

BUNDLECHECK

User Manual

ClearVision Technical Writing Dept.

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Declaration of Conformity

(According to EN 45014)



Manufacturer:

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Designed by:

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declares that the product:

Product Name:

ClearVision BundleChek

complies with the following Council Directives:

**Low Voltage Equipment:
EMC:**

2006/95/EC
2004/108/EC

and conforms to the following standards:

Conducted & Radiated Emissions:

EN61326-1, Class B, 2006

Power-line Harmonics & Flicker:

EN 61000-3-3, 2008

Immunity:

EN61326-1, Class B, 2006

Safety:

EN60950-1, 2006

Place and Date:

Cincinnati, Ohio USA
CE Mark first fixed 2012

Signature:

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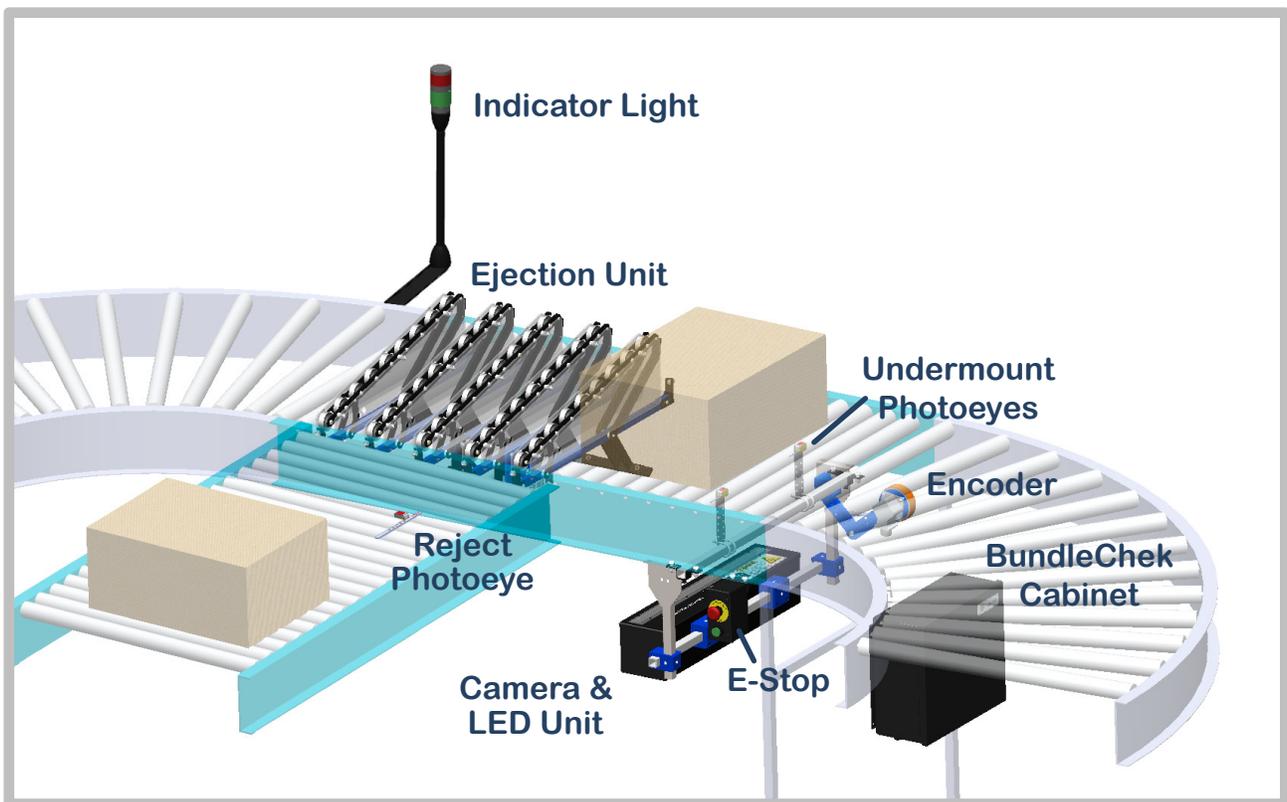
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1) Introduction

This is the user manual for the ClearVision BundleChek system. It contains information on how the system works, how it is used, and how it should be maintained. It also contains safety guidelines and troubleshooting tips. If there are any questions beyond what is covered in this manual, please call ClearVision Technical Support. Contact information can be found in the [Support](#) section of this document (p.17).

2) Overview

BundleChek is designed to integrate into your existing bundle conveyor; it works with the ClearVision GlueChek and FoldChek systems to eject bundles containing defective boxes. The main BundleChek system components include an Ejection Unit, a Control Cabinet, a Camera & LED unit, and a UV marking system. When a defective box is detected, an invisible UV mark is sprayed on the bottom of the bundle containing this defective box as the bundle leaves the counter ejector. The camera and lighting system, located just before the ejection unit, scans the incoming bundles for the UV mark. If one is detected, the bundle is diverted to a secondary conveyor (supplied by the plant), known as the Reject Conveyor. The machine operator can then sort the defective bundles when time permits.



3) System Components

The main components of the BundleChek system are as follows.

3.1) BundleChek Cabinet



The BundleChek Cabinet controls all BundleChek operations. It also works with the main Cabinet that controls GlueChek / FoldChek operations.

Most of the main BundleChek components (including the Ejection Unit, the Camera & LED Unit, the E-Stop Enclosure, the indicator stack light, and the encoder) are connected to the BundleChek Cabinet.

3.2) Counter Ejector Junction Box

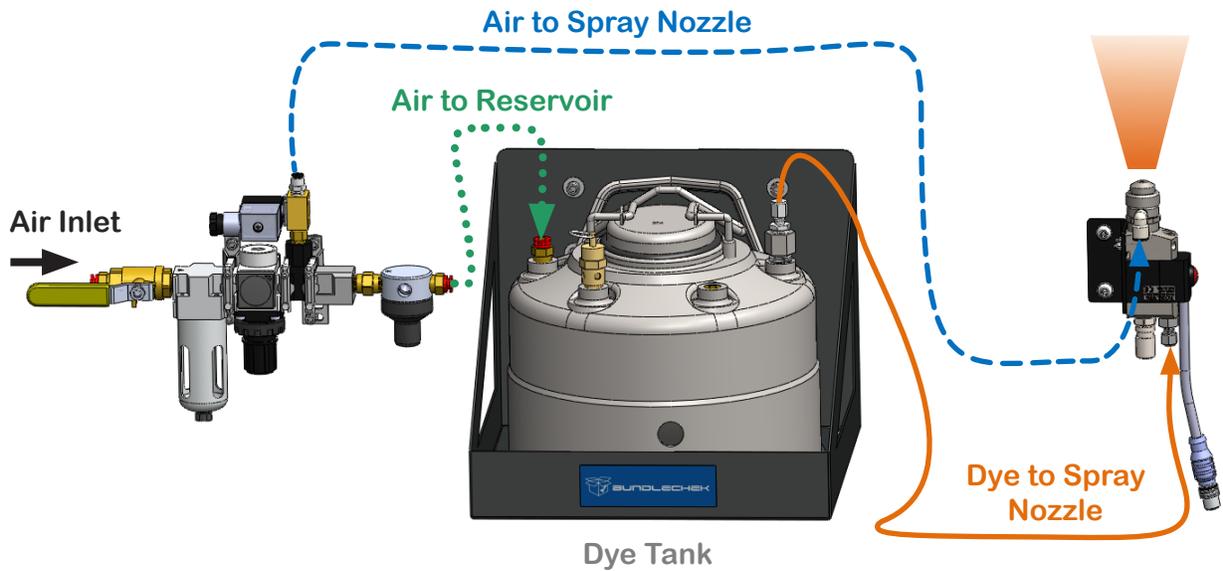
The junction box contains electrical connections near the counter ejector.

It acts as a connecting point between the BundleChek Cabinet and the main system Cabinet, as well as other components such as the UV Spray System, the counter ejector trombone, and the counter ejector tray.



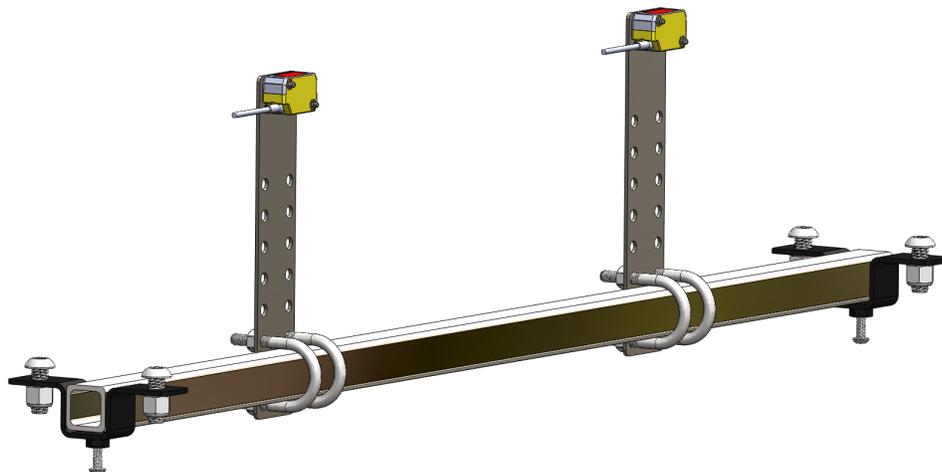
3.3) UV Spray System (Air Treatment and Spray Nozzle)

The UV Spray System consists of a pneumatic air treatment component, a UV dye container, and a spray nozzle. This system permits the marking of bundles using a UV dye at the counter ejector.



3.4) Undermount Photoeyes

These photoeyes detect the positions of bundles on the main conveyor, allowing correct triggering of the Camera & LED Unit.



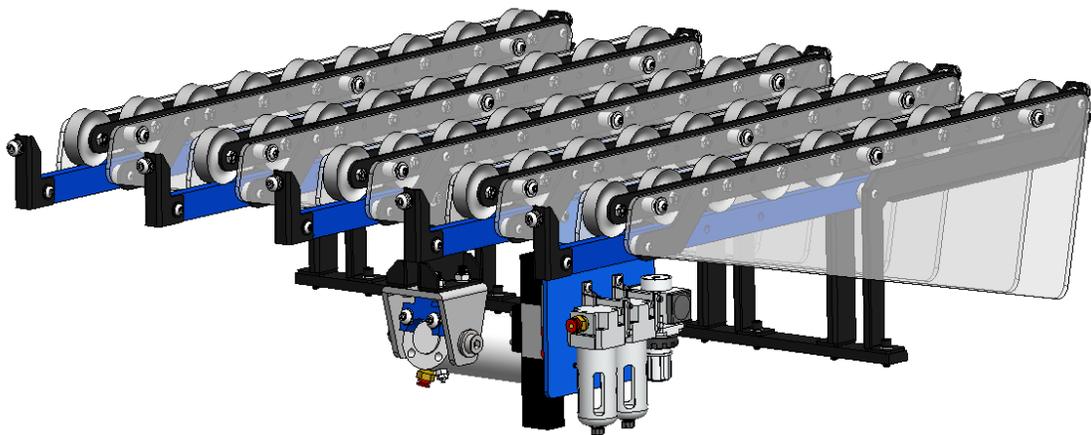
3.5) Camera & LED Unit

The Camera & LED Unit images the bottom of box bundles in search of the dye mark left by the UV Spray System.



3.6) Ejection Unit

The Ejection Unit moves bundles determined to contain defective boxes off the primary conveyor and onto the Reject Conveyor.

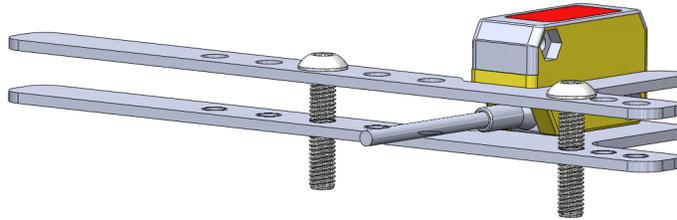


3.7) Reject Conveyor

The Reject Conveyor is the secondary conveyor that defective bundles are ejected onto. This is provided by the plant.

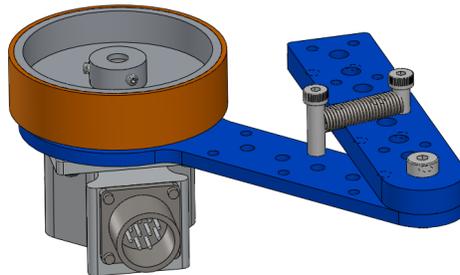
3.8) Reject Conveyor Photoeye

The Reject Conveyor Photoeye detects whether the Reject Conveyor has become full. When the Reject Conveyor is full, an alert dialog first pops up on the main Cabinet screen; if the dialog is not acknowledged for some time, the buzzer on top of the main Cabinet sounds.



3.9) Encoder

The encoder determines the speed of the conveyor and tracks the position of the belts used in performing speed calculations, which in turn helps to determine when a bundle has reached the Ejection Unit.



3.10) E-Stop Enclosure



The E-Stop pushbutton disables all outputs for BundleChek. The green light is illuminated when the system is active.

To reset the E-Stop after it has been pressed, pull out the red E-Stop button and press the green reset button.

3.11) Indicator Stack Light

The indicator stack light shows the status of the system. It will operate in a few different ways depending on the system status, the most common of which are as follows:

Green: System is active and ready to eject bundles.

Red: System is disabled or in a fault condition (see [Troubleshooting](#) section for possible causes and fixes).

Green light on, with Red light flashing: System is active; a bundle has just been sprayed and an ejection is therefore expected soon.

At least the red light or the green light should be on at any given time.



4) Working with the BundleChek System

BundleChek works by tracking boxes that are rejected by a ClearVision inspection system (i.e. GlueChek or FoldChek). When defect boxes are put into a bundle by the counter ejector, the bundle is automatically marked on the bottom with UV-fluorescent dye. The BundleChek camera looks for bundles with this mark, and diverts any bundle with a failure mark onto a dead-end Reject Conveyor.

After a bundle has been rejected, an operator should do the following to sort out the defects:

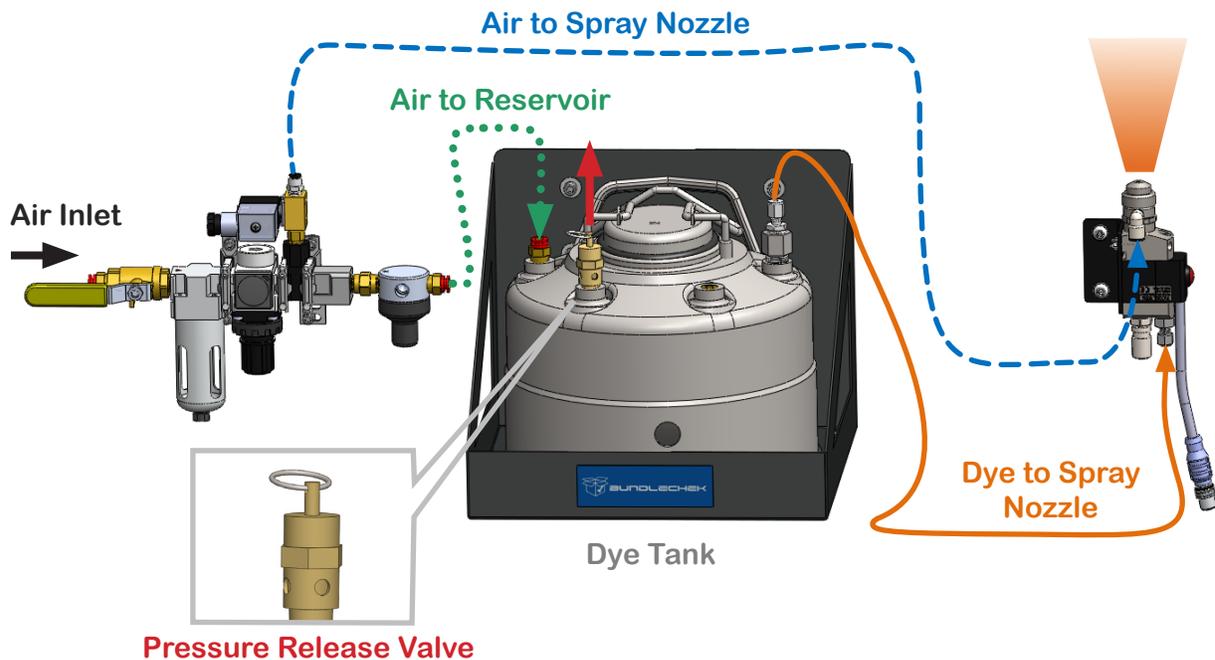
- 1) Remove the strapping from the rejected bundle.
- 2) Find and remove the rejected box (or boxes) from the bundle. These boxes can be identified by UV-fluorescent dye sprayed on one edge. This dye glows under UV light, but in most cases this dye will still be wet and can be seen even with the naked eye.
- 3) Add one or more good boxes to the bundle so that the total number of boxes is correct again.
- 4) Shuffle the bottom box up into the bundle. If this is not done, the same dye mark on the bottom of the bundle will be found and the bundle will be rejected again.
- 5) Put the bundle back onto the conveyor before the strapper. The bundle will now be strapped and inspected like any other bundle.

4.1) Refilling the UV Dye Tank

Refill UV dye tank when you can begin to see the bottom dome of the tank.



Warning: It is important to follow the instructions below very carefully, as any unscrewing of caps prior to the release of air pressure will result in the spraying of dye. The dye is a skin-irritant and could cause damage to eye tissues if it is accidentally sprayed in the eye and not promptly flushed out.



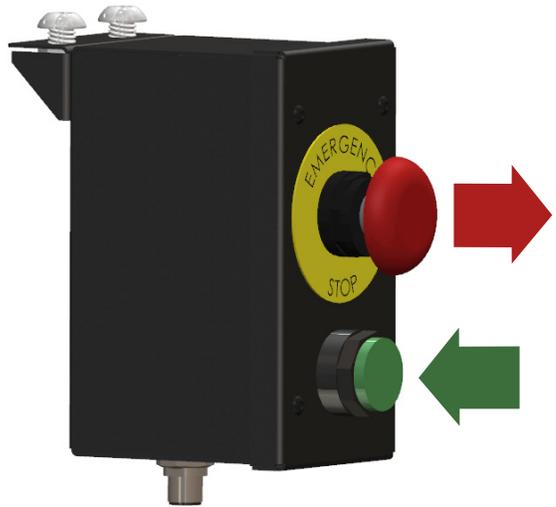
To refill the dye tank:

- 1 Turn off the upstream air supply via the air supply valve (i.e. the valve that controls the air supply to the **air inlet**).
- 2 Pull *up* the **pressure release valve** to release any remaining air pressure.
It is now safe to remove the UV tank lid and refill the dye.
- 3 Place cap back onto the dye bottle, ensuring that it is screwed back on properly.
- 4 Turn upstream air supply back on.

Regularly check to ensure that there is at least enough dye to cover the bottom of the dye tank. Note that this is *not* the same UV dye that is used in the GlueChek spray system; please contact ClearVision to order more dye when necessary.

4.2) Using the E-Stop Button

Push the red E-Stop button near the Ejection Unit if the BundleChek system needs to be stopped at any time. At all other times, make sure the green light is on under the red button. If it is not on, pull out the E-Stop button and press the green reset button. The green light should now be on.



4.3) Photoeyes

Ensure that the view of each photoeye is not obstructed by anything.

5) Safety

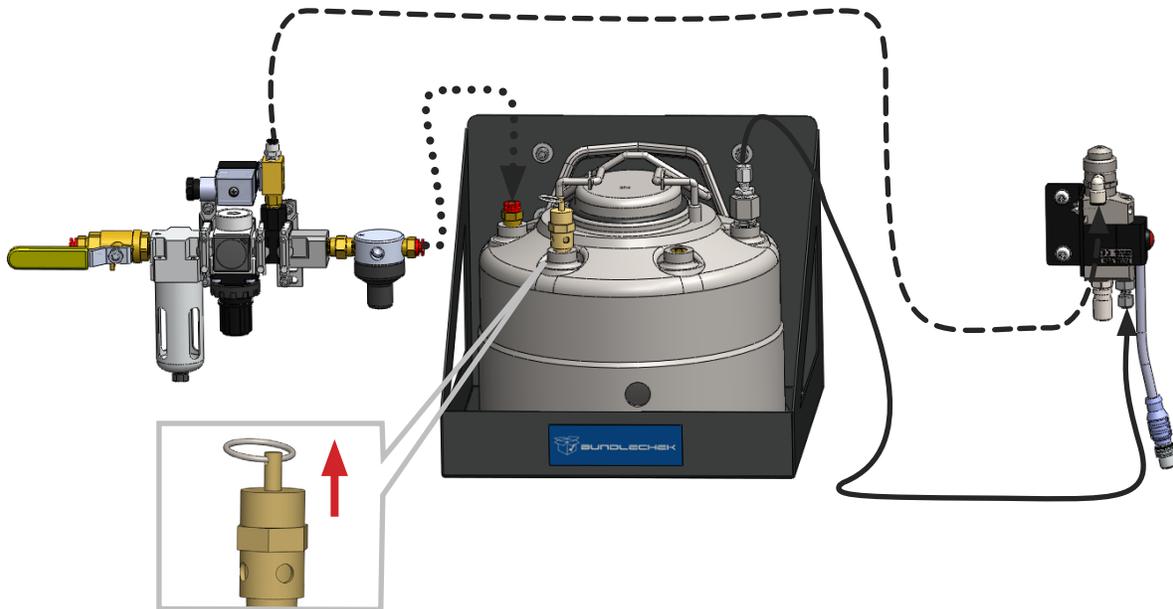


- Do not place hands near the Ejection Unit; bundles may eject at any time.



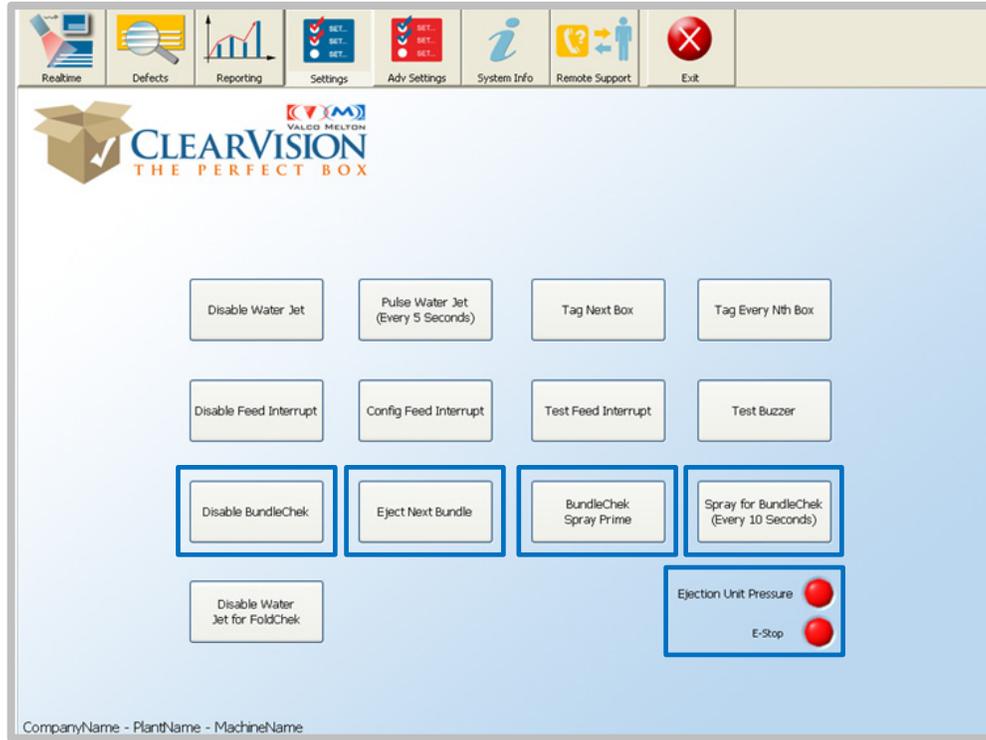
- Use the E-Stop button if a jam occurs, or if the machine operation has become unsafe.

- Before refilling the UV dye container, ensure that *pressure from the air line is turned off (via the air supply valve) and vented* to prevent the remaining dye from spattering out of the container. To release the air pressure, pull the pin at the top of the pressure release valve *up*.



6) Software User Interface

This is the **Settings** screen in the system software accessible from the main Cabinet. See table below for a description of each BundleChek-related button.



In addition to the buttons listed below, all other buttons on the **Settings** screen (i.e. the GlueChek / FoldChek buttons) also work in concordance with BundleChek. For example, pressing **Tag Next Box** results in the marked box being ejected by the Ejection Unit.

Button Name	Description
Disable BundleChek	Stop the system from analyzing or ejecting bundles. This also causes the red light on the indicator stack light to turn on.
Eject Next Bundle	Ejects the next bundle that the main Cabinet analyzes.
Spray for BundleChek	Activates the spray nozzle at the counter ejector every 10 seconds. Primarily used for visually testing the functionality of the spray system.
BundleChek Spray Prime	Use if the spray system has run dry and needs to be primed.
Indicator Lights	Shows status of the air pressure at the Ejection Unit and the E-stop. If either one is disabling the system, the indicator light will be red.

7) Troubleshooting

The list below provides an overview of the most frequently asked questions, and is meant as an introductory guide to common troubleshooting scenarios. Should you require any additional assistance or have any questions, please do not hesitate to contact ClearVision Technical Support (see the [Support](#) section for contact information). Most problems can be resolved in less than 30 minutes with the assistance of remote support.

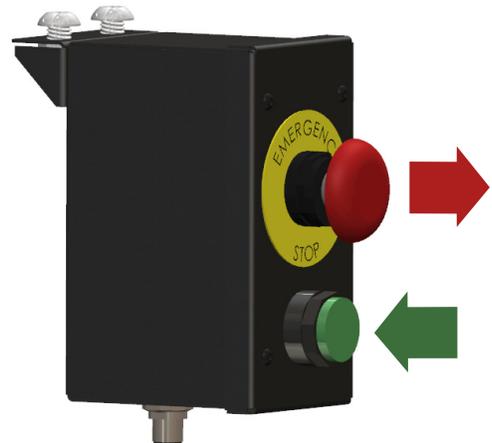
Issue 1: Red indicator light is on

Primary Cause:	Connection with Camera & LED Unit has failed.
Fix:	Wait 30 seconds, and see if green light comes on.



If the green light does not come on after 30 seconds, check for the following possible causes:

Cause 2:	The E-Stop button has been pressed.
Fix:	Pull out the E-Stop button, and then press the green reset button. The green button should now light up.



Cause 3:	Camera & LED Unit is (physically) disconnected.
Fix:	Check that the cables are properly connected.

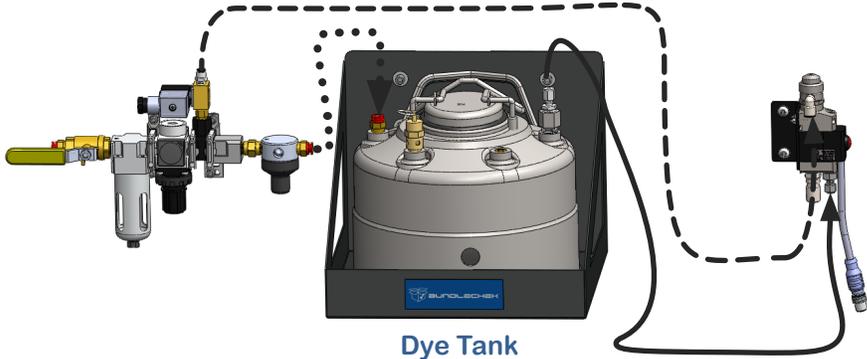
Cause 4:	The Disable BundleChek button on the Settings page at the Control Cabinet has been pressed.
Fix:	Press Enable BundleChek in the Settings page at the Control Cabinet.

Cause 5:	There is no air pressure being applied to the Ejection Unit.
Fix:	Check the pressure regulator dial to ensure that there is pressure being applied to the Ejection Unit; it should be between 50 and 100 psi. Adjust the regulator pressure to 80 psi, as well as the upstream air pressure if necessary.

Issue 2: Neither red nor green indicator light is on

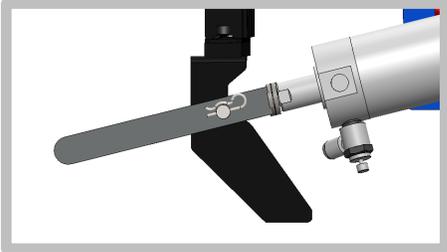
Cause:	There is no power to the BundleChek Cabinet.
Fix:	Ensure all power cables are plugged in, and that all breakers / switches are turned on.

Issue 3: Bundles not being ejected

Cause 1:	There is no / not enough pressure provided to the spraying system.
Fix:	<p>Check that there is the following amount of pressure provided:</p> <ul style="list-style-type: none"> • 40 psi to the air line • 25 psi to the dye tank 

Cause 2:	The UV spray is not functioning properly.
Fix:	Ensure that the UV dye tank contains enough dye to cover the bottom dome of the tank. Click the Spray for BundleChek button on the Settings screen in the main Cabinet to test. If there is no spray then there may be air in line, in which case press BundleChek Spray Prime button until spray is seen coming out of spray nozzle.

Cause 3:	The spray is not ready to be used.
Fix:	Prime the spraying system by pressing BundleChek Spray Prime in the Cabinet software Settings screen.

Cause 4:	The piston located under the Ejection Unit is not attached properly.
Fix:	Ensure that the end of the piston is properly seated in the hook as shown. <div style="display: flex; justify-content: space-around; align-items: center;">   </div>

Issue 4: Constant pop-ups on screen / buzzing of alarm

Cause:	Reject Conveyor is full.
Fix:	Pull the rejected boxes from the conveyor, and re-strap the bundles.

8) Maintenance

8.1) Regular Maintenance

- Regularly blow dust off the Camera & LED Unit housing with compressed air. If the lens becomes dirty, use a damp cloth to clean it.
- Regularly clear scrap from the Ejection Unit, also with compressed air.
- Check the level of UV dye in the dye container at least once per month, and refill as needed. The supplier information of the dye is provided below, but please feel free to contact ClearVision to order more dye.

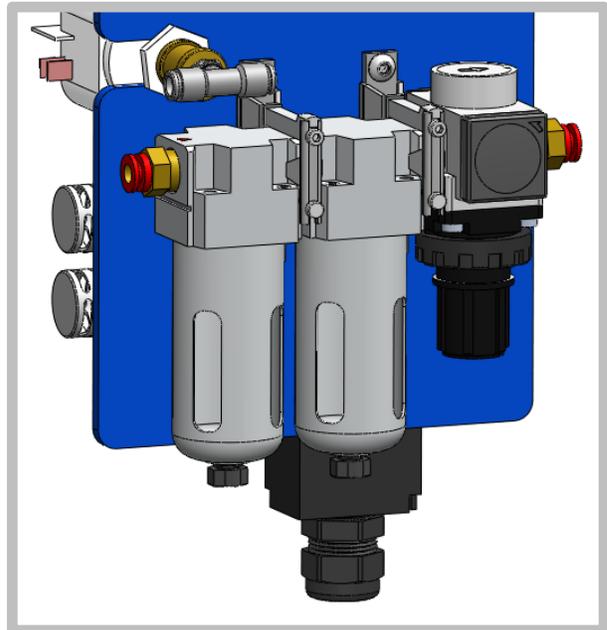
8.2) Machine Lockout and Maintenance

Before any electrical or mechanical maintenance can be performed on the BundleChek system, the following energy sources must be disconnected and locked out according to company safety procedures.

- 120 VAC power cord to BundleChek Cabinet
- Pressurized air to the Ejection Unit (mounted under conveyor)
- Pressurized air to the spray nozzle air preparatory system (mounted on the counter ejector)



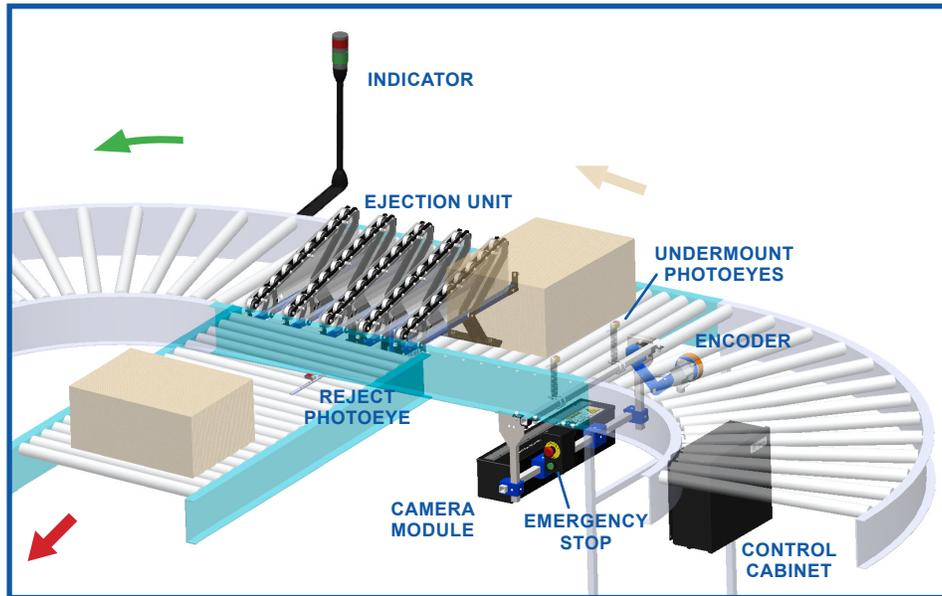
Note: For electrical troubleshooting, electrical schematics are provided inside the BundleChek Cabinet.



9) Support

ClearVision systems are equipped with remote access software which allows ClearVision staff access to systems at anytime. Please do not hesitate to contact ClearVision if there are any issues with your ClearVision system.

You can contact ClearVision support either by phone at 1-866-528-0212 ext. 4 or by email at support@clearvisionboxes.com.



Description

The ClearVision BundleChek system is designed to integrate into your existing bundle conveyor either before or after the strapper.

The system consists of a set of five lifting arms, a control cabinet, a camera module, and a marking system. When a defective box is detected, an invisible UV mark is sprayed on the bottom of the bundle which contains this defective box as it leaves the counter ejector.

A camera and lighting system just before the lifting arms scans the incoming bundles for the UV mark. If one is detected, the bundle is diverted to the secondary conveyor (supplied by plant). The machine operator can then sort the defective bundles when time permits.

Main Components

Marking Module	Marks the bundle with a defective box using a UV dye as the bundle leaves the counter ejector.
Camera Module	Detects the invisible UV mark on the bundle with the defective box.
Ejection Unit	Diverts the bundle containing the defective box off the primary conveyor.
Control Cabinet	Houses PLC and electrical components.

Specifications

Max. Bundle Dimensions:	55" x 50" (1,400 mm x 1,270 mm)
Max. Bundle Weight:	100 lbs (45 kg)
Max. Conveyor Speed:	100 ft/min (30 m/min)
Max. Boxes / hr:	26,000 boxes / hr @ 25 boxes / bundle
Max. Bundle Speed:	1,200 bundles / hr
Min. Bundle-to-Bundle Gap:	1.5 seconds gap between bundles

Installation Prerequisites

Supported Conveyors:	Steel roller with rollers above frame
Conveyor Width:	28-46" (610-1,168 mm)
Conveyor Height:	Min. 24" (610 mm)
Conveyor Length:	Min. 60" (1,500 mm) straight section
Power:	110-220 VAC @ 3A
Air Supply:	Min. 80 psi
Customer-Supplied Secondary Conveyor:	Angled free-wheeling conveyor

Design specifications subject to change without notice.

BUNDLECHEK Quick Troubleshooting

Check the following two items if BundleChek is not behaving as expected:

Indicator Stack Light:

Is the red light on?

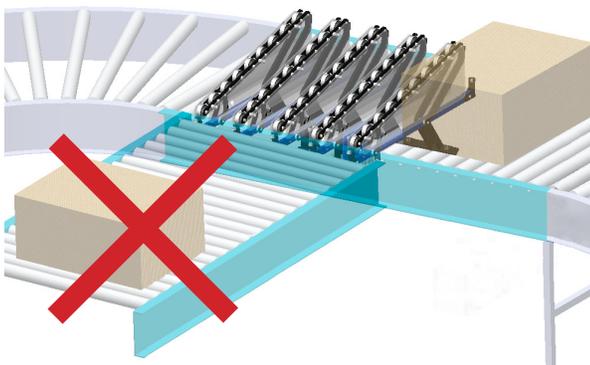


If the red light is on:

- Check that the E-stop button is pulled out and the green button is pressed.
- Check that the ejection unit has air pressure (80 psi).
- Check that [Disable BundleChek](#) is not pressed in the Cabinet software [Settings](#).
- If the green light does not come on after 30 seconds, press [Disable BundleChek](#) in the Cabinet software [Settings](#), and press again to re-enable.

BundleChek Reject Conveyor:

Are bundles not being ejected?



If bundles are not ejecting:

- Check that there is pressure to the spraying system. There should be:
 - 40 psi to the air line
 - 25 psi to the dye tank
- Ensure that the spraying system tank has dye in it, by doing the following:
 - a) Use the shut-off valve to turn off the pressure.
 - b) Pull on the pressure relief valve to vent the system.
 - c) Open the tank and look inside.
- Prime the spraying system by pressing [Prime BundleChek](#) in the Cabinet software [Settings](#).
- Check that the piston has not fallen out of the groove at the ejector unit.

If BundleChek is still not behaving as expected, please call ClearVision at [1.866.528.0212](tel:1.866.528.0212), option 4.