PrintVision/Jupiter User Guide

For:
PrintVision/Jupiter
PrintVision/Jupiter Single Mode
PrintVision/Prelude

Product Version 2.4

AVT P/N: 17200187
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PrintVision/Jupiter 2.4 User Guide
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1 Introduction

PrintVision/Jupiter is a powerful defect detection tool for press operators. Using *PrintVision* can significantly increase the quality of your print and reduce waste and customer rejections.

The moment a defect is detected, the image of the printed area is displayed on the screen and the alarm lights up. The defects are marked on the screen, providing you with an invaluable tool to investigate the nature of the problem and fix it before it turns into expensive waste.

You can expand the capabilities of PrintVision/Jupiter with a range of add-on modules:

- **pRegister** – Automatic pre-registration for CI Flexo presses
- **Presco** - Automatic pressure pre-setting for CI Flexo
- **ABCV** – Automatic Barcode Verification
- **PrintFlow** – Reporting Module
- **RiteSeal** – A solution for viewing & monitoring Cold Seal or Varnish registration
- **Dual Side Inspection** – for double-sided print runs
- **IDEal** – in-line color measurement
- **PrintVision/Argus** – An add-on with combined process control and quality assurance capabilities, that inspects 100% of the printed web material

1.1 About this Guide

1.1.1 *PrintVision* systems

This User Guide applies to the following *PrintVision* systems:

- PrintVision/Jupiter
- PrintVision/Jupiter Single Mode[1]
- PrintVision/Prelude[2]

[1] See "Jupiter single screen systems," page 55 for defect handling on single-screen systems.

[2] *PrintVision*/Prelude does not perform Automatic Inspection. Chapters that apply are Overview, Viewing, and (on some systems) pRegister.

1.1.2 Using this Guide

This Guide will help you understand and get the most out of your *PrintVision* system. It is recommended that you read it through before starting to use the system.

The remaining chapters deal with optional modules that are not installed on every system. Refer to those that apply to your system.

A complete reference summary of all screen icons and menus appears at the end of this manual.

1.1.3 Conventions used in this Guide

Style / symbol	Explanation
* (Optional)	An asterisk and the word “Optional” indicates an optional item or process that may not be installed on your system.
Click **Next**	Menu items and screen buttons appear in bold letters, and the term “click” is used.
Press **Defect Study**	Control panel keys appear in bold letters and the term “press” is used.

1.2 Basic Terminology

1.2.1 Automatic Inspection

Automatic Inspection generally includes a step-by-step coverage of the entire print area (**Cover Map**). It may also include close-up examination of specified print areas (**User-defined Map**), and (if installed) barcode verification (ABCV) and color measurement (IDEal).

When you activate Automatic Inspection, the system records **Master** images of a complete print repeat, and then continuously compares the live image with these Master images. When the system finds a difference between the live image and the Master, it immediately alerts you and indicates the severity, type, and location of the defect—enabling you to solve the problem in real time.

1.2.2 Master Image

When Automatic Inspection is initiated the first time, the system takes sample pictures of all steps in all defined maps. These images are called “Master Images”. The master images are used as the reference during Automatic Inspection. The system compares each master image to the current image of the print in the same location. The system turns on the alarm when it finds differences between the two images.

1.2.3 Maps

The system displays the repeat, according to the borders you define, in the **Job Map** window. The current **Task Map** (Cover, User-defined or Barcode)

is superimposed on the Job Map, showing the steps that constitute the current task.

1.2.4 Defect Study

When the system has found a defect, you can perform a **Defect Study** that is toggle the Defect Image with the **Master Image** on the same screen. You can then decide what action you need to take.

1.2.5 Major and Minor Defects

The system lets you define two types of defect: Major and Minor.

- When a Minor Defect is found the yellow alarm light turns on.
- When a Major Defect is found the red alarm light turns on, and the camera stays at the step where the defect was found—for as long as the defect persists.

1.2.6 Optic Head

The system camera is installed as part of an "Optic Head"—a unit that contains the camera itself, an illumination source and additional components.

The optic head is a unit that moves back and forth along a bridge that traverses the press.

1.3 What's New

The new options and features in Jupiter version 2.4 include:

- "Unique Point," page 28, page 43
- "Elongated Barcodes," page 68
- "User-Defined Barcode Map," page 71
- "Presco Press Control," page 75

Modifications in this revision of the User Guide include:

- "Unique Point," page 28
- "Automatic Search for the Unique Point," page 43
- "Guidelines for working with Sensitivities," page 49
- "Sensitivities: Detailed Descriptions," page51
- "Barcode Sensitivity Thresholds," page 67
- "Elongated Barcodes," page 68
- "User-Defined Barcode Map," page 71
- "Deleting Steps," page 73

1.4 Safety precautions

Access to internal system areas—especially the scanning area assembly—by other than qualified Servicing/Maintenance personnel authorized *by AVT*, is prohibited and may cause personal injury and/or damage to the equipment.

Since the system has moving parts (the optic head) it is important not to operate it when someone is near the traverse bridge.

Note: At both ends of the traverse bridge there are emergency switches which can be used to instantly immobilize the camera in an emergency.

All electric power supplies in the *PrintVision* system are located behind protective covers and there is no danger to people or equipment when the system is operated according to the instructions in this User Guide.

However, basic safely precautions—including the following precautions—should always be followed to reduce the risk of electric shock, personal injury and fire.

- Carefully follow all instructions and warnings marked on the system units
- Prior to cleaning the system units, turn off the mains power supply.
- Never use liquid or aerosol cleaners on the units.
- Do not expose the system to direct sunlight, open fire, hot radiators, moisture or sources of contamination.
- Do not cover or block the ventilation openings on the system units.
- Use authorized power supply only. The voltage and frequency required by the system are specified in the installation instructions.
- Use only power cables supplied or approved by AVT for use with the system.
- The use of controls, adjustments or functions other than those specified in this manual may result in hazardous consequences and in such event the manufacture warranty is void.

2 System Overview

This chapter describes the components of the *PrintVision* system. It is divided into the following sections:

- **Console components**: Monitors, control panel, mouse, and light tower.
- **Optic Head components**: Camera(s) & Bridge(s).
- **Control Panel keys**: Layout and functions.
- **Screens**: The basic layouts of the two Console screens, and the basic toolbar icons, in the standard modes of operation.

2.1 Console components

The press operator controls the system via the console (Figure 1Error! Reference source not found.), which has one or two screens, a light tower, a control panel, and a mouse.

Note: In some installations the *PrintVision* console may be replaced by a customer-supplied console, but the components (control panel, screen(s), mouse and light tower) are identical to those in standard installations.

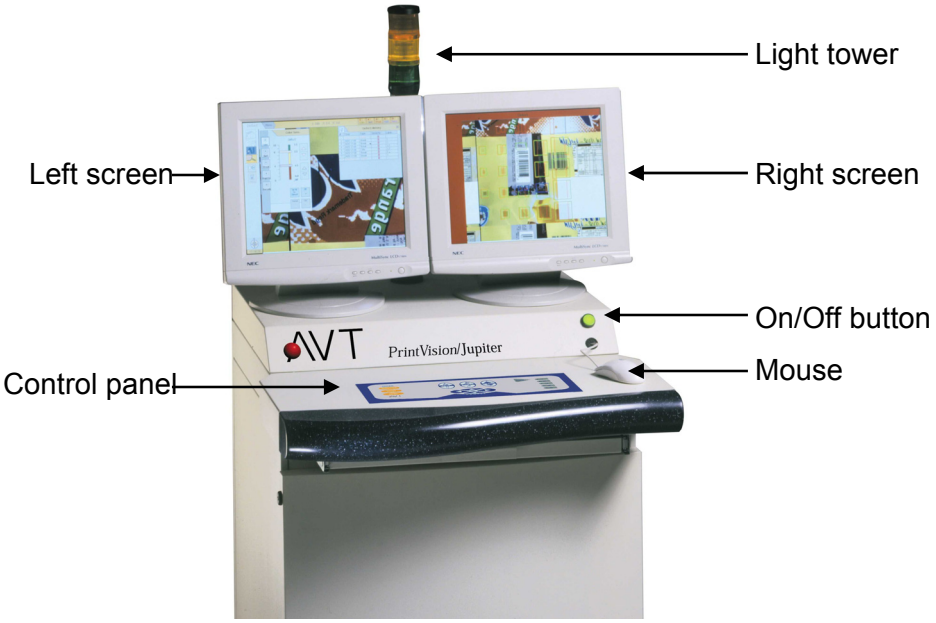


Figure 1. PrintVision/Jupiter console

Figure 2. PrintVision/Jupiter, single screen version

2.1.1 Power controls

The green On / Off button is located on the right side of the console, above the keyboard

2.1.2 Mouse

A standard computer mouse is located on the console, and enables you to perform most functions by clicking toolbar icons or menu items.

2.1.3 Control panel

The control panel is located on the console, and is used for certain functions. The control panel keys are summarized on page 14.

2.1.4 Light tower

The light tower is located on top of the console and indicates the current inspection status. There are three colored lights.

- **A green light** indicates that the system is operating in automatic inspection mode, and no defects have been found.
- **A yellow light** indicates that one or more *minor* defects have been detected.
- **A red light** indicates that one or more major defects have been detected.

- **A buzzer *** (optional) is activated—in some systems—whenever the red light goes on.

*Additional light towers * (optional)*

Additional light towers can be located at other parts of the press so that you can see the inspection status even when you are away from the console.

2.1.5 Monitors

Depending on your system, there may be one or two monitors on the *PrintVision* console. The main screen layouts are described in "Screen Display," page 15.

*External monitors * (optional)*

Additional monitors can optionally be installed at a different location (or locations) along the press.

2.2 Optic Head

The *PrintVision* camera is installed as part of an optic head—a unit containing the camera itself, an illumination source, and additional components. The optic head is a unit which moves back and forth along a bridge which traverses the press.

Figure 3, page 12 shows a typical installation. The labels indicate the moving optic head (A) the traverse bridge (B), and one of the emergency switches (C).

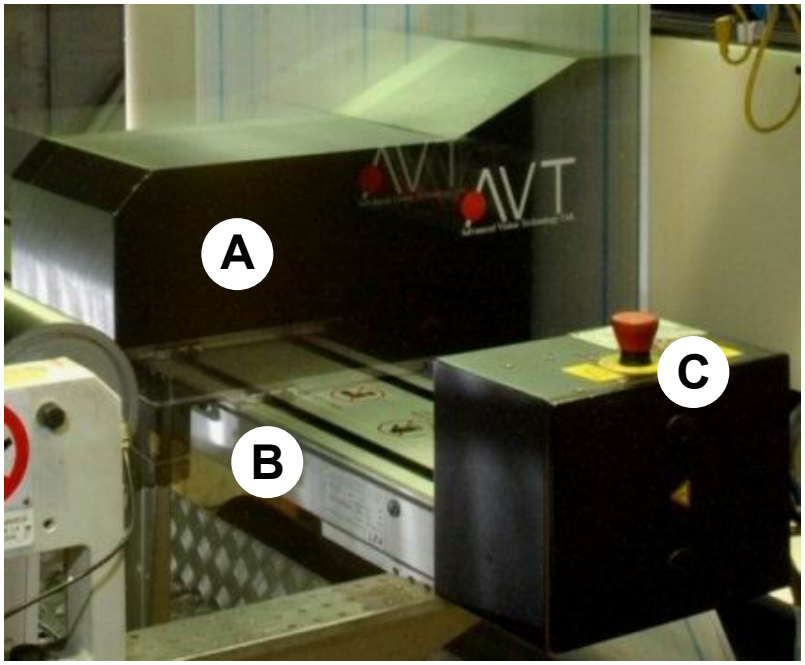


Figure 3. PrintVision optic head mounted on a printing press

The camera is programmed by the system operator to inspect selected areas of the repeat at high resolution. The image is generally displayed full-screen on the left-hand monitor.

2.2.1 Emergency switches

On each end of the camera bridge is a red emergency switch. Pushing either one of these emergency switches immediately cuts off power to the optic head. The optic head immediately stops moving and it can then be manually pushed along the bridge.

To resume power supply to the optic head, rotate the emergency switch clockwise.

2.2.2 RiteSeal camera * (optional)

The *PrintVision* RiteSeal camera is a special, dedicated camera that highlights differences in reflectivity. This is used to monitor Coldseal, Hotmelt and varnish, to verify that they are being printed and positioned correctly relative to the print. Therefore, if RiteSeal option is installed on your system, there is a second camera (the "RiteSeal camera") mounted on its own traverse bridge.

For Coldseal and Hotmelt viewing, the RiteSeal camera is mounted on the reverse side of the web. For varnish viewing the RiteSeal camera is mounted on the same side as the main camera, but at a different location along the press frame.

For more details see "Dual-Head Systems," page 111.

2.2.3 Dual head systems * (optional)

Where both sides of the web are printed on, there may be two regular *PrintVision* optic heads, one on either side of the web. Inspection can be carried out on either or both sides of the web, and each camera image can be viewed on its own, or superimposed one on the other to monitor registration.

For more details see "Dual Head Automatic Inspection," page 113.

2.3 Synchronization devices

The system is synchronized with the printed web by electronic signals, which tell it when each new repeat starts, so it can regulate the strobe beat and produce a steady image of the web. The signals come from one or more of the following electronic devices installed on the press.

2.3.1 Encoder

The encoder is an electronic device installed on the press that rotates at the same rate as the press and sends a synchronization signal to the system.

2.3.2 Optic sensor * (optional)

In some installations, where there may be significant stretching of the web, an optic sensor may be used in addition to the encoder (above) to generate the synchronization signal.

Before inspection starts, the system operator must position the optic sensor in front of the cut marks printed on the package. These marks provide the system with a more accurate signal, and therefore produce a more stable image.

2.3.3 Rotative Pulse Generator * (optional)

The Rotative Pulse Generator (RPG) is an electronic device required in some installations. It includes a wheel rotated by the web and provides a synchronization signal to the system.

2.3.4 Direct synchronization signal * (optional)

In some installations the synchronization signal is provided directly from the press.

2.4 Control panel keys

The *PrintVision* control panel, illustrated below, is divided into three sections: Inspection keys (yellow), Camera adjustment keys (blue), and Fast Access keys (gray).

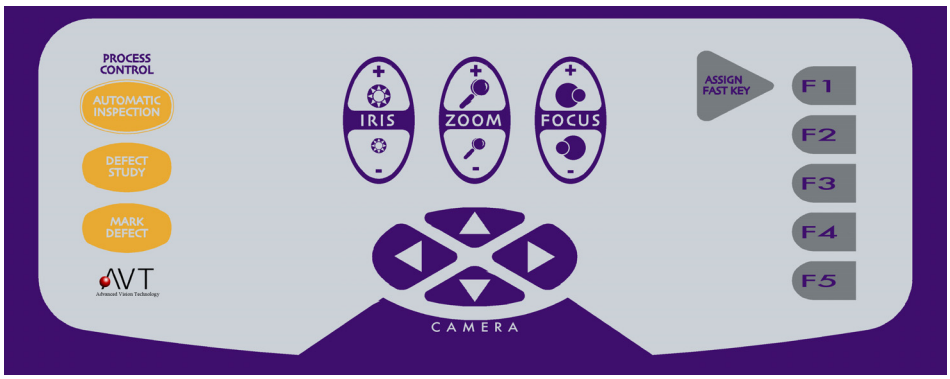


Figure 4. Control Panel

Table 1. Control Panel keys summary

Key	Function
Inspection keys (yellow)	
Automatic Inspection	Starts / stops Automatic Defect Detection.
Defect Study	When a system has found a defect, toggles between the master and the defect.

Key	Function
Mark Defect	When a Label Inserter is installed on the press frame, press this button to stick a label on the web (to mark defective web).
Camera control keys (blue)	
Iris (+/–)	Adjust the brightness of the live Image.
Zoom (+/–)	Adjust the magnification of the live Image.
Focus (+/–)	Adjust the sharpness of the live image.
Arrow keys	Move the camera within the repeat.
Fast keys (black)	
Assign Fast Key	Use to assign locations to the Fast keys F2–F5.
F1	Sends camera to the Zero point of the current Job.
F2–F5	Send camera to one of four user-defined locations on the web.

2.5 Screen display

Standard *PrintVision* systems utilize two screens, while others have a single screen. Both types of system have the same functionality, though there are slight differences in the way the systems are operated. (For more details, refer to “Single-Screen Systems,” page 65.

2.5.1 Standard screen display

Figure 5, page 15 page shows a typical screen display during standard operation.

When no defect has been found, the right screen simply duplicates the live image from the left screen.

The main screen-items are summarized in

Table 2, page 16.

Figure 5. Standard left/right screen display

Figure 6. Main (left) screen with Job Map open

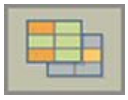
Table 2. Standard screen display

	Item	Description
Left screen	Toolbar	Contains clickable icons to perform most PrintVision functions.
	Menu bar	Allows you to perform all *PrintVision* functions (even those with dedicated icons on the toolbar).
	Live image	The image of the printed web.
	Job Map window	Displays an image of the whole printed repeat together with the location of the camera. The current inspection map (Cover, User-defined, Barcode) is superimposed on the Job Map.
	Status bar	Indicates active inspections, camera settings, light tower status, and sensitivity settings.
Right screen	Live image / Defect / Master	The image from the press. When a defect is found, shows the image with the defects, or the Master image of the same location.
	Image status frame	The frame round the image in the right window indicates whether it is: Red = Major Defect found Yellow = Minor Defect found Green = Master Image

2.5.2 Main toolbar

The main toolbar, which appears when you open PrintVision, contains four or five large icons (depending on your system). These icons give you access to the main PrintVision functions and to dedicated toolbars.

Table 3. Main toolbar icons

Icon	Name	Function
	**Job**	Opens Job toolbar
	**Press Control*** (optional)	Opens Press Control toolbar
	**Tasks**	Opens Task toolbar
	**Automatic Inspection**	Starts/Stops Automatic Inspection
	**Defect Study**	(When a defect has been found) toggles between Defect Image and Master Image.

Opening and Closing toolbars

Clicking on the Job or Task menu in the main toolbar opens the dedicated toolbar for Job or Task functions.

The figure below shows the Task toolbar open. To close any toolbar and return to the Main toolbar, click the × icon at the bottom of the toolbar.

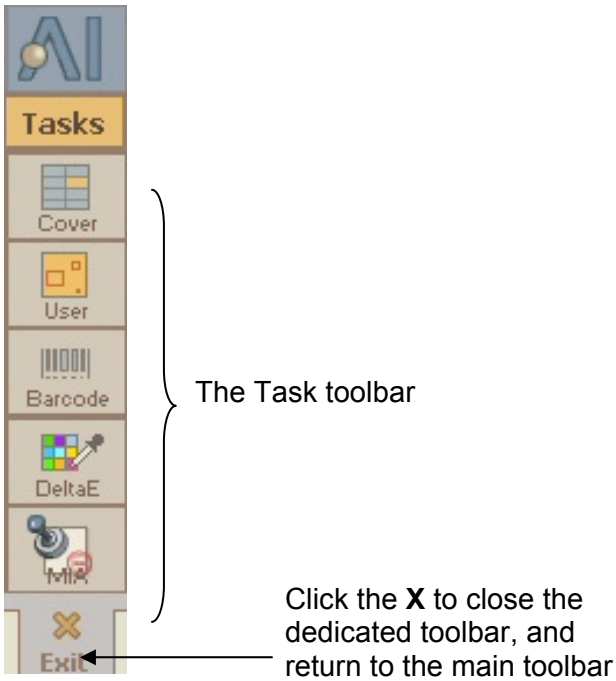


Figure 7. The Task toolbar

2.5.3 Job Map icon

The Job Map icon appears in the lower left corner of the left screen. Clicking on the Job Map icon opens/closes the Job Map window, that displays a map of the entire print repeat, and shows the location of the current camera image on the repeat.

2.5.4 Status Bar

The Status Bar is the orange bar along the top of the left screen. It indicates Active Inspections, camera settings, light tower status, and defined tasks. (In the figure below, the defined tasks are, from left to right, Cover Map, User-defined Map, Barcode and IDEal.)

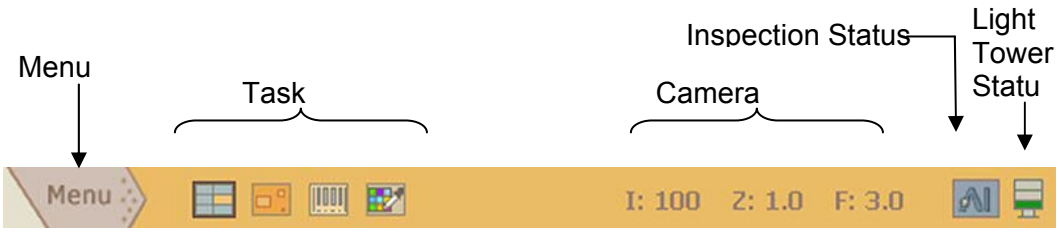


Figure 8. Status bar

2.5.5 Menu tab

Clicking on the Menu tab (on the Status Bar) opens the menubar, from which all *PrintVision* functions may be performed (including those with their own icons on one of the toolbars).

Figure 9. Menubar closed (above) and open (below)

When the menubar is open it hides part of the status bar. To reveal the *full* status bar again, simply click on the menubar arrow icon, to close the menubar.

2.6 Terminology

The following are basic *PrintVision* terms. There is also a quick-reference glossary at the end of this manual.

2.6.1 Job Map

The Job Map is a composite picture of the entire inspection area, used to indicate the current location of the camera, and also to display the various task maps (when defined). The Job map generally appears in the lower left corner of the left screen, however, it can be enlarged, moved, and closed as required.

Figure 10. Job Map

2.6.2 Tasks

A Task is one of the functions that *PrintVision* performs during Automatic Inspection. Depending on your system, up to four types of tasks can be defined:

- Cover Map
- User-defined Map
- Barcode Map* (optional) – for Barcode verification
- IDEal Map* (optional) – for accurate color measurement

Each task is defined as a map with one or more locations (steps) on the print repeat. Task Maps are displayed superimposed on the Job map, so you can clearly see what each task includes.

2.6.3 Task Maps

Cover Map

A Cover map is a grid covering the entire Job Map. Each rectangle on the grid is a step in the Cover Inspection. During Automatic Inspection, the camera moves from step to step, according to the cover map, as the system checks each location for print defects.

The Cover Map task is the basic defect detection task, which is used on almost all PrintVision systems. Figure 11, page 21 shows a Cover Map grid of 72 inspection steps. The yellow cursor shows the current position of the camera.

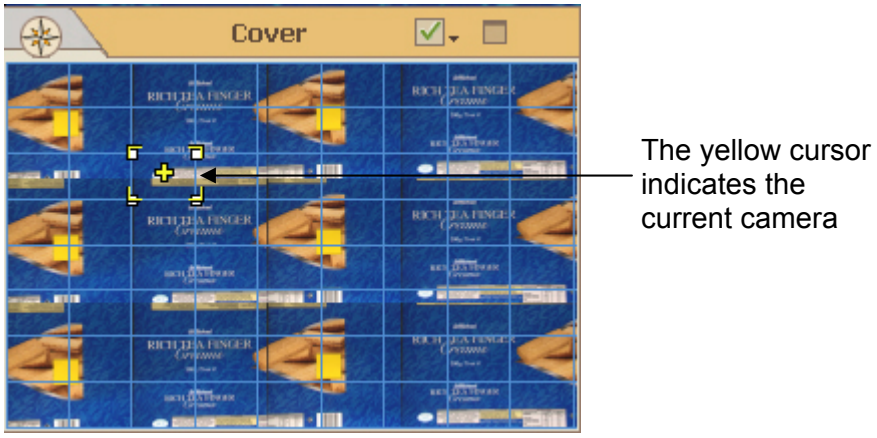


Figure 11. Cover Map (grid) displayed on Job Map

User-defined Map

The User-defined map is one or more rectangles, anywhere on the Job Map. Each rectangle is a step in the User-defined Inspection. Each step can have its own camera settings.

Figure 12 shows a User-defined Map with steps using different zoom values.

Figure 12. User-defined Map (two steps defined)

*Barcode Map * (optional)*

The Barcode map is a map of barcodes to be checked during Automatic Inspection. It is available only if the barcode module is installed. For full details see “Barcode Verification”, page 67

*IDEal Map * (optional)*

The DeltaE map lets you define points of the print for high-accuracy color measurement. For full details see “IDEal,” page 102.

3 Viewing Mode

This chapter describes how to use the viewing functions of the system.

When you first switch the system on, before you set up Automatic Inspection, the system is in Viewing mode. The system produces a steady, live image of the print, and you can control the camera to see any part of the print at the required magnification and brightness.

When the system is in Automatic Inspection mode, you can take control of the camera at any time by stopping Automatic Inspection and using the system in Viewing mode.

3.1 Using Viewing mode

One of the main uses for the Viewing mode is during press Set-up.

Although the main strength of *PrintVision* systems is Automatic Inspection, you may sometimes decide to use Viewing Mode even *during* production.

To use Viewing mode:

1. Click with the mouse on a point in the Job Map to view a specific area of the print.

   OR

   Use the camera arrow keys on the control panel to view a specific area of the print.

   The current image of the selected area is displayed in the main screen.

   Note: Before you set up the system for the current Job, the Job Map displays the image from the *previous* Job, and therefore it cannot be used for navigation. However, you can still view different parts of the print using the arrow keys.

   Note: If the Job Map is closed, open it by clicking on the Job Map icon  at the bottom of the toolbar.

2. Use the camera keys to adjust Iris, Zoom and Focus, as necessary. (Current values are displayed on the status bar.)

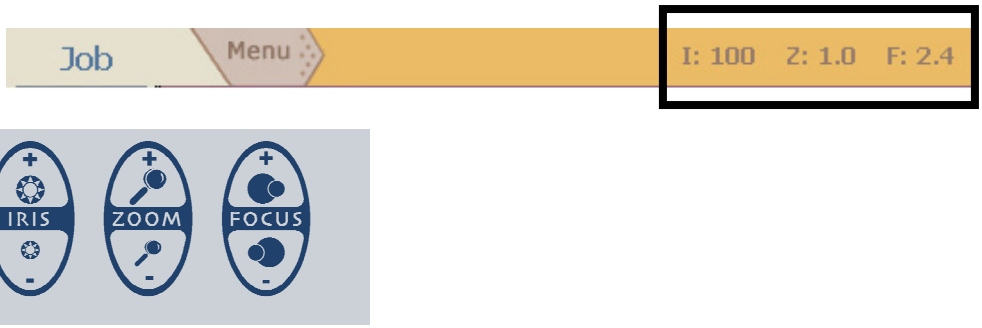


Table 4. Camera Control keys

Key	Function
Iris (+/–)	Increase or decrease the brightness of the image.
Zoom (+/–)	Increase or decrease the magnification of the image.
Focus (+/–)	Adjust the sharpness of the image. A default Focus value is set during installation and does not usually require adjustment. However, when a high zoom value is used the image may become slightly blurred. If this happens you can use the Focus keys to sharpen the image.

3.1.1 When is the system in Viewing mode?

The system is in Viewing mode whenever:

- The system is on, but Automatic Inspection is not active
- Automatic Inspection has found a defect and you click **Defect Study** (Automatic Inspection stops, and you can view any area of the print.)
- You press any Fast Key to send the camera to a pre-defined location (see “Fast Keys,” page 24)

3.1.2 How do you know the system is in Viewing mode?

When the system is in Viewing mode:

- All the light tower lights are off
- The AI icon is removed from the status bar

3.2 Fast Keys

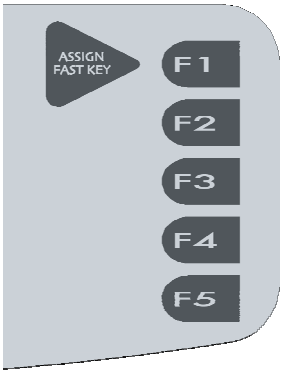


Figure 13. The Fast keys (on the control panel)

The *PrintVision* control panel has five fast keys, **F1–F5**:

- **F1** is configured to move the camera to the zero point for the current Job (the bottom left corner of the Job Map).
- **F2-F5** can be assigned to quickly zoom in on important parts of the print.

3.2.1 Using Fast Keys

You can assign each of the fast keys **F2–F5**, to a particular location, with individual zoom and iris values.

To assign a Fast key:

1. Move the camera to the required location.
2. If needed, adjust the zoom and iris values.
3. On the control panel, press **Assign Fast Key**—then press one of keys **F2–F5**.

   A confirmation message flashes on the screen, and the Fast key is assigned.

To move the camera to a Fast-access step:

- Press one of the Fast Keys (**F1–F5**) either during Automatic Inspection, or in Viewing mode.

  The camera moves to the required step.

> **Note for Dual Head systems:** Each fast key can be assigned to Camera1, Camera2 or Both (superimposed). For details see Chapter 10.

4 Setting Up Automatic Inspection

This chapter describes all aspects of setting up Automatic Inspection.

When you turn on the system, it is in Viewing mode. The live camera image can help you to set-up the register and color of your print, and eliminate defects, until you attain production quality. Once you start printing with the required quality and at full printing speed, you can set up and run Automatic Inspection.

Set-up is fast and easy. You need to enter a few Job parameters (how many depends on your system configuration) and (optionally) define scanning maps. Then the system takes master images of the print and starts using them to check the print.

4.1 Setup Workflow

PrintVision/Jupiter combines simplicity with flexibility by offering you two alternative Setup methods: Fast Track and Advanced Track (see figure below).

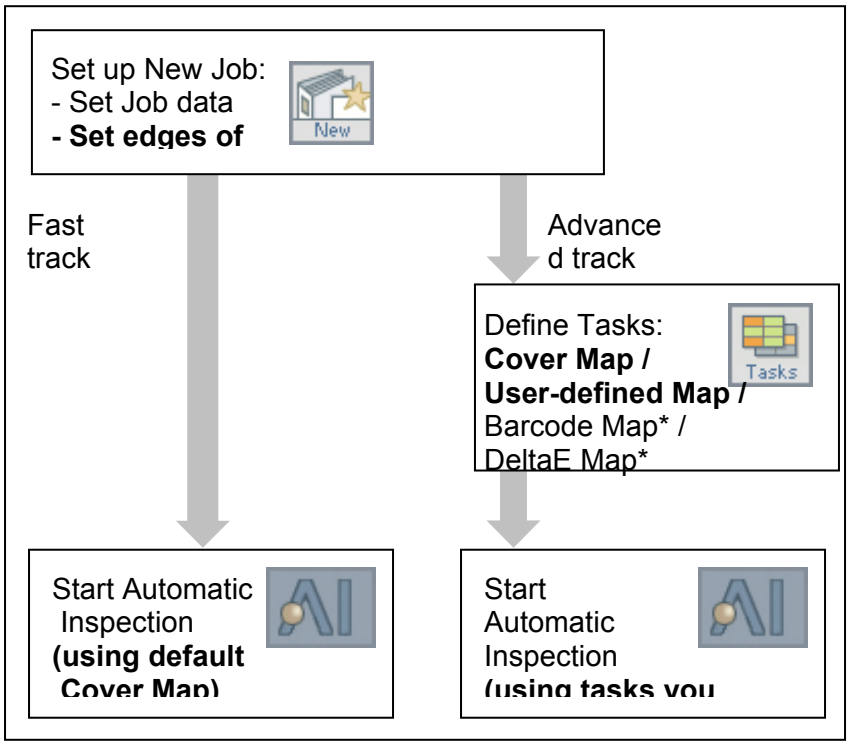


Figure 14. Setup Workflow diagram

4.2 New Job

The following sub-sections lead you through the steps of setting up a New Job. Stages marked *** (optional)** deal with options which are not installed on every system. If one of the optional steps does not apply to you, just skip to the next step.

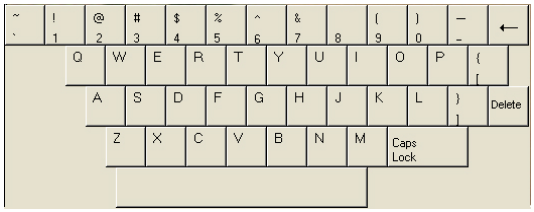
Note: In systems, such as those that include pRegister, **New Job** is split into two stages: **Set-up** and **Run**. On these systems you can begin the new Job (Set-up) before the press is running, leaving only the final stage (Run) to be completed when the press is running.

4.2.1 Start New Job

To begin a new Job:

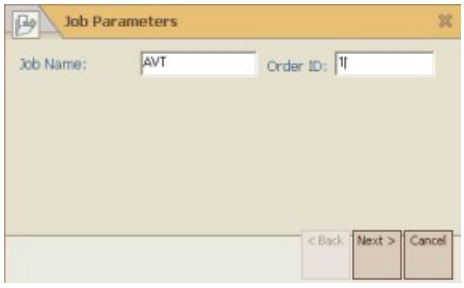
1. On the main toolbar click the **Job** icon  to open the Job toolbar.
2. On the **Job** toolbar click **New** (or **Set-up**).

   An alphanumeric keyboard appears on the lower half of the screen. This is used to type in text for some stages of Job Set-up.



4.2.2 Set Job Parameters * (optional)

If your system includes an archiving option (such as PrintFlow or Master Image Archive), you must give the Job a Name and Order ID. The name is saved and used to locate and load the Job next time it is run.



To set Job name:

1. Use the screen keyboard to type in a name for the Job and an Order ID.

You may optionally type in a Description of the Job and Comments. (Information entered here will appear on the Job Info box for this Job, and appear next time you load this Job.)

2. Click **Next**.

4.2.3 Select Sensor * (optional)

If your system has more than one sensor you now select which one will be used to synchronize the strobe which produces the steady image of the web.

If your system uses an optic sensor, verify that the sensor is correctly located across the web.

To select the sensor:

1. Select the synchronization method.
2. Click **Next**.

4.2.4 Set Dimensions

Setting the dimensions for the Job includes one or more of the following stages:

- Set circumference / number of teeth
- Set number of packages in the width of the repeat * (optional)
- Set number of packages in the circumference * (optional)

Set Circumference / Number of Teeth

Set the length of the repeat (Circumference or No. of teeth, depending on your press).

To set circumference / number of teeth:

1. Use the screen keyboard to type in the correct circumference (or number of teeth).
2. Click **Next** (on some systems, **Finish**).

Note: If your system includes pRegister, you are now asked: "Continue with pRegister settings?" For more details see "pRegister," page 86.

Note: In systems where **New Job** is split up into two stages: **Set-up** and **Run**, you have now reached the end of Job Set-up. When the press is running at full speed, click **Run** on the Job toolbar, to set the print edges, as described in the next section.

---

*Set number of Packages in width * (optional)*

Some systems (such as those with PrintFlow installed) require you to input the number of lanes. This enables the system to describe the location of a defect, for printed reports.

To set the number of Packages in width:

1. Use the virtual keyboard to enter the number of packages in the width of the repeat
2. Click **Next**.

*Set number of Packages in Circumference * (optional)*

If you selected optic sensor in the previous stage ("Select Sensor"), you must now type in the number of packages per repeat. The system then knows when each new repeat begins, and can produce a steady image.

To set the number of Packages in the circumference:

1. Use the virtual keyboard to enter the number of packages along the repeat.
2. Click **Next**.

4.2.5 Set Printing Type* (optional)

In many presses the web can be guided through two alternate paths, for surface or reverse printing. In such presses you must set the correct Printing Type, so the system knows which direction the web is moving in.

To set the printing type:

1. Select **Surface** or **Reverse**.
2. Click **Next**.

Note: If this parameter is not set correctly, Automatic Inspection will not work. This will be indicated by constant blinking of all three Light Tower lights.

To verify that the setting you have chosen is correct, press the **Up** arrow  on the control panel. The print image should move *downwards*.

4.2.6 Unique Point

Jupiter is designed to cope with normal levels of web movement and stretching. In some cases, for example in case of large or unstable web movements, the system may lock onto the wrong position along the web.

In order to optimize system performance a *Unique Point* can be defined. The Unique Point can be any mark or color variation that appears *once only* in

the repeat. The system uses the Unique Point during Automatic Inspection to ensure optimal locking to the print.

Note: On non-Flexo presses, defining a Unique Point may not be necessary.

The following are examples of possible **Unique Points**:

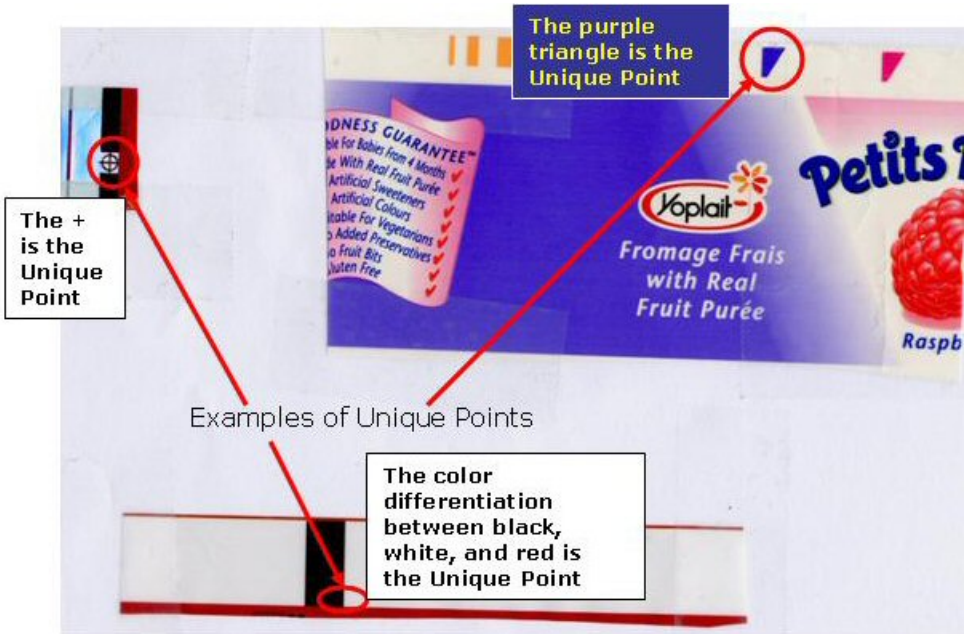


Figure 15. Examples of possible Unique Points

Note: If there is no Unique Point on the actual print, you can affix a piece of cliché (flexographic plate) with a symbol on it (such as + or ↑ or ✱) to the cylinder itself.

To set the Unique Point:

Note: If the job does not have or require a Unique Point, the message "No Unique Point" appears. Simply click **OK** and proceed to the next stage of Setup.

1. Do one of the following:

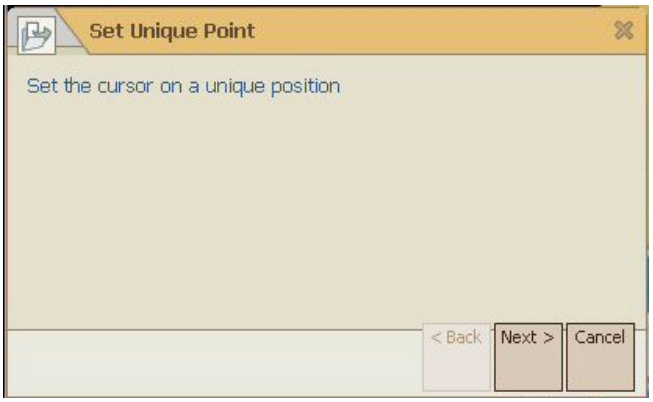
   - If your **Job Setup Toolbar** does not include a **Run** 

button, skip to the next step.

   - If your **Job Setup Toolbar** does include a **Run** 

button, click it now.

The **Unique Point Target Boundary** displays, and the **Set Unique Point** dialog box opens, asking you to "Set the cursor on a unique position".



2. Click on a unique point on the repeat to select it.

   The **Unique Point Target Boundary** moves to the clicked location. If the system determines that the defined area is valid as a unique point, "**Valid point**" appears in the dialog box.

> **Note:** If the system determines that the defined unique point is *not* valid, the message "**The point is not valid**" appears and you must select another point.

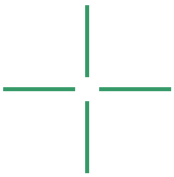
3. When a valid point is displayed, click **Next**.

   The system confirms that the defined point is unique.

4.2.7 Set Inspection Borders / New Job Run

The final stage of setting up the Job involves setting the left and right borders of the inspection area.

When marking the left border, it is best to select a point which is unique in the repeat (that occurs only once in the circumference). This point is used as a Zero point for the system.



To set the inspection borders:

1. Verify that the left edge of the web is shown on the screen (if necessary move the camera).
2. Click on the left edge of the inspection area.
3. Click **Next**.

   The left border is set and the green cursor moves to the right-hand side of the web.
4. Verify that the right edge of the web is shown on the screen, click on the right border of the inspection area.
5. Click **Finish**.

   The system builds a Job Map (this is not a Master Image, but simply an image of the whole inspection area.

   Job Set-up is complete.

   (Optional) If you have one or both of the Press Control modules—pRegister and Presco—you are asked if you want to continue with Press Control setup. For more details see “pRegister,” page 86
6. You can now do either of the following:
   - Start Automatic Inspection immediately (see below). *Jupiter* will create a Cover map using default settings.

     OR
   - Define Additional Tasks for the Automatic Inspection (see “Defining Tasks,” page 32).

4.3 Start Automatic Inspection

OR


To start Automatic Inspection:

- On the main toolbar, click the **AI** icon, or, on the control panel, press **Automatic Inspection**.

  The system starts Automatic Inspection using the defined scanning maps. During the first scan for each map the system records master images (this normally takes the system a few seconds per step).

For a detailed description of system behavior and possible settings during Automatic Inspection, see next chapter: "Working with Automatic Inspection," page 42.

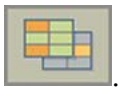
4.4 Defining Tasks

The following subsections deal with the tasks you can define:

- **Cover Map** – Covers the entire repeat in equal-sized steps; you define the size of the steps by setting the zoom value. See "Cover Map Set-up," page 32.
- **User-defined Map** – Contains one or more user-defines steps with a specific zoom value for each step. See "User-defined Map Set-up," page 35.
- **Barcode Map *** – Automatic Barcode Verification. See "Barcode Verification," page 67.
- **IDEal Map *** – Contains one or more color measurement points. See "IDEal," page 102.

Note: If Automatic Inspection is initiated when *no* maps are defined the system automatically creates and uses a default Cover Map.

To define tasks:

1. On the main toolbar, click **Tasks**  .

   The Task toolbar opens.

2. From the **Task** toolbar click the task you want to define.

   The toolbar for the selected task appears.

3. Set up the required task (see below).

4. Repeat for any additional task(s).

4.5 Cover Map Set-up

The Cover map is the basic Automatic Inspection map. It divides the whole repeat into "steps" which are inspected one by one.

By setting the zoom value for the steps of the Cover Map you define the step size and number of steps. A higher zoom value can improve the detection of very fine defects, but this also means there will be more steps in the Cover map, and it will therefore take longer to inspect the whole repeat. A zoom value of between 1.0–1.5 is usually recommended for maximum efficiency.

The Cover map is defined and controlled using the **Cover Map** toolbar.

To set up the cover map:

1. On the **Task** toolbar click **Cover**.

   The Cover Map toolbar opens.

2. Use the Camera keys on the Control panel to adjust the zoom. If you selected *Iris mode* = *Manual*, you can also use the keys on the Control panel to adjust the iris.

3. On the Cover Map toolbar, click **New**.

   You receive a confirmation message and a new Cover map appears, dividing the repeat into equal steps using the selected zoom value.

4.5.1 Cover Map status

Once a Cover Map is defined, it can be assigned any of three statuses:

- **Inspect** – includes the current Cover Map in Automatic Inspection
- **Disabled** – the Cover Map settings are preserved, and can be activated later, but no Cover Map inspection takes place
- **View-only** – the camera moves from step to step, displaying images on the main screen, but no Automatic Inspection takes place

Current status is indicated by the status icon on the Cover map titlebar.

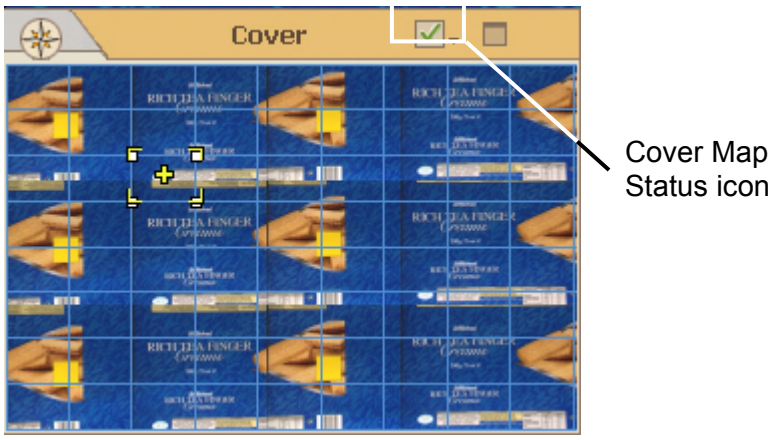
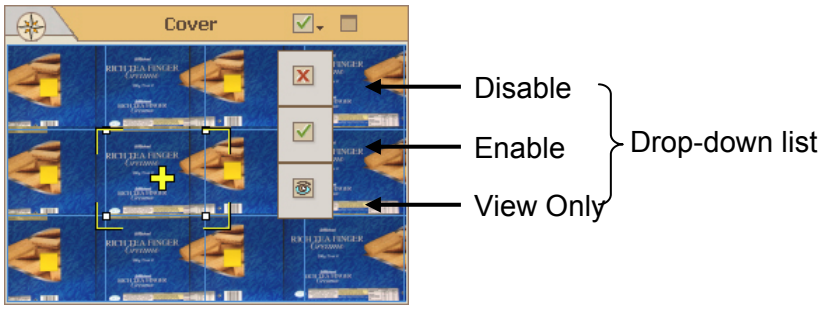


Figure 16. Cover map status icon

To change Cover map status:

1. On the Cover Map status icon click the **Cover Map Status** icon.

   The drop-down list opens.



2. Select **Disable**, **Enable**, or **View-only**.

4.5.2 Disable / View-only single step of Cover map

OR

You can change the status of *a single step* of the Cover Map to Disabled, or View-only, using the Cover map toolbar:

- **Disabled** – the system will skip this step during Automatic Inspection
- **View-only** – the system will pause for a few seconds on this step, to show its image, but will not inspect it

To change the status of a step:

1. Open the Cover Map toolbar (**Job—Tasks—Cover map**).
2. Click on the required step to select it.
3. To disable the step, click **Enabled** on the toolbar.
   - The button changes to **Disabled**.

   OR

   - To change step to View-only, click **Inspect** on the toolbar.

   The button changes to **View-only**.

4.5.3 Cover Map toolbar buttons

The following table summarizes the buttons on the Cover map toolbar.

Table 5. Cover Map toolbar summary

Button	Name	Function
	New	Create new Cover Map using current settings.
	Enabled / Disabled	Shows the status of the current *step*: Enabled or Disabled. Click on the button to change this setting.

Button	Name	Function
	Inspect / View	Shows the status of the current *step*: Inspect or View-only. Click on the button to change this setting.
	Next	Move camera to next step of the Cover Map.

4.6 User-defined Map Set-up

A User-defined map can be used to inspect selected areas of the repeat at a higher zoom value than would be practical for the whole cover map. A User-defined map can be used in addition to, or instead of, a cover map.

To set up a User-defined Map:

1. On the **Task** toolbar click **User**.

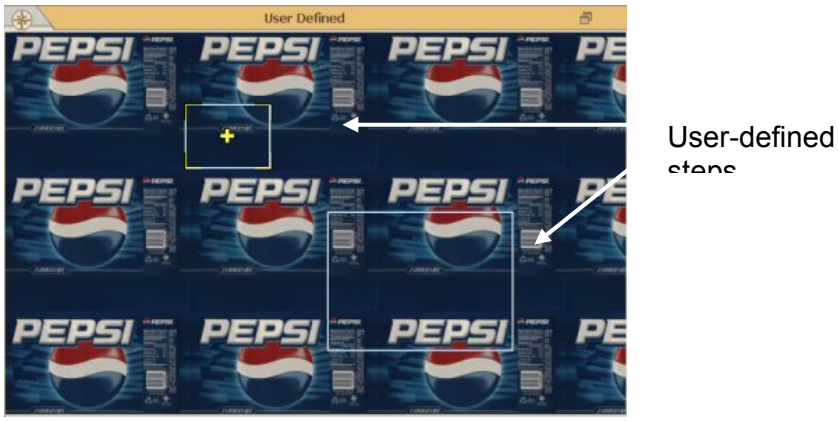
   The User-defined toolbar opens.

2. On the Job Map, click with the mouse to move the camera to the required area of the print—then adjust the zoom as required.

3. Click **Add Step**.

   The new step appears on the User-defined Map.

4. Repeat steps 2 and 3 for any additional steps you need.



5. Click **Exit**.

   The User-defined Map closes.

4.6.1 View-only / Disable User-defined Map

Once a User-defined Map is defined, its status can be changed from Inspect to View-only or Disabled, just as the Cover Map can. You can also change the status of an individual step, as with the Cover Map.

4.6.2 Delete Step in User-defined Map

To delete a step on the User-defined Map:

1. Click on the required step on the User-defined map.
2. Click **Remove**.

   The step is deleted from the User-defined map.

4.6.3 User-defined Map buttons

Table 6. User-defined Map buttons

Button	Name	Function
	Add Step	Create a new step on the User-defined Map, using the current camera location and settings.
	Remove Step	Remove the current step from the User-defined Map.
	Enabled / Disabled	Shows the status of the current *step*: Enabled or Disabled. Click on the button to change this setting.
	Inspect / View	Shows the status of the current *step*: Inspect or View-only. Click on the button to change this setting.
	Next	Move camera to next step of the map.

4.7 Task ratio

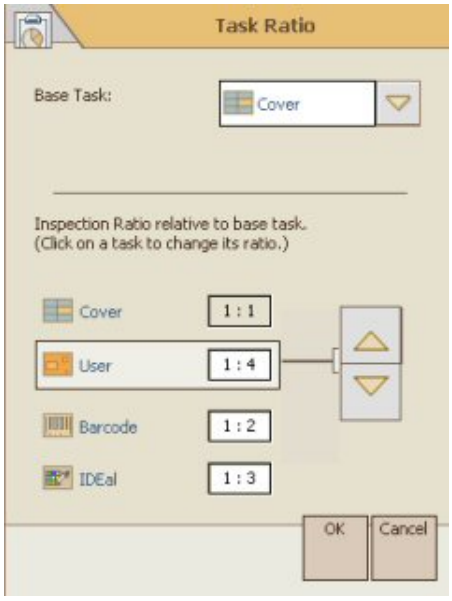
When more than one task has been defined (Cover, User-defined, Barcode), the tasks are performed one after the other in strict rotation.

You can give priority to one task over another, by assigning “Task ratios”. The Default “Task ratio” is 1:1, which means that all maps are inspected with the same frequency.

To change the task ratio:

1. On the **Job** menu, click **Task ratio**.

   The Task Ratio dialog-box appears.



2. Select the Base Task (the task to be performed *most frequently*) from the drop-down list.
3. For the other task (or tasks, if Barcode Inspection is installed), define the Inspection Ratio by using the up/down arrows in the lower part of the dialog-box.

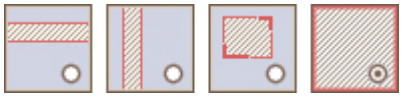
   For example, if you select Cover as the Base task, and then assign User-defined an Inspection Ratio of 1:4, Automatic Inspection will inspect once using the User-defined Map for every *four* inspections using the Cover Map.
4. Click **Ok**.

   The Task Ratio dialog-box closes. When Automatic Inspection is started, it will use the assigned Task ratio(s).

4.8 Masks

A mask can be set up before you start Automatic Inspection—if you know there is a specific area which you don't want to system to check. Alternatively, if during Automatic Inspection a particular area of the print causes a lot of unnecessary alarms—and you don't want to reduce sensitivity thresholds for *other* parts of the print—you can mask this area.

There are four mask icons:



- **Horizontal** (masks the entire width of the web between upper and lower borders which you define),

- **Vertical** (masks the entire length of the web between left and right borders which you define),
- **Inside** (masks a rectangular area—you define the upper-left and lower-right corners),
- **Whole map** (masks the entire print area).

You can also "flip" a mask, so that everything *other* than the selected area is masked using the flip button before you complete mask set-up:

You can choose to mask *specific* types of defect.

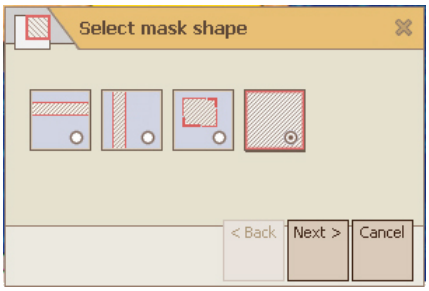
The mask map can include any combination of masks.

4.8.1 Creating a mask

To create a Mask Map:

1. On the **Job** toolbar click **Mask**.
2. On the **Mask** toolbar click **New**.

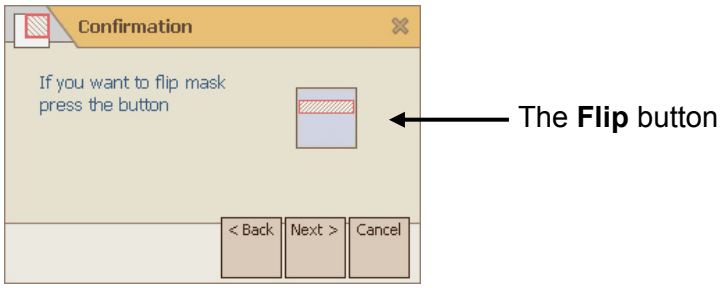
   The Select mask shape dialog-box appears.



3. Select **Horizontal**, **Vertical Rectangle**, or **Whole Map**.
   - For a Horizontal mask you are prompted to set the upper and then the lower limits.
   - For a Vertical mask you are prompted to set the left and then the right limits.
   - For a Rectangle mask you are prompted to set the top left, and then the bottom right corner of the mask.
4. On the left screen image, use the mouse to click on the first limit for the mask (if necessary you can move the screen image using the camera buttons or by clicking on the Job map)—then click **Next**.

   The first border/corner appears on the map.
5. Repeat for the other border ("Horizontal" or "Vertical"), or for the other corner ("Rectangle").

The selected mask area is shaded red on the left screen, and a confirmation message appears.

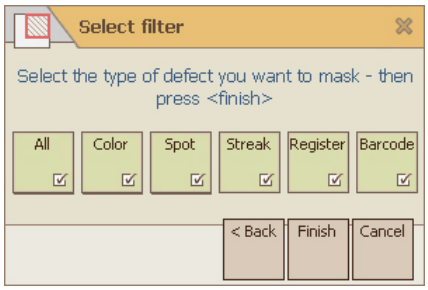


6. If you want to mask everything except the chosen area, click on the **Flip** button, on the Confirmation dialog-box

   The mask "inverts" and everything other than the selected area is shaded red.

7. When the correct area is shaded on the left screen, click **next**.

   You are now asked to select the *type of defect* you want to mask.



8. Select any combination of filters by clicking in the checkbox for that filter type.

   Defect types that you select *will not be checked for*—in the masked area—during Automatic Inspection. If you select *all* defect types, *no* Automatic Inspection will take place in the masked area.

9. Click **Finish**.

   The Mask Map closes.

4.8.2 Adding a step to the Mask Map

You can add additional steps to the mask map using the **New** icon on the Mask toolbar.

To add a step to the Mask Map:

1. On the Mask toolbar click **New**.

   The Select mask shape dialog-box appears.

2. Continue as described above for creating a new Mask.

4.8.3 Deleting Masks

To delete a step from the Mask Map:

1. Open the **Mask** toolbar.

   The Job Map displays the masks that have been defined.

2. Click on the mask you want to delete.

   The cursor moves to the selected mask.

3. On the **Mask** toolbar, click **Remove**.

   You are asked if you want to delete the current step ("Mask") or "All" steps.

4. Click **Mask**.

   The selected step is removed from the Mask Map.

4.8.4 Mask toolbar options

The following table summarizes the Mask toolbar options.

Table 7. Mask toolbar icons

Icon	Function
New	Add a new mask to the Mask Map.
Remove	Remove a step from the current Mask Map.
Enabled/ Disabled	Indicates the status of the selected (highlighted) step of the Mask map (if a mask Map has been defined). Click on the icon to change the status.
Info	When a Mask step is selected, the Info button becomes active. Displays settings for the current step: Filter, Enables/disabled.

4.9 Job Information

The Job Information window displays information about current Job and tasks.

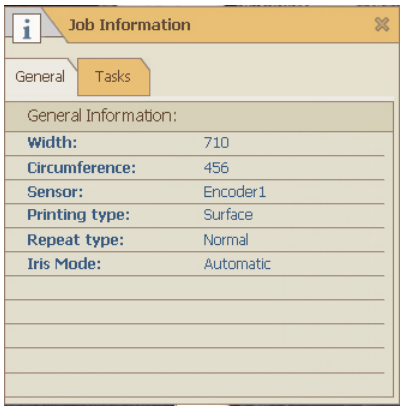


Figure 17. Job Information (General tab)

To view Job info:

1. On the Job toolbar, click **Job info.**

   The Job Information appears, with two or three tabs (depending on your system).

2. Click on a tab to bring it to the top of the pile.

5 Working with Automatic Inspection

This chapter deals with using Automatic Inspection. It is assumed that the Job has been correctly set up and Automatic Inspection is running.

5.1 Basic Principles

The basic principle of Automatic Inspection is comparing the live web image with a Master image.

When you start an Automatic Inspection, the system first records a Master copy of a complete print repeat, and then continuously compares the live image with this Master copy. When it finds a difference between the live image and the Master, it immediately alerts you and indicates the severity, location and type of defect.

Jupiter has the capability to detect very small defects—so small that they are barely visible to the naked eye and might not be significant for your needs. Therefore the system comes with sensitivity controls that you can use to change the thresholds for each type of defect (color, register etc.). Once you have done this, only defects larger than the defined thresholds will be displayed and trigger the system alarm.

For each type of defect you define *two* thresholds: one for major defects and a different one for minor defects.

5.2 Starting / Stopping Automatic Inspection

OR


Both the **AI** icon and the **AUTOMATIC INSPECTION** key on the control panel toggle between starting and stopping Automatic Inspection (click once to start, click again to stop).

The following indicate when Automatic Inspection is active:

- The light on the light tower is lit , indicating inspection status.
- The **AI** icon on the toolbar changes to green

- A small Automatic Inspection icon appears to the right of the status bar
- Map icons appear to the left of the status bar, indicating which tasks are active

- The camera cursor moves from step to step over the Cover Map
- The left screen image changes continually, to show the step that is currently being examined.

5.2.1 Automatic Search for the Unique Point

When Automatic Inspection starts, the system may first initiate an automatic search for the Unique Point if one was defined during Job Setup ("Setting Up Automatic Inspection," page 25).

The search is usually performed in the following cases:

- After Job Setup
- When the press is re-started after a break
- After splicing
- Before any Automatic Inspection that occurs after a certain time interval (pre-defined in the system)

Normally, the search is fully automatic and no user input is required .In some cases, if the unique point was not detected, the operator is required to adjust the unique point, In that case, the exact same unique point that was selected at the beginning of the job should be selected.

To adjust the unique point go to Menu – Job – Unique point – Adjust Unique point.

5.3 Defects

When the system finds a defect the following happens:

- The red or yellow light on the light tower lights up, depending on whether the defect is minor or major.
- A red or yellow frame appears around the defect image on the right screen.
- If the defect is *major*, the red light turns on and the camera stays at the step where the defect was found—for as long as the defect persists.
- If the defect is *minor*, the yellow light turns on and camera scanning continues.

Figure 18. Defect found (blue rectangle indicates spot)

Defects are indicated in the Defect window using the following color code:

Table 8. Defect color code

Color	Defect type
Green	Color defect
Cyan	Register defect
Blue	Spot
Red	Streak
Magenta	Barcode defect
Cyan	Edge defect
Pink	Other defects

When a defect is found you can do the following:

- Click **Defect Study** to toggle between the Defect Image and the Master Image on the *right* screen (see "Defect Study" below).
- If the Master image is defective, you can replace it (see "Re-master," page 46).

5.4 Defect Study

 OR 

When a defect has been found it appears on the right screen. To compare it with the Master image for that step, and view a live image of the area (to see if the defect is still occurring) use **Defect Study**.

To start a Defect Study:

1. When a defect has been found, click the **Defect Study** icon, or press **DEFECT STUDY** on the control panel.

   The Defect image on the right screen is replaced by the Master image, for comparison, and the left screen image zooms in to provide a live, magnified image of the defect(s).

2. Press **Defect Study** a few times to toggle between the Defect image and the Master image, on the right screen.

5.5 Zoom to Defect

When more than one defect is found, you can zoom in to any defect by clicking on it.

To view Defects close-up:

1. In the **Defect** window, click on a defect.

   The camera moves to the defect and zooms in.

2. Click **Defect Study** to toggle between the defect and master images.
3. Repeat the previous two steps for each of the defects that require closer examination.

5.6 Defect History

Defect History is a list of defects found in the current Job. It also lets you perform a Defect Study on earlier defects.

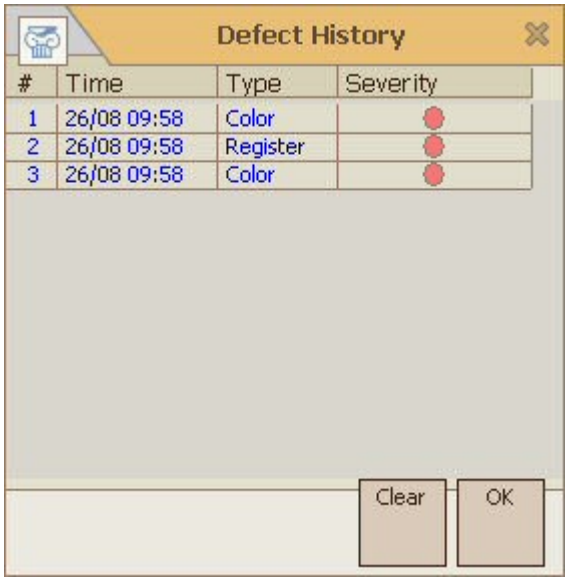


Figure 19. Defect History

The Defect History window shows the time, type and severity, of each defect recently detected in the current Job.

To perform a Defect Study on a past defect:

1. On the main toolbar, click **Defect Study**, to enter Defect Study mode.

2. On the Defect Study toolbar, click **Defect History**.

   Defect History appears.

3. Click on an item in the list to select it.

   The Defect image appears in the right screen.

4. Click **Defect Study** to toggle between the Master and Defect images.

   - To select a different defect, click on the required item in the Defect History list.
   - To delete the current Defect History list, click **Clear**.

5. To close the Defect History window, click **Ok**.

5.7 Re-master

When a Defect Study shows that it is the Master Image that is defective, you need to tell the system to take a new Master Image.

Depending on the nature of the defect, you can choose to re-master:

- The current step (that is, the step where the defect was found)
- The current map (that is, the map in which the defect was found (Cover or User-defined)
- All Task Maps for the Job.

To Re-master:

1. With Defect Study active, click **Re-master**.

   You are asked whether you want to select **Current Step**, **Current Map**, or **Job**.

2. Click the button you require.

   The camera takes a new master image (or images), and Automatic Inspection resumes.

5.8 Sensitivity settings

PrintVision can detect very small defects, invisible to the human eye, sometimes indicating problematic trends that may worsen over time and result in waste.

The success of an inspection depends on realistic sensitivity thresholds for the current job, so that unimportant defects are ignored, while all significant defects are identified. When *PrintVision* is installed, default sensitivity thresholds are configured for your press.

At any time you can change the sensitivity thresholds using the sliders accessed from the Sensitivity display on the status bar (Figure 20). The upper slider (or yellow arrows) can be used to set the threshold for minor defects; the lower slider (or red arrows) can be used to set the threshold for major defects.

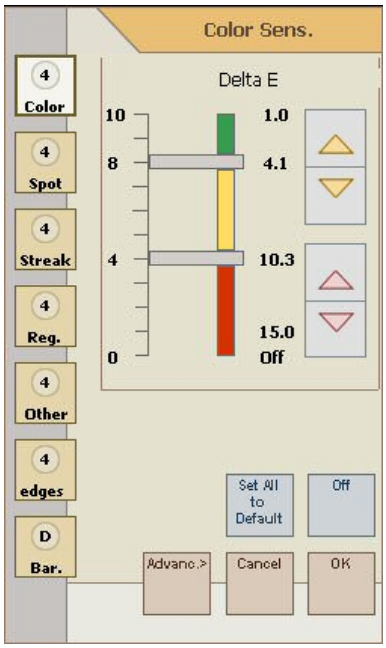


Figure 20. Sensitivity sliders for color defects

In order to simplify sensitivity settings, each defect type has a sensitivity scale of 0-10 (regardless of the actual units for the particular sensitivity type). When set to zero (Off), this type of defect will not be detected by the system. 1 is the lowest sensitivity and 10 is the highest. This scale (0-10) appears on the left side of the slider. Current sensitivity values are also shown on the status bar at the top of the screen.

Figure 21. Sensitivity display on Status bar

On the *right* side of the slider are the *actual* threshold values that correspond to the scale of 1–10. For example: in Figure 21 the threshold

value for a “minor” color defect (yellow slider) is 2.3 ΔE, corresponding to sensitivity value of 8.

5.8.1 Major and minor defects

PrintVision lets you define two levels of defect: major and minor. For minor defects the system alerts you with a yellow light (and a yellow frame around the Defect Image). For major defects the system alerts you with a red light (and a red frame around the image).

In the case of *minor* defects, scanning continues after a defect is found. In the case of *major* defects, the camera continuously examines the step where the defect was found—until the defect disappears (or is fixed).

The ability to set different alarm levels can be very helpful in distinguishing between minor defects of low priority, and major defects that require immediate attention. In a well tuned system, the Yellow alarm can be used as an early warning of a developing defect, while the Red alarm is indicates a major printing problem that is already generating waste.

5.8.2 Sensitivity types

The Jupiter system divides defects into up to six categories (depending on your system). The types are summarized in the table below.

Table 9. Sensitivity types

Name	Color code		Comments
Color	Green		Change in the color of an area.
Register	Cyan		Change in the registration of plates relative to one another.
Spot	Blue		Small spots appearing on the printed web.
Streak	Red		A streak *in the direction of the web* path.
Barcode *	Magenta		Grading of the print quality of barcodes.
Edge	Cyan		Changes in hard edges, such as the boundaries of text areas, relative to the background.
Other *	Pink		Any defect that does not fall into one of the other categories, including plate lift and horizontal streaks.

5.8.3 Advanced Sensitivity*

The Advanced Sensitivity dialog-box gives you finer control over the way Jupiter detects defects. For example, spots can be defined by both size (mm^2) and contrast (%) thresholds, but the regular Sensitivity dialog-box lets the user change only the size setting. Advanced sensitivity lets you change the contrast threshold too.

In most cases the Advanced Sensitivity control is not required, and it is closed by default. In systems where it is available, use the **Advanced** button at the bottom of the regular slider to open the advanced slider.

Most defects can be controlled best using two parameters: Size and Contrast. In principle, you should set the minimal area and minimal contrast for the detection of a defect. This would mean setting *two* sensitivity values for each type of defect.

In practice, for each type of defect one of the two parameters is more important and frequently used than the other. Therefore, in order to simplify system operation, Jupiter includes 2 sets of sensitivities: Basic and Advanced.

In many cases you do not need to change the Advanced Sensitivity settings, but you should be aware of their influence on detection performance.

5.9 Guidelines for working with Sensitivities

In any detection system, sensitivity settings involve a play-off between mis-detection and false alarms. This section provides guidelines on adjusting sensitivity thresholds to attain optimal system performance.

- Raising sensitivity provides better detection, but may result in detecting defects which are not important and are therefore effectively false alarms.
- Lowering sensitivity reduces the amount of false alarms but may result in mis-detection of significant defects.

To help you achieve optimum efficiency, we recommend the following rules of thumb:

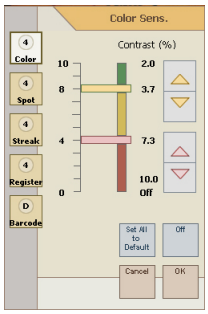
- In general keep sensitivity values as *high* as possible, with an acceptable rate of false alarms.
- Set different values for different sensitivity types, according to your requirements. For example, you can increase Spot sensitivity to detect very small spots while reducing Register sensitivity to ignore mis-register variation in the print.
- Remember you can change sensitivity values any time during Automatic Inspection.
- Sensitivity settings are saved when a Job is saved, and loaded when the saved Job is loaded.
- Using the Mask feature can help you, in some cases, to maintain high sensitivity values while ignoring problems in a particular area of the web.

5.9.1 Changing sensitivity settings

To change sensitivity settings:

1. On the Status bar, click on the sensitivity you want to change.

   The sliders for the selected sensitivity type appear.



2. Use the yellow and red up/down arrows to adjust the sliders, or drag the sliders using the mouse.
3. To set another sensitivity, click on the required icon to the left of the sliders.

   The sliders for the selected sensitivity appear.
4. To close the sliders, click **Ok**.

5.9.2 Reverting to default sensitivity settings

Your system is configured with default sensitivity settings. Whenever you start a new Job, any changes you made to the sensitivity settings in the previous Job are discarded, and the settings return to default.

You can also reset the thresholds to their default values manually, at any time.

To reset all thresholds:

1. On the Status bar, click on any one of the sensitivity values.

   The sliders for the selected sensitivity thresholds appear.
2. Click **Set all to default**.

   All thresholds are reset (not only the type currently displayed).
3. Click **Ok**.

   The dialog-box closes.

5.9.3 Setting sensitivity to Off

You can turn off the sensitivity thresholds for any type of defect (e.g. color), by setting both red and yellow sliders to **Off**.

To set a sensitivity threshold to Off:

1. On the Status bar, click on the sensitivity value you want to turn off.

   The sliders for the selected sensitivity thresholds appear.

2. Click **Off**.

   The thresholds for the current sensitivity are set to OFF.

3. Click **Ok**.

   The dialog-box closes.

5.10 Sensitivities: Detailed Descriptions

This section provides descriptions of both Basic and Advanced sensitivity controls.

5.10.1 Spot

Spot sensitivity is usually used to control the detection of small points of a different color. Such defects are therefore usually of small size and high contrast.

Spot sensitivity sets the threshold for the spot's size.

Advanced Spot sensitivity sets the threshold for spot's contrast.

Typical uses:

- To reduce detection of very small spots, reduce Basic Spot sensitivity.
- To reduce detection of low contrast spots, reduce Advanced Spot sensitivity.

5.10.2 Color

Color sensitivity is usually used to control the detection of color variation over relatively large areas. Such defects are therefore usually of relatively large area and low contrast.

Note: The system will also classify as Color defects changes that are *not* related to global color change, if their size and contrast are above the Color sensitivity thresholds.

Color sensitivity sets the threshold for defect contrast.

Advanced Color sensitivity sets the threshold for defect area.

Typical use:

- To reduce detection of slight and insignificant color variations, reduce Basic Color sensitivity.

5.10.3 Register

Register sensitivity is usually used to control detection of mis-register between printed colors.

Register sensitivity sets the threshold for mis-register size.

There is no advanced sensitivity for Register.

Note: Jupiter marks Edge and Register defects using the same color (Cyan). Use the relevant sensitivity control according to the nature of the detected defect.

Typical use:

- To reduce detection of insignificant print mis-register, reduce Regsiter sensitivity.

5.10.4 Edge

Edge ("Near the Edge") sensitivity is usually used to control detection of defects near sharp contrast edges between areas of uniform color.

Edge sensitivity sets threshold for defect area.

Advanced Edge sensitivity sets threshold for defect contrast.

Typical use:

- To increase detection of defects on or near edges, increase the Edge sensitivity.
- To reduce false alarms of edge defects (where no defect is visible), reduce Advanced Edge sensitivity.

5.10.5 Streak

Streak sensitivity is usually used to control detection of *thin vertical* lines on relatively homogeneous areas.

Streak sensitivity sets the threshold for defect contrast.

Advanced Streak sensitivity sets the threshold for defect length.

Typical use:

- To reduce detection of insignificant, low-contrast streaks, reduce Streak sensitivity.
- To reduce false alarms on short vertical lines defects, reduce Advanced Streak sensitivity.

5.10.6 Other

Other sensitivity is usually used to control detection of *non-vertical* line defects (such as Plate lifts in Flexo presses, scratches or hair) in relatively homogeneous areas.

Other sensitivity sets the threshold for defect contrast.

Advanced Other sensitivity sets the threshold for defect area.

Typical use:

- To reduce false alarms of insignificant Other defects, reduce Other sensitivity.

5.11 View-only scanning

In View-only scanning, the camera moves from step to step—just as for an Automatic Inspection—but Automatic Inspection is not activated.

View-only scanning is useful in Jobs where for some reason Automatic Inspection is not practical—such as when inspecting metallic foils where reflected light produces false alarms.

You can make an entire inspection "View-only", or you can start an Automatic Inspection and define one or more steps as "View-only" steps.

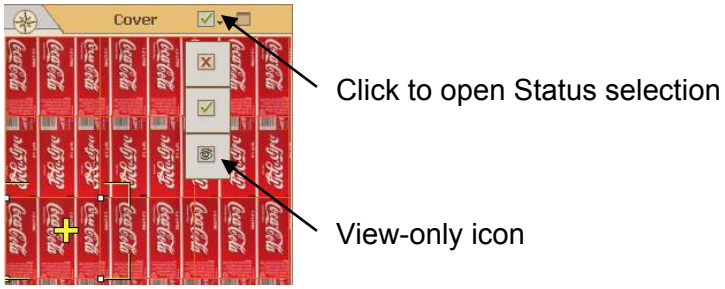
"View only" steps are marked with a white border on Inspection maps, and when the current screen image is a View-only image, the Automatic Inspection icon on the status bar is replaced by the "View-only"  icon.

5.11.1 View-only Scan

In a View-only scan all steps are View-only and no Automatic Inspection is performed.

To start a View-only scan:

1. Set up the Job.
2. Set up one or more maps.
3. Select the View icon from the Map Status drop-down list.



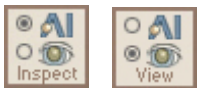
4. Select the View-only icon.

The View-only icon appears on the map title bar in place of the green checkmark.

5. Click **AI,** or press **Automatic Inspection**.

   The camera moves from step to step, enabling you to examine the repeat visually, but no Automatic Inspection occurs.

5.11.2 View-only steps



Setting a step to View-only

You can set any step in any map to "View-only". This lets you view the step during Automatic Inspection, but no defects will be detected automatically for that step.

To set a step to "View-only":

1. Open the required map from the **Task** toolbar.

   The selected map and its buttons appear.

2. Click on the required step.

   The cursor moves to the selected step.

3. Click **Inspect**

   The icon changes to **View**, and the color of the step changes to white.

Note: The Viewing button toggles between **View** and **Inspection**. When you click Viewing to make a step View-only, the button label changes to **Inspection**.

Setting a step back to Automatic Inspection

To set a step back to Automatic Inspection:

1. Open the required map.
2. Click on the required step.
3. On the toolbar, click **View**.

   The icon changes to **Inspect**.

5.12 Unique Point Menu Options

The **Unique Point | Adjust** and **AutoFind** menu options are used to re-establish a defined unique point.

Figure 22. Unique Point Menu Options

To re-establish the Unique Point automatically:

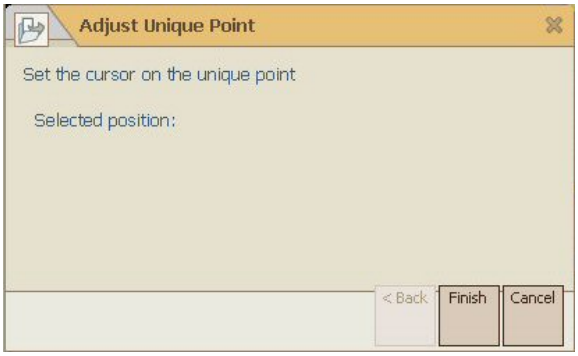
- Click **Job | Unique Point | AutoFind**:

  The system locates the Unique Point that was defined during Setup.

To locate the Unique Point manually for the system:

1. Click **Job | Unique Point | Adjust**.

   The Unique Point Target Boundary and Adjust Unique Point dialog box open.



2. Set the cursor on the exact same Unique Point that was selected at the beginning of the job.

   The Unique Point Target Boundary moves to the selected location.

3. Click **Finish**.

   The dialog box closes.

6 Archiving

Some PrintVision modules (such as PrintFlow and IDEal) include archiving. In these systems, you are asked to define the Job Name and Order ID during Setup, so that data and/or settings can be saved. Systems with archiving also have an additional two icons on the **Job** toolbar: to **Save** and **Load** Job settings from the database.

6.1 Job Parameters

On systems with Archiving the first stage of Job Set-up involves giving the Job a Name and Order ID. The name is saved and used to locate and load the Job next time it is run.

The Description and Comments fields are optional. They can be used to record useful information about the Job (such as a description of the location of the Zero point, for example), that may be useful next time the Job is loaded.

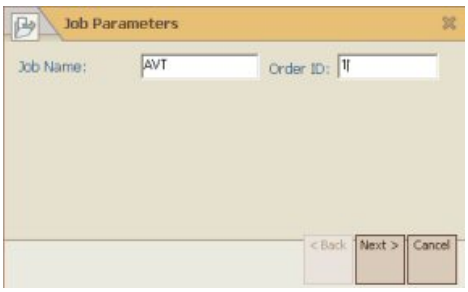


Figure 23. Job Parameters

6.2 Saving Jobs

When you save a Job, *PrintVision* saves all Job parameters, task maps, masks, sensitivity settings and others. The next time you run a Job whose settings have been saved, you only have to locate the zero position for the system, and you are ready for Automatic Inspection.

At any time after Job Set-up you can save all settings configured so far by clicking **Save** on the Job toolbar.

To save a Job:

1. On the **Job** toolbar, click **Save**.

   A confirmation message appears.

Note: If the Master Archive add-on is installed, you are asked if you want

to save any of the current Master images. For more details see "Master Image Archive * (optional)," page 58.

2. Click **Ok**.

   The Job settings are saved.

6.3 Loading Jobs

Loading a Job from the database is like opening a file on a PC, and loads all previously saved settings. You just need to locate the zero point for the system, so that it can use the saved maps for the current Job run.

To load a Job:

1. On the **Job** toolbar, click **Load**.

   Note: If the current Job has not yet been saved you are asked if you want to save it before proceeding.

   The List of saved Jobs appears.

2. Select a Job by clicking on it—then click **Load**.

   The Job Parameters dialog-box appears (with the Job Name field inactive).

3. Type in an Order ID. (You can also optionally type in a description and Comment.)

   The green crosshair cursor appears, and you are asked to set it on the *original* Zero point that was set for this Job.

4. Click on the Zero point.

5. Click **Finish**.

   The system is ready for Automatic Inspection.

6. To start Automatic Inspection click **AI**.

6.4 Deleting Jobs

To delete a Job:

1. On the **Job** menu, click **Delete**.

   The list of saved Jobs appears.

2. Select the Job you want to delete—then click **Delete**.

   You are asked to confirm.

3. Click **Yes**.

The Job is deleted from the database.

6.5 Master Image Archive * (optional)

The Master Image Archive add-on lets you save Master images of a Job to the database. You can retrieve these images later, for visual comparison with another run of the same Job.

Possible reasons for saving a Master Image are:

- To check that colors are identical between Job runs
- To ensure accurate reproduction of a company logo
- To distinguish between two Jobs with barely distinguishable language or other differences

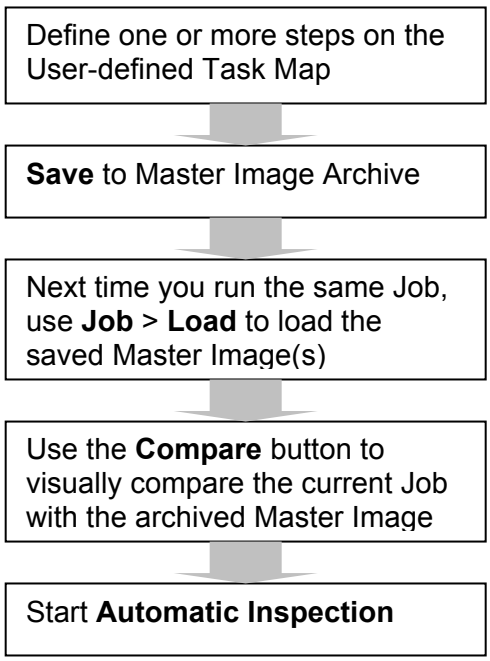


Figure 24. Workflow using Master Image Archive

6.5.1 Saving Master Images

The most efficient way to use Master Image Archive is to create a single User-defined step of the particular area of interest, and save that step only. Saving Master images of the whole Cover Map is not usually necessary, and requires a lot of computer memory; it is therefore not recommended.

To save Master Images for the Job:

1. On the **Job** toolbar, click **Save**.

You are asked which of the current Master Images you want to save: Cover and/or User-defined.

Note: If your system is Dual Head you can also select whether to save the Master images of **Camera 1**, **Camera 2**, or **Both**.

2. Check the checkboxes as required.
3. Click **Ok**.

   The selected Master images are saved.

Note: The database can only contain one set of Masters for a particular Job. Therefore, when you save a new set of Master images, any earlier Masters for the Job are lost.

6.5.2 Using Archived Masters

You can retrieve saved Master images for a Job and compare them visually with the current live image. The left screen is split to allow comparison between the two images, and you can drag the full image around the screen to view all parts.

To use archived Master images:

1. On the **Task** toolbar, click **MIA**.

   The Master Archive toolbar opens, and the Job Map appears.
2. Use the **Next** button to move the cursor on the Job Map to the required step.
3. Click **Show**.

   The left screen splits, showing the archived Master in the left half, and the live image in the right screen.

- To "freeze" the live image (stop it updating), click **Freeze/Live** on the toolbar**.**
- To return to the live, constantly updating image, click **Freeze/Live** again.
- To move both the images to the next step, click **Next**.

Note: In some systems only the Live image moves when **Next** is clicked. On these systems, click **Show** to move the Golden Master to the new position.

4. To close the Master Archive window click the **X** button at the bottom of the Master Archive toolbar.

   The Master Archive toolbar closes, and the left screen returns to normal live display.

7 Print Flow*

PrintFlow is an optional Database and Reporting module. With PrintFlow installed on your system you can:

- Save information on defects, including images.
- Print Roll Reports
- Browse all Roll Report data
- Edit Reports (Accept/Reject Defects)

Most PrintFlow functions are accessed by opening the PrintFlow program, which is described fully in the *PrintFlow User Guide* (a separate manual). This chapter deals only with the standard Roll Report that can be generated from within the automatic inspection system.

7.1 Printing Roll Reports

You can print Roll Reports in the following ways:

- Automatically at the end of each roll, activated by an electronic signal from the press (described below)
- Manually, for the current roll (described below)
- Manually, for any previous roll (refer to the *PrintFlow User Guide*, a separate manual)

The **Reporting—PrintFlow** menu is used to generate reports for the current roll, and to define what information is included in these reports.

7.1.1 Automatic Roll Reports

When the **Reporting—PrintFlow—Auto Roll Report** menu item is selected, the Roll Report is printed automatically whenever the system receives an End of Roll signal.

To set up automatic Roll Reports:

1. On the **Reporting** menu click **PrintFlow—Auto Roll Report**.

   A checkmark appears next to the **Auto Roll Report** item, indicating that a Roll report will automatically be printed at the end of each roll.

Note: To disable Auto Roll Report click the item again. The checkmark disappears.

2. Define the content of the report. (The Defect map and defect images are included in the report only if they are selected in the **Reporting—PrintFlow** menu.)

   - To include the Defect map in the printed report, click **Reporting—PrintFlow—Include Defect Map**.

   A checkmark appears next to the item.

   - To include defect images in the Defect map, click **Reporting—PrintFlow— Include Images in Report**.

   Note: Include Images in Report is only available if **Include Defect Map** is already selected.

   A checkmark appears next to the item.

7.1.2 Manual Roll Reports

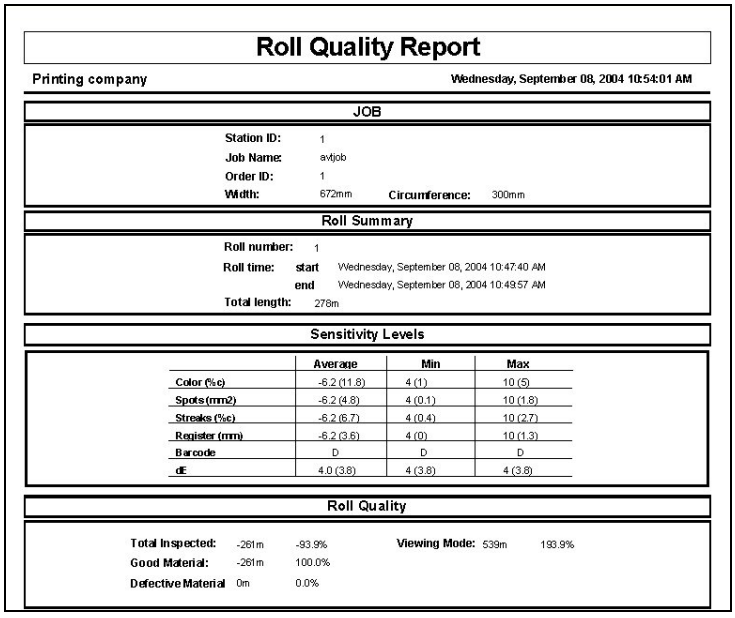
You can print a Roll Report at any time (even without the End-of-Roll signal from the press) by clicking **Reporting—PrintFlow—Print Roll Report**.

The Defect map and defect images are included in the report only if they are selected on the **Reporting—PrintFlow** menu.

7.2 Roll Report Structure

The two figures below show the structure of a printed Roll Report.

- The first section (always printed) contains Job details and Roll, Sensitivity, and Quality summaries.
- The second section contains the Defect Map, and is only printed if the "Include Defect Map" is selected. The Defect Map shows the position (m), lane, and type of each defect found. If the "Print Images in Report" option is selected, the Defect Map also includes Master and Defect Images for each defect.



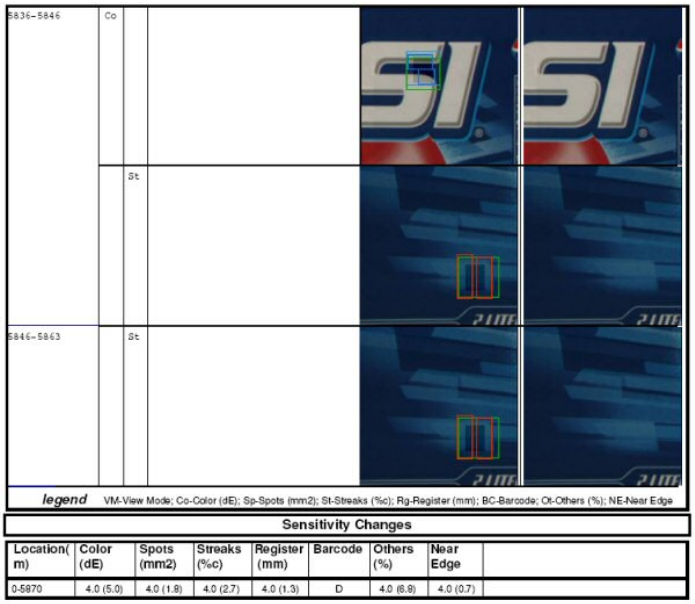
Job Details: Station ID, Job Name, Order ID, width/circumference

Roll Summary: Roll number, start/end times, and total length

Sensitivity Summary: max, min, and average values

Quality Summary: Totals inspected, good, defective, and "viewing only"

Figure 25. Printed Report Structure – Section 1



Defect Map: Defect and Master Images; location and type of defect

Sensitivity Changes: Table of Sensitivity values throughout the Roll

Figure 26. Printed Report Structure – Section 2

7.3 The PrintFlow program

Clicking **Reporting—PrintFlow—PrintFlow** opens the PrintFlow program. This program is described fully in the *PrintFlow User Guide*.

7.4 PrintFlow Manager

PrintFlow Manager is a stand-alone, network tool that gives managers, quality assurance managers, and production engineers access to the inspection data of all PrintVision systems on a site.

For more details refer to the PrintFlow User Guide, or contact your AVT representative.

8 Single-Screen Systems*

This chapter provides information related only to "Single Screen" PrintVision/Jupiter systems. The following PrintVision/Jupiter models have single screen:

- **PrintVision/Jupiter Single Mode:** provides all Jupiter functionality, except for the single screen feature (see section 8.1 below).
- **PrintVision/Prelude:** provides all Jupiter *viewing* functionality together with the pRegister option, without Automatic Defect Detection

8.1 Jupiter single screen systems

Some versions of *PrintVision/Jupiter* have a single screen—rather than a double screen—display. In these systems, the content of the "right screen" (as described in this manual) appears in windows of the single screen.

For example, the defect image appears in a "defect window" in the lower right quarter of the screen. This "defect window" can be closed when you need to view the hidden area of the "left screen", or "maximized to full screen" when you need to examine the defect image closely.

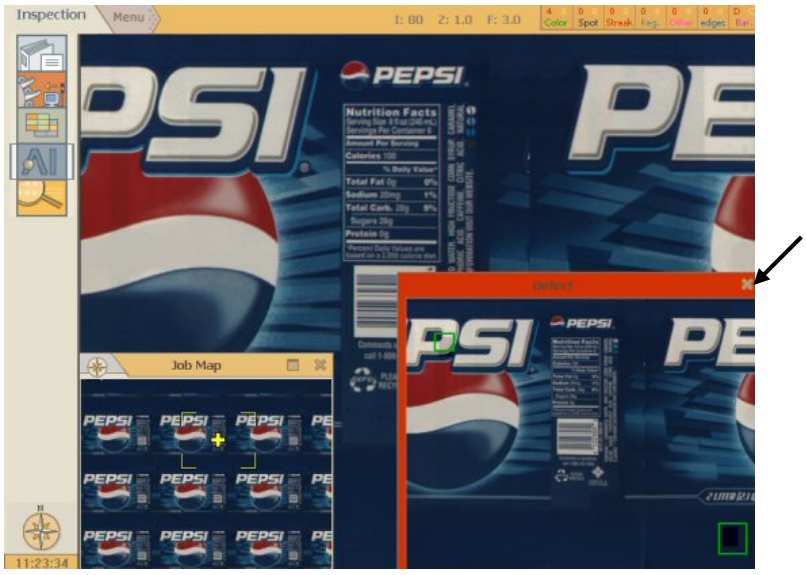


Figure 27. Single screen display

8.1.1 Defect Study

Defect Study is slightly different in single screen systems because of the single screen limitation. When you click **Defect Study** the image of the defect (or master image) fills the screen, hiding the live image.

The **Go to defect** icon can be used to send the camera to the location of the defect, and show a live image of the area. (Clicking again toggles back to the Defect Study image.)

8.2 Prelude

PrintVision/Prelude systems provide all Jupiter *viewing* functions, together with the pRegister option.

Prelude does not include Automatic Inspection; therefore all inspection related icons are either not shown or grayed out (disabled).

Any Prelude system can easily be upgraded to provide full Automatic Inspection capability. For more information about upgrading, contact AVT.

9 Barcode Verification*

The *PrintVision* Barcode Verification module adds Barcode verification as an additional task option on the Task toolbar. Barcode verification is run as part of an Automatic Inspection, and you can define the ratio between Barcode inspections and Cover map/User-defined map inspections.

When you begin an Automatic Inspection that includes Barcode verification, the system automatically locates all barcodes in the repeat and verifies that they are printed according to ANSI standard.

You can set the sensitivity (minor and major defects) of the Barcode Inspection, and view Barcode inspection data.

9.1 Barcode Inspection

When you begin a new Barcode Inspection, the system first creates its own, preliminary map to cover the print area. It then examines each step of that map for barcodes. Finally it creates a Barcode Map, where each step is an individual barcode. This map is used for Barcode Inspection

These stages are fully automated; no user input is required.

To start a Barcode Inspection:

1. On the **Job** toolbar, click **Tasks.**
2. On the **Barcode** toolbar, click **New**.

   PrintVision creates a preliminary map of the repeat.
3. Click **Automatic Inspection**.

   The system automatically locates the barcodes, and then Barcode verification begins.

9.2 Barcode Sensitivity Thresholds

There are two different barcode grading systems:

- ANSI, which grades, A, B, C, D, & F, where A=Best to F=Fail.
- DIN, which grades the barcodes as 0, 1, 2, 3, 4

For more information about Sensitivity thresholds and settings, see “Sensitivity settings,” page 47.

9.3 Elongated Barcodes

Jupiter supports automatic inspection of elongated barcodes. When an elongated barcode is identified, the system divides it into segments. Each segment is analyzed separately and given its own grade. Grades are given according to ANSI or DIN standard.

An alarm is triggered if even *one* segment of the long barcode is below the sensitivity threshold.

9.4 Barcode defect detection

When a barcode defect is detected:

- the alarm light is turned on (yellow or red)
- the Barcode Information window for the defect is displayed on the screen

You can close this window by pressing the **Defect Study** key on the control panel.

9.5 Barcode Information

Barcode Information is a list of the barcode verification data for the *last examined barcode*.

The Barcode Info window is displayed automatically when a barcode defect is detected. You can also open it at any time by clicking **Barcode Info** on the **Display–Barcode** menu.

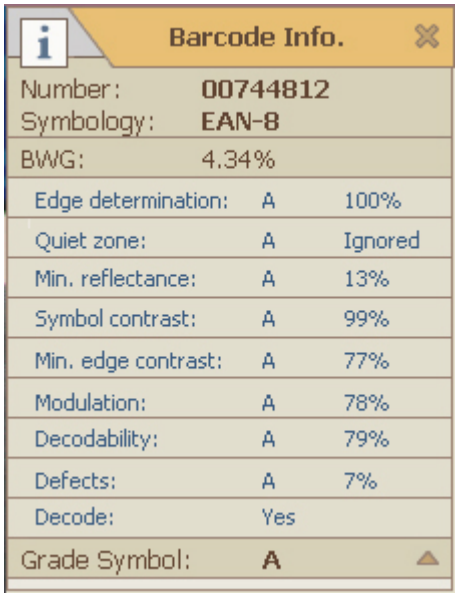


Figure 28. Barcode Info window

Table 10. Barcode Info Summary

Item	Description
Number	The number that the barcode represents.
Symbology	Barcode Type.
BWG	(Bar width growth) Measures the width of the printed bar compared with the standard.
Edge determination	Checks the edges between bars and spaces, and that there are no false bars or spaces.
Quiet zone	Checks that there is adequate space to the left and right of the barcode.
Minimum reflectance	Check that the bars are dark enough.
Symbol contrast	Measures the contrast between the brightest space and the darkest bar.
Minimum edge contrast	Checks that the contrast between adjacent bars and spaces is high enough.
Modulation	Measures the greatest change in contrast within bars or spaces. If the brightness within bars and spaces is consistent, Modulation is graded A. Excessive ink spread can result in low modulation because bars encroach on narrow spaces in the scan reflectance profile.
Decodability	Similar to Decode (below) but assigns a grade and a percentage. Helps track printing plate deterioration. 100% is best but as low as 25% is often acceptable.
Defects	Measures the greatest change in darkness (reflectivity) within a single bar or space, relative to symbol contrast.
Decode	Measures the width fluctuation of bars and spaces, using a mathematical formula for the specific barcode type. Assigns True (=decodable) or False (=not decodable).
Grade symbol	The Grade this barcode was given.

9.6 Barcode statistics

A summary of the Barcode Inspection results for the current inspection can be accessed at any time by clicking **Display □ Barcode □ View statistics**.

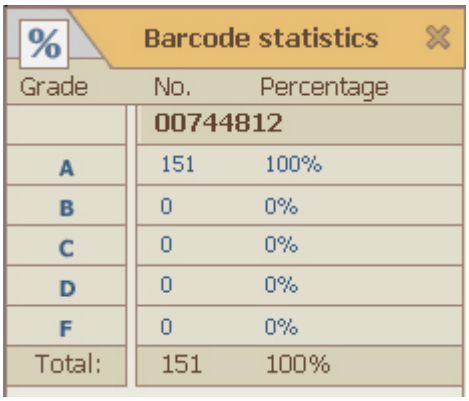


Figure 29. Barcode Statistics

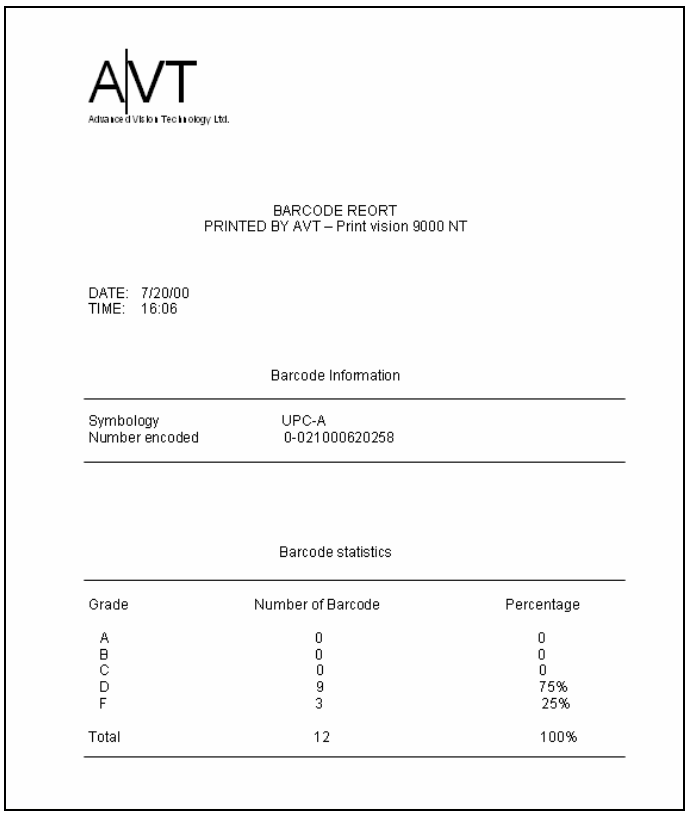
Table 11. Barcode statistics summary

Column	Explanation
Grade	The Standard inspection grade (A=Best, F=Fail).
No.	Number of checked barcodes that matched this grade.
Percentage	Percentage of checked barcodes that matched this grade.

9.7 Barcode Report

The Barcode Report shows the barcode number and symbology, followed by the Barcode Statistics (as described in the previous section). To print a Barcode Report, click **Reporting** □ **Barcode** □ **Print Report**.

The figure below shows an example of a Barcode Report.



AVT
Advanced Vision Technology Ltd.

BARCODE REORT
PRINTED BY AVT – Print vision 9000 NT

DATE: 7/20/00
TIME: 16:06

Barcode Information

Symbology	UPC-A
Number encoded	0-021000620258

Barcode statistics

Grade	Number of Barcode	Percentage
A	0	0
B	0	0
C	0	0
D	9	75%
F	3	25%
Total	12	100%

Figure 30. Sample Barcode Report

Note: If the PrintFlow option is installed, all barcode verification results are reported in the PrintFlow data base and reports. See the *PrintFlow User Guide.*

9.8 User-Defined Barcode Map

In some cases, a user-defined barcode map can make barcode inspection more efficient. Rather than automatically locate *all* the barcodes in the repeat, it lets the user define which barcodes are inspected. This is especially useful when:

- There are an excessive number of barcodes in a Job

  Using User Defined Barcode, reduces both setup and verification time considerably.

- There are too few barcodes in a Job.

  For instance, if there is only one barcode in an entire repeat, you can decrease the setup time by using the User-Defined Barcode Map.

A user-defined barcode map allows a user add steps to or delete steps from the barcode inspection.

To open the Barcode toolbar:

1. From the main toolbar, click the **Task**  button.

   The **Task Toolbar** opens.

2. Click the **Barcode** 

button.

   The **Barcode Toolbar** opens.

To add steps:

1. From the **Barcode Toolbar**, click the **User** 

button.
2. The **User Defined Job Map** opens.

3. In the **User Defined Job Map**, click on a barcode to be inspected.

   Verify that it appears on screen

4. From the **Barcode Toolbar**, click the **Add** 

button.

   A **User-Defined Target Boundary**  is displayed in the **Job Map**. The pale blue line surrounding the barcode is the **User Defined Target Boundary**.

5. Repeat the previous two steps for each additional barcode you want to include in the inspection.

9.9 Deleting Steps

Steps can be deleted from both the regular Barcode Map and from a User-Defined Barcode Map.

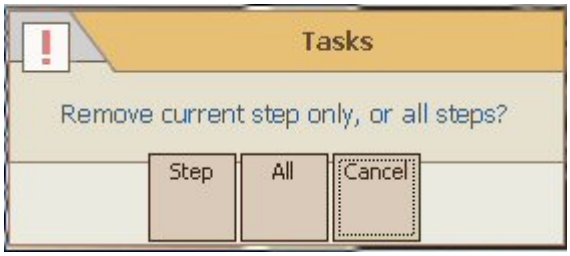
The user can delete added steps or all the steps from a User Defined Barcode Map.

To delete steps:

1. On the Barcode toolbar, click the **Delete** 

button.

   The **Barcode Remove Steps** dialog box opens.



   The **Current Step** is defined by the highlighted box with a yellow cross.

2. To remove the current step only, click **Step**.

   OR

   To remove all steps, click **All**.

   The selected step or steps are removed.

9.10 Barcode Properties Dialog Box

The **Barcode Properties** dialog box (below) allows the user to view and adjust Barcode Inspection properties.

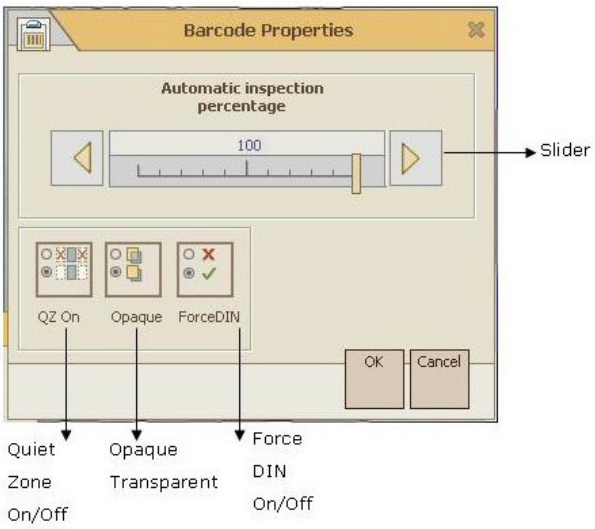


Figure 31. Barcode Properties dialog box

To open the Barcode Properties dialog box:

1. On the Barcode toolbar, click **Properties** 

   The **Barcode Properties** dialog box opens.

2. View and adjust the following inspection properties as required:
   - **Automatic Inspection Percentage.** Automatic Inspection Percentage determines the percentage of the cover map, from the zero point, to be inspected.
   - **Quiet Zone.** The Quiet Zone is the blank area on both sides of the barcode. To ignore Quiet Zone problems, turn off.
   - **Transparent/Opaque.** Select **Transparent** if the web between the dark barcode lines is transparent.
   - **Force DIN.** Select Force DIN to force all barcodes in the job to be graded according to the DIN standard.

9.11 Mixed Maps for Barcode

A mixed map for barcodes enables the user to define both a partial cover map (less than 100 percent) and user-defined steps on the inspected part of the repeat.

9.12 Enable/Disable Barcode Step

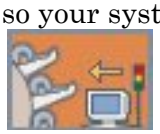
The **Enable/Disable** 

button is used to enable or disable the inspection of the selected step. This allows you to disable a step without losing the definition, so you can enable it later, if necessary.

10 Presco Press Control

AVT's Press Control is an automated color station control solution for FLEXO CI presses. Press Control comprises two optional modules:

- **pRegister** (automatically adjusts *registration* of each color station)
- **Presco** (automically adjusts the Anilox and Plate rolls of each color station for optimum pressure)

Since both modules are optional. so your system may have one, both, or neither. The **Press Control** icon  appears on the main toolbar if the system has at least one Press Control module.

This chapter explains the basic principles of Press Control, and how to register colors and control pressure automatically using the Press Control Wizard. Details and descriptions of individual pRegister and Presco principles and processes may be found in the following two chapters, "pRegister," page 86 and "Presco Press Control," page 100.

10.1 Basic Principles of Press Control

10.1.1 Targets

AVT's Press Control modules utilize specially prepared targets that are printed on the web. Instructions for preparing targets on the flexographic plates are given in AVT's manual *Target Definition*.

- The **pRegister** target consists of two sets of colored round dots that are used by the system to adjust registration (see "The pRegister target," page 86).
- The **Presco** target consists of a matrix of colored rectangles that are used by the system to adjust the print pressure (see "The Presco Target," page 99).

10.1.2 pRegister and Presco Concepts

If you have Press Control (either the pRegister option, or the Presco option, or both), you must link each color unit to its corresponding printed dot in the target (explained in "Color Unit Definition," page 79) during setup and before running the press.

pRegister

The following only applies if the pRegister option for automatic color registration is installed.

While the press is running, you will use a special cursor to click on the pRegister reference dot. This informs the system of the location of the reference dot. The system then automatically locates all the large dots in the pRegister target and uses them to perform rough registration adjustments. The system then locates the second group of smaller and uses them for fine registration adjustment.

Presco

The following applies only if the Presco option for automatic pressure control is installed.

While the system is running, you will use a special cursor to click on the Presco reference square. The system then automatically locates the rectangles in the Presco target and uses them for automatic pressure adjustments.

10.1.3 Work Flow

The following chart shows where the steps of Press Control setup are performed in the setup process of the system.

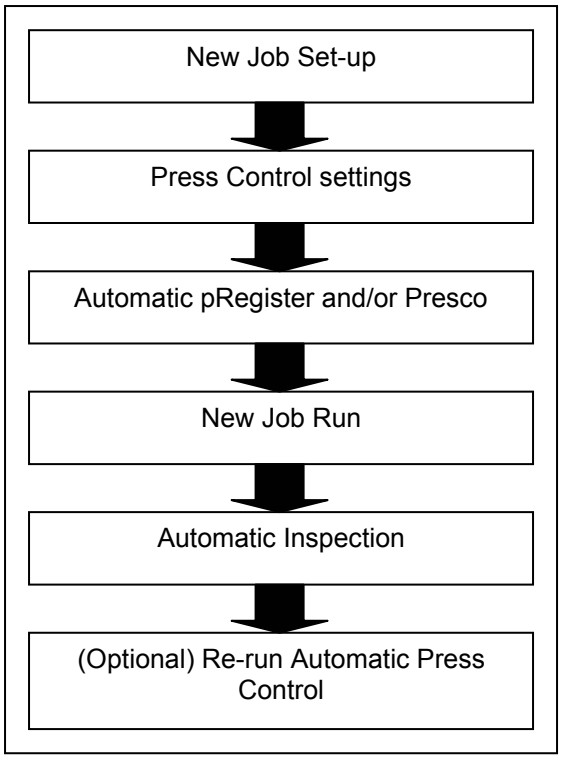


Figure 32. General Press Control workflow

10.2 Using pRegister and Presco to Register Colors and Adjust Pressure

The Press Control Settings Wizard enables you to set up pRegister and Presco to register color stations and adjust printing pressure in a few easy steps.

1. Perform New Job Set-up, as described in “New Job,” page 26.

   The following message appears.

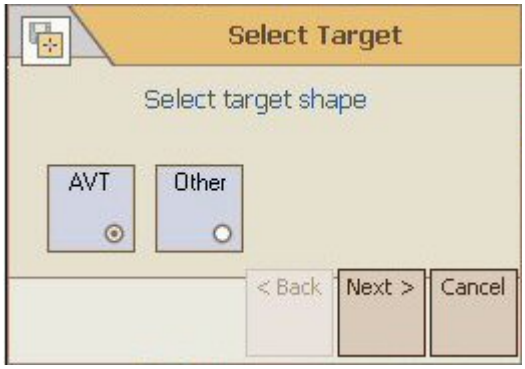
2. Click **Yes**.

   The Press Control Settings Wizard opens. Which options appear depends on the configuration of your system. All possible options are described in the following sections. If the option does not appear on your system, skip to the next option.

   Note: You can access this wizard at any later point by clicking **Press Control**  to open the Press Control toolbar; then, clicking **Settings** 

.

Set Target shape



Jupiter supports both the standard AVT target and some other registration targets requested by customers.

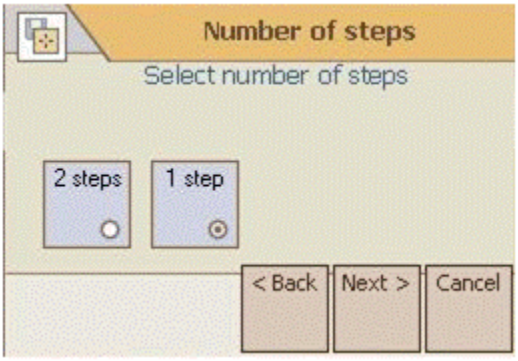
To set target shape:

1. If the job includes an AVT target, select **AVT**; if the job includes another recognized target shape, select **Other**.

2. Click **Next**.

   The next relevant dialog box appears. Go to its instructions.

Set Number of Steps



The AVT pRegister target contains two groups of dots, as explained in "The pRegister target," page 86.

It is usually recommended to use both sets (more accurate).Occasionally, using one set of dots is sufficient if one of the following is true:

- In cases where the accuracy of the big dots is sufficient
- In cases where the initial registration is sufficiently accurate (using only the small dot may then be sufficient)

To set the number of steps:

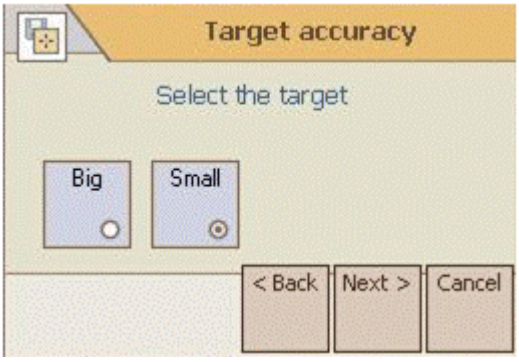
1. To use both sets of targets, select **2 Steps**, then click **Next**.

   The next relevant dialog box appears. Go to its instructions.

   OR

   To use one set of targets, select **1 step**, then click **Next**.

   The **Target Accuracy** dialog box opens.

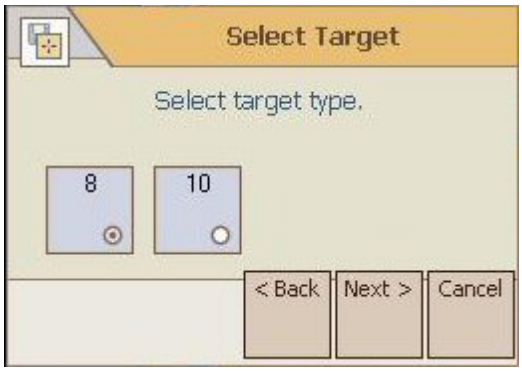
   If you chose to use just *one* set of dots from the pRegister target for the automatic process, you are now asked which set to use.

2. Select one of the options below, and then click **Next**:

- **Big:** pRegister adjustment is done using the large dots
- **Small:** pRegister adjustment is done using the smaller dots

The **next relevant dialog box appears**. Go to its instructions.

Select Target Type



The eight-color pRegister target can be used for jobs with up to eight colors. For jobs with nine or ten colors, a ten-color target is used.

If your press has more then 8 color stations, you need to use Target Type to tell the system which type of target to expect. If your system is configured for 8 color stations, the Set Target Type option will not appear.

To set Target type:

1. Select the correct target type: 8 colors (default) or 10 colors.
2. Click **Next**.

   The next relevant dialog box appears. Go to its instructions.

Color Unit Definition

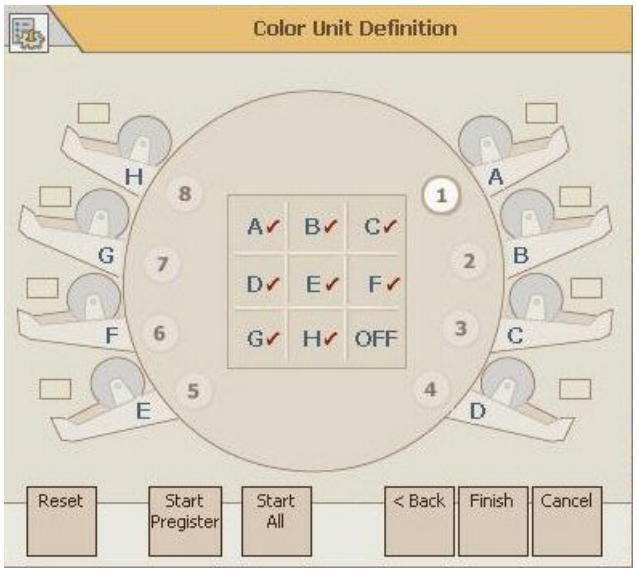


Figure 33. Color Unit Definition Dialog Box (for 8 color target)

Since the system controls the color stations according to the location of the printed dots on the target, you must link the position of each dot (A, B, C….) to its corresponding color station number (1, 2, 3….)

The Color Unit Definition window is where you link each Color Station to the corresponding dot in the target.

The **Color Unit Definition** dialog box is discussed in detail in "Color Unit Definition," page 89.

To define the color units:

1. To link all active Color Stations to their corresponding dot position:
   a. Select a color station by clicking on the station number (which then becomes white).
   b. Select the dot position for that station by clicking the corresponding letter: **A**, **B**, **C** etc., or **Off**. (For more details, see "Color Unit Definition," page 89.)

   The selected color (letter) is shown in the color station.

   Note: One station must have color A (the reference color).

2. Repeat the previous step for all active color stations.
3. Do one of the following:
   - To close the wizard and proceed with automatic pRegister later, click **Finish**. For more detail, see "pRegister," page 86.
   - To start pRegister now, click **Start pRegister**.

   See "The pRegister process," page 90 for details.
   - To proceed with Presco setup, click **Finish**, then click the **Press Ctrl** icon. See "Press Control Processes," page 81.

Press Control Processes

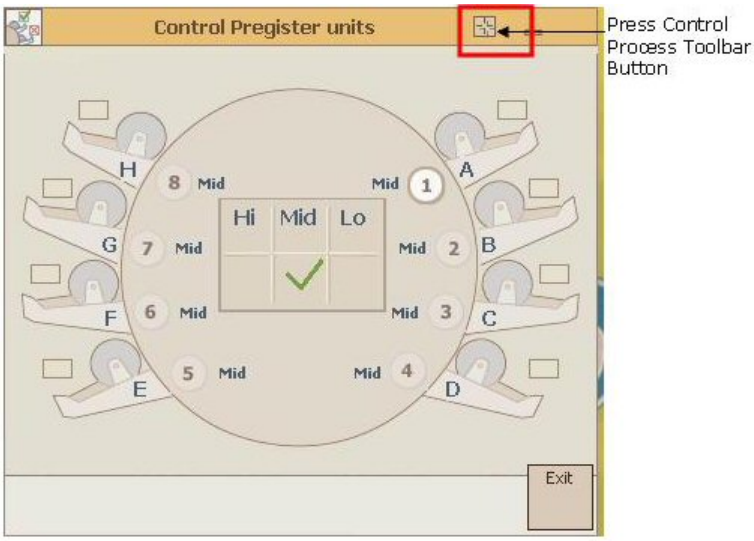


Figure 34. Press Control Process Dialog Box

The Press Control Processes dialog box provides the following features:

- Pressure compensation for ink coverage.
- Enabling / Disabling the press control process for specific color stations.

Pressure compensation for ink coverage

With Presco, you can adjust the pressure according to the ink coverage level of each color station. This setting will affect both Anilox and Plate pressure. The default values are all set to **Mid** (**Medium**).

- To set high Anilox and Plate pressure (for large-area coverage, such as background colors, etc.), select **Hi.**
- To set low Anilox and Plate Pressure (for small area coverage, such as screen printing colors, etc.), select **Lo.**

Enabling / Disabling Press Control Processes on Specific Color Stations

The Press Control Processes dialog box also lets you disable the pRegister or Presco processes for any specific color station(s).

- Click the green checkmark to disable press control for the selected color station. (a red × appears)
- Click the red × to enable press control for the selected color station. (a green checkmark appears)

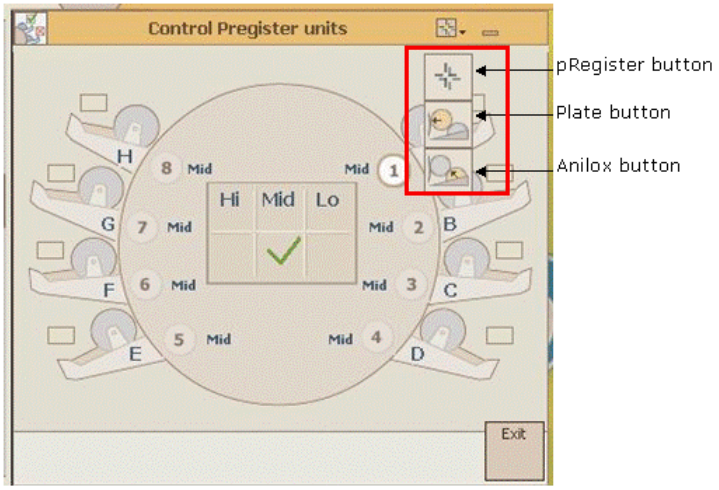
To open the Press Control Processes dialog box:

1. Verify that **Color Unit Definition** was set.

2. On the **Press Ctrl**  toolbar, click the **Control**  button.

   The Press Control Processes dialog box opens.

3. Click on its toolbar button to select **pRegister**, **Plate,** or **Anilox** (see figure below).



4. Select the compensation level (Hi, Mid or Lo) for each color station:

   a. Select a color station by clicking on the station number (which then becomes white).

   b. Select **Hi**, **Mid,** or **Lo;**

   The selected compensation level is shown next to the color station's number.

10.3 Combined Press Control

If your system has both pRegister and Presco, you can run them together using the Combined Press Control option. This enables you to select exactly which processes will run when you click the **Start** button on the **Combined** Press Control toolbar.

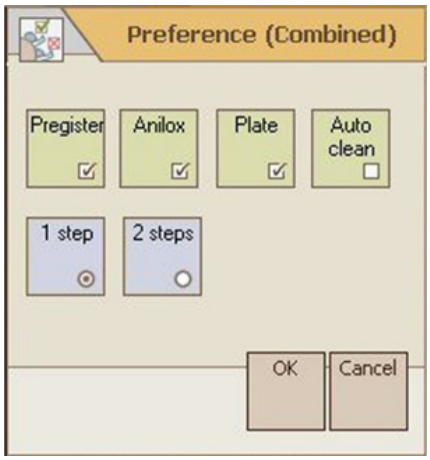
10.3.1 Defining Combined Press Control

To define Combined Press Control:

1. On the Press Control toolbar, click **Combined**.

   The Combined toolbar opens.

2. Click **Preference**.



3. Select your preferences for the combined process:
   - Select one or more of the available processes: **pRegister**, **Anilox**, **Plate,** and **Auto clean**
   - If you selected Anilox and/or Plate, select **1 step** or **2 steps** (whether you wish to run Presco on a single side target only, or on both sides)
4. Click **OK**.

   Your preferences are saved, and when you click **Start**, the Combined Process will run the selected operations.

10.3.2 Running Combined Press Control

To run combined press control:

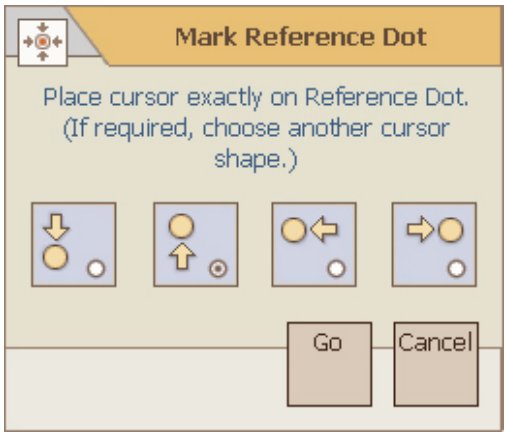
1. On the Press Control toolbar, click **Combined**.

   The Combined toolbar opens.

2. Click **Start** 

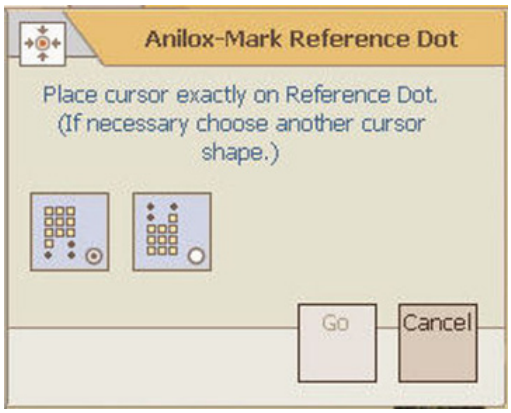
.

You are asked to locate the pRegister target (for details, see "The pRegister process," page 90).



3. Select the correct cursor shape, Click on the corresponding arrow on screen, then click **Go**.

   The pRegister process runs to automatically to adjust color registration. When it is completed, you are prompted to locate the Presco Reference dots.



4. Select the correct cursor shape, Click on the corresponding dots on screen, then click **Go**.

   The Presco processes that you selected (Anilox, Plate, and/or auto clean) automatically adjust pressure. When the process is completed, you can view the results

5. To view the results, click **Info**; otherwise click **Close**.

   - For more details about pRegister results, see "Registration accuracy," page 95

- For more details about Anilox and Plate results, see “Presco results info,” page 101.

11 pRegister

This chapter provides advanced information about AVT's optional pRegister module for automated color registration.

Basic information on using the Press Control modules (pRegister and Presco) can be found in the previous chapter, “Presco Press Control,” page 75.

11.1 The pRegister target

pRegister utilizes a special, AVT-specified registration target. The system locates this target, calculates the amount by which each mark is out of register, and sends signals to the color station motors to automatically reposition them.

The pRegister target is usually positioned vertically along the left side of the web, along with other registration marks. (Sometimes—due to lack of space—it may be placed on the right edge of the web, or even horizontally.)

The standard target is used for jobs with up to eight colors. There is also a slightly different target, for use with nine or ten-color jobs.

Figure 35, page 86 shows two sample pRegister targets, one with eight colors and one with four. Note that the “target dots” are arranged in two groups: a line of larger dots and a group (matrix) of smaller ones.

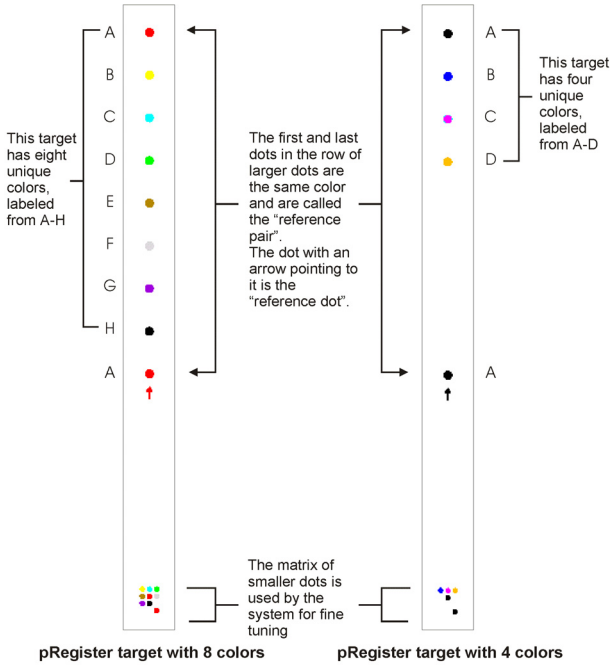


Figure 35. Sample pRegister targets

The dots in the line are each 2 mm in diameter. There is one dot for each color station, except for the reference color which has two dots, one at the top of the column, and another at the end of the column with an arrow pointing to it. The dot with the arrow is called the *reference dot*. The first dot together with the reference dot, are the *reference pair*. This pair is used by the system to measure the displacement of the other dots.

The matrix of smaller dots consists of dots 1 mm in diameter. Again there is one dot per color station, and two for the reference color. The dots are arranged in a particular configuration.

11.2 pRegister Workflow

Before running the press, you tell the system which color is printed in which color station. Then, when the press is running, you locate the reference dot for the system (by moving a special cursor to the location of the reference dot). The system then automatically locates all the larger dots, and performs first rough adjustments, and then fine-adjustments (using the group of smaller dots).

Finally the system measures the accuracy achieved, and informs you of the result.

Figure 36 illustrates pRegister's place in the general workflow, and Figure 37, page 88 summarizes the stages in the automatic pRegister workflow.

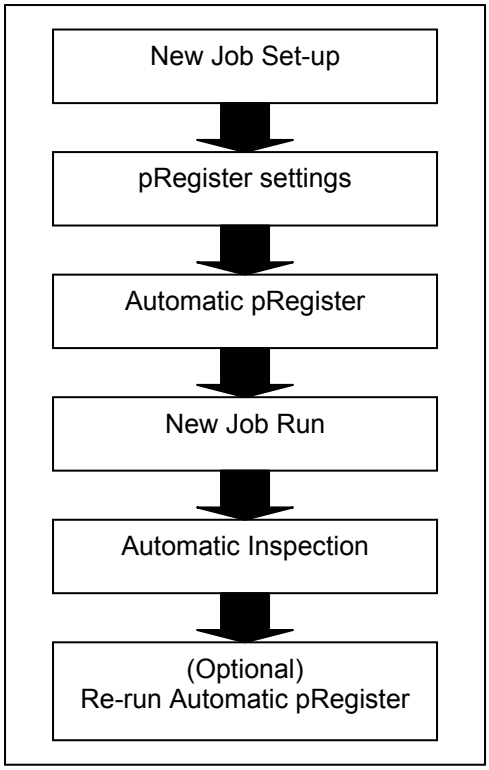


Figure 36. General pRegister workflow

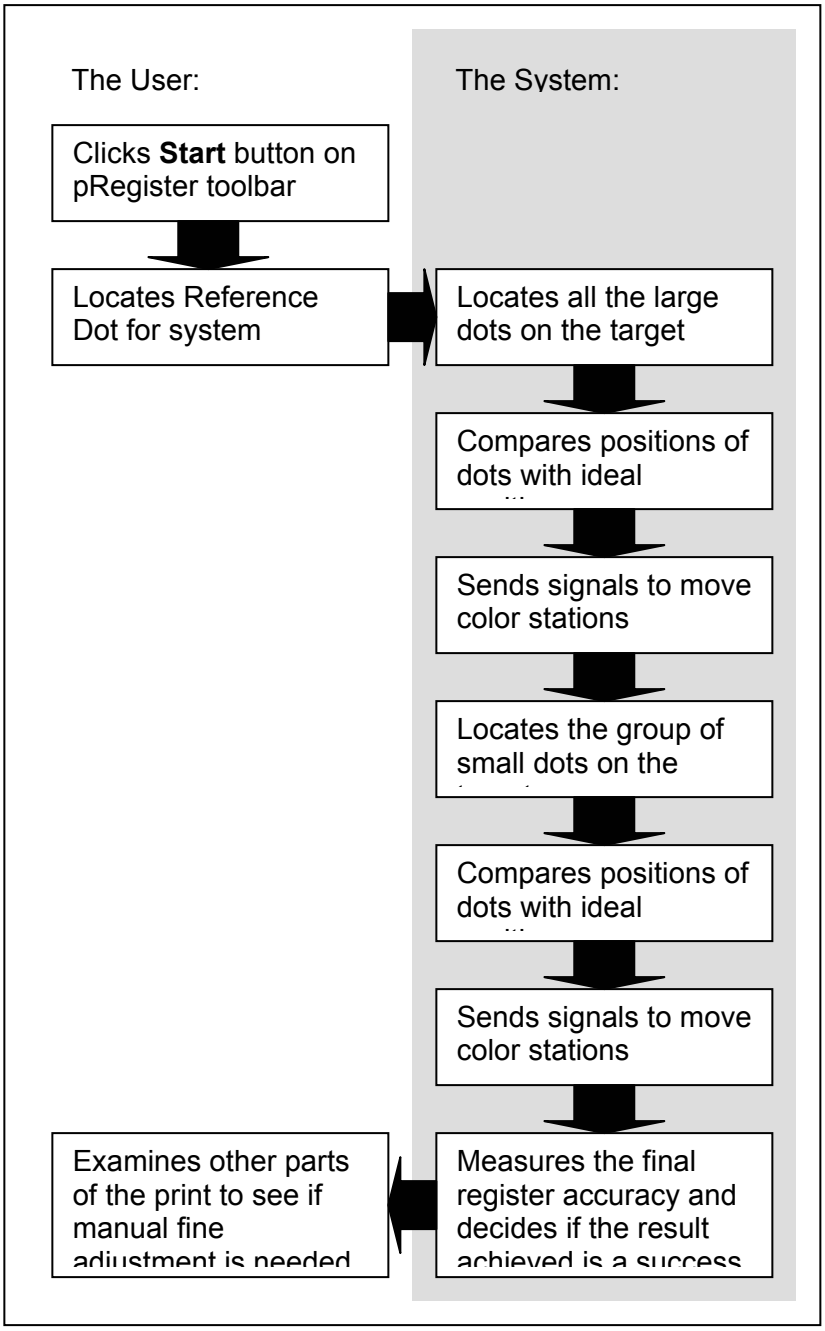


Figure 37. Automatic pRegister workflow

11.3 Color Unit Definition

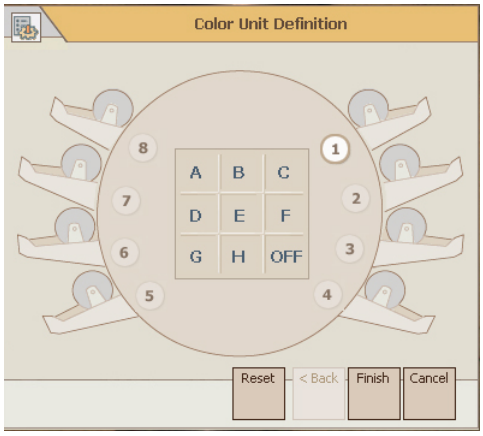


Figure 38. Color Unit Definition dialog box

In order to send register corrections to the press, the system needs to know which dot (in the pRegister target) is printed by which deck. The color stations are numbered from 1–8, and the dots on the target are assigned letters from A–H (see Figure 39).

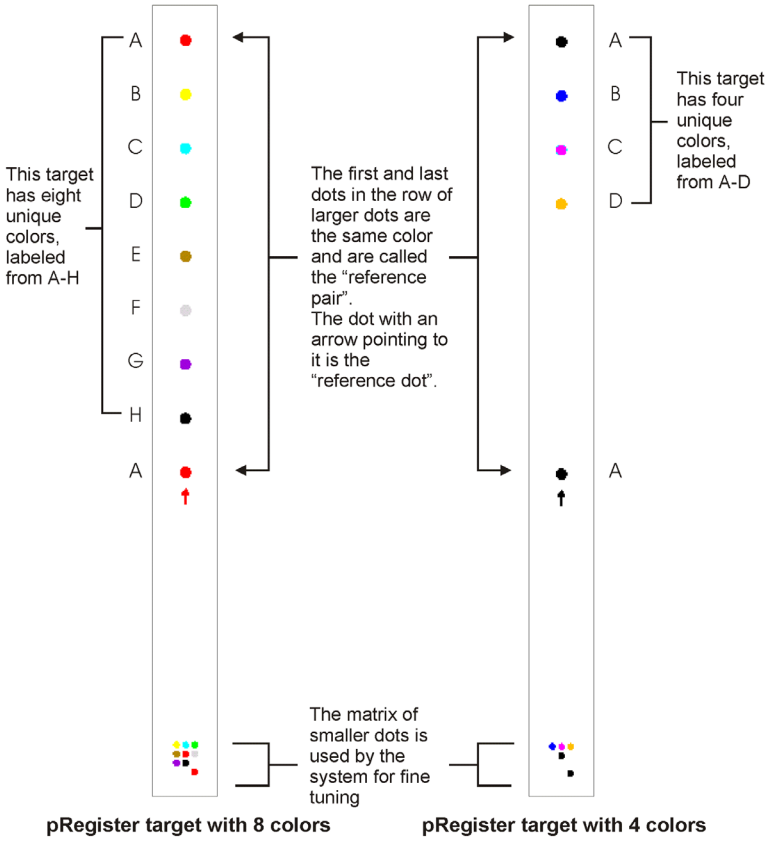


Figure 39. Sample pRegister targets

Note: When less than the full number of colors are used in a Job, there will be blank spaces in the target.

You tell the system which color (A, B, C etc.) is located at each color station (1, 2, 3 etc.). Reference to a print sample, or a list of color alignments from Pre-press, may help you at this stage.

To set color unit definitions:

1. Select the correct color for each station. (To select a station, click on the station number (which then becomes white). To select the color for the station, click a color (**A**, **B**, **C** etc., or **Off**). Do this for all stations.)

   The figure below shows color unit definition for a ten-color press, before and after all ten colors have been assigned. Notice that the letter for the color appears next to the station number, and that each color is checked in the color selection grid, as it is assigned to a station.

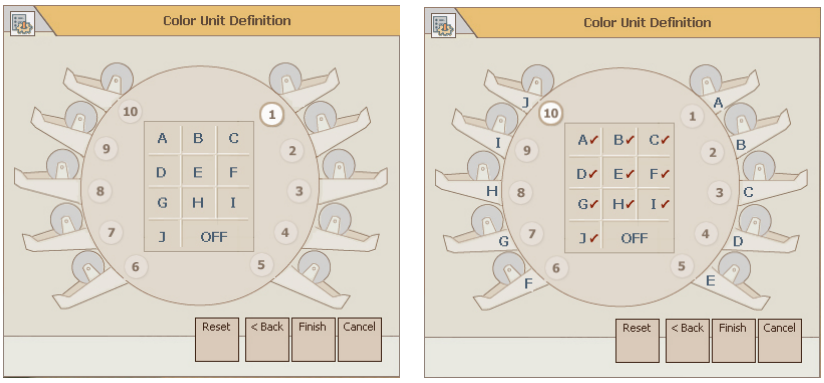


Figure 40. Color unit definition, before (left) and after (right)

Note: One station *must* have color A (the reference color).

2. Click **Finish**.

   You have now completed Job and pRegister Set-up. When the press is running, and all colors appear on the print, you can proceed with Automatic pRegister (below).

11.3.1 Changing pRegister settings

If you need to correct one or more of the settings you entered during **New (Set-up)**, you do not need to begin Set-up again. Simply click **Settings** on the **pRegister** menu and proceed step-by-step through the settings, changing those you want to correct.

11.4 The pRegister process

This section describes the pRegister process, in which the system automatically adjusts all the color stations into register.

11.4.1 Automatic pRegister

You can start automatic pRegister only when:

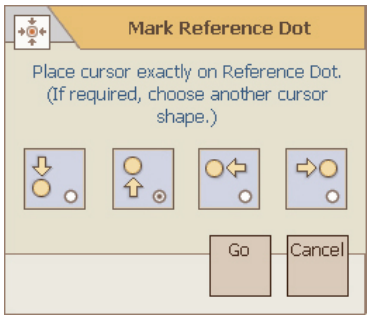
- pRegister setup is complete
- the press is running
- all target dots appear on the screen

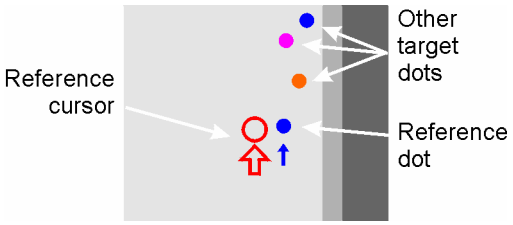
The various stages of automatic pRegister are denoted by messages on the top of the screen.

To start Automatic pRegister:

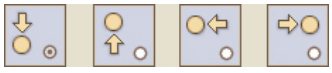
1. On the pRegister toolbar, click **Start** 

   The camera moves to the left edge of the print, and a red cursor (the Reference cursor)—shaped like an arrow and circle—appears superimposed on the live image.



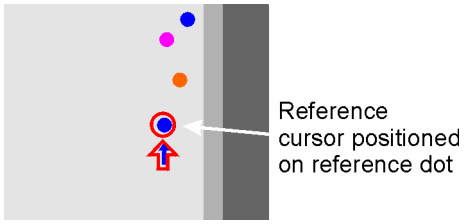


2. If the cursor arrow and the reference dot arrow are not pointing in the same direction, select a different image on the dialog-box.



   The screen cursor changes according to the radio button selected.

3. Click with the mouse to position the cursor on the reference dot (indicated by the arrow).



If the arrow does not appear on screen, use the Camera Movement keys to move the camera until the arrow appears.

Note: This does not have to be done *exactly*. The system will in any case fine-tune the location automatically.

Once the system knows which is the reference dot, it can locate the other dots, and calculate the required corrections.

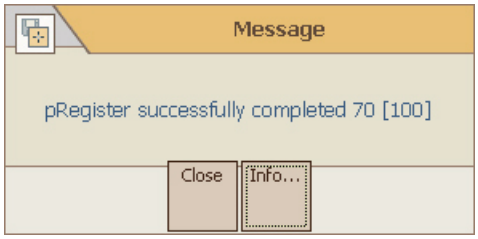
4. Click **Go**.

Automatic pRegister begins, and a series of progress messages flash on the screen. (The process is described in "Working with pRegister," below.

Note: If the press is not running a message appears: "Press not running".

Note: If you need to abort the process before it is complete, click the **Stop** icon on the pRegister toolbar.

When the process is complete the dots in the small pRegister matrix are aligned on the screen, and the pRegister final message appears (see "Understanding the final message," page 94).



5. Click **Info...** to view the results for all color stations.

OR

Click **Close** to remove the message.

If you have the Presco module on your system, this message will not appear and the system will immediately continue to the Presco process (see next chapter for details.)

11.4.2 Working with pRegister

This section describes what you see on the screen during the automatic pRegister process.

pRegister icon

When one of the automatic pRegister modes is active, the **pRegister** icon appears on the status bar at the top of the screen.

pRegister progress

When pRegister runs, a succession of progress messages appear in the upper left of the screen. These messages describe what the system is doing.

Although the pRegister process is automatic, you can follow on the screen the two main stages: rough alignment and fine-tuning.

Rough alignment

First the system looks at the line of larger dots on the target. It calculates how much to move each color station, moves them, and then measures the accuracy achieved. This is the “rough alignment”.

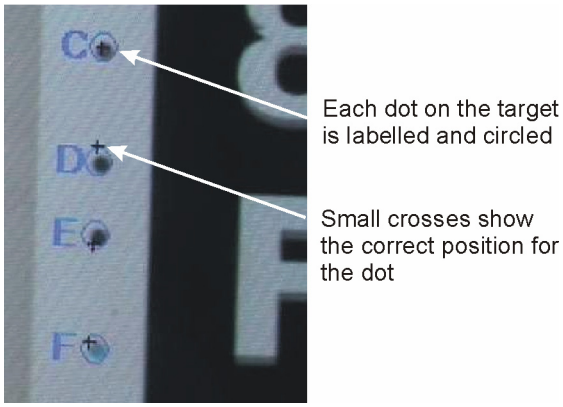


Figure 41. Before rough alignment

After rough alignment the dots are much nearer to their correct positions.

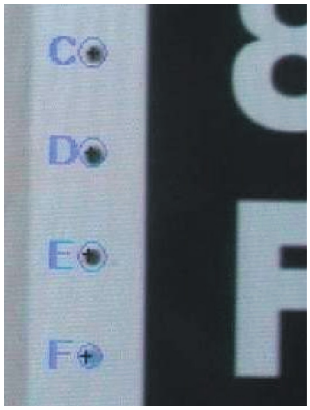


Figure 42. After rough alignment

Fine tuning

The system now looks at the group of small dots. (Note that these dots are only 1 mm wide, but appear on the screen larger than the big dots, because of the higher camera zoom.)

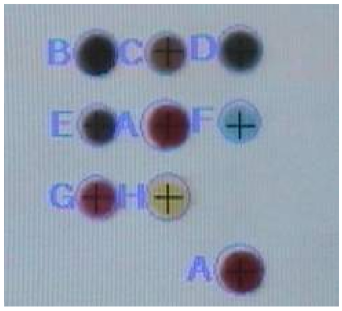


Figure 43. After fine-tuning

After fine-tuning, pRegister examines the alignment of all colors to check that they are "in register".

11.4.3 Abort pRegister

The pRegister **Start** icon toggles between **Start** and **Stop**. If you need to abort pRegister before it is complete, simply press **Stop**. (It may take up to 15 seconds after you press **Stop** for the process to stop.)

11.4.4 Understanding the final message

At the end of the pRegister process, the final message is displayed, providing information on the process. The most common message is "pRegister successfully completed" indicating that all colors are in register within the pre-defined tolerance.
This message is described below together with other possible messages.

"pRegister successfully completed"

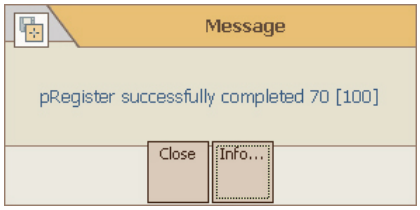


Figure 44. pRegister OK - final message

In Figure 44, page 94 above (70 [100]), the 70 represents the *worst* aligned of all the target colors. Units are microns (thousandths of a millimeter). In this case, the worst aligned of the target dots was no more than 70 microns away from its ideal position.

The number in square brackets is the threshold value for your system (preconfigured)—in this case 100 microns. This message means that *no* color is out of register beyond the system threshold.

"Accuracy not achieved"

If one or more of the target dots is outside the threshold value, an "Accuracy not achieved" message appears. The message does not necessarily mean that

the process failed. Sometimes the threshold value for a “pRegister OK” message may be higher than you actually need. Therefore, if you receive an “Accuracy not achieved” final message you should:

- View the accuracy of all decks, see “Registration accuracy,” (below), and
- Examine the actual print.

Based on this you will be able to decide whether the registration achieved is satisfactory for this Job.

Other final messages

If pRegister is unable to function properly the final message will summarize what has gone wrong, to help you (or the AVT Support Team if necessary) solve the problem.

11.4.5 Registration accuracy

Clicking the **Info** button on the pRegister final message opens the list of registration accuracies for each station/color (see below).

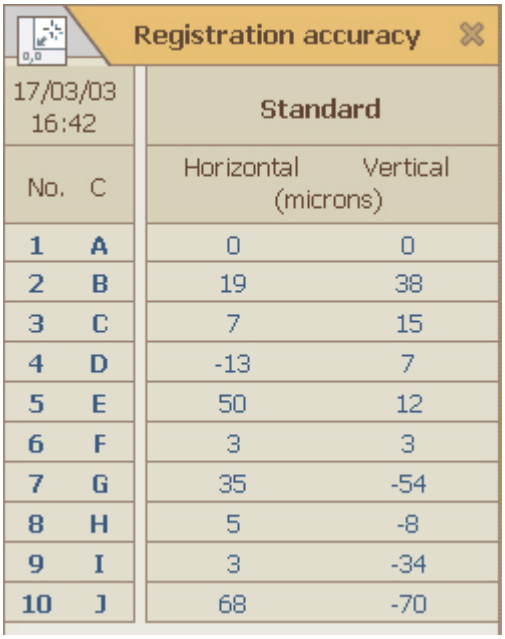


Figure 45. Registration Accuracy

Note that If pRegister is run after manual adjustments have been saved (see “Making manual adjustments,” page 96), the accuracies listed will relate to the *adjusted* positions, not the absolute ones.

11.4.6 Re-running pRegister

You can re-run automatic pRegister at any time, either before or after automatic defect detection, if needed.

11.5 Manual adjustments

Even when automatic pRegister achieves highly accurate registration of the target dots, you may decide that you need to move the color stations manually. The two main cases where you might need to do this are when:

- the target is in register but other parts of the web are out of register—and you want a better *overall* alignment, **or**
- one particular part of the print is especially important and must be perfectly in register, even if this means that other parts of the print will be slightly out of register.

If you make manual adjustments after automatic pRegister, you do not necessarily need to save them to the system. However, unless you do so, the next time you press pRegister, your manual adjustments will be lost.

Furthermore, if you have PrintFlow * (optional), by saving adjustments, and then saving the Job, you will be able to load these manual adjustments for future runs of this particular Job.

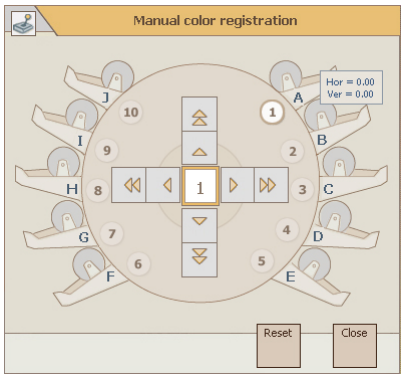
11.5.1 Making manual adjustments

You can manually adjust the color stations using your press controls, or via Jupiter's virtual press control panel.

To manually adjust the register using the Jupiter control panel:

1. On the pRegister toolbar, click **Manual**.

   The virtual control panel appears.



2. For each color station you want to adjust, click on the number of the station to select it.

   The selected number becomes white.

   - Move the station up, down, left, or right, using the double arrow keys (rough tuning) and the single arrow keys (fine tuning).

3. Click **Close**.

11.6 Saving manual adjustments

In the workflow described above, the color stations are moved so that the pRegister target dots are aligned as nearly perfect as possible. The assumption is that if the dots are in register, the rest of the print is also. In most cases, after automatic pRegister no user intervention is required.

However, perfect registration mark alignment does not necessarily mean a perfect print. For various reasons, it is sometimes necessary to fine-tune the registration, using the printed image to achieve a better result over the entire repeat. This may result in misregistring of the registration marks, including the pRegister target.

If you run pRegister *again* after having made manual adjustments, the color stations will be moved back to the positions where the target dots are in register.

If you want to save your manual adjustments so that when you re-run pRegister, the manual adjustment will be maintained, you must **Save Adjustments** and then—when you re-run pRegister—use **Adjusted mode**. This process is described fully in "Manual adjustments," page 96.

11.6.1 Saving adjustments

You only need to save adjustments if you have manually adjusted the register, and you expect to run pRegister again during the current Job.

To Save your fine adjustments:

1. On the **pRegister** toolbar click **Save**.

   The reference cursor (an arrow and circle) appears—superimposed on the live press image—and you are asked to place this cursor on the Reference dot.

2. Click with the mouse to position the cursor on the reference dot (indicated by the arrow).
3. Click **Go**.

   The system records the adjustments. The message "Adjustments saved" appears.

4. Click **Close**.

11.6.2 Run in Adjusted mode

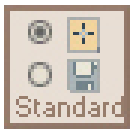
When you save manual adjustments, pRegister automatically switches to Adjusted mode. This means that if you run pRegister, your saved adjustments are used.

To run pRegister in Adjusted mode:

- On the **pRegister** toolbar, click **Start**.

  The system automatically aligns the target dots according to the manually adjusted Target that was saved previously.

11.6.3 Switch between Standard and Adjusted modes



If you have saved manual adjustments but now wish to return the register to standard alignment (where the target dots are in register), run pRegister in Standard mode.

To switch between Standard and Adjusted modes:

1. On the pRegister toolbar, click **Standard**.

   The icon toggles from **Standard** to **Adjusted**.

2. On the pRegister toolbar, click **Start** and proceed as for automatic pRegister.

   The system runs in the selected mode.

12 Presco

This chapter provides advanced information about AVT's optional Presco module for automatically adjusting printing pressure.

Basic information on using one or both of the Press Control modules (pRegister and Presco) can be found in the chapter entitled “Presco Press Control,” page 75.

12.1 The Presco Target

To automatically adjust the printing pressure, the Presco option uses a set of colored rectangular targets and three dots. The rectangles are used by the system for pressure adjustment, while the dots are used for locating the target. Each rectangle appears on only one plate and is printed by only one color station

The 3 dots appear on all plates and are printed by all active color stations.

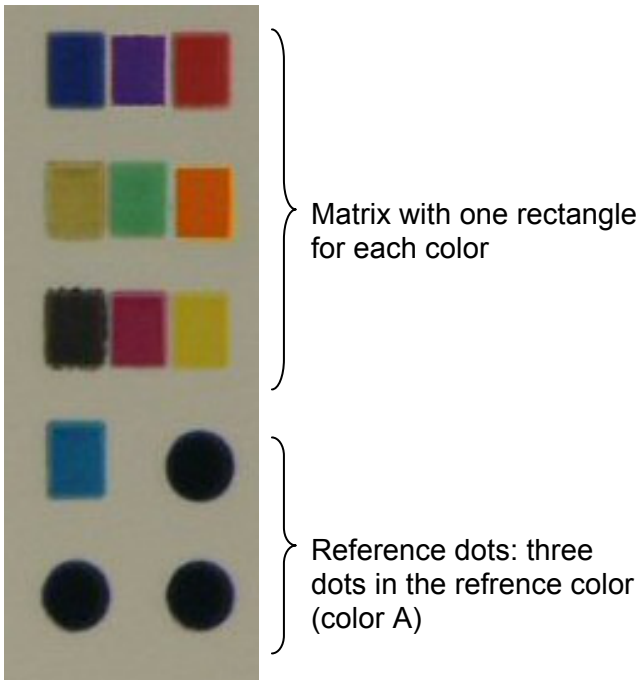


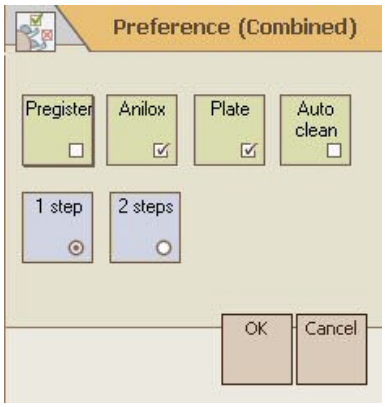
Figure 46. The Presco Target

12.2 Running Presco alone

If registration was already completed automatically or manually, it may be necessary to run the Presco process alone

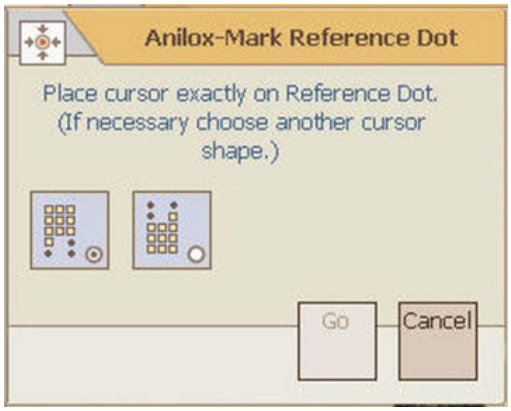
To run Presco alone (without pRegistration)

1. Do all the required setup steps as described in “Using pRegister and Presco to Register Colors and Adjust Pressure,” page 77.
2. When finished, perform step 1 in “Combined Press Control,” page “82.
3. In the Preferences dialog box, uncheck the **pRegister** checkmark and press **OK**.



4. When you press the “Start” 

button, the Presco process will start immediately.
5. Make sure that the press is running and all the rectangles on the Presco target are printing well.
6. Select the cursor shape and mark the Presco reference dots.
7. Press **Go** after marking the Presco reference dots to start the Presco process.



12.3 Presco results info

When Anilox and Plate processes are completed (either as part of a Combined process or Presco alone), a message appears that the process has been completed. Click **Info** on the message to view the amount each color station was adjusted.

To view movement info:

1. On the final message, click **Info**, then select **Anilox** or **Plate**.

   The Status reports indicate:

   - Date and time of process
   - 1 side or 2 sides
   - Total amount of movement of each Anilox , Plate per color station
   - Whether the result achieved for each particular station was a success

Anilox Status

25/03/06 02:15		1 Side		
No.	C	Status	Total move	
2	A	Success	-20.0	-20.0
7	B	Success	-20.0	-20.0
5	C	Success	-20.0	-20.0
4	D	Success	20.0	20.0
6	E	Success	-20.0	-20.0
1	F	Success	-100.0	-100.0
3	G	Success	-100.0	-100.0

Plate Status

25/03/06 02:17		1 Side		
No.	C	Status	Total move	
2	A	Success	70.0	70.0
7	B	Success	70.0	70.0
5	C	Success	110.0	110.0
4	D	Success	70.0	70.0
6	E	Success	-10.0	-10.0
1	F	Success	-10.0	-10.0
3	G	Success	70.0	70.0

Figure 47. Anilox and Plate status reports

13 IDEal

AVT's optional IDEal add-on[3] provides accurate in-line color measurement and management. IDEal performs in-line color measurement of areas you define, in ΔLab and ΔE units. IDEal color measurement can be performed as a stand-alone task, or as part of Automatic Inspection (in parallel to other process control tasks such as Cover Inspection, User-defined Inspection and Barcode Inspection).

IDEal helps you maintain consistent color throughout each print run. With IDEal, you can define one or more points on the repeat, and set the color inspection sensitivity for each point (in ΔE units). The system checks these points during Automatic Inspection, alerting you when a point changes color beyond the defined threshold.

13.1 IDEal as part of Automatic Inspection

IDEal is typically used as an additional task in Automatic Inspection, as the workflow below illustrates.

13.1.1 Typical Workflow

1. Define one or more IDEal points in solid color areas of the repeat.

   You can give each point a name and individual sensitivity thresholds.

2. Start Automatic Inspection that includes the IDEal task as well as other tasks (such as Cover and User-Defined).

   When any of the IDEal points changes color beyond its threshold, the system alerts you, and displays a graphic representation of the color change.

13.1.2 Defining an IDEal Point

You set up the IDEal map by defining one or more points for inspection.

To define a point on the IDEal map:

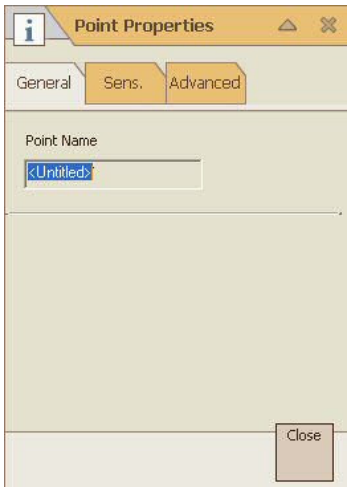
1. On the **Task** toolbar click **IDEal**.

   The IDEal toolbar opens.

[3] The capitalization of "DE" in the name IDEal hints at its purpose of ΔE management.

2. Click 

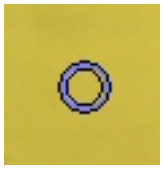
   The Point Properties dialog-box appears, and the cursor changes shape to ⌖. (The dialog-box contains three tabs, with a default name for the new point in the **General** tab.)



3. Click on the required position on the image. (If necessary, move the camera to display the required part of the image on the screen.)

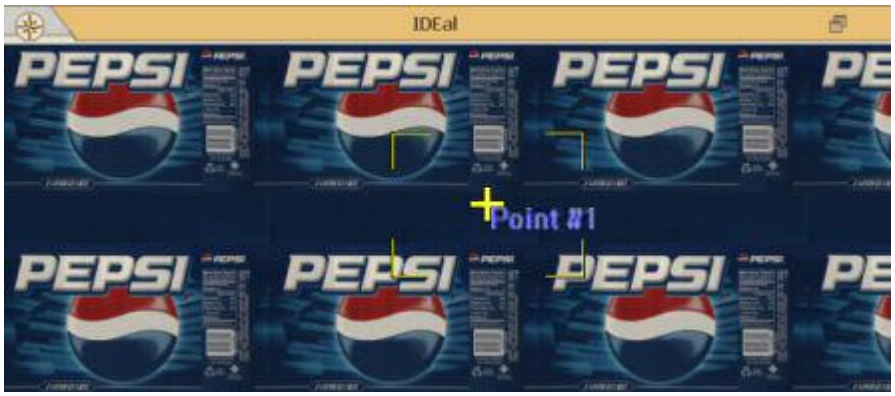
Note: It is essential that the point you choose is in an area of *solid* color (not gradient). It is also recommended that it be one of the ink station colors (not two or more colors mixed), otherwise IDEal may generate unnecessary alarms as a result of insignificant register changes.

   The point is marked as a circle on the image.



4. Set the point properties as required:
   - You can type in a different name for the point.
   - To change sensitivity values for the point, click on the **Sensitivity** tab, and change as required.
   - To change the color measurement method, click on the **Advanced** tab, and select one of the color measurement methods from the list.
5. Click **Close**.
6. Repeat steps 2–5 as necessary, to create additional IDEal points.

   The new points are indicated on the IDEal map as dotted yellow circles. When a point is selected, the circle becomes blue. The point name appears near the point on the Job Map.



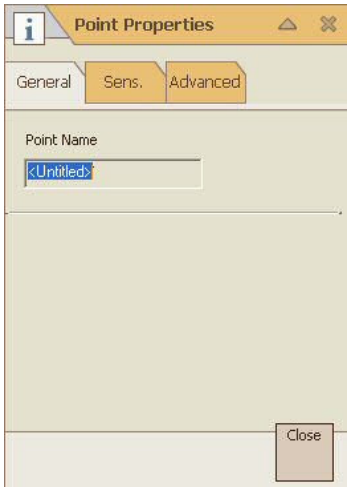
13.1.3 Editing an IDEal point

To modify the properties of an IDEal point:

1. Select the point you want to edit.
2. On the IDEal toolbar, use the **Next** button to move between IDEal points to the one you require.

   The selected point is circled blue on the IDEal map, and on the print image.
3. Click 

   The Point Properties dialog-box opens.



4. Edit the point properties as required:
   - To change sensitivity settings for the point, click on the **Sensitivity** tab, and change as required.
   - To change the color measurement method, click on the **Advanced** tab, and select one of the color measurement methods from the list.
5. Click **Close**.

The point properties are updated.

13.1.4 Deleting an IDEal point

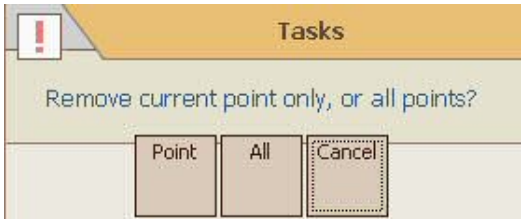
To delete an IDEal point:

1. Select the point you want to delete.
2. On the IDEal toolbar, use the **Next** button to move between IDEal points to the one you require.

   The selected point is circled blue on the IDEal map.

3. On the IDEal toolbar, click 

   A message appears



4. To delete the current point only, click **Point**.

   OR

   To delete all measurement points from the map, click **All**.

   The selected point or points are deleted from the IDEal map.

13.1.5 Automatic Inspection with IDEal

When the IDEal map has been defined, you can start Automatic Inspection.

- The IDEal task icon on the status bar indicates that IDEal inspection is included in the Automatic Inspection.
- When a significant change is detected, in addition to the alarm light, the IDEal Results window appears. The information in this window can help you understand the color change in order to fix it (see next section).

13.2 IDEal Results

The Results window provides graphic and numerical information on the color variation of each IDEal point.

The Results window opens automatically whenever a significant ΔE color change is detected. You can also open it at any other time.

13.2.1 Opening the IDEal Results Window

To view measurement results for a point:

1. Open the menubar.
2. Click **Display | IDEal | Color Measurement**.
3. Select the point from the drop-down menu.

   The Color Management for the selected point appears.

13.2.2 Understanding IDEal Results

The IDEal Results window tabs are summarized in the table below, and described in the following sections.

Table 12. Delta E Results tabs

Tab	Description
Results	A graph of the last five color measurements for this point.
History	A graph of color variations over time.
Compare	A visual comparison between the Master color and the current color at the measurement point.
Sensitivity	Shows current sensitivity settings for the selected point, and lets you adjust these settings.

The Results tab

The Results tab shows color and luminance variations for the selected point. The measurement results appear as black crosses on the graph and bar. The most recent result appears as a blue cross on both the graph and the bar.

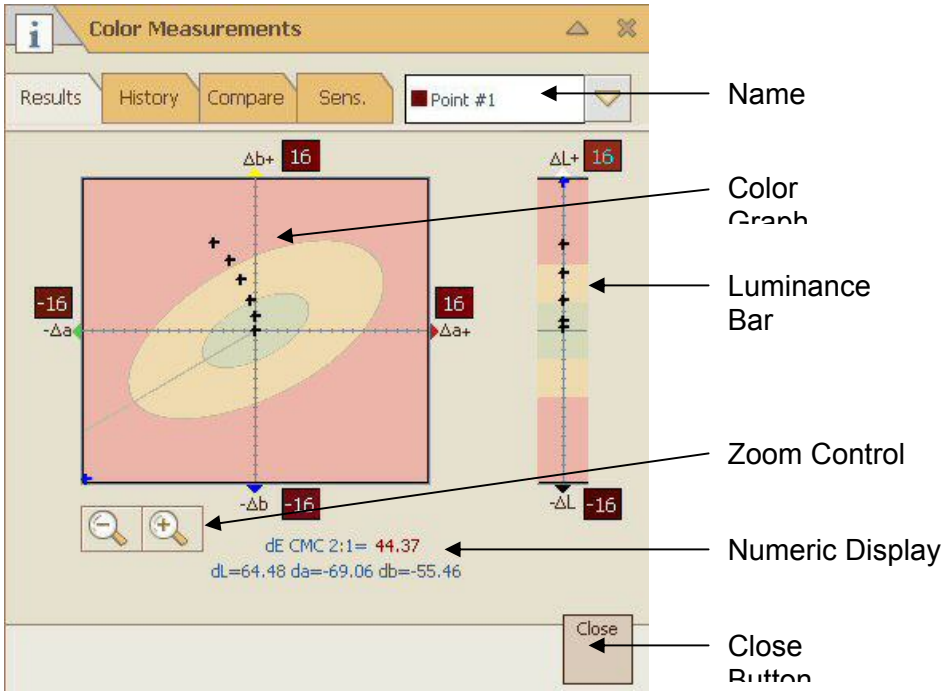


Figure 48. DeltaE Results tab

Table 13. Delta E Results tab components

Component	Description
Name	The name of the selected point. You can select a different point from the drop-down list.
Close button	Lets you close the Results window.
Color graph	Graph showing recent color variations for the point. The area of the graph is divided into three sections, according to current sensitivity settings: Green area: Okay Yellow area: Minor color changes Red area: Major color changes
Luminance bar	Luminance variations plotted on a vertical bar. The background of the bar shows current sensitivity settings.
Zoom control +/–	Lets you view the graph and bar in greater or less detail.
Numeric Display	Numeric display of the last measurement result at the selected point, in ΔE and ΔLab units.

The History tab

The History tab has a graph showing recent color variations at the selected point, plotted against meter count.

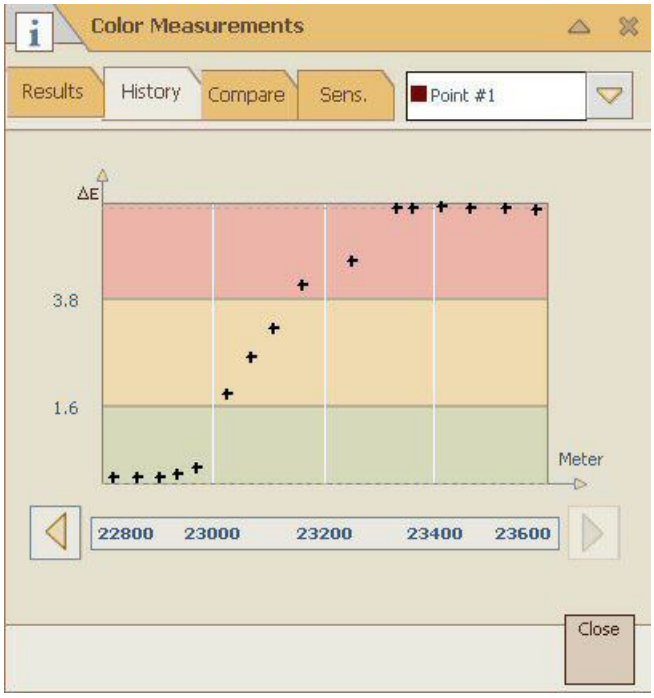


Figure 49. History tab

Compare tab

The Compare tab shows two large areas of color—the master color (left) and the current color (right) at the measurement point—for visual comparison.

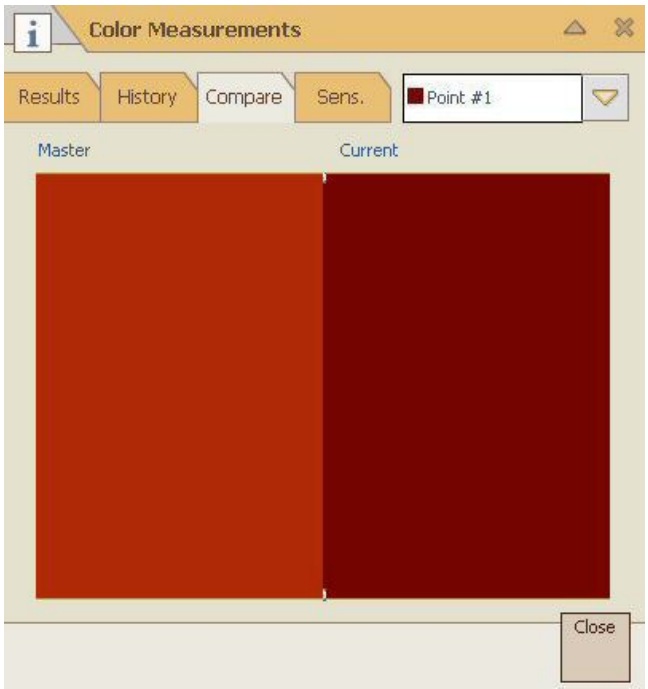


Figure 50. Compare Tab

The Sensitivity tab

The Sensitivity tab shows current settings and lets you change settings:

- For the current point (move sliders—click **Close**)
- For other points (select point from drop-down list—move sliders—click **Close**)
- For all points (move sliders—click **Apply to All**)

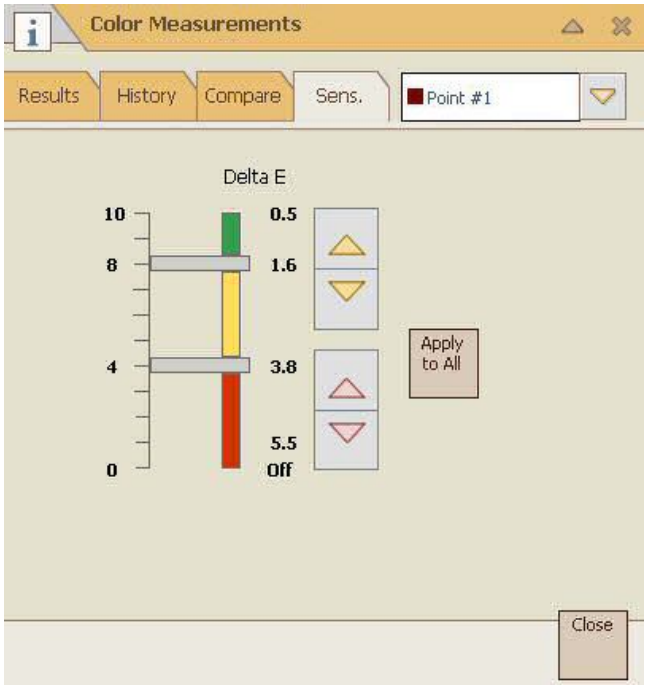


Figure 51. DeltaE Sensitivity tab

13.3 Solo Run

In Solo Run Mode the system continually inspects the color at a single point, and displays the results live. This mode can be used to monitor a single color continuously, for example during press setup.

Note: You cannot define more than one point for a Solo Run.

To start a Solo Run:

1. Select one of the points on the IDEal map.

   The selected point is circled blue.

2. On the IDEal toolbar, click **Solo**.

The Results window opens, and Automatic Inspection of the selected point starts, without any other tasks (Cover, User-defined or Barcode)—even if they have been defined for this Job.

3. To stop Solo Run, click **Solo** again.

13.4 IDEal Reports

IDEal can generate reports automatically at the end of each roll. The printed report includes all measurement results in numerical form. For each measurement point, the IDEal report includes the Delta E and Delta Lab values together with other related info.

Note: If the PrintFlow option is installed, all color measurement results are reported in the PrintFlow data base and reports. See the *PrintFlow User Guide.*

14 Dual-Head Systems

Some Jupiter systems have *two* optic heads, in one of two possible configurations:

- **RiteSeal Viewing** – The additional, special optic head is used to view coating materials such as ColdSeal, HotMelt, or varnish. Since the RiteSeal option only enables viewing but not inspection, only the section "Viewing," page 111 of this chapter, is relevant, as the optical head does not inspect.
- **Dual Head Inspection** – The additional optic head is used for Automatic Inspection of the reverse side of the web (where the web is printed on both sides).

14.1 Configurations

14.1.1 RiteSeal Viewing

A regular and a RiteSeal optic head are mounted *on the opposite or same side* of the web. The RiteSeal optic head is specially designed to show different coatings at high contrast. It is used for viewing ColdSeal, HotMelt, or Varnish. The RiteSeal image is a *view only* image, and is not included in Automatic Inspection. The RiteSeal image can be superimposed on the print image to monitor registration between the print and the coating.

14.1.2 Dual Head Inspection

If the Dual Head Inspection option is implemented, two regular optic heads are mounted on opposite sides of the web. These are for presses where the web may be printed on both sides, and they provide the option of Automatic Inspection for both sides, independently or at the same time.

14.2 Viewing

This section applies to all Dual Head systems.

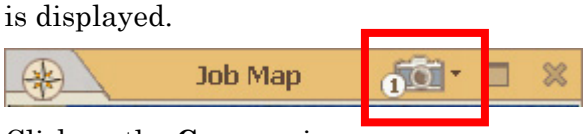
The two cameras are called **Camera 1** and **Camera 2** (In the case of RiteSeal, the regular camera is **Camera 1**, and the RiteSeal camera is **Camera 2**.) . You can select whether *PrintVision* displays the **CAMERA 1** image, the **CAMERA 2** image, or **BOTH** together.

When you select **BOTH,** the two camera images are superimposed. This is particularly useful for adjusting and monitoring register between the two sides of the web. When viewing **BOTH,** you can also adjust the brightness balance between the two superimposed images, using the **BALANCE** slider.

To switch between cameras:

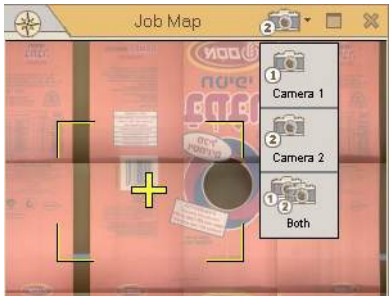
1. Open the Job Map.

   The camera icon on the Job Map titlebar indicates which camera image is displayed.



2. Click on the **Camera** icon.

   A drop-down list of three icons appears.



3. Click on one of the icons to select **CAMERA 1**, **CAMERA 2**, or **BOTH**.

   The selected icon appears on the titlebar, and the selected image appears

Table 14. Dual-head viewing options

Icon	Function
Camera 1	Displays the image from Camera 1.
Camera 2	Displays the image from Camera 2.
Both	Displays both camera images, superimposed on one another. The zoom automatically changes to a default value for viewing "Both" images (1 for regular cameras; 2.5 for RiteSeal cameras).

Note: When using the RiteSeal camera, the minimum zoom value is 2.5.

14.2.1 Dual Head Image Balance

When **Both** images are displayed, you can adjust the brightness balance between the two using the **Dual Head Balance Slider**.

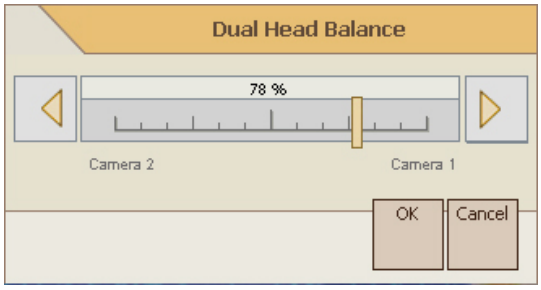


Figure 52. Dual Head Balance Dialog Box

1. Click with the mouse on the slider and drag it right or left.
2. Click **Ok** to close the slider.

14.3 Dual Head Automatic Inspection

This section applies only to systems with two *regular* optic heads. (The RiteSeal camera cannot be used for Automatic Inspection.)

In general, most of the functionality of the single head system is simply duplicated in the dual head system.

14.3.1 New Job Set-up

New Job Set-up in dual head systems is identical to that in single head systems.

14.3.2 Automatic Inspection

The system inspects both sides of the web simultaneously, according to the defined tasks.

The camera icon on the Job Map indicates which image is currently displayed on the screen, but you can change the display as required, even in the middle of Automatic Inspection.

14.3.3 Defects

When a defect is detected it is shown on the right screen, and can be examined using **Defect Study**, regardless of which camera image is displayed on the left screen.

14.3.4 Defect History

The Defect History includes an extra column listing the side (camera) on which the defect was found.

14.3.5 Tasks and Masks

Tasks and masks are applied just as for regular Jupiter systems, with the addition of an icon at the top of the Job map (and equivalent extra items on the Job menu), that let you select which camera to configure.

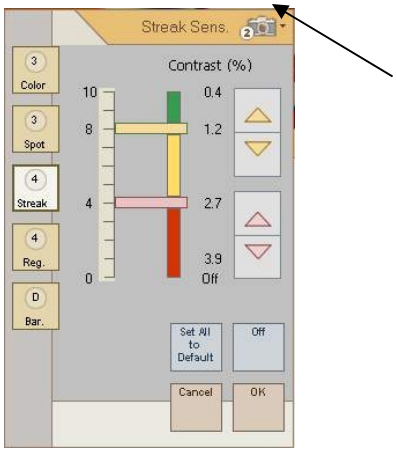
Figure 53. Job map titlebar with camera icon

To configure Tasks or Masks for the second camera:

On the Job map, click the camera icon, and select the second camera from the drop-down list.

14.3.6 Sensitivities

When you open the sensitivity sliders, the icon on the titlebar tells you which camera you are adjusting. You can change the camera by clicking on that icon and selecting the other camera from the drop-down list.



The Camera icon shows which camera is being adjusted. Click the down arrow to select the other camera.

Figure 54. Dual Head sensitivities

14.3.7 Task Ratio

As with sensitivities, task ratios are assigned for each camera. The icon at the top of the box tells you which camera you are adjusting. You can change the camera by clicking on the icon and selecting the other camera from the drop-down list.

15 Troubleshooting

Important: If any of the troubleshooting procedures do not work, please contact your AVT Service Engineer.

15.1 General Troubleshooting

15.1.1 Optic Head Stops Moving

If the optic head stops moving, verify that both of the emergency buttons are pulled out.

15.1.2 Using Diagnostics

There are three **Diagnostic** options:

- **Alarm lights test**
- **Flash test**
- **Self Test**

To access the Diagnostic options from the menu bar:

Select **Tools | Utilities**, and then click one of the three options, described in the following sections.

Alarm Lights Test

The Alarm Lights Test tests the **Alarm Lights** in the **Light Tower** to make sure they are working.

1. Select **Alarm Lights Test**.

   The **Tower Test** dialog box opens.

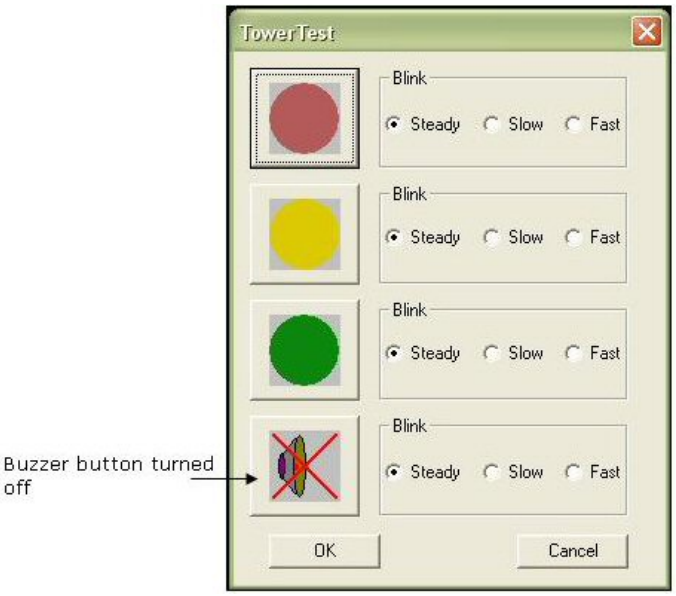


Figure 55. Tower Light Test

To test the Alarm Lights in the Light Tower:

1. For each row, select each of the options to verify that the light or buzzer works in the selected mode.
2. When the testing is completed, click **OK**.

   The **Tower Test** dialog box closes.

Flash Test

The **Flash Test** tests the flash to make sure that it works.

- Select **Flash Test**.

  The **Flash Test** message box opens with the message **Flash test running, please wait…**.

Self Test

The **Self Test** tests the following parts of the system to make sure that the system works:

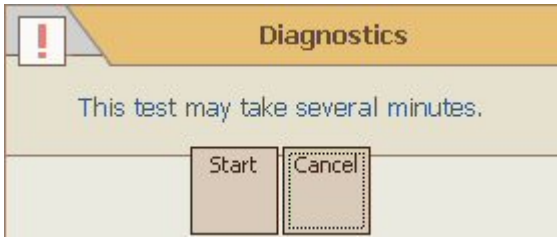
- **Bridge**
- **Flash**
- **Optic Head**
- **Camera**
- **Zoom**
- **Iris**
- **Focus**

- **IPB**

To run Self Test:

1. Select **Self Test**.

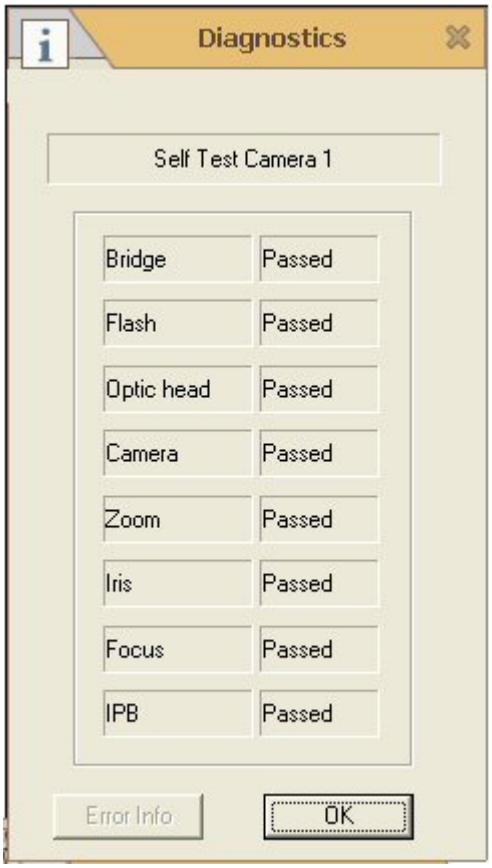
   The **Diagnostics** message box opens.



2. Click **Start**.

   The **Self Test** runs.

   When the **Self Test** finishes, the **Diagnostics** dialog box opens.



   If one or more of the components failed the test, the **Error Button** is active. If the **Error Button** is active, follow the procedure below.

   a. Click the **Error Info** button.

      The **List Err.txt** file in **Notepad** opens. The **List Err.txt** file lists all the errors and the time they occurred.

b. To close the **List Err.txt,** in the upper right-hand corner, click the  button.

The **List Err.txt** file closes.

c. To close the **Diagnostics** dialog box, click the **OK** button.

d. Examine the text file for information about the problem or send it to AVT support.

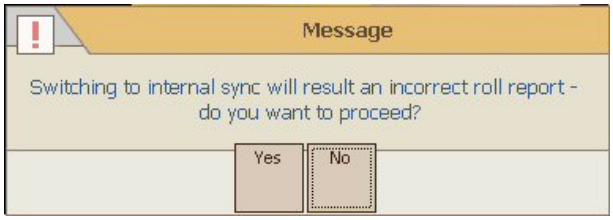
15.1.3 Internal Synchronization

Internal Synchronization can be used to diagnose cases where the image is not updating. Possible causes may be either the flash or the external sync signal.

To run Internal Sync:

1. Select **Tools | System Settings | Sync**. | **Internal**.

   If PrintFlow option is installed, a **Message** box opens stating that switching to internal sync will result in an incorrect roll report.



2. Click **Yes**.

   Internal Sync. runs until synchronization is switch back to external.

   Turning on the internal sync should activate the flash continuously. If it does not, the flash is probably faulty.

Note: Please switch back to internal mode when finished testing.

15.1.4 LEDs on the SOB

If a LED on the SOB (the computer inside the AVT system cabinet) is lit, the corresponding system is operational.

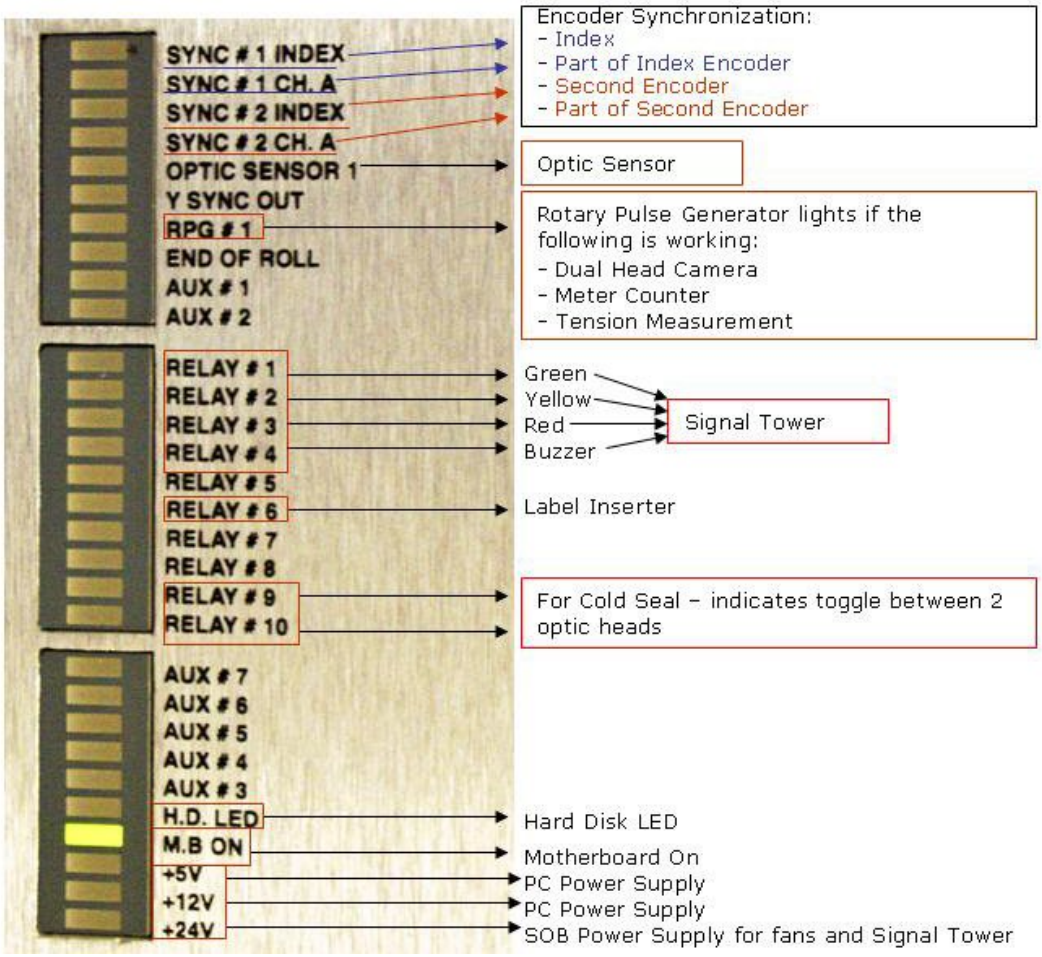


Figure 56. LEDs panel on the Front of the SOB

15.1.5 Bridge/Optic Head Reset

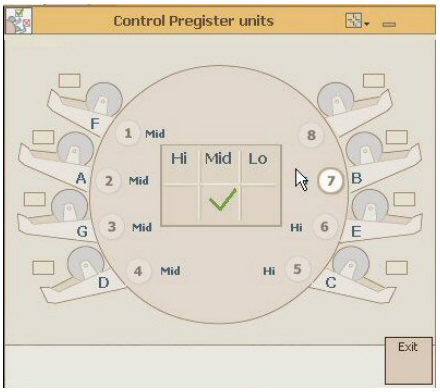
Upon startup or re-start of the system, if the optic head does not reset and recalibrate (the optic head moves from one side of the bridge to the other), it indicates either:

- that the power supply is not working. Contact AVT Customer Service to replace the power supply.

  or

- that the Emergency Stop Button is activated. Check the Emergency Stop Button.

15.2 pRegister Troubleshooting

Symptom	Action
During the pRegister process, the system identifies Job print elements as the pRegister dots.	Make sure that there is sufficient distance between the pRegister targets and the edge of the print; and that nothing is printed in the area in between. (Refer to the drawings in the *Target Definition Manual*.)
"Desired accuracy not achieved" message appears after pRegister process is completed.	This message does not indicate that pRegister failed, but that optimal accuracy was not achieved. Accuracy may be improved by running pRegister again, or by fine manual correction of the registration.
One or more light-colored dots in the pRegister target are not identified during pRegister process.	Make sure the dots are printed well. If not, increase Plate or Anilox pressure as required. Then run pRegister again. If the dots are still not identified, disable the corresponding color station (see "Color Unit Definition," page 89), and stop printing with these color stations during the pRegister process. To disable a color station, do the following:  In the Color Register Units dialog box, click on the number of the Color Station (1, 2, 3 …) whose corresponding registration dot is not recognized. When the Color Station is active (background of number turns white), click on the green ✓. The green ✓ becomes a red ×. The pRegistration of the corresponding Color Station is now disabled. In addition, please cut a sample from the repeat of the printed targets from the web and send it to your local AVT Customer Support representative to the attention of the application team.

Symptom	Action
While performing pRegister of large dots (rough alignment), some dots are moving in the wrong direction (away from alignment).	In the Color Unit Definition dialog box (see "Color Unit Definition," page 89), make sure that each dot in the registration target (A, B, C, …) is associated with the correct Color Station (1, 2, 3, …). Make sure that your job is correctly defined as **surface** or **reversed** (see "Set Printing Type* (optional)," page 6). To determine if the printing type is defined correctly, press the **Move Camera Up** arrow on the keyboard. If the image moves in the wrong direction (namely, the view moves up instead of down), the printing type is defined incorrectly. To correct the problem, use the New Job Setup wizard to modify Printing Type as required.
When pRegister makes fine adjustments, there is a vertical offset from the correct location of the small dots.	This occurs if you have entered the wrong value for the circumference of a gearless press. Use the New Job Setup wizard to "To set circumference / number of teeth," page 27 , and modify as required.
After completing pRegister rough adjustment, and starting fine adjustment, a message appears stating that not all dots could be found.	Make sure all small dots appear on screen and that they are not fading or missing altogether. Make sure printing pressure is sufficient. Make sure that all dots are present on the plate. If some dots have been cut off, disable the automatic registration of the corresponding color stations and run pRegister again.
One of the big dots of the Target is not identified (its required location is marked by a blue rectangle), and the dot is printed (clearly) nearby.	The initial misregistration of that color station may be too great. Try to manually move that color station, in order to move the dot towards the rectangle. Then run pRegister again.
One of the big dots does not move during the pRegister process, and/or one of the small dots is not identified and located far from its required location.	Verify that the color station is not at its movement limit.
Even though the registration is correct, one of the dots in the target is not lined up with the others.	The cause is probably that the target was not prepared in accordance with the guidelines; or that the wrong plate has been mounted. Disable the Color Station corresponding to the misaligned dot and re-run pRegister.

15.3 Presco Troubleshooting

Symptom	Action
During Presco setup while the system is adjusting the pressure, all Presco targets, including the three reference dots, disappear from the screen and an error message appears,	Take out the flexographic plate that contains target A (see “Color Unit Definition,” page 89) and verify that the reference dots are elevated 300 microns above the non-imaging area. If there are also references dots on the opposite edge of the plate, check them also. Make sure that the press speed is 45 m/min–100 m/min (135 ft/min–300 ft/min). Make sure that the web is stable and the web tension is correct. Do not adjust or change the press speed during the Presco process.
pRegister is completed and the system is prompting you to mark the Presco targets, but you cannot see the Presco targets on screen.	Zoom out to show a larger area, and manually move the camera until the targets appear in the middle of the screen. Then click on the targets and press **Go** on the Presco dialog box.
Presco completed successfully, but the print pressure is not adjusted properly on one side of the web.	If there are Presco targets on both sides of the web, perform “Set Number of Steps,” page 78, and select **2 steps.** Repeat Presco setup. When Presco setup is completed on one side of the web, you will be prompted to identify the Presco targets on the other side of the web. It is possible that the press plates are not parallel. In that case you must calibrate the plates from side to side. Contact your press vendor for instructions.
Presco was completed successfully, but on the actual print, high-coverage colors have too low pressure and low-coverage colors (usually in an area of a half-tone or screen) have too high pressure.	Perform the procedure in “Press Control Processes,” page 81. Set the pressure of each Color Station. Set **Hi** for Color Stations with high coverage (such as uniform background colors or color squares). Set **Mid** for Color Station with medium coverage. Set **Lo** for Color Stations with low coverage (such as screens and half-tones).
During the Presco process, one or more of the small Presco targets was marked with a red rectangle around it and an × in the middle.	Make sure the square exists on the flexographic plate and that it was printing correctly during the Presco setup process. Make sure the Color Station printing this square was functioning correctly during the Presco process.

16 Maintenance

If maintenace is not carried out regularly as described here, the system may deteriorate over time.

The optimum frequency of these maintenance procedures depends on local conditions, and the printing application. For example, in some paper converting applications, a thick layer of paper dust can accumulate on system elements within a few days, and such systems should therefore be cleaned at least once a week. On other sites, cleaning once every few months may be enough.

Although most of the operations described below normally can be done by your maintenance staff, it is strongly recommended that you invite AVT Customer Support to perform a thorough maintenance from time to time, and to verify that the system is performing at its best.

Read this chapter thoroughly before starting the maintenance procedure.

16.1 General Precautions

1. Make sure this manual is next to the machine.
2. Observe all safety instructions and warning marks attached to the machine.
3. Make sure to operate the machine only when all safety and emergency equipment are fully functional.
4. In case of machine malfunction, turn off the machine immediately by pulling the plug from the electrical outlet.

   Report the malfunction to the authorized AVT representative.
5. Make sure that only trained and authorized personnel operate the machine.
6. Do not liquids near the system.
7. The machine should only be operated from the type of power source specified on the marking label.
8. Do not allow anything to rest on the power cord. Do not locate the machine where the power cord could be walked on.
9. Make sure to operate the machine according to the user manual.
10. Read all relevant instructions in this manual before attempting to perform any maintenance actions.
11. The following environmental conditions must be adhered to for safe operation:
    - The equipment is intended for indoor use only.

- Do not operate at an altitude higher than 2000 m (6562 ft).
- Ambient temperatures: 5 to 50°C.
- Ambient humidity: maximum 80% RH till 31°C decreasing linearly to 50% RH at 40°C

16.2 Warnings

- Always read the maintenance chapter before performing maintenance.
- Before performing maintenance, disconnect the power cord from the electrical socket. Since high line-voltage may be present in some parts of the machine even after the power is switched off, take proper precautions.

  Danger: High line-voltage is present in some parts of the machine even after the machine is disconnected from the electrical socket.

- The system is installed at the output of a press device. Make sure that the host press device is turned OFF before attempting to perform any maintenance.
- The machine utilizes a very strong stroboscopic light source. Do not expose your body directly to the light source without the proper protective equipment.
- Never cover the camera or the lens.
- Never touch optical elements, such as the lenses or mirrors, with your bare hands.

16.3 Cleaning

The optimum frequency of these cleaning procedures depends on local conditions, and the printing application.

The table below lists suggested frequencies under typical conditions. Adjust these as necessary.

Table 15. Recommended Cleaning Frequency

Component	Recommended Frequency
Filters and Fans	Clean once a month
Tower Light Lamp	Replace once a year or upon burnout
Backboard	Clean once a month

16.4 Maintenance Procedures

There are three maintenance procedures:

- Filter Cleaning and Fan Function
- Replacing the Light-Tower Lamp

- Backboard Cleaning

16.4.1 Filter Cleaning and Fan Function

Recommended frequency: once a month

There are filters and fans on the rear doors of the cabinet and at the computer/SOB front panel.

1. Remove the filters from their housing; clean the filters using air pressure, and rinse with water.
2. After drying, put the filters back in their housing.
3. Verify visually, that the cabinet and computer fans and the fan on the PC power supply are operational.
    - Do not operate the system unless all fans are operating and filters are assembled.
    - Inform AVT of any malfunction.
    - If the environment is very dusty, perform the cleaning procedure once a week.
4. Verify that the bridge control fan is working

16.4.2 Replacing the Light-Tower Lamp

Recommended frequency: once a year, or when it burns out.

Figure 57. Light Tower

To replace the Light-Tower lamp:

1. Shut down the system.
2. To open the relevant tower's part, turn it counterclockwise.
3. To remove the lamp, turn it counterclockwise and pulling it out.
4. To replace the lamp, slightly press and then turn it clockwise.

5. Reassemble the light-tower.

16.4.3 Backboard Cleaning

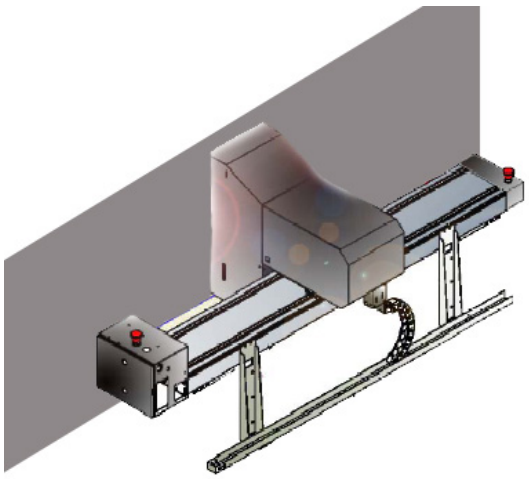


Figure 58. Back Board

Recommended frequency: once a month. Use the following cleaning material:

- Isopropyl Alcohol 70%
- A soft cloth

To clean the back board:

1. Shut down the system.
2. Manually move the optical head to the left edge of the bridge.
3. Use Isopropyl Alcohol 70% and a soft cloth to clean the back plate.
4. Manually move the optical head to the right edge of the bridge.
5. Clean the remainder of the back plate.
6. Replace the backboard if its color yellows.

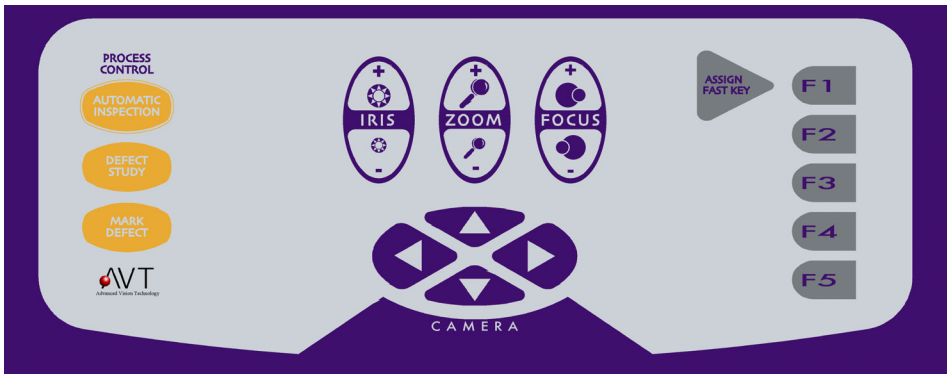
17 Summaries

The following tables summarize:

- Control panel buttons
- Screen icons
- Menu items

Items designated ***(optional)*** apply to some systems only.

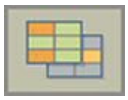
17.1 Control panel summary



Key	Function
Inspection keys (yellow)	
Automatic Inspection	Starts / stops Automatic Defect Detection.
Defect Study	When a system has found a defect, toggles between the master and the defect.
Mark Defect	When a Label Inserter is installed on the press frame, press this button to stick a label on the web (to mark defective web).
Camera control keys (blue)	
Iris (+/–)	Increase / decrease the brightness of the live Image.
Zoom (+/–)	Increase / decrease the magnification of the live Image.
Focus (+/–)	Adjust the sharpness of the live image.
Arrow keys	Move the camera up, down, right and left across the repeat.
Fast keys (black)	
Assign Fast Key	Use to assign locations to the Fast keys F2–F5.
F1	Send camera to the Zero point for the current Job.
F2–F5	Send camera to one of four user-defined locations on the web.

17.2 Toolbar summaries

17.2.1 Main toolbar

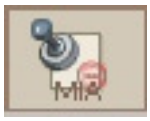
Icon	Name	Function
	**Job**	Opens Job toolbar.
	**Press Control** * (optional)	Opens the Press Control toolbar, for access to pRegister* and Presco*.
	**Tasks**	Opens Task toolbar (used to define steps for Automatic Inspection).
	**Automatic Inspection**	Starts/Stops Automatic Inspection.
	**Defect Study**	Toggles between Defect Image and Master Image.
	**Job Map**	Opens the Job Map window, displaying a map of the entire print repeat.

17.2.2 Job toolbar

Icon	Name	Function
	**New**	Set up new Job. Note: In systems that include pRegister* (optional) there are two icons: Setup – input Job parameters. Run – define inspection borders.
	**Load** *	(Optional) Load the settings of a Job that was previously saved.
	**Save** *	(Optional) Save the settings of the current Job.
	**Mask**	Open Mask toolbar (used to mask areas of the print from Automatic Inspection).

17.2.3 Task toolbar

The Task toolbar (opened by clicking the **Tasks** icon on the main toolbar) includes icons for up to five tasks, depending on your system.

Icon	Name	Function
	Cover	Opens Cover Map toolbar
	User-defined	Opens User-defined Map toolbar
	Barcode *	(Optional) Opens Barcode Map toolbar
	DeltaE *	(Optional) Opens IΔEal Map toolbar
	MIA *	(Optional) Opens Master Image Archive toolbar

17.2.4 Cover / User-defined / Barcode toolbars

There are five different Task toolbars. The following table deals with the toolbars for three of them that are similar: Cover map (C), User-defined map (U) and Barcode (B) map. (The remaining two, DeltaE and Archive are dealt with separately in the following sections.)

Icon	Name	Toolbar(s)	Function
	**New map**	C / B	Create a new map for this task.
	**Add step**	U	Add step to current map.
	**Remove step**	U	Remove step from map.
	**Enable / Disable**	B	Enable / disable Quiet zone.
	**Opaque / Transparent**	B	Define Barcode background as opaque or transparent.
	**Enabled / Disabled**	C / U / B	Enable / disable the inspection of the selected step.
	**Inspect / View**	C / U	Toggle between Automatic Inspection or View-only of the selected step.
	**Next**	C / U / B	Move camera to next step in current map.

17.2.5 DeltaE toolbar * (optional)

Icon	Name	Function
	**Point**	Define a point for DeltaE inspection.
	**Remove**	Remove current point (or all defined points) from DeltaE Map.
	**Properties**	Display
	**Solo**	Run DeltaE Automatic Inspection only (without Cover Inspection).
	**Next**	Move camera to next step in current map.

17.2.6 MIA toolbar * (optional)

Icon	Name	Function
	**Show**	Display archived Master Image for the current step
	**Freeze/Live**	(Toggle) Freeze the current live image / Continually refresh the live image.
	**Next**	Move camera to next step in current map.

17.2.7 Press Control toolbar

Icon	Name	Function
	**Settings**	Opens the Press Control toolbar to set up pRegister and/or Presco.
	**Manual**	Adjust Press Control manually
	**Control**	Open the Press Control Processes dialog box
	**pRegister**	(In the Press Control Processes dialog box): Apply settings to pRegister
	**Anilox**	(In the Press Control Processes dialog box): Apply settings to Anilox

Icon	Name	Function
	**Plate**	(In the Press Control Processes dialog box): Apply settings to Plate only
	**Combined**	(In the Press Control Processes dialog box): Apply settings to pRegister Anilox and Plate

17.2.8 pRegister toolbar * (optional)

Icon	Name	Function
	**Settings**	Begin pRegister settings.
	**Start/Stop**	Start/Stop automatic pRegister.
	**Manual**	Adjust color stations manually.
	**Save**	Save manual adjustments.
	**Standard / Adjusted**	Switch between Standard and Adjusted modes.

17.3 Menu summaries

The following table includes all possible *PrintVision* menu items for all system configurations. Some may not apply to your system.

Menu	Item / Sub-menu	Sub-menu items and/or explanations
Job		
	New	Set up new Job. Note: In systems that include pRegister* (optional) there are two items: **Set-up** and **Run**
	Load…*	(Optional) Load a previously saved Job.
	Save*	(Optional) Save current Job settings.
	Delete*	(Optional) Delete Job from database.
	Edit	Toggle through current Job settings to change as necessary.
	Adjust Zero	Reset the system to the original zero position for this Job

Menu	Item / Sub-menu	Sub-menu items and/or explanations
	Tasks ►	**Cover** – Include/exclude Cover Map in Automatic Inspection. **User-defined** – Include/exclude User-defined Map in Automatic Inspection. **Barcode** – Include/exclude Barcode Map in Automatic Inspection.
	Mask	Define area of print to be excluded (“masked”) from Automatic Inspection.
	Sensitivity…	Open Sensitivity Settings window
	Re-master Job	Take new master images for all the tasks for this Job.
	Information…	Display Job Info for current Job.
	Task Ratio…	Define inspection cycle.
Inspection		
	Start Inspection	Start Automatic Inspection.
	Stop Inspection	Stop Automatic Inspection.
Defects		
	Show Defect	
	Show Master	
	Re-master	
	History	Display Defect History for the Job
Display		
	Job Map	Display/Hide Job Map window.
	Insert label Button*	(Optional) Adds a “Mark Defect” button on the left screen, that can be used to insert labels manually.
	Press Speed	
	Length Count	
	Masks	Show/Hide Masks on Job Map window.
	Show Fast Keys	Show/Hide Fast Key allocations on Job Map window.
	Barcode* ►	**Barcode Info** **Barcode Statistics**
	Optic Heads* ►	Where two camera heads are installed, select which image to display (**Camera 1**, **Camera 2**, or **Both**).
	DeltaE* ►	**Show Points** – Show/Hide DeltaE points on Job Map.). **Results** – Display DeltaE Inspection results.)
Reporting		
	Barcode ►	**Print Report** – Prints Barcode Report

Menu	Item / Sub-menu	Sub-menu items and/or explanations
	PrintFlow* ►	**Print Roll Report** – Print report now. **Auto Roll Report** – (when checked) prints roll report automatically at the end of the roll. **Print Images in Report** – (when checked) Include images in Roll Report. **Include Defect Map** – (when checked) Include Defect Map in Roll Report. **PrintFlow Manager** – Open PrintFlow program
Tools		
	Build Job Map	Build a new Job map
	Save Sensitivities as Default*	Save current sensitivity settings so they will be used as the default settings for each new Job.
	System Settings ►	**Scan Direction** Set the system to scan the Job map by **Row** or by **Column**. **Sync.** Select the synchronization method.
	Iris Mode ►	**Automatic** The system uses a pre-defined iris value for Automatic Inspection (recommended) **Manual** The system uses the current iris value for Automatic Inspection
	Languages ►	Select interface language
	Label Inserter* ►	**On** – (When checked) Switch Label Inserter on. **Automatic** – (When checked) Insert labels automatically during Automatic Inspection. **Mark Defect** – Insert a label manually now.
	Utilities ►	**Save Image ► Live / Live+Master / Defect+Master** – Use only if requested by AVT Support, to facilitate troubleshooting **Modem ► Start / Stop** – Use only if requested by AVT Support, to facilitate troubleshooting **Diagnostics ► Alarm lights test, Flash test, Self-test** **Time Adjustment** – Adjust system time and date.
	End of Roll	(Optional) Send manual “End of Roll” signal to print out roll report.
Help		
	Quick Start	Display the Jupiter Quick Start.
	About	Show *PrintVision* version details

18 Glossary

Control panel	The dedicated AVT keyboard used to operate Jupiter. (Generally an integral part of the console, but can be a separate keyboard in systems where there is no console.)
Cover Inspection	Automatic Inspection of the steps defined in the *Cover Map*.
Cover Map	A grid covering the entire *Job Map*. Each rectangle on the grid is a step in the Cover Inspection.
Default Cover Map	A *Cover Map* created automatically by the system if Automatic Inspection is started without defining step size.
Fast keys	Keys on the console (F1–F5) that can each be assigned to make the camera move to particular *Fast-access step*.
Fast-access step	A particular camera position (including Zoom, Iris and Focus values) that can be defined by the user, and displayed by clicking on its assigned *Fast key*.
IDEal Map	One or more user-defined points that are inspected for color variation.
Job	Print Job.
Job Map	A composite picture of the entire inspection area, used to indicate the current location of the camera (i.e. large screen image), and also to display the various task maps (when defined).
Job Map icon	The icon on the lower left corner of the left screen, used to open the *Job Map window*.
Major defect	A defect classified as major, which produces a red warning light.
Master Image	When Automatic Inspection is initiated, the system takes detailed sample pictures of all steps in all defined maps. These are the Master Images that are used as the reference during Automatic Inspection.
Menu tab	The tab on the *Status bar* used to open and close the Menubar.
Menubar	The Jupiter menubar is opened and closed using the *Menu tab* on the *Status bar*.
Minor defect	A defect classified as minor, which produces a yellow warning light.
Optic head	A camera together with its lens, light source and other components is referred to as an optic head.
Re-master	Replace a master image with a new image from the current print.
Status bar	The upper bar of the left screen that displays current active Inspections, light tower status, and camera/inspection settings. It also contains the *Menu tab* that opens the *Menubar*.

Step	A step is one part of Automatic Inspection, as marked out on the map. The Camera moves from step to step over the repeat.
Task	A Task is a set one or more steps that *PrintVision* examines during Automatic Inspection. Possible Tasks are: Cover Inspection, User-defined Inspection, Barcode Inspection * (optional), and IDEal Inspection * (optional)
Main Toolbar	The main toolbar is the set of icons on the upper left side of the left screen, used to activate Automatic Inspection, and open other toolbars.
Toolbar	Toolbars appear on the left side of the left screen. Specific toolbars are opened by clicking on one of the Main toolbar icons.
User-defined Inspection	Automatic Inspection of the steps defined in the *User-defined Map*.
View Step Mode	When a step in Automatic Inspection is designated “View Only”, the camera includes the step in the inspection cycle but does not report defects for the step.
Viewing Mode	When the system is on but Automatic Inspection is not active, and the camera is used as a video viewer.
Zero point	A unique point on the repeat, selected by the User, which the system uses it to maintain its steady web image.

A Quick Start: General

A.1 Starting the System

- Press the green **START** button.

  After a few minutes, a live image is displayed on both monitors (only when the press is running).

A.2 Starting a New Job

1. Click the **Job**  button at the top of the left menu bar (to open the Job menu).

2. Click the **New** 

button.

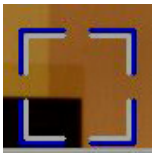
   The New Job Wizard starts.

   a. Set **Job Parameters**: enter the Job Name and Order ID (optional unless you have an archiving system)

   b. Set **Sensor** (optional)

   c. Set **Dimensions** (optional)

   d. Set **Printing Type** (optional)

   e. Set **Unique Point**  (optional). Select a valid point that is unique in the repeat.

   f. Set Left Inspection Border by clicking on the left edge of the print. Since this position is regarded as the zero point, set it on a unique positing that will be easy to find again.

   g. Set Right Inspection Border by clicking on the right edge of the print.

   h. Click **Finish**.

   The job map is created (wait a few seconds). At the end of this process the system is ready for inspection and the job map of the entire repeat appears on the bottom left of the screen.

A.3 Starting Automatic Inspection

- Click on the Inspection  button on the left menu bar.

  Automatic Inspection starts.

A.4 Defect study

When a defect is detected by the system, it is presented on the defects screen (right screen).

To investigate a defect

1. Click the **Defect Study**  button at the left menu bar.

   The Master image is shown on the right screen. Use the **Defect Study** button to toggle between the Defect and the Master (to see the differences between them).

   The system automatically stops the inspection and zoom-in on the selected defect. The zoom-in live image is shown on the left screen.

2. To examine defects that were detected before, use the **Defect History** 

   button. Click on a defect to select it for examination.

   The defect is shown on the screen. To toggle between the Master and a defect and to automatically send the camera to the defect location, click on **Defect Study**.

To replace a Master that contains a defect

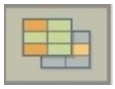
- After Defect Study, to replace the current step's Master image, all Masters in this map, or all masters in this job, press the **Re-Master** 

  button.

  The system will replace the Master and re-start the automatic inspection.

A.5 Defining inspection tasks

To define inspection tasks

1. Click on the **Tasks** button  at the top of the left menu bar.

A.6 To define a Cover map

To define a Cover map

1. Click on the **Cover map** 

button.
2. Set the zoom you would like to use.
3. Click on the **New** 

button

   A new map is created.

A.7 To define User-defined map

1. Click on the **User-defined map** 

button.
2. Do the following for every step you want to define:
   a. Go to the required position by clicking on it in the Job Map.
   b. Set the zoom you would like to use.
   c. Click **AddStep** 

      A new step is added.
3. Click **AI**.

A.8 To define a Barcode map

1. Click on the **Barcode** map 

button.
2. Use of the following two methods:
   - For the system to search for the barcodes automatically, click on the **New** 

button. A new map will be created when automatic Inspection mode is started again.

     OR

   - Click **AddStep** 

. Then click on the Barcode you wish to have inspected automatically.

A.9 To define an IDEal color measurement map

1. Click on the **IDEal map** button. 

2. Click **Add** 

   A section in the middle of the screen will be highlighted for selection.

3. Click on a solid color (not a gradient) to add a measurement point. It is best to choose a color produced by a single Color Station.

   The point is marked by a ring  on the screen image.

4. Enter the color name and continue with Automatic Inspection.

A.10 Setting the sensitivities

1. Click on one of the sensitivity buttons at the right side of the top bar on the left screen.

   The sensitivity menu appears.

2. Set the required sensitivity for yellow and red.

3. Click **OK** to confirm, or click on another sensitivity type at the left side of the dialog.

B Quick Start: pRegister

B.1 Setting Job and pRegister parameters

Job and pRegister parameters are set before printing (no need for the press to run).

B.1.1 Setting New Job parameters

1. Click on the **Job** button  at the top of the left menu bar.
2. Click on the **Setup** button 

.

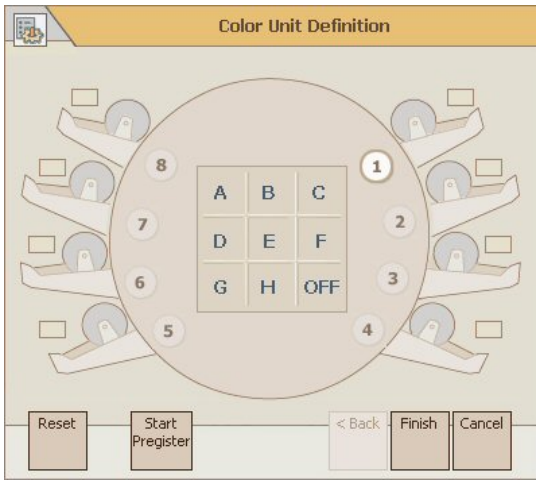
   The New Job Wizard starts.
3. Set Sensor (optional).
4. Set Dimensions.
5. Set Printing type (optional).

   A new message appear:

6. Press **Yes** to proceed with pRegister settings:

B.1.2 Setting pRegister parameters

1. Set Target type (Optional)
2. Set Color Station definitions:



4. For each station:

   a. Select a Color Station number.

   b. Select the letter of the registration target dot printed by the selected Color Station.

5. Click **Start pRegister** to initiate the pRegister process immediately.

   pRegistration starts immediately. If the press is running, the pRegister printed target will appear on Screen.

   OR

   Click **Finish** to start later.

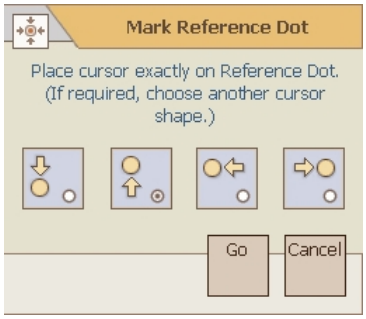
B.2 Starting pRegister automatic registration

Automatic pRegistering is done when the press is running and the printed targets are visible on screen.

1. Click on the **Press Ctrl** button  in the menu bar.

2. Click on the **Start**  button

   The mark reference dot window appears:



3. Set the cursor  on the reference dot. Select a different cursor if needed.
4. Click **Go**.

   The automatic pRegister process begins. When the pRegister short process is done, the following message appears:

5. For more information about the register, click the **Info…** button for more information about the register accuracy of each Color Station.

B.3 Setting Run-time parameters for New Job Run

This process will complete the setup, in order to run automatic inspection.

1. Click the **Run** 

button from the **Job** menu bar.
2. Set the left inspection border (zero position) and click **Next.**
3. Select right inspection border, the click **Finish**.

You can now run inspection by pressing the **AI** button or by pressing the **Inspection** key on the user keyboard.

In case you are using an Argus system, press **AI** also on the right monitor (the Quality inspection side).

You can also run pRegister any time during this run.

C Quick Start: Presco

C.1 Setting Job and Press Control (pRegister + Presco) parameters

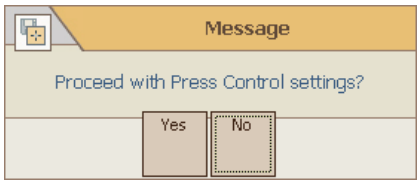
Job, pRegister, and Presco paramaters are set before printing (no need for the press to run).

C.1.1 Setting a New Job parameters

1. Click on the **Job**  button at the top of the left menu bar.
2. Click on the **Setup** 

button.

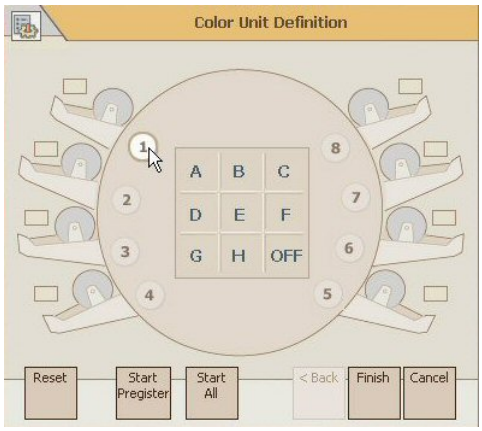
   The new job wizard starts…
3. Set Job Parameters (optional)
4. Set Sensor (optional)
5. Set Dimensions
6. Set Printing type (optional)



7. Click **Yes** to continue.

C.2 Setting press control parameters

1. Set Target type (Optional).
2. Set Color Station definitions:



For each station:

a. Select a Color Station number.

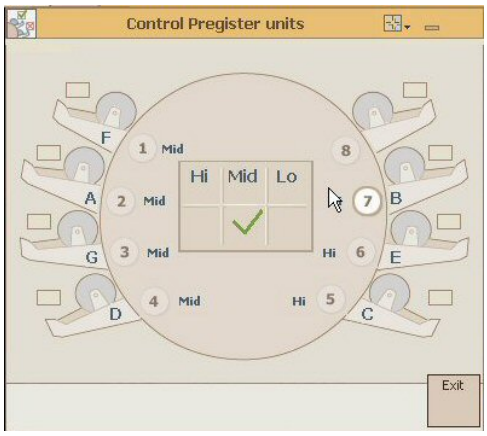
b. Select the letter of the registration target dot printed by the selected Color Station.

6. When all stations are defined, click **Finish** to confirm.

C.3 Resetting Pressure parameters (both Anilox and Plate) of all Color Stations

Start pRegister & Presco automatic registration and pressure:

1. Click the **Press Ctrl**  button in the Task bar.
2. Set Presco print type.
3. Click on the **Control**  button



4. For each Color Station:

a. Select the Color Station.

b. Select the print type of this unit (High, Mid or Low).

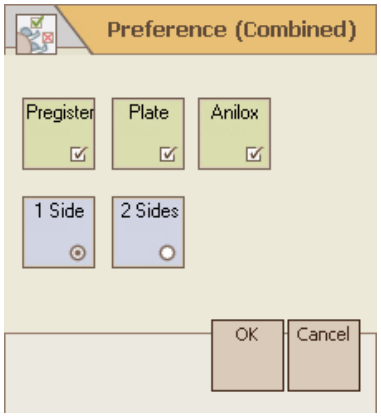
5. When all stations are defined, click **Exit** to confirm.

C.4 Starting the Combined process

Automatic pRegistering and Presco setting is done when the press is running and the printed targets are visible on screen. The combined process automatically runs pRegister, Anilox pressure, and Plate pressure setting processes one after the other.

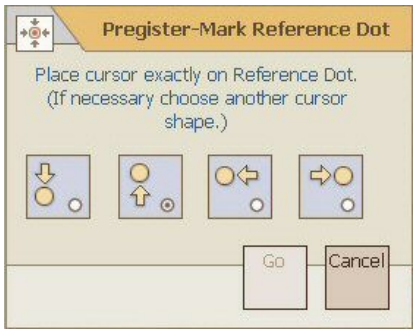
1. Click on the **Combined**  button in the **Press Ctrl** menu bar.
2. Click on the **Preference**  button

The Preference dialog box appears.



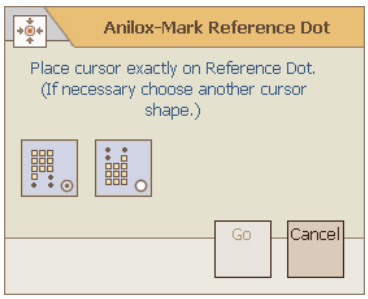
3. Verify that the required processes are checked.
4. Click **OK** button
5. Click on the **Start**  button

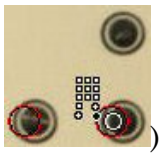
   The following window appears:



6. Set the cursor  on the reference dot. Select a different cursor if needed.
7. Click **Go**.

   The automatic pRegister process begins. When the automatic register setup is completed, the following window appears:



8. If needed, click a button (for instance, ) to select a cursor shape.
9. Set the cursor  on the bottom right reference dot.
10. Click **Go.**

    When automatic pressure setup is completed, the following message appears:

11. Click **Close**.

C.5 Setting Run-time parameters for New Job Run

This process will complete the setup, in order to run automatic inspection.

1. On the **Job** menu bar, click the **Run** 

button.
2. Set the Unique point.
3. Set left inspection border, then click **Next**.
4. Set right inspection border, then click **Finish**.
5. Click **AI**.

You can now run inspections by pressing the **AI** button or by pressing the **Inspection** key on the user keyboard. If you are using an Argus system, also press **AI** on the right monitor (the Quality inspection side).

You can also run pRegister, Anilox, or Plate any time during this run.