



# ***DecoSpector 360™*** ***Operator Guide***

SOFTWARE VERSION: 6.2.23

MANUAL PART NUMBER: 81264 REV. 03

## **Copyright Notice / Contact Us**

© 2024 Pressco Technology Inc. All rights reserved.

No part of this manual may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, for any purpose, without the express written permission of Pressco Technology Inc.

The contents of this manual are furnished for informational use only, are subject to change without notice, and should not be construed as a commitment by Pressco Technology Inc.

Written and designed at:

Pressco Technology Inc. World Headquarters

29200 Aurora Road

Cleveland, OH USA 44139-1847

TEL +1-440-498-2600

FAX +1-440-498-2615

[www.pressco.com](http://www.pressco.com)

Business Hours: Monday - Friday, 8:00am - 5:00pm Eastern Time

Customer Support:

Request technical support and remote support: [techsupport@pressco.com](mailto:techsupport@pressco.com)

24/ 7 Customer Support (for urgent system help): +1-440-498-2000

e-mail: Schedule a service visit: [dispatch@pressco.com](mailto:dispatch@pressco.com)

Request technical support and remote support: [techsupport@pressco.com](mailto:techsupport@pressco.com)

Customer Service Fax: +1-440-498-4761

## Table of Contents

Chapter 1 Introduction .....	8
About this guide .....	8
Safety Considerations .....	9
Static Discharge Protection .....	9
Chapter 2 Declaration of Conformity - DecoSpector 360 .....	10
Chapter 3 Safety Information .....	12
Health Warning - Photosensitive Epilepsy .....	12
Symbols Used With This System .....	13
Arc Welding Warning .....	14
Product Label .....	14
Warning Devices .....	15
Residual Risk .....	15
Intended Use .....	15
Prohibited Use .....	16
Personal Protective Equipment .....	16
Personnel Safety .....	16
Lifting Heavy Objects .....	18
Authorized Users .....	18
Spare Parts Usage .....	19
Chapter 4 Specifications - DecoSpector 360 .....	20
Deco Can Printing Position Requirement .....	20
Measurements .....	20
Environmental Conditions .....	23
Electrical Specifications .....	24
Sound Pressure Level .....	24
Chapter 5 Installation .....	25
Recommendations Prior to Installation .....	25

Instructions for Safe Assembly Operations .....	25
Shipping and Handling .....	25
DecoSpector 360 Components .....	27
Assembly, Location, and Mounting Requirements .....	29
Install the Inspection Module .....	29
Stability of the Control Enclosure .....	31
Utilities to be Supplied by Customer .....	32
Protective Earthing .....	32
Electrical Connections for cabinets 77769, 77770, 81507, and 81508 .....	33
External Connections .....	36
Commissioning .....	37
<b>Chapter 6 Basic Operation .....</b>	<b>38</b>
Log In .....	38
How to Select Items .....	38
Dashboard Feature .....	39
Overview Panel .....	42
Graphs .....	43
Color Borders Around Images .....	47
Control Panel .....	48
Online and Offline .....	48
Statistics on the Control Panel .....	49
Views from the Control Panel .....	49
Notepad .....	50
Language .....	50
Screen Capture .....	51
Help .....	51
Save Images to USB Drive .....	51

Chapter 7 Part and Job Management .....	54
Learn Parts .....	54
Relearn a Job .....	54
Job Management .....	55
Part Changeover (Part Type Inspected Previously) .....	57
New Part (First Time Inspecting a Part) .....	58
Learn Auto-Detect .....	59
Align the Print Blanket .....	61
Show Templates .....	62
Color Zones - Manual, optional .....	64
Inspection Zones .....	65
Confirm a Job Learn .....	69
Learn Log After Relearn .....	70
Part Position Feedback .....	71
Part Position Tool - Different Ways to View .....	75
Chapter 8 View Defects and Part Images .....	77
View Live Images and Defects .....	77
Hold an Image On Screen .....	78
Freeze on Defect Controls .....	78
Show Can View Only .....	81
Chapter 9 Print Quality Screen .....	83
Load Part Images .....	83
Retro-Spec Graph .....	85
View Defects on Images .....	86
Defect Classification .....	88
View Inspection Results .....	89
Options on Print Quality Screen .....	90

Chapter 10 Color Analysis .....	97
Color Measurements .....	97
Color Analysis Graphs .....	99
Color Analysis for One Color - Automatic Color Mode .....	102
Color Display Selection .....	102
Color Trend Graphs .....	104
Chapter 11 Correlation .....	109
Viewing Correlation Graphs .....	109
Mandrel Correlation .....	111
Print Blanket Correlation .....	111
Individual Part Correlation .....	111
Correlation Diagnostics .....	112
Chapter 12 Settings .....	114
Overview Display View .....	114
Forced Reject .....	115
Change Units of Measure .....	118
System Utilities .....	118
Global Utilities .....	124
Chapter 13 Alarms .....	127
Clearing Alarms .....	127
Alarm Descriptions .....	127
Alarm Monitor .....	130
Alarm History .....	131
Chapter 14 Troubleshooting .....	132
Oil or Dirt on the Inspection Tunnel Windows .....	132
Full Power Cycle for DecoSpector .....	133

Chapter 15 Control Enclosure and Operator Interface Hardware .....	135
USB Ports .....	136
Biometric Login Device .....	136
Power On and Off at the Control Enclosure .....	137
Chapter 16 Inspection Module .....	138
Chapter 17 Maintenance .....	140
Maintenance Cautions .....	140
Preventive Maintenance Frequency .....	140
Clean the Control Cabinet Filters .....	141
Service Frame .....	142
Use the Service Frame to Lift the Module for Maintenance .....	142
Clean the Tunnel Windows .....	143
Replace the Filter-Regulator Filters .....	145

# Chapter 1 Introduction

Welcome! Congratulations on your purchase of a Pressco DecoSpector 360™ system! The DecoSpector is an inspection system that performs extensive product quality checks on 100% of the decorated surface area of printed beverage cans.

The DecoSpector system locates the following on cans:

- Printing flaws (voids, spots, smears, cut blanket, etc.)
- Color conformity to specifications (drift, light, dark, contamination)
- Color to color registration (ghosting, shadows, shifts)
- Missing print coat (clear or white)

The DecoSpector system correlates defects to print blanket and mandrels, so that you can quickly locate problematic areas and make repairs or adjustments.

The system consists of a touch screen operator interface, a control enclosure, an inspection tunnel, and the associated cables connecting the components.

---

## About this guide

This guide provides information about system features and technical specifications. It is intended for Administrator-level users.

This guide provides the necessary information to operate a DecoSpector 360 system that is properly installed and programmed. Some machine functions require specialized training. This training is available from Pressco and may be conducted at your plant or at Pressco in Cleveland Ohio, USA. For more information, contact Pressco's training department.

This manual:

- Is valid for software version 6.2.23
- Is considered an integral part of the machine and should be kept handy for future reference as long as the system is being used in your plant
- Is your responsibility to keep in good condition, in a dry place, and ready for consultation by the authorized users of the system
- Contains the technology implemented at the time of selling and supplying the system and shall not be considered inadequate in case of technological enhancements in the machine or in the manual's illustrations


Related publications:


- DecoSpector 360 Software Guide, intended for Administrators, and contains all the software functions of the system.

***The following types of alerts may appear in this guide:***




***DANGER!*** - Danger messages alert you to specific conditions that can cause serious or fatal personal injury. Danger messages give you important information which must be observed to prevent injury.

 **WARNING:** - Warning messages indicate information which must be observed to prevent injury, data loss, or equipment damage.

 **CAUTION** - Caution messages indicate important information which must be observed to prevent: loss of data, poor system performance, or equipment damage.

*Note: Notes contain special information that warrants being set off from the body text as shown here.*


 **IMPORTANT** - Indicates prerequisites or information that must be observed to complete or understand a concept or task.


*TIP: Provides helpful hints for completing a task.*

---

## Safety Considerations


Observe the following safety warnings when operating the system or working near it:

 **WARNING** - Potential for projectiles to strike persons and cause injury. Keep clear of reject devices.

 **WARNING** - Sensitive electronics and High Voltages may be exposed. Keep Processor Cabinet/ Electrical Control Box door closed.

---

## Static Discharge Protection

 **Caution** - Electronic components can be damaged by static electricity discharge.

Always observe the following precautions before removing, installing or handling any electronic components within the Inspection System:

- Wear an anti-static wristband which is grounded to the Inspection System.
- Stand on an anti-static, grounded floor mat, and lay circuit boards on the mat during any board replacement.
- Keep circuit boards in static shield bags when storing and transporting. Ensure the bag is sealed.


## Chapter 2 Declaration of Conformity - DecoSpector 360

Declaration	<p>The listed product is in conformity with following Union harmonization legislation:</p> <p>Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility and with Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits.</p> <p>The Technical Documentation demonstrates the fulfillment of the essential requirements as set out in Annex I of the above Directive.</p>
Manufacturer	<p>Pressco Technology Inc. 29200 Aurora Road Cleveland, Ohio 44139-1847 USA</p> <p>This declaration of conformity is issued under the sole responsibility of the manufacturer.</p>
Product Name	DecoSpector 360™
Referenced harmonised standards to which conformity is declared:	<p>EN 61326-1:2013 Electrical equipment for measurement, control and laboratory use — EMC requirements — Part 1: General requirements</p> <p>EN 55011:2016+A11:2020: Radiated / Conducted Emissions</p> <p>EN 61000-4-2:2009: ESD Immunity</p> <p>EN 61000-4-3:2006 + A1:2008 + A2:2010: Radiated RF Immunity</p> <p>EN 61000-4-4:2004 + A1:2010: EFT Burst Immunity</p> <p>EN 61000-4-5:2006: Surge Immunity</p> <p>EN 61000-4-6:2009: Conducted RF Immunity</p> <p>EN 61000-4-11:2004: Voltage Dips &amp; Interruptions</p> <p>EN 61010-1:2010 Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements</p> <p>2011/65/EU Restriction of Hazardous Substances in Electronic Equipment</p>
Place	<p>Pressco Technology Inc. 29200 Aurora Road Cleveland, Ohio 44139-1847 USA</p>

Signed: Fredrick F. Awig, VP of Engineering & Operations. Signed for and on behalf of Pressco Technology Inc.

Chapter 2

Signed for and on behalf of Pressco Technology Inc., 29200 Aurora Road, Cleveland, OH USA 44139:


 VP, ENG OPERATIONS


Name, Position

Date: 21 April 2021

## Chapter 3 Safety Information

This section contains operator safety information that must be read before operating or servicing the system.


 **WARNING** - This product contains no operator serviceable parts. Refer servicing to qualified personnel. To prevent electrical shock do not open cabinet doors whilst power is connected.

 **WARNING** - Do not, under any circumstances, tamper with sealed machine parts or devices. This could result in the removal of protections that might create potentially hazardous conditions.

 **CAUTION** - Possible hazardous optical radiation from LEDs. Do not stare at lamps.

Observe the following safety warnings when operating the system or working near it:

 **WARNING** - Potential for projectiles to strike persons and cause injury. Keep clear of reject devices.

 **WARNING** - Sensitive electronics and High Voltages may be exposed. Keep Processor Cabinet/ Electrical Control Box door closed.

### Health Warning - Photosensitive Epilepsy

 **WARNING: PHOTSENSITIVE EPILEPSY/ SEIZURES**

A small percentage of individuals may experience epileptic symptoms or seizures when exposed to certain patterns or flashing lights. Exposure to the flashing lights in vision inspection systems may also trigger epileptic symptoms or seizures in these individuals. These flashing lights may trigger epileptic symptoms or seizures in persons who have no history of epileptic symptoms or seizures. If you, or anyone in your family has an epileptic condition or has had seizures of any kind, consult your physician before operating this machinery.

IMMEDIATELY DISCONTINUE use and consult your physician if you experience any of the following symptoms while operating this machinery:

- Dizziness
- Altered vision
- Eye or muscle twitches
- Loss of awareness
- Disorientation
- Seizures
- Any involuntary movement or convulsion

***Epileptic symptom or seizure triggers vary from person to person. Some common triggers are:***











- Flashing lights used for vision inspection systems or fire alarms
- Certain video games or TV broadcasts containing rapid flashes or alternating patterns of different colors
- Bright, contrasting patterns such as white bars against a black background
- Flashing white light followed by darkness
- Stimulating images that take up your complete field of vision, such as being very close to a TV screen or computer monitor
- Certain colors, such as red and blue

***If you encounter something that might trigger epileptic symptoms or seizures without warning:***

- Do not close your eyes (this could cause a flicker effect)
- Do not look directly at the flashing lights or trigger source
- Do cover one eye with the palm of your hand immediately
- Do turn away from the flashing lights or trigger source

## Symbols Used With This System

The following symbols are used on or near the Pressco system. Be aware of potential risk hazards.

Symbol	Meaning
	CAUTION: Risk of danger. Refer to accompanying user documentation before use.
	WARNING: Risk of electric shock
	WARNING: Arc flash and shock hazard
	WARNING: Risk of electrical shock
	WARNING: Risk of burns from hot surface
	WARNING: Hand crush hazard
	On (supply)
	Off (supply)
	Alternating current
	Protective conductor terminal

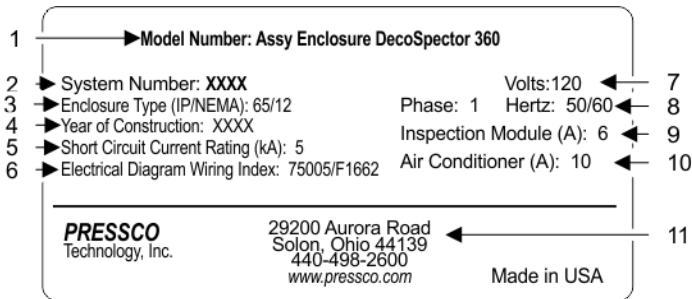
	Warning: Arc flash and shock hazard
	Warning: UPS voltage present when power is off
	Warning: UPS Disconnect
	Warning: Electrical interlock
	Danger: shock and arc flash explosion hazards

## Arc Welding Warning

**⚠ WARNING** - Potential equipment damage can occur if the vision equipment is not fully powered down prior to any arc welding performed on the line where the vision equipment is installed, specifically but not limited to our encoders.

## Product Label

The following illustration shows an example label that you will find on the system components.



- 1) Name of component
- 2) Serial number
- 3) Enclosure type
- 4) Year of construction
- 5) Short circuit current rating (kA)

## Chapter 3

- 6) Electrical wiring diagram number (Pressco number)
- 7) Voltage range in Volts AC
- 8) Frequency range in Hertz (Hz)
- 9) Inspection module current rating
- 10) Air conditioner current rating
- 11) Place of construction

---

## Warning Devices

The Pressco system has warning devices that indicate system failure or report excessive defects or warnings for your production line. These include an optional light tree, alarms and indicators on screen, and audible warnings (depending on system).

### Alarms

User-programmable alarms allow you to set the duration of the lights in the optional light tree and the horn if certain criteria are met.

In addition to the light tree, an alarm button is displayed on screen when certain criteria are met. You can click the alarm button to clear the alarm(s) and see more detailed information about the alarm condition.

### Light Tree

The optional light tree is mounted on a pole in a customer-specified location.



The light tree color segments represent each alarm or system condition. A color segment may appear for more than one alarm condition.

---

## Residual Risk

The Pressco system has been designed to minimize any danger of personal injury. However, the system uses rejection devices to remove defective product from the production stream. Also, the electronics cabinets contain risk of shock if they are opened.

Observe the following safety warnings when operating the system or working near it:



*WARNING - Potential for projectiles to strike persons and cause injury. Keep clear of reject devices.*



*WARNING - Sensitive electronics and High Voltages may be exposed. Keep Processor Cabinet/ Electrical Control Box door closed.*

---

## Intended Use


**Type of Process** - The Pressco system is intended to monitor container and other special manufacturing processes and identify non-conforming product.

**Intended Use** - The Pressco system is designed and constructed for use in an indoor industrial environment, always sheltered from the weather.

**Space Required** - The Pressco system and accompanying sensors must be installed in a place that will enable safe and easy installation, size changeover, user operation, and maintenance procedures.




---

## Prohibited Use

 **WARNING** - If this instrument is not used as specified, the protection provided by the equipment could be impaired. This instrument must only be used in a normal condition (in which all means of protection are intact).


 **Important** - The Pressco system should NOT be used for any purpose other than specifically indicated in the section titled "Intended Use" on the previous page.

The following uses are not intended:






-  Use in an explosive environment
-  Use in a flammable environment
-  Use in a damp, moist, or wet environment, except where specifically indicated

---

## Personal Protective Equipment

 **Important** - Always follow the safety requirements of your plant in addition to the recommendations below.

We recommend, at minimum, use of the following Personal Protective Equipment (PPE):





	Protective clothing
	Protective gloves
	Protective ear plugs or headphones
	Protective eye wear
	Protective foot wear

---







## Personnel Safety

The following rules are recommended to ensure the safety of personnel in charge of machine operation and maintenance.





**During machine operation:**




	Only one operator is needed to operate the machine. All others must keep at a safe distance.
	Operators must be familiar with all machinery connected to the Pressco equipment and know how to use emergency stop devices. Note: the emergency stop devices may not be connected directly to the Pressco equipment, but it is important to know how to use them.
	Before putting the Pressco system online, the operator must ensure that all safety devices used with all connected machinery are in place and operational. Do not operate with guards removed.
	The operator must maintain maximum focus on his work and be alert throughout his shift. If this is not the case, immediately inform the shift supervisor.

**When carrying out maintenance or repair work:**

	Disconnect master switch. For switch locations, refer to the Power Up and Power Down section.
	Before starting the machine, ensure that no person is close to the machine.
	If maintenance or repair requires the disconnection or removal of safety or protection systems, this operation must be supervised by authorized personnel who must ensure the prevention of personal injury or damage to the machine. All machine movements must be performed with limited speed and limited movements.
	Maintenance or repair work on electrical components must be carried out exclusively by authorized, trained personnel. When running tests with power connected, you must strictly comply with the rules provided.
	Personnel working on higher parts of a machine must wear a harness and hook it on to the structure and must always move with extreme caution.
	Never perform lubrication or maintenance procedures on mechanical parts with the machine running.


**For your safety, do not:**

-  Open safety guards during machine operation
-  Perform maintenance and repair while the system is running
-  Lean on the machine
-  Sit on the machine components

-  Use the machine for purposes other than those listed in this manual
-  Modify parts of the machine
-  Allow unqualified personnel to operate or perform maintenance procedures on the machine


---


## Lifting Heavy Objects

 **CAUTION** - Some components are heavy. Take proper precautions to prevent personal injury or damage to equipment. If you are not capable of lifting the object alone, ask a capable person to help lift the object, or use a mechanical lifting device

The components do not have handles to lift the equipment. Be sure to:

- Lift equipment from the bottom - do not use wires, brackets, nor other protrusions
- Keep fingers away from sensor lenses to keep the equipment clean
- Proceed slowly

 **WARNING**- The Pressco cabinets must NOT be lifted by one person. Use a mechanical lifting device, and ask another person to assist you.

 Do not twist your body when moving the load. Instead take small steps with your feet turning until you are in the correct position.

### **To safely lift equipment:**

1. Stand close to the load and center yourself over it with your feet shoulder width apart.
2. Tighten your abdominal muscles.
3. Keeping your back straight, bend your knees and squat down to the floor.
4. Get a good grasp on the load with both hands.
5. Keeping the load close to your body, use your leg muscles to stand up lifting the load off the floor. Your back should remain straight throughout lifting, using only the muscles in the legs to lift the load.
6. To place the load in the appropriate spot, bend at the knees using only your leg muscles to lower the load.

---

## Authorized Users

Trained machine operators, mechanic and electrical maintenance staff, and plant managers are considered authorized users of the Pressco system. These users should carefully read the information contained in this manual. The plant manager must ensure that the safety recommendations included in this manual are observed.

 **WARNING** - Allowing workers who are unfamiliar with the production process to operate the Pressco system could result in hazard risk.

If you are unclear about any part of this manual, contact Pressco Technical Support.



*Important - No worker should ever operate the system outside of his/ her own area of competence and responsibility.*

**Proper Operation:** - Only one worker is to operate the system at any given time. The correct position for the operator is in front of the user interface monitor or control enclosure (if applicable).

**Repairs:** - Any repair on the system shall be carried out exclusively by Pressco Technology Inc. service personnel or by other service expressly authorized by Pressco Technology Inc.

---

## Spare Parts Usage

The following restrictions apply to replacing parts:



*WARNING - Using spare parts that are not designed to Pressco's specifications can compromise the safety and effectiveness of the Pressco system.*

- The use of parts that are not within Pressco's design specifications is prohibited. This prohibition applies in particular when the parts involved contain or are connected with safety devices.
- Before resuming production, make sure all safety devices are in working order.

Pressco Technology Inc. shall not be liable in any way if any of the above-described directions are not complied with.

To obtain a spare parts list, contact the Spare Parts department at Pressco: [SpareParts@pressco.com](mailto:SpareParts@pressco.com). Or call +1-440-498-2000 (Monday - Friday 8AM - 5PM Eastern time).

In addition, Pressco's technicians are available to help customers, in their own plant, to solve any problem that might arise during use and maintenance of the system.

## Chapter 4 Specifications - DecoSpector 360

This instrument has been designed and tested in accordance with Publication EN61010-1 (2010) Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use and has been supplied in a safe condition. The instruction documentation contains information and warnings which must be followed by the user to ensure safe operation and to maintain the instrument in a safe condition.

### Deco Can Printing Position Requirement

#### Specification

We require that two millimeters (2mm) of bare aluminum be present at the top of each can. This is required for proper part location. Less than 2mm may result in part location issues, which impacts inspection.

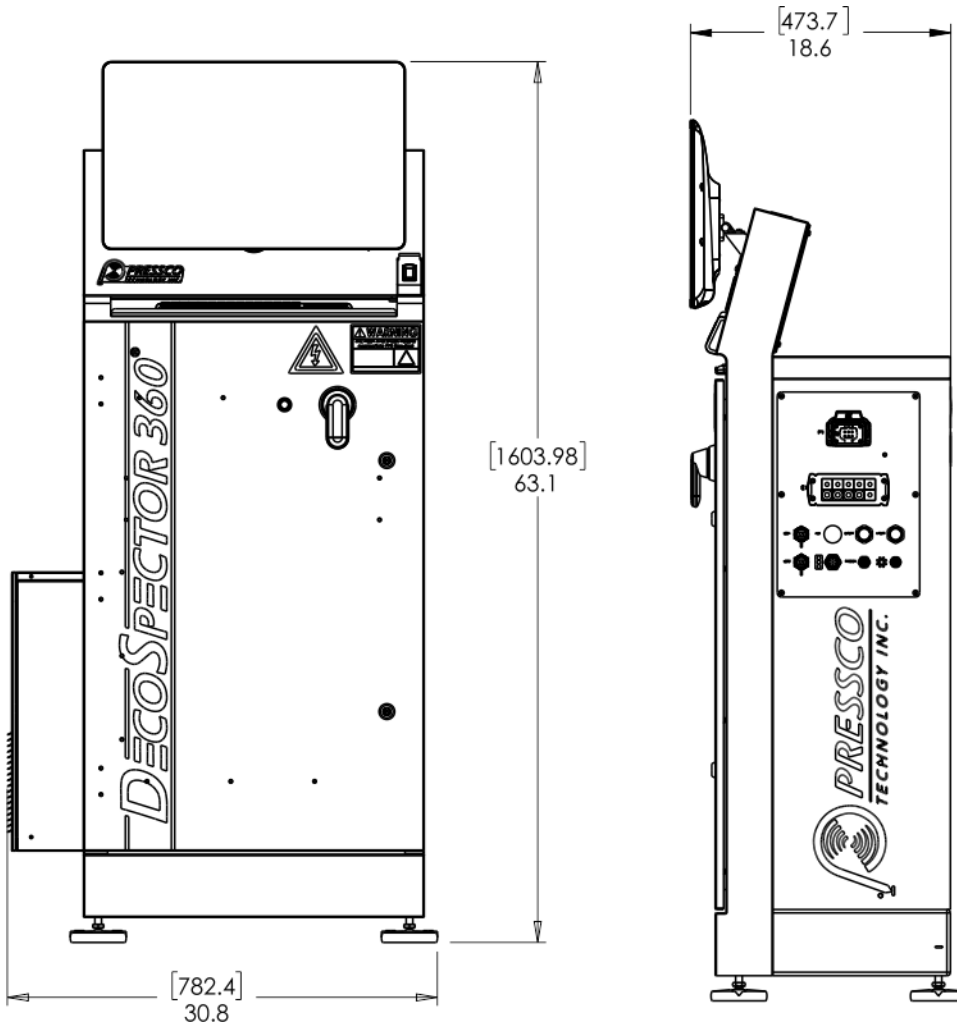


#### Measurements

The following topics show the measurements for the DecoSpector cabinet, inspection module, and service frame.

## Deco Control Enclosure Measurements

This drawing shows measurements for cabinet numbers 77769, 77770, 81507, and 81508.



The measurements are in inches. The numbers in brackets are in millimeters.

## Deco Inspection Module Measurements

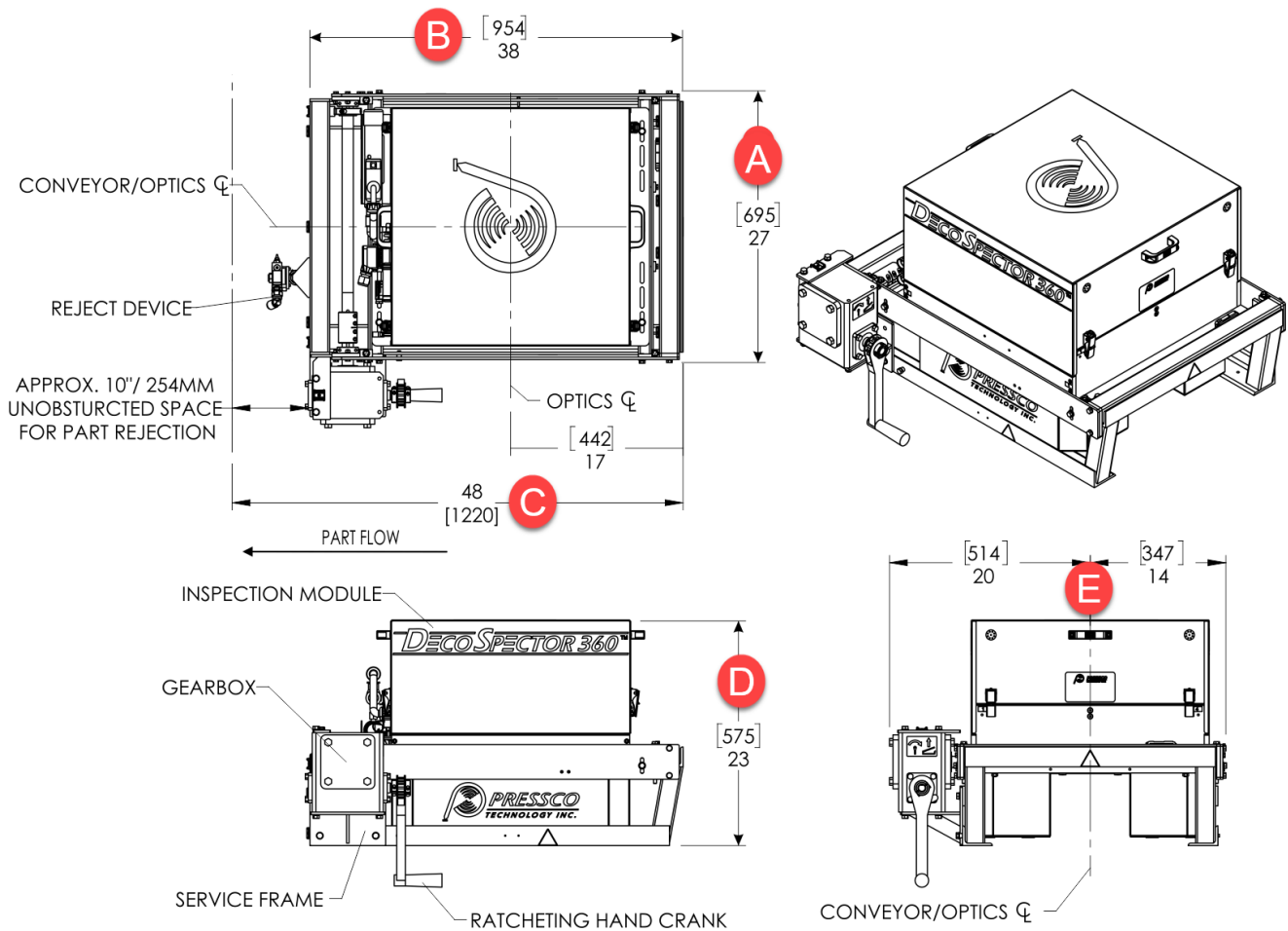
**⚠ CAUTION** - This object is heavy. Review the section on lifting heavy objects before moving this object. ["Lifting Heavy Objects" on page 18](#)

### Dimensions of inspection modules and service frames

*Note: The dimensions listed below include the Service Frames on which the modules are mounted*

*Note: measurements do not include connectors*

The illustration below shows the measurements of the standard (pin stripper) inspection module DS6 (model 76610). Other module measurements are listed in tables below.



- NOTES:
1. MODULES SHOWN IN INSPECTION POSITION.
  2. FRAME SHOWN IN ONE OF SEVERAL POSSIBLE CONFIGURATIONS.
  3. GEARBOX AND REJECTOR CAN BE LOCATED ON EITHER SIDE OF CONVEYOR.
  4. FRAME TO CONVEYOR MOUNT LEGS NOT SHOWN.

**Standard (pin stripper) inspection module DS6 (model 76610)**

A	Width	27 inches [695 mm]
B	Length	38 inches [954 mm]
C	Length with reject device and optics (10 inches necessary for rejection)	48 inches [1220 mm]
D	Height	23 inches [575 mm]
E	Width from conveyor centerline	20 inches [514 mm] and 14 inches [347 mm]

**XL (pin stripper) inspection module DS7 (model 76620) and DS9 (model 80134)**

Width	33 inches [847 mm]
Length	44 inches [1108 mm]

## Chapter 4

Length with reject device and optics	53 inches [1360 mm]
Height	25 inches [641 mm]
Width from conveyor centerline	23 inches [590 mm] and 17 inches [424 mm]

### Standard (pin stripper) inspection module DS8 (model 80125)

Width	27 inches [695 mm]
Length	38 inches [954 mm]
Length with reject device and optics	48 inches [1220 mm]
Height	24 inches [613 mm]
Width from conveyor centerline	20 inches [514 mm] and 14 inches [347 mm]

### XXL inspection module (model 83226)


Width	37 inches [939.80 mm]
Length	41 inches [1041.40 mm]
Length with reject device and optics	42.06 inches [1068.40 mm]
Height	25.79 inches [655.07 mm] (34.85 inches [885.19 mm] with stand)

## Environmental Conditions

The DecoSpector 360™ system is designed to be safe in the following environmental conditions:

*Note: Please consult Pressco Technology Inc. if your environmental conditions are outside of those listed.*

Condition	Specifications
Indoor/ outdoor use	Indoor use only
Altitude	Up to 2000 meters
Operating Temperature	5 °C to 50 °C
Storage Temperature	0 °C to 70 °C
Humidity	Maximum relative humidity 80 % for temperatures up to 31 °C decreasing linearly to 50 % relative humidity at 50 °C
Mains supply	Voltage fluctuations up to ± 10 % of the nominal voltage Transient overvoltage typically present on MAINS supply
Overvoltage protection rating	NOTE: the normal level of transient overvoltages is impulse withstand (overvoltage) category II of IEC 60364-4-443.
Rated pollution degree	This instrument is designed for use in Installation Category II and Pollution Degree 2 as per EN61010-1 and EN60664 respectively.

 **WARNING** - This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

## Electrical Specifications

The following are electrical specifications\* for the DecoSpector 360™ control enclosure:

*\*Note: the specifications are current as of the date of this publication and the wiring diagrams included in this publication. If your system was manufactured in a different year, look at the **System Number tag** located on your system to see the actual specifications.*

Configuration	Specification - 120 V system	Specification - 230 V system
Voltage Range	120 Vac	230 Vac
Frequency	50/ 60 Hz	50/ 60 Hz
Current	7A for Air Conditioner 6A for Inspection System	3.5A for Air Conditioner 3A for Inspection System

## Sound Pressure Level

The (optional) horn on the light tree has a maximum 105dB level at 1 meter distance in front of the horn. Use proper hearing protection as specified by your plant safety instructions.

## Chapter 5 Installation

This section contains information about installation requirements and preparations that need to be complete before installing the system.

### Recommendations Prior to Installation

Before the machine is installed, the Pressco installer, together with the Customer (or representative) shall check the following criteria in the environment where the machine is to be installed:

- Work required by contract for the installation of the machine has been carried out
- The plant layout drawing that describes where the machine will be installed is the final drawing agreed to by Pressco Technology Inc.
- The space and height required for installation are actually available
- Only the components included in the installation layout are present in the area where the machine is to be mounted. Ensure no machines or components have been added at a later stage that might hinder mounting or make it more difficult. Should this be the case, immediately contact Pressco's Project Engineering personnel to arrange a suitable solution to the problem.

We recommend the following prior to machine installation:

- Transport the machine in its packaging to the area where it will be installed to minimize possibility of damage
- Carefully remove the packaging material and check components for damage
- Check tightness of mechanical components, as they can loosen during transport
- Prepare the compressed air mains line. Before making final connections, ensure that the pipes are clean and free from any debris.

### Instructions for Safe Assembly Operations



**IMPORTANT** - *The site supervisor will be responsible for ensuring that all the various mounting phases are carried out safely and in compliance with current regulations.*

*The site supervisor will also be required to make sure that all the members of personnel involved in the mounting operations comply with said regulations.*

### Shipping and Handling

Pressco Technology Inc. ships unassembled components in packing cases designed to protect the contents during handling and from exposure to weather.

Unless otherwise specified in the contract with the machine order, the Customer shall supply Pressco Technology Inc. with the means and equipment necessary for the unloading, lifting, and handling of machine parts. Pressco Technology Inc. deems it important to have one of their technicians supervise the process of unloading, handling, and lifting the machine. The technician can give useful advice as to the logical sequence in which the components should be unpacked and positioned for ease of assembly.

**⚠ WARNING** - Only qualified personnel must be involved in the operation of unloading, handling, and lifting the machine. Pressco Technology Inc. shall not be liable for damage to components and/or personal injury resulting from the involvement of unauthorized personnel and/or failure to comply with the directions provided in this manual in relation to lifting and transport.

**!** Important - The site supervisor will be responsible for ensuring that all the various mounting phases are carried out safely and in compliance with current regulations.

After the machine is delivered, check for any damage that might have occurred during shipping. In case of damage, contact Pressco Technology Inc.

In handling the machine, always keep it close to the ground.



We recommend using a forklift truck with adequate capacity and forks to suit the weight to be lifted (machine plus packaging).

The dimensions and weight of typical crates are listed below. You will receive more than one crate. The size and weight of the crates may be more depending on your order.

**!** Note: the following values are from the standard DecoSpector cabinet and original DecoSpector inspection module. The newer and larger modules will have larger crates and will weigh more.

Size	Crate A: 99.06 x 124.46 x 195.58 cm [39 x 49 x 77 inches] Crate B: 114.3 x 129.54 x 119.38 cm [45 x 51 x 47 inches]
Weight	Crate A: 322.05 kg [710 lbs.] Crate B: 332.48 kg [733 lbs.]

## Hoisting

The machine is packaged in a wooden box, inside which the parts are individually packaged to prevent shock and sudden movements during transport. It is anchored onto a pallet.

**⚠ WARNING** - To prevent personal injury in the event that the machine or packaging box should fall, ensure that during hoisting operations no person is standing within the range of action of the hoisting machines.

Hoisting, transporting and placement operations should be supervised by qualified technical staff trained in these specific areas.

Before performing any movement, you should always ensure that the hoisting means and equipment (ropes, hooks, etc.) are suitable for lifting the weight and also verify its stability.

**!** If using a fork lift truck, ensure that the forks extend beyond the opposite side.

Before you start moving the machine, check the stability of the element to be transported.

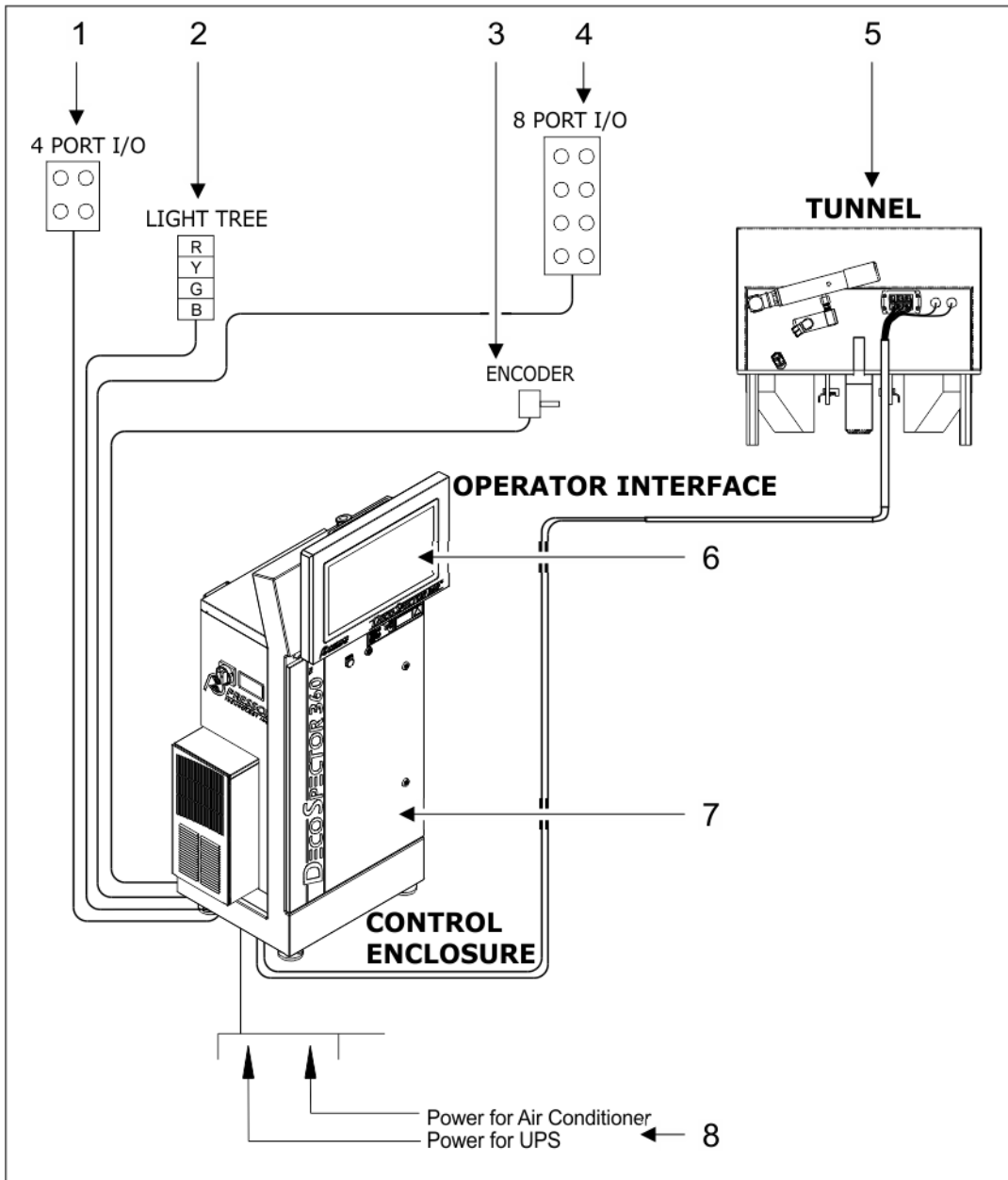


## Storing

The machine should be stored indoors, still packed. Maintain regular temperature and humidity.

## DecoSpector 360 Components

The following diagram shows the major components of the system. Your plant may have a different configuration based on your inspection requirements.



- 1) 4-port I/O box - (correlation signals) located near the correlation sensors
- 2) Light tree - location is plant-specified
- 3) Encoder - located near the tunnel
- 4) 8-port I/O box - (part detection and rejection signals) located near the tunnel
- 5) Tunnel - also called Inspection Module, mounted on a Service Frame
- 6) Operator interface - in some plants, this interface may be located in a remote location from the control enclosure
- 7) Control enclosure
- 8) Power input for air conditioner and UPS

## Assembly, Location, and Mounting Requirements

### Installation

Pressco Technology Inc. recommends that the machine be installed and assembled by Pressco's specialized technicians. This is of vital importance for correct machine operation.

**⚠ WARNING** - Pressco Technology Inc. shall not be liable in case of failures or damage to property and/or personal injury resulting from or connected with assembly if this has been carried out by unauthorized personnel, or is not in compliance with the indications given in this manual.

To carry out production and cleaning/ servicing operations, it is important for the machine to have a minimum amount of space all around and away from walls.

### Ventilation

Leave 1 meter [39 inches] clear around the control enclosure. Place the system components in a position with adequate ventilation to allow proper air flow through the air filters.

## Install the Inspection Module

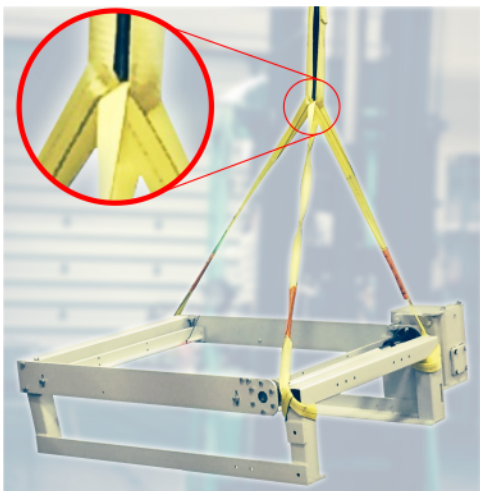
Installation should be carried out by Pressco personnel. Refer to the installation drawings.

**⚠ Caution** - The user interface and inspection module must **NOT** be lifted by one person. Use a mechanical lifting device, and ask another person to assist you.

### Lift the Service Frame

Using a forklift or other mechanical lifting device, lift the service frame using the three straps that are installed by Pressco prior to shipping. Use a hook, another strap (as shown below), or your plant's preferred method.

Place the service frame in the desired location and mount as specified in the installation drawings.



## Lift the Module

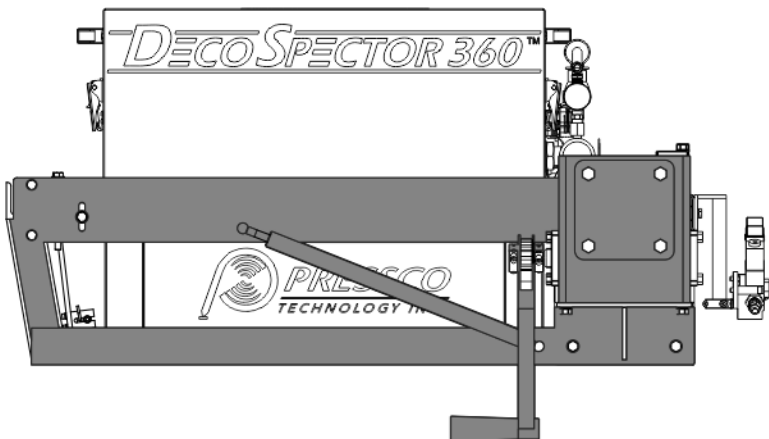
Using a forklift or other mechanical lifting device, lift the module using the two straps that are installed by Pressco prior to shipping. Use a hook, another strap, or your plant's preferred method.

Place the module on top of the service frame. Secure the module in place with screws, as specified in the installation drawings.



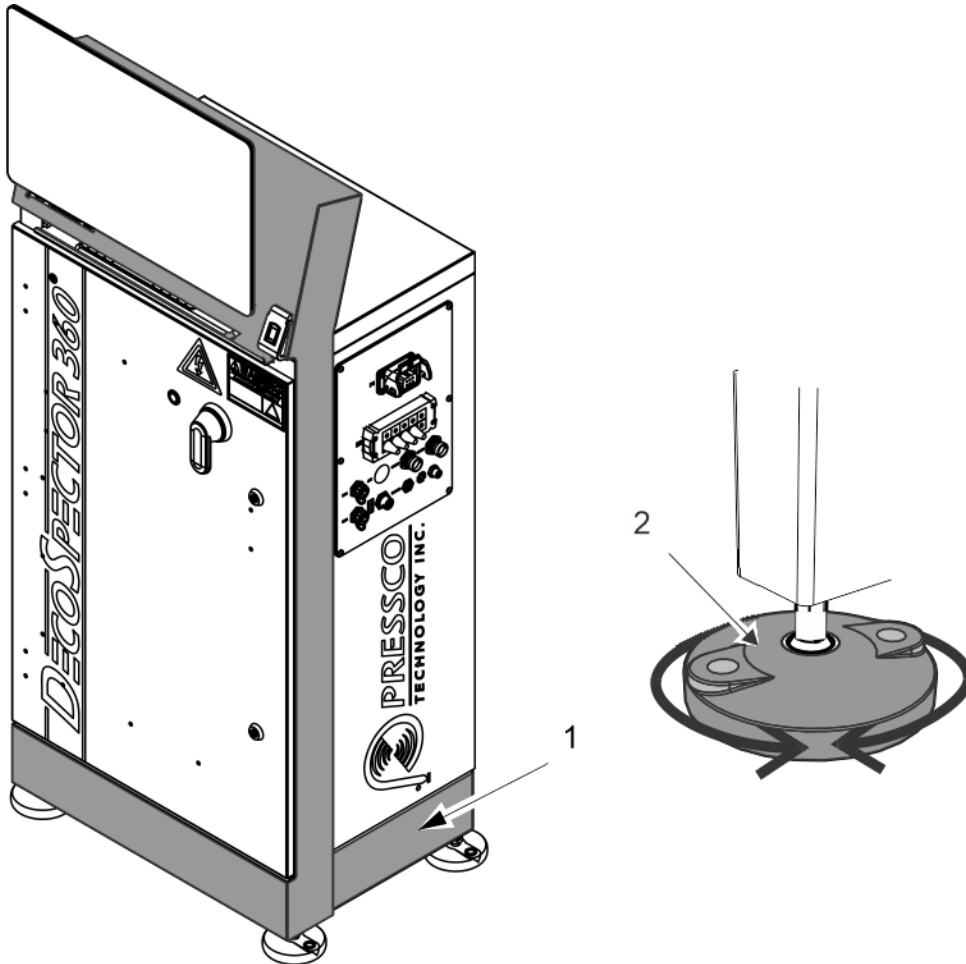
## Secure the Module to the Service Frame

Secure the module to the service frame. Refer to the installation drawings for instructions.



## Stability of the Control Enclosure

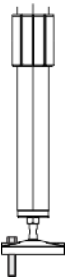
Ensure the stability of the control enclosure. Also refer to the directives in the Personnel Safety section.



### **To make sure the control enclosure is stable:**

1. Make sure that the control enclosure frame [item 1] is secured properly.
2. Adjust the feet [item 2] to level the control enclosure. Proper leveling can help ensure proper operation.

## Securing to Floor



The ground under the machine must be sufficiently solid to sustain the machine mass at the support points. In addition, the floor must be free of bumps, grooves and other surface irregularities. The surface must be flat enough so that the leveling feet of the machine bear weight across their entire surface.

Attach the machine to the floor by installing M12 x 50mm lag bolts into the floor through the hole on the frame foot pad. Do this on one hole in each foot.

## Utilities to be Supplied by Customer

The following utilities are required to operate the DecoSpector system. Before making connection, make sure the utility matches the technical specifications. More than one connection of the utilities may be required depending on the number of modules installed. Refer to specific wiring diagrams.

**WARNING** - This is a Protection Class 1 Product (provided with a protective earthing ground terminal). The equipment must only be connected to a supply that is also provided with a protective earth conductor. Any interruption of the protective conductor inside or outside of the equipment is likely to make the instrument dangerous. Intentional interruption is prohibited.

Utility	Requirements
Air supply for rejection device	Pipe size must be such that there will be no pressure decrease during machine operation. Air must be dry and free of oil.
Electrical supply	Provide one each electrical socket to comply with: " <b>Electrical Specifications</b> " on page 24 (use the specifications that apply to your system)
Internet connection (optional)	Provide a shielded ethernet cable to use Pressco's remote support through the Internet.

## Protective Earthing

This product must be grounded (earthed). If it should malfunction or break down, grounding provides a path of least resistance for electric current to reduce the risk of electric shock.



**DANGER** - Improper connection of the equipment grounding conductor can result in a risk of electric shock. Check with a qualified electrician or service technician if you are in doubt as to whether the product is properly grounded.

### Cord Connected Equipment

The product will be equipped with a supply cord having an equipment grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with local codes and ordinances.

Do not modify the plug provided with the product - if it will not fit the outlet, have a proper outlet installed by a qualified electrician.

### Cable Direct

This product must be connected to a grounded metal, permanent wiring system, or an equipment grounding conductor must be run with the circuit conductors and be connected to the equipment grounding terminal.

## Electrical Connections for cabinets 77769, 77770, 81507, and 81508

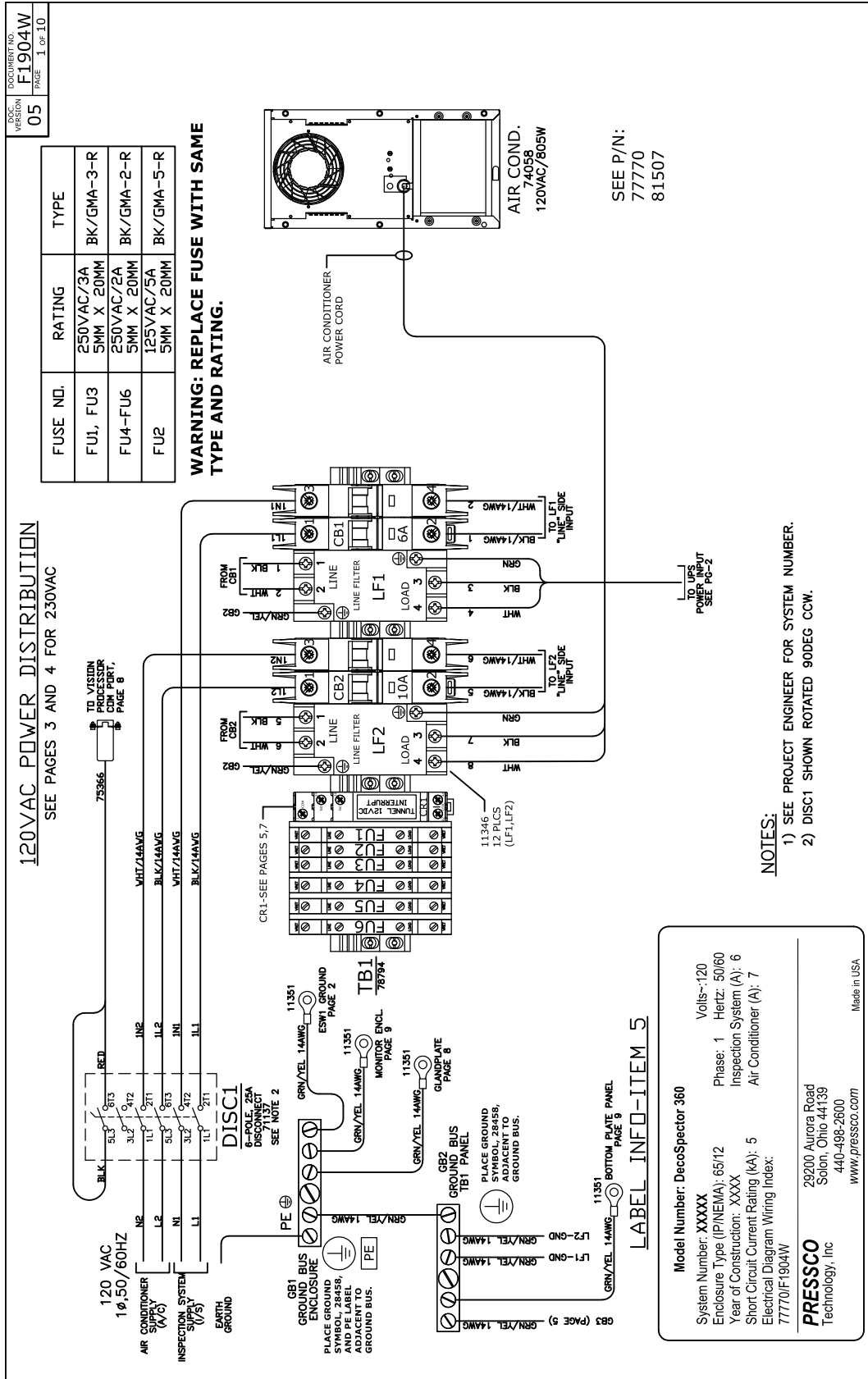
Make sure that the power outlet voltage matches the voltage required by the machine. Refer to the specifications for equipment included with your system: ["Electrical Specifications" on page 24](#)



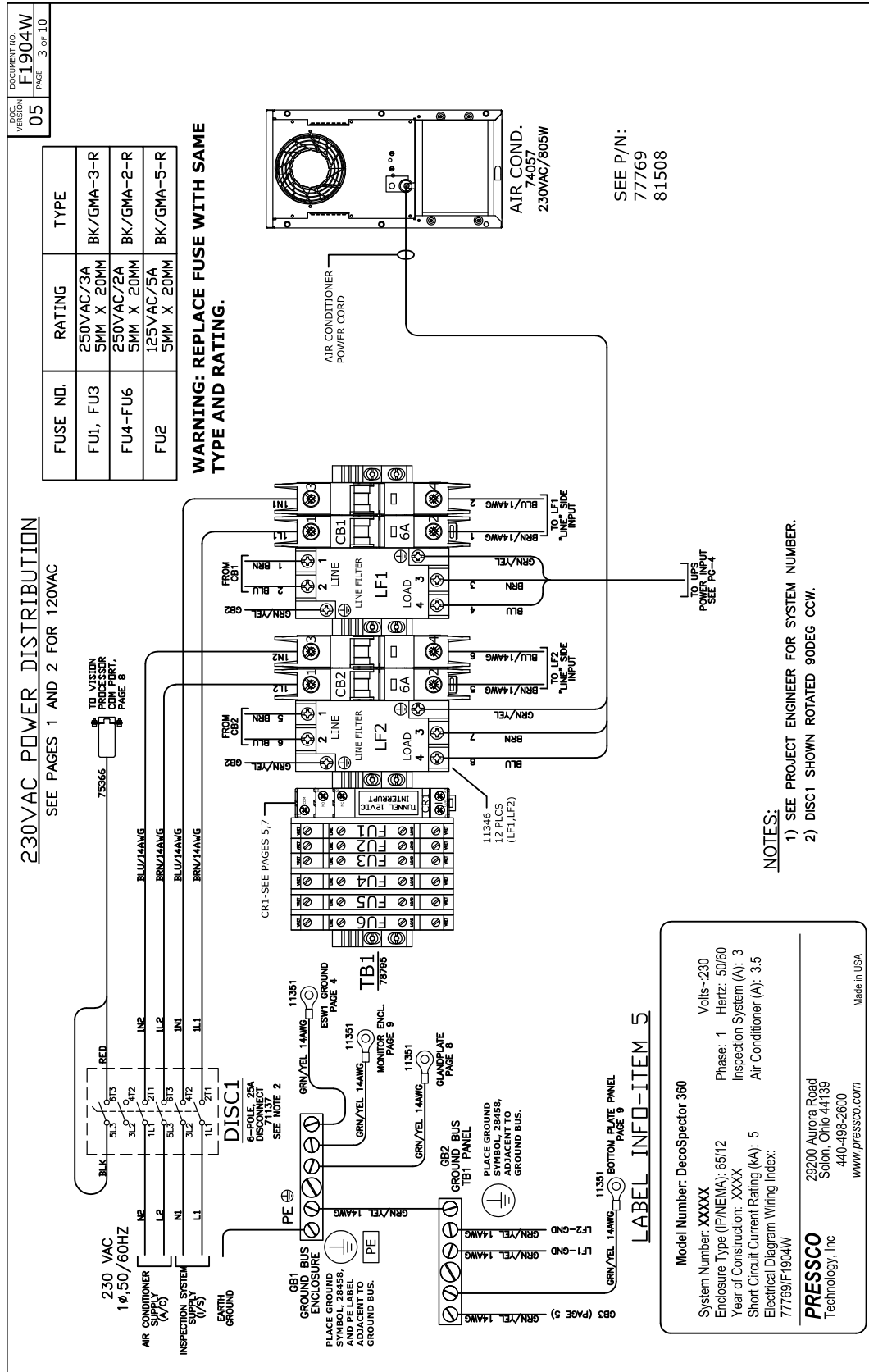
*WARNING - Power Switch is the power disconnect device. Do not position the equipment such that access to the disconnect switch is impaired. If not readily accessible (such as within a rack or mounting out of reach), an additional disconnect device should be installed that can isolate the Live and Neutral lines of the mains power supply, whilst leaving the protective earth intact.*

The following diagrams show the electrical connections. For other wiring diagrams, please see the Technical Reference Guide or Hardware Guide.

# Wiring Diagram - sheet 1 of 10 (120VAC) - Power Distribution

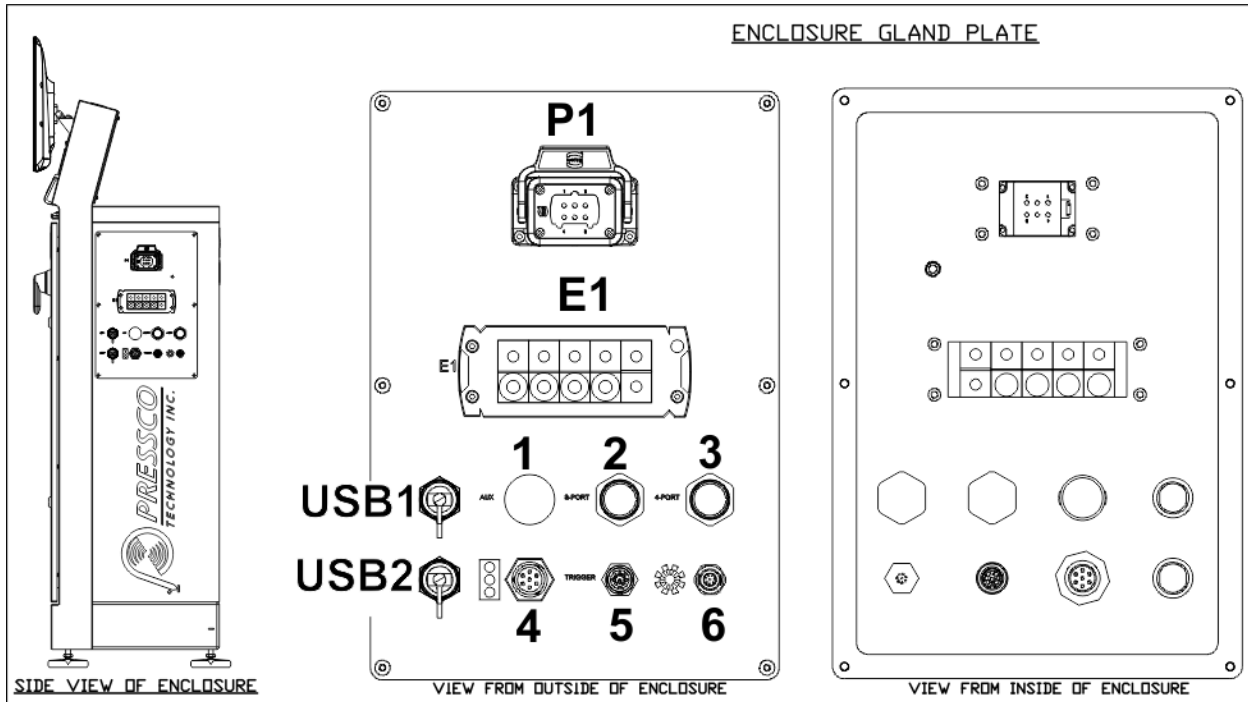


# Wiring Diagram - sheet 3 of 10 (230VAC) - Power Distribution



## External Connections

The connectors are on the side of the DecoSpector cabinet.



P1) Inspection Module power 12Vdc /24Vdc /48Vdc

E1) block connector - inspection module connections

USB1 and USB2 - for data transfer

- 1) Auxiliary input
- 2) 8-port I/O (part detection and rejection)
- 3) 4-port I/O (correlation sensors)
- 4) Light tree
- 5) Trigger (camera)
- 6) Encoder

*Note: the connectors not called out in the diagram have no connection*

## Commissioning

Before placing the machine into operation, make sure the following checks are completed:

Completed	Yes	No
Positioning and leveling of the unit		
Connection of compressed air line to connection points		
Connection of power supply to control enclosure		
Connection of power supply to inspection module(s) if applicable		
Proper wiring from the control enclosure to the inspection module using the wiring diagrams		

# Chapter 6 Basic Operation

## Log In





User: Supervisor  
Access: Admin

Tap to log in. Enter your password (using the onscreen keyboard), then select Login. If you forgot your password, ask your Administrator to set a new password for you.

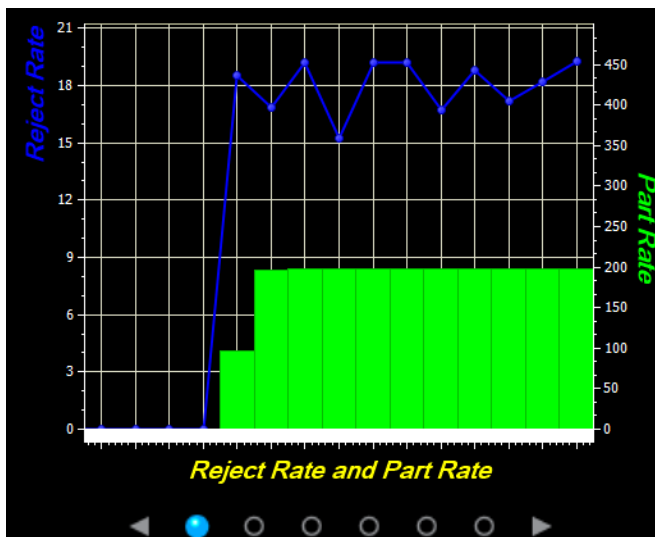
If you have a biometric account, press your finger on the biometric device to log in. You must use the same finger that you used when you created the account.

## How to Select Items

To select items, use the touch screen. Depending on the area of the screen, different gestures provide additional functions.

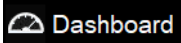
	Tap to select an item.
	Swipe (or flick) to select the next image or graph. Flick a number to change a parameter value.
	Press and hold to bring up additional functions.
	Use two fingers to zoom in or zoom out. Separate your fingers to zoom in, and move fingers together to zoom out.

Some areas provide multiple options to select items. For example:



- Swipe in the graph (or image) area to show the next one
- Select a dot below the graph (or image) to select a different one
- Select an arrow to the left or right to show the next one

# Dashboard Feature



To view the Dashboard, select the Dashboard icon from the Control Panel. (If you do not see this icon, then it needs to be configured. Ask your Administrator to set it up.)

The Dashboard is an optional feature that provides a high level view of how the Deco system is operating. Its main features include:

- Alarm monitoring
- Job performance comparison
- Defect percentages
- Part spacing and positioning



When the Dashboard is enabled, it is the main screen displayed when the DecoSpector software is launched.

Put the system online to see the Dashboard updates. The information on this screen is view only. In other words, there is no area that responds to mouse clicks with one exception: the individual cameras in the Part Position graph can be clicked for camera angle views.

## Resetting the data on the dashboard

Clear the Dashboard statistics the same as clearing all system statistics.



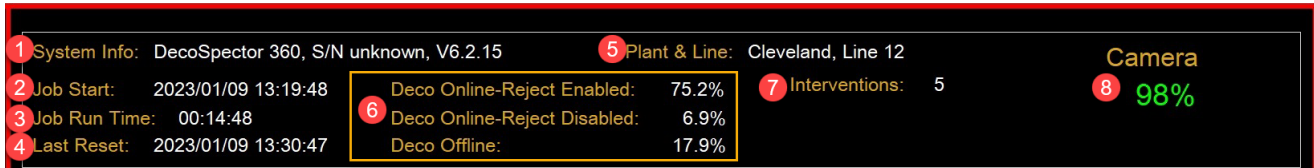
- Press and hold in the statistics area to clear statistics.

Total Parts	89
Rejected	0
Rejected %	0.00

You will be asked, “Do you want to clear the job statistics?” Select “Yes” and the dashboard data will be cleared and the Last Reset date/time will be updated.

## Dashboard Features

See the descriptions of the various areas of the dashboard:



### Dashboard header information:

- 1) **System Info** - Contains “DecoSpector 360” followed by the serial number of the machine and the version number of the software.
- 2) **Job Start Time** - This contains the date and time of when the job was first loaded.
- 3) **Job Run Time** - This contains the number of hours, minutes, and seconds since the job was first loaded.
- 4) **Last Reset** - This displays the last time the system was reset. The system is reset when Deco is launched, when a new job is loaded, or when you “tap and hold” in the statistics area of the Control Panel.
- 5) **Plant & Line** - Contains the respective fields from the Dashboard setup screen, separated by a comma.
- 6) **Deco Online-Reject Enabled/Disable/Offline** - These three values represent the percentages of the system’s online and offline time, with the online time split between the time the rejector is enabled and the rejector is disabled.
- 7) **Interventions** - This is the total number of times that a user does any of these: changes a parameter, clears an alarm, or takes the system offline then online again.
- 8) **Camera Cleanliness** - Represents the cleanliness of the camera, displayed as a percentage. Values 95%-100% display in green, values 90%-94% display in yellow, and values < 90% display in red.



**Charts and Graphs:**

9) **Alarm Information chart** - This chart shows the status of the alarms listed. When one of these alarms is triggered, but not cleared, the status circle to the left of the alarm name will appear red. Also, the alarm count in the graph is incremented. When you clear the alarm, the status circle will turn green. The count values are cleared whenever the system is reset.

10) **Inspection Deco Defects Graph** - This graph shows the percentage of total defects, print defects, and color defects. The vertical red line represents the threshold value as configured on the Dashboard Setup screen. If the percentage value of any of the bars is below the threshold value, the bar will be displayed in green. If the percentage value of any of the bars is above the threshold value, the bar will be displayed in red. If a vertical red line does not appear on the graph, it is because the threshold value is larger than the highest percent value currently represented on the graph.

11) **Part Spacing Graph** - This graph shows the spacing of the cans as they travel through the tunnel.

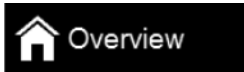
12) **Previous Job Comparison Graph** - This graph compares the currently running job (yellow bars) with the previously run job (blue bars). The data shown is the percentage of print defects, color defects, total rejects, total parts not inspected, and total time online.

13) **Inspection Process Defects Graph** - This graph shows the percentage of total parts rejected but not inspected, total parts with image acquisition errors, total parts with registration or orientation errors, total parts that are out of round, and total parts that had a shadow print defect where an adjacent can was present and the part was passed. The vertical red line represents the threshold value as configured on the Dashboard Setup screen. If the percentage value of any of the bars is below the threshold value, the bar will be displayed in green. If the percentage value of any

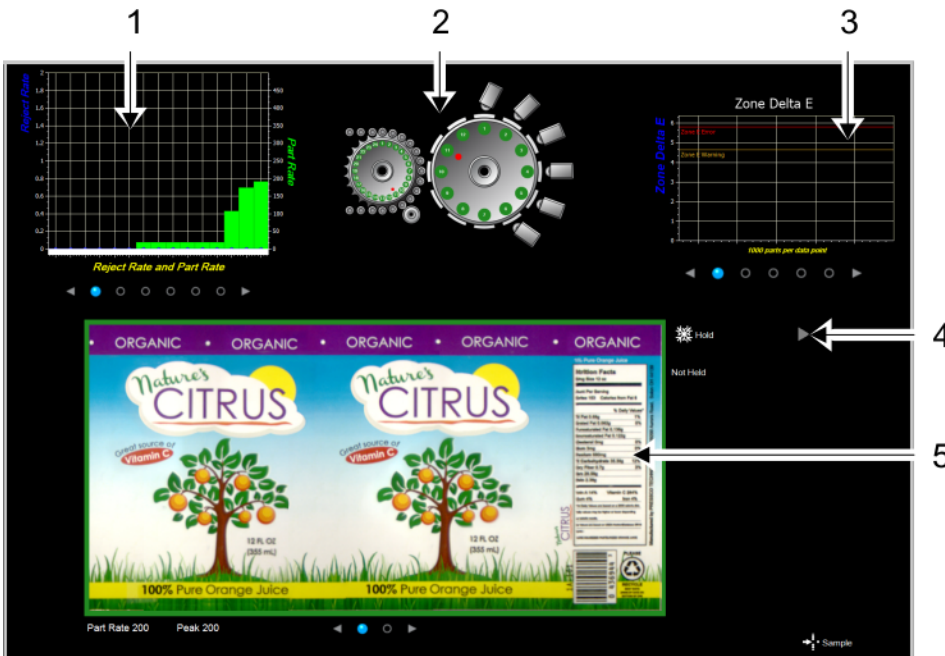
of the bars is above the threshold value, the bar will be displayed in red. If a vertical red line does not appear on the graph, it is because the threshold value is larger than the highest percent value currently represented on the graph.

14) **Part Position Graph** - This graph plots the positions of the cans when the image is acquired. You can click on the individual cameras for camera angle views.

## Overview Panel

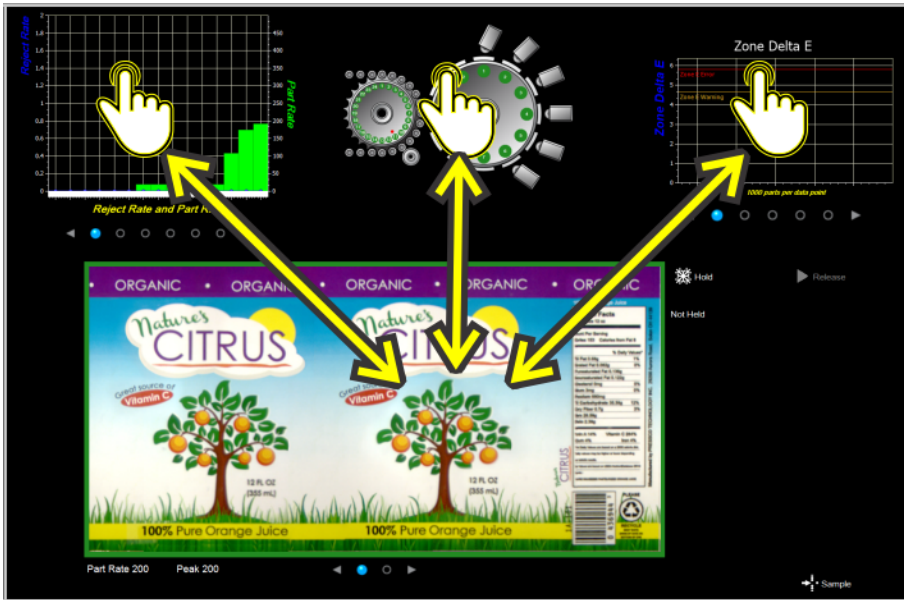


This screen shows an overview of the system statistics, correlation, and live part images. You can change views on this screen depending on your preferences. For example, you can view a large image of the correlation graphic instead of the part image if you want to.

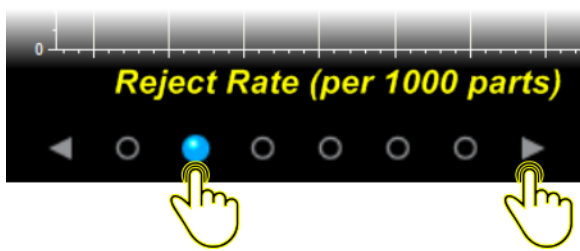


- 1) Statistics Graphs - see "Graphs" on the next page
- 2) "Correlation" on page 109
- 3) "Color Trend Graphs" on page 104 (only if Color Zones are configured)
- 4) You can select what to display from "Overview Display View" on page 114
- 5) "View Live Images and Defects" on page 77

The lower section of the Overview Panel controls system operation and display. When a graph or image is displayed in the lower section, more controls are displayed to the right. Tap a graph or part image in the top section to display it as a large graph or image in the lower section of the panel.



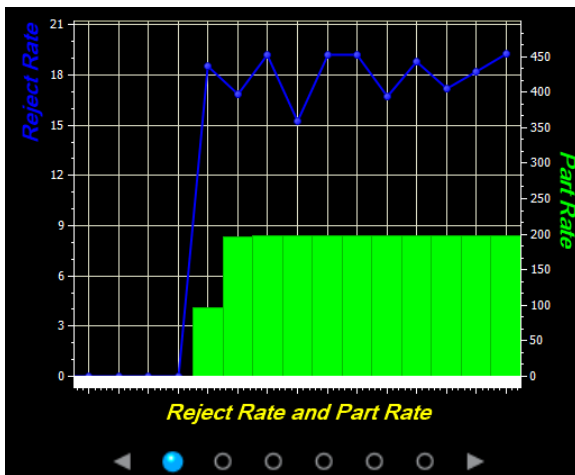
Swipe the graphs or use the buttons to display the different graphs.



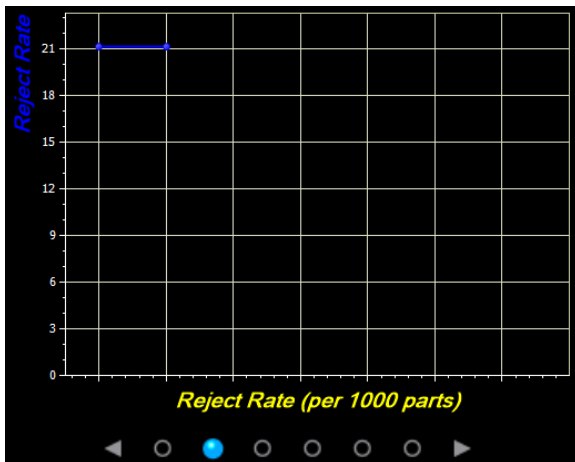
## Graphs

The DecoSpector system has several graphs for you to monitor production. Tap the blue dots below the graph, or select the left and right arrows to see the different graphs. The following are examples:

### Reject Rate and Part Rate Graph

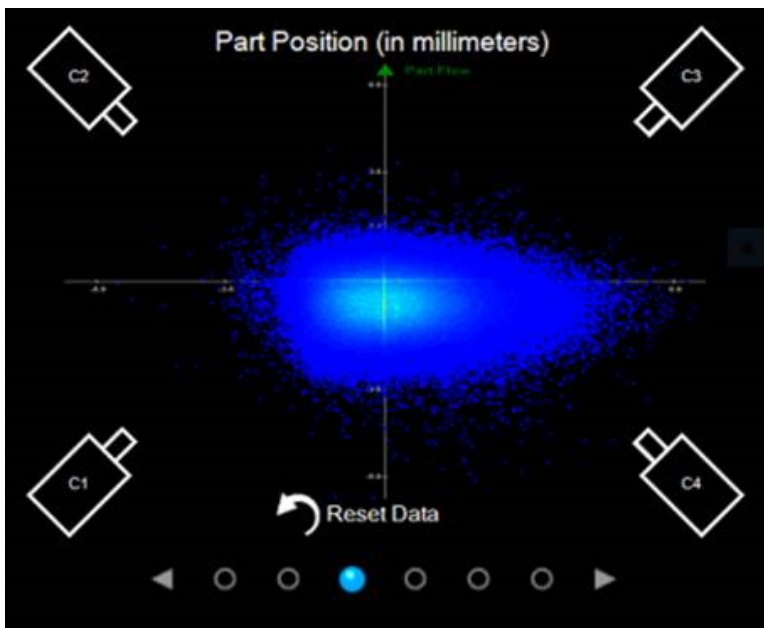


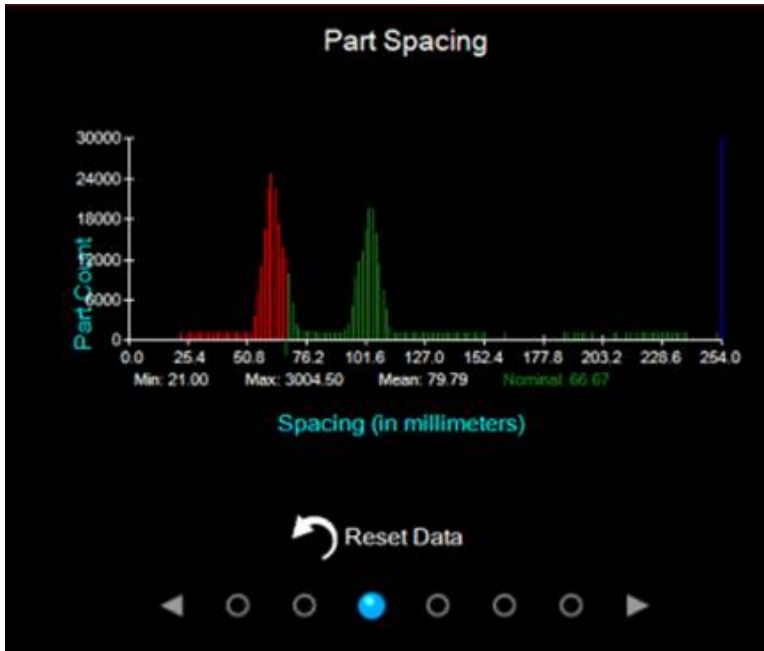
### Reject Rate (per 1000 parts) Graph



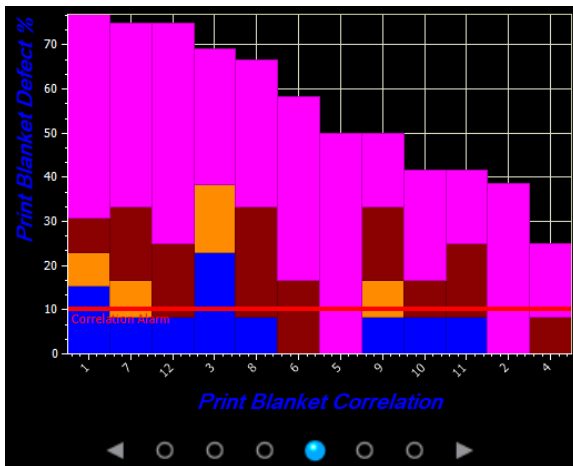
### Part Position Feedback

This tool helps determine the position of the part flow, and quality of material handling, within the DecoSpector 360™ tunnel.





### Print Blanket Correlation



Graphs for Mandrel and Pin correlation are also available.

### Statistics Grid

	Count	Percent (%)
Total Parts Inspected	3000	99.569
Total Parts Offline	13	0.431
Total Parts Rejected	443	14.767
Total Parts With Defects	462	15.400
Empty Pockets	0	0.000
Forced Rejects	0	0.000
Part Locate Inconsistency	219	7.300
Adjacent Cans	0	0.000
Out of Round	0	0.000
Registration	219	7.300
Orient	0	0.000
Print Defects	243	8.100
Wrong Color	94	3.133
Scuff	148	4.933
Shadow	0	0.000
Large Color Void	1	0.033
Small Color Void	0	0.000
Color Defects	167	5.567
Missed Acquisitions	0	08/19 18:11
Missed Inspections	0	08/19 18:11
Missed Results	0	08/19 18:11
Encoder Overspeed	0	08/19 18:11

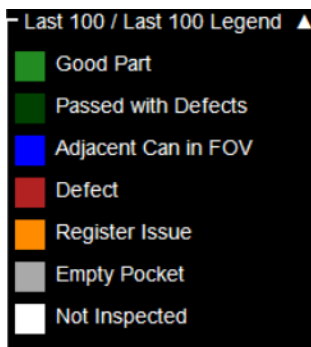
"Color Trend Graphs" on page 104

## Color Borders Around Images

The DecoSpector system displays a different color border around each image depending on the inspection status. A green border is shown below.

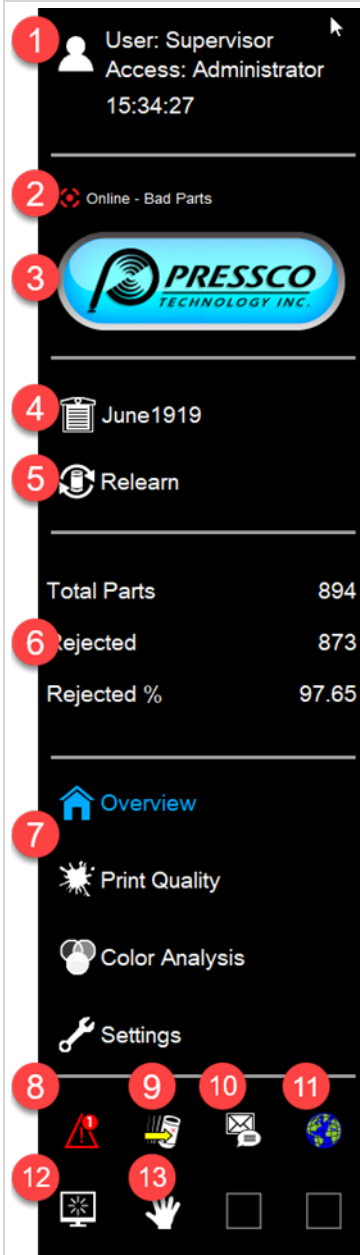


This key is displayed in the "Print Quality Screen" on page 83.



- Green = good part
- Dark Green = a part passed, but it also had defects (example: a shadow detected on a part that had an adjacent can. The shadow is assumed to have been caused by the adjacent can)
- Blue = an adjacent can is in the camera's field of view
- Red = defect
- Orange = registration issue or orientation error
- Gray = empty pocket
- White = part not inspected

## Control Panel



- 1) "Log In" on page 38
- 2) System status
- 3) "Online and Offline" below
- 4) "Job Management" on page 55 - to change the part you are inspecting
- 5) "Relearn a Job" on page 54
- 6) "Statistics on the Control Panel" on the next page
- 7) "Views from the Control Panel" on the next page
- 8) "Alarms" on page 127
- 9) Rejector
- 10) "Notepad" on page 50
- 11) "Language" on page 50
- 12) "Screen Capture" on page 51
- 13) Custom Buttons - set up by the Administrator

## Online and Offline

The button changes depending on system status and whether a user is logged in.



Dark face with blue outline. Logged in: System is offline. Tap to put the system online.



Blue face with blue outline. Logged in: System is online, capturing images, and/or inspecting parts. Tap to put the system offline.



Dark face with no outline. No user logged in: When you select the button in this state, the system will prompt you to log in.



No user logged in - System is offline.

Light face with no outline. No user logged in - System is online, capturing images, and/or inspecting parts.

*Note: An Administrator can enable or disable the automatic online feature from Settings | System Settings | Configuration Settings | Go Online After Job Learn Completes.*

## Statistics on the Control Panel

Total Parts	89
Rejected	0
Rejected %	0.00

Tap the statistics area (more than once) to view more statistics.

Total Parts	89
Adjacent Cans %	0.00
Register %	2.25



- Press and hold in the statistics area to clear statistics.

## Views from the Control Panel

Select what to display in the Overview Panel (the big part of the screen).



**Dashboard**

- Select for the "Dashboard Feature" on page 39 (in software versions 6.2.20 and higher)



**Overview**

- Select for the Home screen, or "Overview Panel" on page 42



**Print Quality**

- Select for the "Print Quality Screen" on page 83



**Color Analysis**

- Select for "Color Analysis" on page 97



**Settings**

- Select for "Settings" on page 114 such as reject settings and reports

## Notepad

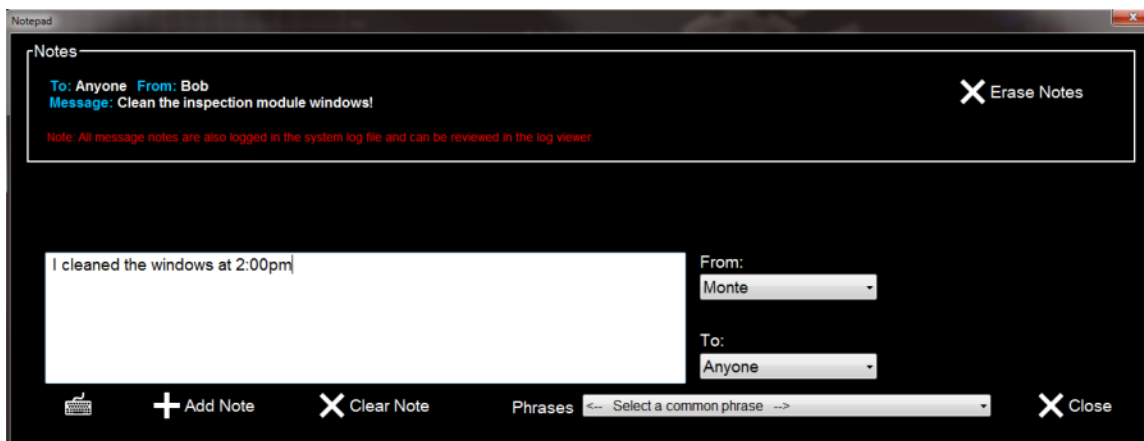


- Add messages to other DecoSpector users. Common phrases (provided from the Phrases drop-down menu) are normally used by Pressco Technicians to leave messages to operators, especially when a remote connection has been set up.

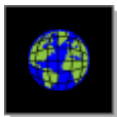


- The icon turns green when you Add Note, then Close the dialog. This notifies other users that there is a message waiting. To remove the green color, select Erase Notes. The icon turns white again. The system saves all messages in the Log Viewer.

Clear Note removes the text in the white box only.

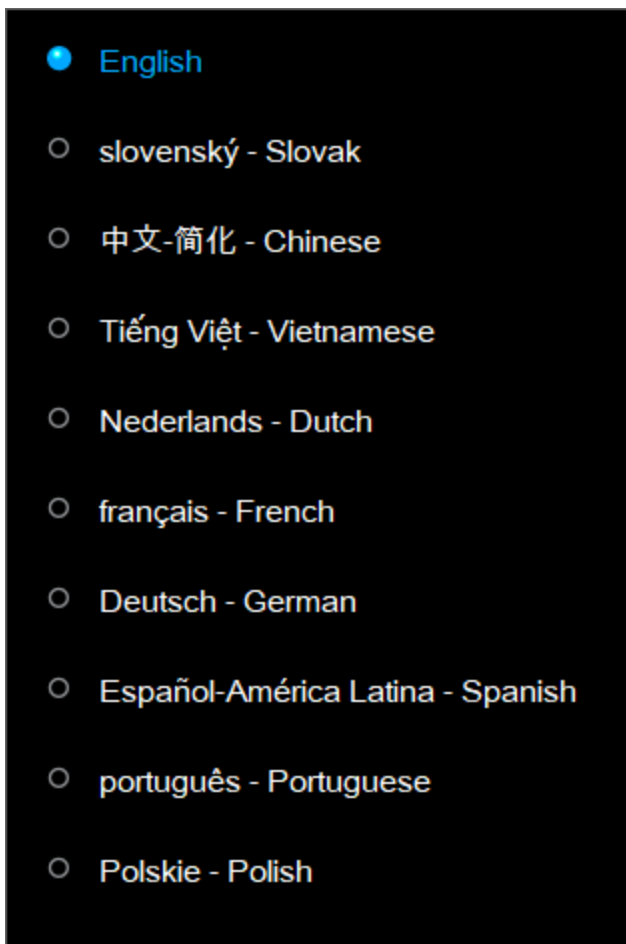


## Language



- Select the user interface language. Your language preference is saved with your user account, so your default language is automatically loaded when you log in. This button is normally used to override the current language, or when no one is logged in.

The languages available, as of version 6.2.23 software, are:



- English
- Slovak
- Chinese (simplified)
- Vietnamese
- Dutch
- French
- German
- Spanish for Latin America
- Portuguese
- Polish

---

## Screen Capture



- Capture a screen image for reference, troubleshooting, or to send to Pressco technical support. The system briefly displays the file path after the capture is taken.

---

## Help

Access help (manuals) from Settings | System Utilities | Help. Displays the Help files.

*Note: to exit, press the X button in the lower right corner. If the window moves so that you cannot see the X, try pressing the top bar of the help window, and dragging the window up. This allows you to see the controls at the bottom of the screen.*



---

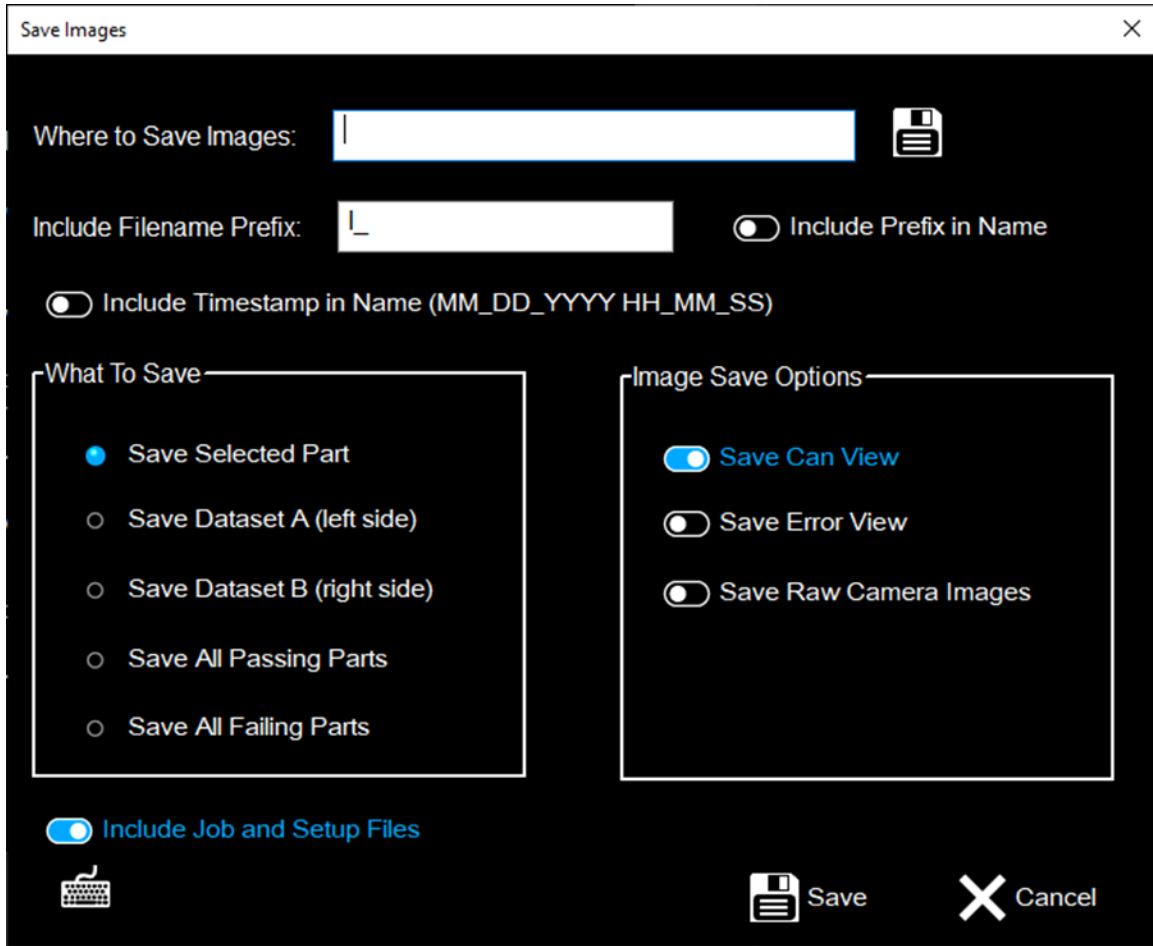
## Save Images to USB Drive

You may need to transfer images from the DecoSpector system to your computer or send to Pressco technical support.


*Note: The images must already be saved to system hard drive, or have occurred within the last 100 parts inspected.*

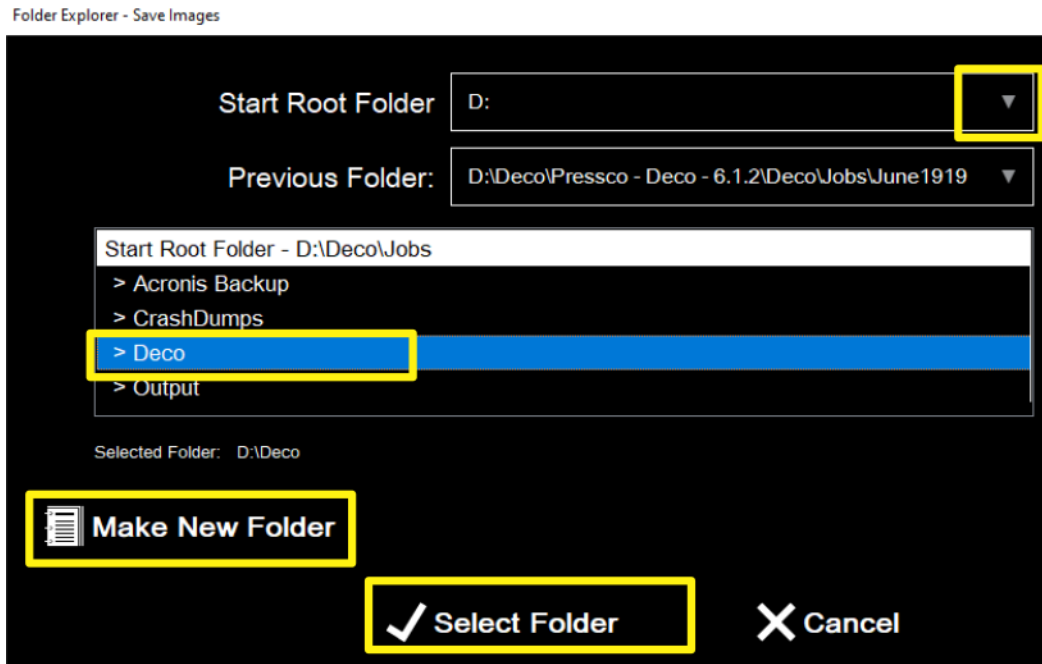
**To save images to an external device:**

1. Plug a USB device into one of the USB Ports.
2.  **Print Quality** Select Print Quality.
3. Select the **Load** button to load the desired image(s). Then **Load Dataset**. See "[Load Part Images](#)" on page 83 for more information about loading images.
4.  **Save Part Images** Select the **Options** button | **Save Part Images**.\* The Save Images dialog is displayed.



\*The Save Images icon only appears if you have loaded images. What To Save typically needs to be changed to Dataset A or B. Image Save Options - Save Raw Camera Images is only used to provide images that can be analyzed more effectively.

5.  Select the disk icon next to "Where to save images."
6. Select the drop-down next to **Start Root Folder**, and select the USB drive location. Browse to the desired folder, using **Make New Folder** if desired.



7. Click **Select Folder** when you have selected the desired location.
8. Make other desired selections in the Save Image dialog and select **Save**. The images are saved to the device.

# Chapter 7 Part and Job Management

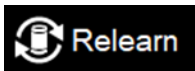
This section describes how to have the DecoSpector system 'learn' your parts, and describes various job settings.

## Learn Parts

The system must learn parts each time you load a part program or inspect a new part type. This ensures that the most recent decoration data is used for inspection.

- If you have inspected a part before and a part program exists, select **Relearn** or **Learn Job** from the Control Panel
- If you have never inspected a part type before, go to "[New Part \(First Time Inspecting a Part\)](#)" on page 58

## Relearn a Job



Relearn job icon

Use Relearn:

- during part changeover, when a job already exists
- if you have been running the same part for several hours, to detect subtle process changes
- if inspection is not working correctly. First, "[Clean the Tunnel Windows](#)" on page 143, and then **Relearn**. If the windows get dirty over time, this can affect inspection performance.

*Note: If your Control Panel reads "**Learn Job**" instead of "Relearn" then the system determines whether the parts being inspected are from the same job that was already loaded. See "[Learn Auto-Detect](#)" on page 59.*

### **To use Relearn:**

Select the **Relearn** icon from the home screen or Job menu. The system will automatically collect part images, go through Pre-Calibration and Part Fixture steps\*, and then go online to inspect parts.\*\*



*Note: the learn process may take much longer than normal if part handling is not correct. If there are physically damaged cans, off center cans, or adjacent cans in the image, then the system will have difficulty learning the can label.*

\*Pre-Calibration only occurs if the job can size is not already calibrated. The system may prompt you to align the print blanket, only if the consistency data for the part is out of specification. Move the image so that it looks like your print blanket.

\*\*The system must be set up to go online automatically. If not: Put the system online to inspect



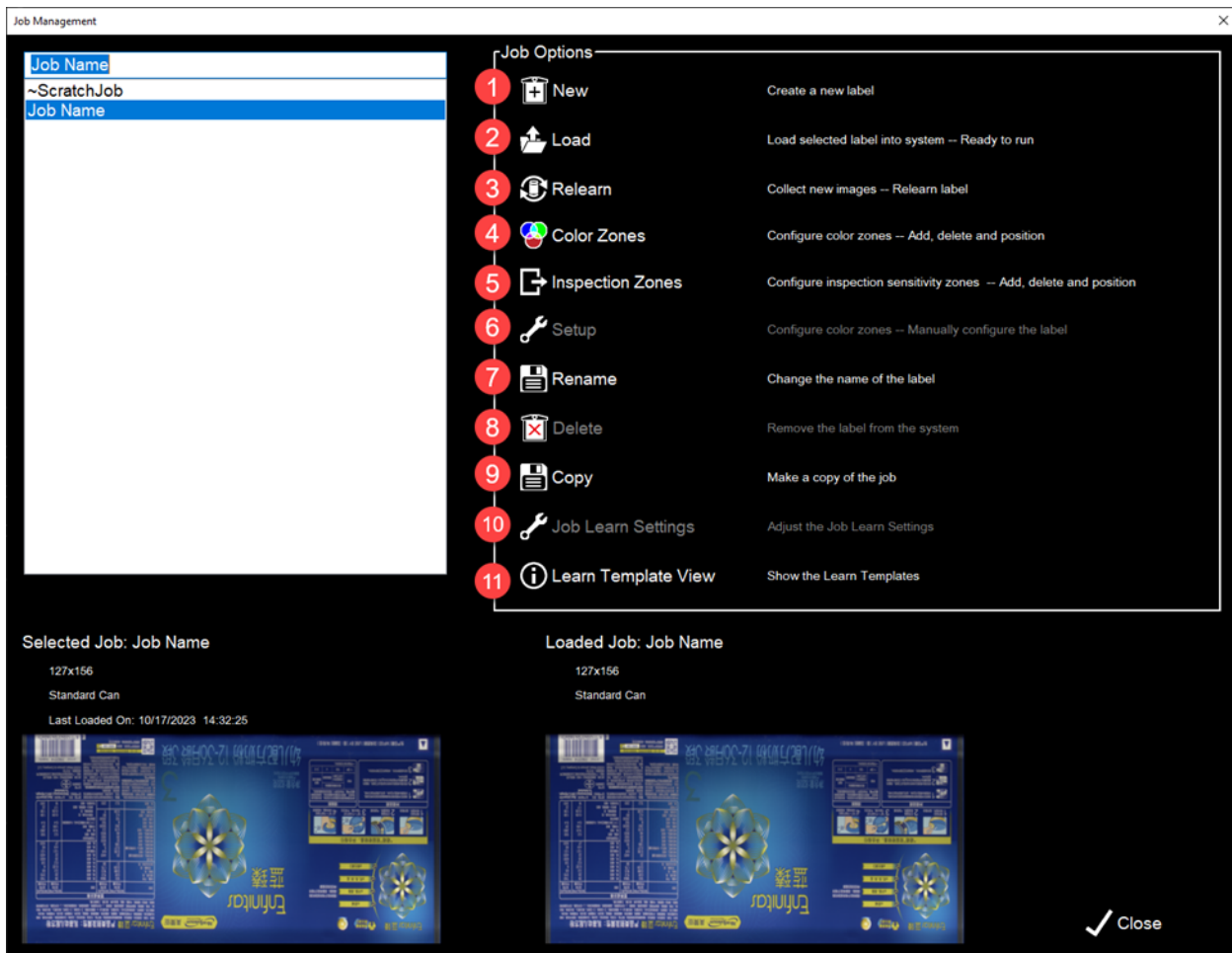
parts.

## Job Management



- Tap the job name icon (in the control panel) to open the job menu.

*Note: You will learn new cans each time you change production. When you save a job, the lighting and inspection settings are saved.*

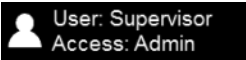
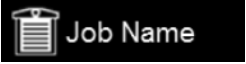



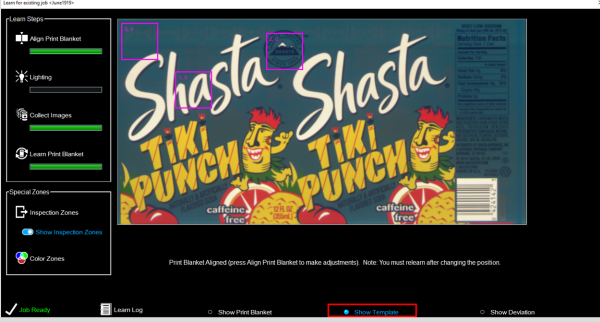




- 1) **New** - "New Part (First Time Inspecting a Part)" on page 58
- 2) **Load** - in the left column, select the job or label you want to inspect, then select **Load** "Part Changeover (Part Type Inspected Previously)" on the next page
- 3) **Relearn** - Relearn the label
- 4) **Color Zones** - If your system uses automatic colors, then you will not see this option.
- 5) **Inspection Zones** - Increase or decrease sensitivity on portions of the label
- 6) **Setup** - Advanced Job Settings \*Pressco Technician access only\*
- 7) **Rename** - rename the job or label
- 8) **Delete** - remove the job or label from the system \*Administrator only\*
- 9) **Copy** - make a copy of the job or label
- 10) Job Learn Settings - \*Pressco Technician access only\*
- 11) **Learn Template View** - Allows you to view the templates without needing to relearn the job.

## Part Changeover (Part Type Inspected Previously)

This process is used when you are changing over production. If you have inspected a part type previously, you will change the Job and relearn the parts.

### To change parts:

Step	Button or Menu Item
1. Log in to the Pressco system. (Operators may change part jobs.)	
2. Make sure the system is offline, so the button face is not blue.	
3. Select Job icon (in the Control Panel) to open Job menu.	
4. Select the job name of the part you want to inspect.	
5. Select Load to load the job. The icon turns blue while the system loads the job. Wait until the job is loaded.	
6. Select <b>Relearn</b> . Wait while the system learns the label.	
7. If your system is programmed to go online automatically, you are finished.   If your system is programmed to not go online after a job learn, then go to step 8.	
8. Select <b>Show Templates*</b> . Make sure the images are clear, and they resemble your label. If not, select <b>Relearn</b> again.  *You will only see Show Templates if the system is not programmed to go online automatically.	
8. Select <b>Job Ready</b> to close the Learn menu.	
9. Put the lane online.	

*Note: the learn process may take much longer than normal if part handling is not correct. If there are physically damaged cans, off center cans, or adjacent cans in the image, then the system will have difficulty learning the can label.*

## New Part (First Time Inspecting a Part)

This process is used when you are changing production to a new type of part that the DecoSpector system has never inspected before.



Log in. Take the system offline (so the face of the button is not blue).

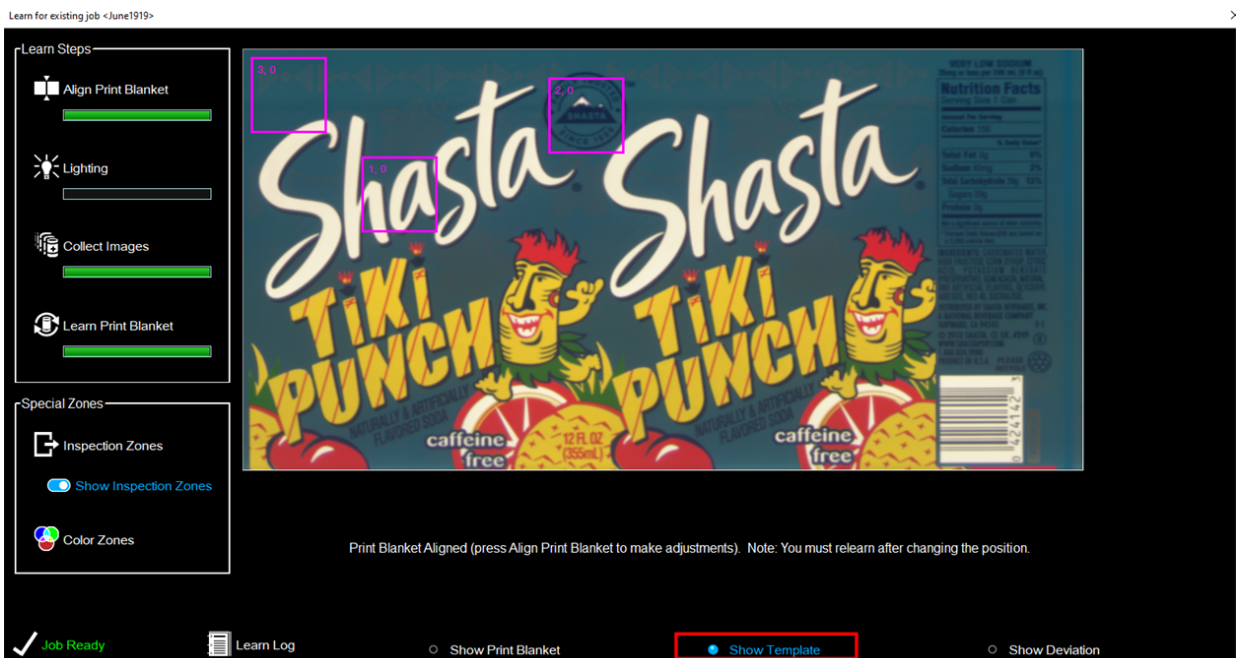
Allow the production line to run so that the system captures part images.

1.  **Job Name** Select Job Name | **New** from the Job Management menu.

2. Use the onscreen keyboard to create a new **Job Name**. Otherwise, the system defaults to the current date and time as the job name.
3. Select a **Job Can Size** from the drop-down menu.
4. Select a **Can Style** from the drop-down menu.
5. Select an **Orientation**. Typical setup uses "Standard Deco." The other options are available for special cases.
6. Tap the **Create** button to save your selections.
7. Wait until the system prompts you to align the print blanket. Select **OK**. To learn how to align the print blanket, see ["Align the Print Blanket"](#) on page 61.

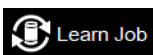


8. Align the print blanket and select **Save Alignment**. The system collects part images, adjusts lighting, and creates templates. The system saves the templates, which are used as the standard to which it compares inspected parts during online operation. The system will post a temporary message that says "Learn Deco Finished."
9. If your system is configured to "Go Online After Job Learn," then you are finished. The system automatically finishes learning and goes online to inspect parts. Otherwise, go to the next step.
10. Select **Show Template**. Make sure the images are clear, and they resemble your label. If not, try to learn the part again. Exit from this menu and select **Learn Job** or **Relearn** from the Control Panel.



11. Select **Job Ready** to finish the learn process.
12. If your system is configured to view the Learn Review Report, then another screen will display any images that were excluded from the learn process.
13. Put the system online to inspect parts.

## Learn Auto-Detect



When you select Learn Job\* from the Control Panel, the system determines whether the parts are from the same job. It looks for rogue cans (cans that are not part of the current production run).

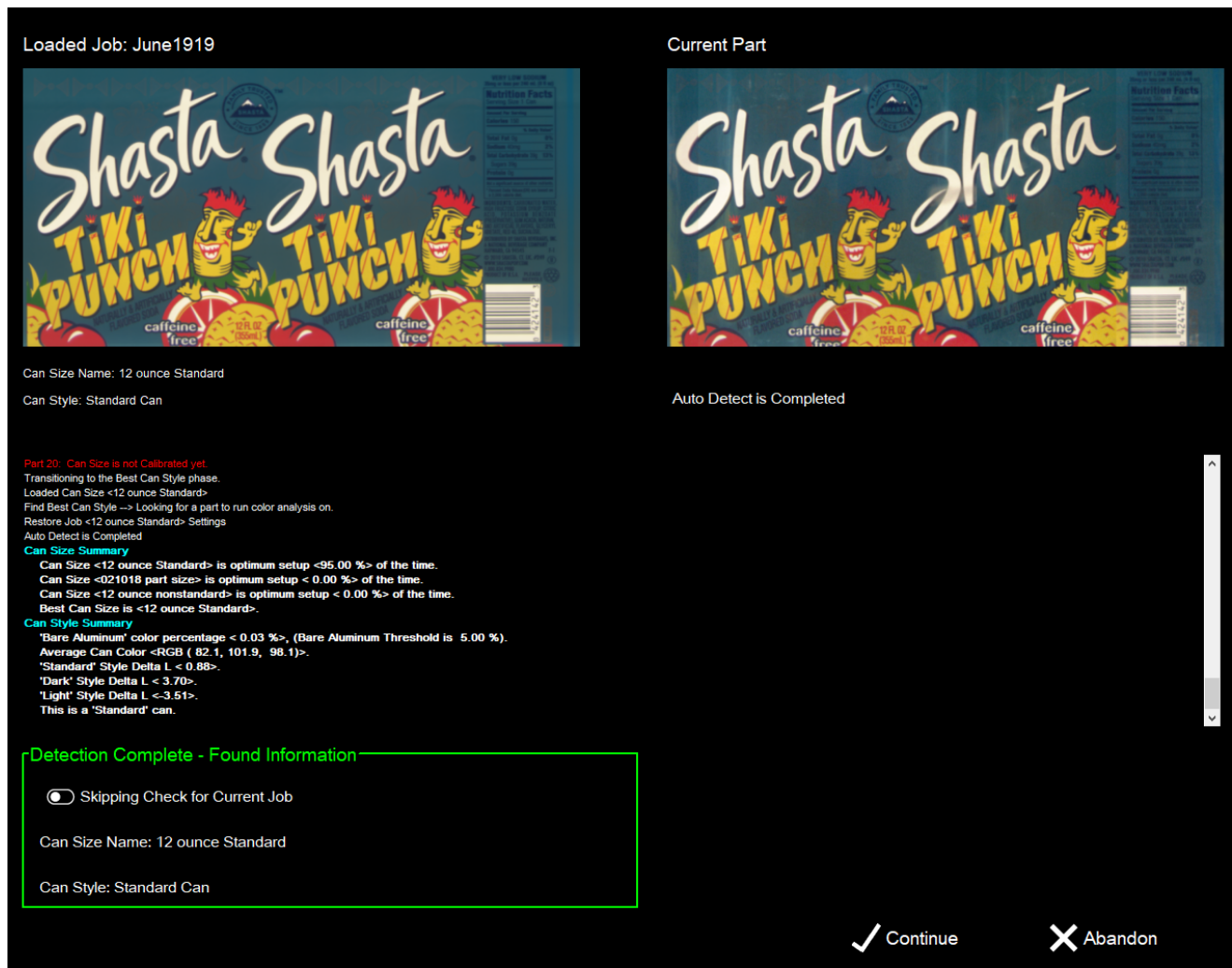
*\*If your Control Panel reads "Relearn," then the system will not detect whether parts are from the same job. See "Relearn a Job" on page 54.*

When you create a **new** job, the system skips the phase to determine whether the parts are from the same job. If it is a new job, then the system automatically determines which can size and style works best for the current parts.

**To use Learn Auto-Detect:**

1. Select **Learn Job** from the Control Panel.
2. Wait while the system automatically detects the parts. The system determines whether the parts are from the same job.
3. If your system is set up to stop learning while you review this dialog, you can review the parts it is learning, select whether to check to see if the cans were from the current job, or select **Abandon** to continue. (If there is only one part size in the system, then the Learn Auto-Detect process is ignored.)
4. If the part is from the same job, then you will see the Learn/ Relearn dialog automatically. You can select **Job Ready** then put the system online to inspect parts.

Job Learn Auto-Detect






## Align the Print Blanket

Align the image on the screen so it looks as close to your print blanket as possible. This step is only necessary if the system prompts you (usually when learning a new part).

*Note: if your system is configured to "Go Online After Job Learn," then you will not see these screens.*

### To get to this screen manually:

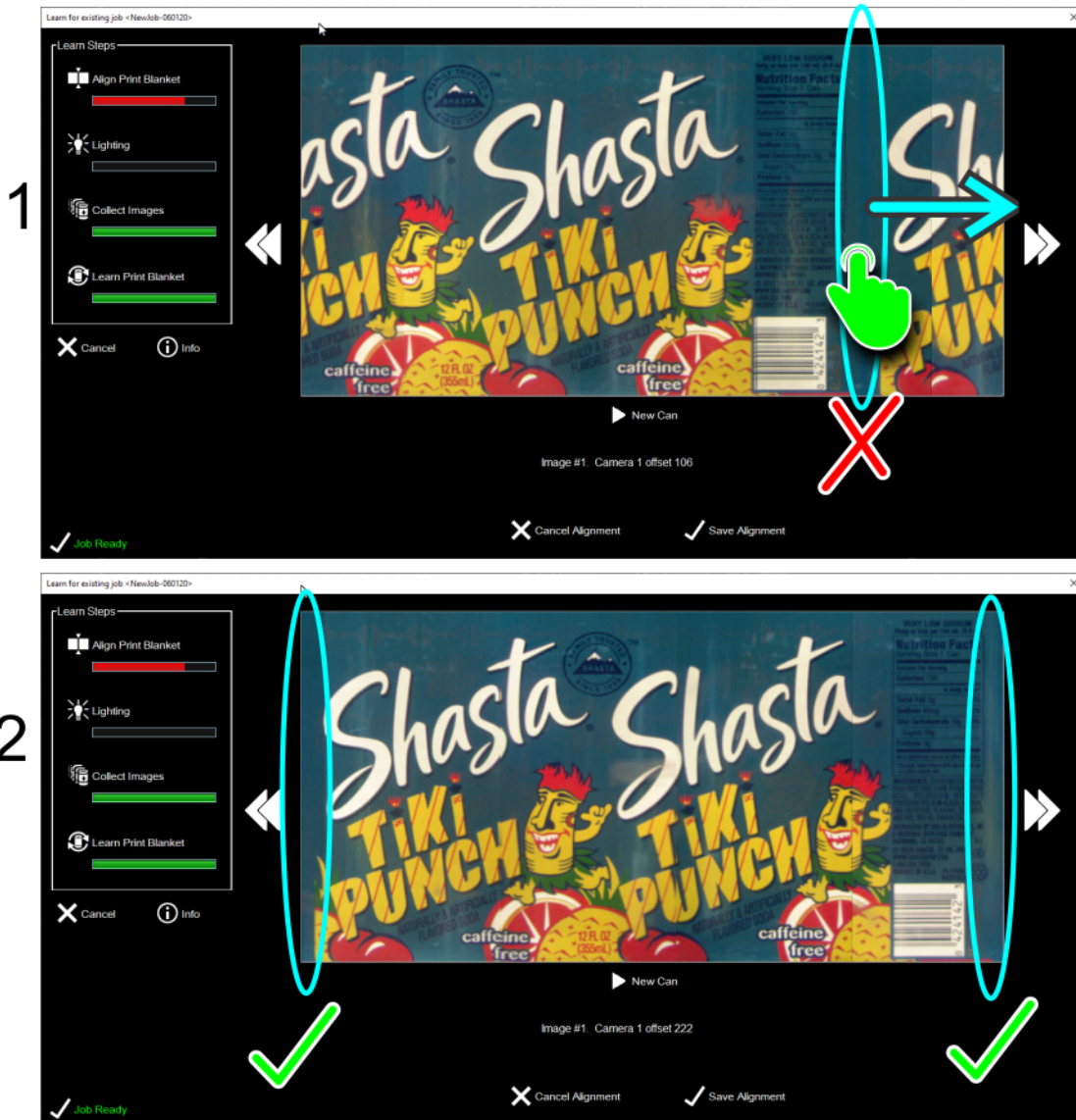
1.  Job Name Select the Job Menu.
2.  Relearn Select Re-Learn. Allow the system to re-learn a set of parts.
3.  Align Print Blanket Select Align Print Blanket.

### To align the print blanket:

1. Press and drag the image [image 1] (in either direction) so that it looks like your print blanket [image 2]. The ends of the print blanket should fall in the ends of the image.

*TIP: touch the screen at the location of the seam (as shown below), then drag the image all the way to the left or right. This makes it easy to align the image. Use the arrow buttons to the left or right of the image to fine-tune the position.*

*Note: Normally, you do not need to select another image. You only need to select New Can if the displayed image did not unroll properly. (example: pieces of the image are missing, or they are shifted vertically)*





2. Select "Save Alignment."

## Show Templates

These screens are available after the system collects part images and aligns the print blanket. If an inspected part does not match the learned templates, that part is considered defective.

*Note: if your system is configured to "Go Online After Job Learn," then you will not see these screens.*

**To get to this screen manually:**

1.  **Job Name** Select the Job Menu.
2.  **Relearn** Select Re-Learn. Allow the system to re-learn a set of parts.

3.  **Align Print Blanket** Select Align Print Blanket.

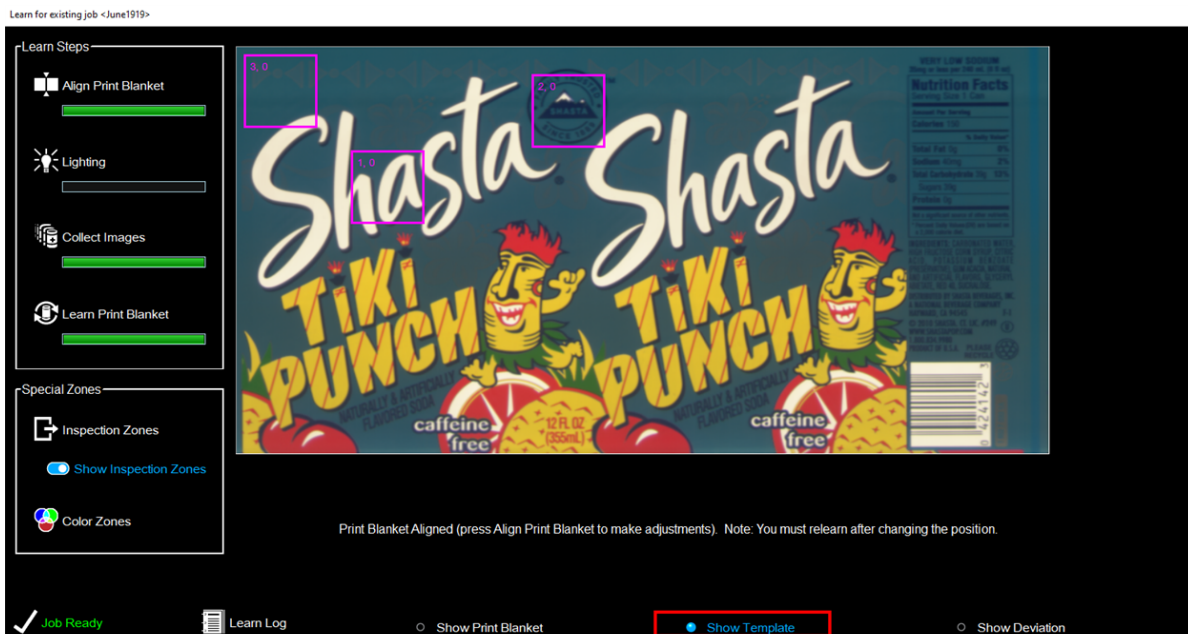
Align the Print Blanket as necessary.

**To see the template:**

1. Select the **Show Template** button. This becomes active after the system learns parts.
2. Compare the image to the actual part.
3. Relearn the part if the template or deviation is bad.
4. Select **Job Ready** to finish the learn process.
5. Put the system online to inspect parts.

**Example templates**

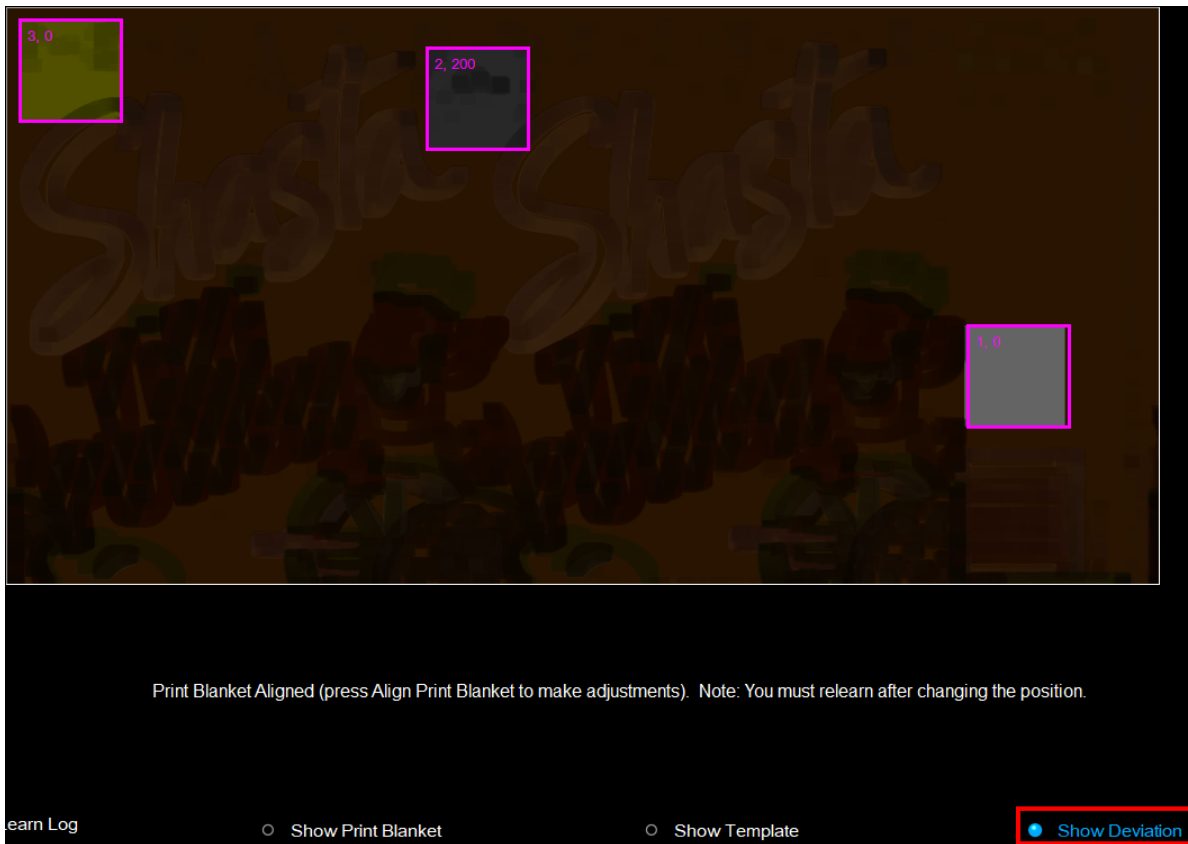
The template is OK if the image looks clear and resembles the part.



The template is bad if parts of the image are missing, or the image bleeds through. Relearn the part.



Select "Show Deviation" (below the images). This shows the range of pixels that each inspected part can have. A darker image = more sensitive inspection. (NOTE: if you have Inspection zones set up, pixels might be yellow, depending on sensitivity - this is OK)



Images are bad if:

- the images do not resemble the actual part
- you see 'ghosting,' or a repeated area

## Color Zones - Manual, optional

*Note: if your system is configured to "Use Automatic Colors," then you will not see this screen nor set up colors. The system does that automatically.*

Use Color Zones to monitor specific colors over time. You may choose up to eight colors, and the system will monitor how closely each image compares to the original image



**To set a color zone:**



1. Select **New Zone**. An adjustable circle is displayed on the image. This is the template image, so the colors are an average of all the learned parts.
2. Move and/ or resize the inner circle to an area on your part you want to monitor. Try to use an area that contains only one color, not shading nor borders. Use the outer circle as space to allow for part movement. Do not include other colors within the outer circle. You can move and re-size the circle on the full image or the zoomed image on the right.
3. Select the Zone Name to rename the color, if desired. The system will automatically apply a color name based on RGB values if you choose not to add a name. Select Auto Name Color to apply a standard color name. You may type a different name if desired: select the keyboard icon. Save.
4. To add another zone, select New Zone again and move or resize the circle as desired. Rename the color.
5. Select Save to save changes and exit. The system will save this information with the job. WAIT while the system updates the parameters.

When the system learns the part, it places the color zone on the same area of all images, regardless of part movement.



### Color Analysis


Go to the Color Analysis screen. You will see the color blocks below the image (in Automatic color mode). These are all the colors that the system found in your part image. You can use Color Display Selection to turn colors on or off.

## Inspection Zones

This feature allows you to increase or decrease the sensitivity on specific parts of your label, without affecting inspection on other parts of the label. You can inspect specific areas such as the date code area, or busy printed areas to find washer stains, for example. Each zone has independent sensitivity control.

Once you save the inspection zones, this information is saved with the job, so that it gets used each time you run the job.

**To set up inspection zones:**

1.  Job Name Go to the job menu.
2. Select **Inspection Zones**.
3. Select **New Zone**. A default zone and inspection settings appear on the screen.

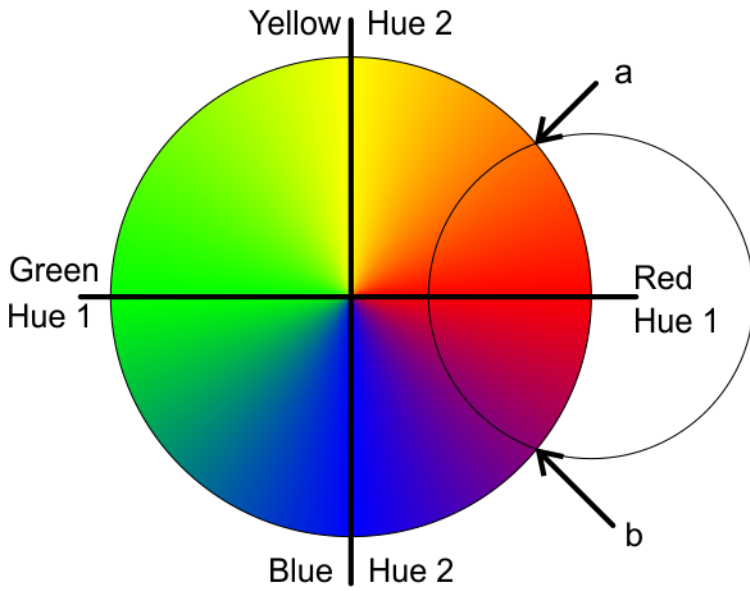


4. Move the zone to where you would like to adjust the sensitivity. (You can set up more than one zone)
5. Adjust the sensitivity. (See below for information about sensitivity)
6. **Save** your changes and exit the dialog.

*Tip: The sensitivity values are locked together by default, which provides the best overall inspection. Typical settings are 120% for more sensitive, and 80% for less sensitive.*

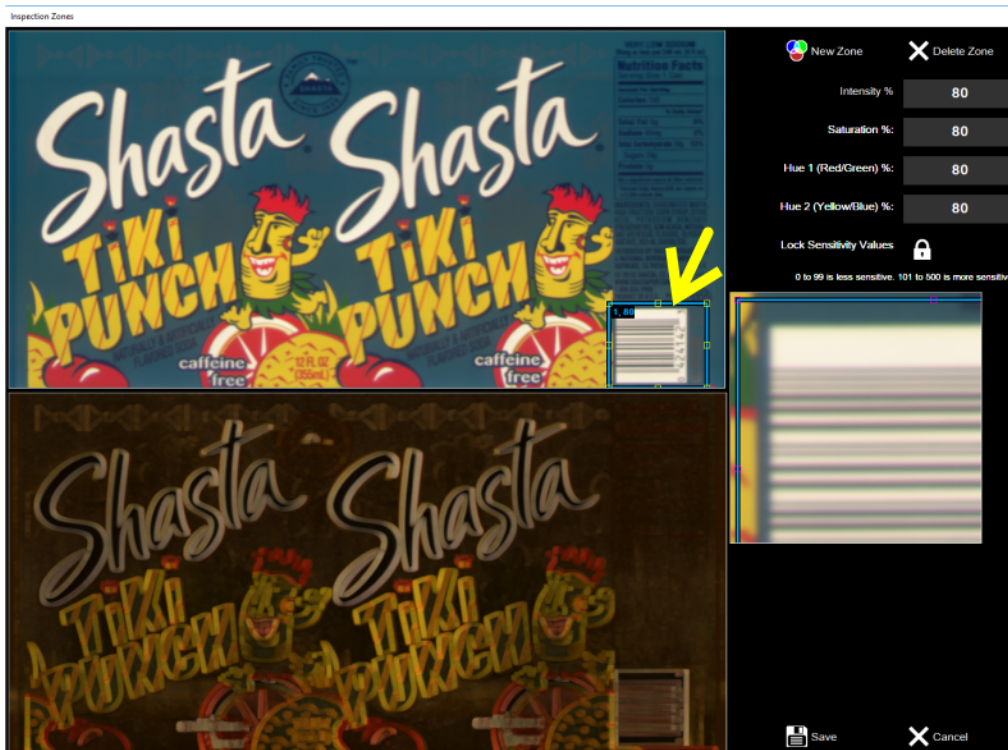
- Intensity % inspects for shadows and scuffs
- Saturation % inspects for too much color or color voids
- 100% is standard inspection
- 0-99 is less sensitive
- 101-500 is more sensitive. At 500, the inspection block is black (look in the lower image); almost every pixel fails at this setting.

Hue 1 and Hue 2 typically get adjusted the same amount. Try small incremental adjustments.




- a and b represent red as it starts drifting towards yellow or blue
- Hue 1 affects Red and Green. If you expect to see red, but the can color is printing orange or purple, OR you expect to see green, but the can color is printing greenish-yellow or aqua, then increase Hue 1.
- Hue 2 affects Yellow and Blue. If you expect to see yellow, but the can color is printing orange or yellow-green, OR you expect to see blue, but the can color is printing greenish blue or purple, then increase Hue 2.

In our example below, we placed an inspection zone over the bar code, making inspection less sensitive in this area.



See also: "Inspection Zones Example" below

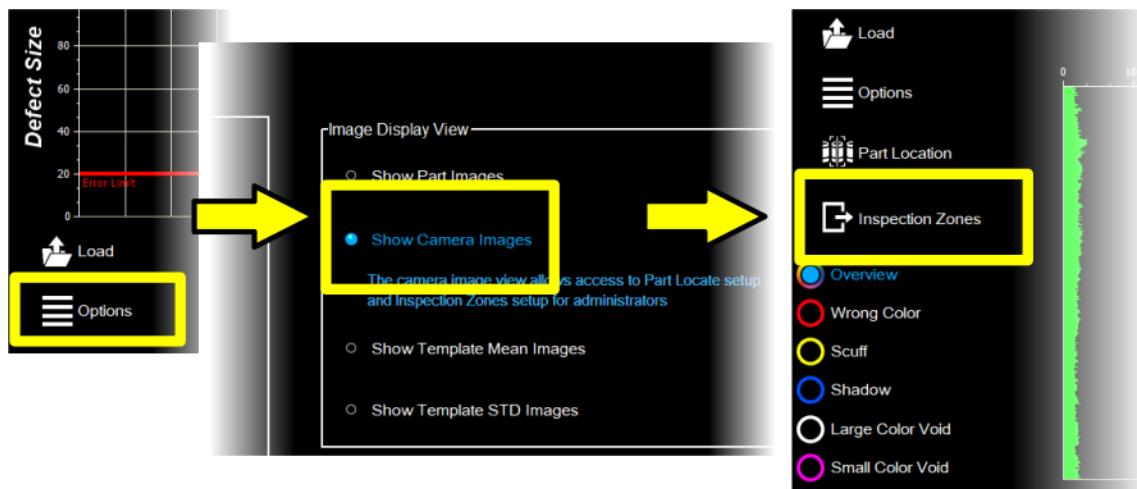
## View Inspection Zones from Print Quality Screen

 To see the inspection zones in action, go to the Print Quality tab. To view anything on this screen, you must load images. See "Load Part Images" on page 83

If you are an Administrator, you can make changes to Inspection Zones in the Print Quality tab.

*Note: Inspection Zones must be configured in the Job Management menu prior to editing in Print Quality View.*

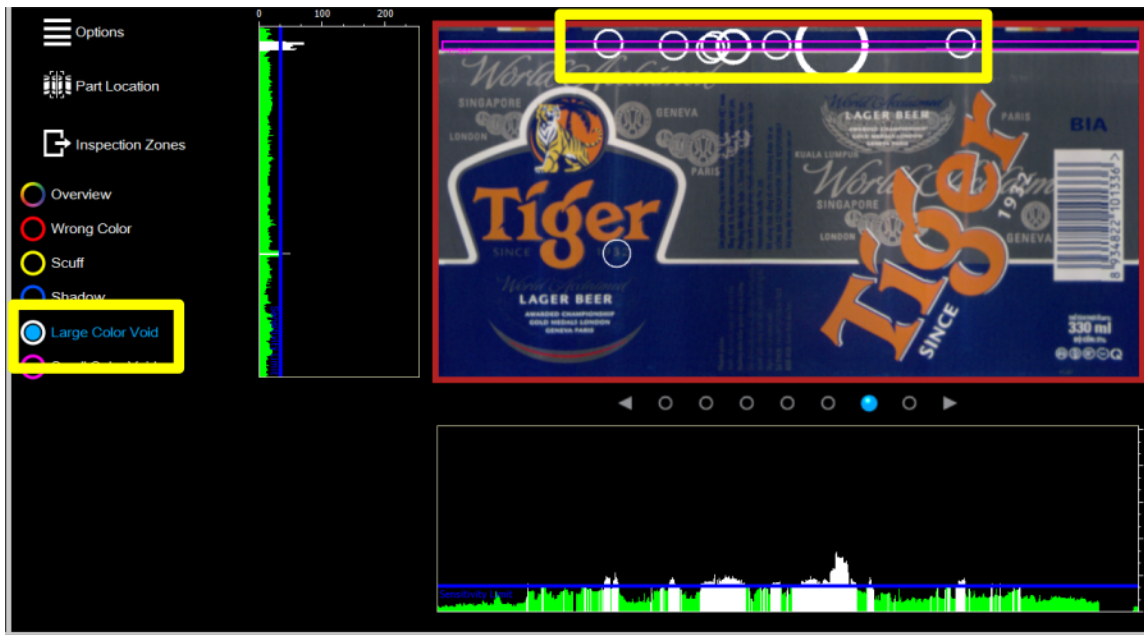
Select the **Options** button, then select **Show Camera Images** on the right side of the dialog. When you exit the dialog, an Inspection Zones button is displayed on the Print Quality screen.



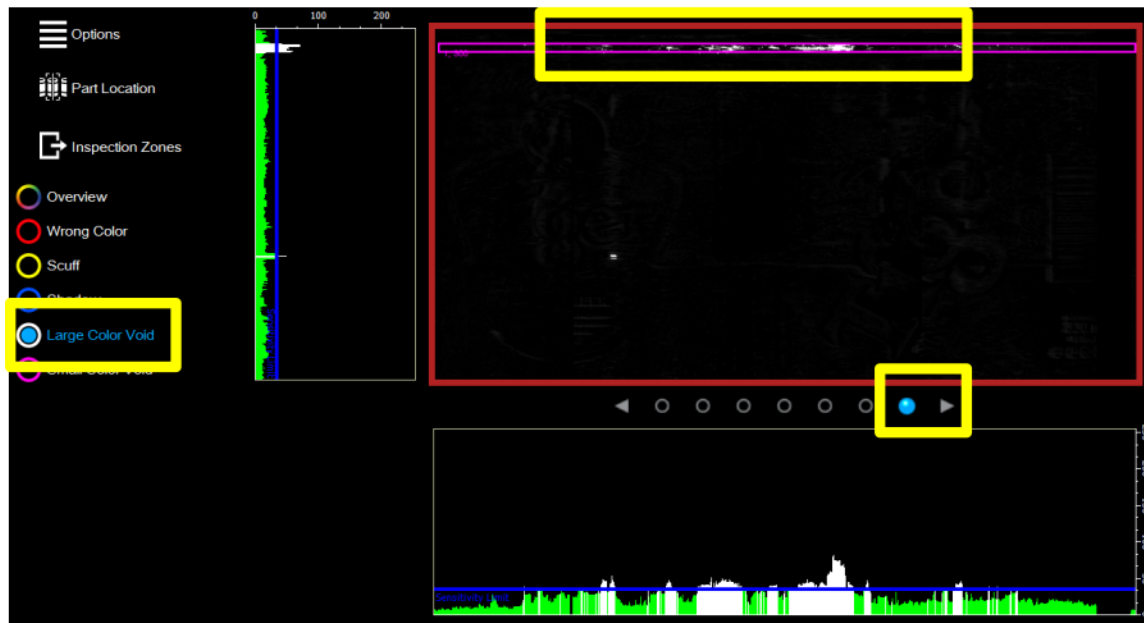
 Select the **Inspection Zones** button to configure the zones.

## Inspection Zones Example

This example shows that a Large Color Void was found within the inspection zone.



You can see the defect more clearly by looking at the "error" image. Click the appropriate dot under the image.



## Confirm a Job Learn

Make sure the job is performing as expected. Check these things:

Reject rate ("Statistics on the Control Panel" on page 49)

- If there are too many defects in the Last 100 parts: see if they really are bad parts or false rejects.
- If you have a high false reject rate, check the sensitivity and defect size. See how: Adjust Inspection Settings.

Look at Latest Defects (in "[Print Quality Screen](#)" on page 83). Make sure they are really defects.

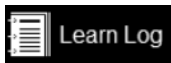
- If the system is rejecting parts with small defects, then adjust sensitivity and defect size.
- If it looks like the parts are mis-aligned on the screen, then relearn the part
- If there are too many false rejects in Last 100 Parts OR Latest Defects, then re-learn the part. Make sure you clean the tunnel windows before re-learning. See "[Clean the Tunnel Windows](#)" on page 143

## Learn Log After Relearn

*Note: This version of the Learn Log will only be available if the system is NOT programmed to automatically go online after a learn. An Administrator can enable or disable the automatic online feature from Settings | System Utilities | Go Online After Job Learn. An Administrator can enable or disable the automatic online feature from Settings | System Settings | Configuration Settings | Go Online After Job Learn.*

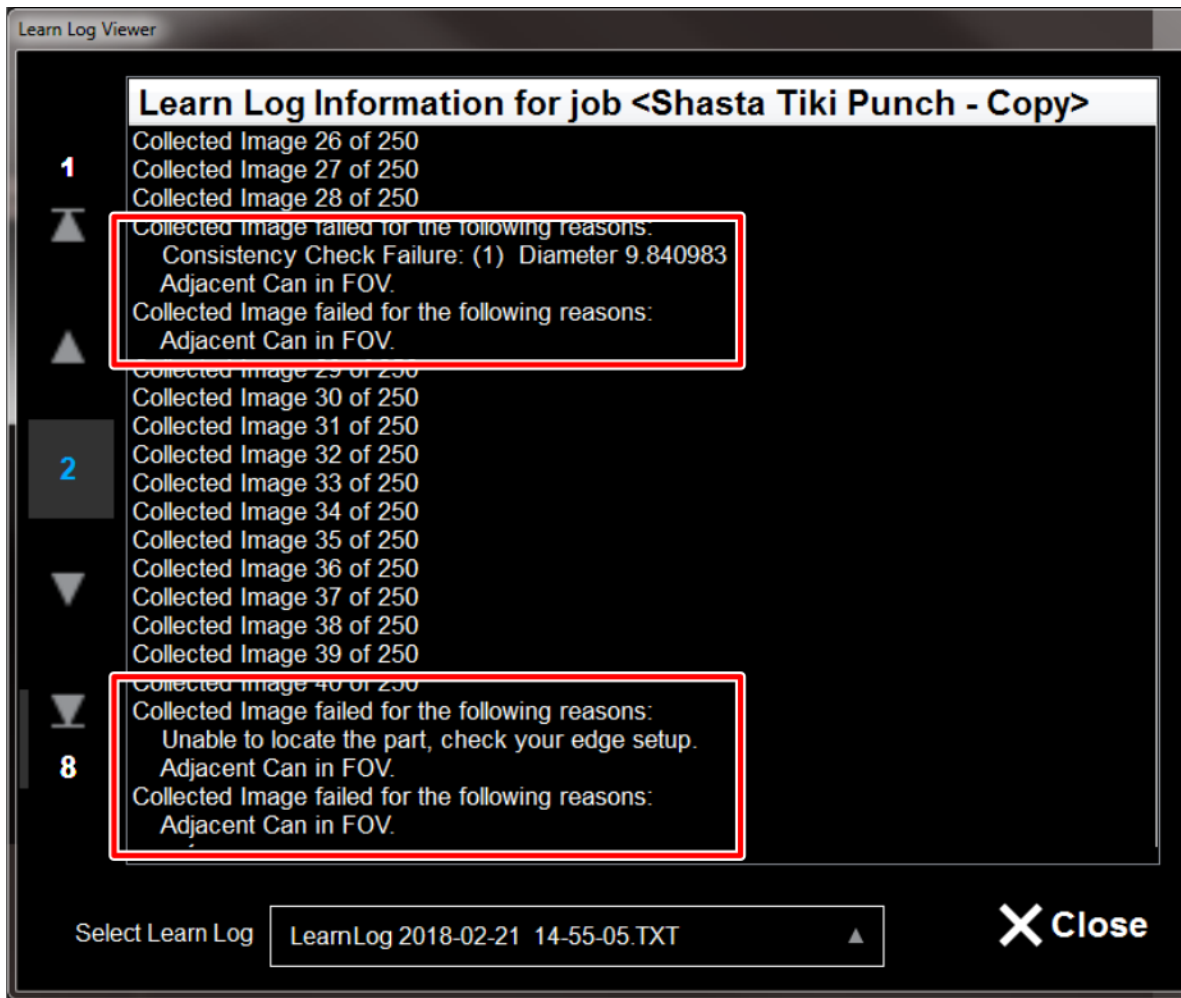


To access this menu: System is Offline. Select the job name | **Relearn**. You must wait till Relearn is finished.



Then select **Learn Log** from the Learn menu.

Look at the history of Learn processes for the active job. The report includes who initiated the learn and when, as well as information about any images that failed inspection during learn (failed images are not used in creating the learn templates).



## Part Position Feedback

This tool helps determine the position of the part flow, and quality of material handling, within the DecoSpector 360™ tunnel. There are three views:

- Part Position
- Camera Tilt
- Part Spacing

### **To access the tool:**

Go to **Settings | System Calibration | Part Position Feedback**. Part Position is the first view.

### **To navigate between the different views:**

Part Position:

- By clicking anywhere other than a camera you will switch to the Part Spacing view.
- By clicking on any camera the view will be changed to show the specific Camera's Tilt data.

Part Spacing:

## Chapter 7

- By clicking anywhere you will switch to the Part Position view.

### Camera Tilt:

- By clicking anywhere other than a camera you will switch to the Part Position view.
- By clicking on the displayed camera you will switch to the Part Position view.
- By clicking on any other camera the view will be changed to show the specific Camera's Tilt data.

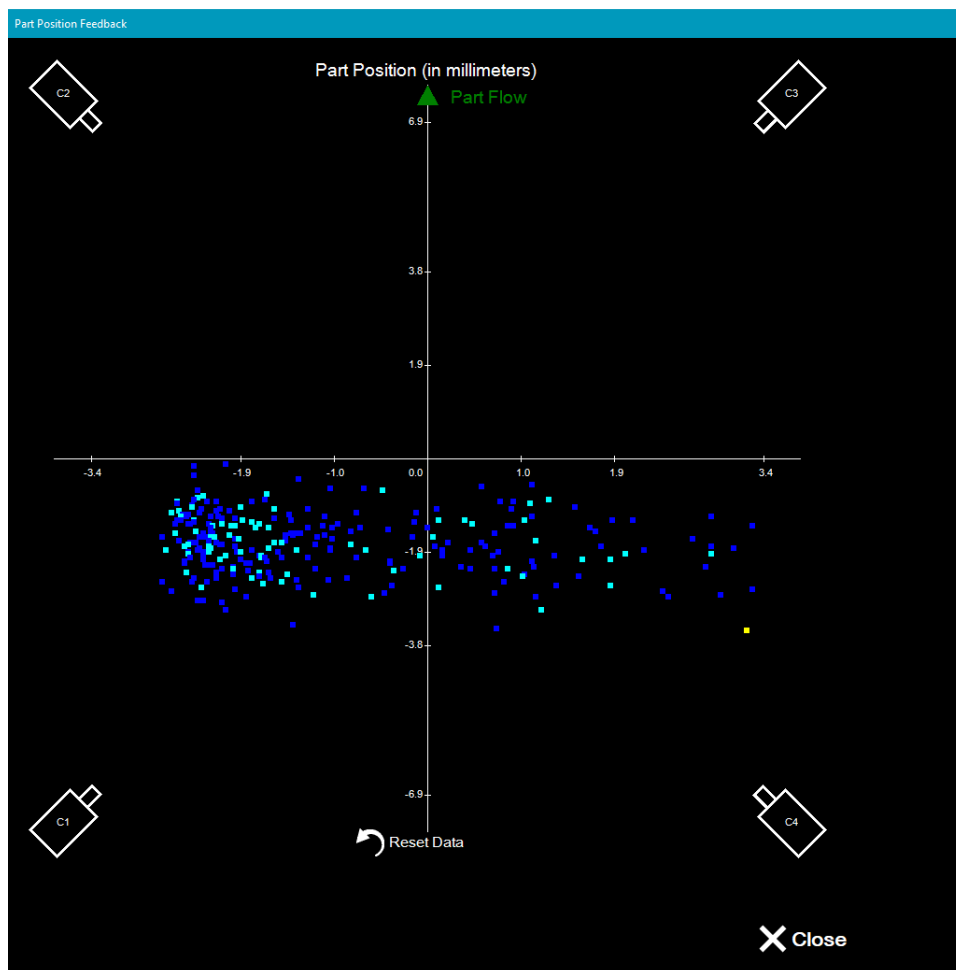
*Note: to switch between inches and millimeters, go to **Settings | System Settings | Configuration Settings | Units**.*

## Part Position



*Note: It is important that the mechanical position of the inspection tunnel be installed with the correct camera orientation with respect to part flow. When done correctly, the cameras, position, and flow information will match the physical installation of the product.*

*Note: Part Present Delay should be set, at least roughly, before this tool can help refine the position of the part. The Part Position data is only collected once the system is properly configured to inspect parts while online. If the part position is too far off, then the system cannot find and unroll can images, so there would be no available part position information to plot.*



**Part Position Title** - The title indicates if the information is shown in inches or millimeters.

**Green Part Flow Arrow** - This shows the direction of the production flow under the tunnel.

**Color Coding** - Dark blue indicates at least one part at that position. Lighter blue (cyan) indicates a higher concentration of parts at that position. Yellow indicates the highest concentration of parts at that position.

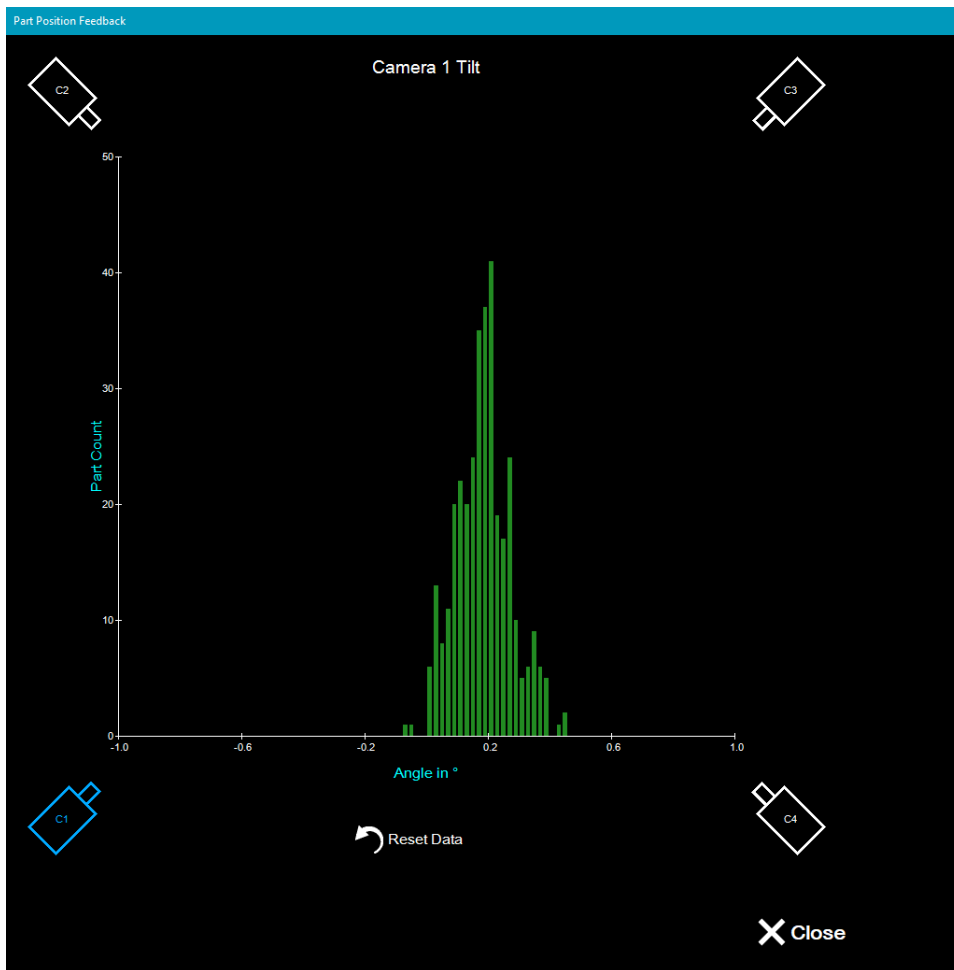
**Reset Data** - Pressing this will clear out the collected data for all plots (not just the current view).

**C1 through C4** - These are the cameras and act as a button to switch to the specified camera tilt plot.

## Camera Tilt

*Note: The way that the system computes the tilt information for each camera causes opposite pairs to have the exact same angle measurements but with opposite signs. So if the measured angle in C1 is 0.25, then C3 will measure -0.25.*

*Note: Part Present Delay should be set, at least roughly, before this tool can help refine the position of the part. The Part Position data is only collected once the system is properly configured to inspect parts while online. If the part position is too far off, then the system cannot find and unroll can images, so there would be no available part position information to plot.*



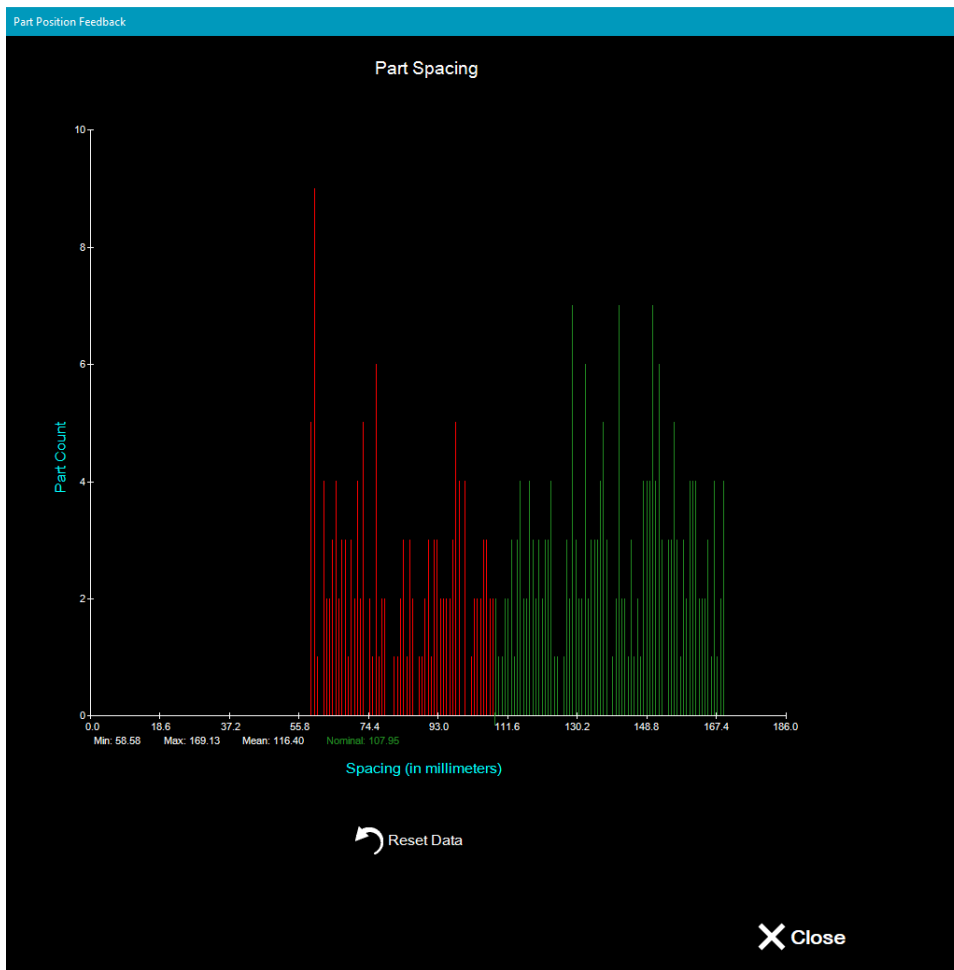
**Reset Data** - Pressing this will clear out the collected data for all plots (not just the current view).

**C1 through C4** - These are the cameras and act as a button to switch to the specified camera tilt plot.

## Part Spacing

The part spacing plot collects information about how far apart consecutive cans are based on the part present signal for each part. This information is scaled to real distances by having a good can width calibration (Part Present Delay). The part width is measured in encoder ticks, which allows the system to convert the spacing (measured in encoder ticks) into the desired units.

*Note: The Part Spacing data does not require proper location and unroll of parts. This is strictly a measure of the acquisition change in encoder ticks. So the spacing data will be accurate even without proper part present positioning. What is critical to the part spacing is the can width. If the can width has not been calibrated for the given part size, then all distance measurements will be inaccurate.*



**Y-Axis** - The Y-Axis (vertical) of the graph indicates the number of parts that are at a specific distance.

**X-Axis** - The X-Axis (horizontal) indicates the physical spacing between consecutive parts.

### Color Coding:

**Red** - This indicates that the distance between parts is less than the nominal spacing desired for the given can size. Reducing the number of parts that are too close to each other will help eliminate reflections and shadows caused by the material handling of the part.

**Green** - This indicates that the distance between parts is greater than the nominal spacing desired for the given can size. These parts should have minimal reflections and shadows caused by material handling of the part.

**Blue** - This indicates a part that is measuring a distance of less than 0 (smaller than the given part width; most likely you would need to calibrate the part width to get accurate data) or larger than the largest plotted value.

**Statistical Data:**

**Min** - This is the smallest measured part spacing found in the displayed graph.

**Max** - This is the largest measured part spacing found in the displayed graph.

**Mean** - This is the average part spacing for all of the parts in the displayed graph.

**Nominal** - This is the current distance that is used to color code the graph results to help visualize when parts are not sufficiently spaced apart. This can be adjusted for each can size in the system through the Can Size Settings dialog.

**Reset Data** - Pressing this will clear out the collected data for all plots (not just the current view).

---

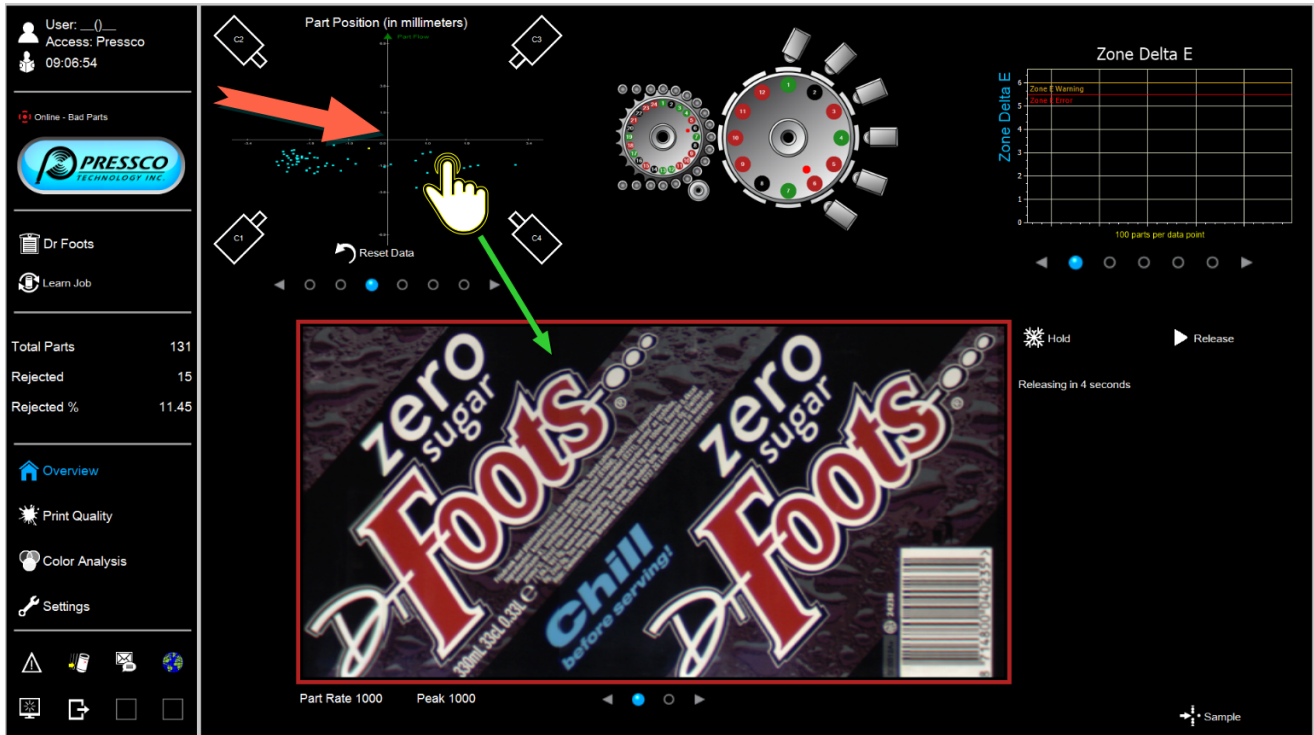
## Part Position Tool - Different Ways to View

This topic shows how you can view this tool within the DecoSpector 360™ system. For details about the tool, see "[Part Position Feedback](#)" on page 71.

The part position tool collects data in two ways. The first is online production data, which most views use to populate the display. The second is offline part present delay tool and the data is only based on parts run through that specific dialog.

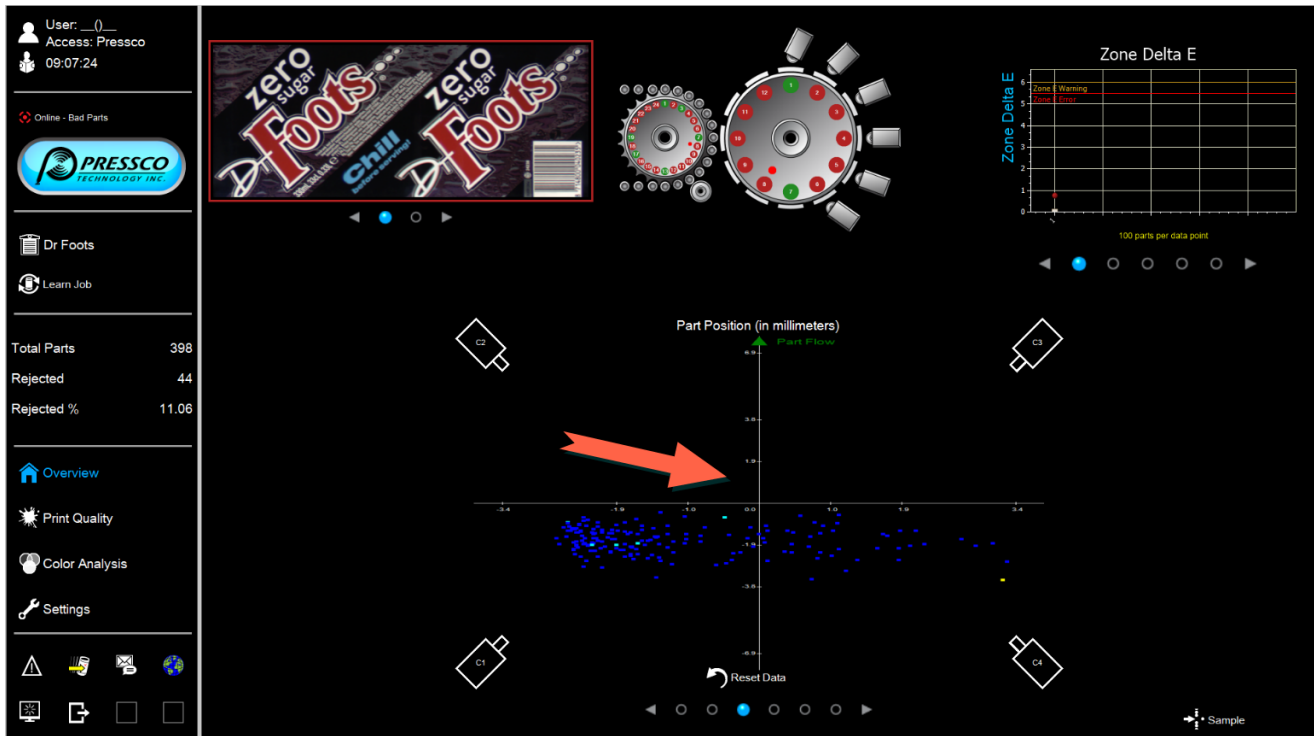
### System Overview - Small Graph View

The small graph view allows you to see the online Part Position information. The ability to change the view (part position, camera tilt, etc.) can only be done in the large graph view. (click the small graph to display the large view) The selected view from the large graph view will be displayed in the small graph view.



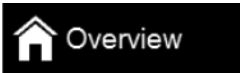
### System Overview - Large Graph View

The large graph view allows you to see the online Part Position information. The information is identical to the view that is shown under System Settings – System Calibration. (click the part image to switch the large graph back to small graph view)



# Chapter 8 View Defects and Part Images

You can view defects and part images in three screens:



"Overview Panel" on page 42

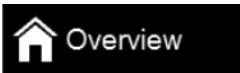


"Print Quality Screen" on page 83 - Use Print Quality to view inspections on recent or saved images. This is where you can adjust inspection sensitivity.



"Color Analysis" on page 97 - You can adjust color sensitivity in this screen.

## View Live Images and Defects



- View live inspection images.



Put the system online to inspect parts. The live images are updated in the part area. Swipe in the image area or tap the dots below the image to switch between the inspected image and the "error" image. The error image shows only the defects, if any.



To zoom in on the image, use two fingers on the screen and drag apart to see the zoomed image. Then you can pan around the image by holding the image and dragging it on the screen.

To zoom in using the keyboard, double-left-click on the area desired. To zoom out, double-right-click.

To hold images on screen, use the Freeze on Defect option. See "Hold an Image On Screen" on the next page

## Hold an Image On Screen



Use the Freeze on Defect option to hold images on screen.



Image is not held. Tap to manually hold.



Image is held.



Tap Release to release the image.

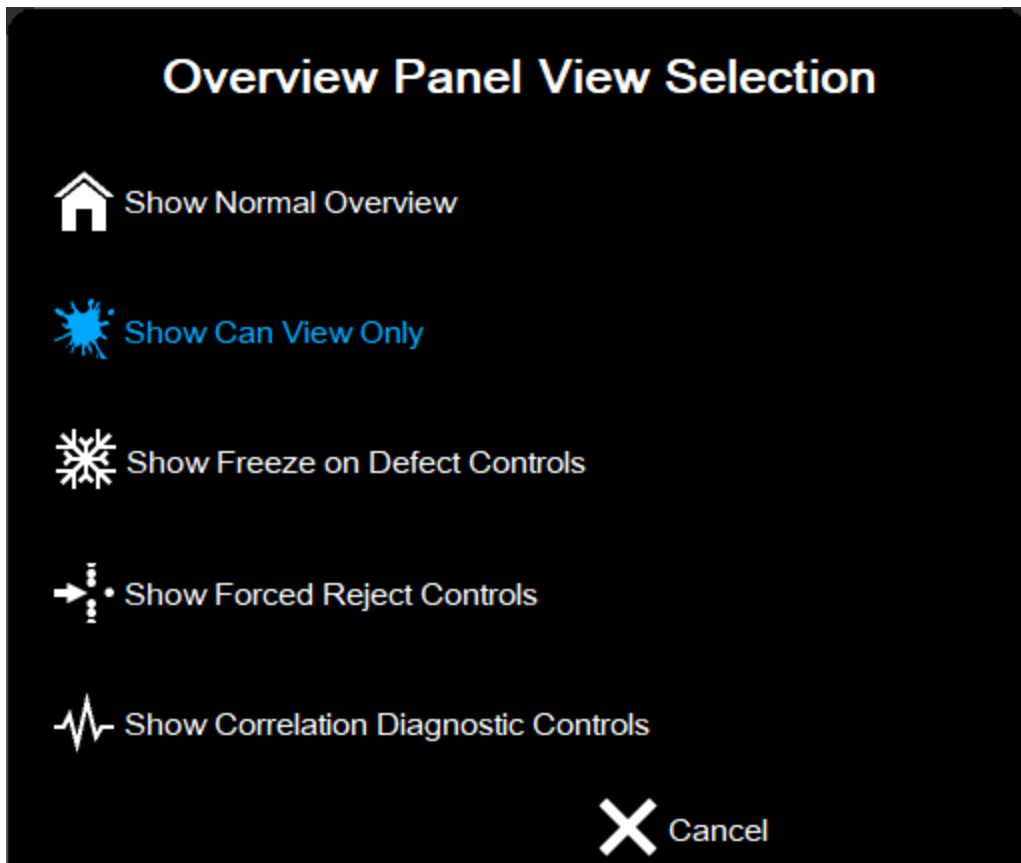
For more options (such as holding defect images automatically), see "[Freeze on Defect Controls](#)" below.

## Freeze on Defect Controls

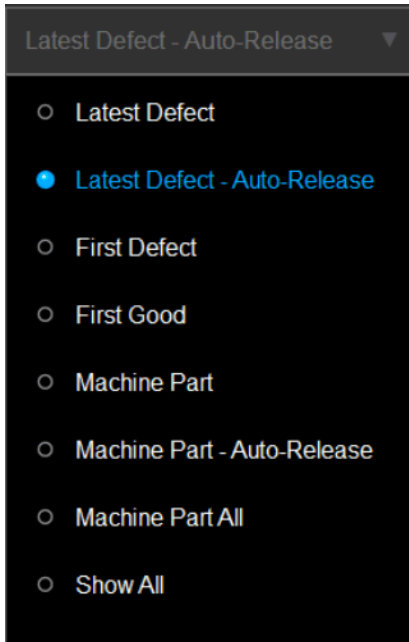
*To enable Freeze on Defect Controls:*



Enable the controls from the Settings menu: **Settings | Overview Display View | Show Freeze on Defect Controls.**



The Freeze on Defect Controls are displayed on the home screen. Select when to freeze a defect on screen.



**Latest Defect** - Freeze the image of the last defective part. Each subsequent failing part freezes on the screen until another part fails.


**Latest Defect - Auto-Release** - Freeze the last defective image for up to the specified number of seconds, which is selectable next to Release Time.

**First Defect** - Freeze the image of the first defective part after going online. The image remains on screen until you release it or change Freeze Mode.

**First Good** - Freeze the image of the first good part after going online. The image remains on screen until you release it or change Freeze Mode.

**Machine Part** - Freeze the next defective part image correlated to the selected machine part. It remains on screen until the next part correlated to the machine part becomes available and is replaced by the new image. Use the Select button to choose the desired machine part(s).

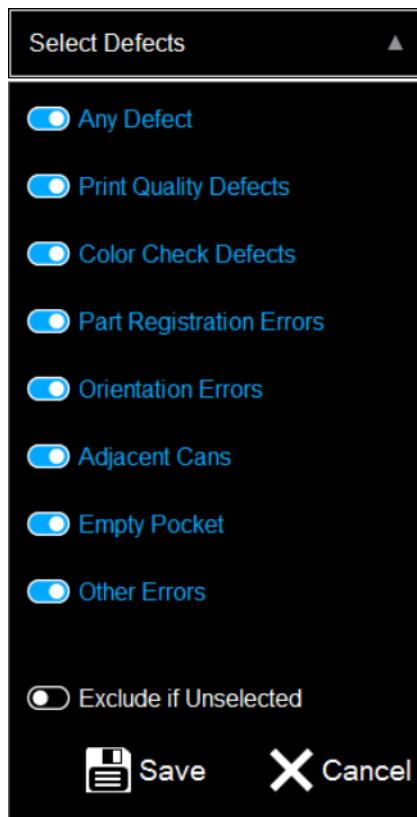
**Machine Part - Auto-Release** - Freeze the next defective part image correlated to the selected machine part. It remains on screen for the specified time, or until the next part correlated to the machine part becomes available, whichever comes first. Use the Select button to choose the desired machine part(s).

**Machine Part All** -  Show the part image from the specified machine part(s), whether it passes or fails. It remains on screen until the next part correlated to the machine part becomes available. Use the Select button to choose the desired machine part(s).

**Show All** - Show all part images, not just the frozen images.

## Select Defects controls

Select the type of defects to freeze on screen (used with Freeze on Defect).



 = on.

**Any Defect** - Display any defect.

**Print Quality Defects** - Display only Print Quality defects, which include: wrong color, scuff, shadow, color void, and too much color.

**Color Check Defects** - These defects occur when the part fails the tests for Color Zones. Color Zones are optional and are based on your plant specifications.

**Part Registration Errors** - A registration error occurs when the system does not find the top or side edges of a part.

**Orientation Errors** - An orientation error occurs when the part is tilted too much. This is also the reason for failure if the system detects a 'tramp can' or wrong label. This check is done automatically by the system.

**Adjacent Can Errors** - An adjacent can error occurs when the system sees another can (in addition to the can being inspected) in the field of view. The adjacent can may cause shadows or reflections on the part being inspected.

**Empty Pocket** - The system tests to see if a part is present before proceeding with inspection. If a part is not present, then this is called an Empty Pocket. For accurate production numbers, we need to locate empty pockets. No inspection takes place (for the current part) if the system finds an

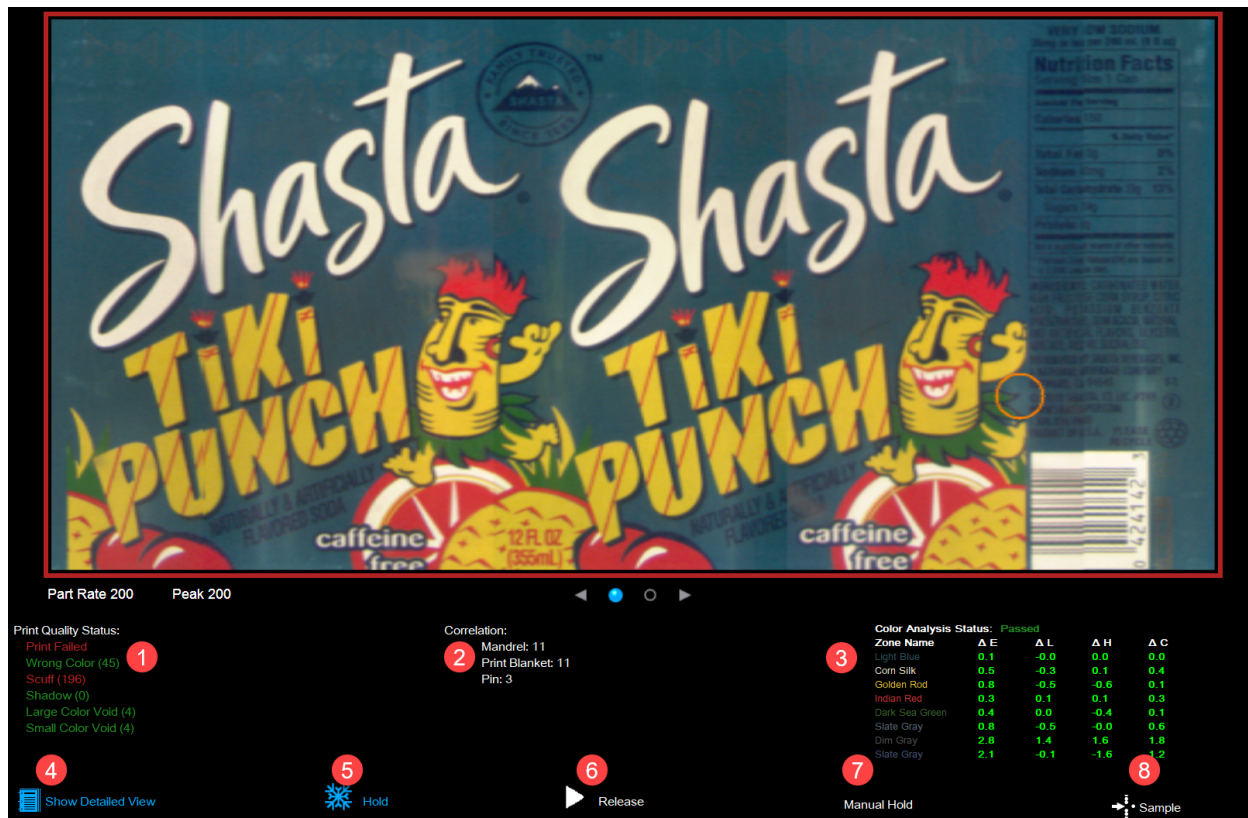
empty pocket. Empty pockets are found when the system does not locate any feature edges during part location. This can happen if the part is too short, too dark, or there is another severe defect that causes the system not to find the part.

**Other Errors** - Display other errors that do not fall into the other specified categories.

**Exclude if unselected** - Do not show the defect types (above) if they are turned off in the menu.

## Show Can View Only

This view allows you to view just the can image with details about the part. To see this view, select **Settings | Overview Display View | Show Can View Only**. The can takes up the entire width of the screen, minus the control panel.



The parts of the screen include:

- Print Quality Status** - This section displays whether the part passed. If not, you will see what made it fail (in this example, a scuff mark).
- Correlation** - This displays the machine parts correlated to the current part shown on screen.
- Color Analysis Status** - If you have color zones set up, you can see whether the part passed color analysis. If you have Show Detailed View enabled (as in our example), you can see the color analysis details for each of the defined colors.

4. **Show Detailed View** - Shows the color zone information for each of the defined colors (shown in item 3). For more information about Delta E and other values, see "[Color Measurements](#)" on page 97.
5. **Hold** - This is the manual hold button for Freeze on Defect.
6. **Release** - This is the manual release button for Freeze on Defect.
7. **Latest Defect Hold - or other** - This shows the Freeze on Defect mode you are currently running.
8. **Sample** - This allows you to reject one or more parts based on your Forced Reject settings.

*Note: To change the Freeze on Defect mode, you will need to go back to the normal home screen.*



To go back to the normal home screen: Select **Settings | Overview Display View | Show Normal Overview**.

***To change Freeze on Defect settings:***

From the Home screen, select **Settings | Overview Display View | Show Freeze on Defect Controls**. These controls are shown to the right of the part image.

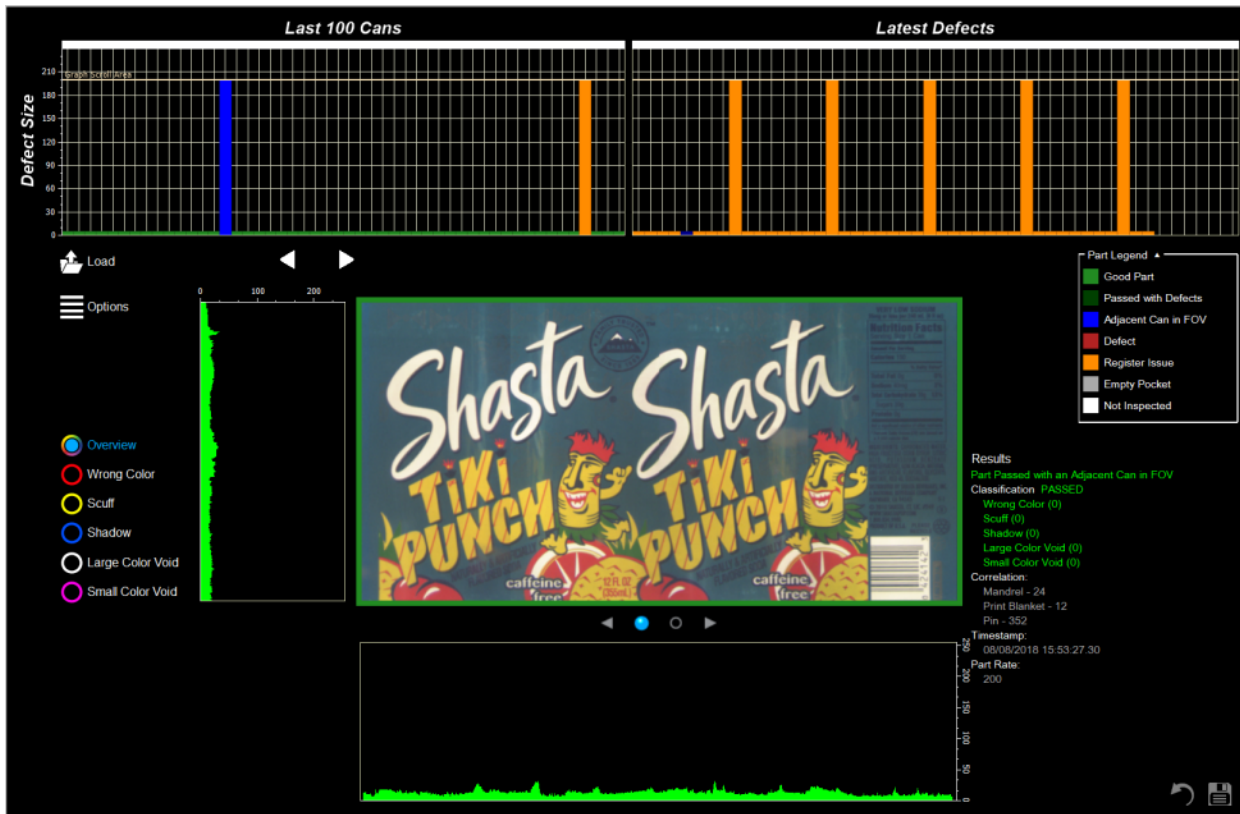
See "[Freeze on Defect Controls](#)" on page 78 for more information.

***To change Forced Reject settings:***

From the Home screen, select **Settings | Overview Display View | Show Forced Reject Controls**. These controls are shown to the right of the part image.

See "[Forced Reject](#)" on page 115 for more information.

# Chapter 9 Print Quality Screen



This screen allows you to view recently inspected parts through the Retro-Spec interface. This allows you to see trends in inspection. It also allows you to change inspection settings and try them on images without interfering with current inspection.

You must be an Administrator to save changes.

**!** To view anything on this screen, you must load a fresh set of images. See ["Load Part Images" below](#).

From the Print Quality screen, you can:


- ["View Defects on Images"](#) on page 86
- [View "Defect Classification"](#) on page 88
- ["View Inspection Results"](#) on page 89

## Load Part Images

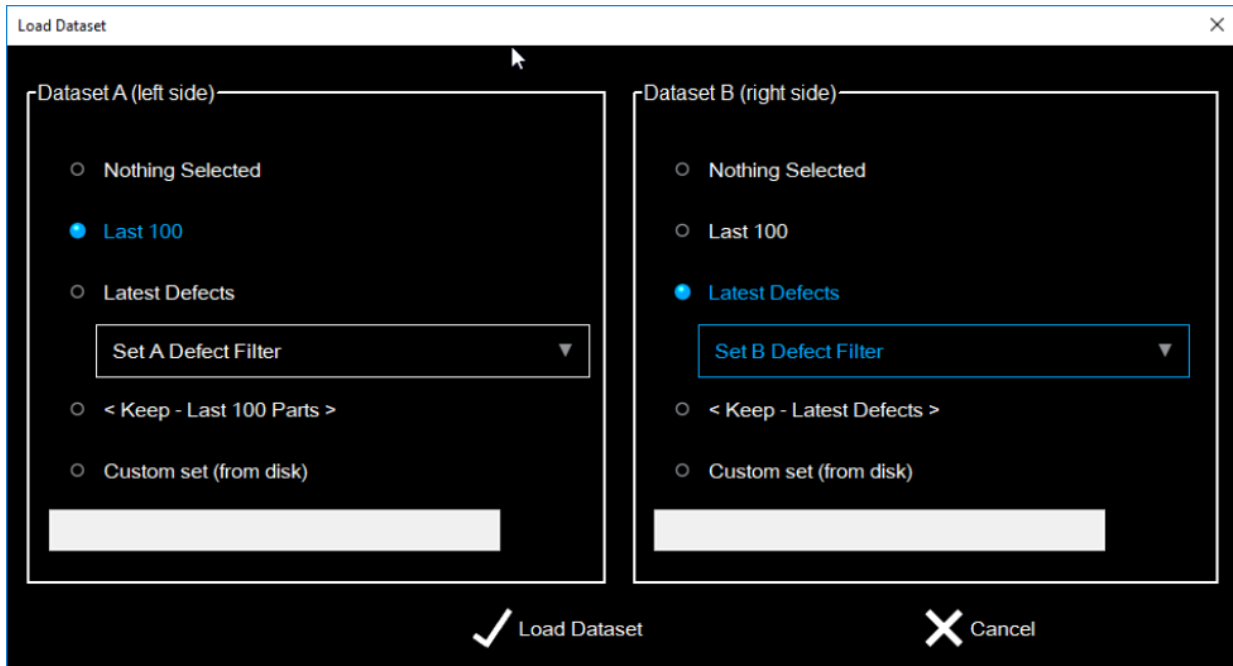
*Note: The images must already be saved to system hard drive, or have occurred within the last 100 parts inspected.*

**To load part images (in Print Quality or Color Analysis):**

## Chapter 9

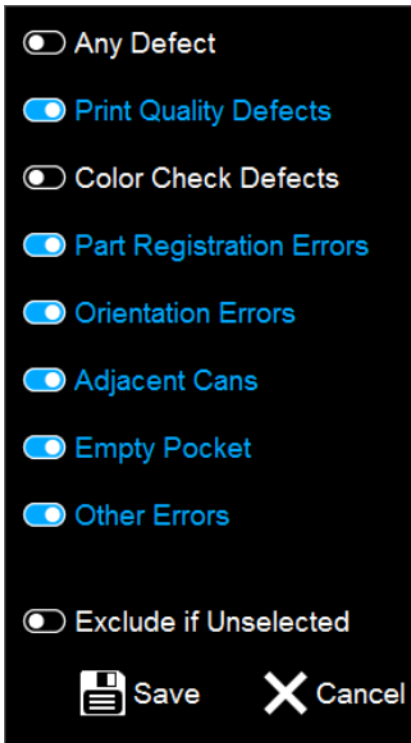
1.  - Tap the load icon.
2. Select images to load for Data Set A (left side of the graph) and Data Set B (right side of the graph).

*Note: when you select Custom Set (from disk), up to 49 images from the selected folder are loaded.*



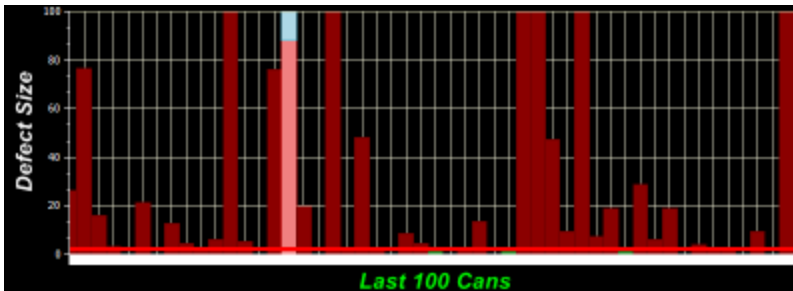
*Tip: Look at the Last 100 images, in addition to Latest Defects. If you only look at the latest defects, you may be missing parts that are just barely passing, that you want to reject.*

3. If you select Latest Defects, you can filter which defects you want to see. Make your selection from the drop-down menu:

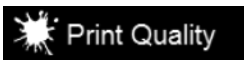


**Any Defect** switches all options on or off.

4. After the images are loaded, tap one of the bars at the top of the screen to see the corresponding image below the graph. In the Color Analysis screen, the graph looks different than below. You can select any point on the graph to select a part.
5. Select Load Dataset and WAIT until the system finishes loading the images. (\*\*LOADING\*\* is displayed during the load process. The name of the data set is displayed when loading is complete)



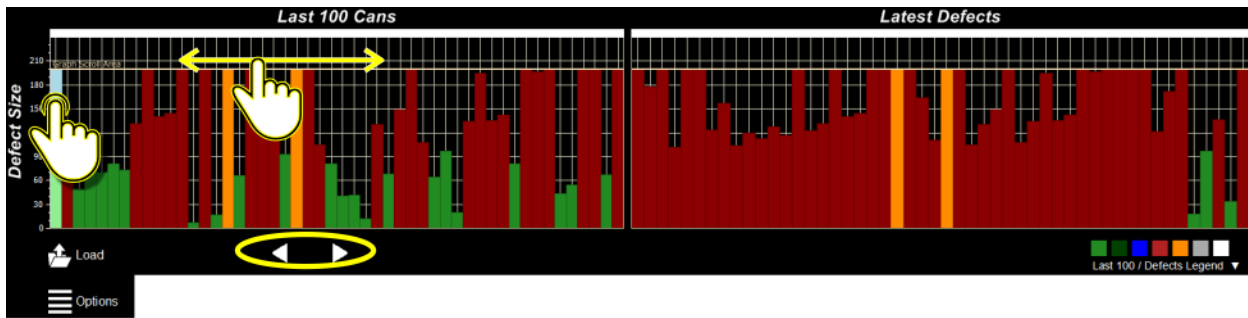
## Retro-Spec Graph



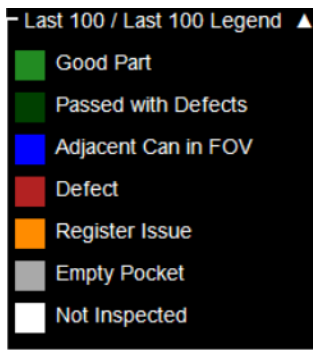
- Tap the Print Quality icon to see the Retro-Spec interface.

To view parts on the Print Quality screen, "[Load Part Images](#)" on page 83.

The Retro-Spec graph can load up to 200 parts at a time, 100 in each Data Set (A and B). Each bar on the graph represents a different part. Select a bar to see the part image below the graph. Approximately 50 parts per graph are shown at a time. To scroll, press and drag on the graph or use the arrows under the graph.



The bars on the graph are color-coded, and the legend is displayed below the graph (if enabled). See also "Color Borders Around Images" on page 47.

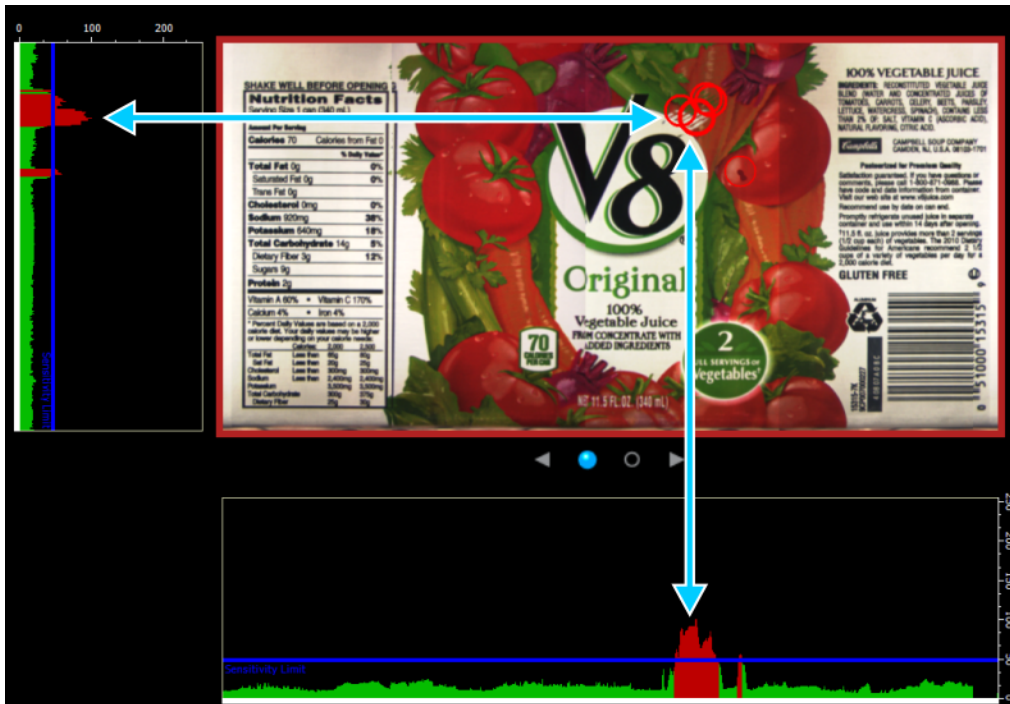


## View Defects on Images



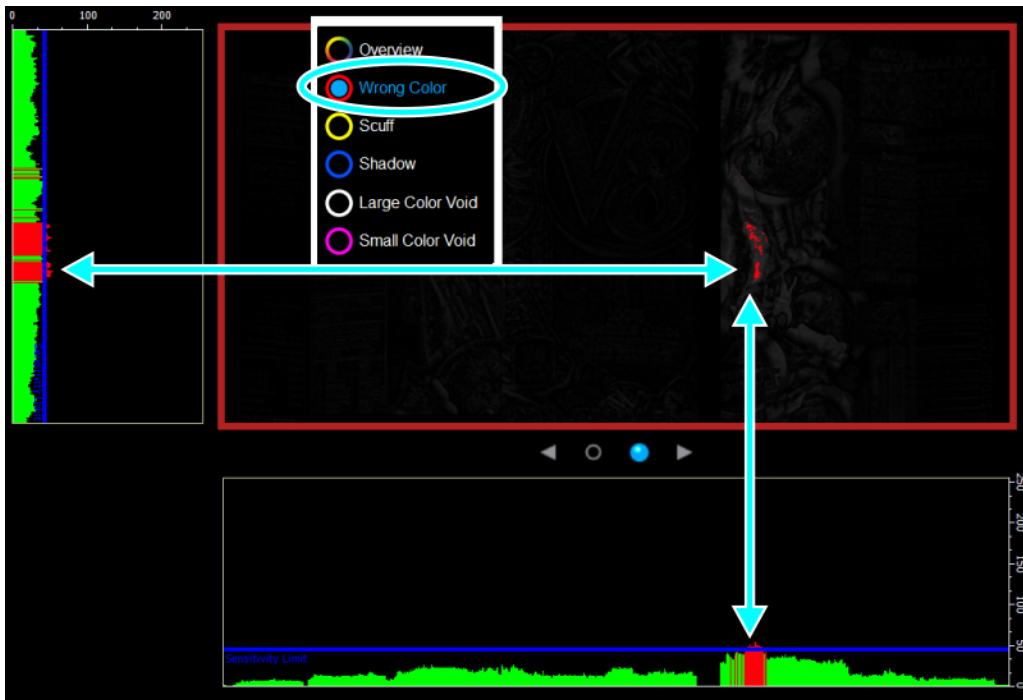
There are two images available for each part: 1) part image, and 2) error image. Swipe, or use the navigation dots or arrows under the image to switch between images.

A part image is shown below. The circles on the image indicate where the defects are found.



An error image example is shown below. The arrows (drawn for illustration purposes) indicate where the defects were found.

Look at the classification legend to see what type of defect was found. The colors correspond to the colors in the error image. See also "Defect Classification" on the next page

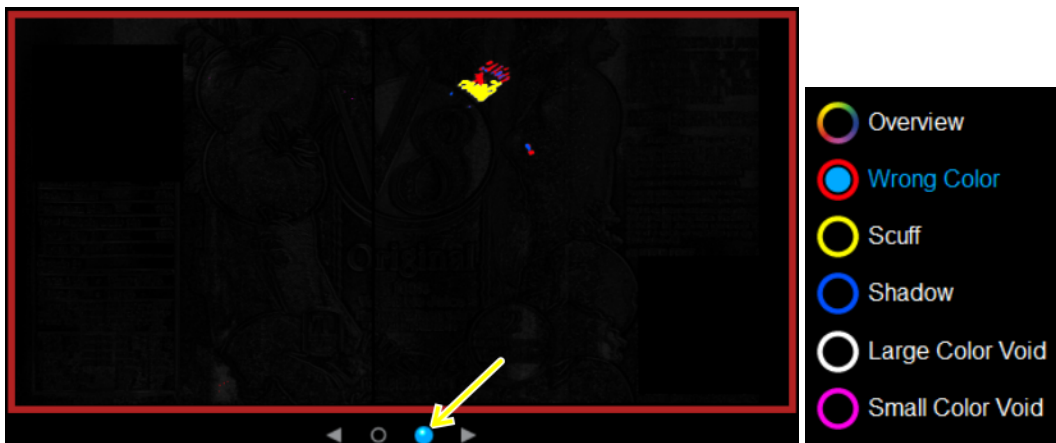


## Defect Classification



When you view the Error image in the Retro-Spec interface, you can see what type of defect occurred on each part. The defects are color-coded in the Error image. You can select the type of defect to view.

*Note: one defect can fall into more than one classification.*



*Note: The system determines the strongest classification for each pixel and colors it accordingly. You may see one defect show up in multiple classification views (example, shadow and too much color). This means the pixels in the defect area had strong characteristics in multiple classifications.*

**Overview** - This selection shows all defect types.

**Wrong Color** - The system found color somewhere on the label where it was expecting a different color, such as finding green when it was expecting to see red.

**Scuff** - The system found an area on the label that was too bright.

**Shadow** - The system found an area on the label that was too dark.

**Large Color Void** - The system found no color where it was expecting to see color, in a relatively large area.

### Detecting Large Color Voids

To detect color voids you will need to reduce the sensitivity and greatly increase your defect size. Color void is looking for large area changes and not good at detecting small pixel sized defects.

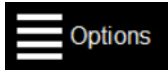
Example: If you are using a sensitivity close to 50 for all the classification sensitivity values, then you may want to try a color void sensitivity around 40 and adjust up or down from there as needed. The defect size will be anywhere from 100 to 500 depending on how sensitive you have made the classification and what size defect you want to catch.

*Note: See Adjust Inspection Settings for information about changing sensitivity.*

**Small Color Void** - The system found no color where it was expecting to see color, in a relatively small area.

## View Inspection Results

View the inspection results of each part.



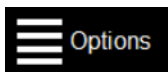
Use the Options button (from the Print Quality screen) to select which results to view.

If the Results are not on your screen, enable it by selecting **Options | Show Results Window |** exit the menu.



*Tip: look at the camera images. This helps you determine print quality on the parts.*

### To see camera images:



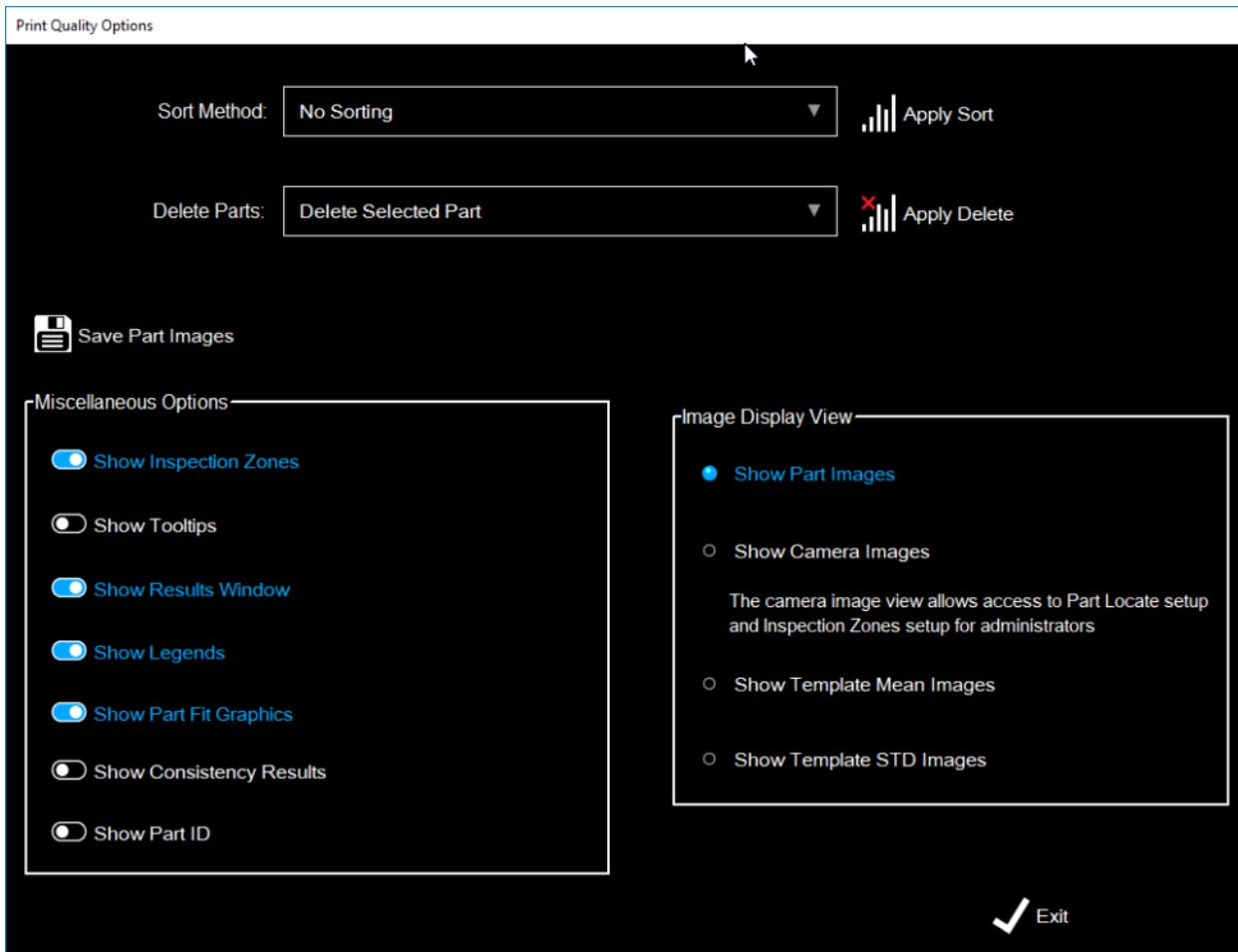
Select **Options | Show Camera Images** (from the right side of the menu). Select

Exit.



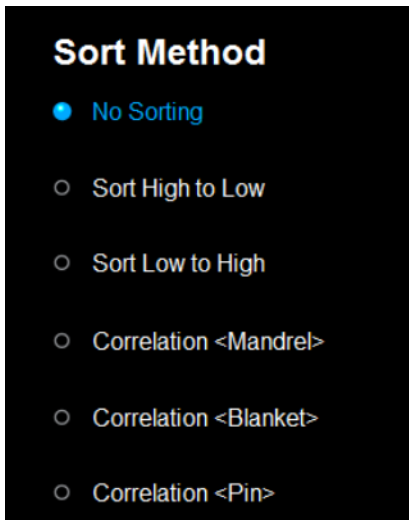
## Options on Print Quality Screen

**Options** Tap **Options** to see Retro-Spec options on the Print Quality screen.



## Sort Method

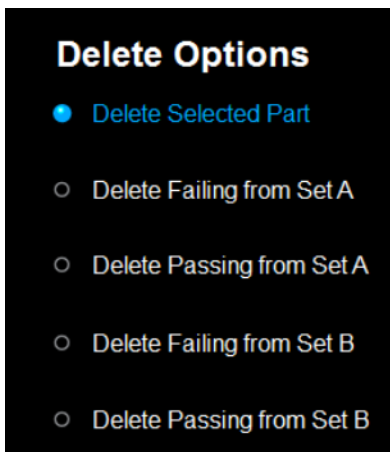
Sort the parts in the Retro-Spec graphs in the upper part of the screen to view them the way you want to. Select **Apply Sort** to see the sorted graphs.



---

## Delete Parts

Delete specific types of parts from the Retro-Spec graphs. Select **Apply Delete** to see the updated graphs. Part images are not deleted from the hard disk - they are only removed from the current graph.

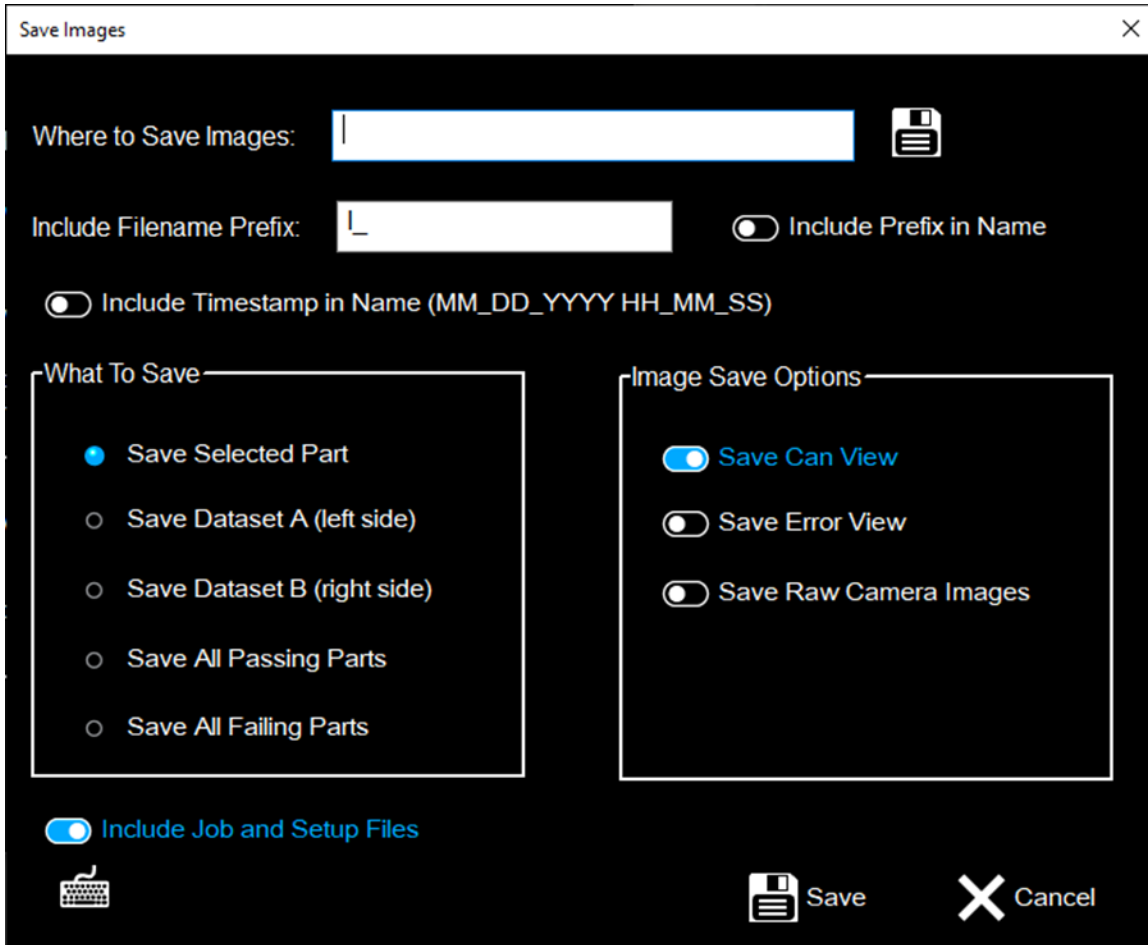


---

## Save Part Images

Save images to disk to reference later, or send to Pressco Technical support for assistance. See also "[Save Images to USB Drive](#)" on page 51.

---



*Note: when you enable any "Show" option, select another part on the Retro-Spec graph to see the updates on the screen*

### Show Inspection Zones

Show the boxes where you set up "Inspection Zones" on page 65.

Show Tooltips - not used

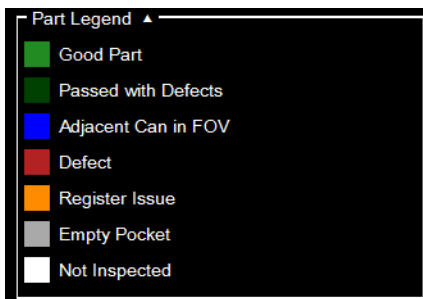
### Show Results Window

Show the inspection results after loading images or applying updated inspection settings.

```
Results
Classification DEFECT
Color Failure
Wrong Color (382)
Scuff (0)
Shadow (0)
Color Void (202)
Too Much Color (36)
Correlation:
Mandrel - 11
Blanket - 11
Pin - 11
Timestamp:
05/11/2017 14:20:16.506
Part Rate:
120
Total Error 382
(Error = 60, Sensitivity = 31)
```

### Show Legends

Show the color-coded Part Legend.



### Show Part Fit Graphics

You must also enable **Show Camera Images** on the right side of the menu. This allows you to view the part registration graphics.

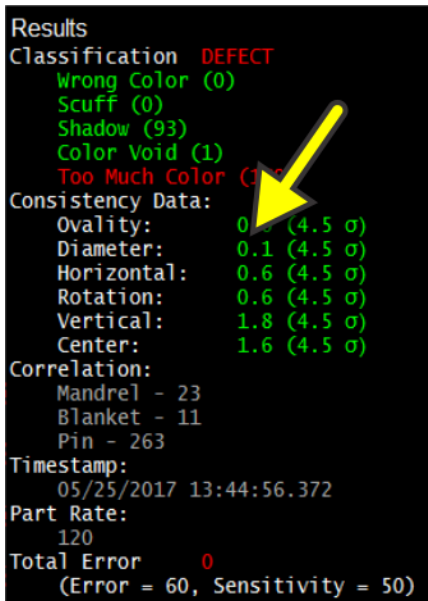


Enabling Part Fit Graphics also provides access to Part Locate Settings and "Inspection Zones" on page 65.

---

### Show Consistency Results

This data is automatically displayed if the part failed for part registration consistency. To view it otherwise, **Show Consistency Results** in the Options. You must also enable **Show Results Window**. To see this feature update on screen, you may need to select a different part from the Retro-Spec graph.



```
Results
Classification DEFECT
Wrong Color (0)
Scuff (0)
Shadow (93)
Color Void (1)
Too Much Color (1)
Consistency Data:
Ovality: 0.7 (4.5 σ)
Diameter: 0.1 (4.5 σ)
Horizontal: 0.6 (4.5 σ)
Rotation: 0.6 (4.5 σ)
Vertical: 1.8 (4.5 σ)
Center: 1.6 (4.5 σ)
Correlation:
Mandrel - 23
Blanket - 11
Pin - 263
Timestamp:
05/25/2017 13:44:56.372
Part Rate:
120
Total Error 0
(Error = 60, Sensitivity = 50)
```

A yellow arrow points to the 'Ovality' value in the 'Consistency Data' section.

### Show Part ID

You must also enable **Show Results Window**. This allows you to view the part ID number. The system tracks each part as it goes through inspection. Parts may be correlated to specific machine parts such as print blankets. To see this feature update on screen, you may need to select a different part from the Retro-Spec graph.

---

```
Results
Classification PASSED
Wrong Color (14)
Scuff (0)
Shadow (0)
Color Void (10)
Too Much Color (5)
Correlation:
Mandrel - 9
Blanket - 9
Pin - 685
Timestamp:
05/25/2017 14:05:14.532
Part Rat
120
Part ID:
2926
Total Error 14
(Error = 60, Sensitivity = 50)
```

### Show Part Images

Show the default inspected image.

### Show Camera Images

Show the different views of the part. **Show Camera Images** must be enabled each time you enter the Options menu. It does not stay enabled.



### Show Template Mean Images

Show the template images that were created when you learned this part. For more information, see "Show Templates" on page 62.

### Show Template STD Images

## Chapter 9


Show the standard deviation images that were created when you learned this part. For more information, see ["Show Templates" on page 62](#).

---

# Chapter 10 Color Analysis

## Color Analysis

This section describes how the system monitors your part's colors. The colors (or zones) need to be defined when the job is created or updated.

 *To view anything on this screen, you must load a fresh set of images. See "[Load Part Images](#)" on page 83.*

The system sets up colors using either Automatic or Manual colors. This is set up during installation.

---

## Color Measurements

The DecoSpector 360™ takes several color measurements. Use the measurement that best matches your plant's color measurement process.

In the following examples, the "standard color" is Blue: RGB: 28, 82, 162. The color squares represent different measured values. The numbers under the squares represent the number shown on the scale to the left of the DecoSpector graph.

Your standard colors are computed when the system "learns" your parts.

*Note: if Simplified Delta E mode is enabled, then you will only see Delta E measurements in the system.*

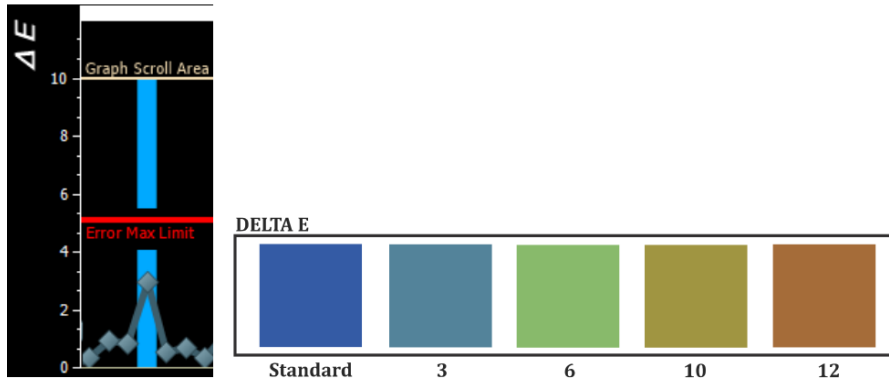
### Delta E

Delta E is a measurement used to indicate how much a color deviates from an accepted standard.

The inspection provides Delta E detection by measuring color separation on a scale of 0 - 100. A value of zero indicates that there is no discernible difference in color from the reference value. A value of one indicates the minimum human perceptible difference in color. The colors are measured in RGB, and converted to L\*a\*b\* color space for Delta E measurements.

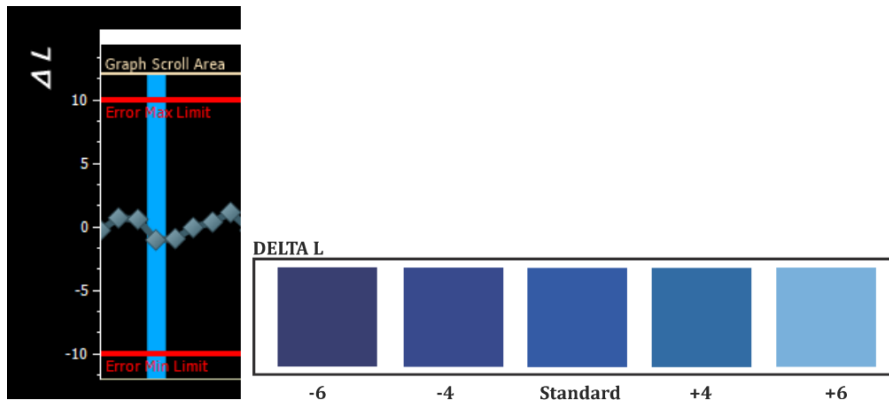
On the Delta E graph, the further away a measured color is from the standard, the more different the color.

Delta L, Delta H, and Delta C are all components of the Delta E measurement.



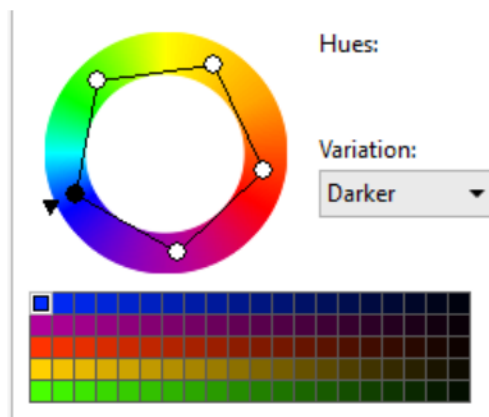
### Delta L

Lightness. On the Delta L graph, a negative number represents a color that is darker than the standard. A positive number represents a lighter color than the standard.

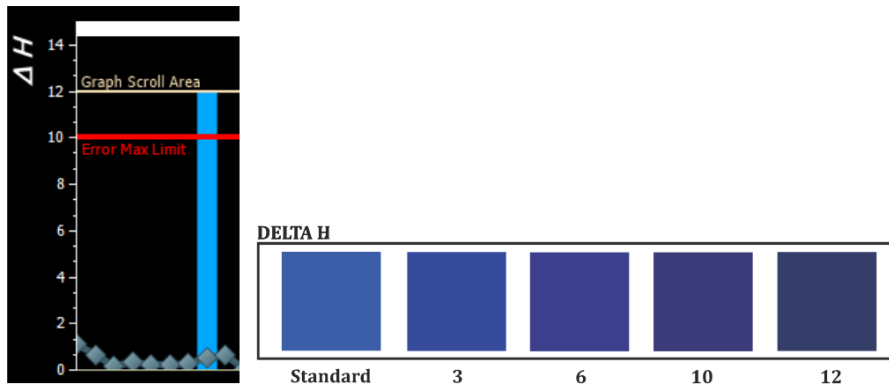


### Delta H

Hue. The attribute of color that enables an observer to classify it as red, green, blue, purple, etc., and excludes white, black, and shades of gray. [Source: <http://www.thefreedictionary.com/hue>]

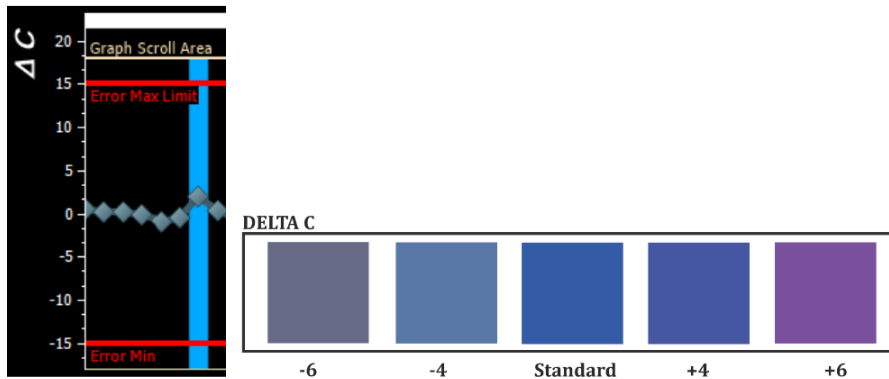


On the Delta H graph, the higher the number, the further away that color is from the standard.



### Delta C

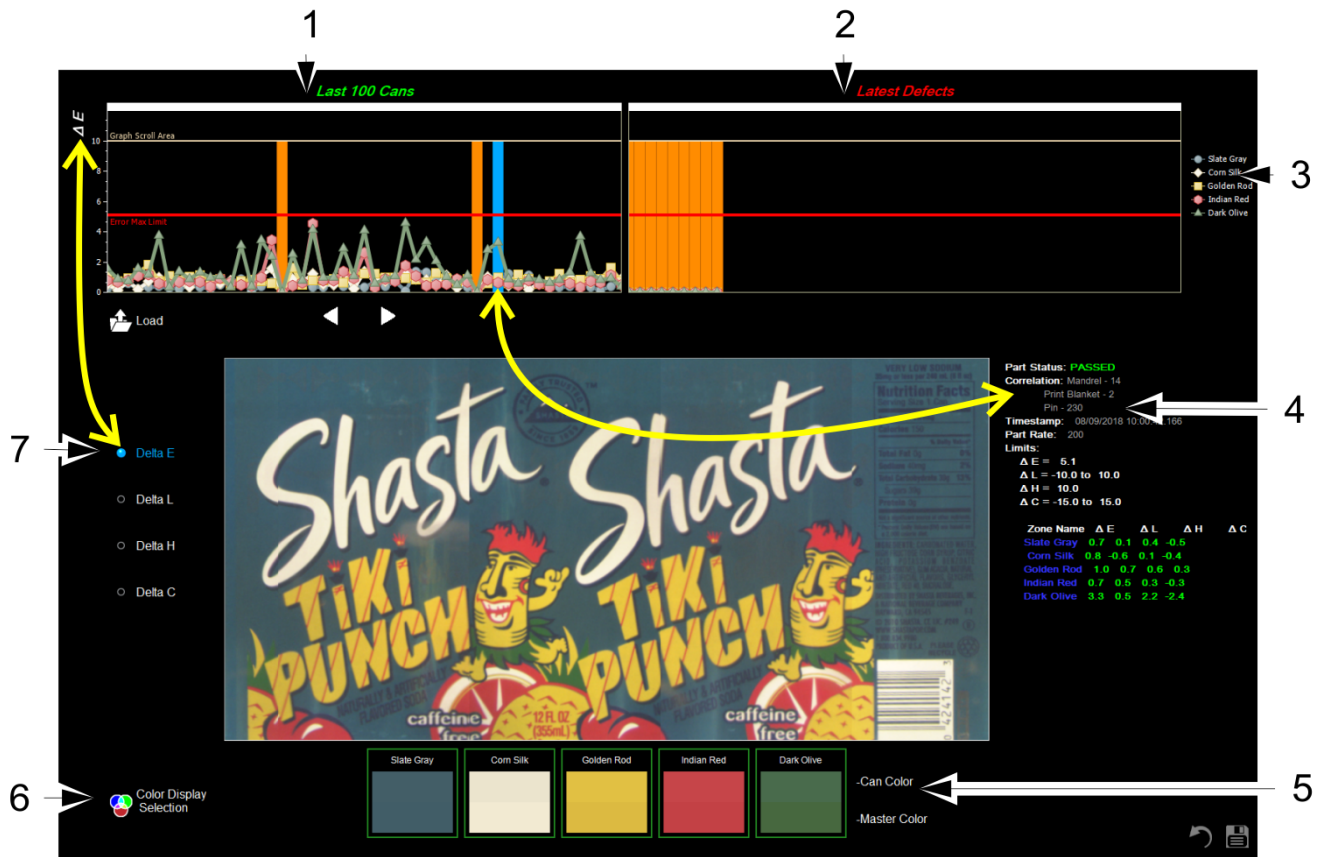
Colorfulness. The system may find an area to be more blue or less blue, for example. On the Delta C graph, a negative number means that the measured area is less colorful than the standard. A positive number means that the measured area is more colorful than the standard.



## Color Analysis Graphs

This example graph shows the default setup. To see parts, select the Load icon and select a set or sets of part images.

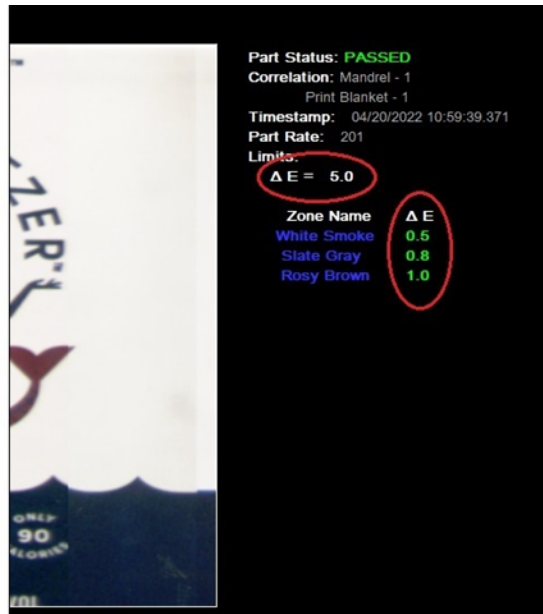
*Tip: If your system is excessively rejecting a specific color, select **Color Display Selection**. Then disable the problem color.*



- 1) Data Set A - our example loaded Last 100 Images
- 2) Data Set B - our example loaded Latest Defects - Any Defects
- 3) Color key
- 4) Inspection results for the selected part
- 5) Can Color = the measured color on the selected part. Master Color = the learned color that the part should match.
- 6) "Color Display Selection" on page 102 - Select the colors you want to display or measure
- 7) Use the radio button to select which color measurement graph you want to display. For more information see "Color Measurements" on page 97.

### Color Analysis with Simplified Delta E enabled

When Simplified Delta E mode is enabled, the graphs show only Delta E measurements.



## Color Analysis for One Color - Automatic Color Mode

You can view the inspection results for one color. To see parts, select the Load icon and select a set or sets of part images.

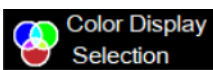


### To see the information for one color:

1. Select one part (bar) in the Retro-Spec graph.
2. Only the selected color measurement graph is shown at the top of the screen (Delta E, etc.).
3. Select the desired color block from under the part image (example, Light Blue).
4. The selected color is highlighted in cyan on the image (the highlight is cyan, regardless of the color you are looking for).
5. You can select any color measurement to the left of the image (Delta E, etc.).
6. The selected color is highlighted in the results section.

When you select the image or color block again, the display reverts to all displayed colors.

## Color Display Selection

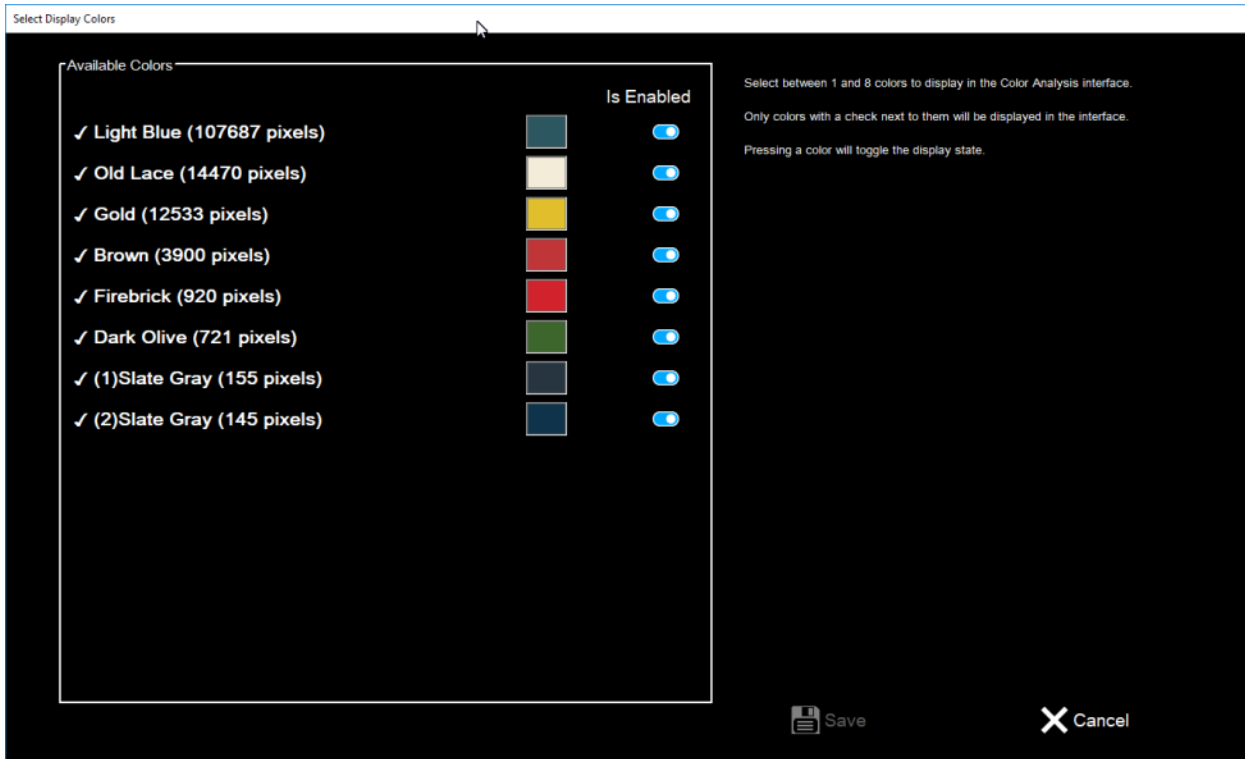


This icon is displayed in the lower left corner of the Color Analysis screen.

Select which colors your want to view or analyze. Choose from colors that were previously set up through Automatic Colors or Manual Color Zones.

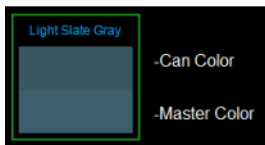
## Chapter 10

Select the **Color Display Selection** icon. Then, from the popup dialog, select the color(s) you want to view (the colors with a check mark will be displayed). Save changes and exit.

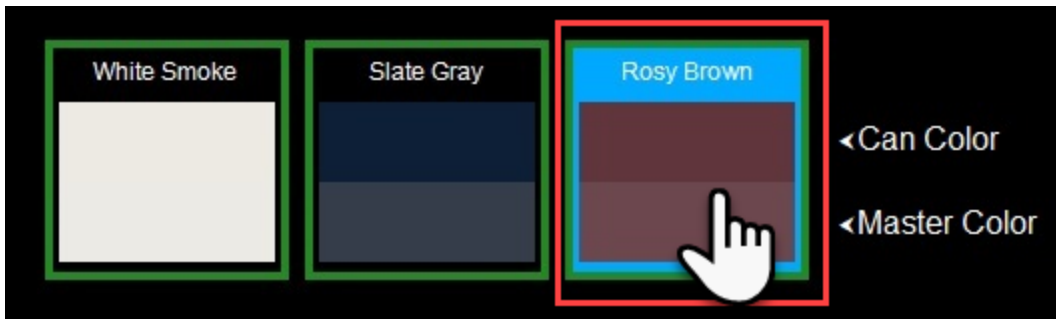


**Is Enabled** - [Only when using Automatic colors] If a color is enabled, then the DecoSpector will analyze that color. If the color is disabled (the switch is not blue), then the system will not analyze that color. You can have the system analyze a color, but not show it in Color Analysis if you choose.

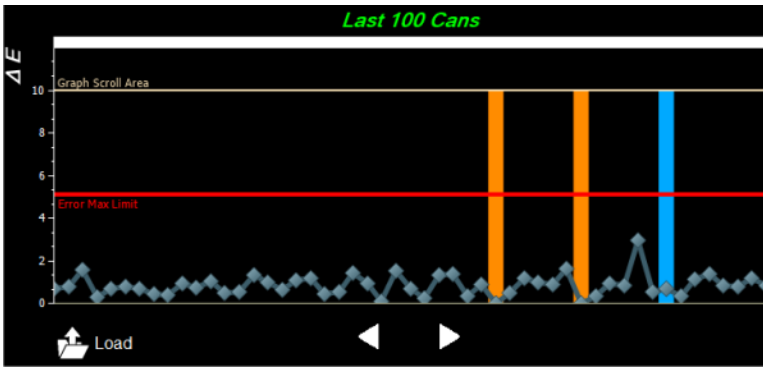
The selected colors will be displayed below the image as Can Color and Master Color.



When you select one of the color blocks, it will be outlined in cyan.



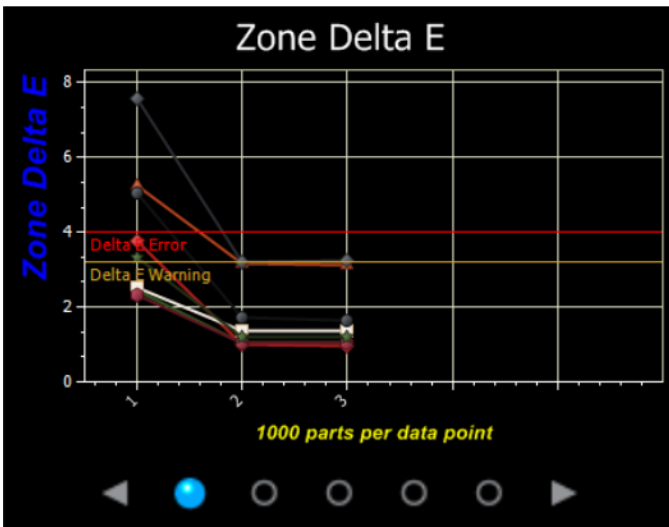
The graphs at the top of the screen will show only the selected color(s) from the Select Display Colors dialog box. If a color is not checked, then you will not see it in the Color Analysis graphs, nor under the image.



## Color Trend Graphs

### Overview

On the home screen, you can view several color monitoring graphs. Swipe over the graph or select one of the dots under the graph to select different graphs. A dot is added to the chart every 1000 parts to indicate how the color is trending.




### Color Analysis

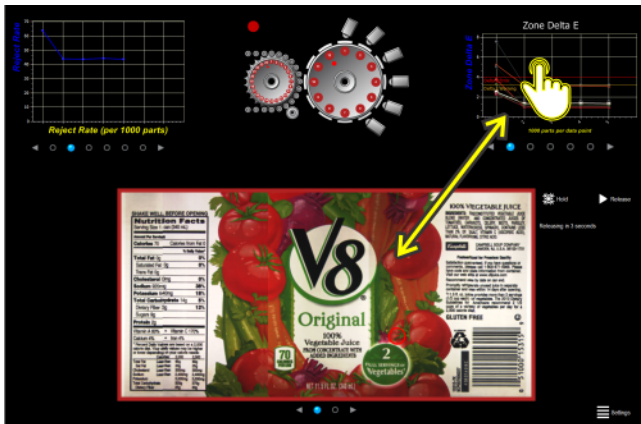
You can set the Error and Warning limits for these graphs in the Color Analysis screen. Use the Retro-Spec graph at the top of the screen to adjust the limits.

You can select a specific color graph to display using the following steps.

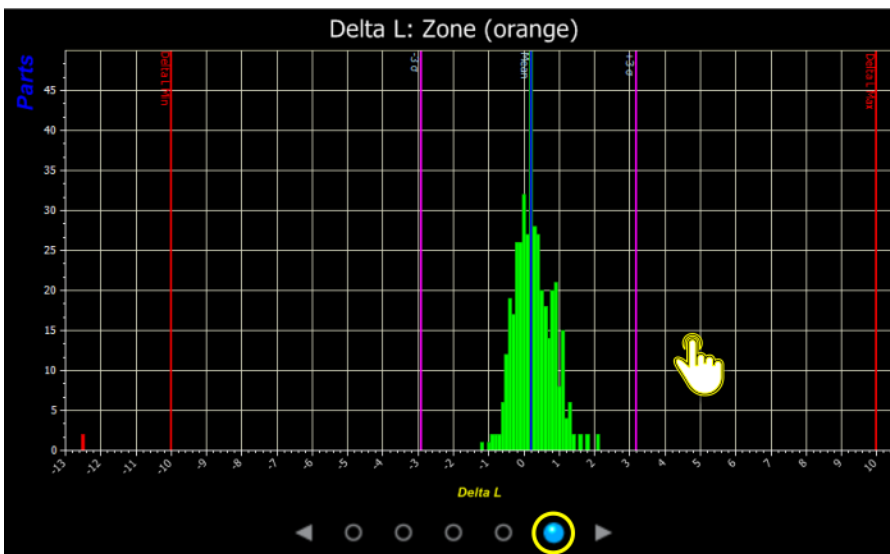
*Note: Before selecting a graph you must: Set up Color Zones or use Automatic Color Zones*

### To choose a graph:

1.  **Overview** Select the graph in the upper right corner of the home screen to view it as a large graph in the center of the screen.

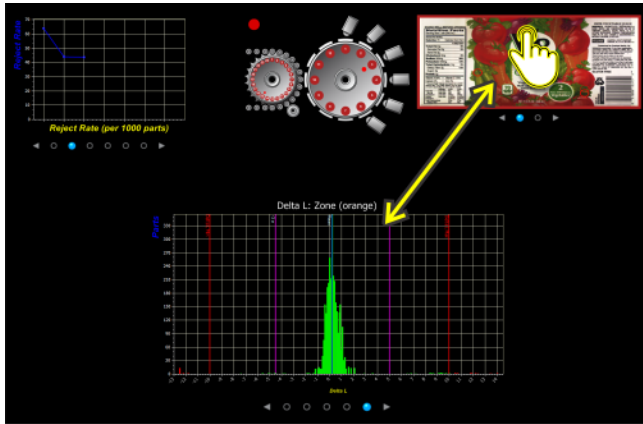


2. Select the rightmost dot to view the user-selectable graph.

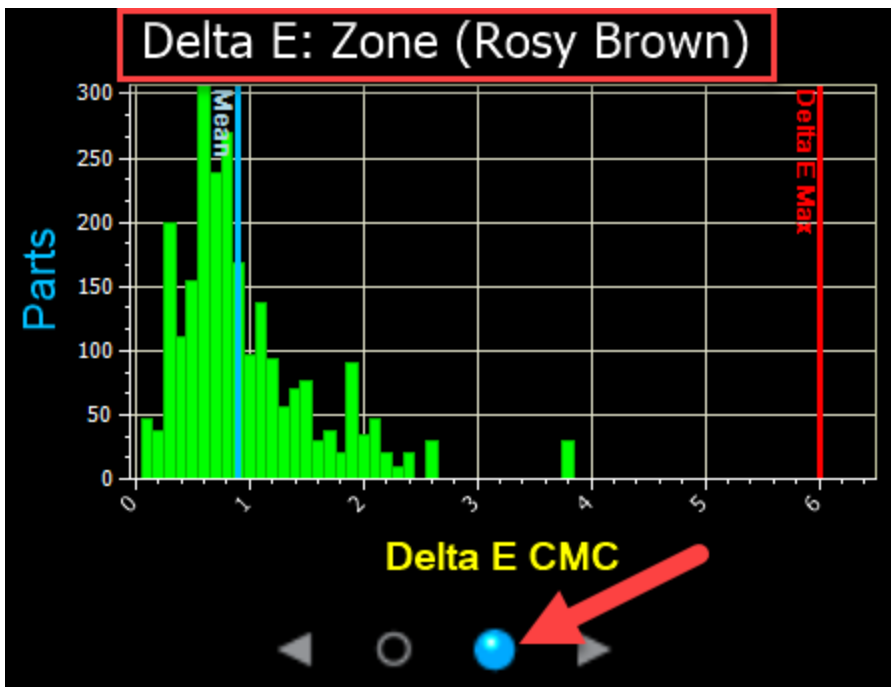


3. Click on the graph to bring up the Zone setup screen.
4. Select one of the zones from the Zone setup screen (see below for information about selecting zone using automatic colors, simplified Delta E, or manual color zones).
5. Select OK and exit the Zone setup screen.

To move the graph to the upper right of the home screen, select the part image. The graph and the part image will switch places.



You might need to select one of the other dots underneath the graph to view the color zone graph that you selected.



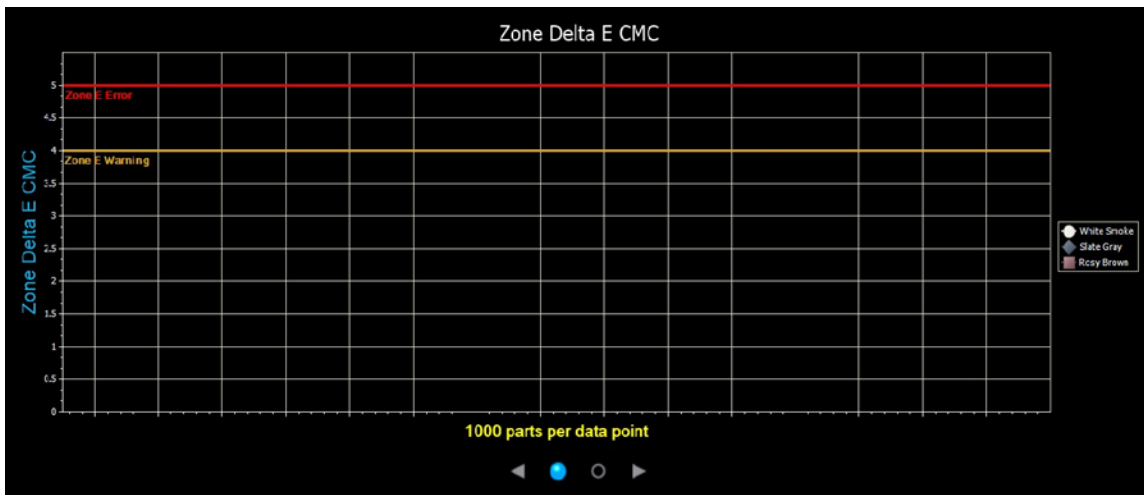
If you are using Automatic Colors:



- Select a color from the drop-down menu.
- Select a color measurement (Delta E, Delta L, Delta H, or Delta C).
- Select OK to save changes and exit. The selected graph is displayed on screen.

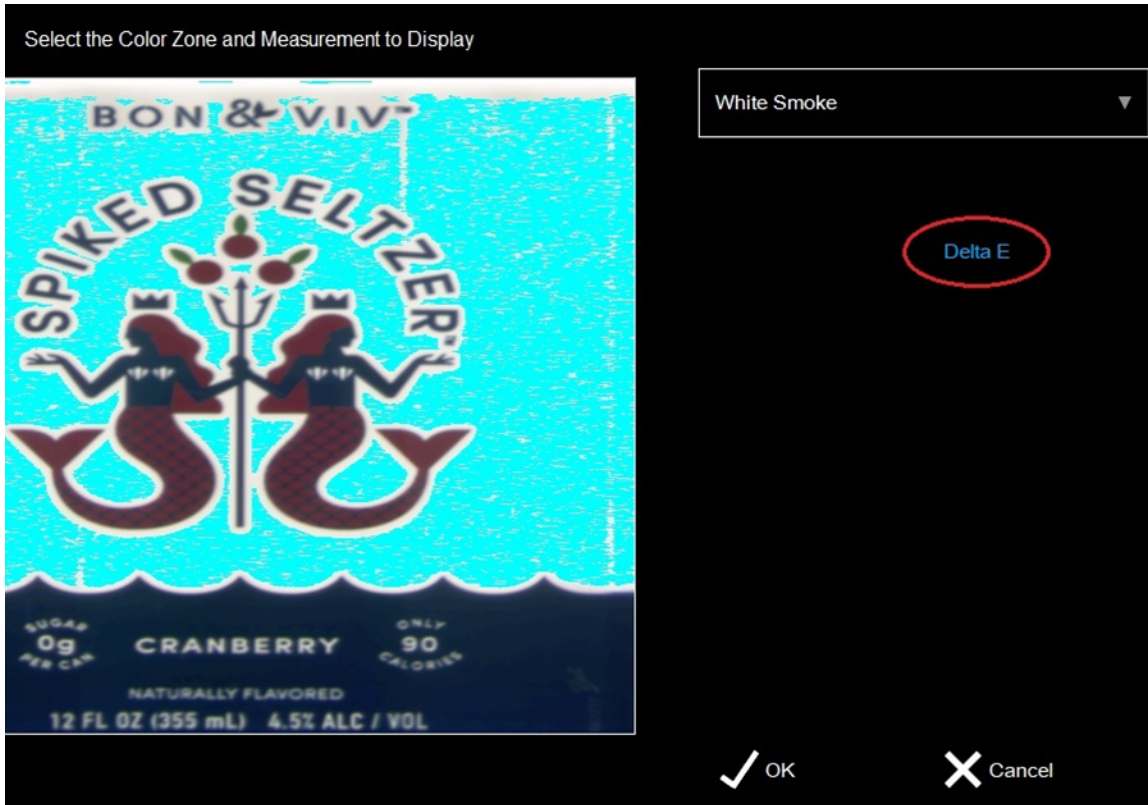
**When Simplified Delta E mode is enabled:**

Trend graphs will only display Delta E when Simplified Delta E mode is enabled:



Instead of being able to scroll through five screens, you will only scroll through two screens: Delta E and a color/ measurement-specific graph.

In the **color/ measurement-specific graph**, when you click on the graph, the dialog box also hides Delta L, Delta H, and Delta C options.



**If you are using Manual Color Zones:**



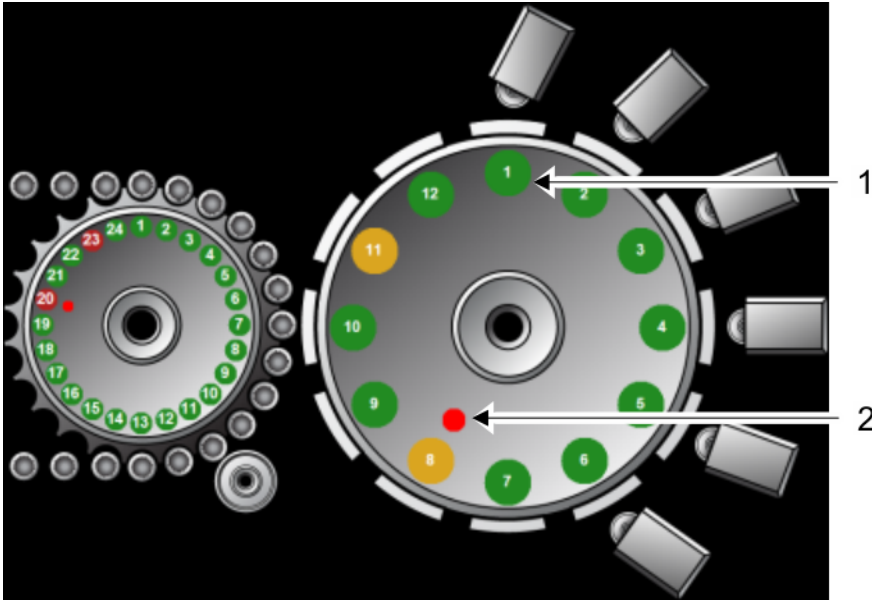
- Select one of the color zones on the image (yellow circle turns blue when you select it). The Zone Name is displayed in the upper right of the screen.
- Select a color measurement (Delta E, Delta L, Delta H, or Delta C).

# Chapter 11 Correlation

The DecoSpector system provides correlation to the following machine parts: Mandrel, Print Blanket, and Pin Chain

*Note: Correlation is set up using Correlation Settings. This is usually performed during installation by Pressco.*

The correlation graphic on the Home (Overview) screen shows the status of machine parts.



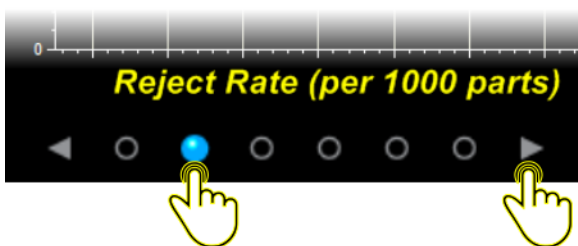
1) The large dots with numbers show the alarm condition of the machine part. The color is dependent on the defect % of each component, and is hard-coded in the software. Clearing statistics resets the color to green.

- Red = alarm condition [ $> 10\%$  defects]
- Yellow = warning [ $5\% - 10\%$  defects]
- Green = OK. No excessive machine part defects. [ $<5\%$  defects]

2) The small red dot indicates where the last failing part came from.

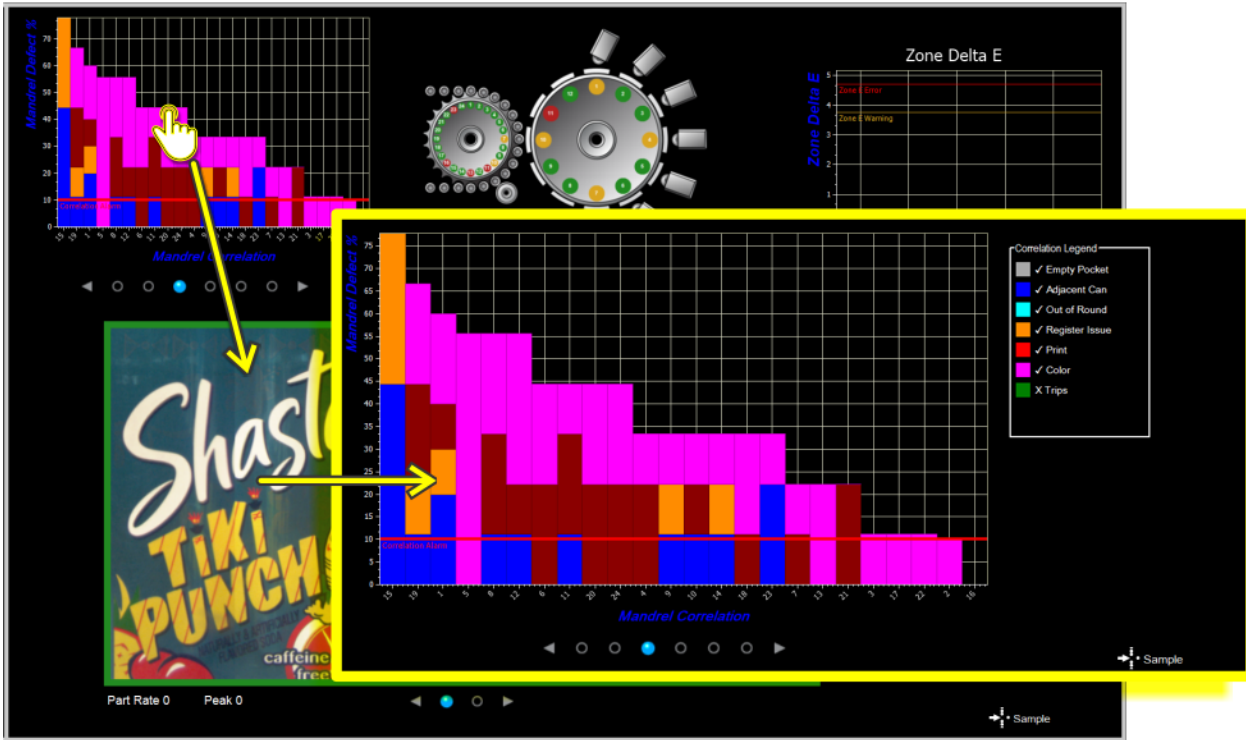
## Viewing Correlation Graphs

Swipe the graphs or use the buttons to display the different graphs.



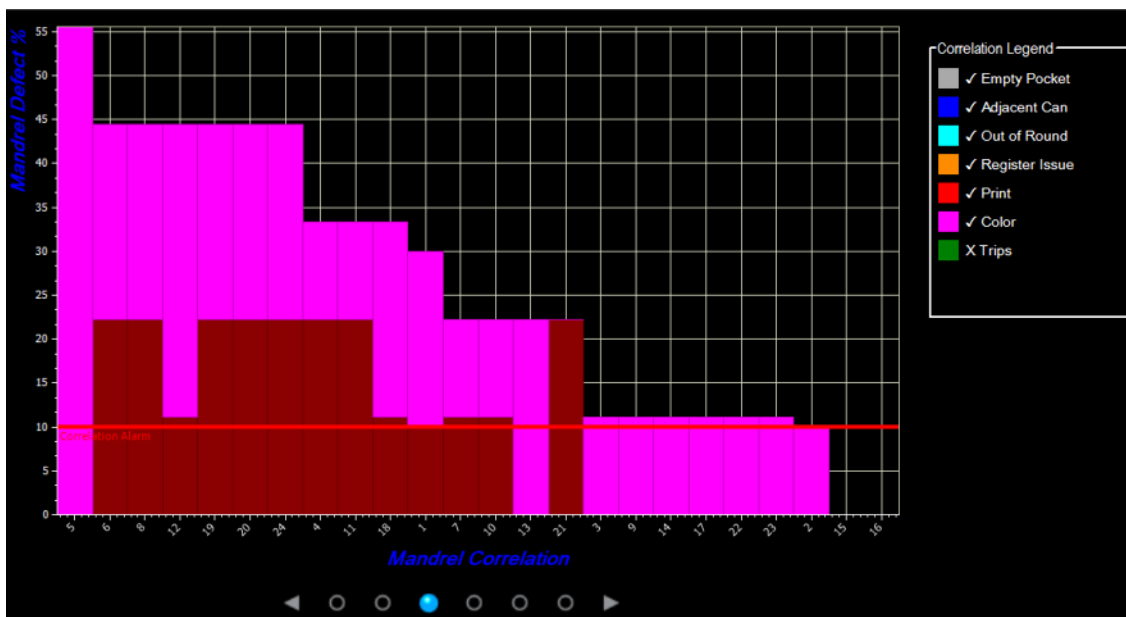
## Chapter 11

To see a larger graph, click the graph in the upper screen. The graph will be displayed in the lower screen.



The correlation graphs are color coded based on the reason the parts failed. The legend is displayed when you view a larger graph in the lower screen. The legend allows you to filter what you want to see. Click on a color to select or de-select an option. An 'X' means that information will not be shown.

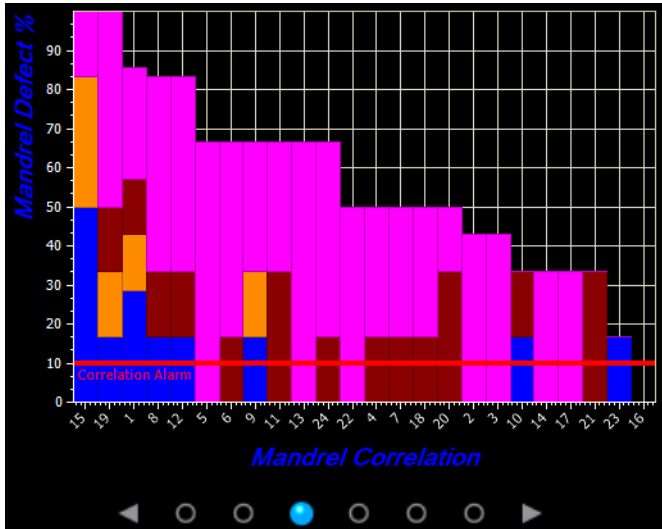
*Tip: typically, only Print and Color defects matter, since a mandrel or print blanket have nothing to do with the other defect categories.*



Gray = Empty Pocket | Blue = Adjacent Can | Cyan = Out of Round | Orange = Register Issue | Red = Print Defect | Magenta = Color Defect | Green = Deco Trip

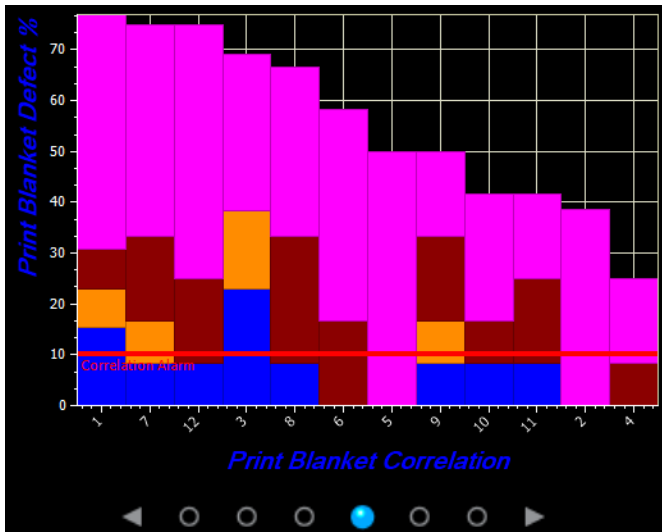
## Mandrel Correlation

The mandrel numbers are located on the bottom of the graph. This is sorted in descending order, left to right, from the highest number of failed parts to the lowest number of failed parts.



## Print Blanket Correlation

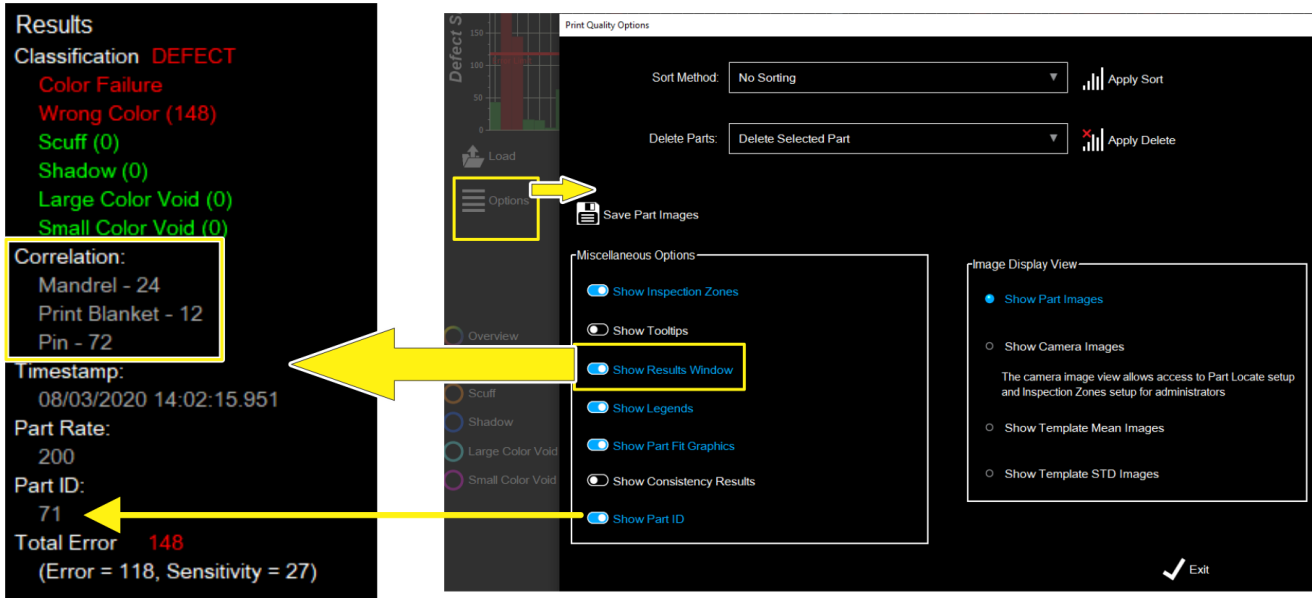
The print blanket numbers are located on the bottom of the graph. This is sorted in descending order, left to right, from the highest number of failed parts to the lowest number of failed parts.



## Individual Part Correlation



View the Results window on the Print Quality screen to see the correlation data of each inspected part. To see this window, "Show Results Window" must be enabled. See ["Options on Print Quality Screen"](#) on page 90.

In this example, the part was correlated to Mandrel 24, Print Blanket 12, and Pin 72.



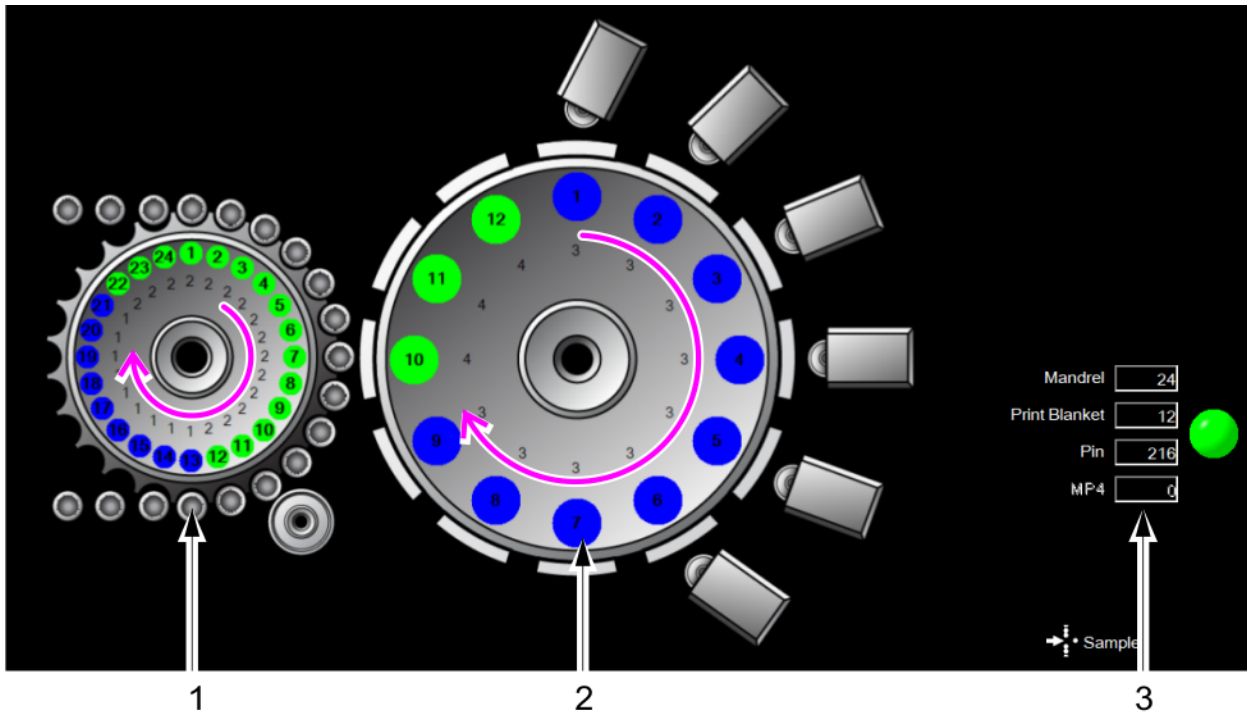
## Correlation Diagnostics

Check to make sure the system is tracking the correlation of all machine parts.

 Settings |  Overview Display View | **Show Correlation Diagnostic Controls.** The controls are displayed on the home screen.

When the system is online, you will see the correlated machine part numbers update with colored dots. The dots toggle between blue and green so that you can see where the current part is in the production line. If a machine part is skipped, you see that the machine part dot does not change.

The machine part count is displayed (the innermost numbers on the graphic). If the counts do not increase equally, then this indicates a correlation problem. This number resets to one after it reaches 99.

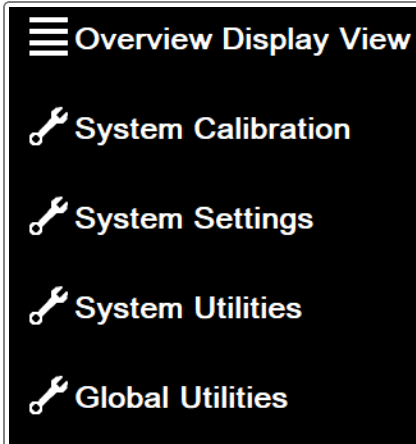


1) Mandrel parts | 2) Print blanket parts | 3) Correlation values

# Chapter 12 Settings



- Adjust system settings. A grayed out item means that only higher user levels have permission to access that item.



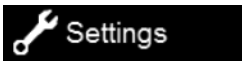
"Overview Display View" below

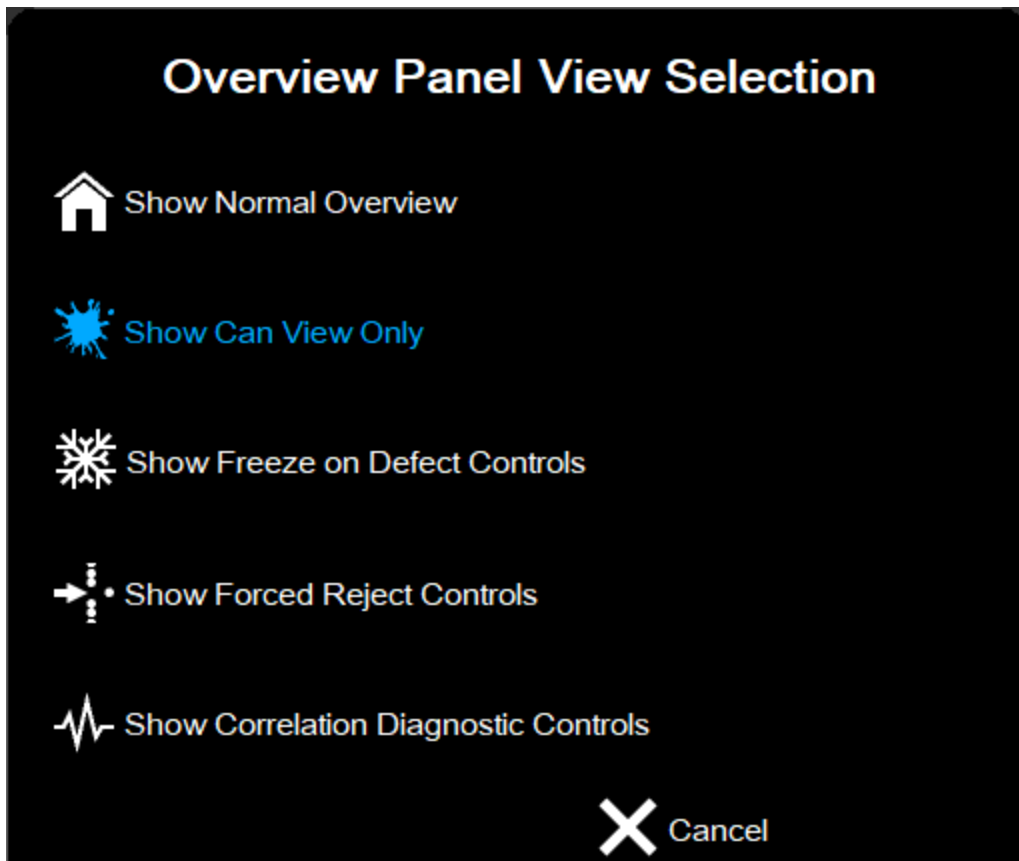
System Calibration, Settings, and Utilities are for Administrators only.

Exit the Software from Global Utilities.

## Overview Display View

Select what to display on the Overview screen. To get to this menu:





**Show Normal Overview** - Resets the home screen to default, hiding Freeze on Defect, Forced Reject, and Diagnostic Controls.

**Show Can View Only** - This view allows you to view just the can image with details about the part. "Show Can View Only" on page 81

**Show Freeze on Defect Controls** - Show the "Freeze on Defect Controls" on page 78 on the home screen.

**Show Forced Reject Controls** - Show the "Forced Reject" below controls on the home screen.

**Show Correlation Diagnostic Controls** - Show the correlation value where the current part is, and show that the system is tracking machine parts. Correlation Diagnostics.

## Forced Reject

Force any part to be rejected. The system will reject all parts associated with the selected components, regardless of the pass/fail condition of those parts. This provides a means of handling an emergency situation until repairs on machine can be made. If you know there is a serious problem with a particular component, you can use this method to ensure that no part from the defective machine component passes the inspection process.

*Tip: Forced Reject can be used for everyday quality checks if you would like to inspect dry cans versus wet cans.*

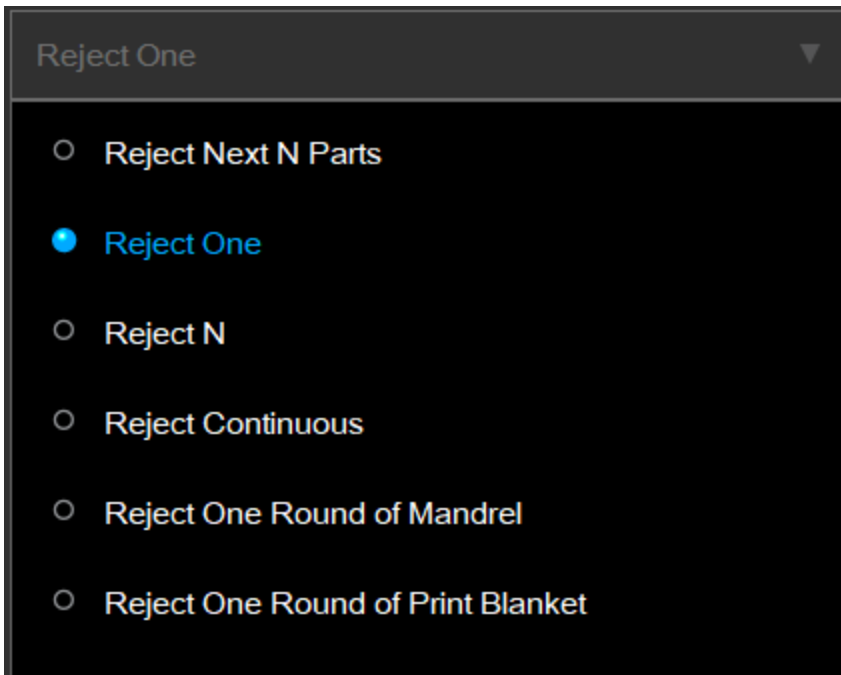
*Note: the DecoSpector system must be online to reject parts*


**To set up Forced Reject:**

1. Select **Settings | Overview Display View**.
2. Select **Show Forced Reject Controls**. These are displayed on the right side of the home screen.

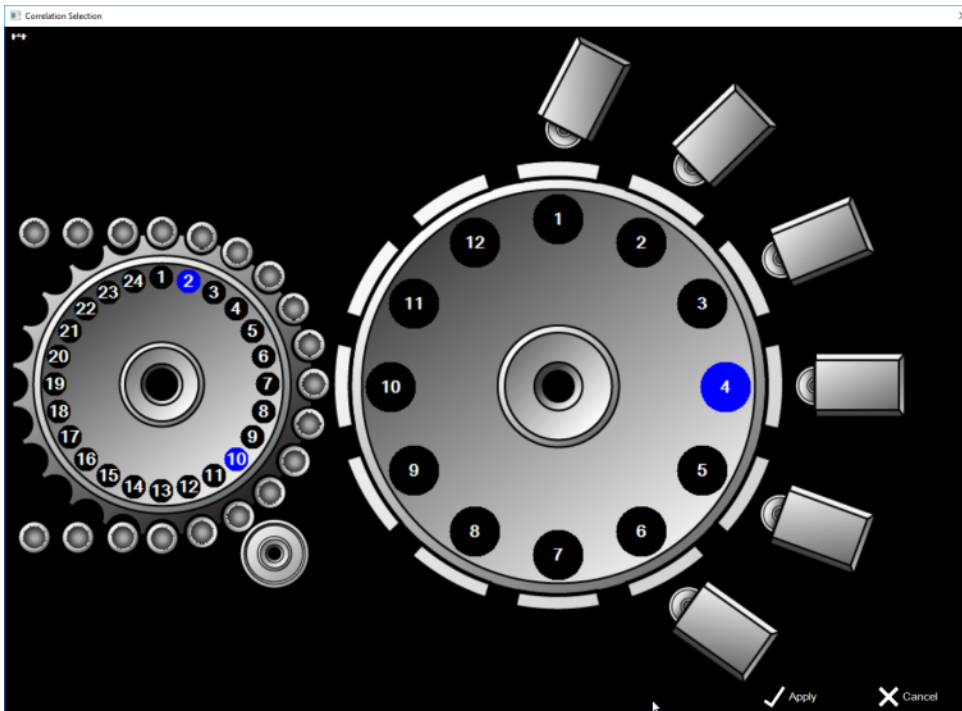


3. To select a different option than what is displayed, select the drop-down menu and make another selection.





4.  Tap the **Select** button to select different machine parts. A graphic with machine parts is displayed. [shown below]
5. Tap each machine part that you want reject correlated parts from. In the example below, mandrels 2 and 10 and print blanket 4 are all selected.

*Note: even if you select a Forced Reject option such as "Reject One Round of Print Blanket," you can still select other machine parts from the graphic.*




6. Tap **Apply** to save changes and exit. The correlation graphic at the top of the Home (Overview) screen highlights the selected machine parts.

**To use Forced Reject:**

1.  Put the system online to inspect parts.
2.  Tap the **Start Forced Reject** button. The system rejects those parts correlated to the selected machine parts and conditions you selected. The border around the part image turns gray when a part is rejected through Forced Reject. A message stating Forced Reject Completed is displayed when all the reject criteria is met.



**Notes about Forced Reject:**

-  To reset the Forced Reject options to the default values, select the **Reset Selected** button. (If the system is still in Forced Reject mode, you may need to cancel Forced Reject before making changes)

- The system uses an OR function to reject parts. That is, if you select mandrel 2 and print blanket 4, the system will reject the first part correlated to either machine part.
- When using **Reject One** or **Reject Continuous**, you must **Select** which correlated machine parts to reject.
- When using **Reject Next N** or **Reject N**, you can change the number of N parts on the screen by pressing and holding the number next to **Reject Count**.
- You can add additional correlated machine parts by tapping the **Select** button and selecting more machine parts.

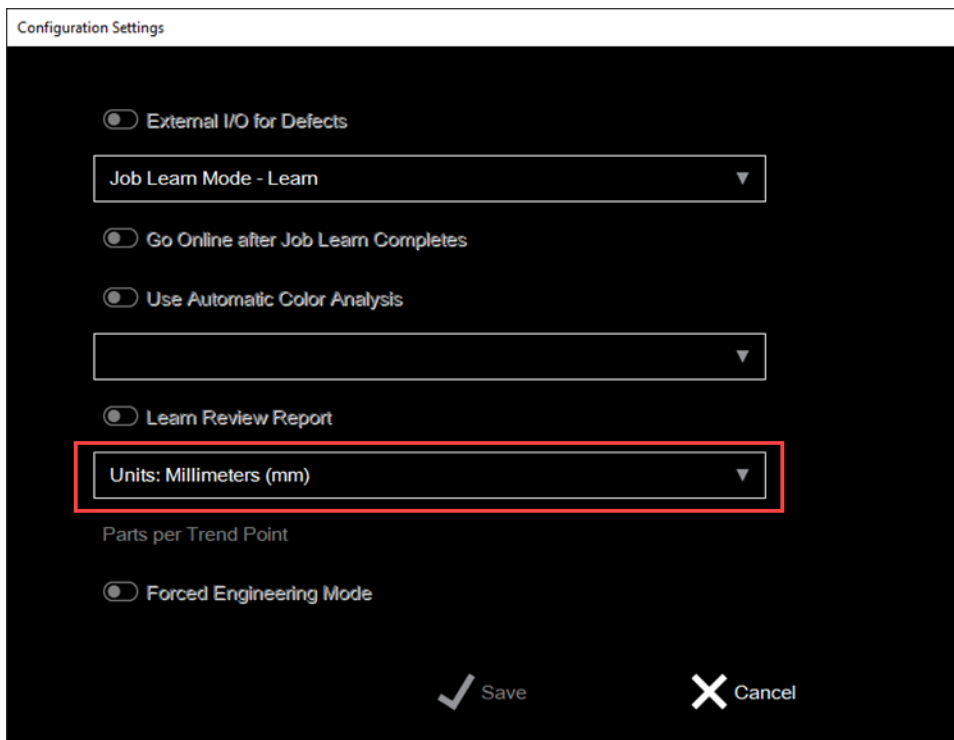
## Change Units of Measure

Switch between inches and millimeters in the system displays. To change units:



Settings

Go to the Settings menu | **System Settings** | **Configuration Settings** | select either Inches or Millimeters.



## System Utilities

These utilities allow you to view information about your system and connect with Pressco Tech Support. To get to the utilities:

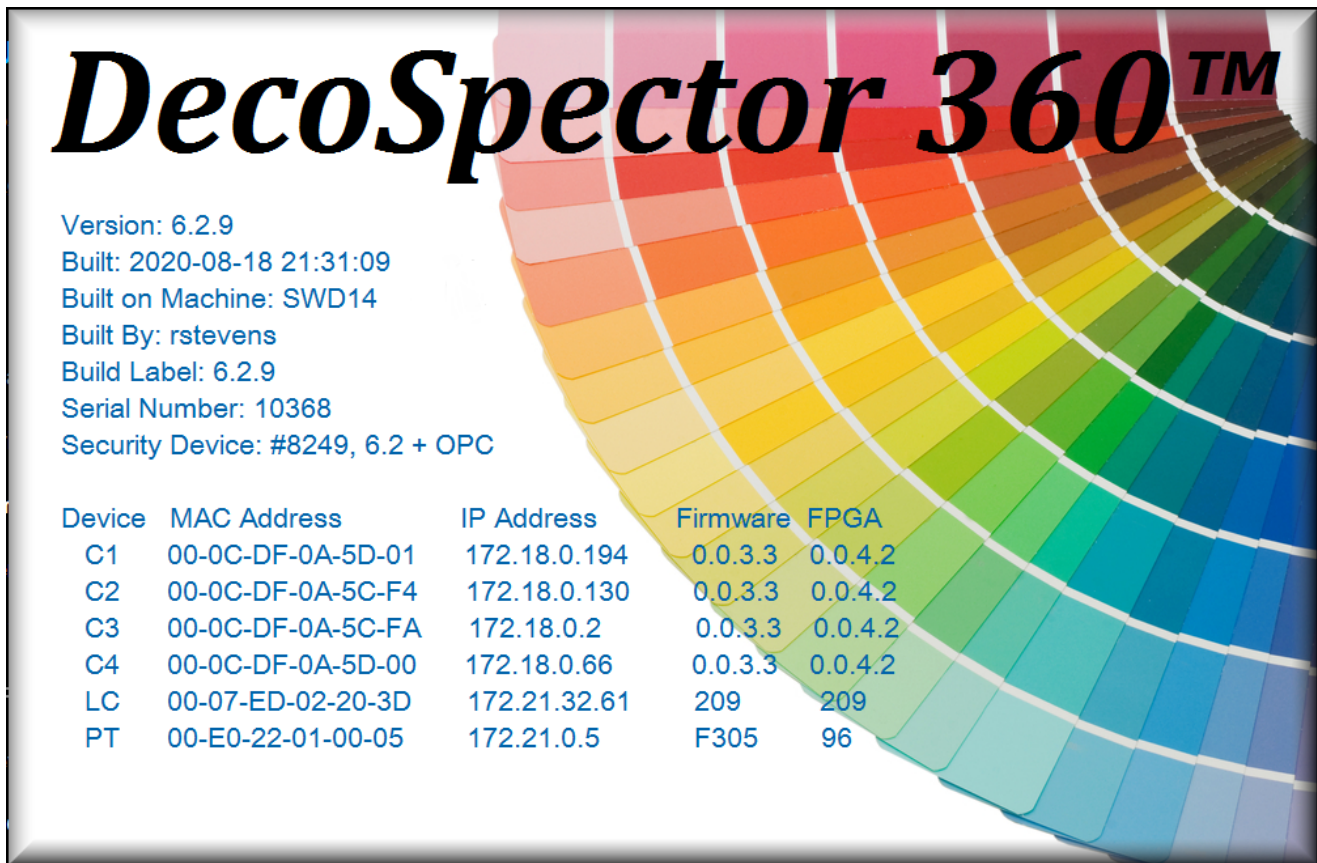


Settings

Go to the **Settings** menu | **System Utilities**.

### About DecoSpector

**About** - View the software and firmware versions. This information may be required if you request Technical Support assistance.



# DecoSpector 360™

Version: 6.2.9  
 Built: 2020-08-18 21:31:09  
 Built on Machine: SWD14  
 Built By: rstevens  
 Build Label: 6.2.9  
 Serial Number: 10368  
 Security Device: #8249, 6.2 + OPC

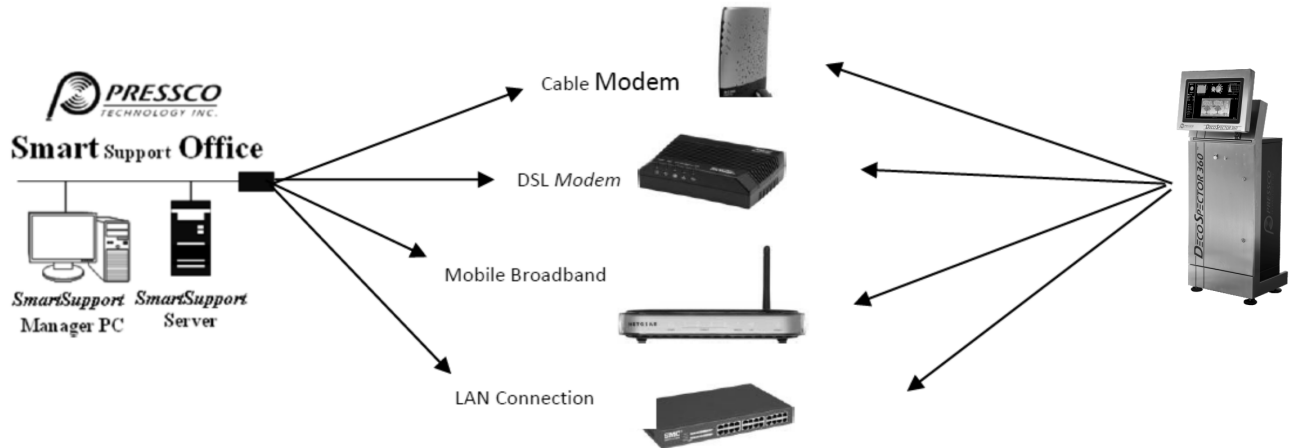
Device	MAC Address	IP Address	Firmware	FPGA
C1	00-0C-DF-0A-5D-01	172.18.0.194	0.0.3.3	0.0.4.2
C2	00-0C-DF-0A-5C-F4	172.18.0.130	0.0.3.3	0.0.4.2
C3	00-0C-DF-0A-5C-FA	172.18.0.2	0.0.3.3	0.0.4.2
C4	00-0C-DF-0A-5D-00	172.18.0.66	0.0.3.3	0.0.4.2
LC	00-07-ED-02-20-3D	172.21.32.61	209	209
PT	00-E0-22-01-00-05	172.21.0.5	F305	96

## Remote Support

Each DecoSpector 360™ system is equipped with iTivity and Team Viewer agent software that provide a safe and effective means of allowing remote support connections to the system. These allow Pressco engineers to access your DecoSpector 360™ system remotely, and assist with troubleshooting and optimizing system performance.

To use remote support, you must provide an Ethernet connection to the DecoSpector 360™ and outgoing Internet access to the specific support server, described in the ["iTivity" on page 121](#) and ["Teamviewer" on the next page](#) topics.

Connection Methods: The remote support connection can operate over a variety of networks. However, these are image and video based systems so the higher the bandwidth available the better we will be able to navigate through the system and assist with any issues you encounter.



### **Teamviewer**

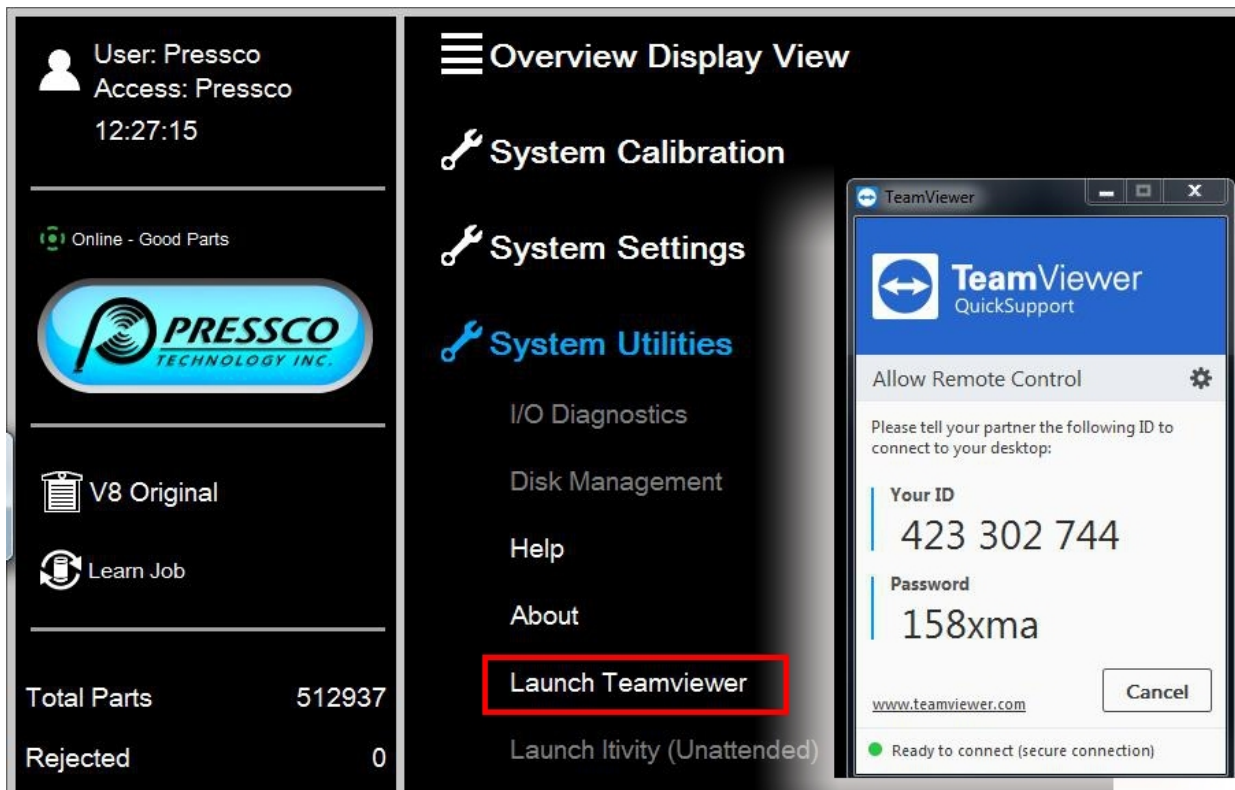
Each DecoSpector 360™ system is equipped with Team Viewer agent software.

Team Viewer is installed at the Pressco factory on the DecoSpector 360™ system, in systems with version 6.2 software and higher.

To use the Team Viewer connection method, the DecoSpector 360™ will need outgoing Internet access to TeamViewer.com via port 5938. Firewall rules may need to be set to allow outbound traffic over port 5938.

#### **To initiate a Pressco support session:**

1. Launch Team Viewer: go to **Settings | System Utilities | Launch Teamviewer**. When the connection is established you will see a dialog box with an ID number and password. Those are the logon credentials needed for others to gain access to that computer.



2. Contact Pressco support, via email, support chat, text message, or by phone call. See below.
3. Notify Pressco with the TeamViewer ID and Password. Pressco will log into your Deco system, and perform troubleshooting or maintenance as necessary.

Request technical support and remote support: [techsupport@pressco.com](mailto:techsupport@pressco.com)

24/ 7 Customer Support (for urgent system help): +1-440-498-2000

### ***iTivity***

Each DecoSpector 360™ system is equipped with iTivity agent software that, when initiated, will establish an encrypted connection to a server located behind the Pressco firewall. This allows Pressco engineers to access your DecoSpector 360™ system remotely. Only registered members of the Pressco support team can gain access to the remote support server.

To use remote support, you must provide an Ethernet connection to the DecoSpector 360™ and outgoing Internet access to support.pressco.com via port 23800. If you do not have a DNS, Pressco can provide you with the IP address of the remote support server. If connecting through a firewall you will need to add a rule allowing outgoing access from the DecoSpector's IP address to support.pressco.com:23800. All other connections can remain blocked.

Once the session is established, the DecoSpector 360™ shows up on our server and is identified by the serial number of the system. Our Engineers can then connect and offer assistance.

### ***To request a Pressco support session:***

Contact Pressco support. Provide the serial number of the system that needs to be accessed. Pressco will log into your Deco system and perform troubleshooting as necessary.

## UPS Information

**UPS Information** - View remaining battery life and other information about the UPS backup device.

## Log Viewer



Settings | System Utilities | Log Viewer.

View the system logs, including inspection changes, alarms, and errors.

The screenshot shows the Log Viewer interface with a table of events and a detailed view of a selected event. The table has columns for Type, Date, Message, User, Online, and Job. The detailed view shows the event type as 'Alarm', the date as '2015-06-11 10:16:57', the system as 'Online', and the user as 'Supervisor'.

Type	Date	Message	User	Online	Job
Information	2015-06-11 14:03:41	Current user now = "Supervisor", Access Level = Admin, Language = English	Supervisor		
Information	2015-06-11 14:02:28	Current user now = "Nobody", Access Level = Guest, Language = English	Nobody		
Information	2015-06-11 14:01:50	Current user now = "Supervisor", Access Level = Admin, Language = English	Supervisor		
Information	2015-06-11 14:01:44	Current user now = "Nobody", Access Level = Guest, Language = English	Nobody		
Information	2015-06-11 14:01:36	Current user now = "Operator", Access Level = Operator, Language = Spanish	Operator		
Information	2015-06-11 14:01:31	Current user now = "Nobody", Access Level = Guest, Language = English	Nobody		
Alarm	2015-06-11 13:53:06	Alarm Online Notification: RESET	Supervisor	Online	V8 Original 080...
Alarm	2015-06-11 13:53:05	Alarm Online Notification: TRIGGERED	Supervisor	Online	V8 Original 080...
Job Managem...	2015-06-11 13:28:04	Learn Deco completed for job <C:\Pressco\Deco\Jobs\V8 Original 0807_co...	Supervisor	Offline	V8 Original 080...
Job Managem...	2015-06-11 13:08:29	Job <V8 Original 0807_copy> has been loaded	Supervisor	Offline	V8 Original 080...
Information	2015-06-11 13:07:54	Current user now = "Supervisor", Access Level = Admin, Language = English	Supervisor		
Information	2015-06-11 13:07:39	Current user now = "Nobody", Access Level = Guest, Language = English	Nobody		
Error	2015-06-11 13:07:39	The Biometric Reader was not found	Nobody	Offline	V8 Original 080...
Information	2015-06-11 13:07:28	Application startup. Version: 6.0.29.0, Instance: 631	Nobody	Offline	~ScratchJob
Information	2015-06-11 11:19:50	Application closing. Instance: 630	Supervisor	Offline	V8 Original 080...
Information	2015-06-11 10:20:34	Going Offline	Supervisor	Offline	V8 Original 080...
Information	2015-06-11 10:16:57	Going Online	Supervisor	Online	V8 Original 080...
Alarm	2015-06-11 10:16:57	Alarm Online Notification: RESET	Supervisor	Online	V8 Original 080...
Alarm	2015-06-11 10:16:56	Alarm Online Notification: TRIGGERED	Supervisor	Online	V8 Original 080...
Job Managem...	2015-06-11 09:52:21	Job <V8 Original 0807_copy> has been loaded	Supervisor	Offline	V8 Original 080...
Job Managem...	2015-06-11 09:48:22	Job <V8 Original 0807_copy> has been loaded	Supervisor	Offline	V8 Original 080...
Parameter Ch...	2015-06-11 09:25:34	Inspection Parameters Changed. Ignore Shadow Enabled	Supervisor	Offline	NewJob10
Job Managem...	2015-06-11 09:21:28	Job <NewJob10> has been created	Supervisor	Offline	NewJob10
Information	2015-06-11 09:13:48	Current user now = "Supervisor", Access Level = Admin, Language = English	Supervisor		
Information	2015-06-11 09:13:44	Current user now = "Nobody", Access Level = Guest, Language = English	Nobody		
Parameter Ch...	2015-06-11 09:00:56	Reject Parameters Changed. Rejecter was ENABLED	Monte	Offline	V8 Original 080...
Information	2015-06-11 08:57:46	Current user now = "Monte", Access Level = Operator, Language = English	Monte		
Information	2015-06-11 08:57:10	Current user now = "Nobody", Access Level = Guest, Language = English	Nobody		
Error	2015-06-11 08:57:10	The Biometric Reader was not found	Nobody	Offline	V8 Original 080...
Information	2015-06-11 08:56:57	Application startup. Version: 6.0.29.0, Instance: 630	Nobody	Offline	~ScratchJob
Information	2015-06-10 16:43:12	Application closing. Instance: 629	Supervisor	Offline	V8 Original 080...
Information	2015-06-10 16:43:02	Current user now = "Supervisor", Access Level = Admin, Language = English	Supervisor		
Information	2015-06-10 16:42:56	Current user now = "Nobody", Access Level = Guest, Language = English	Nobody		

Selected Event Details

Event: Alarm Alarm: Alarm Online Notification: RESET

Date: 2015-06-11 10:16:57 System: Online

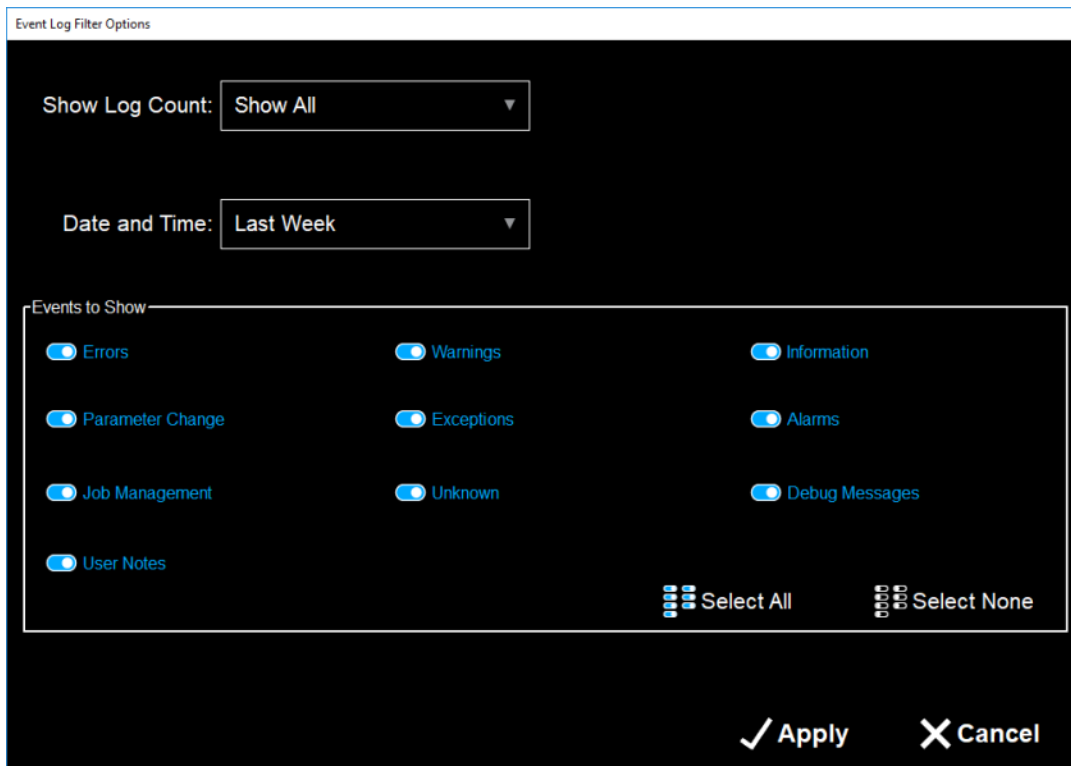
User: Supervisor Job: V8 Original 0807\_copy

Filter Options Delete Older than 60 Days Close

- 1) Sort any column by selecting the column heading
- 2) Go to beginning of the log file
- 3) Page up
- 4) The current page of the log file. Press and hold the number to enter any valid page to navigate to.
- 5) Total number of pages in the log file
- 6) Detailed information about the selected line (if selected). Use the up/ down arrows on the right side of the box to scroll up/ down one line in the log file.
- 7) View your chosen criteria. Filter options are shown below.

8) Delete old log entries (Administrator only). Select the desired criteria, then select the Delete button next to the drop-down box.

The available log filters are shown below. Enable the desired filters.



## Create Support Package

A support package is a set of files gathered by the system to help find system problems. You will send this package to Pressco service specialists so that they can troubleshoot your system.


### *What you need:*

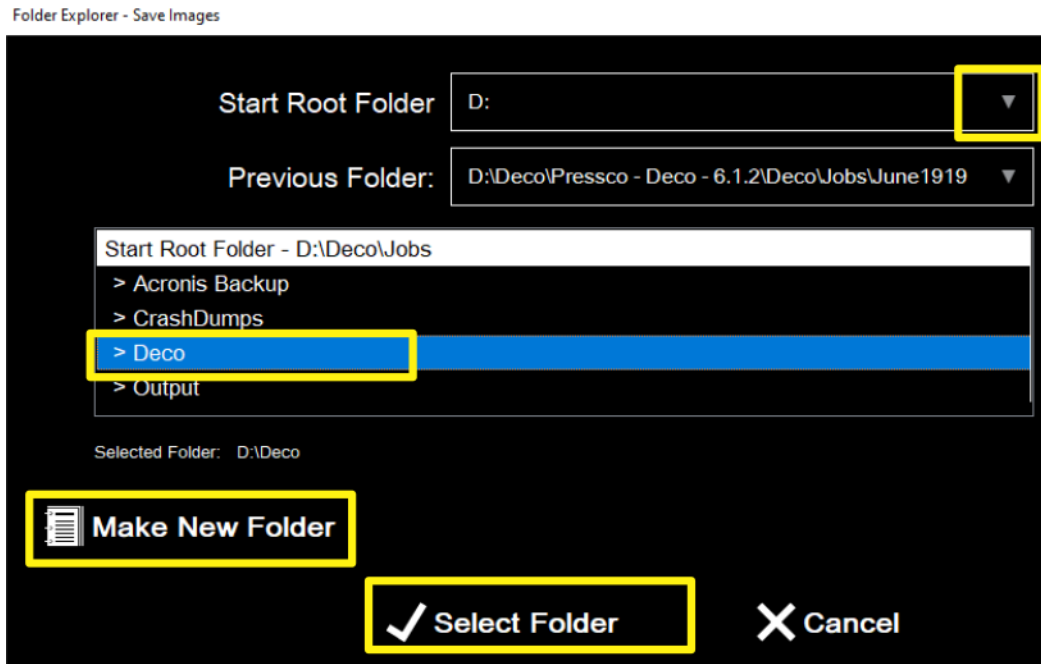
- Mechanical keyboard to enter a file name (only if you want to enter a custom file name)
- USB flash drive (128MB or larger)

### *To set up for the support package procedure:*

- (if using) Connect the mechanical keyboard to a USB port on the side of the monitor
- Connect the USB drive to the other USB port (see USB Ports)

### *To create the support package:*

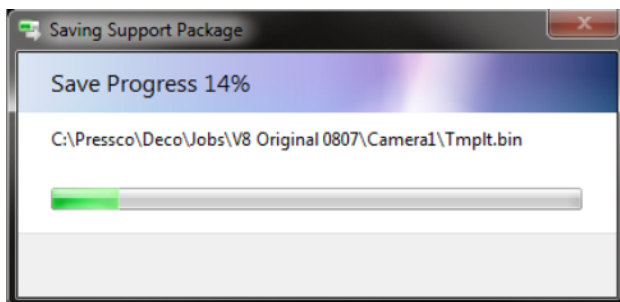
1. Make sure the system is offline.
2.  **Settings** | **System Utilities** | **Create Support Package**. A Folder Explorer will open, allowing you to select a location. If you are saving to the USB drive, then select that drive from the Start Root Folder.



3. Browse to the desired folder, or make a new folder if desired.

*Tip: make a note of the Selected Folder. This is where the file is saved*

4. **Select Folder.** The DecoSpector system will create a support package zipped file. [name example: SYSTEM-NAME\_year\_month\_day\_time.zip] The status window will be removed from the screen when the process is complete.

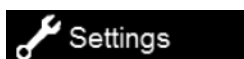


5. Remove the USB flash drive.
6. Remove the mechanical keyboard.
7. Send the support package files to Pressco.

### To send the files to Pressco:

1. Attach the USB drive to your computer.
2. Send an e-mail to [techsupport@pressco.com](mailto:techsupport@pressco.com) and attach the support package files. Pressco service/ tech support will respond within one business day, if possible.

## Global Utilities



Settings

These settings apply to the entire system. **Settings | Global Utilities.**

**Job Management**, accessed from Global Utilities, is the same menu accessed from the Control panel. See "[Job Management](#)" on page 55.

## Email Parameter Changes

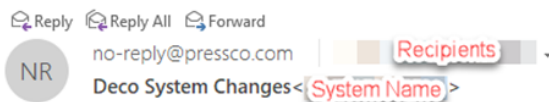
The "Email Parameter Changes" utility collects information about various parameter changes. This information will be periodically sent to pre-determined individuals via email.

A queue is filled if someone makes changes to inspection parameters. Once an email is sent, that queue is cleared.

If this feature is enabled, the recipients in the email list will receive an email - **only if the queue is not empty** - when:

- The time interval has reached its limit, and every time interval after that
- Someone disables the process
- Someone changes the time interval in the dialog
- The system shuts down normally - not from a crash

### Example:



Please do not respond to this email. This is an automatic message generated by Deco.

If you think you have received this email by accident, please contact the Deco system administrator to have your name removed from the email list.

11/10/2022 10:09:53.217

User Name: Pressco

Part Name: Bon Viv Spiked Seltzer

Camera Black Level Parameters Changed. Camera Black Level for Color Analysis from 0 to 0, Camera Black Level for Print Quality from 0 to 8.

11/10/2022 10:10:00.552

User Name: Pressco

Part Name: Bon Viv Spiked Seltzer

Reject Parameters Changed. Rejecter was DISABLED, Reject Missed Results was DISABLED

11/10/2022 10:10:13.986

User Name: Pressco

Part Name: Bon Viv Spiked Seltzer

Part Tracking Parameters Changed. Part Present Delay from 2745 to 2744, Part Present Disable from 120 to 119

11/10/2022 10:10:29.228

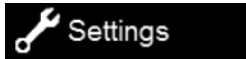
User Name: Pressco

Part Name: Bon Viv Spiked Seltzer

System Position Calibrated.

### What you need:

- **To make changes:** Administrator-level user privileges
- **To view settings and send a test email:** Operator-level access



To get to this menu, from **Settings | Global Utilities | Email Parameter Changes**.

Email Parameter Changes

**Host**

**Port**

**User Name**

**Password**

**SMTP Authentication**

**Email Interval**

**Email List(use ';' to separate)**

**Enabled**

**Test Email**    **Save**    **Cancel**

**Test Email** - Operator-level users or higher may send a test email.

# Chapter 13 Alarms



- Select the alarm icon to clear, configure, or view alarms.

Each alarm is user-configurable to: enable the alarm, turn on the light tree, sound the horn, turn the rejector off, and many other options.

Some alarms, including Inspection speed too slow, General failure, and System power loss cannot be disabled, because they are necessary for system operation.

See "[Alarm Descriptions](#)" below for a list of alarms.

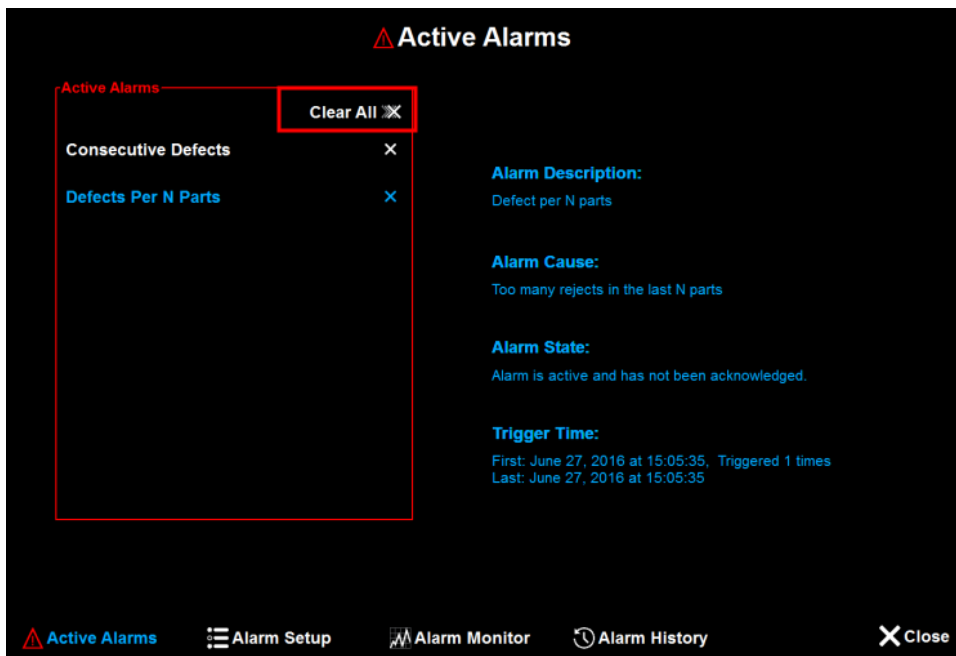
## Clearing Alarms



The alarm icon turns red when an alarm is triggered, and the Active Alarms screen is displayed. The number next to the icon indicates the number of currently triggered alarms.

To see more information about the active alarm, select the alarm name in the left column. More information will be displayed on the right side of the screen.

Select Clear All (or the X) to clear the alarms. If there are no active alarms, no alarms are displayed in the list. If you close the screen without clearing alarms, the alarm icon stays red.



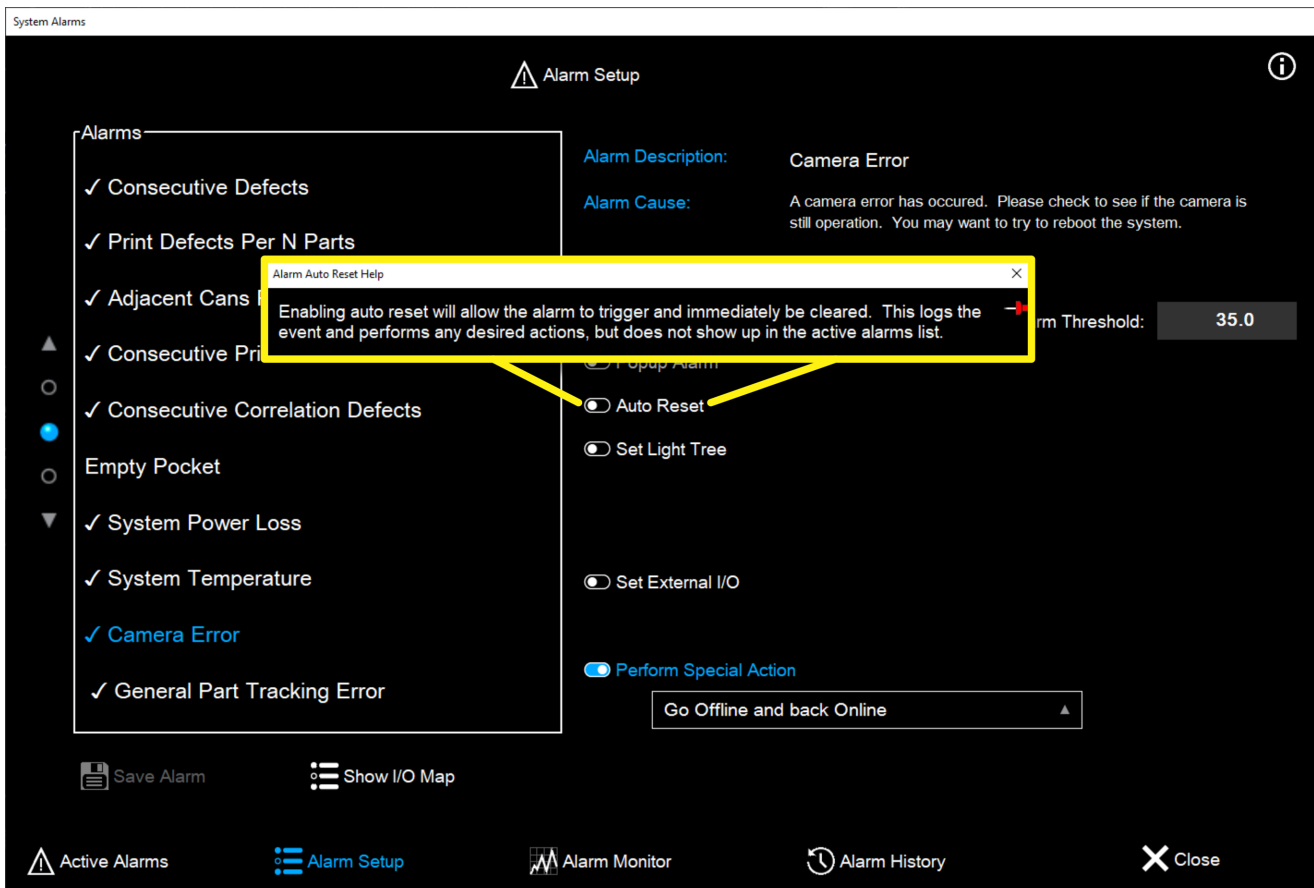
## Alarm Descriptions



To see more information about any alarm setting, press and hold the name of the item. More information about that item is displayed on screen.

*Note: you must be an Administrator to access Alarm Setup. However, as an Operator, you can select an alarm name in the Active Alarms screen to see more information.*

*Note: some alarms listed below are not available in later versions of software. Your system may not show all alarms listed.*



The available alarms are:

**General Failure** - A general failure has occurred.

**Invalid Correlation** - Correlation values are out of range. Check the sensors to make sure they are all adjusted properly.

**Offline Acquire Active** - This alarm is typically used to tell the decorator that the vision system is doing offline acquisition and needs part flow.

**Online Notification** - The system was placed online to inspect parts. We typically use this alarm to signal external I/O that the system is inspecting.

**Offline Notification** - The system was placed offline. We typically use this alarm to signal external I/O that the system is not inspecting.

**Defects Per N Parts** - Indicates an excessive reject rate over a small number of parts. We typically use this alarm to signal external I/O to allow the decorator to be stopped for adjustment.

**Consecutive Defects** - The system is rejecting all parts. We typically use this alarm to signal external I/O to allow the decorator to be stopped. Either the decorator has a problem or the vision system is dirty.

**Print Defects Per N Parts** - The system detected too many print rejects in the last N parts. We typically use this alarm to signal external I/O to allow the decorator to be stopped for adjustment.

**Adjacent Cans Per N Parts** - The system detected too many adjacent cans in the last N parts. You can set a value for N. This usually indicates an extreme part tracking issue. Too many adjacent cans may also be caused by a dirty diffuser. Please make sure the diffuser is clean.

**Consecutive Print Defects** - The system is rejecting all parts due to Print defects. We typically use this alarm to signal the external I/O to allow the decorator to be stopped. Either the decorator has a problem, or the vision system is dirty.

**Consecutive Correlation Defects** - One or more machine parts are generating defects every time. This is not a critical situation, but does indicate that a machine part may need adjustment.

**Empty Pocket** - This alarm indicates we had an empty pocket or a missing can. We can configure the system to automatically reject the next N parts to prevent inside of can ink issues.

**Inspection Speed Too Slow** - The inspection is unable to keep up with the current part rate.

**Correlation Sampling** - This alarm is triggered when the user rejects a round of machine parts for sampling purposes. The alarm allows the user to set external I/O to trigger other equipment in the plant.

**Camera Error** - The system is having problems with one or more of the system cameras. Try rebooting the system.

**Camera Acquire Error** - A camera acquire queue error has occurred. Please check to see if the camera is still in operation. Try rebooting the system. This is a serious issue. If the error does not go away after rebooting, please contact the Pressco Service Department.

**Camera Merge Error** - A camera merge queue error has occurred. Please check to see if the camera is still in operation. Try rebooting the system. This is a serious issue. If the error does not go away after rebooting, please contact the Pressco Service Department.

**General Part Tracking Error** - The system had an issue with tracking parts within the system. Try rebooting the system. This is a serious issue. If the error does not go away after rebooting, please contact the Pressco Service Department.

**Missed Reject** - The system did not reject a part, possibly because it was too busy processing an inspection, or because of some other error.

**Encoder Overspeed** - The encoder speed is too fast.

**Reject Jam Detected** - A jam was detected at the reject confirm sensor. The reject confirm sensor has been blocked for an extended period of time. When the reject confirm sensor remains blocked, it is typically due to parts backing up in the reject area. It can also be caused by the reject confirm sensor getting moved by being hit.

**Dirty Diffuser** - The diffuser needs to be cleaned. This is the plastic window in the inspection tunnel that shields the cameras. This alarm usually triggers many adjacent can detections as well. Please make sure the diffuser is clean.

**Reject is Disabled** - The system rejector has been disabled. We typically link this alarm with external I/O to prevent the decorator from being run without visual inspection. Note that this alarm cannot be manually reset. It is reset when the system rejector becomes enabled again.

**System Power Loss** - The system has lost power and is running on battery backup. Typically, the system will automatically shut down if the power is off for an extended period of time.

**System Temperature** - The system temperature is too high. Perhaps the A/C is not working. This adversely impacts overall system performance and can cause the system to run slower and potentially miss inspecting parts.

**Color Delta E Error Per N Parts** - Too many color zone Delta E measurements are critically bad. Check the process to determine the cause.

**Color Delta E Warning:** - One or more of the color zone Delta E measurements are getting close to being out of specification. This is a trend alarm indicating the process may need adjustment.

**Color Delta E Error:** - One or more of the color zone Delta E measurements are critically bad. Check the process to determine the cause.

**Color Delta L Warning:** - One or more of the color zone Delta L measurements are getting close to being out of specification. This is a trend alarm indicating the process may need adjustment.

**Color Delta L Error:** - One or more of the color zone Delta L measurements are critically bad. Check the process to determine the cause.

**Color Delta H Warning:** - One or more of the color zone Delta H measurements are getting close to being out of specification. This is a trend alarm indicating the process may need adjustment.

**Color Delta H Error:** - One or more of the color zone Delta H measurements are critically bad. Check the process to determine the cause.

**Color Delta C Warning:** - One or more of the color zone Delta C measurements are getting close to being out of specification. This is a trend alarm indicating the process may need adjustment.

**Color Delta C Error:** - One or more of the color zone Delta C measurements are critically bad. Check the process to determine the cause.

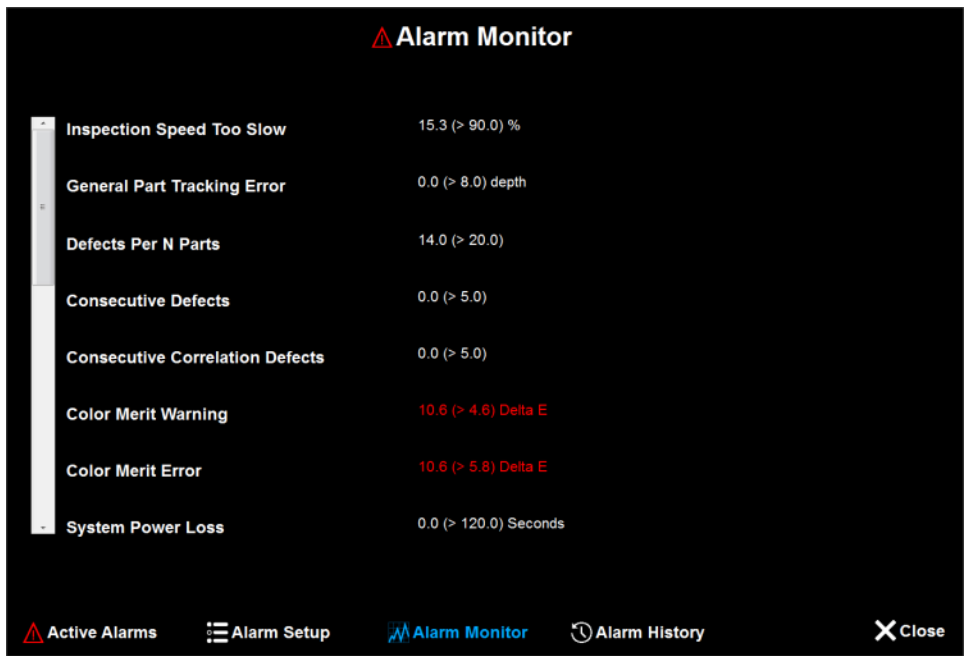
**Image Save - Low Disk Space** - The disk partition used for the Image Save Utility is running low on space. Review, then delete or move images off of the DecoSpector system to make more room.

**CPU Temperature** - The CPU is running too hot. Perhaps the air conditioner is not working or the CPU fan has failed. This adversely impacts system performance, causing the system to run slower and potentially miss inspecting parts.

---

## Alarm Monitor

View which alarms were recently triggered and how high the alarms were over the trigger threshold.



## Alarm History

This operates like "Log Viewer" on page 122, except that the messages are only about alarms.

# Chapter 14 Troubleshooting

This section contains some possible errors that might occur with the DecoSpector system, and actions you can take.

*Note: Some items are only available to advanced users, and may not be included in the Operator Guide.*

Symptom	Possible Cause	Action
Cannot log in Pop-up window says "Deco has stopped responding" No camera images, or cameras not being found by system	Software error or crash	Restart the system: "Power On and Off at the Control Enclosure" on page 137  If the software is not responding, or restarting the system does not work, then: "Full Power Cycle for DecoSpector" on the next page
Reject rate too high, or false rejects	Learned parts or template have changed	Learn another set of parts: Relearn (or Learn Job)
	"Oil or Dirt on the Inspection Tunnel Windows" below	"Clean the Tunnel Windows" on page 143
Parts not being detected properly	The incorrect can size or can style is selected	Select the proper Can Size and Can Style for your part in the job setup  New Part (First Time Inspecting a Part)
	Part location is not set properly. This often occurs when the part is not properly centered in the field of view, or there is more than one part appearing in it.	Check Part Locate Settings  Check Lighting Settings

## Oil or Dirt on the Inspection Tunnel Windows

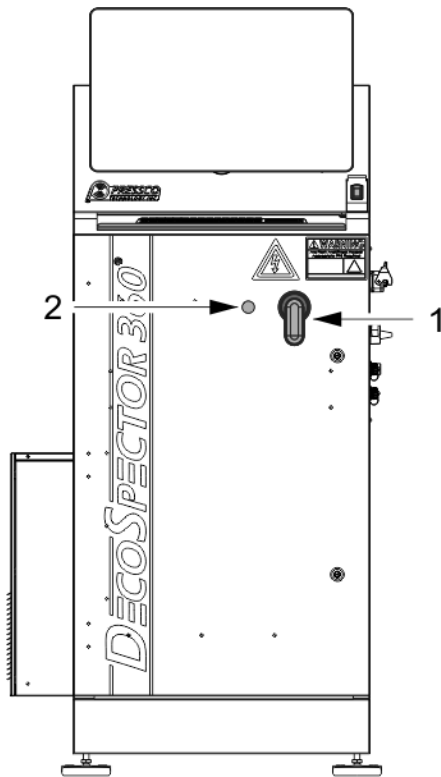
You may be able to see oil or dirt on the inspection tunnel windows through the software. Look at the live images on the home screen. When you look at the image, the spot may show up in a different place horizontally for each part, but remains in the same place vertically between parts, as shown below.

"Clean the Tunnel Windows" on page 143



## Full Power Cycle for DecoSpector

This procedure should only be performed when a standard power cycle does not work (example: the software is not responding).



*WARNING - Keep clear of reject devices. Projectiles may cause injury.*



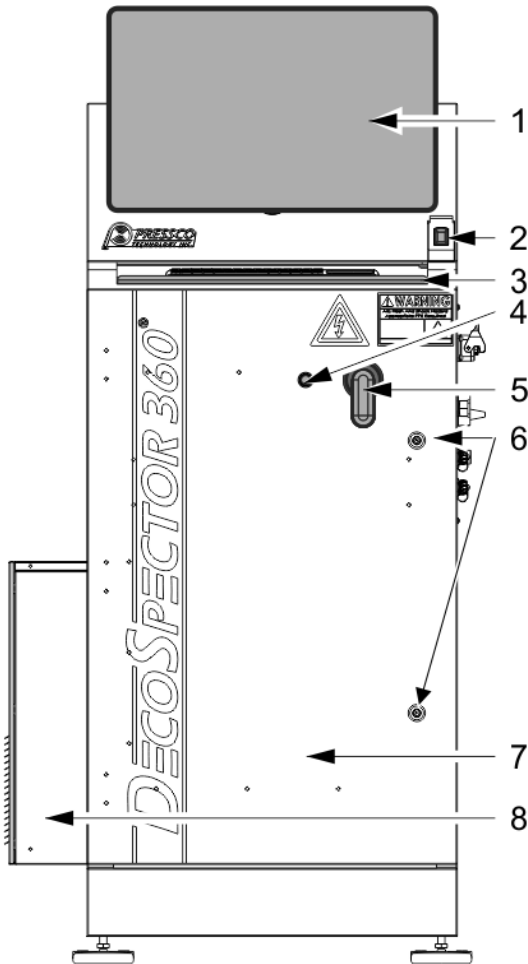
*WARNING - When the system is powered down, there is still voltage present at the UPS. Only AUTHORIZED PERSONNEL should attempt to open the system. We recommend that only AUTHORIZED PERSONNEL have access to the keys.*

1. If the software or Windows is locked up, then use [CTRL+ALT+DEL from the mechanical keyboard] and use Task Manager to stop "Deco.exe." Shut down the PC through Windows.
2. Turn off the main power switch [1].
3. Open the cabinet door, using the keys supplied by Pressco.
4. The UPS is on the back of the cabinet door. Shut off the UPS by pressing the on/off button for 3 seconds. Wait 1 minute before turning it back on, to allow components to discharge.



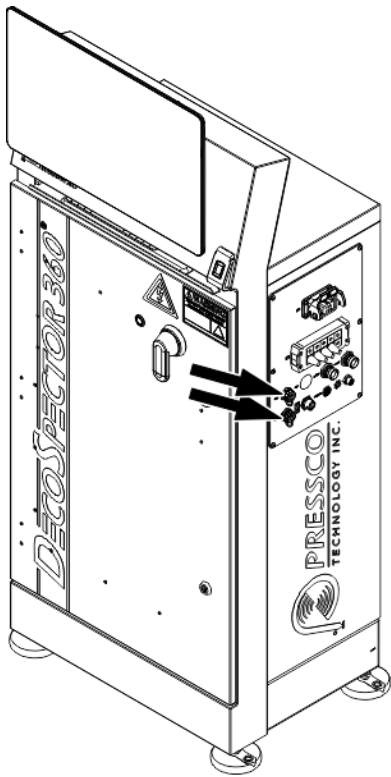
5. Turn on the UPS by pressing the on/off button for 3 seconds.
6. Close the cabinet door.
7. Turn on the main power switch on the cabinet. The software will start within a few minutes.

# Chapter 15 Control Enclosure and Operator Interface Hardware



- 1) Touch screen monitor
- 2) Biometric login device
- 3) Keyboard tray
- 4) Power indicator LED
- 5) Power switch
- 6) Locks (Accessing the internal components with power OFF)
- 7) Vision processor (inside control enclosure)
- 8) Air conditioner

## USB Ports



There are USB ports available to back up or transfer data.

## Biometric Login Device

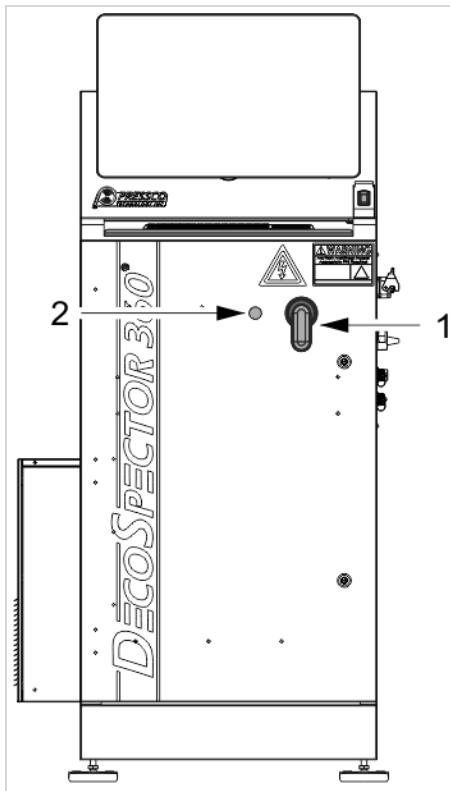
The Biometric Identification login device is used to log in and out of the Pressco system. This device is optional and must be purchased with the system.



To log in with this device, press your finger to the device. The following are conditions for use:

- You must use the same finger as initially set up by your administrator
- If you do not know how your account was set up (or which finger you used), contact your administrator
- If, after three tries, the Pressco does not recognize your finger print, you must log in using the On Screen Keyboard (OSK)

## Power On and Off at the Control Enclosure



Power on: Turn on the switch [1] on the front of the cabinet. The power indicator [2] will illuminate. The software will start automatically. (You must log in and put the system online to begin inspection)

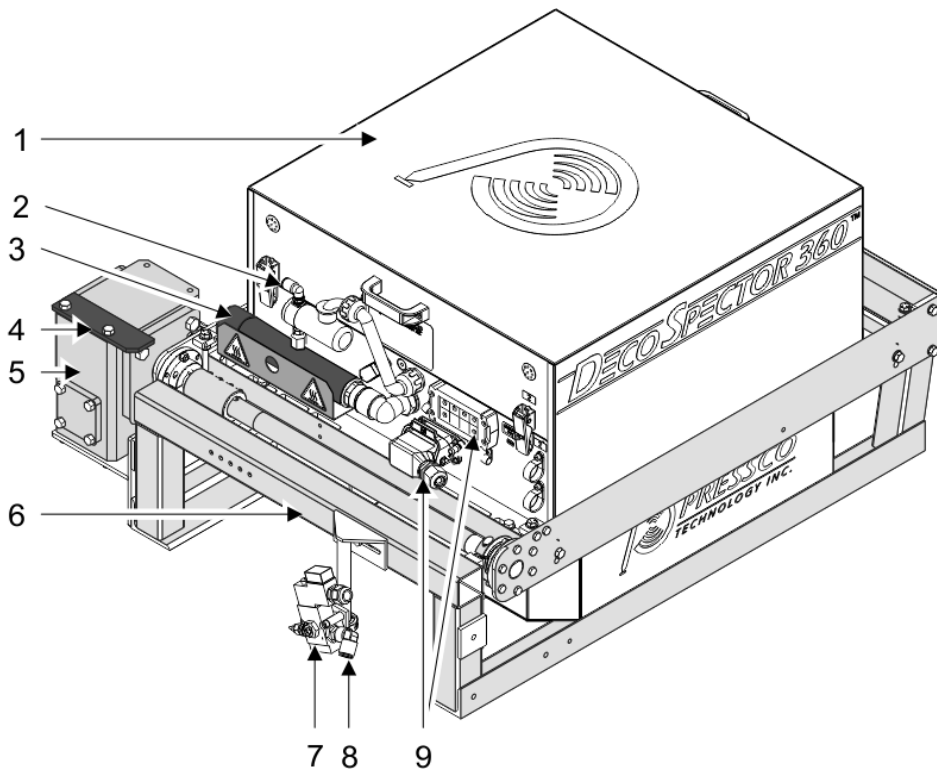
*Note: it takes about a minute for the computer to start after the main power switch is turned ON*

Power off: Turn off the switch on the front of the cabinet. The system, including the computer, shuts down. The UPS shuts down.

**⚠ WARNING** - When you shut down power using this switch, there is still voltage present on the UPS inside the unit until it discharges.

**! Important** - If you want to restart the system, turn off the power, let the software and components completely shut down, and leave the power off for about one minute before turning it back on. This allows the electronic components to correctly reset.

## Chapter 16 Inspection Module



**WARNING** - Keep hands away from the Vortex cooler [3] to avoid risk of burns.

- 1) DecoSPECTOR 360™ inspection module
- 2) air connection for Vortex cooler
- 3) Vortex cooler
- 4) mechanical stop for the service frame
- 5) gear box for moving the service frame
- 6) service frame
- 7) air connection for the Vortex cooler
- 8) air connection for the rejector
- 9) connection for cables to the control enclosure







## Chapter 16

This page left blank intentionally

# Chapter 17 Maintenance

## Maintenance Cautions


**When carrying out maintenance or repair work:**

	Disconnect master switch. For switch locations, refer to the Power Up and Power Down section.
	Before starting the machine, ensure that no person is close to the machine.
	If maintenance or repair requires the disconnection or removal of safety or protection systems, this operation must be supervised by authorized personnel who must ensure the prevention of personal injury or damage to the machine. All machine movements must be performed with limited speed and limited movements.
	Maintenance or repair work on electrical components must be carried out exclusively by authorized, trained personnel. When running tests with power connected, you must strictly comply with the rules provided.
	Personnel working on higher parts of a machine must wear a harness and hook it on to the structure and must always move with extreme caution.
	Never perform lubrication or maintenance procedures on mechanical parts with the machine running.

### LED Caution:

 **CAUTION** - Possible hazardous optical radiation from LEDs. Do not stare at lamps.

## Preventive Maintenance Frequency

 **IMPORTANT** - The windows inside the inspection tunnel need to be cleaned regularly. The frequency depends on plant conditions, and could be as much as three or four times per shift.

Action	Frequency - Number of times per:					Supplies Required
	Shift	Day	Week	Month	Year	
"Clean the Tunnel Windows" on page 143	1x					Part number: 74284 - Kit Window Cleaning DS2 (includes plexi-glass cleaner and lint-free wipes)
"Clean the Control Cabinet Filters" on the next page				1x		Recommended: "RP Super Filter Coat Adhesive." Find this on the Internet or in a hardware store near you.

Action	Frequency - Number of times per:					Supplies Required
	Shift	Day	Week	Month	Year	
Replace the two Filter/ Regulator Filters: 30 minutes  "Replace the Filter-Regulator Filters" on page 145						3x Part number: 67622 - Kit Oil Removal Replacement Filters

## Clean the Control Cabinet Filters

The filter should be cleaned once a month for best results. The filter is located on the side of the cabinet. Replace with a new filter when necessary.

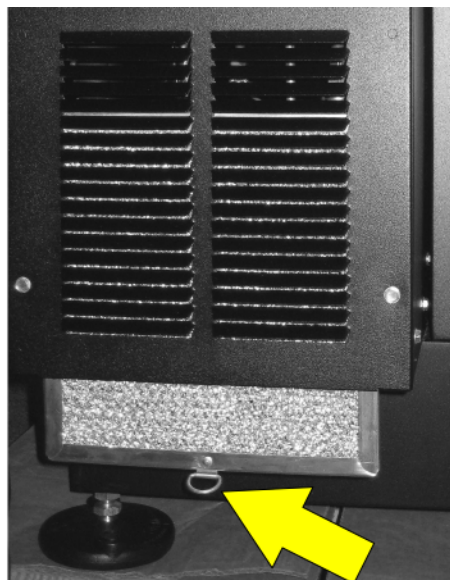
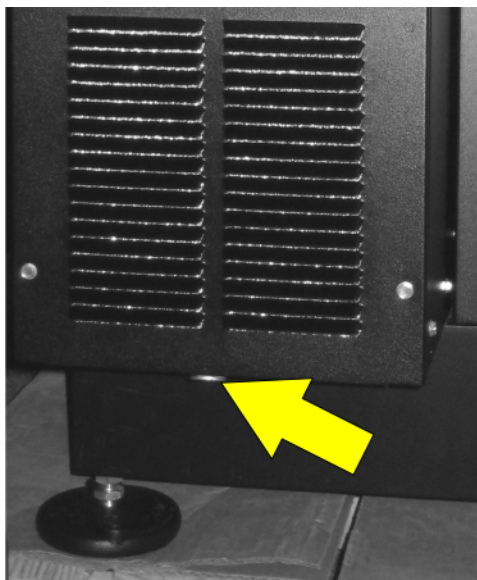
*Note: You may need to clean the filters weekly depending on plant conditions*

### What you need:

Recommended: "RP Super Filter Coat Adhesive." Find this on the Internet or in a hardware store near you.

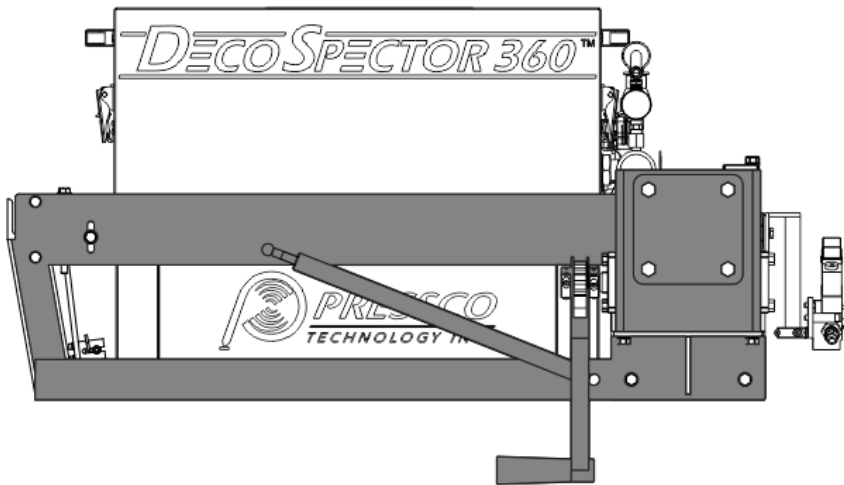
### To clean the filter:

1. Pull the ring on the bottom of the filter cover, and pull the filter down to remove it. (see photo below)
2. Remove the filter and clean it. DO NOT use caustic solutions.
  - If the filter contains dry dust and dirt, flush the filter with warm water from the exhaust side to the intake side
  - If the filter contains oily dust and dirt, clean it in soapy water, then rinse in clear water
3. Dry the filter completely [placing it with a corner down will assure complete drainage].
4. Recoat the filter with "RP Super Filter Coat Adhesive." Spray both sides for best results.
5. Place the filter back inside the filter cover.



## Service Frame

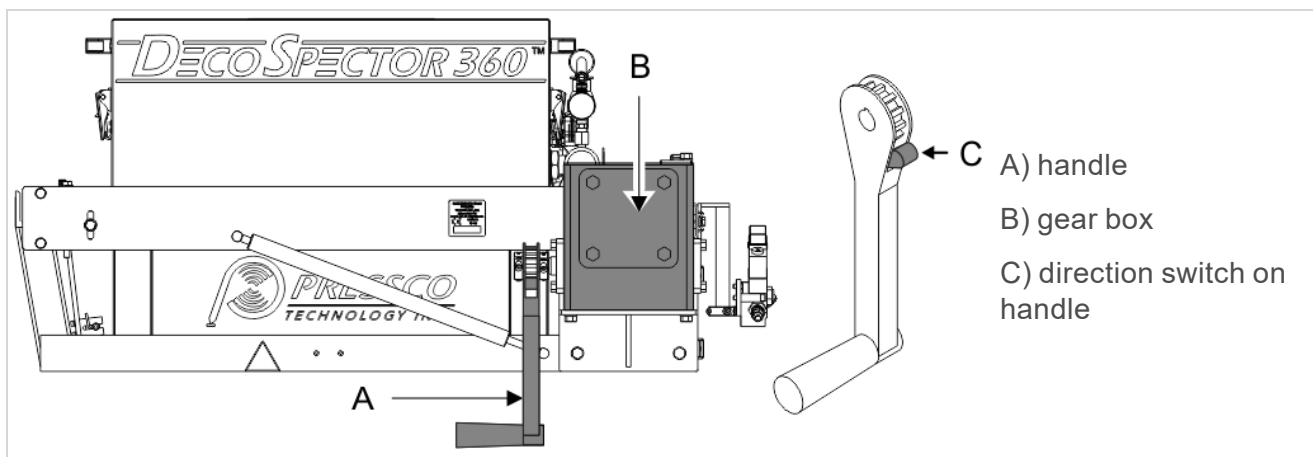
The service frame is used during inspection module maintenance and calibration.



- ⚠ WARNING** - This product contains no operator serviceable parts. Contact Pressco for service. How to Contact Pressco
- Do not open the gearbox enclosure. Oil may spill from the gearbox if it is opened.
  - KEEP OFF the service frame. The service frame is not for lifting persons.
  - KEEP OUT from under the raised service frame until it is secured by the locking device.

## Use the Service Frame to Lift the Module for Maintenance

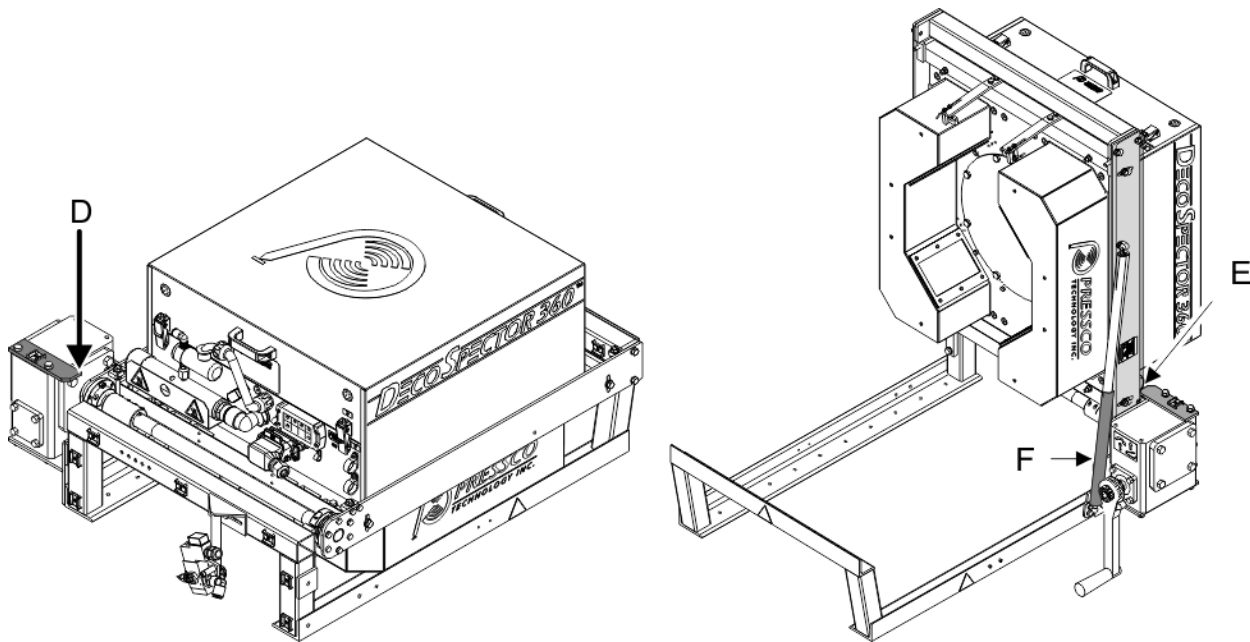
1. Use the handle [A] to lift the module. Turn handle [A] clockwise = module moves up. The handle contains a ratchet device, allowing movement in only one direction at a time.
2. Move the module up until it reaches the stop position [D].
3. Clean the module windows and perform other maintenance procedures as necessary.



### When you are finished with maintenance:

1. Push to release the locking mechanism [F].
2. Use the switch [C] on the handle to change directions.

3. Crank the handle [A] to lower the module. Turn handle [A] counter-clockwise = module moves down.



D) mechanical stop

E) service frame does not move after reaching the mechanical stop

F) locking device holds the module in place while you work

## Clean the Tunnel Windows

The inspection tunnel windows need to be cleaned at least once per shift, depending on plant conditions.



*Important - Debris and contamination could build up on both the glass and plastic surfaces. This dirt could appear in the inspection windows, causing false rejects of parts, missed defects, or it could degrade lighting. Clean glass and plastic surfaces often.*

### What you need:

- Soft, clean, oil-free cloths
  - Recommended: Part number: 81945. It includes one bottle of lens cleaning solution and one box of lens cleaning wipes.
  - You may use supplies already in your plant, designed to clean safety glasses, such as Uvex Clear S463 liquid lens cleaner, with Honeywell Uvex Clear Lens Cleaning Tissues
- Mild soap and water solution
- Flashlight to see inside tunnel area
- Stopped production line - only for a short time when you swing the tunnel open and closed

### Do NOT use:

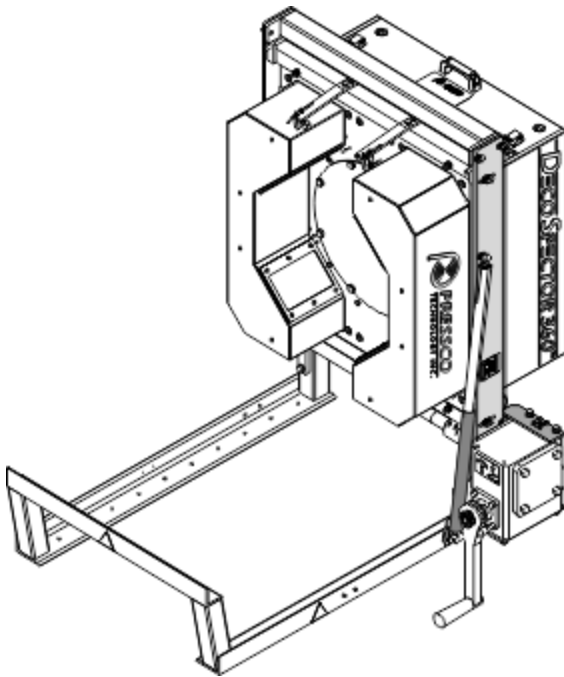
⊘ Regular paper towels to clean the surfaces. These may scratch the surfaces or leave lint.

⊘ Alcohol-based solvents. These may damage the plastic surfaces.

⊘ Harsh chemicals. These may damage multiple surfaces.

**To clean the windows:**

1. Ensure the production line is stopped, and the area surrounding the tunnel is clear (of people, parts, equipment).
2. Turn the service frame handle clockwise to move the tunnel up and away from the production line.
3. Push the locking mechanism into place.



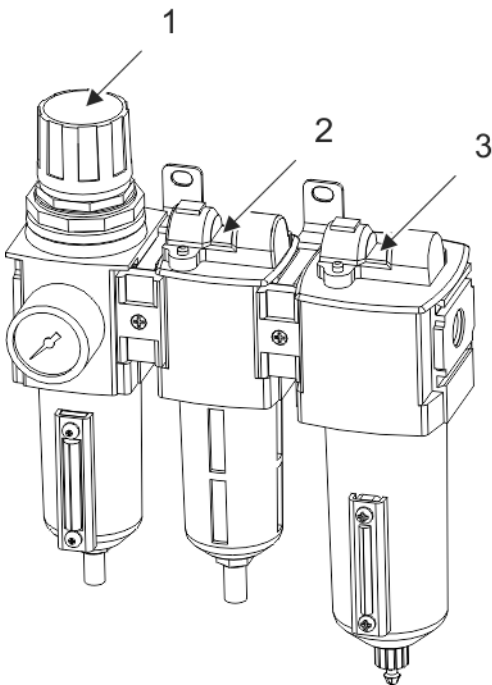
4. If desired, signal to someone in your plant to restart production, while you clean the windows.
5. Using a soft cloth and mild cleansing solution, clean all inspection and lighting windows inside the tunnel. Make sure all grease, oil, and other debris is removed.



6. If you have started production, signal to someone to stop it again.
7. Push to release the locking mechanism on the service frame.
8. Flip the switch to change directions of the service frame.
9. Crank the handle to lower the module back into place.
10. Start production.
11. Select the Relearn button in the DecoSpector 360™ software, so that the system learns parts with the newly cleaned windows.

## Replace the Filter-Regulator Filters

The filter/ regulator assembly shown below is installed with the inspection module. Replace filters.



Chapter 17

	Pressco part number	Description	Replace at least:
1		Filter/ regulator. No filter change necessary.	
	67622	Kit (contains one each of 67620 and 67621) It is easier to replace both of these filters at the same time	
2	67620	Filter oil removal	Every 2000 hours
3	67621	Filter oil vapor removal	Once per year