SNODGRASS

LOW LEVEL, BULK GLASS DEPALLETIZER

USER MANUAL

V.2 4/2017

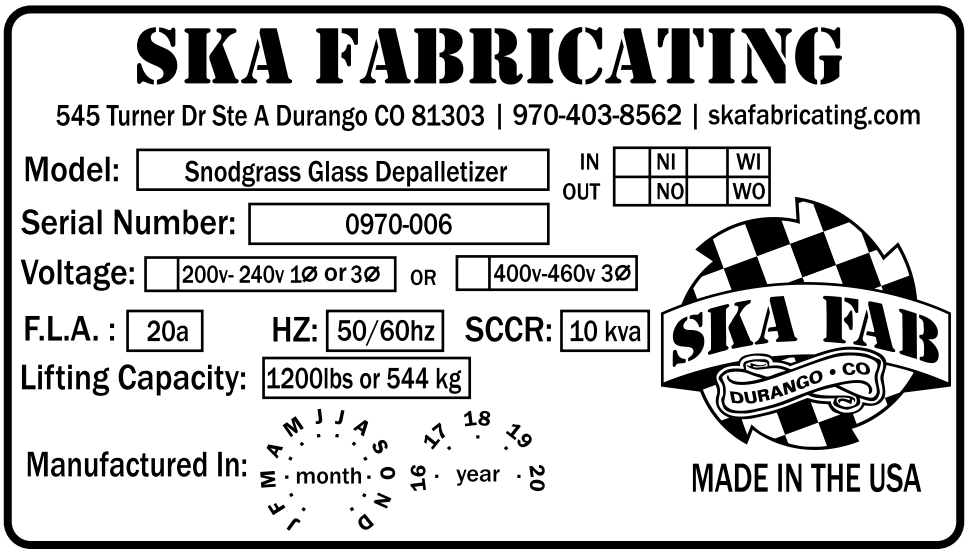
TABLE OF CONTENTS

TECHNICAL INFORMATION

- Reaction Force of Machine: 2500 lbs/1134 kg
  NOTE: ***Please ensure anchor points are designed to handle load of machine.***
- Lifting Capacity of Machine: 1200 lbs/545 kg (*Do not exceed)*
- This machine is designed to operate up to 300 bottles per minute (*Do not exceed)*
- This machine is designed for the sole purpose of lifting pallets of empty bottles.
  NOTE: ***Any other use is prohibited.***
- Machine weighs 1500 lbs/680 kg.
- Lift Machine with a forklift from the top frame using appropriate straps and a sufficient height forklift (*Always secure the load)*- SEE PAGE 3 FOR DIAGRAM
- Warning labels:

Mandatory Action | High Voltage | Stop | Warning | Prohibited

- Safety Gate (when applicable) will remain locked until carriage is in the down position and power is applied to the machine.
- The sound pressure level measured at the operator station < 70 db (A).



Machine Nameplate- ***DO NOT REMOVE***

TECHNICAL SPECIFICATIONS

Dimensions:

Length:	51” (1295 mm)
Width:	72” (1829 mm)
Height:	

Speed:

Lift carriage:	6.8 m/min maximum
Sweep carriage:	6 m/min maximum

Rate:

10 to 300 bottles/minute

Lifting capacity:

1200 lbs (545kg)

Electric power:

Power circuits:

- 208 VAC, 30 Amps, 3 phase or single phase, 60 Hz (USA)
- Optional 480 VAC, 20 Amps, Three Phase, 60Hz

Control circuits:

- 24 VDC

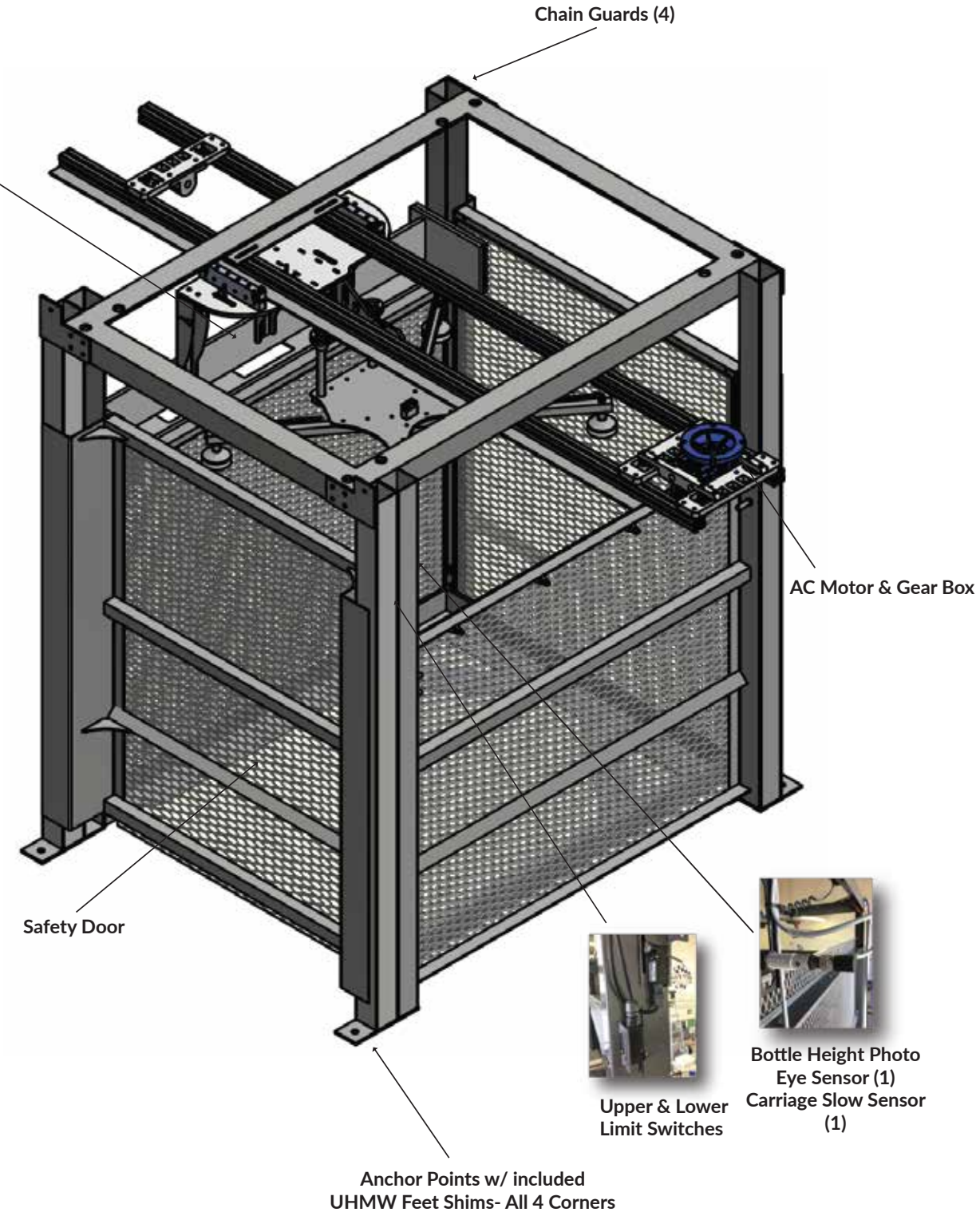
Pneumatic power:

- Primary Regulator- 8.3 bars (120 PSI),
- Secondary Regulator- 2 bar (30 PSI)

Safety Equipment:

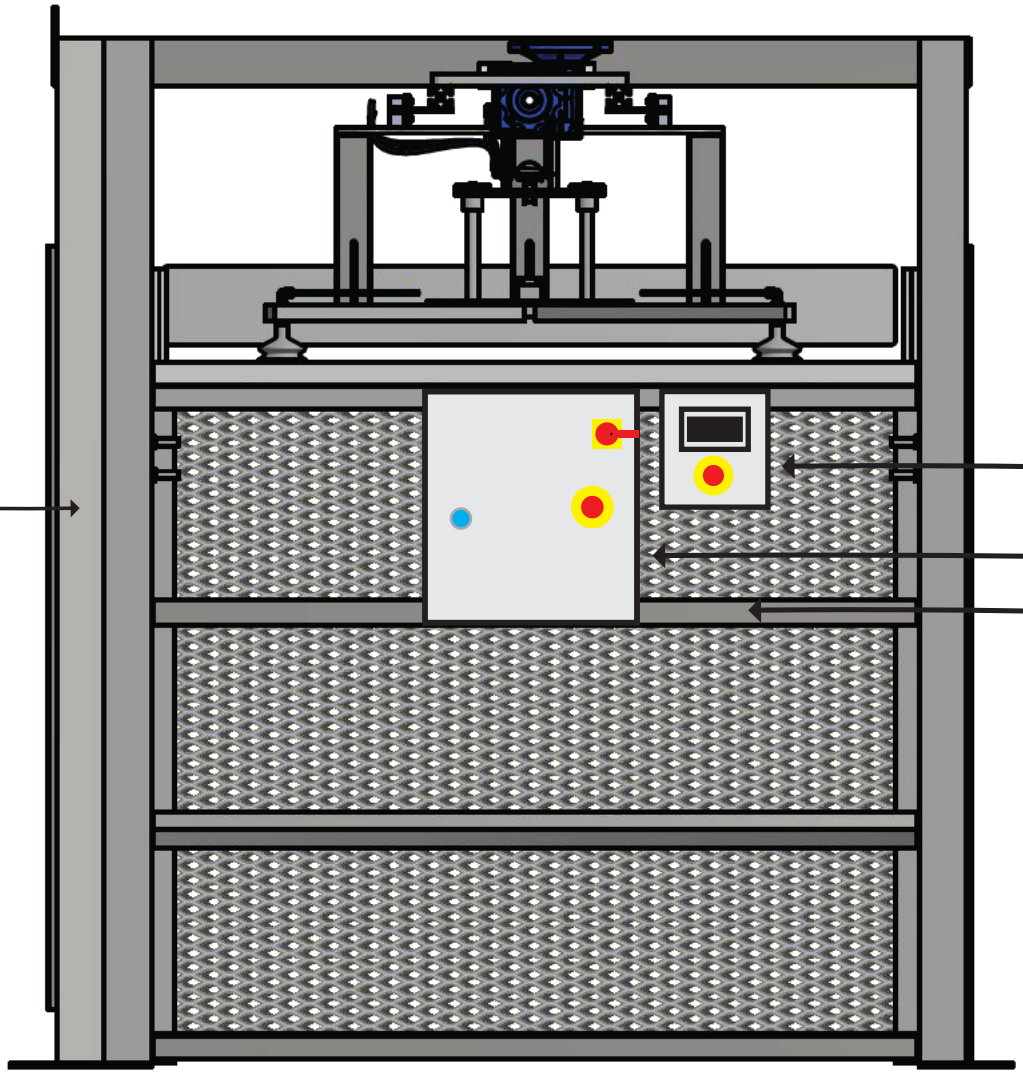
Manually opened Safety gate with IDEM safety switch with Solenoid Interlock, power to unlock, IP67 rated- When applicable

SNODGRASS EQUIPMENT DETAIL- FRONT



SNODGRASS EQUIPMENT DETAIL- BACK

Chains, turnbuckles & counter weights in columns (4)

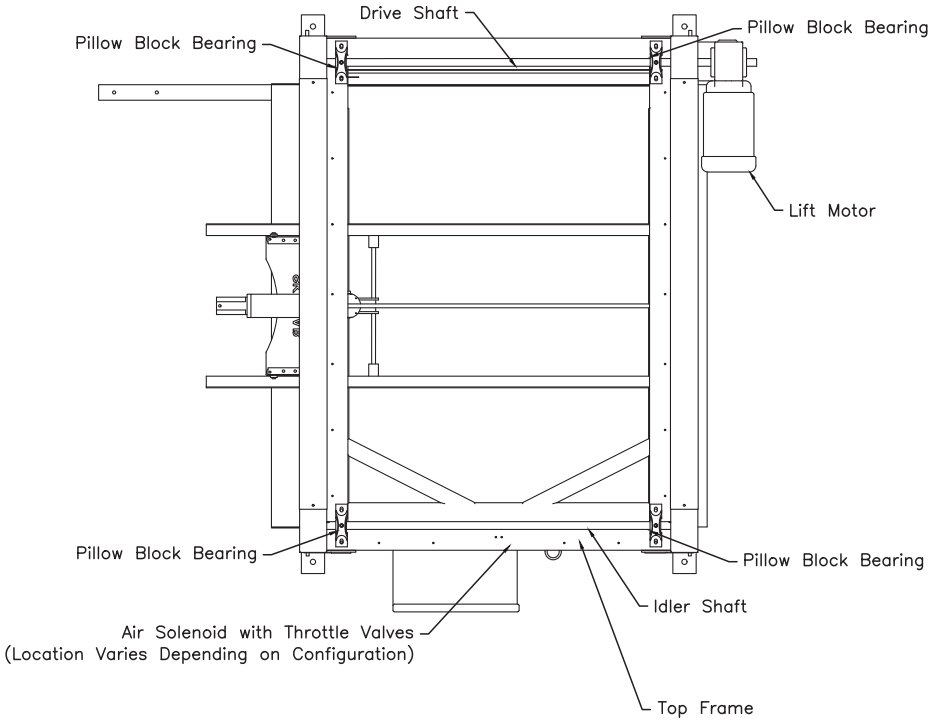


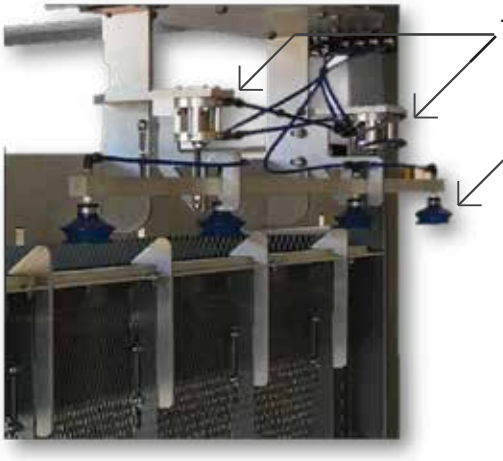
Remote HMI

Control Box

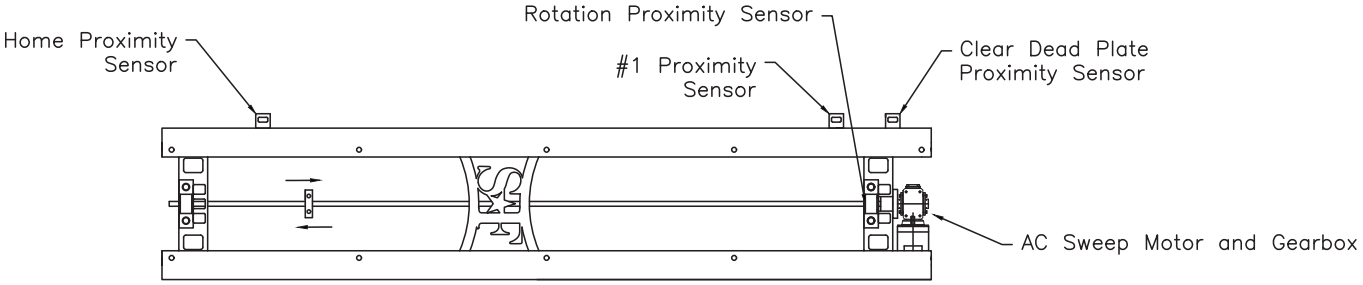
Included Air Regulator Placement

SNODGRASS EQUIPMENT TOP & SWEEP

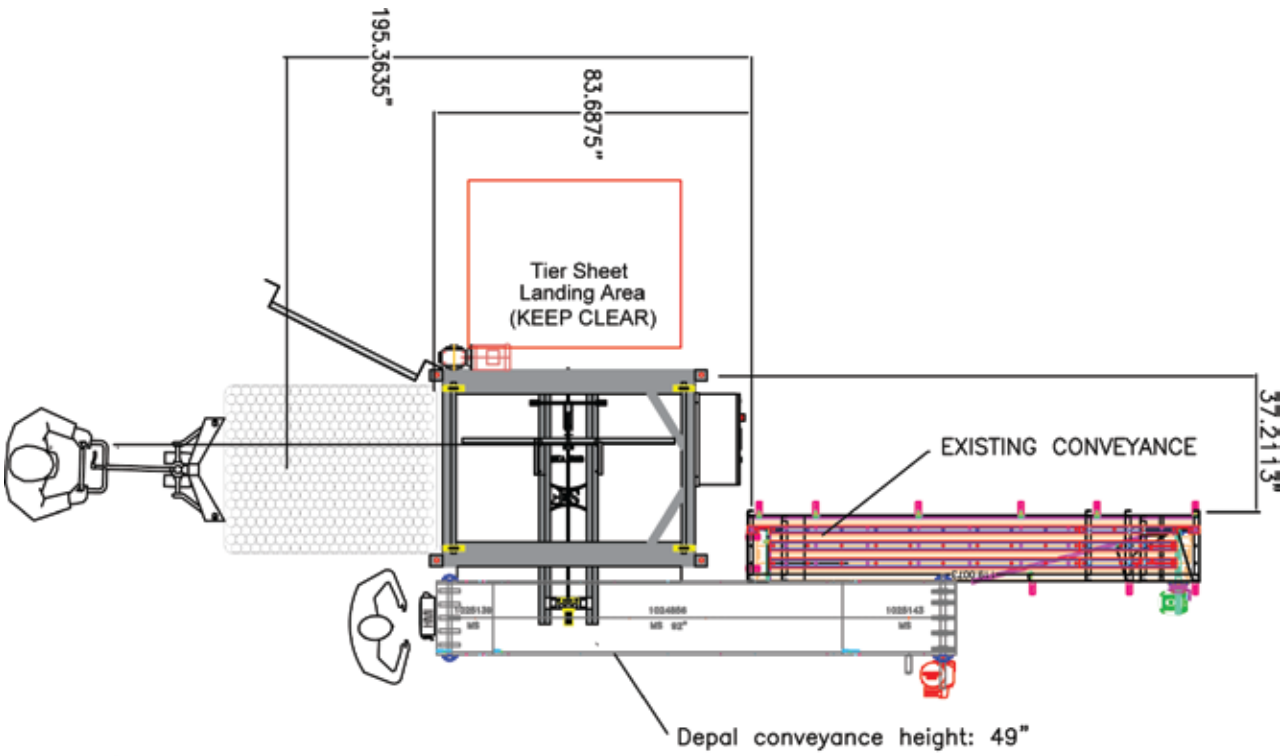




Tier Sheet Vacuum Generator & Pressure Switch



OPERATION DETAIL



SAFETY

Perform the following procedures to ensure safe operation of your depalletizer

1) Perform an inspection before startup to ensure that nothing is obstructing movement of the lift carriage or sweep carriage.

2) Ensure proper operation of the lower limit switch and upper limit switch. (*Refer to Adjustments and Fine Tuning for details)*

3) Stay clear of all moving parts during operation. Make sure anyone in the vicinity is aware that the machine is in operation.

4) Watch out for falling tier sheets. Tier sheets are ejected on the side of the machine opposite the conveyor. Make sure everyone in the vicinity is aware of where the tier sheets will be ejected.

5) Safety door must be closed and locked for proper operation of machine.

6) If you experience any problems or malfunctions, you can always press the red Quick Stop button on the front of the control box or remote HMI to stop all operations. (The Quick Stop button is released by turning the button clockwise)

QUICK START GUIDE

THE FOLLOWING STEPS WILL GUIDE YOU IN GETTING YOUR DEPALLETIZER RUNNING IN A TIMELY MANNER

Check proper operation of all sensors and level switches. Perform dry run in AUTO mode checking for proper function*

1) Turn the power disconnect switch on the front of the control box to **ON**

2) Load your pallet of bottles into the depalletizer:
   - Inspect pallet for damaged bottles and/or tier sheets
   - Fix or remove damaged bottles
   - Straighten/Trim any bent tier sheets
   - For narrow-in narrow-out depals only: Raise the sweep pusher for pallet loading clearance (this step does not apply to narrow-in wide-out depals)
   - Open safety doors
   - Position the pallet in front of depalletizer and cut the bands that run perpendicular to the loading direction
     NOTE: Leave bands that run parallel to the loading direction
   - With the lift carriage all the way down, insert the pallet into the depalletizer using a pallet jack
   - Remove pallet jack and ensure the pallet is pushed all the way into the lift carriage
   - Cut the remaining bands and remove them along with the top frame
   - Close the saftey door (for narow-in narrow-out machines lower the sweep pusher

QUICK START GUIDE CONTINUED

3) From the **HOME** screen, select the MANUAL OPERATION tab (F2). Press and hold **UP** until the Bottle Height Photo Eye sensor stops the lift carriage. Double check that the tier sheet under the top layer of bottles is slightly below the top of the white plastic dead plate; *if the tier sheet is not slightly below the top of the white plastic dead plate see Limit Switches in Adjustments and Fine Tuning.*

4) From the **HOME** screen, press the green **START** button.

5) After inspecting the top layer of bottles to ensure that it is ready to be swept, press the Sweep Mode button (before pressing, it will read “Manual Sweep”) to enter Automatic Sweep mode.

6) At this point, the depalletizer is completely automated until the pallet is empty. When you are on the last layer of your run, toggle **CLEAR DEAD PLATE** and **LAST LAYER** switches **ON** at any time during the layer

NOTE: The lift carriage will automatically return to the bottom of the machine with an empty pallet if it reaches the upper limit switch

7) When you are done with the run, turn the conveyor off and turn the power disconnect switch to **OFF**

ROUTINE MAINTENANCE

SIMPLE STEPS TO KEEP YOUR DEPALLETIZER IN GOOD CONDITION AND OPERATING SMOOTHLY FOR MANY YEARS TO COME

1) **Lubricate drive screw:** Apply food grade grease to the sweep carriage drive screw approximately once every month (more often for heavy use or humid/coastal locations).

2) **Lubricate chains, sprockets, turnbuckles, and columns:** Apply oil to the chains and the inside of the four corner columns every three months. Inspect lift chains, sprockets, and turnbuckles monthly. Expected life of lift Chains, sprockets, and turnbuckles is 10,000 hours or 10 years, whichever comes first.

3) **Hardware:** Inspect all hardware on the depalletizer, conveyor, and rinse cage every three months and tighten or replace if necessary.

4) **Lubricate pillow block bearings:** Apply food grade grease to the pillow block bearings on the drive shaft, idler shaft, and drive screw once every year.

5) **Air Line:** Disconnect the air line from exit side of the air regulator and apply two drops of air tool oil once every year.

6) **Sweep Bearings:** Inspect the bearings on the sweep carriage for wear once every year and replace if necessary.

7) **Conveyor:** Refer to the manual that came with your conveyor for conveyor maintenance.

ADJUSTMENTS & FINE TUNING

Follow the steps below to get your depalletizer set up properly

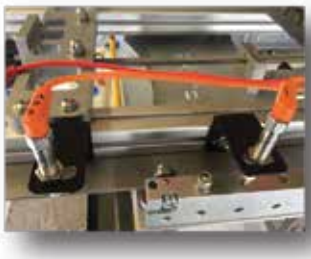
1) **Proximity (Prox) Sensors.** The prox sensors have an orange wire attached to them and can be adjusted with two adjustable wrenches. All prox sensor heights should be adjusted to leave a space of about 1/16" between the prox sensor and the flag bolt on the sweep carriage or associated flag

   a. The Home prox sensor stops the sweep carriage at the back of the rails in the Home position.

   b. The Front prox sensor stops the sweep carriage at the beginning of the plastic dead plate in auto mode.

   c. The Clear Dead Plate prox sensor stops the sweep carriage at the end of the plastic dead plate.

   d. For narrow-in narrow-out depals only: The Sweep Safety prox sensor, located on the top frame above the entrance of the depal, is used to make sure that the sweep pusher is in the lowered position before the sweep advances. The sweep will not advance if this sensor detects that the sweep is in the raised position.



2) **Limit Switches.** The upper and lower limit switches are located high on a column of the depalletizer, generally under the lift motor. The upper limit swich is located lower on the machine than the lower limit switch. Both limit switches are used to stop the lift carriage at the limits of its range of motion. When the upper limit switch is triggered in auto mode, the lift carriage will automatically return to the bottom of the machine where it will trigger the lower limit switch and stop.

3) **Photo Eye Sensors.** The photo eye sensors have a grey wire attached to them and can be adjusted by hand. Each photo eye sensor needs to be adjusted so that it can see its corresponding reflector when there is nothing in between the sensor and the reflector (the yellow light on the sensor will be illuminated when the sensor sees the reflector).

a. The Slow Lift Photo Eye sensor is located near the front of the machine on an adjustable mount. When this is blocked, the lift carriage goes into a slow mode while raising.

b. The Bottle Height Photo Eye sensor is used to stop the lift carriage at the correct height for sweeping bottles across the plastic dead plate and onto the conveyor. Its height should be adjusted such that the tier sheet underneath the layer that is being swept is just below the top surface of the plastic dead plate (the bottles will have to rise slightly over the routered front edge of the dead plate).

c. The Bottle Advance Photo Eye sensor is used to stop the sweep carriage when bottles have accumulated on the conveyor and to sweep more bottles as soon is there room for them.

4) **Lift Chains.** The lift chains can be easily adjusted with a 9/16” wrench. In the Manual Operation screen, lift the empty lift carriage until it hits the upper limit switch. Loosen the hex nut that is located at the top of the turnbuckle that connects the chain to the lift carriage and turn the turnbuckle to adjust the height of the lift carriage. Be sure to level the lift carriage with the plastic dead plate and then check all four corners for level with the top frame of the depalletizer.

Note: It is a good idea to adjust the lift chains so that the side of the lift carriage that is opposite the dead plate is slightly lower (about 1/4”) – this provides extra clearance below the sweep pusher to avoid grabbing the next tier sheet down at the beginning of a sweep.

5) **Lift motor.** The speed of the lift motor can be adjusted using the HMI touchscreen. Most users will leave the speed set at about 50% of maximum.

6) **Sweep motor.** The speed of the sweep motor can be adjusted using the HMI touch screen. Most users will leave the speed set at about 80% of maximum. There is an overload feature that will stop the sweep carriage in the event of a jam, which can also be adjusted using the HMI touchscreen; if the sweep carriage is constantly over loading, first ensure that there is nothing blocking the sweep carriage, then refer to HMI manual, Page 10-11

TIPS & TRICKS

A FEW THINGS TO MAKE LIFE EASIER

1) Make sure all bottles and tier sheets are in good condition prior to loading. Damaged bottles and tier sheets cause a variety of problems in the depalletizer.

2) Load pallets into the depalletizer with a pallet jack (not with a forklift)

3) Make a mark (using tape or whatever you please) near the bottom of the machine on the same side as the control panel so you can raise a full pallet to the correct height for removing the top frame of the pallet without leaving the control panel.

4) Never wrap a pallet of bottles with plastic. Secure partial pallets by putting the plastic OR WOOD top frame (with tier sheet underneath) on top of the pallet and re-banding.

TROUBLE SHOOTING

Solutions to the most commonly experienced problems

1) There is a fault code displayed on the HMI touchscreen.
    a. After addressing the cause of the fault code, you will need to press the Reset button to clear the code from the screen.

2) The lift carriage will not raise.
    a. Check the Bottle Height Photo Eye sensor for blockage or misalignment.
    b. Check the lift carriage speed settings, making sure that they are not set to zero.
    c. Check the upper limit switch for proper operation.

3) The sweep carriage will not advance.
    a. Check the Bottle Advance Photo Eye sensor for blockage or misalignment.
    b. Check the drive screw for damage (nicks, burrs, etc.) and make sure it is lubricated.
    c. Sweep Carriage is faulting out- Refer to HMI Manual Pg. 10 Section 2.4.4

4) There is a problem that seems related to electronics or software.
    a. Turn the power disconnect switch on the front of the control box to OFF and leave it there for at least 60 seconds. Then turn the machine back on.

5) Bottles are falling over as they are pushed onto the conveyor or bottles are being left on top of a tier sheet as it is being removed.
    a. Check to make sure the Bottle Height Photo Eye sensor is adjusted properly.
        i. In manual mode, raise a pallet of bottles until it is stopped by the Bottle Height Photo Eye sensor.
        ii. If the Bottle Height Photo Eye sensor is adjusted properly, the tier sheet directly underneath the top layer of bottles should be slightly below the top of the plastic dead plate (to keep the tier sheet from sliding forward onto the dead plate).

HMI MANUAL

SIEMENS SIMATIC HMI AND S7-1200 PLC

SKA FAB

DURANGO • CO

CONTENTS

LIST OF FIGURES

LIST OF TABLES

1 Document Versions

Application Versions	Date	By	Changes
	4/17	JBH	Original Document Creation – Released with 2_0, 2_1
	6/28	SMB	Revised for Allen Bradley Program

2 Screen by Screen

This section contains an overview of the HMI screens with a description of each item.

2.1 Start-Up (Splash Screen)

Upon Power-Up the HMI will open to the Start-Up or Splash Screen the fields are described below.

Figure 1 Start-Up (Splash Screen)

2.1.1 Start-Up or Splash Screen Controls

1 Ska Logo Home Button – Selecting the Ska logo in the upper left corner of any screen will cause the HMI to navigate to the Start-Up / Splash Screen.

2 Home / Main Screen Navigation – Selecting this button navigates to the Home / Operations Screen.

3 Design Name Application Version – This indicates which PLC and HMI version are currently installed.

4 Help - Selecting this button navigates to the Help / IO Check Screens.

2.2 Machine States Table

The machine state is presented in the Operator Notification Field when not hidden by an operator notification field message on every HMI screen. This indicates the program stem the machine is currently executing.

State Number	State Name	Description
0	System Ready	Safety Door is Latched and Locked. Ready for Manual or Auto Operation

Table 2-1 Depal Machine States

2.3 Pre-Start Operations: Safety Interlock Door Screens

The depal is equipped with a safety interlock door to ensure the machine and the pallet are properly secured prior to any operation of the machine . In order to operate the machine in Operate/Auto or Manual Mode, the safety switch must be fully latched (slide fully over) and locked. The status of the door lock will be indicated in the Operator Notification Area of Home / Main Operations Screen as shown in the table below.

Operator Notification	Description/Correction
DOOR IS OPEN, LATCH AND LOCK DOOR TO OPERATE	To operate the lift of sweep in any mode (Operate/Auto or Manual) the door must be fully latched (slide the handle fully over) and locked. Settings and Help Screens are still fully functional when the door is unlocked. Conveyor Start/Stop control is also functional when the safety door is unlocked. Press the “Lock Door” Button on the Home Screen to lock the door. *Note: the gate may be unlocked only by pushing the “Unlock” button on the Home Screen when the lift carriage is at the lower limit switch.*
SAFETY GATE IS UNLOCKED	The door is unlocked and can be unlatched to open the door and exchange the pallet.
SYSTEM READY	The door is latched and locked. The depal can be operated in any mode (Operate or Manual)

The Door Lock and Unlock Door buttons are shown on the screen shots below. Numbers have been added to the controls to aid in matching descriptions to the on-screen controls.

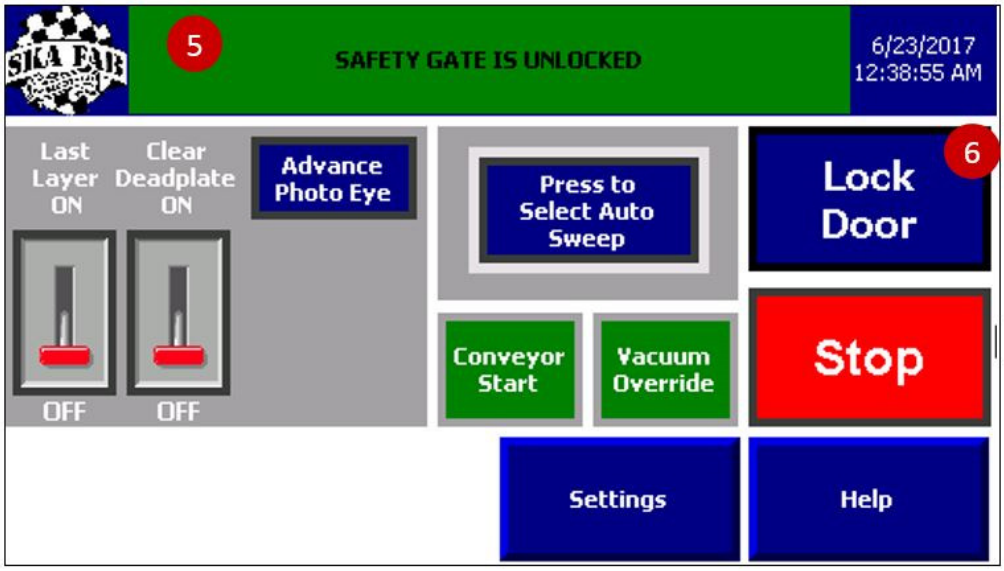


Figure 2 Home / Main Operations Screen – Door Unlocked

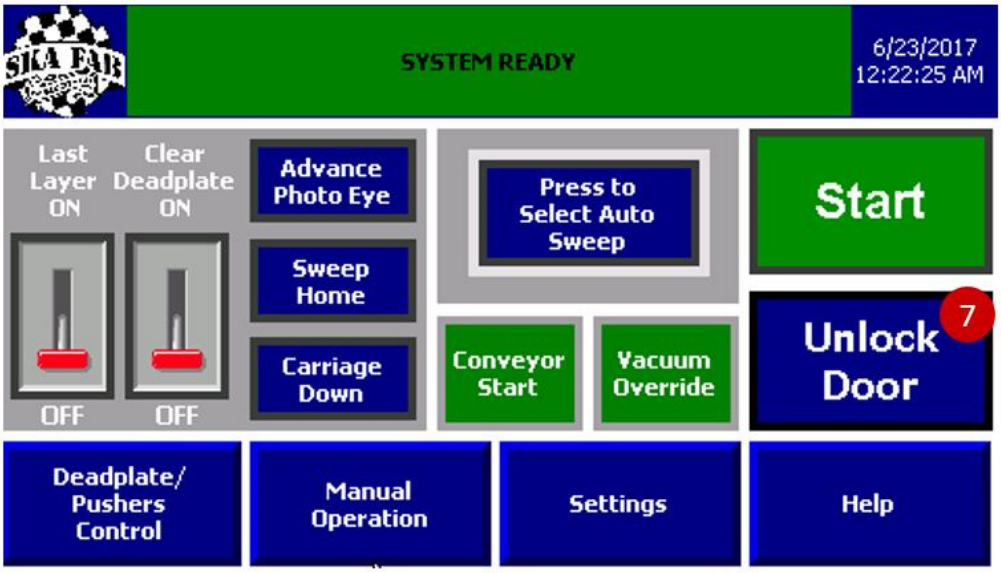


Figure 3: Home/ Main Operations Screen - Door Locked

2.3.1 Pre-Start Operations: Safety Interlock Door Controls

5

Operator Notification Field – This area will either show the highest priority Operator Notification or the current machine operation state.

Operator Notification Area- Operator Notifications indicate that the normal operation of the machine has been interrupted and that a specific task may be required to return the machine to operation. The table below contains the graphic the user will see and the required task to return to normal operation.

6 Lock Door: This button is visible if the safety door is closed and latched and is used to secure the safety door prior to any operations of the depal including the sweep or lift. When the door lock button is pressed, the button is replaced with the START button, and the Unlock Door button will appear below it as shown in Figure 3.

7 Unlock Door: This button is visible if the safety door is locked, the depal is not in automatic running mode, and the lift carriage is at the bottom prox. When the Unlock Door button is pressed, the button is replaced with the STOP button and the Lock Door button will appear above it as shown in Figure 2.

2.4 Home / Main Operation Screen

Home Screen provides the main interface for Depal Operation. A description of each of the controls is included below in Table X-X.

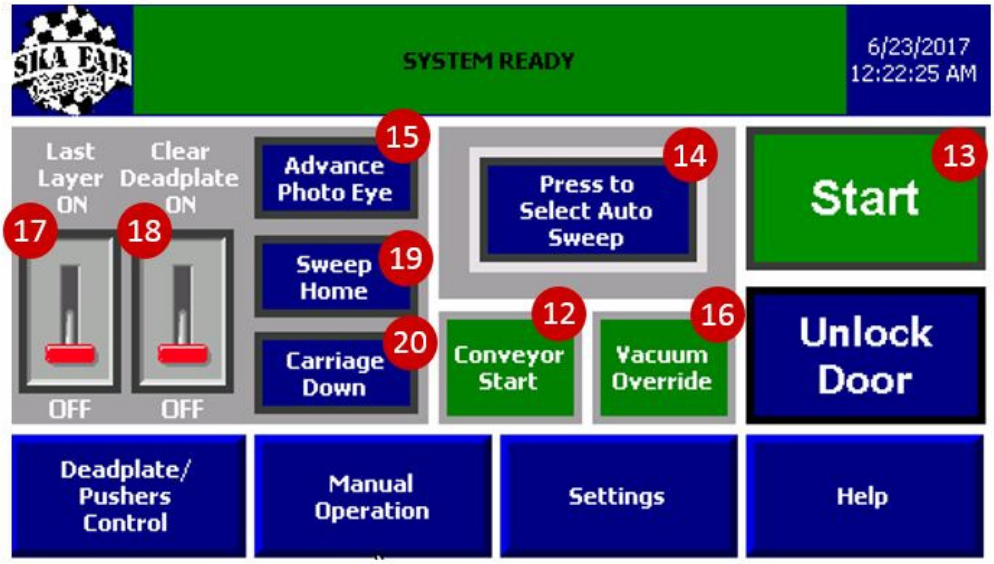


Figure 4: Home / Main Operations Screen

2.4.1 Navigation

The Navigation button are located along the bottom of the screen and provide easy access to the additional screens needed to operate the system.

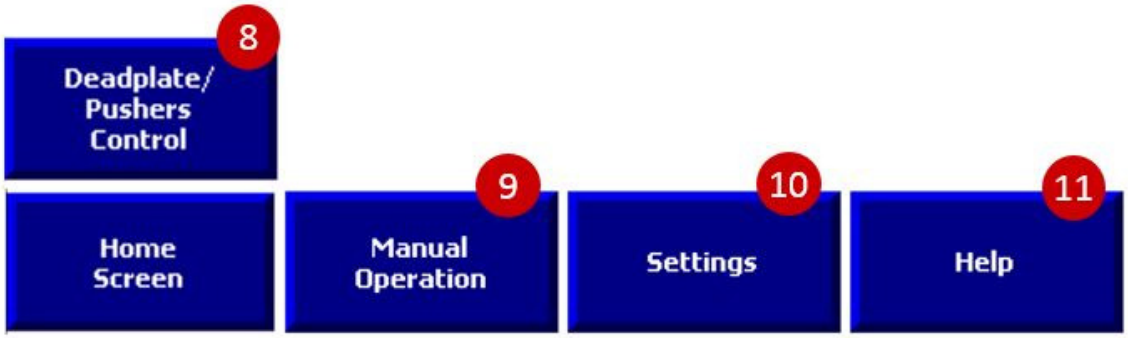


Figure 5: Home / Main Screen Navigation

8 Deadplate/ Pushers Control OR Home Screen–

Deadplate/ Pushers Control- If the machine is equipped with the Retractable Deadplate and Pushers Option, the first position Home Screen button is replaced with the Deadplate/Pushers Control Button which will allow the user to cycle the retractable deadplate and bottle layer alignment pushers as required. See Appendix A Deadplate/Pushers Option

Home Screen – If the machine is not equipped with the Retractable Deadplate and Pushers Options, the Home Screen button is displayed. Pushing the Home Screen button will return the operator to the Home / Main Operation Screen

9 Manual Operation– The Manual operation screen allows each portion of the machine to be exercised for set-up and checkout. If the machine is in operation, selecting the Manual Operation button is not visible. When the machine is in STOP modem, the button is visible. See Section Manual Operation Screen

10 Settings– The settings menu is where speeds, limits, time delays and other settings are input. The machine will remain in operation if the settings menu is accessed. See Section Settings Menu

11 Help Screens– The help screens provide access to simple operation instructions and IO check screens which can be used to monitor the PLC IO. See Appendix B Help / IO Check Out

2.4.2 Home / Main Operation Screen Controls

The Home / Main Operation Screen controls are used for most machine operations these are listed in order of use from initial load (Full Pallet) to unload (Empty Pallet).

12 Conveyor Start / Stop – This button will appear if the control cabinet was equipped with VFD3 and is typically used to an offload conveyor taking containers away from the depal. The Conveyor may be stopped and stated as needed, changing the operation state of the conveyor will not interrupt the depal sequence.

13 Start- The Depalletizer Start button is used to start and stop the depal sequence. The Start is enabled whenever it is not inhibited by a machine state which appears in the Operator Notification Field.

Note: When the push button is pressed and the depal enters RUN mode, the green light in the Start button on the control panel door will turn on.

14 Manual / Auto Sweep - The Manual / Auto sweep mode selection determines if the sweep begins when the Advance Photo Eye (PE) is clear (Auto) or waits until the Advance Photo Eye Button is pressed (Manual). Normal operation is to inspect the first tier of containers once at height and then select the Advance PE button or select the Auto Sweep Mode button.

Note: The Manual mode is automatically selected when the Pallet Lift Carriage reaches the lower limit.

Advance Photo Eye Button– This control provides two functions:

15

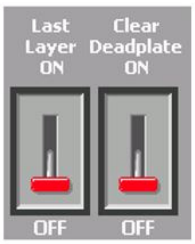
- Manual Sweep Mode- this button allows the sweep to begin when the containers reach the height PE and the Advance PE is clear.

- Auto Sweep- this provides an override to advance the sweep and override the Advance PE once the height PE is blocked (containers at height).

Note: In Auto Sweep Mode, the Advance PE path must be clear for 1.5 seconds before the sweep will begin. This Conv PE Delay set point is field adjustable in the Sweep Settings Screen as shown in Figure 14.

16 Vacuum Override – This push button overrides the vacuum confirmation pressure switch and allows for tier sheet removal by overriding the vacuum pressure switch. This can be used to test the vacuum / tier sheet removal sequence without the tier sheet being present.

17 Last Layer Toggle– The depal is equipped with a Last Layer Proximity Sensor that is configured to sense the presence of the pallet lift carriage and automatically trigger the Last Layer function. The Last Layer Toggle is also available to allow operators to trigger this function on any layer of pallet however the Last Layer Toggle can only be switched while the depal is in RUN mode.



This control causes the machine to complete the current layer and send the pallet carriage home upon reaching either the pallet clear proximity (Middle Proximity) or dead plate clear proximity (Front Proximity) which depends upon the Clear Dead Plate Toggle.

Note: Upon completion of the Last Layer Sweep the sweep arm remains in place to prevent containers from falling back into the lift carriage area.

18 Clear Dead Plate Toggle – This control determines how far the current sweep operation will sweep.

Off – The sweep will sweep to the clear pallet (Middle Proximity)
On – The sweep will sweep to the clear dead plate (Front Proximity)

19 Sweep Home Button – This button appears only when the machine is in STOP mode, and is used to return the sweep arm to the home position (Back Proximity).

20 Carriage Down Button – This button appears only when the machine is in STOP mode and will send the carriage to the lower limit.

2.5 Home/ Main Operations Screen: Pause/Resume Screens

When the depal is running in Operate (Auto) Mode, the machine may be paused by pressing the Pause button on the Home/Main Operations Screen. Pressing Pause will place the machine into a HOLD state and will allow the operator to resume operations at a later time.

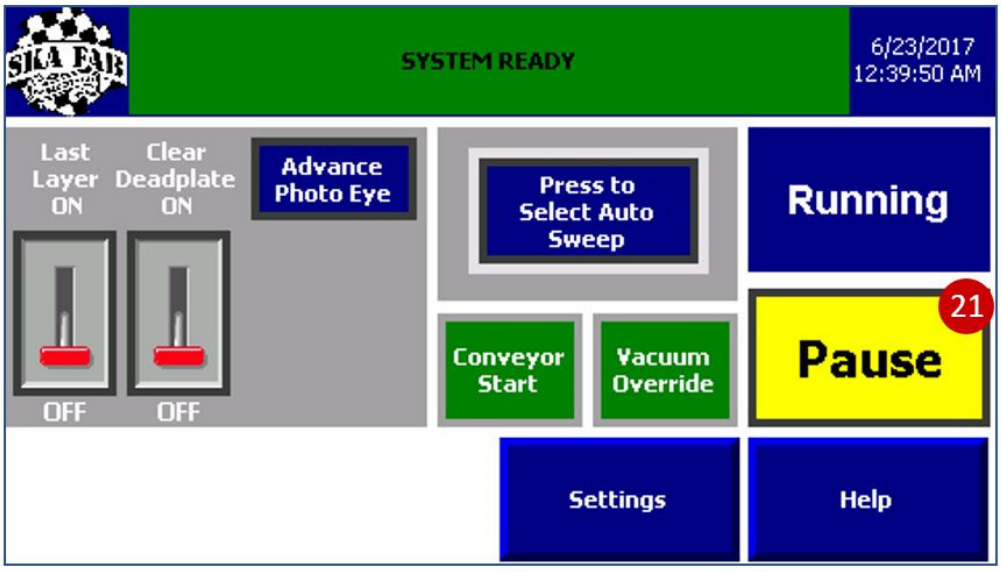


Figure 6: Home/ Main Operations Screen – Running

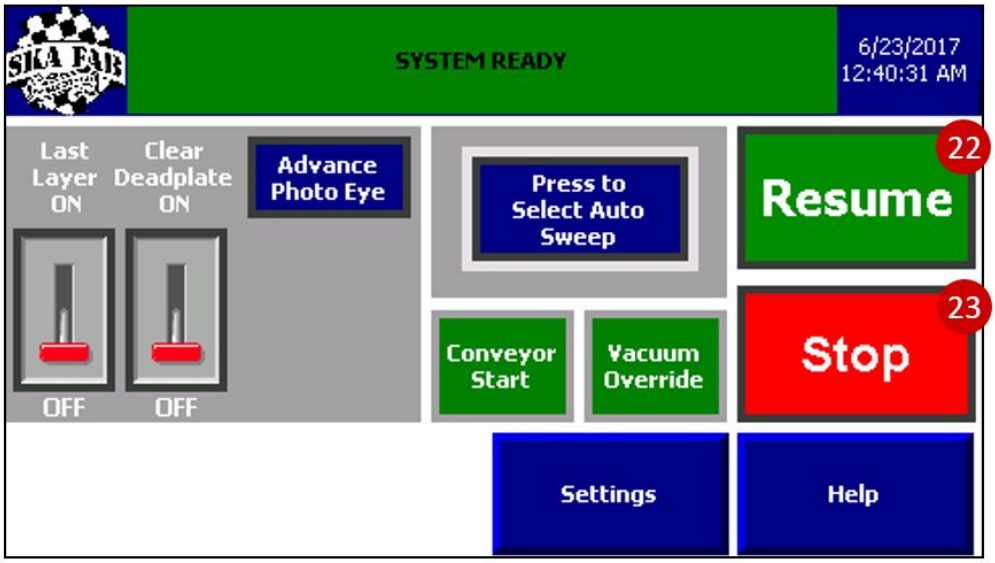


Figure 7: Home/ Main Operation Screen – Paused

2.5.1 Home/ Main Operations Screen: Pause/Resume Controls

21

Pause: This button is visible when the machine is in RUN mode. When pressed, the button is replaced with the Stop button and the Resume button will appear above the button.

To stop operations, press the Stop button after pressing the Pause button. In the case of an emergency, the machine can be stopped immediately with the Emergency Stop (E-Stop) button on the HMI or the control panel door.

Note: While the depal is paused, the green light on the control panel door will flash.

22 Resume: This button is visible when the Pause button has been pressed while the machine is running automatically in Operate Mode. When pressed, the button is replaced with the Running textbox and the Pause button will reappear directly below the button.

23 Stop: Selecting Stop will stop the current sequence, halting all operations.

Note: When the Stop button is pushed, the green light on the control panel door will turn off.

2.6 Manual Operation Screen

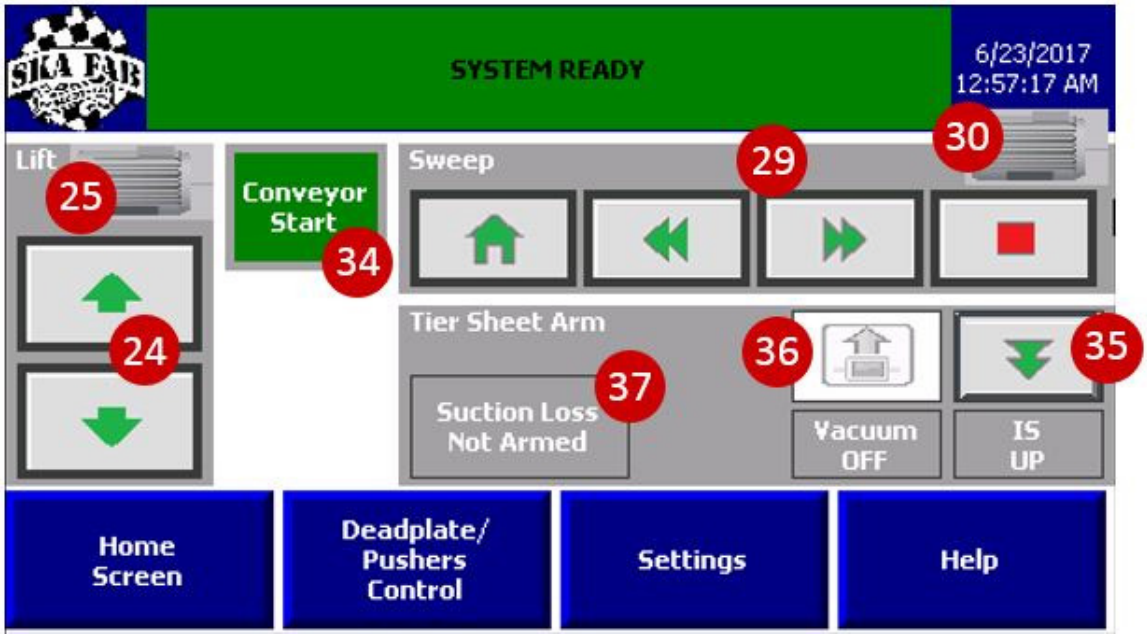


Figure 8 Manual Operation Screen

2.6.1 Manual Operation Screen Navigation

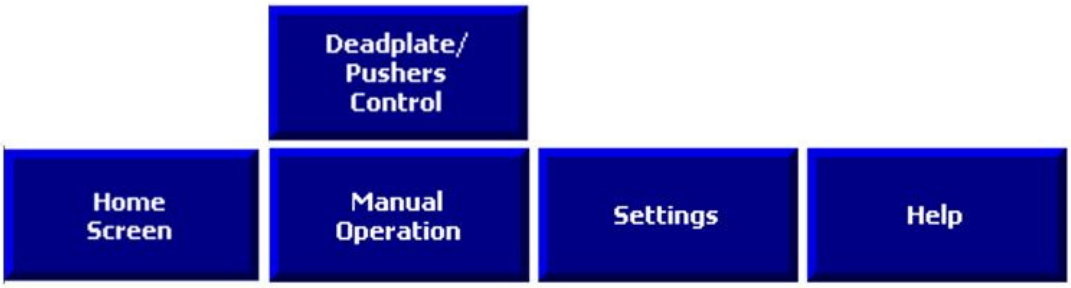


Figure 9: Manual Operation Screen Navigation

2.6.2 Manual Lift Controls and Settings

The lift carriage is moved using the output from VFD1 (Lift). Two limit switches are used to are used to confine the upper and lower limits of travel. The controls described below can be used to manually control the lift carriage motor.

24 Lift Raise/Lower – The Raise (Up Arrow) and Lower (Down Arrow) buttons are used to manually raise and lower the pallet lift carriage. The manual raise is prevented from operating when the sweep arm is way from the home position and is limited in its upward travel by both the height PE and the upper pallet carriage limit switch. The carriage may be lowered regardless of the sweep arm position and is limited by the lower pallet carriage limit switch.

25 Lift Motor Current Trend (Motor Symbol) – Selecting the motor symbol adjacent to the Lift Raise / Lower button will open a trend window used to monitor the motor current over time and to access the overcurrent settings, as shown below in Figure 10.

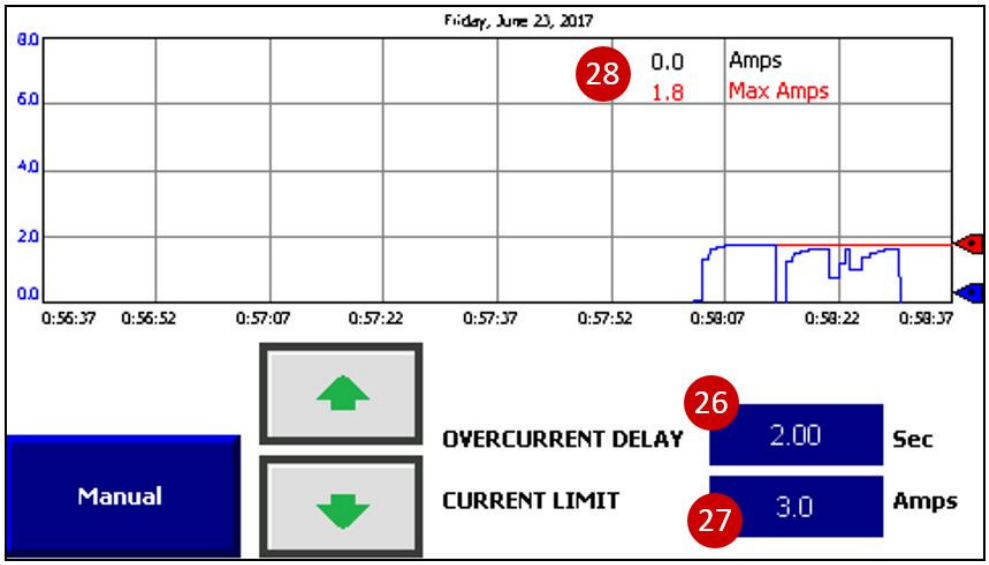


Figure 10: Lift Motor Current Trend Window & Setpoints

26 Lift Overcurrent Delay – The delay before the overcurrent fault shuts down the lift requiring the control panel reset button to be pushed.

27 Lift Current Limit- The current limit that, after the Overcurrent Delay, will shut down the lift requiring the control panel reset button to be pushed.

28 Amps- The real time lift (VFD1) current values.

Max Amps- The maximum current measured while manually operating lift.

2.6.3 Manual Sweep Controls and Settings

The Sweep is moved using the output from VFD2 (Sweep). Three proximity sensors are used to locate the sweep arm in its travel by "detecting" a steel bolt on the sweep arm trolley to determine the location. See Figure 11 (Right).

A forth optional location proximity sensor can be included to position the sweep within 1-inch by counting the rotations of the sweep shaft. When included this allows the sweep distance to be set in inches which is needed when the containers are being discharged onto a conveyor that is less than the width of a pallet layer. The sweep distance is set in the Sweep Settings Screen.

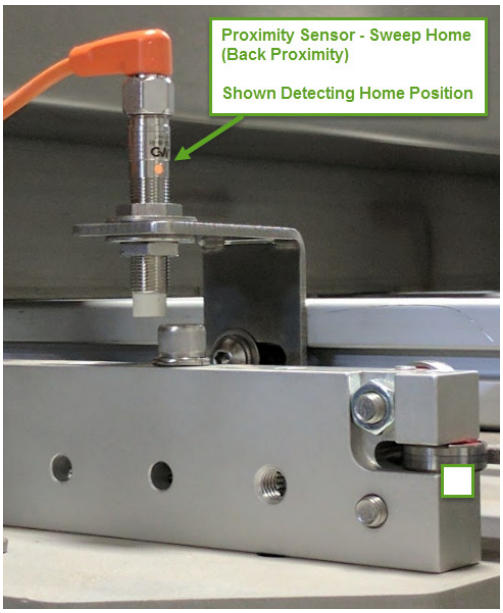


Figure 11 Sweep Home Proximity Sensor

29 Sweep Right / Left – These controls jog the sweep left and right. The sweep will move while the button is held but will not allow the sweep to travel beyond either the front or back proximity sensors or if the sweep overcurrent alarm is triggered.

Sweep Home – The home button will return the sweep to the home position. The button is pressed to start the sweep home operation. The sweep will travel toward the home or back-proximity sensor until detected and brakes to a stop.

Sweep Stop – This button is used to stop a sweep home process. During a sweep home operation, the button is pressed and the sweep brakes to a stop.

30 Sweep Motor Current (Over Current Configuration) (Motor Symbol) – The Sweep Arm Overcurrent Alarm is used to prevent container breakage due to a jam or other obstruction of the sweep arm. The overcurrent setting / tuning screen is located through a button that looks like a Motor directly above the sweep controls.

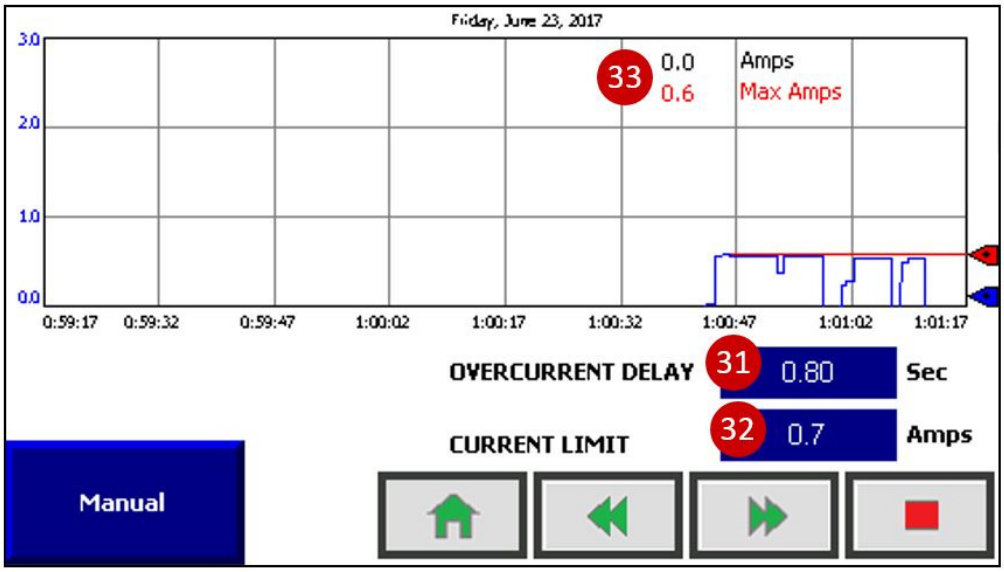


Figure 12 Sweep Arm Current Trend / Overcurrent Settings

31 Sweep Overcurrent Delay – The delay before the overcurrent alarm shuts down the sweep requiring the panel reset button to be pushed.

32 Sweep Current Limit- The current limit that, after the Overcurrent Delay, will shut down the sweep requiring the panel reset button to be pushed.

33 Amps- The real time sweep arm (VFD2) current values.

Max Amps- The maximum current measured during the current tier sheet operation or during manual operation of the sweep. The max is reset upon returning to the sweep home proximity sensor. This value may also be reset at any time by using the Sweep Stop Button.

2.6.4 Manual Conveyor Controls

34 Conveyor Start / Stop – This button will appear if the control cabinet was equipped an additional VFD(s) and is typically used with an offload conveyor taking containers away from the depal. The Conveyor may be stopped and started as needed, changing the operation state of the conveyor will not interrupt the depal sequence.

2.6.5 Manual Tier Sheet Arm Controls

The Tier Sheet Arm is located behind of the Sweep and is provided to remove the tier sheet after it is emptied. The Tier Sheet Arm is equipped with suction cups which utilize suction generated by an integrated suction generator.

Figure 13 Tier Sheet Arm Mechanism

35 Tier Sheet Arm Raise/Lower – This control will raise and lower the sweep arm.

36 Tier Sheet Vacuum ON/OFF – This control will turn the suction solenoid On and Off

37 Tier Sheet Vacuum Suction Loss Armed / Disarmed Indicator – This HMI indicator will advise when the loss of suction alarm is enabled. If the suction switch is triggered after the arm delay BEFORE the vacuum generator is turned OFF a shutdown occurs and the machine enters the STOP state with an alarm dialog that indicates the alarm type. The vacuum override on the Main Operation Screen bypasses the Suction Loss Alarm.

2.7 Settings Menu

The Settings Menu allows access to the speed, time delays, and current limits related to the depal operation. The Settings Menu is opened using the Settings button from the Home/Main or Operations Screen.

2.7.1 Setting Screen Navigation

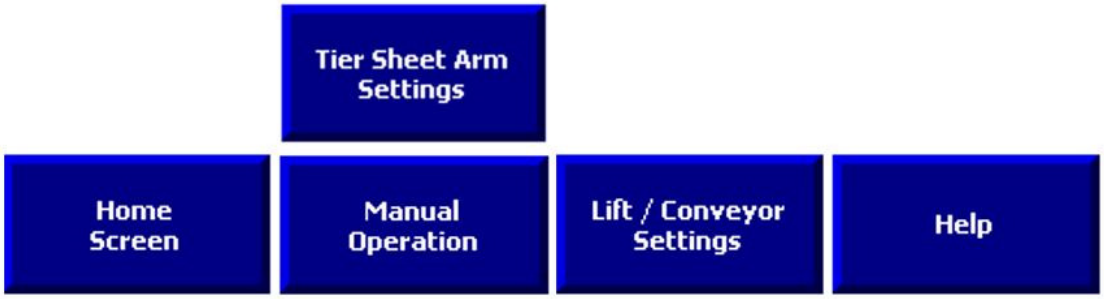


Figure 14 Settings Screen Navigation

2.7.2 Sweep Settings Controls

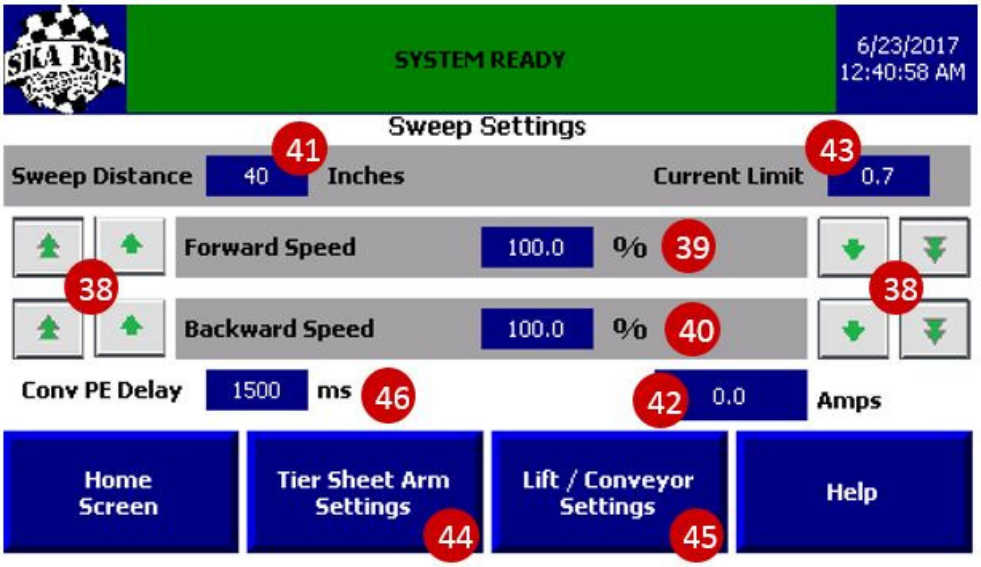


Figure 15: Sweep Settings Screen

38 Speed Adjustment Buttons- These allow the speed to be raised by either a single step or multiple steps.

39 Forward Speed Set Point – Forward speed (away from Home) used to sweep containers onto the offload conveyor. Entry in percent of maximum.

40 Reverse or Backward Speed Set Point – Reverse speed (towards Home) used to return the sweep to home after sweeping containers onto the offload conveyor. Entry in percent of maximum.

41 Sweep Distance Set Point- Distance the sweep moves in a single operation in inches.

42 Sweep Current - The real time sweep arm motor (VFD2) current values.

43 Sweep Current Limit – The sweep arm current limit in Amperes. There are two values that make-up the overcurrent shutdown; this set point and a time delay. The time delay set-points can be accessed from the Sweep Current Trend Screen. See Figure 12.

44 Tier Sheet Arm Settings - This opens the Tier Sheet Arm Settings Screen.

45 Lift Conveyor Settings - This opens the Lift/Conveyor Settings Screen.

46 Conveyor PE Delay – This set point controls the amount of time the Advance Photoeye must see a clear signal before triggering the sweep.

2.7.3 Lift Settings Controls

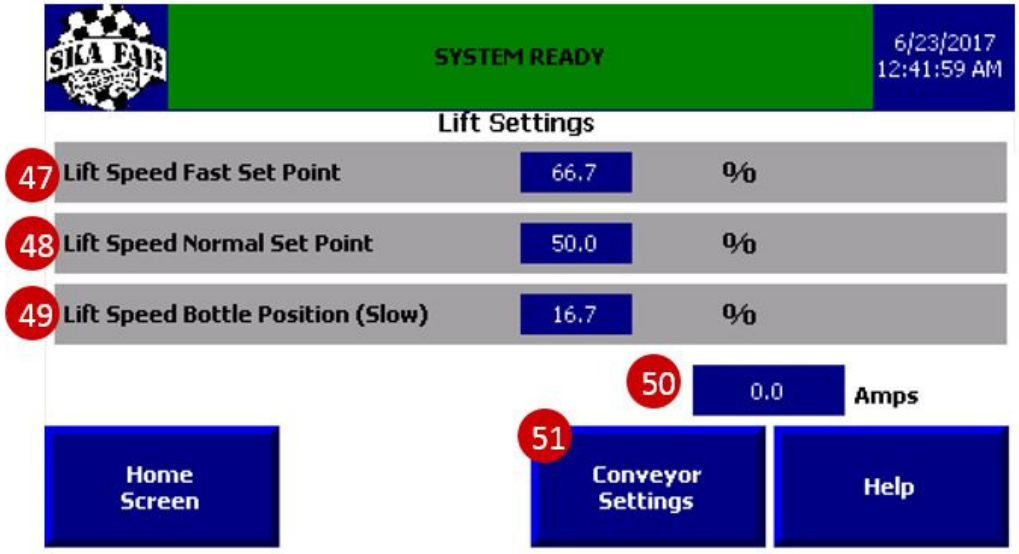


Figure 16: Lift Settings Screen

47 Lift Speed Fast Set Point – The homing speed at which the lift carriage will go down in the “All Home” operation used to return the pallet to the bottom of lift for unloading

48 Lift Normal Speed – The speed that the lift will accelerate to during the normal lift operation when the Slow PE is NOT blocked. This speed is reached over an 8 second time window

49 Lift Speed Bottle Position (SLOW) – This is the speed that the lift will operate at to lift the containers once the Slow PE has been blocked. This speed reduction is critical in insuring that the containers are the correct height to be swept onto the off-load conveyor.

50 Lift Current- This field will show the current being consumed by the lift motor (VFD1).

51 Conveyor Settings – This opens the Conveyor Settings.

2.7.4 Conveyor Settings Controls

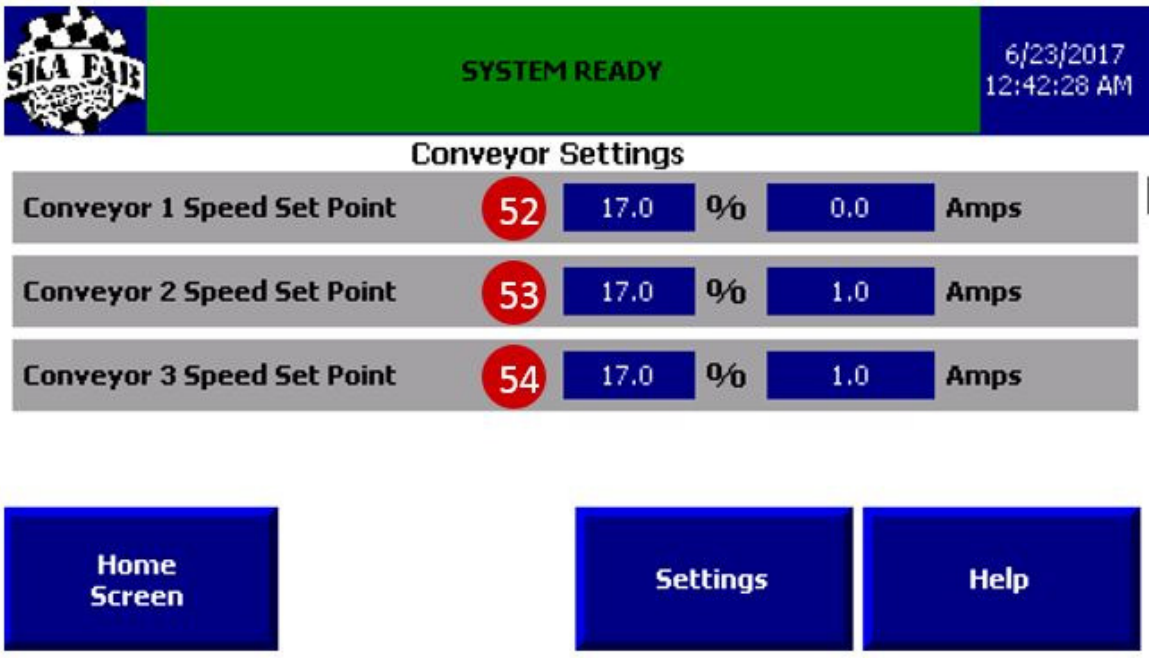


Figure 17: Conveyor Settings Screen

52 Conveyor 1 Speed Set Point and Current - This is the speed that the containers are moved away from the dead plate as the sweep arm sweeps forward and the real time current drawn by the Conveyor 1 motor.

53 Conveyor 2 Speed Set Point and Current - This is the speed that the containers are recirculated in the reflow accumulation table and the real time current drawn by the Conveyor 2 motor.

54 Conveyor 3 Speed Set Point and Current - This is the speed of the reflow table center discharge conveyor and the real time current drawn by the Conveyor 3 motor.

2.7.5 Tier Sheet Arm Settings Controls

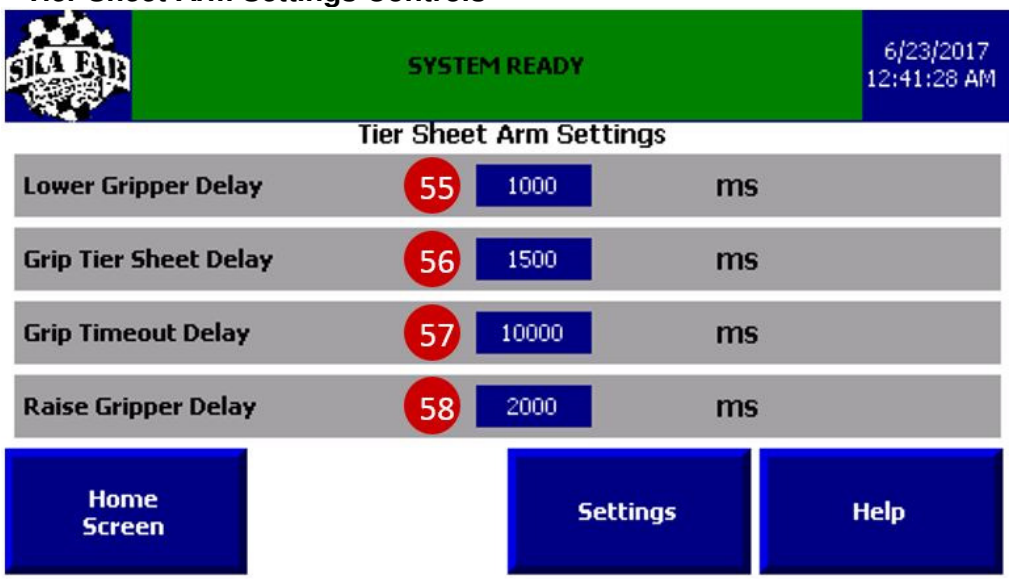


Figure 18: Tier Sheet Arm Setting Screen

55 Lower Gripper Delay- This set point controls the amount of time the Tier Sheet Arm pauses before descending once the sweep has arrived at the clear pallet proximity sensor.

56 Grip Tier Sheet Delay- This set point controls the amount of time the Tier Sheet Arm pauses before applying vacuum to the Tier Sheet Arm suction cups.

57 Grip Timeout Delay- This set point controls the amount of time the Tier Sheet Arm attempts to achieve suction. If suction is not achieved prior to this amount of time, a notification will display in the Operator Notification Area indicating “SWEEP SUCTION NOT ACHIEVED – Press Reset”. The machine will automatically enter stop mode and the operator is required to press the RESET button on the door of the control panel to acknowledge the error.

58 Raise Gripper Delay- This set point controls the amount of time the Tier Sheet Arms waits before raising once suction has been achieved and the vacuum pressure switch has been triggered.

2.7.6 Deadplate / Pushers Settings Controls

The Retractable Deaplate and Pushers Option adds a Extendable/Retractable Deadplate and pneumatic pushers to the depal. This option is used when a gap(s) exists between the bulk container footprint and the pallet footprint. See Appendix A Deadplate/Pushers Options

3 Appendix A Deadplate / Pushers Option

The Retractable Deaplate and Pushers Option adds a Extendable/Retractable Deadplate and pneumatic pushers to the depal. This option is used when a gap(s) exists between the bulk container footprint and the pallet footprint.

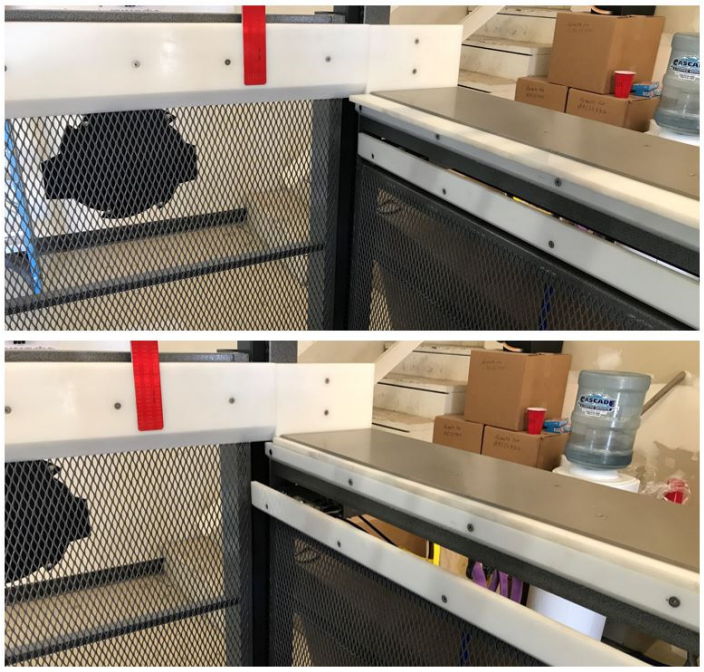


Figure 19: Deadplate Extended (Top) / Pusher Extended (Top)

3.1 Deadplate/Pushers Manual Control Screen

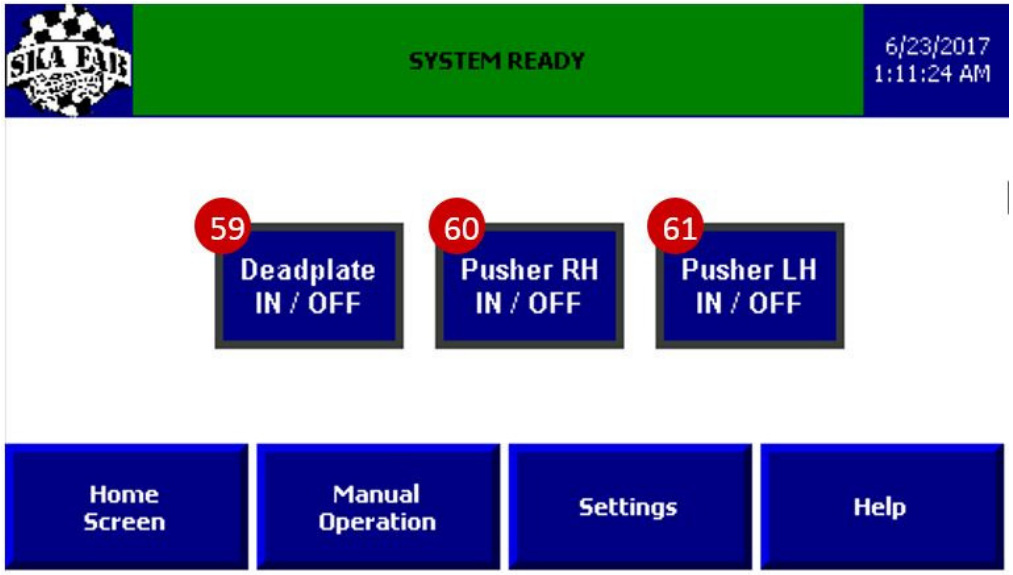


Figure 20: Deadplate/Pushers Manual Control Screen

3.1.1 Deadplate / Pushers Controls

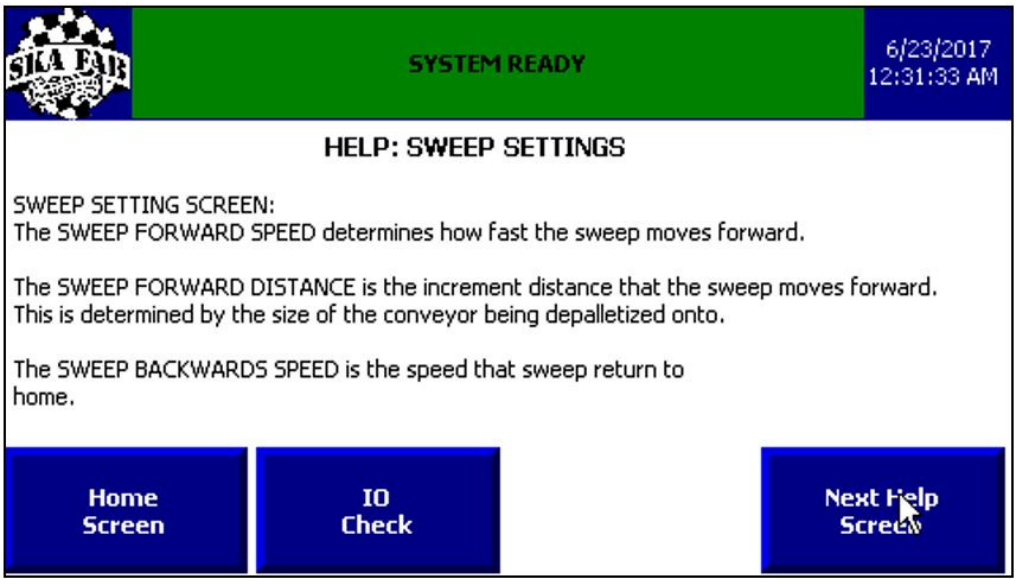
59 Deadplate IN/OFF- This will extend and retract the deadplate.

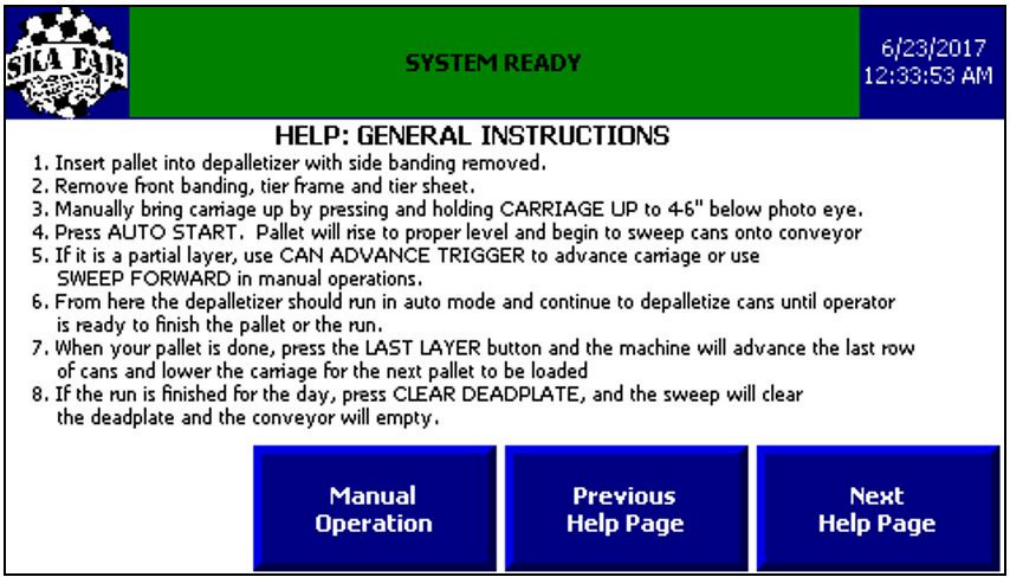
60 Pusher RH IN/OFF – This will extend and retract the Right Hand Pusher.

61 Pusher LH IN/OFF – This will extend and retract the Left Hand Pusher.

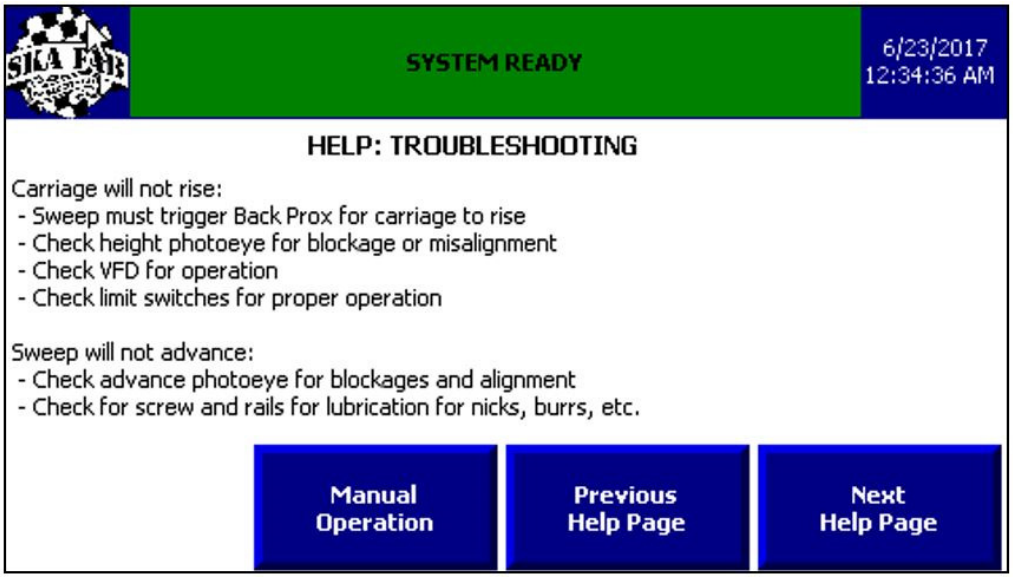
4 Appendix B – Help / IO Check Out

4.1 Built in Help Screens

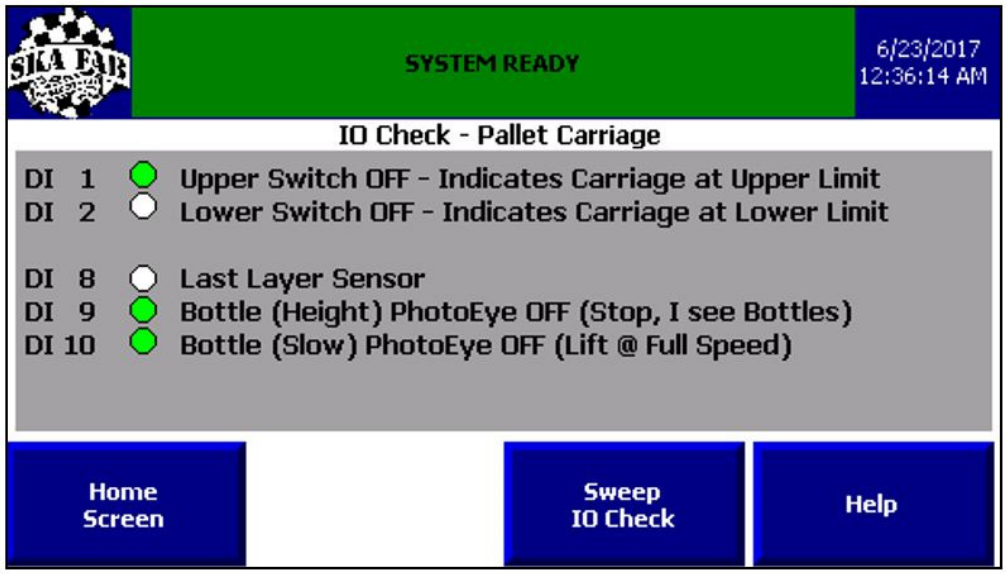


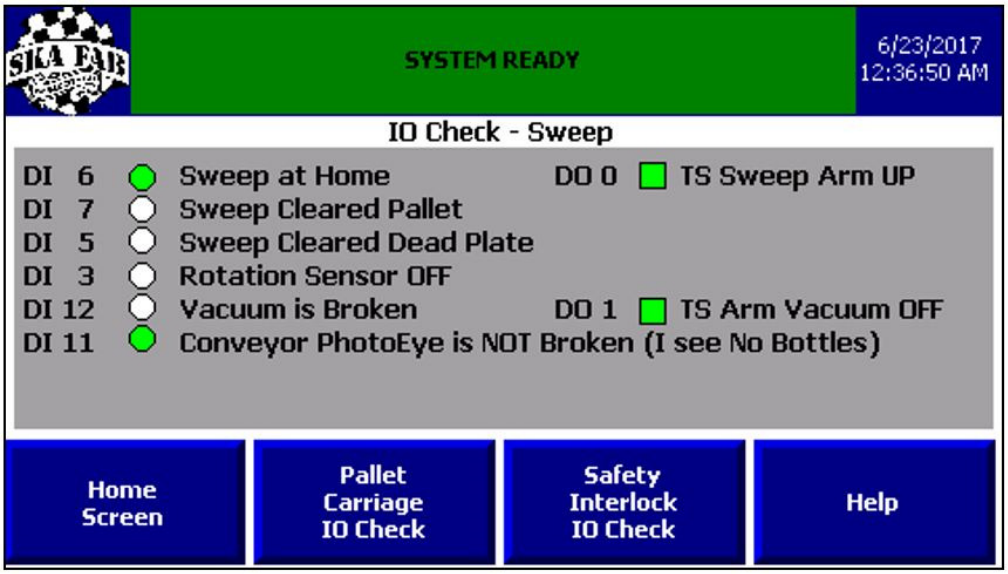


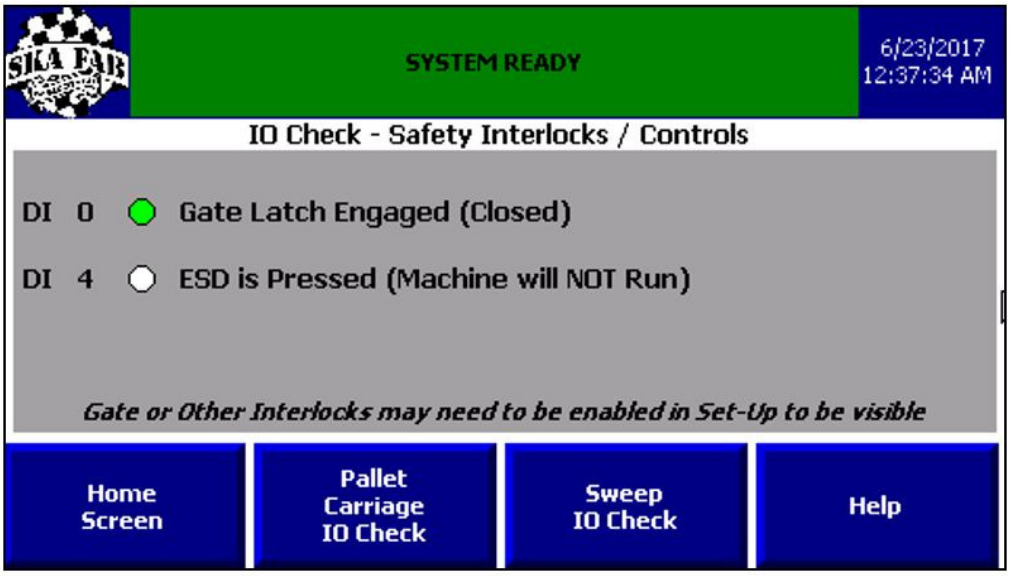

SYSTEM READY
6/23/2017
12:34:18 AM
HELP: MAINTENANCE
* Check that columns are free from obstructions and carriage is level before operation.
* Lubricate sweep guides and drive screw monthly with food grade lubricant.
* Lubricate columns monthly with food grade lubricant.
* Lubricate bearings on pillow blocks with grease gun annually.
Manual Operation
Previous Help Page
Next Help Page


SYSTEM READY
6/23/2017
12:34:36 AM
HELP: TROUBLESHOOTING
Carriage will not rise:
- Sweep must trigger Back Prox for carriage to rise
- Check height photoeye for blockage or misalignment
- Check VFD for operation
- Check limit switches for proper operation
Sweep will not advance:
- Check advance photoeye for blockages and alignment
- Check for screw and rails for lubrication for nicks, burrs, etc.
Manual Operation
Previous Help Page
Next Help Page

4.2 IO Check Sub Menu






SYSTEM READY
6/23/2017
12:37:34 AM
IO Check - Safety Interlocks / Controls
DI 0
Gate Latch Engaged (Closed)
DI 4
ESD is Pressed (Machine will NOT Run)
Gate or Other Interlocks may need to be enabled in Set-Up to be visible
Home Screen
Pallet Carriage IO Check
Sweep IO Check
Help

5 Appendix D – Operator Notification List

Operator Notification	Description/Correction
CARRIAGE NOT RAISING - HEIGHT PHOTOEYE BLOCKED - CLEAR PE	The lift carriage cannot be raised because the height photoeye is blocked. Look for a blockage between the photoeye and the reflector and check for proper alignment.
CARRIAGE NOT RAISING - SWEEP MUST BE HOME TO RAISE	The lift carriage cannot be raised when the sweep is not at home. Return the sweep to home to allow the lift to raise.
SWEEP SUCTION NOT ACHIEVED (Press Reset)	Sweep attached Tier Sheet Arm failed to achieve suction on a tier sheet. The depal is now in STOP mode, press the RESET button on the control panel door before any operation may be restarted. Inspect the area thoroughly before restarting to determine the cause of the fault. Look for anything that might interfere with the Tier Sheet Arm Travel or suction cups including blockages or damage to the tier sheet which may help identify the source of the issue.
SWEEP SUCTION LOST (Press Reset)	Sweep attached Tier Sheet Arm lost tier sheet after first achieving suction. Triggered by suction first being achieved and then losing it. The depal is now in STOP mode, press the RESET button on the control panel door before any operation may be restarted. Inspect the area thoroughly before restarting to determine the cause of the fault. Look for blockages or damage to the tier sheet which may help identify the source of the issue.
SWEEP NOT MOVING - TIER SHEET ARM DOWN - RAISE	The sweep cannot be moved when the Tier Sheet Arm is in the down position. Raise the Tier Sheet Arm to allow full operation of the sweep.

CARRIAGE UPPER / LOWER LIMIT FAULT (Use NC Contacts)	Both the Upper and Lower Limit Switches are triggered at the same time. Visually confirm the location of the lift carriage and the status of both the upper and lower limit switch. Ensure that no external factors are impacting the status of either limit switch.
SWEEP AT BACK LIMIT	The sweep has reached its limit of travel.
E-STOP BUTTON IS PUSHED (Turn E-Stop Button, Press Reset)	The Emergency Stop (E-Stop) button has been pressed on either the HMI or the control panel door. Confirm the cause of the emergency stop prior to resetting the machine. To reset the machine, turn the E-Stop button that was pressed to reset it, then press the RESET button on the control panel door.
SWEEP ALREADY HOME	The sweep cannot complete a sweep home command or continue moving towards home as the sweep is already at the home proximity sensor, one of its limits of travel.
CARRIAGE AT UPPER LIMIT	The lift carriage cannot continue the lift carriage up command as the lift carriage has reached the upper limit switch. *Note: the lift carriage will automatically stop and start descending if the upper limit switch is triggered.*
CARRIAGE AT LOWER LIMIT	The lift carriage cannot continue the lift carriage down command as the lift carriage has reached the lower limit switch.
CARIAGE DRIVE OFF LINE	Pallet Lift Carriage VFD1 off line. Triggered by the absence of the Carriage drive on the machine network. All operation is stopped until restored.

CARRIAGE DRIVE HAS FAULT (Press Reset)	Pallet Lift Carriage VFD1 fault. Triggered by any VFD fault that prevents operation. Actual VFD Alarm is also displayed for troubleshooting.
CONVEYOR DRIVE (VFD3) OFF LINE	Attached Conveyor VFD3 off line. Triggered by the absence of the Conveyor Drive 3 on the machine network. Stops all operation until restored.
CONVEYOR DRIVE (VFD4) OFF LINE	Attached Conveyor VFD4 off line. Triggered by the absence of the Conveyor Drive on the machine network. Stops all operation until restored.
CONVEYOR DRIVE (VFD5) OFF LINE	Attached Conveyor VFD5 off line. Triggered by the absence of the Conveyor Drive on the machine network. Stops all operation until restored.
CONVEYOR DRIVE (VFD3) FAULT (Press Reset)	Pallet Lift Carriage VFD3 fault. Triggered by any VFD fault that prevents operation. Actual VFD Alarm is also displayed for troubleshooting.
CONVEYOR DRIVE (VFD4) FAULT (Press Reset)	Pallet Lift Carriage VFD4 fault. Triggered by any VFD fault that prevents operation. Actual VFD Alarm is also displayed for troubleshooting.
CONVEYOR DRIVE (VFD5) FAULT (Press Reset)	Pallet Lift Carriage VFD5 fault. Triggered by any VFD fault that prevents operation.
SWEEP DRIVE OFF LINE	Sweep VFD2 off line. Triggered by the absence of the Sweep Drive on the machine network. Stops all operation until restored.
SWEEP OVER CURRENT (Press Reset)	Sweep Over Current indicates that a blockage of the sweep may exist. Triggered by a sweep drive current exceeding the over current set point for longer than the over current delay set point.