Chapter 4
Control Screens

This chapter describes the operating controls on the EDL Bundler.

This chapter contains the following sections:

Page

4.1 MAIN SCREEN

4.1.1 SCP

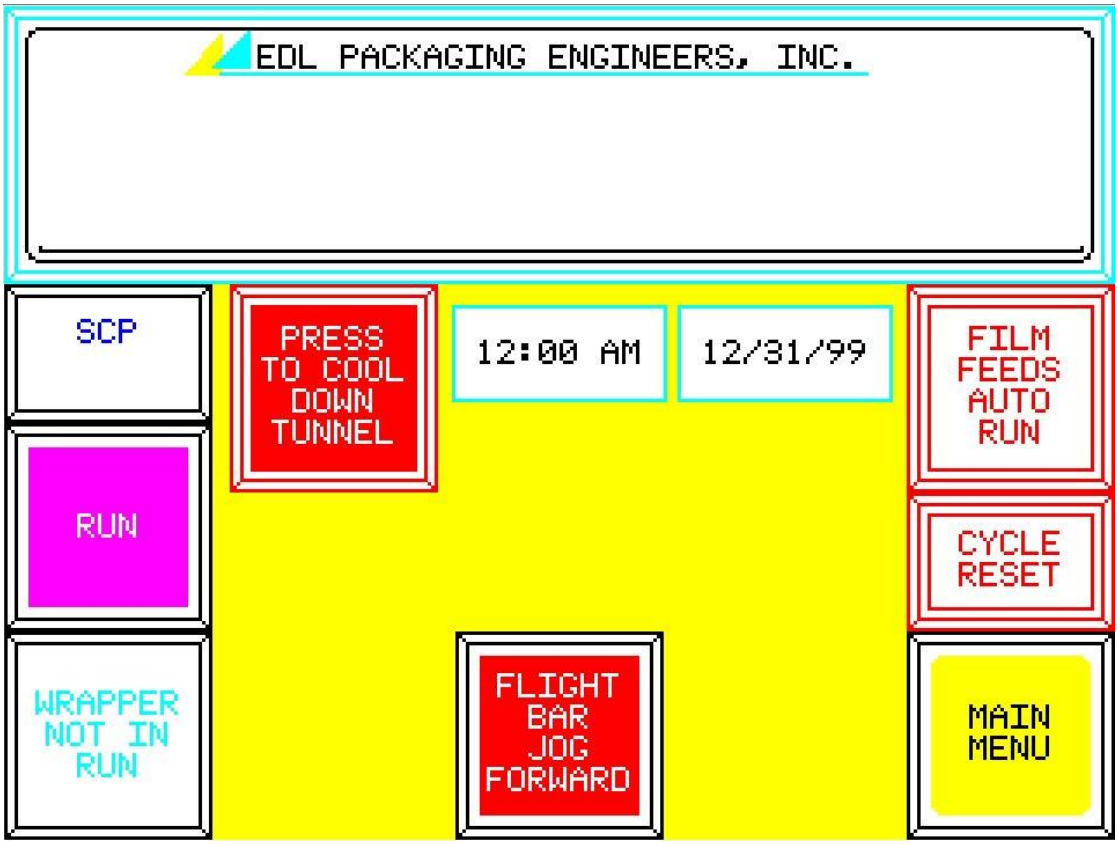
Press and enter 4-digit code to access TIMER MENU.

4.1.2 RUN

When the guard circuit is energized (green light on start pushbutton illuminated) and no ALARMS or FAULTS exist, pressing this button switches the WRAPPER into RUN. This button will indicate WRAPPER IN RUN.

4.1.3 RUN CANCEL

When this button is pushed, the WRAPPER continues running until the FLIGHT BAR & SEAL CYCLES are complete. At this point it stops and the button indicates WRAPPER NOT IN RUN.



4.1.4 PRESS TO COOL DOWN TUNNEL

Pressing this button will send the SHRINK TUNNEL HEAT into RUNDOWN. During this time, the tunnel conveyor and fan will continue to run. After the 20 minute RUNDOWN timer is finished, the tunnel fan will shut off. This button will indicate PRESS START TO RESTART TUNNEL.

MAIN SCREEN (continued)

4.1.5 FLIGHT BAR JOG FORWARD

If the guards are closed but the WRAPPER is NOT IN RUN, the FLIGHT BAR goes FORWARD while this button is being pressed. When the button is no longer pressed, the FLIGHT BAR stops. If the button is pressed long enough that the FLIGHT BAR reaches the seal jaw, a seal is performed.

4.1.6 FILM FEEDS AUTO RUN

When the WRAPPER is NOT IN RUN, pressing this switch allows the film feeds to operate with guards open. This feature is used for film threading. The button will then indicate FILM FEEDS IN MANUAL. Pressing the WRAPPER START pushbutton resets the film feeds to AUTO.

4.1.7 CYCLE RESET

When the WRAPPER is NOT IN RUN, pressing this button will reset all of the sequences.

4.1.8 MAIN MENU

Press to go to MAIN MENU.

4.2 MAIN MENU

4.2.1 CLEAN SCREEN

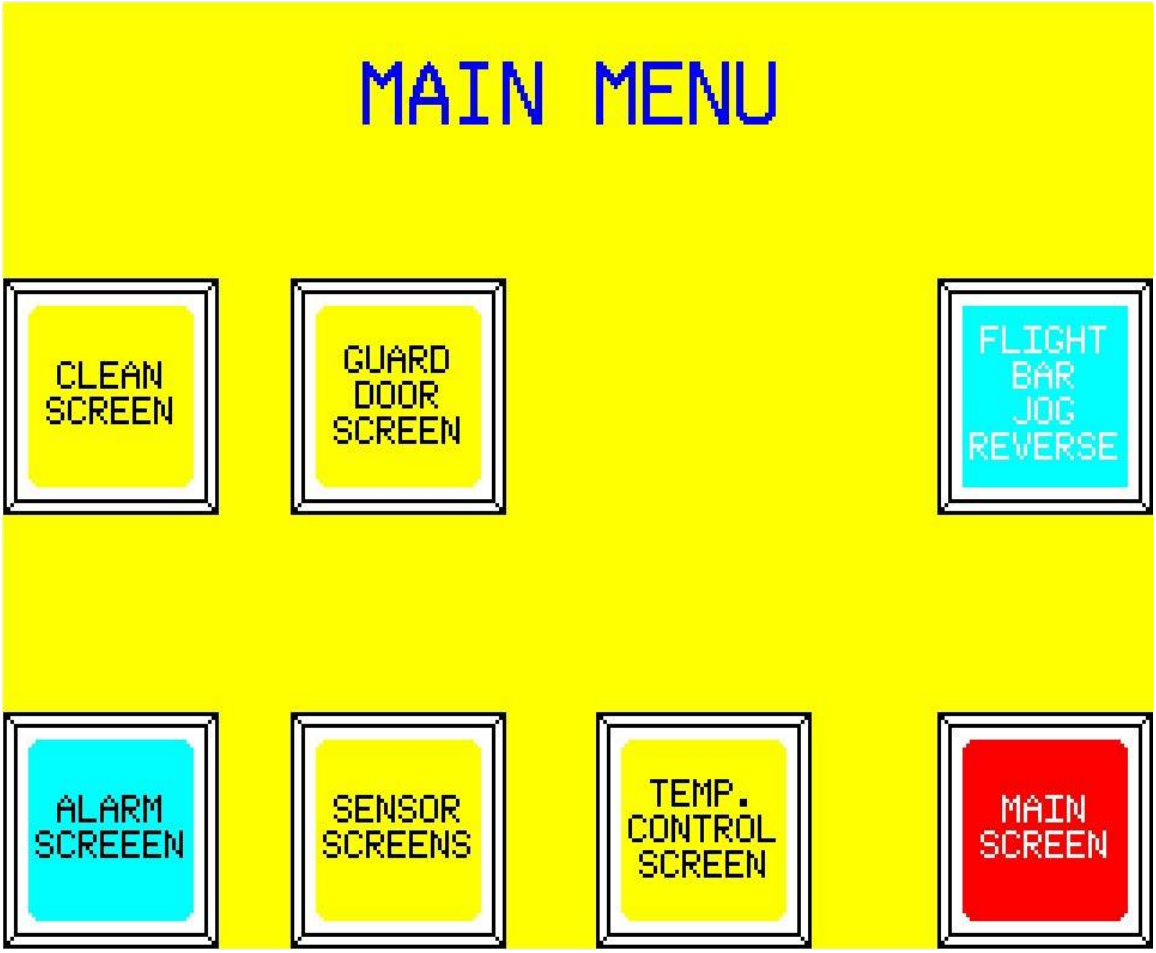
Press to go to CLEAN SCREEN.

4.2.2 GUARD DOOR SCREEN

Press to go to GUARD DOOR SCREEN.

4.2.3 ALARM SCREEN

Press to go to ALARM SCREEN.



4.2.4 SENSOR SCREENS

Press to go to SENSOR SCREENS.

4.2.5 TEMP. CONTROL SCREEN

Press to go to TEMPERATURE CONTROL SCREEN.

4.2.6 FLIGHT BAR JOG REVERSE

If the guards are closed but the WRAPPER is NOT IN RUN, the FLIGHT BAR moves in REVERSE while this button is being pressed. When the button is no longer pressed, the FLIGHT BAR stops. If the FLIGHT BAR backs up near the seal jaw dead plate, it stops and can not be jogged any further in the REVERSE direction.

4.2.7 MAIN SCREEN

Press to return to MAIN SCREEN.

4.3 TIMER MENU

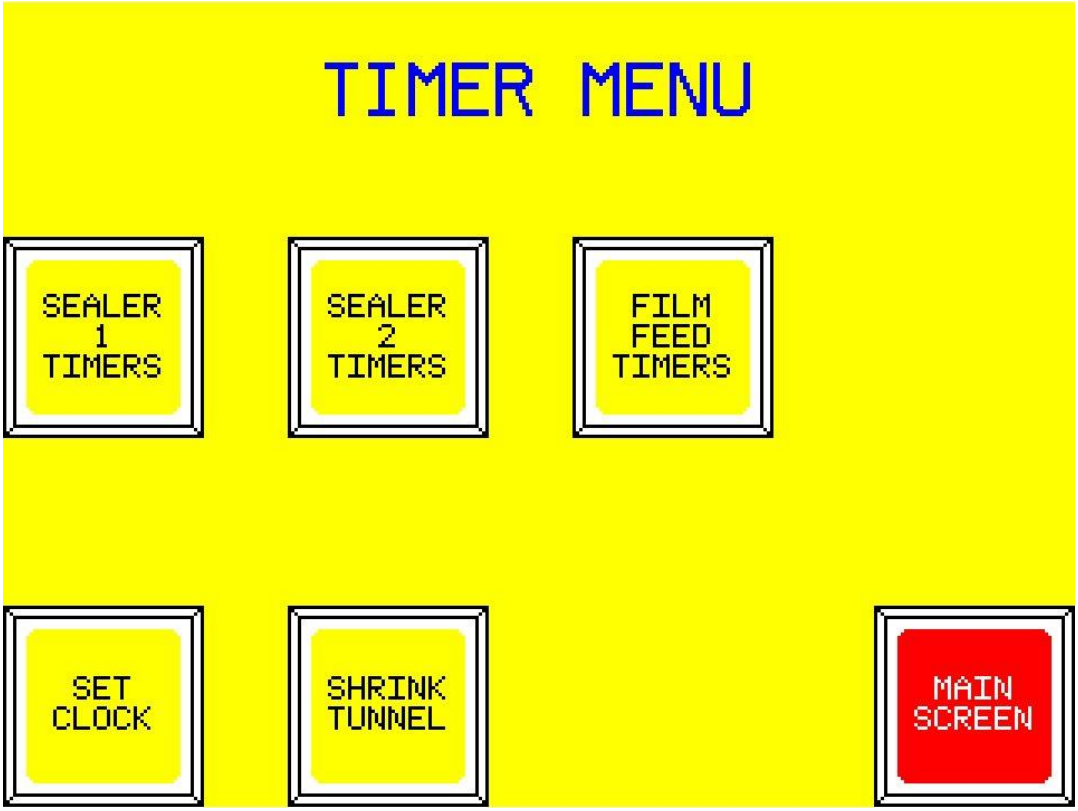
NOTE: TIMER MENU screen is only accessible by entering the 4-digit code under SCP in MAIN SCREEN.

4.3.1 SEALER 1 TIMERS

Press to go to SEALER 1 TIMERS SCREEN.

4.3.2 SEALER 2 TIMERS

Press to go to SEALER 2 TIMERS SCREEN.



4.3.3 FILM FEED TIMERS

Press to go to FILM FEED TIMERS SCREEN.

4.3.4 SET CLOCK

Press to go to SET CLOCK SCREEN.

4.3.5 SHRINK TUNNEL

Press to go to SHRINK TUNNEL SCREEN.

4.3.6 MAIN SCREEN

Press to return to MAIN SCREEN.

4.4 SEALER 1 TIMERS

4.4.1 SEALER 1 JAW CLOSED DURATION

This timer controls how long the KNIFE JAW is held on to create the seal.

4.4.2 SEALER 1 JAW CURE TIMER

This sets the amount of time that the SEAL JAW is held closed after the knife jaw opens.

4.4.3 TIMER MENU

Press to return to TIMER MENU.

4.5 SEALER 2 TIMERS

4.5.1 SEALER 2 JAW CLOSED DURATION

This timer controls how long the KNIFE JAW is held on to create the seal.

4.5.2 SEALER 2 JAW CURE TIMER

This sets the amount of time that the SEAL JAW is held closed after the knife jaw opens.

4.5.3 SEALER 2 PACK CLAMP TIMER

When the PACK CLAMP comes down, this timer starts. When the timing is finished, the PUSHER returns.

4.5.4 TIMER MENU

Press to return to TIMER MENU.

4.6 FILM FEED TIMERS

4.6.1 SEALER 1 TOP & BOTTOM FILM FEED OFF DELAYS

As the flight bar brings product to SEALER 1, the movement of FILM raises the DANCER BARS and the FILM FEED PROXES no longer sense them. This causes the FILM FEED motors to run. As they run, the dancers lower to block the PROXES. These timers then cause a delay before the FILM FEED motors stop.

4.6.2 SEALER 2 TOP & BOTTOM FILM FEED OFF DELAYS

As the pusher brings product to SEALER 2, the movement of FILM raises the DANCER BARS and the FILM FEED PROXES no longer sense them. This causes the FILM FEED motors to run. As they run, the dancers lower to block the PROXES. These timers then cause a delay before the FILM FEED motors stop.

4.6.3 SEALER 1 (or SEALER 2) TOP & BOTTOM LOW FILM RUN OUT

When a TOP or BOTTOM LOW FILM PROX. detects low film, the screen will display FILM LOW. This timer sets the remaining FILM FEED run time before the WRAPPER goes into RUN CANCEL. I.E.: if timer is set at 5 sec. and each feed takes .5 seconds, then 10 feeds will occur before RUN CANCEL.

4.6.4 TIMER MENU

Press to return to TIMER MENU.

CH

4.7 SET TIME & DATE

NOTE: This screen is accessible by the SET CLOCK button in the TIMER MENU screen. TIMER MENU screen is only accessible by entering the 4-digit code under SCP in MAIN SCREEN.

4.7.1 TIME

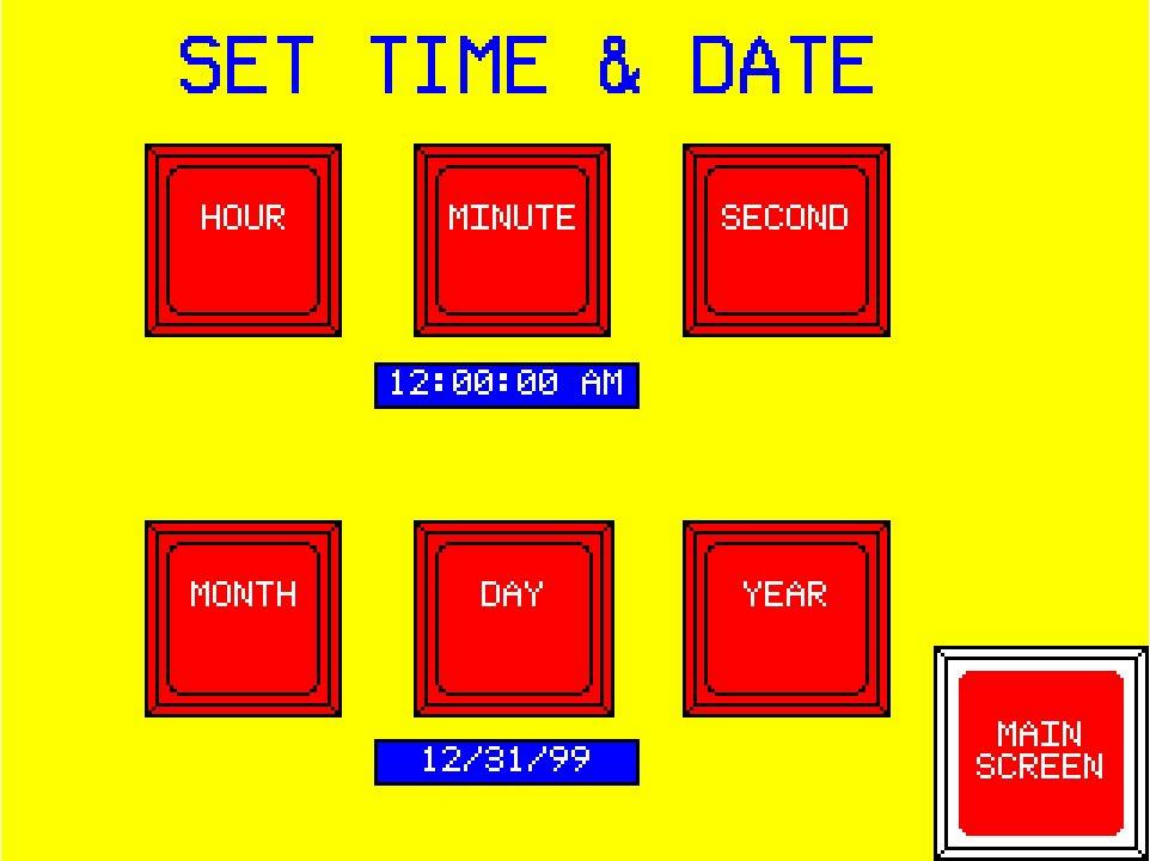
This numeric entry allows for the HOUR, MINUTE, SECOND and AM/PM to be entered. Having the time correct is important for accurate ALARM history.

4.7.2 DATE

This numeric entry allows for the MONTH, DAY, and YEAR to be entered. Having the date correct is important for accurate ALARM history.

4.7.3 MAIN SCREEN

Press to return to MAIN SCREEN.



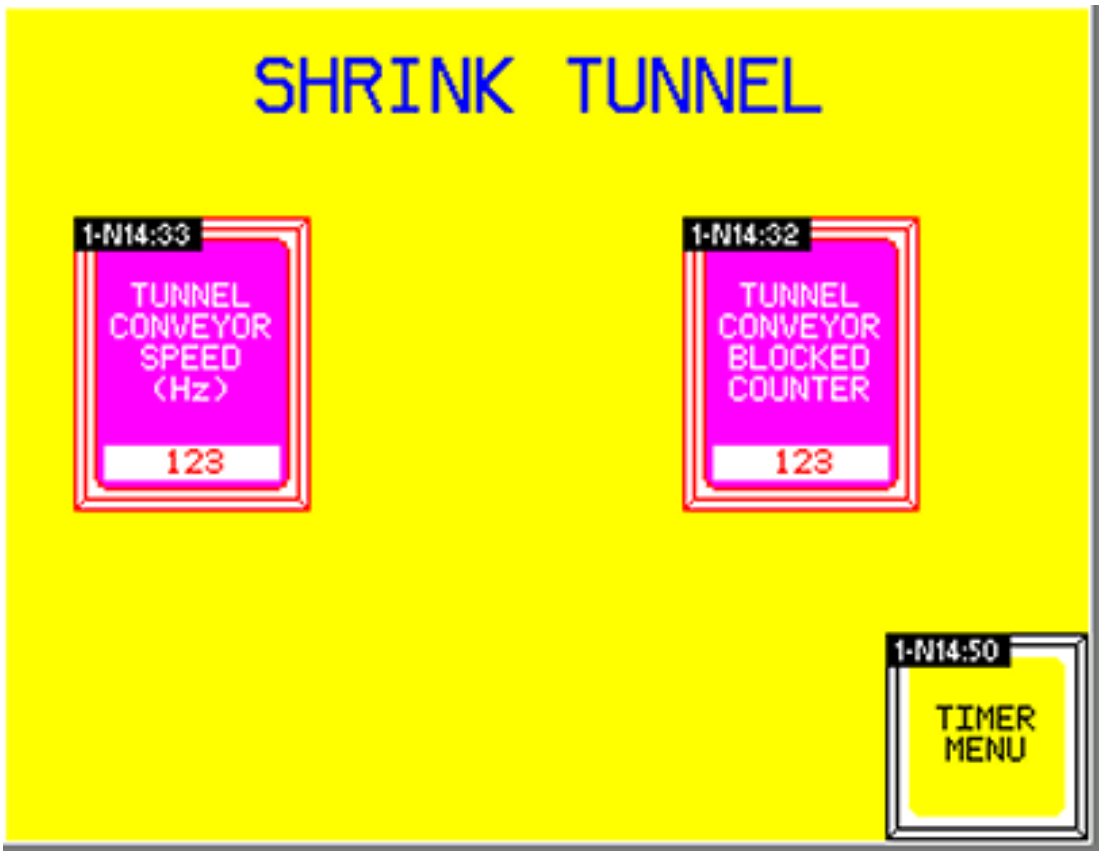
4.8 SHRINK TUNNEL

4.8.1 TUNNEL CONVEYOR SPEED (Hz)

The speed of the TUNNEL CONVEYOR and POP-UP CONVEYOR can be adjusted to transfer product through the tunnel in a given period of time. If product conveys through the SHRINK TUNNEL too slowly, holes in the film wrap can appear. If the product is conveyed through the SHRINK TUNNEL too quickly a loose wrap result.

4.8.2 TUNNEL CONVEYOR BLOCKED COUNTER

If machine is fitted with a TUNNEL CONVEYOR BLOCKED EYE, this value can be changed to set amount of conveyor travel. When the eye is blocked long enough that the counter reaches this value, a TUNNEL CONVEYOR BLOCKED FAULT will occur. The range is from 0 to 500 six inch increments.



4.8.3 TIMER MENU

Press to return to TIMER MENU.

4.9 CLEAN SCREEN TIME REMAINING

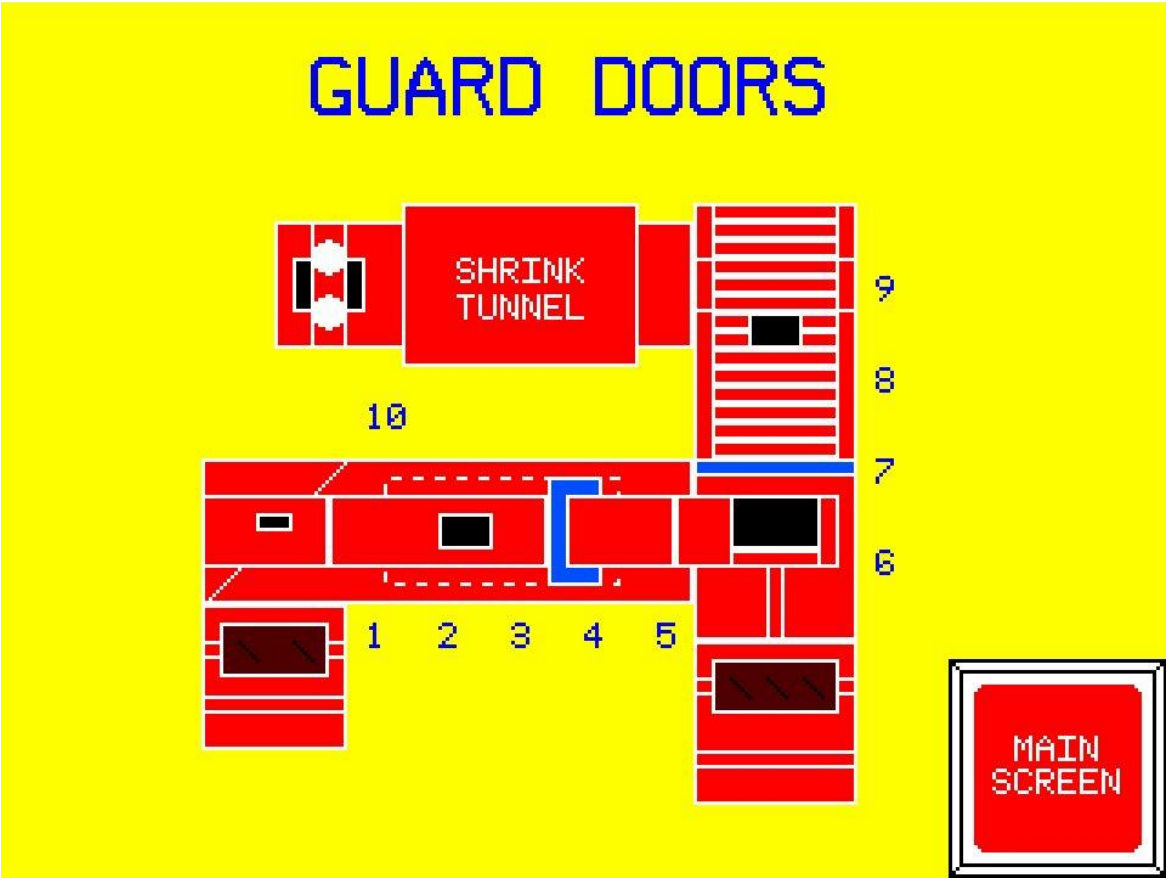
The OPERATOR INTERFACE can be cleaned without affecting machine control because there are no buttons or switches on this screen. When the CLEAN SCREEN is displayed, CLEAN SCREEN TIME begins timing down from **15 seconds**. Once the timer reaches zero, the OPERATOR INTERFACE switches to MAIN SCREEN.

4.10 GUARD DOORS

This top view of the WRAPPER shows which GUARD DOOR is open.

4.10.1 MAIN SCREEN

Press to return to MAIN SCREEN.



4.11 ALARM WINDOW

This screen displays the latest ALARMS in a First In/First Out format. ALARMS include FAULTS, OPEN GUARDS, OVERLOADS, and JAMS. It lists them such that the most recent one is on bottom.

a. When an event is triggered, the ALARM is TIME and DATE stamped and displayed as BLACK on RED.

b. TOUCH the SCREEN to bring up the ALARM MANAGER. ALARMS can then be ACKNOWLEDGED or CLEARED (DEL).

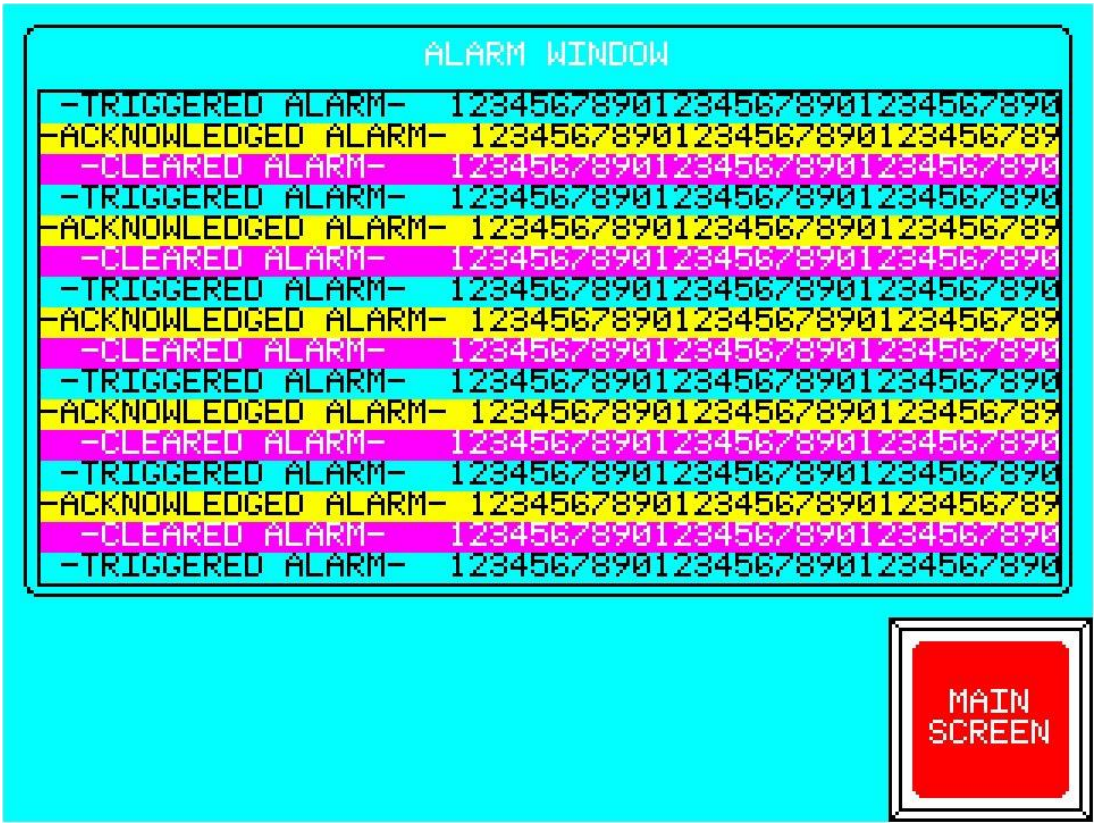
c. If the ALARM is ACKNOWLEDGED, the display changes to BLACK on CYAN and an additional TIME and DATE stamp is applied.

d. If the ALARM is CLEARED, the display changes to BLACK on GREEN and a THIRD TIME and DATE stamp is shown.

A history of the last 999 ALARMS is accessible through the ALARM MANAGER by use of the UP/DOWN keys.

4.11.1 MAIN SCREEN

Press to return to MAIN SCREEN.



```
 -TRIGGERED ALARM-   123456789012345678901234567890
-ACKNOWLEDGED ALARM-  12345678901234567890123456789
  -CLEARED ALARM-    123456789012345678901234567890
 -TRIGGERED ALARM-   123456789012345678901234567890
-ACKNOWLEDGED ALARM-  12345678901234567890123456789
  -CLEARED ALARM-    123456789012345678901234567890
 -TRIGGERED ALARM-   123456789012345678901234567890
-ACKNOWLEDGED ALARM-  12345678901234567890123456789
  -CLEARED ALARM-    123456789012345678901234567890
 -TRIGGERED ALARM-   123456789012345678901234567890
-ACKNOWLEDGED ALARM-  12345678901234567890123456789
  -CLEARED ALARM-    123456789012345678901234567890
 -TRIGGERED ALARM-   123456789012345678901234567890
-ACKNOWLEDGED ALARM-  12345678901234567890123456789
  -CLEARED ALARM-    123456789012345678901234567890
 -TRIGGERED ALARM-   123456789012345678901234567890
```

4.12 TEMPERATURE CONTROL

4.12.1 SHRINK TUNNEL SETPOINT

Pressing this button brings up a numeric entry screen for changing the SHRINK TUNNEL TEMPERATURE SET POINT. The ACTUAL TEMPERATURE inside of the SHRINK TUNNEL is displayed under the set point. The square turns YELLOW whenever the heaters are on.

4.12.2 SEALER 1 SETPOINT

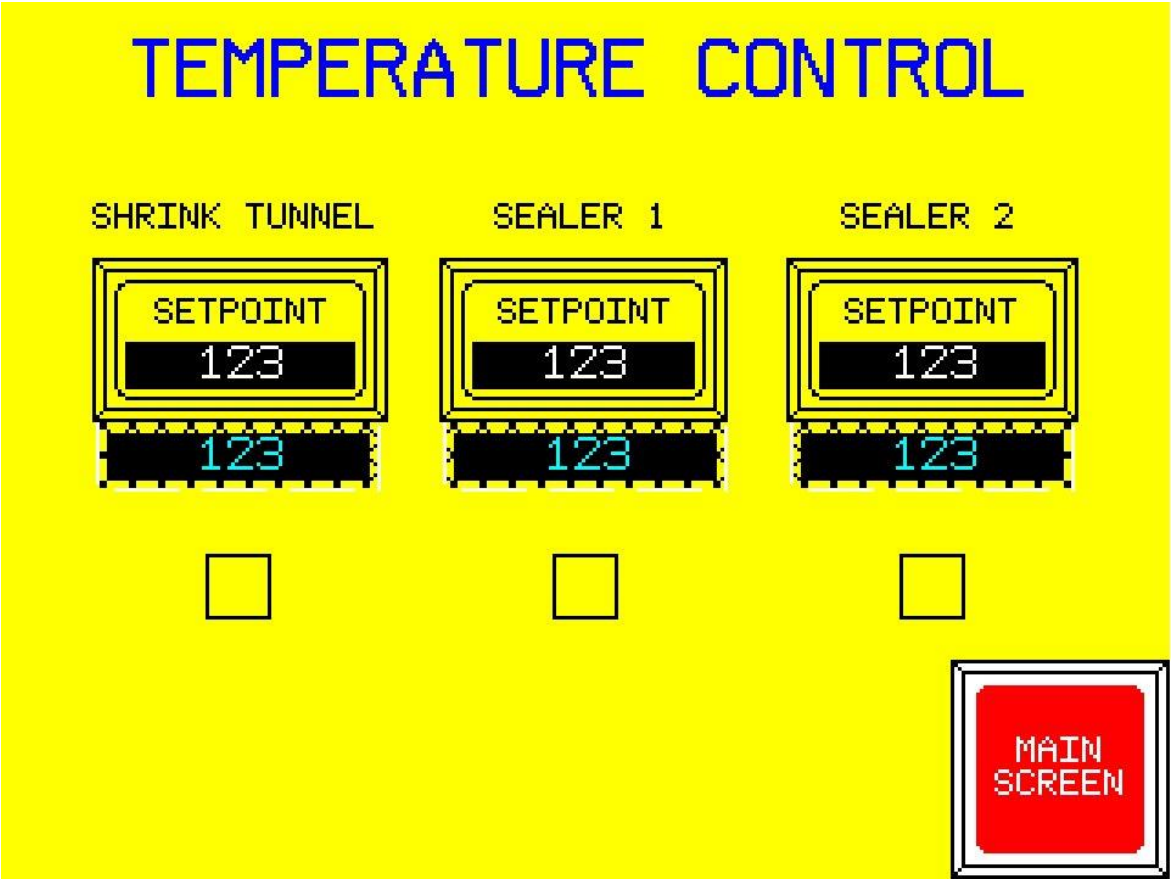
Pressing this button brings up a numeric entry screen for changing the SEALER 1 SET POINT. The ACTUAL TEMPERATURE of SEALER 1 is displayed under the set point. The square turns YELLOW whenever the heating element is on.

4.12.3 SEALER 2 SETPOINT

Pressing this button brings up a numeric entry screen for changing the SEALER 2 SET POINT. The ACTUAL TEMPERATURE of SEALER 2 is displayed under the set point. The square turns YELLOW whenever the heating element is on.

4.12.4 MAIN SCREEN

Press to return to MAIN SCREEN.

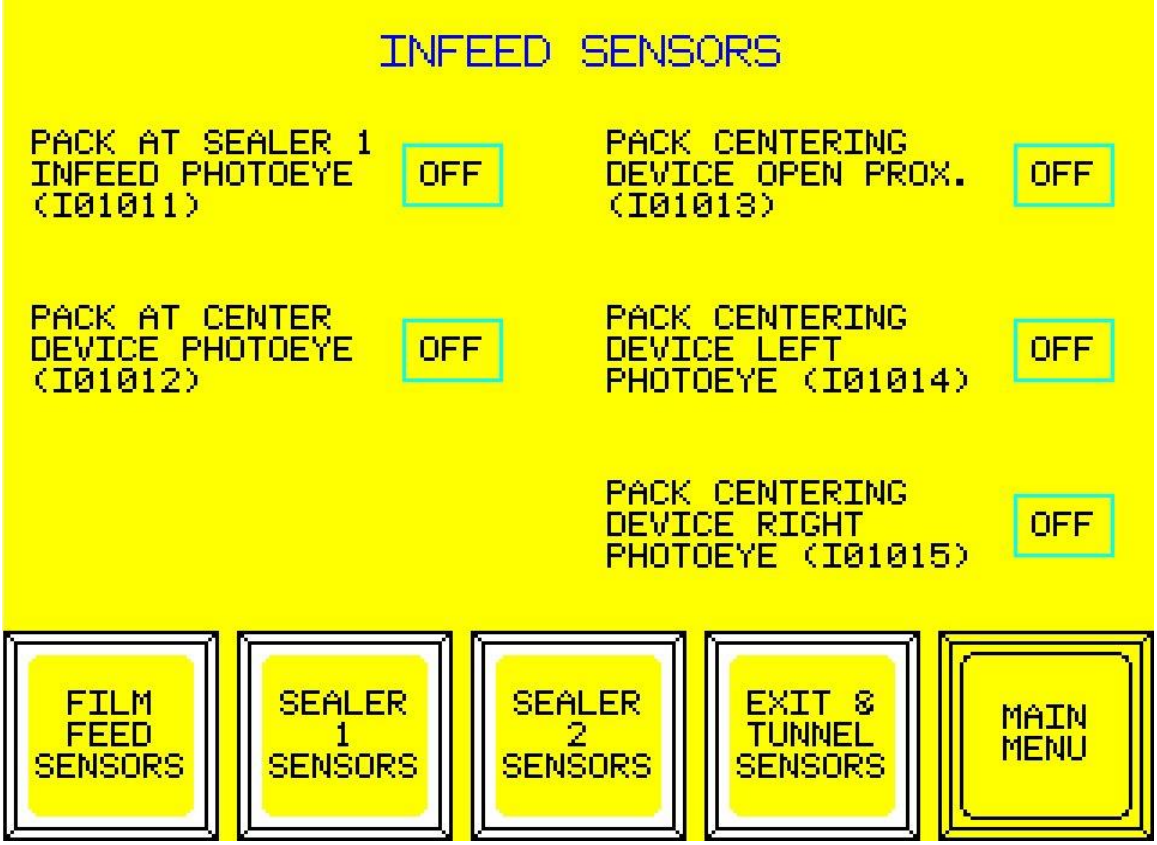


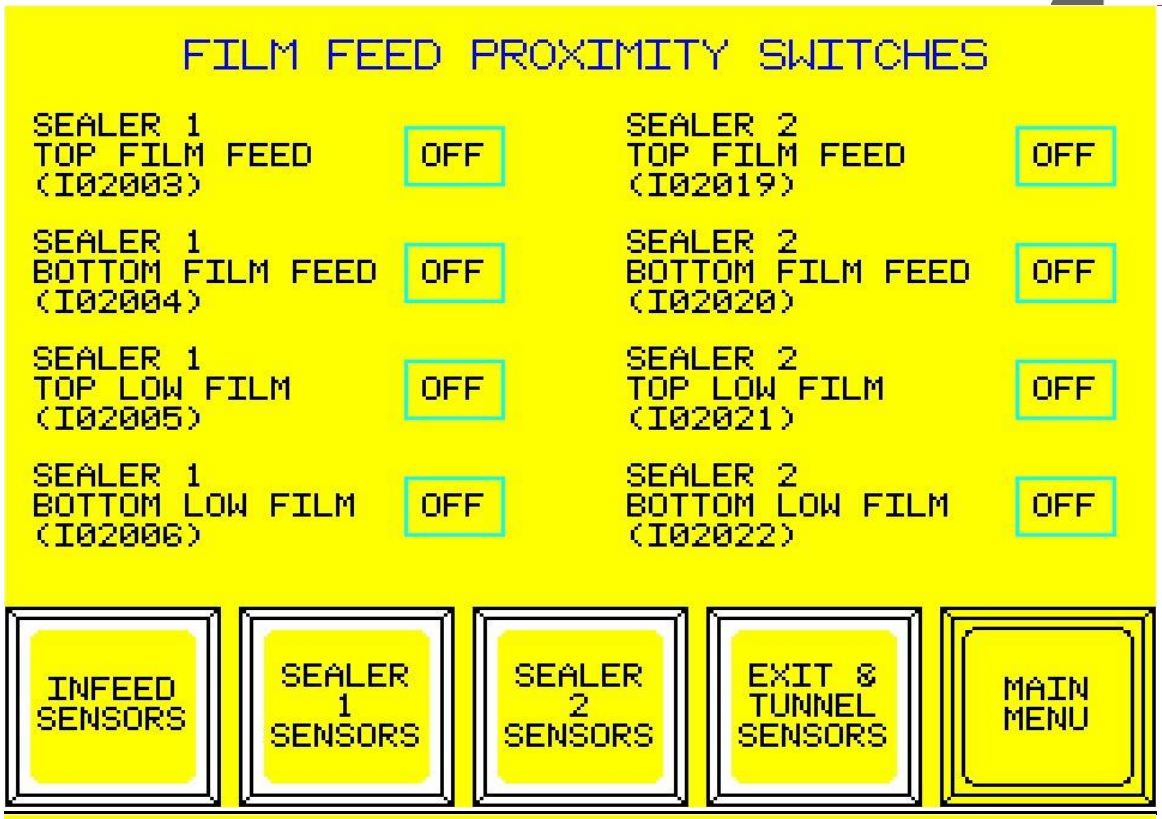
4.13 SENSOR SCREENS

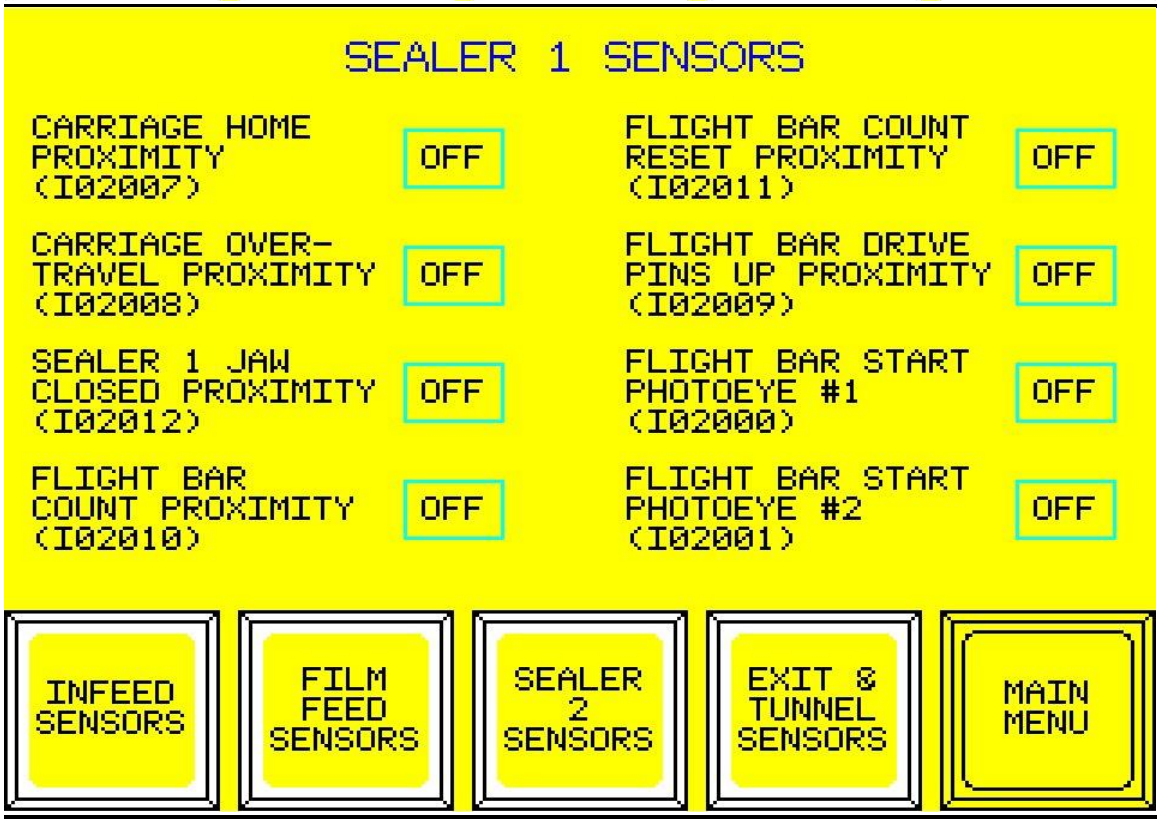
a. INFEED SENSORS
b. FILM FEED SENSORS
c. SEALER 1 SENSORS
d. SEALER 2 SENSORS
e. EXIT & TUNNEL SENSORS

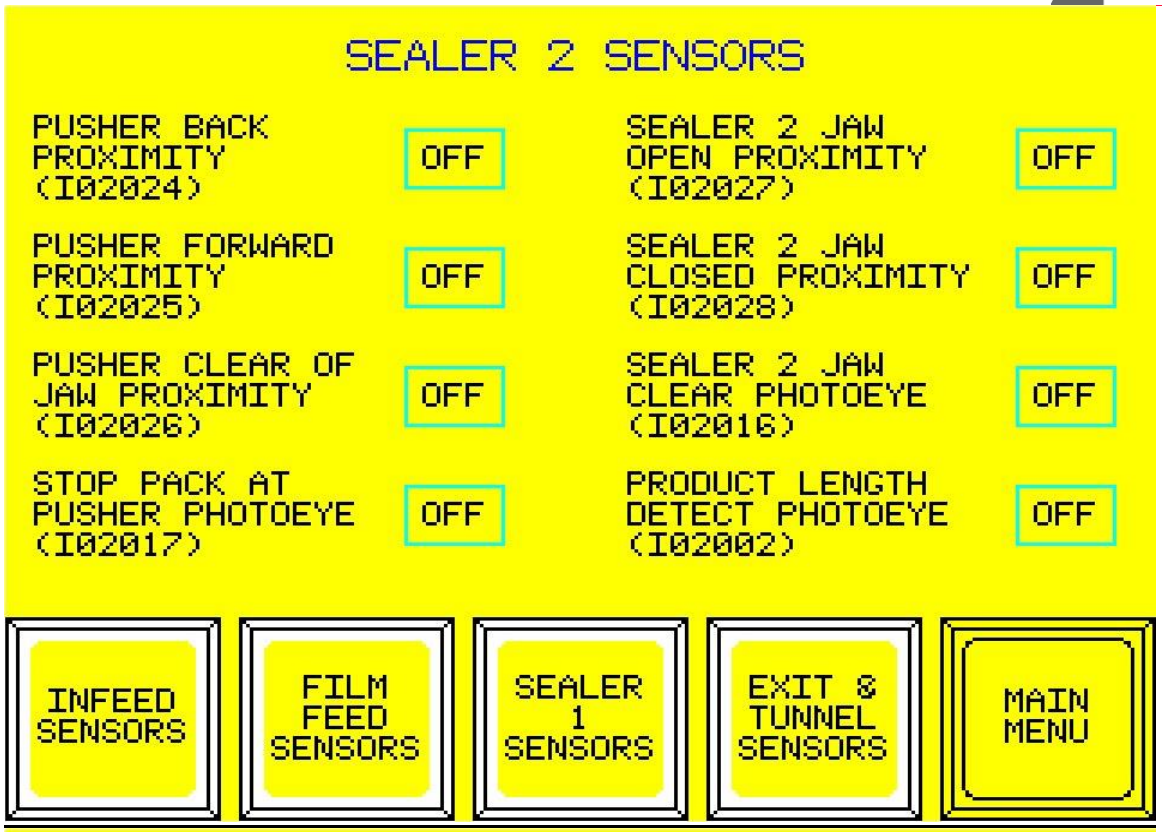
These screens display the CURRENT STATUS of the PROXIMITY SWITCHES and PHOTOEYES that are on the EDL WRAPPER SYSTEM.

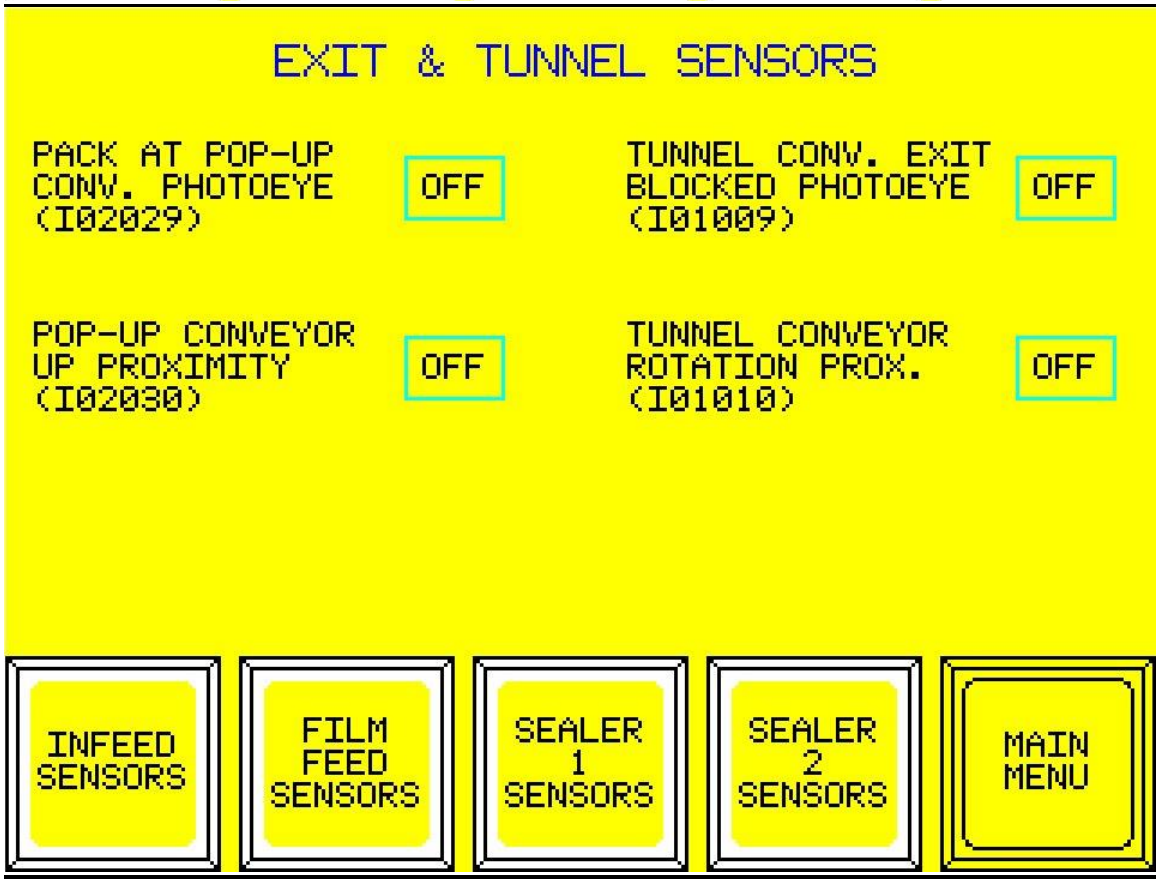
Pressing on the NAME of each PHOTOEYE or PROXIMITY brings up a screen explaining how the SENSOR is used in the operation of the WRAPPER.




FILM FEED PROXIMITY SWITCHES
SEALER 1 TOP FILM FEED (I02003)
OFF
SEALER 2 TOP FILM FEED (I02019)
OFF
SEALER 1 BOTTOM FILM FEED (I02004)
OFF
SEALER 2 BOTTOM FILM FEED (I02020)
OFF
SEALER 1 TOP LOW FILM (I02005)
OFF
SEALER 2 TOP LOW FILM (I02021)
OFF
SEALER 1 BOTTOM LOW FILM (I02006)
OFF
SEALER 2 BOTTOM LOW FILM (I02022)
OFF
INFEED SENSORS
SEALER 1 SENSORS
SEALER 2 SENSORS
EXIT & TUNNEL SENSORS
MAIN MENU


SEALER 1 SENSORS
CARRIAGE HOME PROXIMITY (I02007)
OFF
FLIGHT BAR COUNT RESET PROXIMITY (I02011)
OFF
CARRIAGE OVER-TRAVEL PROXIMITY (I02008)
OFF
FLIGHT BAR DRIVE PINS UP PROXIMITY (I02009)
OFF
SEALER 1 JAW CLOSED PROXIMITY (I02012)
OFF
FLIGHT BAR START PHOTOEYE #1 (I02000)
OFF
FLIGHT BAR COUNT PROXIMITY (I02010)
OFF
FLIGHT BAR START PHOTOEYE #2 (I02001)
OFF
INFEED SENSORS
FILM FEED SENSORS
SEALER 2 SENSORS
EXIT & TUNNEL SENSORS
MAIN MENU


SEALER 2 SENSORS
PUSHER BACK PROXIMITY (I02024)
OFF
SEALER 2 JAW OPEN PROXIMITY (I02027)
OFF
PUSHER FORWARD PROXIMITY (I02025)
OFF
SEALER 2 JAW CLOSED PROXIMITY (I02028)
OFF
PUSHER CLEAR OF JAW PROXIMITY (I02026)
OFF
SEALER 2 JAW CLEAR PHOTOEYE (I02016)
OFF
STOP PACK AT PUSHER PHOTOEYE (I02017)
OFF
PRODUCT LENGTH DETECT PHOTOEYE (I02002)
OFF
INFEED SENSORS
FILM FEED SENSORS
SEALER 1 SENSORS
EXIT & TUNNEL SENSORS
MAIN MENU


EXIT & TUNNEL SENSORS
PACK AT POP-UP CONV. PHOTOEYE (I02029)
OFF
TUNNEL CONV. EXIT BLOCKED PHOTOEYE (I01009)
OFF
POP-UP CONVEYOR UP PROXIMITY (I02030)
OFF
TUNNEL CONVEYOR ROTATION PROX. (I01010)
OFF
INFEED SENSORS
FILM FEED SENSORS
SEALER 1 SENSORS
SEALER 2 SENSORS
MAIN MENU

As a box comes into the wrapper, it blocks the SEALER 1 INFEED PHOTOEYE (I01011). When SEALER 1 INFEED PHOTOEYE (I01011) is no longer blocked, Sealer 1 Infeed Conveyor is stopped and a Centering Device timer begins. Sealer 1 Infeed Conveyor starts after the box is centered. This brings the next box in until it blocks the SEALER 1 INFEED PHOTOEYE (I01011). This box is put "on pause" until the previous box gets transfered by the Flight Bar.

INFEED SENSORS

When the wrapper guard circuit is reset, the PRODUCT CENTERING OPEN PROXIMITY (I01013) checks to make sure that the Centering Device is in position for the next box. After every box is centered, the Centering Device is returned to its "open" position.

The Centering Device closes in on a box until PRODUCT CENTERING LEFT PHOTOCELL (I01014) and PRODUCT CENTERING RIGHT PHOTOCELL (I01015) are both on. After a slight time delay, the Centering Device opens.

INFEED SENSORS

When sealer 1 or sealer 2 demand film, the dancer bars move up and the corresponding proximity switches turn off. This starts the motor(s). With the motor running, film is pulled off of the roll and the dancer lowers to turn the proximity switch back on. This starts an adjustable timer that delays the stopping of the motor.

These proximity switches are also used to detect a film feed jam. Each dancer is monitored by a timer for film feeds in auto and a timer for film feeds in manual. If any dancer gets jammed such that its proximity switch stays off, the corresponding timer will generate an alarm.

(I02003, I02004, I02019, I02020)

NEXT SCREEN

FILM FEED SENSORS

With the film feeds in auto, broken film detection is enabled for each sealer. Both top film feed proximity switches are monitored from the time that a pack gets pushed, until the seal is complete. The proximity switch staying on during this sequence indicates that the dancer never went up. Therefore, the film could not wrap around the pack because it was broken. This condition shuts the wrapper off and generates an alarm.

(I02003, I02004, I02019, I02020)

PREV. SCREEN

FILM FEED SENSORS

There is a low film proximity switch located beneath all four film cradles. When any of the film rolls is nearly empty, it sits low enough in the film cradle to depress a metal flag beneath the roll that trips a lever and opens the proximity switch. An open switch signals the PLC that the film roll is low, and an alarm signal is generated.

(I02005, I02006, I02021, I02022)

FILM FEED SENSORS

When the wrapper guard circuit is reset, the carriage sends the seal jaw in the opposite direction of product flow. SEALER 1 CARRIAGE HOME PROXIMITY (I02007) checks to make sure that it is in position for the flight bar to bring in the next pack. After every seal, the carriage is returned to its "home" position.

As the flight bar brings in a pack, the stop pins come up and the seal jaw travels with the flight bar for a short distance. If the seal jaw travels too far, SEALER 1 CARRIAGE OVERTRAVEL PROXIMITY (I02008) turns on. This stops the wrapper and generates an alarm.

SEALER 1 SENSORS

SEALER 1 SEAL JAW CLOSED PROXIMITY (I02012) turns on when the jaw has completely closed. The remainder of the seal cycle is controlled by timers. This proximity is also used to monitor how long the SEAL JAW takes to go closed. If the fault detection timer finishes timing before the jaw reaches this proximity, a SEALER 1 JAW JAM occurs and the WRAPPER is STOPPED.

SEALER 1 SENSORS

SEALER 1 FLIGHT BAR COUNT PROX. (I02010) turns on and off approximately 50 times during the Flight Bar index. The number of counts where the Flight Bar goes from fast speed to slow can be adjusted. A different count is used to enable the Sealer 1 Stop Pins to come up in time with the Flight Bar. Lastly, this PROXIMITY is used to detect a FLIGHT BAR JAM. If this sensor stays on or off while the Flight Bar is being commanded to run, the wrapper is stopped and an alarm is generated.

At the start of every index, the FLIGHT BAR passes the COUNT RESET PROXIMITY (I02011) and the count is set to 0.

FLIGHT BAR DRIVE PINS UP PROXIMITY (I02009) is used to check that the pins go to the up position when turned on. If this sensor stays off when the pins are told to go up, the wrapper is stopped and an alarm is generated.

SEALER 1 SENSORS

When the pack leaves the product centering device, it blocks FLIGHT BAR START PHOTOEYE #1 (I02000). It then blocks FLIGHT BAR START PHOTOEYE #2 (I02001). The next step in this sequence occurs when PHOTOEYE #1 is no longer blocked. Finally, PHOTOEYE #2 becomes unblocked and the Flight Bar comes around to push the pack into the film. The Flight Bar runs until it reaches the position for sealing.

SEALER 1 SENSORS

When the wrapper guard circuit is reset, the pusher is commanded to go back. SEALER 2 PUSHER BACK PROXIMITY (I02024) checks to make sure that the pusher has gone to its "back" position.

SEALER 2 PUSHER FORWARD PROXIMITY (I02025) turns on when the pusher has completely transfered the pack into position for sealing. When this proximity turns on, the pack clamp is commanded to come down. This proximity is also used to monitor how long the PUSHER takes to go forward. IF the fault detection timer finishes timing before the pusher reaches this proximity, a PUSHER JAM occurs and the WRAPPER is STOPPED.

After the pack clamp comes down upon the pack, the pusher returns. SEALER 2 PUSHER CLEAR OF JAW PROXIMITY (I02026) turns on as the pusher passes it. At this point, the seal cycle begins because the pusher is no longer an obstruction.

SEALER 2 SENSORS

When the wrapper guard circuit is reset, the seal jaw is commanded to go up. SEALER 2 SEAL JAW OPEN PROXIMITY (I02027) checks to make sure that the jaw has gone to its "open" position.

SEALER 2 SEAL JAW CLOSED PROXIMITY (I02028) turns on when the jaw has completely closed. The remainder of the seal cycle is controlled by timers. This proximity is also used to monitor how long the SEAL JAW takes to go closed. IF the fault detection timer finishes timing before the jaw reaches this proximity, a SEALER 2 JAW JAM occurs and the WRAPPER is STOPPED.

SEALER 2 SENSORS

When STOP PACK AT SEALER 2 PUSHER PHOTOEYE (I02017) sees a pack, it starts a timer. When timing is finished, Sealer 2 Infeed Conveyor is stopped and the PUSHER is enabled. The value of the timer varies according to what was calculated when the pack passed in front of the PRODUCT LENGTH DETECT PHOTOEYE (I02002).

SEALER 2 JAW CLEAR (I02016) is a through-beam PHOTOEYE that checks for obstructions in the path of the Seal Jaw just before it closes. If the photoeye is blocked at that time, the wrapper stops and an alarm is generated.

SEALER
2
SENSORS

The SHRINK TUNNEL MESH PROXIMITY (I01010) detects half-rotations of the conveyor drive shaft. If the SHRINK TUNNEL conveyor is being commanded to run, this proximity verifies that it is actually moving. If the proximity stays on for five seconds or stays off for five seconds, the wrapper is stopped and the heat tunnel is switched into cooling mode.

This photoeye works in conjunction with the mesh proximity to detect a backup condition at the exit of the heat tunnel. The mesh proximity continually reveals conveyor travel distance to the PLC. If the allowable distance is exceeded while the TUNNEL CONVEYOR PHOTOEYE (I01009) is BLOCKED, the infeed conveyor is stopped. The infeed conveyor restarts when the pack is no longer blocking this photoeye.

EXIT & TUNNEL SENSORS

When a box is being conveyed away from Sealer 2, it passes the PRODUCT AT POP-UP CONVEYOR PHOTOEYE (I02029). This photoeye measures the width of the box. The box width is then used to stop Sealer 2 Exit Conveyor so that the box is in the correct position for being transfered to the Shrink Tunnel. The Pop-Up Conveyor comes up when Sealer 2 Exit Conveyor stops.

POP-UP CONVEYOR UP PROXIMITY (I02030) checks to make sure that the conveyor has gone to the "up" position. If this sensor stays off when the Pop-Up Conveyor is told to go up, the wrapper is stopped and an alarm is generated.

EXIT & TUNNEL SENSORS
