



Lined Shell Inspection Series 6

Lined Shell Inspection Series 6 | Software Version 6.0

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Module 1 Pressco Introduction

Welcome!

Congratulations on your purchase of an Intellispec system! The Intellispec is a high-speed machine vision system designed specifically for product and online process monitoring. It is a powerful tool that provides inspection much more reliably than the human eye or sampling methods. The latest PC technology, powerful inspection algorithms, online adjustment capability, and inspection data storage allow the Intellispec to automatically inspect parts with extreme accuracy on high-speed lines.

The Intellispec will help you provide the highest quality of products shipped to your customers.

Inspection Terminology

Analysis - Analyzes the pixel shade information within a region and compares it to reference values. The inspection passes or fails based on these comparisons. There are also several analyses that make measurements. You may have many analyses for each inspection region.

Dimension - The dimension inspection type connects the results of two other inspections to do the analysis. For example, a distance inspection can connect two registrations to measure the distance between centers of two features.

Enhancements - Enhancements are used to alter images for better defect detection, or for making certain features stand out.

Inspection Module - The housing, camera, cables, and associated electronics that are installed on or over the production line to acquire an image of your product. Sometimes referred to as a tunnel. The inspection module can have a different sensor than a camera to make measurements of your product (example: Intellimass sensor).

Lane - A lane usually refers to one production line, and can contain multiple sensors.

Orientation - An orientation compensates for part rotation by finding a grayscale pattern. An analysis which must rotate with the part must follow an orientation.

Part Program - The list of regions, analyses, registrations, etc. programmed specifically for your part to detect defects or make measurements.

Part Tracking - refers to the monitoring of parts from the part detect sensor to reject station. This ensures that the correct parts are rejected at the correct time, and that good parts remain in the part stream.

Region - The Region indicates where on the part the analyses will take place. You may have as many inspections as you like in one region.

Registration - A registration compensates for part movement by finding the reference point on the part. All analyses follow a registration.

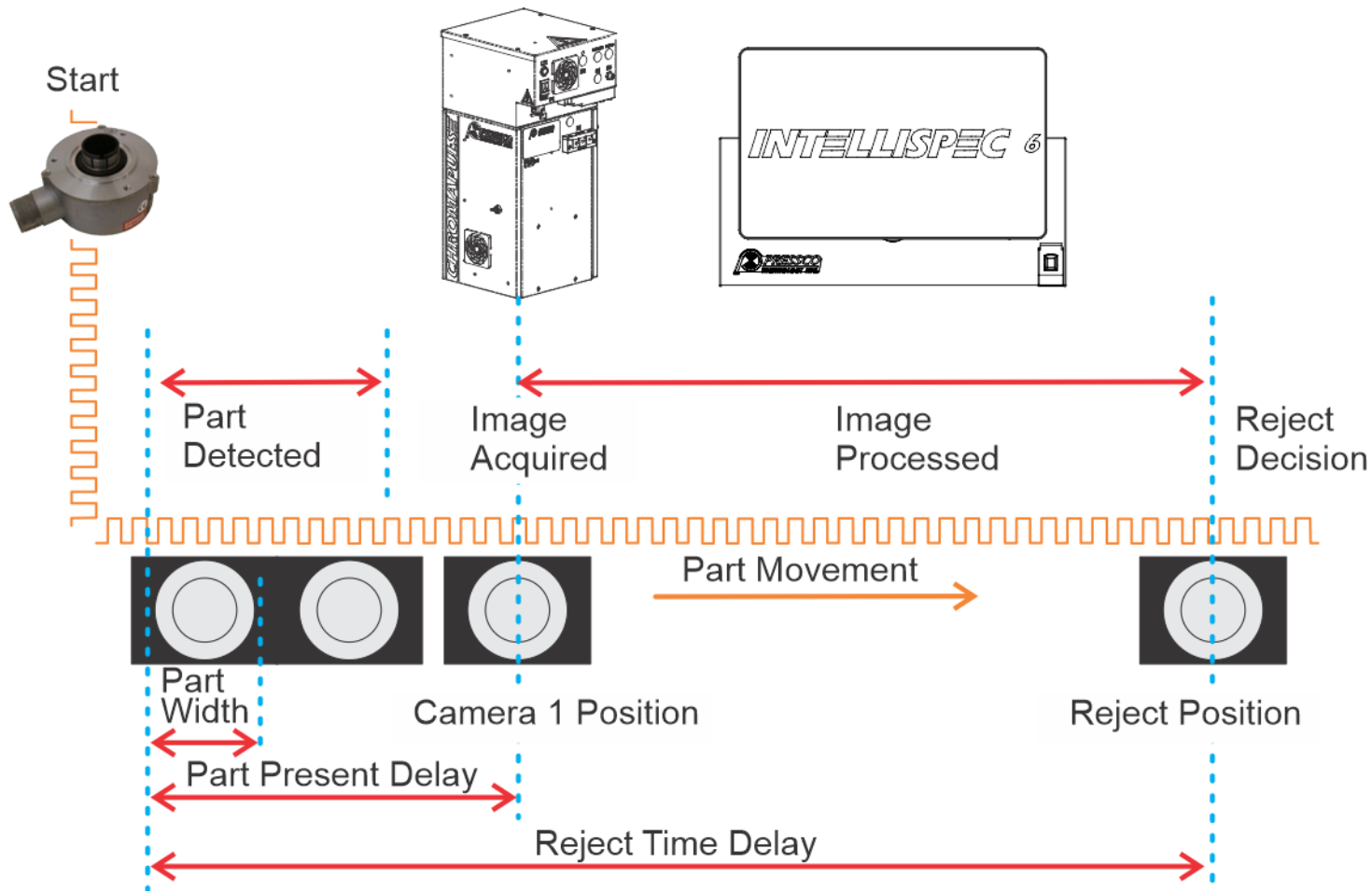
Reject - A part that failed one or more inspections from any sensor. The part can be physically rejected, or simply counted in the statistics.

Retro-Spec - The graphical interface that allows you to make quick changes to a part program. It also allows you to experiment with different parameter settings to see how changes affect the most recent inspection population, without rejecting parts.

Sensor - A camera, Intellimass, or other sensor that acquires images, measurements, or other data from your product.

Sequence of Events During Inspection

This illustration shows a typical inspection sequence of events. Note that your system configuration may involve more components, and may be different than pictured here.

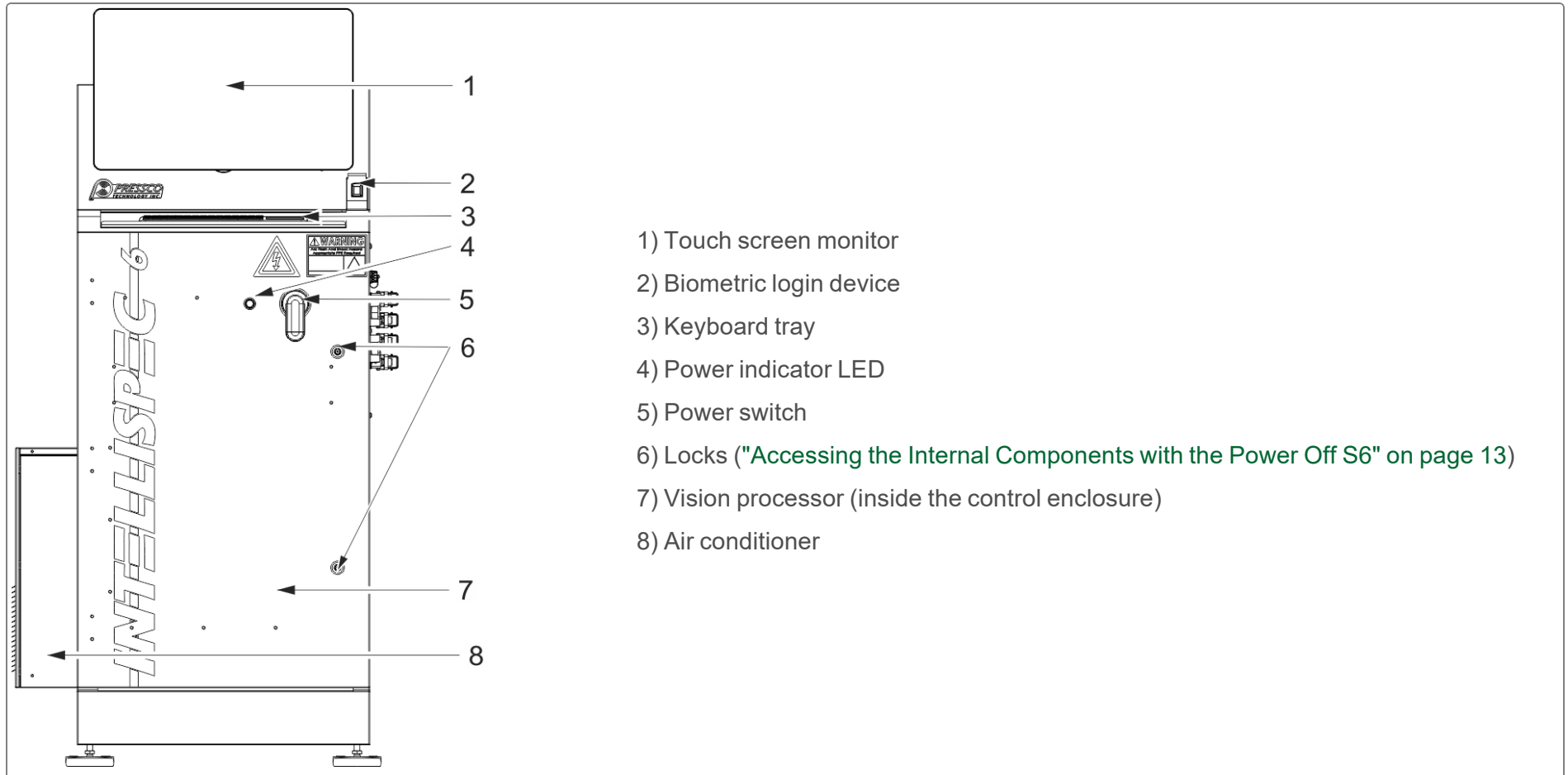


Module 2 Hardware Overview

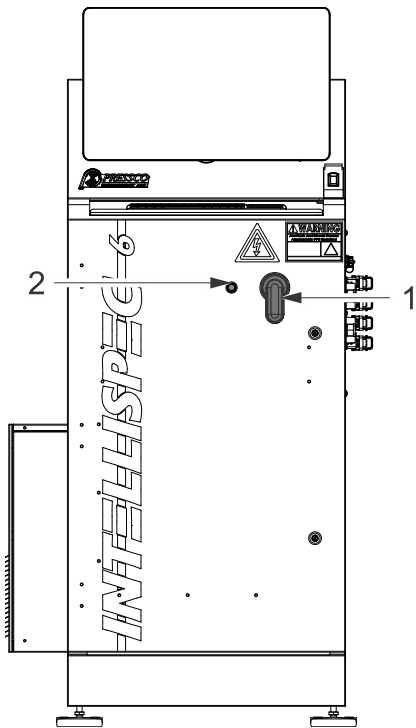
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Intellispec Cabinet and User Interface



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)

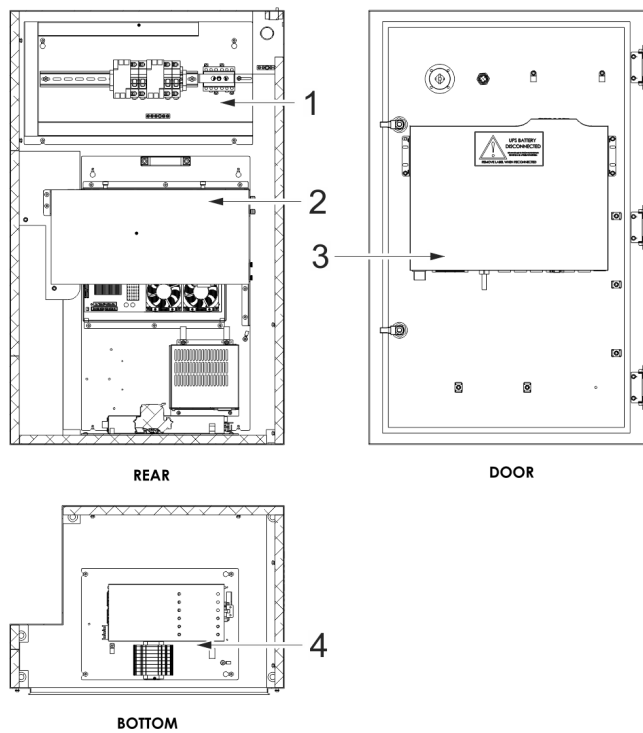
Note: it takes about a minute for the computer to start after the main power switch is turned ON

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.

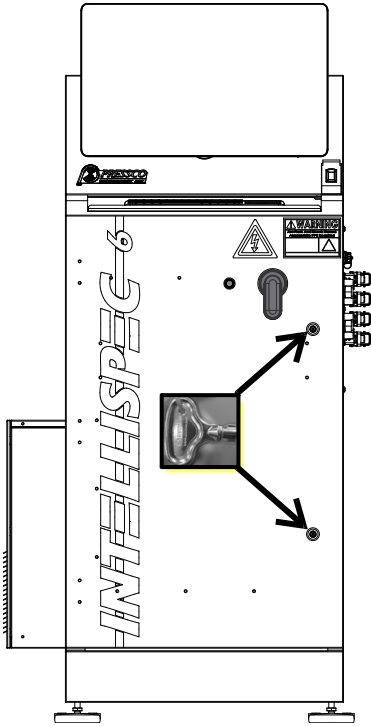
 **Important** - If you want to restart the system, turn off the power, let the software and components completely shut down, and leave the power off for about one minute before turning it back on. This allows the electronic components to correctly reset.

Computer Internal Components



- 1) Power Entry Panel, including terminal block TB1
- 2) Vision Processor Assembly
- 3) UPS (Uninterruptible Power Supply)
- 4) DC Power Panel, including terminal block TB2

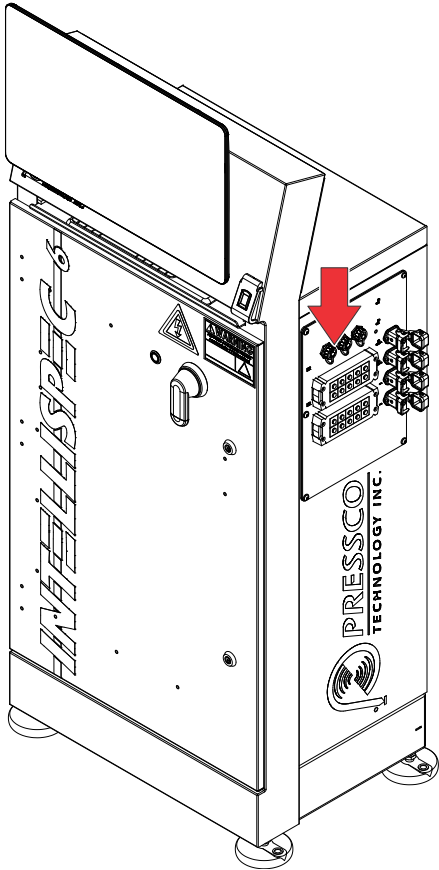
Accessing the Internal Components with the Power Off S6



To access the components inside of the control cabinet, you will need the keys (supplied by Pressco).

⚠ 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.

USB Ports S6



There are USB ports available to back up or transfer data



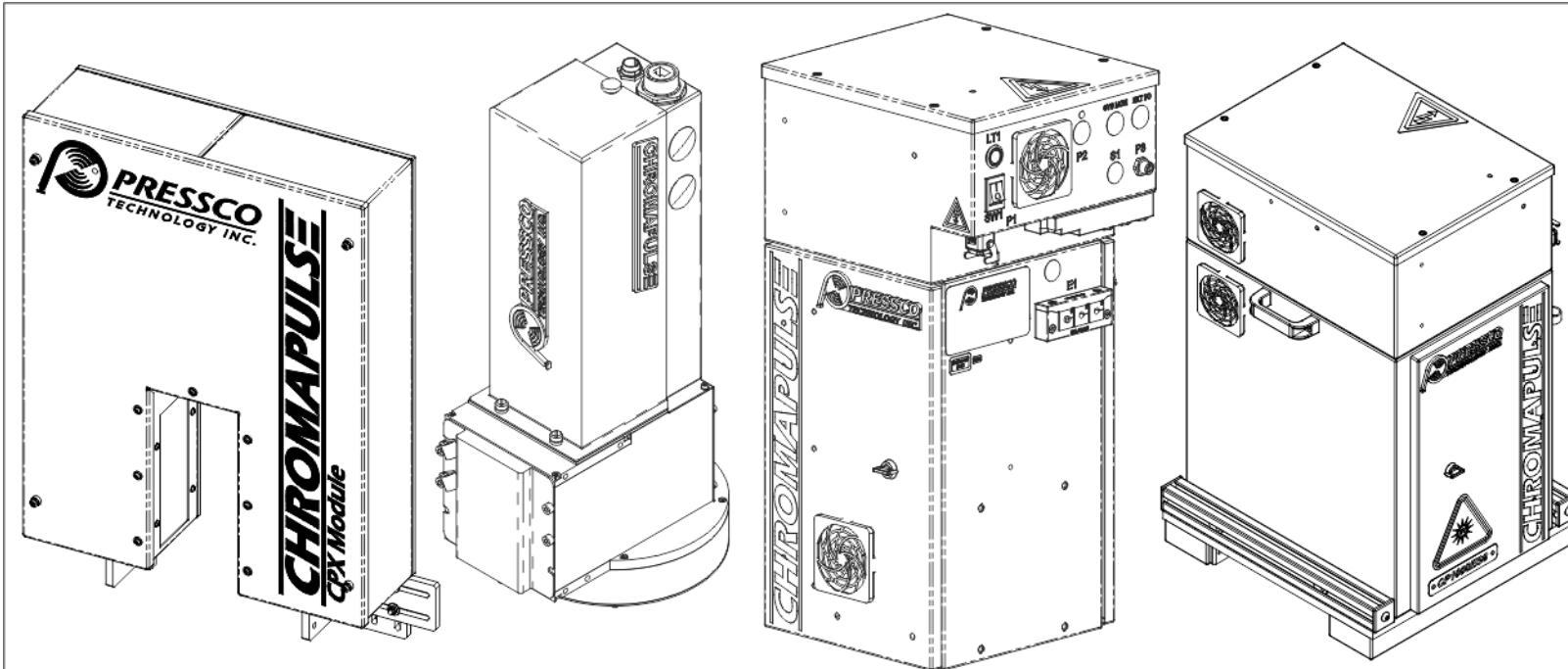
The USB port is not for charging your phone! Only use these ports to import or export data.

Use the USB ports when you are:

- Importing or Exporting Part Programs from another system How to Create, Copy, or Import a Part Program
- Exporting user accounts
- Importing user accounts
- Creating a Support Package
- Saving images, especially to send with a support package

Chromapulse Module

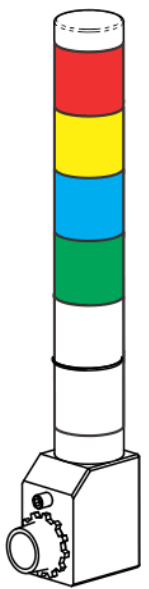
Chromapulse modules come in many shapes and sizes. Your system will have a module that is ideal for the size of the part and specific defects.



5-Light Tree

The lights on the optional light tree will turn on, off, or blink depending on status of certain hardware. Each lane has its own light tree.

Note: the light tree on your system may look different than the picture shown

5-Light Tree	Light color	Condition	What it means
	Red	On - steady	Alarm condition
	Red	On - blinking	Part tracker board lost communication with the host PC or has an error and needs to initiate an alarm
	Red	Off	No alarm (OK)
	Amber	On - steady	Warning alarm condition
	Amber	Off	No warning (OK)
	Amber	0.5 second flash	System automatically resets Asynchronous Correlation FIFO (not used in all systems)
	Blue	On	Not assigned
	Blue	Off	Not assigned
	Green	On - steady	Lane is online
	Green	Off	Lane is offline
	White	On - steady	Power On (Part tracker board has power)
	White	Off	Power Off (Part tracker board has no power)

Module 3 Software Overview

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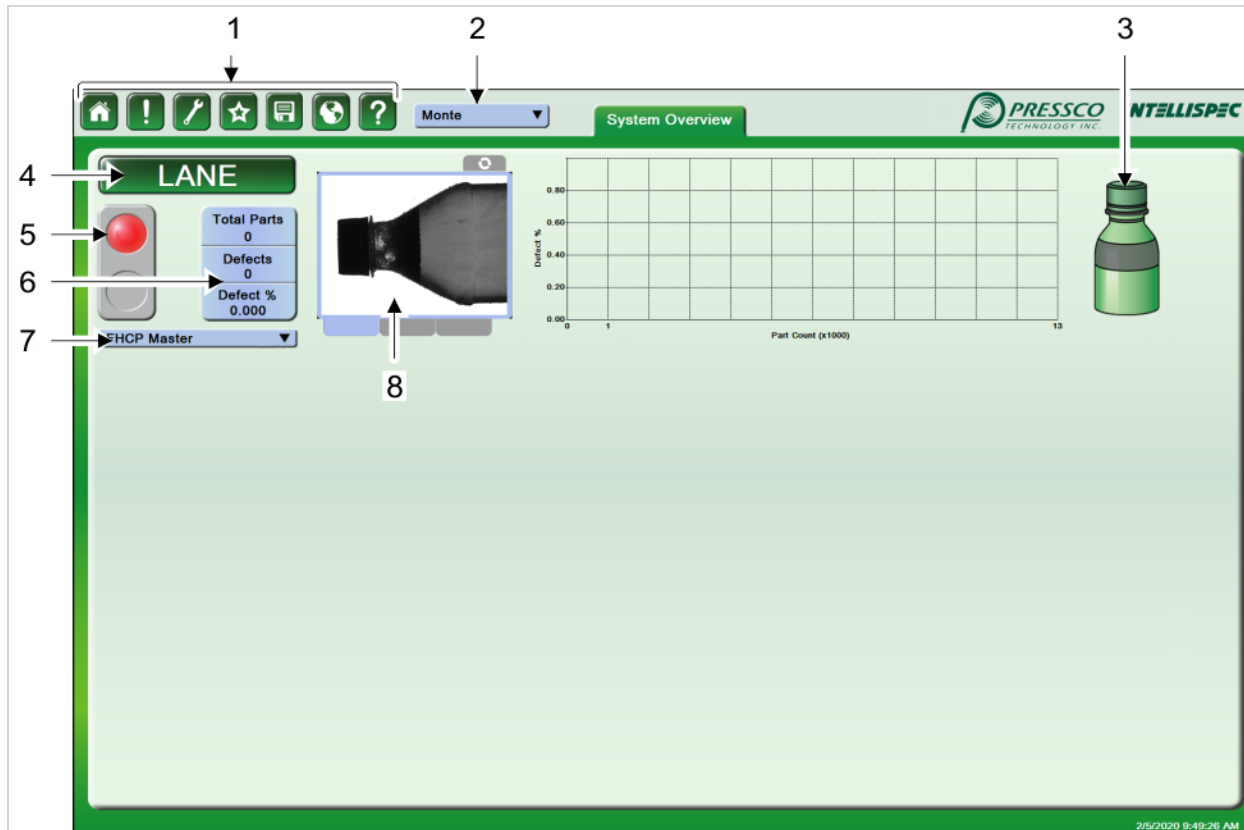
4 Software Screens

This section describes the four main types of screens in the Intellispec software.

System Overview screen



Access the System Overview screen by selecting the Home icon.



1) "Menu Toolbar" on page 23

2) Log in/ Log out.

3) Walk-by graphic

4) Go to Lane Overview

5) Online/ Offline

6) Lane Statistics

7) Part Program

8) Heartbeat Image

Note: your system may have multiple lanes. This example shows one lane.

Lane Overview Screen

Lane *n* Access a Lane Overview screen by selecting a Lane button. Your system may have multiple lanes.

2 →

1 →

BNS

Total Parts: 56
Defects: 23
Defect %: 41.071

Defect %

Part Count (x1000)

Alarm level 21.771%

Sensor 1
Defects: 7
Defect %: 12.500

Neck
Defects: 4
Defect %: 7.143

Seal
Defects: 12
Defect %: 21.429

Trend Graphs
Machine Parts
Statistics
Reject Images
Cavity
Spindle
InFeed
OutFeed
Inspections
Statistics
Freeze on Defect
Walk-by

10/15/2018 9:01:18 AM

1) Select the sensor button to toggle to detailed Sensor View and back

2) Switch to System Overview

Sensor Overview Screen



Access the Sensor Overview by selecting a sensor button. Your system may have multiple cameras/ sensors.

2 →

Admin_0815 600 ppm 600 (max)

BNS

Parts Defect % Lane Total

H-axis: V-axis: Series:

Defect %

100.00 75.00 50.00 25.00 0.00

1 2 3 4 5 6

Part Count (x1000)

Alarm level 21.771%

Bottle Training

Seal

Defects 234 Defect % 20.086

Inspections

- Empty Pocket ROI
- Empty Pocket
- Center Region
- Seal Center
 - Seal Surface ROI
 - Seal Surface Inspection
- Choked Neck Region
 - Choked Neck
- Ovality ROI
 - Ovality Inspection

08 59 56 08 59 58 08 59 53 08 59 58 08 59 59 08 59 59 09 00 01

09 00 01 09 00 01 09 00 02 09 00 02

Inspection Results (double click to edit)

Inspection	Result
Empty Pocket ROI	Good
Empty Pocket	Good
Center Region	Good
Seal Center	Good
Seal Surface ROI	Good
Seal Surface Inspection	Bad
Choked Neck Region	Good
Choked Neck	Good
Ovality ROI	Good
Ovality Inspection	Good

1 →

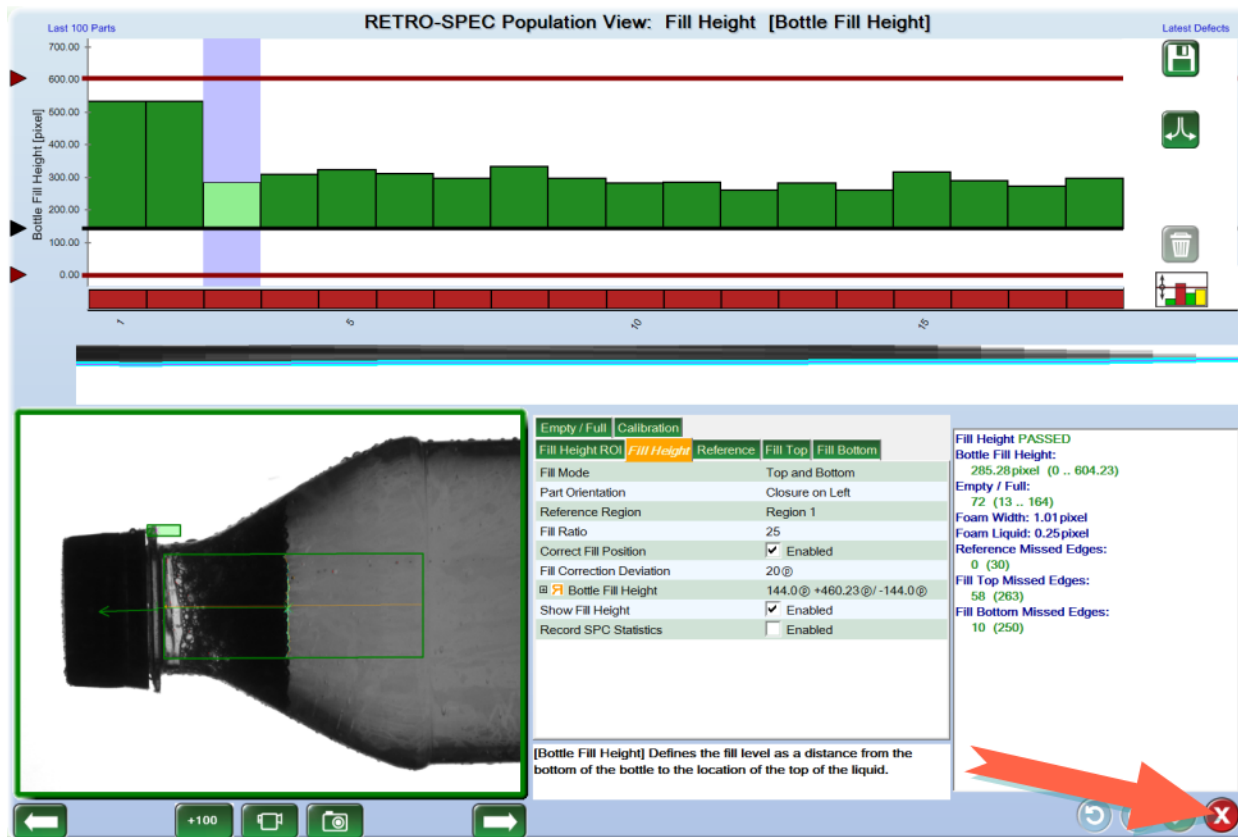
10/15/2018 9:06:02 AM

- 1) Double-click to open Inspection View
- 2) Switch to System Overview

Inspection Overview Screen

Double-click an inspection name in the inspection tree to access the Inspection Overview screen. This is the screen where you may adjust inspection parameters (if you have user permission).

Two different views are available: "Retro-Spec Population View Graph" and "Retro-Spec Part View Graph." Double-click on the upper graph to switch between them.



Close the Inspection View to switch to System Overview or Sensor Overview

Menu Toolbar



Note: some menu items change, depending whether you are in System Overview mode or Lane/Sensor Overview mode

- 1) **Home** - Go to the System Overview Screen
- 2) **Alarms** - Clear, view, and set alarms
- 3) **Tools menu** - Configure system settings, reports, hardware, part tracking, rejectors, part setup, and more
- 4) **Star menu** - Take screen shots and manage background tasks, and launch the OPC Client (if installed)
- 5) **Back Up and Restore Menu** - Create a support package, restore the system from a support package, and launch Windows Explorer
- 6) **Language** - Select the language to display the Intellispec software, from the available options
- 7) **Help** - Access the help documents, remote support, and determine software version

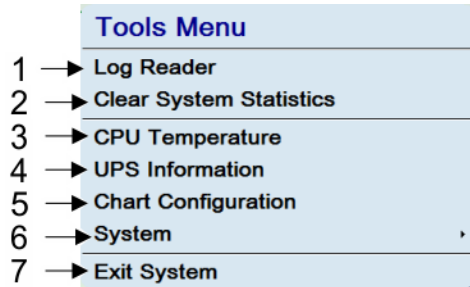
For other icons that appear, see [Background Tasks](#)

Tools menu - System Overview Screen



To get to this menu: Select the Home button | Tools .

Note: Some menu items are only available to advanced level users.



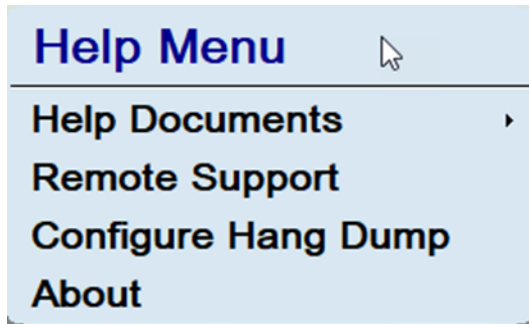
- 1) **Log Reader** - Open the Intellispec log (see also "**Log Reader**" on page 36)
- 2) **Clear System Statistics** - Clear the entire system statistics (all Lanes)
- 3) **CPU Temperature** - If a multiple core computer is used, the highest temperature is displayed. If the shutdown CPU temperature is reached, the Intellispec system shuts down.
- 4) **UPS Information** - Display Uninterruptible Power Supply (UPS) information and settings
- 5) **Chart Configuration** - Choose the Trend Graph type and the number of points for the chart in the System Overview Screen
(not shown) - **Defect Writing** - [Only if Defect Database option is installed and enabled] Enable or disable defect recording for multiple lanes.
(not shown) - **OPC Configuration** - [Only if the OPC Server is installed] This is an optional feature that must be purchased separately.
- 6) **System** - Set system date and time or set up a printer
- 7) **Exit System** - Shut down Intellispec software

Help



Select the Help icon to:

- use the system manuals
- access Pressco remote support
- Configure a hang dump (for administrators - troubleshooting purposes). This is only shown if it is enabled.
- obtain your current software version



To access the user manuals:

1.  Select the Help icon.
2. Select Help Documents, then select a manual from the list. The user manual is displayed.

User Accounts & Login

This section describes how to log in and how to manage user accounts.

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)

Log in and log out

To log in, use either method:

- A.  Select the Log In button. Select your user name, and enter your password.
- B. With the optional biometric sensor: Press your finger to the sensor. The system logs you in. If the system fails to recognize your identity after three attempts, then log in through the log in dialog box.

To log out:

- A.  Select the button with your name, then select the Log Out button.
- B. With the optional biometric sensor: Press your finger to the sensor. The system logs you out.

Note: When another user logs in, the system automatically logs you out.

Log In menu

To ensure that only authorized users perform certain changes to the system, users are required to log in.* Some of these menu items are available to advanced users only.

*Some tasks can be configured so that users do not need to log in. This is done through the Manage Permissions menu.

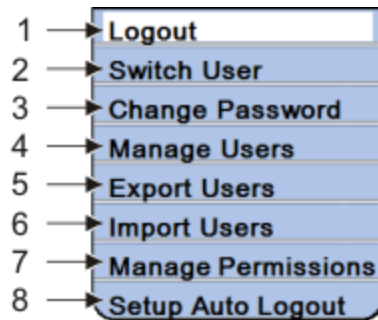
To view the Log In menu:

Log In ▼

Select the Log In button and enter your password. The text on the button changes to indicate who is logged in.

Bob ▼

Select the Log In button again. The popup menu appears.



1) Logout

2) Switch user

3) **Change Password** - Change only your password

4) **Manage Users** - Add, remove, or edit users

5) **Export Users** - Export user profiles from one Intellispec to another

6) **Import Users** - Import user profiles from one Intellispec to another

7) **Manage Permissions** - Assign specific areas of the system that a user can access

8) **Set Up Auto Logout** - The system logs you out if there is no activity for the specified time

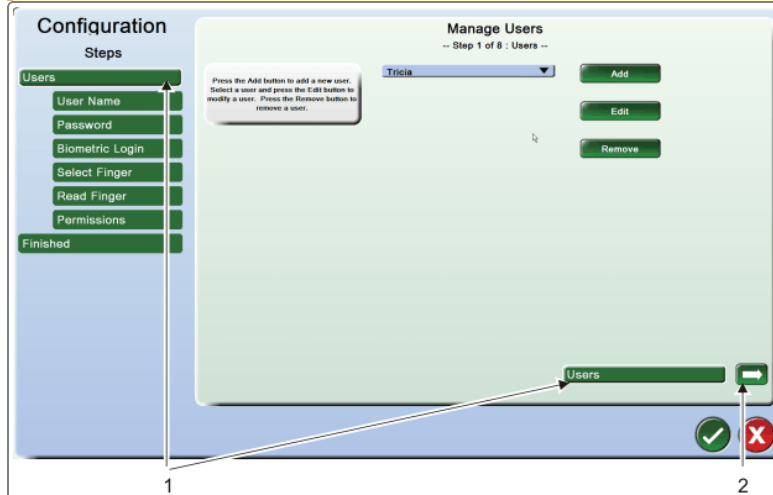
Note: There is a Pressco Technician account for use only by Pressco Service Engineers. This gives access to unsupported features (menu items are a different color). If you log into this account and use those features, do so at your own risk.

User Management

Administrator only

Add, Edit, or Remove users. You may create one user account for a group of people (example: Shift 1).

Note: the biometric login features are only used when the optional biometric login device is installed



To manage a user account:

1. Log in as an administrator.
2. **Bob** Select the button with your user name | Manage Users.
3. Select Add, Edit, or Remove a user. Follow the information on screen to complete these actions. The current step is highlighted [item 1 in illustration].
4.  Use the forward arrow button [item 2] to move to the next screen(s).

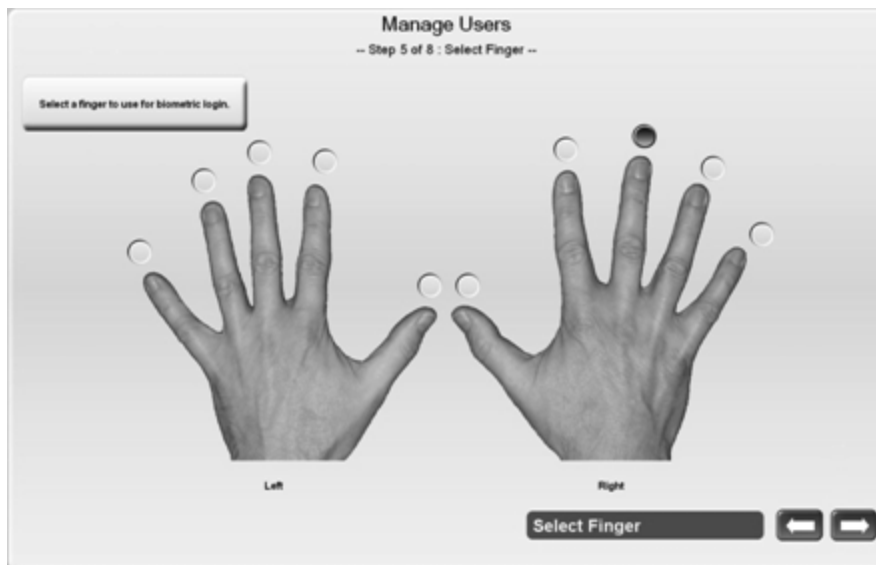
Add a user with the biometric login device

The biometric device uses finger recognition software to log in. You can always log in using your user name and password, even if you have a biometric login device. The maximum number of biometric accounts is 40.

Note: You cannot create two accounts for the same finger print. You could create two accounts for one person, but you must use two different fingers

To add a user with the biometric login device:

1. Log in as Administrator.
2. **Bob** ▼ Select the button with your user name | Manage Users | Add.
3. Add the new user name when prompted. Select the forward arrow.
4. Enter a password, then Confirm it. Select the forward arrow.
5. [Biometric login] Select Biometric.



6. [Select Finger] Choose which finger the biometric sensor will read. This finger must be used every time when logging in.
7. [Read Finger] Select the Start button at the top of the screen. Instruct the user to place his or her finger on the biometric sensor three times (for accuracy) when prompted.
8. [Permissions] Select the desired permissions.
9. [Finished]  Select the OK button to save changes and exit.

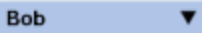
Export Users

Export user accounts from one system to another, or back up your user accounts.

What you need:

- A USB device
- Administrator access

To export a user account:

1. Insert the USB device into an available slot on the Intellispec system.
2.  Select the button with your user name | Export Users.



3. Select the user account that you want to export.
4.  Select the right arrow to export the user account.
5. Choose the destination to save the user account from the drop-down menu, or select the disk icon to browse to the USB device.
6.  Select the OK button to save changes and exit. The user account is exported.

Import Users

Import user accounts from one system to another, or from a backup USB device.

What you need:

- A USB device with user accounts already saved on it, or a folder on the Intellispec hard drive with valid user accounts
- Administrator access

To import a user account:

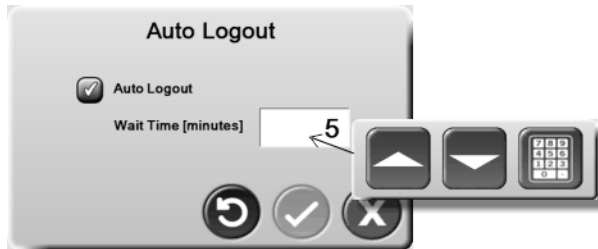
1. Insert the USB device into an available slot on the Intellispec system.
2.  Select the button with your user name | Import Users.



3. Select the user account that you want to import from the right column. If you do not see any users available, select the disk icon to browse to a location where the user account is saved.
4.  Select the left arrow to import the user account.
5.  Select the OK button to save changes and exit. The user account is imported.

Set Up Auto Logout

This feature will automatically log out any user after a number of minutes of inactivity.



To set up Auto Logout:

1. Log in.
2.  Select the button with your user name.
3. Select Setup Auto Logout. The setup menu is displayed.
4. Enable Auto Logout. A check mark is displayed in the box when it is enabled.
5. Set the Wait time in minutes (from 1 to 9999 minutes).
6.  Select the OK button to save changes and exit. All users will be logged out automatically after the set number of minutes of inactivity.

Module 4 System Tools

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Log Reader

Log Reader

Configure
Tools
Filter

	Date	Time	Lane	Message	User	Online	Part Program	AI
Tue	2011-11-29	17:03:05	(2) Nickle	System went offline.	Administrator	Offline	Nickel	R
Tue	2011-11-29	09:27:47	(0) System	System process starts.	Administrator	Online	default	
Tue	2011-11-29	09:28:18	(0) System	Internal Error	Administrator	Offline	default	
Tue	2011-11-29	09:28:31	(4) Quarter	Lane process starts.	Administrator	Offline	Measurement_test	
Tue	2011-11-29	09:28:31	(4) Quarter	Version: 5.0.467 (XP, 32 bit)	Administrator	Offline	Measurement_test	
Tue	2011-11-29	09:28:31	(4) Quarter	Built: 11/28/2011 3:29:07 PM	Administrator	Offline	Measurement_test	
Tue	2011-11-29	09:28:31	(4) Quarter	Built by: dpaunescu	Administrator	Offline	Measurement_test	
Tue	2011-11-29	09:28:31	(4) Quarter	Built on machine: DPOP755	Administrator	Offline	Measurement_test	
Tue	2011-11-29	09:28:31	(4) Quarter	Built on operating system: Microsoft Windows NT 5.1.2600 Service...	Administrator	Offline	Measurement_test	
Tue	2011-11-29	09:28:31	(4) Quarter	Build changed from '5.0.465 (XP, 32 bit)' to '5.0.467 (XP, 32 bit)'	Administrator	Offline	Measurement_test	
Tue	2011-11-29	09:28:31	(2) Nickle	Lane process starts.	Administrator	Offline	Nickel	R
Tue	2011-11-29	09:30:20	(2) Nickle	Sensor 'Neck' with Id 2 in the part program 1L squat blue was not fou...	Administrator	Offline	Nickel	
Tue	2011-11-29	09:30:20	(2) Nickle	Sensor 'Seal' with Id 3 in the part program 1L squat blue was not fou...	Administrator	Offline	Nickel	
Tue	2011-11-29	09:30:20	(2) Nickle	Sensor 'Neck' with Id 2 in the part program .5L Snapple Clear was no...	Administrator	Offline	Nickel	
Tue	2011-11-29	09:30:20	(2) Nickle	Sensor 'Seal' with Id 3 in the part program .5L Snapple Clear was no...	Administrator	Offline	Nickel	
Tue	2011-11-29	09:30:22	(0) System	Was not able to connect to a UPS	Administrator	Offline	default	
Tue	2011-11-29	09:30:41	(0) System	User 'Administrator' has logged in.	Administrator	Offline	default	
Tue	2011-11-29	09:32:03	(2) Nickle	System went offline.	Administrator	Offline	Nickel	
Tue	2011-11-29	09:41:35	(1) Penny	System went online.	Administrator	Online	Penny	
Tue	2011-11-29	09:41:36	(1) Penny	System went offline.	Administrator	Offline	Penny	

Navigate

←
Next Text
→

All Columns

Enter Search Text

⬆
⬆
⬇
⬇

🌐
✓



To get to this menu: select Home | Tools | Log Reader.

The log reader displays the Intellispec event history including:

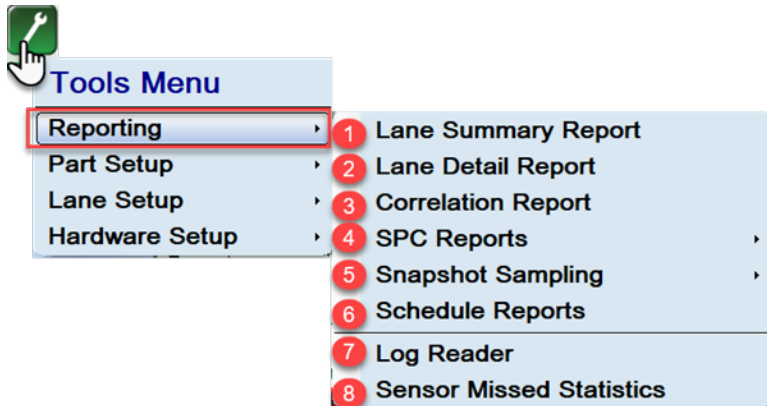
- User log in and log out information
- Notification when the part program was changed. Note: detailed changes to parameters and program changes are found in the Part Program Change Log
- Alarms, when triggered and cleared
- System errors
- System starting information
- Lane online/ offline history
- Lighting changes
- Reports generated
- Text files of the logs are stored at: C:\Pressco\Logs.

Reporting

The Intellispec generates many different reports to provide inspection detail. Many of these reports can be transferred outside of the Intellispec.

Note: Some menu items are only available to advanced level users.

  To view reports: Select a Lane button | Tools | Reporting.



1 and 2 - "Lane Summary and Lane Detail reports" on the next page

3 - "Correlation Report" on page 39

4 - SPC Reports (SPC = Statistical Process Control)

5 - Snapshot Sampling

6 - "Schedule Reports" on page 40

7 - Log Reader

8 - **Sensor Missed Statistics** - Displays the number of missed parts and missed part tracking for the sensor.

(not shown)- **Defect Data Viewer** - [if enabled] view the images in the defect database

(not shown)- **Defect Database** - [if enabled] view the inspection data from the defect database

Lane Summary and Lane Detail reports

Lane Summary Report

This report lists the statistics for the lane, including:

- Number of parts inspected
- Number of defects
- Defect percentage

The above numbers are reported per sensor, and as an overall number for the lane. An example from a one lane system is shown below.

Lane Summary Report.txt - Notepad

Inspection	Parts	Defects	Defect %	Last N	Last N %
BNS	3456	1614	46.701	0	0.000
Base	3456	692	20.023	0	0.000
Sensor	3456	231	6.684	0	0.000
Seal	3456	691	19.994	0	0.000

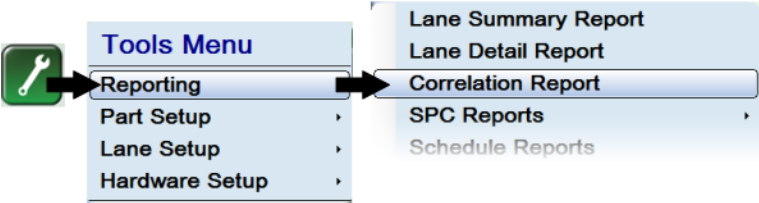
Lane Detail Report

This report contains all the information in the Lane Summary Report, plus inspection detail for each sensor.

Lane Detail Report.txt - Notepad

Inspection	Parts	Defects	Defect %	Last N	Last N %
BNS	3456	1614	46.701	0	0.000
Base	3456	692	20.023	0	0.000
Empty Pocket ROI	3456	0	0.000	0	0.000
Empty Pocket	3456	0	0.000	0	0.000
True Center ROI	3456	0	0.000	0	0.000
True Center	3456	0	0.000	0	0.000
Outer Base ROI	3456	0	0.000	0	0.000
Outer Base Inspection	3456	231	6.684	0	0.000
Spoke Defects ROI	3456	0	0.000	0	0.000
Black and white	3456	0	0.000	0	0.000
Clipping	3456	0	0.000	0	0.000
Orientation ROI	3456	0	0.000	0	0.000
Orientation	3456	0	0.000	0	0.000
Foot ROI	3456	0	0.000	0	0.000
Foot Inspection	3456	462	13.368	0	0.000
Between Foot ROI	3456	0	0.000	0	0.000
Between Foot Inspection	3456	0	0.000	0	0.000
Pearling ROI	3456	0	0.000	0	0.000
Pearling Inspection	3456	0	0.000	0	0.000
Gate Registration ROI	3456	0	0.000	0	0.000
Gate Registration	3456	0	0.000	0	0.000
Gate ROI	3456	0	0.000	0	0.000
Gate Inspection	3456	0	0.000	0	0.000
Around Gate ROI	3456	0	0.000	0	0.000
Around Gate Inspection	3456	231	6.684	0	0.000
Base Fold Inspection	3456	0	0.000	0	0.000
off-Center Gate Inspection	3456	230	6.655	0	0.000

Correlation Report



This report contains the percentage of defects by machine part, sorted from highest to lowest percentage of failure.

Report - Notepad		
File Edit Format View Help		
Machine Name: TT3400		
Part Program: FHCP3X Master		
Current Time: 6/18/2013 1:28:37 PM		
Last Reset: 6/18/2013 9:42:47 AM		
'FILLER VALVE'		
#	Percent	
28	0.18	
112	0.18	
136	0.18	
16	0.18	
76	0.18	
88	0.18	
100	0.18	
52	0.18	
40	0.18	
64	0.18	
124	0.17	
4	0.17	
144	0.16	
60	0.16	
24	0.16	
36	0.16	
96	0.16	
84	0.16	
108	0.16	
120	0.16	
'CAPPER HEAD'		
#	Percent	
28	0.71	
16	0.71	
4	0.71	
24	0.64	
36	0.64	
12	0.63	
20	0.51	
22	0.51	
8	0.5	
34	0.5	
10	0.5	
32	0.5	
18	0.45	
30	0.45	
6	0.44	
13	0.42	
19	0.42	
25	0.42	
1	0.41	
7	0.41	
31	0.41	
15	0.34	
..	..	

Schedule Reports

Set up a schedule where the Intellispec generates reports automatically. This is a Lane-level setting. To schedule reports for more than one lane, you must repeat the process for each lane. To access: select from Lane Overview: Tools | Reporting | Schedule Reports.

The screenshot shows the 'Schedule Reports' dialog box. It has a title bar 'Schedule Reports'. Inside, there's a section with a dropdown menu (1) showing '✓Lane Summary Report' and a checkbox (2) 'Enable Scheduled Report' which is checked. Below this is a green-bordered box containing several options: a dropdown menu (3) 'Text File' with a 'File Name' button next to it; a checkbox (4) 'Keep File Name'; a checkbox (5) 'Clear Statistics'; a 'Next Scheduled Report' field (6) showing '0:00' and 'Tomorrow'; a 'Time Between Reports' section (7) with '12 hours' and '0 minutes' inputs; and a 'Preview' button (8) at the bottom. To the right of the green box are four checkboxes: (9) 'Print on Change-Over', (10) 'Print on Shutdown', (11) 'Print on Clear Statistics', and (12) 'Print on Shutdown Clear Statistics'. At the bottom right of the dialog are two large circular buttons: a green checkmark and a red 'X'.

- 1 - Report drop-down menu
- 2 - Enable Scheduled Report
- 3 - Destination drop-down menu
- 4 - Keep File Name
- 5 - Clear Statistics
- 6 - Next Scheduled Report
- 7 - Time Between Reports
- 8 - Preview
- 9 - Print on Change-Over
- 10 - Print on Shutdown
- 11 - Print on Clear Statistics
- 12 - Print on Shutdown Clear Statistics

Types of Alarms

There are five types of alarms: System, Lane, Sensor, Rejector, and Machine Part alarms. Most of these are configurable (except the System Alarms - UPS and over temperature).

Note: Alarms are recorded in the system log reader, even when the alarms are automatically cleared.

View and Clear Alarms



To View or Clear Alarms, select an Alarm button. If no alarm is active, click the Alarms icon | View/Clear Alarms.

Select the Clear button to clear a single alarm, or the Clear All button to clear all alarms, including alarms in other tabs.

Select different tabs to see more alarms. The tabs (except Lane) have sub-tabs. If any alarm is raised in a sub-tab (Sensor 1 in our example), then the container tab (Sensor) also shows an alarm.

Select any indicator to see alarm details. You can also do this if an alarm is not active.

The indicators in this screen show whether an alarm is enabled, and whether it is triggered.



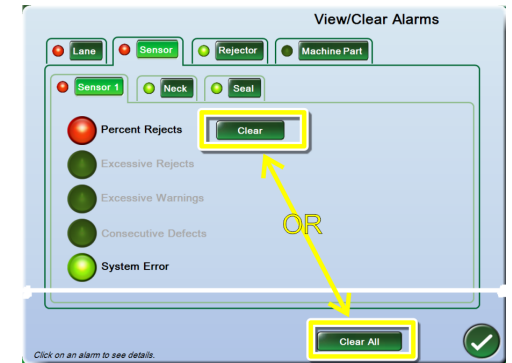
Red On - the alarm is both enabled and triggered



Green On - the alarm is enabled, but has not been triggered



Green Off - the alarm is not enabled nor triggered



View and Clear Machine Part Alarms



From the alarms button | View/ Clear Alarms | Machine Part:

View/Clear Alarms

Lane

Sensor

Rejector

Machine Part

Cavity

Spindle

InFeed

Percent Rejects

Excessive Rejects

Excessive Warnings

Consecutive Defects

Correlation Out Of Range

Clear

Clear

Correlation Alarm Details

InFeed

2. Excessive Rejects

Alarm triggers at percent: 2

Sample Size: 100

Next Triggered Item

1.	2.	3.	4.	Item	Parts	Failed	Failed %	When
				1	100	4	4	15:50:37.669
				2	100	4	4	15:50:37.813
				3	100	3	3	15:50:35.522
				15	100	4	4	15:50:36.937
				16	100	4	4	15:50:37.057

Update

Clicking on any machine part alarm shows a details table breaking the alarm details down per correlation value (aka machine part item).

The table lets you select any of the (enabled) alarms either by using the drop down or by clicking one of the columns 1., 2., 3., etc.

A "Next Triggered Item" navigator helps to quickly find the item in alarm when all machine parts cannot be displayed simultaneously.

The Update button updates current inspection information (how many parts have currently been processed and how many failed; this is automatically done if an alarm is raised while in this view).

Review Alarm Configurations

 You can view all the alarm setups from one screen. Access this screen from the alarms button | Review Alarm Configurations, in Lane or Sensor Overview.

Review Configurations for All Alarms

Lane #1 (LANE) Source Type All Activation Hide Disabled

Light Tree

Lane	Source		Alarm	Activation	Visual	Audible	Duration
#1 (LANE)	Lane		Percent Defects	Warning	3600 s	3600 s	
#1 (LANE)	Lane		System Error	Warning	10 s	2 s	
#1 (LANE)	Sensor 1	Main	Percent Rejects	Warning	3600 s	3600 s	
#1 (LANE)	Sensor 1	Main	Consecutive Defects	Warning	3600 s	3600 s	
#1 (LANE)	Sensor 1	Main	System Error	Warning	10 s	2 s	
#1 (LANE)	Sensor 2	Color 1	Percent Rejects	Warning	3600 s	3600 s	
#1 (LANE)	Sensor 2	Color 1	Consecutive Defects	Warning	3600 s	3600 s	
#1 (LANE)	Sensor 2	Color 1	System Error	Warning	10 s	2 s	
#1 (LANE)	Sensor 3	Color 2	Percent Rejects	Warning	3600 s	3600 s	
#1 (LANE)	Sensor 3	Color 2	System Error	Warning	10 s	2 s	
#1 (LANE)	Rejector 1		Jam at Reject Confirm	Warning	3600 s	3600 s	
#1 (LANE)	Rejector 1		Missed Reject	Warning	10 s	2 s	
#1 (LANE)	Rejector 1		Missed Result	Warning	10 s	2 s	
#1 (LANE)	MP1	Filler Valve	Percent Rejects	Warning	3600 s	3600 s	
#1 (LANE)	MP2	Capper Head	Percent Rejects	Warning	3600 s	3600 s	
#1 (LANE)	MP2	Capper Head	Excessive Rejects	Warning	3600 s	3600 s	

All Lane Sensor Rejector Machine Part

0x2 (Bit 1) 0x2 (Bit 1)

Copper Head Copper Head Color 1 Color 2 Color 2 Filler Valve Main

Use the drop-down menus at the top of the screen to filter what you want to see. For example, view the alarm setups for only the Sensors, or only the Source drop-down.

Sort data by column, by selecting a button at the top of the table. For example, sort the alarms alphabetically by sensor/ machine part name, by clicking the blank button.

System Alarms - Description and Configuration

The system alarms are the UPS (uninterruptible power supply) and CPU temperature alarms. You can configure the UPS shut down time. These are only shown in the System Overview and will not show up as flashing lane buttons, or on any light tree, and will not sound a horn.

Alarm	Description	Action
UPS	Battery is dead. Or: Plant power is lost and the UPS shutdown time is exceeded. The Intellispec shuts down.	Replace battery Automatically resets If plant power is restored before the Intellispec shuts down, then the alarm is automatically cleared. Otherwise, restart the system.
Over temperature	CPU temperature exceeds highest recommended operating temperature. The Intellispec system shuts down. You must wait till the processor cools before resuming operation.	

System Alarm Setup



To get to this menu: select Home | Alarms.

System Alarms

1 → UPS Shutdown Time (sec)

2 → CPU Temperature Warning Level (°C) 88

→ CPU Temperature Shutdown Level (°C) 96

→ CPU Temperature Current Value (°C) 46

1 - **UPS Shutdown Time** - The number of seconds that the UPS will maintain power to the system if AC power has been lost. The Intellispec system shuts down after this time period. This allows for a normal Windows shutdown.

2 - **CPU Temperature** - If a multiple core computer is used, the highest temperature is displayed. If the shutdown CPU temperature is reached, the Intellispec system shuts down.

Lane Alarms - Brief Description

The Lane Alarms affect the hardware associated with one lane. A lane usually refers to one production line, and can contain multiple sensors.

Alarm	Description	Action	4-Light Tree ²	5-Light Tree ²
Percent Defects ¹	Percentage of defects exceeds the set limit.	Check the production line to see what might be creating too many bad parts Reset alarm on screen	 Red	 Red
Offline ¹	Lane goes offline	Automatically resets	 Green = system is online  Red = system is offline	 Green = system is online  Red = system is offline
Chute Full ¹	Reject chute is full	Clear chute Reset alarm on screen	 Red	 Red
Power Status ¹	Lane AC Power is lost	Automatically resets Troubleshoot: Check that the inspection module power switch is on. Check +24V supply.	 Red = AC power is lost  Blue = power is OK	 Red = AC power is lost  White = power is OK
Good Parts ¹	Used as a part counter. When specified number of parts is reached, then alarm is triggered.	Replace the box with counted parts with an empty box, then clear alarm. Reset alarm on screen	 Red	 Red
System Error ¹	Part tracker or other internal system errors	Depends on specific alarm (see details for System Error Alarm) Reset alarm on screen	 Red Red Flashing for Part Tracker Lost Communication	 Red Red Flashing for Part Tracker Lost Communication

¹ If you want to connect an external monitoring device such as a PLC, an optional Extended I/O board is required for each lane.

² The light tree displays this color for the Duration if Visual Enabled.

Lane Alarm Configuration



Set up alarms for a lane. To get to this menu: From Lane Overview mode, select Alarms | Lane Alarm Configuration. Select an alarm from the drop-down menu to configure that alarm. Enabled = checked.

Note: Some menu items are only available to advanced level users.

Lane Alarm Configuration

Selected Alarm **Percent Defects** All Alarms ...

☐ Alarm Enabled

Minimum Count ◀ 100 ▶ 100

Trigger [%] ◀ 13.140 ▶ 13.140

☐ Audible Enabled

☒ Visual Enabled

Duration **Seconds**

◀ 3600 ▶ 3600

Color ☒ Red ☐ Yellow

Exchange Settings
☐ Warning ☒ Critical (linked to System Ready Bit)

Alarm Digital Outputs

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

↺ ✓ ✗

Sensor Alarms - Brief Description

Sensor alarms are configured for each sensor (camera or other sensor).

Alarm	Description	Action	Light Tree ²
Percent Rejects ¹	Percent Rejects - This alarm is triggered when the Trigger [%] is exceeded. It will remain triggered until you clear the alarm.	Check the production line to see what might be creating too many bad parts Reset alarm on screen	 Red
Excessive Rejects ¹	Excessive Rejects - This alarm is triggered when Trigger [%] of the last Sample Size parts have been found defective. It will remain triggered until you clear the alarm.	Check the production line to see what might be creating too many bad parts Reset alarm on screen	 Red
Excessive Warnings ¹	Excessive Warnings - This alarm is triggered when Trigger [%] of the last Sample Size parts have been found with a warning status. It will remain triggered until you clear the alarm. Warnings are enabled in the Retro-Spec Options when you are editing an inspection. They can also be enabled in Lane Setup Select Features.	Check the production line to see what might be creating too many bad parts Reset alarm on screen	 Amber
Consecutive Defects ¹	Consecutive Defects - This alarm is triggered when Consecutive Triggers has been exceeded [the sensor had too many consecutive defects]. It will remain triggered until you clear the alarm.	Check the production line to see what might be creating too many bad parts Reset alarm on screen	 Red
Mass Lighting	Mass Lighting - This alarm is triggered when the lighting threshold falls below a minimum level.	Clean the mass sensors and emitters Reset alarm on screen	none
System Error ¹	Missed part, missed acquisition, missed result, or other internal error	Reset alarm on screen	 Red

¹ If you want to connect an external monitoring device such as a PLC, an optional Extended I/O board is required for each lane.

² The light tree displays this color for the Duration if Visual Enabled.

Sensor Alarm Configuration

 Set up alarms for a Sensor. To get to this menu: From Lane or Sensor Overview mode, select Alarms | Sensor Alarm Configuration. Choose a sensor to configure. You must configure each sensor separately.

Select an alarm from the drop-down menu to configure that alarm. Enabled = checked.

Some menu items are only available to advanced level users.

Sensor Alarm Configuration

Apply alarm to:

SensorBase

Selected AlarmPercent Rejects

All Alarms ...

☐ Alarm Enabled

Minimum Count100100

Trigger [%]0.5000.500

☒ Audible Enabled

DurationSeconds55

☒ Visual Enabled

DurationSeconds4545

ColorRedYellow

Exchange SettingsWarningCritical (linked to System Ready Bit)

Alarm Digital Outputs01234567891011121314

Rejector Alarms - Brief Description

Rejector Alarms are triggered when a part did not get rejected as expected.

Alarm	Description	Action	Light Tree ²
Jam at Reject Confirm ¹	The reject confirm path has been blocked too long. Works with Reject Confirm Calibration (Optional)	Remove jammed parts at the rejecter, then clear alarm. Reset alarm on screen	 Red
Missed Reject ¹	System missed rejecting a part. Works with Reject Confirm Calibration (Optional)	Reset alarm on screen	 Red
Missed Result ¹	The part reached the rejector before the part was fully inspected and the result was sent to the part tracker. That is, the inspections took too long to run.	If this occurs often, look at the inspection settings. It may be possible to use other settings to reduce inspection time. Reset alarm on screen	 Red

¹ If you want to connect an external monitoring device such as a PLC, an optional Extended I/O board is required for each lane.

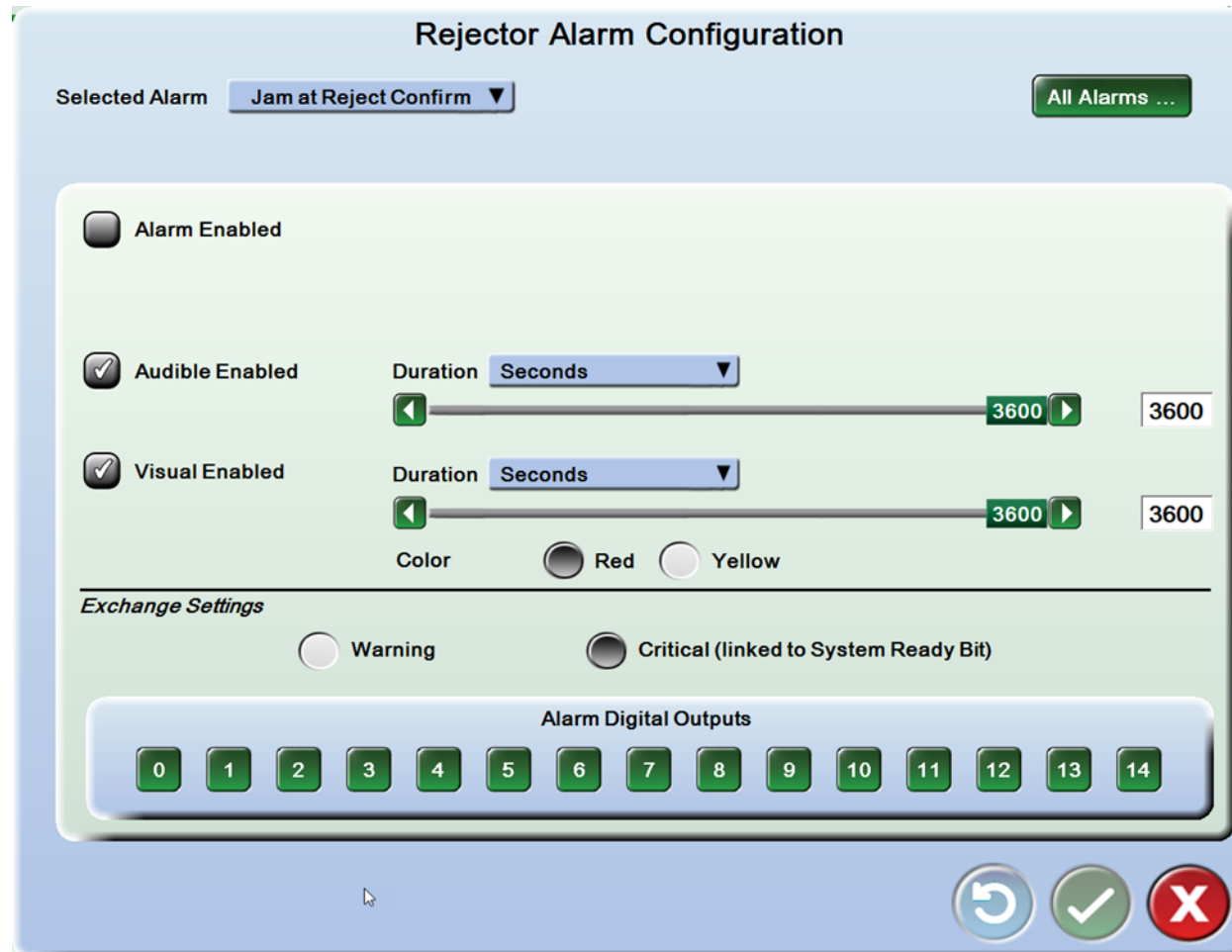
² The light tree displays this color for the Duration if Visual Enabled.

Rejector Alarms Configuration

 Set up alarms for rejecting. To get to this menu: From Lane Overview mode, select Alarms | Rejector Alarm Configuration.

Select an alarm from the drop-down menu to configure that alarm. Enabled = checked.

Note: Some menu items are only available to advanced level users.



The image shows a software window titled "Rejector Alarm Configuration". At the top, there is a "Selected Alarm" dropdown menu currently set to "Jam at Reject Confirm", and a green button labeled "All Alarms ...". Below this, the configuration is divided into sections. The first section has a checkbox for "Alarm Enabled" which is unchecked. The second section has a checked checkbox for "Audible Enabled", followed by a "Duration" dropdown set to "Seconds" and a slider ranging from 0 to 3600, with the value 3600 displayed in a box. The third section has a checked checkbox for "Visual Enabled", followed by a "Duration" dropdown set to "Seconds" and a slider ranging from 0 to 3600, with the value 3600 displayed in a box. Below these, there is a "Color" section with two radio buttons: "Red" (selected) and "Yellow". A horizontal line separates this from the "Exchange Settings" section, which contains two radio buttons: "Warning" (selected) and "Critical (linked to System Ready Bit)". At the bottom, there is a section titled "Alarm Digital Outputs" containing a row of 15 green buttons numbered 0 through 14. At the very bottom of the window are three circular buttons: a refresh button, a checkmark button, and a red button with a white 'X'.

Machine Part Alarms - Brief Description

Machine Part alarms are the correlation-based alarms. They are visible only if your system has correlation sensors installed.

Note: for Machine Part Alarms, except Correlation Out of Range, statistics apply to each correlation value separately. That is, if one of 100 machine parts fails at 100 percent, the detected percentage is 100 percent while overall it would be 1 percent.

Alarm	Description	Action	Light Tree ²
Percent Rejects ¹	Percent Rejects - This alarm is triggered when the Trigger [%] is exceeded. It will remain triggered until you clear the alarm.	Check the production line to see what might be creating too many bad parts Reset alarm on screen	 Red
Excessive Rejects ¹	Excessive Rejects - This alarm is triggered when Trigger [%] of the last Sample Size parts have been found defective. It will remain triggered until you clear the alarm.	Check the production line to see what might be creating too many bad parts Reset alarm on screen	 Red
Excessive Warnings ¹	Excessive Warnings - This alarm is triggered when Trigger [%] of the last Sample Size parts have been found with a warning status. It will remain triggered until you clear the alarm. Warnings are enabled in the Retro-Spec Options when you are editing an inspection. They can also be enabled in Lane Setup Select Features.	Check the production line to see what might be creating too many bad parts Reset alarm on screen	 Amber
Consecutive Defects ¹	Consecutive Defects - This alarm is triggered when Consecutive Triggers has been exceeded [the sensor had too many consecutive defects]. It will remain triggered until you clear the alarm.	Check the production line to see what might be creating too many bad parts Reset alarm on screen	 Red
Correlation Out of Range	Correlation Out of Range - This alarm is triggered if the part tracker counts a machine part that was not configured.	Reset alarm on screen	 Red

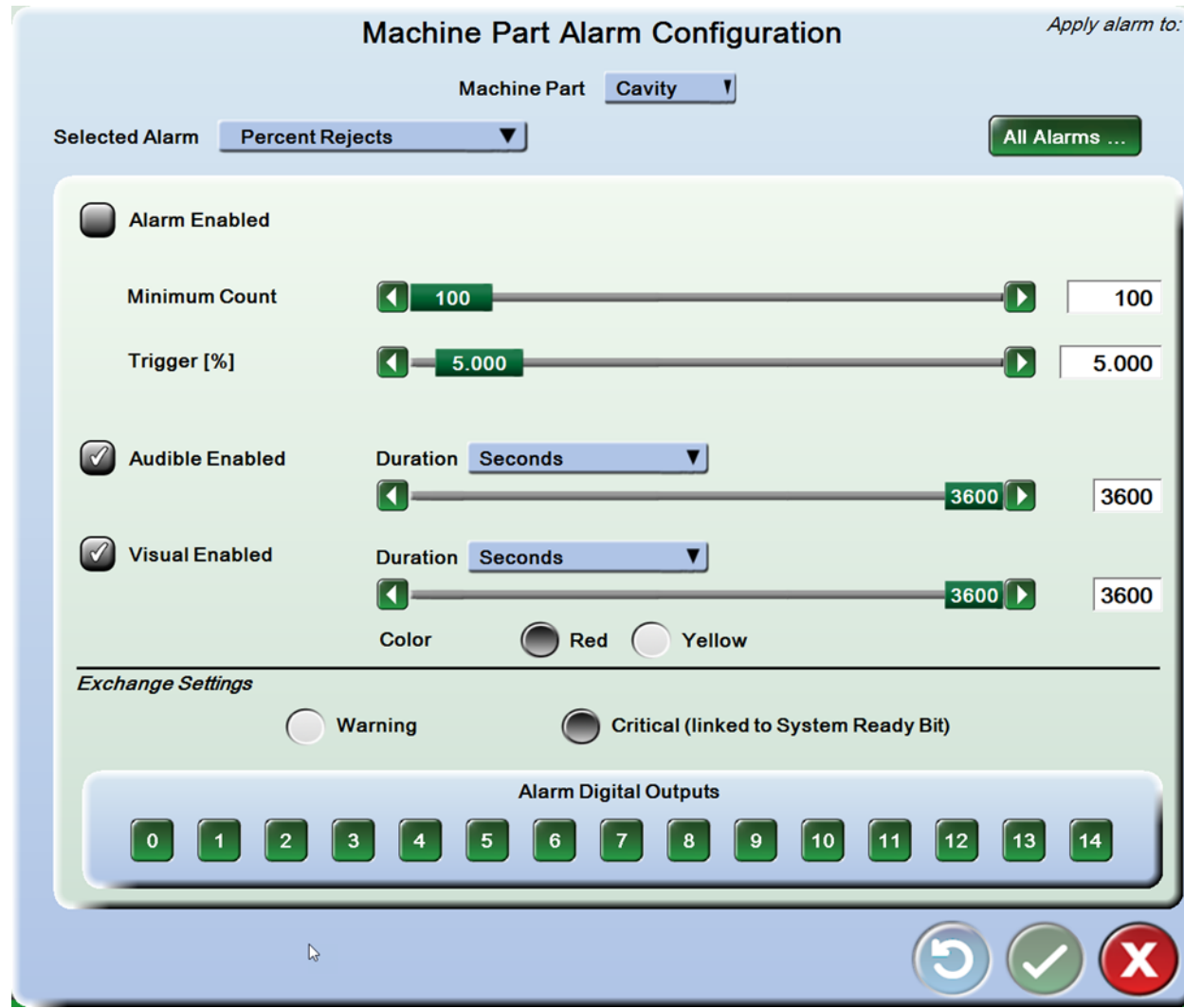
¹ If you want to connect an external monitoring device such as a PLC, an optional Extended I/O board is required for each lane.

² The light tree displays this color for the Duration if Visual Enabled.

Machine Part Alarms Configuration

 Set up alarms for machine parts. To get to this menu: From Lane Overview mode, select Alarms | Machine Part Alarm Configuration. Select an alarm from the drop-down menu to configure that alarm. Enabled = checked.

Note: Some menu items are only available to advanced level users.



The dialog box is titled "Machine Part Alarm Configuration" and includes a sub-header "Apply alarm to:". Below this, there is a "Machine Part" dropdown menu set to "Cavity". A "Selected Alarm" dropdown menu is set to "Percent Rejects", with an "All Alarms ..." button to its right. The main configuration area has a light green background and contains several settings:

- Alarm Enabled:** A checkbox that is currently unchecked.
- Minimum Count:** A slider set to 100, with a text input field also showing 100.
- Trigger [%]:** A slider set to 5.000, with a text input field also showing 5.000.
- Audible Enabled:** A checked checkbox. Below it is a "Duration" dropdown set to "Seconds" and a slider set to 3600, with a text input field also showing 3600.
- Visual Enabled:** A checked checkbox. Below it is a "Duration" dropdown set to "Seconds" and a slider set to 3600, with a text input field also showing 3600.
- Color:** Two radio buttons, "Red" (selected) and "Yellow".
- Exchange Settings:** Two radio buttons, "Warning" (selected) and "Critical (linked to System Ready Bit)".
- Alarm Digital Outputs:** A row of 15 green buttons numbered 0 through 14.

At the bottom right of the dialog are three circular buttons: a refresh button, a checkmark button, and a red "X" button.

All Alarms

All Alarms ... All Alarms button from an alarm configuration window.

Apply the same settings to all alarms on one or all lanes and one or all sources (Sensors, Rejectors, or Machine Parts). For example, you may always want to use the same Visual Duration for all Sensor alarms. This screen applies that setting. (You still have to do it separately for each source type: Lane, Sensor, Rejector, Machine Part.)

Apply to All Alarms

Apply to All Alarms For:

Apply the selected settings to all alarms for:

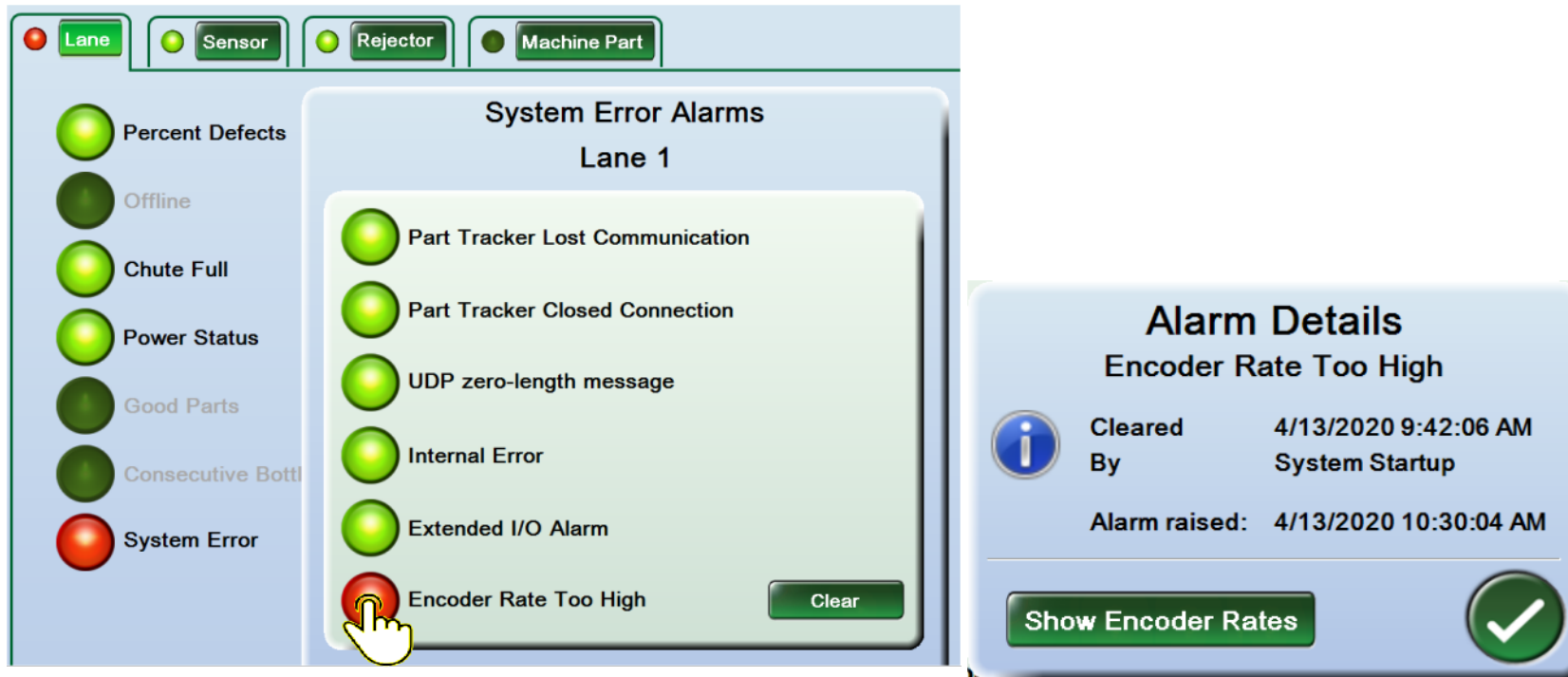
Selected Sensors

Setting Selection	Value Being Set
☒ Alarm Enabled	☒ Enabled
☒ Visual Enabled	☒ Enabled
☒ Visual Duration	45 45 Seconds
☒ Color	☒ Red ☐ Yellow
☒ Audible Enabled	☒ Enabled
☒ Audible Duration	5 5 Seconds
☒ Exchange Settings	☐ Warning ☒ Critical (linked to System Ready Bit)
☒ Digital Outputs	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

Encoder Rate Alarm

This alarm is raised when the encoder rate exceeds a threshold. You can also “see” the encoder rates from this alarm. This feature is available in Intellispec software versions 5.6.017, 5.7.025, 6.0.029 and later.

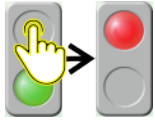
The Encoder Alarm is a System Error alarm. You can click on the LED of the alarm to get more details.



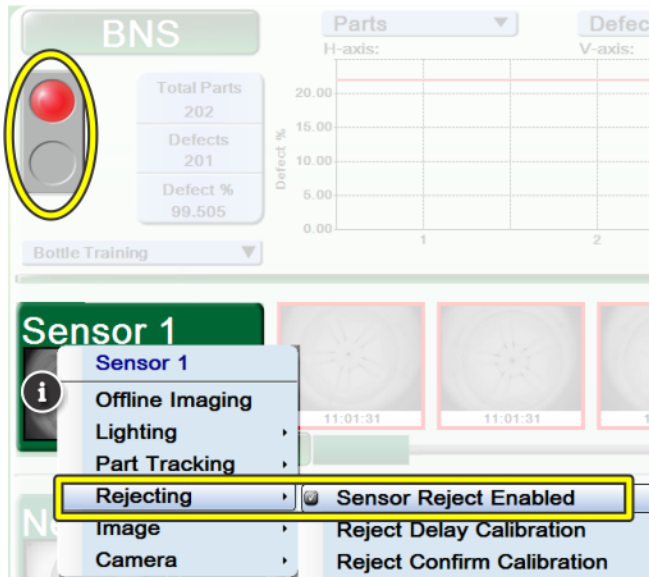
Disable or Enable the Rejector for One Sensor

Mechanic level user and higher

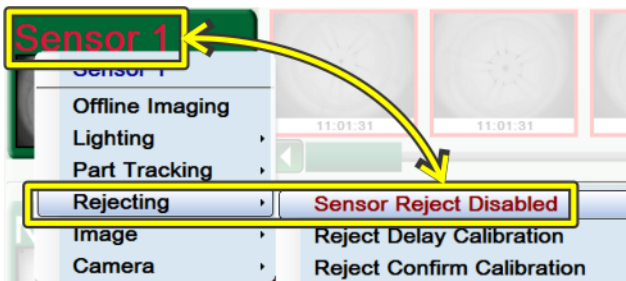
If the system is rejecting excessive parts, you can quickly disable the rejector for that camera.



1. Take the lane offline.
2. Right-click a sensor button. Select Rejecting | Sensor Reject Enabled.



This toggles to Sensor Reject Disabled. Red text = disabled.



After you have resolved the problem, be sure to Enable the rejector, using the same steps as above. Checked = enabled

Disable or Enable the Rejector for Multiple Sensors

To enable or disable the rejector for one or more sensors within a lane:



From Lane Overview or Sensor Overview mode, select Tools | Lane Setup | Rejecting | Sensor Reject Enable/Disable. Checked = enabled

Enable Rejecting for Sensor

☒ Neck

☐ Flange

☒ Body

☒ Dome

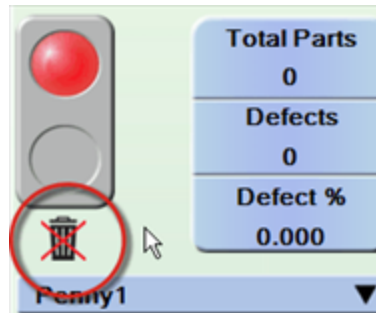
☐ BMID

☐ Color Dot

If a rejector is disabled, the sensor name is displayed in red instead of white.

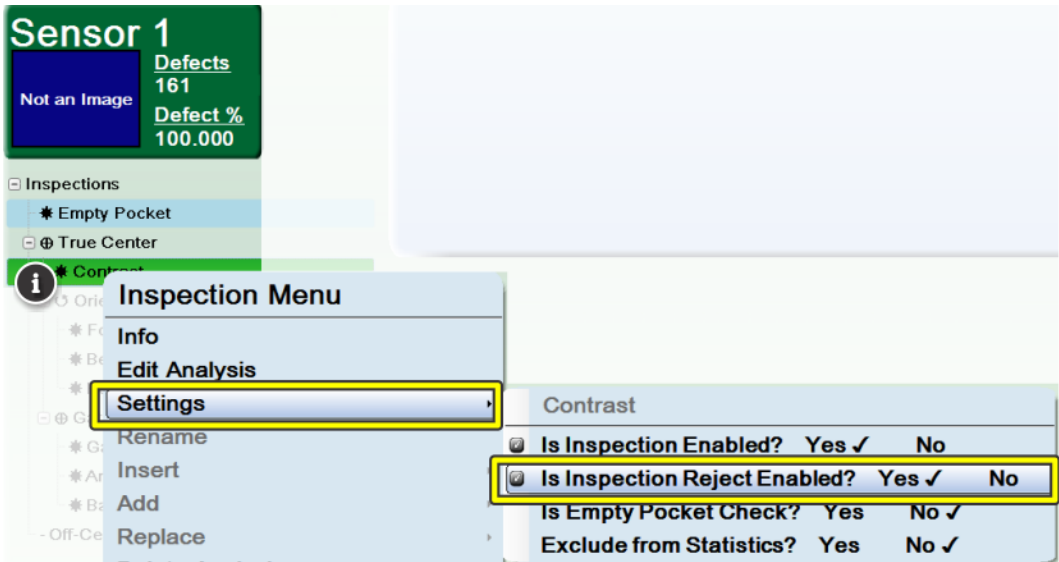


If the rejector for all sensors within the lane is disabled, you will see the trash can icon.



Disable or Enable the Rejector for an Inspection

Right-click an inspection in the inspection tree. Select Settings | "Is Inspection Reject Enabled?" Make your selection.



Forced Rejects Utility



To get to this screen: From Lane or Sensor Overview mode, select Tools | Lane Setup | Start Forced Reject.

Note: the lane must be Online to force rejects

Exiting the Forced Rejects utility will not stop the forced reject process. Use the Stop Forced Rejects button.

Forced Reject

1 → **Combined Machine Parts** ▼

2 → **Reject N Parts** ▼

3 → **Sample Interval**

4 → **Cavity** ☒ (1..24)
Spindle ☐ (1..300)
InFeed ☐ (1..24)
OutFeed ☐ (1..24)

5 → **Rejector**
☒ 1 ☐ 2

6 → **Start Forced Reject**
Forced reject won't start until the system is on-line.

Click on a text or number field to edit it.

Status

Forced reject started.
Correlation(Cavity, Spindle, InFeed, OutFeed)
Reject 1 of 9,Correlation(5, 5, 5, 5)
Reject 2 of 9,Correlation(5, 29, 5, 5) Bad Part
Reject 3 of 9,Correlation(5, 53, 5, 5)
Reject 4 of 9,Correlation(5, 77, 5, 5) Bad Part
Reject 5 of 9,Correlation(5, 101, 5, 5)
Reject 6 of 9,Correlation(5, 125, 5, 5)
Reject 7 of 9,Correlation(5, 149, 5, 5)
Reject 8 of 9,Correlation(5, 173, 5, 5)
Reject 9 of 9,Correlation(5, 197, 5, 5) Bad Part
Forced reject completed or stopped.
Forced reject completed.

↑
7

1) Any Part/ Single Machine Part/ Combined Machine Parts/ By Sampling Inspection (drop-down menu)

2) Reject one part, 'N' parts, or continuously reject from a specific machine part.

3) Sample Interval - Only reject parts every n number of intervals.

4) Select Machine Part

5) Rejector - Specify which rejector to force rejection of the part.

6) Start Forced Reject/ Stop Forced Reject

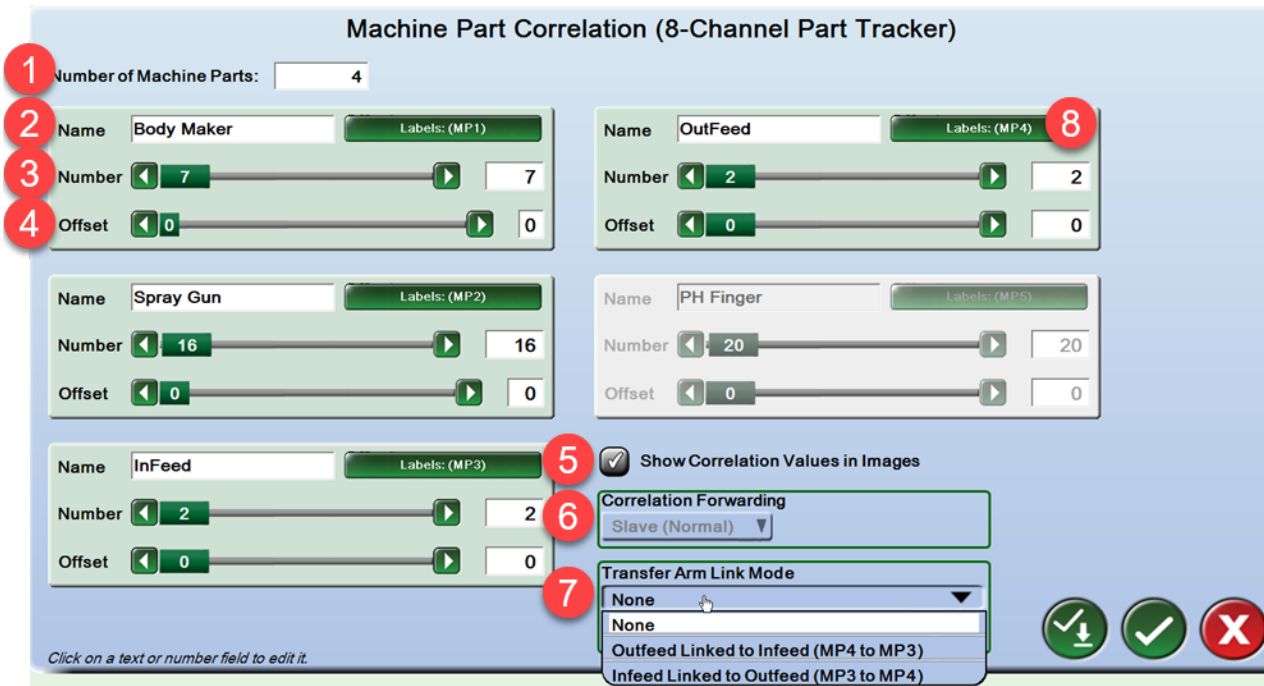
7) Status box - Displays information about the rejection process.

Machine Part Correlation

Configure up to four parts for correlation.

Note: this screen is usually set up by the Pressco installer

 To get to this screen: From Lane or Sensor Overview mode, select Tools | Lane Setup | Machine Part Correlation.



The screenshot shows the 'Machine Part Correlation (8-Channel Part Tracker)' interface. It features a top section for 'Number of Machine Parts' (set to 4) and a grid of configuration panels for each part. The panels are labeled (MP1) through (MP5). Each panel includes fields for 'Name', 'Number' (with a slider), and 'Offset' (with a slider). A 'Show Correlation Values in Images' checkbox is checked. Below the panels are dropdown menus for 'Correlation Forwarding' (set to 'Slave (Normal)') and 'Transfer Arm Link Mode' (with options: None, Outfeed Linked to Infeed (MP4 to MP3), Infeed Linked to Outfeed (MP3 to MP4)). At the bottom right are three circular buttons: a green checkmark, a green checkmark with a download arrow, and a red X. Red numbered callouts (1-8) point to specific elements: 1 points to the 'Number of Machine Parts' field; 2 points to the 'Name' field of the first part; 3 points to the 'Number' slider of the first part; 4 points to the 'Offset' slider of the first part; 5 points to the 'Show Correlation Values in Images' checkbox; 6 points to the 'Correlation Forwarding' dropdown; 7 points to the 'Transfer Arm Link Mode' dropdown; 8 points to the 'Name' field of the fourth part.

1 - **Number of Machine Parts** - Select the number of correlation sensors in your system (1-4). If you are using inspection-based correlation such as BMID, AlphaNumeric or Color Dot you will need to reserve a machine part for tracking the inspection-based correlation, and a correlation sensor is not needed for this machine part. The correct part tracker type should already be selected but if the title shows a part tracker type different from what you have you will need to run the Discovery software and select the correct type. (Edit the lane and select the Correlation step.)

2 - **Name (correlation)** - Name each machine part to something recognizable to you (examples: Cavity, Spindle, or Liner Gun #1). This name is displayed on the Intellispec screens and throughout correlation reports.

3 - **Number** - Set the number of components in each machine part (example, number of pockets in a starwheel).

4 - **Offset** - Change what the inspection system considers part #1 (or pocket #1) and the actual part. For example, if you reject a part from cavity #1, and the system rejects the part from cavity #2, then set the offset at 1. This ensures the inspection system tracks components properly.

5 - **Show Correlation Values in Images** - Displays the correlation values in the large defect images and in Freeze on Defect images.



6 - **Correlation Forwarding** - This feature takes correlation information from one lane of inspection (slave lane) and forwards it to another lane (master lane). This is used when one lane has software correlation (inspections) set up, and the other lane does not.

[only if Correlation Forwarding is used] **Resync Timeout** - This parameter applies to the master lane only. If part flow stops for this number of seconds, the system re-synchronizes the correlation between master and slave. This is an opportunity taken to reduce the chance that the correlation between slave and master is incorrectly offset, which can occasionally happen due to double-triggers at the slave's part detect.

[not shown] **Outfeed Transfer Sequential** - (Only when four sensors are used, and only in blow molder installations) Specify whether the infeed and outfeed transfer arms are numbered Independently or Sequentially.

Example of Outfeed Transfer Sequential

For example, your machine has 10 infeed transfer arms and 10 outfeed transfer arms. If they are numbered Independently, the infeed transfer arms are numbered 1 - 10, and the outfeed transfer arms are also numbered 1 - 10. If they are numbered Sequentially, the infeed transfer arms are numbered 1 - 10, and the outfeed transfer arms are numbered 11 - 20.

7 - **Outfeed Linked to Infeed (MP4 to MP3)** - (Only in blow molder installations) Enable this to derive the outfeed correlation count (MP4) from the infeed correlation count (MP3). This is typical of most blow molders

Example of Linked to Infeed

For example, in an SBO20 machine, the infeed count will be from 1 - 10. The outfeed count will be from 11 - 20. Infeed count 1 will correspond to outfeed 11, and so forth.

Note: When this feature is enabled, the number of components is forced to be equal (number of components in MP3 = number of components in MP4).

Note: For linked outfeed there is no index sensor for MP4 in the hardware configuration.

11 - Machine Correlation Labels - Use this dialog to change machine part labels to user defined names. It can be used for machine correlation as well as inspection based correlation. The user defined name is used by some inspections. For example, the OCR Correlation uses the displayed string for assigning text we read to a specific machine part.

8 - Machine Correlation Labels

Create a Support Package

A support package is a set of files gathered by the Intellispec system to help find system problems. You will send this package to Pressco service specialists so that they can troubleshoot your system. This file can also back up your system configuration (not the entire system database).

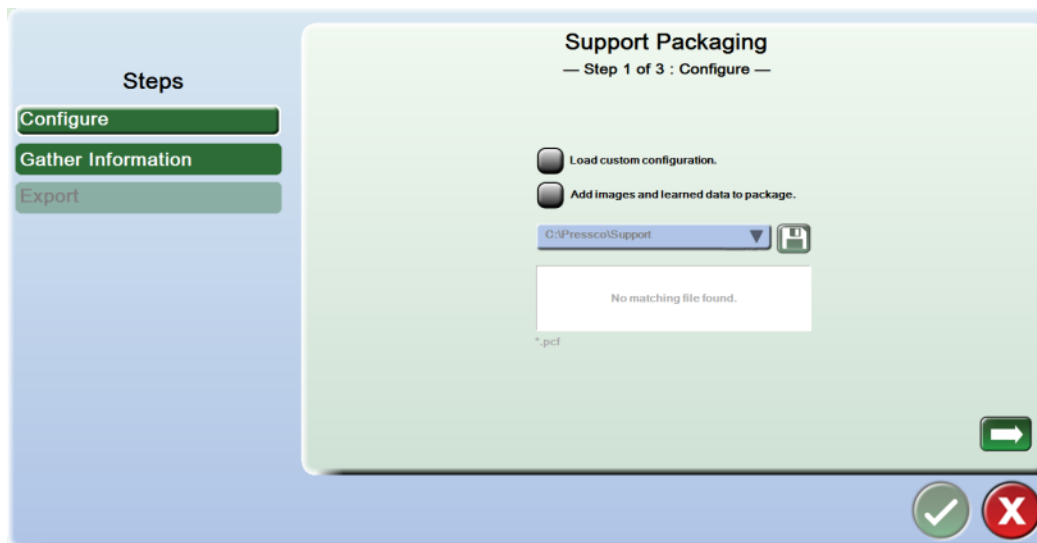
Note: On rare occasions, the Intellispec software cannot be started, so you will not be able to access the support package tool from the user interface. It is possible to create the support package without Intellispec running by starting the following executable from Windows: C:\Pressco\bin\SupportPackaging.exe.

What you need:

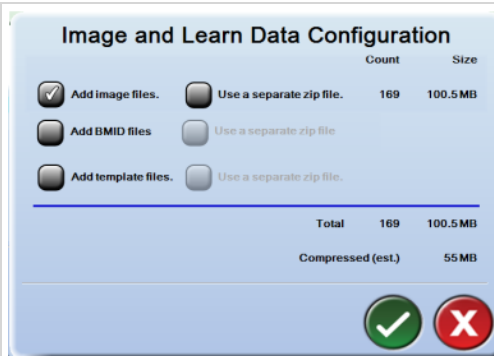
- USB flash drive (128MB or larger). Connect this to the USB port
- If you have a ".pcf" file from a Pressco Support representative (to acquire additional system information), then copy that file to the USB drive prior to connecting it to the Intellispec system
- If you want to save images to send with the support file, then save images prior to creating the support file. Be sure to save them in the default image folders: C:\Pressco\Lane n\Images\Sensor n. See Saving Images.

To create the support package:

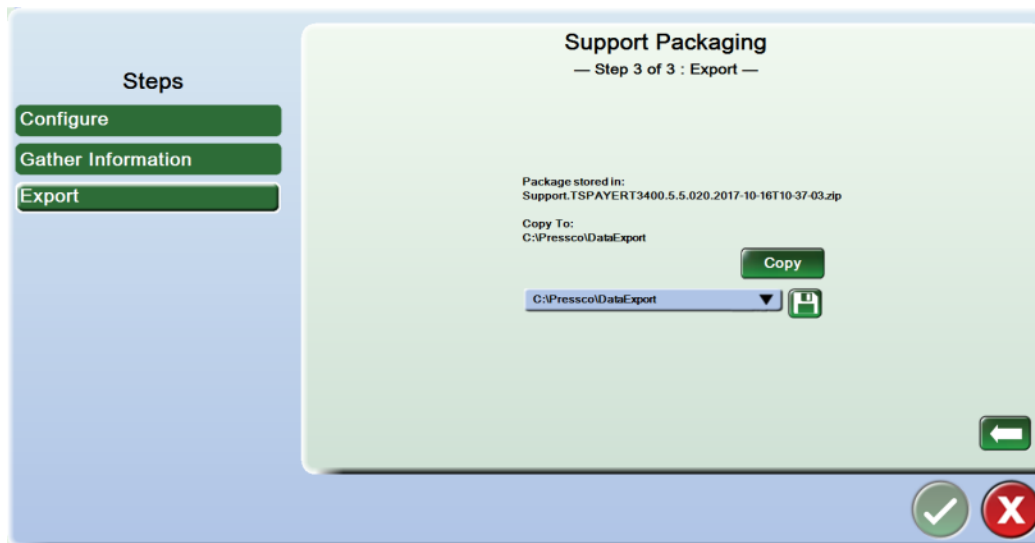
1.  Select the Backup and Restore Menu | Create Support Package. The support package wizard is displayed.
2. (optional) At Step 1: Configure: add the ".pcf" file or images.



3. (optional) Check the Load custom configuration box. A .pcf file is a custom Pressco configuration file that gathers information beyond the standard Support Package. If a Pressco Support representative sent you a .pcf file, then connect the USB device that contains the .pcf file. Select the disk icon and browse to the location (USB drive) where the .pcf file is stored. The system locates the .pcf file.
4. (optional) Check the Add images and learned data to package box. A dialog (shown below) allows you to choose the type of images to include.



- **Add image files** - select images in the default image folder (example: C:\Pressco\Lane 1\Images\Sensor 1). All sensors and lanes for which you have images are included.
 - **Use a separate zip file** - a zip file with "IMAGES" in the name is created along with the Support Package zip file. All sensors and lanes for which you have images are included. If you do not check this box, then the images are included in the main Support Package zip file.
 - **Add BMID files** - if you have an inspection using BMID correlation, the images from the BMID folder are included (example: C:\Pressco\Lane 1\BMID).
 - **Add template files** - if you have a Template Registration or Template Orientation inspection, the images from the InspectionTemplates folder are included (example: C:\Pressco\Lane 1\InspectionTemplates).
5. Follow the instructions on screen. Use the forward arrows to move to the next screens.
 6. When the steps are completed, verify that the Step 3: Export screen is displayed.



7. Select the USB Flash Drive in the "Copy to:" location.
8. Select the Copy button. The support package files are copied to the USB flash drive, then a "Copy Succeeded" message is displayed.



9. Select the OK button to continue.
10. Select the OK button at the bottom of the Support Packaging screen to exit.
11. Remove the USB flash drive.
12. Copy the files that were saved, including images, from the USB drive to your computer.
13. Send an e-mail to techsupport@pressco.com and attach the support package files. Pressco service/ tech support will respond within one business day, if possible.

Restore From Support Package

You can restore (import) a support package to a working Intellispec system. This allows you to use the same configuration on multiple systems without having to duplicate your efforts, or use a known good configuration created on another system or by Pressco Technical Support.

What you need:

- A USB flash drive with a known good support package on it
- Mechanical keyboard (MKB) to enter a problem description (if backing up your current configuration)

To restore the support package:

1.  Select the Backup and Restore menu | Restore from Support Package.



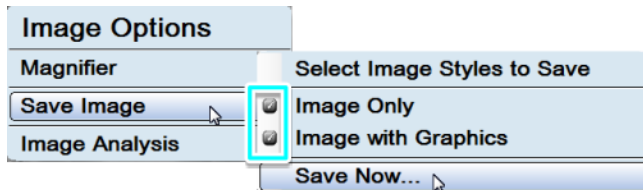
2. The system will suggest that you back up your current system. We recommend that you select the "Create Support File" button to back up the system.
3. Follow the instructions on screen, and select the location of the USB drive that contains the support package you want to restore, when prompted.
4. Select the support package from the USB drive that you want to restore.
5. Use the forward arrows to move to the next screens.
6. When the system says "Series V (or 6) Application detected," select the Stop Application button to shut down the Intellispec software. This is necessary to restore the support package.
7. At step 4 on screen, select the Unpack Zip File button to restore the support package and wait for the system to unpack the files.
8. When the system says "Unpacking Complete," select the forward arrow to move to the next screen.
9. Select the Restart Discovery button to restart the Intellispec application.

Save Images

There are several ways to save an image within the Intellispec system.

Save any image:

In most parts of the system, right-click over any image. Follow the instructions on screen. This is useful to save images to include with a Support Package.

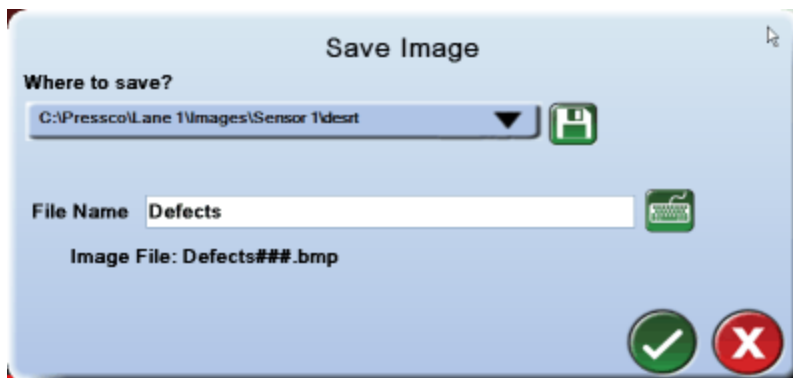


Checked = enabled. Then click Save Now...

Image Only - bitmap (.bmp) image with no graphics. Note: only bitmap images can be loaded back into the Intellispec.

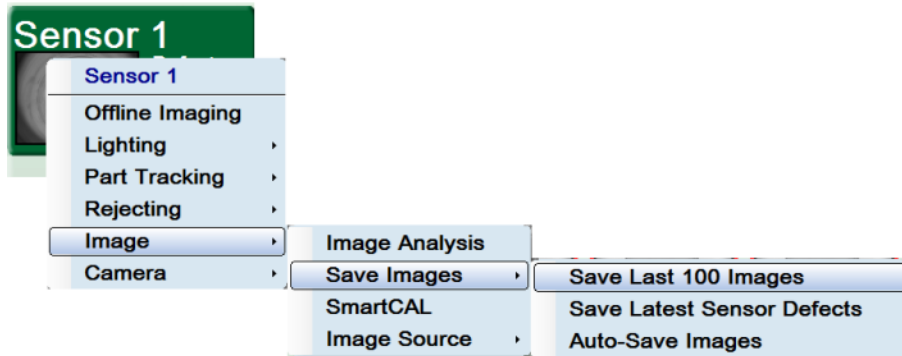
Image with Graphics - portable network graphic (.png) image with inspection graphics

The image is saved to the default location shown, unless you specify a different location. A default file name is provided for you. Select the keyboard icon to rename the image.



Save Images Through the Sensor Menu

Save a set of images from one sensor (up to 100 images). You can save images whether the lane is online or offline. Right-click to see the menus.



Save Last 100 Images - Save the last 100 images captured by the current sensor.

Save Latest Sensor Defects - Save the latest defect images shown in the Reject Images thumbnails, up to 100 images.

See also "Auto-Save Images" on the next page

Auto-Save Images

Save up to 1000 images from one sensor when the lane is online. To get to this menu: Right-click a sensor button | Image | Save Images | Auto-Save Images.

The screenshot shows the 'Image Auto-Save' dialog box with the following elements and numbered callouts:

- 1: Selected Sensor (Dropdown menu showing 'Neck')
- 2: Save To (Text field showing 'C:\Pressco\Lane 1\Images\Sensor 1' with a disk icon for browsing)
- 3: File Name (Text field showing 'Auto' with a file icon for browsing)
- 4: Quantity (Text field showing '287' with a range '(1 .. 1000 Parts)')
- 5: Skip N Parts Between Saves (Text field showing '0')
- 6: By Inspection (Checked checkbox and dropdown menu showing 'Any Inspection')
- 7: Part Result (Dropdown menu showing 'Passing or Failing')
- 8: Display (Dropdown menu showing 'Original Image')
- 9: Use Correlation (Checked checkbox)
- 10: Body Maker (Text field showing '1' with a range '(1..7)')
- 10: Spray Gun (Text field showing '4' with a range '(1..5)')
- 11: Start Auto-Save (Green button)

A numeric keypad is visible on the right side of the dialog. A status window on the bottom right shows a list of saved images with their correlation values and status (Good Part).

- 1) **Selected Sensor** - Select one or all sensors.
- 2) **Save To** - Select the location. To change the location, select the disk icon and browse to the desired location.
- 3) **File Name** - Create a file name, descriptive of the part you are inspecting. The system automatically adds numbers and letters to the name. Example: "Auto0001_S1_P.bmp." [0001] = image 1. [S1] = Sensor 1. [P] = part passed. [F] = part failed.
- 4) **Quantity** - Quantity of images to auto-save, up to 1000.
- 5) **Skip N Parts Between Saves** - Check the box if you do not want to save consecutive images. Enter the number [N] of parts to skip between saved images.
- 6) **By Inspection** - Only available when you have one sensor selected [in item 1]. Save images related to an inspection. Use the drop-down menu to select the inspection from the current part program.
- 7) **Part Result** - Save images that pass or fail inspection, or both. When images are saved, the file name contains [P] for passing or [F] for failing.

- 8) **Display** - Save the original image from the camera, or the image after centering, or the image after centering and orientation.
- 9) **Use Correlation** - [available if correlation is installed] Save images correlated to specific machine parts.
- 10) **Machine parts** - [available if correlation is installed] Select the machine part(s) to save images from. Also enter a machine part number in the box provided.
- 11) **Start Auto-Save** - Select Start Auto-Save to start saving images. Select Stop Auto-Save to stop the process. The lane must be online to collect images.

Module 5 Lighting and Imaging

In this section:

Pressco Inspection Theory	77
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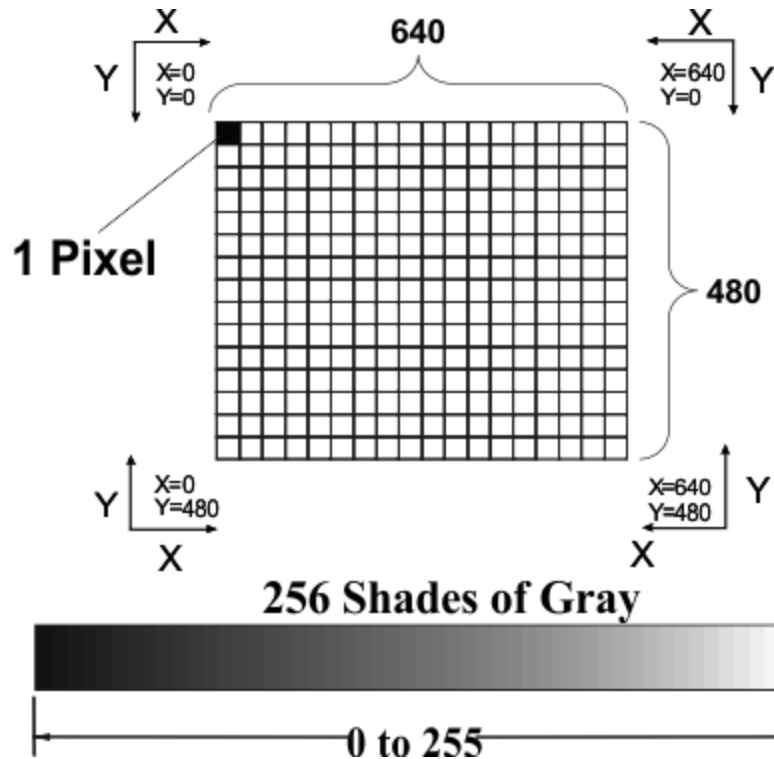
Introduction to Pressco Inspections

What is a pixel? - Pixel (picture element) is the smallest part of a digital image

X/Y Location - All pixels have an X/Y location in an image.

Grayscale - The measured brightness of a pixel from 0 to 255

- 0 = black, the absence of light
- 255 = white, saturated with light



Pixel Grayscale Values

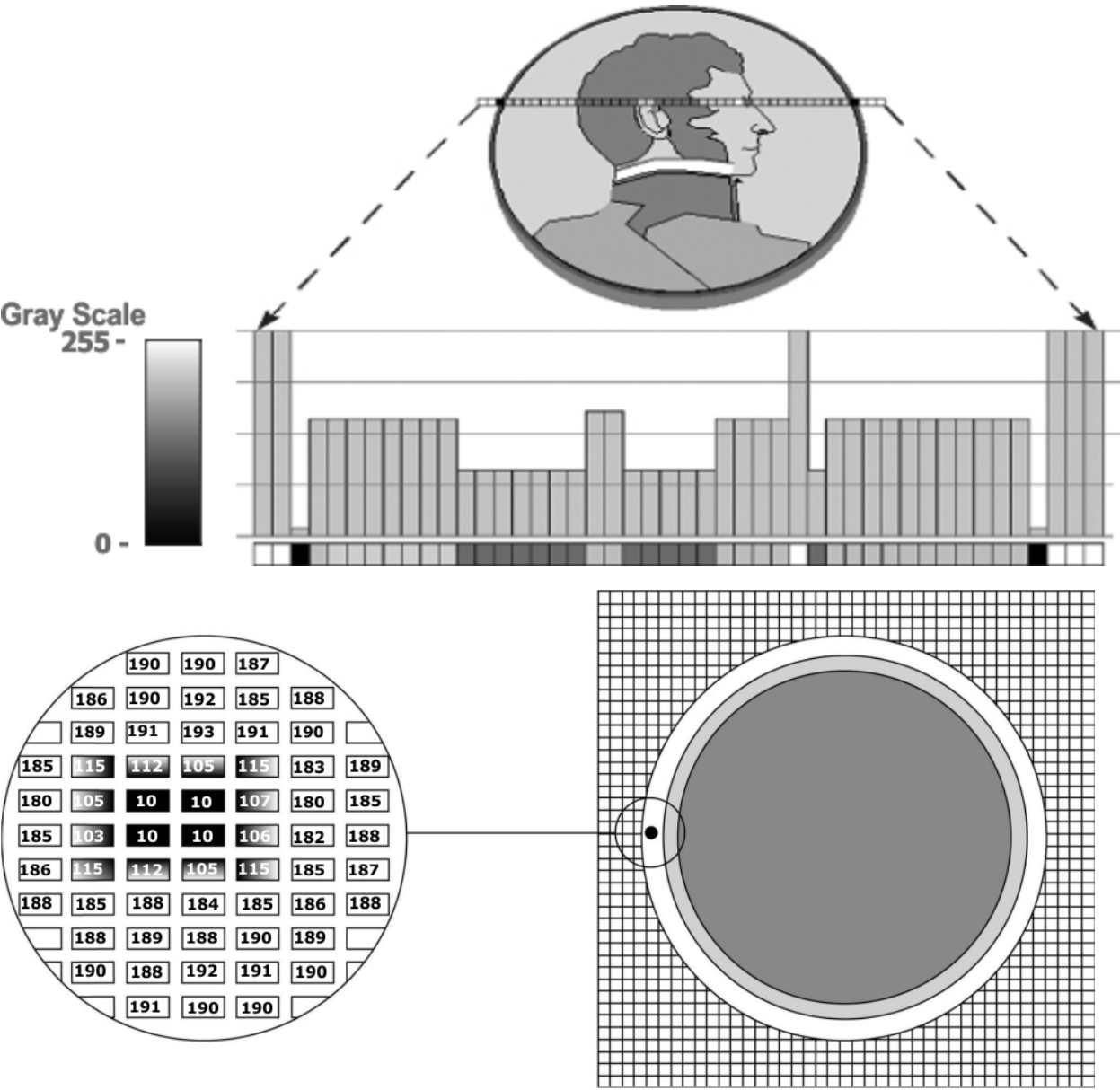
255



255	254	253	252	251	250	249	248	247	246	245	244	243	242	241	240
239	238	237	236	235	234	233	232	231	230	229	228	227	226	225	224
223	222	221	220	219	218	217	216	215	214	213	212	211	210	209	208
207	206	205	204	203	202	201	200	199	198	197	196	195	194	193	192
191	190	189	188	187	186	185	184	183	182	181	180	179	178	177	176
175	174	173	172	171	170	169	168	167	166	165	164	163	162	161	160
159	158	157	156	155	154	153	152	151	150	149	148	147	146	145	144
143	142	141	140	139	138	137	136	135	134	133	132	131	130	129	128
127	126	125	124	123	122	121	120	119	118	117	116	115	114	113	112
111	110	109	108	107	106	105	104	103	102	101	100	99	98	97	96
95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80
79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48
47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32
31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

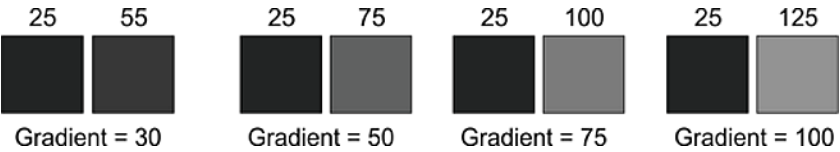
0

Examples of Grayscale

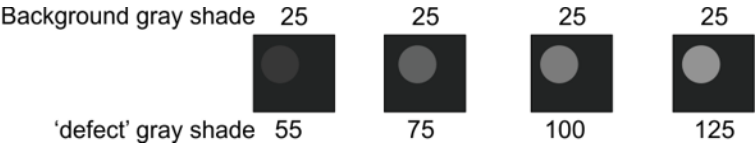


Gradient

The difference in gray shades between pixels being compared.

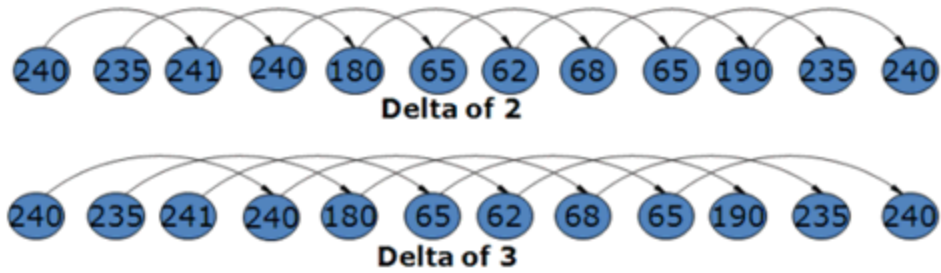


The illustration below shows the same gradient values as above, but displayed as an example 'defect.' In each case, the background is the same - 25 gray shade.



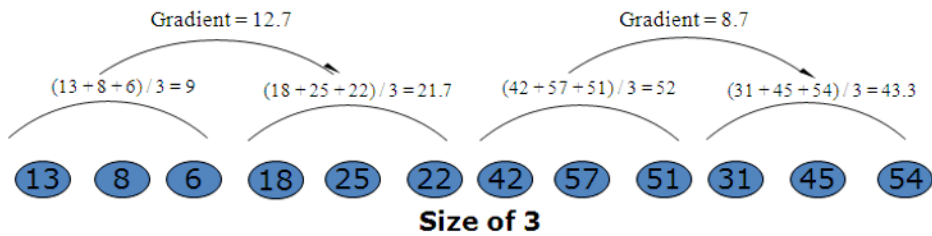
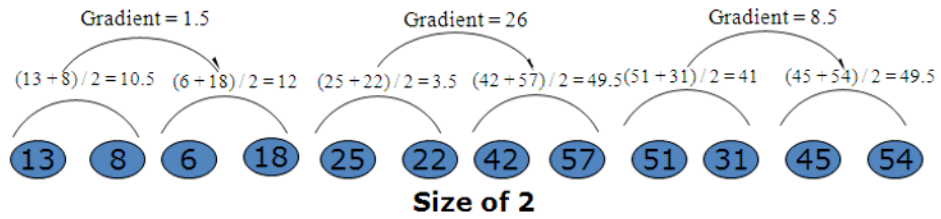
Delta

The distance between pixels being compared. Higher delta = greater sensitivity.



Size

The number of pixels in a group being compared. Greater size = lower sensitivity.



Part Tracker Simulation

Used for troubleshooting. A simulated part rate allows inspection to continue.



To get to this screen: From Lane or Sensor Overview mode, select Tools | Hardware Setup | Part Tracker Simulation. Select the desired check box(es) and then enter the desired values.

Part Rate - Enter a simulated part rate in parts per minute (PPM).

Encoder Rate and Resolution - Enter the simulated encoder properties.

Note: the system cannot run in both PDX mode and Part Tracker Simulation mode at the same time. If one mode is already running and you enable the other mode, the system displays a warning that the latest setting will override the previous mode.

Offline Imaging

Acquire images when the lane is offline. To see this menu, right-click over a sensor button, then select Offline Imaging.



Triggered Mode

Single Image - a picture is taken every time the button is clicked. (it uses the part detector)

Run - pictures are taken continuously as each part triggers the part detect sensor.

Immediate Mode

Single Image - a picture is taken every time the button is clicked. (it does not use the part detector)

Run - the camera takes continuous pictures, using the "Image Update Interval." You see whatever is under the camera.

Image Analysis

Measure the gray shade value, or distance between, pixels in your image. This is available offline only.

Note: to quickly measure a gray shade in an image, use the Image Magnifier instead (click or right-click an image).

To get to Image Analysis: Make sure the lane is offline. Right-click a sensor button | Image | Image Analysis.

Image Analysis for Sensor 'Body'

Marker Position: 0 = 104; 1 = 263; Distance = 159
Marker Value Difference: (0 - 1) = 5
Marker Values: 0 = 163; 1 = 158

C: Area=20018 Circle Center=192, Ang=118, Range=93.197, STD=16.885, Angle=104.442°, Center=(200, 248)
C: Area=20018 Circle Center=192, Ang=106, Range=97.146, STD=19.183, Angle=104.442°, Center=(200, 248)
C: Area=20018 Circle Center=192, Ang=126, Range=97.146, STD=19.183, Angle=104.442°, Center=(200, 248)
Calibration: Circle Diameter=182.00 Measured Diameter=148.06, Computed Scale=0.8199
Calibration: Circle Diameter=182.00 Measured Diameter=148.06, Computed Scale=0.8199
Calibration: Circle Diameter=182.00 Measured Diameter=148.06, Computed Scale=0.8199
Calibration: Circle Diameter=182.00 Measured Diameter=148.06, Computed Scale=0.8199
L: Line Length=182.00 Measured Diameter=148.06, Computed Scale=0.8199
Calibration: Circle Diameter=182.00 Measured Diameter=148.06, Computed Scale=0.8199
L: Line Length=182.00 Measured Diameter=148.06, Computed Scale=0.8199

Measured Length: 148.06 mm
Calibration Units: millimeters [mm]
Calibration Scale: 0.8022 millimeters / pixel
1.2466 pixels / mm

1 move
2 get more images

Measure area
a - move area
b - resize area

Calibrating the Image Pixel Scale

Using Image Analysis

Image Analysis can be used to enter your actual measured values of your part and compute the units of measure per pixel. This is called Pixel Scale. This calibration can be used for any inspection on that sensor.

To compute the pixel scale:

1. Using a known good part, measure the length or diameter of an area on your part.
2. Enter that value into the Measured box.

3. Place a line or circle on the part image in Image Analysis over the same location used to measure your part. Place the markers of the line, or a circle at the edges where you want the system to measure your part.
4. Click the Compute Scale button. The system computes the pixel scale and displays the values.
5. To save the scale to the Sensor file, click the Save Scale button. The pixel scale is saved with the sensor and can be used for any inspection on that sensor.

Using an inspection

Pixel scale can be calibrated for an individual inspection or sensor. When Save Calibration is used in these inspections, you can use the calibrated information in other inspections for that sensor. The inspections that perform pixel scale calibration are:

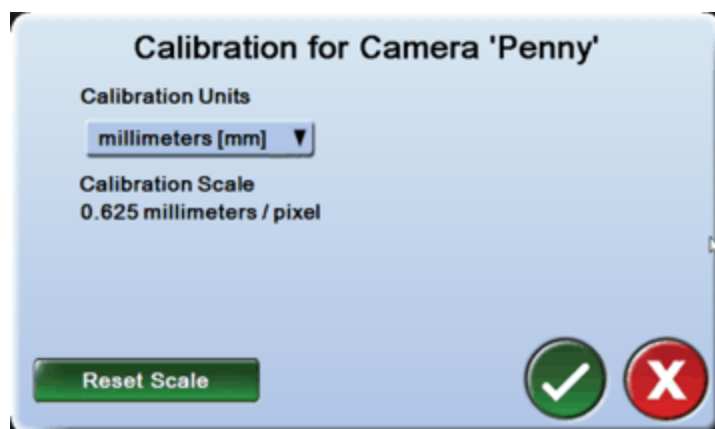
- Measurement
- Fill Height
- Fill Height - Segmented
- Neckring Registration
- Distance

Select Measurement Unit (Review Camera Calibration)

Select a measurement unit. If you switch between inches and millimeters, the pixel scale is automatically converted. Calibration to pixel scale is performed in Image Analysis or some inspections such as Measurement or Fill Height. Calibration is used to compute measurements on a part.

The unit you select in this menu is displayed in the Inspection menus: "p in a circle" for pixels, mm for millimeters, " for inches, or blank for custom units.

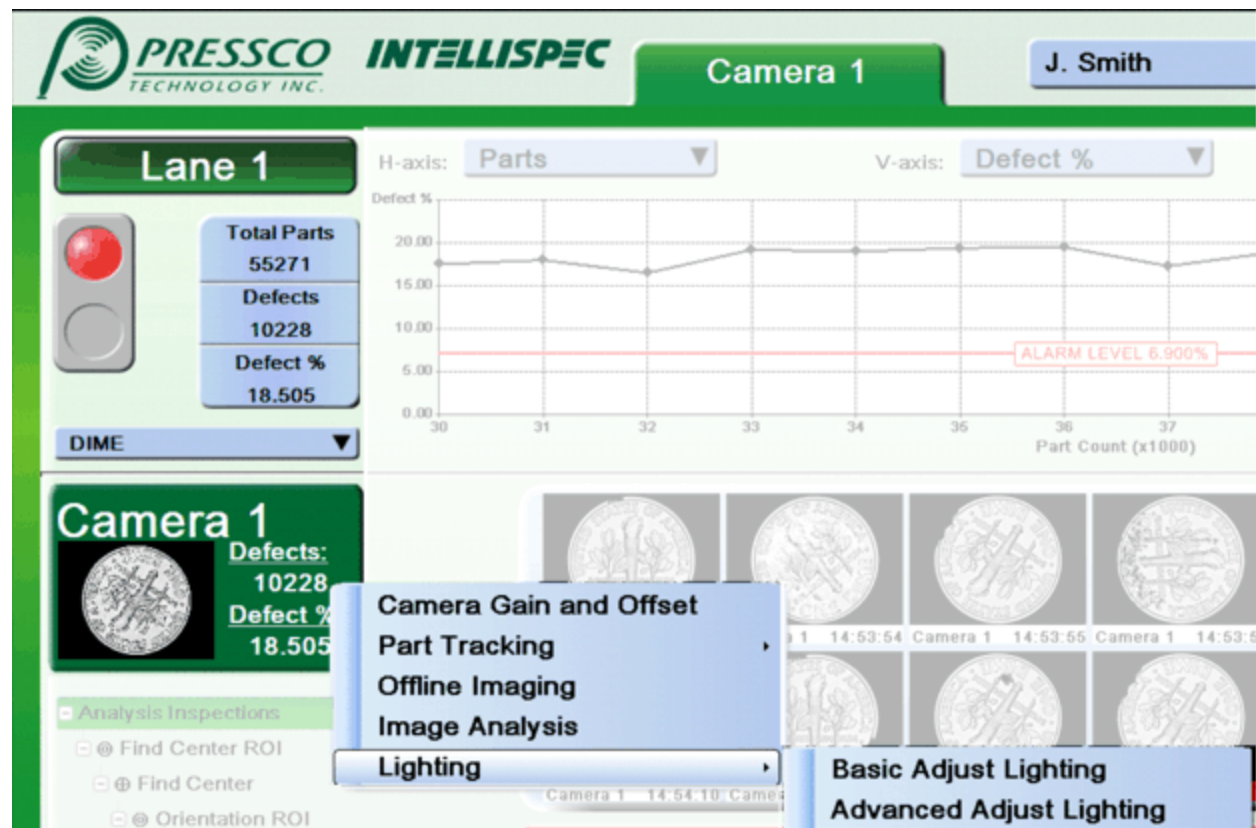
To get to this menu, right-click over a Sensor button | Camera | Review Camera Calibration.



Notes:

- If you switch from mm to inches or the opposite, the scale is converted for you. However, if you switch to custom or pixels between mm and inches, then the scale is not adjusted for you.
- If you switch to pixels, the scale is set to 1.0. The scale will revert back to your calibrated value if you switch from pixels to another unit.
- The Reset Scale button sets the scale to 1.0 for any unit you have selected.

Lighting - access



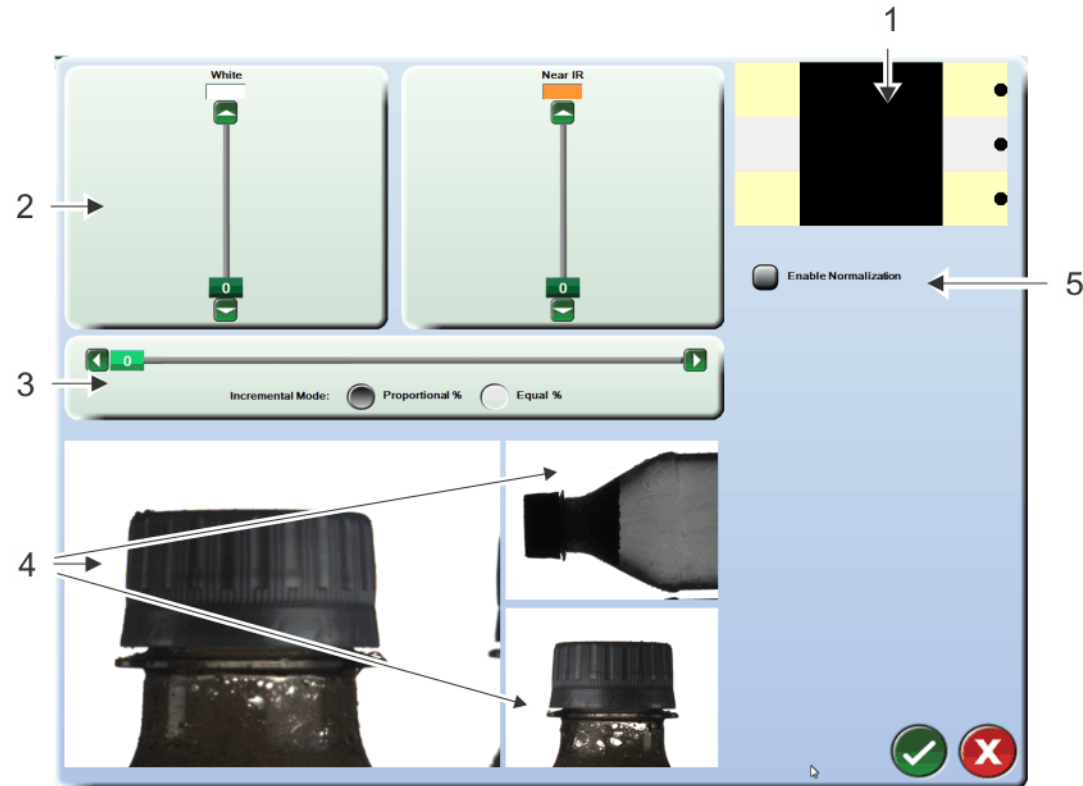
To access the lighting software:

1. From Lane Overview mode, right-click on the desired sensor button.
2. Select Lighting.
3. Select Basic or Advanced lighting. For most adjustments, Basic lighting is adequate. Advanced Adjust lighting is used by Pressco engineers or for making infrequently performed specialized settings.

Basic Adjust Lighting

Basic lighting provides most of the lighting adjustments you will use. Lighting must be adjusted while the lane is offline.

To get to this screen: Right-click over a sensor button | Lighting | Basic Adjust Lighting.

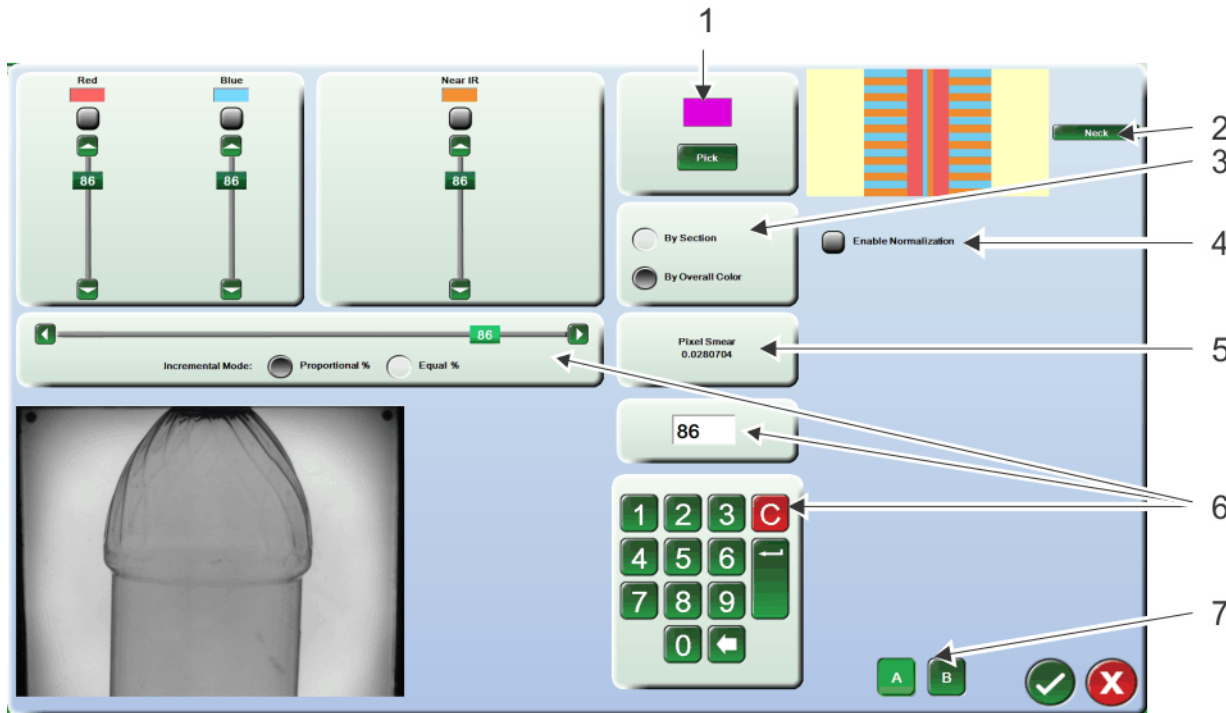


- 1) Select a zone to adjust it. You can select a single zone or multiple zones. As lighting is changed, the zone and the button next to it change color.
- 2) Separate slider bars for each color (red, green, blue, and infrared) allow individual adjustment.
- 3) Proportional % - Moving the slider bar adjusts all colors but maintains the current percentage of each color. Equal % lighting - Each color is adjusted by the same amount.
- 4) Select any image (if applicable to your system) to select the camera to adjust lighting.
- 5) Enable Normalization - (or Disable Normalization). For most applications leave normalization disabled. If you are modifying an old part program that has normalization enabled, then leave it enabled.

Advanced Adjust Lighting

This screen provides additional lighting setup. This is mostly used by Pressco engineers, or for making infrequently performed specialized settings. Lighting must be adjusted while the lane is offline.

To get to this screen: Right-click over a sensor button | Lighting | Advanced Adjust Lighting.



- 1) Opens a color palette and allows you to choose preselected colors.
- 2) If your inspection module has different lighting arrays, click one of the array buttons to adjust lighting by zone.
- 3) By Section - Change lighting by each section. By Color - Change lighting for multiple sections at once.
- 4) Enable Normalization - (or Disable Normalization). For most applications leave normalization disabled. If you are modifying an old part program that has normalization enabled, then leave it enabled.
- 5) Pixel Smear - The Intellispec computes the amount of pixel smear from lighting, image size, and part rate. It should be kept below one.
- 6) On-screen keypad - enter the percentage of color. This also moves the percentage slider.
- 7) A/B buttons - Set up two different lighting settings for the same part so you can compare.

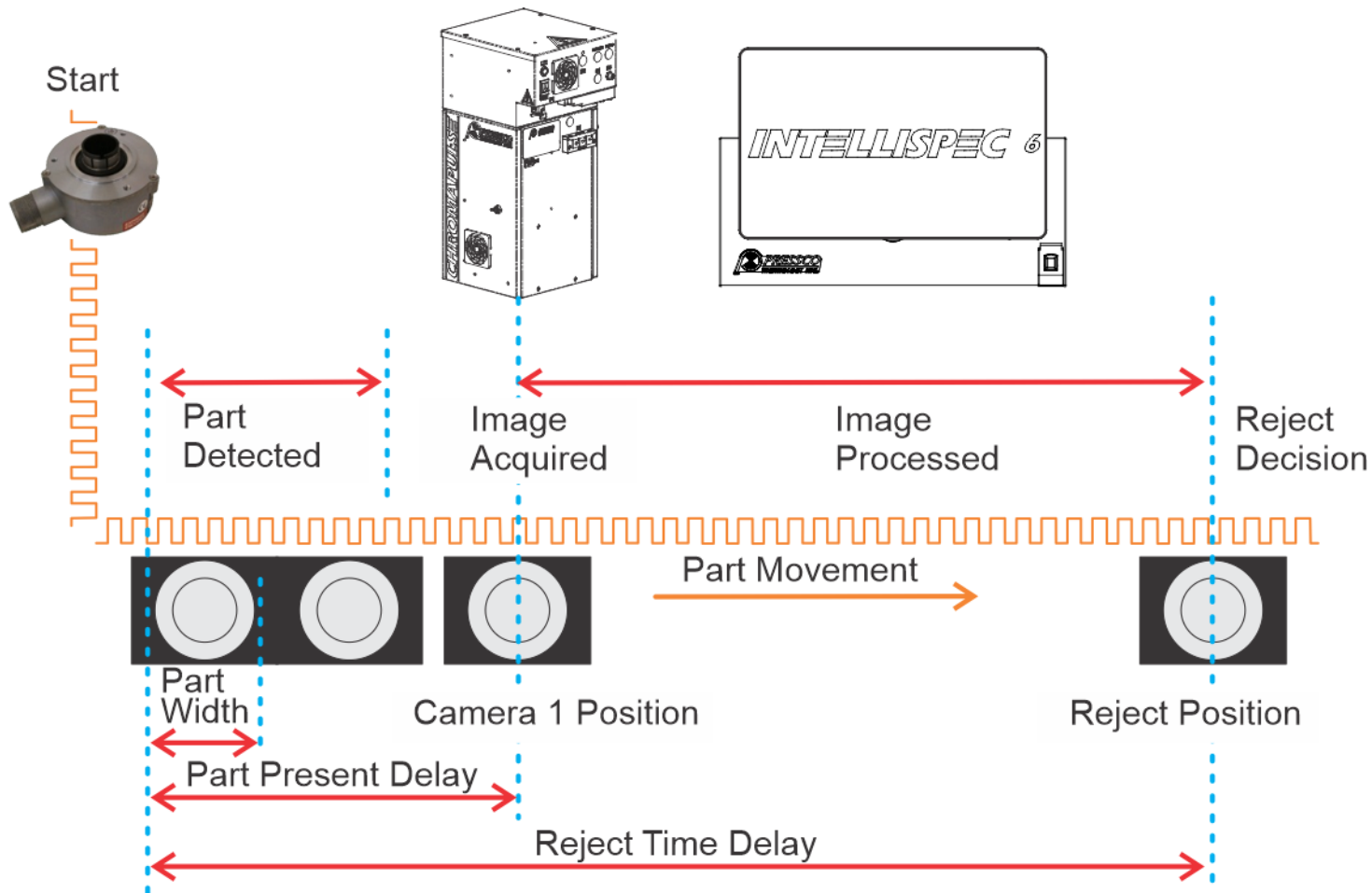
Module 6 Part Tracking

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Sequence of Events During Inspection

This illustration shows a typical inspection sequence of events. Note that your system configuration may involve more components, and may be different than pictured here.



Part Tracking Terminology

Part Width - The number of encoder ticks that the part sensor "sees" the part.

Part Present Delay - The distance (in encoder ticks) from the part detect sensor to the camera centerline. If a PDX is used, this is the number of encoder ticks from the part detect pulse out of the PDX to the camera centerline.

Reject Dwell or Reject Pulse Width - The duration (in milliseconds) of the reject signal. This signal must be long enough to ensure the part is efficiently rejected, and short enough to ensure that only one part is rejected for each reject pulse.

Adaptive Reject - This optional feature is necessary when you have a significant change in product speed, since the rejector has a constant turn-on time. This logic allows the system to monitor the product speed and compensate the pulse being sent to the rejector. It is used in systems such as Belvac.

Reject Confirm - Not commonly used. This is the distance in encoder pulses from the reject mechanism to the reject confirm sensor (if installed).

Encoder



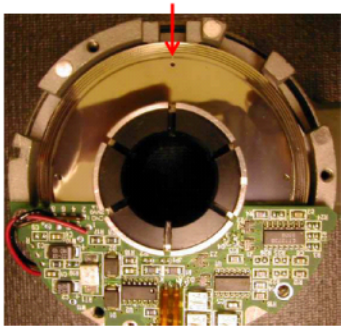
Encoder - A device used to indicate mechanical motion with a pulse rate directly proportional to line/ conveyor speed. The system tracks part movement through encoder ticks, from the moment the part is detected until it passes the reject station.

Encoder/ PDX "Timing Wheel"

Encoder sensor counts pulses to know the position of the part



The encoder "Z" indicator is used to zero the count when the wheel has turned a full 360 degrees



Part Tracking Using a PDX

The Part Detect Generator (PDX) is used in some applications where the Intellispec system inspects directly on a machine, rather than on a conveyor. The PDX is a circuit built into the Part Tracker board.

If a PDX is used, part tracking is done by:

- Monitoring the movement of the transfer wheel (or other machine component) with the encoder
- Feeding the signal to the software
- Programming the software with the resolution of the encoder and the number of pockets used
 - This generates a part detect pulse for every pocket
 - This part signal is used to acquire part images and generate reject pulses

An empty pocket inspection must be applied if using a PDX. The PDX tracks pockets, not parts, so the empty pocket inspection determines whether the part is in the pocket.

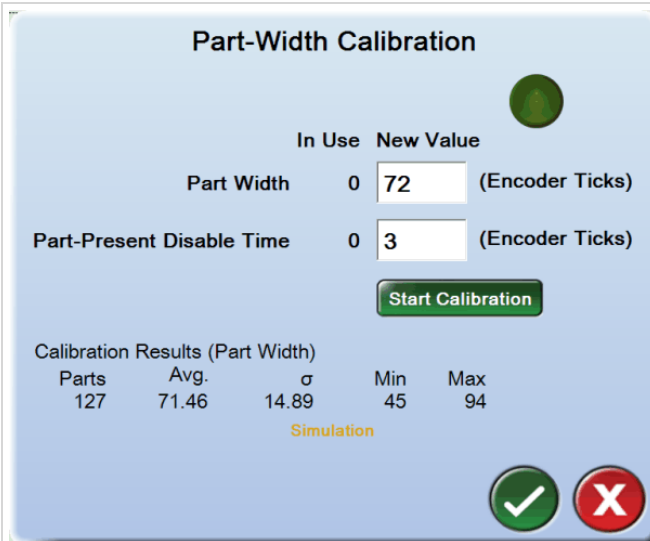
Advantages of using a PDX:

- No part detect sensor is used and therefore no component can be accidentally moved by a machine crash or during maintenance
- Part timing should not be affected when running different parts

Part Width Calibration

Part Width is the number of encoder ticks that the part detect sensor "sees" the part. To perform the calibration you must be running parts past the part detect sensor.

For systems using a PDX, the Part Width Calibration is not used, but values of 0 and 1 should be used respectively for Part Width and Part Present Disable Time.



Part-Width Calibration

☒ In Use ☐ New Value

Part Width 0 (Encoder Ticks)

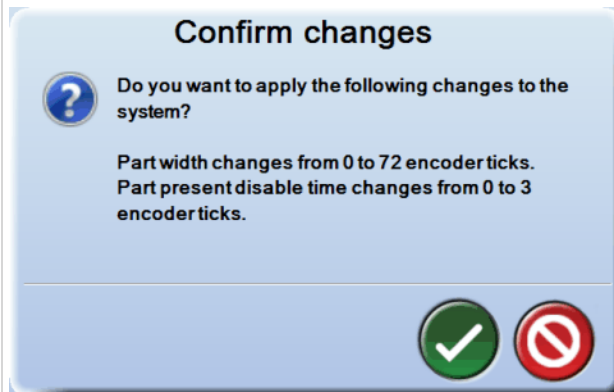
Part-Present Disable Time 0 (Encoder Ticks)

Calibration Results (Part Width)

Parts	Avg.	σ	Min	Max
127	71.46	14.89	45	94

Simulation

☒ ☐



Confirm changes

 Do you want to apply the following changes to the system?

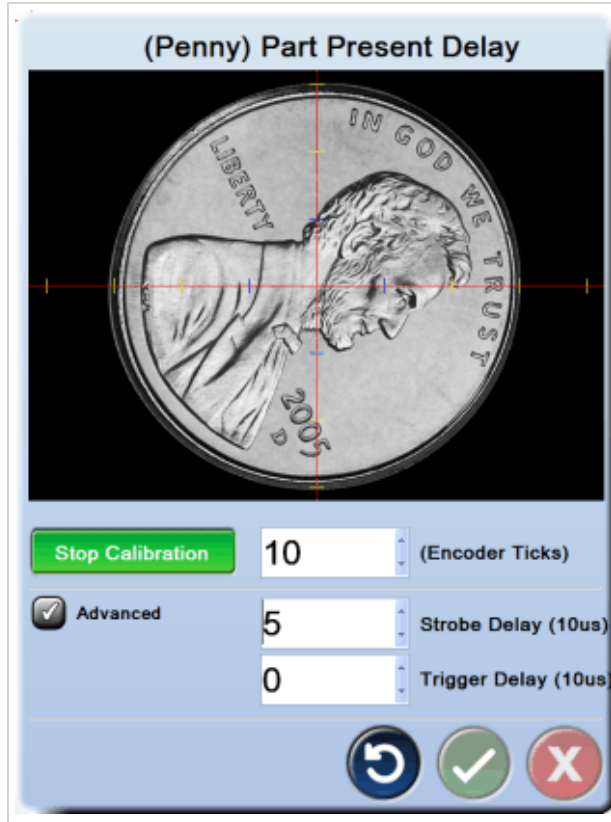
Part width changes from 0 to 72 encoder ticks.
Part present disable time changes from 0 to 3 encoder ticks.

☒ ☐

To calibrate the Part Width:

1. From Sensor Overview mode, right-click a sensor button | Part Tracking | Part Width Calibration.
2. With parts running under the camera or sensor, select Start Calibration. As each part goes by its width is displayed in Part Width field.
3. After a sufficient number of parts have gone by (we recommend about 10 parts), select "Stop Calibration" (same button as Start Calibration). This will display the calibration results in the lower part of the screen.
4. Examine the results; look for the minimum and maximum values to be within approximately 10 encoder ticks of each other. If the results are acceptable select OK to save the data. If the results are skewed, recalibrate the part width. To exit without saving the changes, select the exit button.
5. The system will prompt you to confirm your changes. If the results are acceptable select OK to save the data. If the results are skewed, select the cancel button and recalibrate.

Part Present Delay Calibration



To calibrate the Part Present Delay:

1. From Sensor Overview mode, right-click a sensor button | Part Tracking | Part Present Delay Calibration.
2. Select the Start Calibration button.
3. Place a part onto the conveyor or into the part stream. The part will trigger the part detect sensor, then the system will count the number of encoder ticks and take a picture.
4. Manually adjust the part present delay (encoder ticks) value until the image is centered every time a part is run through the system.
5. When completed, select the Stop Calibration button. The Part Present Delay calibration value is saved and stored in a Lane configuration file.
6. Select the OK button to save changes and exit.

Reject Delay and Dwell Calibration

Calibrating Reject Delay and Dwell takes time and patience. In preparation, gather several different preforms if available, and/or use a marker to create 'defects' on preforms. Use as many preforms as it takes to complete proper calibration.

The screenshot shows a software interface titled "Reject Delay Calibration". It features a "Reject Delay [encoder ticks]" input field set to "5000". Below this are two radio buttons: "Encoder Based Dwell" (selected) and "Time Based Dwell". A "Reject Dwell [ms]" input field is set to "150". There is a checkbox for "Use Adaptive Reject" which is currently unchecked, with a "Turn-on Time [ms]" input field set to "0" below it. A green "Start Calibration" button is located at the bottom right of the main configuration area. At the very bottom, there is an "Adaptive Reject" section with a "Max Encoder Frequency" input field set to "10000". Four circular navigation buttons (back, forward, checkmark, and X) are positioned at the bottom of the interface.

To calibrate the Reject Delay:

1. From Sensor Overview mode, right-click a sensor button | Rejecting | Reject Delay Calibration.
2. Select the Start Calibration button.
3. Place a part on the running conveyor or into the part stream. After the number of encoder ticks shown in the Reject Delay box, the rejector will be activated.
4. Make sure the correct part was rejected.
5. Continue to insert parts into the part stream.
6. Manually adjust the reject delay (encoder ticks) until the correct part is rejected every time.
7. Adjust Reject Dwell so that it is long enough to completely reject the part, and short enough that only one part is rejected for each reject pulse.
8. When completed, select the Stop Calibration button. The Reject values are saved and stored in a Lane configuration file.
9.  Select the OK button to save changes and exit.

Adaptive Reject Calibration (optional)

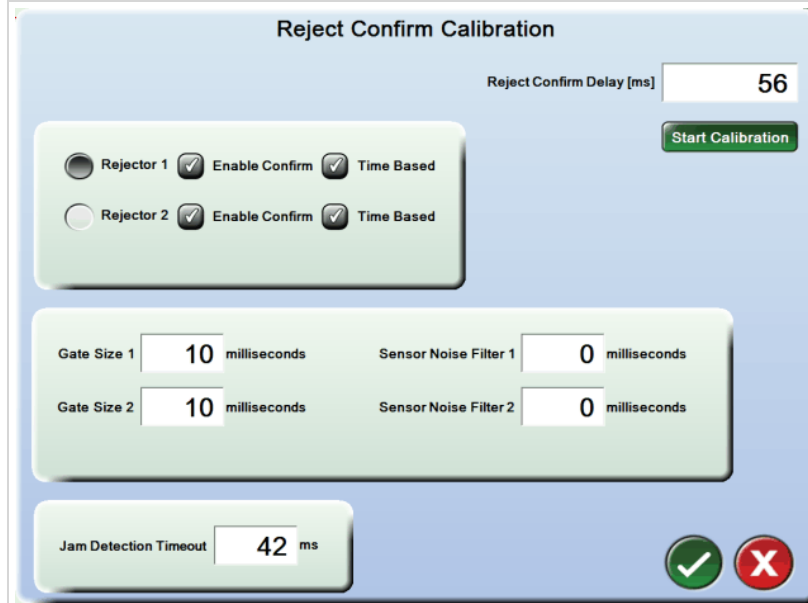
Note: Adaptive Reject is not used in BNS



To calibrate Adaptive Reject:

1. Run the conveyor at maximum speed for about 35-40 seconds. This programs the adaptive reject logic for maximum product speed.
2. Go to the I/O Diagnostics screen and record the encoder rate while the line is running at max speed.
3. Go to the Reject Delay Calibration menu: Right-click over a sensor button | Rejecting | Reject Delay Calibration.
4. Select the check box: Use Adaptive Reject.
5. Set the Max Encoder Frequency to the value you recorded in step 1.
6. Set the reject device Turn On Time (usually about 10 ms for air rejectors and about 15 ms for the pusher rejector).
7.  Select the OK button to save changes and exit.

Reject Confirm Calibration (optional)



To calibrate Reject Confirm:

1. From Sensor Overview mode, right-click a sensor button | Rejecting | Reject Confirm Calibration.
2. Check Enable Confirm.
3. If using time-based Reject Confirm, then also check the Time-Based box, and set Gate Size, Sensor Filter and Jam Detection Timeout.
4. Select the Start Calibration button.
5. Run a part through the system. Tip: for best results, run about 10 parts through the system.
6. When completed, select the Stop Calibration button. The system will compute Reject Confirm Delay. [Reject Confirm Delay = (number of pulses from Part Detect to Reject Confirm Sensor) minus Reject Delay]
7.  Select the OK button to save changes and exit.

The following parameters are used only with Time-Based Reject Confirm:

Gate Size - The time interval (in milliseconds) that the system looks for the product to pass by the reject confirm sensor. The valid range is 1 to 63 milliseconds.

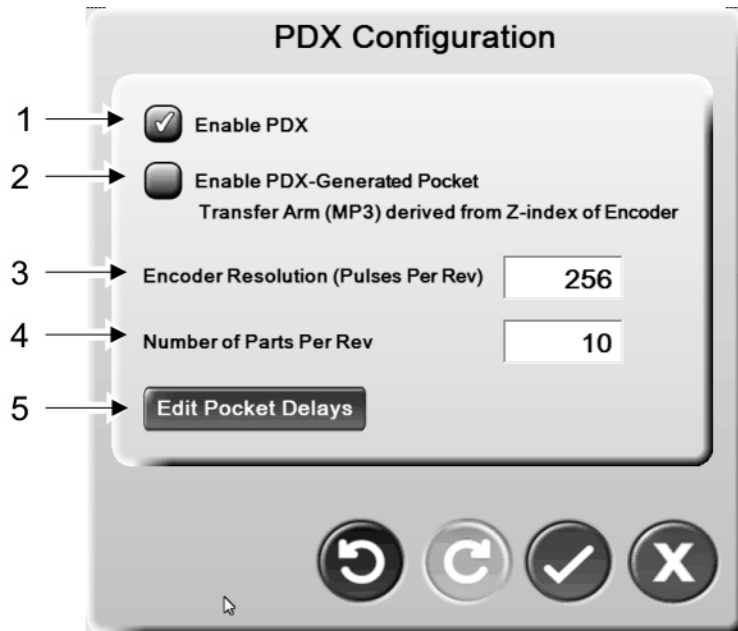
Sensor Noise Filter - The shortest pulse width (in milliseconds) that the reject confirm sensor will pass. This is used to filter out glitches or noise. This is usually set much smaller than part width, but larger than glitches or noise. The valid range is 0 to 4 milliseconds.

Jam Detection Timeout - Specifies how long the sensor is blocked before the Jam at Reject Confirm alarm is triggered. This alarm must be enabled through Lane Alarm Configuration. The valid range is 1 to 32000 milliseconds.

PDX Configuration

The Part Detect Generator (PDX) is used in some applications where the Intellispec system inspects directly on a machine, rather than on a conveyor. The PDX is a circuit built into the Part Tracker board.

Note: the system cannot run in both PDX mode and Part Tracker Simulation mode at the same time. If one mode is already running and you enable the other mode, the system displays a warning that the latest setting will override the previous mode.



 To get to this screen: From Lane or Sensor Overview mode, select Tools | Hardware Setup | PDX Configuration.

To configure the PDX:

1. Select the Enable PDX check box.
2. Enter the encoder resolution used on your system (example, 8192 pulses per revolution).
3. If your system is NOT using a pocket disk to generate the index signal, check the Enable PDX-Generated Pocket box.
4. Select the OK button to accept changes and exit.

1) **Enable PDX** - Enables the PDX circuit.

2) **Enable PDX-Generated Pocket** - On Most systems - If your system is not using a pocket disk, and you need the Z-index signal of the encoder, check this box. This eliminates the need for a pocket disk. The index signal is handled on the Part Tracker board. Or, if your system is using a physical pocket disk with an index pin, leave this box un-checked.

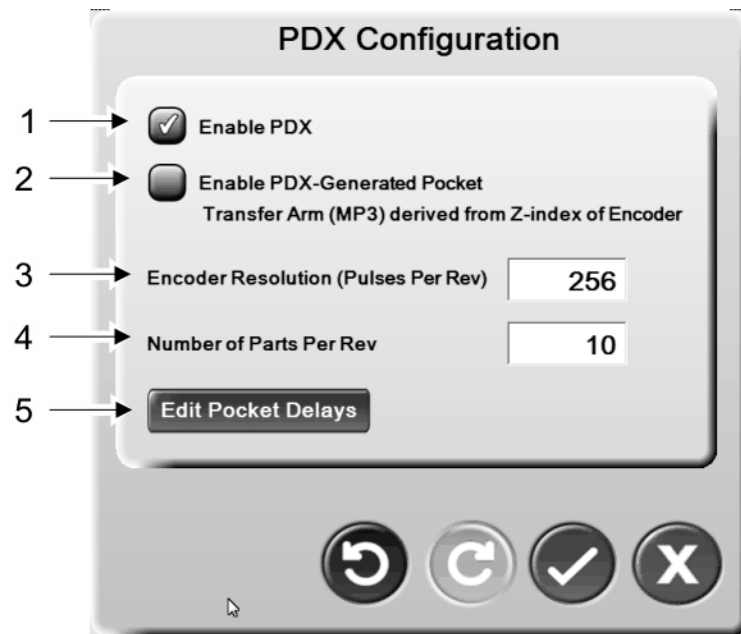
3) **Encoder Resolution (Pulses Per Rev)** - Enter the resolution of the encoder installed on your machine.

4) **Number of Parts Per Revolution** - Enter the number of machine parts or pockets (example, number of Transfer Arms) where the encoder is attached.

5) Edit Pocket Delays

This feature only needs to be used if machine parts become unevenly spaced. If your system has rigid machine parts and consistent spacing part to part, then no further action is needed.

For this explanation, Encoder Resolution [3] = 256. Number of Parts Per Rev [4] = 10.



When you click the Edit Pocket Delays button, you can manually change the delays, as shown below.

PDX Pocket Delays

A ☒ Use Manual Adjustments

1.	2.	3.	1.	2.	3.
4	0	5	9	128	5
5	26	5	10	154	5
6	51	5	1	179	-10
7	77	5	2	205	5
8	102	5	3	230	5

B

1. Pocket Number Offset = 3 (Click to Change)
2. Default Pocket Delay [Encoder Ticks]
3. Adjustment to Pocket Delay [Encoder Ticks]

C

Pocket Delay Adjustment

-10

A) checked = enabled

B) Pocket Number [Column 1] - If you have a pocket (physically) marked as pocket #1, but the index pulse is 3 pockets away, you can use 3 as an offset (as shown in the above example). If the index pulse is located at pocket #1, then no offset is necessary.

Default Pocket Delay [Column 2]- This is computed for you. The system divides Encoder Resolution [3] by the Number of Part Per Rev (pockets) [4], and computes the delay between each pocket.

C) Pocket Delay Adjustment [Column 3] - You can change the delay for one pocket, or Apply to All. If just one machine part has shifted, then you may only need to change the delay for one pocket.

You may notice that sometimes you can enter a negative number, and sometimes not, or a value for the last pocket is limited more than others. Pocket delays are sent as a list of values to the part tracker. The system computes valid values for the part tracker rules, which include: non-negative values, subsequent delays are larger than the previous delays, and the last delay must be fewer ticks than the encoder resolution.

Part Width Calibration using PDX

Note: For systems using a PDX, the Part Width Calibration is not used, but values of 0 and 1 should be used respectively for Part Width and Part Present Disable Time.

Module 7 System Maintenance and Troubleshooting

In this section:

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Troubleshooting Tools and Information	113

Maintenance Frequency

Item	Description	Frequency
Observe proper rejection	Verify that defective parts are being rejected by inserting a known defective part through inspection	Daily
Observe Proper inspection	Verify that no stray parts are stuck in or near the inspection module or reject station	Daily
Observe Proper inspection	Verify that no buildup of dirt or contaminants has occurred on inspection module. Clean if necessary.	Daily
Observe Proper inspection	Verify that each camera's image is properly centered, focused, and properly lit. Adjust if necessary.	Daily
Glass surfaces	Clean with soft, clean, oil-free cloth dampened with glass cleaning solution	Daily
Plastic surfaces	Clean with soft, clean, oil-free cloth dampened with mild soap and water solution	Daily
Part Detect Sensor and Reflector	Clean with soft, clean, oil-free cloth dampened with mild soap and water solution. Wipe dry.	Weekly
GFCI receptacle	Press TEST on the GFCI receptacle.	Monthly
Create a Support Package	Create a snapshot of your Intellispec settings.	Monthly
Clean the Control Cabinet Filters	Rinse in clean water; use mild soap and water solution if oily.	Monthly
Clean the Vision Processor Filter - CSL Plus	Rinse in clean water; use mild soap and water solution if oily.	Monthly
Acronis Backup	Create a full System Backup.	Yearly

Note: please refer to the manual for your inspection module(s) for maintenance procedures

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.

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.

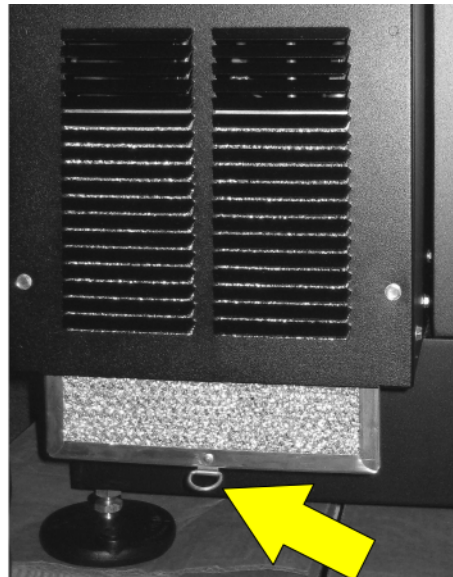
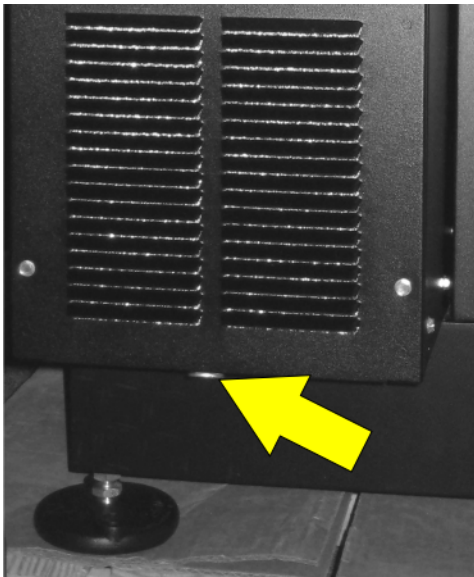
Note: You may need to clean the filters weekly depending on plant conditions

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.



Digital Camera LED Status



Link LED	
Orange	1 Gb
Green	100Mb

NOTE: Always be Orange when connected to an IntelliSpec

Traffic LED

Yellow	Traffic
--------	---------

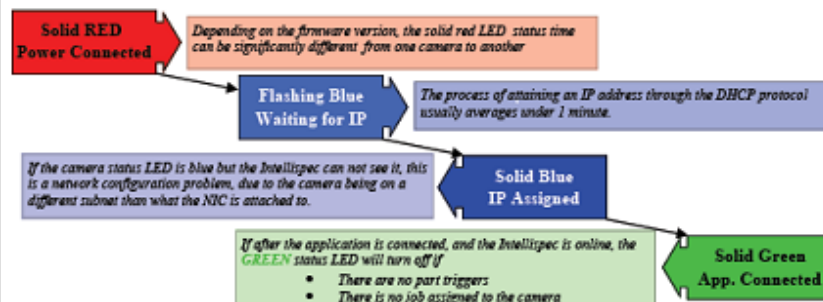
STATUS LED

● Solid	IP Address Assigned
● Slow	Waiting for an IP Address
● Fast	Ethernet Cable Disconnected
● Solid	Application Linked to the Camera
● Slow	Trigger Acquisition in Progress
● Fast	Acquisition in Progress
● Slow	Camera Initialization Problem
● Fast	Camera Overheating

LED Status Definition

LED Status	Definition
LED OFF	No power / No trigger pulse
G Steady*	Application connected
E Slow Flashing	Triggered acquisition in progress
E Fast Flashing	Free running acquisition in progress
B Steady	IP assigned but no application connected
L Slow Flashing	Waiting for an IP Address
U Fast Flashing	Ethernet cable disconnected
E Steady	Camera not initialized
R Slow Flashing	Camera initialization problem
E Fast Flashing	Camera is too HOT

Normal Camera Connection LED Progression



Normal On-Line Camera LED Status



*NOTE: If a camera is connected while the application is running the status LED may turn green but it might not acquire images. To avoid this, always power down the IntelliSpec when connecting a camera.

Help - Remote Support

Remote Support allows remote access to the Intellispec software. iTivity software is used by Pressco to provide remote system support if a Maintenance Agreement is purchased for that Intellispec system.

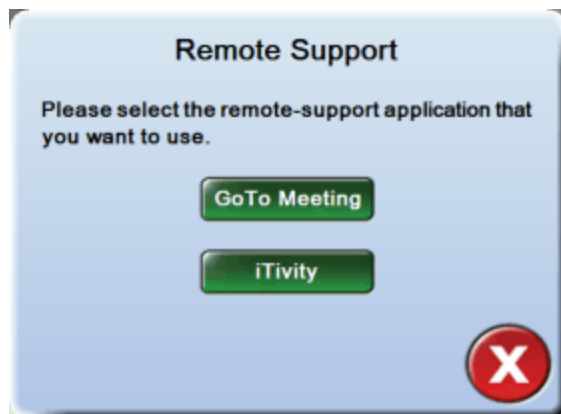
Note: your plant may use TeamViewer for remote support instead of iTivity. Contact Pressco's Technical Support to connect.

You will need:

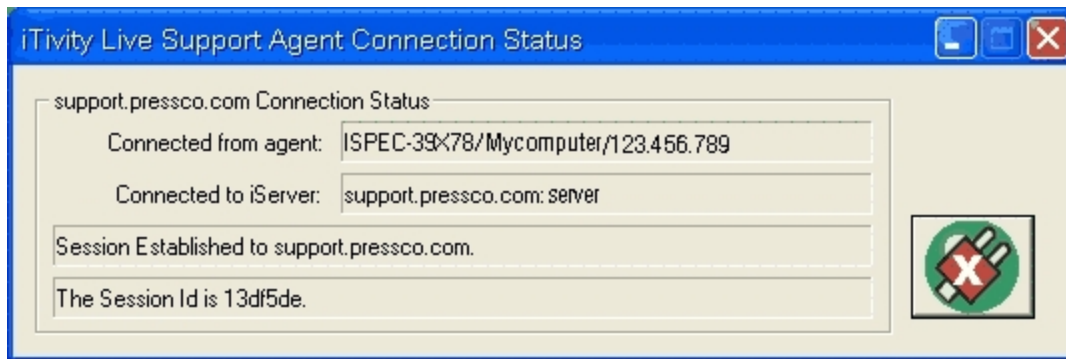
- A functioning Intellispec (systems without power, or systems that are not capable of running Intellispec software, cannot be remotely accessed)
- An internet connection to your Intellispec. This can be established through your network, and is usually set up during installation. You may use DSL, Cable, Mobile Broadband, or plant network connections to connect to the internet. Contact your network administrator for help.

To use Remote Support:

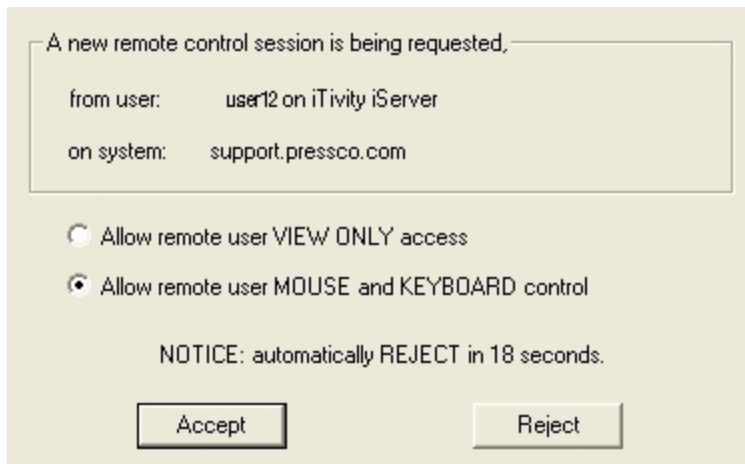
1. Notify a Technical Support representative that you require remote support. You will need to identify yourself, your location, and the Intellispec to which he should connect.
2.  In the Intellispec software, Select Help | Remote Support.



3. Select the iTivity button. If your system has a valid internet connection, the iTivity agent will attach to the server at Pressco. A connection status screen will appear indicating that the session has been established, as shown below. Intellispec systems are identified by computer name, which, in most cases, is the serial number.



4. When the Pressco Tech Support representative is connected, you will be asked to give him control of your Intellispec system. Check Allow remote user MOUSE and KEYBOARD control and select Accept. The Tech Support representative will now perform the necessary troubleshooting of your system.



5. When the Tech Support representative is finished, he will disconnect your Intellispec from the remote session.

If you need to disconnect your Intellispec from the remote session yourself, follow the steps below.

To disconnect from remote support:

1. Select the X in the upper right corner of the 'iTivity Live Support Agent Connection Status' box.
2. When the system asks "Do you really wish to exit the iTivity Live Support Agent?" select OK. The system will be disconnected.



Note: if you select the button, the session will be disconnected, but this does not close the remote support program.

If the session is disconnected and you want to allow Tech Support to be able to access your system again, select the button.



support.pressco.com Connection Status

Agent disconnected: ISPEC-39X78/Mycomputer/123.456.789

Disconnected from iServer: support.pressco.com: server

Not Connected.

The Session Id is 1ab1b77.

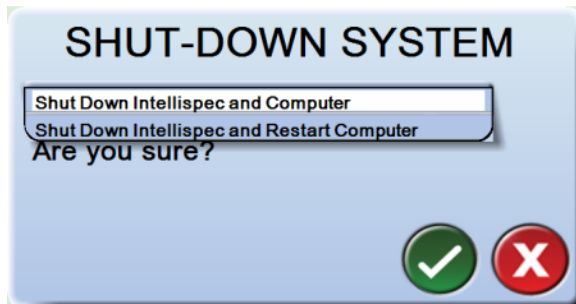


Exiting the Intellispec Software

You must have proper user permissions to exit the software. This prevents unauthorized system shutdowns. Contact your system administrator if you need user permissions.

To exit Intellispec software:

1. Log in.
2.   Select Home | Tools | Exit System.
3. Select an option.



4.  Select the OK button. The Intellispec software and/or computer shuts down (and restarts if applicable).

Discovery Software - What is Discovery?

Discovery is software installed on the Intellispec hard drive that automatically looks for and identifies certain components installed on each lane. The software identifies sensors, cameras, lighting drivers, part trackers, and if used, Intellimass drivers that are attached to the system. Each one of these devices communicates with the Intellispec software via Cat -6 cabling and is assigned a unique MAC address.

Note: You should rarely need to use this software. However, if a new component (for example, camera) is installed on the system the software would be used to configure the new camera.

Additionally, during system startup, if a previously configured component fails to communicate with the Intellispec software, the discovery software screen will automatically appear on the user interface, alerting you to the problem.

Discovery software screen



- 1) The Discovery menu toolbar allows you to perform additional actions.
- 2) The tree shows the system configuration. Red indicates unassigned hardware devices. Orange indicates missing hardware devices.
- 3) Select one of the buttons to perform specific actions, such as add or edit lanes or sensors.

Discovery Menu Toolbar



Tools Menu

- Rediscover New Hardware - when this command is initiated this software will perform another search of all hardware communicating with the Intellispec and displayed in the tree on the left side of the screen.
- Add Simulated Devices for Testing - this is software used by Pressco engineers to assign devices on an Intellitrainer.*
- Inspection Module Preset Editor - this is software used by Pressco engineers to assign new components as they become available.

 Wizard Menu - the same choices as those listed in the green buttons in the center of the screen.

 Language Menu - displays language choices that can be displayed.

 Help - provides software and systems for users.

*Intellitrainer = portable Intellispec training computer.

Module 8 Part Programming - General Information

In this section:

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Manage Part Programs	125
Create or Copy a Part Program	127
Inspection Overview	128
Inspection Tree Configuration	132

Part Changeover

When changing parts to inspect, you only need to change the part program (if you have a part program already set up for the newly inspected part type).

This will load the proper inspections, lighting, and guide rail settings, if applicable (as long as these were previously set).

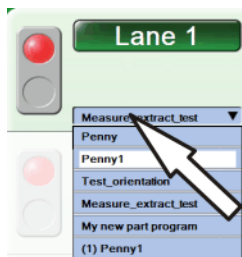
Note: Some menu items are available to advanced users only

What you need:

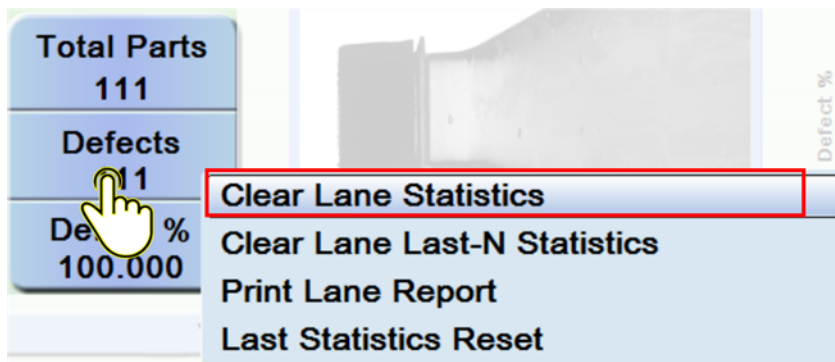
User permission to Switch Part Program

To change parts:

1. Log in.
2. Click the part drop-down menu.



3. Click the name of the new part to inspect. The new part program is loaded on the Intellispec.
4. Click the statistics panel and select Clear Lane Statistics, to begin counting statistics for the new production run.



5. Put the lane online to begin inspecting new parts.

Lane-specific information is contained in each Part Program. Everything you set up have previously set up is stored: camera information, lighting information, calibration information, and inspections.

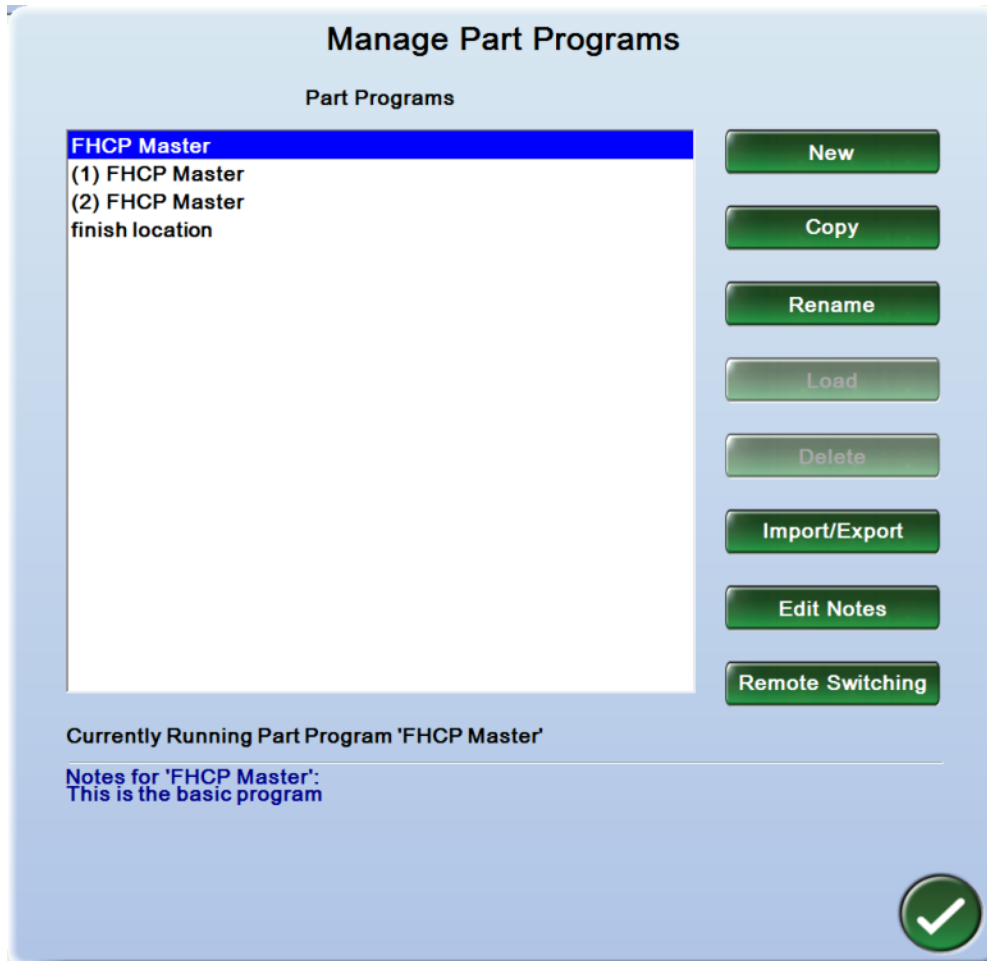
Manage Part Programs

Create new part programs or delete, edit, rename, import or export existing part programs for all the different products inspected with the system.

To load a part program, see [Part Changeover](#)

To get to this screen:

-  From Lane or Sensor Overview mode, select Tools | Lane Setup | Manage Part Programs. Or:
- Right-click the Part Program drop-down.



Edit Notes - Add setup and program information about the part. This is helpful if you need to modify the part program later. These notes are displayed at the bottom of the Manage Part Programs screen when you select or change a part program.

Create or Copy a Part Program

You will need:

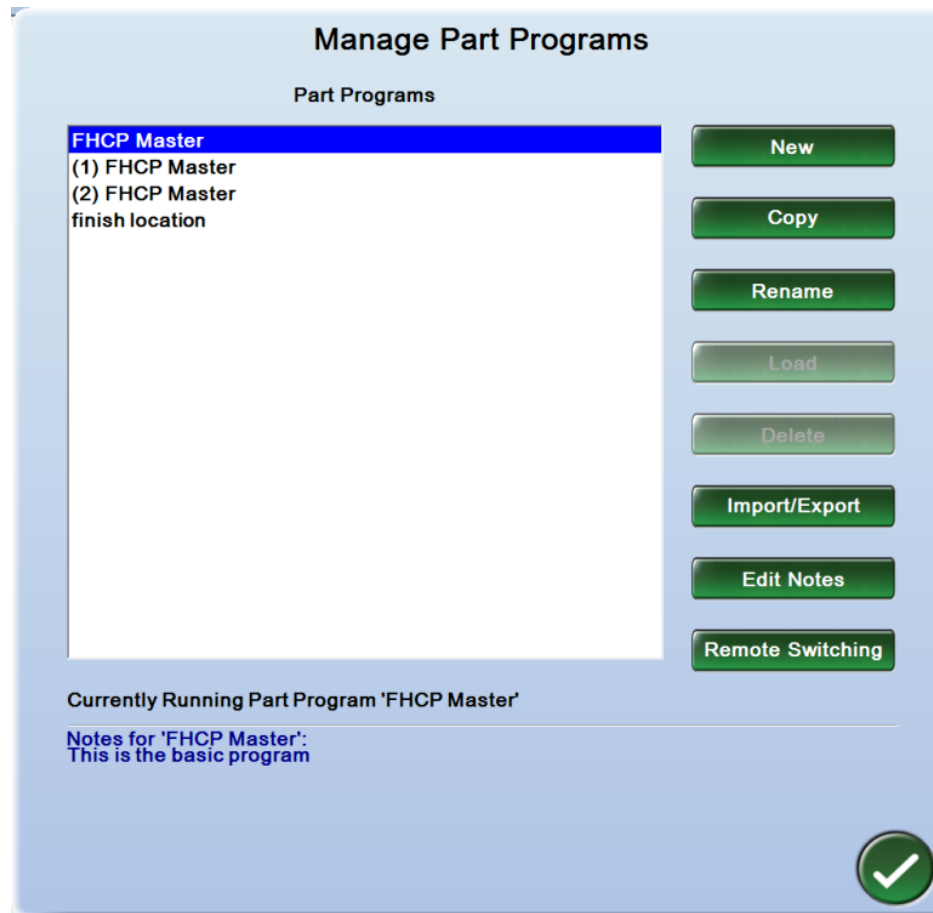
System permissions to create part programs

To create a Part Program:

1. Go to a Lane Overview or Sensor Overview screen.
2. Right-click over the part program drop-down menu. Choose from the available options.



Right-click



Inspection Terminology

Analysis - Analyzes the pixel shade information within a region and compares it to reference values. The inspection passes or fails based on these comparisons. There are also several analyses that make measurements. You may have many analyses for each inspection region.

Dimension - The dimension inspection type connects the results of two other inspections to do the analysis. For example, a distance inspection can connect two registrations to measure the distance between centers of two features.

Enhancements - Enhancements are used to alter images for better defect detection, or for making certain features stand out.

Inspection Module - The housing, camera, cables, and associated electronics that are installed on or over the production line to acquire an image of your product. Sometimes referred to as a tunnel. The inspection module can have a different sensor than a camera to make measurements of your product (example: Intellimass sensor).

Lane - A lane usually refers to one production line, and can contain multiple sensors.

Orientation - An orientation compensates for part rotation by finding a grayscale pattern. An analysis which must rotate with the part must follow an orientation.

Part Program - The list of regions, analyses, registrations, etc. programmed specifically for your part to detect defects or make measurements.

Part Tracking - refers to the monitoring of parts from the part detect sensor to reject station. This ensures that the correct parts are rejected at the correct time, and that good parts remain in the part stream.

Region - The Region indicates where on the part the analyses will take place. You may have as many inspections as you like in one region.

Registration - A registration compensates for part movement by finding the reference point on the part. All analyses follow a registration.

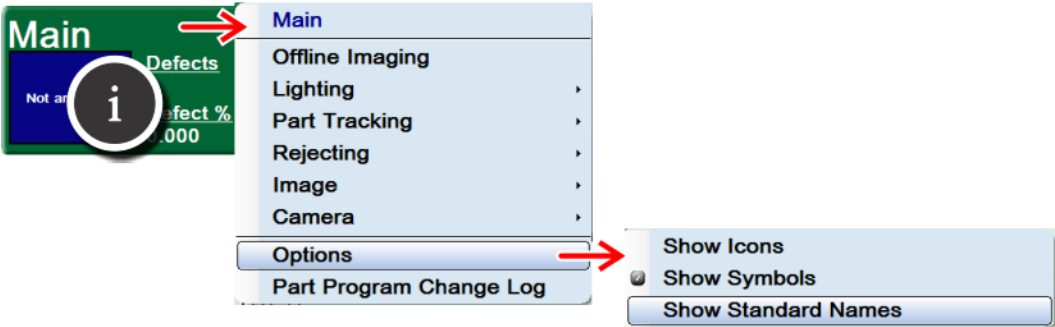
Reject - A part that failed one or more inspections from any sensor. The part can be physically rejected, or simply counted in the statistics.

Retro-Spec - The graphical interface that allows you to make quick changes to a part program. It also allows you to experiment with different parameter settings to see how changes affect the most recent inspection population, without rejecting parts.

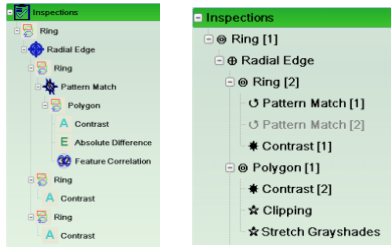
Sensor - A camera, Intellimass, or other sensor that acquires images, measurements, or other data from your product.

Icon or Symbol Options (Sensor Menu)

Icons or symbols indicate the General Type of inspection for each item. Checked = enabled



Show Icons Show Symbols



Icon	Symbol	General Inspection Type
		Region - location of inspection
		Registration - to find part center or point of reference
		Analysis - inspection
		Correlation - inspection to correlate a part to the machine part where it was made
		Orientation - to place an inspection on the same location on each part, regardless of part rotation

Icon	Symbol	General Inspection Type
		Enhancement - to add image processing to make defects or part features stand out better
		Intellispec Mass inspection

Show Standard Names

Displays the default Intellispec inspection names. You may use other inspection names that make sense for your part (example: upper wall).

Showing Standard Names is useful to Pressco engineers or to someone troubleshooting your machine, so that they quickly know the exact inspection type.

The Standard Names are used in the Pressco manuals.

Inspection Tree Relationships

The inspection tree shows the relationship of each inspection. Indented objects are dependent on the object above it (in the example below, Contrast [2] is dependent on Polygon [1]). Some items in the menu may be turned off (grayed out). The ability to access some items depends on your user access.

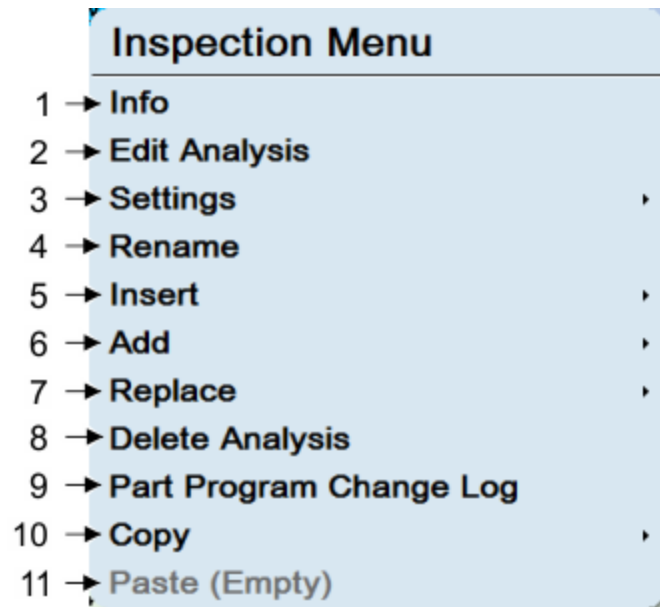


See also ["Icon or Symbol Options \(Sensor Menu\)"](#) on page 130

Inspection menu

Create and edit part programs through the inspection menu. To see this menu, right-click over any inspection name.

We use the term 'inspection' as a generic term for analyses, regions, enhancements, registrations, dimensions, etc. some items are grayed out if you do not have user access to those items, or if they do not apply to the current selection.



1 - Info

Display general information about the inspection. The "Specific Type" is the name used in the Inspections section in this guide



1 - Name - your name for the inspection | 2 - General type - Analysis, Region, Orientation, etc. | 3 - Specific type - sub-category (example, Ring, Polygon, or Measurement Region)

2 - **Edit** - Open the Inspection Editor - performs the same action as double clicking.

3 -Settings

Inspection sub-menu. Checked = enabled

Neckring Registration		
☒	Is Inspection Enabled?	Yes ✓ No
☒	Is Inspection Reject Enabled?	Yes ✓ No
	Is Empty Pocket Check?	Yes No ✓
	Exclude from Statistics?	Yes No ✓

Is Inspection Enabled? All of its dependent inspections are also enabled/disabled. The inspection name is grayed out when it is disabled.

Is Inspection Reject Enabled? If "No" is checked, then you can temporarily pass all parts regardless of whether they pass or fail the current inspection. Some items, such as Regions, do not have pass/fail criteria. This option is grayed out if reject is not applicable.

Is Empty Pocket Check? If "Yes" is checked, then inspection is being used as an empty pocket check.

Note: if you enable Empty Pocket Check, then Inspection Reject is automatically disabled. The system provides a warning that the rejector is being disabled.

Exclude from Statistics? If "Yes" is checked, then do not count failures of this inspection in the statistics. If "Yes" is checked, then:

- The inspection is not displayed in graphs
- If the inspection fails on a sensor, and no other inspection fails on the same sensor, the defect count is not increased for that sensor.
- If the inspection fails for a walk-by group and no other inspection fails in the same group, the defect count is not increased for that group.
- If the inspection fails and is the only inspection failing within a lane, the defect count is not increased for that lane.
- The inspection is still displayed in the results grid when you select the Reject Images button.
- The inspection name is still available in the drop-down selections when you select the SPC Graphs button.

- You can still view this inspection in the Inspections graph and Statistics Grid if you select the appropriate Display option (right-click over graph).

Start or Stop Auto-Learn (not shown) - [Present when Operator Trigger is enabled in Auto-Learn] Manually start or stop an Auto-Learn process. See Auto-Learn.

4 - Rename the inspection

5 - **Insert** - Add one item above the currently selected item.

6 - Add an inspection

7 - **Replace** - Replace the current item with a similar inspection.

8 - **Delete** - Delete the current item. If the item has other items below it (at a lower hierarchy), those items are deleted as well. Delete All Inspections deletes all the items in the inspection tree.

9 - **Part Program Change Log** - Display the **Part Program Change Log**. This lists the inspections and the edit history for each.

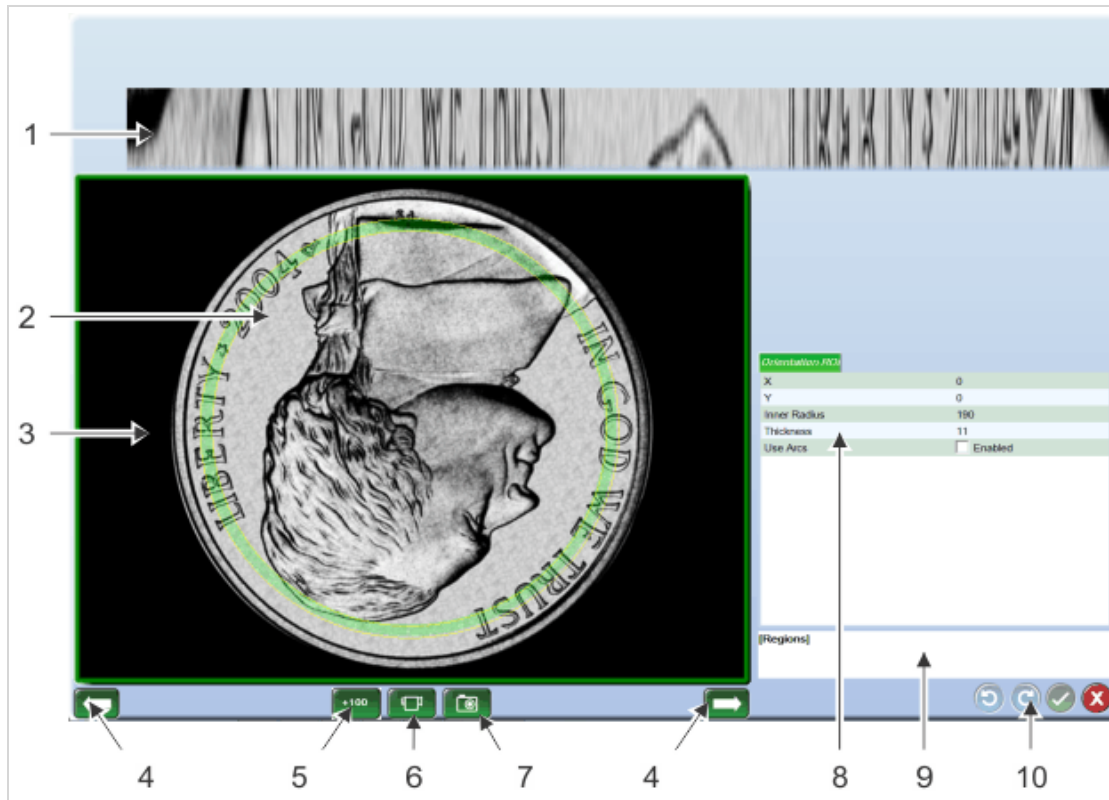
10 - Copy the selected inspection

11 - **Paste** - Paste the contents of the clipboard into the inspection list. The contents are pasted below the currently selected item.

Edit Regions

This view is available when you are editing a region. Double-click a region name in the inspection tree to see the region editor. You must have user permissions to edit.

In Region editor, you will not see anything happen if you select numbers 5, 6, or 7. The data set is changed, but you will not see the data set until you view the Inspection Editor.

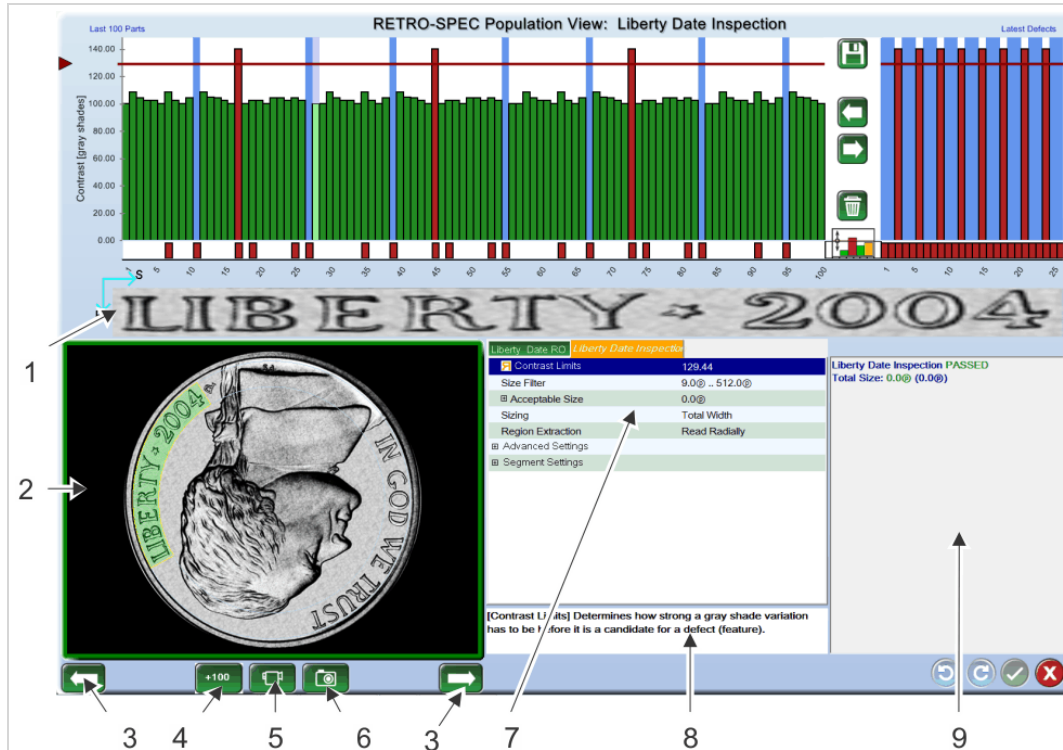


- 1 - Unwrapped region of interest (ROI)
- 2 - Part image
- 3 - Editable region
- 4 - Previous and Next image
- 5 - Get 100 new images
- 6 - Refresh data set
- 7 - Snap one image
- 8 - Edit parameters
- 9 - Parameter description window
- 10 - Undo/ Redo/ Accept/ Cancel

Edit Inspections

Edit an inspection. You must have user permissions to edit.

The Retro-Spec graph at the top of the screen is described separately.



- 1 - Unwrapped region of interest (ROI)
- 2 - Part image
- 3 - Previous and next image
- 4 - Get 100 new images
- 5 - Refresh data set
- 6 - Snap one image
- 7 - Inspection parameters
- 8 - Parameter description window
- 9 - Results box

Edit Parameters

You can change options that will alter the outcome of an inspection. You must have user permissions to edit. Double-click the inspection name in the inspection tree to edit.

The screenshot shows the 'Edit Parameters' dialog box for an inspection. The 'Radial Edge' tab is selected. The parameters are organized into a table with two columns: the parameter name and its current value. A red box highlights the top row of the table, which contains the inspection tabs. A red line connects the 'Search Vector Count' parameter to its value '105'. A red line connects the 'Qualifying Percent Limits' parameter to its value '46.88 .. 68.68'. The 'Qualifying Percent Limits' parameter is highlighted in blue. The 'Search Vector Count' parameter is highlighted in green. The 'Search Direction' parameter is highlighted in light blue. The 'Radial Tolerance' parameter is highlighted in light green. The 'Diagnostics' parameter is highlighted in light blue. The 'Show Edges' parameter is highlighted in light green. The 'Reject Limits' parameter is highlighted in light blue. The 'Qualifying Percent Limits' parameter is highlighted in blue.

Parameter	Value
Search Vector Count	105
Search Direction	☒ Flipped
Radial Tolerance	4
Diagnostics	
Show Edges	☒ Enabled
Reject Limits	
Qualifying Percent Limits	46.88 .. 68.68

- 1) Inspection tabs
- 2) Adjust numeric values
- 3) Check box to enable or disable the feature
- 4) Backwards R
- 5) Column division

Editor Options

Right-click over the parameters menu to see the Editor Options. Checked = enabled

The screenshot shows the 'Editor Options' menu. The 'Editor Access' section is expanded, showing the 'Enable Region Editor' and 'Numeric Input' options. The 'Enable Region Editor' option is checked. The 'Numeric Input' option is also checked. The 'Editor Access' section is expanded, showing the 'Enable Region Editor' and 'Numeric Input' options. The 'Enable Region Editor' option is checked. The 'Numeric Input' option is also checked. The 'Editor Access' section is expanded, showing the 'Enable Region Editor' and 'Numeric Input' options. The 'Enable Region Editor' option is checked. The 'Numeric Input' option is also checked.

- Normal
- Advanced
- Show Generic Text
- Slider
- Text Entry
- Both
- Text Entry on Click on Value Side

Editor Access

Normal - display the normal menus (for most users)

Advanced - display the advanced parameters (for power users)

you must have the appropriate permissions to see the advanced parameters: "Access advanced inspection parameters"

Show Generic Text - default Intellispec names.

Enable Region Editor - Available when the inspection has an associated region that can be modified.

Numeric Input

Slider = Large Slider as described in ["Edit Parameters" on the previous page](#)

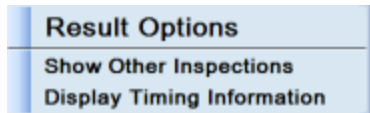
Text Entry = Numeric Text Entry

Both = both Large Slider and Numeric Text entry. After you make changes, select the OK button to close them.

Text entry on click on value side = if you select an item the right column of the menu, you will see only the Numeric Text Entry box, even if you have Both checked

Result Options

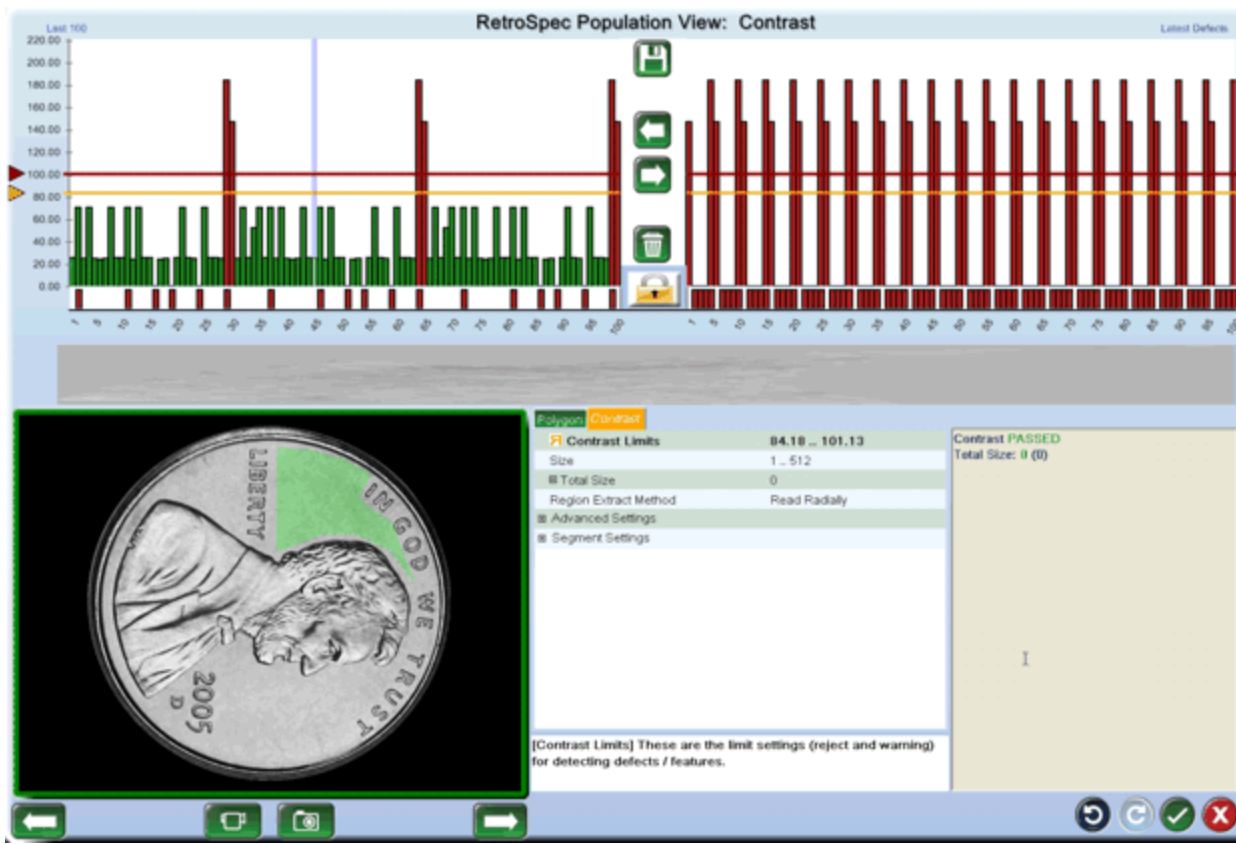
There is additional information for the Results Box. Right-click to see the menu. Checked = enabled



Show Other Inspections - Shows whether a part passed or failed other inspections on the current sensor. Right-click the menu again to see the option to hide good inspections. Double-click any inspection to show the Retro-Spec graph and images for that inspection.

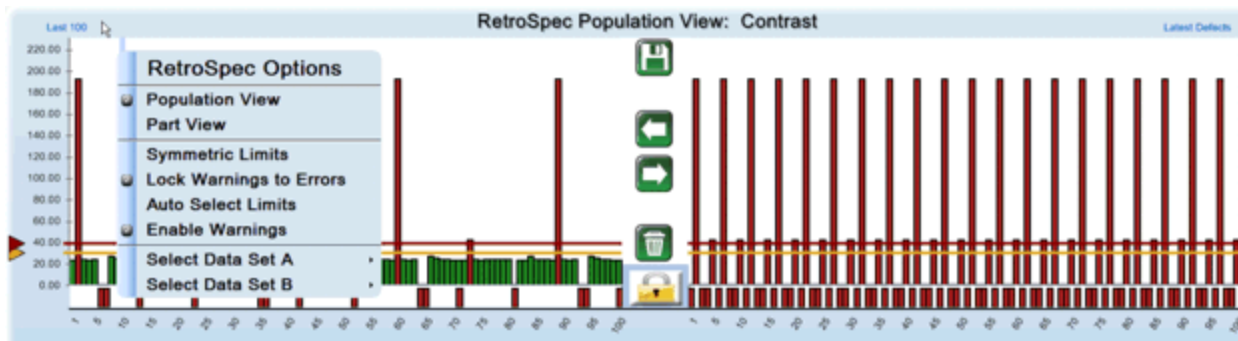
Display Timing Information - Displays timing information for each inspection on the current sensor and the total time in milliseconds.

Retro-Spec Display



Double-click an inspection name in the inspection tree to see the Retro-Spec display. There are two views available for the graph area of the screen: "Retro-Spec Population View" on the next page and "Retro-Spec Part View" on page 145.

Retro-Spec Population View

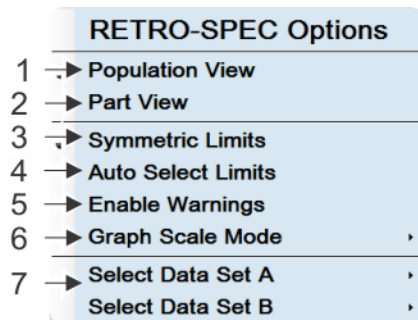


- Each peak is a different part. Red peaks are failed parts, green peaks are passed parts.
- The left side of the graph displays up to the last 100 parts that were inspected
- The right side of the graph displays up to the last 100 rejected parts
- Click on any peak to display the Part View for that part
- Right-click on the graph to select between the Part View and the Population View

Retro-Spec Options

Right-click the Retro-Spec graph to see the Retro-Spec options menu.

Note: some options are not displayed if they are not applicable to the current inspection.



- 1 - **Population View** - Display the Retro-Spec population view graph.
- 2 - **Part View** - Display the Retro-Spec part view graph.
- 3 - **Symmetric Limits** - When the Retro-Spec graph has upper and lower limits (two red bars and two yellow bars), this option keeps the upper and lower limits the same distance from nominal.

Lock Warnings to Errors - [If warnings are enabled] Locks the yellow warning bar to the red reject bar in the Retro-Spec graph, keeping them the same distance apart.

4 - **Auto Select Limits** - Automatically adjusts warning and reject levels to make all parts in the data set pass.

5 - **Enable Warnings** - Provides a warning level (yellow) sensitivity bar. A warning does not reject parts, but indicates that the process is approaching the reject status. When you enable warnings, they are enabled for all inspections for the current sensor.

6 - **Graph Scale Mode** - Change the height scale of the graph. Limits Only displays part parameter values up to and including the current inspection limits. This is useful when you want to zoom in on data without extra lines on the graph. Note that the limit lines may not be displayed on the graph. As soon as you change the parameter limits from the menu, the limit lines are displayed again on the graph. Limits and Data is the default mode that displays all the inspection data plus the limit lines.

7 - **Select Data Set A or B** - For each Data Set, you can select what you want to display. You can choose files that have been previously saved to the computer. See information about Saving Images. See also Freeze on Defect Image in Retro-Spec.

[not shown] **Select Parameter** - Choose a graph to display. This is available for some inspections, such as Measurement and BMID inspections.

Retro-Spec Part View



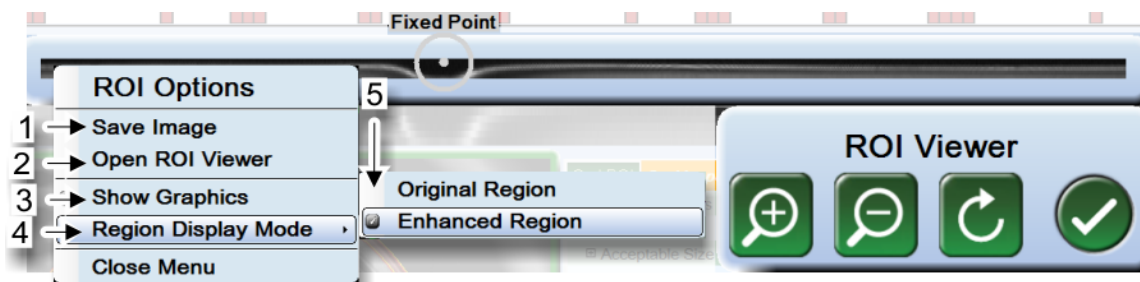
- The Part View displays a single part view. Each peak shows the contrast as the inspection moves from 0° (at left), to 360° (at right).
- Green peaks are acceptable; red peaks are where the contrast has exceeded limits.
- The height or amplitude of each peak reflects the amount of contrast (how dark or light change)
- The width of each peak reflects the physical size of the change (below the red peaks are the same width as the light and dark marks they represent)

1) Unwrapped region - Below the graph is a display of the inspection region unwrapped. The degrees represent where the unwrapped region begins and ends.

2) Sensitivity slide bar - This is the inspection's primary sensitivity parameter and is adjusted up (less sensitive) or down (more sensitive) by clicking on the bar or arrow at the left and dragging it to the desired position.

Unwrapped Region of Interest Options

Right-click in the Unwrapped Region of Interest to display this menu. Checked = enabled



- 1) Save Region of Interest Image
 - 2) **Open ROI Viewer** - Display the unwrapped region at full resolution. Select a rotate button to change the orientation of the unwrapped ROI image.
 - 3) Show Graphics - no effect
 - 4) **Region Display Mode** - Show the original region, or the enhanced region if you use an enhancement in the part program.
- [not shown] **Region Selected** - (Only available if the inspection has more than one region; example: Fill Height) Select which region to display.

Part Program Change Log

The part program change log lists the inspections and the edit history for each. You can view all inspections from one sensor, other sensors, or other part programs. This is helpful if you want to see the previous settings for an inspection.

Inspection

Undefined

Show Other Inspections

Part Program

Measurement_Test

Show Other Part Programs

Sensor

Undefined

Show Other Sensors

Roll Back

Difference

Details

Filter

Type	Time Stamp	User	Camera/Sensor	Inspection	Parameter	Before	After
Create	2011-02-15 16:13:57	Administrator	Nickel	Ring			
Create	2011-02-15 16:12:19	Administrator	Nickel	Ring	Inner Radius	25	100
Edit	2011-02-15 16:12:49	Administrator	Nickel	Ring	Thickness	50	50
Create	2011-02-15 16:12:57	Administrator	Nickel	Radial Edge			
Edit	2011-02-15 16:13:36	Administrator	Nickel	Radial Edge	Target Size	100	200
Create	2011-02-15 16:13:56	Administrator	Nickel	Radial Edge	Qualifying Percent Limits	E:25.0 W:50.0 G:	E:32.71 W:47.31 G:
Create	2011-02-15 16:13:56	Administrator	Nickel	Measurement			
Edit	2011-02-15 17:17:21	Administrator	Nickel	Measurement	Feature Type	Light Feature	Borders: Both Light
Edit	2011-02-15 17:17:21	Administrator	Nickel	Measurement	Inner Diameter Enabled	No	Yes
Edit	2011-02-15 17:17:21	Administrator	Nickel	Measurement	Width Enabled	No	Yes
Edit	2011-02-15 17:17:21	Administrator	Nickel	Measurement	Width Units	pixel	Custom unit
Edit	2011-02-15 17:17:21	Administrator	Nickel	Measurement	Width Nominal Value	50.0	26.5
Edit	2011-02-15 17:17:21	Administrator	Nickel	Measurement	Width Min/Max	E:-50.0 W:W-10.0 G:0.0000 G:0.0 W:W:0.0	E:-25.0 W:W-25.17 G:0.0 G:0.0 W:W:0.77 E:
Edit	2011-02-15 17:17:21	Administrator	Nickel	Measurement	Width Average	E:-50.0 W:W-10.0 G:0.0000 G:0.0 W:W:0.0	E:-25.0 W:W-25.0 G:0.0 G:0.0 W:W:0.0
Edit	2011-02-15 17:17:21	Administrator	Nickel	Measurement	Width Continuity	E:-50.0 W:W-10.0 G:0.0 W:W:0.0	E:-40.76 W:W-8.85 G:0.0 G:0.0 W:W:4.82 E:
Edit	2011-02-15 17:17:21	Administrator	Nickel	Measurement	Width Range	G:53.0 E:	G:11.65 E:
Create	2011-03-01 18:03:37	Administrator	Nickel	Clipping			
Edit	2011-03-01 18:05:17	Administrator	Nickel	Clipping	Use Clipping	No	Yes
Create	2011-03-01 18:05:26	Administrator	Nickel	Stretch Grayscale			

To view the part change log:

- Sensor

Defects

667

Defect %

18.67%
- Go to Sensor Overview mode.
 - Right-click over an inspection name and select Part Program Change Log from the Inspection menu. If the current inspection has never been changed since it was set up, no data is displayed.
 - Select any of the available check boxes to view other inspections, inspections from other part programs, or inspections from other sensors. Some boxes are dependent on others; for example, you must select a dark gray check box before a light gray check box becomes active.

Type	Time Stamp	User	Part Program	Inspection
Create	2010-09-20 08:26:29	Tricia	Penny1	

To view a full column width, select and drag the column title to re-size that column.

Optimize

The Optimize feature automatically sets the optimum settings for many inspection parameters. It is processor-intensive and must be done off-line. For this to work correctly, ensure that you have moved all acceptable images to the left side of the Retro-Spec graph (Set A), and the defect images to the right side of the graph (Set B). Optimize is available under the Advanced Settings.

To use the Optimize feature:

1. Make sure the Retro-Spec graph is in Population view: right-click on the graph to select Population View.
2. Load a set of good images into Data Set A

Next load a set of images of bad parts into Data Set B. These parts should have defects in the current inspection's region of interest.

To finish setting up the Optimize feature:

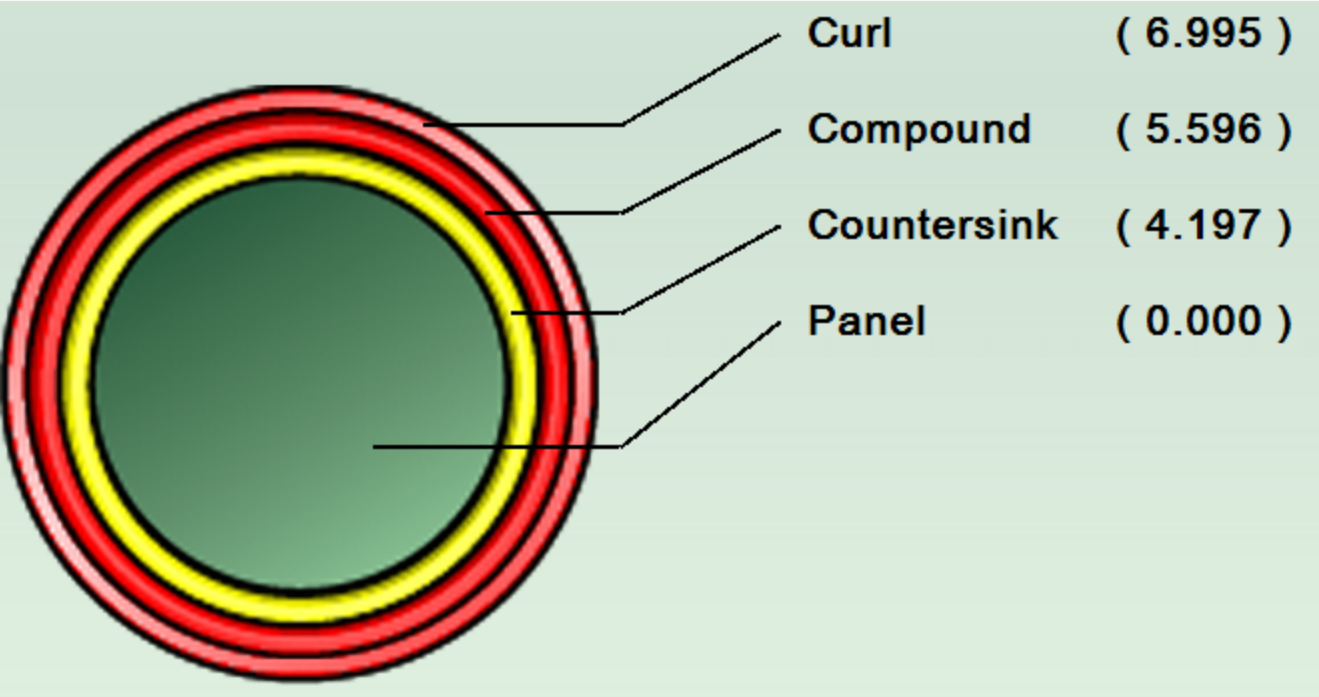
1. In the Contrast menu, choose the Defect Type: light, dark, or both.
2. Adjust the Acceptable Size parameter to catch the size of defect you want to detect.
3. Click the Optimize button. The system will analyze the part sets and determine the best settings to pass the good parts while failing the bad parts. Wait till the optimization process is complete - this may take several seconds.
4. Scroll through the images from the Retro-Spec graph to determine whether the good parts are still passing and the bad parts are failing. You should see good parts on the left side of the graph, and bad parts on the right side of the graph.
5. Test the inspection by loading more images. You can make slight adjustments in the Contrast menu if necessary.

Module 9 Lined Shell Inspections - Introduction

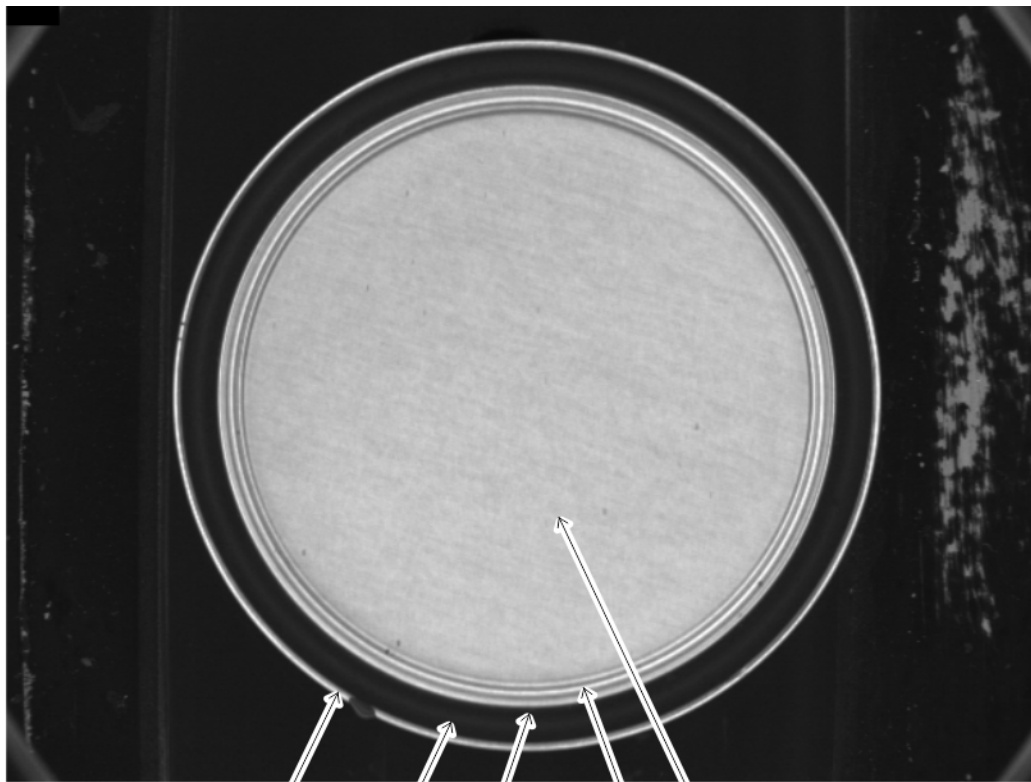
This section describes how to set up the standard set of inspections for lined shells on the Intellispec system. The size, placement, and typical sensitivity settings are shown for each region of the part.

Note: The inspections and parameters shown in this guide are sized for a sample part. Inspection regions can be scaled up or down to accommodate a wide variety of part sizes. The inspections outlined here are intended to provide complete coverage of the critical areas and a typical level of defect detection. Your specific application may require some modifications to obtain the level of defect detection you require.

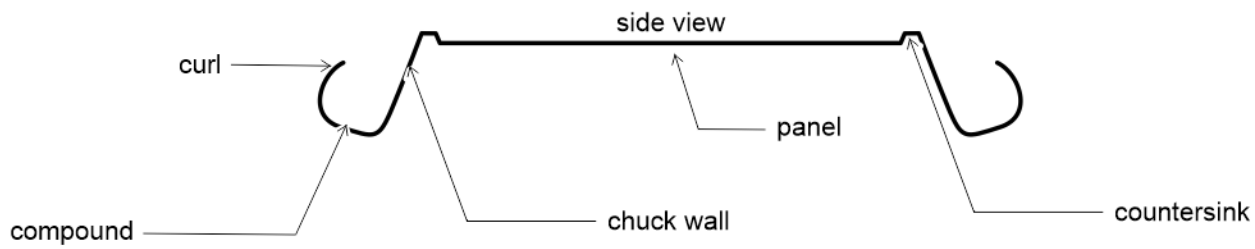
The image below shows the typical areas of the part, using the Intellispec Walk-By graphic. We use these main areas of the part to set up inspections.



The images below show the location of these areas on an actual part.



curl ————— compound ————— chuck wall ————— panel ————— countersink



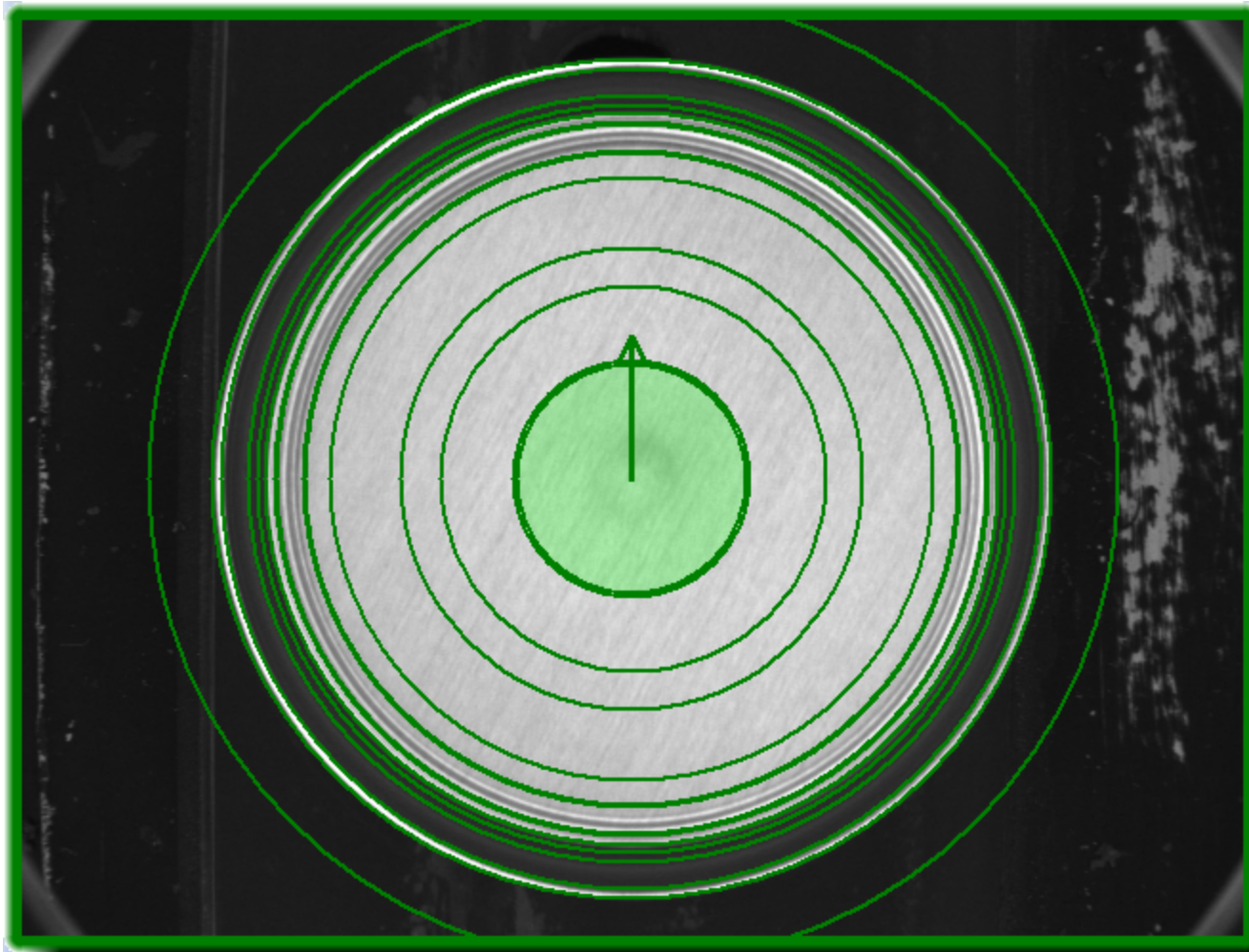
Typical defects

The defects that we usually look for on a lined shell include:

- Curl Clip Outs / Bent Curls / Wrinkled Curls
- Compound Voids / Blanks
- Dings / Dents
- Scrap-in-Die
- Compound Slings / Splashes
- Scratches / Scuffs
- Lacquer Defects
- Contamination
- Double Ends

Lined Shell Inspections

This section covers how to set up all the inspections. The picture below shows an image with all inspection regions as seen from the Intellispec system. We will set these up one at a time.

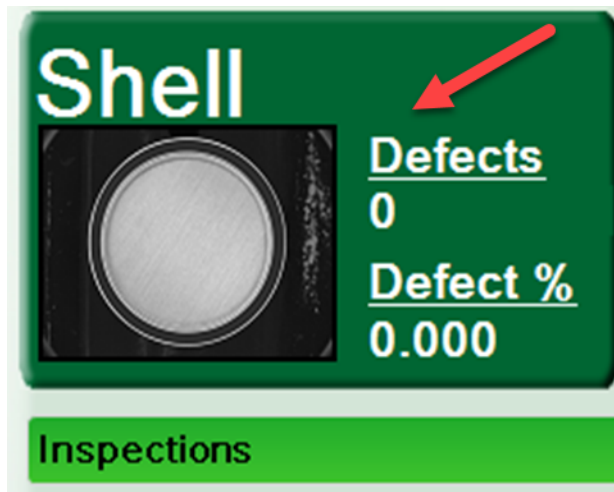


Create the Lined Shell Inspection Tree

The steps below will guide you through the process of building the Lined Shell Inspection Tree, while ensuring that the directory links are connected correctly. First add the inspections, then rename them to something that makes sense to you. We have added inspection names that correspond to the location on the part. Note that we will set up the regions and parameters later. For now, we will just build the inspection tree.

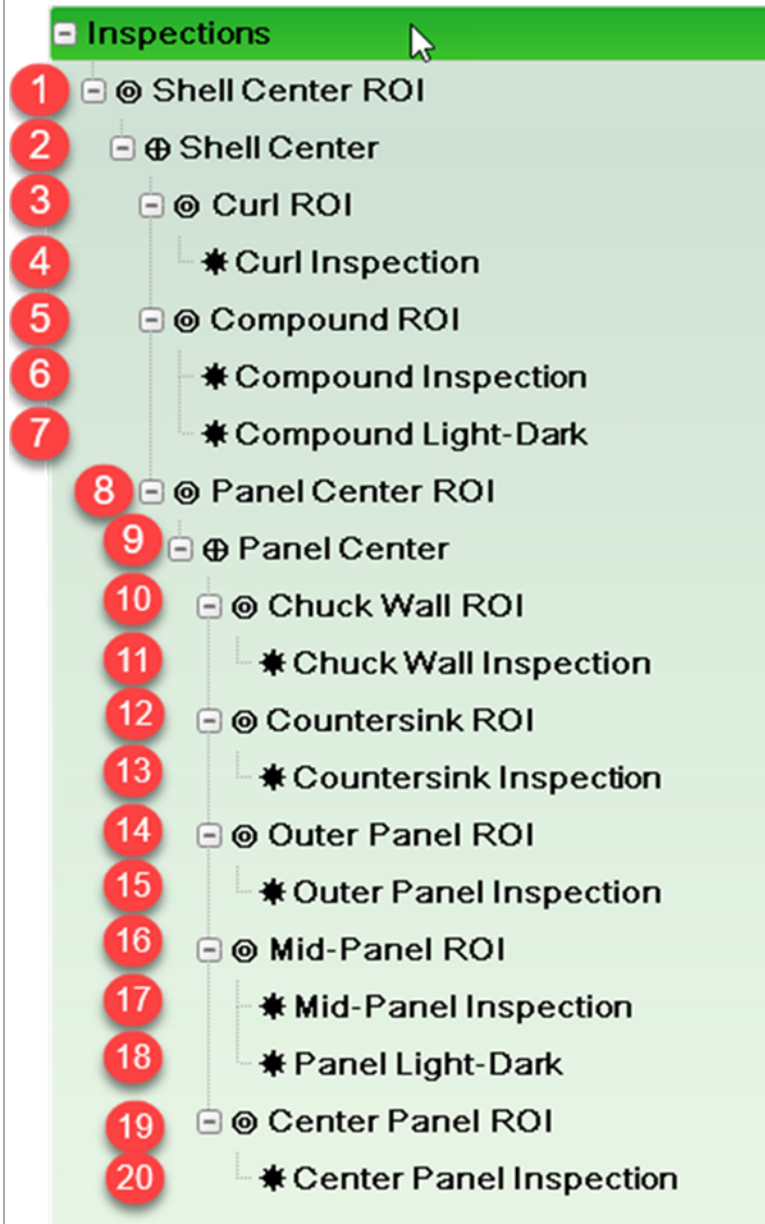
To create a new part program, refer to the Manage Part Programs dialog. Select "New." See ["Create or Copy a Part Program" on page 127](#)

Go to Sensor Overview mode by clicking the sensor button:



Note: ROI = Region of Interest

This is how the inspection tree will look



Inspection tree creation continues on the next page

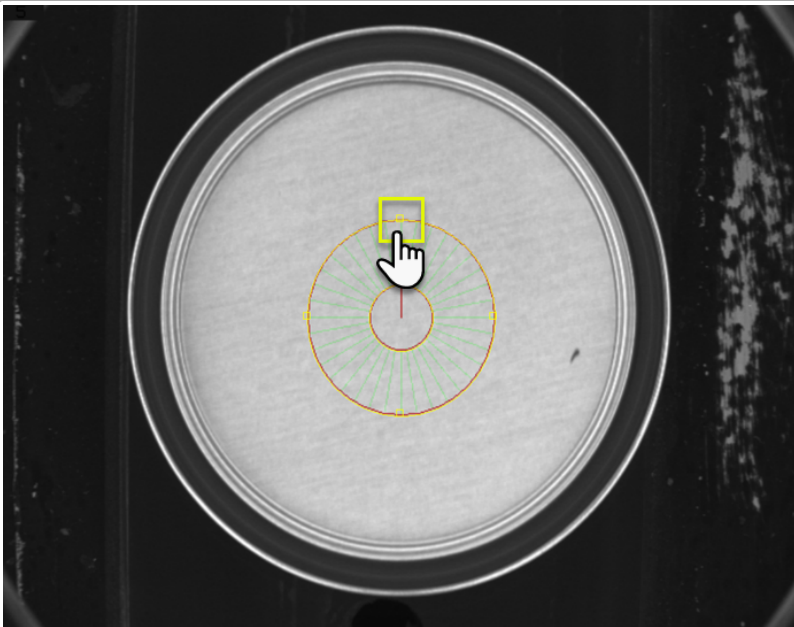
Note: After each step, select the OK button to save changes, and the Exit button to exit the inspection.

1. **Inspections** Right-click Inspections. Add | Region | Ring. Rename it Shell Center ROI.
2. Right-click Shell Center ROI. Add | Registration | Radial Edge. Rename it Shell Center.
3. Right-click Shell Center. Add | Region | Ring. Rename it Curl ROI.
4. Right-click Curl ROI. Add | Analysis | Contrast. Rename it Curl Inspection.
5. Right-click Shell Center. Add | Region | Ring. Rename it Compound ROI.
6. Right-click Compound ROI. Add | Analysis | Contrast. Rename it Compound Inspection.
7. Right-click Compound ROI again. Add | Analysis | Ambient. Rename it Compound Light-Dark.
8. Right-click Shell Center. Add | Region | Ring. Rename it Panel Center ROI.
9. Right-click Panel Center ROI. Add | Registration | Radial Edge. Rename it Panel Center.
10. Right-click Panel Center. Add | Region | Ring. Rename it Chuck Wall ROI.
11. Right-click Chuck Wall ROI. Add | Analysis | Contrast. Rename it Chuck Wall Inspection.
12. Right-click Panel Center. Add | Region | Ring. Rename it Countersink ROI.
13. Right-click Countersink ROI. Add | Analysis | Contrast. Rename it Countersink Inspection.
14. Right-click Panel Center. Add | Region | Ring. Rename it Outer Panel ROI.
15. Right-click Outer Panel ROI. Add | Analysis | Contrast. Rename it Outer Panel Inspection.
16. Right-click Panel Center. Add | Region | Ring. Rename it Mid-Panel ROI.
17. Right-click Mid-Panel ROI. Add | Analysis | Contrast. Rename it Mid-Panel Inspection.
18. Right-click Mid-Panel ROI. Add | Analysis | Ambient. Rename it Panel Light-Dark.

19. Right-click Panel Center. Add | Region | Ring. Rename it Center Panel ROI.
20. Right-click Center Panel ROI. Add | Analysis | Contrast. Rename it Center Panel Inspection.

Place the Shell Center ROI

We will set up the Region of Interest (ROI) so that the system knows where to search for the center of the shell. Since parts move slightly on the conveyor between part to part, we need to make sure the inspections are properly placed on each part. Once this point is found, the remaining inspections are run.

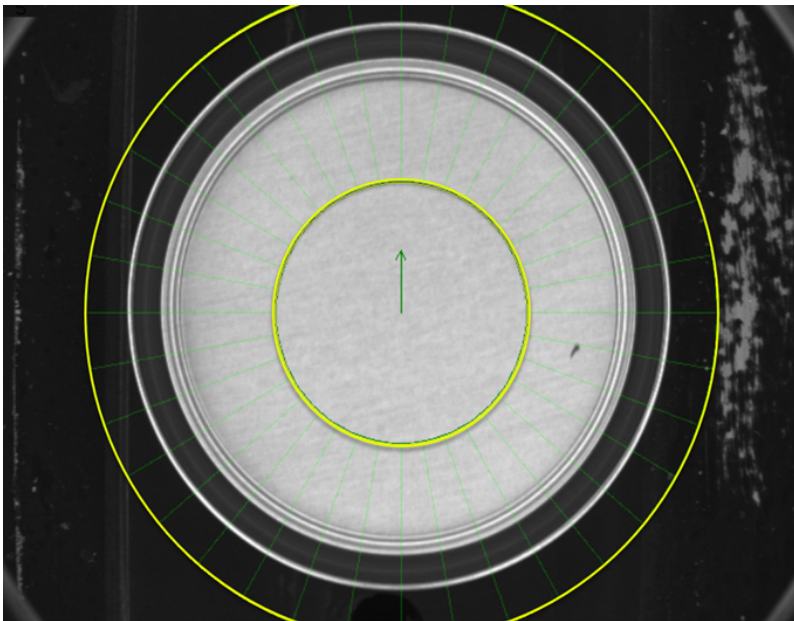


Double-click the name of the Shell Center ROI in the inspection tree to edit the region.

We will place a doughnut-shaped region to include the transition from the dark area of the conveyor to the bright white area of the curl.

To edit the region:

1. Click inside the default region.
2. Select one of the yellow boxes on the outer region border, and drag it outside of the part. Leave enough room to accommodate part movement from part to part. It is OK for the region to be outside of the inspection window.
3. Click in the center of the region. You will see yellow boxes on the inner region border.
4. Drag one of the yellow boxes so that the inner border is inside the panel as shown to the left.
5. Leave the remaining parameters at the default values. Your values may vary, based on your part and system setup.



Shell Center ROI	
X	0
Y	0
Inner Radius	101
Thickness	153
Use Arc Segments	☐ Enabled
Perimeter Type	Normal

6. ☒ Select the OK button to save changes and exit.

Set up the Shell Center Registration

The Registration searches for edges to find the true center of the part.

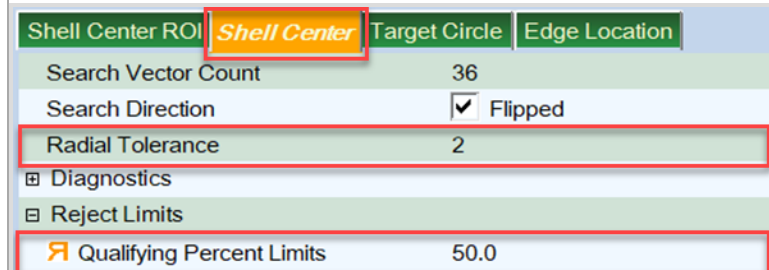


Shell Center ROI | Shell Center | **Target Circle** | Edge Location

Target Radius 220

Learn **Learn**

Adapting Target Radius ☐ Enabled



Shell Center ROI | **Shell Center** | Target Circle | Edge Location

Search Vector Count 36

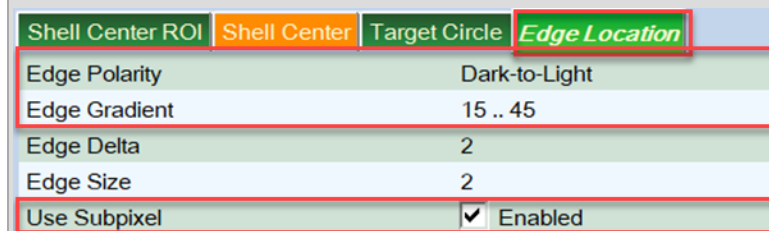
Search Direction ☒ Flipped

Radial Tolerance 2

☐ Diagnostics

☐ Reject Limits

Qualifying Percent Limits 50.0



Shell Center ROI | Shell Center | Target Circle | **Edge Location**

Edge Polarity Dark-to-Light

Edge Gradient 15 .. 45

Edge Delta 2

Edge Size 2

Use Subpixel ☒ Enabled

Double-click the name of the Shell Center to edit it.

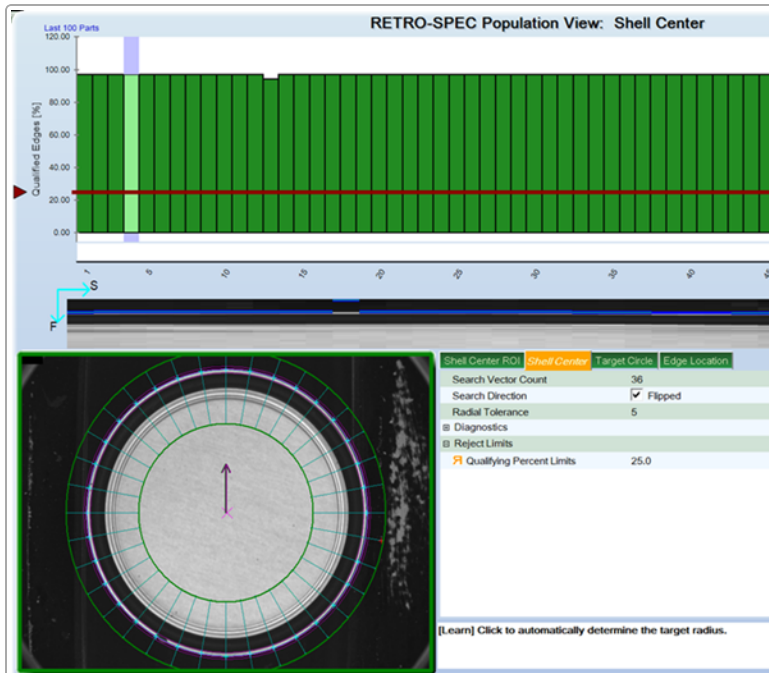
By default, the registration will likely fail due to not enough edges found.

To set up the registration:

Go to the Target Circle tab. Click the Learn button. This allows the system to learn where the edges will fall.

To make the inspection more sensitive, adjust parameters in the Shell Center tab and Edge Location tab.

Pay attention to the parameters (outlined in red) shown to the left. Start with these settings, and adjust if needed for your part.



The system should now find the edge transitions between the dark conveyor belt and the light pixels of the curl.

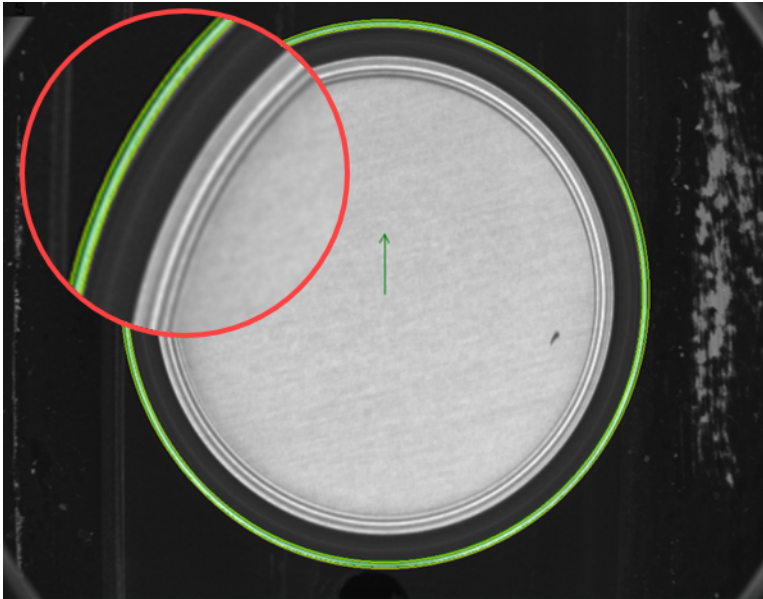
Leave the remaining parameters at the default values. Your values may vary, based on your part and system setup.



Select the OK button to save changes and exit.

Place the Curl ROI

We will set up the Region of Interest (ROI) directly on the curl. Once this point is found, the remaining inspections are run.



Double-click the name of the Curl ROI in the inspection tree to edit the region.

We will place a doughnut-shaped region directly on the curl.

To edit the region:

1. Click inside the default region.
2. Select one of the yellow boxes on the outer region border, and drag it to the outside edge of the curl as shown.
3. Click in the center of the region. You will see yellow boxes on the inner region border.
4. Drag one of the yellow boxes so that the inner border is just on the inner edge of the curl.
5. Leave the remaining parameters at the default values. Your values may vary, based on your part and system setup.
6.  Select the OK button to save changes and exit.

Curl ROI	
X	0
Y	0
Inner Radius	215
Thickness	5
Use Arc Segments	☐ Enabled
Perimeter Type	Normal

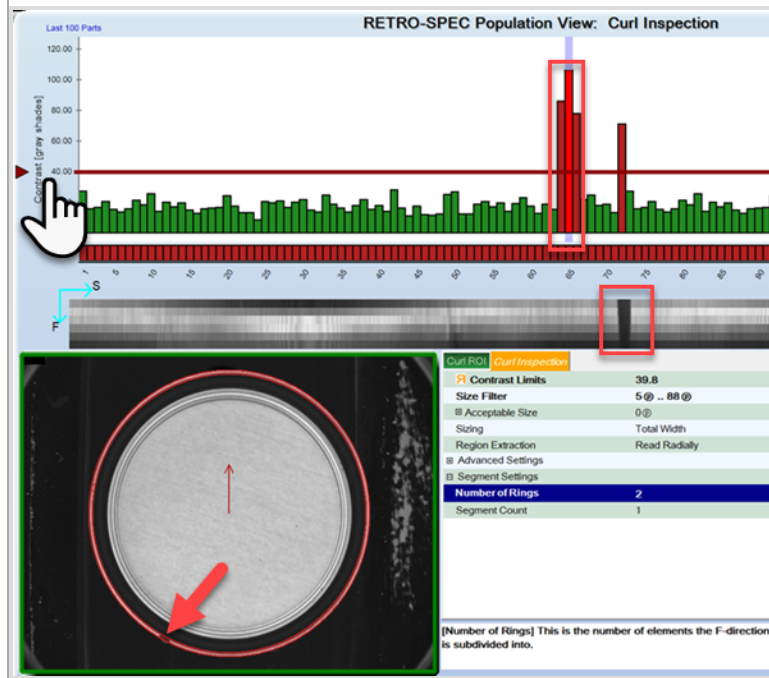
Set up the Curl Inspection

We are using a Contrast inspection to find defects on the curl. Double-click the Curl inspection to edit it.

Curl ROI	Curl Inspection
Contrast Limits	39.88
Size Filter	5 @ .. 88 @
Acceptable Size	0 @
Sizing	Total Width
Region Extraction	Read Radially
Advanced Settings	
Segment Settings	
Number of Rings	2
Segment Count	1

To set up the inspection:

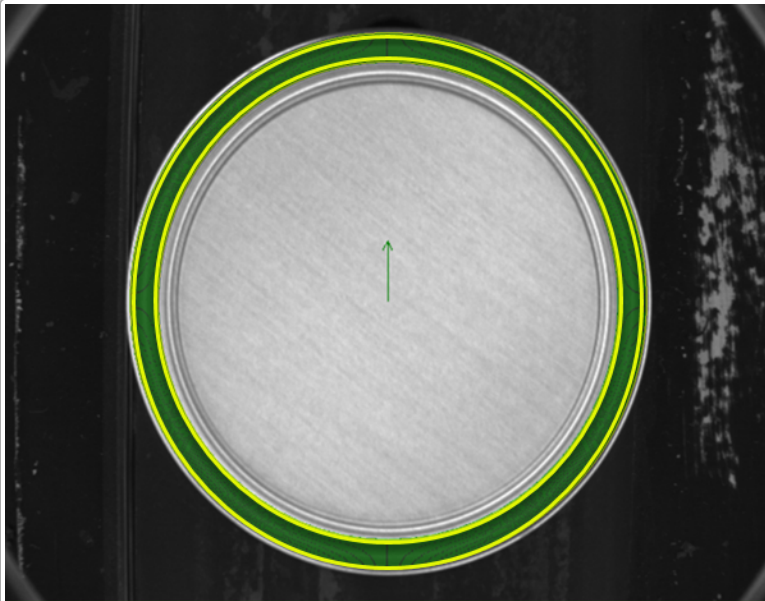
1. Pay attention to the parameters (outlined in red) shown to the left. Start with these settings, and adjust if needed for your part.
2. Leave the remaining parameters at the default values. Your values may vary, based on your part and system setup.
3.  Select the OK button to save changes and exit.



In this example, you can see the failure from the Part View graph. The system found a clipout on the curl. You can make the inspection more or less sensitive to your parts' defects by moving the red horizontal bar in the graph up or down.

Place the Compound ROI

We will set up the Region of Interest (ROI) on the compound channel. Once this area is set up, the remaining inspections are run.



Double-click the name of the Compound ROI in the inspection tree to edit the region.

We will place a doughnut-shaped region directly on the compound channel.

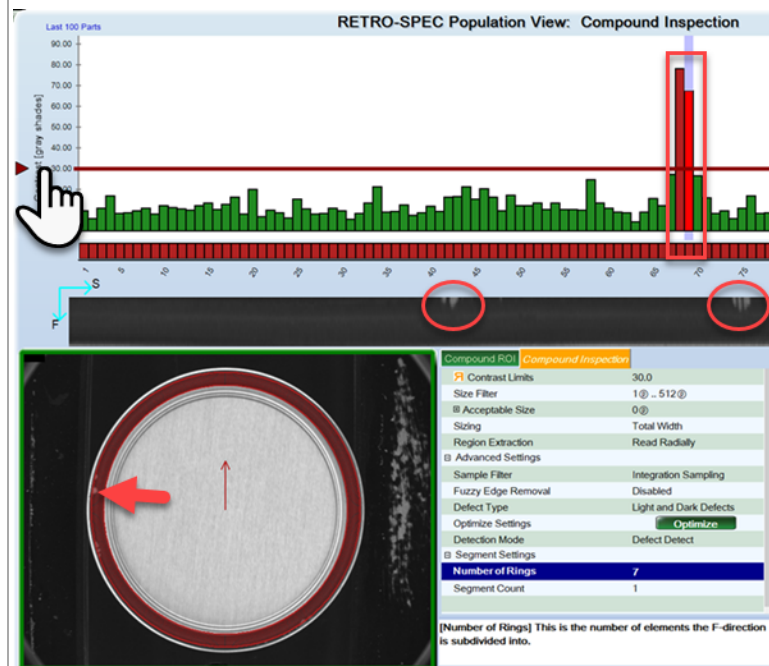
To edit the region:

1. Click inside the default region.
2. Select one of the yellow boxes on the outer region border, and drag it to the outside edge of the compound channel as shown.
3. Click in the center of the region. You will see yellow boxes on the inner region border.
4. Drag one of the yellow boxes so that the inner border is just on the inner edge of the compound channel.
5. Leave the remaining parameters at the default values. Your values may vary, based on your part and system setup.
6.  Select the OK button to save changes and exit.

Compound ROI	
X	0
Y	0
Inner Radius	192
Thickness	23
Use Arc Segments	☐ Enabled
Perimeter Type	Normal

Set up the Compound Inspection

Compound ROI		Compound Inspection	
Contrast Limits	21.4		
Size Filter	1 @ .. 176 @		
Acceptable Size	0 @		
Sizing	Total Width		
Region Extraction	Read Radially		
Advanced Settings			
Sample Filter	Integration Sampling		
Fuzzy Edge Removal	Disabled		
Defect Type	Light and Dark Defects		
Optimize Settings	Optimize		
Detection Mode	Defect Detect		
Segment Settings			
Number of Rings	7		
Segment Count	1		

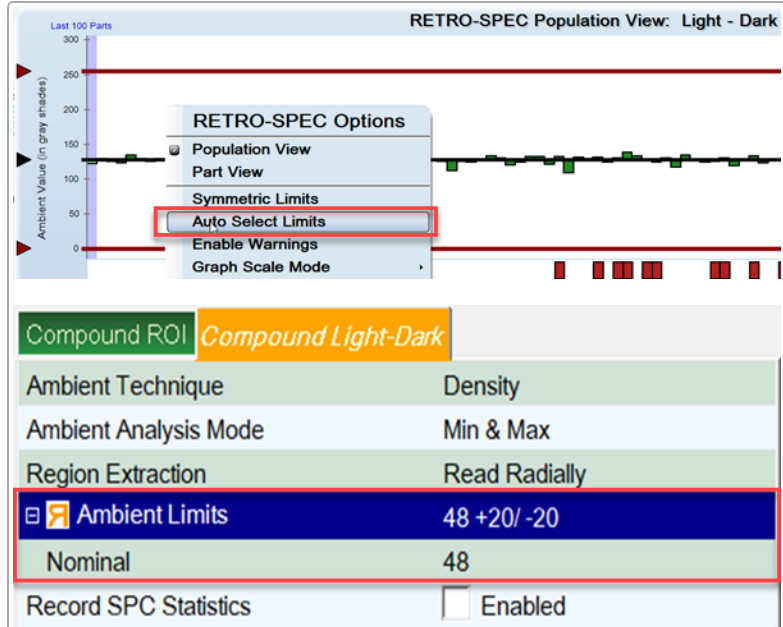


We are using a Contrast inspection to find defects on the compound. Double-click the Compound inspection to edit it.

To set up the inspection:

1. Pay attention to the parameters (outlined in red) shown to the left. Start with these settings, and adjust if needed for your part.
2. Leave the remaining parameters at the default values. Your values may vary, based on your part and system setup.
3. In the example, the system found a compound void. You can make the inspection more or less sensitive to your parts' defects by moving the red horizontal bar in the graph up or down.
4. Select the OK button to save changes and exit.

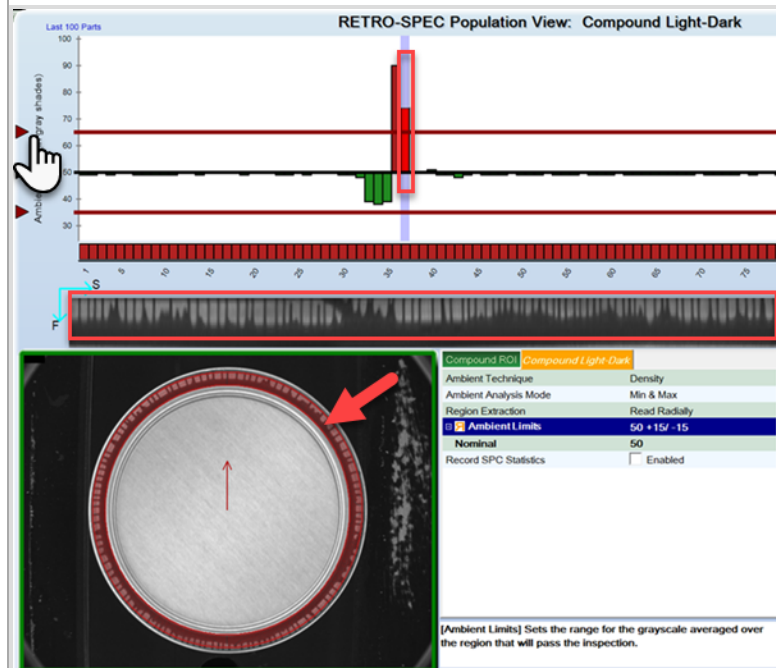
Set up the Compound Light - Dark Inspection



We are using an Ambient inspection to find absence of compound. Double-click the Compound Light - Dark inspection to edit it.

To set up the inspection:

1. Put the lane online, wait a few seconds for the system to acquire several images, and select the [+100] button.
2. Take the lane offline.
3. Right-click over the Retro-Spec Population View graph and choose Auto-Select Limits. The system will automatically set the inspection limits based on your parts.
4. Leave the remaining parameters at the default values. Your values may vary, based on your part and system setup.

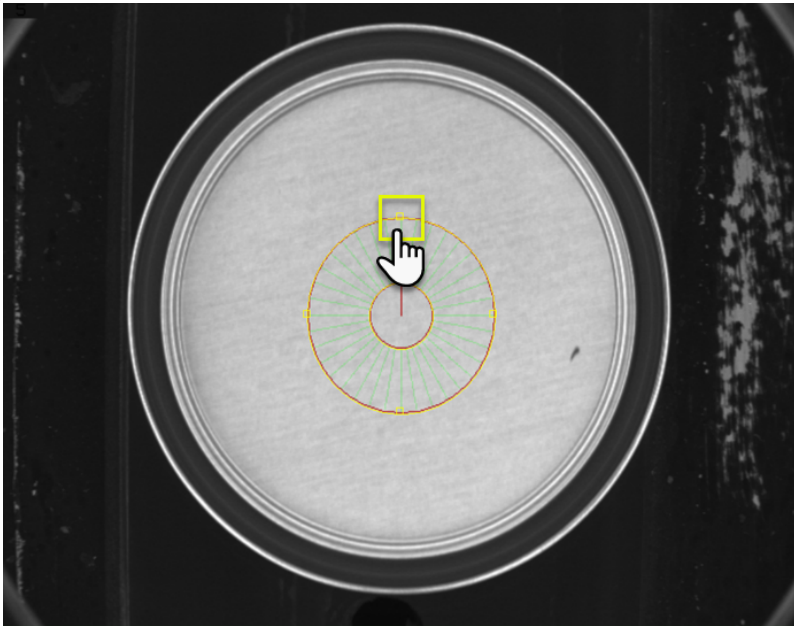


To test the inspection:

1. Scroll through the images to make sure parts are passing (or failing) as expected.
2. You can make the inspection more sensitive by moving the red horizontal bars on the Retro-Spec graph closer to center, or less sensitive by moving the red horizontal bars away from center.

Select the OK button to save changes and exit.

Place the Panel Center ROI



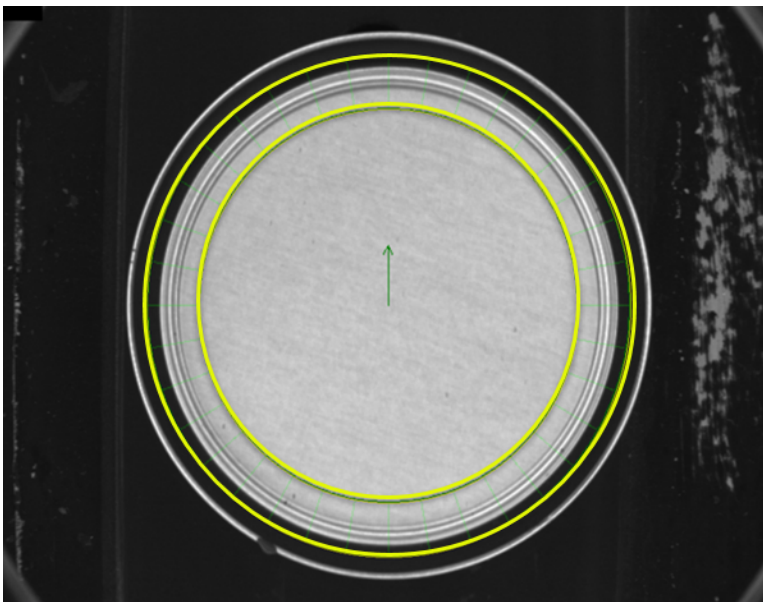
We will set up the Region of Interest (ROI) so that the system finds the true center of the panel. Once this point is found, the remaining inspections are run.

Double-click the name of the Panel Center ROI in the inspection tree to edit the region.

We will place a doughnut-shaped region to find the transition from the dark compound area to the bright countersink.

To edit the region:

1. Click inside the default region.
2. Select one of the yellow boxes on the outer region border, and drag it into the compound area as shown.
3. Click in the center of the region. You will see yellow boxes on the inner region border.
4. Drag one of the yellow boxes so that the inner border is inside the panel as shown to the left.
5. Leave the remaining parameters at the default values. Your values may vary, based on your part and system setup.



Panel Center ROI	
X	0
Y	0
Inner Radius	158
Thickness	43
Use Arc Segments	☐ Enabled
Perimeter Type	Normal

6.  Select the OK button to save changes and exit.

Set up the Panel Center Registration

The Registration searches for edges to find the center of the panel, in order to place inspections properly on the panel.

Panel Center ROI	Panel Center	Target Circle	Edge Location
Search Vector Count	36		
Search Direction	☒ Flipped		
Radial Tolerance	2		
Diagnostics			
Reject Limits			
Qualifying Percent Limits	50.0		
Panel Center ROI	Panel Center	Target Circle	Edge Location
Edge Polarity	Dark-to-Light		
Edge Gradient	15 .. 46		
Edge Delta	2		
Edge Size	2		
Use Subpixel	☒ Enabled		
Panel Center ROI	Panel Center	Target Circle	Edge Location
Target Radius	192		
Learn	Learn		
Adapting Target Radius	☐ Enabled		

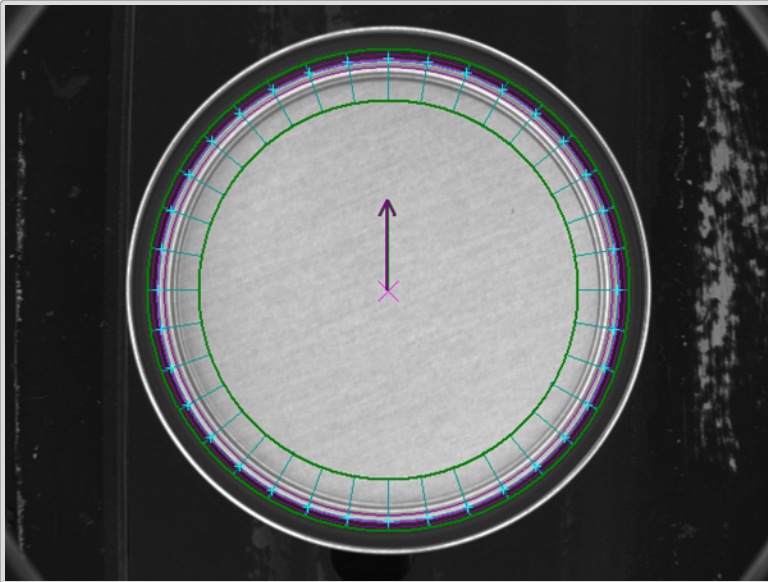
Double-click the name of the Panel Center to edit it.

By default, the registration will likely fail due to not enough edges found.

To set up the registration:

Pay attention to the parameters (outlined in red) shown to the left. Start with these settings, and adjust if needed for your part.

Go to the Target Circle tab. Click the Learn button. This allows the system to learn where the edges will fall.



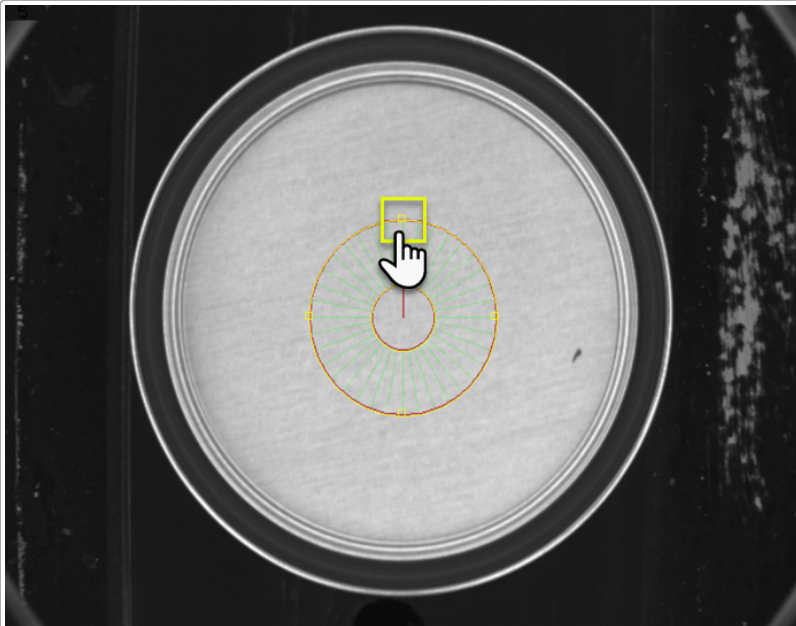
The system should now find the edge transitions between the dark compound area and the light pixels of the countersink.

Leave the remaining parameters at the default values. Your values may vary, based on your part and system setup.



Select the OK button to save changes and exit.

Place the Chuck Wall ROI



We will set up the Region of Interest (ROI) to inspect the chuck wall.

Double-click the name of the Chuck Wall ROI in the inspection tree to edit the region.

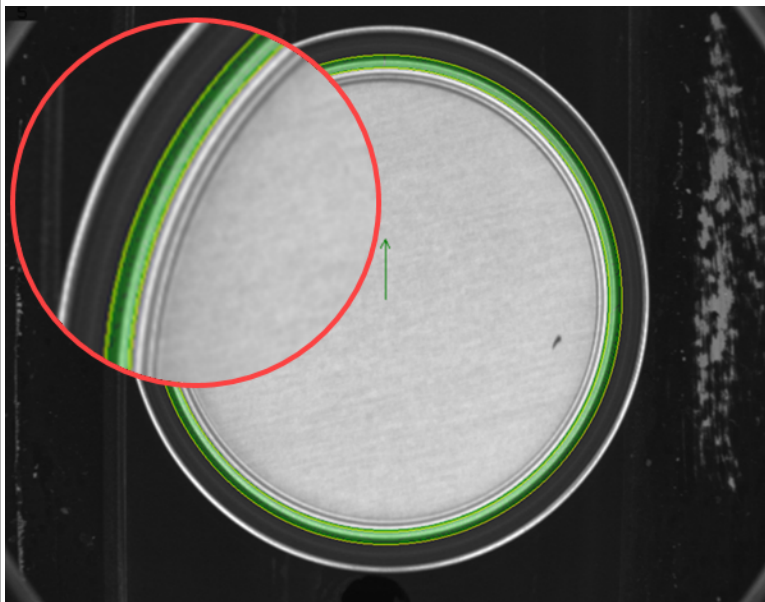
We will place a doughnut-shaped region to inspect the chuck wall.

To edit the region:

1. Click inside the default region.
2. Select one of the yellow boxes on the outer region border, and drag it to the chuck wall as shown.
3. Click in the center of the region. You will see yellow boxes on the inner region border.
4. Drag one of the yellow boxes so that the region is just inside the chuckwall as shown.
5. Leave the remaining parameters at the default values. Your values may vary, based on your part and system setup.

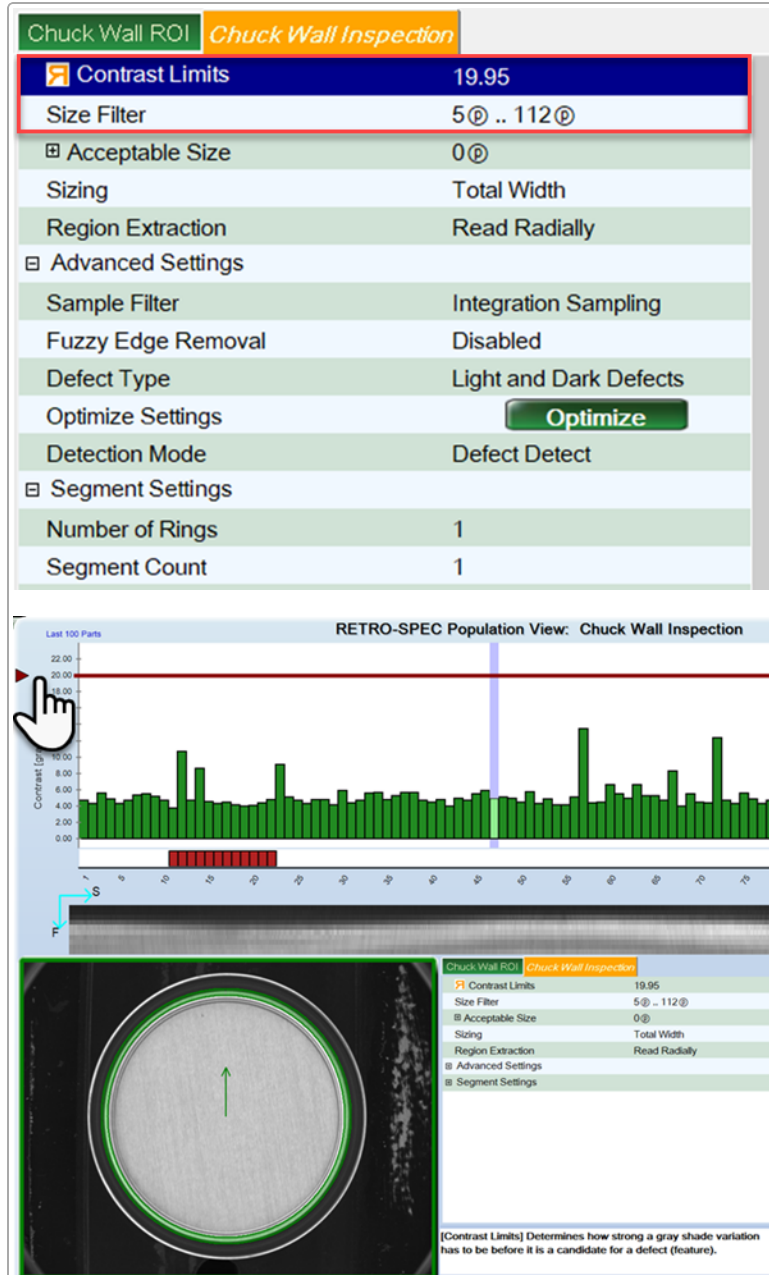
Chuck Wall ROI	
X	0
Y	0
Inner Radius	186
Thickness	10
Use Arc Segments	☐ Enabled
Perimeter Type	Normal

6.  Select the OK button to save changes and exit.



Set up the Chuck Wall Inspection

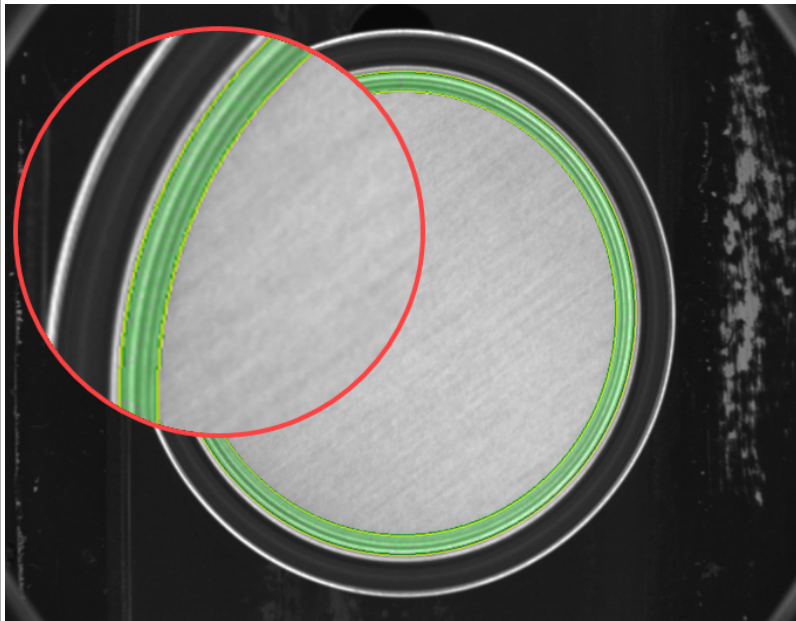
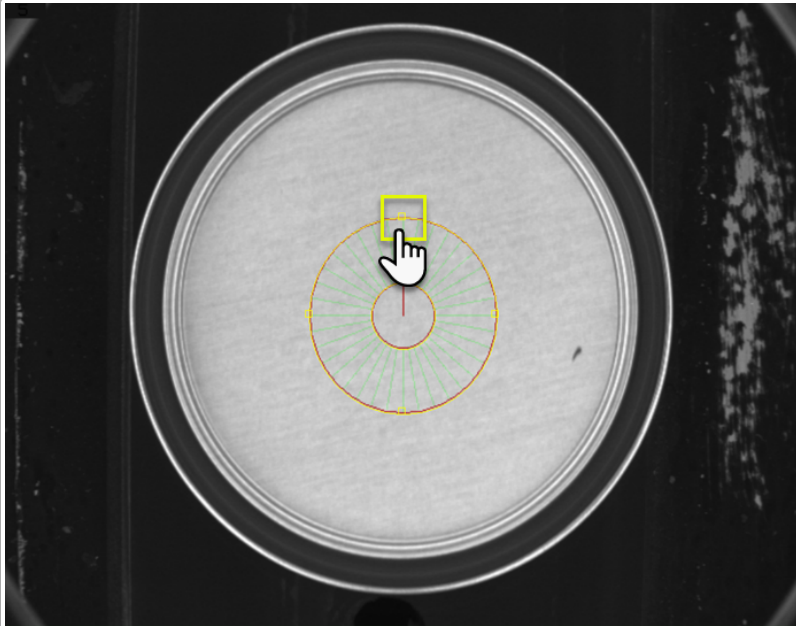
We are using a Contrast inspection to find defects on the chuck wall. Double-click the Chuck Wall inspection to edit it.



To set up the inspection:

1. Pay attention to the parameters (outlined in red) shown to the left. Start with these settings, and adjust if needed for your part.
2. Leave the remaining parameters at the default values. Your values may vary, based on your part and system setup.
3. Look at the inspection graph and make sure that parts are passing/ failing as expected. You can make the inspection more or less sensitive to your parts' defects by moving the red horizontal bar in the graph up or down.
4.  Select the OK button to save changes and exit.

Place the Countersink ROI



We will set up the Region of Interest (ROI) to inspect the countersink.

Double-click the name of the Countersink ROI in the inspection tree to edit the region.

We will place a doughnut-shaped region to inspect the countersink.

To edit the region:

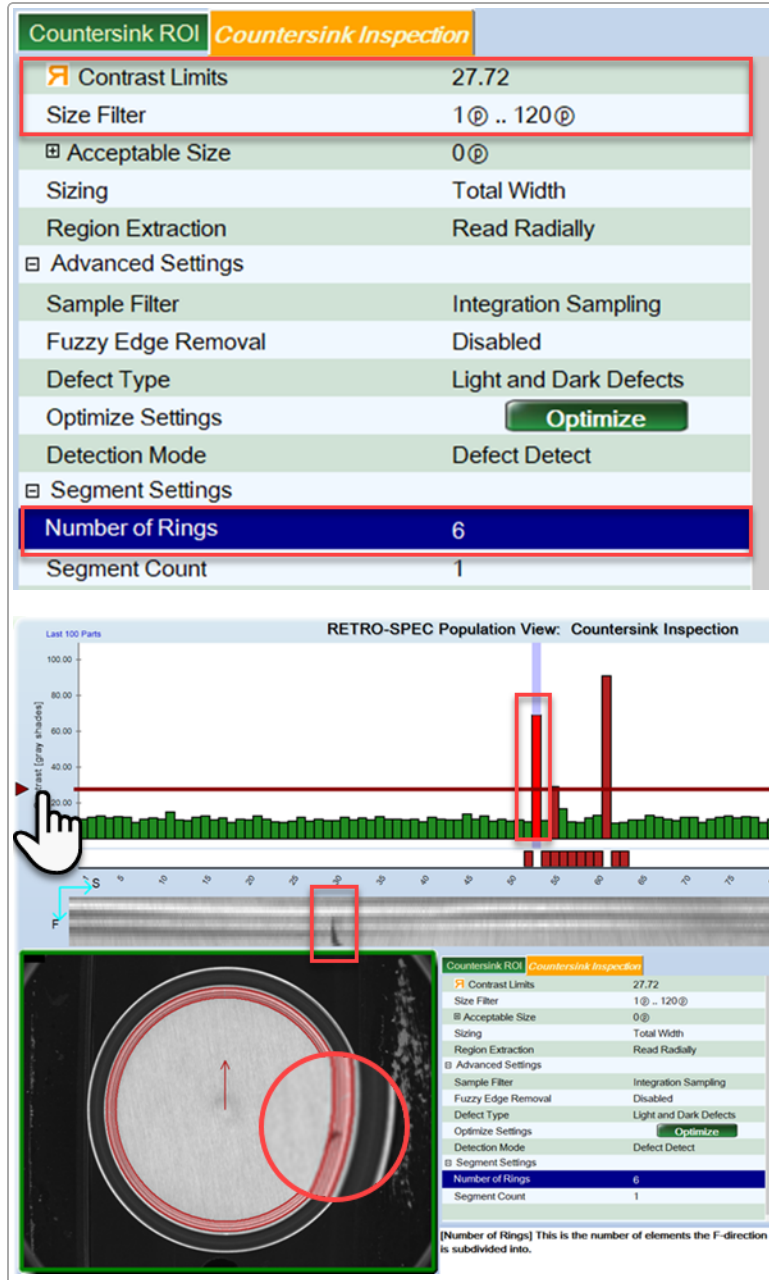
1. Click inside the default region.
2. Select one of the yellow boxes on the outer region border, and drag it just outside the countersink as shown.
3. Click in the center of the region. You will see yellow boxes on the inner region border.
4. Drag one of the yellow boxes so that the region is just inside the countersink as shown.
5. Leave the remaining parameters at the default values. Your values may vary, based on your part and system setup.

Countersink ROI	
X	0
Y	0
Inner Radius	172
Thickness	15
Use Arc Segments	☐ Enabled
Perimeter Type	Normal

6.  Select the OK button to save changes and exit.

Set up the Countersink Inspection

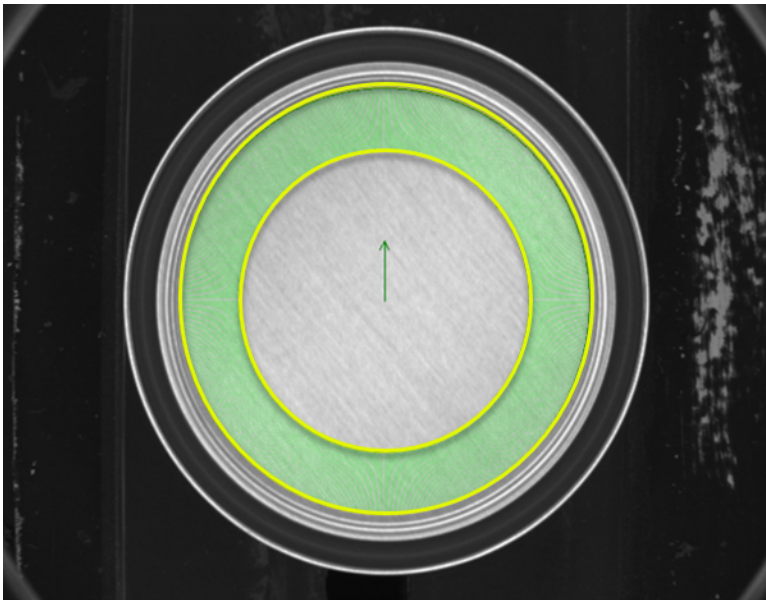
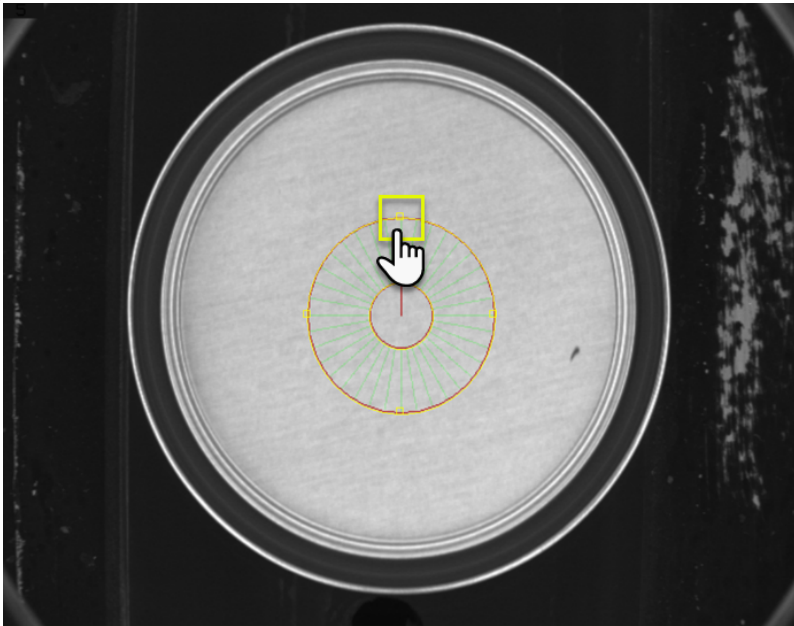
We are using a Contrast inspection to find defects on the countersink. Double-click the Countersink Inspection to edit it.



To set up the inspection:

1. Pay attention to the parameters (outlined in red) shown to the left. Start with these settings, and adjust if needed for your part.
2. Leave the remaining parameters at the default values. Your values may vary, based on your part and system setup.
3. Make sure that parts are passing/ failing as expected. In our example, the system found a defect. You can make the inspection more or less sensitive to your parts' defects by moving the red horizontal bar in the graph up or down.
4.  Select the OK button to save changes and exit.

Place the Outer Panel ROI



We will set up the Region of Interest (ROI) to inspect the outer panel.

Double-click the name of the Outer Panel ROI in the inspection tree to edit the region.

To edit the region:

1. Click inside the default region.
2. Select one of the yellow boxes on the outer region border, and drag it just inside the countersink as shown.
3. Click in the center of the region. You will see yellow boxes on the inner region border.
4. Drag one of the yellow boxes so that the region is wide enough to inspect the outer panel as shown.
5. Leave the remaining parameters at the default values. Your values may vary, based on your part and system setup.

Outer Panel ROI	
X	0
Y	0
Inner Radius	121
Thickness	50
Use Arc Segments	☐ Enabled
Perimeter Type	Normal

6.  Select the OK button to save changes and exit.

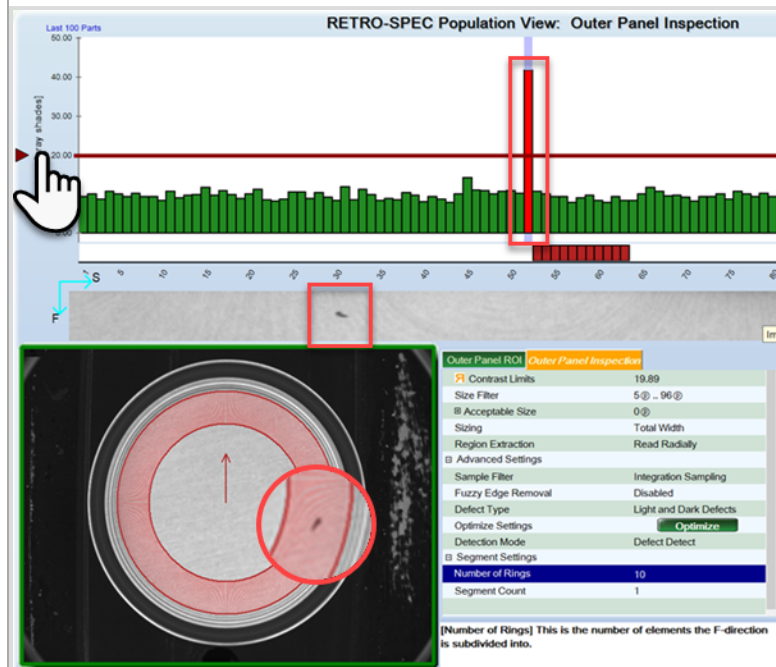
Set up the Outer Panel Inspection

We are using a Contrast inspection to find defects on the outer panel. Double-click the Outer Panel Inspection to edit it.

Outer Panel ROI	
Outer Panel Inspection	
Contrast Limits	19.89
Size Filter	5 @ .. 96 @
Acceptable Size	0 @
Sizing	Total Width
Region Extraction	Read Radially
Advanced Settings	
Sample Filter	Integration Sampling
Fuzzy Edge Removal	Disabled
Defect Type	Light and Dark Defects
Optimize Settings	Optimize
Detection Mode	Defect Detect
Segment Settings	
Number of Rings	10
Segment Count	1

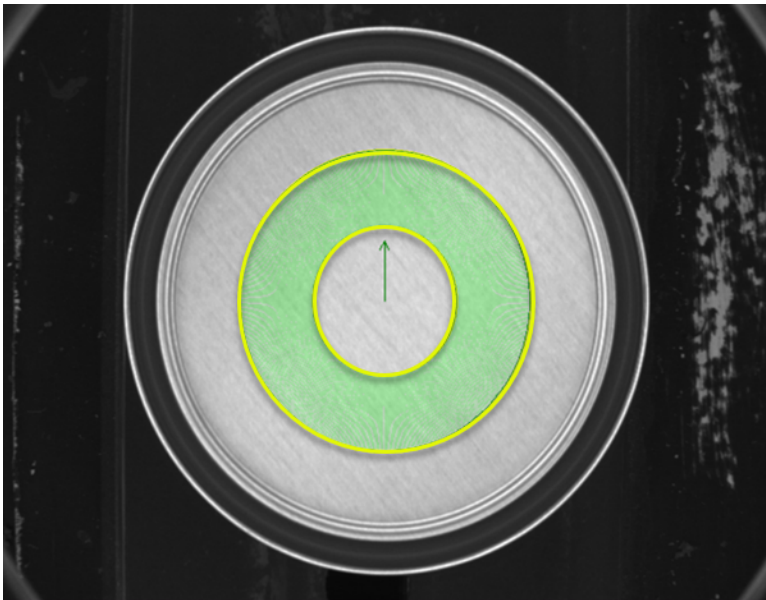
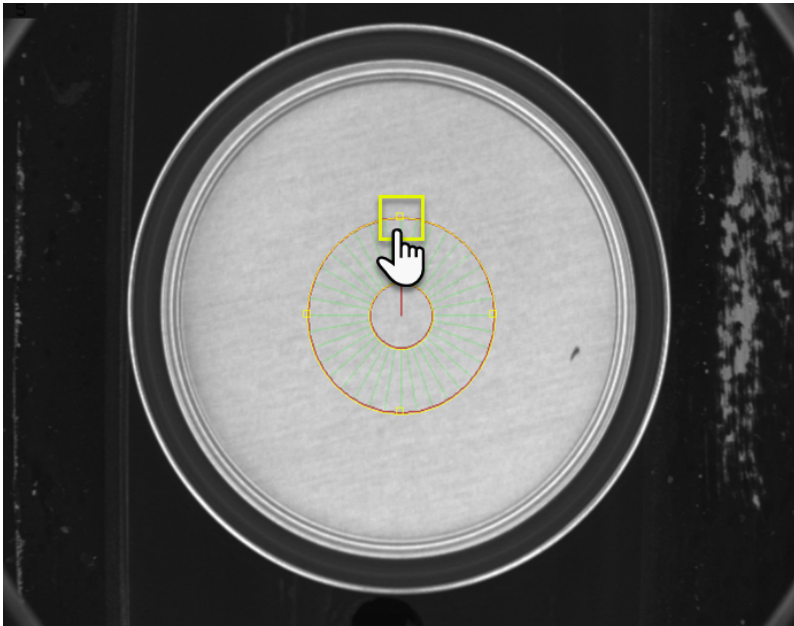
To set up the inspection:

1. Pay attention to the parameters (outlined in red) shown to the left. Start with these settings, and adjust if needed for your part.
2. Leave the remaining parameters at the default values. Your values may vary, based on your part and system setup.
3. ☒ Select the OK button to save changes and exit.



Outer panel inspection example, showing a defect. You can make the inspection more or less sensitive to your parts' defects by moving the red horizontal bar in the graph up or down.

Place the Mid-Panel ROI



We will set up the Region of Interest (ROI) to inspect the mid panel.

Double-click the name of the Mid-Panel ROI in the inspection tree to edit the region.

To edit the region:

1. Click inside the default region.
2. Select one of the yellow boxes on the outer region border, and drag it about two-thirds the distance from the center to the countersink as shown.
3. Click in the center of the region. You will see yellow boxes on the inner region border.
4. Drag one of the yellow boxes so that the region is wide enough to inspect the mid panel as shown.
5. Leave the remaining parameters at the default values. Your values may vary, based on your part and system setup.

Mid-Panel ROI	
X	0
Y	0
Inner Radius	60
Thickness	61
Use Arc Segments	☐ Enabled
Perimeter Type	Normal

6.  Select the OK button to save changes and exit.

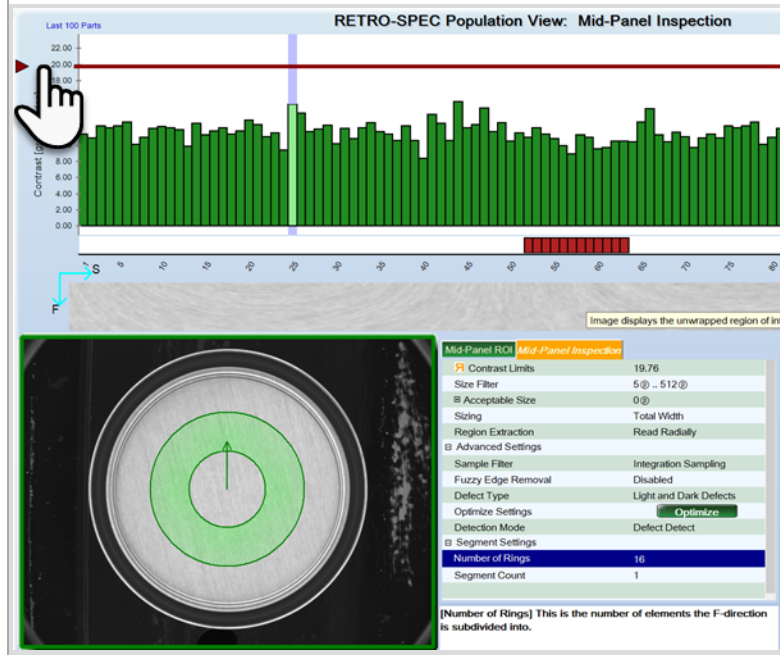
Set up the Mid-Panel Inspection

We are using a Contrast inspection to find defects on the mid panel. Double-click the Mid-Panel Inspection to edit it.

Mid-Panel ROI <i>Mid-Panel Inspection</i>	
Contrast Limits	19.76
Size Filter	5@ .. 512@
Acceptable Size	0@
Sizing	Total Width
Region Extraction	Read Radially
Advanced Settings	
Sample Filter	Integration Sampling
Fuzzy Edge Removal	Disabled
Defect Type	Light and Dark Defects
Optimize Settings	Optimize
Detection Mode	Defect Detect
Segment Settings	
Number of Rings	16
Segment Count	1

To set up the inspection:

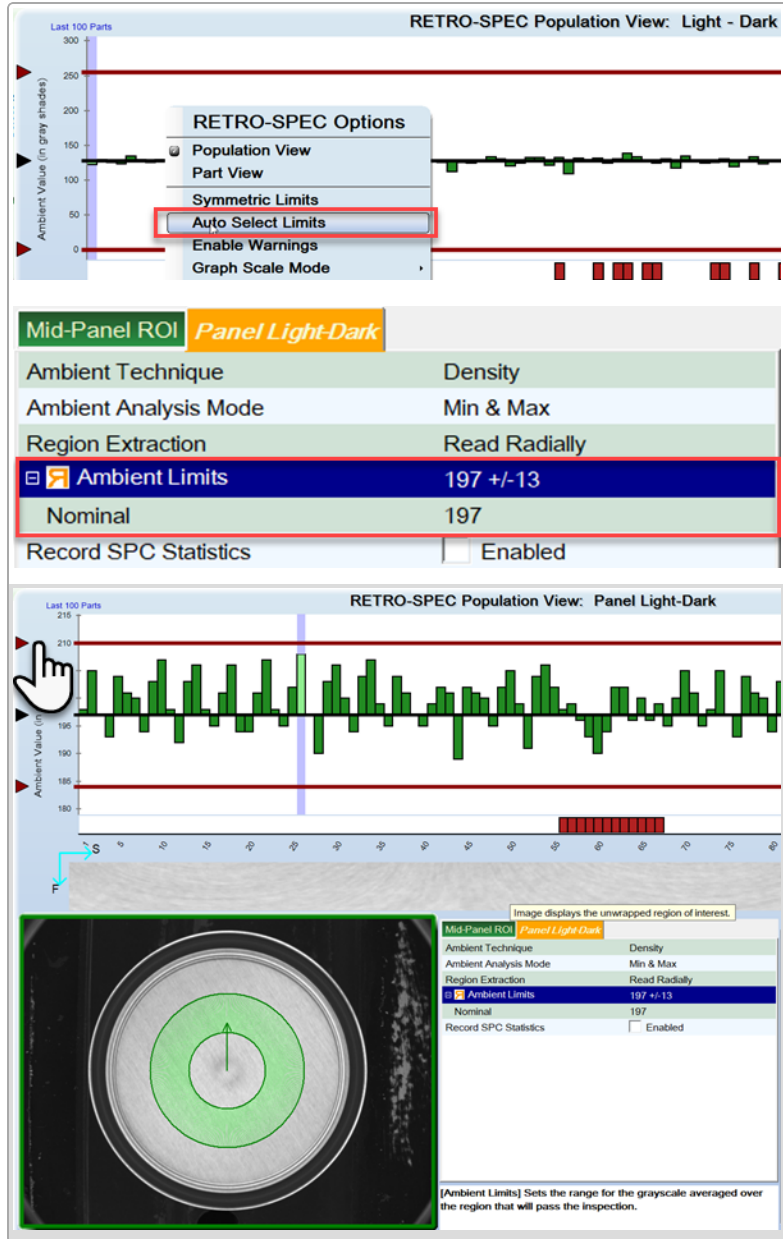
1. Pay attention to the parameters (outlined in red) shown to the left. Start with these settings, and adjust if needed for your part.
2. Leave the remaining parameters at the default values. Your values may vary, based on your part and system setup.
3.  Select the OK button to save changes and exit.



Mid-panel inspection example. You can make the inspection more or less sensitive to your parts' defects by moving the red horizontal bar in the graph up or down.

Set up the Mid-Panel Light - Dark Inspection

We are using an Ambient inspection to find parts that are too light or too dark.



Double-click the Panel Light - Dark inspection to edit it.

To set up the inspection:

1. Put the lane online, wait a few seconds for the system to acquire several images, and select the [+100] button.
2. Take the lane offline.
3. Right-click over the Retro-Spec Population View graph and choose Auto-Select Limits. The system will automatically set the inspection limits based on your parts.
4. Leave the remaining parameters at the default values. Your values may vary, based on your part and system setup.

To test the inspection:

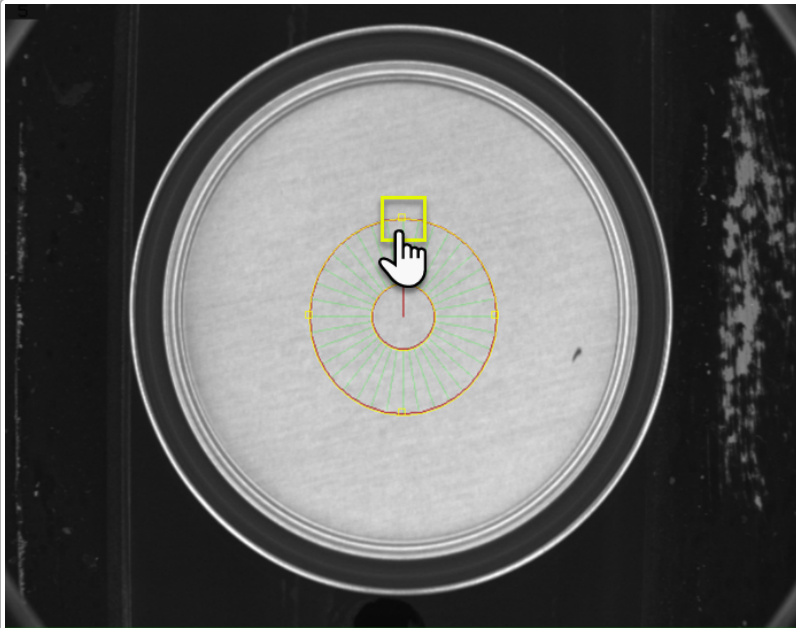
1. Scroll through the images to make sure parts are passing (or failing) as expected.
2. You can make the inspection more sensitive by moving the red horizontal bars on the Retro-Spec graph closer to center, or less sensitive by moving the red horizontal bars away from center.



Select the OK button to save changes and exit.

Place the Center Panel ROI

We will set up the Region of Interest (ROI) to inspect the center panel.



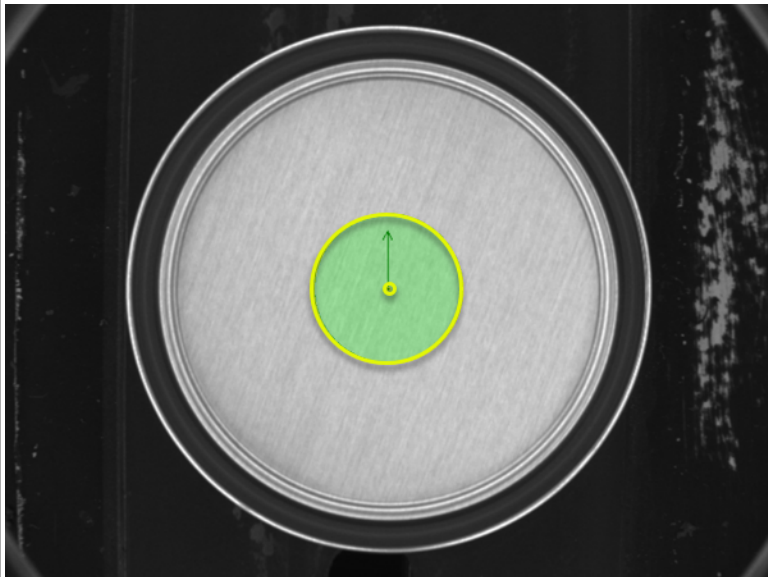
Double-click the name of the Center Panel ROI in the inspection tree to edit the region.

To edit the region:

1. Click in the center of the region. You will see yellow boxes on the inner region border. Drag it inwards so that "Inner Radius" = 1.
2. Click inside the default region.
3. Select one of the yellow boxes on the outer region border, and drag it about one-third the distance from the center to the countersink as shown. The region should cover the center of the panel.
4. Leave the remaining parameters at the default values. Your values may vary, based on your part and system setup.

Center Panel ROI	
X	0
Y	0
Inner Radius	1
Thickness	61
Use Arc Segments	☐ Enabled
Perimeter Type	Normal

5.  Select the OK button to save changes and exit.



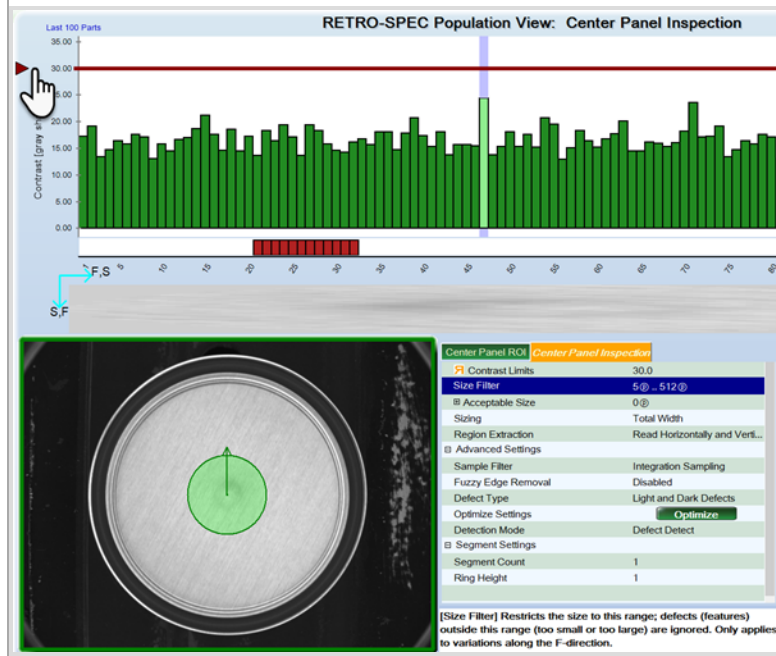
Set up the Center Panel Inspection

We are using a Contrast inspection to find defects on the center panel. Double-click the Center Panel Inspection to edit it.

Center Panel ROI	Center Panel Inspection
Contrast Limits	30.0
Size Filter	5 @ .. 512 @
Acceptable Size	0 @
Sizing	Total Width
Region Extraction	Read Horizontally and Vert...
Advanced Settings	
Sample Filter	Integration Sampling
Fuzzy Edge Removal	Disabled
Defect Type	Light and Dark Defects
Optimize Settings	Optimize
Detection Mode	Defect Detect
Segment Settings	
Segment Count	1
Ring Height	1

To set up the inspection:

1. Pay attention to the parameters (outlined in red) shown to the left. Start with these settings, and adjust if needed for your part.
2. Leave the remaining parameters at the default values. Your values may vary, based on your part and system setup.
3.  Select the OK button to save changes and exit.



Center panel inspection example. You can make the inspection more or less sensitive to your parts' defects by moving the red horizontal bar in the graph up or down.