CASI®
CORNERSTONE AUTOMATION SYSTEMS

CASi-IBOD Gen3 Single and Duo System Reference & User Guide

Rev. F, 07/25/2024

CASI Technical Support

Standard Technical Support Hours: Mon - Fri 8:00 a.m. – 5:00 p.m. CST

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You can also fill out our technical support form on our website, and a customer service representative will contact you.

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Revision Log

Date	Revised By	Rev Level	Sections Revised
10/12/2023	B Thornton	B	Cabinet Changes, Tool and EOA changes, Optional E-Stop Rope Pull Troubleshooting update. Stack light update. User Login definitions and barcode recipe instructions addition.
10/24/2023	B Thornton	C	Website location for manuals, new back up battery instructions
02/27/2024	B Thornton	D	Alarms update, rate update
06/05/2024	B Thornton	E	Copyedits, safety section additions, user level updates, reorganize and rename headers.
07/25/24	B Thornton	F	Branding, format update and added Clear operating procedure.

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1 Document Introduction

This document is to be used as a technical guide and serves as a reference to the formalized training conducted by CASI (Cornerstone Automation Systems, LLC) or one of its designees. In addition, it is intended as a reference for system operations and basic troubleshooting.

1.1 Proprietary Information

This document and the information contained herein, including attachments, are proprietary to CASI (Cornerstone Automation Systems, LLC). It is not to be disclosed to competitors, third parties, vendors, or others without the prior written consent of an officer of CASI. All intellectual properties, concepts, trademarks, and designs relating to this project and provided by CASI (Cornerstone Automation Systems, LLC) remain the property of CASI.

2 Safety

For safe operation of the CASi-IBOD, read and understand the entirety of this Operator Manual prior to operating the system.

If the CASi-IBOD is modified or operated in a manner that is not designed, this could lead to decreased reliability and possible injury and void the factory warranty.

2.1 General System Safety

- Be sure to observe all **DANGER, CAUTION**, and **WARNING** safety labels before operating, troubleshooting, or maintaining this IBOD System.
- Appropriate **Lock-Out-Tag-Out (LOTO**) should be used when performing any maintenance. It is the end user's responsibility to establish LOTO procedures that meet their facility's safety requirements.
- Do not leave the system running unmonitored.
- Personnel operating the IBOD System must be appropriately trained in its use, including the proper sequence of starting and stopping the conveyor and the correct loading and unloading methods.
- Conduct regular safety training sessions to familiarize workers with system operations and safety procedures.
- Keep hands, long hair, loose clothing, and jewelry away from moving conveyor parts and rollers.
- Do not exceed the recommended maximum conveyor load capacity.
- Before starting the Conveyor, be sure no unwanted cartons or other items are on the conveyor rollers.
- Do not operate the IBOD with damaged or broken parts.
- Never remove guards or enclosures while the system is running.
- Never operate the system with guards or enclosures removed.

- To avoid the risk of electric shock, do not operate the conveyor with the electrical covers removed.
- Do not operate the IBOD in an environment with high moisture concentration.
- Only qualified and trained technicians and maintenance personnel should perform service and repair work on the IBOD.
- Schedule routine maintenance checks to keep the system in optimal working condition.
- Regularly test emergency stop functionality to ensure rapid response in case of emergencies.
- Use any additional signage to indicate system operation zones and potential hazards.
- Encourage employees to report any safety concerns or hazards promptly.
- Keep system areas clean and free of debris to prevent slip and trip hazards.

2.1.1 System Shutoff with Lock Out Tag Out (LOTO)

WARNING: No maintenance should ever be performed until the system has been properly powered down and Lock Out Tag Out (LOTO) procedures implemented. It is the end user's responsibility to establish LOTO procedures that meet their facility's safety requirements. It is recommended that the LOTO procedures include an E-Stop, System Electrical Power Shutoff, and System Pneumatic Air Shutoff in the steps.

2.2 Conveyor Safety

- Be aware of all potential hazards, including entanglement, crush, and pinch point injuries.
- Ensure workers wear proper attire to minimize the risk of entanglement or injury.
- Regularly inspect conveyors for signs of wear, damage, or malfunction.

2.3 E-Stop Safety

Each CASi-IBOD is equipped with Emergency Stop (E-Stop) buttons. Using an E-Stop forces an immediate halt to all moving components.

The **Emergency Stop (E-Stop) System** uses **E-Stop triggers** to activate the safety circuit. Generally, E-Stops work by opening the electrical circuit to remove operational functionality from a device in use and must be reset manually by an operator to resume operations.

E-Stop buttons are located on the IBOD frame and on the infeed and outfeed conveyors. An IBOD Single has one button, and an IBOD Duo has two buttons on the frame.

Some CASi-IBOD systems have extended CASI conveyors or other modules. These optional conveyors have E-Stop buttons on the conveyor frame, and E-Stop rope pulls are located along the conveyors' length.

NOTE: Pushing an E-Stop button causes the entire system to halt but does not remove all power from the system; continue using safety precautions for electric shock hazards even when the E-Stop has been pressed.

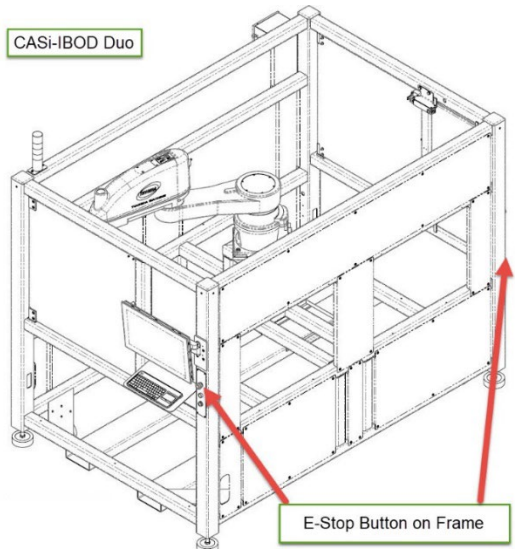


Figure 1 - E-Stop Button Location IBOD DUO

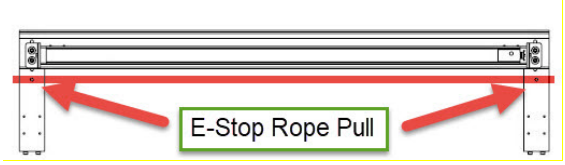


Figure 2 – Conveyor Rope Pull locations (Optional)

Please see Section 6.3 Emergency Stop System for complete information on E-Stop functionality.

2.4 Bar Code Scanners, Dimensioners, and Photo eyes Safety

Lasers are often used in CASI systems and additional modules.

- Regardless of the laser's strength, avoid staring at the beam.
- Do not point laser beams at other people.
- Be cautious of reflective surfaces, which may redirect the laser beam into the eye of an observer.

2.5 Sorters, Pushers, Diverters, and Weight Scale Safety

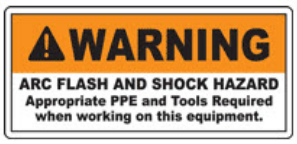
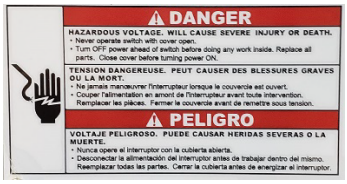
- Be aware of all potential hazards, including entanglement, collision, crush, and pinch points.
- These systems should **NEVER** be operated with safety guards and devices removed, disabled, or bypassed.

2.6 Safety Precautions, Warnings, and Safety Labels

- Turn the electrical supply off and disconnect it before performing any service, adjustments, or machine maintenance.
- Before starting the conveyors, be sure no tools, boxes, or other implements are on the conveyor belts.
- Never attempt to work on the machine while the machine is running.
- Failure to comply with safety and warnings could result in severe personal injury.

Table 1 – Example Precautions, Warning and Safety Labels

Before operating, troubleshooting, or maintaining this system, be sure to observe all safety and lockout all other WARNINGS, CAUTIONS, and IMPORTANT NOTICES.

 **Figure 3 - Sharp Blade Caution**	 **Figure 4 - Pinch Point Warning**	 **Figure 5 – Danger Hazardous Voltage**
 **Figure 6 - Pinch Point Warning**	 **Figure 7 - Power Off for Maintenance**	 **Figure 8 – Banner Light Curtain Not a Safety Device**
 **Figure 9 – Arc Flash and Shock Warning**	 **Figure 10 - Lock Out Tag Out**	 **Figure 11 - Electrical Ground**
 **Figure 12 - Voltage Warning**	 **Figure 13 - Robot Controller Caution**	 **Figure 14 - Robot Warning**

IMPORTANT NOTICE: Be sure to read and understand all the Safety and E-Stop sections of this User Guide.

NOTE: OEM (Original Equipment Manufacturer) components have their own manuals for detailed information such as setup, maintenance, and repair. Refer to the OEM website for the latest manuals on components.

3 CASi-IBOD (Intelligent Box Opening Device) System Description

The **CASi-IBOD (Intelligent Box Opening Device)** system enables you to transform human labor – the opening of product containers – into an automated process. The CASi-IBOD cuts boxes according to client specifications. Then, in conjunction with an infeed and outfeed conveyor system, boxes roll down the conveyor and proceed to the robot for precision cutting. The cutting parameters are defined using the software. After cutting the box, the CASi-IBOD rolls the box to the out-feed conveyor.

CASi-IBODs are manufactured in single and duo configurations. The IBOD single uses one lane to process the product, while the IBOD-Duo uses two lanes to send the product through the robot-cutting zone.

The following figures show examples of the CASi-IBOD Single and Duo.

Figure 15 – The CASi-IBOD Single

The CASi-IBOD Duo features two product lanes with a slightly larger frame:

Figure 16 – The CASi-IBOD Duo

NOTE: Some features, such as the Automatic Tool Changer, Lid Remover, Window Cut recipe feature, and advanced sortation, are optional and may not be part of your system.

3.1 CASi-IBOD Standard System Specifications

Table 2 - CASi-IBOD System Specifications

CASi – IBOD Single/Duo Specifications	
Maximum Cut Rate (Boxes/Hour)*	Single – 450 (*Variable) / Duo – 950 (*Variable)
Minimum Box Size (LxWxH)	6” x 6” x 5” (152mm x 152mm x 127mm)
Maximum Box Size (LxWxH)	30” x 21” x 19” (762mm x 533mm x 483mm)
Minimum/Maximum Weight	1 lb. / 50 lbs. (0.5 kg / 23 kg)
Power Requirements (Standard)	230 VAC / 3 PH / 50-60 Hz / 30A
Power Requirements (Optional)	480 VAC / 3 PH / 50-60 Hz / 20A
Air Requirements**	**Single – 2 CFM @ 90 PSI **Duo – 5+ CFM @ 90 PSI
Operating Temperature	40 – 100 F (4 – 38 C)
Operating Humidity	Humidity 0% - 60%

*IBOD maximum cut rates are based on performing a 4-sided top cut with the contour standard tool on 12” x 12” x 12” cartons weighing no more than 20 lbs. Specifications listed in the table above are for generic, basic, IBOD models and are subject to change based on client need and use. Cut-rates *will change* based on the type of tool head, cut recipe, box size, and weight of the box. See your **CASI SRD or FAT** document for the target rate numbers for your system.

**Air requirements are based on our best estimates. The CASi-IBOD requires clean/dry air defined as:

- Clean = Particulate and oil removal to 3 microns or less.
- Dry = Moisture content below 38°F dew point typical of a refrigerant-based dryer.
- THE CUSTOMER MUST SUPPLY A female ARO quick connector or a male threaded 3/8” NPT connector.

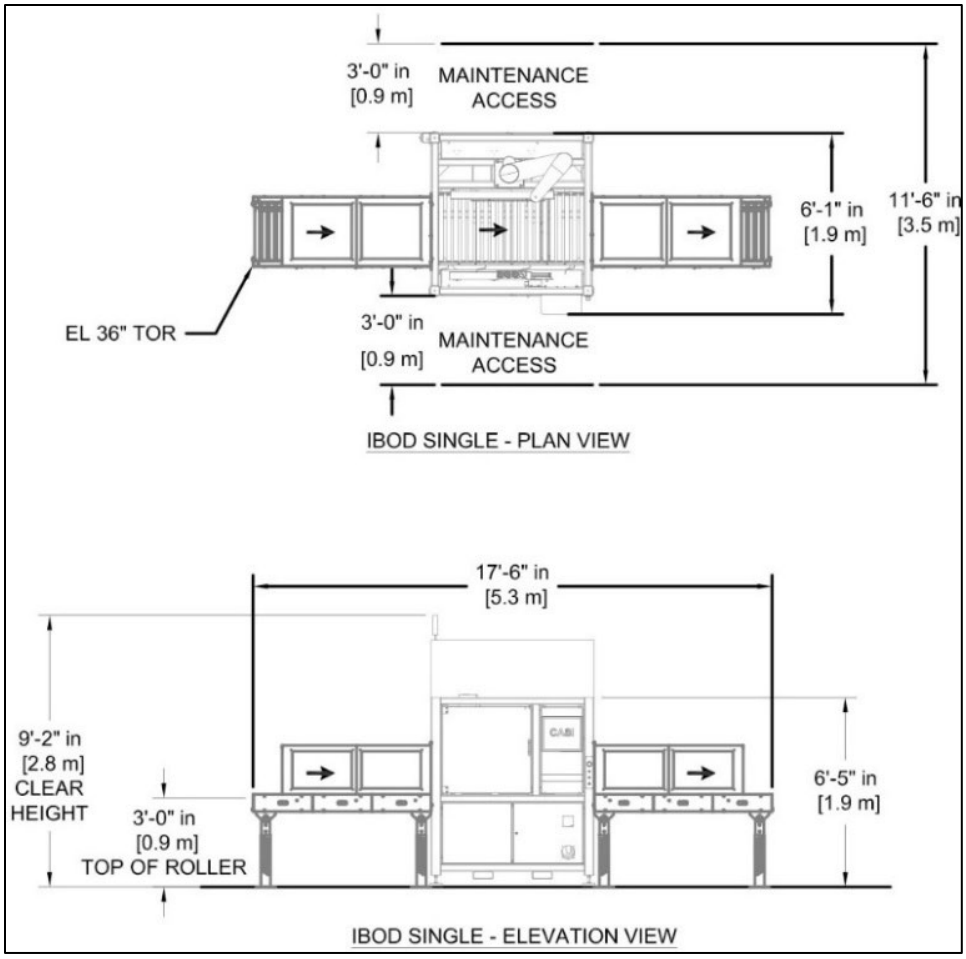


Figure 17 - IBOD Single Dimensions

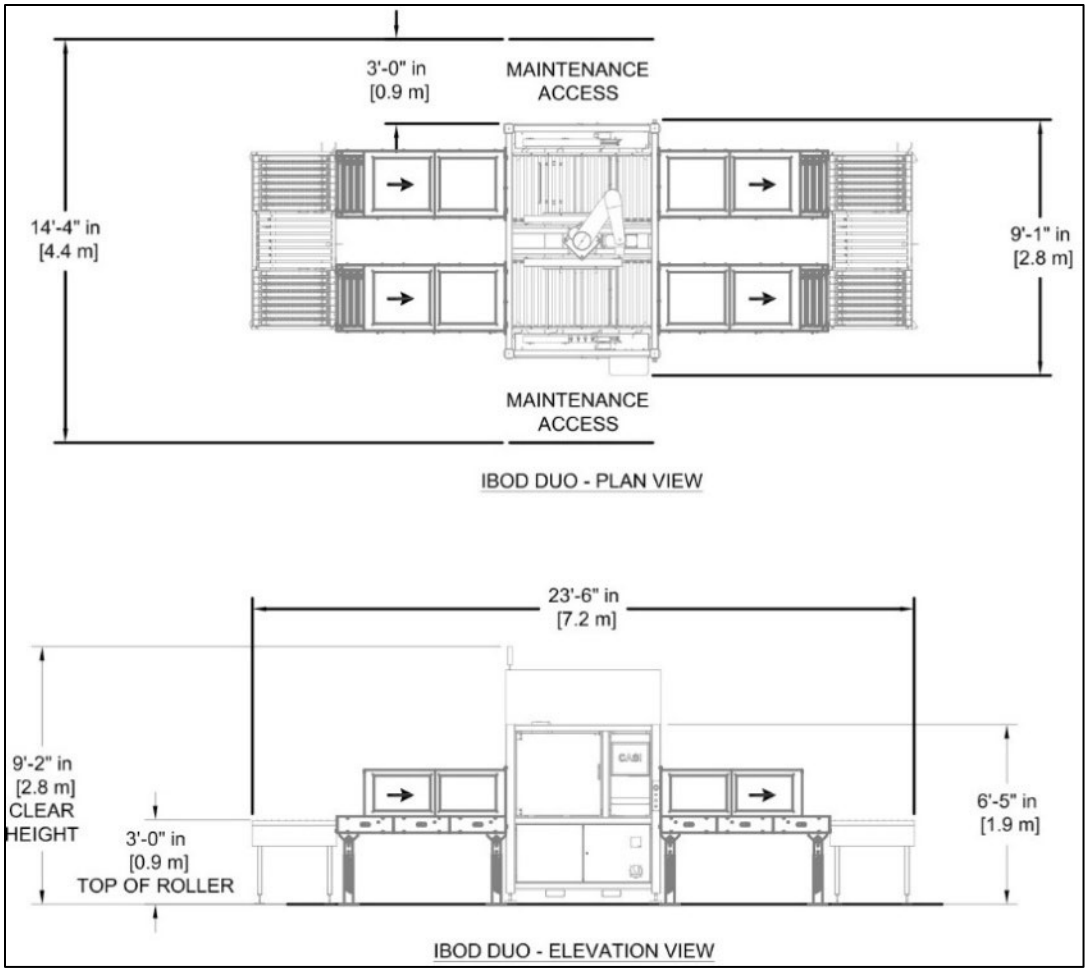


Figure 18 - IBOD Duo Dimensions

3.1.1 Electrical and Mechanical Diagrams

Electrical and mechanical diagrams are available; contact **Client Services** at (800) 930-3788.

3.1.2 Replacement Parts and Service Information

Contact **Client Services** at (800) 930-3788 for information on CASI system spares.

3.2 Users

The primary users of the CASI IBOD system will be operations personnel utilizing an automated process with software controls. CASI software controls are password-protected by default. See Section 7.1.1.1 User Login Permission Definitions for more information on software user levels.

3.3 CASi-IBOD Components

The CASi-IBOD box-cutting system consists of the following zones:

- **Infeed Zone** – the conveyor before the robot area, where the box enters the CASi-IBOD.
- **Cutting Zone** – the robot area inside the protected glass enclosure.
- **Outfeed Zone** – the conveyor just outside the cutting zone, where the box exits the CASi-IBOD.
- **System Cabinet** – the system cabinet houses the system's electrical components in the front and rear enclosures.

Figure 19 – Infeed, Cutting, and Outfeed Zones

Refer to the Maintenance and Troubleshooting sections at the end of this manual for service information on these components.

NOTE: OEM (Original Equipment Manufacturer) components have their own manuals for detailed information such as setup, maintenance, and repair. Check the OEM website for the latest manuals on components.

3.3.1 Infeed Conveyor Zone

The Infeed conveyor transfers cartons into the IBOD cutting zone. The Infeed Conveyor Zone includes a drive roller, drive card, idler rollers, belts, and photo eyes with reflectors.

Refer to the Maintenance and Troubleshooting sections at the end of this manual for additional information on these components.

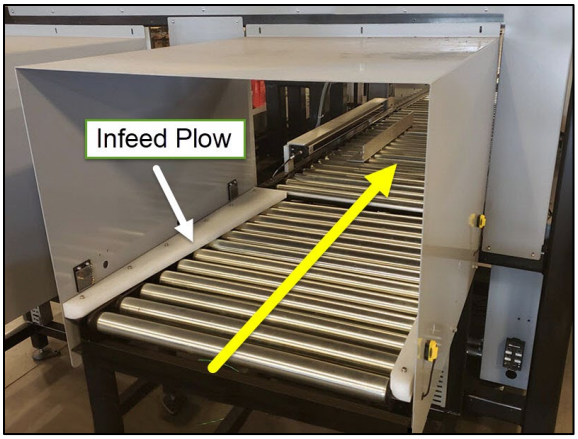


Figure 20 – CASi-IBOD – Infeed Zone

The CASi-IBOD Infeed Zone consists of the following components:

3.3.1.1 Photo eyes and reflectors

The Conveyors have photoelectric sensors (photo eyes) and reflectors across from them. When an object passes a photo eye, it triggers that section of the conveyor to start or stop.

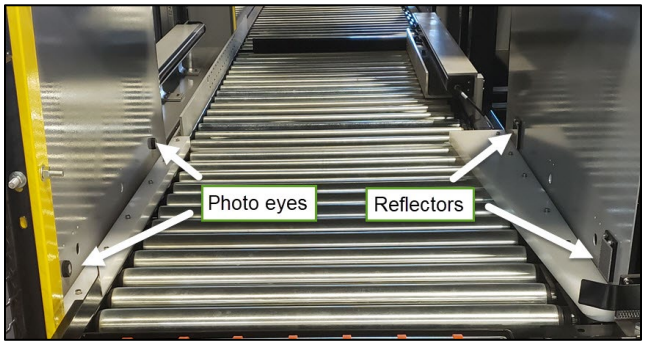


Figure 21 – CASi-IBOD – Infeed Photo Eyes and Reflectors

3.3.1.2 Motor Drive cards

Motor Drive Cards control the motors that drive the powered conveyor rollers. CASi-IBODs have multiple Drive Cards.

Figure 22 – CASi-IBOD – Motor Drive Card

3.3.1.3 Power Rollers, Idler Rollers, and Belts

The infeed zone has idler rollers and belts connected to a power roller that is controlled by a powered motor.

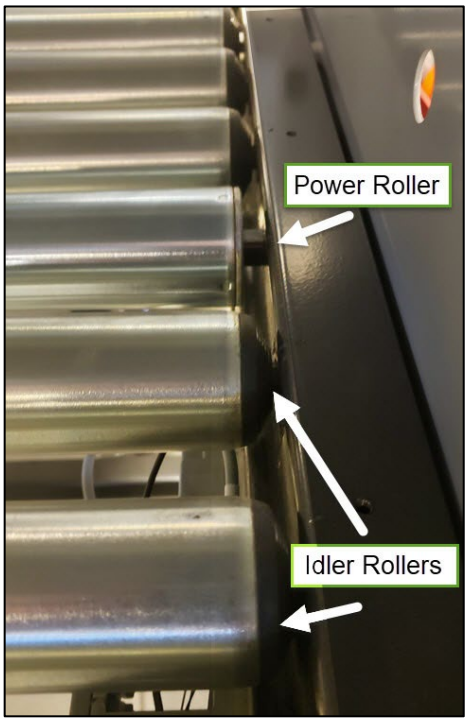


Figure 23 - CASi-IBOD Infeed Power and Idler Rollers

Figure 24 - CASi-IBOD Infeed Roller Belts

3.3.2 Cutting Zone

Figure 25 - CASi-IBOD – Cutting Zone

The CASi-IBOD Cutting Zone consists of the following components:

- Box Cutter Robot
- Automatic Tool Changer
- Horizontal Light Curtain
- Vertical Light Curtain
- Door Interlocks
- Box Snugger
- Blade Stop
- Photo eyes and Reflectors
- Diffused Photo eye
- Drive Rollers
- Drive Cards
- Internet Camera

3.3.2.1 The CASi-IBOD Box Cutter Robot

The CASi-IBOD Box Cutter Robot uses software-controlled automation to cut boxes according to precise specifications defined by the client.

Figure 26 - CASi-IBOD Box Cutter Robot

See sections 8 Service and Maintenance, and 9 Troubleshooting for additional information about the IBOD box-cutting robot.

3.3.2.2 IBOD Automatic Tool Changer

NOTE: Some features, such as the Automatic Tool Changer, Lid Remover, Window Cut feature, and customized interfaces, are optional and may not be part of your system.

The CASi-IBOD features a cutting tool on the robot arm. The Automatic Tool Changer allows quick and easy changes of worn-out tool heads. The bladed tool heads have changeable blades to allow the tool heads to be reused.

The IBOD software can be set to change blade tools automatically, based on use and wear, but operators can instruct the robot to change tools at any time using the HMI screen. The robot will place the used tool in an empty space on the tool storage tray and pick up a new tool.

*Different tool heads are available based on client needs and cut patterns.

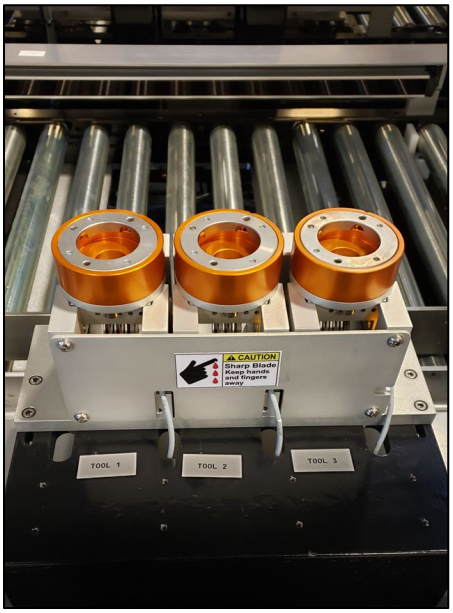


Figure 27 - CASi-IBOD Robot Tool Changer rack, shown with 3 extra tape-cut tools

To change the blades in the tool head, see the **CASI Tool and Blade Change Supplemental Guide** found on the **CASI Zendesk Support Website.**

3.3.2.3 Photo eyes and Light Curtains

There are Light Curtains and Photo eyes inside the cutting zone:

Horizontal Light Curtain

Horizontal Light Curtains measure the length of a box. There is one set (2) in a CASi-IBOD Single and two sets (4) in a CASi-IBOD Duo.

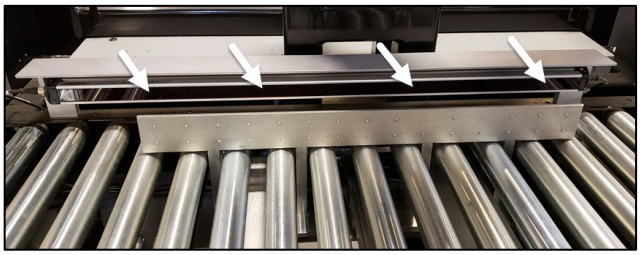


Figure 28 - Horizontal Light Curtain

Vertical Light Curtain

Vertical Light Curtains measure the height of a box. There is one set (2) in a CASi-IBOD Single and two sets (4) in a CASi-IBOD Duo.

Figure 29 - Vertical Light Curtain

Diffused Photo eye (No Reflector)

Diffused Photo eyes function the same as regular Photo eyes except that they face upward below rollers and do not need reflectors to work.

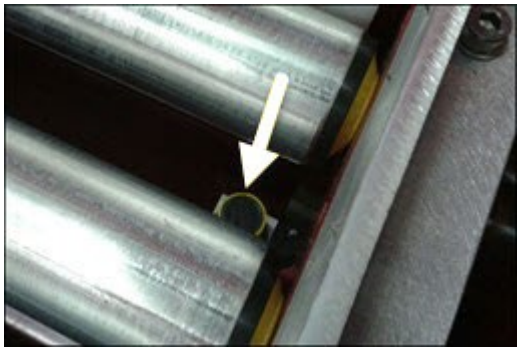


Figure 30 - Diffused Photo eye

3.3.2.4 Door Locks and Safety Interlocks

A lock system is located on and around the frame above the acrylic door that ensures the door is closed while the system is running and will not open unless the system is stopped.

3.3.2.5 Box Snugger

A Box Snugger straightens and measures the width of the box. There is one (1) in a CASi-IBOD Single and two (2) in a CASi-IBOD Duo.

Figure 31 – Box Snugger

3.3.2.6 Blade Stop

The Blade Stop pops up to stop the box so the robot can cut it. There is one (1) in a CASi-IBOD Single and two (2) in a CASi-IBOD Duo.

Figure 32 - Blade Stop Deployed

3.3.2.7 Internet Camera

There is a camera attached to the frame of the CASi-IBOD inside the cutting zone. It can be used by CASI Customer Service to assist customers with issues.

Figure 33 - Internet Camera

3.3.3 Outfeed Zone

The Outfeed Conveyor Zone includes a motorized conveyor with drive rollers, idler rollers, drive cards, and photo eyes with reflectors. These are the same as the Infeed components.

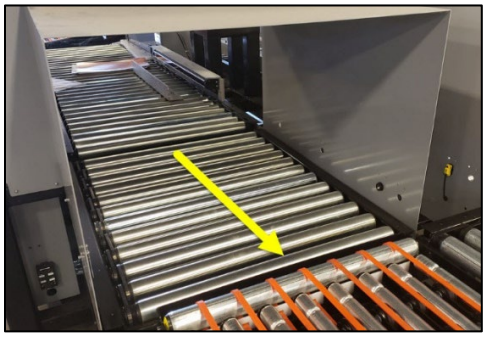


Figure 34 – CASi-IBOD – Outfeed Zone

3.3.4 Frame and System Cabinets

The IBOD frame is the system's body structure with attachment points for the main air, main power, the CORE computer, keyboard and mouse, and mechanical control buttons.

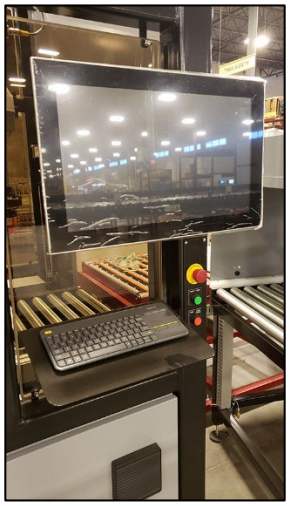


Figure 35 - CORE Computer

Figure 36 - Frame Control Buttons

The System Cabinets house almost all electrical and pneumatic components for the CASi-IBOD.

3.3.4.1 CASi-IBOD Lower Front System Cabinet

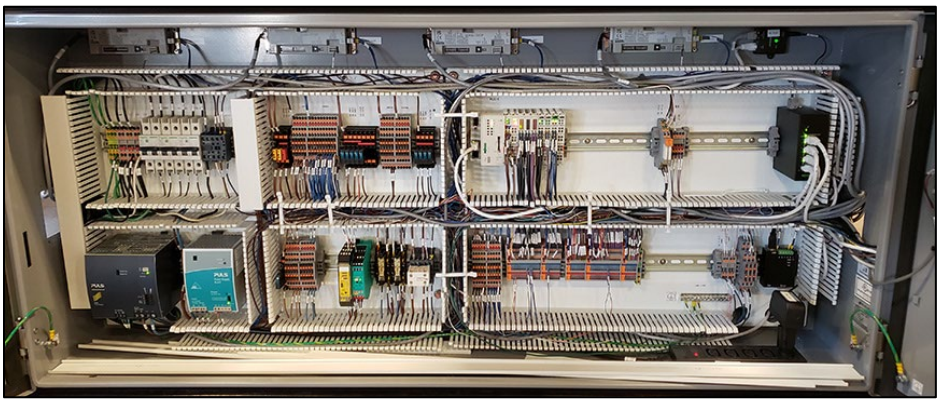


Figure 37 - CASi-IBOD Front System Cabinet

The CASi-IBOD Lower Front Cabinet consists of the following components*:

- Serial Gear – USB Analog to USB Converter
- Electrical Connections, Low Voltage
- Programmable Logic Controller (PLC)
- Drive Cards
- Safety Monitor
- 230VAC Power Distribution Unit
- POE Power Supply
- Ethernet Switch
- Circuit Breakers
- ASi Nodes

*Component list may vary based on client specifications, parts availability, or design change. Refer to the **Electrical Schematic document** for technical specifications.

3.3.4.2 CASi-IBOD Lower Rear System Cabinet

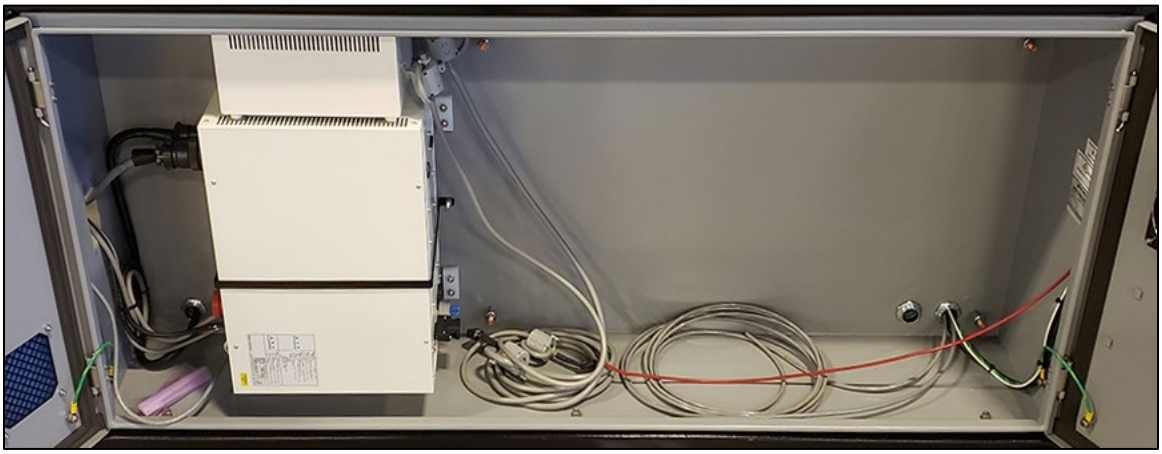


Figure 38 - CASi-IBOD Rear System Cabinet

The CASi-IBOD Lower Rear Cabinet consists of the following components*:

- Robot Controller
- Robot Contactor
- Power Supplies (ASi 30V, 24V, and E-24V)

*Component list may vary based on client specifications, parts availability, or design change. Refer to the **Electrical Schematic document** for technical specifications.

3.3.4.1 CASi-IBOD Upper System Cabinet

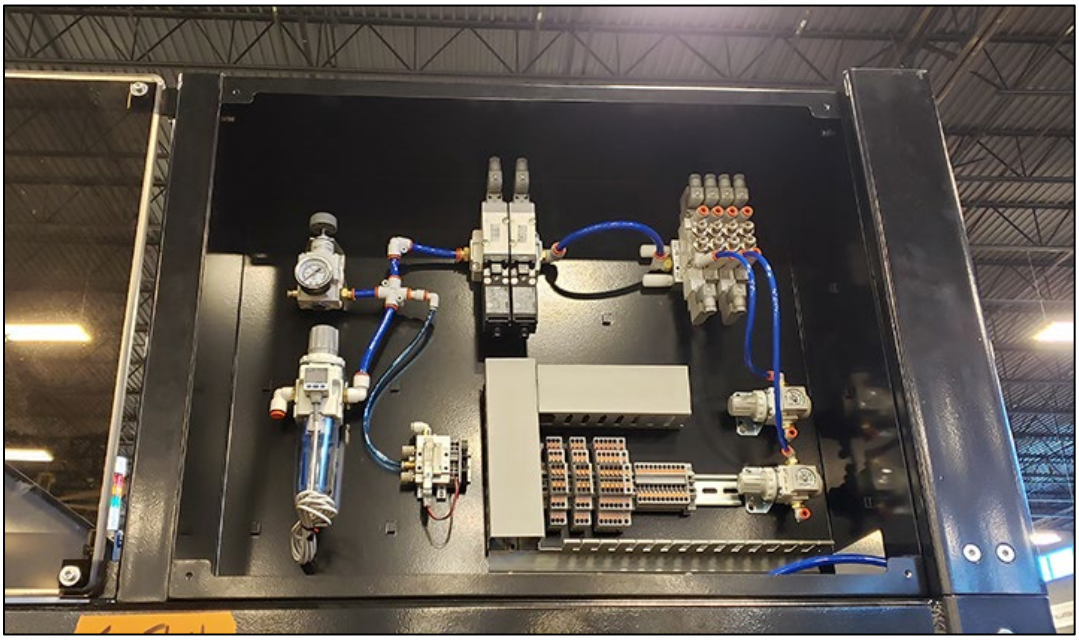


Figure 39 - CASi-IBOD Upper Cabinet

The CASi-IBOD Upper System Cabinet consists of the following components*:

- Main Air Pressure Regulator
- Pressure Switch
- Tool Changer Air Flow Valve
- Collision Sensor Regulator
- Dump Valve
- Valve Manifold for the Snugger and Blade Stop
- Snugger Regulator

*Component list may vary based on client specifications, parts availability, or design change. Refer to the **Mechanical Schematic document** for technical specifications.

4 Nameplate Information

The CASi-IBOD system nameplate is located on the main electrical disconnect box of the CASi-IBOD. Each system has a unique serial number.

Figure 40 – Example CASi-IBOD System Nameplates

5 Installation and Set-Up

The following conditions are required for the mechanical setup of the CASi-IBOD Single or CASi-IBOD Duo:

- Clean, dry air
- Leveled floor
- Proper infeed height
- Proper outfeed height

5.1 Receiving and Handling

The CASi-IBOD arrives intact on a truck and may or may not be crated. CASI personnel will supervise unpacking and setting up the CASi-IBOD.

*Some CASi-IBOD systems have additional conveyors and tunnels that will be separately packaged.

5.2 Machine Set-Up

The CASi-IBOD should be fork-lifted into position.

5.2.1 CASi-IBOD Forklift Location

The CASi-IBOD should be moved using the specified forklift slots on the machine.

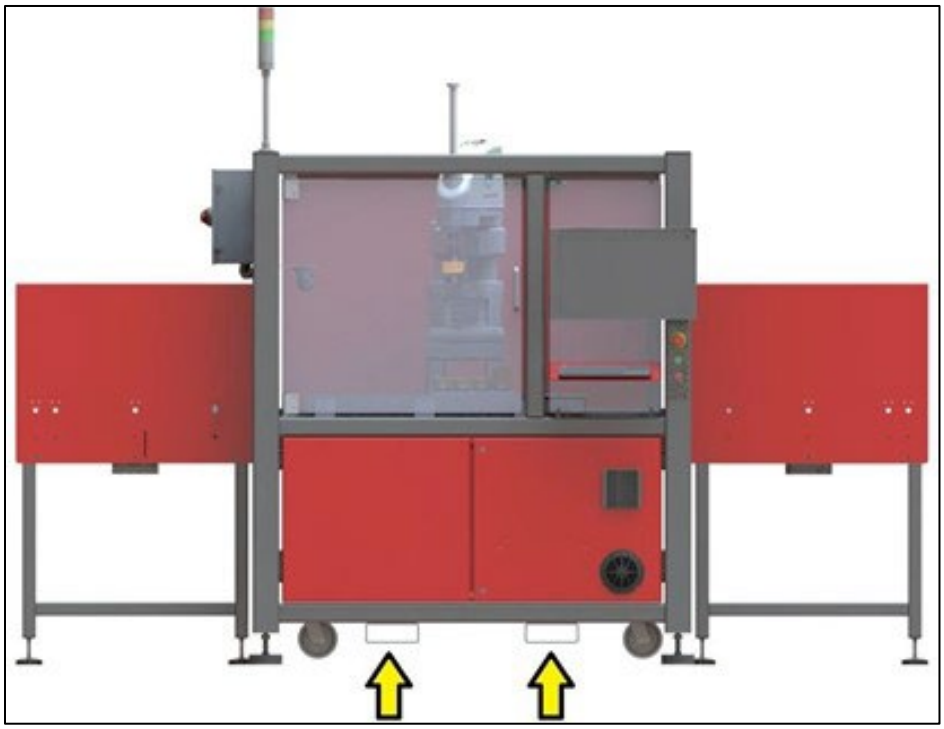


Figure 41 - CASi-IBOD Forklift Slots

The machine can be positioned in its final location utilizing the included casters. The machine placement will depend on each installment. Height can be adjusted using the shock-absorbing leveling legs to be between 34 and 38 inches. The top of roller height is best suited for 36 inches.

IMPORTANT NOTE: The CASi-IBOD system is designed not to require floor mounting; however, the infeed and outfeed conveyors are separate modules and should be anchored to the floor.

WARNING: The machine should not be moved while powered.

6 Operational Procedure

The CASi-IBOD system operates primarily on automation, requiring minimal operator intervention. Once a recipe is selected, you can initiate the system by pressing the start button. The subsequent Sections and Subsections of 6 and 7 elaborate on the operation and capabilities of the IBOD system.

6.1 Loading the System

It is important to allow for gaps in between boxes when loading the conveyor. Boxes must have a minimum of one inch spacing between them and should be aligned straight on the conveyor. Boxes should be loaded with the “short” edge of the box leading.

Figure 42 - Proper and Improper Loading of Boxes

For CASi-IBOD performance, all boxed units must meet the following corrugate specifications:

- A unit shall be a single wall, corrugated cardboard box of in a standard square, or rectangular shape (± 0.5 inches from square).
- The carton shall be constructed with either tape or glue; any staples, strapping, or other potentially damaging material should not be present.
- CASi-IBOD has been tested and validated to cut corrugate flutes B, C, and E.

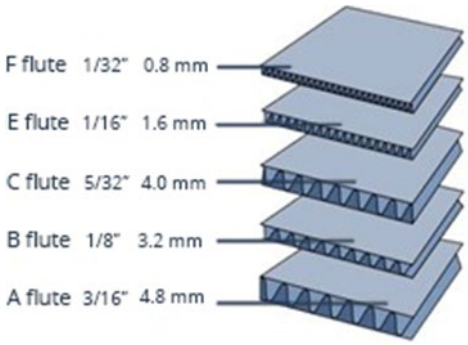
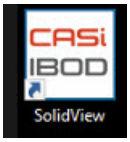


Figure 43 - Example Corrugate Box Thickness

6.2 Running the IBOD System

The CASi-IBOD is mostly automated with little need for intervention from operators. The following start up procedure assumes that the system is set up and ready to run product.

1. Start the CASi-IBOD software application, if needed.



2. **Log in** to the software, if needed.

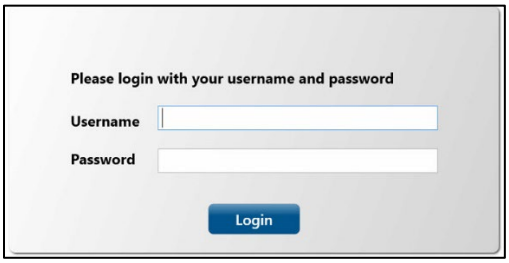


Figure 44 - Log in Box

3. Check to make sure the correct cutting recipe is active on the **Recipe Tab**. Load the correct recipe, if needed.

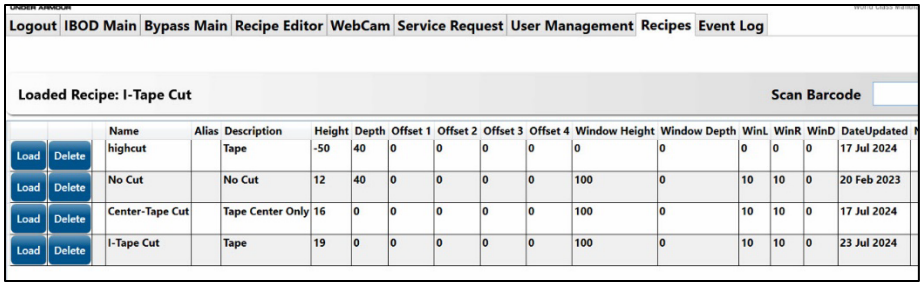


Figure 45 - Recipe Tab

4. On the *IBOD Main tab,* click the **Start Button** or push the green **Start/Reset button** on the IBOD frame. This will initialize the IBOD.

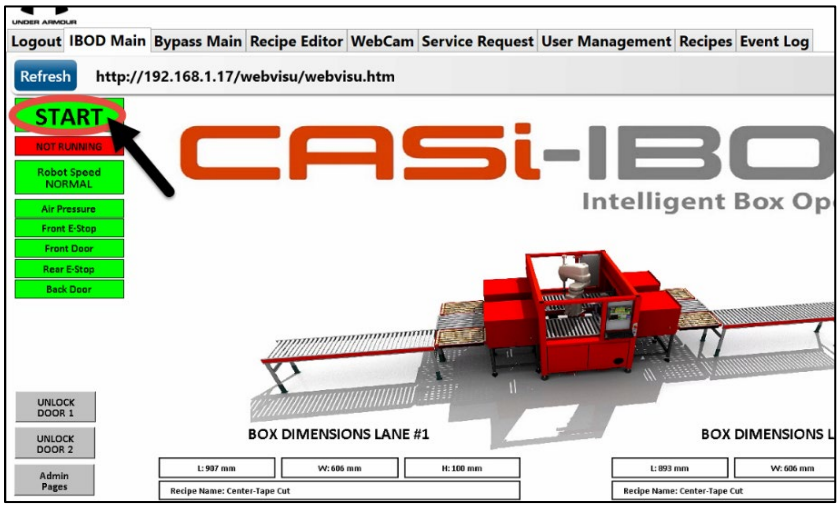


Figure 46 - IBOD Main Tab Start

Figure 47 - IBOD Frame Control Start

5. The system will initialize and emit start up beeps. The system will then automatically check its components. After approximately 5-8 seconds, the stack light will turn green, indicating the CASi-IBOD system is ready to run the product.

6.3 Emergency Stop (E-Stop) System

The **Emergency Stop (E-Stop) System** uses **Emergency Stop (E-Stop) Buttons** to activate the safety circuit. Pushing an E-Stop button will cause the system to halt immediately, and the pneumatic air dump valve will release the air from the system.

The system will not restart until the E-Stop is manually reset and the system is restarted.

In the event an E-stop device is triggered, an alert is made on the CASI CORE HMI (Human Machine Interface). Product will be automatically cleared from the IBOD and conveyors by the rollers once the system is reset.

WARNING: Pressing an E-Stop DOES NOT remove ALL power to the system. Continue using safety precautions for electric shock hazards even when the E-Stop has been pressed.

All operators should be trained to know all the E-Stop locations and how to trigger the E-Stops on this system.

Lozier+CASI recommends the end-user conduct a risk assessment and risk reduction analysis to determine the appropriate frequency for E-Stop system checks. In place of the assessment and analysis, test each component before the start of each production day.

There are E-Stop buttons located on the IBOD frame (**Figure 48)** and on the end of the infeed and outfeed conveyors. (**Figure 49**). Some CASi-IBOD systems may include the optional E-Stop rope pulls located along the length of CASI conveyors. (**Figure 50**).

Figure 48 - IBOD E-Stop Frame Button

Figure 49 – E-Stop Mushroom Button

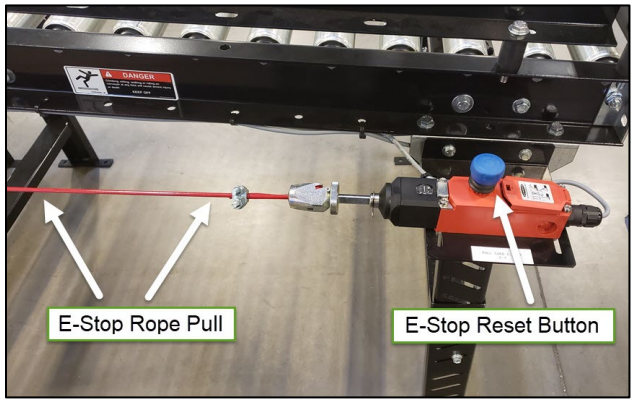


Figure 50 - Emergency Stop (E-Stop) Rope Pull

Figure 51 - Close-up E-Stop Rope Pull Reset Button

NOTE: OEM (Original Equipment Manufacturer) components have their own manuals for detailed information such as setup, maintenance, and repair. Check the OEM website for the latest manuals on components, such as the Banner Engineering E-Stop components.

6.3.1 E-Stop Locations – Standard IBODs

The following diagrams show the E-Stop locations for the standard CASi-IBOD single and Duo systems.

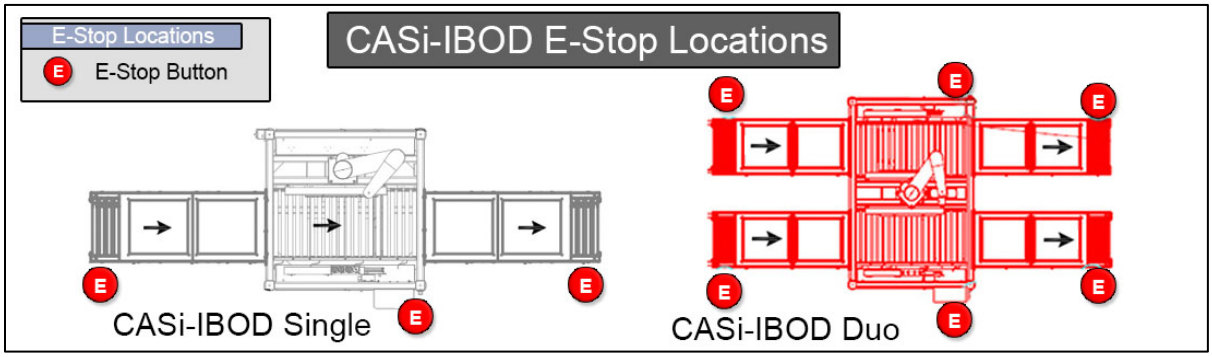


Figure 52 - Standard CASi-IBOD E-Stop Locations

6.3.2 E-Stop Button Procedure

For immediate system shutdown, push the red **Emergency Stop (E-Stop) Button** on the IBOD or the CASI conveyors to completely stop the system.

Figure 53 - IBOD Frame E-Stop

Figure 54 - Conveyor E-Stop (Optional)

1. Push the **E-Stop button** and the IBOD system will completely halt. The E-stop buttons on the IBOD will light up and blink red. The system will not restart until the E-Stop is manually reset.

6.3.2.1 CASi-IBOD E-Stop Button Reset Procedure

1. Resolve the issue that triggered the necessity of the E-Stop.
2. Turn the red **E-Stop** button clockwise (the direction of the arrow on the button if present).
3. Press or Click the **E-Stop Reset** button on the *IBOD Main Tab* on the CORE software screen or press the green mechanical **Start/Reset** button on the IBOD frame. This will reset the E-Stop.
4. Wait five (5) seconds to restore full motorized power and air.
5. Press the green **Start** button on the *IBOD Main Tab* on the CORE software screen or press the green mechanical **Start/Reset** button on the IBOD frame. This will start the CASi-IBOD system.

6.3.3 E-Stop Rope-Pull Procedure (Optional Systems)

The red E-Stop Pull Cords run the length of CASI conveyors.

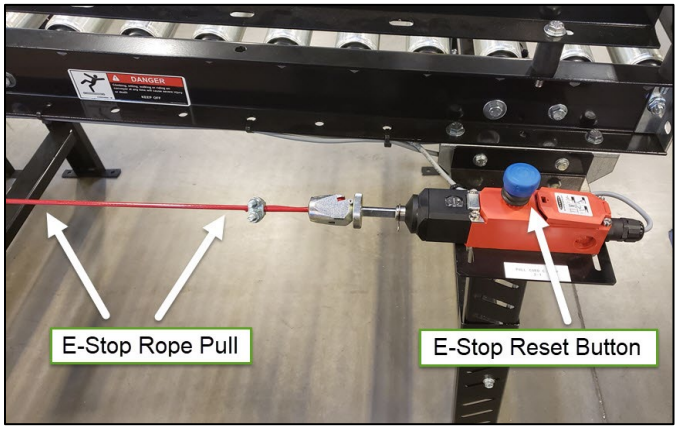


Figure 55 - E-Stop with Rope Pull and Reset Button

1. For immediate Conveyor shutdown, pull the **red E-Stop cord**. The **blue E-Stop Reset Button** also functions as an emergency button.

6.3.3.1 E-Stop Rope-Pull Reset Procedure

1. Ensure any issues are resolved, and the system is clear.
2. Reset the E-Stop by pulling up the **Blue E-Stop Reset button** on the top of the E-Stop assembly. This will release the E-Stop.
3. Press or Click the **E-Stop Reset button** on the *IBOD Main Tab* on the CORE software screen or press the green **mechanical Start/Reset button** on the IBOD frame. This will reset the E-Stop.
4. Wait five (5) seconds to restore full motorized power and air.
5. Press the green **Start** button on the *IBOD Main Tab* on the CORE software screen or press the green **Start/Reset** button on the IBOD frame.

6.4 CASi-IBOD

The CASI IBOD is a heavily automated box cutting system controlled by UI software and PLC on the system CORE. The following subsections provide detailed information on running the IBOD.

6.4.1 CASi-IBOD Main Electrical Power Box

A 240V electrical power box is standard on the CASi-IBOD Duo and Single. (**Figure 56** and **Figure 57**).

The system electrical power box has a red lever or red knob that will turn the CASi-IBOD power on and off. The power box is located on the outside frame of the CASi-IBOD.

Figure 56 – IBOD Lever Power Control Box

Figure 57 – IBOD Knob Power Control Box

Some IBOD systems have a transformer that distributes 480V power down to 240V power.

Figure 58 - 480V Transformer

WARNING: In the event of power loss, the CASi-IBOD can trigger a safety circuit monitor.

After power has been restored and the system is back on, if any run issues persist, press and reset an **E-Stop button.** Start the system as normal after the E-Stop.

If the issues are still not resolved, contact CASI support for resolution at:

(800) 930-3788, Mon.-Fri. 8 a.m. – 5 p.m. CST

6.4.2 CASi-IBOD Main Pneumatic Air Shutoff

The main pneumatic shutoff is located on the outside of the CASi-IBOD frame and is noted by the blue LOTO sticker.

Turning the Red valve towards SUP will turn the air on; turning the valve towards EXH will stop the air supply.

Figure 59 - IBOD Main Air Shutoff

WARNING: In the event of facility air loss or if the CASi-IBOD main air is turned off, the IBOD will need to re-fill the system with air.

After restoring the air supply to the IBOD, press an **E-Stop button** and wait several seconds for the IBOD to build air pressure. Once the air pressure has normalized, **Reset the E-Stop** and **Start** the system as normal.

6.4.3 CASI CORE HMI (Human Machine Interface)

The CASi-IBOD is controlled and operated via the CASI CORE HMI (Human Machine Interface), consisting of an all-in-one computer and a keyboard with a touchpad mouse.

CASI's proprietary SolidView™ Software drives the CASI-CORE HMI. Refer to the CASI SolidView™ Software section for more information on software functionality and operation.

Figure 60 – CASI CORE HMI (Human Machine Interface)

6.4.3.1 Starting the CASI CORE

To start the CASI CORE HMI (Human Machine Interface), press the power button on the back of the all-in-one computer.

Figure 61 - Starting the CASI CORE HMI

NOTE: The location of the power button on the back of the all-in-one computer may be in a different location than shown in the figure.

6.4.4 CASi-IBOD Start

The CASi-IBOD can be started by using the software Start button or the green Start button located on the frame of the IBOD.

6.4.4.1 HMI Software Start Button

The system is started with the **Start** button located in the SolidView™ software, running on the CASI CORE.

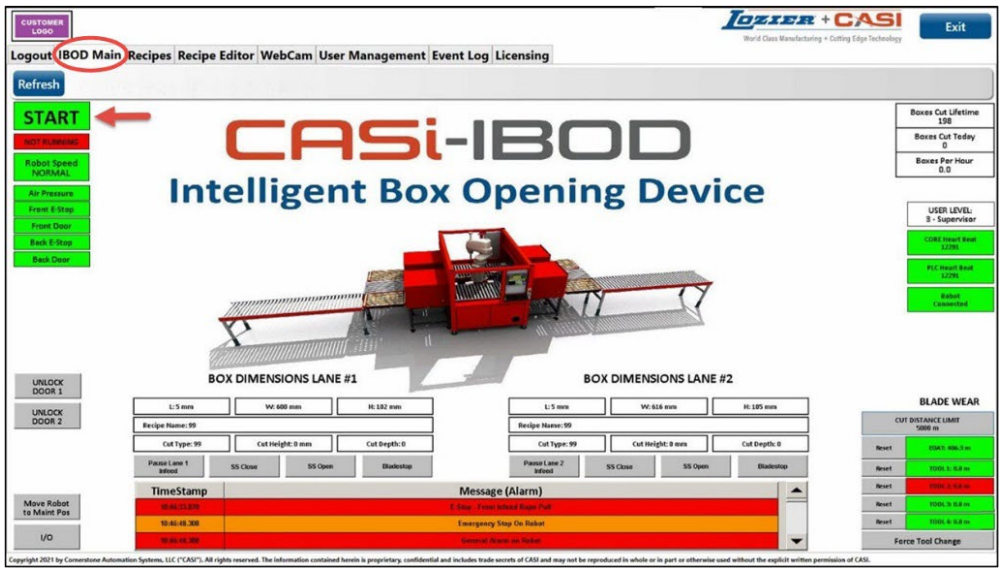


Figure 62 – HMI CORE Software Start Button

6.4.4.2 CASi-IBOD Frame Start Button

The **Start/Reset Button** is a small green button located on the front of the CASi-IBOD frame. The start button is used to start and reset the system after an E-Stop.

Figure 63 - CASi-IBOD Frame Start Button

6.4.4.3 Running the IBOD System

1. Ensure that all CASi-IBOD Zones and conveyors are clear of items before starting the system.
2. Ensure that the CASi-IBOD and conveyors are powered ON.
3. Ensure all E-Stop buttons are reset throughout the system.
4. If the CASI UI application is not running, Double-click the **SolidView™(CASI-IBOD)** icon on the Windows desktop.
5. The SolidView™ software will open.
6. Log in to the system. Instructions for logging in can be found in Section 7.1.1 Login.
7. The *IBOD Main* Tab will display.
8. Tap the *Recipe* tab. Make sure the correct cutting recipe is loaded.
9. Tap the *Main* tab.
10. Tap the green **Start** button on the *Main* Tab or press the green **Start** button on the IBOD frame.

6.4.5 CASi-IBOD Stop

The CASi-IBOD can be non-emergency stopped by using the software Stop button or the red Stop button located on the frame of the IBOD.

6.4.5.1 HMI Stop Button

In the SolidView™ software, the *IBOD Main* tab screen will have a red **Stop** button provided the system is running. (i.e., When the system is operating, the Stop button will display in place of the Start button.)

This **Stop** is used to halt the system and is sometimes referred to as a "soft stop."

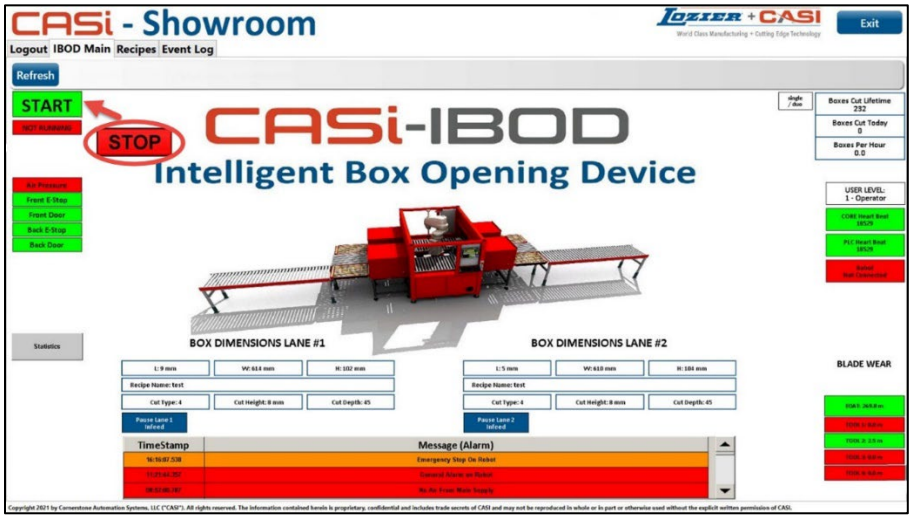


Figure 64 - Stop Button on CASI CORE HMI

To restart the system after a soft stop:

Select the **Start** button on the touch screen (as long as no physical E-Stops were enacted during the system halt).

6.4.5.1 CASi-IBOD Frame Stop Button

The Stop Button is a small red button located on the front of the CASi-IBOD frame. The stop button can be used to stop the system.

The frame **Stop** Button should be used to stop the conveyor in non-emergency situations.

Figure 65 - Stop Frame Button

6.4.5.2 End of Day Shutdown

We advise that the CASI system stay powered up but in a stopped state for any downtime.

To stop the system for downtime:

1. Click the system's **Stop** button on the UI Main screen.
2. **Log out** the current user out of the SolidView UI.

6.4.5.3 System Shutdown

We advise that the CASI system stay powered up, but in the event that powering off the CORE and equipment is necessary, follow these steps:

1. Click the system's **STOP** button (preferred) on the CASI CORE Main screen to stop all pieces of equipment on the system.
2. Click the **EXIT** icon on the SolidView™ interface. The **CASi-IBOD Software Closing** message displays.
3. Shut down CASI CORE through the Windows shutdown process.
4. Turn **OFF** all associated equipment and disconnect power according to current plant procedures and practices.

6.4.6 Accessing the CASi-IBOD Cutting Zone

The CASI IBOD has an acrylic door that protects the robot and users during cutting. The system will stop, and an E-Stop will be triggered when the door is unlocked and opened. Alert messages display on the software user interface when you unlock and open the door. The door will automatically latch and lock when you close the door.

Figure 66 - Open CASi-IBOD Cabinet Door

To open and close the door, complete the following steps:

1. Press the red **Stop** button on the HMI CORE SolidView™ screen.
2. Press and hold the red **Stop** button on the frame for 1 second to unlock the door. *Some systems may also have a door unlock button on the software.
3. Grab the handle and open the door.

6.4.7 CASi-IBOD Signal Tower

There is an LED signal tower on each CASi-IBOD system, sometimes called a stack light. The stack light visually displays the system status LED color for easy recognition.

Figure 67 – Signal Tower

There are three lights on the Signal Tower, which indicate the status of the system:

- **No Light**
  - Stopped without error
  - Powered down
- **Red – Solid**
  - Stopped with a critical error condition
  - E-Stop triggered
- **Button - Red Flashing**
  - Non-Active E-stop buttons will flash after the E-Stop is mechanically reset but not software reset.
- **Yellow Solid**
  - System Error, possible intervention needed
  - Force Tool change is running
  - A system setting is active that changes the functionality of the system, such as the Lane Pause button is active
- **Green and Yellow Flashing**
  - Possible Jam – photoeye or light curtain is blocked
  - IBOD stopping.
- **Green – Solid**
  - Running
- **Green Flashing**
  - Start up in progress
- **Sound – Audible Beeping**
  - The system will beep three times on start-up and beep once when the system is in an extended E-Stop.

7 CASi-IBOD Software Interface

CASI's proprietary Software, SolidView™, is installed on the CASI CORE HMI (Human Machine Interface) to operate the CASi-IBOD system.

NOTE: This document is a general overview of the operation of the CASi-IBOD. Our systems are usually customized per client, so you may not have all the features covered in this guide on your system. There may also be supplemental guides for additional or unique functionality of your customized system.

7.1 Starting the SolidView™ Software

The CASi-IBOD system has a desktop icon for starting the SolidView™ software, which may vary slightly in appearance or naming.

To open the CASi-IBOD SolidView™ Software from the CASI CORE HMI,

1. Double-click the **CASi-IBOD** icon.

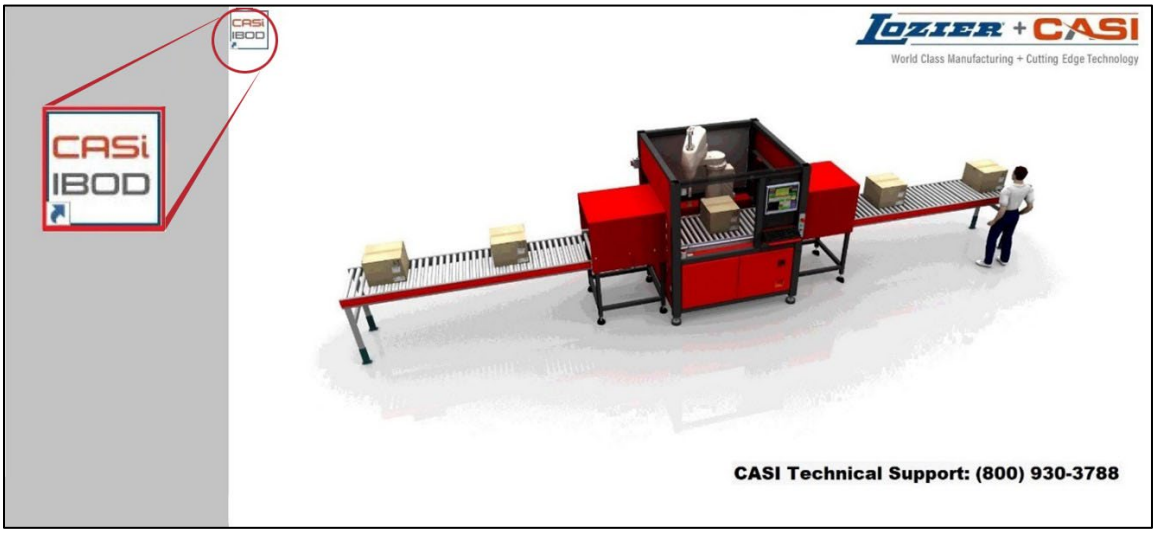


Figure 68 – Example CASi-IBOD SolidView™ Icon on CASI CORE HMI Screen

2. The *User Login* screen will appear.

7.1.1 Login

The *Login Tab* screen displays when the software is initialized or by clicking the *Login Tab*.

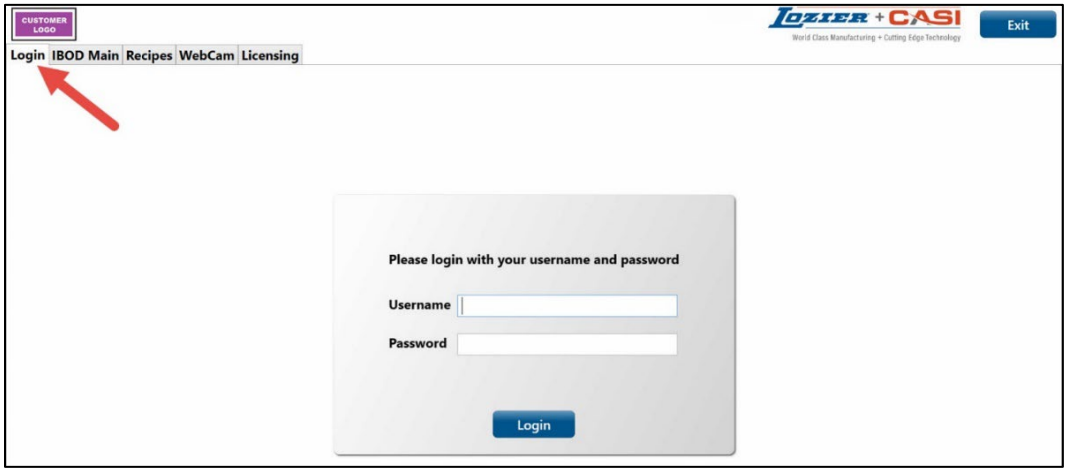


Figure 69 - Login Tab Screen

1. Enter the Username and Password.
2. Press **Login**.

Figure 70 – Login in Button

NOTE: Operators may view the *IBOD Main* Tab, but the operator must log in to run the system. The interface you see after logging in will depend on the user level assigned to you.

7.1.1.1 User Login Permission Definitions

The following list outlines the general permissions for each level of log in. *This list may vary as most client's user permissions are customized.

- **User/Operator (level 1)** -This user level has basic operational capabilities:
  - Start
  - Stop
  - E-Stop
  - Pause Lanes
  - Open Doors
  - Load Recipes
  - View Blade Wear status
  - View Message Alarms
  - View I/O layout screen
  - View Event log
- **Maintenance (Level 2)** – This user level has all basic operational capabilities that operators have, plus system control access:
  - Admin pages
  - Recipe Editor
  - Force Tool Head Change button
  - Blade Wear menus
  - Move robot to maintenance position button
  - System Layout
  - I/O controls
  - Web Cam access
- **Supervisor (Level 3)** - This user level has all basic operational and maintenance capabilities plus user management access.
- **Level 4: CASI Personnel** – CASI only permission levels. Used by CASI support.

7.1.1.2 Incorrect Login

If the Username and Password are incorrect, messaging will pop up to inform the user of the incorrect login. Enter the correct username and password to log in. After five incorrect login attempts, the system will lock the username out. A supervisor users will need to unlock the username and if needed, reset the password.

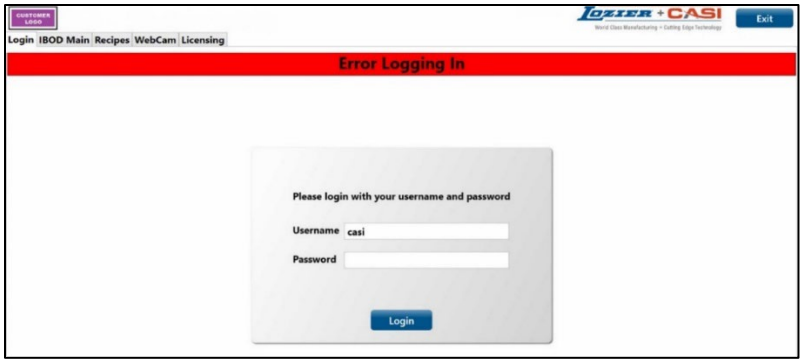


Figure 71 – Login Error

7.1.1.3 User Login Lockout

CASI systems have a user lockout feature and may not display lockout information. After five incorrect login attempts, the system will lock the username out. Supervisor users can unlock most user IDs. To unlock a login, see the Unlock User, 7.8.4 section of this guide.

7.1.1.4 Switch Users

To switch users, navigate to the *Logout Tab*, enter your username and password, then click the **Switch Users** button.

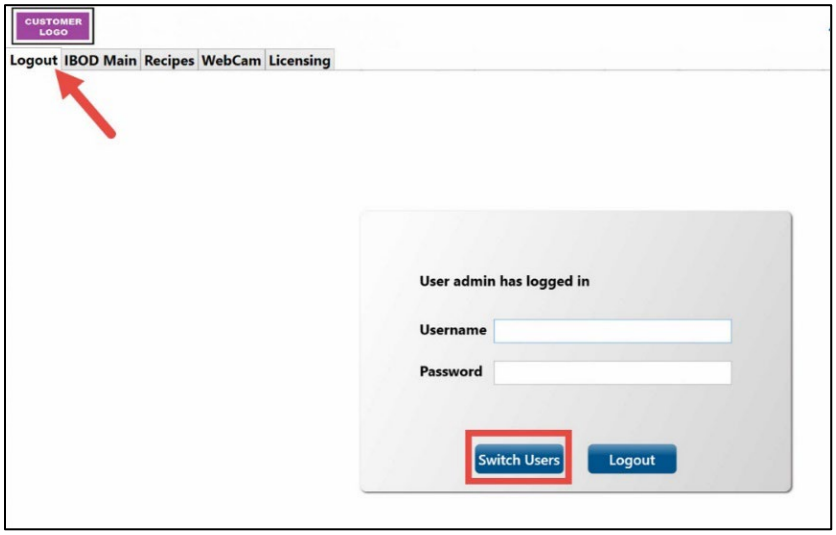


Figure 72 – Switch User Procedure

7.1.2 Logout

1. To log out, navigate to the *Logout Tab*.
2. The screen will display which user is currently logged in. Click the **Logout** button to log out.

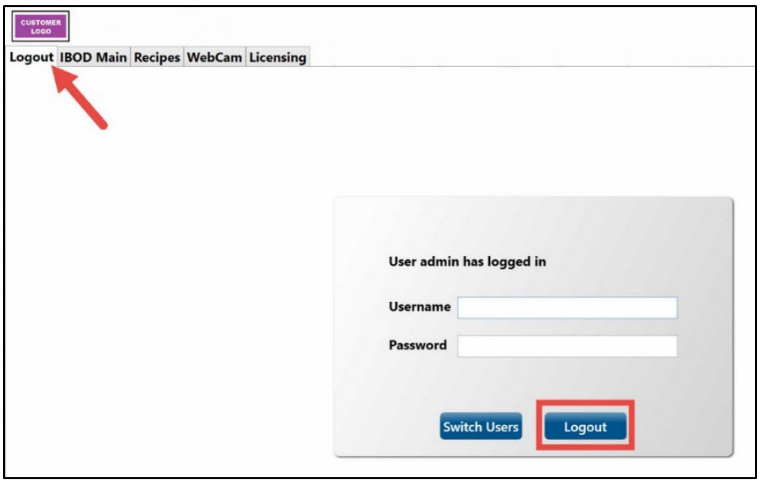


Figure 73 - Logout Procedure

Once logged out, the following message displays.

Figure 74 – Log out Successful

7.2 IBOD Main Tab

The **IBOD Main** tab displays the operational functions of the CASi-IBOD. This tab consists of control buttons, indicator lights, conveyor configuration, and CASi-IBOD blade wear indicators.

NOTE: **Some functionality described in the following sections will not be visible or available to all user levels**.

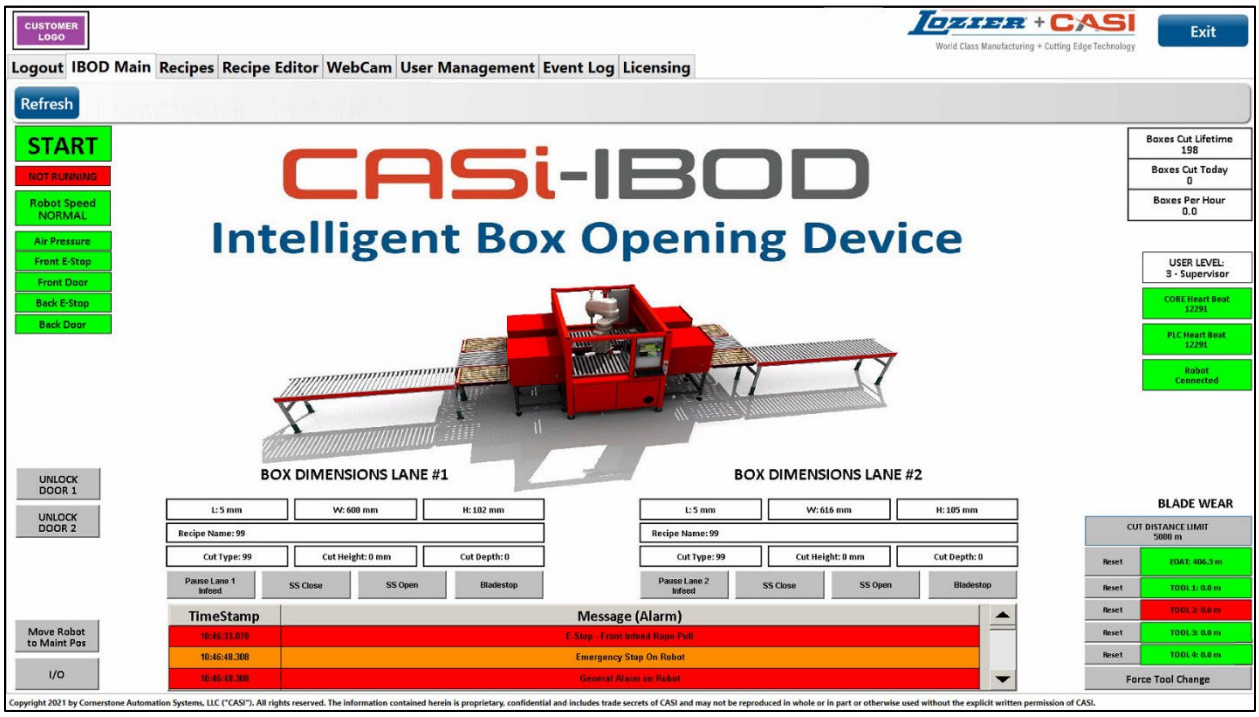


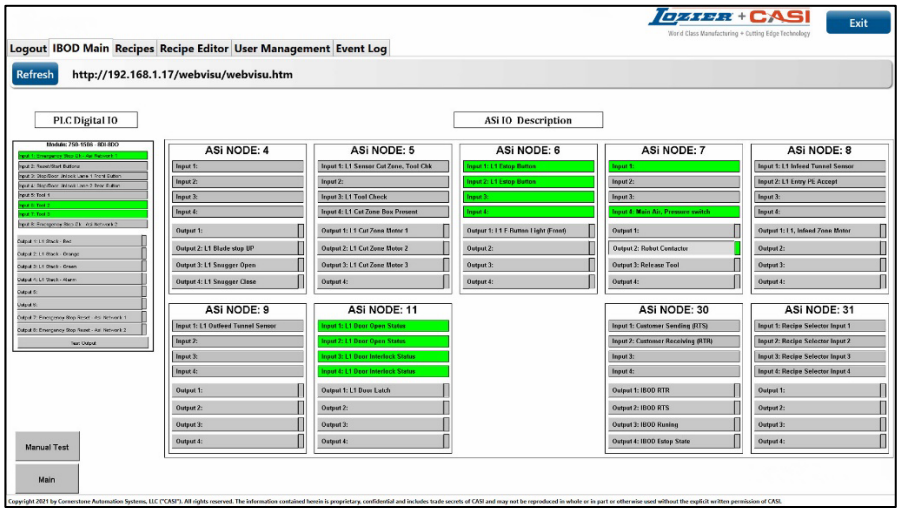
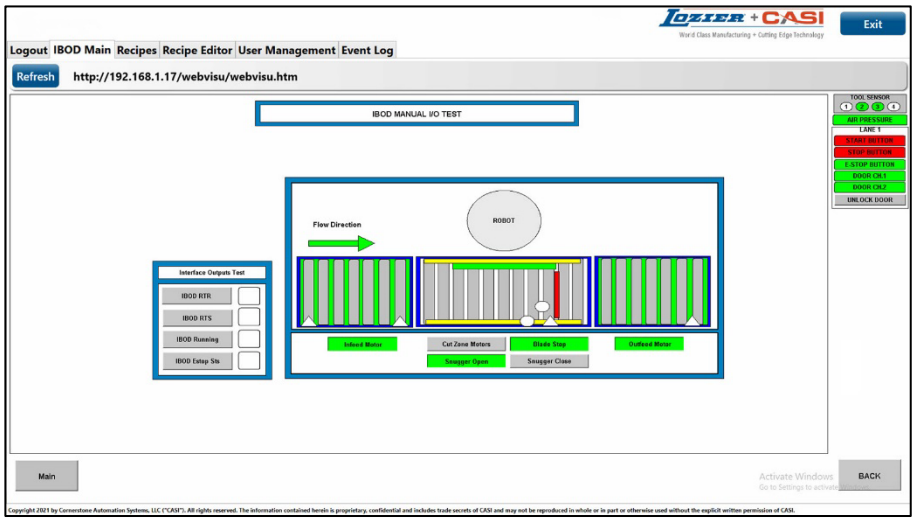
Figure 75 – IBOD Main Screen Tab

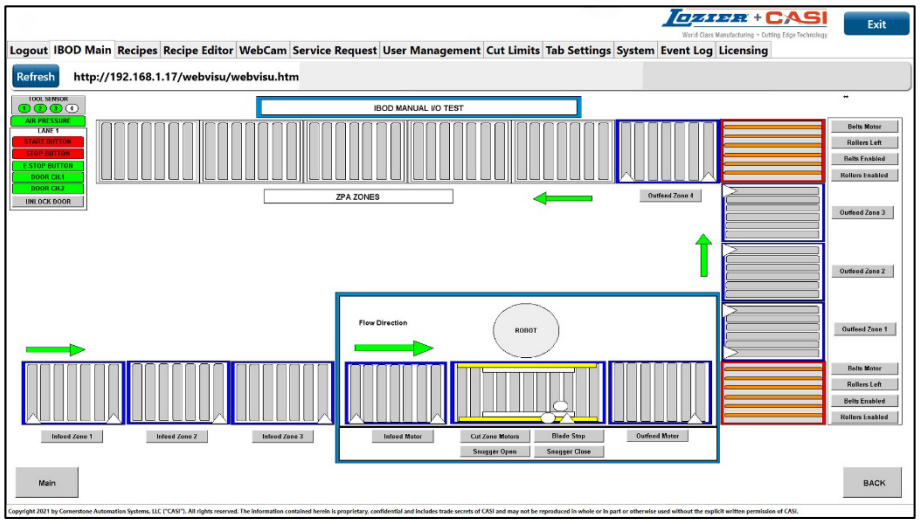
The following table describes some of the main software buttons. Some buttons may not be available on all systems or at all login levels.

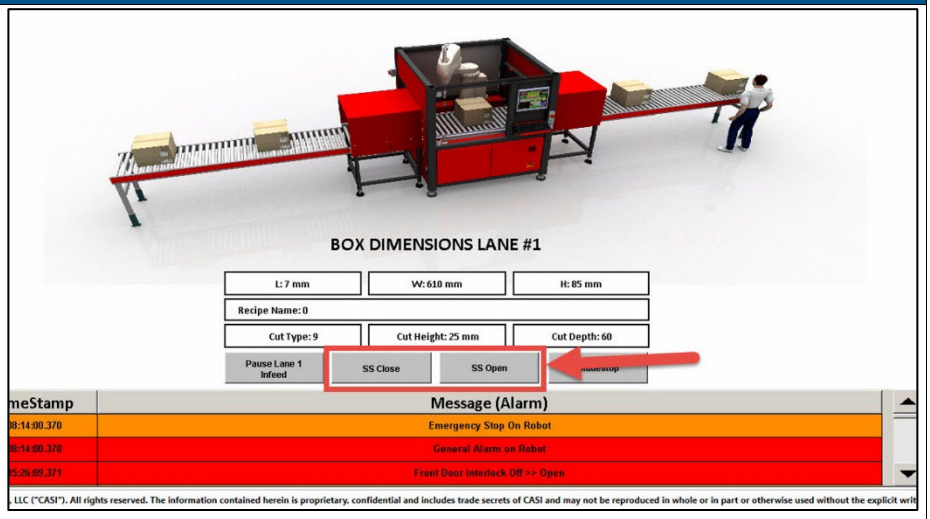
Table 3 - SolidView™ Main User Interface Button Descriptions

Button	Functionality
	The **START / STOP** toggle buttons enable you to start or stop the CASi-IBOD system. Once clicked, it will toggle between a green **START** and a red **STOP**.
	The **Exit** button closes the CASI SolidView™ Management Software and stops controls and operations of the system. Clicking the **Exit** button on the CASI CORE HMI screen will close the software. The **SolidView Exit Confirmation** message will display. 
	The **Refresh** button will reload the system UI on the screen. Pressing this button will often resolve display issues with the UI. (May take more than 1 push).
	To pause the conveyor infeed, press the **Pause Lane 1 Infeed** or **Pause Lane 2 Infeed** buttons. This process holds everything prior to the infeed tunnel. To resume operation, press the same buttons to unpause the infeed.
	Press this button to **unlock** the CASi-IBOD frame door. The system must be stopped for this button to function.
***Only Available to Advanced Login Levels**	
	Press this button to move the robot to a position near the door for maintenance purposes. The IBOD must be stopped for this button to appear and function.

Button	Functionality
	Press the **Start button** must be pressed to move the robot back to its home position. This will start the IBOD running process as normal.
Release Tool	This button will only appear above the "move to maintenance" button when the system is stopped, the robot is in the maintenance position and the IBOD door is open. Press this button to release the cutting tool head manually. **The cabinet door must be open so the operator can hold the tool when it is dropped/released.** A verification warning screen will alert the maintenance operator that the tool is going to be released and dropped.  See the **CASi-IBOD Tool and Blade Change companion Manual** for detailed instructions on using the tool head release functionality.

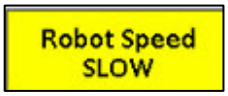
Button	Functionality
I/O	Press to open the "I/O screen."  This screen displays the system by ASi node, including conveyors and IBODs. Some systems may have multiple pages of ASi nodes. The **Layout** and **Manual Test** buttons may be located in the lower left corner of this screen.
Manual Test	On the **I/O page,** press the **Manual Test** button to open the component test window.  This page allows users to manually trigger components in each zone of the IBOD for CASI diagnostic purposes.

Button	Functionality
Layout	On the **I/O page**, press the **Layout** button. Some systems may have an expanded manual test section that includes conveyors and other modules. 
Admin Pages	The **Admin page** has robot position controls. Only trained or experienced users should attempt to adjust these controls. **Adjusting these controls can result in complex errors and loss of functionality.**
Robot Settings	**Robot Settings** are under the *Admin menu.* These settings are only for trained or experienced users. **Adjusting these controls can result in complex errors and loss of functionality**
Main	Press the "Main" button to return to the IBOD Main screen.
SS Open SS Close	Press **SS Close** to extend the Box Snugger and **SS Open** to return the Box Snugger to the closed position.

Button	Functionality
	
	Press to raise and lower the Bladestop bar.

There are several display boxes that function to keep you aware of the system's operational status. These are displayed on the IBOD Main Tab and will alert in green, yellow, or red, depending on the status.

Table 4 - Operational Status Indicators of the CASi-IBOD

Indicator	Definition	
Running / Not Running	Indicates if the system is Running (green) Not Running (red)	
Robot Speed	Indicates Robot Speed. This button is functional for some log in levels. Press to toggle the speed between Normal and Slow.	 
Air Pressure OK	Indicates if there is air pressure. This indicator toggles from green to red if the system air pressure is too low. If red, check the main air supply.	

Indicator	Definition
Front Estop	Indicates that the front E-Stop button has been pressed.
Front Door	Indicates if the front door is open. The front door has the CASi-IBOD logo on it and is located next to the CASI CORE HMI. **NOTE**: If the door unlock is opened, it will trigger an E-Stop. Doors must be opened and then reclosed to reset the lock.
Back Estop	Indicates that the back E-Stop button has been pressed. (CASi-IBOD Duo systems only.)
Back Door	Indicates if the back door is open. (CASi-IBOD Duo systems only.)
CORE Heartbeat	Indicates the system network traffic of the CORE.
PLC Heartbeat	Indicates the system network traffic of the PLC.
Robot Connected	This button indicates whether the robot is connected or not.
Boxes Cut Statistics	The *Boxes Count Statistics* displays boxes cut in the machine's lifetime, boxes cut today, and boxes cut per hour. You can click on this table to reveal additional statistics. See Section 7.2.4 Box and Shift Count Menu for more information.

7.2.1 Lane 1 and Lane 2 Information

The Box Dimensions Lane 1 and Lane 2 section of the IBOD Main Tab displays the dimensions of the previous boxes in the cut zones and the recipe currently loaded.

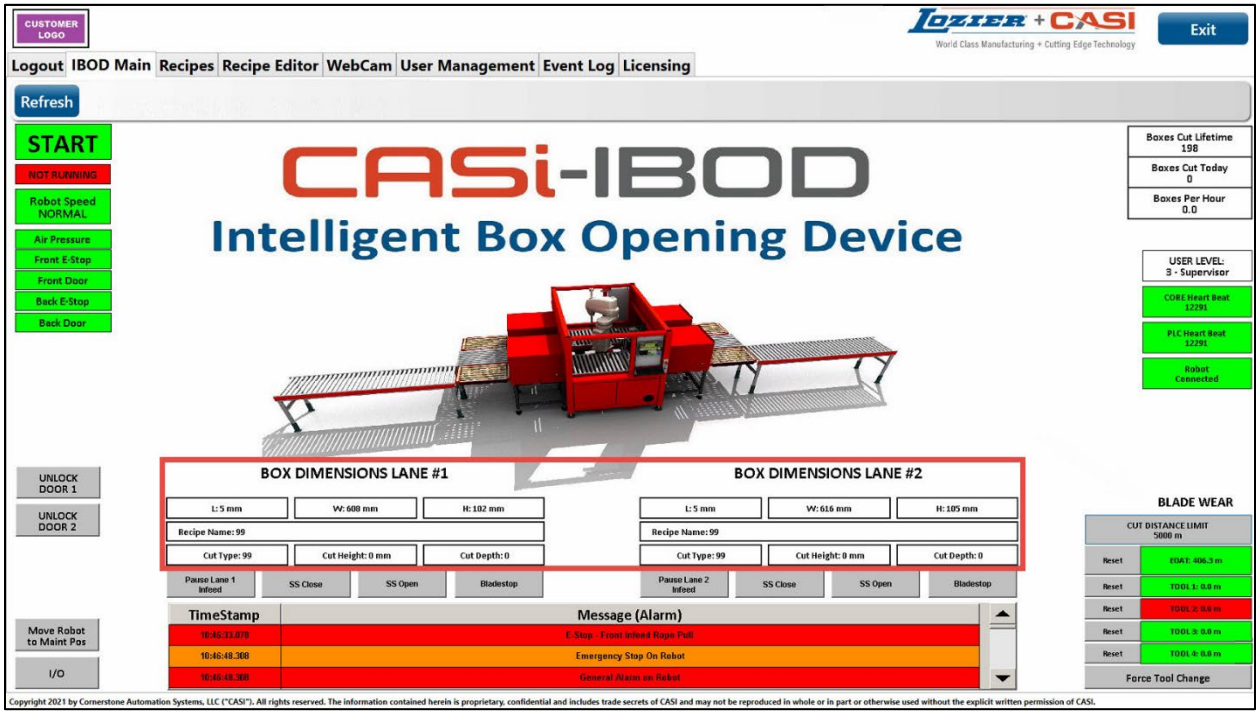


Figure 76 – IBOD Main Tab – Box Dimensions Table

The assigned recipe and cut offsets are shown for each side (Lane 1 or Lane 2).

On the CASi-IBOD Single, only Lane 1 shows on this screen. On the CASi-IBOD Duo, lanes can be run separately if needed by using the *Pause Lane 1 (or 2) Infeed* button.

7.2.2 CASi-IBOD Blade Wear

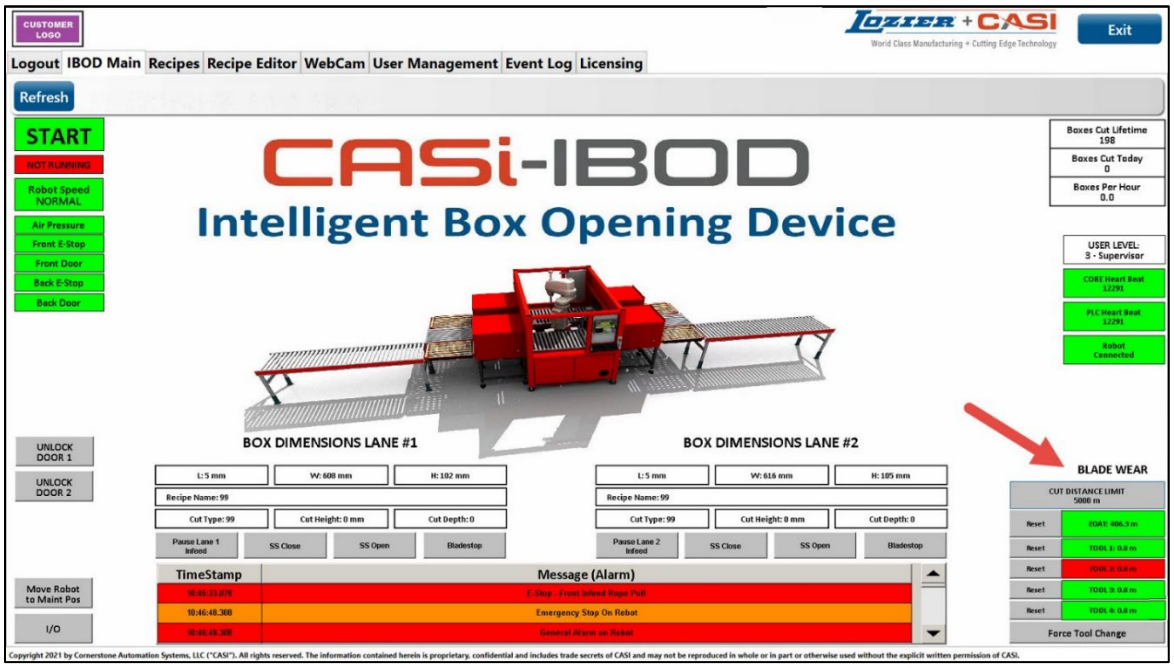


Figure 77 – IBOD Main Tab – Blade Wear Table Level 2-4

The CASi-IBOD **Blade Wear** table is calculated in meters and addresses the following:

- Red indicates that the tool is missing or is above the set **Cut Wear Distance Limit**.
- The CASi-IBOD **Blade Wear** table will indicate when the blades have met their preset level of use (Cut Distance). The tool status will display red if a blade has reached the set cut limit distance. Usable tools will display as green.
- The **Automatic Blade Changer** will automatically drop a tool that has reached the cut distance threshold and pick up the 1st usable tool.
- You can force a blade change by clicking the **Force Tool Change** button. Use this button if a blade is broken or boxes are no longer being cut. Stop the machine by pressing the red **Stop** button. After the CASi-IBOD has cleared out all boxes in process and stopped, then press the **'Force Tool Change'** button. The system will automatically switch to a new tool.
- The blade distance indicators display the total cut distance each tool has traveled.
- The **EOAT** (end of arm tool) indicator displays the status and total cut distance of the tool currently attached to the robot arm. This "distance" is used to calculate the wear of the CASi-IBOD robot's blade.
- Once the **Blade Distance** exceeds the preset **Blade Wear** setting, the CASi-IBOD will automatically replace the depleted blade tool with a new one if a spare tool is available.

- The Cut Distance Limit is a settable value. This value will be the threshold at which the tool will be discarded and placed in the tool holder.

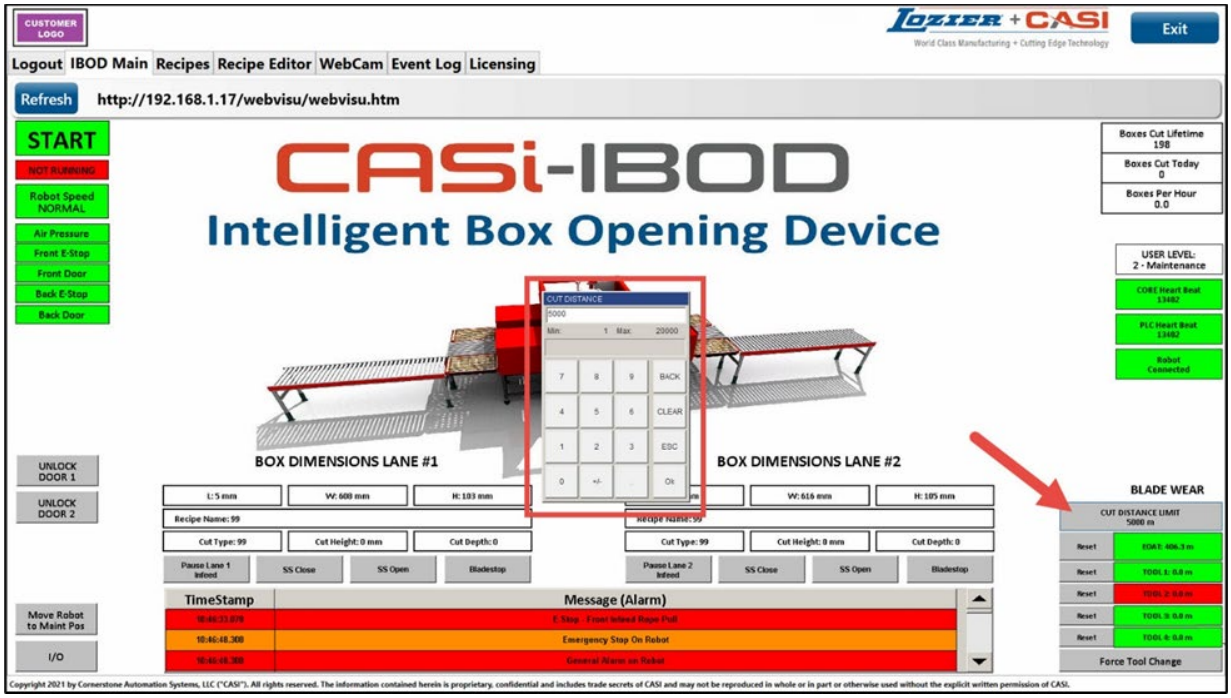


Figure 78 – Cut Distance Limit Box

- To set or reset this number. Click on the **Cut Distance Limit Box**
- The *Cut Distance Limit* popup will display

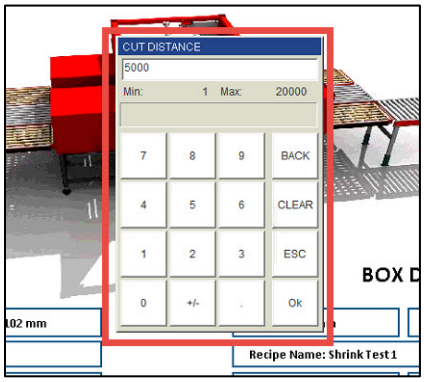


Figure 79 - Cut Distance Limit Pop-up

- Enter *Cut Distance* number and press **OK**
- Cut Distance is measured in linear meters by adding the length of each side of every box cut.

Supervisors and Maintenance personnel can reset the blade distance count by clicking the **Reset** button on the corresponding tool.

7.2.3 System Notification Alerts

System alerts are displayed in the Alarm Message box at the bottom of the screen. These alerts are color-coded and time-stamped. See section 9.2 CASi-IBOD System Alerts for a list of the most common alarm messages.

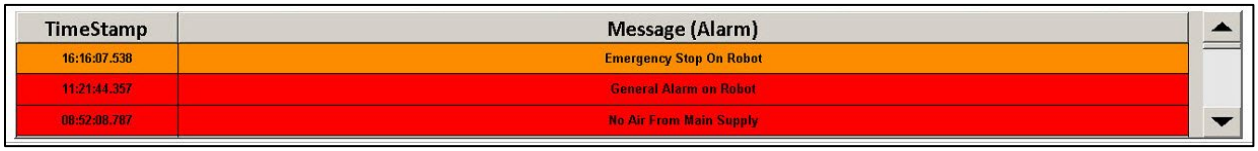


Figure 80 – System Alarm Message Box

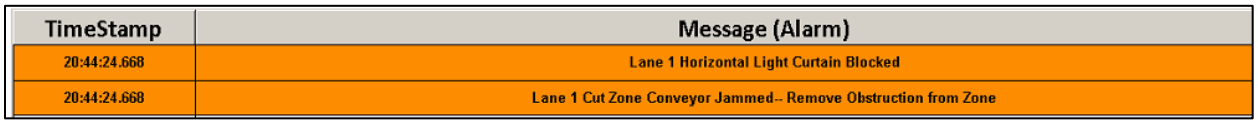


Figure 81 - Example Messages

Some critical alerts display a banner at the top of the screen. These alerts are color-coded and will display temporarily.

Figure 82 - Example Banner Alert

7.2.4 Box and Shift Count Menu

The **Box Cut Counter** display in the upper right-hand corner of the IBOD Main tab is also a menu. Users can click in the box to open the **Shift Count Menu**.

Figure 83 – Box Count Display

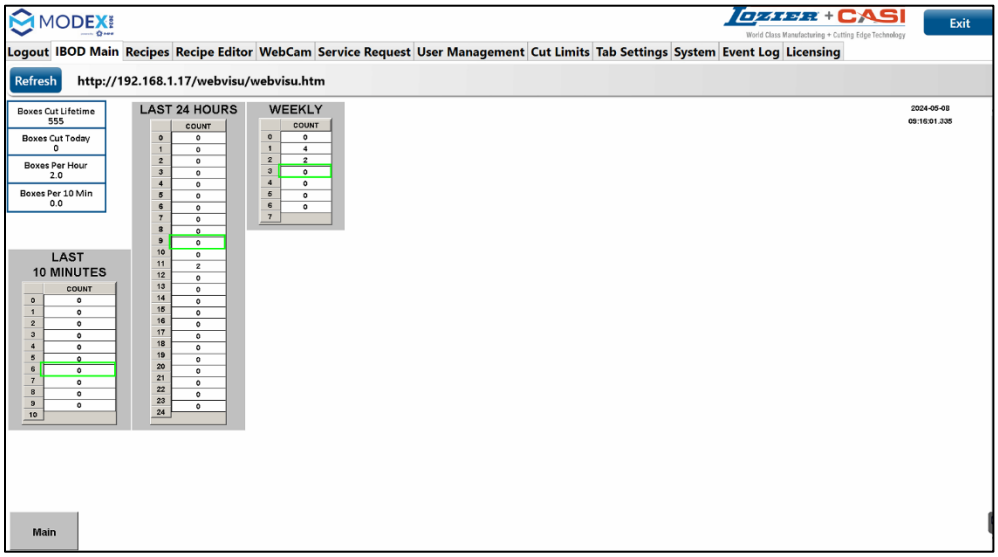


Figure 84 – Example Shift Count Menu

The Shift Count menu showcases box tallies progressing through the system in 10-minute intervals, along with hourly counts for a full 24-hour period and weekly totals.

Click the **Main button** to return to the Main IBOD screen.

7.3 Recipes Tab

The Recipes Tab allows users to view, load, edit, and create recipes depending on permission levels.

7.3.1 Load a Recipe

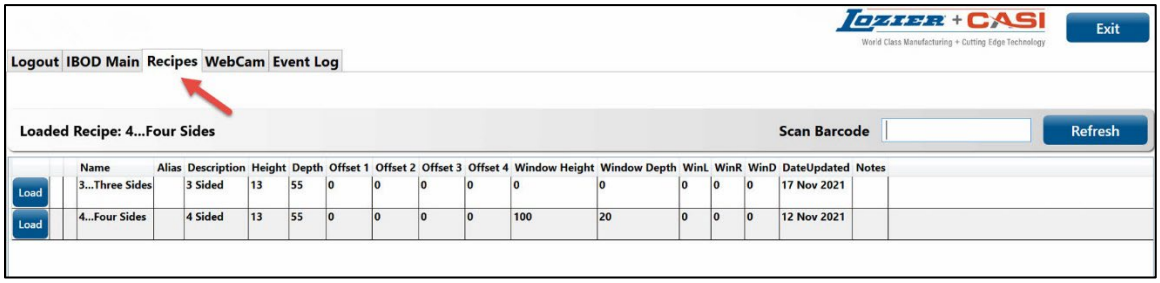


Figure 85 – Recipes Tab

All user levels can do the following:

- Load a recipe

To select and load a Recipe, follow these steps:

1. Tap the **Recipe Tab** menu, as seen in **Figure 85**
2. Click the **Load** button on the Recipe you want to use.

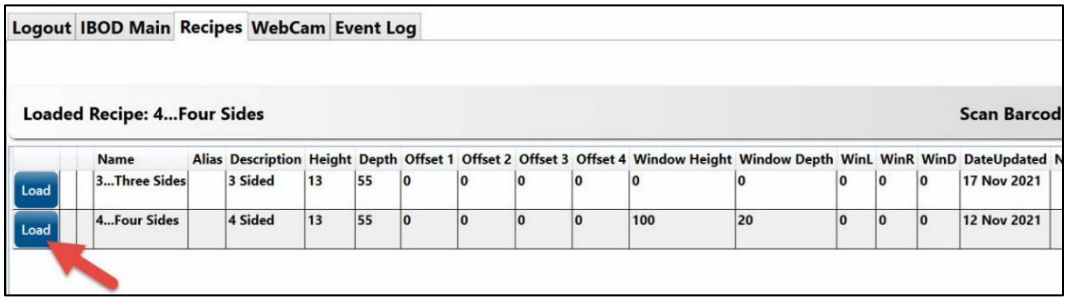


Figure 86 – Selecting and Loading a Recipe

3. A green banner “IBOD will cut with recipe” alert will display at the top of the screen.

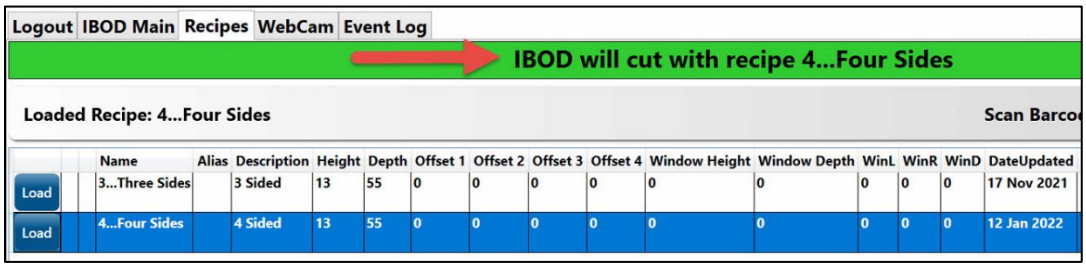


Figure 87 – Loading Recipe Message

4. The CASi-IBOD will cut with that Recipe. The screen displays the recipe that is loaded.

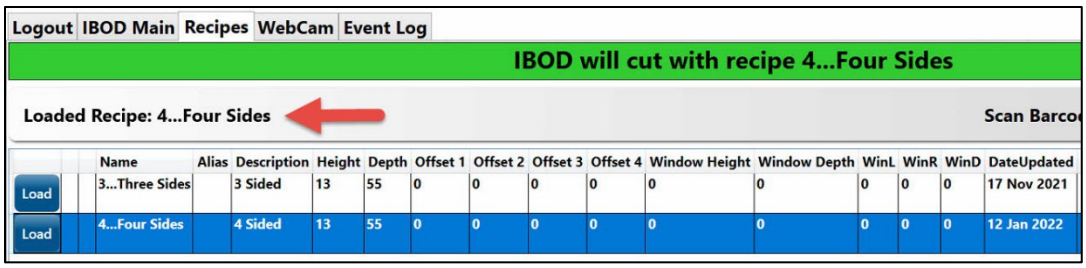


Figure 88 - Loaded Recipe Displays on Screen

7.3.1.1 Scanning Barcode Numbers as Reuseable Recipes (optional systems)

Optionally, a hand scanner can be used to scan and load a recipe, provided the recipe is named exactly the same as the the barcode number of the box and was previously saved as a recipe.

To load a recipe using a hand scanner, follow these steps:

1. Tap on the **Recipe Menu** tab.

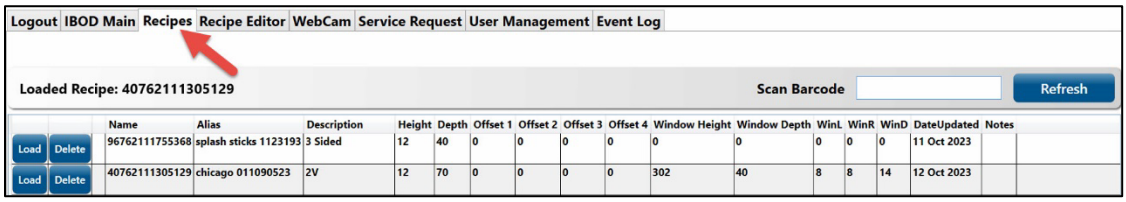


Figure 89 - Recipe Tab Menu

2. Tap the **Scan Barcode box** to highlight the input box.

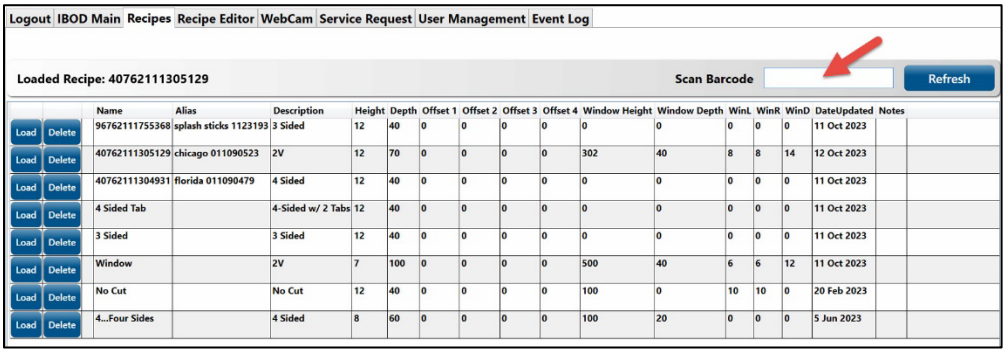


Figure 90 - Scan Barcode Box

3. **Scan** the barcode of the box with the hand scanner. (Management should have created the recipe already.)
4. The recipe will load, and a green banner will show at the top of the screen, stating, "IBOD will cut with the recipe."

7.3.2 Recipe Tab – Level 2 Maintenance and Level 3 Supervisor

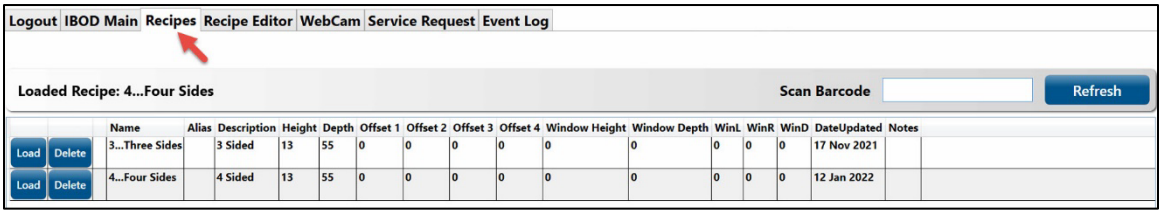


Figure 91 – Recipes Tab Level 2 Maintenance and Level 3 Supervisor

Level 2 Maintenance personnel and Level 3 Supervisors can do the following on the Recipes screen:

- Load
- Delete Recipes – optional on some systems.

7.3.2.1 Load

To select and load a Recipe see previous section 7.3.1 Load a Recipe.

7.3.2.2 Delete a Recipe (optional on some systems)

To delete a recipe, follow these steps:

Click the **Delete** button on the Recipe you want to delete.

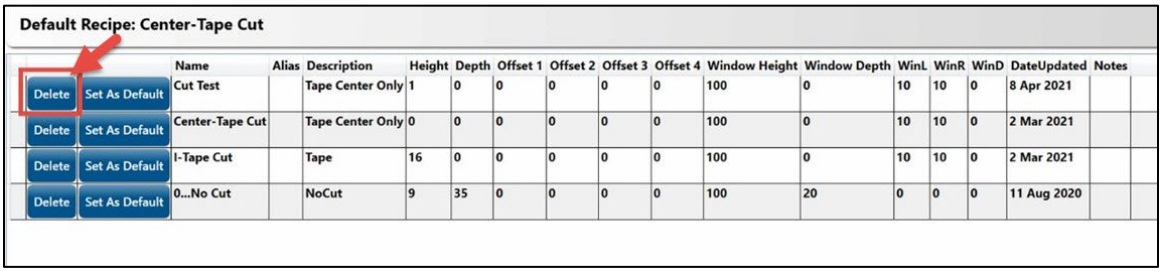


Figure 92 - Delete a Recipe

A message will ask for confirmation to delete the Recipe. Click **Yes** to confirm or **No** to cancel the deletion.

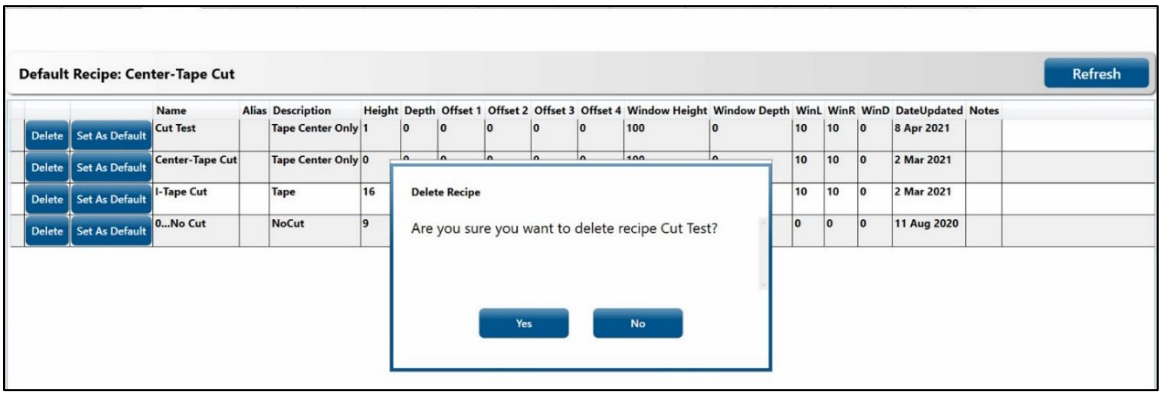


Figure 93 – Delete Recipe Confirmation Message

A green banner "Recipe Deleted" alert will display at the top of the screen, and the deleted recipe will no longer display in the available recipe list.

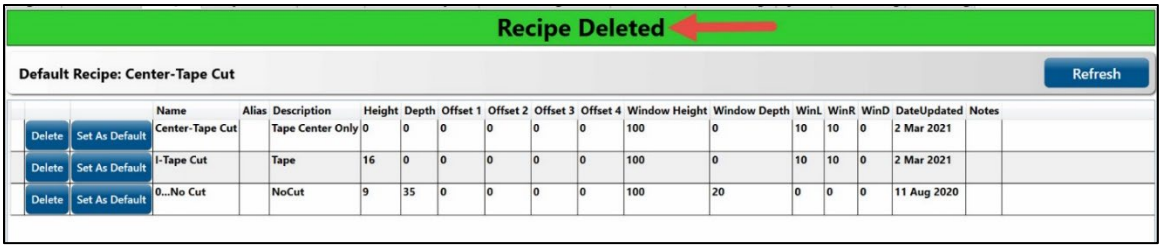


Figure 94 – Deleted Recipe Confirmation Banner

7.4 Recipe Editor Tab – Level 2 Maintenance and Level 3 Supervisor

Level 2 Maintenance personnel and Level 3 Supervisors can do the following on the Recipe Builder screen:

- Edit Recipes
- Add Recipes

7.4.1 Searching for a Recipe

You can **Edit a Recipe** by first searching for the recipe name:

1. Enter the Recipe name in full and click the **Enter** button.
2. Enter a partial Recipe name, locate it in the list, and double-click on it.

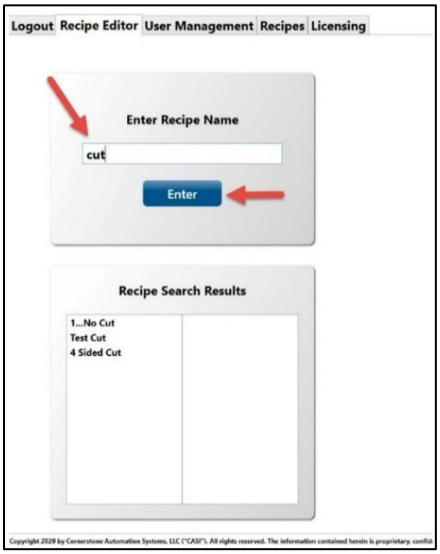


Figure 95 -Searching for a Recipe

7.4.1.1 Entering a Complete Recipe Name Method

Enter the Recipe name in full and click the **Enter** button. A green recipe found message displays.

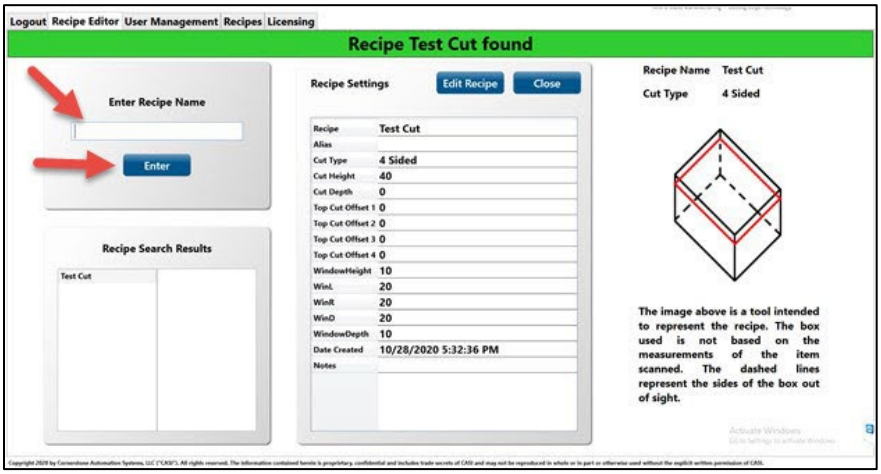


Figure 96 – Entering Complete Recipe Name

7.4.1.2 Entering a Partial Recipe Name Method

You can enter the full Recipe name or search for a partial Recipe name/number by following these steps:

1. Enter a partial Recipe name.
2. From the *Recipe Search Results* list, select the **Recipe** you want to use.
3. Double-click on that Recipe.

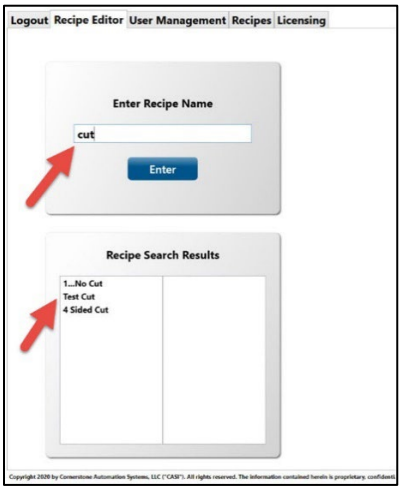


Figure 97 – Entering a Partial Recipe Name

7.4.2 Adding a Recipe

Follow these steps to add and set up a new recipe:

1. Enter a new Recipe name on the Recipe Editor screen, then click **Enter**.

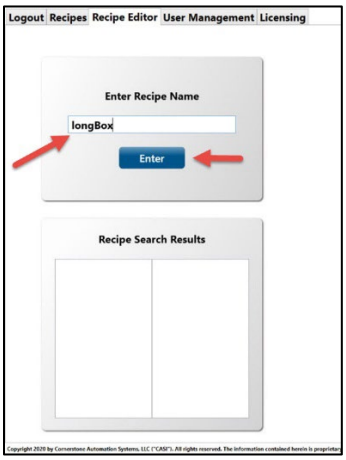


Figure 98 – Adding a Recipe

2. A popup message will display that the recipe does not exist. Click **Yes** to create the new recipe or **No** to cancel the recipe creation.

Figure 99 – Recipe Creation Popup Message

3. Choose the Cut Type from the available types on the Cut Type screen. You can add an **Alias** (alternate name or description) and **Notes** (optional)
4. After choosing a Cut Type, additional tabs will appear along the top Recipe Editor menu. Depending on the cut, the tabs available will be different. These tabs control the parameters of the cut and may or may not need to be edited for optimal cutting. Examples:
    a. On the Top Cut screen, set the **Cut Depth** by using the **+** and **–** buttons to increase or decrease the depth that the blade cuts into the box.
    b. On the Top Cut screen, set the **Cut Height** by using the **+** and **–** buttons to change the distance from the top edge of the box that the robot will cut.
5. Click **Save**.

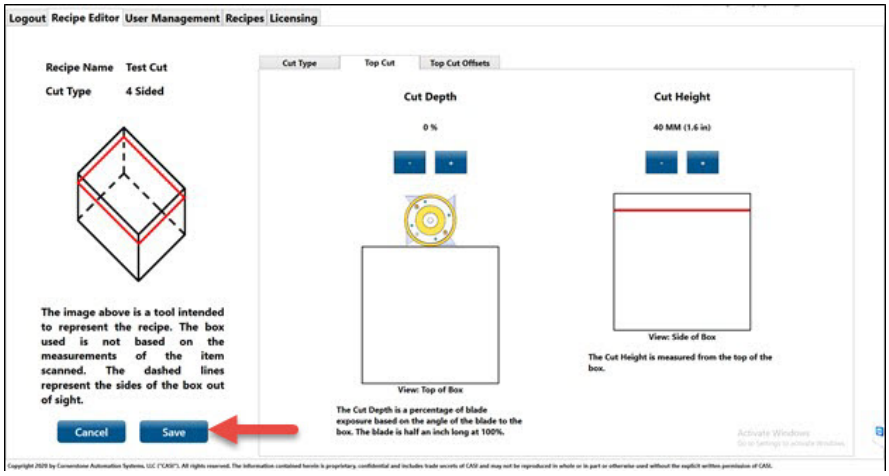


Figure 100 – Configuring Top Cut Depth and Top Cut Height

6. A message will display confirming the recipe has been saved and assigned.

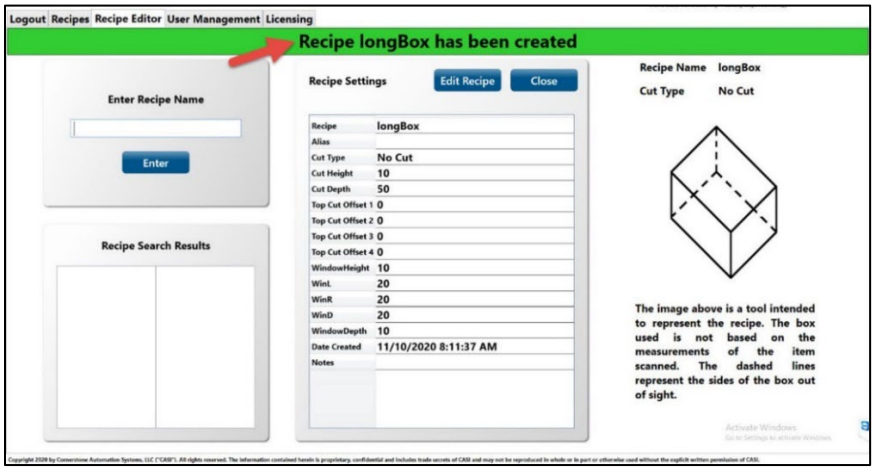


Figure 101 – New Recipe Has Been Assigned Message on Screen

7.4.2.1 Using a Barcode to Create a Recipe Name (optional on some systems)

Barcodes can be used to create a recipe name so that when a barcode is entered or scanned, the IBOD will automatically load the recipe associated with the barcode.

While barcode methods can be useful for certain tasks, we encourage other approaches for capturing and loading recipes.

To add a barcode as a recipe name:

1. Tap the **Recipe Editor Tab** menu.

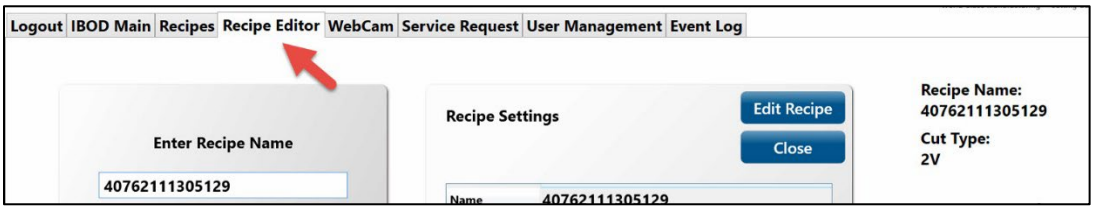


Figure 102 - Recipe Editor

2. Tap the **Enter Recipe Name** box.
3. **Scan** the barcode number of the box with a hand scanner. The number will populate in the *Enter Recipe Name* box when successfully scanned. Alternatively, type the barcode number in the Enter Recipe Name box.
4. A dialog box will pop up showing: **Recipe does not exist. Would you like to create it?** Tap **Yes**.

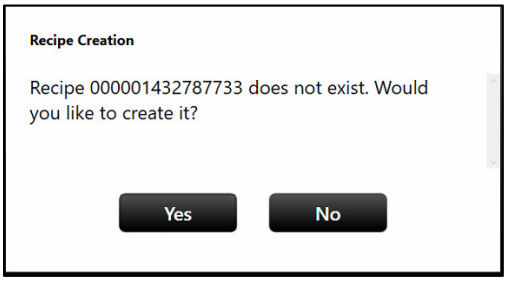


Figure 103 - Recipe Creation Pop Up

5. The standard *Create Recipe* menu will display. **Select** the desired cut, navigate the tabs to edit any cut parameters that are necessary, and add an alias, such as product name, to help identify what the barcode belongs to to complete the recipe creation process.

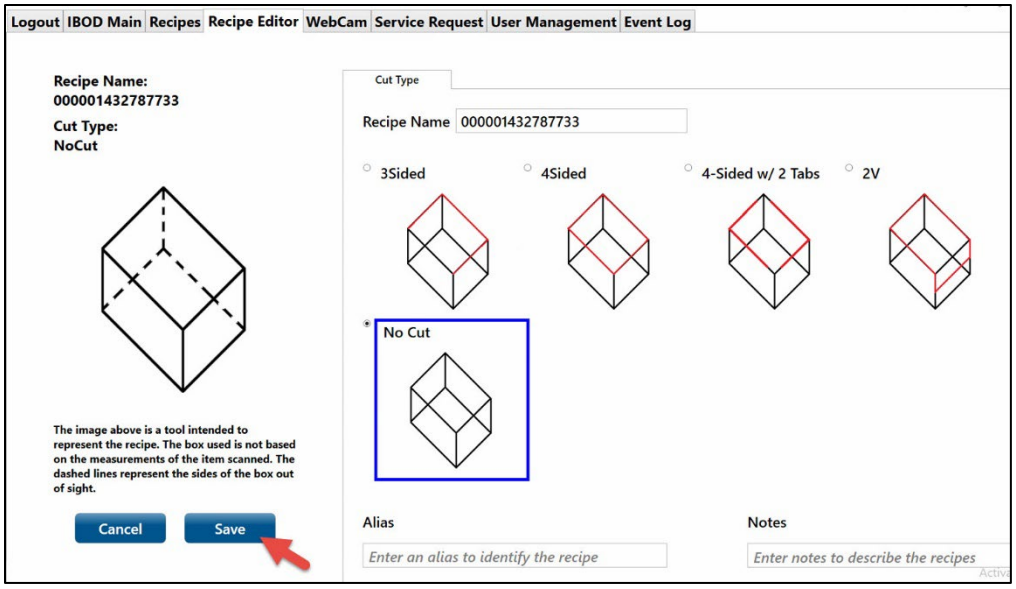


Figure 104 - Recipe Editor Example

6. Tap the **Save button** as seen above in **Figure 104.**
7. A "recipe has been created" banner will show at the top of the screen. The recipe will now be available in the Recipes menu. A hand scanner can be used to load the recipe as long as the name matches the barcode.

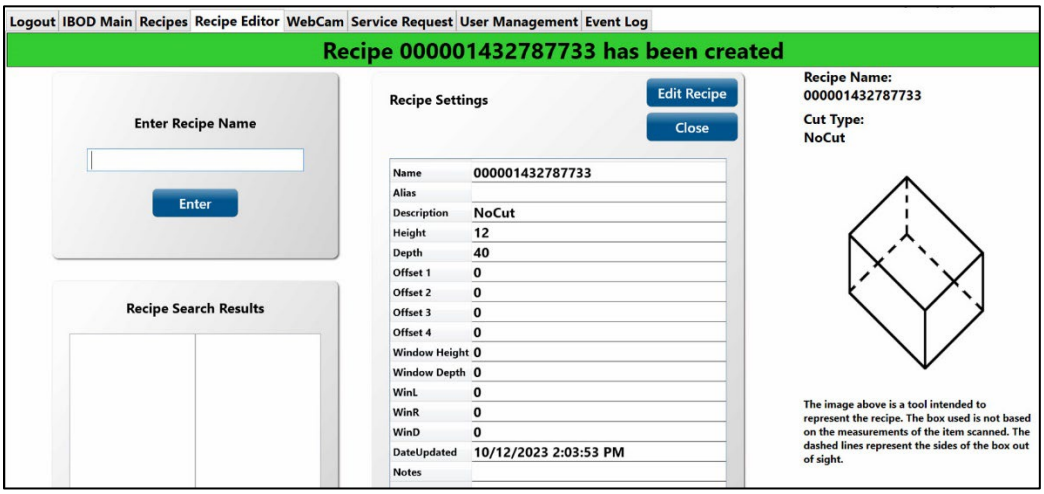


Figure 105 - Recipe Created Success

7.4.3 Editing the Recipe

To edit the Recipe, click the **Edit Recipe** button.

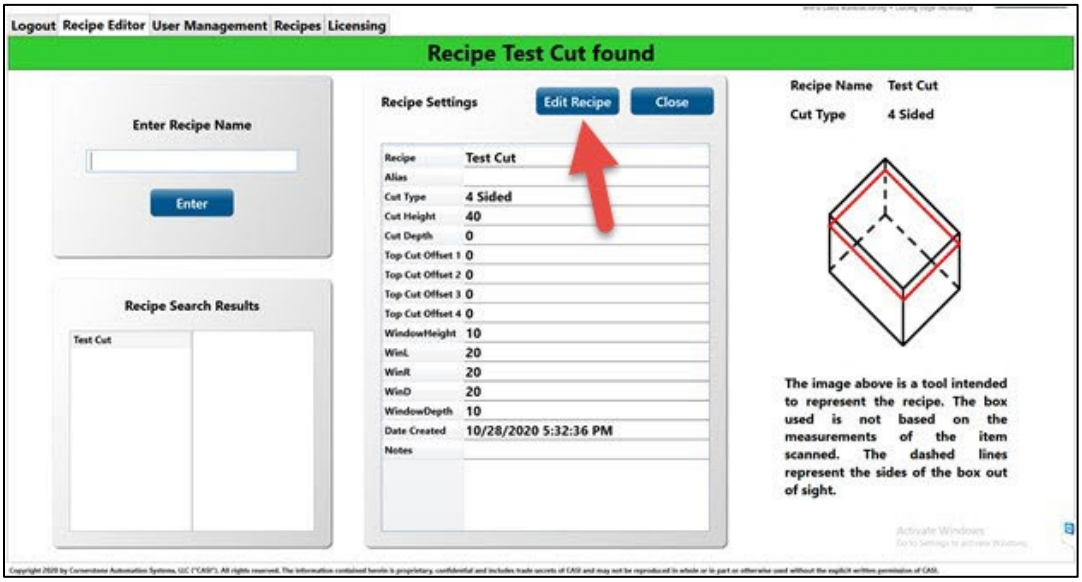


Figure 106 – Edit Recipe Button

You can edit the following:

- **Cut Type** - 3 Sided, 4 Sided, 4 Sided with Tabs, Window or No Cut.
- **Top Cut** – Top Cut Depth or Top Cut Height.
- **Top Cut Offsets** – used to increase or decrease the depth of cuts on the sides of the box.
- **Window Cut** – optional on some systems.

7.4.3.1 Cut Type Tab

To change a **Cut Type**, select the cut type you want to change to, then click the **Save** button.

You can add an **Alias** (alternate name/description) and **Notes** (optional).

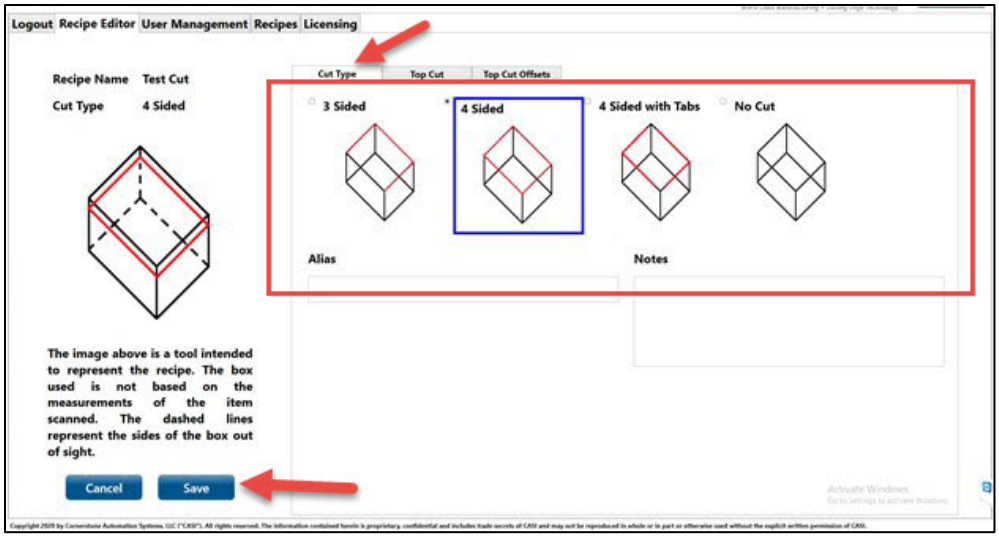


Figure 107 – Cut Type Tab, Save Button

7.4.3.2 Top Cut Tab

There are two primary settings on the top cuts – **Top Cut Depth**, which is a measurement of how deep the blade penetrates the side of the box, and **Top Cut Height**, which is how far from the top edge of the box the cut will be made.

To change a **Top Cut Depth**, use the **+** or **–** buttons to increase or decrease the depth.

To change a **Top Cut Height**, use the **+** or **–** buttons to increase or decrease the height.

Click the **Save** button.

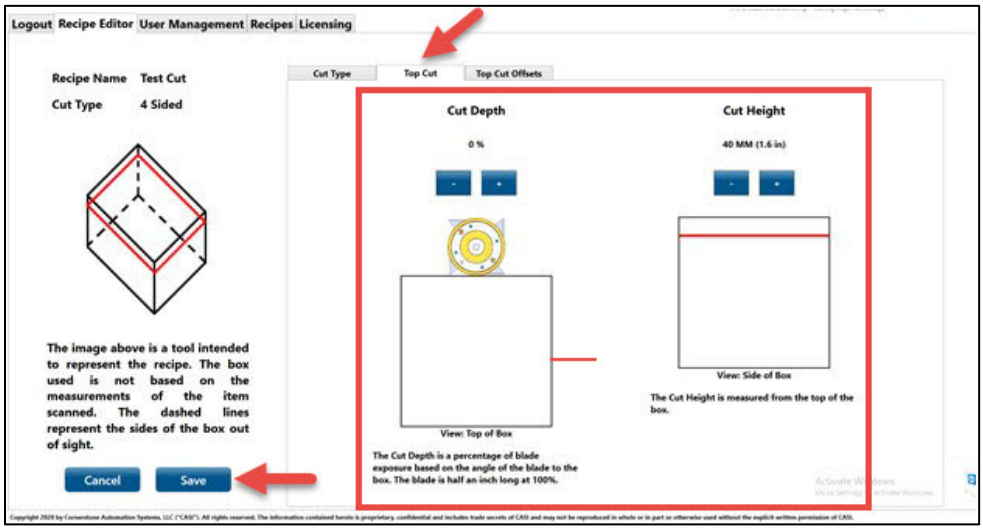


Figure 108 – Top Cut Tab

7.4.3.3 Top Cut Offsets Tab

The **Top Cut Offsets** tab is used to individually adjust the top cut offsets on each side of the box.

Use the **+** or **–** buttons on the **Offset 1**, **Offset 2**, **Offset 3**, and **Offset 4** sides to increase or decrease the distance the cutting tool travels from each side of the box, then click the **Save** button.

**Note: As a general rule, the Top Cut Offsets should remain set to '0' and are only adjusted in special circumstances.*

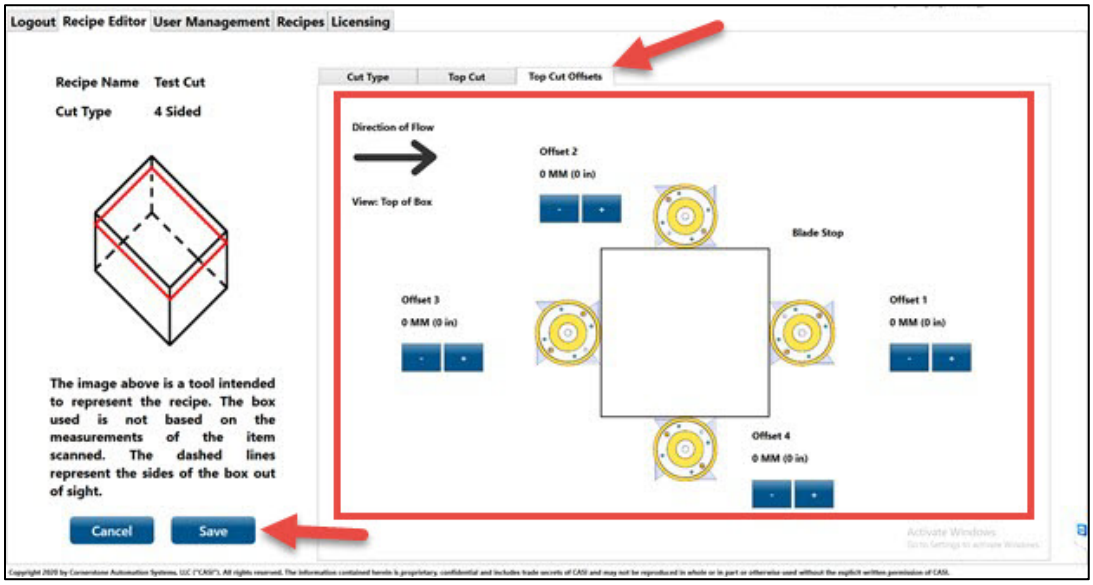


Figure 109 – Top Cut Offsets Tab

7.4.4 Loading the New Recipe

To select and load the new recipe to be used to cut boxes, follow these steps:

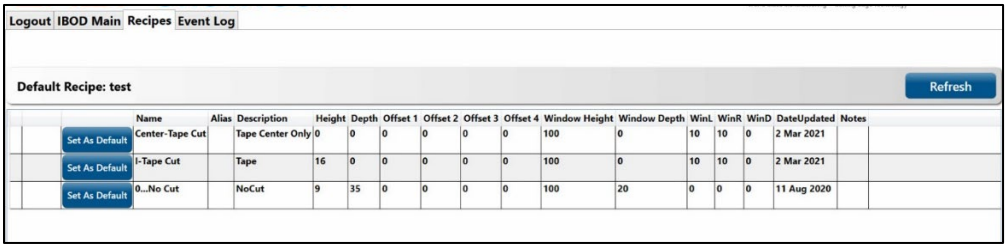


Figure 110 – Recipes Tab – Level 1 User

1. Tap the **Recipe Tab** menu.

2. Click the **Load** button on the Recipe you want to use.

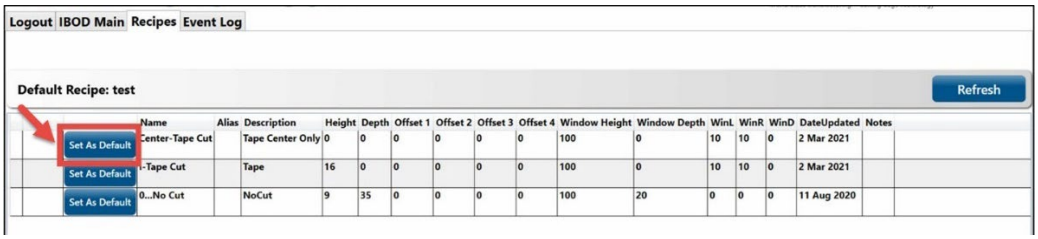


Figure 111 – Selecting and Loading a Recipe

3. A green banner "Cut Has Been Set As Loaded" alert will display at the top of the screen.

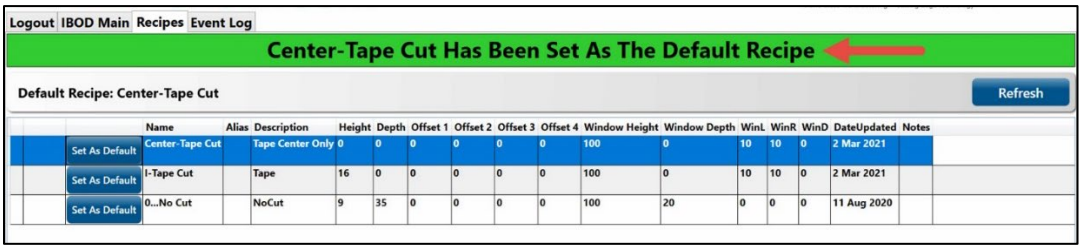


Figure 112 – Loading Recipe Message

4. The CASi-IBOD will cut with the loaded recipe. The screen displays which recipe is selected.

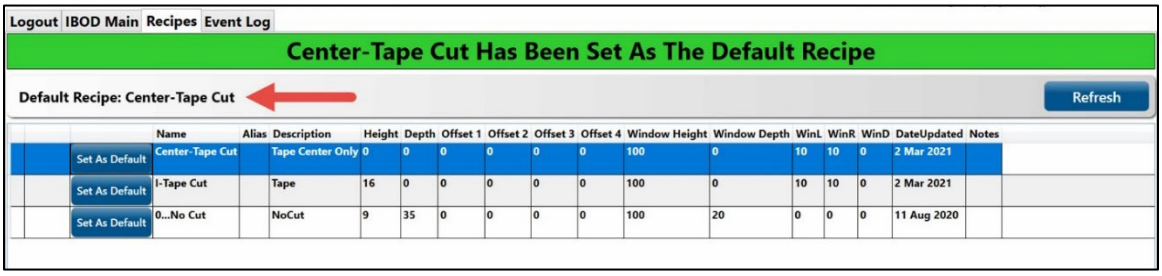


Figure 113 – Default Recipe Displays on Screen

7.4.5 Optional Window Cut

Note: This is an optional feature on some systems. You will not see the Window Score if your system does not have this option.

To modify the Window Cut height or offset, follow these steps:

1. In the Cut Type tab, select the **Window Score** option.
2. On the Window Score screen, set the **Window Height** by using the **+** and **–** buttons to increase or decrease the distance from the top edge to which the horizontal window line will be cut.
3. On the Window Score screen, set the **Vertical Cut Offset** by using the **+** and **–** buttons to increase or decrease the distance from the sides of the box where the vertical lines will be cut.
4. Click **Save**.

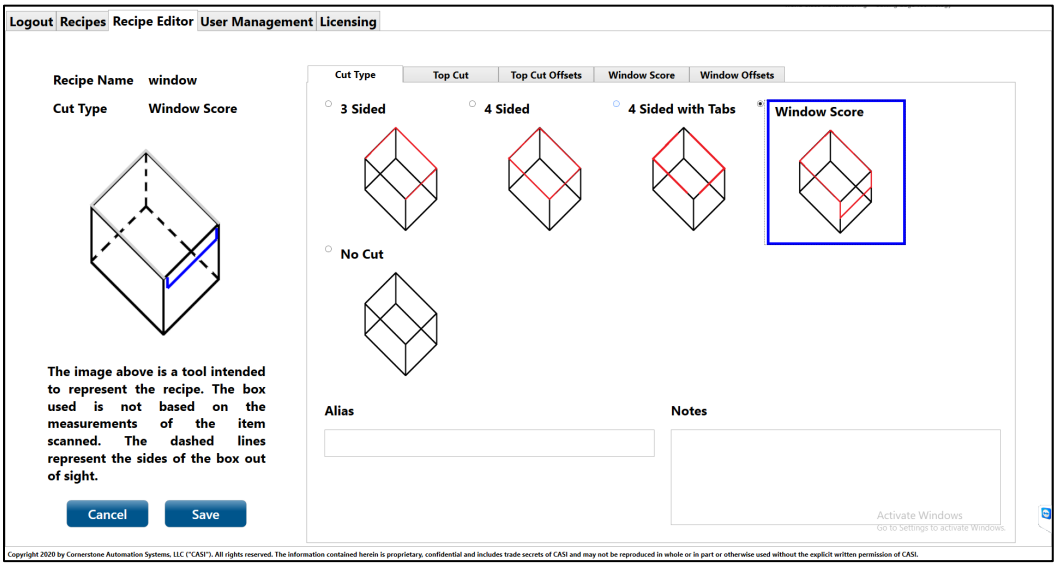


Figure 114 – Window Score Option

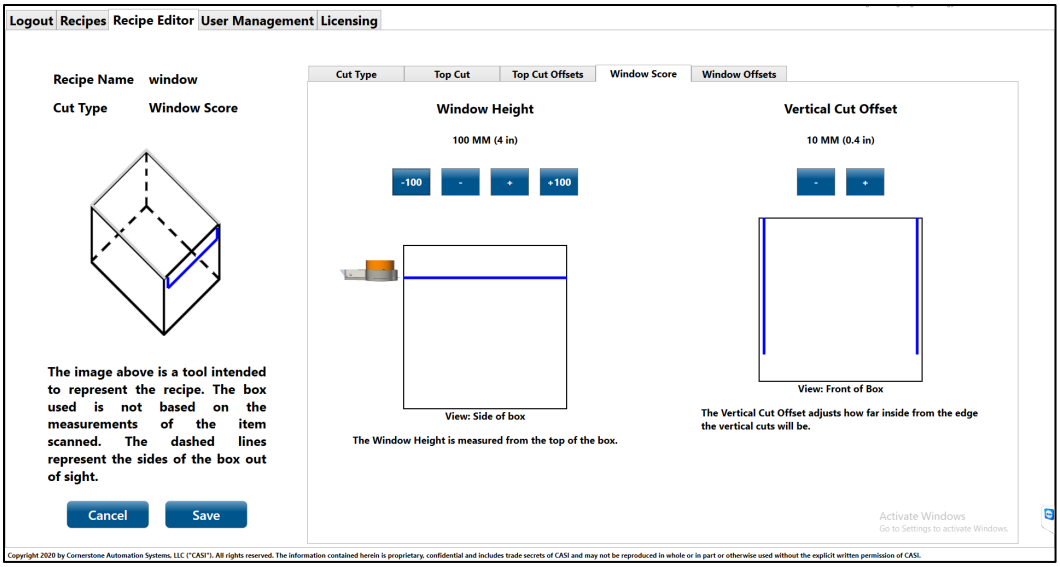


Figure 115 – Adjusting the Window Score Height and Offset

In the Window Offsets tab, follow these steps:

1. On the Window Offsets screen, set the **Vertical Cut Depth** by using the **+** and **–** buttons to increase or decrease the depth of the vertical cuts.
2. On the Window Offsets screen, set the **Window Score Depth** by using the **+** and **–** buttons to increase or decrease the depth the blade cuts the horizontal window score.
3. Click **Save**.

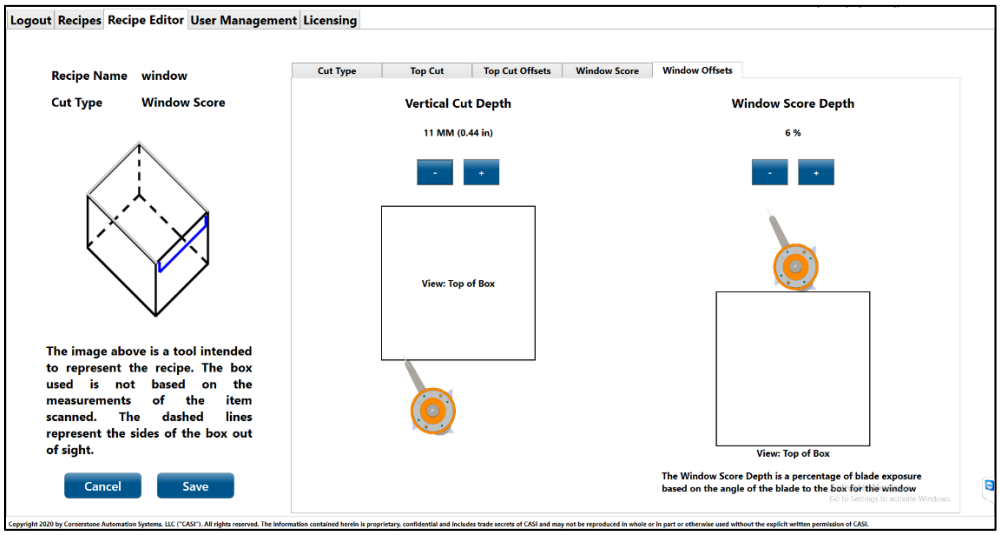


Figure 116 – Adjusting Vertical Cut Depth and Window Score Depth

7.4.6 Optional Tape Cut

Note: This is an optional feature on some systems. If your system does not have this option, you will not see the option in the *Recipe Editor*.

To create or modify a Tape Cut, follow these steps:

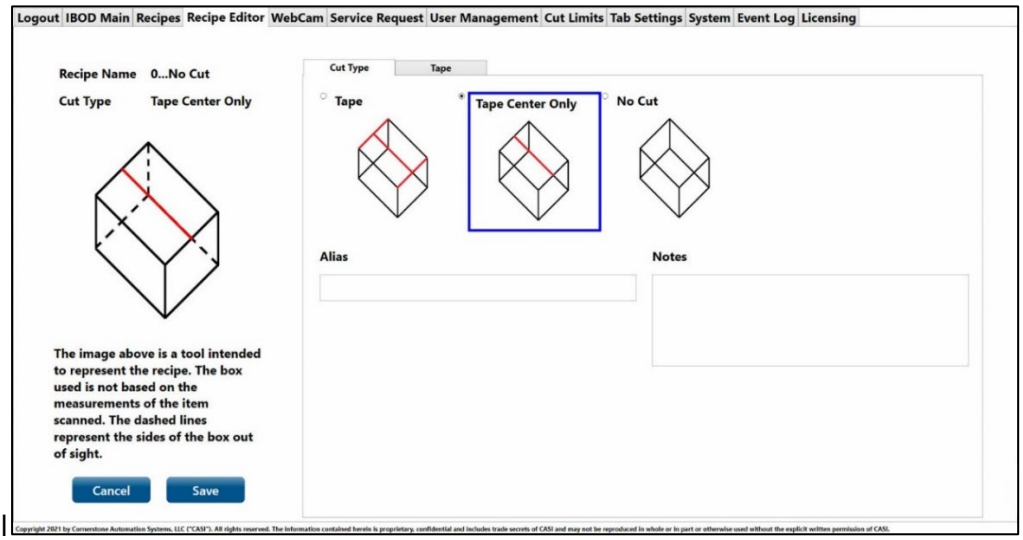


Figure 117 – Optional Tape Cut - Cut Type Screen

The Tape Tab will become active once the Cut type has been selected.

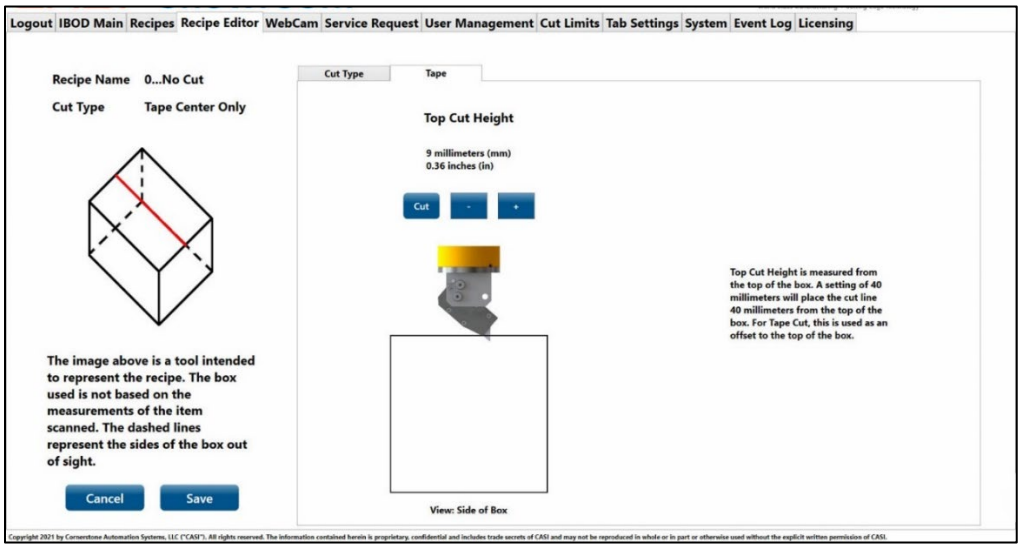


Figure 118 – Optional Tape Cut – Tape Screen

On the Tape screen, set the **Top Cut Height** by using the **+** and **–** buttons to increase or decrease the depth of the blade into the box. The blade animation on the screen will move up or down to represent the measurements entered.

Click **Save** when finished.

A green "Recipe Name has been Created" banner will display to let you know the recipe was created or modified successfully.

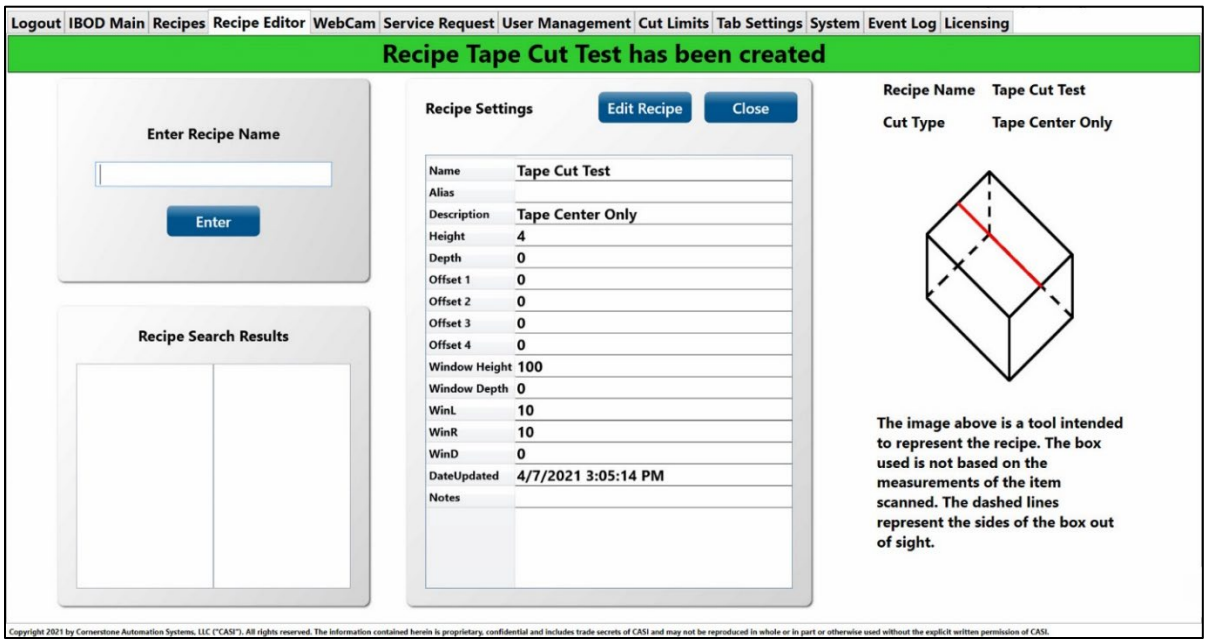


Figure 119 – Optional Tape Cut – Recipe Created or Modified Banner

7.5 Routes Tab (Optional on some systems)

Some CASi-IBOD systems are equipped with additional modules and conveyors with specialized lane sorting capabilities.

These specialized systems are customized to the client's needs, and an additional customized Manual will be provided in a **Supplemental Documentation** file on the **CASI Zendesk Support Website.**

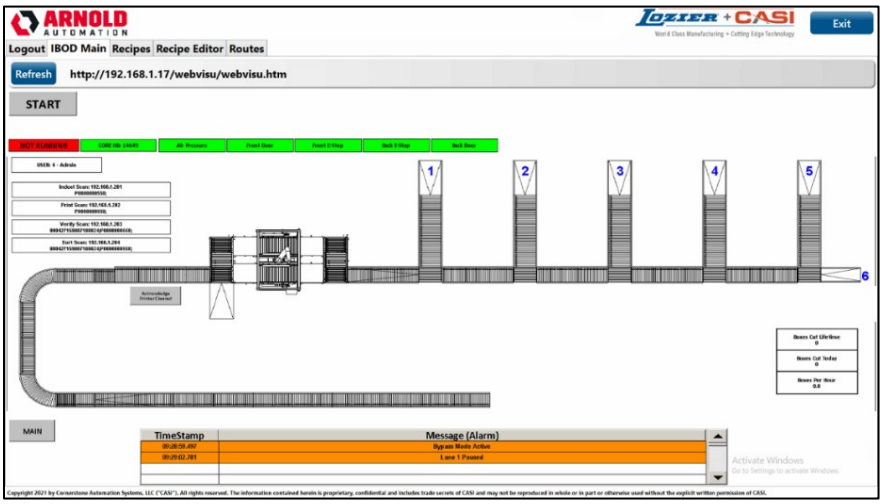
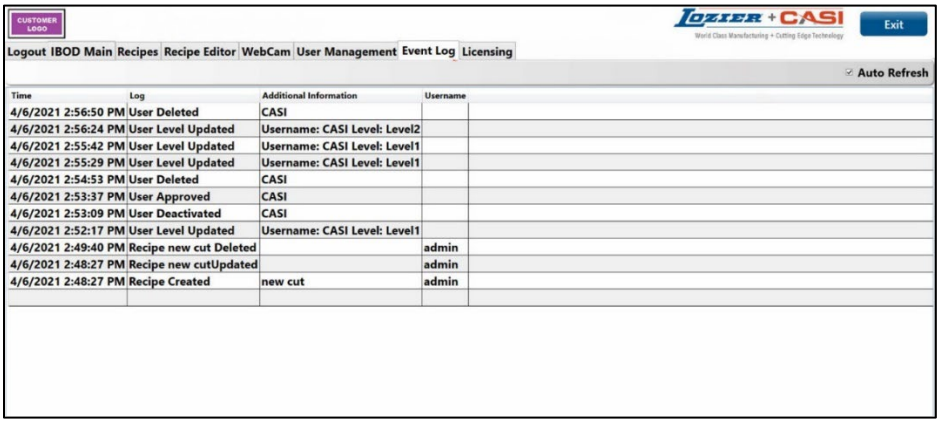


Figure 120 - Example Custom Routes Screen

7.6 Event Log

The *Event Log* tab is password protected and displays the status of real-time system events.



Time	Log	Additional Information	Username
4/6/2021 2:56:50 PM	User Deleted	CASI	
4/6/2021 2:56:24 PM	User Level Updated	Username: CASI Level: Level2	
4/6/2021 2:55:42 PM	User Level Updated	Username: CASI Level: Level1	
4/6/2021 2:55:29 PM	User Level Updated	Username: CASI Level: Level1	
4/6/2021 2:54:53 PM	User Deleted	CASI	
4/6/2021 2:53:37 PM	User Approved	CASI	
4/6/2021 2:53:09 PM	User Deactivated	CASI	
4/6/2021 2:52:17 PM	User Level Updated	Username: CASI Level: Level1	
4/6/2021 2:49:40 PM	Recipe new cut Deleted		admin
4/6/2021 2:48:27 PM	Recipe new cutUpdated		admin
4/6/2021 2:48:27 PM	Recipe Created	new cut	admin

Figure 121 – Event Log Tab

7.7 Web Camera – Level 2 Maintenance and Level 3 Supervisor

The Web Camera allows a CASI Technical Support team member to view the status of your CASi-IBOD system in real time to help with any issues.

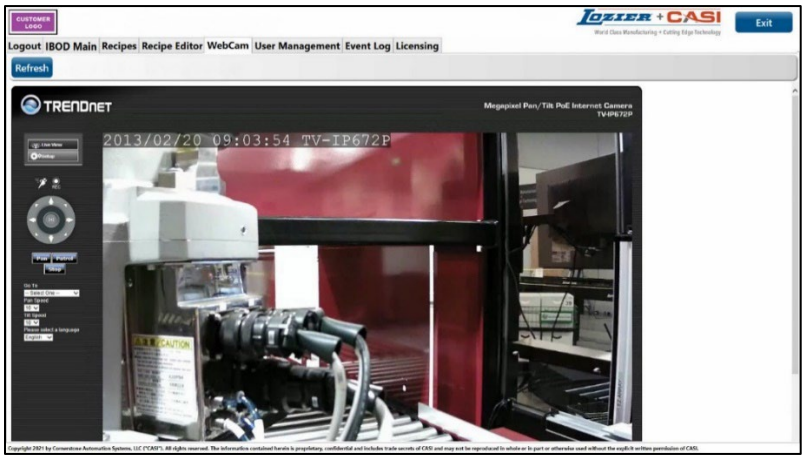


Figure 122 – Web Camera

7.8 User Management - Level 3 Supervisor

The User Management tab allows Administrators to do the following:

- Create User
- Approve User
- Deactivate User
- Unlock User
- Reset Password
- Change Level

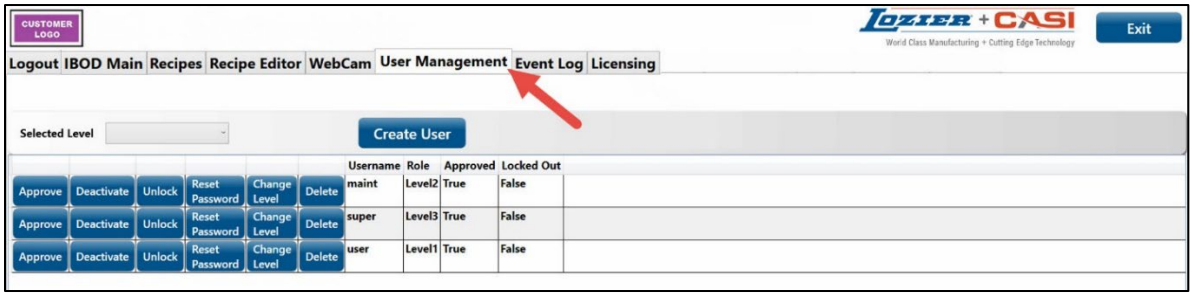


Figure 123 – User Management Screen

7.8.1 Create User Button

To create a user, click the Create User button on the User Management screen.

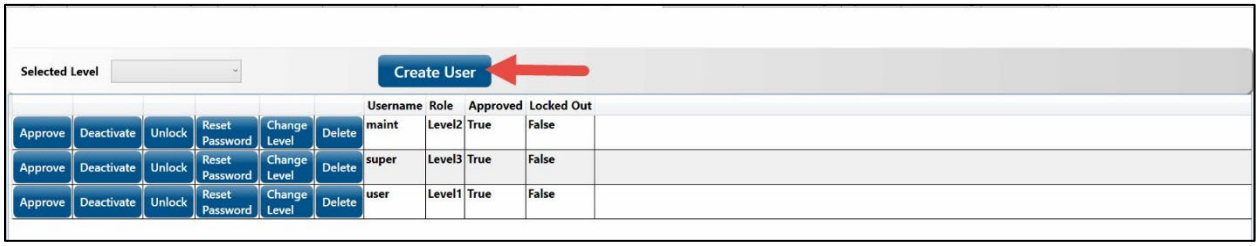


Figure 124 – Create User Button

On the popup screen, enter the credentials for a new user:

Enter **Username**
Enter **Password**
Confirm Password (re-enter password)

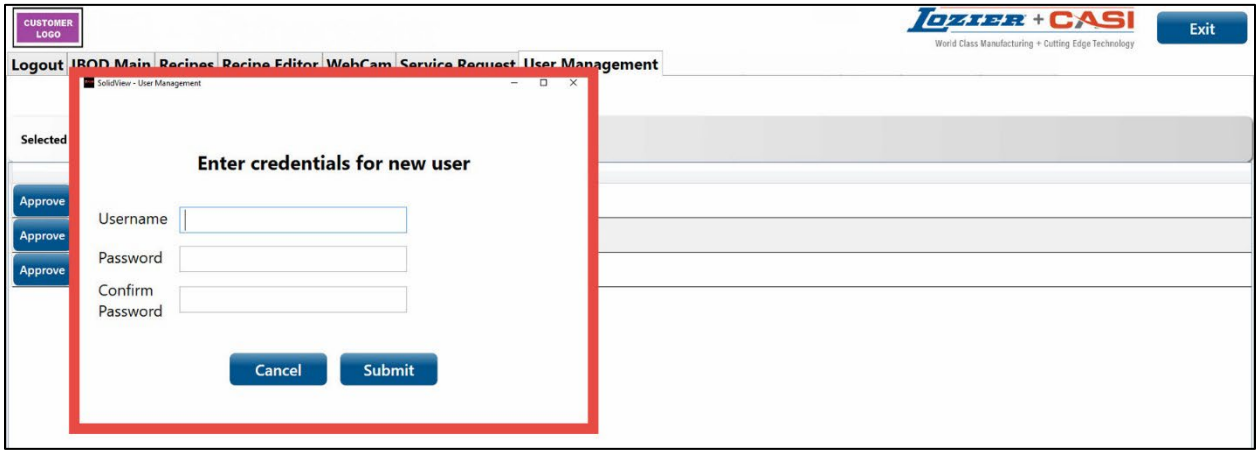


Figure 125 – Entering Credentials for New User

Click **Submit**.

A green "User has been successfully created" banner will display at the top of the screen, and the new user will now display in the User List.

Figure 126 – User Created Successfully Message

The default user level for newly created logins is **level 1 operator**. To change the user permission level, see section 7.8.6 Change Access Level.

7.8.2 Approve User Button

Approving a user is used to reenable an account that has been deactivated.

To approve a user, follow these steps:

1. Tap the row of the user that needs to be reactivated. The row will highlight.
2. Click the **Approve** button on the corresponding User row.
3. A green "User Has Been Approved" banner will display at the top of the screen.

The table box under *Approved* will populate with *True*.

Figure 127 – Approve User Button

7.8.3 Deactivate User Button

Users can be deactivated so that they can not log in.

To deactivate a user, follow these steps:

1. Tap the row of the user to deactivate. The row will highlight.
2. Tap the **Deactivate** button.
3. A green "User Has Been Deactivated" banner will display at the top of the screen.
4. The table box under *Approved* will populate with *False*.

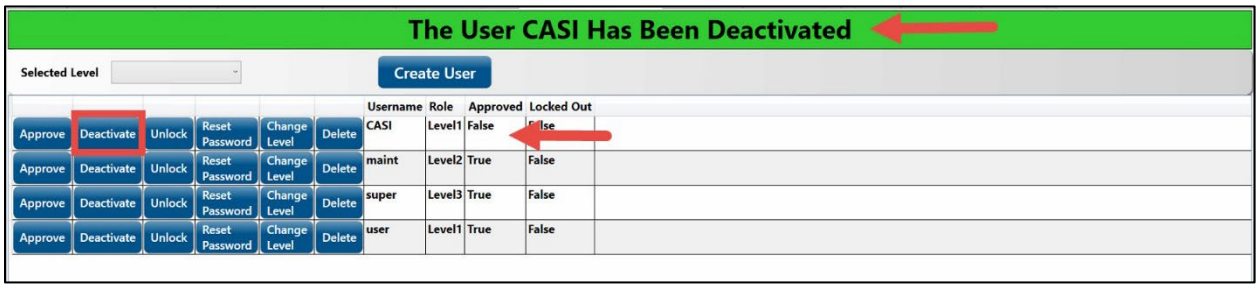


Figure 128 – Deactivate User Button

7.8.4 Unlock User Button

To unlock a user, follow these steps:

1. Click the **Unlock** button on the corresponding User row.
2. A green "User Has Been Unlocked" banner will display at the top of the screen.
3. The table box under *Locked Out* will change from *True* to *False*.

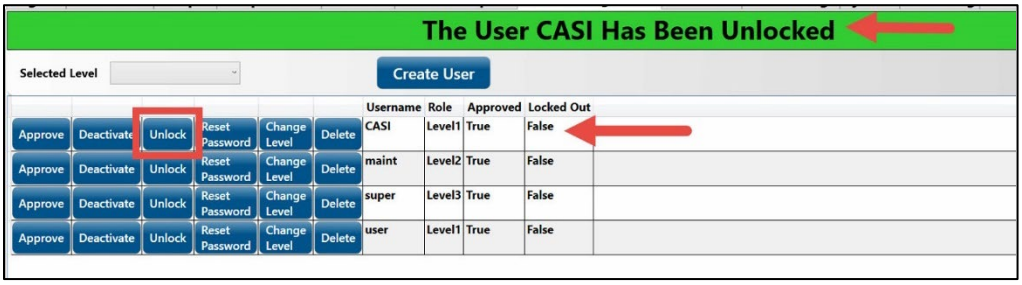


Figure 129 – Unlock User Button

7.8.5 Reset Password Button

To reset a password, follow these steps:

1. Click the **Reset Password** button.

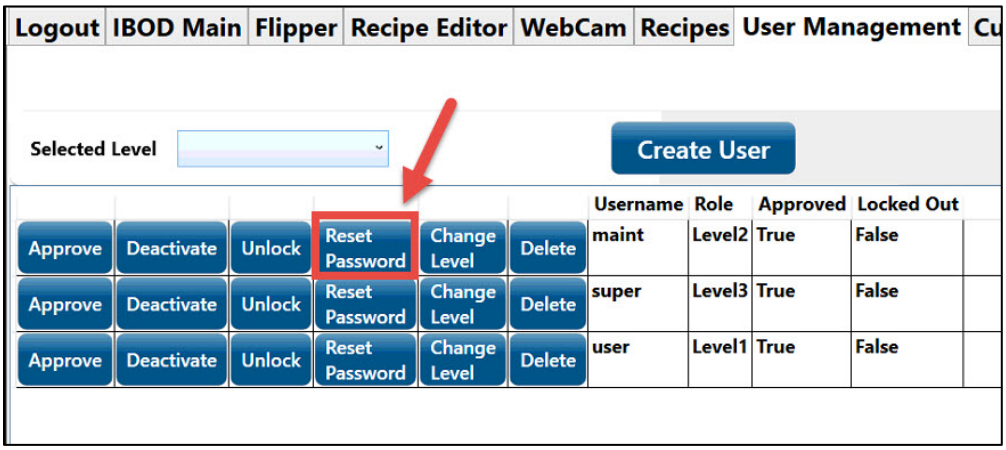


Figure 130 – Reset Password Button

2. On the popup, enter **New Password**.
3. *Confirm New Password* (re-enter password).
4. Click **Submit**.

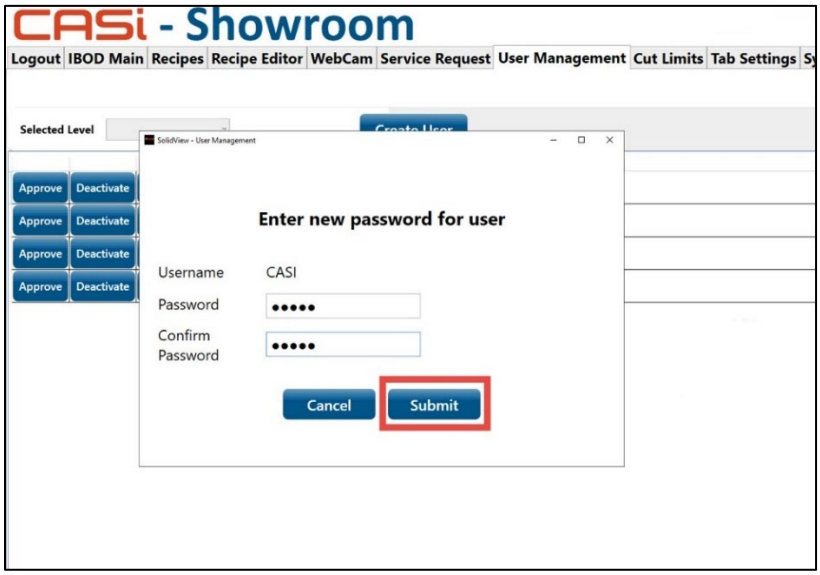


Figure 131 – Enter New Password for User Popup

5. A Green “Password for user has been successfully reset” banner will display at the top of the screen.

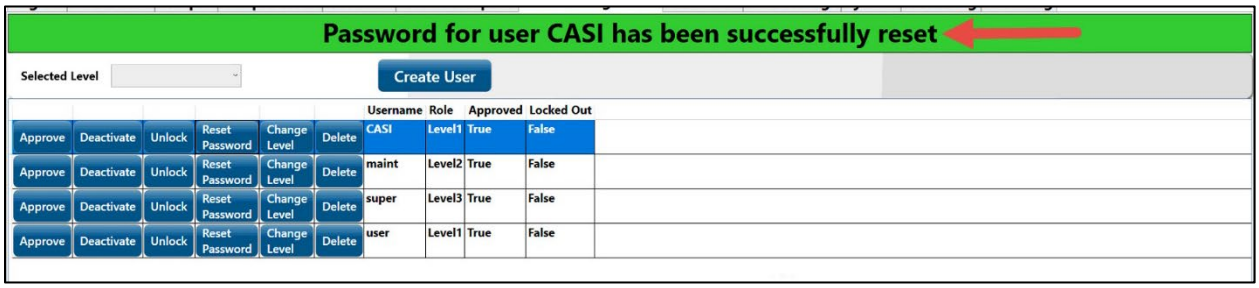


Figure 132 – User Password Reset

7.8.6 Change Access Level Button

Supervisors can assign and change user levels permissions for log ins. For log in title definitions, see Section 7.1.1.1 User Login Permission Definitions.

To change the access level of a user, follow these steps:

Select the **Selected Level** from the dropdown menu.

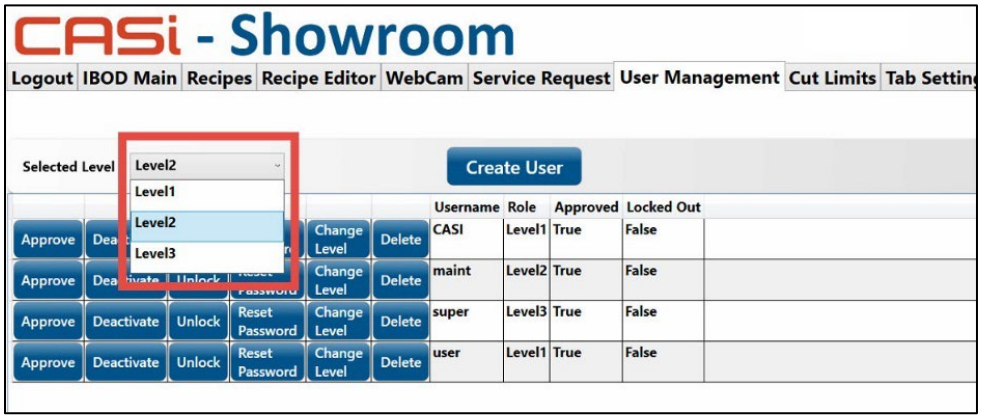


Figure 133 – Change User Level Dropdown Box

Click **Change Level** button on the corresponding User row.

A green “User Level Has Been Changed” banner will display. Under **Role**, the new level will display.

Figure 134 – Change Level Button

7.9 Exiting the SolidView™ Software

To exit the SolidView™ Software, click on the **Exit** button in the upper right corner of the screen.

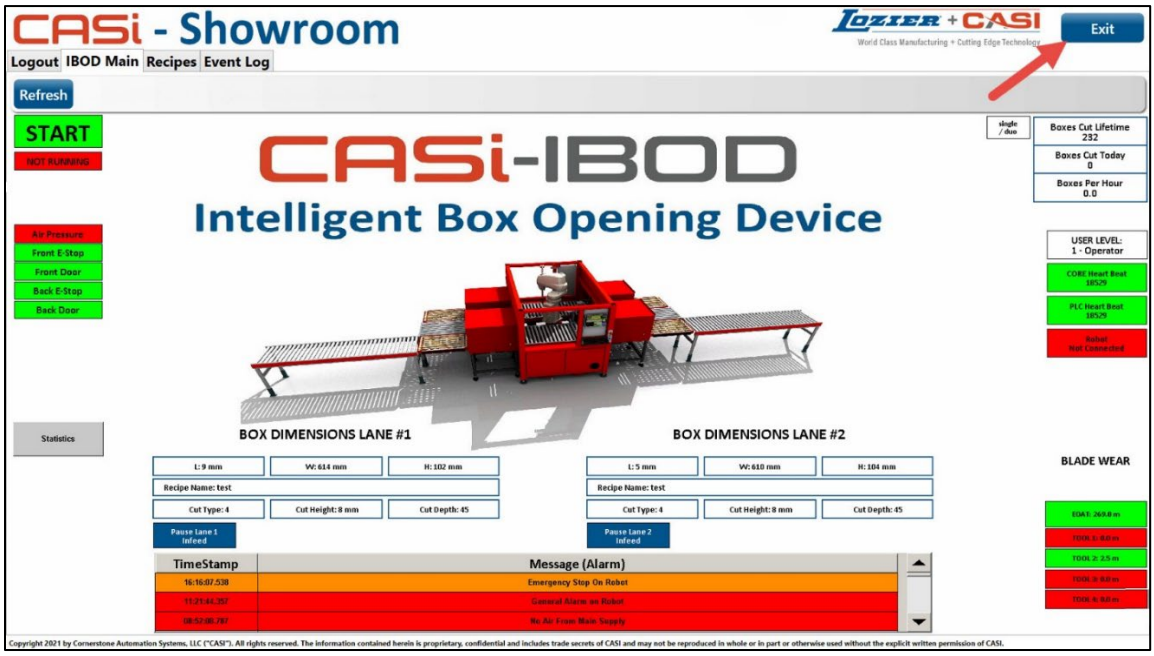


Figure 135 – Exiting the SolidView Software

A pop-up message will ask for confirmation to exit Solidview™. Click **Yes** to confirm or **No** to cancel and return to the IBOD- Main Tab.

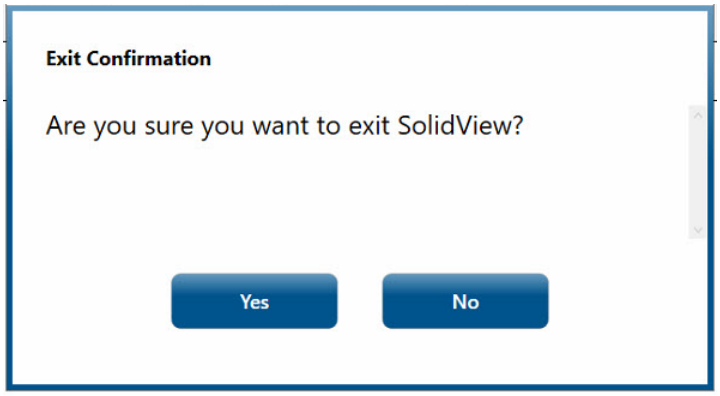


Figure 136 – Exit Confirmation Pop-Up

7.10 Backing-Up the System

To perform a system backup, refer to the procedures on the Microsoft website: https://www.microsoft.com.

NOTE: The customer's responsibility is to clone the hard drive and maintain data archives. Routinely backing up the system is a critical component of system maintenance. The CORE SolidView™ can be reinstalled, but the data on the drive can be lost if it is not backed up regularly. The customer is responsible for establishing and maintaining a regular backup schedule.

IMPORTANT NOTICE: Microsoft Windows automatic updates have been turned off. CASI does NOT recommend turning them on, nor updating/installing service packs.

7.10.1 CORE Backup

- System backup is recommended:
    - Quarterly
    - After a CASI software update
    - Before any Microsoft updates are applied [Microsoft updates **ARE NOT** recommended by CASI; the customer assumes risk]

7.11 Licensing - Level 2 Maintenance and Level 3 Supervisor

The **Licensing Tab** is for activating the software license. Once activated, this tab will no longer be visible.

*Software Activation is only available for Supervisors and Maintenance personnel and is contingent upon final payment per contract terms.

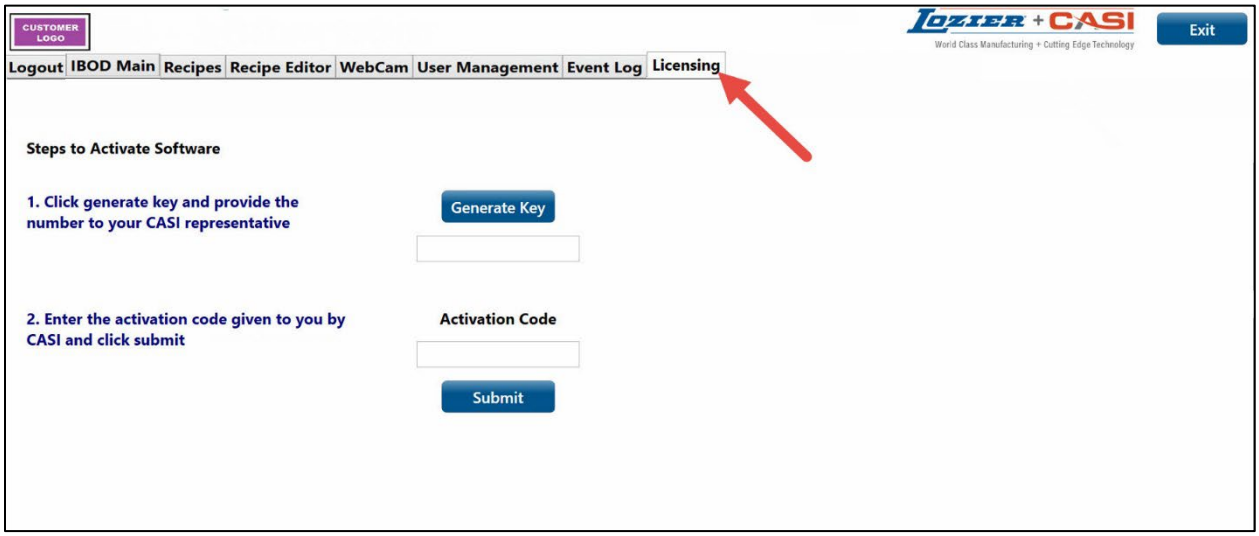


Figure 137 – Licensing Screen

Follow these steps to activate the software:

Click **Generate Key**; give this code to the CASI Tech Support representative.

NOTE: Standard Technical Support can be reached via phone at 800-930-3788 during the Hours of Operation M- F, 8:00 a.m. to 5:00 p.m. CST.

The CASI Tech Support Representative, in turn, will give an activation number. Enter this code in the ***Activation Code*** box.

Click the **Submit** button. Codes will be cleared.

The Software will be ***Activated,*** and a response will be generated in the ***Result*** box, such as *Software will expire in 30 days, Fully activated*, etc.

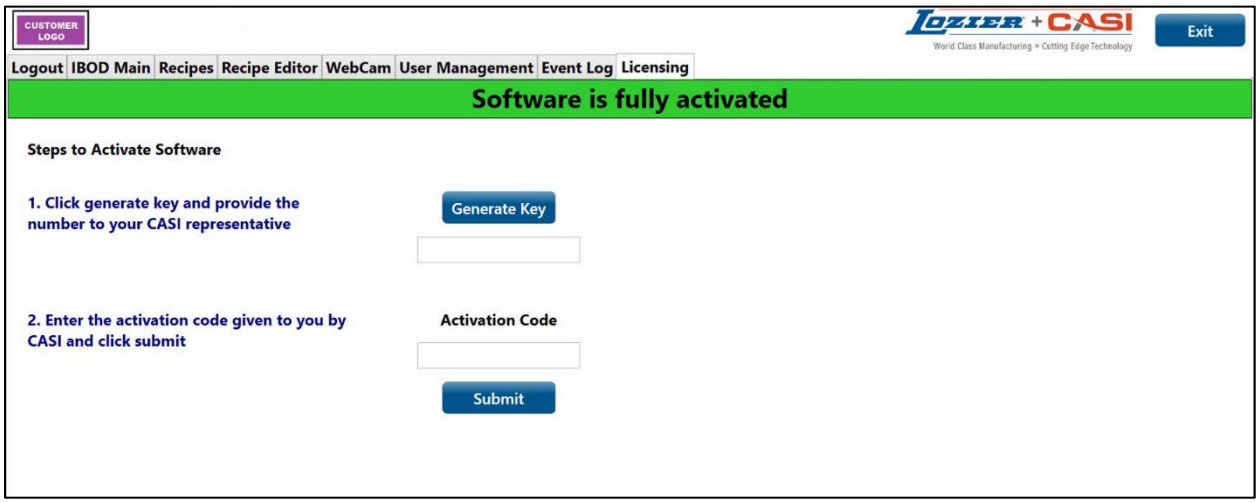


Figure 138 – Software Fully Activated Result

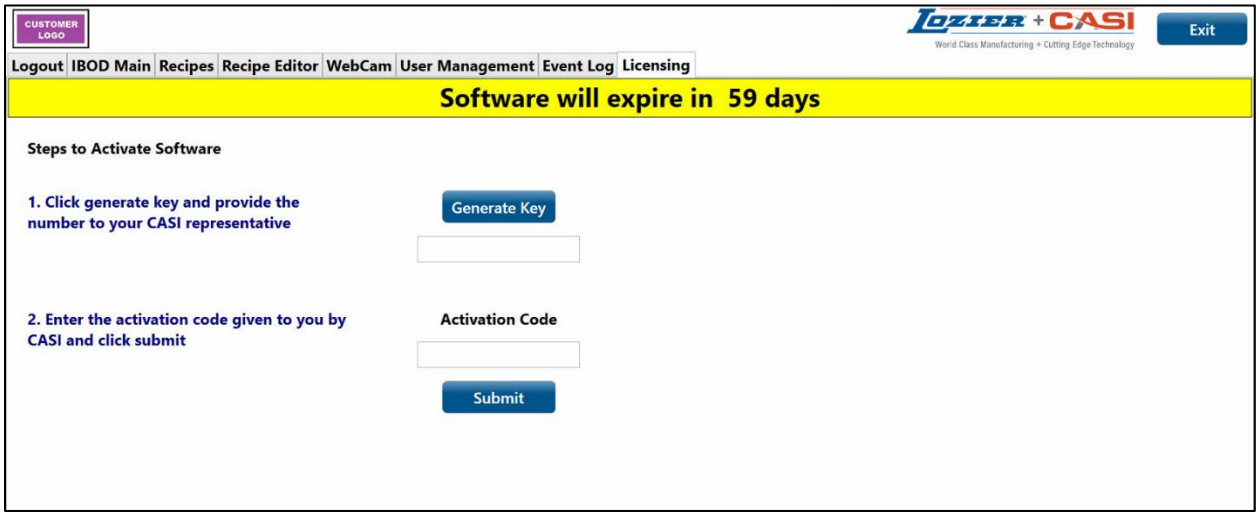


Figure 139 – Software Will Expire Alert

8 Service and Maintenance

WARNING: No maintenance should ever be performed unless proper Lock Out Tag Out (LOTO) procedures are followed. The end user is responsible for establishing LOTO procedures that meet their facility's safety requirements.

- Turn the electrical supply off and disconnect it before performing any service, adjustment, or machine maintenance.
- Before starting the conveyors, be sure no tools, boxes, or other implements are on the conveyor belts.
- Never attempt to work on the machine while the machine is running.
- Failure to comply with safety and warnings could result in severe personal injury.

NOTE: OEM (Original Equipment Manufacturer) components have their own manuals for detailed information such as setup, maintenance, and repair. Check the OEM website for the latest manuals on components.

The following tables describe routine maintenance for the system hardware on an **A**s-**N**eeded, **D**aily, **W**eekly, **M**onthly, and **Q**uarterly, **Y**early basis. Certain components are maintained based on hours of use, as indicated. Additional information may be found in the OEM (original equipment manufacturers) documentation.

8.1 Cleaning Maintenance

Table 5 - Cleaning Maintenance

Part	Maintenance	AN	D	W	M	Q	Y
Conveyor	Ensure all photo eyes, light curtains, drive cards, and rollers are free of dust and debris, which could interfere with normal operation.		X				
Sorters, Pushers, Diverters, Scales	Ensure all photo eyes, light curtains, drive cards, and rollers are free of dust and debris, which could interfere with normal operation.		X				
Photo eyes (Sensors)	Clean photo eye lenses and reflectors with a dry cloth to remove dust.			X			
Power Rollers	In combination with humidity, dust, and dirt may bridge the electric circuit. Regularly blow off dust and dirt by using low-compressed air.	X					
Motor Drive Cards	In combination with humidity, dust, and dirt may bridge the electric circuit. Regularly blow off dust and dirt by using low-compressed air.	X					
Tool Changer (optional equipment)	Ensure the tool changer is free of debris	X					

8.2 Lubrication Maintenance

Table 6 - Lubrication Maintenance

Part	Maintenance	AN	D	W	M	Q	Y
Bearings	Apply grease/lubricant to any bearings on the system using installed Zerk fittings.					X	
Robot	Grease the vertical shaft using AFB Grease.					X	
Tool Changer (optional)	Grease the master tool changer with a small amount of bearing grease.			X			

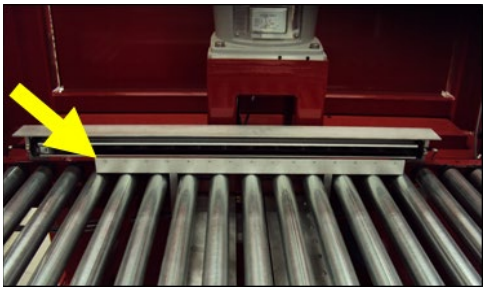
8.2.1 Snugger Bearings Lubrication

The lubrication cycle of the Snugger bearings is based on the travel distance of the bearing. Per the manufacturer, it should be lubricated approximately every 30,000 cycles. If boxes are being run at a rate of 450 units per hour, this would approximate the lubrication cycle being done after every 70 run hours. If running 2 shifts, this would then result in a weekly lubrication schedule.

Box Snugger

To Lubricating the Bearings:

1. Stop the CASi-IBOD.
2. Move the Snugger to the lube position, 5-1/2" from the side guard.
3. Remove the blue plug from around the rail pillow block bearing.
4. Apply 3-5 pumps of THK AFB-LF Grease to the round rail pillow block bearing.
   Note: If replacing with new bearings, initial lubrication is 10 drops per bearing, then maintenance is 5 drops.
5. Replace the blue plug.
6. Repeat Steps 3-5 for the other round rail pillow block bearing.
7. Open a lube port lid on the snugger rail.
8. Apply 2-3 drops of Mobile SHC 630 Gear and Bearing Oil to the lube port.
9. Close lube port lid.
10. Repeat Steps 7-9 for the remaining snugger rail lube ports.
11. Cycle Snugger back and forth by hand to distribute oil.



Box Snugger Assembly

Measurement from Edge of Side Guard

Lube Port on Round Rail Pillow Bearing

Lube Port on Snugger Rail

8.3 Check and Adjust Maintenance

Table 7 - Check and Adjust Maintenance

Part	Maintenance	AN	D	W	M	Q	Y
General Hardware Checks	Ensure all nuts and bolts are tight.				X		
	Ensure belts are snug and do not slip.				X		
	Ensure Idler rollers are free spinning.				X		
Electrical Connections	Ensure all electrical connections are in place and fully connected.			X			
Emergency Stop Circuit	Check the functionality of all E-Stop Equipment.		X				
***Optional Equipment: E-Stop Rope Pull**	Check the tension window for the cable and adjust the arrows to match the line.		X				
Flex Conduit	Ensure any/all flex conduit is free of nicks, cuts, or abrasions.			X			
Photo eyes (Sensors)	Verify photo eyes are functioning.		X				
Floor Anchors	Ensure all floor anchor nuts are tight					X	
Roller Motors	Ensure the Motor Roller fasteners are tight. **CAUTION:** Do not turn the Motor Rollers unless the Motor Cable is unplugged. Failure to do so may damage the Motor Drive Card.			X			
	Check for visible damage.				X		
Pneumatics: Air Pressure	Ensure proper air pressure is maintained for the system, including the pop-up conveyors.		X				

Part	Maintenance	AN	D	W	M	Q	Y
Pneumatics: Air Leaks	Check the fittings, connectors, hoses, etc., for leaks. Repair leaks, or replace parts, as required.			X			
Pneumatics: Hoses and Filters	Ensure all hoses are connected properly and are free of binds and kinks.		X				
	Ensure water is not accumulated in the regulator.		X				
Power Rollers	Tighten any loose Motor Roller fasteners that are found. **CAUTION:** Do not turn the Power Rollers unless the Motor Cable is unplugged. Failure to do so may damage the Motor Drive Card.			X			
	Ensure the Roller shaft is secured properly.						X
	Check Roller Drive for visible damage.				X		
Motor Drive Cards	*WITH POWER OFF* - Check looseness or backlash of bolts/screws. Tighten them, if necessary.		X				
	Check the drive card leads for visible damage.				X		
	Ensure the screws of the card are still tight and that the cables are still laid properly and connected to the terminals.						X
Cutting Tool Head	Inspect to make sure fastening screws are still tight. Check blades for wear and breakage.			X			

8.3.1 Pneumatic Controls

There are pneumatic air controls located in the IBOD cabinet that control several functions of the IBOD.

The Box Snugger, Bladestop, and Tool Changer have connections and controls in the cabinet compartment.

Figure 140 – Component Solenoid Valves

Figure 141 – Main Air Regulator

Figure 142 - Snugger Regulator

Figure 143 - Precision Regulator (for collision sensor)

WARNING: Disconnecting or shutting off the main air supply on the CASi-IBOD can trigger a safety circuit monitor.

An **E-STOP must be activated before shutting the air supply off** to avoid triggering the safety monitor circuit.

If the safety monitor circuit is activated, the system will not recover and will get stuck in an E-STOP loop. The system safety monitor must be reset.
Contact CASI support for the resolution at:

(800) 930-3788, Mon.-Fri. 8 a.m. – 5 p.m. CST

8.3.2 CASi-IBOD Robot Tool Changer

The Automatic Tool Changer allows for quick and easy replacement of worn blades.

Use the instructions outlined in Section 7.2.2 CASi-IBOD Blade Wear to force a tool head change. The software command will instruct the robot to place the current tool into the empty space on the tool storage tray and pick up another available tool.	

8.3.2.1 CASi-IBOD Tool Head Blade Change

To change the blades in the tool head, see the **CASI Tool and Blade Change Supplemental Guide** found on the **CASI Zendesk Support Website**.

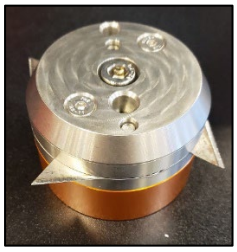


Figure 144 - Standard Cut Tool

Figure 145 - Window Cut Tool

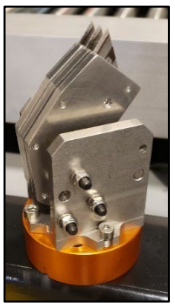


Figure 146 - Tape Cut Tool

8.3.3 CASi-IBOD Robot Collision Tool/Test

CASi-IBOD Robot Collision Tool/Test 1. Check air pressure. 2. Check wire & air hose connections on device. 3. Check for leaks in air hose. 4. Check to ensure the head is settled. 5. Check connections on the top of the robot. 6. Check for an audible beep coming from the robot controller located in the rear enclosure.	

Figure 147 – CASi-IBOD Box Cutter Robot Collision Tool/Test

8.4 Check and Replace Maintenance

Table 8 – Check and Replace Maintenance

Part	Maintenance	AN	D	W	M	Q	Y
System Visual Inspection	Perform visual inspection for broken or damaged components.		X				
Robot Batteries	Recommended replacement is 6 Months.					X	
Roller Drive Belts	Inspect for wear, replace as necessary	X					
Detector Batteries	Batteries should be replaced more often if the controller is frequently shut down or shut down for long periods of time.					X	

8.4.1 Robot Back Up Batteries Replacement Procedure

We recommend that the batteries be replaced annually or semi-annually.

Note: When changing the batteries, the CASi-IBOD software should remain ON. This ensures there is power to the robot controller and will prevent the servo motors from losing their positions.

WARNING: If the CASi-IBOD loses power and the robot AA batteries are dead, any movement of the robot will cause the robot to lose all of the correctly programmed positioning.

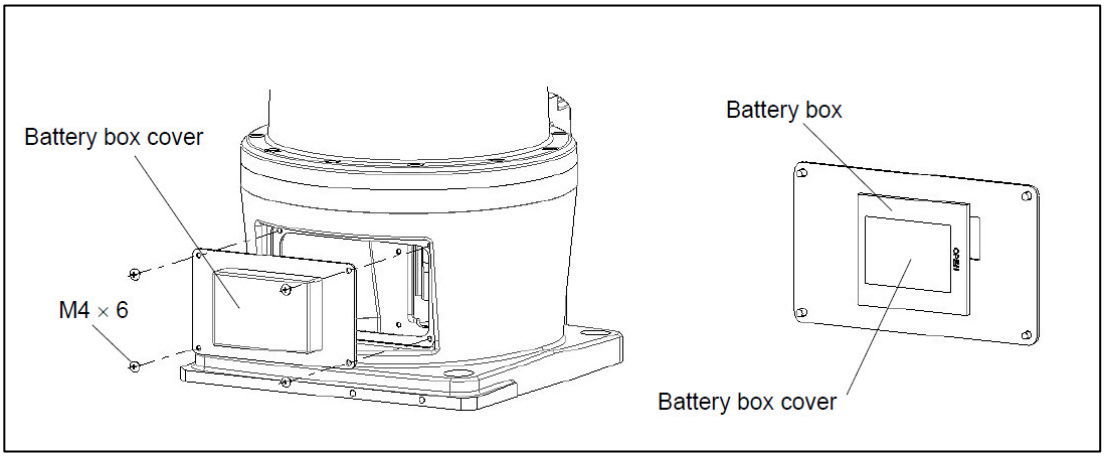


Figure 148 - Robot Battery Replacement Procedure

1. Keep the power on, Press an IBOD E-Stop button.
2. Unscrew the four (4) truss head screws to remove the battery box cover.
3. Remove the battery box from the robot base unit. Cables will still be connected.
4. Remove the battery box cover.
5. Remove the batteries.
6. Replace the 3 “AA” batteries within 5 minutes of removing batteries.
7. Reattach the battery box cover.
8. Reattach the battery box to robot base unit.

For an easy to use, printable document to record the battery replacement schedule, see the included file **IBOD Robot Box Cutter Battery Replace Log** on the **CASI Zendesk Support Website.**

8.5 Software Maintenance

CASI software is custom configured for each client.

NOTE: It is the customer's responsibility to clone the hard drive and maintain data archives. Routinely backing up the system is a critical component to system maintenance. The CORE SolidView™ can be reinstalled but the data on the drive can be lost if it is not backed up on a regular basis. It is the customer's responsibility to establish and maintain a regular backup schedule.

IMPORTANT NOTE: Microsoft Windows automatic updates have been turned off. CASI does NOT recommend turning them on, nor updating/installing service packs.

8.6 E-Stop System Check Procedure

A designated person should check each Emergency Stop (E-stop) device for proper operation, physical damage, and excessive environmental contamination. This should take place on a periodic schedule determined by the client based on the severity of the operating environment and the frequency of switch actuations. Adjust, repair, or replace components as needed. If inspection reveals contamination on the switch, thoroughly clean the switch. Replace any damaged, broken, deformed, or badly worn switch. **Always test the control system for proper functioning** under proper conditions after performing maintenance or replacing any component of the device.

CASI recommends the end user conduct a risk assessment and risk reduction analysis to determine the appropriate frequency for E-stop system checks. In lieu of the assessment and analysis, test each component before start of each production day. Refer to the E-Stop System Check Procedure for the process to check the E-stop system.

Check the Emergency Stop (E-Stop) system:

1. Push each red **Emergency Stop (E-Stop) Button** on the IBOD Frame.
    a. Push all the red **E-Stop Buttons** on the conveyors.
    b. *Optional systems, Pull all red **E-Stop Rope Pulls** on the conveyor.
2. Check to make sure the system is properly disabled.

9 Troubleshooting Guide

IMPORTANT NOTICE: Be sure to check all E-Stops. If any of the system E-Stops are engaged, the entire System will be disabled.

CASI warranty support requires remote access. If remote access is not provided, then any labor required to triage, troubleshoot, and resolve issues, including associated travel time and materials, will be billed to client at prevailing CASI certified technician and engineering (if applicable) rates.

9.1 Disclaimer

- Be sure to observe all **DANGER, CAUTION**, and **WARNING** safety labels before operating, troubleshooting, or maintaining the CASi-IBOD.
- ***NO*** maintenance should ever be performed until the system has been properly powered down and **Lock-Out Tag-Out** (***LOTO***) procedures implemented. It is the end user's responsibility to establish LOTO procedures that meet their facility's safety requirements.
- Do not leave the system running unmonitored.
- Personnel operating the CASi-IBOD must be appropriately trained in its use, including the proper sequence of starting and stopping the conveyor and the correct loading and unloading methods.
- Keep hands, long hair, loose clothing, and jewelry away from moving conveyor parts and rollers.
- Do not exceed recommended maximum conveyor load capacity.
- Before starting the Conveyor, be sure no unwanted cartons or other items are on the conveyor rollers.
- Do not operate the System with damaged or broken parts.
- To avoid the risk of electric shock, do not operate the conveyor with a cover of an electrical enclosure removed.
- Do not operate the CASi-IBOD in an environment with high moisture concentration.
- Only qualified and trained technicians and maintenance personnel should perform service and/or repair work on the CASi-IBOD.
- If this first-level troubleshooting does not return the CASi-IBOD to operation, Lozier+CASI technical support is available.

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WARNING: In the event of facility air loss or if the CASi-IBOD main air is turned off, the IBOD will need to re-fill the system with air.

After restoring the air supply to the IBOD, press an **E-Stop button** and wait several seconds for the IBOD to build air pressure. Once the air pressure has normalized, **Reset the E-Stop** and **Start** the system as normal.

The following tables serve as reference for common issues.

For issues not listed, call CASI Technical Support. **800-930-3788**

9.2 CASi-IBOD System Alerts

The CASi-IBOD will show system alert messages in the event log on the software interface. Critical alerts will also display a colored banner at the top of the screen. This section of the manual shows the most common alerts.

Often triggering and resetting an E-Stop, closing and restarting the CASi-IBOD software or shutting down and restarting the CORE computer will clear/solve inconsistent errors and temporary bugs within the CASi-IBOD system. Pushing the "Refresh" button can also help fix issues with visual UI issues.

Table 9 – CASi-IBOD System Alerts, Single and Duo

Alarm	Definition
IBOD Lane Outfeed Full	The IBOD outfeed lane has a blocked sensor, possibly by boxes.
Infeed or Outfeed Jammed – Remove Obstruction from Zone	IBOD Infeed and Outfeed photoeyes will trigger this alarm when they are blocked. This could be by product or debris. Clear the photoeye to resolve.
Cutting Zone jammed or Light Curtain Blocked.	The cut zone photoeye inside the IBOD or the Light Curtain are blocked. This could be by product or debris. Clear the photoeye/light curtain to resolve. If intervention to put the IBOD into a stopped state manually does not take place within 30

	seconds, the IBOD will trigger an auto stop, and a red message "Robot Homing Failure – Startup Error" will appear. The robot will automatically reposition as normal once the photoeye or light curtain is cleared and the system is restarted.
Failed to Receive System Parameters from SQL	The PLC failed to receive correct data from SQL. Power Cycle the Full System.
Front/Back IBOD Emergency Stop Pressed	An E-Stop on the IBOD frame has been triggered.
Infeed/Outfeed Tunnel Emergency Stop Pressed	An E-Stop on the IBOD infeed or outfeed tunnel has been triggered.
Infeed Conveyor Emergency Stop Pressed (Optional Systems)	An E-Stop on the IBOD infeed conveyor has been triggered. (Optional Systems)
Front/Back Door Safety Switch Open	The RFID safety switch for the IBOD doors is triggered.
Invalid Cut Width – Too Wide	Box is too wide for the recipe to cut properly. Box likely to pass through.
J1-4 Limit Reached	The robot arm joint movement has reached its clockwise or counterclockwise limit. This could be for multiple reasons. If problem persists, contact CASI tech support.
Front Door Unlocked	The IBOD front door is unlocked and can be opened.

Back Door Open (IBOD Duo)	The IBOD back door is unlocked and can be opened.
Cut Command Too Long	A light curtain is reading that an object is too long to attempt the cut length.
Cut Command Too Low	A light curtain is reading that an object is too short to attempt the cut height.
Collision Sensor Detected	The robot detected a collision.
J3 Up/down Limit Reached	The robot arm joint movement has reached its upward or downward height limit.
General Alarm on Robot	General alarm on the system.
Tool Change Error	An error occurred during the automatic tool change.
Tool Change Needed	The current tool head needs to be changed.
Tool Change Running	The robot is in process to change the tool head.
Running Low Speed	The robot was put into slow mode by a user, or the robot temporarily, automatically, entered slow mode to resolve an issue.
Lane Paused (IBOD Duo)	One of the lanes has been deactivated by using a pause button on the software UI.
Robot Disconnected	The robot lost connection to the IBOD system. Check the network cable and a

	maintenance user needs to power cycle the robot using the administration pages available. If problem persists, contact CASI tech support.
Lane Horizontal Light Curtain Blocked	The horizontal light curtain inside the IBOD cutting zone is blocked or dirty.
Bypass Mode Activated	Boxes will be sent through the CASi-IBOD without a cut.
Auto Reconnect to Database	If error persists while running, **Stop** the system for 2 minutes, then **Start** the system again.

Pressing the "Refresh" button on the IBOD Main Tab can resolve visual UI issues. To address inconsistent errors and temporary bugs within the system, you can try triggering and resetting an E-Stop, closing and restarting the machine software, or shutting down and restarting the CORE computer.

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9.3 Clearing a Jam

If a jam occurs, the CASi-IBOD automatically attempts to clear it. If a jam occurs within a CASi-IBOD and IBOD cannot successfully clear it, the software will alert the operator with an audible message and a written alert message. Operators should clear the jam manually.

1. Stop or E-Stop the system.
2. Open the frame door.
3. Remove the source of the jam.
4. *If the robot is preventing the removal of the jam, move the robot into a safe position before removing the jam. Examples of safe positions are:
   - Middle of where a box would be while being cut.
   - Moving the tool shaft of the robot into a middle position.
   - Do not move the robot by pushing on the tool shaft. Be sure to push on one of the 2 main arms.

Note: To move the robot shaft up/down, press and hold the **square button** located on the underside of the 2nd robot arm to release the brake.

5. Close the door.
6. Reset the E-Stop circuit by pressing the **Reset E-Stop** button on the UI or the green **Start/Reset** button on the frame.
7. Press **Start** on the monitor screen or the green **Start/Reset** button on the frame to restart the system.

9.4 Troubleshooting Boxes

Table 10 – Troubleshooting Boxes

Issue	Correction
Communication Error	1. Exit and restart SolidView™. 2. Exit SolidView™ again. 3. Wait 5 seconds. 4. Restart SolidView™.
Box Jam	Most box jams should clear themselves. If the box jam does not clear itself, complete the following steps: 1. Press the **Stop Button** on the frame. 2. Press and hold the **Stop Button** to open the door. 3. Put the robot in a safe position, such as the following: • Middle of where a box would be while being cut • Shaft of robot in a middle position • To move robot shaft, press and hold the **square button** on top of the robot to release the brake while moving the shaft 4. Remove the jammed box. 5. Close the door. 6. Reset by pressing the green **Reset Button.** 7. Press **Start**.
Boxes are cutting poorly	1. Stop machine by pressing the **Stop Button**. 2. Check for missing or broken blades. 3. Check blade for dullness. 4. If the blade is dull, change the blades. 5. Restart machine. 6. Run boxes and check to see that the tool is traveling where the cut needs to be. 7. If the path needs to be adjusted, log in and make the appropriate adjustments to the **Recipe** offsets. **Note:** Always check a minimum of 20 boxes before making any adjustments to the tool path.

Issue	Correction
Boxes are being rejected for width but are within specifications	1. Stop, the machine, open the door and then move the snugger to the middle of the conveyor (approximate). 2. Close door and restart the system. The snugger will automatically rehome itself. 3. If problem persists, contact CASI Support
CASi-IBOD not sending boxes to outfeed conveyor	1. Verify that all photo eyes are free from debris and functioning properly. 2. Check to see that the takeaway conveyor is moving. If it is not moving, the CASi-IBOD will not let the box out of the cut zone. 3. Step2 (if conveyor is running) 4. Press the **Stop** button and wait five (5) seconds. 5. Press **Start**.
CASi-IBOD not bringing boxes in from infeed conveyor	If the conveyor is running: 1. Verify that all photo eyes and light curtains are free from debris and functioning properly. 2. Press the **Stop** button and wait five (5) seconds. 3. Press **Start**.
Box Dimension Errors	1. Use compressed air to blow dust and debris out of the inside of the CASi-IBOD. Make sure the light curtains are clean and clear.

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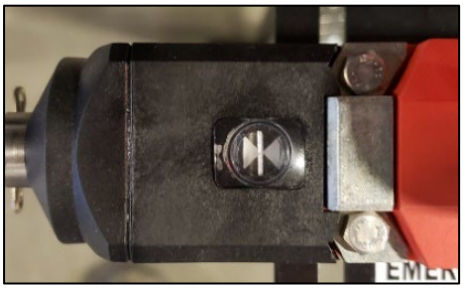
9.5 Troubleshooting Conveyors

Table 11 – General Conveyor System Troubleshooting

Issue	Check	Correction
No Zones on the conveyor will run	1. No power to the Power Supply unit 2. No lights on Power supply	1. Ensure system power is ***ON*** 2. Ensure power supply is properly connected. Check for loose connections and repair or replace any loose or damaged power supplies. 3. Check output power of the power supply
Individual Zone will not run	1. Drive card problem 2. Bad cable connection to drive card 3. Roller motor defective	1. Check all drive cards in the affected conveyor section. Replace any defective drive cards as necessary. 2. Check all connections on the drive card for any loose or disconnected wires. Repair or replace any wire or connectors, as necessary. 3. Check all roller motors in the affected conveyor section. Replace any defective roller motors, as necessary.
	Check Photo eyes	1. Ensure photo eye cable is fully connected to drive card. Inspect cable for cuts or abrasions. Repair or replace as necessary. 2. Ensure photo eye is aligned with the reflector opposite it. Realign, as necessary. 3. Ensure there is no debris or foreign object interfering with the operation of each photo eye.
A zone will not start after accumulation	Check O-rings and/or Poly-V belts	Ensure belts are not stretched, worn or cut. Replace any and all defective belts.

Issue	Check	Correction
***Optional Equipment. The E-Stop Rope Pull will not reset after mechanically pulling the blue reset button.**	The tension of the cable can be too tight, too lose or damaged.	Check the Tension Viewing Window in the E-Stop housing. The arrows must align with the line to ensure proper functioning tension.  **Figure 149 - E-Stop Cable Tension Window** To adjust the tension, turn the round silver dial near the cable attachment of the assembly. *See the OEM Banner Rope Pull data sheet on the OEM support website for complete instructions to reconfigure the E-Stop Rope Pull.
***Optional Equipment: The E-Stop Rope Pull will not trigger when the cable is pulled.**		
***Optional Equipment: The E-Stop Rope Pull is triggered when the cable is NOT pulled.**		

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9.6 Troubleshooting Software

Table 12 – General Software Troubleshooting

Issue	Check	Correction
Program Nonresponsive	A computer, operating system, software program or driver may stop responding or cause other programs to stop responding because of several possible reasons, such as a confliction of software or hardware resources between two programs, lack of system resources, or a bug in the software or drivers.	To recover from a program that has stopped responding, a user can generally press the **CTRL + ALT** + **DEL** keys on the keyboard to open the ***Close Program*** window or open the ***Task Manager*** window and click the **End Task** button to terminate the program. If another window opens, click the **End Task** button again to confirm stopping the program.
Runtime Error	The runtime message can be caused by: File required by the program to run is not found. Program needs to be reinstalled or missing file(s) need to be copied back to the computer.	To recover from a runtime error, first close all open programs associated with CASI software. Reopen programs and, if the issue persists, reboot the CASI CORE controller. If Runtime errors remain unresolved, contact the CASI support staff for further assistance.
Software responsive but conveyor system not responsive	Possible causes: • E-Stop has been activated. • Communication between CASI software and PLC has been disrupted. • System hardware issue	To resolve this issue: 1. Ensure the E-Stop circuit has been reset. 2. Restart all CASI software. 3. Reboot CASI HMI CORE 4. Verify power is being applied to the system (check the breaker in PWD power cabinet).

10 End of Life Statement

Your CASi-IBOD Single or CASi-IBOD Duo has been designed to provide years of reliable and trouble-free service, but at some point, in time it may be necessary to retire this CASi-IBOD Single or CASi-IBOD Duo unit from service. To protect our Environment, specific guidelines and requirements should be followed.

This CASi-IBOD Single or CASi-IBOD Duo is primarily constructed from sheet metal and steel and contains no hazardous materials. This system has an electrical control panel and electrical components that must be removed from the system and disposed of according to country, regional or local requirements.

The CASi-IBOD Single or CASi-IBOD Duo is Industrial Equipment as stated in Category 6 of Annex 1A of the EU (Waste of Electrical and Electronic Equipment) WEEE Directive 2012/19/EU. This Directive as of 2014 applies to this equipment type, and in the future this Directive should be reviewed for any changes that may now apply.