



## Introduction

The jet.engine™ GUI (Graphical User Interface) is software used to set up, control and monitor the inc.jet™ line of Imagers and ink delivery systems. This software will look somewhat familiar to anyone who has worked in a Windows environment.

The menu system at the top left consists of a series of drop-down menus. The toolbars underneath the menus feature typical Windows icons such as New, Open, Save, Font, formatting options, etc., as well as icons that are specific to the jet.engine™ system (e.g., icons for the various data objects, for moving between records, for loading data, etc.). If you move your mouse over an active icon, a tool tip appears, which describes the function of the icon.

The Main Tabs are directly underneath the tool bars. You use these screens to design a print job as well as set up and run the system.

By default, the jet.engine™ GUI opens on the [Imager Setup](#) tab.

## Using this Help


[Understanding Word Symbolism](#)

[Navigating Through Topics](#)

[Making a Paper Manual](#)

## Understanding Word Symbolism


Certain text in Help topics has different formatting to indicate special meaning:

- **Bold Text:** If a word in a sentence or paragraph (not in section headings) appears in bold text, it indicates that the word is a proper name or Key Word. For example, in the phrase "Please read the entire jet.engine™ GUI **Help System**", the bold text refers to the title bar at the top of this window. Bold text may also refer to buttons, tabs, or drop option boxes that perform control functions.
- Underlined Text: Words that are underlined require special attention. These words are given emphasis as a warning or a note critical to the subject of the word or sentence in which the underlined text is contained.
- [Hyperlinks:](#) Hyperlinks are underlined and appear as blue text. Clicking on a hyperlink opens another screen somewhere in the jet.engine™ GUI **Help System** to reveal more information about the blue underlined text. Hyperlinks may also transfer you to an internet address on the world wide web using the default web browser installed on your machine.
- **Pop Up Text:** Pop Up Text looks like a Hyperlink but is not underlined. Clicking on this brings up a pop up window that contains a note or definition about the word in blue text.
- **Drop Down Text** : Click on Drop Down Text to display additional information, diagrams, pictures, etc. Click once to show the text, click again to hide it. This format is used in many places to hide text that may not be of interest to you.

 **Note:** This icon and text formatting indicates a special message that is important to the text or picture above.

 **Warning:** This icon and text formatting indicates that this message contains a warning and should be read and followed carefully.

## Navigating Through Topics

You can view topics by double clicking on the topic in the **Contents** tab. While viewing one topic, you may need to click a hyperlink to another topic. To return to the previous topic, click the **Back**  button at the top left of the jet.engine™ GUI **Help System** window.

## Printing This Help File (Making a Paper Manual)

These Help files have been optimized to provide ease of navigation and printability. Although this is primarily a software Help system, it can also be printed using any printer installed on your machine.

[Open Help Contents](#) 

[Select Print](#) 

[Make Selection](#) 

[Select Printer Options ▾](#)

## Overview

### Contents

[Software Installation Requirements](#)[Other Languages](#)[What's New in This Release](#)[System Overview and Requirements](#)[System Specifications](#)

## Software Installation Requirements

[OS Requirements](#)[System Requirements](#)

### OS Requirements

The *jet.engine™* GUI is designed to run on Windows XP and Vista operating systems. **If installed on other operating systems, the following error message may appear:**

The operating system is not adequate for running *jet.engine™* GUI.

If this error occurs, the installation process will automatically abort.

### System Requirements

Minimum system requirements vary with system setup and application. Factors affecting performance of the *jet.engine™* GUI software, other than PC ratings, include:

1. Database size (if loaded)
2. Conveyor speed
3. Number of Imagers/pens
4. Printing area
5. Page gap

Items 1 – 4 require higher system requirements as the size of the item increases (directly proportional). Item 5 requires a higher system requirement as the gap size decreases (inversely proportional).

#### Absolute Operating Minimums

- Windows XP Home
- 600 MHz processor
- 64 MB RAM
- 40 MB hard drive space

#### Suggested Requirements

- Windows XP Professional or Windows Vista-Business Edition
- Pentium 4 class processor or better
- 1 GB RAM
- 80 MB hard drive space

## Other Languages

### Language Settings of *jet.engine™* GUI

The *jet.engine™* GUI is currently available in seven languages:

- English (United States)
- Chinese (Traditional)
- French (France)
- German (Germany)
- Italian (Italy)
- Japanese
- Spanish (Traditional Sort)

English is the default language of the installation program.

## Changing to non-English

 **Note:** Contact your OEM provider for more details on obtaining additional Language DLL(s) for changing the GUI language after the setup.exe is run.

## What's new in this Release


### Feature Changes and Additions


**NEW** Features 


Bug Fixes! 


## System Overview and Requirements


The jet.engine™GUI is just one part of an overall printing system. A complete printing system consists of:


**jet.engine™ GUI software**  Software designed to setup, control, and monitor the other system components.


**jet.engine™ Imager**  The printer itself. This is the device that controls the spraying of the pens.

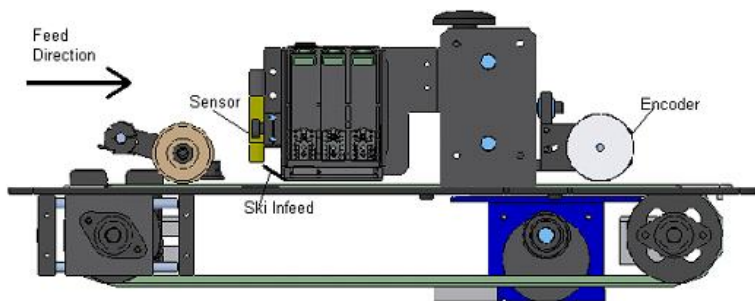
**HP™ Designed Print Cartridges**  The ink container and delivery (spraying) device.

**Transport Base**  What the Imager is mounted to and what the media is transported on.

**Power Supply**  The device that supplies electrical power to the Imagers and peripherals.

**Print Sensor**  A sensor mounted upstream that detects the product.

**Encoder**  A device that measures speed of the product or conveyor.



## System Specifications

### Printing Resolutions

#### Horizontal (Process Direction)

- 600 dpi
- 300 dpi
- 200 dpi
- 150 dpi

- 120 dpi
- 100 dpi
- 75 dpi


### Vertical (Non Process Direction)

- 600 dpi
- 300 dpi

## Maximum Printing Speeds

Maximum printing speeds are rated at 600 or 300 dpi vertical resolution by each stated horizontal resolution.

Horizontal Resolution (dpi)	Max Speed (ips)	Max Speed (fpm)	Max Speed (m/s)
600	25	125	0.635
300	50	250	1.27
200	67	335	1.7
150	100	500	2.54
120	125	625	3.18
100	150	750	3.81
75	200	1000	5.08

 Note: Maximum printing speeds are a limitation of the HP™ pens' ability to consistently spit ink in a uniform pattern.

 Note: The *jet.engine™* GUI allows for a 10% over-speed allowance before automatically shutting down the printing process. In some applications, where print quality is not a concern, this percentage can be increased. Please contact your OEM provider for more information about this setting.

## Getting Started (Quick Start Guide)

### Contents

[Installing the Software](#)

[Starting the \*jet.engine™\* GUI](#)

[Initial Setup](#)

[Sample Job Setup](#)

[Printing a Sample Job](#)

[Creating a Custom Job](#)

[Where to go Next](#)

## Installing the Software

[Installing for the First Time](#)

[Reinstalling or Updating](#)

### Installing the *jet.engine™* GUI for the First Time

The *jet.engine™* GUI is installed much like any other Windows program. Follow the steps below:

**Start the Installation Program** 

**Accept Agreement** 

**Enter Customer Information** 

**Destination Folder** 

**Choose Installation Options** 

[Confirm Installation Settings](#) ▾


[Finish Installation](#) ▾

## Reinstalling or Updating *jet.engine™* GUI


When you install the GUI you will have an option for removing the previous GUI (if the GUI is a recent version).

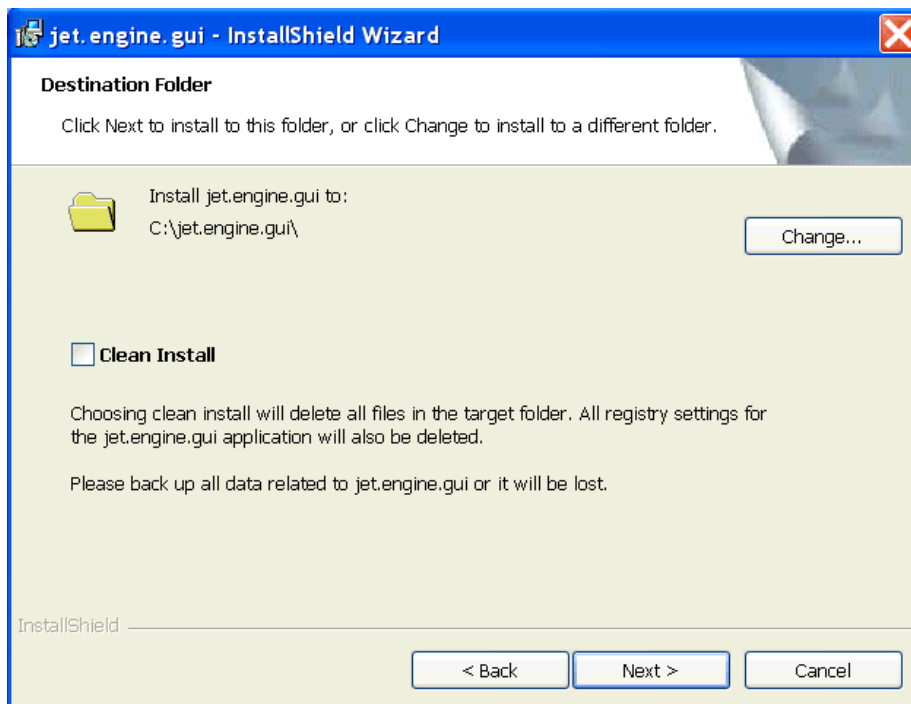
 **Note:** It is a good idea to back up jobs and configurations before updating.

After backing up job and configuration data (optional), install the update, using the steps listed above.

 **Warning:** If reinstalling or updating an older version of the *jet.engine™* GUI, you will be requested to manually remove the *jet.engine™* GUI first (by the setup.exe dialog). To work properly, the older version must be un-installed before updating to a new version. To do this, open the Windows Control Panel, select Add/Remove Programs, and select the *jet.engine™* GUI entry from the list.


 **Note:** Software Installation/Clean Install

 **Warning:** If you are installing a new version of the *jet.engine™* GUI and you check off the Clean Install check box, (see screen shot below), selecting the clean install will remove everything (essentially delete the jet.engine.gui folder). If you select a clean install it is advised that you **back up jobs and configurations before performing the Clean Install!**



## Starting the *jet.engine™* GUI

There are three ways to start the *jet.engine™* GUI.

- **Windows Desktop icon:** Double click the *jet.engine.gui* icon .
- **Windows Start Menu:** Click *Start > All Programs > jet.engine GUI > jet.engine.gui* (see below).
- *jet.engine.gui.exe:* Open Windows Explorer, navigate to the C:\jet.engine.gui\ folder, double click the *jet.engine.gui.exe* filename.



 **Note:** The folder path may be different if the default setting for the [Destination Folder](#) was changed during installation.

## Initial Setup

### Contents

[Configuring PC Network Settings](#)

[Setting the Imager IP Address](#)

[Updating Firmware](#)

[Initial System Setup and Settings](#)

[Testing the Print Sensor Input](#)

[Testing the Encoder Input](#)

[Aligning the Pens for Seamless Printing](#)

[Application Settings](#)

## Configuring PC Network Settings


The PC on which the jet.engine™ GUI is installed must have at least one physical network (ethernet) adaptor installed locally. The PC will become the server for the printers attached to it. This requires certain settings to be manually entered in the PC network settings section of Windows, which is accessed through the Windows Control Panel.

Follow the steps below to set your PC's network connection to work with the default IP address that is assigned to the Imagers at the factory.

**Open Network Connection** 

**Set IP and Subnet Mask** 

Click OK > OK to continue.

 **Note:** The jet.engine™ GUI requires a dedicated network connection. If the host PC (the PC on which the jet.engine™ GUI is installed) is connected to a local network, a second network card must be installed and configured. Contact your company's IT department or OEM provider for further details.

## Setting the Imager IP Address

Once the PC on which the jet.engine™ GUI is installed has the proper network settings (set in the previous section, [Configuring PC Network Settings](#)), the program can be started (see [Starting jet.engine GUI](#)).

The jet.engine™ GUI checks for Imagers connected to the host PC at program startup. The startup process looks for the Imagers (printers) which were connected to it the last time the program shut down. If there are changes, the Find Imagers window appears.

This Find Imagers window is activated in one of three ways:

- the first time the program starts after installation;
- on startup, if the program sees a printer configuration change; or
- by selecting Find Imagers from the File menu.

To set the imager IP Address:

 **Note:** To make IP Address changes, the jet.engine™ GUI must be in Technician or Developer software mode.

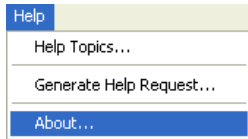
**Confirm/Set Software Mode** 

[Scan for Imagers](#)[Confirm Imager Order](#)[Change IP Address](#)

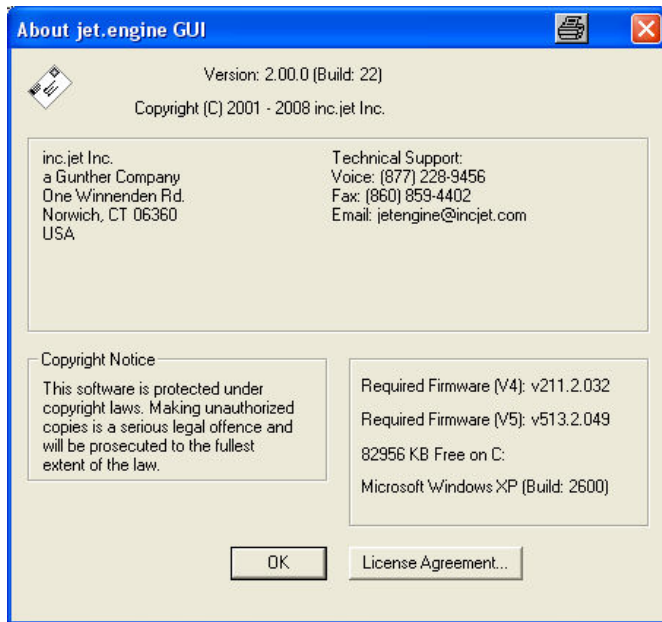
## Updating Firmware

Some versions of the jet.engine™ GUI require a minimum firmware version to communicate and operate properly. New features included in jet.engine™ GUI upgrades will also contain a firmware upgrade as well.

To see the versions of firmware you are currently running you can select Help/About from the top Menu bar on the jet.engine™ GUI.

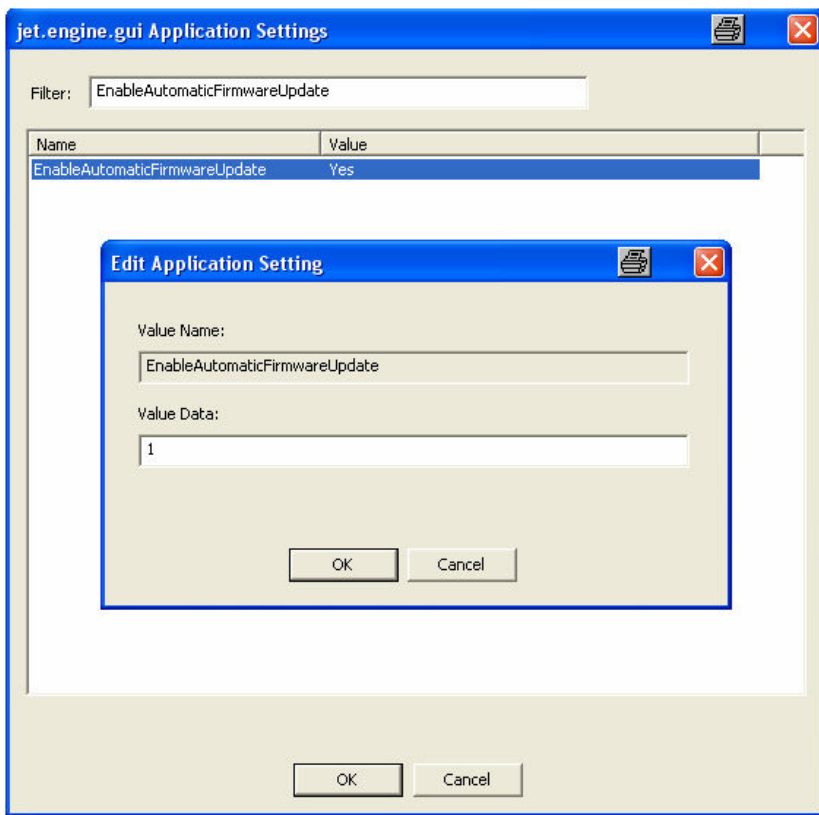


The firmware version number being used for the GUI will be displayed on this About jet.engine™ GUI screen.



Note: The Automatic Firmware Updates feature setting should be Enabled in Application Settings, (this is the default setting). If this setting is enabled the jet.engine™ GUI automatically checks for the necessary versions of the firmware. If it is turned off for some reason it is recommended that it should be Turned Back On in the Applications Settings.

- Firmware will be automatically updated by the default setting in the [Application Settings](#) -> EnableAutomaticFirmwareUpdate = 1 (shown below)
- Firmware is located in located in C:\jet.engine.gui\firmware folder



Click on the following [Application Settings link](#) for a complete list of all settings.

### Program Startup/Versions Warning Message

Two types of hardware:

V4 imager board:

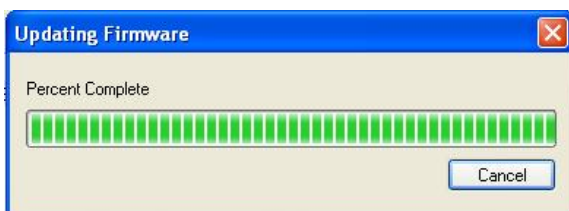
- Support for service station
- Imager Firmware file name starts with "V4" (for example) V4Imager\_B2132051\_APP.s19

V5 imager board:

- No support for service station
- Imager Firmware file name starts with "V5" (for example) V5Imager\_B5133054\_APP.s19

The Automatic Firmware Update process is as follows:

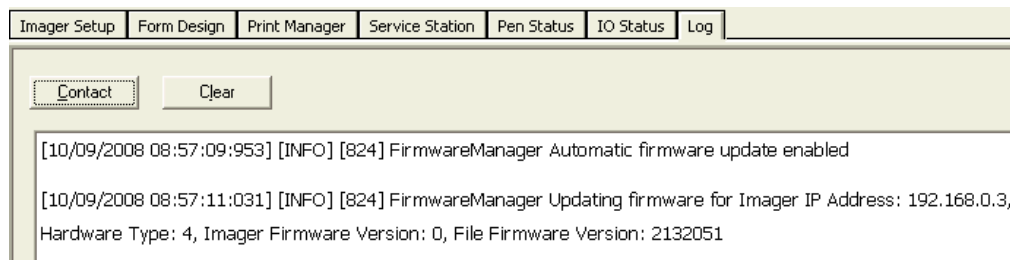
- 1) The imager reports the current version of firmware
- 2) If the firmware version in the folder "firmware" is newer the imager will be updated automatically.
  - The following status window will appear while the new firmware is being downloaded:





 **Note: If you have two imagers with the same [IP Address](#) the Automatic Updates process will not start!.**

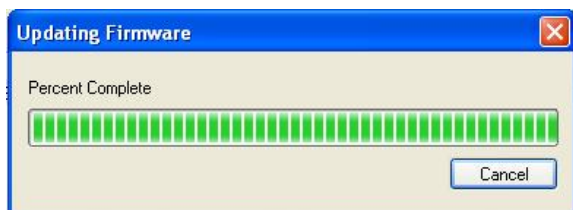
3) The status of the firmware update will be logged in the GUI Log tab: (Example below)



Manual Firmware Update:

 **Warning: It is possible to manually update the firmware, however, this is not recommended.**

- From the Find Imagers window, click Update Firmware.
- An Open File window will appear.
- Select the file version suggested in the previous Errors Report.
- Click Open to continue.
- The following status window will appear while the new firmware is being downloaded:



[Next >>](#)

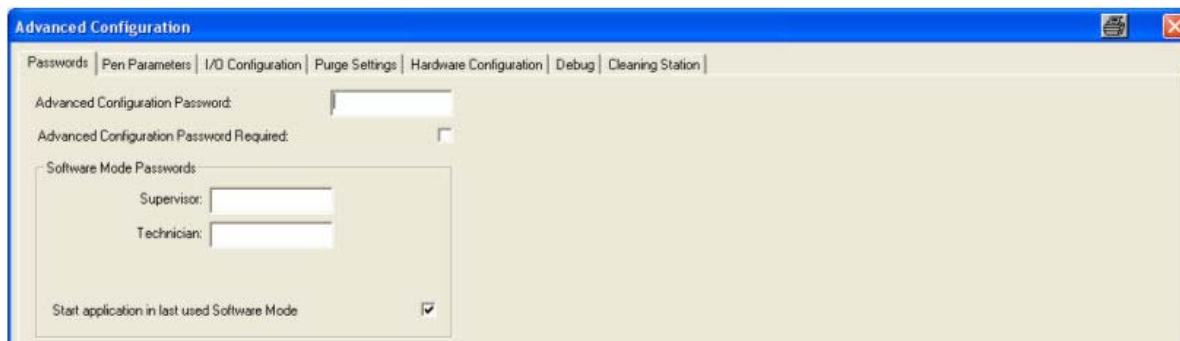
## Initial System Setup and Settings

When setting up the printing array for the first time, certain settings are made that will most likely never change. These are:

- [Password Settings & Access Control](#)
- [General System Settings](#)
- [Imager Settings](#)
- [Pen Properties](#)

### Password Settings & Access Control

There are several levels of password protection that can be used to limit the user to certain sections of the jet.engine™ GUI. From the Options menu, choose Advanced Configuration and select the [Passwords](#) tab.



There are 4 levels of access control (software mode) in the jet.engine™ GUI:

- Operator - Lets you run jobs. This is the lowest level of access. No system setting changes are allowed.
- Supervisor - Enables you to change jobs and data sources.
- Technician - Allows access to passwords and system configuration and settings.
- Developer - Allows full access control to all GUI settings.

By default, the jet.engine™ GUI starts in Operator mode. On the Passwords tab, you have the option of setting a password for access to the Supervisor and Technician modes.

**i** Tip: Check the Start application in last used Software Mode option to enable the jet.engine™ GUI to open in the previously used Software Mode.

## General System Settings

To avoid errors during operation, certain settings need to be entered in the System Settings tab of the Imager Configuration window. System settings are generalized parameters that allow you to:

- tell the jet.engine™ GUI how to display data;
- set overall operating settings;
- control special functions or options;
- select modes of operation that allow communication with other devices or applications.

The following need to be set at the minimum and are enough for most customers:

### Terminal Mode

### Units

### Other Settings

Other general settings are set on the [Imager Setup](#) tab of the main jet.engine™ GUI screen. The following parameters must be set:

### Print Resolution

### Conveyor Direction

### Pen Direction

## Imager Settings

These settings tell the jet.engine™ GUI how to interface with the outside world. They deal mainly with the setup of the Print Sensor and Encoder, and are found in Options>Imager Configuration>[Imager Settings](#).

You need to tell the jet.engine™ GUI how to handle the passing of signals between the encoder, print sensor, and other Imagers (if installed). You do this through VTMK Configuration.\*



\*VTMK = Vacuum Table Mounting Kit

The first two settings in the box are presets that work with inc.jet™ supplied kits and configurations:

[VTMK - Parallel Wired](#)

[Daisy Chained](#)

[Custom](#)

Note: More about IO Settings is contained in the next two Help sections: [Testing the Print Sensor Input](#) and [Testing the Encoder Input](#).

## Pen Properties Settings

This group of settings is optional. They notify you when the installed ink containers need to be replaced. From the Pen Status tab of the main jet.engine™ GUI screen, click the Set [Pen Parameters](#) button.

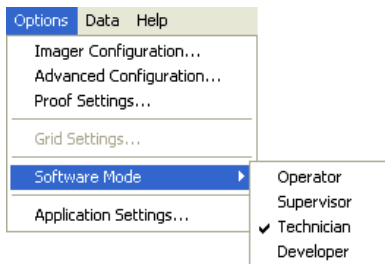
[Pen Type](#)

## Application Settings

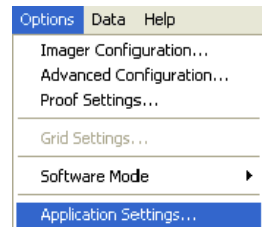
Note: The Application Settings in the jet.engine GUI used to be stored in a Registry. The Registry is no longer used for the Application Settings.

### Application Settings Menu:

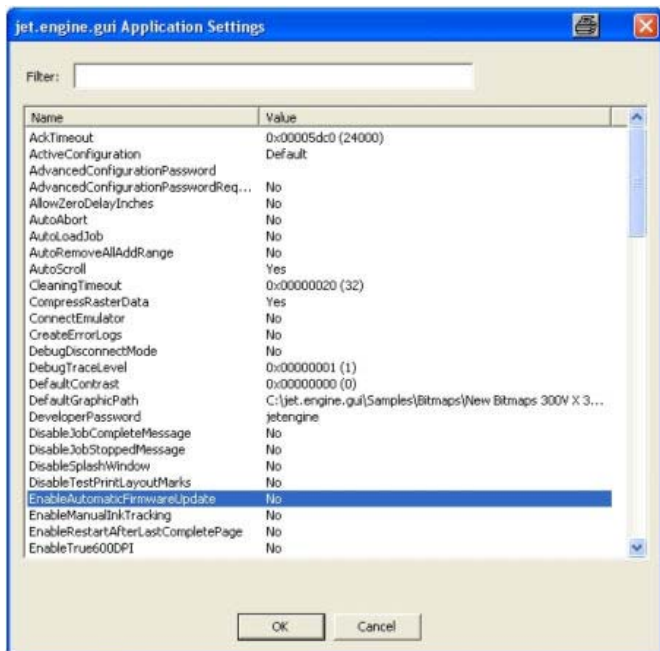
To access the Application Settings Menu you must log in as Technician or Developer



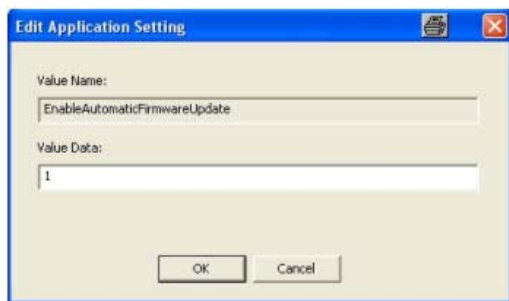
Once you are logged in as Technician or Developer you can access the Application Settings menu by clicking on "Options" on the top menu bar and select Application Settings.



Once you have opened the Applications settings menu you can set a variety of Advanced settings



Clicking on an individual menu item will highlight the item, double clicking on the item will open an "Edit Application Setting" menu,



In the example (above); you would enter a data value in the "Value Data" field box, 1 represents Yes and 0 represents No.

 Note: Application Settings can be a number, a number including a decimal point, a symbol, a word or a path to a file location.


 Note: Click the following link for descriptions for the current ["jet.engine GUI Application Settings"](#)


[Next >>](#)


## Testing the Print Sensor Input

The Print Sensor is usually, but not always, a photo eye that is connected upstream of the first printer. This is the device or means used to trigger the printer. The following sensor settings must be entered during initial setup:

**Input channel**  Select hardware sensor input.

**Active and Non-Active States**  Select input polarity (sensor is active high or active low).

**Input Edge**  Select transition trigger point.

**Distance From Sensor**  Enter how far away the sensor is from the Imager.

After you have configured the settings, you can test the input:

- Block the sensor with the page or media.
- Verify that LED 5 of the imager is red when blocked.

Note: Printing does not have to be enabled to test the Print Sensor.

Note: Only the first imager will show the print sensor when not in print mode.

Note: When in print mode, the encoder must transition 4 pulses (4/300") to "qualify" as a sensor trigger. (This is to eliminate false triggers when the transport is stopped).

[Next >>](#)

## Testing the Encoder Input

An Encoder is a device that is used to measure distance traveled over time at various speeds in high resolution. The Encoder tells the Imagers in the system when to print.

The Encoder is usually, but not always, mounted just upstream of the first upstream Imager. This provides the best accuracy. However, the Encoder can also be mounted anywhere in the conveyor path, or on a shaft of the conveyor drive.

You must enter the following Encoder settings in initial setup:

**Mode** Select the mode in which the Encoder is connected.

**Input channels** Select a hardware input(s).

After configuring these settings, you can test the input:

- Block the sensor with the page or media.
- Verify that LED 5 of the Imager is green when blocked. Refer to the Imager Technical Manual for more information.

Note: Printing does not have to be enabled to test the encoder.

[Next >>](#)

## Aligning the Pens for Seamless Printing (Stitching)

At this point, the system should be ready for printing. All of the basic mechanical, electrical, and software settings should be in place.

Stitching is not required for printing the sample job, but is recommended. Refer to the [How To: Set Up Stitching](#) section of Help for a tutorial on how to perform Stitching.

Note: Stitching must be performed before [Creating a Custom Job](#). If Stitching is not done prior to job layout design, placement of data in the Form Design tab of the main *jet.engine*™ GUI screen may not correspond to the placement of data on the printed output.

## Application Settings



### GUI Application Settings Guidelines:

Key for colored boxes

Yellow: Can be set within GUI settings by user

Aqua: Should **not** be changed by user in Application Settings dialog.

Key Name: HKEY\_LOCAL\_MACHINE\SOFTWARE\inc.jet\GUI\Settings

Click the following link for information about how to access the [Application Settings Menu](#).

AckTimeout	(8000) msec	The amount of time (in milliseconds) the GUI will wait for the imager to respond with an ACK to any message sent. This time can sometimes be long, especially when cleaning station commands are sent and the processor is busy and can't read the Ethernet queue quickly.
ActiveConfiguration	Default	Current Value: 0X00001f40 (8000) The Configuration Loaded when the GUI is first executed
AdvancedConfigurationPassword	Password	Password to access the Advanced Configuration Pop-up Window, leave blank = No Password Necessary
AdvancedConfigurationPasswordRequired	(0) NO	<b>What is password normally used?</b> 0 = No Password , 1 = Password Required to access the Advanced Configuration Pop-up Window
AutoAbort	(0) NO	0 = Normal, 1 = Automatically Abort Printing when Stop Button is Pressed.
Can be set within GUI settings by user		
AutoLoadJob	(0) NO	0 = Disable, 1 = Enable Automatic Load of job running when GUI was closed
Can be set within GUI settings by user		
AutoRemoveAllAddRange	(0) NO	0=_No/Disable 1= <u>Yes/Enable</u>
Can be set within GUI settings by user		
AutoScroll	(1) YES	0 = Disable, 1 = Enable Database Auto scroll in Print Monitor Tab
Can be set within GUI settings by user		
CleaningTimeout	(32)	Sets the number of seconds the cleaning station is allowed to use when responding to a command. Value is large to support cleaning station calibration operations.
CompressRasterData	(1) YES	Current Value: 0X00000020 (32) 0 = Disable, 1 = Enable Compression of the Raster Data Image prior to sending it to the Imager
Can be set within GUI settings by user		
ConnectEmulator	(0) NO	0 = Normal Operation, 1 = Connect to Imager Emulator
		Factory Testing Function – requires Emulator Application. Note - when using the emulator the OutOfSequencePageCheck MUST be set to 0, and the file "io_config.dat" must be deleted from the configuration being used. <b>Application must be restarted for any changes in this setting to take effect!</b>
CreateErrorLogs	(0) NO	<b>0=_No/Disable 1= <u>Yes/Enable</u>.</b>  TSG – Creates a separate log file in the "ErrorLogs" folder and log each Critical

DebugDisconnectMode	(0) NO	Error generated while the application is running. It also create a separate folder for each Critical Error generated and copies the current log file and the previous log file to that folder. <b>Application must be restarted for any changes in this setting to take effect!</b> 0 = Disable, 1 = Enable
Should not be changed by user!		
DebugTraceLevel	(1)	0 = Disable Debug Logs in the "Logs" directory when GUI executed Current Value: 0X00000001 (1)
Can be set within GUI settings by user		
DefaultContrast	(0)	Current Value: 0X00000000 (0)  TSG - Set the vertical contrast.  Range 0 to 15 in 6.25% increments,  0 = 100% contrast (default) This will effect only the printed image and not be displayed on the GUI form design. Add description
DefaultGraphicPath		TSG – Used by dynamic bitmap object. Defines the default directory from which the bitmaps are loaded.
DeveloperPassword	Password	Password to set User Mode to Developer in the GUI
Should not be changed by user!		
DisableJobCompleteMessage	(0) NO	0=_No/Disable 1= <u>Yes</u> /Enable  <b>TSG - Disable or Enable the popup message when a job is completed</b> 0=_No/Disable 1= <u>Yes</u> /Enable
DisableJobStoppedMessage	(0) NO	<b>TSG - Disable or Enable the popup message when a job is stopped.</b> 0=_No/Disable 1= <u>Yes</u> /Enable
DisableSplashWindow	(0) NO	TSG - Disable or Enable the splash window displayed when the application is started. 0=_No/Disable 1= <u>Yes</u> /Enable
DisableTestPrintLayoutMarks	(0) NO	<b>TSG – Disable or Enable Page Boundary marks while printing the layout. Application must be restarted for any changes in this setting to take effect!</b> 0=_No/Disable 1= <u>Yes</u> /Enable
EnableAutomaticFirmwareUpdate	(0) NO	<b>TSG - Disable or Enable Automatic Firmware Update. If Enabled the application will compare the firmware version of the jet.Engine upon connection and update it's firmware if a new firmware is available on the Computer.</b> 0=_No/Disable 1= <u>Yes</u> /Enable
EnableManualInkTracking	(0) NO	TSG - If enabled, artificially create an id for the pen, based on the imager number and pen number, and use it as a Pen ID to track the ink usage. 0=_No/Disable 1= <u>Yes</u> /Enable
EnableRestartAfterLastCompletePage	(0) NO	<b>TSG – If enabled, user can specify Restart Settings via Options menu command. Application must be restarted for any changes in this setting to take effect!</b> 0 = Disable, 1 = Enable True 600 DPI printing
EnableTrue600DPI	(0) NO	TSG -

EncoderBasedTracking	(1)	0 = Disable, 1 = Enable - The Encoder-based Page Tracking feature is used to track inconsistency between an encoder signal as it is fed into different imagers. The GUI will declare an error if a difference larger than the tolerance of encoder ticks is detected. The Tolerance setting allows the operator to choose what should constitute an error. This feature is used for cut-sheet and continuous form applications.
FitToWindow	(1)	0 = Disable, 1 = Enable Fit To Window in Imager Setup Tab
Can be set within GUI settings by user		
GridColor	0x00808080	The color of the grid as displayed in the Form Design Tab.
Should not be changed by user!		Current Value: 0x00808080 (8421504)
GridHorizontalSpacing	0.10000	Horizontal Grid Setting (Range is 0.01 to 0.25)
Can be set within GUI settings by user		When units are English, this is in inches. When units are metric they are stored in inches and converted to metric by the GUI.
GridShowGrid	(0) NO	0 = Disable, 1 = Enable Display of Grid Marks in Form Design Tab
Can be set within GUI settings by user		
GridSnapToGrid	(0) NO	0 = Disable, 1 = Enable Snap To Grid Mode in Form Design Tab
Can be set within GUI settings by user		
GridStyle	0x00010100	The style of the grid as displayed in the Form Design Tab.
Should not be changed by user!		Current Value: 0x00010100 (65792)
GridVerticalSpacing	0.010000	Vertical Grid Setting (Range is 0.01 to 0.25)
Can be set within GUI settings by user		When units are English, this is in inches. When units are metric they are stored in inches and converted to metric by the GUI. Current Value: 0.010000
HoovenHackForBadPenBoard	(0) NO	0=_No/Disable 1= <u>Yes</u> /Enable
Should not be changed by user!		TSG – Customer specific setting to switch pens. Only used by one customer. This should not be used by any other customer.
IgnoreFPGAFirmwareWarning	(0) NO	0 = Disable, 1 = Enable Display of Firmware warning, if the Firmware is different then required, every time the GUI runs.
ImagerLogEthernetFilter	(0)	Storage for the setting in the Imager Ethernet Log (Advanced Configuration/Debug Tab).
Should not be changed by user!		0 (0x0000) = No Logging 1 (0x0001) = Command Logging 2 (0x0002) = Register Logging 4 (0x0004) = Register Low-Level Logging 8 (0x0008) = Print Logging 16 (0x0010) = Pen Logging




		32 (0x0020) = Flash Memory Logging
		64 (0x0040) = Cleaning Station Logging
		128 (0x0080) = Miscellaneous Logging
		256 (0x0100) = Error Logging
		65535 (0xFFFF) = All
InkCostEnabled	(1) YES	Current Value: 0x00000000 (0) 0 = Disable, 1 = Enable Display of Ink Cost Estimates when not printing
Can be set within GUI settings by user		
InkCostPerML	0.95240	Cost per milliliter to use in Ink Cost Estimates
Can be set within GUI settings by user		
		Current Value: 0.95240
InkCostPerMLUnits	(\$)	(\$) = Units to display with ink cost estimate
Can be set within GUI settings by user		
KeepAliveTime	(2500)	Current Value: 0x000009c4 (2500)
LastFirmwareVersionUsed	(0)	TSG – Used to monitor the connection with jet.Engine. <b>Application must be restarted for any changes in this setting to take effect!</b> Storage Location for Last Firmware Version Used 0x00200f0a ???
Should not be changed by user!		
		Current Value: 0X00000000 (0)
LastFirmwareVersionUsedV5	(0)	Current Value: 0X00000000 (0)
Should not be changed by user!		
		TSG - Storage Location for Last Firmware Version Used for the V5 board.
LastMode	(8)	Saves the last mode, i.e., supervisor, technician, ...
LastStartedPage	(0) NO	Current Value: 0X00000008 (8) 0=_No/Disable 1= <u>Yes/Enable</u>
LogInkUsage	(1) YES	TSG – Used in conjunction with the “EnableRestartAfterLastCompletePage” setting. This should not be modified by the user on the application settings dialog. 0=_No/Disable 1= <u>Yes/Enable</u>
LogKeepAliveMessages	(0) NO	TSG – If enabled, log the ink usage to the log file. 0 = No/Disable, 1 = Yes/Enable Logging of Keep Alive Messages.
LogRipTimings	(1) YES	0=_No/Disable 1= <u>Yes/Enable</u>
LogTriggerEvaluations	(1) YES	<b>TSG – If enabled, log Rip timings to the log file.</b> 0=_No/Disable 1= <u>Yes/Enable</u>
ManifoldPenLife	760.00000	<b>TSG – If enabled, log trigger evaluations to the log file.</b> Current Value: 760.00000
Can be set within GUI settings by user		
MaxImageCacheSize	(200)	Current Value: 0X000000c8 (200)

MaxLinesPerLog	(10000)	<p><b>TSG – Used by dynamic bitmap object to determine maximum number of bitmaps that can be sent to the jet.Engine.</b></p> <p>Maximum number of lines to put in a log file before closing that file and opening a new one</p>
MaxPCBuffersAllowed	(40)	<p>Current Value: 0X00002710 (10000) Current Value: 0X00000028 (40)</p> <p>TSG - Maximum number of buffers allowed to be pre-ripped on the PC before we error out.</p>
Multistation	(0) NO	<p>0 = Disable, 1 = Enable Multistation printing mode</p>
OEM	(0)	<p><b>Application must be restarted for any changes in this setting to take effect!</b></p> <p>OEM user select: 0 = inc.jet (Others available and provided by inc.jet)</p> <p>OEM user select:</p> <p>0 = inc.jet</p> <p>1 = Kirk-Rudy</p> <p>2... TBD</p> <p>Current Value: 0X00000000 (0)</p>
OperatorMoveAmount	0.00000	<p><b>Application must be restarted for any changes in this setting to take effect!</b></p> <p>Current Value: 0.00000</p>
OutOfSequenceErrorCorrection	(0.00000)	<p>TSG - No longer needed when Encoder Based Tracking is enabled.</p> <p>This value is used for a tolerance in looking for out of sequence pages. The check compares the distances from sensor of imagers. It ensures that</p> <p>if one imager follows another, the pages print in that same manner. The correction is necessary when imagers are close together because the</p> <p>pages can finish printing and notify the GUI at a time that is very close. This allows those cases to be ignored.</p>
OutOfSequencePageCheck	(1)	<p>Current Value: 0.00000</p> <p>No longer needed when Encoder Based Tracking is enabled.</p> <p>An Imager Request for data is tied to a distance from sensor for that imager. Upon receipt of a request for data, the software loops through all imagers to see if that imager should have completed this page already. If it should have, but has not – an error is declared. (Must be set to zero when running the Emulator).</p>
OverspeedVariablePercent	(10)	<p><b>0 = No/Disable 1 = Yes/Enable</b></p> <p>Sets percentage of overspeed allowed before printing is stopped due to overspeed error. (10 = 10% - 15KHz nominal firing rate, 16.5KHz maximum firing rate)</p>
OverwritePdfFile	(0) NO	<p>Current Value: 0X0000000a (10) 0 = No/Disable 1 = Yes/Enable</p> <p>TSG – If enabled, pdf file is overwritten when using PDF Print Engine.</p>

PageDifferentialAdjustment	3.00000	Value in inches added to page length to compensate for imager width.  Sets an additional length to be added to each page (in inches?) when performing the differential page check. Required when the page size is about the same as the Imager-to-Imager spacing, to compensate for the fact that an imager has a "width".
PageDifferentialCheck	(1) YES	Current Value: 3.00000 0 = Disable, 1 = Enable Page Differential Check (number of pages in the imager "span" is not more than physically possible is computed by GUI for all imagers)
PdfFileNameType	(0)	
PdfRipKeys		Current Value: 0X00000000 (0) TSG – Third party license key used by PDF RIP software component
PdfRipRes		TSG – Path to the resource files used by the PDF RIP software component.
PdfRipTemp		TSG – Path to the temporary files used by the PDF RIP software component.
PenCalibrationEnergyIncreasePercentage	(28)	Sets the percent over energy applied to each pen when it is automatically calibrated.
PenCalibrationTimeout	(12000)	Current Value: 28.00000 (28) Time (in msec) to allow a pen calibration to complete before declaring a timeout
PixelDropVolume(pl)	(30)	Current Value: 0X00002ee0 (12000) The pixel drop volume (in picoliters) to use for each pixel fired in the cost estimates and the pen life status and tracking calculations
Can be set within GUI settings by user		
PreviousJob	?	Current Value: 0X0000001e (30) The file name and path to the job that will be loaded automatically if "Load Previous Job" is enabled.  0=_No/Disable 1= <u>Yes/Enable</u>
Realtime	(0) NO	0=_No/Disable 1= <u>Yes/Enable</u>  TSG – If enabled, runs the GUI process at the Realtime priority.
RemoveAllRangeEnabled	(0) NO	<b>Application must be restarted for any changes in this setting to take effect!</b> 0=_No/Disable 1= <u>Yes/Enable</u>  <b>TSG – When enabled, displays the controls on the Print Manager Screen that allows the user to remove all queued records and add user specified records to the queue for printing. Application must be restarted for any changes in this setting to take effect!</b>
RemoveLogFilesAfterXDays	(14)	Sets the number of days to keep log files before they are automatically deleted to prevent filling a hard drive with log files.
RemoveRedundantButtons	(0) NO	Current Value: 0X0000000e (14) 0 = Include, 1 = Remove Record Block and Fixed Text Buttons from the GUI – these functions can be performed using the Field Block.
RequiredFirmware	(2112032)	Default Firmware Required by the GUI – Used when performing the FPGA Firmware Warning check at initial execution of the

RequiredFirmwareV5	(5132049)	GUI. Current Value: 0X00203a20 (2112032) Current Value: 0X004e4f11 (5132049)
Resources	?	Sets the language resource file to use when running the GUI. Currently supported languages include Japanese (jpn), German (deu), Chinese (), Chinese () – Must have the supporting language DLL installed in the same location as the jet.engine.exe file in order to use this feature.
RestartPageIncrement	(0)	Current Value: 0X00000000 (0)
RestartPrompt	(1) YES	0=_No/Disable 1= <u>Yes</u> /Enable
Can be set within GUI settings by user		<b>TSG – Used in conjunction with the “EnableRestartAfterLastCompletePage” setting. This should not be modified by the user on the application settings dialog.</b>
SaveConfigurationTimeout	(30)	Amount of time allocated to saving the Firmware configuration in the Imager (Imager Configuration/System Settings Tab). If the Imager does not respond within this number of seconds, an error is declared.
SaveImagerBitmaps	(0) NO	Current Value: 0X0000001e (30) 0 = Disable, 1 = Every page bitmap created during printing is stored in the C:\incjetbmps\ directory.
StartInLastMode	(1) YES	0 = Always open in Operator Mode when GUI is executed, 1 = Always open in Last User Mode used when GUI is executed.
Can be set within GUI settings by user		
StopPrintingDelay	(0)	Current Value: 0X00000000 (0)
SupervisorPassword	super	TSG - Password to set User Mode to Supervisor in the GUI
SupportLeftRight	(0) NO	0 = Disable, 1 = Enable display (and operation) of the Left/Right Paper Orientation in the Imager Setup Tab – Still in Development
TechnicianPassword	tech	Password to set User Mode to Technician in the GUI
UseContrast	(0) NO	0=_No/Disable 1= <u>Yes</u> /Enable
UseNewPageDifferential	DB-(1) YES	TSG - If enabled, set the contrast using the value defined in the “DefaultContrast” setting. 0=_No/Disable 1= <u>Yes</u> /Enable
UseNewStopMessage	(0) NO	TSG – If enabled use a new method for calculating the max page differential that include the PageWidth as part of calculation. 0=_No/Disable 1= <u>Yes</u> /Enable
		TSG – If enabled, use new message while stop printing that takes the stop type argument.

## Sample Job Setup

 Note: This topic assumes that you have already configured the Imager software and hardware settings required for system operation. If you have not done so, go to Getting Started (Quick Start)/Initial Setup in Help.

The jet.engine™ GUI comes with a sample job that includes a pre-designed form set up for two Imagers, and a pre-loaded database containing fictitious personal records with address information. The form is designed with many of the standard printable form objects as a working example.


To open and load the sample job:

**Open Job Window** 

**Find the Sample Job File** 

**Open the File** 

**Customer Specific Settings** 

 Note: Opening this job will add a second Imager to the configuration, if one is not already present. If only one Imager is being used, the second Imager must be removed from the configuration in the **Imager Setup** tab. Only the top half of the form design layout will be printed. Refer to the [How To: Setting the Imager Configuration](#) of this help system for more details on how to delete additional Imagers.

[Next >>](#)

## Printing a Sample Job

Print jobs are started from the Print Manager main tab of the jet.engine™ GUI. This is also where you:

- [Select data to be printed \(Queuing\)](#)
- [Start a print job](#)
- [Monitor job progress](#)
- [Monitor job statistics](#)
- [Monitor Ink Status](#)
- [Stop a print job](#)

**Example of Print Manager tab with sample job loaded** 

### Select data to be printed (Queuing)

Queuing is the state that a record is in when the jet.engine™ GUI has selected it for printing. At this point, the records have not yet been processed. All records are queued by default when a Data Source is added to a job, or when the job is opened. In most cases, no further action is required.

In certain cases, however, you may want to pick up from where you left off on a previous print job. Refer to the following:

**Queuing Options** 

**Example of Queuing a Range of Records** 

### Start A Print Job


Starting a print job is as easy as pushing the Start Print button. The Status column of the Print Manager display will change once printing has started. Record status will begin to change from Queued to Ripped to Buffered.


You'll notice as well that several of the monitors and statistics are now active.

The system is ready to print on product being fed.

### Monitor Job Progress

There are several displays of information that can tell you how far along the print job is. Some of these are particular to the print cycle, while others are universal throughout the entire job. These include:

**Record Status**  Indication of what stage a particular record is in.

**Counter**  How many have been printed.

**Job Status Frame**  Status information about the entire job.

### Monitor Job Statistics

Several job statistics are provided for your monitoring, estimating, and planning needs. These displays of data are crucial for monitoring performance of a job as well as the printing system. Statistics displayed here can invaluable when planning future print jobs.

These readings include:

[Speed and Time Related](#)

[System Bandwidth](#)

## Monitor Ink Status

Ink Status information is displayed in the Ink Status frame. This information is drawn from the [Ink Status](#) tab of the main jet.engine™ GUI interface screen. Pixels Per Page is critical to calculating ink usage and estimating approximately how many ink dispensing containers will be needed in the future. Pages To Empty and Time To Empty are based on an average of the Pixels Per Page and the Time/Speed statistics.




## Stop A Print Job

Once the print job has started, the green Start Print Job button changes to a red Stop Print Job button, which is used to stop and abort a print job or print cycle. Pressing the Stop Print Job button changes the button into a red Abort Printing button. Click it once again to abort the print job.

 **Note:** If the Auto Abort option is checked in the [System Settings](#) tab of the Imager Configuration window, the job will be immediately aborted with the first click.

## Creating a Custom Job

 **Note:** This topic assumes that you have already followed the preceding steps of the Getting Started (Quick Start) section of Help. This means that all the hardware settings and core software settings have been entered into the GUI and the system is able to print at least at a basic level.

Several steps of planning and software setup must be taken to ensure a proper print setup:

[Stitching the pens](#) Aligning the print heads.

[Analyze product stock](#) The media on which you will print.

[Adjust mechanical imager mounting](#)

[Enter GUI setup parameters](#) Physical setup parameters.


[Create a template](#) A paper form layout design guide.

[Lay out the Form Design](#) Defining print areas and data types

## Where to go Next

[General Information](#)

[How To](#)

 **Note:** At this point, the software should be set up, and the sample jobs were able to print, at least at a basic level. If not, try searching Help using the Search tab located at the top left of this window for the particular problem you are having.

## General Information

The topics found in the General Information section of Help assume that you have read the prior sections, or that you already have a basic understanding of the GUI software. These are the topics you will view when pressing the F1 key while in the different GUI screens, and where you will find explanations on the different tabs, windows, and controls used throughout the GUI.

It is a good idea to briefly read over this section in its entirety. This section can also be used as a first point of reference if you are having problems operating a particular part of the GUI.

## How To

There are several How To topics that provide tutorials on how to set up or perform certain features of the jet.engine™GUI. These include:

- [How To: Set Up an IO Event](#)
- [How To: Set the Imager Configuration](#)
- [How To: Set Up Stitching \(Align Printing\)](#)
- [How To: Set Up Purging](#)
- [How To: Proof](#)
- [How To: Advanced Form Design](#)
- [How To: Read jet.engine™ GUI Debug Logs](#)
- [How To: Work with Data Sources](#)

## General Information

### Contents

[Main Tabs](#)

[Imager Configuration](#)

[Working with Jobs and Configurations](#)

[Form Design \(Job Layout\)](#)

[Working with Databases](#)

[Testing Print Jobs](#)

[Ink Level Settings](#)

[Advanced Configuration](#)

[Terminal Mode Overview](#)

[Menu Bar](#)


[Toolbars](#)

[Print To PDF](#)

[Pen Life Settings](#)

[Multistation](#)

## Main Tabs

The jet.engine™GUI application has seven (7) **Main Tabs** located below the toolbars on the jet.engine™GUI screen. You can click on each tab in the image below for a more complete description. Use the Back button  in the tool bar to return to this page.



### [Imager Setup](#)

The **Imager Setup** tab is where you set up and configure the Imager system.

### [Form Design](#)

The **Form Design** tab is where you lay out and design your print job .

## [Print Manager](#)

The **Print Manager** tab is where you initiate printing and monitor the status of a running print job.

## [Service Station](#)

The **Service Station** tab is where you set up and control operation of Imager service stations for Imagers configured with Automatic Capping (AC) capability.

## [Pen Status](#)

The Pen **Status** tab is where you set up, monitor, and re-set ink levels for each pen cartridge.

## [I/O Status](#)

The I/O Status tab is where you can view the status of all inputs and outputs used in all enabled **IO events**.

## [Log](#)

The **Log tab** is where you can view any status or error messages that occur during a print job.

# Imager Setup

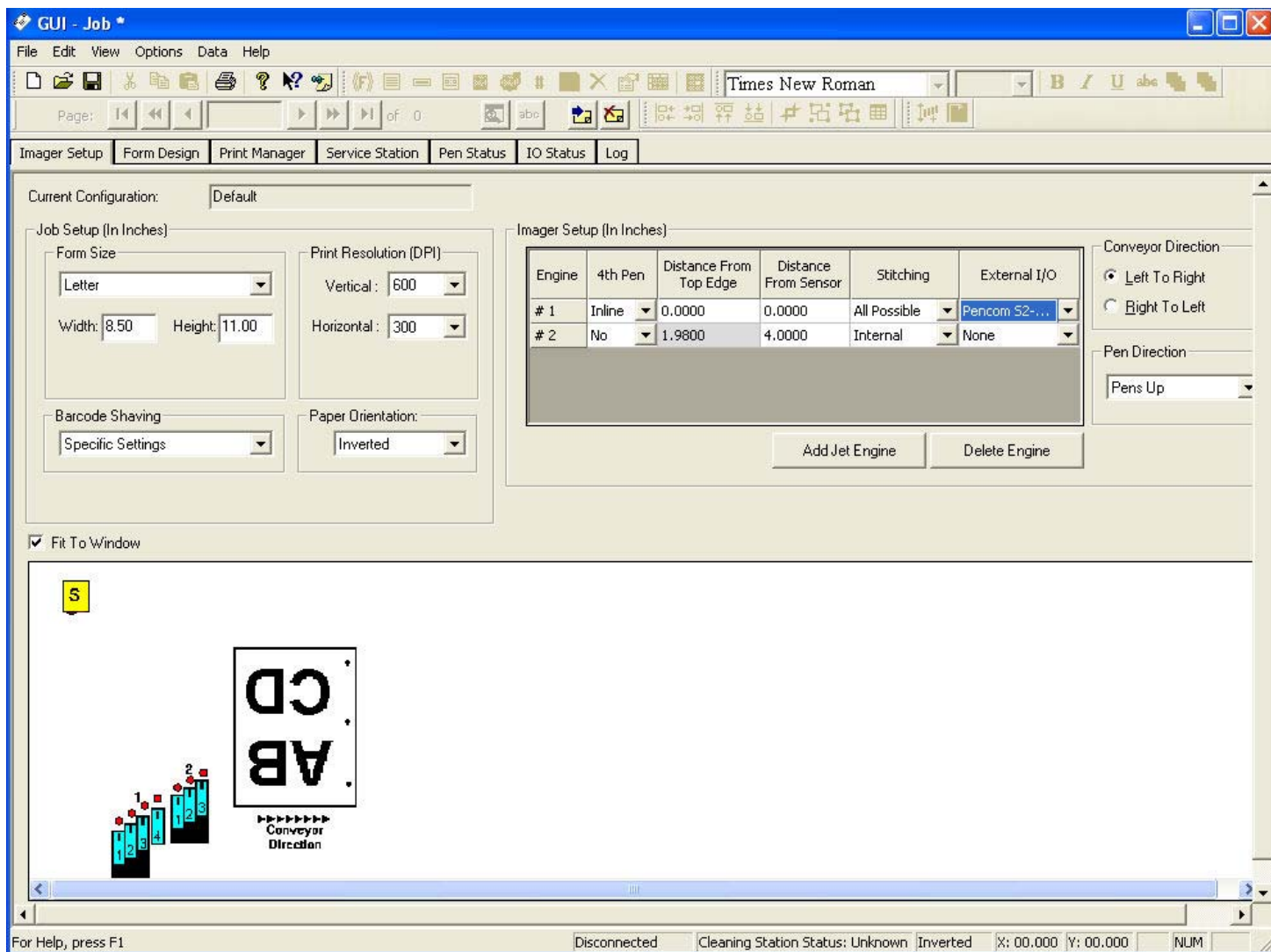
On the **Imager Setup** screen you can create print job configurations and store them in a file with a .ijj extension.

The **Imager Setup** screen is divided into three areas:

1. The top area left area (**Job Setup**) is where you set printing parameters.
2. The top right area (**Imager Setup**) is where you configure the jet engines.
3. The bottom area is where you see a graphic representation of the Imager/print configuration .

See How To: Setting the Imager Configuration for additional information on using **Imager Setup**.





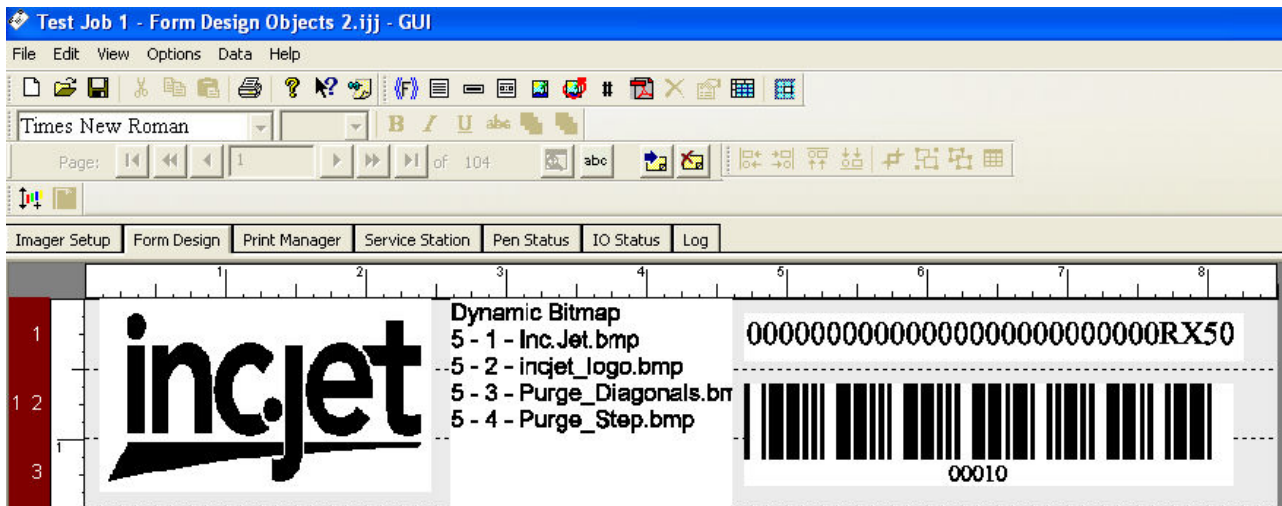


## Form Design

The **Form Design** screen is where you lay out the various data objects (**Field Block**, **Record Block**, **Message Line**, **Indicia**, **Fixed Bitmap**, **Dynamic Bitmap**, **Number Generator** or **PDF File**) that will be used in the print job. In other words, this is where you design your print job. Please refer to the individual objects for additional details.

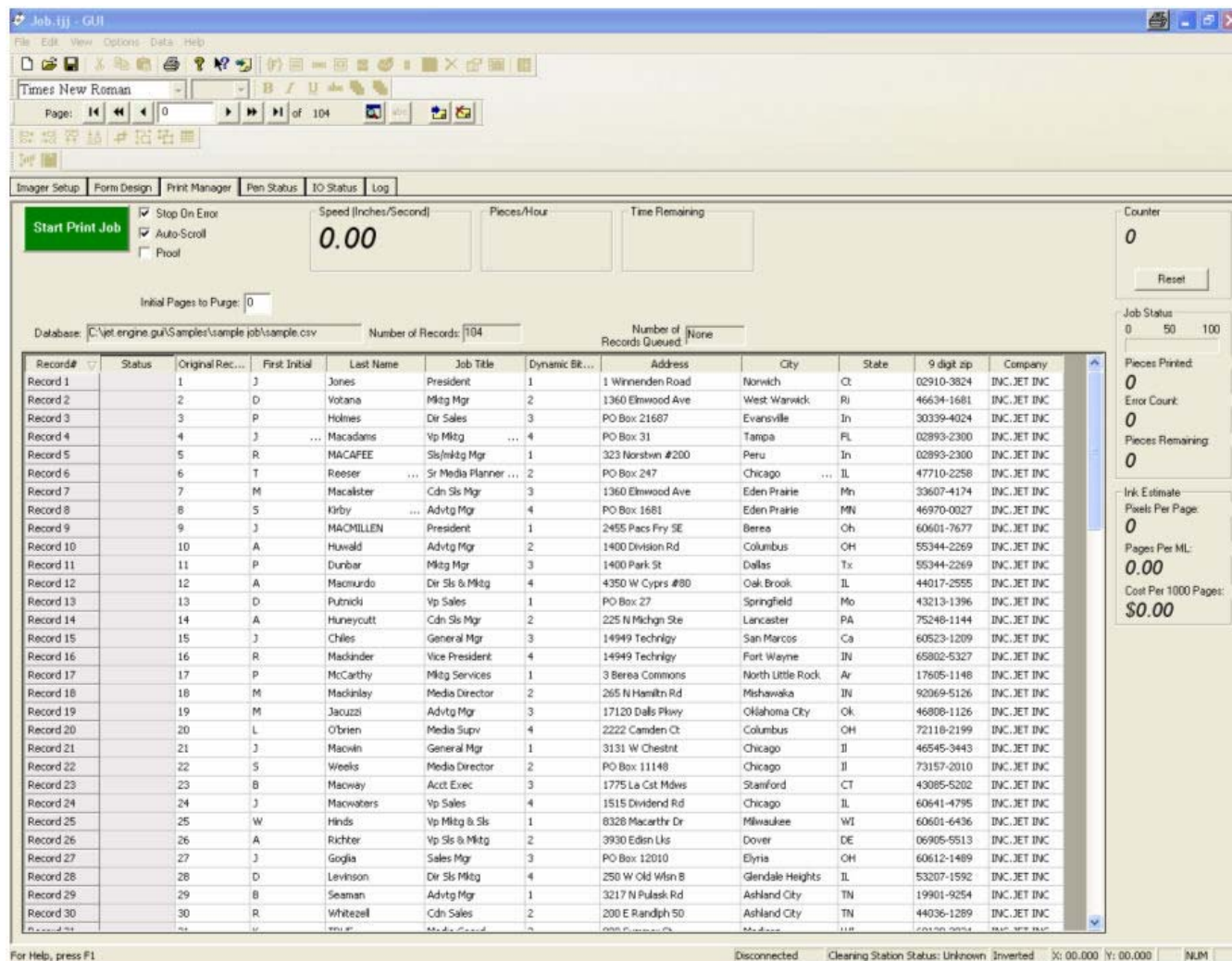
The **Form Design** layout screen, the area where you place the objects, is actually a scale representation of the print area available to the Imagers. Your design area is on the **Imager Setup** screen. (See also **Grid Settings** and **Stitching**.)

**Note:** There may be instances when you want to design a print job with overlapping blocks. You should position the objects on the **Form Design** screen exactly as you want them printed. Use the **Bring To Front**  and **Send To Back**  buttons on the tool bar to arrange the objects, keeping in mind that dynamic blocks will always print on top of fixed blocks.



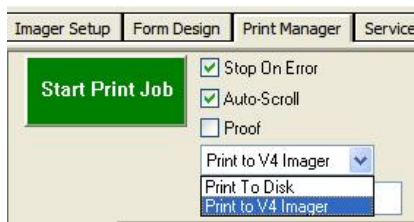
## Print Manager

You start, stop, and monitor all of your print jobs in the **Print Manager**. This screen displays the contents of the data file that is printing, as well as statistics on the performance of the Imagers and the *jet.engine™* GUI. You can also monitor ink status on this screen.



Before you start printing, you can direct the system to **Stop On Error** by checking that box. This means that every time the system detects an error, the print job will stop. If this is not checked, the system will simply skip that page in the printing process.

If you check the **Auto Scroll** box, the **Print Manager** will continually scroll during the printing process so that the record being printed is the first record listed. If you don't check this box, you can manually scroll up and down through the records.



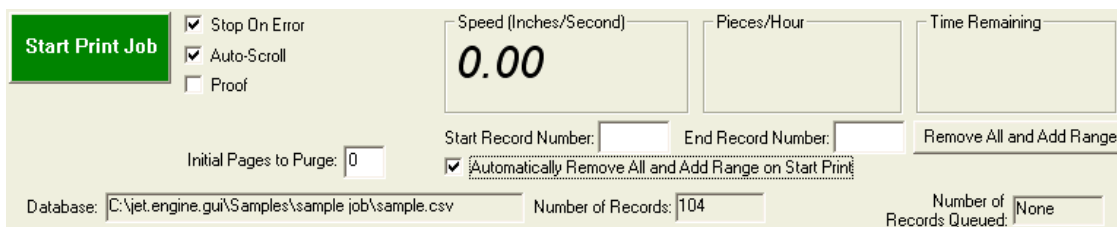
Under these check boxes is a Print to Disk/Print to V4 Imager drop-down menu, (shown above).

**There are additional files required to enable this Print to Disk feature, if you would like to use this feature please contact your Inc.Jet Service Field Application Engineer.**

#### Print to Disk/Print to V4 Imager:

Typically, you would choose Print to V4 Imager as your destination for the print job. However, there may be occasions when the print job is so complex, or has so many objects, that the size of the job affects the ability of your PC to process it. In such an instance, you may choose to Print to Disk. This saves the job as a .ptd file, which can then be opened and printed.

Note: This selection drop down menu for selecting Print to V4 Imager or Print to Disk will not appear on the display unless "PrintToDisk" is set to "1" for "Yes" in the "Applications Settings" dialog menu.



#### Remove All and Add Range:

You can select a range in the Start Record Number and End Record Number that you want to print within the job you currently have loaded.

- To do this enter in the starting and ending record number range you would like to print.
- Next click the **Remove All and Add Range** button, the records you specified will be queued for printing and the rest of the records will be removed.

#### Automatically Remove All and Add Range on Start Print:

You can select a range in the Start Record Number and End Record Number that you want to print within the job you currently have loaded that will start the next time you press the "Start Print" button.

- To do this enter in the starting and ending record number range you would like to print.
- Next click the check box to select **Automatically Remove All and Add Range on Start Print**

Note: This selection boxes for selecting Start Record Number, End Record Number, the select button for Remove All and Add Range and the check box for Automatically Remove All and Add Range on Start Print will not appear on the display unless "RemoveAllAddRangeEnabled" is set to "1" for "Yes" in the "Applications Settings" dialog menu.

#### Print to Disk:

- To Print to Disk, select that option from the drop-down menu. A Save As screen appears, in which you can name the file and select a location where you want to store it. It will automatically be saved with a .ptd file extension.
- Click OK to return to Print Manager, and then click the Start Print Job button. The print job will process as though it is printing, but it is actually being saved as a complete file.
- Once it has finished, open the file (select Open Job from the File menu, locate and select the .ptd file, and click OK). You'll notice that the drop-down menu no longer appears in Print Manager, because the file can only be printed to the V4 Imager.
- Click the Start Print Job button and the job will print.

You can set the number of **Initial Pages to Purge** by entering that number in the box (see **How to: Insert a Purge Page**).

The boxes across the top of the **Print Manager** tell you how fast the system is printing (**Speed Inches/Second**), how many **Pieces/Hour** it is printing, and also the **Time Remaining** in the printing process.

The counter keeps track of the number of pages printed in all print jobs while the GUI is running, unless you hit the **Reset** button between jobs or exit the GUI. You can see how many pieces have printed in the current job in the **Job Status** box. It also shows you the **Error Count**, i.e., how many errors have occurred in printing.

The **Ink Status** box indicates how many **Pixels Per Page** are being printed, and estimates for you how many more pages will print before ink runs out (**Page to Empty**). In some instances, it will indicate the approximate **Time to Empty**.

If you have checked the Calculate Ink Costs box on the [System Settings](#) screen, the Ink Status box will be replaced by an Ink Estimate box, which shows an estimate of the cost to print 1,000 pages of a selected record. This information is only shown when printing is not in progress.

The **Buffers** box is an optional feature that will only appear if you have set it up in **System Settings**.

The Quantity column appears only if the setting Enable Multiple Copies has been enabled in the [System Settings](#).

The screenshot shows the Print Manager tab with a table of records and several control panels. The table has columns for Record#, Status, Quantity, Original Rec..., First Initial, Last Name, Job Title, Dynamic Bit..., Address, City, State, 9 digit zip, and Company. The records are numbered 1 through 14. The control panels include a 'Start Print Job' button, checkboxes for 'Stop On Error', 'Auto-Scroll', and 'Proof', a 'Print to V4 Images' dropdown, and a text box for 'Initial Pages to Purge'. There are also fields for 'Speed (Inches/Second)' (0.00), 'Pieces/Hour', and 'Time Remaining'. On the right side, there is a 'Counter' section with a 'Reset' button, a 'Job Status' section with a progress bar, and an 'Ink Estimate' section with fields for 'Pieces Per Page', 'Pages Per ML', and 'Cost Per 1000 Pages'.

Record#	Status	Quantity	Original Rec...	First Initial	Last Name	Job Title	Dynamic Bit...	Address	City	State	9 digit zip	Company
Record 1			1	J	Jones	President	1	1 Winnende...	Norwich	CT	02910-3624	INC.JET INC
Record 2	0	2	D	J	Votana	Mktg Mgr	2	1360 Elmwo...	West Warwick	Ri	46634-1681	INC.JET INC
Record 3	0	3	P	H	Holmes	Dir Sales	3	PO Box 21687	Evansville	In	30339-4024	INC.JET INC
Record 4	0	4	J	...	Macadams	Vp Mktg	4	PO Box 31	Tampa	FL	02893-2300	INC.JET INC
Record 5	0	5	R	...	MACAFEE	Sls/Mktg Mgr	1	323 Norstw...	Peru	In	02893-2300	INC.JET INC
Record 6	0	6	T	...	Reeser	Sr Media Pla...	2	PO Box 247	Chicago	IL	47710-2258	INC.JET INC
Record 7	0	7	M	...	Macalister	Cdn Sls Mgr	3	1360 Elmwo...	Eden Prairie	Mn	33607-4174	INC.JET INC
Record 8	0	8	S	...	Kirby	Advtg Mgr	4	PO Box 1681	Eden Prairie	MN	46970-0027	INC.JET INC
Record 9	0	9	J	...	MACMILLEN	President	1	2455 Pacs F...	Berea	OH	60601-7677	INC.JET INC
Record 10	0	10	A	...	Huwald	Advtg Mgr	2	1400 Divisio...	Columbus	OH	55344-2269	INC.JET INC
Record 11	0	11	P	...	Dunbar	Mktg Mgr	3	1400 Park St	Dallas	Tx	55344-2269	INC.JET INC
Record 12	0	12	A	...	Macmurdo	Dir Sls & Mktg	4	4350 W Cyp...	Oak Brook	IL	44017-2555	INC.JET INC
Record 13	0	13	D	...	PUTNICKI	Vp Sales	1	PO Box 27	Springfield	Mo	43213-1396	INC.JET INC
Record 14	0	14	A	...	Huneyoutt	Cdn Sls Mgr	2	225 N Michg...	Lancaster	PA	75248-1144	INC.JET INC

### Page Number Range

When no database is loaded in Print Manager Tab, (Right click on the blank Print Manager data section), the Set Page Number Range Menu will pop up. From here you can specify Start and Stop page numbers, select to stop after a specified number of pages or specify that you will Hit the Stop Print Button manually to stop printing.

The screenshot shows the Print Manager tab with a context menu open over the data section. The menu options include: Add All, Remove All, Add Selected, Add From Selected to End, Add Range..., Remove Selected, Reset All Quantities, Set All Quantities, Reset Selected Quantities, Set Selected Quantities, Set Quantities To Database Values, Add Error Records, Preview Selected, and Set Print Range... The 'Set Print Range...' option is highlighted. To the right, the 'Page Number Range' dialog box is open, showing fields for 'Starting Page Number' (1) and 'Stopping Page Number' (0). The dialog has three radio button options: 'Stop Printing at the Following Page' (selected), 'Stop Printing after this Many Pages', and 'I will Hit the Stop Print Button Manually'. There are 'OK' and 'Cancel' buttons.

### Installation of the Printer Driver:

The printer drivers are automatically installed in the GUI. In the event a problem occurs and the GUI will not print an error message pop up will appear. (See examples of Windows XP and Windows Vista messages that will pop up below).

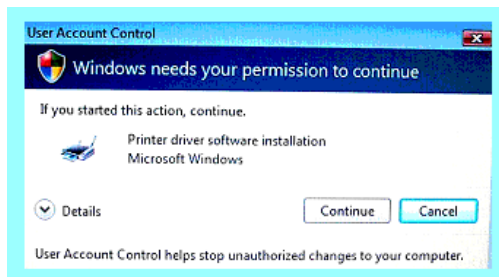
### Windows "XP" Printer Driver Message:



### Windows "Vista" Style Printer Driver Messages:

- When the GUI is first installed you will see the following dialog.

Press Continue.



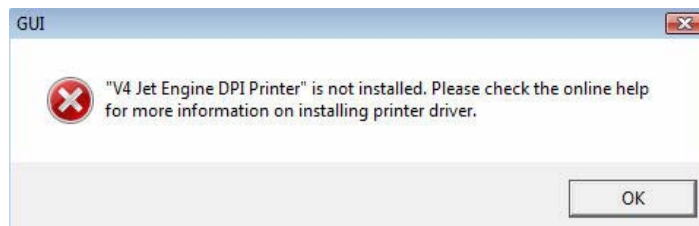
- Next, the following warning will be displayed.

Click on the "Install this driver software anyway".



- If the V4 jet Engine DPI Printer did not install correctly you will see the following dialog.

Click OK and then close and restart the GUI and the V4 jet Engine DPI Printer will attempt to install again.




#### How to install the printer driver manually:

Close the GUI and look for a folder inside the jet.engine.gui/PrinterDriver folder called InstallPrinter.exe, click on it and run it. This will install the printer drivers into the GUI.

#### File location:

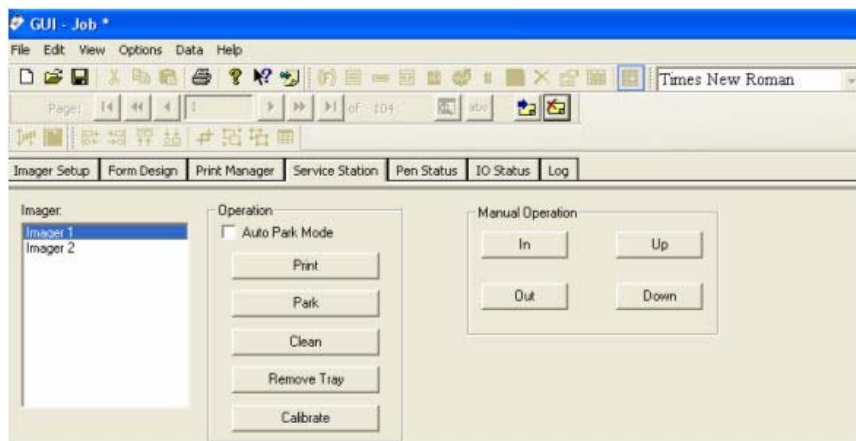


 In the event that this does not work properly call Inc.Jet Service for assistance.

## Service Station

Much like your motor vehicle, Imagers need maintenance to keep them in good operating order. You can set up a number of operations on the **Service Station** screen that will help ensure that your Imagers perform reliably.

If you have checked the **Service Station Enabled** box on the System Settings screen, the **Service Station** appears as a Main Tab.



The **Imager Box** shows you which Imagers are currently recognized by the system.

**Note:** When Imagers are added via the **Imager Setup** screen, they will not appear in this box until the GUI is shut down and restarted.

After you select an Imager, you can control it by using the buttons to the right of the **Imager Box**.

The **Auto Park Mode** box, if checked, parks the Imager when a print job is stopped by the GUI. If you do not check this box, you need to use the **Park** button. To **Park** an Imager is to place it onto the capping station, where the pens will fire a purging (or cleansing) spray into the cups in the capping station. Parked Imagers are protected from having their print heads dry out.

You use the **Print** button to move the Imager to the ready-to-print position. If you click on **Remove Tray**, the capping tray, which contains the cups, moves to the front of the Imager for easy removal.

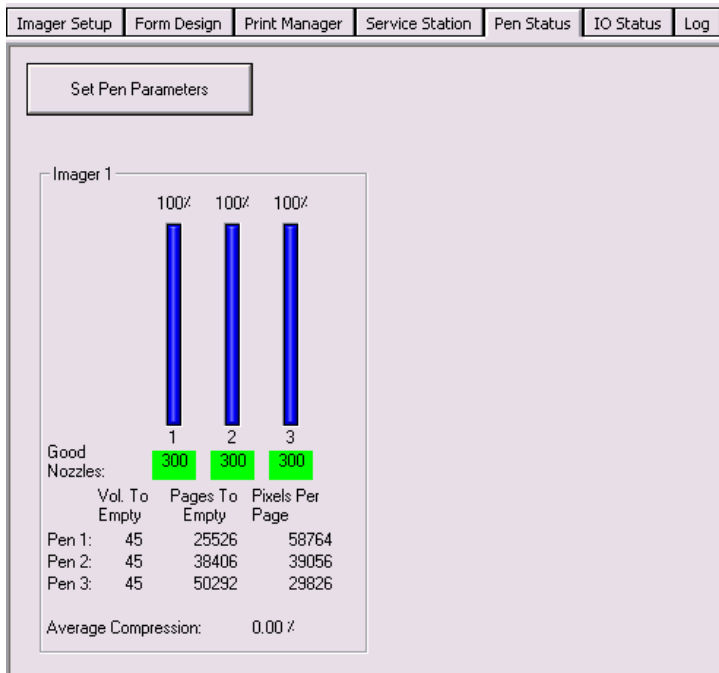
**Manual Operation** allows you to "jog" the Imager, i.e., adjust it **In**, **Out**, **Up**, or **Down** in small increments. It is a good practice to **Park** the Imager after using any of the **Manual Operation** buttons to re-qualify it.

**Note:** During the **Park** and **Clean** operations, ink is discharged into the cups, and these can overflow if too much ink accumulates.

## Pen Status

You can check the quantity of ink in each pen from the **Pen Status** screen. Based on the job in progress, the *jet.engine*™ GUI calculates the number of **Pixels Per Page** for you, and determines the number of **Pages To Empty** for each pen and Imager.

If you click the **Set Pen Parameters** button, you go to the [Pen Properties](#) screen, where you can set the **Low Ink Warning Level** for each Imager and its pens.






**Good Nozzles Indicators:**


The Good Nozzles test is an electrical test that the GUI performs that looks for damaged nozzles, (not clogged jets). This means that the pen cannot print with more than the number of nozzles indicated.


Note: The "Good Nozzles number" on the display represents the number of good nozzles on each pen.


**Good Nozzles Indicator Color Key:**

300 Good nozzles = Green  0 Good nozzles = Red 

290 and over - up to and including 299 Good nozzles = Green/Yellow Combined 

260 and over - up to and including 289 Good nozzles = Yellow 

1 and over - up to and including 259 Good nozzles = Red/Yellow Combined 

Unknown # of Good Nozzles = Gray 

Note that multiples of 13 to 14 or 21 to 22 bad nozzles indicate that the contacts on the back of the pen are dirty and cleaning may recover many nozzles. A number of lower than 300 good nozzles on the display can also indicate that a pen may be seated in the stall improperly.

**IO Status**

The **IO Status** tab displays the status of all inputs and outputs used in all enabled **IO events**.

Name	Imager #	Type	Point	Control	Value
Imager 1 Input 1	1	INPUT	IN 1	Automatic	OFF
Imager 1 Output 0	1	OUTPUT	OUT 0	Automatic	OFF
Imager 1 Output 1	1	OUTPUT	OUT 1	Automatic	OFF

For each enabled event , the screen displays the following information:

- The name of the **Input** or **Output** (This will be either the default label or a label you have defined using **Define Labels** on the **IO Events** page.)

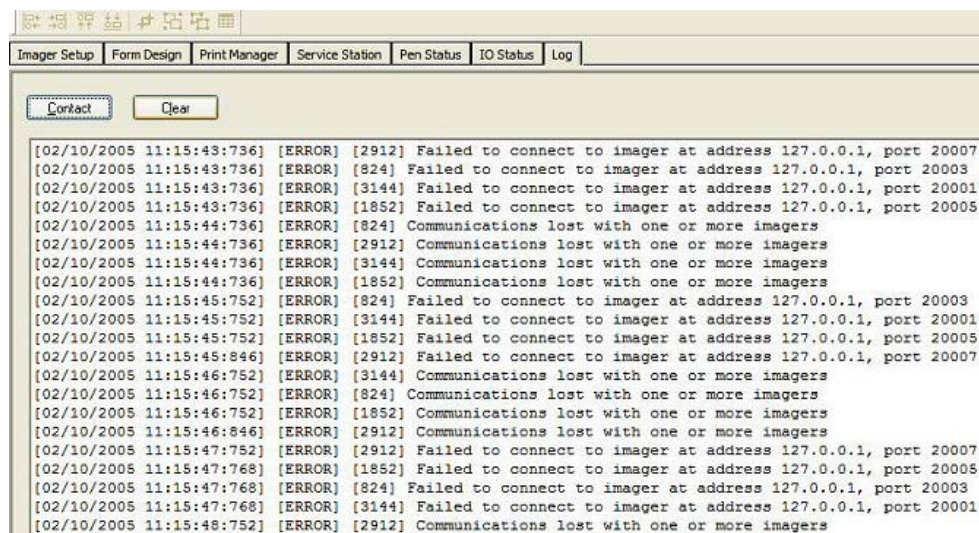
- The **Number (#)** of the affected imager
- Whether the event is an **Output** or **Input**
- The **Point** involved, i.e., which one of the six (6) inputs or two (2) outputs
- Whether the **Control** is **Automatic** or **Manual** (If the event is an **Input**, you cannot change to **Manual** control. However, if the event is an **Output**, you can use the drop-down menu to change from **Automatic** to **Manual**. Changing to **Manual** enables the **Toggle** button so that you can then manually control the **Output**.)

When you exit the **IO Status** tab, all **IO Events** will revert to **Automatic Control**.

## Log

The **Log** screen displays any status or error messages that occur during a print job. The **Log** will continue to be appended as long as the software is running. You can clear the **Log** by clicking on the **Clear** button.

The **Contact** button allows you to communicate with the Imagers and report any problems with the active configuration. If you click on the **Contact** button, you'll receive a message telling you whether the Imager is still alive, as well as the [firmware version](#) of the Imager.



## Imager Configuration

### Contents

[IO Events](#)

[Network Setup](#)

[Stitching](#)

[Imager Settings](#)

[System Settings](#)

[Imager Status LED's](#)

## Network Setup

### Contents

[Find Imagers](#)

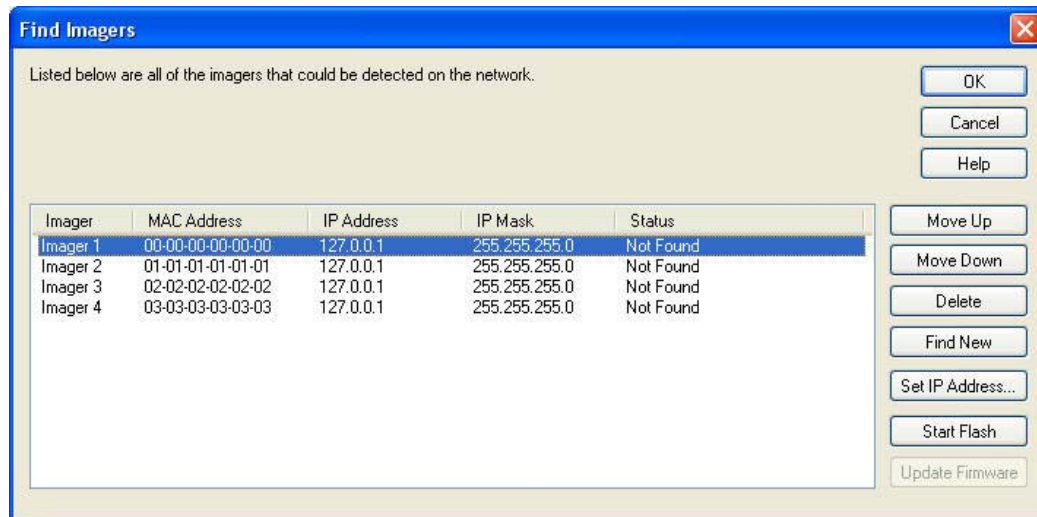
[Set Imager IP Address](#)

## Set Imager IP Address

Each **Imager** must have its own unique **IP (Internet Protocol) Address**. This identifies the location of the **Imager**. Some portion of the **IP Address** represents the network number or address, and some portion represents the local machine address. You can set **Imager IP Addresses** from the **Find Imagers** screen.

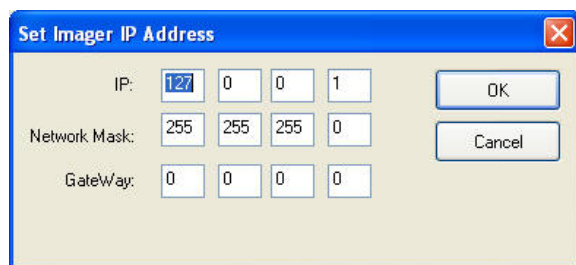


From the **File** menu choose **Find Imagers**.



From the list of **Imagers** that appear on the **Find Imagers** screen, select an **Imager**. Click on the **Set IP Address** button.

Note: The Manual update buttons will be disabled when you are in "Automatic Mode"

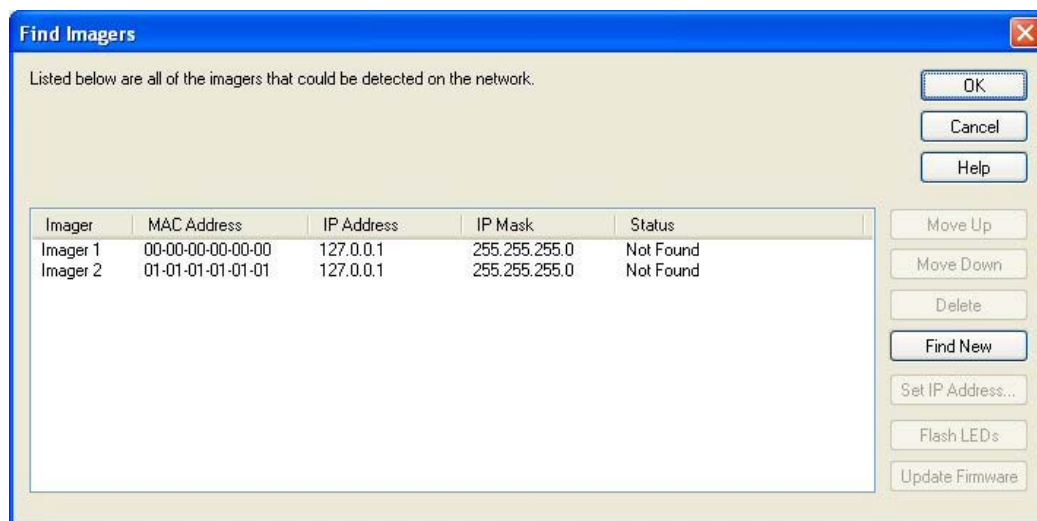


Enter the **IP Address**. The **Network Mask** and **GateWay** do not change.

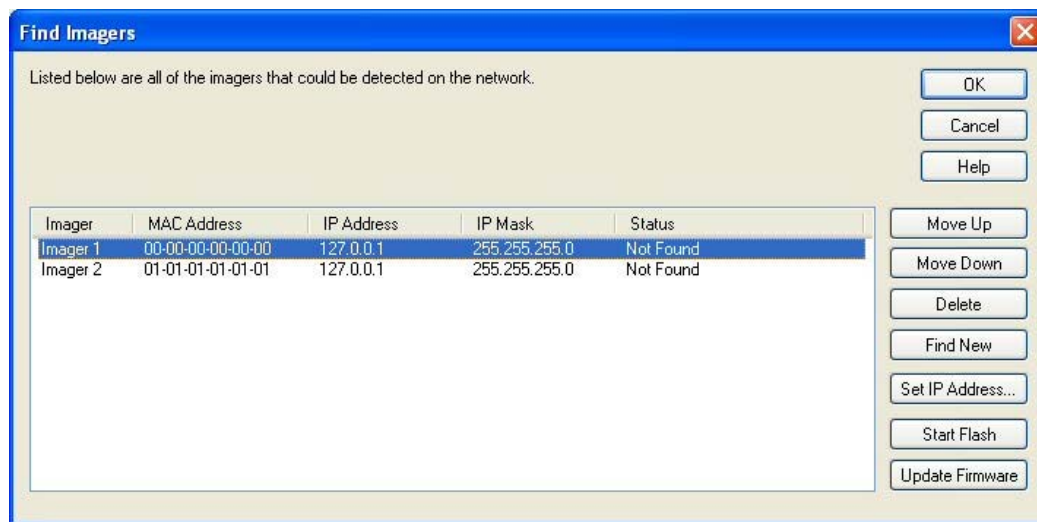
Note: The firmware version numbers may be different for a system with a V4 and a V5

## Find Imagers

In the **Find Imagers** window you'll see a list of all the Imagers found on the network. You can click on the **Find New** button to detect new Imagers on the network.

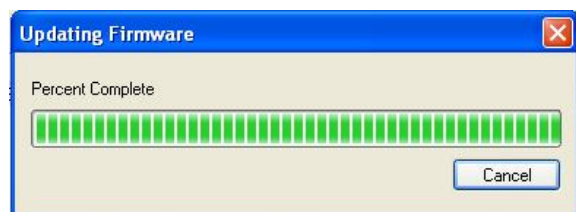


If you select an Imager from the list by clicking on it once, the other buttons will become active:



#### Find Imager Function Select Buttons:

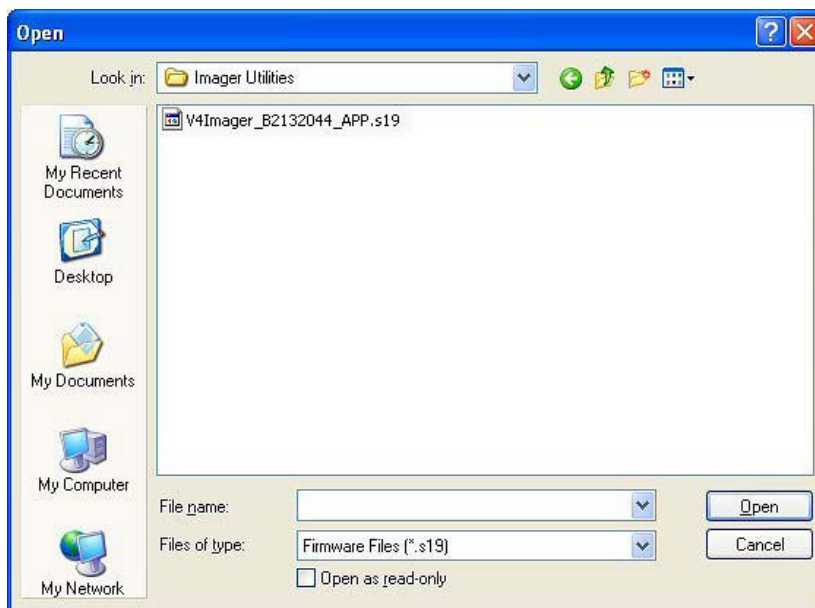
- **Move Up** - Clicking on the "Move Up" button moves the Imager up in the list
- **Move Down** - Clicking on the "Move Down" button moves the Imager down in the list
- **Delete** - Clicking on the "Delete" button deletes the Imager from the list
- **Find New** - Clicking on the "Find New" button looks for any new Imagers
- **Set IP Address** - Clicking on the "Set IP Address button" brings up the Set Imager IP Address window
- **Start Flash** - Clicking on the "Start Flash" button flashes an LED on the selected Imager to verify communication with that Imager
- **Update Firmware** - You can also Update Firmware on a selected Imager by clicking on the Update Firmware button.
  - The following status window will appear while the new firmware is being downloaded:



Note: The Automatic Firmware Updates feature should be **Enabled**, (this is the default setting). If this setting is enabled the *jet.engine™* GUI automatically checks for the necessary versions of the firmware. If it is turned off for some reason it is recommended that it should be Turned Back On in the Applications Settings.

Note: If you have two imagers with the same IP Address the Automatic Updates process will not start!

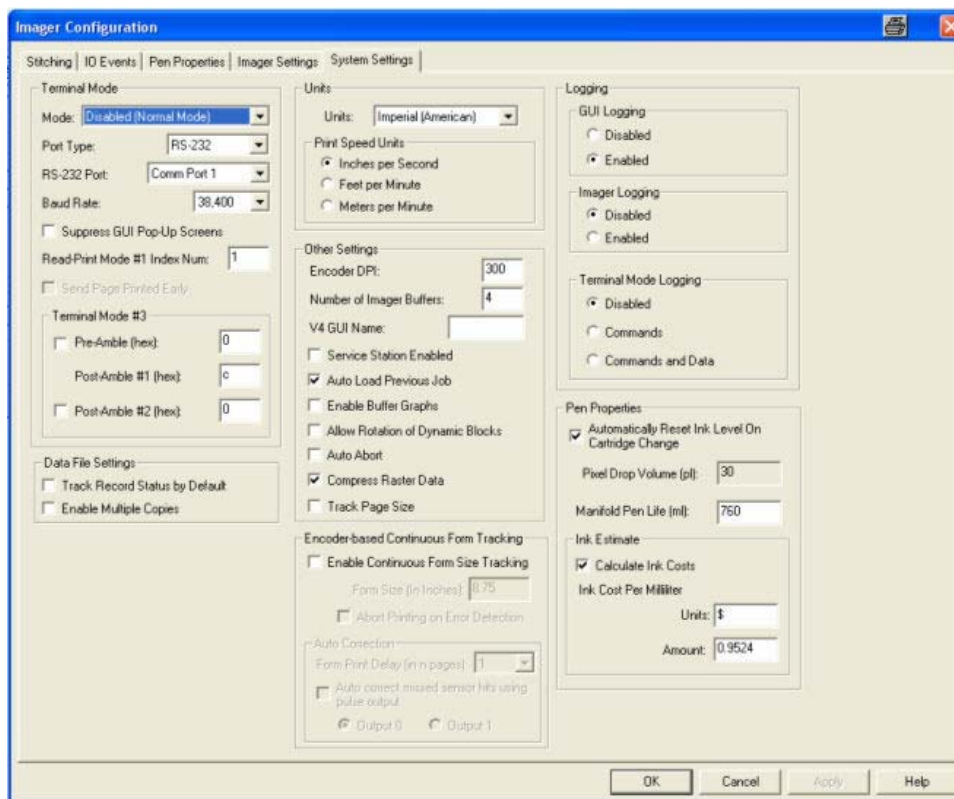
(See also [Updating Firmware](#) in the Getting Started (Quick Start)/Initial Setup section of Help.)



A typical Windows browser screen appears from which you can select a **Firmware File (\*.s19)**. You will find these in the Imager Utilities directory, where they were placed when you installed the **jet.engine™** GUI. Once you have selected the **Firmware File**, click **Open** and the software for the selected Imager is updated. The system will also automatically reboot the Imager.

## System Settings

From the **System Settings** screen you have access to a number of features used to configure Imagers.



## Terminal Mode

By configuring **Terminal Mode**, you can set up the jet.engine™GUI to receive dynamic print data from a remote application, as well as allow a remote application to control several of the jet.engine™GUI functions and capabilities.

## Units

In the **Units** box you can set the jet.engine™GUI to run in either **Imperial** or **Metric** mode. You can also change the unit of measure for **Print Speed Units**.

## Logging

Logging is a process by which messages are written to a log file and can be used as a debug tool. You can enable or disable Logging in this section. All logs are created as a file with a date/time stamp as its name. There are three types of Logs:

1. GUI Logs: These log all the messages to and from the jet.engine™ GUI in the log file. jet.engine™ GUI Log file names begin with the letter "G."

2. Imager Logs: All Imager messages are recorded in Imager Logs. Imager Log file names begin with the letter "I."

3. Terminal Mode Logs: If the jet.engine™GUI is set up in one of the Terminal Modes, these logs give an account of all recognized messages between the remote machine and the jet.engine™GUI. Terminal Mode Log file names begin with the letter "T."

Log files are limited to 10,000 lines (default). After the log is full, a new file, with a new time stamp, is created. The old file is preserved in the respective log directory.

## Pen Properties

If you check Automatically Reset Ink Level on Cartridge Change, the jet.engine™GUI will reset the ink level of a new pen to 100% and track the ink usage of all the pens installed.

You can also enter the Pixel Drop Volume and [Manifold Pen Life](#) values.

If you check Calculate Ink Costs, the jet.engine™GUI will provide an estimate of the cost to print 1000 pages of any given record. Units refers to a currency symbol (the U.S. "\$" is the default), and Amount refers to the cost of the ink per millilitre, in the selected currency.

The Ink Estimate information will appear on the [Print Manager](#) screen, in place of the Ink Status box, only when printing is not in progress.

In the example above, the selected record prints 1995 Pixels Per Page, using 16708.44 millilitres of ink at an estimated cost of \$0.06 Per 1000 Pages.

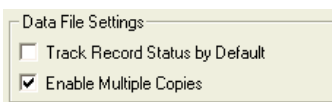
 Note: The Ink Estimate will be affected by such variables as stitching, overlapping objects, and objects hanging off the edge of the page.



### Track Record Status by Default:

The "Track Record Status by Default" feature generates a verification file for the database to record records printed or errored. When this feature is enabled a verification file will be generated for every new job that is created and run. The naming convention is "databasefilename.ext.verification", and when initialized contains a "?" (question mark) on each line for the number of records in the database. As the database is printed the question mark "?" will be replaced with a "P" for printed or "E" for errored. When the database is closed and reopened the user will see the record status in the first column of the print manager tab indicated by green cells with the text "printed" (or red cells with the text "errored") for previously processed records.

**Note:** The user can clear the tracking file by selecting **Delete Tracking File** from the **Data** menu to reprint the database.

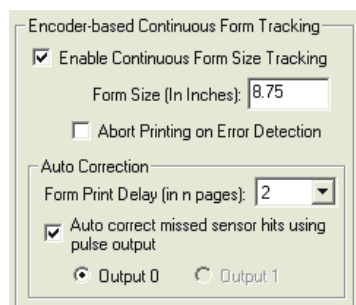


### Enable Multiple Copies:

If Enable Multiple Copies is selected; you can configure a job field in a schema that contains a number that will specify how many pages of that individual record will be printed.

## Encoder Based Continuous Form Tracking

The Encode-based Continuous Form Tracking feature is used to make certain that the eyemark sensor does not miss any marks. If it does, the GUI will create a popup and display all pages that were missed. This feature is used for continuous form print applications.



#### Continuous Form Size Tracking:

When the check box in the System Settings Tab to "Enable Continuous Form Size Tracking" is selected, (shown above), the GUI software tracks the distance between pages. As each page is printed the software verifies the distance from the last page printed is equal to the "Form Size" set. If a page is missed, an error is generated and the skipped page log is displayed. The log indicates the page number(s) for all skipped pages. The log can be left displayed, or closed by the operator, however, every time a page is skipped the log will be displayed.

#### Form Size:

When Printing is started, the software checks that the "Form Size" defined in the Continuous Form Size Tracking, (shown above), is at least 0.25" larger than the page width set in the form size in the Imager Setup. If the check fails an error is generated and printing is stopped.

#### Abort Printing on Error Detection:

If this box, (shown above), is checked or "enabled", the software aborts printing on error detection.

#### Automatic Sensor Generation:

When the check box to "Auto correct missed sensor hits using pulse output", (shown above), is enabled, the GUI software will automatically generate and insert missed top of form marks for the continuous web.

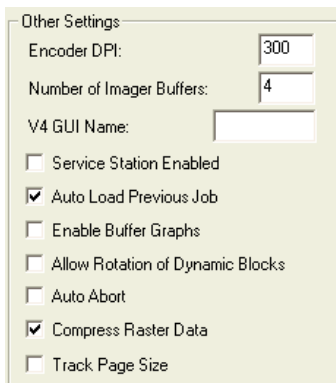
**Note:** Auto correction uses output 0 to create the top of form pulses, so **this output is not available for other uses when this mode is enabled.** The placement accuracy of the output pulse is 1/75".

#### Form Print Delay:

The "Form Print Delay" setting, (shown above), defines the number of top of form pulses in a row that will cause an error. The system will add this number of pages to the sensor queue (inserting this number of blank pages at the beginning of printing) and then automatically generate top of form pulses. All top of form pulses generated are logged as "generated TOF" in the skipped page log. The system will track the distance between all received top of form pulses and insert correctly located

top of forms in the print stream for any missed pages. If the system ever reaches the point where no top of form pulses are queue up then too many pages in a row have been missed, an error is generated and printing is terminated.

## Other Settings



Other Settings

Encoder DPI: 300

Number of Imager Buffers: 4

V4 GUI Name:

Service Station Enabled

Auto Load Previous Job

Enable Buffer Graphs

Allow Rotation of Dynamic Blocks

Auto Abort

Compress Raster Data

Track Page Size

In the **Other Settings** box, you can set the **Encoder DPI** as well as the **Number of Imager Buffers**.

**V4 GUI Name** allows multiple instances of the jet.engine™GUI to be given different names.

You can elect to have the [Service Station Enabled](#).

If you check **Auto Load Previous Job**, then the next time you open the jet.engine™GUI it will automatically open with the job that was active when the jet.engine™GUI was closed.

(You can also choose to load the previous job loaded by selecting Load [Last Used Software Mode](#) in Advanced Configuration/Passwords section).

**Enable Buffer Graphs** is a diagnostic tool which, when enabled, displays during printing on the **Print Manager** screen, allowing you to see what is moving through the print buffers.

Selecting **Allow Rotation of Dynamic Blocks** enables rotation of dynamic objects, i.e., **Record Blocks**, **Field Blocks**, and **Number Generators**, during printing. You should be aware, however, that this operation consumes a great deal of your computer's CPU speed, and has the potential to slow down your print job.

Enabling **Auto Abort** means that, instead of clicking twice on **Stop Print Job** in **Print Manager**, to halt a print job, the job will instead be aborted with a single click on the **Stop Print Job** button.

**Compress Raster Data** compresses the data that is sent to the printer.

**Track Page Size** setting should be disabled as the default setting. When this setting is disabled the top of form sensor is locked out for the length of the page. If it is enabled it allows you to run variable length pages, it is not suggested that this setting be used unless you actually are running variable page sizes!

## Imager Settings

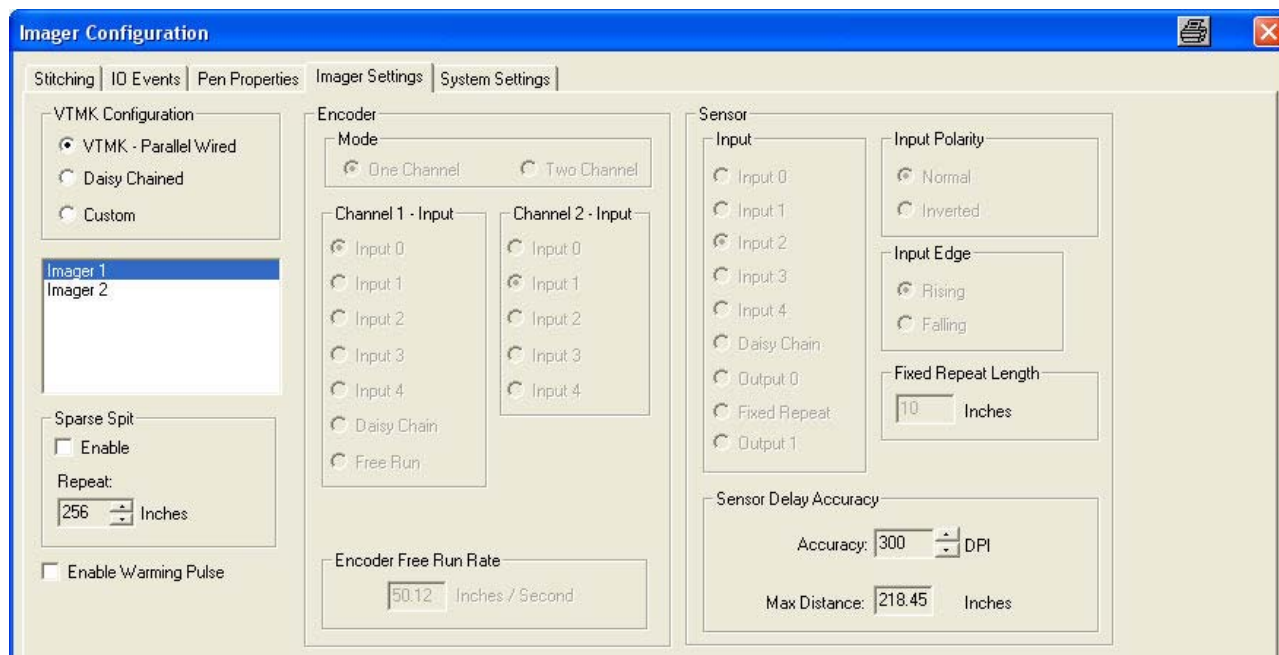
On the **Imager Settings** page you can set up the jet.engine™GUI to work with a particular Imager setup. Presets for parallel and daisy chained VTMK (Vacuum Table Mounting Kit) configurations are provided. The **Custom** button is used to configure user-supplied encoder and sensor combinations. The **Encoder** and **Sensor** sections are disabled when VTMK presets are used.

**Sparse Spit** is a feature that, when enabled, keeps the pens clean and ready to print by firing each of the jets individually at random. Because the dots are spaced out, they go unnoticed. The number entered in the **Interval** box must be multiplied by 16 inches to determine the repeat distance in inches of encoder travel.

You can check **Enable Warming Pulse** to eliminate the need for pens to warm up before firing. This keeps the pens in a ready-to-fire condition.

**Encoder** and **Sensor** signals may be simulated when necessary. **Encoder Free Run Rate** is the approximate belt speed. The number entered here is rounded to the nearest acceptable value as determined by current parameters. **Fixed Repeat Length** is the amount of belt travel between firings.

**Sensor Delay Accuracy** affects the resolution of the printer. As the number is increased, the resolution decreases, but the maximum distance from the sensor to the Imager may be increased.

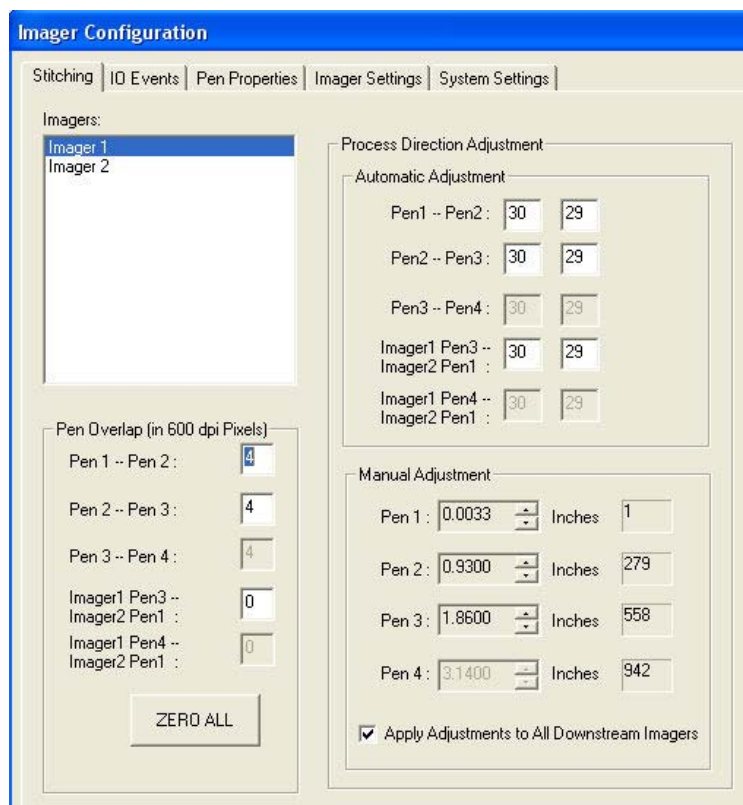


## Stitching Overview

An Imager is limited to the area it can cover and the number of pens it can contain. Similarly, pens are limited to the area they can cover. If the size of your printed document requires that you use multiple pens and/or multiple Imagers, you want to make sure that the area where one pen meets another, or where one Imager meets another, does not overlap or leave a gap in the print, and that the leading edge of images from the multiple pens or Imagers align properly. Fine tuning this process of adjusting the pen overlap and Top of Form location on Imager pens is called **Stitching**.

To configure **Stitching**, select **Imager Configuration** on the **Options** menu and click on the **Stitching** tab. A list of the Imagers is in the upper left corner. When you select an Imager from the list, that Imager's settings appear in the **Pen Overlap** and **Process Direction Adjustment** sections.

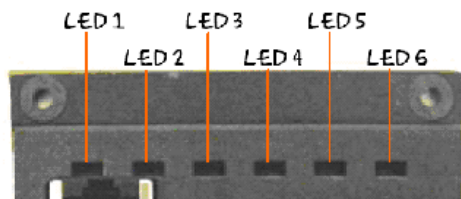
For additional information on setting up **Stitching** and calibrating **Pen Overlap** and **Process Direction Adjustment (Automatic Adjustment and Manual Adjustment)**, see [How To: Set Up Stitching \(Align Printing\)](#).



Note: Imager #1 - Pen #1 is the reference point and CAN ONLY BE MODIFIED on the **Imager Setup** screen.

## Status LED's

## Imager Status LED's



The Imager has six bi-color LEDs that indicate system status.

LED 1 shows 100 Base-T status

LED 2 shows 10 Base-T status as follows:

Half Duplex	<b>Green ON</b>
Half Duplex Activity	<b>Green Flash</b>
Full Duplex	<b>Red ON</b>
Full Duplex Activity	<b>Red Flash</b>
No Link	<b>LED OFF</b>

LED 3 is used to indicate whether the Imager is configured.

Imager Unconfigured	<b>Red On</b>
Imager Operational	<b>Green ON</b>

LED 4 Shows Imager Status

Pens On/Ready to Print	<b>Green Flash</b>
Pens On/Printing	<b>Green Solid</b>
Find Imager	<b>Red/Green Flash</b>
Error	<b>Red Flash</b>

LED 5 Shows Sensor and Encoder Status. The Sensor has priority over the encoder.

Sensor and Encoder Inactive	<b>LED OFF</b>
Product Under Sensor	<b>Red On</b>
Encoder Pulses Detected	<b>Green ON</b>

LED 6 Shows Capping Station Motor status.

Motor Voltage Detected	<b>Green ON</b>
Motor Voltage Missing	<b>Red ON</b>

## IO Events

### Contents

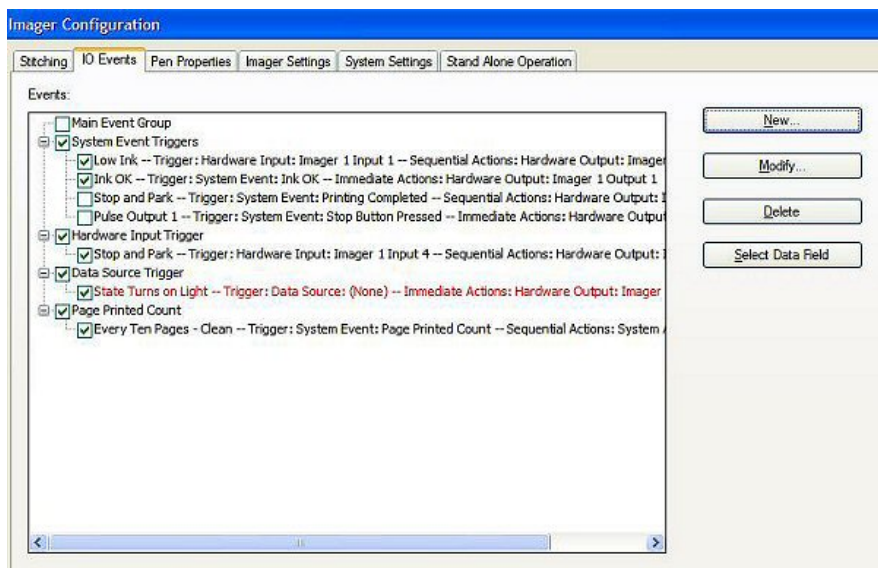
[Define Labels](#)

[IO Events Setup](#)

## IO Events Setup

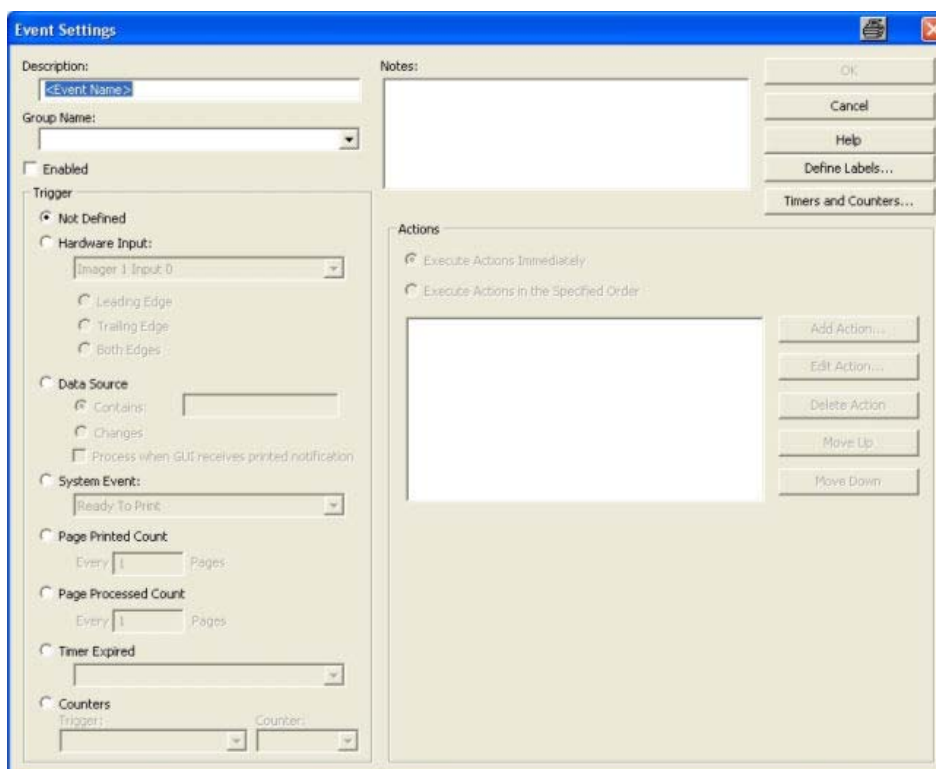
The IO Events tab displays a list of events that are configured in the system, and their status (enabled/disabled). An **IO Event** detects a condition and takes an action based on that condition. Every event has a **Trigger** (condition) and an **Action**. A sample list of Events with Triggers and Actions is shown in the figure below. (For examples of setting up IO Events with Triggers and Actions see How To: Set Up an IO Event.)





Events can be placed in the Main Event Group or in a group that you define. Any number of user-defined groups can be created. For example, in the figure above, the "Hardware Input Trigger" and "System Event Triggers" groups contain one (1) and four (4) Events respectively. These Events may or may not be inter-related. Once an Event is highlighted, the Modify and Delete buttons are enabled. If the event uses a data source as a Trigger, then the Event is displayed in red and the Select Data Field button is also enabled.

If you choose to create a new Event or modify an existing one, the Event Settings screen appears.



You can assign a Description to each Event as well as assign each Event to a Group. Existing Groups are listed in the drop-down menu for Group Name, or you can create a new Group by entering a name in the blank box for Group Name. You can also enter Notes in the box on the right if additional information is necessary.

When the condition to Trigger or execute an event occurs, the specified Action is performed. There are two types of Actions:

1. Execute Actions Immediately: These are performed as soon as the Trigger is received.
2. Execute Actions in the Specified Order: These Actions have a number of Actions, or a sequence, specified. As soon as the Trigger is received, the first Action is performed. The next Action in the sequence must wait until the previous Action is complete.

## Triggers

There are seven (7) types of Triggers:

1. Hardware Input: This type is connected to an Imager input. The Trigger condition may be set as its leading edge (when the input reaches a "high" value) or

trailing edge (when the input reaches a "low" value). You can rename Imager inputs and outputs with the Define Labels button. All six Imager inputs are available in this section:

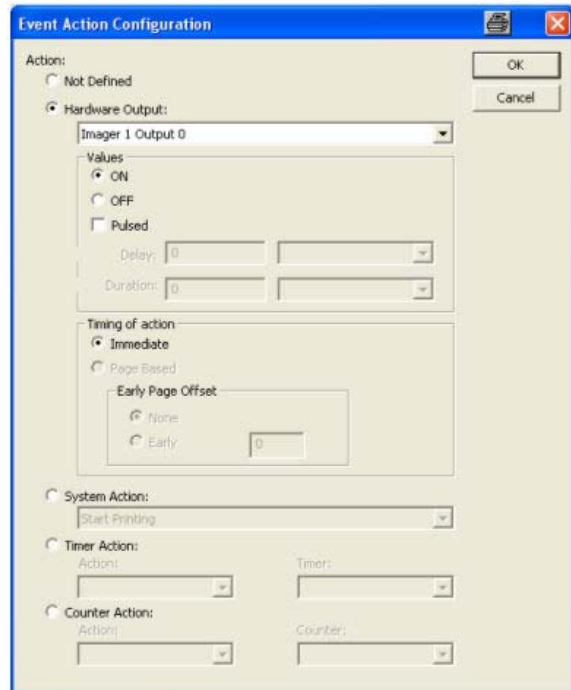
- Inputs 0 and 1: On the first Imager, typically dedicated to the encoder; consult the Imager Settings
  - Input 2: On the first Imager, typically dedicated to the Imager Sensor; consult Imager Settings
  - Inputs 3 and 4: Free
  - Input 5: Dedicated to Cleaning Station Interlock; can be used to trigger an event based on Cleaning Station status
2. Data Source: You can use this type to trigger an Event when it contains a particular string or when it changes its value. In either case, you must specify a field in the database as the Trigger field. Data Source Triggers can only have Actions that execute immediately. They cannot perform Actions in a sequence.
  3. System Event: This type of Trigger cannot be controlled once you have set up the print conditions. The system monitors some internal parameters, and you can use the values of these parameters to Trigger certain events. For example, on completion of printing (Printing Completed), you might want to park the Imager (Move to Park). Or in the event of an Error, you might want the system to Stop Printing.
    1. Abort Button Pressed – This occurs when the stop printing button is pressed and auto-abort is checked or when the abort printing button is pressed.
    2. Cleaning – This occurs just prior to sending the "Clean" command to the imager.
    3. Cleaning Completed – This occurs after the cleaning command has completed (success or error – it is received upon receipt of all the imager's status)
    4. Error – This occurs when any imager error is received if the GUI is not already stopping or has received a prior error (in which case it is stopping).
    5. Finished Printing – This occurs as the last item after printing has stopped – whether by aborting, stopping, error, or normal completion.
    6. In Park Position – This occurs after a move to park and the imager is parked status has been received by the GUI.
    7. In Print Position – This occurs after a move to print and the imager is in print position status has been received by the GUI.
    8. Ink Low – This occurs when the ink low condition has been detected.
    9. Ink OK – This occurs when the ink was detected as low and has been restored to a non-low condition.
    10. Moving To Park – This occurs after the "Move To Park" command has been issued to the imager and is awaiting completion.
    11. Moving To Print – This occurs after the "Move To Print" command has been issued to the imager and is awaiting completion.
    12. Page Printed – This occurs after all imagers have reported a page as being printed.
    13. Print Error – This occurs after any error from the ripping, invalid data, or communications failure.
    14. Printing Aborted – This occurs after the printing was aborted (either by pressing the button or by a system action) and the imagers have been stopped. This also can occur when a system action of Abort Printing is executed and the GUI is not printing so that sequential actions can continue.
    15. Printing Completed – This occurs after the printing has normally completed.
    16. Printing Started – This occurs when the printing has started. The configuration data has already been sent and the ripping has just started.
    17. Purge (Page-Based) – This occurs after an action of Purge has been detected and executed. This is prior to actually sending the purge page.
    18. Purge Completed – This occurs after a purge page (or the last purge page in a set of pages) has been printed on all imagers.
    19. Ready To Print – This occurs after all imagers have been told to enable print.
    20. Speed Updated – This occurs after every ACK from the imager.
    21. Stop Button Pressed – This occurs when the stop button is pressed.
    22. Stop Printing Requested – This occurs after the PC ripping has been stopped but prior to notifying the imagers to stop printing.
  1. Page Printed Count: This Trigger actually counts the number of pages printed by the jet.engine™ GUI. You can set up the Event to execute after printing a certain number of pages, e.g., insert a purge page (Purge, the Action) every 100 pages.
  2. Page Processed Count: With this type of Trigger, the jet.engine™ GUI processes a number of pages before it begins to print. The default value is 10 pages. This value depends on the number of Imager buffers, the number of PC buffers, and whether or not you want an early warning of an impending event.
  3. Timer Expired: This Trigger specifies an input condition of the expiration of a Timer, as set up in [Timer and Counter section](#), below.
  4. Counters: This Trigger specifies an input condition of the count of a Counter, as set up in [Timer and Counter section](#), below. The input condition can be set to entering or leaving the counter Maximum, Minimum, or Threshold.

 Note: In the Page Processed Count Trigger, if the jet.engine™ GUI detects a condition within the processed pages that satisfies a Trigger to fire an Event, it will fire the Event immediately, even if the page has not been printed.

## Actions

You can instruct the system to Execute Actions Immediately or Execute Actions in the Specified Order (sequentially).

To set up an Action, click on the Add Action button.



There are four types of Actions:

### 1. Hardware Output:

- The specified Trigger can turn a Hardware Output ON.
- A Hardware Output can also be pulsed, which means you can specify how long you want it to remain ON (Duration) and/or how long you want to Delay the Hardware Output before it goes to ON. An Action that has a Data Source as a Trigger must be pulsed. Consecutive pulses that overlap in duration will lock the output for the total duration of the pulses.
- If the Trigger is a Data Source or Page Processed Count, and you set the Hardware Output for Immediate action, you have the option to make the Action Page Based which means the Action will occur after each page is printed.
- If the Trigger is a Data Source or Page Processed Count, and you set the Hardware Output for Immediate action, you can also request an Early Page Offset, and specify the number of pages for when the offset should occur. Using this option means you will receive an early warning (by the number of pages specified) that a Trigger condition is about to occur for the specified Action.

### 2. System Action:

- When you set up a System Action, it overrides the parameters set by the system internally by specifying a Trigger that performs them. For example, if the Trigger is a system-generated Error, the resulting System Action might be Clear Buffers. Available System Actions:
- Abort Printing
- Clean
- Clear Buffers
- Insert Purge Page
- Move to Park
- Move to Print
- Spit
- Start Printing
- Stop Printing

## 3. Timer Action

- Reset, Start, or Stop a Timer defined in the system; see [Timer and Counter section](#), below.

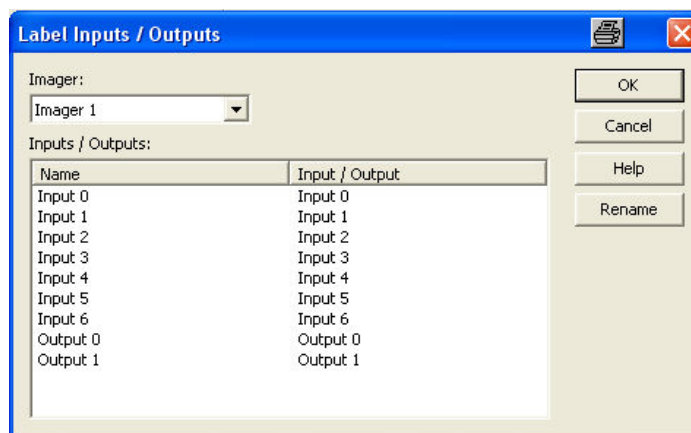
## 4. Counter Action

- Load Counter Minimum, Load Counter Maximum, Load Counter Threshold, Increment Counter, or Decrement Counter on any Counter that has been defined as shown in the [Timer and Counter section](#), below.

For examples of setting up Triggers and Actions, see How To: Set Up An IO Event.

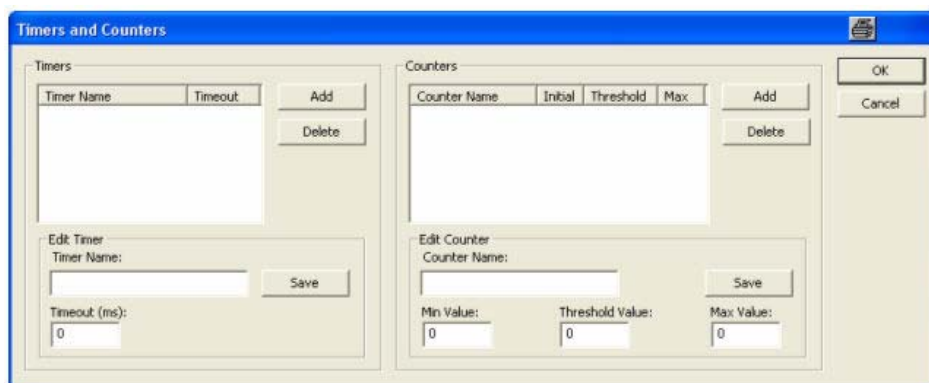
## Define Labels

By selecting the Define Labels button, you can rename the input and output points used in the IO Events. Define Labels is described in more detail in the [Define Labels section](#).



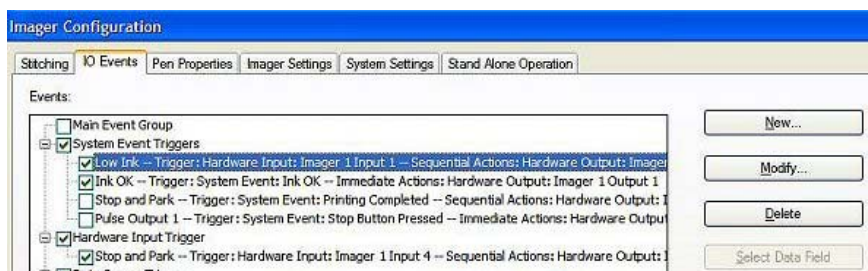
## Timers and Counters

Selecting the Timers and Counters button brings up the following dialog which allows the creation and modifying of timers and counters. For more information, see [Timer and Counter Overview](#).

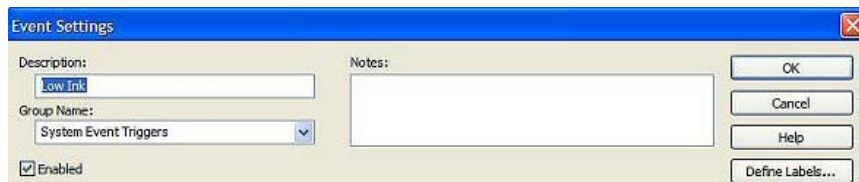


## Define Labels

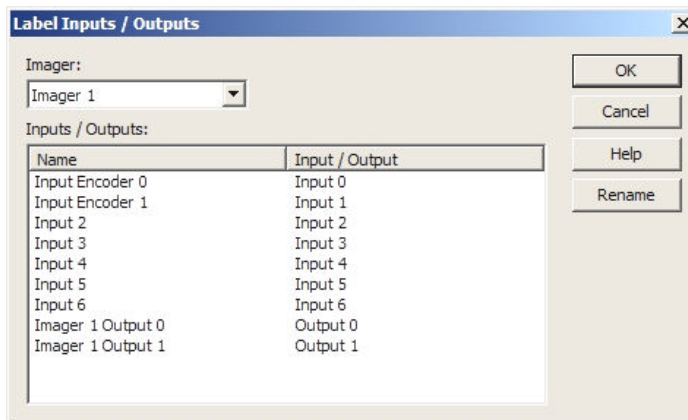
When you are setting up **IO Events**, you have the opportunity to attach labels to Imager **Inputs** and **Outputs**. From the **IO Events** page either choose **New**, to set up a new event, or, highlight an existing event and choose **Modify**.



This takes you to the **Events Settings** screen.



Click on **Define Labels**.



From the **Imager** drop-down menu, select the **Imager** you want to label. The **Imager** name and its corresponding **Inputs** and **Outputs** appear in the box below. You can rename any of these items. Simply click once on the item you want to rename, and then either the **Rename** button on the screen, or **F2** on your keyboard. Type in the new name, and click **OK** to save the new name.

## Working with Jobs and Configurations

### Jobs

Jobs are files that hold information and settings that are required to tell the GUI how and where to print what.

These items are saved in the job file:

- [Form Design layout](#)
- [Object Properties](#)
- [Imager Setup parameters](#)
- sdf

Refer to the following sections for more information on jobs:

[Open Job](#)

[Save Job](#)

[Save Job As](#)


[Job Notes](#)

### Configurations

Configurations are a set of files that the GUI uses to save setup parameters not saved in a job file. You will in most cases never need to handle these files unless you need to make a back up or transfer them to another PC. They can be stored and opened through the jet.engine GUI.

Configurations contain:

- hardware\_config.dat
- io\_config.dat
- Network\_config.dat

-  System\_config.dat

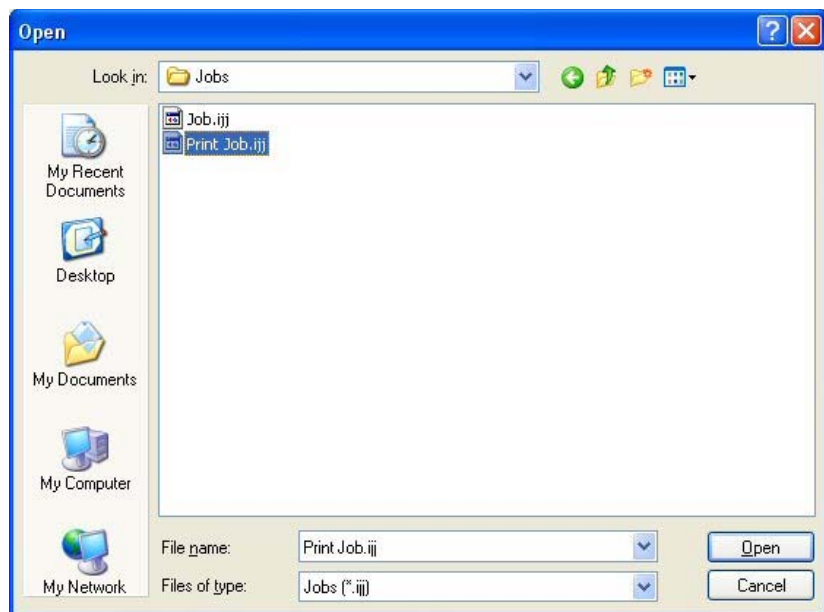
Refer to the following sections for more about using configurations:

[Load Configuration](#)

[Store Configuration](#)

## Open Job

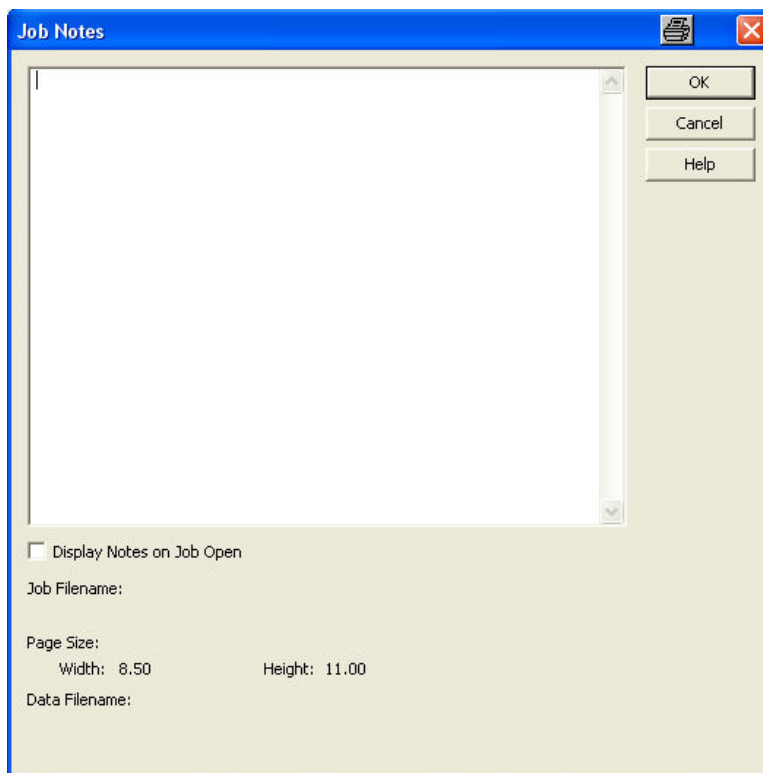
You can open a previously saved job (.ijj file) either by choosing **Open** from the **File** menu, or clicking  on the toolbar. This opens a typical Windows browser from which you can locate and **Open** the job.



## Job Notes

You can record notes about a job that you might find useful for future reference.

From the **Edit** menu, choose **Job Notes**. The **Job Filename**, **Page Size**, and **Data Filename** are displayed at the bottom of the screen. Type in any information you think is important. If you want to see this information displayed whenever this job is opened, check the box next to **Display Notes on Job Open**.

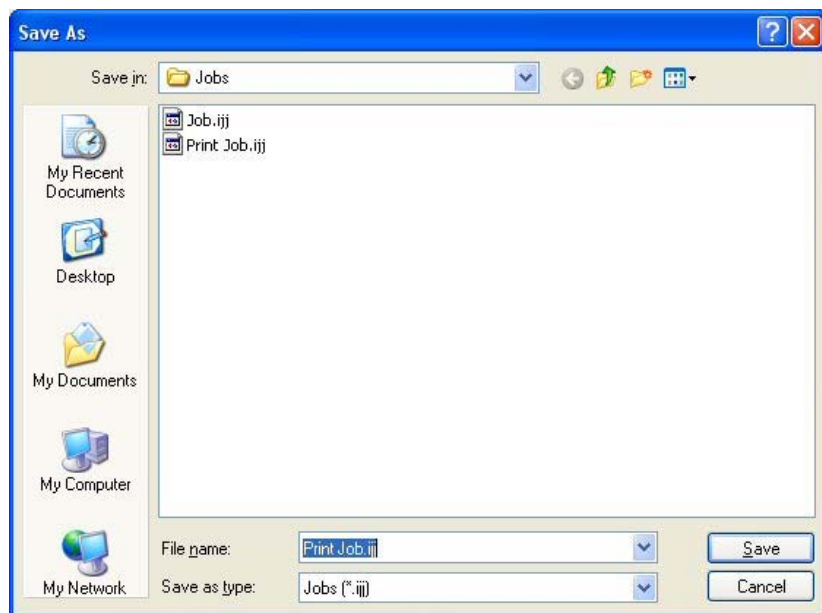


## Save Job

This is a typical Windows screen. Use this **File** menu option to save the current job .

If the job has previously been saved, simply click on the **Save** button.

Otherwise, you need to enter a **File name**, choose a **Save as type**, and select a destination on your computer or network.

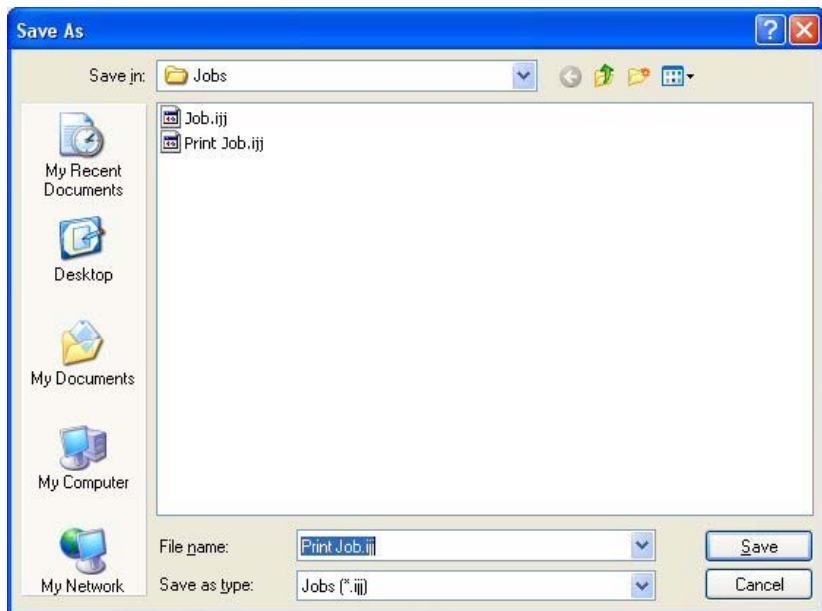


## Save Job As

This is a typical Windows screen. Use this **File** menu option to save the current job .

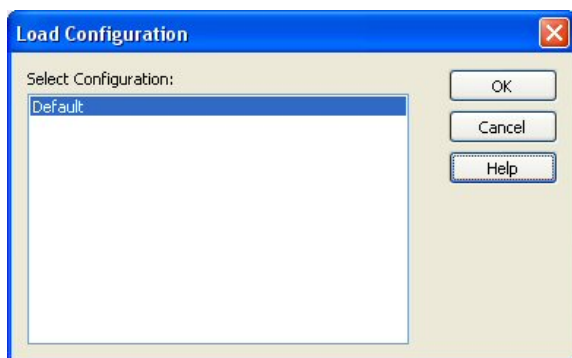
If the job has previously been saved, simply click on the **Save** button.

Otherwise, you need to enter a **File name**, choose a **Save as type**, and select a destination on your computer or network.



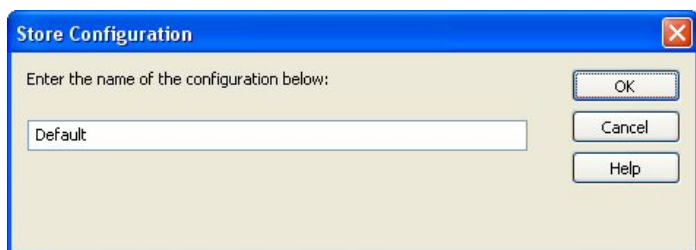
## Load Configuration

If you have saved any **Configurations**, you can retrieve them from the **Load Configuration** screen on the **File** menu. A **Configuration** from a previous print run would include the number of Imagers, how they were set up, **Stitching**, any **IO Events** involved, etc.



## Store Configuration

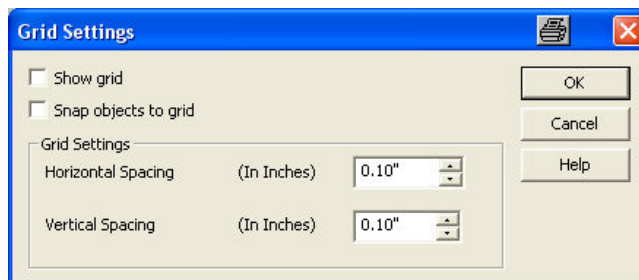
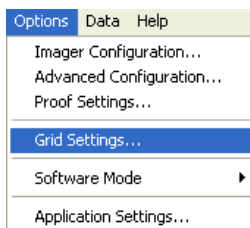
You can **Store** a print run's **Configuration** for future use. A **Configuration** would include the number of Imagers, how they were set up, **Stitching**, any **IO Events** involved, etc. From the **File** menu click on **Store Configuration**. Type in a name and click **OK**. Your stored configuration will appear in the list the next time you click on **Load Configuration** from the **File** menu.



## Grid Settings

**Grid Settings**, which you access from the **Options** menu, are enabled only when the **Form Design** screen is the active screen.







The grid is the line of evenly spaced dots that you see across the **Form Design** screen when the **Show Grid** option is selected. These help you align your objects.

You can set the **Horizontal** and **Vertical Spacing**, which changes the distance between the dots. If you want fine spacing, choose a smaller number. If you want broader spacing, choose a larger number.

 **Note:** Dots can never be spaced more than .25 inches apart.

You have the option to **Show Grid** and/or **Snap Objects To The Grid** (the top left corner of the block will always snap to the nearest dot). These two options are also available as toggle buttons directly from the tool bar on the **Form Design** page:  **Show Grid** and  **Snap Object To The Grid**.

## Dynamic Data Objects

### Contents

[Record Block](#)

[Number Generator](#)

[PDF File](#)


[Dynamic Bitmap](#)

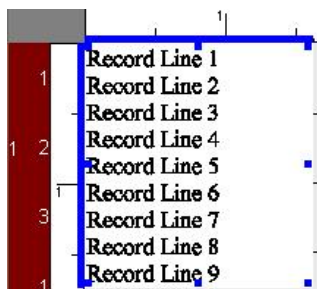
[Field Block](#)

[Data/Time Formats](#)

## Record Block

A **Record Block** is used with a data source that has variable data. For example, you would use a **Record Block** if you are printing a job containing multiple names and addresses. The **Record Block** that you set up on the **Form Design** layout is actually a template that shows how you want the information from the data source to be printed. Its contents will change as each record prints.

With the **Form Design** layout active, click on the  icon. A **Record Block** is inserted at the upper left corner of the layout. You can re-position the block by dragging and dropping it, or by using the arrow keys on the keyboard.



Before using a **Record Block**, it is important to know how your data is arranged in your data source. **Record Blocks** are, by default, nine (9) lines long. Think of a **Line** as a **Field**. Here is an example of how a **Record Block** might be set up from a data source with variable data:

```
*****AUTO**3-DIGIT 110
```

Mr. C. Montgomery Burns


71 Croesus Ave

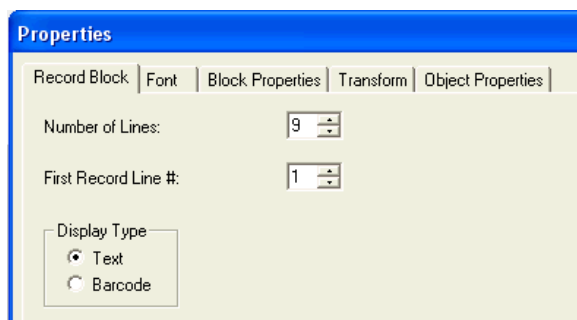
Springfield, US 11001-2554

This record has four (4) lines. Note that the person's name in this example is one field in the data source. If your data source has a name divided into different fields, e.g., first name, last name, etc., you will probably want to use a **Field Block**, rather than a **Record Block**, for setting up your print job.

Your data source may have fewer than, or more than, nine (9) lines. You can make this change on the **Field Block Properties** screen.

You can view the block's **Properties** in one of three ways:

- Double click on the block.
- Click once on the block, and then click the  icon in the toolbar.
- Right click on the block, and select **Properties** from the menu.



If the records in your data source have more or less than nine (9) lines (or fields), you can enter the correct number in the box next to **Number of Lines**.

You may want your **Record Block** to start with a line other than the first line (e.g., if "Mr." is the first line you might not want that included). In that case, in the box next to **File Record Line #**, enter the number of the line where you want the **Record Block** to start.

You can change the **Font**, as well as its style and size, on the [Font](#) tab.

To set the position of the block and other characteristics, click on the [Block Properties](#) tab.

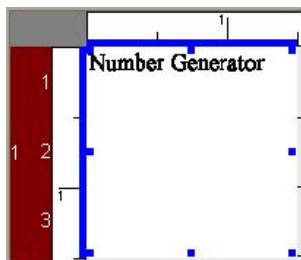
You can **Transform** the block during printing by clicking on the [Transform](#) tab. You will also see the transformation change on the **Form Design** screen.

With all text-based objects, including the **Record Block**, you have the option to display the data as a **Barcode**. If you choose this option, a [Barcode Properties](#) tab appears from which you can set the print characteristics of the **Barcode**.

## Number Generator


The **Number Generator** object is used for jobs that require the printing of a sequence of numbers, with each page having a different number. For example, if you were printing tickets that have seat numbers on them, you would need to set up a **Number Generator** so that the tickets are printed with individual numbers in a sequence.

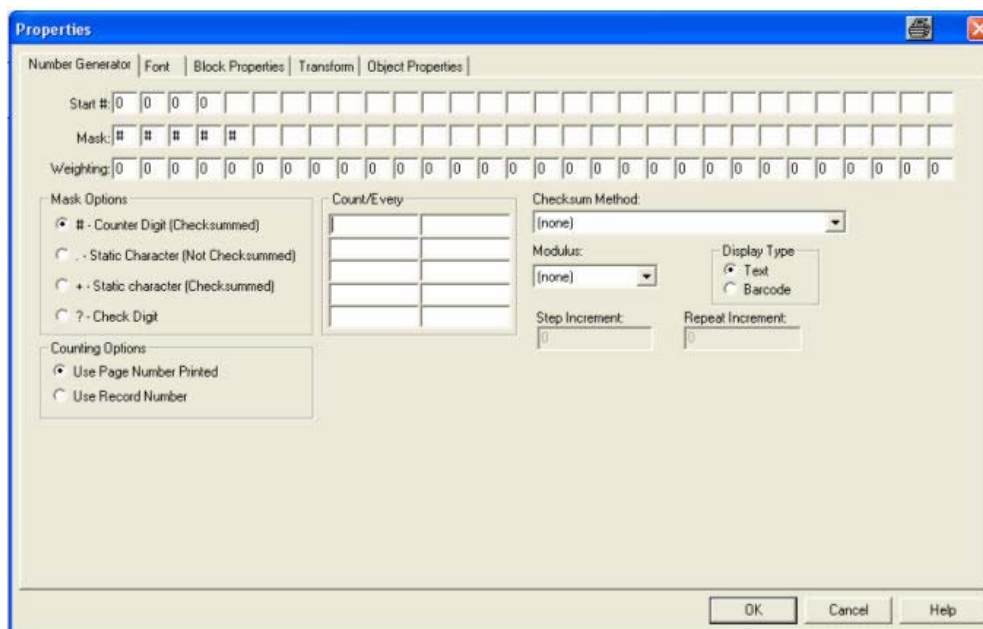
With the **Form Design** main tab screen active, click on the  icon. A **Number Generator** block is inserted in the upper left corner of the layout.



You can re-position the block by dragging and dropping it, or by using the arrow keys on the keyboard.

In order to configure the **Number Generator** you need to access the block's **Properties**, which you do in one of three ways:

- Double click on the block.
- Click once on the block, and then click the  icon in the toolbar.
- Right click on the block, and select **Properties** from the menu.



The **Start #** is the number that will start the sequence, and is limited to 30 characters. A **Start #** can be simply a number, or it can contain an alphanumeric combination. In the example above, which could be a **Number Generator** for printing tickets, the **Start #** indicates that each ticket will be printed with the word "Titans", followed by a (-), then a number.

The **Mask** controls the way that each character is handled by the software. There are four different types of masks controlled by **Mask Options**.

1. **Counter Digits** are the dynamic, or changing, characters in the number. They will change according to a user-defined formula. Make sure you allow enough blank spaces for the number to sequence properly, or it will roll back to zero. **Counter Digits** are always used in calculating the check digit. This is indicated by a "#" character in the mask box.
2. **Static Characters** do not change. They can be included in the **Checksum** calculation. Only numeric characters can be **Checksummed**. This is indicated by a "+" in the mask box. A "." in the mask box means that the static character is not used in the **Checksum** calculation.
3. Alpha characters, such as "TITAN" in the example above, generate a **Static Character (Not Checksummed) Mask** (".").
4. The **Check Digit** is the number that is generated as a result of the **Checksum Method** selected. This number can be read by a barcode scanner or OCR reader to verify that a code has been properly printed and read.

**Weighting** allows more sophisticated **Checksum** calculations to be used by giving more "weight" to certain numbers.

Once you determine your numbering format, you can set up the method for sequencing the numbers. The number will increase (or decrease) based on the values entered into the **Count/Every** boxes. The format for the values in these boxes is two numbers, separated by a forward slash ("/"). The first number is the amount that the counter increases when the record is seen. The second number is the number of records that must be seen to trigger an increase. In the **Count/Every** example above, 2/1, the number will increase by 2 for each (1) record. So, if the first number is "TITANS-0001", the next number is "TITANS-0003", then "TITANS-0005", and so on.

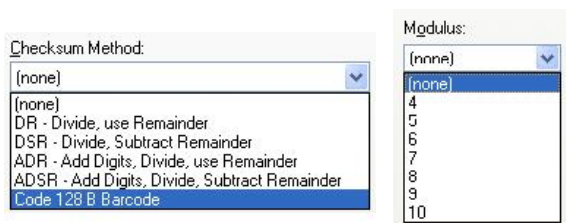
Negative values can also be used. If the **Count/Every** value is "-2/1", the number will decrease by two for every record it sees. So, if the first number is "TITANS-0300", the next number would be "TITANS-0298", then "TITANS-0296", and so on.

You can set up quite complex counting patterns. For example, suppose you need to cycle through the same 1000 serial numbers continually. By entering '1/1' and '-

1000/1000' the number will increase by one every time until it gets to one thousand. At that point, it will decrease by one thousand, thus returning to the start. Since you can enter up to ten values, you can do quite sophisticated counting.

Further, the Counting Options box allows choosing between Use Page Number Printed or Use Record Number to determine how to increment the numbers on copies of the same page, if Multiple Copies is [enabled](#).

The **Checksum Method** and **Modulus** pull-down menus work together to calculate the **Checksum** digit in a variety of ways.



- **DR-Divide, use Remainder** takes the numeric string that comprises the **Checksum** (the number whose **Mask** is #) and divides it by the **Modulus** number. Discard the quotient and keep the remainder. For example, if the string value is 1257 and the **Modulus** operator is 8, the calculation is as follows:  $1257 \text{ mod } 8 = 1257/8 = 157 \text{ R } 1$ . Discard the 157 and the resulting **Checksum** digit is 1.
- **DSR-Divide, Subtract Remainder** is similar except that the remainder is subtracted from the **Modulus** number. For the number 1257 used in the example above, the remainder 1 is subtracted from the **Modulus** 8, resulting in a **Checksum** digit of 7.
- **ADR-Add Digits, Divide Remainder** takes the digits in the **Checksum** number and adds them together. It divides the result by the **Modulus** number and uses the remainder. So,  $1+2+5+7 = 15$ ,  $15 \text{ mod } 8 = 15/8 = 1 \text{ R } 7$ . Discard the 1 and the **Checksum** is 7.
- **ADSR-Add Digits, Subtract, Divide Remainder** is similar to the above method, except that the remainder is subtracted from the **Modulus** number. Using the example above, the remainder 7 would be subtracted from the **Modulus** 8, resulting in a checksum of 1.
- A **Checksum** generator for **Code 128 B Barcodes**, a common barcode, is also provided.

You can change the **Font**, as well as its style and size, on the [Font](#) tab.

To set the position of the block, and other characteristics, click on the [Block Properties](#) tab.

You can Transform the block during printing by clicking on the [Transform](#) tab. You will also see the transformation change on the **Form Design** screen.

With all text-based objects, including the **Number Generator**, you have the option to display the data as a **Barcode**. If you choose this option, a [Barcode Properties](#) tab appears, from which you can set the print characteristics of the **Barcode**.

## PDF File

The **PDF File (Portable Document Format)** capability is a function that is licensed from Printing Technology Services, Inc., and requires a key for you to use it. To obtain a key contact Printing Technology Services, Inc. at [info@printingtechnology.net](mailto:info@printingtechnology.net).


There are two instances in which you might use a PDF file: either you have constructed a PDF file with variable data in it, or you have a PDF file with which you want to print variable data (i.e., you want to overlay parts of the PDF file with variable data, or you want to print the PDF file with variable data next to it).

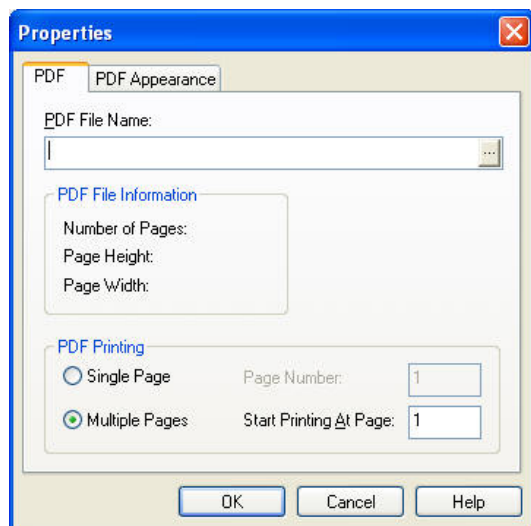
To insert a **PDF File**, make the **Form Design** screen active, and click  on the tool bar. A **PDF Block** is inserted in the upper left corner of the layout.



You can re-position the block by dragging and dropping it, or by using the arrow keys on the keyboard.

In order to load a **PDF File**, you need to access the block's **Properties**, which you do in one of three ways:

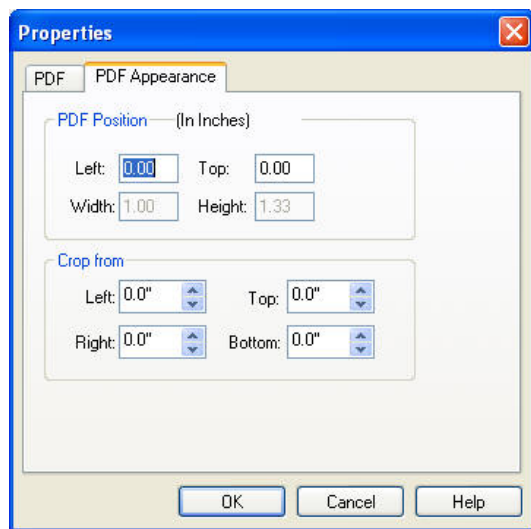
- Double click on the block.
- Click once on the block, and then click the  icon in the toolbar.
- Right click on the block, and select **Properties** from the menu.




To locate a **PDF File**, click on the button at the right edge of the **PDF File Name** box. This opens a typical Windows browser from which you locate a file. Once you select a file, you see that the **PDF File Information** for that file (**Number of Pages, Page Height and Page Width**) is automatically displayed.

You have two options for **PDF Printing**. If you choose **Single Page**, and enter the number of the page to print, the system will print the same page repeatedly. If you choose **Multiple Pages**, and enter the number of the page where you want the printing to start, all pages in the **PDF File** from that point will be printed.

From the **PDF Appearance** tab, you can determine how the **PDF File** appears on the **Form Design** layout.




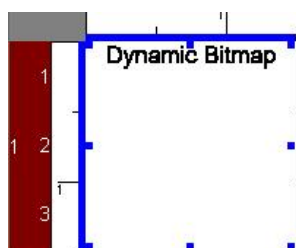
To set the **PDF Position**, you enter values in the **Left** and **Top** boxes.

You can **Crop**, or delete portions of, the **PDF File**, using the **Crop from** boxes. For example, if you want to delete the bottom inch of your **PDF File**, simply enter "1" in the **Bottom** box. You can also crop the **PDF File** directly on the **Form Design** layout. Click once on the **PDF File** block to select it. On the tool bar, click on , the **Crop** button. Then, using the blue handles on the edges of the block, and holding down the left mouse button, **Crop** the block.


## Dynamic Bitmap

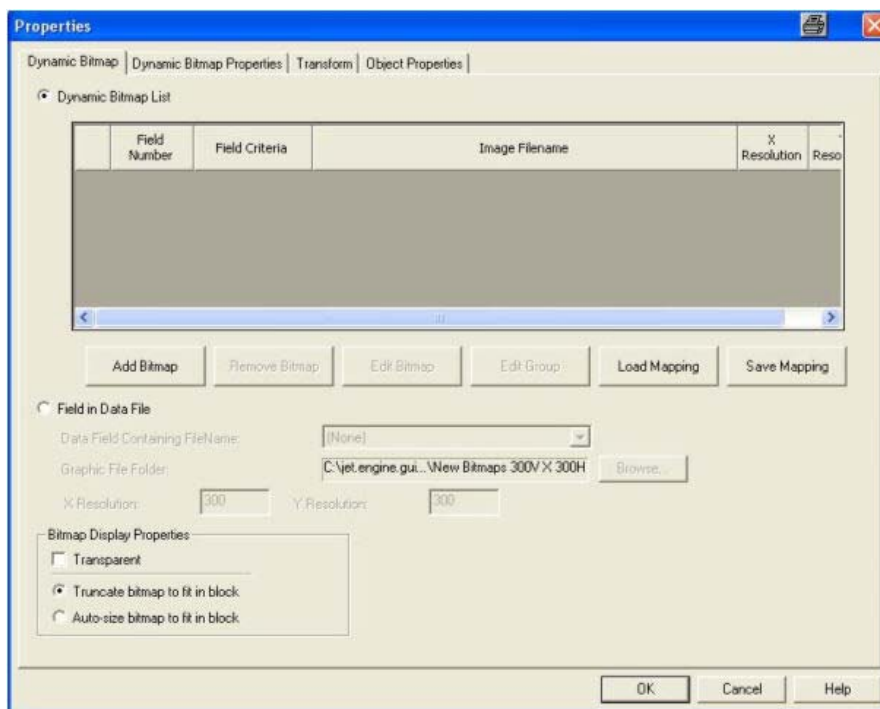
The **Dynamic Bitmaps** feature gives you the ability to use an assortment of bitmaps during a print run.

With the **Form Design** screen active, click on the  icon in the toolbar. The **Dynamic Bitmap** block will be inserted in the upper left corner of the layout. You can re-position the bitmap by dragging and dropping it, or by using the arrow keys on the keyboard.



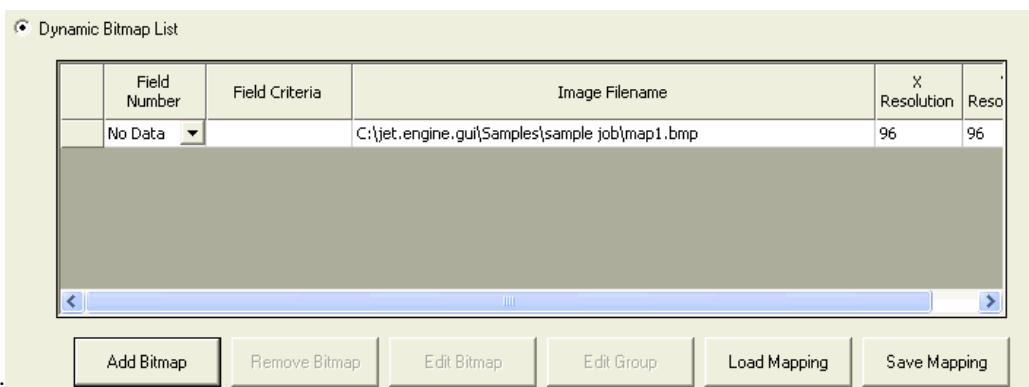
You can view the dynamic bitmap's **Properties** in one of three ways:

- Double click on the bitmap.
- Click once on the bitmap, and then click the  icon in the toolbar.
- Right click on the object, and select **Properties** from the menu.



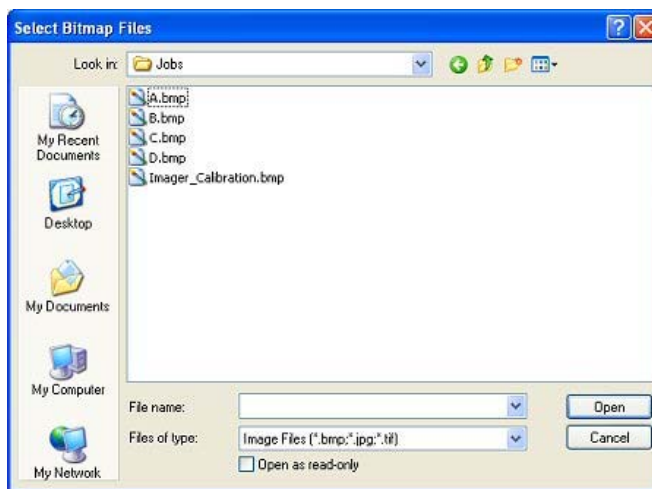
If you check the box next to **Transparent**, then the non-black portions of a bitmap become transparent.

You can select whether to Truncate bitmap to fit in block or to Auto-Size bitmap to fit in block.



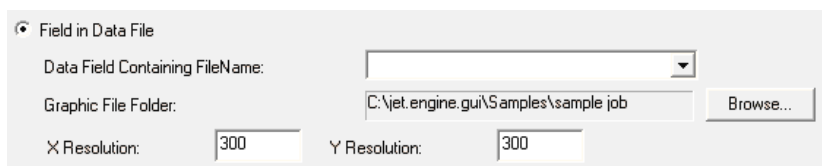
**Dynamic Bitmap List:**

To add each bitmap, click on **Add Bitmap**. This opens the **Select Bitmap Files** window, which works like any Windows file browser.



Simply select the .bmp file and click **Open**, or double-click on the .bmp file name. The bitmap will be added to the list. Repeat this action until you have added all the bitmaps. You can see on the **Properties** screen above that each bitmap selected is connected to a field in your data source and a criterion specified for that field. When a field criterion for a given bitmap matches the value in the data source, that bitmap will be printed. You can size the bitmap manually by changing the "X" and "Y" Resolution number in the respective fields.

If you want to remove a bitmap from the list, click once in the block to the left of the row that contains the bitmap you want to delete. This will highlight the entire row. Then click on the **Remove Bitmap** button.



#### Field in Data File:

Enabling this "Field in Data File" allows you to select a folder containing multiple bitmap and reference what bitmaps you want to print using a field in a database. Under "Graphic File Folder" click on the **Browse...** button, once you have selected the folder containing the bitmaps select a field in the database containing the names of the bitmaps you want to print.

You can size the bitmap manually by changing the "X Resolution" and "Y Resolution" number, (shown above).



To select the field that contains the bitmap names; click on the "Data Field Containing File Name" drop down and select the desired field.



From the **Dynamic Bitmap Properties** tab, you can change the **Dynamic Bitmap Position** by entering values in the **Left** and **Top** edit boxes.

If you check the box next to **Position Is Locked**, then the bitmap can no longer be moved around in the layout window.

Dynamic Bitmap Position (In Inches)

Left:  Top:

Width:  Height:

Position Is Locked


You can Transform the block during printing by clicking on the [Transform](#) tab. You will also see the transformation change on the **Form Design** screen.

The [Object Properties](#) tab allows you can give a unique name to the object you have created. You can also indicate in the checkbox whether or not the Object is Printable.

## Field Block

### Field Block Properties Tab:

In a **Field Block**, you can arrange the display of data from a data source . You can also intersperse fixed text with the fields from the data source.

Once you have loaded the data source (see Load Data), and with the **Form Design** screen active, click on the  icon to place the **Field Block** in the layout. The block will be inserted at the upper left corner of the layout. You can re-position the block by dragging and dropping it, or by using the arrow keys on the keyboard.

A Field Block can contain data from a data source or can be fixed text. To load a data source file, click on the **Load File** button. Your data will appear in the bottom of the window. You can place a field into the preview window by clicking on the column heading, and then clicking the **Add Field** button. To add fixed text, simply type directly in the preview window itself.

Properties

Field Block | Block Properties | Transform | Object Properties

<<First Initial>><<Last Name>>  
<<Address>>  
<<City>>,<<State>>  
<<9 digit zip>>

Rich Text Format (RTF)    Add Function     Remove Leading Whitespace from Fields  
 Preview Data     Remove Trailing Whitespace from Fields  
 Remove Blank Lines     Remove Leading Whitespace from Lines  
 Remove Trailing Whitespace from Lines

Display Type  
 Text  
 Barcode

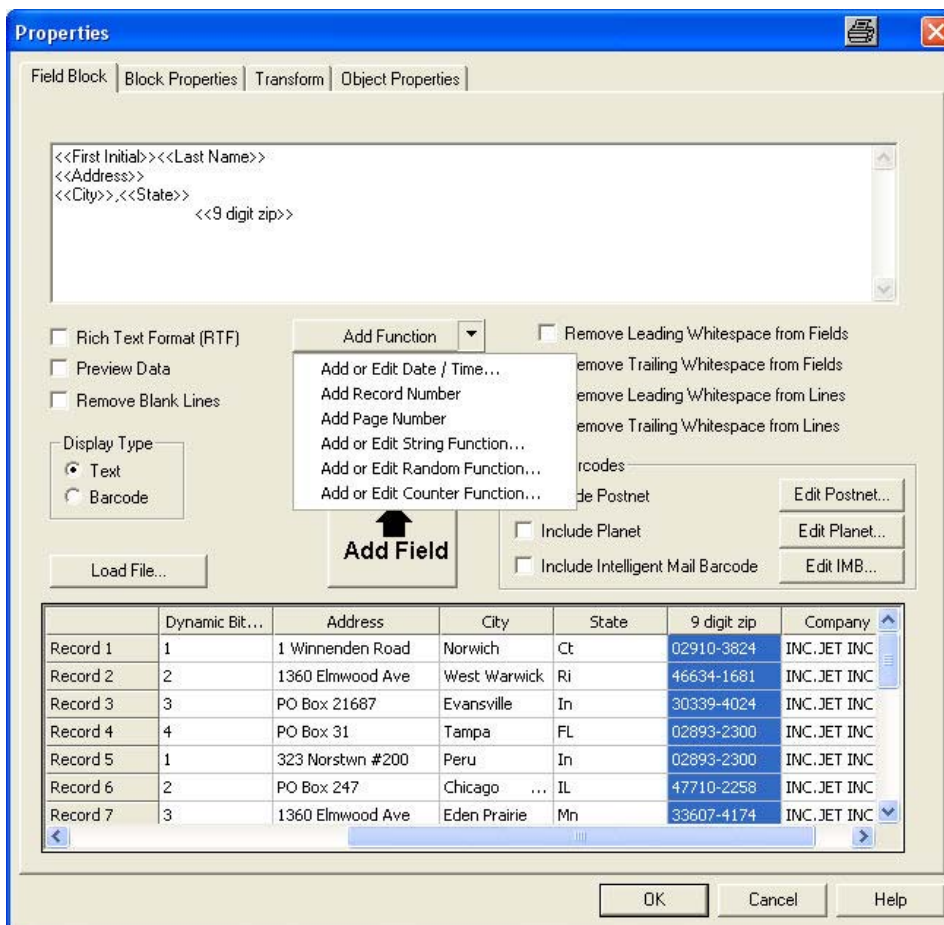
Load File...    **Add Field**    USPS Barcodes  
 Include Postnet    Edit Postnet...  
 Include Planet    Edit Planet...  
 Include Intelligent Mail Barcode    Edit IMB...

	Dynamic Bit...	Address	City	State	9 digit zip	Company
Record 1	1	1 Winnenden Road	Norwich	Ct	02910-3824	INC.JET INC
Record 2	2	1360 Elmwood Ave	West Warwick	Ri	46634-1681	INC.JET INC
Record 3	3	PO Box 21687	Evansville	In	30339-4024	INC.JET INC
Record 4	4	PO Box 31	Tampa	FL	02893-2300	INC.JET INC
Record 5	1	323 Norstwn #200	Peru	In	02893-2300	INC.JET INC
Record 6	2	PO Box 247	Chicago ...	IL	47710-2258	INC.JET INC
Record 7	3	1360 Elmwood Ave	Eden Prairie	Mn	33607-4174	INC.JET INC

OK    Cancel    Help

You can choose to make a **Field Block** either rich text format (RTF) or non-RTF. The picture above shows a non-RTF **Field Block** in the preview window. You see that all the data is in the same font style and size, and all text has the same characteristics. An RTF **Field Block**, however, allows different font styles, sizes, and characteristics within one block as shown below.





If you decide to make the block RTF (by checking the **Rich Text Format** box), a tool bar appears above the preview window from which you can choose different font characteristics, as well as the font and its size.

If you decide not to make the block RTF, then you select the font, its characteristics and font size from the tool bar on the **Form Design** layout page.

The relative position of the fields is shown in the preview window. You can see what the actual data will look like by checking the **Preview Data** box. The fields for the first record in the list will be previewed.

If you have chosen not to use the RTF format, you have the option to **Remove Blank Lines** by checking that box. You can also elect to **Remove Leading Whitespace from Fields** and **Remove Trailing Whitespace from Fields**. If you have chosen a non-RTF format, you also have the option to **Remove Leading Whitespace from Lines** and **Remove Trailing Whitespace from Lines**.

#### Block Properties Tab:

To set the position of the block and other characteristics, click on the [Block Properties](#) tab.

#### Transform Tab:

You can Transform the block during printing by clicking on the [Transform](#) tab. You will also see the transformation change on the **Form Design** screen.

#### Barcode Properties Tab:

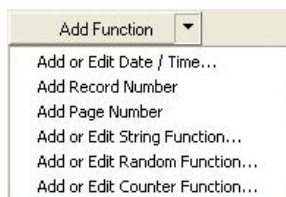
With all text-based objects, including the **Field Block**, you have the option to display the data as a **Barcode**. If you choose this option, a [Barcode Properties](#) tab appears from which you can set the print characteristics of the Barcode.

#### Object Properties Tab:

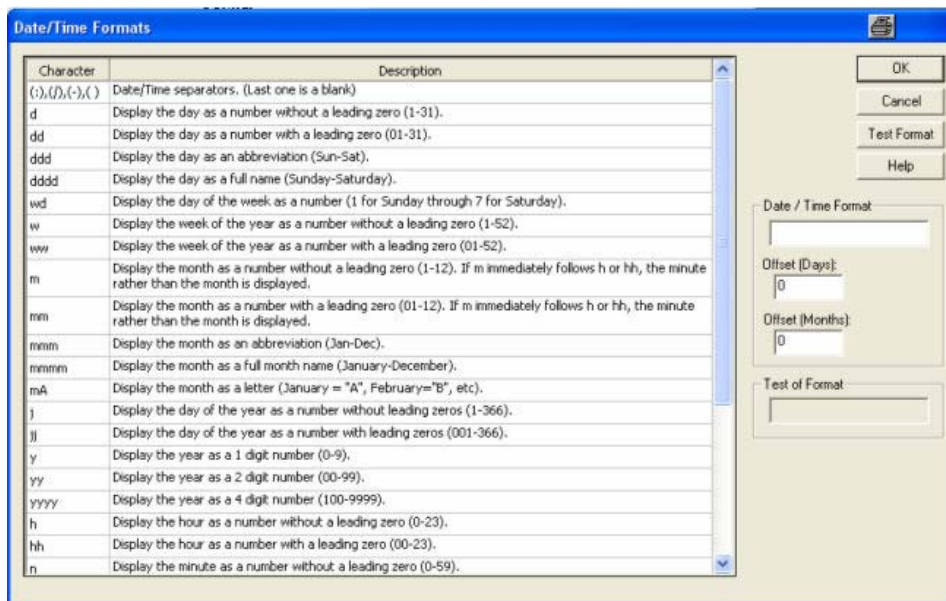
The [Object Properties](#) tab allows you can give a unique name to the object you have created. You can also indicate in the checkbox whether or not the Object is Printable.

#### Add Function Fields Selection:

You have several additional options in the **Add Function** drop-down menu.

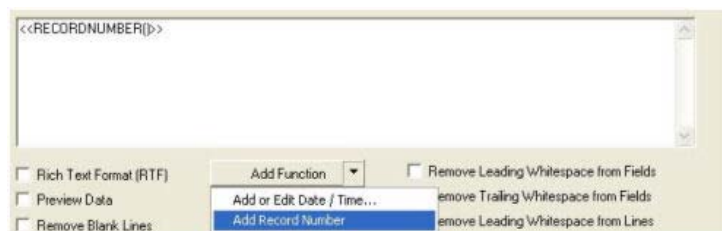


1. You can [Add or Edit Date/Time Formats](#).

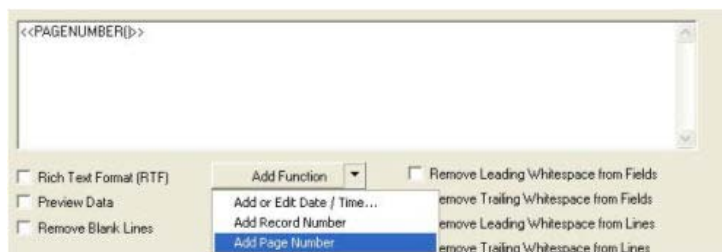


[Click here for: More information on Date/Time Formats](#)

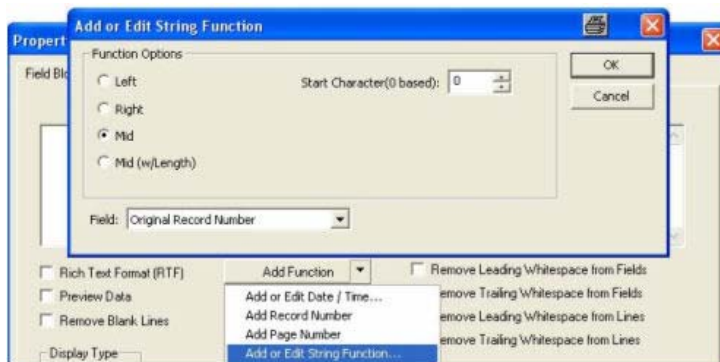
2. You can insert the current record number into the **Field Block** as a field by choosing **Add Record Number** as in the example above.



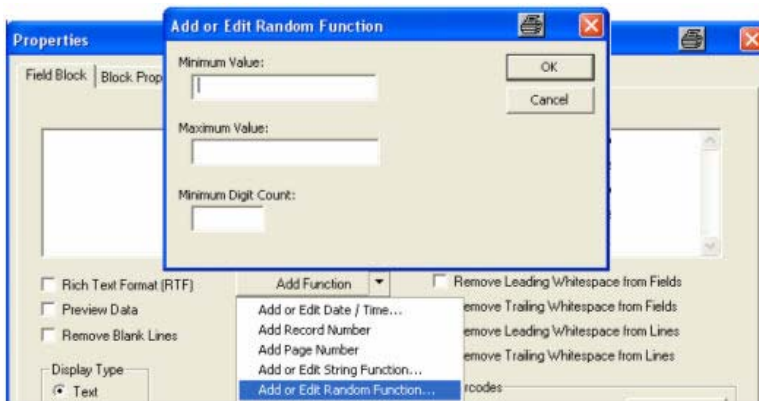
3. You can Add Page Number into the **Field Block**



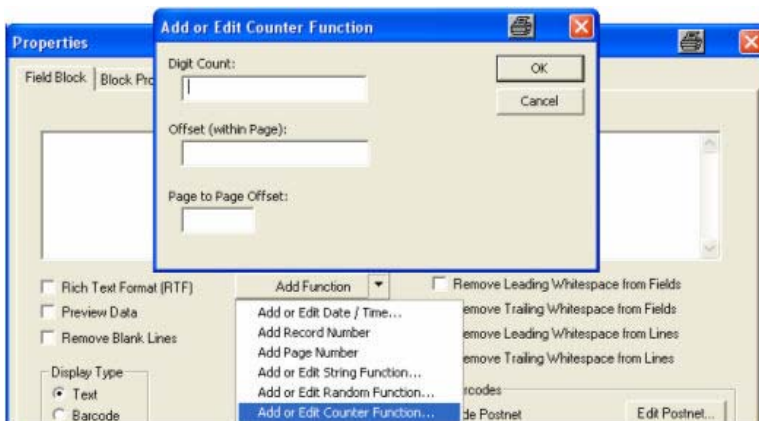
4. You can Add or Edit String Function into the **Field Block**



5. You can Add or Edit Random Function into the **Field Block** specifying the minimum and maximum numeric value



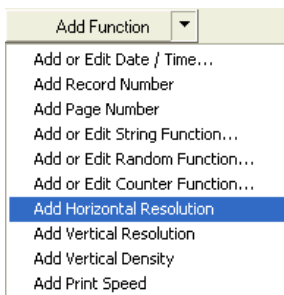
6. You can Add or Edit Counter Function into the **Field Block** 1 digit count, 2 offset and 3 page to page offset.



**Advanced Add/Functions:**

---

 Note: Advanced Function categories are only available when logged in to Developer Mode.



**Add Function Select/Developer Mode:**

The following are more options that are available in the Add Function drop-down menu when you are in "Developer" Software Mode.

1. You can insert the horizontal resolution setting into the **Field Block** so it will display as a field by choosing **Add Horizontal Resolution**.

<<HORIZONTALDPI(>> Example: 300

2. You can insert the vertical resolution setting into the **Field Block** so it will display as a field by choosing **Add Vertical Resolution**.

<<VERTICALDPI(>> Example: 300

3. You can insert the vertical density setting into the **Field Block** so it will display as a field by choosing **Add Vertical Density**.

<<VERTICALDENSITY(>> Example: 100%

4. You can insert the print speed setting into the **Field Block** so it will display as a field by choosing Add Print Speed.

<<PRINTSPEED(>> Example: 0.00

### USPS Barcodes:

Check the appropriate box to choose the type of USPS Barcode you would like to include.

USPS Barcodes

Include Postnet Edit Postnet...

Include Planet Edit Planet...

Include Intelligent Mail Barcode Edit IMB...

If you want to include a [Postnet Barcode](#), a [Planet Barcode](#) or an [Intelligent Mail Barcode](#) simply click to check the **Include** box.

The screen that opens for Edit Postnet, Edit Planet and Edit IMB is the same screen, the button you select will show the category you are setting at the top left of the settings box.

Edit Postnet

Edit Planet

Edit Intelligent Mail Barcode

**Edit Postnet**

Location

Top Distance from text:

Bottom 0.080"

Bars Per Inch

Narrow (23 bars / inch)

Normal (22 bars / inch)

Wide (21 bars / inch)

Checksum

Included in Data (None)

Automatic Detection

Calculated (Postnet)

Fields

Start:

End:

Shaving

None (0%)

Low (17%)

Medium (34%)

High (50%)

Allow Blank Data

OK

Cancel

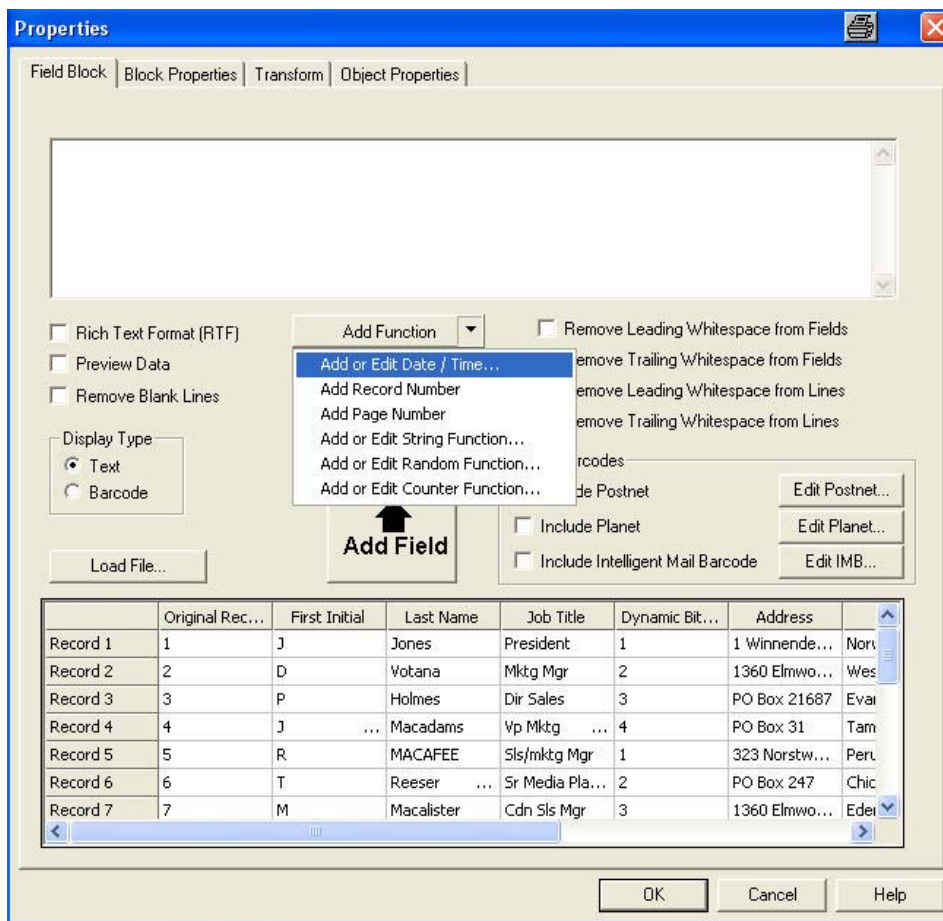
Help

\* Click this ["Advanced Barcode Settings" link](#) for a detailed description of Intelligent Mail Barcode ("IMB")\*

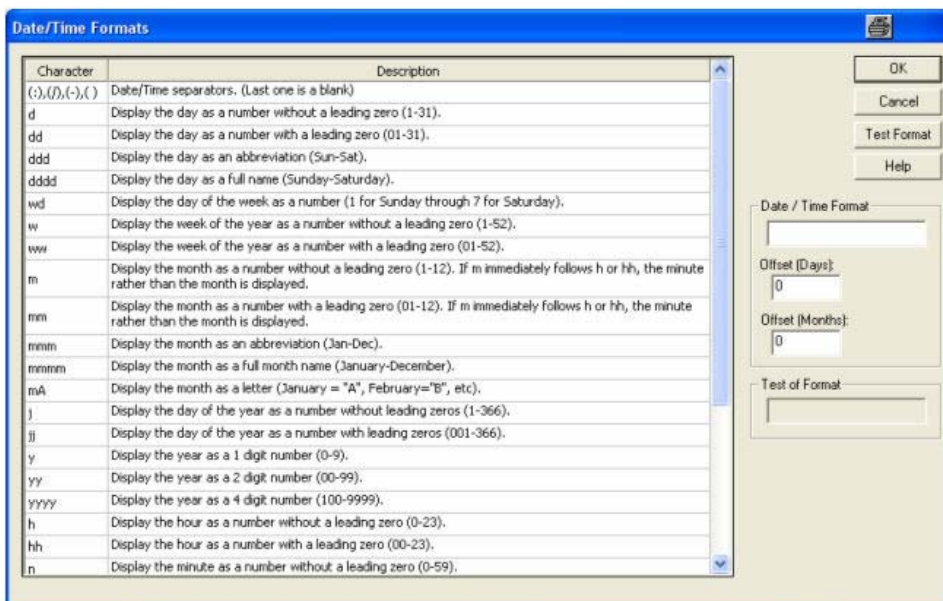
## Date/Time Formats

You can insert a **Date/Time Stamp** anywhere in a **Field Block** .

From the **Field Block Properties** screen, click on the **Add Function** drop-down menu, and select **Add or Edit Date / Time**.



This will open the **Date/Time Formats** window.



From the list of possible formats on the left side of the screen, decide on the one you'd like to use, and type the **Character** for that format into the **Date/Time Format** box. You can see a sample of the format by clicking on the **Test Format** button. The sample appears in the **Test of Format** box as in the example below.

Entering a value for the Day Offset or Month Offset will cause the displayed date to be advanced by the amount entered.

You can Transform the block during printing by clicking on the [Transform](#) tab. You will also see the transformation change on the **Form Design** screen.

The [Object Properties](#) tab allows you can give a unique name to the object you have created. You can also indicate in the checkbox whether or not the Object is Printable.

## Fixed Data Objects

### Contents


[Indicia](#)

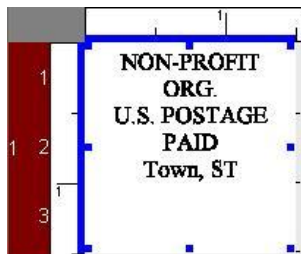
[Fixed Bitmap](#)

[Message Line](#)


## Indicia

**Indicia** are similar to Message Lines, except that they must be formatted within guidelines specified by the United States Postal Service in its Domestic Mail Manual. This manual is available online at <http://pe.usps.gov/text/dmm/DMMTC.htm>. The **Indicia** provided with the software is a template that you need to edit in order to comply with USPS regulations.

With the **Form Design** layout active, click on the  icon. The **Indicia** block is inserted at the upper left corner of the layout. You can re-position the block by dragging and dropping it, or by using the arrow keys on the keyboard.



You can view the block's **Properties** in one of three ways:

- Double click on the block.
- Click once on the block and then click the  icon in the toolbar.
- Right click on the block and select **Properties** from the menu.

### Indicia Tab:



You can edit the Indicia text by simply typing the desired text/numbers in the box, (shown above).

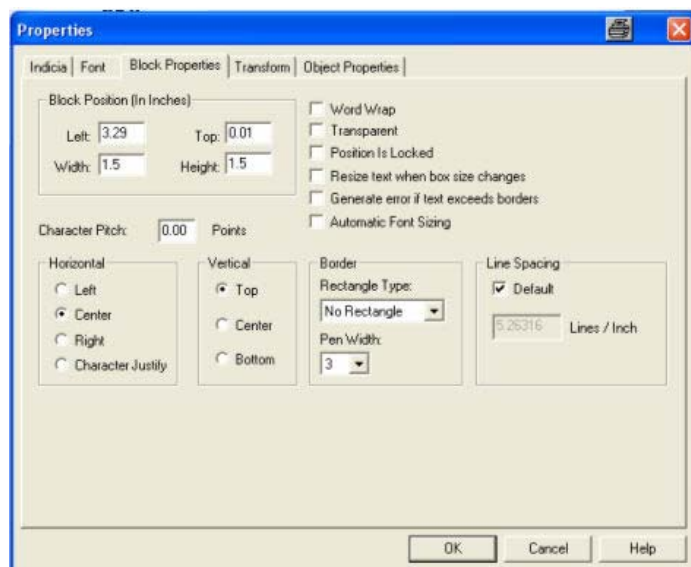
**Font Tab:**

You can change the font , font size, and font style on the [Font](#) tab.

**Font** [Click here for description of Font Tab:](#)

**Block Properties Tab:**

You have more options on the Block Properties tab.



You can position the Block Position on the **Form Design** layout by entering values in the **Left** and **Top** boxes. You can size the block entering values in the **Width** and **Height** boxes. You can also set the **Horizontal** and **Vertical** position of the text within the block.

Checking **Word Wrap** will keep the text from running outside the block. If you check the box next to **Transparent** , then the non-black portions of a bitmap become transparent. The bitmap can no longer be moved around in the layout window if you check the box next to **Position Is Locked**.

**Resize text when box size changes** means that if the size of the block is changed, the size of the font will change proportionally. However, this is true only if you resize the block from the corner. If you resize the object from the top or bottom, the text size will not change.

Checking Automatic Font Sizing will automatically adjust the font size.

You can also have the system **Generate error if text exceeds borders**. This means that if any of the text exceeds the boundaries of the object, you will receive an error during printing. If you do not choose this option and the condition occurs, text will appear truncated or cut off.


You can change the Character Pitch by entering a number in the Character Pitch/Points field.

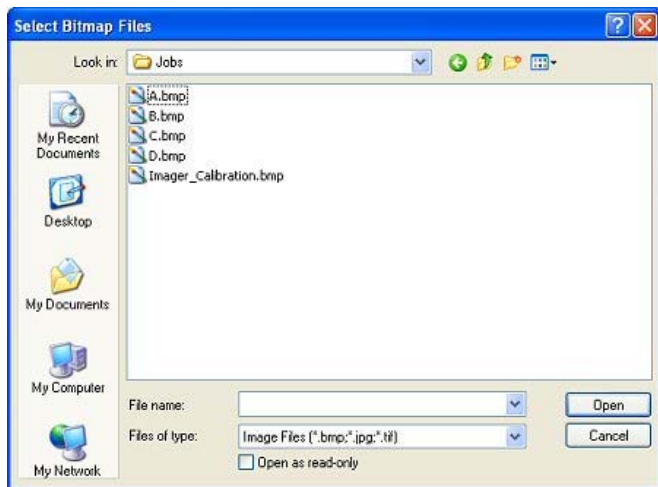
You can choose the default Line Spacing or un-check the default check box and enter in a numeric value for the line spacing desired.

**Transform Tab:**

You can Transform the block during printing by clicking on the [Transform](#) tab. You will also see the transformation change on the **Form Design** screen.


**Fixed Bitmap**

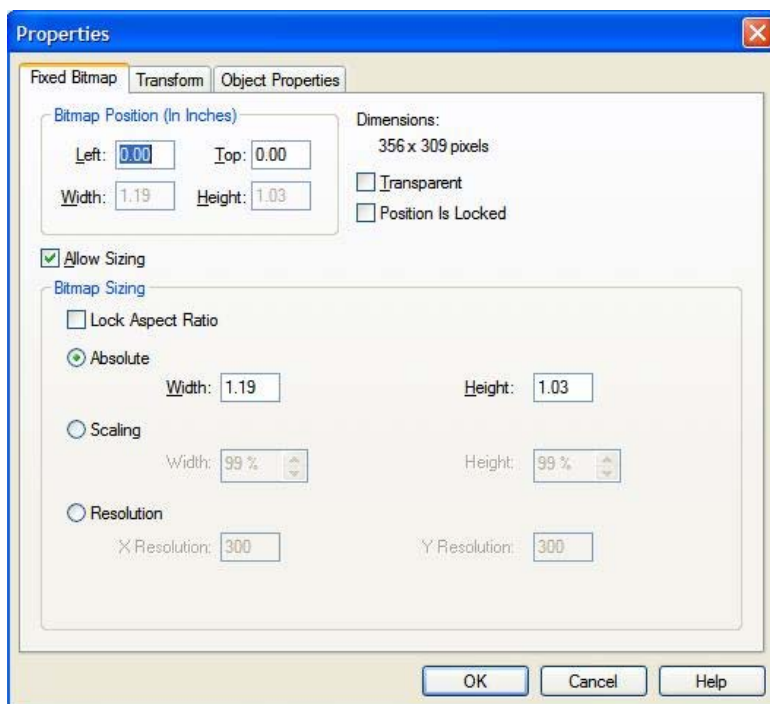
A **Fixed Bitmap** is one which cannot be changed. You can add a **Fixed Bitmap** to the **Form Design** screen by clicking on the  icon. This opens the **Select Bitmap Files** window, which works like any Windows file browser.



Simply select the .bmp file and click **Open**, or double-click on the .bmp file name. The bitmap will be inserted at the upper left corner of the **Form Design** layout. You can re-position the bitmap by dragging and dropping it, or by using the arrow keys on the keyboard.

You can view the bitmap's **Properties** in one of three ways:

- Double click on the bitmap.
- Click once on the bitmap, and then click the  icon in the toolbar.
- Right click on the object, and select **Properties** from the menu.



From the **Fixed Bitmap** window, you can change the **Bitmap Position** by entering values in the **Left** and **Top** edit boxes. If you check the box next to **Position Is Locked**, then the bitmap can no longer be moved around in the layout window.

If you check the box next to **Transparent**, then the non-black portions of a bitmap become transparent.

Bitmaps cannot actually be resized in the GUI. You have to use Microsoft Paint or a similar application to do that. However, if the box next to **Allow Sizing** is checked, you can change the **Scaling** of the bitmap in one of three ways:

- You can enter **Absolute** (specific) **Width** and **Height** values.
- You can enter **Scaling** percentages in the **Width** and **Height** boxes.
- You can enter DPI (dots per inch) **X Resolution** and **Y Resolution** values.

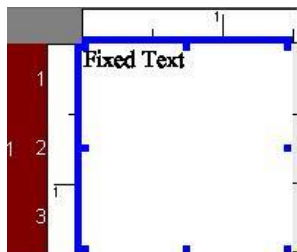
If you check the **Lock Aspect Ratio** box before you make changes, the scaling changes proportionally. For example, if you change the **Absolute Width** to 1.5, the same value is automatically entered for the **Height**. If you change the **Scaling** percentage to 150% for the **Width**, the **Height** automatically changes by 150% as well. If you change the **X Resolution** value to 600, then the **Y Resolution** is automatically changed to 600, too.



You can **Transform** the block during printing by clicking on the [Transform](#) tab. You will also see the transformation change on the **Form Design** screen.


## Message Line

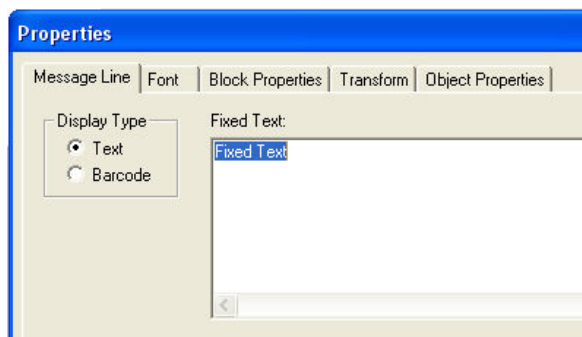
A **Message Line** is a block of fixed text that you have created. With the **Form Design** layout active, click on the  icon. The **Message Line** block will be inserted at the upper left corner of the layout. You can re-position the block by dragging and dropping it, or by using the arrow keys on the keyboard.



You can enter your text through the **Message Line Properties** screen.

You can access the block's **Properties** in one of three ways:

- Double click on the block.
- Click once on the block, and then click the  icon in the toolbar.
- Right click on the block, and select **Properties** from the menu.



On the **Message Line** tab, simply type your text in the box.

Choose the **Font** and its characteristics from the **Font** tab.

Set the **Block Properties** of your block (e.g., the position of the block on the **Form Design** layout, the position of the text within the block, the block border, etc.) on the **Block Properties** tab.

To **Transform** the block during printing, use the [Transform](#) tab. You will also see the rotation change on the **Form Design** screen.

With all text-based objects, including the **Message Line** block, you have the option to display the data as a **Barcode**. If you choose this option, a **Barcode Properties** tab appears from which you can set the print characteristics of the barcode.

## Barcodes

[Advanced Barcode Settings](#)

[Barcode Properties](#)

## USPS Postal Barcodes


[Postnet Barcode](#)

[Planet Barcode](#)

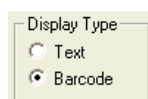
[Intelligent Mail Barcode](#)

## Barcode Properties

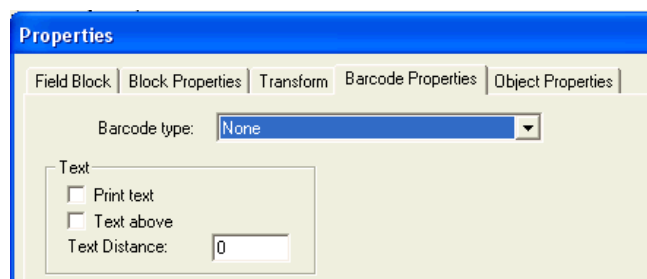
With some text-based blocks, you have the option to display the block as a barcode. You do this by opening the **Properties** dialog in one of three ways:

- Double click on the object.
- Select the object, and click the  icon.
- Right click on the object, and select **Properties** from the menu.

In the box **Display Type** you can choose either **Text** or **Barcode**.



If you check the button next to **Barcode**, you'll see that a **Barcode Properties** tab appears. This page is used to define a **Barcode Type** and its properties.

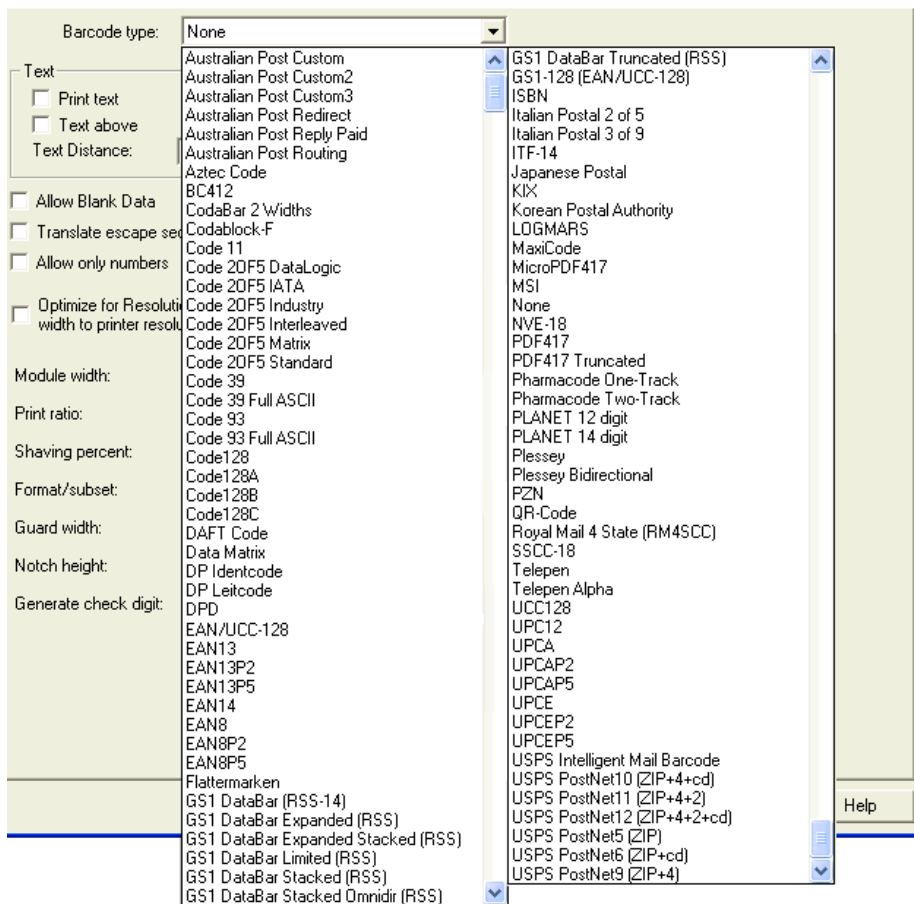


First, choose a **Barcode type** from the drop-down menu (see **Postnet Barcode** for information on using that type). From the **Text** box, you have the option to **Print text** with the **Barcode**. You can also elect to place **Text above** the **Barcode** and set the **Text Distance** in 1/1000 mm increments.

<input type="checkbox"/>	Allow Blank Data		
<input type="checkbox"/>	Translate escape sequences		
<input type="checkbox"/>	Allow only numbers		
<input type="checkbox"/>	Optimize for Resolution - optimizes module width to printer resolution		
Module width:	<input type="text"/>	default: empty	(1/1000mm)
Print ratio:	<input type="text"/>	<input type="text"/>	
Shaving percent:	<input type="text" value="0"/>	default: 0% of barcode shaved	
Format/subset:	<input type="text"/>	default: empty	
Guard width:	<input type="text" value="-1"/>	default: 0	(1/1000mm)
Notch height:	<input type="text" value="0"/>	default: 0	(1/1000mm)
Generate check digit:	<input type="text" value="Default"/>	default: Standard	

For information on the settings on the bottom of the Barcode Properties screen, (shown above), click the following link to see **Advanced Barcode Settings section**.

The **Barcode types** that are selectable from the "Barcode Type" Menu are shown (below).



## Intelligent Mail Barcode



[Intelligent Mail Barcode](#) is selectable in multiple ways using the Field Block Properties dialog setup screen.

Selecting "Include Intelligent Mail Barcode"/Using Barcode "Display Type" & Choosing "Barcode Type":

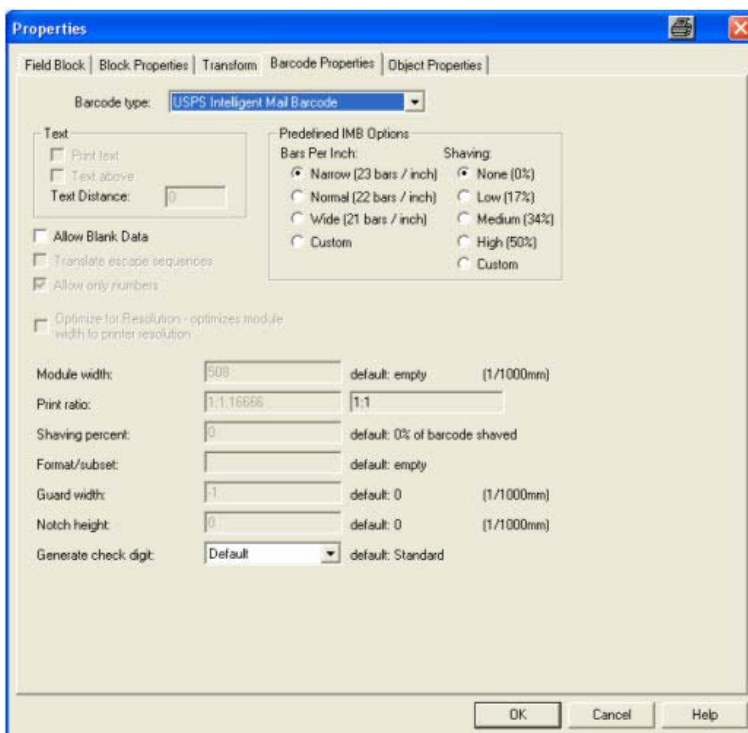
In the example, (shown below), the IMB data is being selected from 5 separate fields in the job schema, and is set up by selecting the



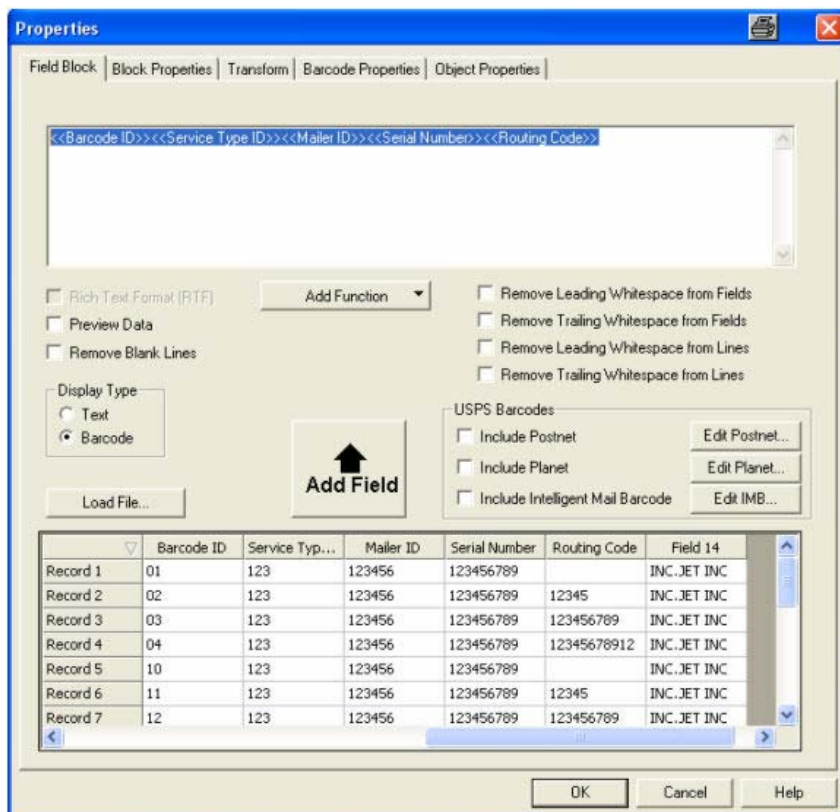
radio button,

then under the **Barcode Properties** tab, and choosing **Barcode type:** **USPS Intelligent Mail Barcode**, next choose the options and job parameters for the IMB

barcode. (See IMB field layout description shown below)



Once you have set the Intelligent Mail Barcode options and job parameters for the IMB barcode you need to select the job field (s) that contain the barcode data that you want to print. In the example, (below) the barcode data is being selected from five fields. Under the Field Block tab you would select the Barcode ID field and click Add Field, next select the Service Type field and click Add Field, next select the Mailer ID field and click Add Field, next select the Serial Number field and click Add Field, last select the Routing Code field and click Add Field, now the field (s) that you selected show up in the Field Block Properties display, (shown below).



Note: In the **Field Block Properties** screen, you also have access to several "USPS Barcode" options.

## Selecting "Include Intelligent Mail Barcode"/Using "USPS Barcodes":

In this example we are selecting "Include Intelligent Mail Barcode" under "USPS Barcodes" section of the setup screen.

On the right-hand side in the USPS Barcodes section, check [Include IMB](#), and then click on the [Edit IMB...](#) button to set up the IMB Barcode parameters. From this setup screen, (shown below), you can specify the job setup parameters and choose the data field (s) in the job schema that you parse the IMB barcode data from.

From this screen, you can position the IMB **Barcode** to appear either at the **Top** or **Bottom** of a **Field Block**.

You have the same pre-set **Bars Per Inch** and **Shaving** options described above, as well as several others.

You also have the option to **Allow Blank Data**. If this box is left unchecked, then, when a record occurs which does not have a zip code, an error is generated according to the **Trigger** and **Action** set up in **IO Events** for such an occurrence.

**Note:** Checksum Field has only one option for IMB: Always choose the [Automatic Detection](#) radio button for IMB.

In this example the IMB data is being selected from 5 separate fields in the job schema. Using the drop down menus in the Start/End **Fields** box, you choose which **Field (s)** to use to start the IMB **Barcode**, and which **Field** to use to end the IMB **Barcode**. The drop-down menus for the **Fields** list the names of all **Fields** in the data source. In this case, to print the full zip code from all 5 fields the **Start Field** would be Barcode ID , and the **End Field** would be Routing Code.

Record#	Status	Field 2	Field 3	Field 4	Field 5	Field 6	Field 7	Field 8	Barcode ID	Service Type ID	Mailer ID	Serial Number	Routing Code	Field 14
Record 1	J	Jones	President	1	1 Winnende...	Norwich	Ct	12	123	123456	123456789	123456789	12345	INC..JET INC
Record 2	D	Volana	Mktg Mgr	2	1360 Elmwo...	West Warwick	Ri	34	123	123456	123456789	123456789	12345	INC..JET INC
Record 3	P	Holmes	Dir Sales	3	PO Box 21687	Evansville	In	56	123	123456	123456789	123456789	123456789	INC..JET INC
Record 4	J	Macadams	Vp Mktg	4	PO Box 31	Tampa	FL	78	123	123456	123456789	123456789	12345678912	INC..JET INC
Record 5	R	MACAFEE	Sls/Mktg Mgr	1	323 Norstb...	Peru	In	99	123	123456	123456789	123456789	123456789	INC..JET INC
Record 6	T	Reeser	Sr Media Pla...	2	PO Box 247	Chicago	IL	10	123	123456	123456789	123456789	12345	INC..JET INC
Record 7	M	Macalister	Cdn Sls Mgr	3	1360 Elmwo...	Eden Prairie	Mn	11	123	123456	123456789	123456789	123456789	INC..JET INC

(See the Intelligent Mail® barcode for Large Mailers in Figure 1 layout example below)

If the IMB barcode is broken up into more than one **field**. These fields must be listed in consecutive fields in the job schema.

The first two examples, (above), are using an IMB that has 5 individual fields. If the IMB is configured in 5 separate fields



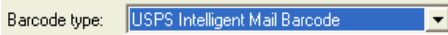
1. In the first field you will always have a 2 digit **field** which contains the Barcode ID
2. In the second field you will always have a 3 digit **field** named Service Type ID
3. In the third field you will have a 6 or 9 digit **field** named Mailer ID (Large Mailers use 6 digit and Small mailers use a 9 digit Mailer ID)
4. In the fourth field you will have a 6 or 9 digit **field** named Serial Number (Large Mailers use 9 digit and Small mailers use a 6 digit Serial Number)
5. In the fifth field you will have 4 choices for the Routing Code, the routing code will always be specified as:
  - None, (Blank field)
  - 5 Digit
  - 9 Digit or
  - 11 Digit.

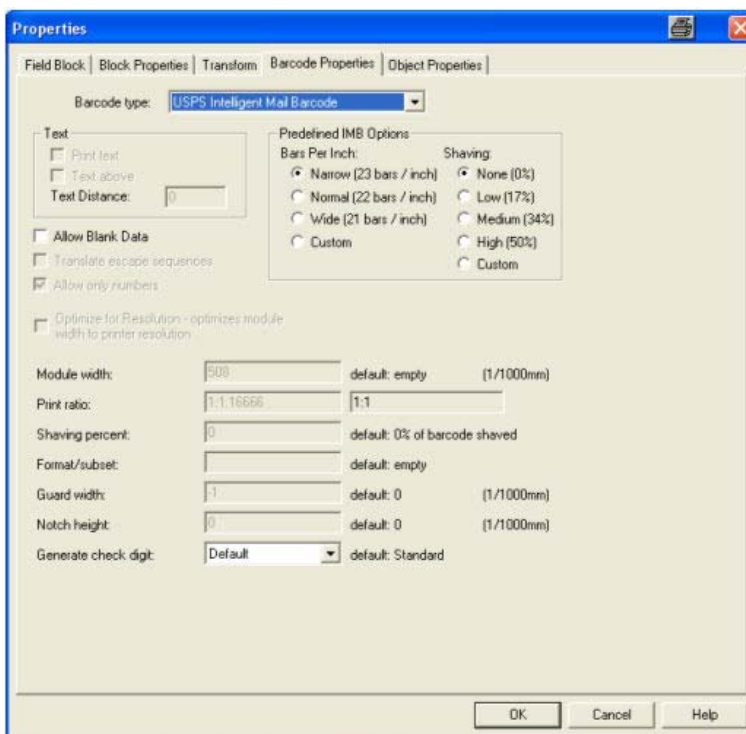
Note: If the 5th field, ("Routing Code"), is any length other than the four choices allowed a Barcode Error screen will pop up.

Note: The IMB Format for "Smaller Mailers" swaps the number of characters required for the Mailer ID and the Serial Number fields.

(See the Intelligent Mail® barcode for Small Mailers in Figure 2 layout example below)

Selecting a "Intelligent Mail Barcode" from a Single Field in the schema using "Barcode" "Display type":

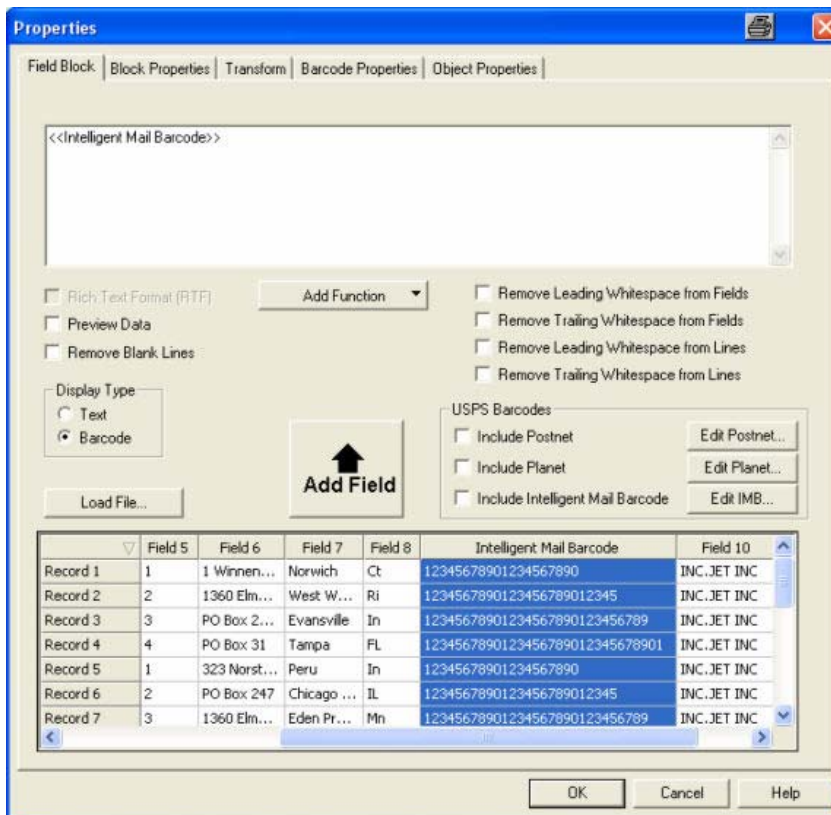
Select the  radio button, then under the  tab, choose , next choose the options and job parameters for the IMB barcode.



Once you have set the Intelligent Mail Barcode options and job parameters for the IMB barcode you need to select the single job field that contains the barcode data that you want to print. The characters in the IMB field must be 20, 25, 29 or 31 characters.

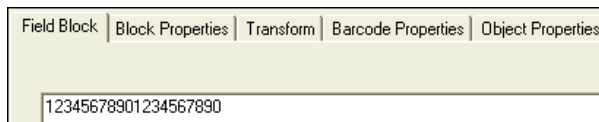
In the example, (below) the barcode data is being selected from one field. Under the Field Block tab select the Intelligent Mail Barcode field and click Add Field, now the field that you selected shows up in the Field Block Properties display, (shown below).

Note: If the single IMB field is any length other than 20, 25, 29 or 31 characters allowed a Barcode Error screen will pop up.



**Note:** An "Intelligent Mail Barcode" can also be selected from a Single Field in the schema by selecting "Include Intelligent Mail Barcode" under the "USPS Barcodes" select section.

#### Selecting a Static "Intelligent Mail Barcode" using "Barcode" Display type:



It is also possible to print the same IMB barcode on every piece by typing in the barcode digits manually in the dialog setup screen. Note: As is the other examples, the only amount of accepted characters for an IMB are 20, 25, 29 or 31 characters.



After typing in the digits desired, select the **Barcode** radio button, then under the **Barcode Properties** tab, choose **USPS Intelligent Mail Barcode** from the dropdown menu, now the barcode will be printed from the barcode digits you entered manually in the dialog setup screen.

#### "IMB", ("Intelligent Mail Barcode" Symbology), information overview.

USPS deadline for availability is December 2008.

The Intelligent Mail barcode, (IMBC), is the term the United States Postal Service (USPS) uses for the new barcode symbology used to track and sort letters and flats. It contains a suite of services, including the Confirm® Service, which is referred to as OneCode Confirm™, and the Address Change Service™, which is referred to as OneCode ACS™. The IMBC is 31 digits in length and consists of five distinct portions, with the last being the 11-digit routing ZIP Code. The IMBC differs visually from the POSTNET because it consists of four bar types: ascending (above horizontal), descending (below horizontal), full length (spans above and below horizontal) and a short bar.

Intelligent Mail combines the information of both the POSTNET and PLANET symbols, and additional information, into a single barcode that is about the same size as the traditional POSTNET symbol. Automation Discounts for the use of Intelligent Mail barcodes have been supported since March 2007.

Currently, the use of the Intelligent Mail barcode is optional; however because it offers significant advantages, it makes good business sense to implement this new symbol today. The USPS plans to require the Intelligent Mail barcode to qualify for automation discounts beginning January of 2009.

Note: USPS has not finalized the IMB rules and finalized dates have not been determined yet. Any specific details given in these descriptions are still subject to change.

## The Intelligent Mail® barcode

The Intelligent Mail® barcode is a height-modulated barcode that encodes up to 31-digits of mailpiece data into 65 vertical bars using 4-state symbology (ascender, descender, tracker and full bar).

Key specification tolerances:

- Overall barcode length between 2.667 and 3.225 inches.
- Overall barcode height between 0.125 and 0.165 inch.
- Vertical barcode clearance at least 0.028 inch; horizontal barcode clearance at least 0.125 inch.

Other physical characteristics are the same as POSTNET™ and PLANET Code® barcodes. Appendix A contains the Intelligent Mail barcode specification tolerances.

The Intelligent Mail barcode consists of a 20-digit Tracking Code (Barcode ID, Service Type ID, Mailer Identifier (MID), and Serial Number) and up to 11-digit Routing Code (Delivery Point ZIP Code). Depending on mail volume and services selected, the Intelligent Mail barcode construct will change as seen in the figures below.

**FIGURE 1: Large mailer with 6-digit Mailer ID**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Barcode ID [2N]		Service Type ID [3N]			Mailer ID [6N]						Serial Number [9N]									Routing Code [none, 5, 9, or 11N]										

**FIGURE 2: Small mailer with 9-digit Mailer ID**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Barcode ID [2N]		Service Type ID [3N]			Mailer ID [9N]									Serial Number [6N]						Routing Code [none, 5, 9 or 11N]										

The following fields are embedded within the Intelligent Mail barcode:

- Barcode ID identifies the presort makeup in conjunction with an Optional Endorsement Line.
- Service Type ID identifies special services requested (OneCode Confirm™ and/or OneCode ACS™) or Mail Class when used for automation rate discount without any services.
- Mailer ID is a 6-digit or 9-digit number that uniquely identifies the mail owner or mailing agent.
- Serial Number can uniquely identify the mailpiece or mailing.
- Routing Code must contain Delivery Point ZIP Code from CASS (Coding Accuracy Support System) certified software in order to obtain automation rate discount. 4

## INTELLIGENT MAIL BARCODE CONSTRUCT

The Intelligent Mail barcode carries a data payload of up to 31 digits comprised of the following elements.

Type	Field	Field Length (in digits)
Tracking Code	Barcode Identifier	2 (2nd digit must be 0-4)
	Service Type Identifier	3
	Mailer Identifier	6 or 9
	Serial Number	9 (when used with 6 digit Mailer ID) 6 (when used with 9 digit Mailer ID)
Routing Code	Delivery Point ZIP Code™	0, 5, 9, or 11
<b>Total Data Payload</b>		<b>31 (maximum)</b>


Note: For more information on Intelligent Mail® Barcode see the "USPS Intelligent Mail® Barcode Technical Resource Guide", available on the internet at the following location: [http://ribbs.usps.gov/ONECODESOLUTION/USPSIMB\\_Tech\\_Resource\\_Guide.pdf](http://ribbs.usps.gov/ONECODESOLUTION/USPSIMB_Tech_Resource_Guide.pdf)





A **Postnet Barcode** is a graphical representation of a US Postal Service Zip Code. You can configure a Postnet Barcode from the **Properties** screen for either a **Record Block**, a **Field Block**, a **Number Generator**, or a **Message Line**.

A block's **Properties** can be accessed in one of three ways:

- Double click on the block.
- Click once on the block, and then click the  icon in the toolbar.
- Right click on the block, and select **Properties** from the menu.

### Include Postnet Barcode Using "Display Type" Menu:

On the "**Display Type**" setup screen you can choose either **Text** or **Barcode**, choose "**Barcode**".


Display Type  
 Text  
 Barcode

Once you have checked the **Barcode** radio button, you will see a new tab titled **Barcode Properties**. Click on this tab, and from the "**Barcode Type**" drop-down menu **USPS PostNet9 (ZIP+4)** select a **PostNet Barcode**.

**PostNet Barcodes** are named with a number. This number tells you the number of digits represented in the barcode. For example, **PostNet5** represents a typical 5-digit zip code and **PostNet9**, (shown above), represents a 9-digit zip code.

**PostNet Barcodes** may have additional numbers called **Checksum** digits. These additional digits actually represent numeric calculations that insure the validity of the data represented by the barcode. So, you will find **PostNet6**, **PostNet10** and other **PostNet Barcodes** as options in the drop-down menu, (shown below).

USPS Intelligent Mail Barcode  
 USPS PostNet10 (ZIP+4+cd)  
 USPS PostNet11 (ZIP+4+2)  
 USPS PostNet12 (ZIP+4+2+cd)  
 USPS PostNet5 (ZIP)  
 USPS PostNet6 (ZIP+cd)  
 USPS PostNet9 (ZIP+4)

 **Note:** When using an embedded PostNet Barcode, keep in mind when designing your form that clear zones around the barcode are strictly enforced.

**Properties**  
 Field Block | Block Properties | Transform | Object Properties | Barcode Properties

Barcode type: **USPS PostNet5 (ZIP)**

**Text**  
 Print text  
 Text above  
 Text Distance: 0  
 Allow Blank Data  
 Translate escape sequences  
 Allow only numbers  
 Optimize for Resolution - optimizes module width to printer resolution

**Predefined Postnet Options**  
 Bars Per Inch:  
 Narrow (23 bars / inch)  
 Normal (22 bars / inch)  
 Wide (21 bars / inch)  
 Custom  
 Shaving:  
 None (0%)  
 Low (17%)  
 Medium (34%)  
 High (50%)  
 Custom

Module width: 508 default: empty (1/1000mm)  
 Print ratio: 1.13333  
 Shaving percent: 0 default: 0% of barcode shaved  
 Format/subset: default: empty  
 Guard width: 1 default: 0 (1/1000mm)  
 Notch height: 0 default: 0 (1/1000mm)  
 Generate check digit: Automatic default: Automatic

OK Cancel Help

After selecting a **PostNet Barcode**, you'll see that you now have a set of **Predefined PostNet Options** and other job setup settings available to you. This is the

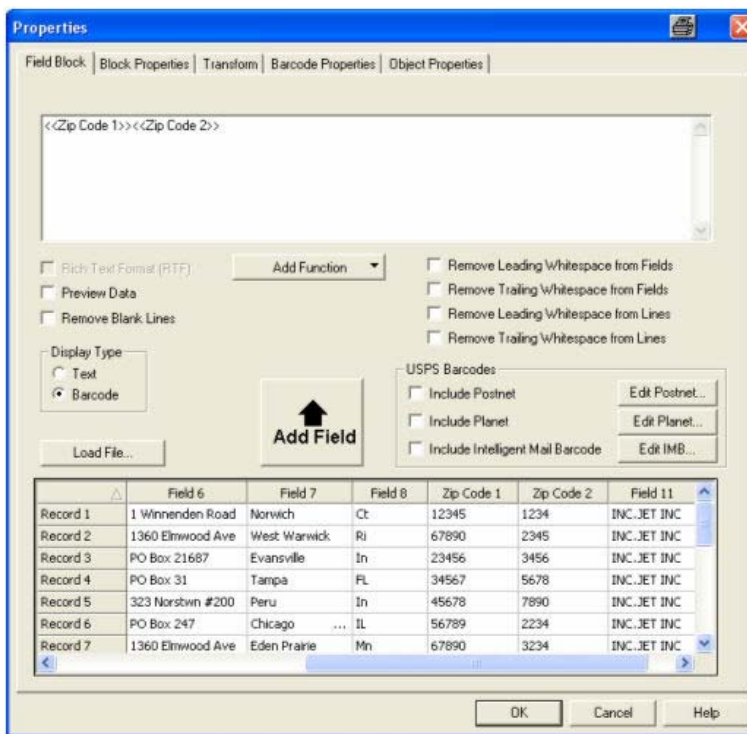
easiest way to make changes in the characteristics of a **PostNet Barcode**. (See below for additional information on editing a **PostNet Barcode** from a **Field Block**.)

**Bars Per Inch** can be re-set at pre-determined measurements for **Narrow** or **Wide**. **Normal** is the default. You can also make the bars smaller by selecting one of the **Shaving** options shown. This lets you "shave" some of the width from the barcode. This can be useful in dealing with ink bleed. You can also use **Bars Per Inch** and **Shaving** in combination.

If you check the **Custom** button for either **Bars Per Inch** or **Shaving**, the **Advanced Barcode Settings** at the bottom of the screen become available to you.

You also have the option to **Allow Blank Data**. If this box is left unchecked, then, when a record occurs which does not have a zip code, an error is generated according to the **Trigger** and **Action** set up in **IO Events** for such an occurrence.

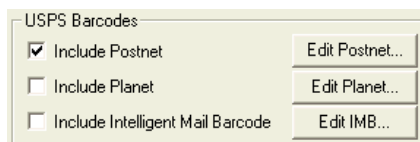
Once you have set the Postnet options and job parameters for the Postnet barcode you need to select the job field (s) that contain the barcode data that you want to print. In the example, (below) the barcode data is being selected from two fields. First under the Field Block tab you would select the Zip Code 1 field and click Add Field, then select the Zip Code 2 field and click Add Field, the field (s) that you select will show up in the Field Block Properties display.



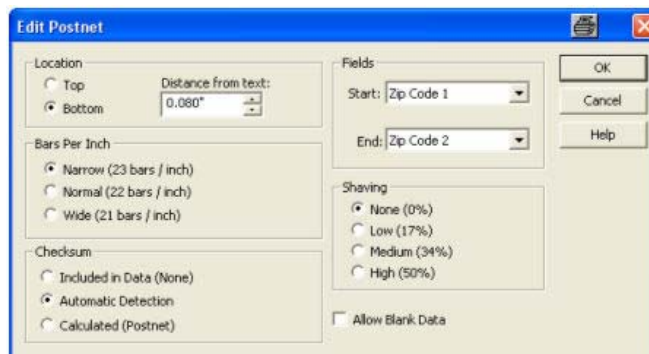
**Note:** In the Field Block Properties screen, you have access to additional USPS Barcode options using the "USPS Barcodes" Menu.

#### Include Postnet Barcode Using "USPS Barcodes" Menu:

On the right-hand side under [USPS Barcodes](#), click the check box to "**Include PostNet**", and then click on the button.



This opens up the **Edit Postnet** screen. In this screen you choose which **Field** to use to start the **PostNet Barcode**, and which **Field** to use to end the **PostNet Barcode**. The drop-down menus for both **Fields** list the names of all **Fields** in the data source.



	Field 6	Field 7	Field 8	Zip Code 1	Zip Code 2	Field 11
Record 1	1 Winnende...	Norwich	Ct	12345	1234	INC.JET INC
Record 2	1360 Elmwo...	West Warwick	Ri	67890	2345	INC.JET INC
Record 3	PO Box 21687	Evansville	In	23456	3456	INC.JET INC
Record 4	PO Box 31	Tampa	FL	34567	5678	INC.JET INC
Record 5	323 Norstw...	Peru	In	45678	7890	INC.JET INC

Depending on the data source you are using for your print job, it's possible that the zip code is broken up into more than one **Field**. In the example above, you have a **Field** named Zip Code 1 that includes the 5-digit code, and a **Field** named Zip Code 2 in the same data source that includes the 4-digit zip code extension. In this case, to print the full zip code, the **Start Field** will be Zip Code 1, and the **End Field** will be Zip Code 2. If you want to print only the 5-digit zip code from that same data source, the **Start Field** would be Zip Code 1 and the **End Field** would also be Zip Code 1.

You have the same pre-set **Bars Per Inch** and **Shaving** options described above, as well as several others.

From this screen, you can position the **PostNet Barcode** to appear either at the **Top** or **Bottom** of a **Field Block**.

**Checksum** offers you three options:

1. If you choose **Included in Data (None)**, the record data will contain the **Checksum** character. If it is not found, an error will be generated.
2. If you choose **Automatic Detection**, and the data requires it, the software will add a **Checksum**. Otherwise, if **Checksum** is found in the data, it will use that **Checksum**.
3. If you choose **Calculated (Postnet)**, the **PostNet Checksum** will always be added. If one is already there, it will generate an error.


## PLANET Barcode



PLANET barcodes are required by the USPS for use with their CONFIRM service, which provides confirmation that customers received the mail. As a complement to Postnet barcodes, they can be used by mailers to synchronize telemarketing programs with direct mail campaigns.

A PLANET barcode can have either 12 or 14 digits. You can select a PLANET Barcode from the **Properties** screen for either a **Record Block**, a **Field Block**, a **Number Generator**, or a **Message Line**.

You access a block's **Properties** in one of three ways:

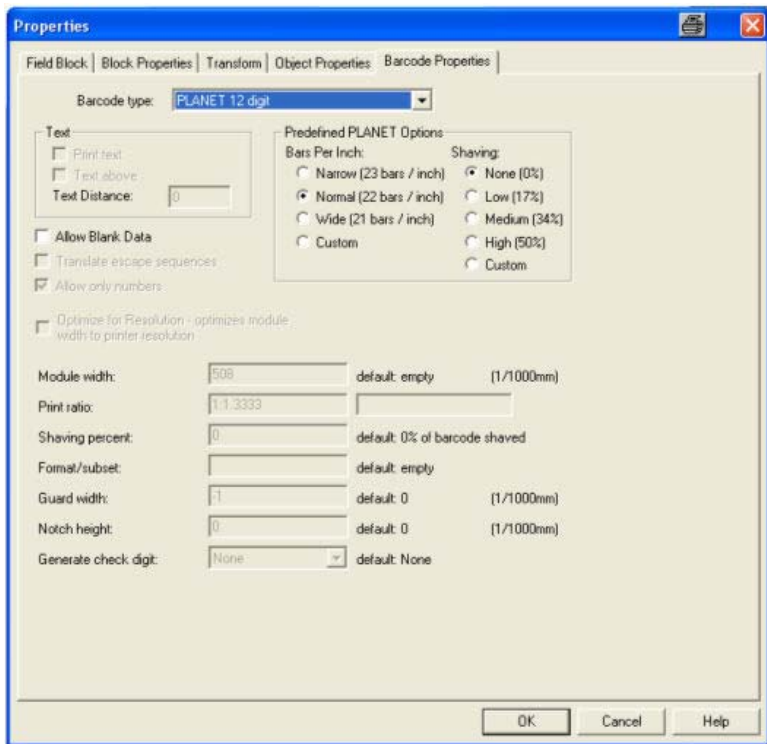
- Double click on the block.
- Click once on the block, and then click the  icon in the toolbar.
- Right click on the block, and select **Properties** from the menu.

### Include Planet Barcode Using "Display Type" Menu:

On the Properties setup screen you will find a box on the screen titled **Display Type** from which you can choose either **Text** or **Barcode** radio button.

Display Type  
 Text  
 Barcode

Check the **Barcode** radio button. You'll see a new tab appear titled . Click on this tab, and then from the **Barcode Type** drop-down menu, (shown below), select either 12 or 14 digit **PLANET Barcode**.



Once you have chosen a **PLANET Barcode**, you'll see that you now have a set of **Predefined PLANET Options** available to you. This is the easiest way to make changes in the characteristics of a **PLANET Barcode**.

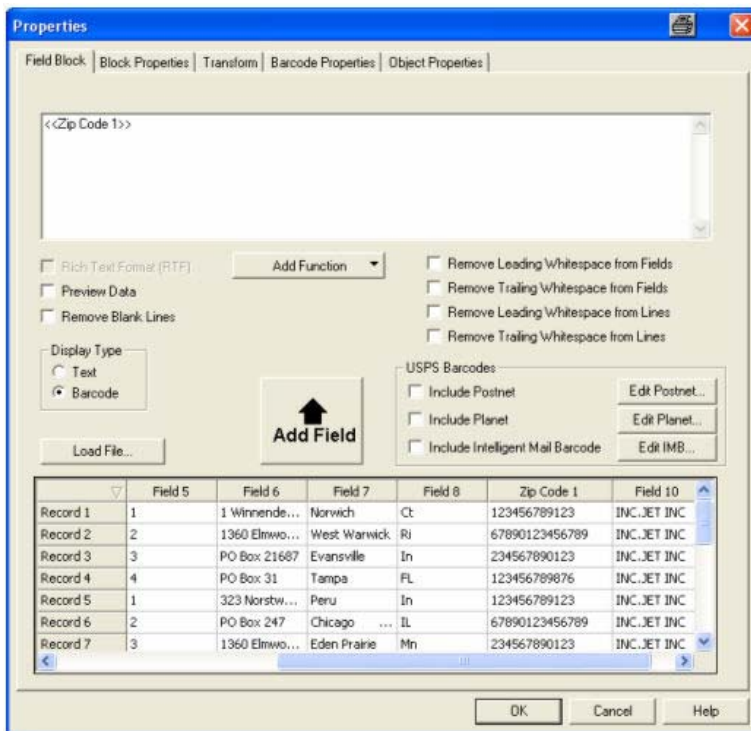
**Bars Per Inch** can be re-set at pre-determined measurements for **Narrow** or **Wide**. **Normal** is the default. You can also make the bars smaller by selecting one of the **Shaving** options shown. This lets you "shave" some of the width from the barcode. This can be useful in dealing with ink bleed. You can also use **Bars Per Inch** and **Shaving** in combination.


In the Predefined PLANET Options, the module width, print ratio and shaving percent values for the barcode are optimized to assure that each bar and space of the printed barcode are the same size (the same number of pixels wide).

If you check the **Custom** button for either **Bars Per Inch** or **Shaving**, the **Advanced Barcode Settings** at the bottom of the screen become available to you.

You also have the option to **Allow Blank Data**. If this box is left unchecked, then, when a record occurs which does not have the PLANET Barcode data, an error is generated.

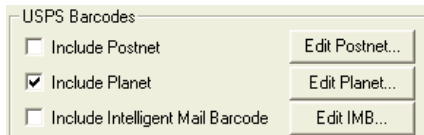
After choosing the Planet Barcode you need to select the job field that contains the barcode data that you want to print. In the example, (below), you would select the Zip Code 1 Field and click Add Field, the field that you select will show up in the display.



 **Note:** In the **Field Block Properties** screen, you also have access to several USPS **Barcode** options.

### Include Planet Barcode Using USPS Barcodes Menu:

On the right-hand side under **USPS Barcodes** box section, check **Include Planet**, and then click on the **Edit Planet...** button to set up the Planet Barcode parameters. An Edit Planet setup screen will appear, from this setup screen you can specify the data field in the job schema that you parse the planet barcode data from.



USPS Barcodes

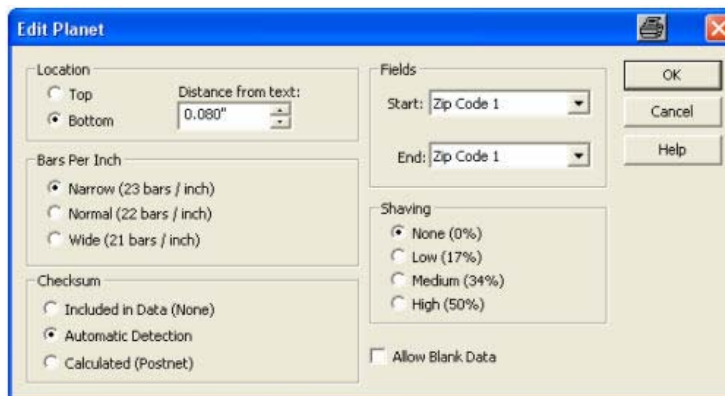
Include Postnet Edit Postnet...

Include Planet Edit Planet...

Include Intelligent Mail Barcode Edit IMB...

In the Edit Planet display setup screen, (shown below), you will choose which **Field** to use to start the **Planet Barcode**, and which **Field** to use to end the **Planet Barcode**. The drop-down menus for Zip Code **Fields** list the names of all **Fields** in the data source. In this case if you want to print the Planet zip code, the **Start Field** would be Zip Code 1, and the **End Field** would be Zip Code 1.

	Field 5	Field 6	Field 7	Field 8	Zip Code 1	Field 10
Record 1	1	1 Winnende...	Norwich	Ct	123456789123	INC.JET INC
Record 2	2	1360 Elmwo...	West Warwick	Ri	67890123456789	INC.JET INC
Record 3	3	PO Box 21687	Evansville	In	234567890123	INC.JET INC
Record 4	4	PO Box 31	Tampa	FL	123456789876	INC.JET INC
Record 5	1	323 Norstw...	Peru	In	123456789123	INC.JET INC



**Edit Planet**

**Location**

Top Distance from text:

Bottom 0.080"

**Bars Per Inch**

Narrow (23 bars / inch)

Normal (22 bars / inch)

Wide (21 bars / inch)

**Checksum**

Included in Data (None)

Automatic Detection

Calculated (Postnet)

**Fields**

Start: Zip Code 1

End: Zip Code 1

**Shaving**

None (0%)

Low (17%)

Medium (34%)

High (50%)

Allow Blank Data

OK Cancel Help

You have the same pre-set **Bars Per Inch** and **Shaving** options described above, as well as several others.

From this screen, you can position the **Planet Barcode** to appear either at the **Top** or **Bottom** of a **Field Block**.

**Checksum** offers you two options:

1. If you choose **Included in Data (None)**, the record data will contain the **Checksum** character. If it is not found, an error will be generated.
2. If you choose **Automatic Detection**, and the data requires it, the software will add a **Checksum**. Otherwise, if **Checksum** is found in the data, it will use that **Checksum**.

## Advanced Barcode Settings

With some text-based blocks, you have the option to display the block as a Barcode (see Barcode Properties for information on choosing Barcode as a display type.)

The following Advanced Barcode Settings are available on the bottom portion of the Barcode Properties screen.

 **Note:** For Postnet Barcodes, these settings only become available if you choose Custom in the Predefined Postnet Options box.

<input type="checkbox"/>	Allow Blank Data		
<input type="checkbox"/>	Translate escape sequences		
<input type="checkbox"/>	Allow only numbers		
<input type="checkbox"/>	Optimize for Resolution - optimizes module width to printer resolution		
Module width:	<input type="text"/>	default: empty	(1/1000mm)
Print ratio:	<input type="text"/>	<input type="text"/>	
Shaving percent:	<input type="text" value="0"/>	default: 0% of barcode shaved	
Format/subset:	<input type="text"/>	default: empty	
Guard width:	<input type="text" value="-1"/>	default: 0	(1/1000mm)
Notch height:	<input type="text" value="0"/>	default: 0	(1/1000mm)
Generate check digit:	<input type="text" value="Default"/>	default: Standard	

If you check Allow Blank Data, the *jet.engine*<sup>TM</sup> GUI will not generate an error when blank data is used.

You can check [Translate escape sequences](#) if you are using non-printable or special characters in the barcode. If this box is enabled, it tells the system that escape sequences (like \n) are to be translated (Default: no). The use of escape sequences is useful if you need to encode control characters like Carriage Return or FNC1 into the barcode. If you want to use non-printable or special characters in your barcode, you have to use escape sequences. They always start with a backslash ("\") followed by the sequence. You can use them also for encoding binary data (bytes) into your barcode (if the symbology you are using offers this feature, e. g. PDF417 or Data Matrix).

If you check Allow only numbers, only numbers in the data will be printed in the barcode. For example, if this box is checked, and the 9-digit zip code "55555-1111" is in the data file, the hyphen will not print in the barcode.

[Optimize for Resolution](#) - optimizes module width to printer resolution: If this box is enabled, the module width of the barcode will be calculated to the nearest lower pixel integer to prevent loss of quality.

[Module width](#): You can set the module width by entering a value (in 1/1000 mm increments) in the box.

A barcode is divided into individual "modules" - the smallest unit of the bar segments. The Module width functions as fundamental unit, i.e., all lines and spaces are based on this adjustment. The Module width is calculated automatically, based on the width of the blue bounding rectangle, or can be set to a specific value. It also depends on the number of utilizable data characters to be encoded. Depending upon the printer or image resolution, the lower limit for the Module width may be exceeded, leading to unreadable barcodes (a module width < 1 Pixel). Make sure that the barcode bounding rectangle is as wide as necessary.

Shaving percent: The bar is reduced by the percent you enter here. For example, entering a 10 reduces the bar by 10 percent.

[Format /subset](#): Format is like a "picture" specification for formatting the barcode data prior to printing it.

[Guard width](#): The Guard bar is a horizontal line, which limits the barcode on the upper and lower side. If the value is not set to zero (standard), the Guard bar is printed. Values larger than zero indicate the width of the Guard bar in 1/1000 mm. For some barcode types (like UPC and EAN), the value must be zero.

[Notch height](#): This sets the height at which the synchronization bars protrude from the barcode, e.g., the double lines within EAN (the European standard) on the left, centrally and on the right side.

[Generate check digit](#): If this box is enabled, a check digit will be included in the barcode. For non-Postnet Barcodes, the choices are Standard (the default choice) or None. For Postnet Barcodes, the choices are Automatic (the default choice), Postnet, or, with some, None.

## Barcode Format Overview

This page supplies an overview of the supported barcodes, standard print ratios, and standard check digit methods.

Barcode Name	Name of the barcode symbology	
Print Ratio	Standard Print Ratio of the barcode. Predefined corresponding to the barcode symbology.	
Ratio	Format	Format of the Print Ratio. Helpful to understand the definition of the Print Ratio.
	String	
	xB (1B, 2B, ...)	width of the single Bars
	xS (1S, 2S, ...)	width of the single Spaces (also called gaps)
Check-Digit	Enumeration of the pre-selected check digit method for each barcode symbology.	

Bar Code Name	Print Ratio	Ratio Format String  (Ratio Hint)	Check Digit
Not a valid type	-----	-----	
Code 11	1:2.24:3.48:1:2.24	1B:2B:3B:1S:2S	<a href="#">None</a>
Code 2 of 5 (Standard)	1:3:4.5:1:3	1B:2B:3B:1S:2S	<a href="#">None</a>
Interleaved 2 of 5 Standard	1:3:1:3	1B:2B:1S:2S	<a href="#">None</a>
Code 2 of 5 IATA	1:3:1	1B:2B:1S	<a href="#">None</a>
Code 2 of 5 Matrix	1:3:4.5:1:3	1B:2B:3B:1S:2S	<a href="#">None</a>
Code 2 of 5 Data Logic	1:3:1:3	1B:2B:1S:2S	<a href="#">None</a>
Code 2 of 5 Industrial	1:3:1	1B:2B:1S	<a href="#">None</a>
Code 3 of 9 (Code 39)	1:3:1:3	1B:2B:1S:2S	<a href="#">None</a>
Code 3 of 9 (Code 39) ASCII	1:3:1:3	1B:2B:1S:2S	<a href="#">None</a>
EAN8	1:2:3:4:1:2:3:4	1B:2B:3B:4B:1S:2S:3S:4S	<a href="#">EAN8</a>
EAN8 - 2 digits add on	1:2:3:4:1:2:3:4	1B:2B:3B:4B:1S:2S:3S:4S	<a href="#">EAN8</a>
EAN8 - 5 digits add on	1:2:3:4:1:2:3:4	1B:2B:3B:4B:1S:2S:3S:4S	<a href="#">EAN8</a>
EAN13	1:2:3:4:1:2:3:4	1B:2B:3B:4B:1S:2S:3S:4S	<a href="#">EAN13</a>
EAN13 - 2 digits add on	1:2:3:4:1:2:3:4	1B:2B:3B:4B:1S:2S:3S:4S	<a href="#">EAN13</a>
EAN13 - 5 digits add on	1:2:3:4:1:2:3:4	1B:2B:3B:4B:1S:2S:3S:4S	<a href="#">EAN13</a>
EAN128	1:2:3:4:1:2:3:4	1B:2B:3B:4B:1S:2S:3S:4S	<a href="#">Code128</a>
UPC 12 Digits	1:2:3:4:1:2:3:4	1B:2B:3B:4B:1S:2S:3S:4S	<a href="#">UPCA</a>
CodaBar (2 widths)	1:3:1:3	1B:2B:1S:2S	<a href="#">None</a>
CodaBar (18 widths)			----
Code128 automatic subset switching / autocompress (Code128 A, B, and C see below)	1:2:3:4:1:2:3:4	1B:2B:3B:4B:1S:2S:3S:4S	<a href="#">Code128</a>
Deutsche Post Leitcode	1:3:1:3	1B:2B:1S:2S	<a href="#">DPLeit</a>
Deutsche Post Identcode	1:3:1:3	1B:2B:1S:2S	<a href="#">DPIdent</a>
Code 16K			----
Code 49			----
Code 93 UPCD1	1:2:3:4:1:2:3:4	1B:2B:3B:4B:1S:2S:3S:4S	<a href="#">2Mod47</a>
Fluttermarken	1:1	1B:1S	<a href="#">None</a>
RSS-14	1:2:3:4:5:6:7:8:9:1:2:3:4:5:6:7:8:9	1B:2B:3B:4B:5B:6B:7B:8B:9B: 1S:2S:3S:4S:5S:6S:7S:8S:9S	<a href="#">None</a>
RSS Limited	1:2:3:4:5:6:7:8:9:1:2:3:4:5:6:7:8:9	1B:2B:3B:4B:5B:6B:7B:8B:9B: 1S:2S:3S:4S:5S:6S:7S:8S:9S	<a href="#">None</a>
RSS Expanded	1:2:3:4:5:6:7:8:9:1:2:3:4:5:6:7:8:9	1B:2B:3B:4B:5B:6B:7B:8B:9B: 1S:2S:3S:4S:5S:6S:7S:8S:9S	----
Telepen Alpha	1:3:1:3	1B:2B:1S:2S	<a href="#">None</a>
UCC128 (= EAN128)	1:2:3:4:1:2:3:4	1B:2B:3B:4B:1S:2S:3S:4S	<a href="#">Code128</a>
UPC A	1:2:3:4:1:2:3:4	1B:2B:3B:4B:1S:2S:3S:4S	<a href="#">UPCA</a>
UPC A – 2 digit add on	1:2:3:4:1:2:3:4	1B:2B:3B:4B:1S:2S:3S:4S	<a href="#">UPCA</a>
UPC A – 5 digit add on	1:2:3:4:1:2:3:4	1B:2B:3B:4B:1S:2S:3S:4S	<a href="#">UPCA</a>
UPC E	1:2:3:4:1:2:3:4	1B:2B:3B:4B:1S:2S:3S:4S	<a href="#">UPCE</a>
UPC E – 2 digit add on	1:2:3:4:1:2:3:4	1B:2B:3B:4B:1S:2S:3S:4S	<a href="#">UPCE</a>
UPC E – 5 digit add on	1:2:3:4:1:2:3:4	1B:2B:3B:4B:1S:2S:3S:4S	<a href="#">UPCE</a>
PostNet-5 (ZIP 5 digits)	1:1	1B:1S	<a href="#">PostNet</a>
PostNet-6 (ZIP 5 digits + check digit)	1:1	1B:1S	<a href="#">PostNet</a>

PostNet -9 (ZIP + 4)	1:1	1B:1S	<a href="#">None</a>
PostNet-10 (ZIP + 4 + check digit)	1:1	1B:1S	<a href="#">PostNet</a>
PostNet-11 (ZIP + 4 + 2)	1:1	1B:1S	<a href="#">PostNet</a>
PostNet -12 (ZIP + 4 + 2+ check digit)	1:1	1B:1S	<a href="#">PostNet</a>
Plessey Code	1:2:1:2	1B:2B:1S:2S	<a href="#">Plessey</a>
MSI Code	1:2:1:2	1B:2B:1S:2S	<a href="#">MSI1</a>
SSCC18	1:2:3:4:1:2:3:4	1B:2B:3B:4B:1S:2S:3S:4S	<a href="#">Mod10</a>
FIM			
LOGMARS	1:3:1:3	1B:2B:1S:2S	<a href="#">None</a>
Pharmacode One-Track	1:3:2:4:2:3	1B:2B:1C:2C:1S:2S	<a href="#">None</a>
Pharmacentralnumber	1:2.5:1:2.5	1B:2B:1S:2S	<a href="#">PZN</a>
Pharmacode Two-Track	1:1	1B:1S	<a href="#">None</a>
General Parcel			
PDF417	1:2:3:4:5:6:7:8: 1:2:3:4:5:6	1B:2B:3B:4B:5B:6B:7B:8B: 1S:2S:3S:4S:5S:6S	<a href="#">None</a>
PDF417 Truncated	1:2:3:4:5:6:7:8: 1:2:3:4:5:6	1B:2B:3B:4B:5B:6B:7B:8B: 1S:2S:3S:4S:5S:6S	<a href="#">None</a>
MaxiCode	1:1		----
QR-Code	1:1	(1B:1S)	----
Code128 (Subset A)	1:2:3:4:1:2:3:4	1B:2B:3B:4B:1S:2S:3S:4S	<a href="#">Code128</a>
Code128 (Subset B)	1:2:3:4:1:2:3:4	1B:2B:3B:4B:1S:2S:3S:4S	<a href="#">Code128</a>
Code128 (Subset C)	1:2:3:4:1:2:3:4	1B:2B:3B:4B:1S:2S:3S:4S	<a href="#">Code128</a>
Code 93 Ascii	1:2:3:4:1:2:3:4	1B:2B:3B:4B:1S:2S:3S:4S	<a href="#">2Mod47</a>
Australian Post Standard Customer	1:1	1B:1S	<a href="#">None</a>
Australian Post Customer 2	1:1	1B:1S	<a href="#">None</a>
Australian Post Customer 3	1:1	1B:1S	<a href="#">None</a>
Australian Post Reply Paid	1:1	1B:1S	<a href="#">None</a>
Australian Post Routing	1:1	1B:1S	<a href="#">None</a>
Australian Post Redirection	1:1	1B:1S	<a href="#">None</a>
ISBN Code (=EAN13P5)	1:2:3:4:1:2:3:4	1B:2B:3B:4B:1S:2S:3S:4S	<a href="#">EAN13</a>
Royal Mail 4 State (RM4SCC)	1:1	1B:1S	<a href="#">None</a>
Data Matrix	1:1		----
EAN-14	1:2:3:4:1:2:3:4	1B:2B:3B:4B:1S:2S:3S:4S	<a href="#">EAN14</a>
Codablock-E			CodablockE
Codablock-F	1:2:3:4:1:2:3:4	1B:2B:1S:2S	CodablockF
NVE-18	1:2:3:4:1:2:3:4	1B:2B:3B:4B:1S:2S:3S:4S	<a href="#">Mod10</a>
Japanese Postal Code	1:1	1B:1S	<a href="#">None</a>
Korean Postal Authority Code	1:3:4	1B:1S:2S	<a href="#">Mod10Kor</a>
RSS-14 Truncated	1:2:3:4:5:6:7:8:9:1:2:3:4:5:6:7:8:9	1B:2B:3B:4B:5B:6B:7B:8B:9B: 1S:2S:3S:4S:5S:6S:7S:8S:9S	<a href="#">None</a>
RSS-14 Stacked	1:2:3:4:5:6:7:8:9:1:2:3:4:5:6:7:8:9	1B:2B:3B:4B:5B:6B:7B:8B:9B: 1S:2S:3S:4S:5S:6S:7S:8S:9S	<a href="#">None</a>
RSS-14 Stacked Omnidirectional	1:2:3:4:5:6:7:8:9:1:2:3:4:5:6:7:8:9	1B:2B:3B:4B:5B:6B:7B:8B:9B: 1S:2S:3S:4S:5S:6S:7S:8S:9S	<a href="#">None</a>
RSS Expanded Stacked	1:2:3:4:5:6:7:8:9:1:2:3:4:5:6:7:8:9	1B:2B:3B:4B:5B:6B:7B:8B:9B: 1S:2S:3S:4S:5S:6S:7S:8S:9S	<a href="#">None</a>
Planet 12 digits	1:1	1B:1S	<a href="#">Mod10Pla</a>
Planet 14 digits	1:1	1B:1S	<a href="#">Mod10Pla</a>
Micro PDF417	1:2:3:4:5:6: 1:2:3:4:5:6	1B:2B:3B:4B:5B:6B: 1S:2S:3S:4S:5S:6S	<a href="#">None</a>



## Guard Width

Width of optional bars printed above and below the symbol. The guard bars eliminate partial reads (as drawn in the example below). The complete symbol can be surrounded by a guard box.



## Module Width

The module width (abbreviated with X in this document) is the width of the smallest element in the barcode (the smallest bar or space). The minimal module width depends on the barcode-symbology. In most specifications the recommended module width is at least 0.19 mm.

When adjusting the module width of a barcode object, ensure if the entire barcode can be displayed with the maximum data content (widen the barcode object if needed).

If the module width is not specified, it is computed automatically by dividing the width of the object by the number of required modules. This depends on the number of data characters to be encoded. The module width decreases as the data content increases.

## Notch Height

The height of linear barcode-symbol is not relevant in most cases.

For most barcodes, the recommended minimal height is 15% of the symbol width.

## Print Ratio

The print ratio or so-called Bar/Width-Ratio is the width relationship of all elements of a barcode – with respect to the smallest element. Such a ratio exists for the bars and also for the spaces.

Simple barcode-symbologies are using only two different bar widths, i.e. the entire data must be shown by using a combination of wide and narrow elements. More efficient linear barcodes are using elements with up to 9 different widths.

The ratio-format is used to describe the possible ratio settings. The ratio-format depends on the selected barcode-type and shows how many different bar and space-widths are used in a particular symbology.



The picture above shows a barcode with 4 different element widths (8 elements in total; 4 bars / 4 spaces). Because ratios of bars and spaces are maintained separately, the ratio format is built as follows:

1B:2B:3B:4B:1S:2S:3S:4S

The first four values (1B:2B:3B:4B) refer to the 4 different bar widths, the second four values (1S:2S:3S:4S) refer to the available spaces. These settings show that 4 different bar widths and 4 different space widths are used in the symbology. The actual width is computed by multiplying the module width with the current setting of the print ratio for this element.

The print-ratio is adjustable by defining a ratio-string. Without user interaction the recommended standard ratio is used. However – the user has the possibility to adjust the print-ratio to individual needs.

Example:

Code 2of5 Interleaved has uses a print ratio of 1:3:1:3. The ratio-hint for this symbology shows 1B:2B:1S:2S.

This indicates that the wide bar is 3 times the width of the small bar (and similar for the spaces). If you want a ratio of 1:2 (which is sometimes required by industry label specs) then you adjust the print-ratio like "1:2:1:2". The first two values 1:2 adjust the bar ratio and the last two values adjust the ratio of the spaces.

RatioHint	Ratio	Result
-----------	-------	--------

<b>(Format)</b>		
(1B:1S)	1:1	1 bar and 1 space is used
(1B:2B:1S:2S)	1:2:1:2.4	Same width is used for bars and spaces 2 bar-width and 2 space-widths are used by the symbology  The print ratio of the wide bars (2B) to the small bars (1B) is specified as 2 : 1
(1B:2B:3B:1S:2S)	1:2.5:4:1:2	The print ratio of the wide spaces (2S) to the small spaces (1S) is specified as 2.4 : 1 3 different bar-widths and 2 different space-widths are used by the symbology  There are three bar widths (1B, 2B, 3B) with the ratio 4 : 2.5 : 1 and 2 space widths with the ratio 2 : 1

Table 2: Print-ratio adjustment

**Format/Subset** – Format is like a “mask” for formatting the barcode data prior to encoding it.

Ø Attention: do not confuse the Format with the Ratio Format!

Placeholders in the format string can be mixed with constant data characters to build a final data string. Control characters are also supported. With this feature it's possible to:

- § Select subsets in Code 128, EAN 128 and UCC 128 (even within the code!)
- § Select the required start/stop character for CODABAR
- § Change the position of the check digit (for special applications only)
- § Set the values Date, Preamble, Service Class, postal and country code directly in the barcode data (in conjunction with special Esc-sequences).

<b>Placeholder</b>	<b>Description</b>
<b>character</b>	
#	Stands for the next data character
&	Stands for all remaining data characters
^	Stands for the next check digit (use only if check digits will be computed!)
A	Switch to Subset A (used in: Code 128, EAN 128, UCC 128)
B	Switch to Subset B (used in: Code 128, EAN 128, UCC 128)
C	Switch to Subset C (used in: Code 128, EAN 128, UCC 128)
A	Start- or stop character A (only in: CODABAR)
B	Start- or stop character B (only in: CODABAR)
C	Start- or stop character C (only in: CODABAR)
D	Start- or stop character D (only in: CODABAR)
S	Only for MaxiCode: enables setting the values of Date, Preamble, Service Class, Postal- and Country- Code directly in the barcode data (only in conjunction with Escape Sequences).
J	With Japanese Postal codes, the Address B data fields can be automatically compressed, i.e. Japanese symbols are converted into ASCII symbols.

Examples:

<b>Data input</b>	<b>Barcode type</b>	<b>Format string</b>	<b>Data used for encoding</b>
123	Irrelevant		123
123	Irrelevant	5&	5123
123	Irrelevant	&6	1236
123	Irrelevant	q#w#e#	q1w2e3
123	Irrelevant	#q&	1q23
123	Irrelevant	&^	123c
123	Irrelevant	^&	c123
Hello	Code 128	A&	Hello
Hello	Code 128	A##B&	Hello
Hello4711	Code 128	A##B&	Hello4711
Hello4711	Code 128	A##B###C&	Hello4711

red	characters	represented in Subset A
gray	characters	represented in Subset B
green	characters	represented in Subset C
c		represents the place of the check digit

## Optimize for Resolution

Printing tolerances can lead to problems when decoding a barcode. A [remedy for this problem](#) is to optimize the module width with respect to available printing resolutions. Assume you want to print a barcode with a resolution of 300 dpi then one pixel equals 0.003333 inch (or 0.08466 mm) in such a case.

To avoid raster errors, you should select a module width that is an integer multiple of the pixel width (e.g. for 300 dpi a multiple of 0.08466 mm).

∅	200 dpi: 2 modules per pixel (0.127 mm) = 0.254 mm
∅	202 dpi: 2 modules per pixel (0.1257 mm) = 0.251 mm
∅	300 dpi: 3 modules per pixel (0.08467 mm) = 0.254 mm
∅	600 dpi: 5 modules per pixel (0.04233 mm) = 0.212 mm
∅	For printer solutions over 300 dpi normally the optimizing of the module width isn't necessary.

## Translate Escape Sequences

If you want to use non-printable or special characters in a barcode, you have to use "Escape Sequences". An Escape Sequence always start with a backslash ('\') followed by the sequence.

➤ Hint: With activated Escape-Sequences you are not able to encode a Backslash („\“) directly. Therefore you have to encode "\\".

Escape-Sequence	Description
\a	Bell (alert)
\b	Backspace
\f	Form feed
\n	New Line
\r	Carriage Return
\t	Horizontal Tab
\v	Vertical Tab
\\	The Backslash \ itself
\0ooo	ASCII-character in octal notation:  ooo octal digits (0..7)
\ddd	ASCII-character in decimal notation:  ddd decimal digits (0..9)
\xhh	For encoding Bytes or ASCII-characters in hexadecimal notation  hh hexadecimal digits (0..F)
\F	FNC1 or Gs (\x1d), used in UCC/EAN codes as field separator
\E	ECI ( <b>E</b> xtended <b>C</b> haracter <b>I</b> nterpretation), used in 2D codes like MaxiCode, DataMatrix and QR-Code. Is used for switching between various code pages (multiple character sets) – contact us to get further information.
\EB, \EE	special ECI identifiers for nesting ECIs. \EB ( <b>E</b> CI <b>B</b> egin) opens a nesting level, \EE ( <b>E</b> CI <b>E</b> nd) closes it. Used in QR-Code
\G	GLI ( <b>G</b> lobal <b>L</b> anguage <b>I</b> dentifier), similar to ECI, but only used in PDF417.

## Extended Escape Sequences

Control character	Escape Sequence	Barcode type(s)
FNC1	\210	Code128, EAN128, UCC128
FNC2	\211	Code128, EAN128, UCC128
FNC3	\212	Code128, EAN128, UCC128
FNC4	\213	Code128, EAN128, UCC128
DC1	\x11	Code93, Code93Ext
DC2	\x12	Code93, Code93Ext
DC3	\x13	Code93, Code93Ext
DC4	\x14	Code93, Code93Ext
Rs	\x1e	MaxiCode (Mode 3,4 SCM)
Gs	\x1d	MaxiCode (Mode 3,4 SCM)
Eot	\x04	MaxiCode (Mode 3,4 SCM)

## Generate Check Digit

The method for the check digit (s) calculation depends on the respective barcode type; especially for barcode types EAN 8/13, UPC A/E and Postnet 6/10/12.

- Ø When selecting the standard check digit, the input can take place with and without a check digit. In the latter case the check digit is calculated automatically and added.
- Ø Example EAN13: 12 digits input (= utilizable data), the 13th digit (= check digit) is added automatically. 13 digits input (=Utilizable data), the check digit is replaced by your data and isn't calculated.

Check Digit	Check digit calculation methods
None	No check digit will be computed
Standard	Standard check digit of barcode type will be used
Mod10	Modulo 10 (usually used with Interleaved 2of5)
Mod43	Modulo 43 (suggested for Code39 and Logmars, consist of 1 digit)
2Mod47	Modulo 47 (2 digits)
DPLeit	Method for DP Leitcode
DPIdent	Method for DP Identcode
1Code11	Method for Code11 (1 digit)
2Code11	Method for Code11 (2 digits)
Postnet	Method for USPS Postnet
MSI1	Method for MSI (1 digit)
MSI2	Method for MSI (2 digits)
Plessey	Method for Plessey
EAN8	Method for EAN 8
EAN13	Method for EAN 13
UPCA	Method for UPC A
UPCE	Method for UPC E
EAN128	EAN 128 internal method (Modulo 103)
Code128	Code 128 internal method (Modulo 103)
RM4SCC	Method for Royal Mail 4 State
PZN	Mod-11 Method for PZN
Mod11W7	Mod-11 (Weighting = 7)
EAN14	Method for EAN 14
Mod10Kor	Method for Korean Postal Authority - Modulo 10
Mod10Pla	Method for Planet - Modulo 10

## Common Object Properties

## Contents

[Font](#)

[Rotate](#)

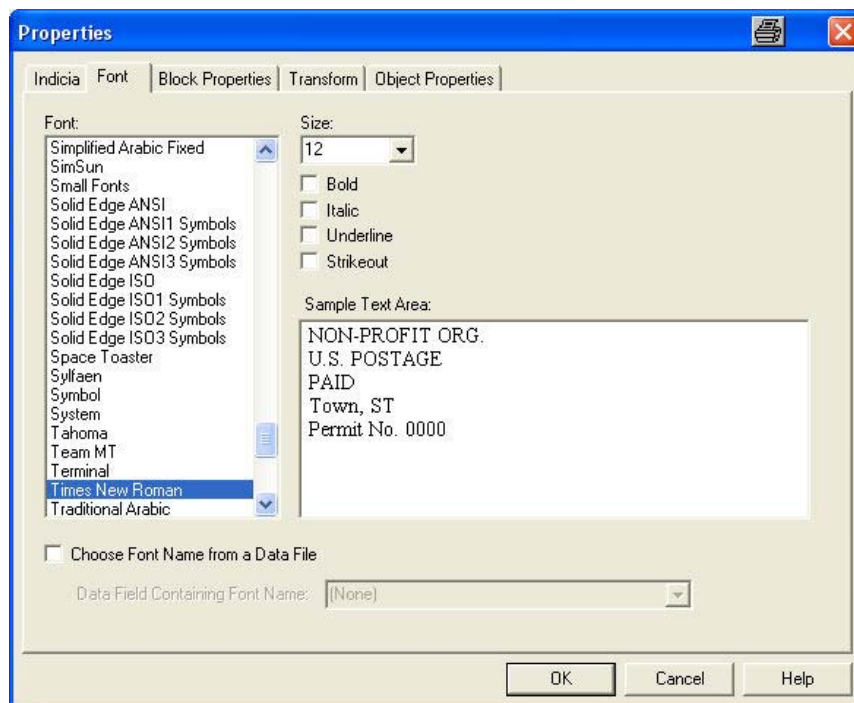
[Block Properties](#)

[Object Properties](#)

## Font

### Font Properties:


The Font tab is available in many of the Properties windows. This is where you can choose the font, font style, and font size for the block. You also have options for Underline and Strikeout (put dashes through the text, e.g., ~~strikeout~~). The Sample Text Area displays the font with the characteristics you have chosen.

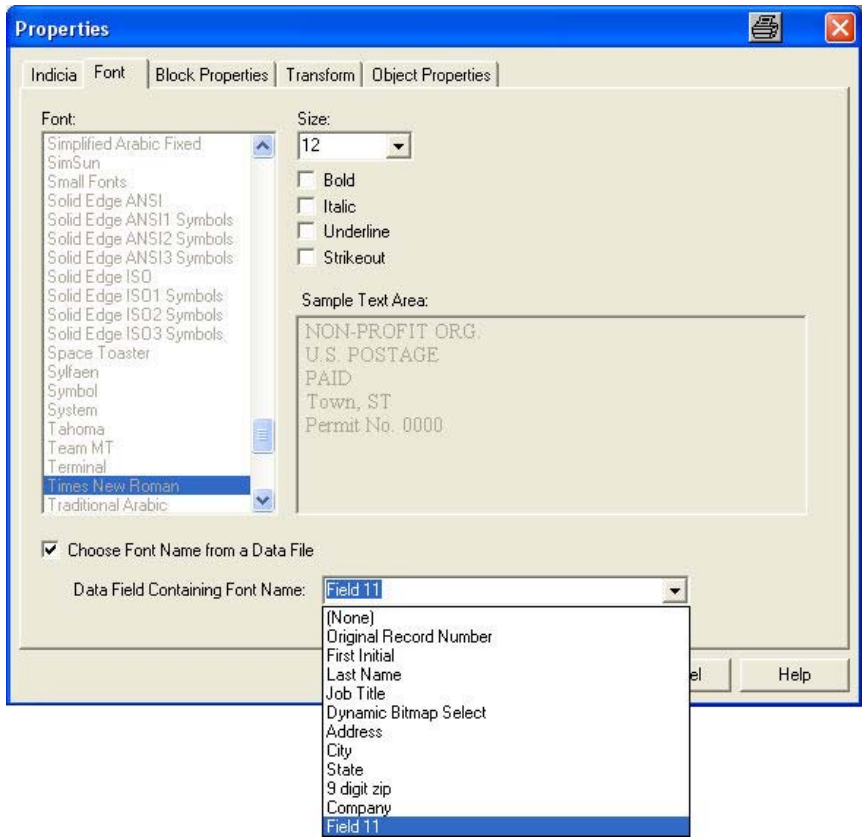


### Choose Font From Data File:

You can set up print objects on form design to change font type from page to page. A database field that contains font names can be used to designate the font you want to use for every page/record.

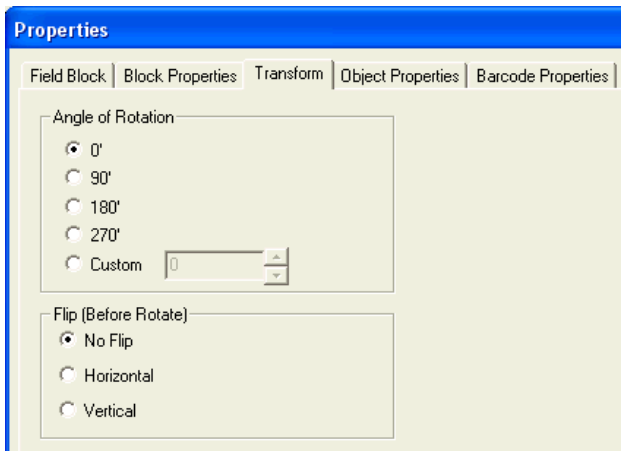
Click on the "Choose Font From Data File" check box, when this box is checked the "Data Field Containing Font Name" menu becomes enabled. Then click on the drop down menu select arrow and choose the field name from the database file that contains the font names. (See example below) When the job runs the font type entry for each record will be used to select the font used for that record.

 Note: The database you have loaded must have a field that contains the font name that will be assigned to each respective record in the job file.



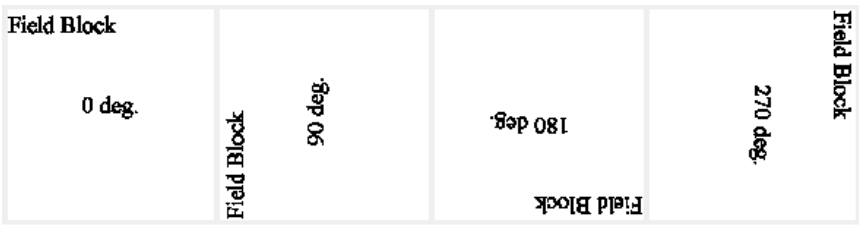
Record#	Field 11
Record 1	Ariel
Record 2	Arial Narrow
Record 3	Times New Roman
Record 4	Ariel
Record 5	Arial Narrow
Record 6	Times New Roman
Record 7	Ariel
Record 8	Arial Narrow
Record 9	Times New Roman
Record 10	Ariel
Record 11	Arial Narrow
Record 12	Times New Roman
Record 13	Ariel
Record 14	Arial Narrow
Record 15	Times New Roman

**Transform**



From the Transform tab on the **Properties** screen, you can change the Angle of Rotation of a block or bitmap in 90° increments.

**Zero Degree Rotation    90 Degree Rotation    180 Degree Rotation    270 Degree Rotation**

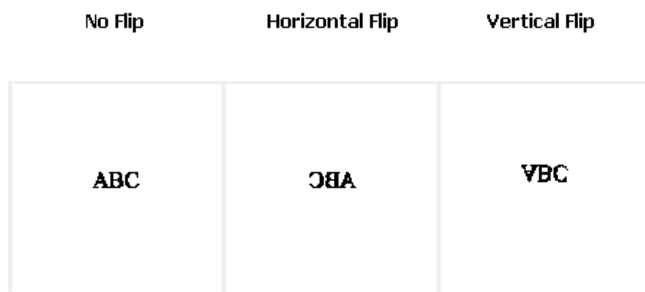


For some blocks or bitmaps, you also have the option of entering a **Custom** degree of your choice.

**Custom degree rotation**



Flip Horizontal mirrors the object relative to the horizontal axis. Flip Vertical mirrors the object relative to the vertical axis. An object may be flipped Before or After Rotate.




 **Note:** You will see these "transformation changes", (shown above), on the **Form Design** screen.

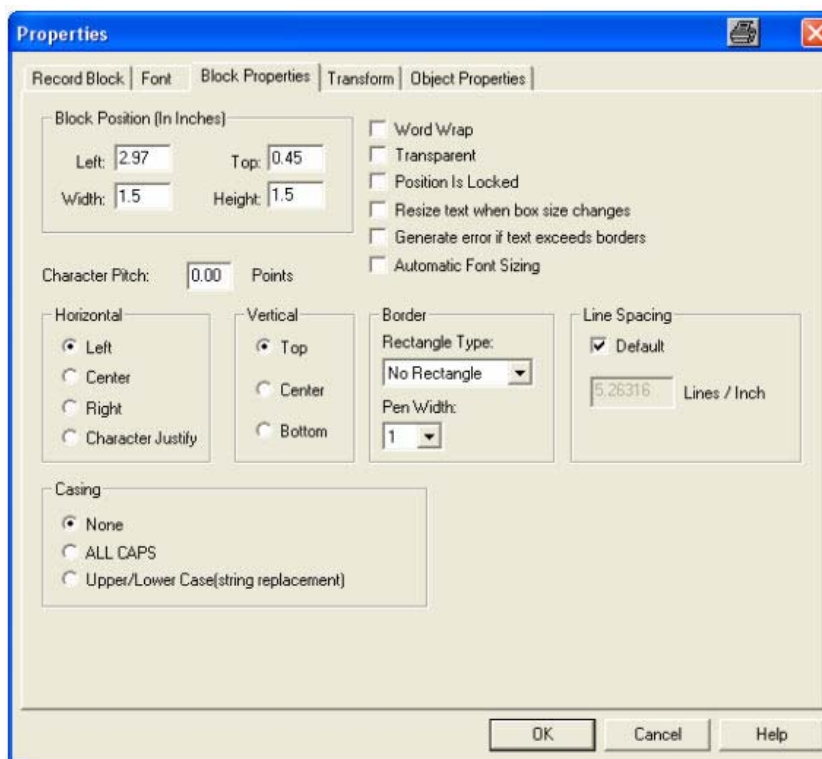
## Block Properties

Block properties (e.g., position on the layout, border characteristics, etc.) are set on the **Block Properties** tab in the **Properties** screen.

You can access a block's **Properties** in one of three ways:

- Double click on the block.
- Click once on the block, and then click the  icon in the toolbar.
- Right click on the block, and select **Properties** from the menu.

Click on the **Block Properties** tab.



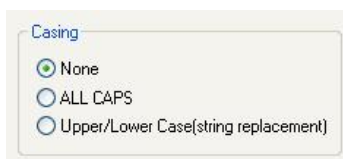
You can position the block on the **Form Design** layout by entering values in the **Left** and **Top** boxes. To change the size of the block, enter values in the **Width** and **Height** boxes. If you want to position the text within the block, choose **Horizontal** and **Vertical** options. You can specify the Character Pitch in the Character Pitch box.

Checking **Word Wrap** keeps the text from running outside the block. If you check the box next to **Transparent**, the non-black portions of a bitmap become transparent. The bitmap can no longer be moved around in the layout window if you check the box next to **Position Is Locked**.

**Resize text when box size changes** means that if the size of the block is changed, the size of the font will change proportionally. However, this is true only if you resize the block from the corner. If you resize the object from the top or bottom, the text size will not change.

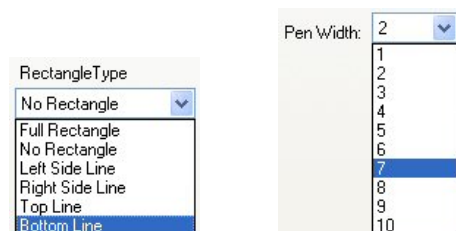
You can also have the system **Generate error if text exceeds borders**. This means that if any of the text exceeds the boundaries of the object, you will receive an error during printing. If you do not choose this option, and the condition occurs, text will appear truncated or cut off.

The **Block Properties** tab for the **Record** and **Field Blocks** also gives you a **Casing** option.



Casing may be set at either **None**, **All Caps** (every letter in the block is capitalized), or to **Upper/Lower Case** as defined in **String Replacement**.

**Rectangle Type** and **Pen Width** have drop down menus that help you define the border characteristics of the block.



To Transform the block during printing, use the **Transform** tab.

Line Spacing allows you to specify the number of lines per vertical inch.

For help with **Block Properties** of a **Bitmap**, **Dynamic Bitmap**, or **PDF File**, see their individual pages.



Properties

Field Block | Block Properties | Transform | Object Properties

Name:

Object is Printable

The Object Properties tab allows you can give a unique name to the object you have created. You can also indicate in the checkbox whether or not the Object is Printable.

## Tables and Groups

### Contents

[Table](#)

[Selecting & Grouping Objects](#)

[Alignment of Multiple Objects](#)

### Table

This is a feature you can use to design a page of multiple objects arranged in a fixed column and row format. The row and column elements can be individual layout objects, or a group of layout objects.


There are four instances in which you might use this feature.

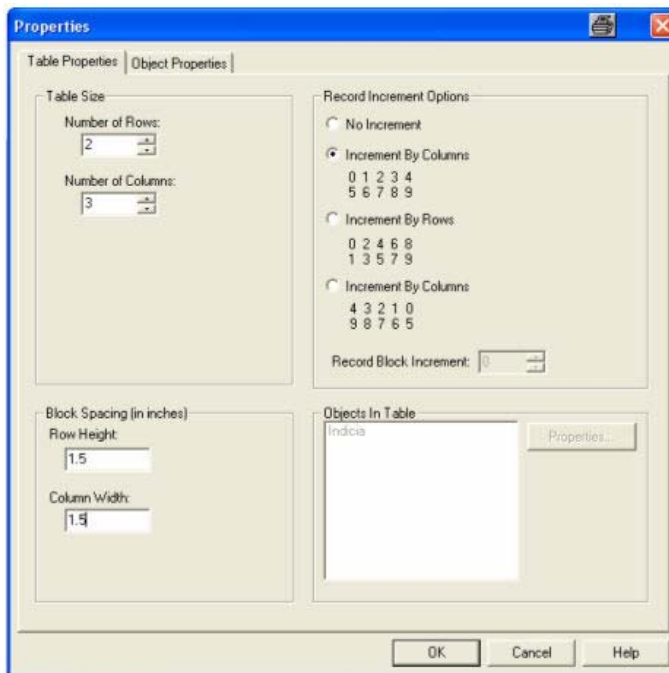
#### ***To print multiple copies of an individual object***

In this example, a page of identical **Indicia** have been set up for printing. (You could also do this with a **Record Block**, **Field Block**, **Message Line**, **Number Generator**, or **Dynamic Bitmap**.)

**Note:** The Table feature cannot be used with a PDF File. Placement of multiple PDF Files in Form Design will cause a Global Protection Fault (GPF) and cause the *jet.engine™* GUI to shut down.

Row	Column 1	Column 2	Column 3
1	NON-PROFIT ORG. U.S. POSTAGE PAID Town, ST Permit No. 0000	NON-PROFIT ORG. U.S. POSTAGE PAID Town, ST Permit No. 0000	NON-PROFIT ORG. U.S. POSTAGE PAID Town, ST Permit No. 0000
2	NON-PROFIT ORG. U.S. POSTAGE PAID Town, ST Permit No. 0000	NON-PROFIT ORG. U.S. POSTAGE PAID Town, ST Permit No. 0000	NON-PROFIT ORG. U.S. POSTAGE PAID Town, ST Permit No. 0000

To set up the table, first place one block on the **Form Design** screen. Then, click  on the tool bar to open the **Table Properties** screen.



In the **Table Size** section, you set the **Number of Rows** and the **Number of Columns** that you want to print on the page. The example above is set up to print a page with two rows of three columns.

You set the **Row Height** and **Column Width** in the **Block Spacing** box. **Row Height** is the spacing between the top edge of the block in one row and the top edge of the block in the row below. **Column Width** is the spacing between the left edge of one block and the left edge of the block in the next column. In this example both the rows and columns are set 1.5 inches apart.

The **Record Increment Options** box does not apply for this example and is left at the default **No Increment**.

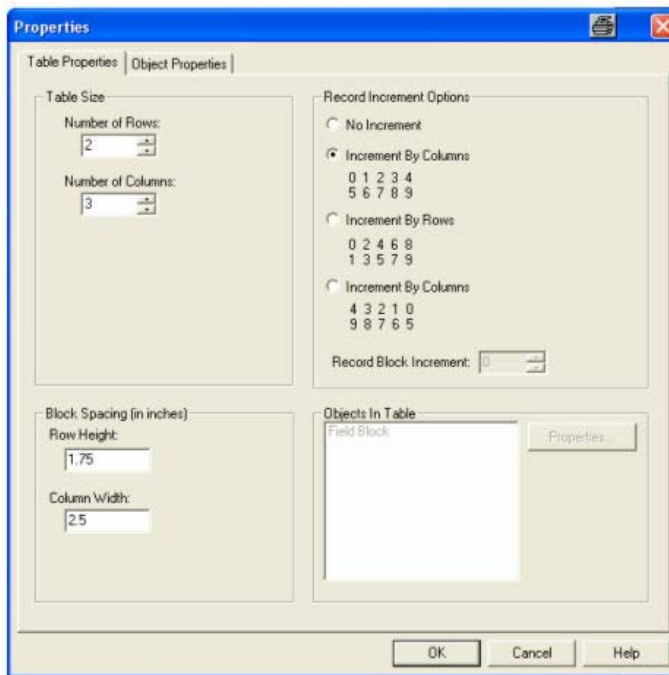
The **Object in Table** box lists all the objects that are used in the table. In this example, only **Indicia** are used. Select **Indicia** in this box and the **Properties** button becomes active. If you click on this button, you will see the same **Properties** screen for **Indicia** that you would see if you double-clicked on the single object in **Form Design** (before setting up the **Table**). To give the **Table** object a unique name (other than "Indicia"), click on **Object Properties** and enter a name in the space provided.

### To print multiple objects from a data source where the structure of the object is identical but the contents change for each object

Address labels are a good example of this type of print setup: the structure of the labels is identical, i.e., the data appears in the same place for each label, but the content of each label changes as you go from record to record, as seen below.

1	2	3	4	5	6	7
J Jones President - INC.JET INC 1 Winnenden Road Norwich Ct 02910-3824	D Votana Mktg Mgr - INC.JET INC 1360 Elmwood Ave West Warwick Ri 46634-1681	P Holmes Dir Sales - INC.JET INC PO Box 21687 Evansville In 30339-4024				
J Macadams Vp Mktg - INC.JET INC PO Box 31 Tampa FL 02893-2300	R MACAFEE Sls/mktg Mgr - INC.JET INC 323 Norstwn #200 Peru In 02893-2300	T Reeser Sr Media Planner - INC.JET INC PO Box 247 Chicago IL 47710-2258				

In this example, the **Number of Rows** is 2, the **Number of Columns** is 3, the **Row Height** is set at 1.75, the **Column Width** is set at 2.5, and **Field Block** is listed in **Objects in Table**.



The **Record Increment Options** is set to **Increment By Columns**. This means that the change in records will go from column to column, left to right, with Record 2 to the right of Record 1, and Record 3 to the right of Record 2. If **Increment By Rows** was checked, the change in records would go from row to row, top to bottom, with Record 2 under Record 1 in Column 1, etc. If **No Increment** was checked, the page would print multiple copies of only one record.

**To print multiple objects when each row or column must have a different starting number**

This instance is applied only to a **Number Generator** block and uses a feature called **Step and Repeat**.

In the example below, the print job is set up to print serial numbers. Notice that each column starts with a number one thousand higher than the previous column (each column **Steps** up by 1000), and each row starts with a number one higher than the row directly above it (it **Repeats** the number above, incremented by 1).

Setup   Form Design   Print Manager   Service Station   Pen Status   IO Status   Log			
1	2	3	4
SN2000	SN3000	SN4000	
-----			
SN2001	SN3001	SN4001	
-----			





The **Table Properties** (**Table Size**, **Block Spacing**, **Record Increment Options**) for these objects are similar to the earlier example of the address labels.

If you select **Number Generator** in the **Objects In Table** box, and click on the **Properties** button, the **Number Generator Properties** screen is displayed.

This is the same screen you would see if you double-clicked on a single **Number Generator** block while in **Form Design** (before setting up the **Table**), with one exception: there are boxes for **Step Increment** and **Repeat Increment**. This is where you set the **Step and Repeat** values.

### **Any combination of the above**

You may find that you want to combine two or more blocks, as in the example below.

1	2	3	4	5	6
J Jones President INC.JET-INC 					
D Votana Mktg Mgr INC.JET-INC 					
			P Holmes Dir Sales INC.JET-INC 		
			J Macadams Vp Mktg INC.JET-INC 		

Each object in this table contains a **Field Block** in text format, a **Bitmap**, and a **Field Block** in barcode format. Look at the **Table Properties**:

The Properties dialog box is shown with the following settings:

- Table Size:** Number of Rows: 2, Number of Columns: 2
- Record Increment Options:**
  - No Increment
  - Increment By Columns (0 1 2 3 4, 5 6 7 8 9)
  - Increment By Rows (0 2 4 6 8, 1 3 5 7 9)
  - Increment By Columns (4 3 2 1 0, 9 8 7 6 5)
- Record Block Increment:** 0
- Block Spacing (in inches):** Row Height: 1.5, Column Width: 3.5
- Objects In Table:** Barcode, Bitmap, Name

There are three objects listed in **Objects In Table**: **Barcode**, **Bitmap** and **Name**. If you selected either **Barcode** or **Name**, and clicked the **Properties** button, you would see the **Properties** screen for a **Field Block** displayed. These **Field Blocks** were given a unique name in **Object Properties**.

## Selecting & Grouping Objects

When designing your print job on the **Form Design** screen, you may want to combine or **Group** objects. In order to do so, you first need to **Select** the objects to be grouped. You can do this in either of two ways:

- **Select** the first object by clicking on it once. You can tell that an object has been selected by the blue "handles" that appear on the edges. Then, while holding down the **Ctrl** key, click once on each of any additional objects you want to include in the **Group**.
- Position the mouse pointer somewhere outside the first object. Then, while holding down the left mouse button, move the mouse over the other objects to be combined. As you move over the objects, you'll see a box being formed. Whichever object is touched by the box will be included in the **Group** when you release the mouse. This is called rubber-banding.

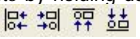
Once you have selected multiple objects, you can put them in a **Group** by clicking  on the tool bar. (To ungroup objects, click .)

You can also combine individual objects with a **Group** or **Groups**, or **Groups** with other **Groups**, using one of the methods above.

You may want to **Select** an object once it is in a **Group**. You can do this without ungrouping the objects. Click once on the object you want to **Select**. You'll see that the entire **Group** is selected. Click again on the object you want to **Select** and only that object is selected.

If the object you want to **Select** is in a **Group** within a **Group**, click once on that object and the entire **Group** is selected. Click a second time on the object and the smaller **Group** within which it is contained is selected. Click a third time on the object and the object is selected.

## Alignment of Multiple Objects

Select the multiple objects by holding down the CTRL key and clicking on the blocks to be aligned. Using the buttons on the tool bar for Left Align, Right Align, Top Align, and Bottom Align  , align the blocks as you want them to appear in print.

 **Note:** The first block to be selected for alignment is used as the reference point for aligning all the other selected blocks.

## Working with Databases

### Contents

[Load Data](#)

[Unload Data](#)


[Data/Modify Schema](#)

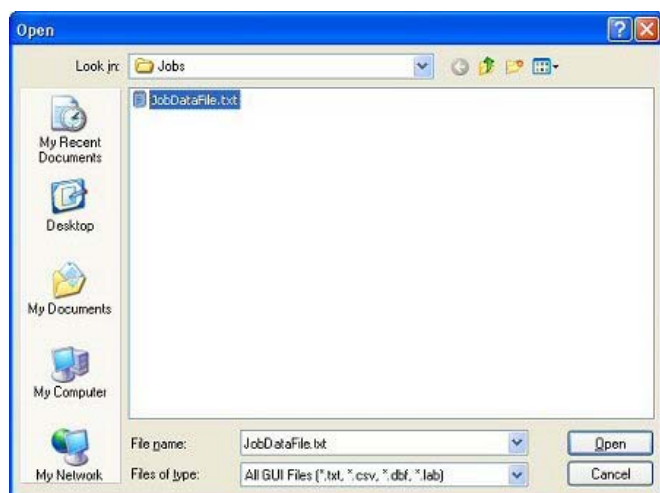
[String Replacement](#)

[Search](#)


[Manual Schema](#)

## Load Data

You can load a data file either by selecting **Load Data** from the **Data** menu, or by clicking the  icon . This opens a typical Windows browser for locating and opening the file.



## Unload Data

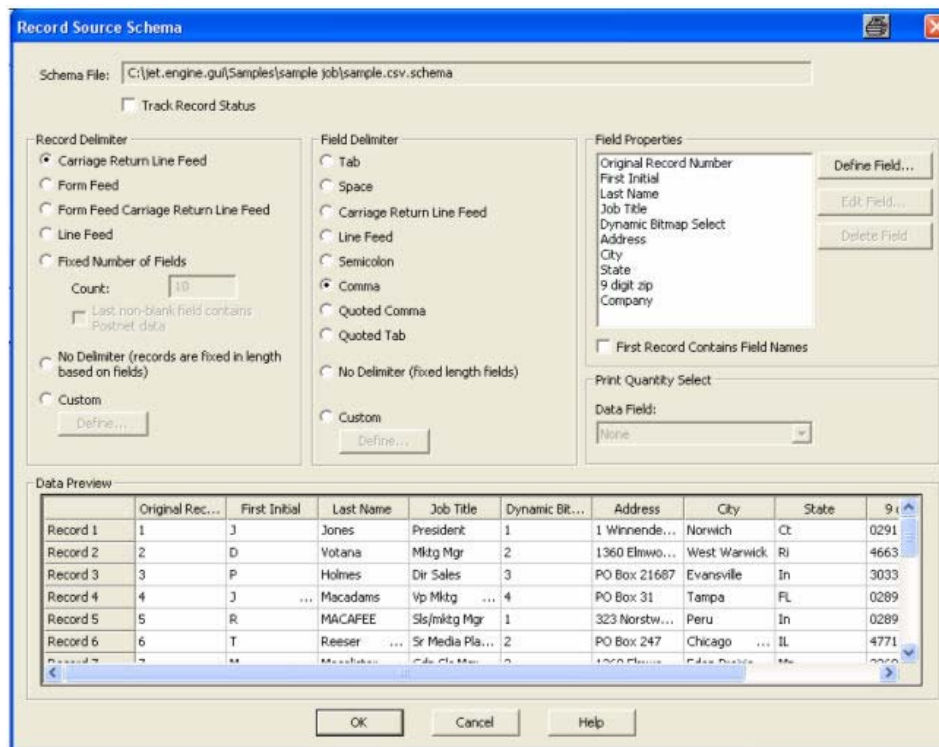
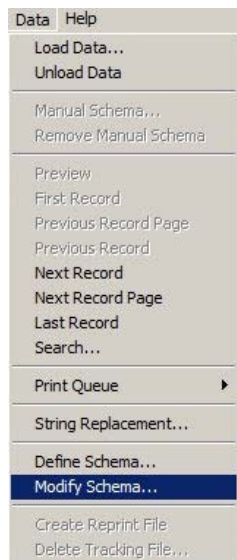
To **Unload Data**, choose **Data/Unload Data** from the menu or click on the  icon . Data is automatically unloaded.

## Data/Modify Schema

Data sources containing records can be in a variety of different formats. You need to be certain that the system can identify the format of your data source file.

After you load your data source (see Load Data), view the records in the **Print Manager** main tab to see if they appear as they should. If they do not, then the system was unable to automatically detect the format, and you may need to tell it where one record ends and another begins, or, within records, where one field ends and another begins. You do this by selecting **Modify Schema** from the **Data** menu. The **Record Source Schema** screen is where you define the format of your data

source file.



The Track Record Status

The Track Record Status feature generates a verification file for the database to record records printed or errored. The naming convention is "databasefilename.ext.verification", and when initialized contains a "?" (question mark) on each line for the number of records in the database. As the database is printed the question mark "?" will be replaced with a "P" for printed or "E" for errored. When the database is closed and reopened the user will see the record status in the first column of the print manager tab indicated by green cells with the text "printed" (or red cells with the text "errored" ) for previously processed records.

**Note:** The user can clear the tracking file by selecting Delete Tracking File from the Data menu to reprint the database.

Creating Reprint File:

In addition a new database containing only the un-printed records can be generated by accessing the Data menu and then clicking on Create Reprint File.

For more information on printing or deleting tracking records, click on this ["Track Record Status link"](#)

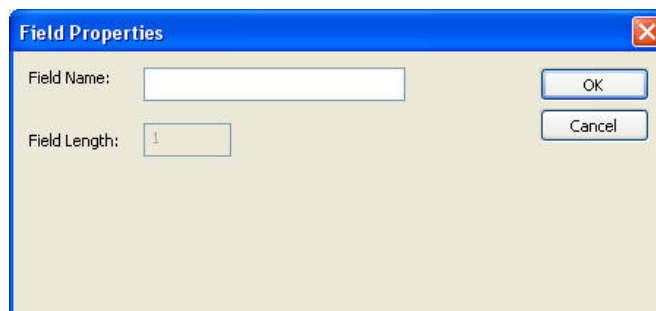
On this screen you can specify **Record Delimiters** and **Field Delimiters** in your data source file. A **Delimiter** tells the system what in the file indicates the end of a record or field.

You can also **Define**, **Edit**, or **Delete** fields from this screen.

The first several records are shown in **Data Preview** at the bottom of the screen, so you can see how they appear in the data file.

If the Multiple Copies setting is [enabled](#), you can specify a field in the data source to use as the quantity to print in the Print Quantity Select box.

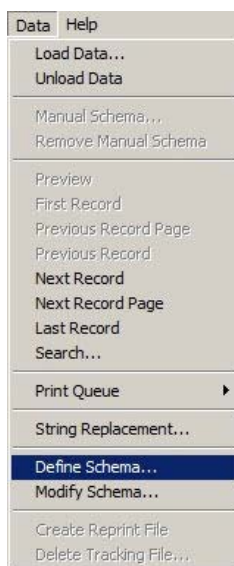
To name a **Field**, select it in the **Field Properties** box, and click on **Define Field**. This brings up the **Field Properties** screen.



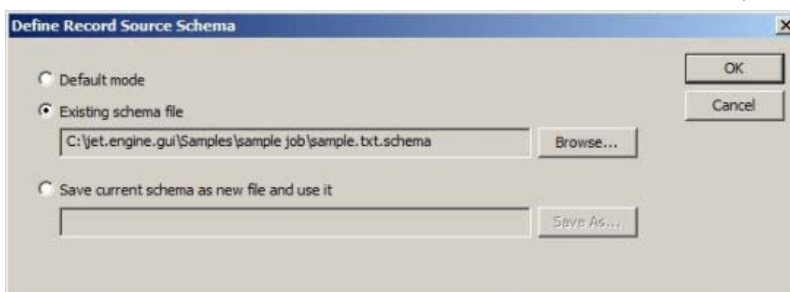
Enter a **Field Name** and click **OK**. The name will replace **Field N** in the **Field Properties** box, and in the **Data Preview** box. To edit an existing **Field Name**, select the name, click on the **Edit Field** button, and replace the **Field Name** in the box. Click **OK**.

You can also **Delete** a field name after selecting it in the **Field Properties** section.

#### Define Schema:



With a database loaded, under the "Data" Menu select Define Schema, the Define Record Source Schema selection screen, (shown below), will display.



The purpose of the Define Schema Selection is:

1. To permit the reuse of an existing schema for multiple databases.
2. To allow for a unique schema for each database. (Default Mode)

The file location of the schema you have loaded will show in the "Existing Schema File" section of the Define Record Source Schema selection screen, (shown above). When you define a schema for a job, it is saved with the job.

#### This screen provides you with 3 options:

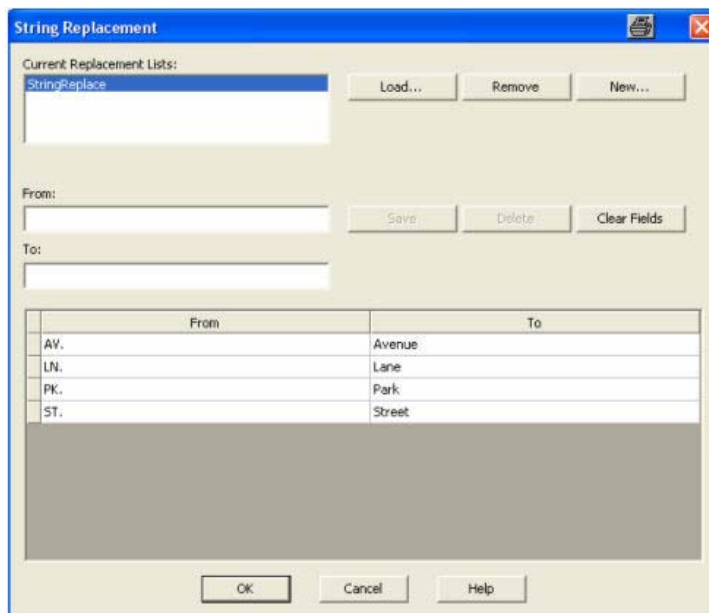
1. **Default Mode** This option will look for a schema file with the name of the database appended with .schema. Also note that database files ending with the extensions .csv, .tab, etc. will automatically create schema files. If the database ends with .txt and no schema exists the user will be prompted to create one using the Modify Schema dialog.
2. **Existing Schema option allows the user to specify a schema with a different file naming convention used in the Default mode. Note that unloading the database will automatically revert back to the Default Mode. Again, the existing schema file is lost when a new database is loaded.**
3. "Save current Schema as new file and use it" allows you to save the existing schema file as a new schema and use it. Note, after this action the file name will be moved into the second option, (existing schema file).

## String Replacement

There may be recurring items in your data source file that you would like to replace with a different item. These items are call **Strings** and you can change them by creating a **String Replacement List**.

From the **Data** menu click on **String Replacement**. If there is an existing **List** that you want to use, select it in the **Current Replacement Lists** box and click **Load** . The **List** appears in the bottom of the screen.





In the example above, **Replacement List 1** tells the system that every time "AVENUE" appears, replace it with "Ave." Every time "STREET" appears, replace it with "St", and so on. If you want to edit something on the list, click on the item in the **List**. Its values appear in the **From** and **To** boxes. From there you can edit the items by re-typing in the **From** and/or **To** boxes, or click on **Clear Fields** and type in new values. You can also select the items and click **Delete** to remove them from the **List**. If you want to add to the list, simply type in the **From** and **To** boxes and click **Save**. The items are then added to the **List**.

To add a list to the **Current Replacements List** box, click on **New**.



From here, you can browse to select a **List** that already exists elsewhere, or you can create a new **List** by giving it a **File name** and choosing a file type from **Save as type**. Click the **Save** button.


If you are adding a **List** that already exists elsewhere, it will be added to the **Current Replacements Lists** box. From there you can select it, **Load** it and edit as described above.

If you are creating a new **List**, select the name from the box, enter values in the **From** and **To** boxes, and click **Save**. Repeat until you have completed the **List**.

You can also **Delete** a **List** by selecting it in the **Current Replacements Lists** box and clicking on **Remove**.

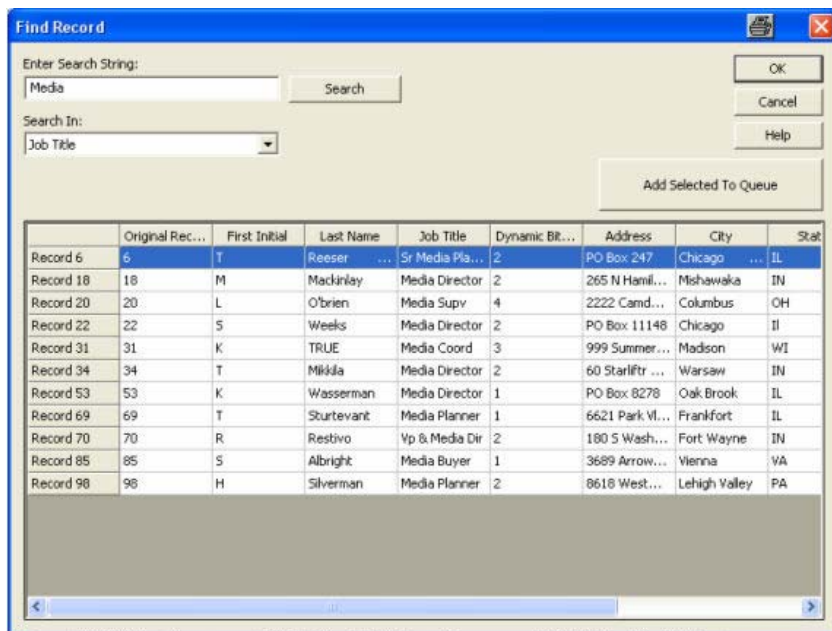
These **Lists** become part of the configuration for your print job and will be saved as part of the job's .jij file.

## Search

Once you have loaded a data source (see Load Data), you can **Search** for a particular record through the **Find Record** screen, either by clicking on **Search** from the **Data** menu, or by clicking on the  icon. You must be in **Print Manager** to use this function.

On the **Find Record** screen, start by entering in the **Enter Search String** box the item, or a portion of the item, for which you are searching. You can also indicate which fields to **Search In** by choosing from the drop-down menu. Click on the **Search** button.

Records which match your **Search** criteria appear in the box in the bottom part of the **Find Record** screen.



When you find the record for which you are searching, select that record by clicking the record number in the first column. If you want to print that particular record (e.g., it generated an error and you want to print it again), click **Add Selected To Queue**.

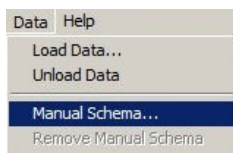
Database: C:\Documents and Settings\Jon\Desktop\...sample.csv Number of Records: 104 Number of Records Queued: 1

Record#	Status	Original Rec...	First Initial	Last Name	Job Title	Dynamic Bit...	Address	City	State	9 digit zip	Company
Record 1		1	J	Jones	President	1	1 Winnende...	Norwich	Ct	02910-3824	INC..JET INC
Record 2		2	D	Volana	Mktg Mgr	2	1360 Elmwo...	West Warwick	Ri	46634-1681	INC..JET INC
Record 3		3	P	Holmes	Dir Sales	3	PO Box 21687	Evansville	In	30339-4024	INC..JET INC
Record 4		4	J	Macadams	Vp Mktg	4	PO Box 31	Tampa	FL	02893-2300	INC..JET INC
Record 5		5	R	MACAFEE	Sls/Mktg Mgr	1	323 Norstw...	Peru	In	02893-2300	INC..JET INC
Record 6	Queued	6	T	Reeser	Sr Media Pla...	2	PO Box 247	Chicago	IL	47710-2258	INC..JET INC
Record 7		7	M	Macalster	Cdn Sls Mgr	3	1360 Elmwo...	Eden Prairie	Mn	33607-4174	INC..JET INC
Record 8		8	S	Kirby	Advgt Mgr	4	PO Box 1681	Eden Prairie	MN	46970-0027	INC..JET INC
Record 9		9	J	MACMILLEN	President	1	2455 Pacs F...	Berea	Oh	60601-7677	INC..JET INC
Record 10		10	A	Huwald	Advgt Mgr	2	1400 Divisio...	Columbus	OH	55344-2269	INC..JET INC

When you return to the **Print Manager** screen, you'll see that the **Status** of that record is **Queued**.

If you select that particular record and click **OK**, you return to the **Print Manager** screen. That record is now the first record in the list, and you can see where it is in relation to the rest of the data source by using the scroll bar on the right of the screen.

## Manual Schema



Manual Schema Purpose:

The Manual Schema is used to permit binding a schema and sample database to a job that uses terminal mode.

- The Schema is embedded in the Job
- A sample Database can be referenced and the first 20 records previewed
- Software Mode Operator cannot access.
- No data is shown in the Print Manager tab as there is no actual database.

**Manual Schema Usage:**

- To create a job with a Manual Schema No database can be loaded, the Software mode must be Supervisor or above.


The following are the steps to create the Manual Schema:

1. Set Schema
2. Menu: Data-> Manual Schema...
3. Choose example database: (you will be prompted for schema if one does not exist).

Choose sample database for data preview (optional)

- Menu: Data->Modify Schema...
- Press OK; (you will be prompted for database to use for preview)

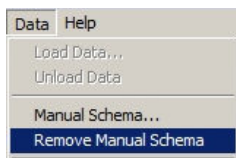
 **Note: The path for data is stored in job (not the database)**


 Note: If a job is opened and the database is not found, it will not preview and no error will be generated.

Manual Schema Removal:

To remove a Manual Schema from a job use the following steps;

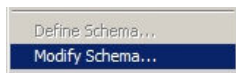
Menu: Data -> Remove Manual Schema



 **Note:** You will now be able to load a database

Edit Manual Schema:

To edit a Manual Schema embedded in a job use the following steps;



Menu: Data->Modify Schema

- Make changes
- Press OK
  - You will be prompted for database to use for preview

 **Note:** You can press cancel if no data preview is desired

## Testing Print Jobs

### Contents


[Preview Form Data](#)


[Test Page: Print Preview](#)

[Test Page: Print](#)

## Preview Form Data

If you want to see how the data in your print job will look in print, without actually printing it, you can use the jet.engine™GUI's **Preview** feature.

After you have set up your block on the **Form Design** screen, **Load Data**, either by clicking  on the tool bar, or by selecting **Load Data** from the **Data** menu.

Then, while still on the **Form Design** screen, select **Preview** from the **Data** menu, or click on  on the tool bar (this button will allow you to toggle the **Preview** feature on or off).

The first record in your data source is now previewed in the block on the **Form Design** layout. If you want to view other records in the data source, you can use the **Page** arrow buttons on the tool bar to move back and forth through the pages, or to the beginning or end of the data source. Typically, one page prints one record. However, when using a **Table**, one page can print multiple records. (Note: These button features are also available as selections on the **Data** menu.)



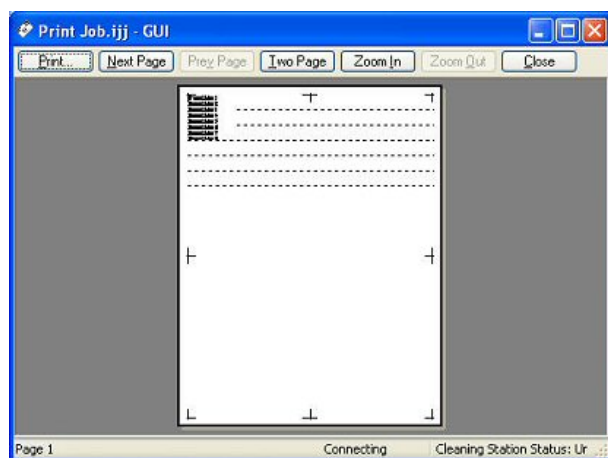
If you want to view a particular page, enter its number in the box, and hit **Enter** on your keyboard. That page's record(s) will appear in the block.

With the **Preview** feature enabled, the data that appears in the block on the **Form Design** screen is also the first record that appears on the **Print Manager** screen. From there, you can scroll through the records and view a particular record in the context of other records before and after it.

Conversely, with **Preview** enabled, you can highlight a record on the **Print Manager** screen and see it previewed on the **Form Design** screen.

## Test Page: Print Preview

You might find it useful to view your print job before running the entire job. You can do this from the **File** menu by choosing **Print Preview**.

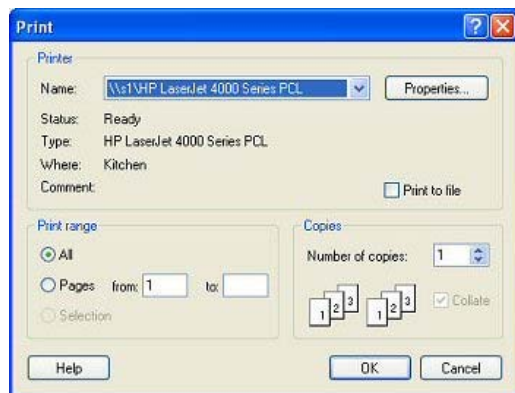


From this screen, you can preview the print job as individual pages, or in **Two Page** spreads. Using the **Next Page** and **Prev Page** buttons, you can move back and forth among the pages. You can also **Zoom In** or **Zoom Out** on individual pages.

 **Note:** To not use the layout marks as shown above, set the "Application Settings", 'DisableTestPrintLayoutMarks' to 0.

If you choose the **Close** button, you will return to your document without printing anything.


Choosing the **Print** button brings up a typical Windows print dialog.

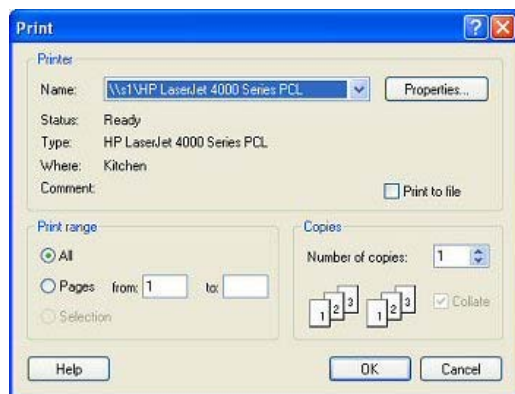


From here, you can select a printer and its properties, print all or a specific range of pages, and set the number of copies to print.

## Test Page: Print

You might find it useful to print a test page of your print job to see how it looks on a page before running the entire job.

To print a test page, either click  on the tool bar, or, from the **File** menu, choose **Print/Test Page**. You'll then see a typical Windows print dialog (as shown below), where you can select a printer and its properties, print all or a specific range of pages, and set the number of copies to print.



## Advanced Configuration

### Contents

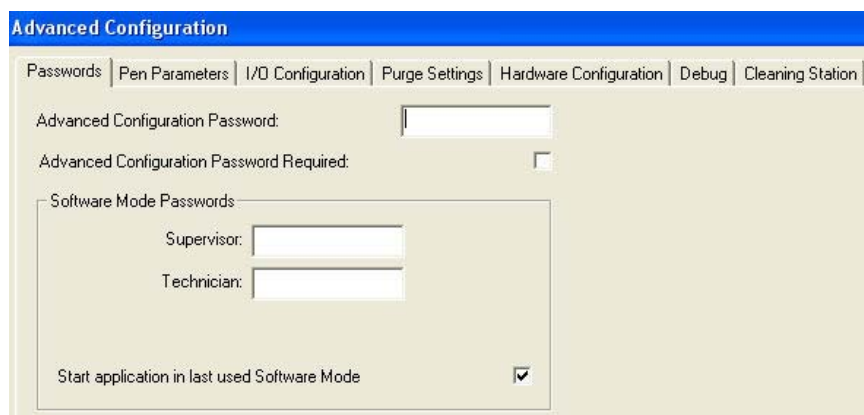
[Passwords](#)

[Pen Parameters](#)

[I/O Configuration](#)

[Purge Settings](#)

## Passwords



When operating the jet.engine™GUI as a **Technician** or **Developer**, you have the ability to set passwords. You can access this feature by going to the **Options** menu, choosing **Advanced Configuration**, and clicking on the **Passwords** tab.

 **Note:** If you are operating in the **Operator** or **Supervisor** mode, and require a password, see your systems administrator.

If you want to require a password to access the **Advanced Configuration** features, then enter the password in the **Advanced Configuration Password** box, and check the box next to **Advanced Configuration Password Required**. If this box is not checked, a user will not be prompted for a password to access **Advanced Configuration**, even though you may have entered a password.

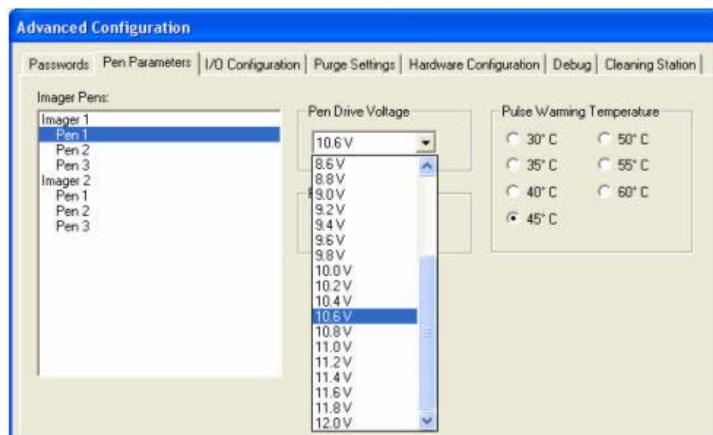
You can also set passwords here for users to access different operating modes. The **Operator** mode is the mode with the fewest privileges and cannot require a password. However, both the **Supervisor** and **Technician** modes can be set to require a password. Enter the password in the box next to the appropriate mode. If no password is entered here, then the user can change operating modes at will.

### Last Used Software Mode:

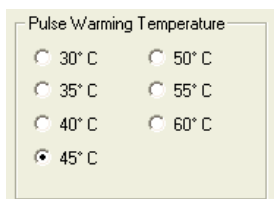
By default, the jet.engine™GUI opens in the **Operator** mode. If the "**Start application in last used Software Mode**" box is checked, the application will open in the last used mode. If you have specified a password, then the user will be prompted for that password. The jet.engine™GUI will remain in **Operator** mode if the password is entered incorrectly.

## Pen Parameters

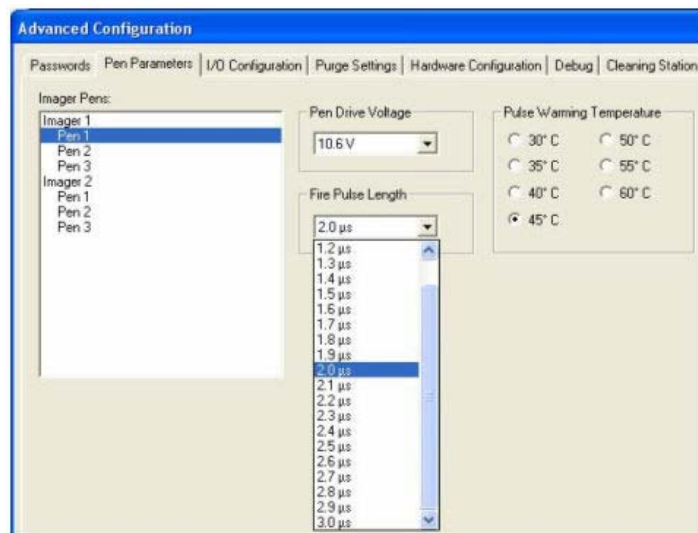
Pen Parameters allow you to set the conditions under which the pens will operate. Each pen can be set up separately with non-similar characteristics.



Pen Drive Voltage is the voltage output of the pen regulator that drives the pen.



Pulse Warming Temperature is the trigger threshold that controls the pulse warming trigger.

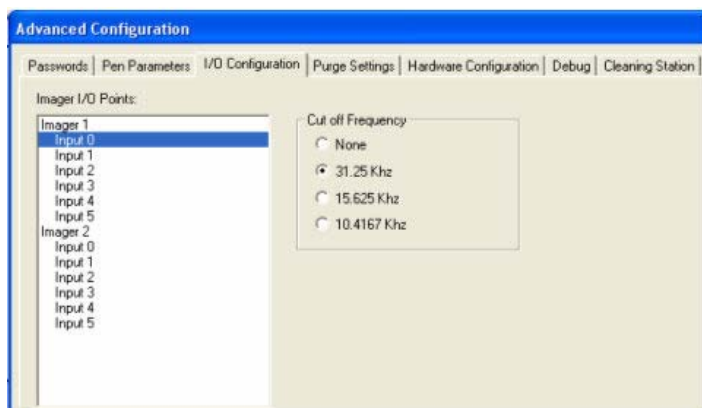


Fire Pulse Length is the amount of time that the Pen Drive Voltage is applied to the pens. The recommended range of values is 1.9  $\mu$ s to 2.2  $\mu$ s, although higher values are provided.

**Note:** Using values that are higher than recommended values may result in the print job running at a slower than optimal speed. If you want to use Fire Pulse Lengths higher than 2.3  $\mu$ s, please contact inc.jet™ Technical Support.

The Fire Pulse Length and the Pen Drive Voltage together decide the energy provided to the pen, which in turn decides the amount of ink that will be used to print.

## IO Configuration



The IO Configuration screen allows you to set the Cut off Frequency for each Input on every Imager. The Default is 31.25 KHz.

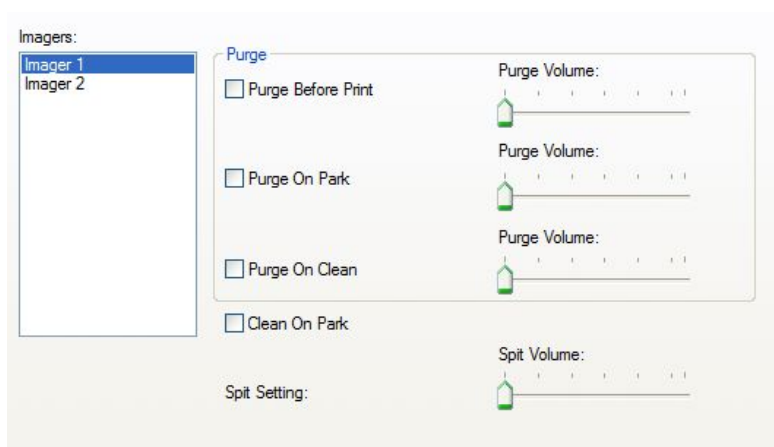
The Cut off Frequency sets the amount of time an Input must remain stable in order to be recognized as valid. The lower the Cut off Frequency, the longer the Input must remain stable without transitions. A Cut off Frequency value of 31.25 KHz means that Input must remain constant for a period of 16  $\mu$ s for it to be a valid Input transition. Cut off Frequencies of 15.625 KHz and 10.4167 KHz mean the Input must remain constant for 32  $\mu$ s and 48  $\mu$ s respectively. If the setting is set to None, all signals are accepted.

**Note:** In order to be recognized, the Input that provides the encoder pulses must also confirm to this condition, or the encoder Input will be filtered out.

## Purge Settings

Purging is a means of periodically cleaning the ink jets by sending ink through each jet on the ink head. Configuration of automatic purging during capping station movements is set up on the Purge Settings tab, which you access through Advanced Configuration.

**Note:** Purge Settings is only available if you have Technician privileges.



All jet.engine™ Imagers equipped with automatic capping stations have the ability to automatically purge all enabled pens whenever a capping station movement is performed. Capping station moves include Move to Print, Move to Park, and Clean.

On the Purge Settings tab, you can enable and disable purging and set the purge volume for all Cleaning Station moves. The purge volume is adjustable using a slider scale from 30 pixels to 300 pixels per nozzle. The selected value defines the number of pixels of ink that each pen will print using every enabled nozzle when performing the purge operation.

There are three occasions when you can purge the nozzles on the pens:

1. Purge before Print:

A purge (in the capping tray) occurs before a Move to Print is performed.

2. Purge on Park:

A purge (in the capping tray) occurs after a Move to Park is performed.

3. Purge on Clean:

A purge (in the capping tray) occurs before a Clean is performed.


Additionally, you can control the following behaviors:

Clean On Park

A clean occurs when the Imager is parked.

Spit Setting

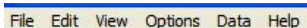
Specify the volume of ink to use when a Spit is performed.

 **Note:** Keep in mind, that purge parameters are stored in the Imager, and not the jet.engine™ GUI. The purge parameters are received from each Imager and displayed when the Purge Settings tab is selected. Therefore, the parameters must be set up for each Imager and may not be same for each Imager. Each time a new Imager is added to the system, these parameters must be re-configured.

## Other

Information regarding the Hardware Configuration, Debug and Cleaning Station features is covered in separate documentation. Please contact inc.jet™.

## Menu Bar



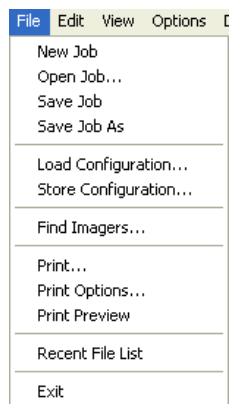
The **Menu Bar** appears directly under the blue title banner, in the top left corner of the *jet.engine™* GUI screen. It is similar to menu bars found in most Windows-based applications.

Each heading contains a drop-down menu which will allow you to access commands, functions, additional menus or information.

Click on a heading in the following list for additional information about its drop-down menu.

- [File](#)
- [Edit](#)
- [View](#)
- [Options](#)
- [Data](#)
- [Help](#)

## File Menu



The File Menu contains commands to be used with individual files:

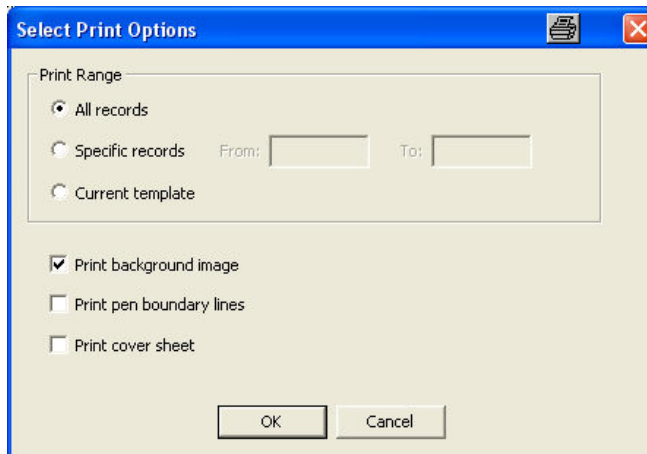
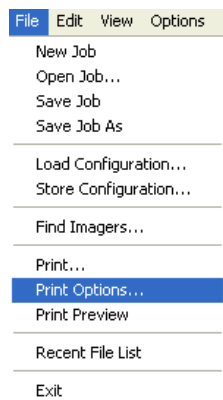
- **New Job:** Use this command to open a new job file.
- **Open Job:** If you select this command, you'll see a browser window from which you can locate and open a job that has previously been saved.
- **Save Job:** Use this command to save an existing job to which you have made changes. You can also use this command to save a new job for the first time.
- **Save Job As:** You can use this command to save a new job for the first time, or to save an existing job under a new name.
- **Load Configuration:** If you have previously stored a job configuration (a group of specific settings), you can use this command to load that configuration into the



current job.

- **Store Configuration:** Use this command to save a configuration or group of settings which you may want to use for future jobs.
- **Find Imagers:** Use this command to find imagers that are connected to the *jet.engine™* GUI.
- **Print:** Use this command to print a selected item.
- **Print Options:** Use this command to open a print options menu, (shown below).

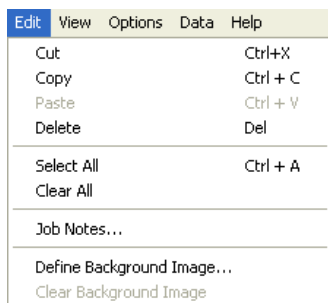
See [Print to PDF section](#) for more information on setting up and using this feature.



- **Print Preview:** Use this command to preview a selected item before printing it.
- **Exit:** Selecting this command closes the *jet.engine™* GUI. **If you have not already saved the open file, you will be asked if you want to save the changes.**

**Note:** Between the Print Preview command and the Exit command, you'll see a list of the most recent jobs which have been opened (TestJob.ijj in the example above). Up to ten jobs may be listed and may include jobs from the current *jet.engine™* GUI session as well as from previous sessions. You can double-click on a file name to open that file.

## Edit Menu

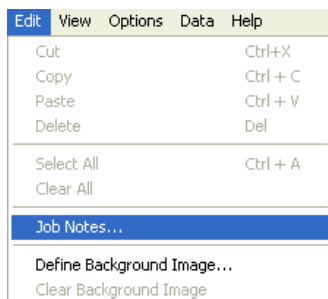


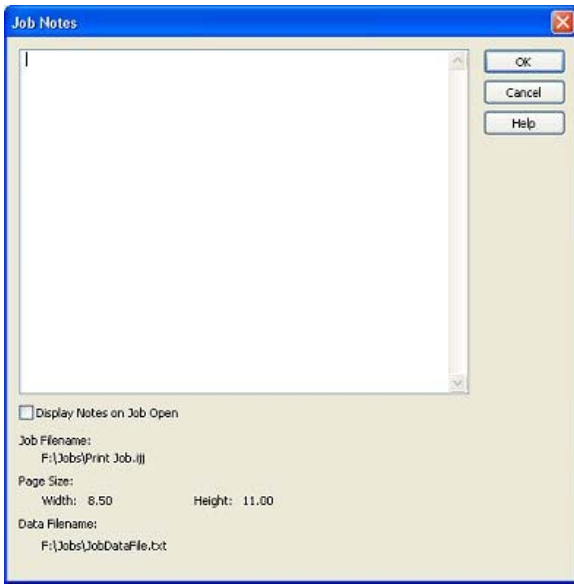
The Edit Menu contains typical Windows commands used for editing (Cut, Copy, Paste, Delete, Select All), along with their keyboard shortcuts. These commands are only available when Form Design is the active Main Tab.

In addition, the Clear All command can be used to remove all objects from the Form Design screen.

Job Notes:

Another feature of the Edit Menu is the Job Notes option.

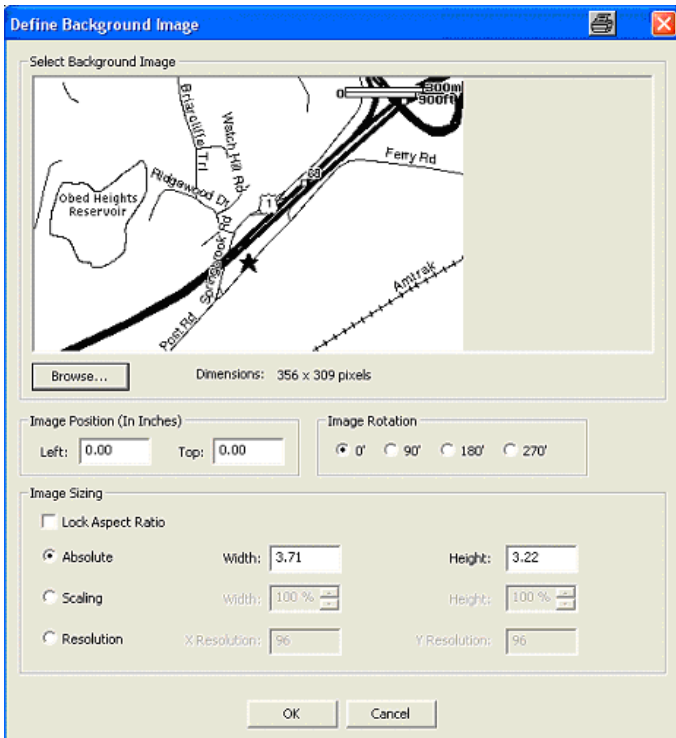
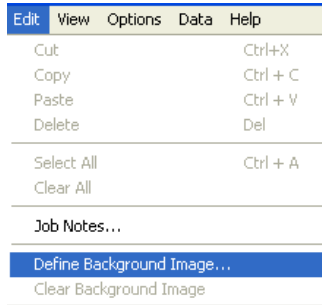




If you choose this command, you will see a screen with a text box in which you can record notes about the current job that you might find useful for future reference. Check the box next to Display Notes on Job Open to have this information displayed whenever the job is opened.

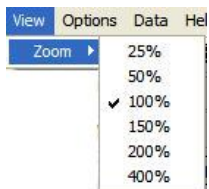
Define Background Image:

Another feature of the Edit Menu is the Define Background Image feature. From here you can select an image to appear in the background.

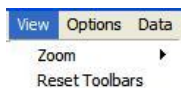


## View Menu

You can use Zoom option on the View Menu to change the size of the Form Design area from a list of percentages. The default is 100%.

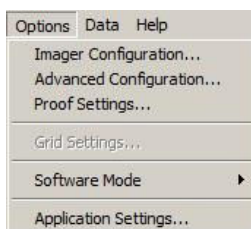


The Reset Toolbars option is also on the View menu.



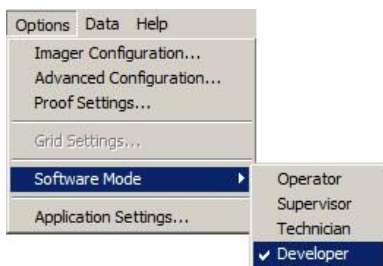
Toolbars can be moved around in the toolbar area at the top of the screen, and they can be moved into the lower portion of the window, by selecting the gray bar on the left side of the toolbar while holding down the left mouse button. If you close a toolbar that you have moved to the lower portion of the window (by clicking the 'X' in the upper right corner), the toolbar disappears. To retrieve the toolbar, select Reset Toolbars from the View menu, and the toolbar will be returned to the toolbar area at the top of the window.

## Options Menu



The Options Menu is your gateway to available settings for [Imager Configuration](#), [Advanced Configuration](#), [Proof Settings](#), and [Grid Settings](#). Selecting any of these items will take you to additional screens for accessing their settings.

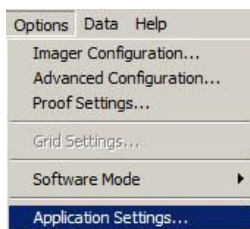
Software Mode refers to the level of access available to the user.



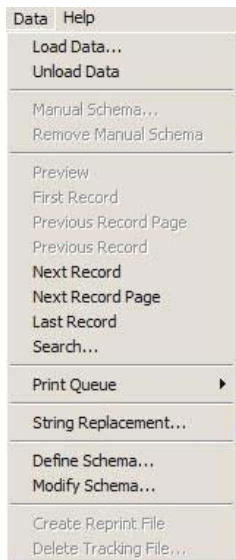
The Operator mode is the mode with the fewest privileges and does not require a [Password](#). An Operator cannot change the job layout or any of the job's configurations. A Supervisor has limited access to hardware configuration and can change the job layout. A Technician is able to configure hardware and can change [IO Events](#). A Developer has full access to hardware configuration as well as to all the debug tools available in the *jet.engine™* GUI.

### Application Settings Menu:

You must log in as Technician or Developer to access the Application Settings menu, clicking on this [Application Settings link](#) to learn more about Application Settings.



## Data Menu

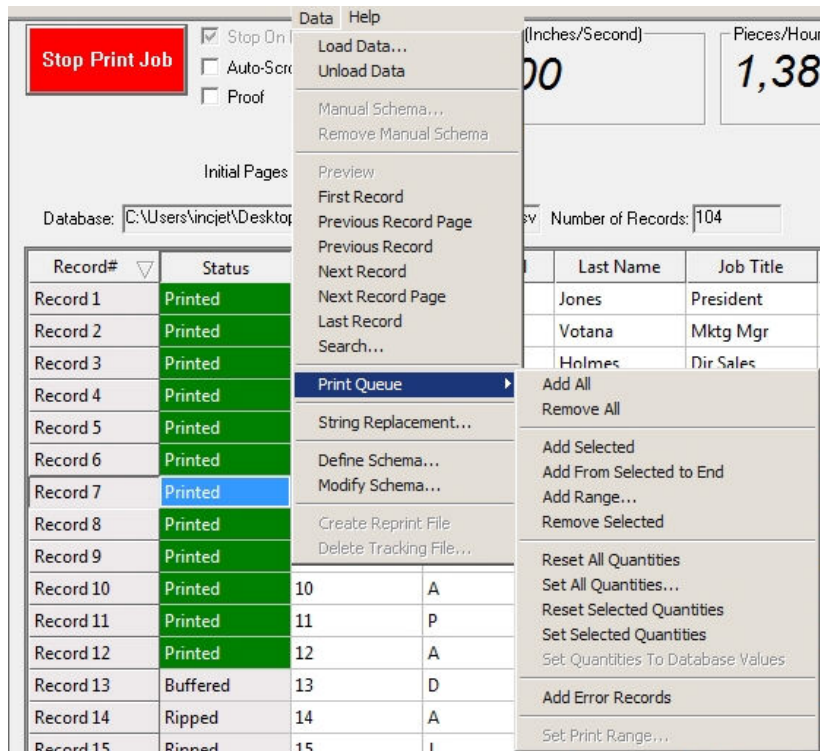


From the Data Menu, you can [Load Data](#) or [Unload Data](#).

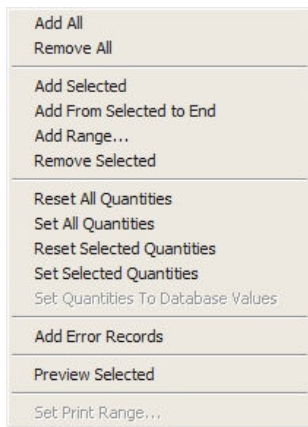
**Note:** You can also use the Load Data Source and Unload Data Source buttons on the Database Toolbar.

Once a data source has been loaded, and Preview mode has been selected, you can use this menu to move among the records, i.e., go to the First Record, the Previous Record Page, the Previous Record, the Next Record, the Next Record Page or the Last Record.

You can also manage the Print Queue from this menu:



**Note:** You can also access the Print Queue menu by right-clicking anywhere on the Print Manager Main Tab.



From the Print Queue menu you can -

Add All records;

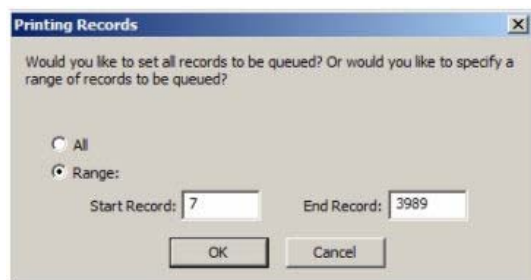
Remove All records;

Add Selected records;

Add From Selected to End; Select a specific record and add every record from there to the end of the data source

Record 18	Queued	1	C-02095-25...	PERM	8/3/2007 12...	Denied	AGS STUCCO	2709 W BEL...	LITTLETON	CO	80214	238170	Sking Centr...	Construction	
Record 19		0	A-07158-44...	PERM	8/31/2007 1...	Certified			LACKAWANEN	PA	18435	721214	Recreational...	Hospitality	
Record 20		0	A-07061-16...	PERM	8/21/2007 1...	Certified			GLEN COVE	NY	11542	721214	Recreational...	Hospitality	
Record 21		0	A-06067-94...	PERM	10/10/2006 ...	Certified			WHITE PLAINS	NY	10604	721110	Hotels (exc...	Hospitality	
Record 22		0	A-06164-27...	PERM	10/25/2006 ...	Certified			SOMERY	MONTGOMERY	AL	36108	721110	Hotels (exc...	Hospitality
Record 23		0	C-03184-53	PERM	8/11/2007 1	Denied			FLANDERS	CA	94620	721110	Hotels (exc...	Hospitality	

Add Range; Specify a range of records and add them to the print queue



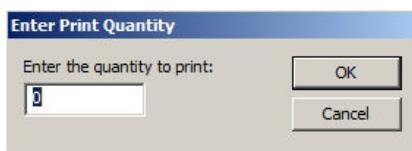
Remove Selected records;

Reset All Quantities of records with quantities defined, if Multiple Copies is Enabled;

Set All Quantities of records with quantities defined, if Multiple Copies is Enabled;

Reset Selected Quantities of records with quantities defined, if Multiple Copies is Enabled;

Set Selected Quantities of records with quantities defined, if Multiple Copies is Enabled;

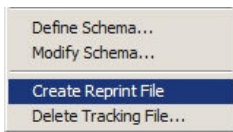
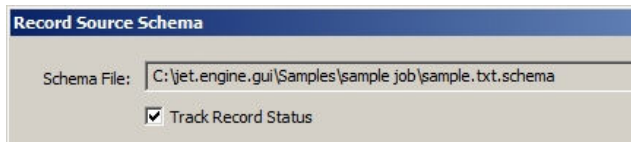


Add Error Records to the print queue which had previously showed up as records with errors.

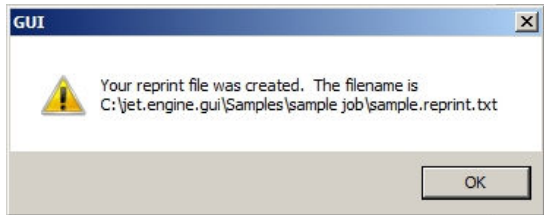
Click on the following links for information on the Data Menu choice categories; [String Replacement](#), [Define Schema](#) and [Modify Schema](#).

### Creating a Reprint File

To Create a Reprint File you need to go into the Data Menu and select Modify Schema and enable Track Record Status (shown below). Click on this [Track Record Status Link](#) for more detailed information.

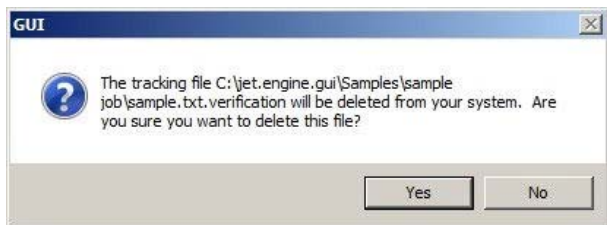


After the Track Record Status is enabled you can now select Create Reprint File from the Data drop down menu, the following message box will display. Click OK and the file will be sent to the default printer you have selected.



Delete Tracking File

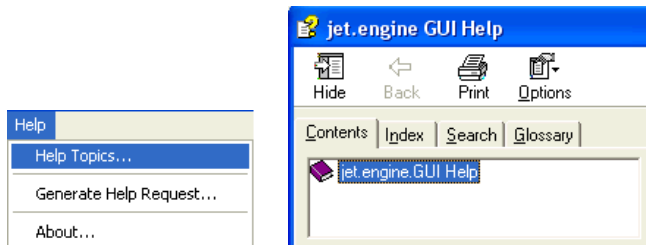
To Delete a Tracking File make sure the [Track Record Status](#) is enabled, then select [Create Reprint File](#) from the Data drop down menu, the following message box will display.



## Help Menu

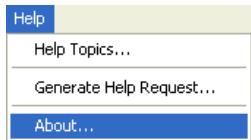
Help/Topics

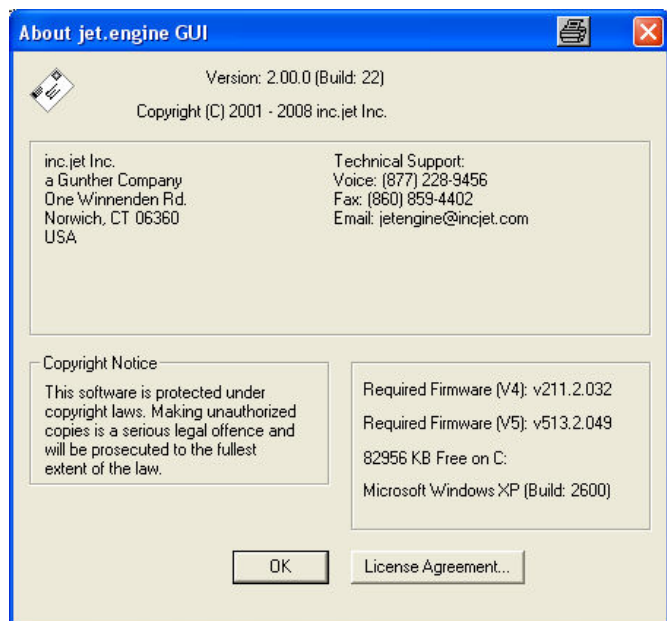
If you select Help Topics it will bring you to the Help Files menu where you can look up any subject in an organized index.



Help/About:

If you select About, you'll see a typical Windows screen that gives information regarding the software version and build level.






### Technical Support:

Technical Support contact information is also listed on this screen.

Firmware Versions:

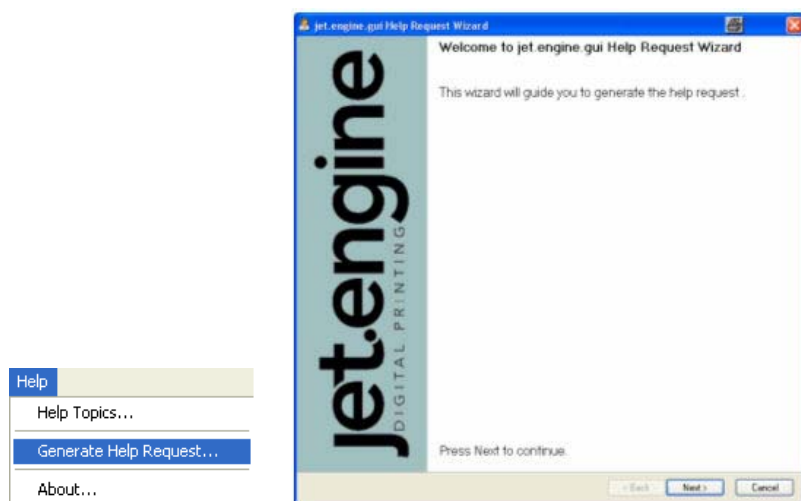
**Note:** The Firmware versions that are required for use in Version 2.0 are listed on the bottom right of the About *jet.engine™* GUI screen, (shown above).

**FYI:** Firmware versions are updated automatically, this feature is set to automatic firmware update enabled as the default setting in the [Application Settings](#). When the *jet.engine™* GUI is updated to a newer version it contains new firmware versions that will automatically install as long as automatic updates is enabled.

From this screen you can also access a copy of the License Agreement by clicking on the  button on the About screen, (shown above).

Help/Generate Help Request Wizard:

If you select Generate Help Request the following jet.engine.gui Help Request Wizard screen will pop up. This wizard will guide you through and collect all the necessary information and files that we will need to diagnose your issue/concern.



Once the jet.engine.gui Help Wizard screen displays click on "Next" to continue.

In the second screen that opens you will enter in the "Customer information", i.e. your name, company name, Job Title, address, email and telephone numbers.

The third screen is where you will "Describe the issue in detail", you will create a title name for the issue and fill in the information on the date and time of the incident,

the detail of the description and steps on how to reproduce the issue.

The fourth screen will allow you to "Select the components to include in the zip file" that the Help Wizard will create, there is a check box that you will select for each item that you would like to include in the zip file.

- The files you can select are Job file, Configuration files, Registry settings, Systems information, Dynamic bitmap files, PDF files and Data source schema file.
- On the same page you can select the "Data Source Records", the choices are None, All records, First 20 records or a specific start / finish record range can be specified.
- There is also a selection for "Maximum Number of Log Files" that you can specify from 1 to 99.

After completing this information click the "Next" button, you will see a screen that says "please wait while we process your request". A progress bar will display and then the last screen will display once the information has been saved.

On the last screen you will see a message that says; "Successfully generated help request file, Please follow the instructions below to get technical support".

The information on this page will give you the instructions on where the file is located that you have just created, (Example:Help request file: C:\jet.engine.gui\TechnicalSupport\helpRequest\_2008\_10\_17\_10\_13\_50.zip). The file can be sent to the email address indicated: jetengine@incjet.com, or a CD containing the file can be sent via US Mail.

The bottom section of the page will show you a summary of the information you provided using the Help Request Wizard, if any of the information is incorrect you can press the back button to go back and correct any errors that you may have made in the information that you provided.

Once you have finished inputting all the information and decided your method for submitting the file you created to Inc.Jet you can click the "Finish" button.

## Toolbars

Toolbars consist of icons that give you quick access to functions and features of the *Jet.engine™* GUI. In many instances, a toolbar icon is an alternative to going through the Menu Bar.

If you hold your mouse over an icon, a tool tip will appear that describes the function of that icon.

Toolbars can be moved around in the toolbar area at the top of the screen, and they can be moved into the lower portion of the window, by selecting the gray bar on the left side of the toolbar while holding down the left mouse button. If you close a toolbar that you have moved to the lower portion of the window (by clicking the 'X' in the upper right corner), the toolbar disappears. To retrieve the toolbar, select Reset Toolbars from the View menu, and the toolbar will be returned to the toolbar area at the top of the window.








There are five (5) toolbars available in the *Jet.engine™* GUI. Click on a toolbar title in the list below to find out more about its features.

- [File](#)
- [Form Design \(Job Layout\)](#)
- [Font](#)
- [Preview](#)
- [Alignment](#)




## File Toolbar



From the File toolbar you can do the following:

-  Open a New file or job
-  [Open](#) an existing file or job. If you click on this icon, a browse window appears.
-  [Save](#) a new file or save changes to an existing file.
-  Cut text or an object.
-  Copy text or an object to the Windows clipboard for pasting elsewhere.
-  Paste text or an object already copied to the Windows clipboard.
-  Print using the typical Windows Print dialog.




-  View the About screen, which gives information about the version of the software. You can also access the License Agreement through this screen.
-  Access the Help files (you can also use the F1 key on your keyboard).
-  Access the [Job Notes](#) screen.

## Form Design (Job Layout) Toolbar







The icons on this toolbar are used to place and manage data objects on the [Form Design](#) page.

The first eight (8) icons represent data objects:

-  [Field Block](#)
-  [Record Block](#)
-  [Message Line](#)
-  [Indicia](#)
-  [Fixed Bitmap](#)
-  [Dynamic Bitmap](#)
-  [Number Generator](#)
-  [PDF File](#)




The remaining icons can be used to manage data objects on the Form Design screen:

-  Delete an object
-  Access the [Properties](#) for a selected object
-  Toggle the [Form Design grid](#) on and off
-  Snap objects to the grid



## Font Toolbar



This toolbar is used primarily to manage [Font](#) attributes:

-  Click on the arrow on the right to see a drop-down menu of available fonts.
-  Click on the arrow on the right to see a drop-down menu of font point sizes.
-  Use these icons to change the attributes of a font or any of its individual characters. From left to right, they are: Bold, Italicize, Underline and Strikethrough Effect.

At the end of this toolbar are two icons that are used to manipulate data objects on the Form Design screen when they overlap each other. They are:

-  Bring to Front - moves the selected object to the front of another object.
-  Send to Back - moves the selected object behind another object.

 Note: Font changes are retained until changed; they are not lost when the GUI is shut down.

## Preview Toolbar



The icons on this toolbar (with the exception of the last two on the right) are only active when the [Print Manager](#) Main Tab is the active screen, and a data source has been loaded. You can use them to preview records in the print queue.





The number visible in the center (2 in this example) indicates which Page (or record) of the total number of pages (104 in this example) is selected.

Use the single arrows to move one page back (previous page) or one page forward (next page).

Use the double arrows to move one screen back (previous record page) or one screen forward (next record page).

Use the arrow/line combinations to move to the first page/record of the data source or the last page/record of the data source (104 in this example).

The remaining icons are:


-  [Record Search](#)
-  Toggle [Preview](#) mode on and off
-  [Load Data Source](#)
-  [Unload Data Source](#)


## Alignment Toolbar




The icons on the Alignment Toolbar become active when you are in Form Design and have selected two or more objects (using the Ctrl key).

Use the four (4) icons on the left to [Align](#) multiple objects according to the direction of the arrows, i.e., left align, right align, top align, or bottom align.

The Crop tool:  is only available when working with a [PDF](#) object.

The icons  and , are used for [Grouping](#) of multiple objects.

The last icon on the right:  is used for arranging objects in a [Table](#).

## Print To PDF

The ability to Print to PDF has been added, and when combined with the following features, allows the GUI to create a PDF print that will mimic the exact print that will be created on the product, including background images already present, different colors of the pens, and differing pen location.

[Full Color Background Image](#)

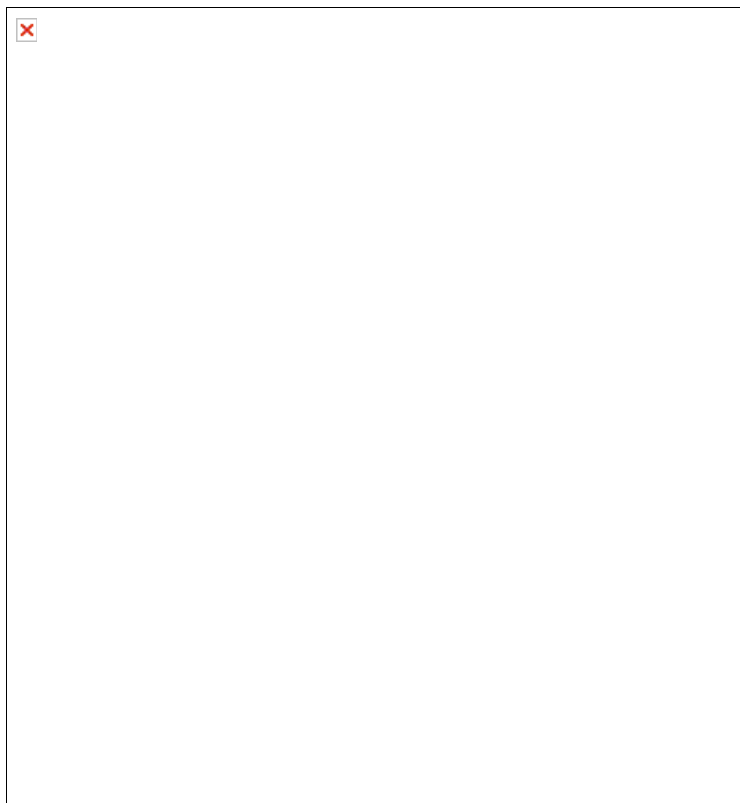
[Define Color of the Pen](#)

[Adjust Pen Group location](#)


[Printing Completed Project](#)

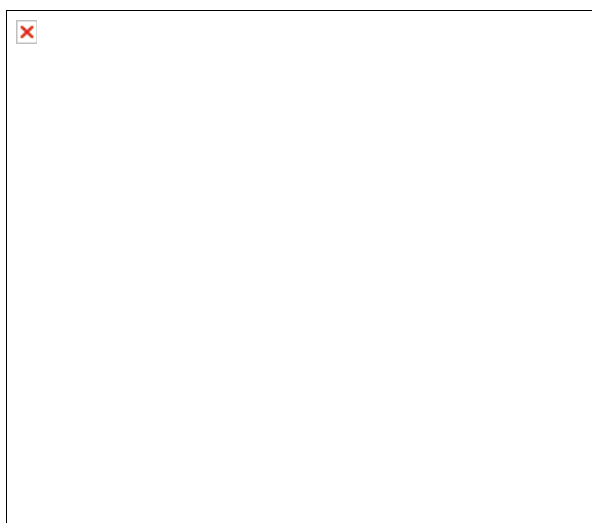
## Full Color Background Image

The Edit Menu contains the option "Define Background Image...". This allows a bitmap, jpeg or tiff formatted image to be underlaid behind the print job loaded into the GUI - allowing for simulation of a form or product being printed on top of. The following screen is used to define the image before entering it as the background.

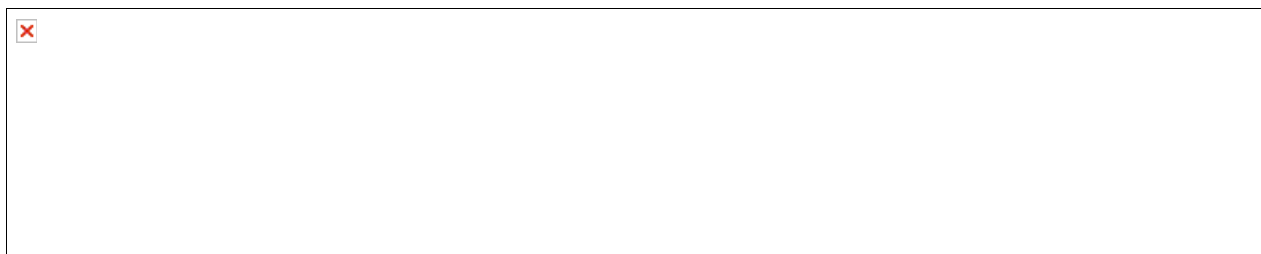


### Define Color of the Pen

The color of each pen can be individually assigned in the form design tab, allowing for an accurate reproduction of what the final print will look like. The  button in the Form Design tab change it from black & white to color mode, then right clicking on the pen will bring up the Select Pen Color popup.



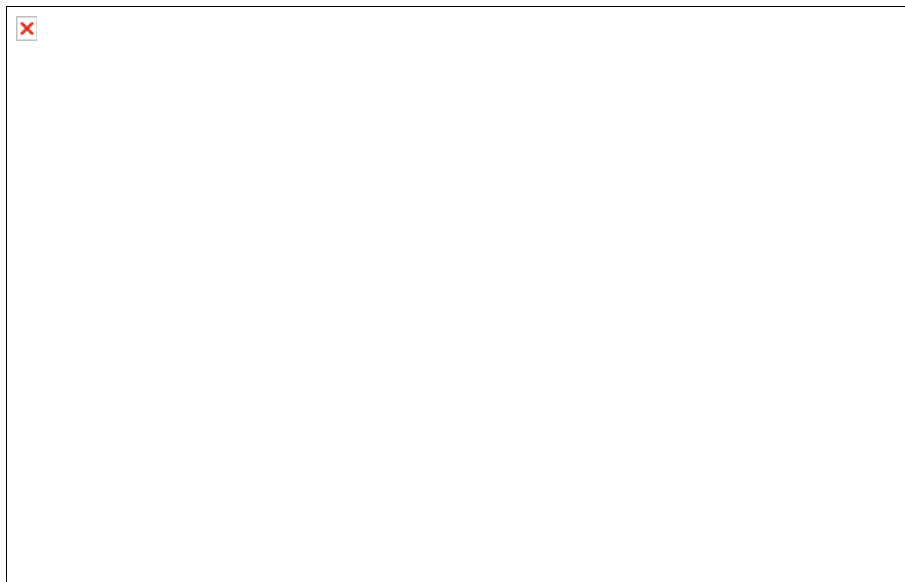
Either select from a preset or create a custom color. Each pen will display as the selected color on the form design screen, as well as during a print to PDF.



### Adjust Pen Group Location

The Form Design tab allows the location of the pen group to be moved, to allow it to be aligned with the background image form, product, etc. This is the last step needed to have a sample of the finished print job read to print. Select the pen group, and drag it to the location that it needs to be in. This only works in the color

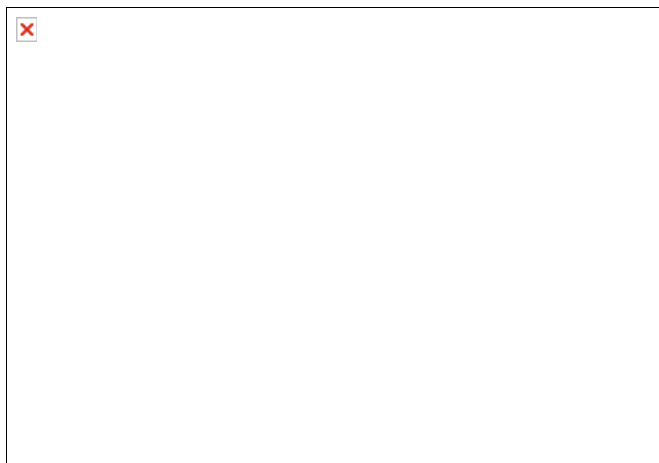
mode, not black and white.



## Printing Completed Project

With everything else ready, one must still set the imager to print with the correct parameters

To print the now formatted job to a PDF, make sure a PDF Printer is installed on the system, and that the job is formatted as wanted. Under the GUI File Menu, select Print Options... to display this screen:



From this screen the operator can select the number of records in the database to include in the preview and whether to include the various options in the output image. Optional output elements include the background imager, pen boundary lines, and a cover sheet.

The full color background image can be included in the print preview. The entire background image will be printed, including any parts that are outside the page size configured for the jet.engine page. The background image is always printed behind all pens data. Pen boundary lines are dotted lines that show the boundaries between each Print Cartridge in the overall layout.

Once layout and setup is complete, use the Print... selection from the GUI file menu to print the file (be sure to select the pdf printer), or use Print Preview to get a look at your completed layout as it will print.

## Terminal Mode

By configuring **Terminal Mode**, you can set up the jet.engine™GUI to receive dynamic print data from a remote application, as well as allow a remote application to control several of the jet.engine™GUI functions and capabilities.

 **Note:** The *Terminal Mode - Communication Interface Specification* contains a detailed description of the commands used in this mode.

You set up **Terminal Mode** in a section of the **Systems Settings** screen, which you access from the **Options/Imager Configuration** menu.

There are seven (7) possible **Terminal Modes** available on the **Mode** drop-down menu:

1. **Disabled (Normal Mode)**: This disables [Terminal Mode](#) and is the default jet.engine™GUI operating mode.
2. **Terminal Mode #1**: No dynamic print data files are loaded into the jet.engine™GUI. Dynamic print data is sent to the jet.engine™GUI application from a remote application, one record at a time, by commands defined in the **Terminal Mode - Communication Interface Specification**. **Terminal Mode #1** also supports several commands related to remote control of jet.engine™GUI functions and capabilities.
3. **Terminal Mode #2**: This is also called **Gunther Inserter Mode** and is similar to **Terminal Mode #1**, except that the dynamic print data is sent to the jet.engine™GUI in the format required by the **Gunther Inserters**. The *Terminal Mode - Communication Interface Specification* contains a description of the commands used in this mode.
4. **Terminal Mode #3**: This mode allows direct ASCII printing capability. **Pre-Amble** and **Post-Amble**s, if required, are configured in the jet.engine™GUI. The **Pre-Amble** and the **Post-Amble**s are used to delimit (signal the beginning or end of) the ASCII data to be printed. This mode does not support the reception or handling of the remote commands defined in the *Terminal Mode - Communication Interface Specification*.
5. **Index Mode #1**: In this mode a dynamic print data file is loaded into the jet.engine™ GUI, either directly from the jet.engine™GUI or from a remote application. The remote application sends a message to the jet.engine™GUI, one record at a time, to indicate which record to print, based on the **Index** number of the record. This allows the system to print items from a dynamic print data file in non-sequential order. This is useful in systems where items that require dynamic print can get diverted and not reach the printer, or in applications where random access of the dynamic print data file is required. The *Terminal Mode - Communication Interface Specification* contains a description of the commands used in this mode.
6. **Index Mode #2**: This is a proprietary mode used by a particular customer.
7. **Read-Print Mode #1**: This mode allows direct connection of a barcode scanner to the jet.engine™GUI computer through a RS-232 port. The barcode scanner reads a barcode and sends the scanned data to the jet.engine™GUI. The jet.engine™GUI then uses the data as an **Index** into the loaded dynamic print data file, and prints the data associated with that **Index**. The dynamic print data file is loaded into the GUI, and the **Field** number in the data file that represents the **Index** is configured in the jet.engine™GUI. The **Field** selected as the **Index** represents the characters that the scanner will output to the GUI when the barcode on the document is scanned. The barcode scanner is configured to use an STX (0x02) as the **Pre-Amble**, and an ETX (0x03) as the **Post-Amble**. The scanner is configured to run in **Point-to-Point** operating mode, which sends data whenever it is available, and without any request from the jet.engine™GUI. This mode does not support the reception or handling of the remote commands defined in the *Terminal Mode - Communication Interface Specification*.

From the **Port Type** drop-down menu, you can choose either **RS-232** or **Local Host**. **Local Host** allows inter-process communications between the jet.engine™GUI and remote applications running on the same computer. The *Terminal Mode - Communication Interface Specification* contains a description of how to configure the **Local Host** port type.

If you have selected the **RS-232 Port Type**, you use the **RS-232 Port** and **Baud Rate** drop-down menus to configure **RS-232** parameters.

## [Communications Overview](#)

Terminal Mode is a capability of the inc.jet™ jet.engine™ imaging system that allows certain operations, such as the receipt of dynamic print data, to be transferred to the jet.engine™ Graphical User Interface (GUI) application via remote applications.

Remote applications can communicate to the GUI application via:

- **Serial (RS-232) Interface**
- **Inter-process Communication (Local Host Socket)**

- **Ethernet (10/100 Base-T) Interface**

### Serial (RS-232) Interface


Remote applications can communicate to the GUI application via a 3-wire (TxData, RxData, Gnd) RS-232 Interface. Baud rates of 38,400, 57,600 and 115,200 are supported on Serial Ports COM1 through COM8.

### Inter-process Communication (Local Host Socket)

Remote applications can communicate to the GUI application using Inter-process Communications via the Local Host Socket. The GUI application is the "Server" while the Remote application is the "Client". The Remote application must use a Socket Address of 127.0.0.1 (Port 10001) for Sending Terminal Mode Messages to the GUI application, and the Remote application must use a Socket Address of 127.0.0.1 (Port 10002) for Receiving Terminal Mode Messages from the GUI application.

### Ethernet (10/100 Base-T) Interface

This has been implemented in an easy to use way that uses the same Ethernet address that the Imagers connect to of the PC to receive and send Terminal Mode data and commands using the same ports that Local Host uses. Once the jet.engine GUI's Port Type is set to Local Host, the GUI listens to the Ethernet's card address and Local Host's address. Which ever is seen with Terminal Mode data first, is listened to the rest of the time while in Terminal Mode. This means that PC with the GUI must be networked to the PC or other network resource that is sending the data to be printed.

 **Note:** You can use local host for selection of second PC on the same subnet as the printers. The *jet.engine™* GUI will connect to the host internally or externally.

In order to clear pop-up screens, you need to push buttons, which is not necessarily desirable when you are remotely controlling jet.engine™ GUI functions and capabilities. You can keep pop-up screens from appearing on the jet.engine™ GUI by checking the box for **Suppress GUI Pop-Up Screens**.

The **Read-Print Mode #1 Index Num** is the Field number you assign to the dynamic print data file used in **Read-Print Mode #1**. It represents the characters that the scanner will output to the jet.engine™ GUI when the barcode on the document is scanned.

**Send Page Printed Early** checkbox allows the system to send the **Page Printed** message after the first Imager has finished printing, rather than the default of after the last Imager has finished printing. This option is only available for **Index Mode #1**.

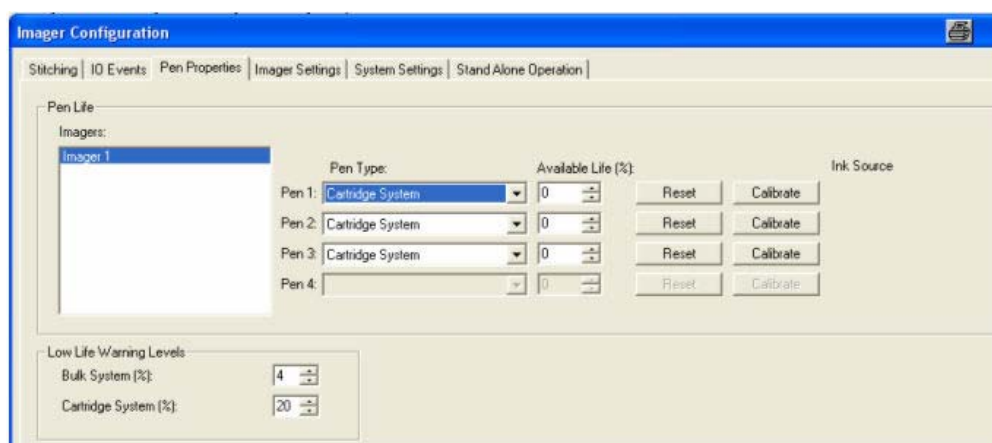
The **Pre-Amble #1**, **Post-Amble #1** and **Post-Amble #2** are used to delimit the dynamic print data received from the remote application when you are operating in **Terminal Mode #3**.

**Pre-Amble #1** represents the character used to signal or delimit the start of a dynamic print data string . If this is not required, it should be left unchecked.

The **Post-Ambles** are used to signal or delimit the end of a dynamic print data string. At least one character is required to delimit the end of a string, and **Post-Amble #1** should be set to that character. If two characters are used to delimit the end of a string, then **Post-Amble #1** should be set to the first delimiting character, and **Post-Amble #2** should be set to the second delimiting character. If **Post-Amble #2** is not required, it should be left unchecked. Carriage return - line feed pairs are used as **Field** delimiters in the **Terminal Mode #3** dynamic print data string.

## Pen Life Settings

On the Pen Properties screen you can input initial pen parameters and specify levels at which low ink messages will appear.



When you select an Imager from the list, you can set the **Pen Type** (cartridge, manifold, or bulk) as well as the **Available Ink % (Percentage)** for each pen. If you click on the **Reset** button, the available ink percentage is reset to 100. The [ink consumption of a pen](#) is tracked so that if it is removed and replaced in the Imager at a later time, it's ink level is remembered and displayed. New pens are automatically set to 100% available life.

### Pen Calibration:

The Calibrate button is used to re-calibrate pens to improve their performance. If you click on this button, the following screen appears.

 **Note:** You must have pens installed to perform a calibration.

### Data the software collects from the pens:

At power up, the firmware will do a nozzle test of each pen stall and print cartridge, and return the results to the GUI software. With Imager logging disabled only the

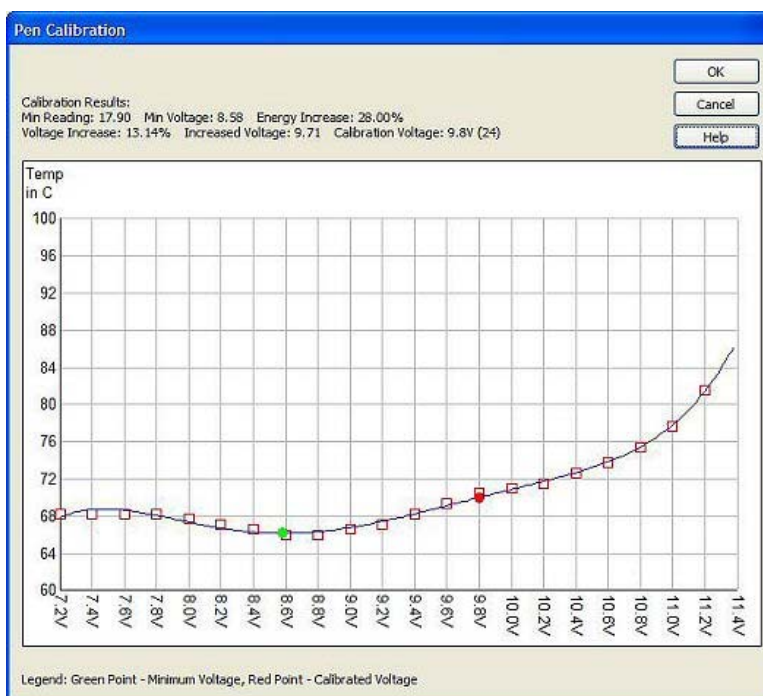
[number of good nozzles](#) is returned. With logging enabled the individual results of each nozzle are included in the [Firmware log](#).

The firmware will then read the cartridge ID and determine if the cartridge has changed since the last power up. If the cartridge ID read is successfully and the cartridge has been changed (the ID is different), the firmware will do a pen thermal calibration (measure the current value of the pen thermal set resistor (TSR) and set it to the current temperature of the pen driver pcb thermistor) - if the pen is not at the same temperature as the pen driver pcb this calibration will be incorrect.

**Note:** There is a 0.5% chance the cartridge has been changed, but has the same Cartridge ID - in this case the system will not recognize the cartridge has changed and will use the temperature calibration of the previous cartridge. In addition, ink levels will not be properly reset by the firmware and GUI software.

#### Pen Calibration Process:

- Pen Calibration is a process where the software attempts to determine the optimum drive energy for the current print cartridge.
- The Imager will use the current pulse length for the calibration, and vary to drive voltage during the calibration.
- The pen is pre-heated to 80 degrees C for 1 second, then 1000 nozzles are fired at decreasing drive voltages.
- The temperature of the print head ink is measured after each firing sequence.
- The temperatures measured at each drive voltage are returned to the GUI software for analysis.
- This information is relayed to the Imager to adjust the pens.
- The GUI generates the Pen Calibration plot (shown below):



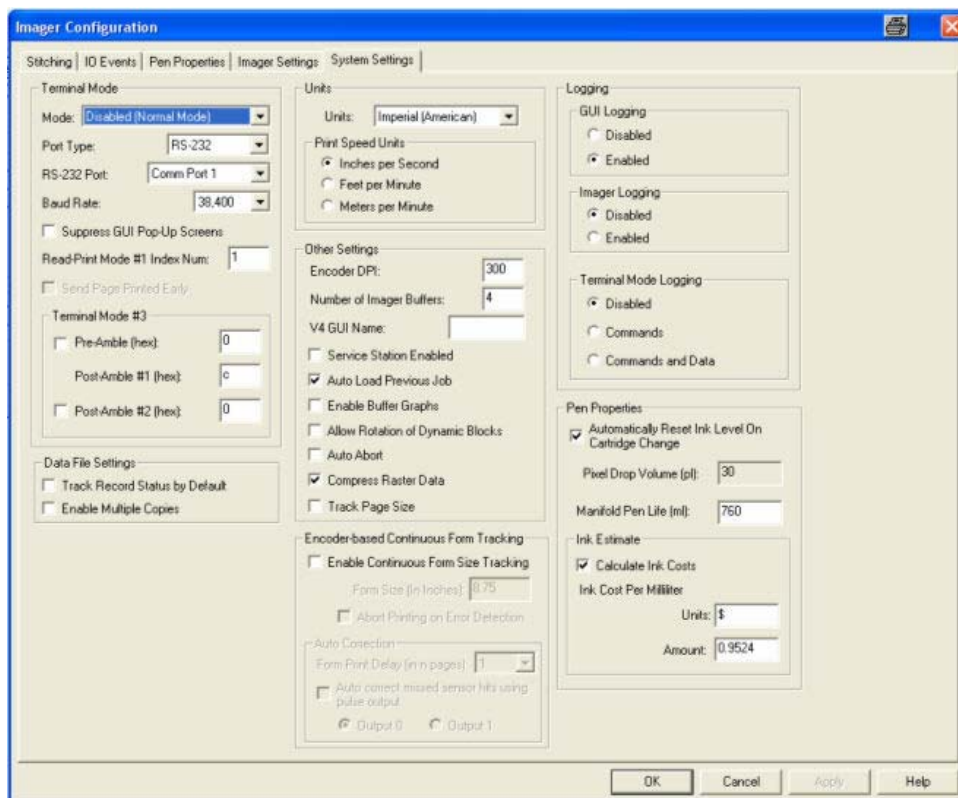
#### Pen Calibration Plot:

- On the pen calibration plot there are two data points displayed: A green dot and a red dot.
- The green dot indicates the point on the curve where the temperature reached it's lowest point before starting to rise again.
- This is the point where the print cartridge has started to retain heat (and therefore is not ejecting ink reliably) - it is the "turn on energy" of the pen.
- If the pen calibration does not include a "low" point - the GUI indicates the calibration was not successful.
- The red dot indicates the point where the system will set the drive voltage of the pen.
- The drive voltage set point (red dot) is determined by adding the "over energy" (set in the Application Settings, in the GUI , or XML file in Vista installations) to the "turn on energy".
- If the pen calibration is successful the GUI software will change the drive voltage of the pen to match the calibration results - This is the only change the calibration performs.
- If the pen calibration is not successful, no changes are made to the pen configuration settings.
- After a successful pen calibration the pen drive voltage can be changed by using the Options Menu - Advanced Configuration - Pen Parameters Tab

**The values in the Pen Parameters Tab should only be adjusted by qualified personnel - driving a pen with too much energy (drive voltage, pulse length) can damage the drive electronics.**

The system default for Pen Type is Cartridge System. If you are using a Bulk System, you need to change the Pen Type from the drop-down menu, and then click the Reset button for each setting changed.

If you select Manifold Pen, a drop-down menu will appear on the right, from which you need to select an appropriate Ink Source. The Manifold Pen Life Setting is available in the lower-right of the System Settings tab, as shown below and can also be set in the Application Settings dialog menu .

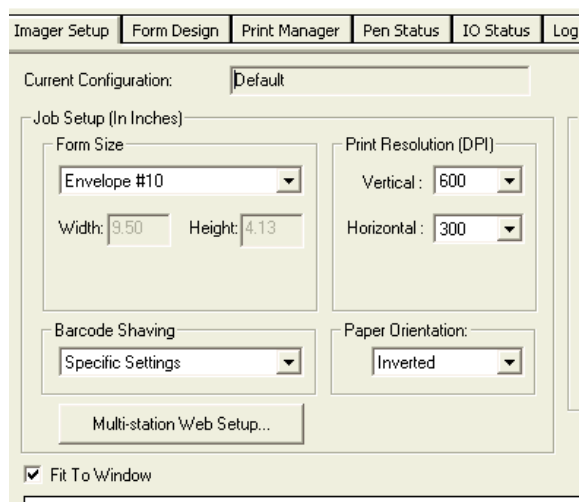


You can also set the **Low Ink Warning Levels** for both bulk and cartridge systems.

The jet.engine™GUI calculates for you the amount of ink used, based on the print jobs that are run, and adjusts the levels in the indicator windows on the Pen **Status** screen. Once the ink reaches the **Low Ink Warning Level** that you have chosen, the indicator will change from blue to red, and a red dot will appear under the pen on the **Imager Setup** page. Additionally, by selecting the Calculate Ink Costs checkbox in the System Settings tab, you can let the GUI estimate your ink consumption cost.

## Multistation

The inc.jet™ GUI allows Imagers to be positioned at no more than 38.9283 inches from the sensor. However, physical machine constraints may demand that some Imagers be positioned further away from the sensor (downstream) at a distance that exceeds the maximum allowed. Using repeat length (the distance from the beginning of one page to the beginning of the next), the maximum distance from sensor (38.9283 inches) and the actual distance from sensor for each Imager (as indicated for each Imager on the Imager Setup screen), Multistation computes a specific number of blank pages to pass an Imager before it prints the actual page. Sending blank pages allows the greater distance from sensor. This computation is not visible in the inc.jet™ GUI.

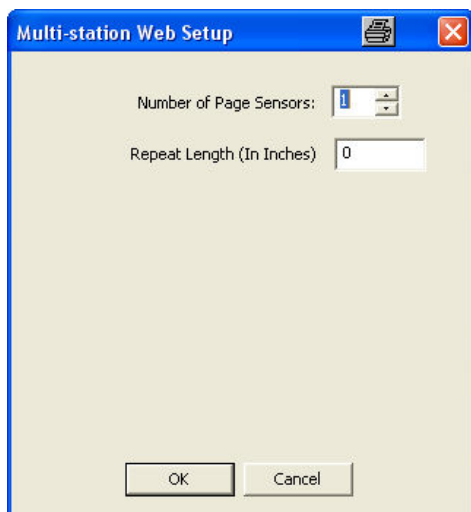


Once Multistation has been enabled in the Application Settings, a button becomes visible on the Imager Setup screen in the inc.jet™ GUI. If you click on this button the following screen appears

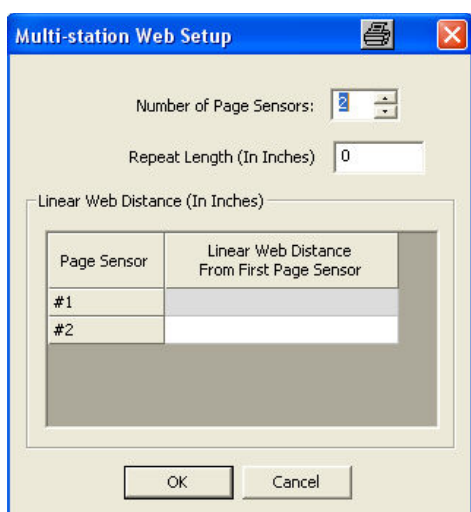
In these screens the operator enters a value for **Repeat Length**. Repeat Length is the distance, in inches, from the beginning of one page to the beginning of the next.

- When Number of Page Sensors = 1, this feature will open the pop up table (shown below).

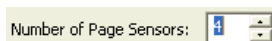




- When Number of Page Sensors = 2 or more, this feature will open the pop up table (shown below).
- In Multi-station with multiple sensors: Each Station is defined as a group of imagers that are triggered by the same sensor.



You can set up the number of page sensors and set the Linear Web Distance From First Page Sensor for each sensor you have configured.



To increase or decrease the number of page sensors click the up or down arrows in the "Number of Page Sensors" select box, the up arrow increases the number of sensors and the down arrow decreases the number of sensors.

- LinearWebDistance is used to calculate the number of blank pages that we have to be sent to each imager at startup.
- The number of blank pages for each imager within a station will be the same, and it will be calculated as  $(\text{int}) \text{LinearWebDistance} / \text{repeatLength}$ .
- When Number of Page Sensors > 1, the user specifies the "Linear Web Distance From First Page Sensor" for each sensor.
- You cannot change the value for the First sensor, as it's distance from itself is 0.

In the Imager Setup section on the right, the operator enters the Distance from Sensor, in inches, for each Imager used in the print job, and indicates for each Imager whether stitching is Internal or All Possible.

In the example above, the Multi-station computation is as follows:

1. The first and second Imagers are positioned within 38.9283 inches from the sensor.
2. The third Imager is 100 inches from the sensor and the fourth Imager is 120 inches from the sensor, both outside of the maximum allowable distance of 38.9283 inches (see note below).
3. The repeat length of the page is 10 inches.
4. Multi-station divides 100 inches (the distance from sensor of the third Imager) by 10 (the repeat length) to indicate that 10 blank pages must pass before the third Imager prints.

5. The third and fourth Imagers are 20 inches apart, so the fourth Imager will print after 10 blank pages, plus 20 inches.

Any images stitched together must be within the distance from sensor value of 39.9283 inches. For example, if a group of imagers are located 105 and 115 inches from the sensor, all imagers in that group that are stitched must be within 39.9283 inches from the imager closest to the sensor in that group. Dividing 105 by 10 inch repeat calculates to 10 blank pages for the imager at 105 inches. The calculated distance from sensor is at 5" (the remainder of the division). The second imager, if stitched with the first, cannot be past 139.9283 (100 is the evenly divisible value for blank pages + max distance from sensor if the imagers are stitched).

 Note: The maximum allowable distance from sensor is dependent on the Sensor Delay Accuracy setting, i.e., the lower the accuracy setting, the more the allowable distance from sensor increases. **Sensor Delay Accuracy is set in Options/Imager Configuration/Imager Settings.**

## How To

### Contents

[How To: Set Up and IO Event](#)

[How To: Set the Imager Configuration](#)

[How To: Set Up Stitching \(Align Printing\)](#)

[How To: Set Up Purging](#)

[How To: Proof](#)

[How To: Advanced Form Design](#)

[How To: Read \*jet.engine\*™ GUI GUI Debug Logs](#)

[How To: Work with Data Sources](#)

## How To: Set Up An IO Event

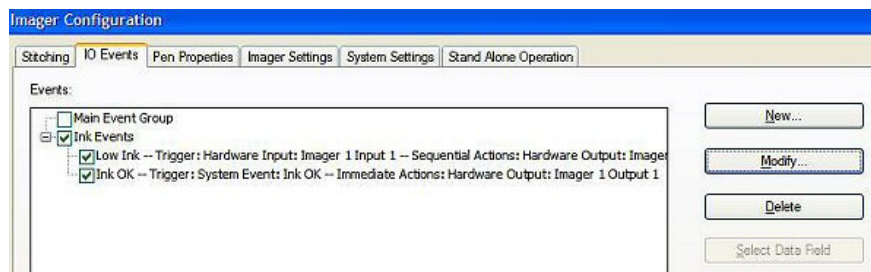
### Introduction

The Imager accepts Input signals and transmits Output signals. The connection to the Imager is through a 36 pin connector. In order to access the hardware Inputs and Outputs, you need a VTMK cable harness, a custom cable assembly, or a breakout board of the 36 pin Imager connector. To use System Events, Page Processed, or Page Printed Count as Triggers, no other equipment is necessary, although displaying the results externally may not be possible.

### Configuring an Event with a System Trigger

Configuring an Output Event means the information from the Imager is displayed via an output device. To configure an Output Event, you need to know the following:

1. The condition that triggers the event.
2. The Action that the Trigger will cause.
3. The condition required to turn off the Trigger.



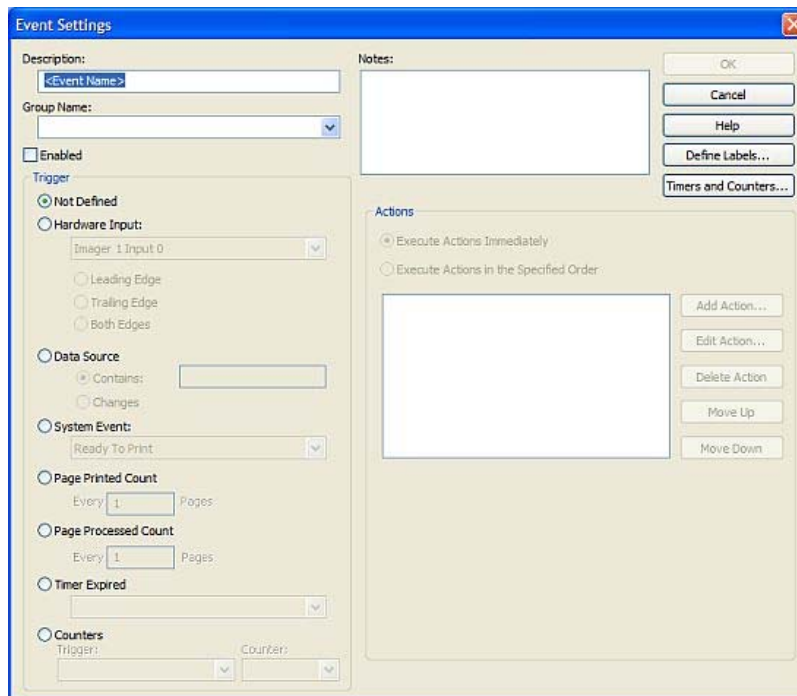
In this example, it is assumed that you want to turn on an LED to signify that the ink level is low, and that the LED should turn off when the ink level is restored to a level that is higher than low warning level.

Therefore:

- Trigger for the event: low ink level
- Action: turn LED on
- Condition to turn off the Trigger: restore ink level

### Configuring an Event with an Input Trigger

Configuring an Input Event means that you send information from an Imager. To configure an Input Event, you need to know the same information that is required for an Output Event, i.e., the Trigger, the Action, and the Condition to turn off the Trigger.



In this example, it is assumed that you want to use a push button or external signal pulse to stop the print job and park the Imager. On manually restarting the print job, the Imager will automatically move into print position.


Therefore:

- Trigger for the event: Assert push button
- Action: Stop printing.
- Condition to turn off the Trigger: Optional in this case

When the push button or external signal pulse is asserted, it creates a Leading Edge. (When the push button action is reversed after being asserted, it creates a Trailing Edge). The Trigger executes the Action when it detects the Leading Edge.

The Action should stop the printing operation and park the Imager. This is a set of actions that must be executed in specified order.

Refer to the section on Wiring Hardware Inputs and Outputs for details of connecting Input devices.

 **Note:** You may want to give the Input a more meaningful name, e.g., Stop Printing. You can do this us clicking the Define Labels button.

## How To: Set the Imager Configuration

[Introduction](#)


[Transport Settings](#)

[Setting the Imagers](#)

[Saving the Configuration](#)

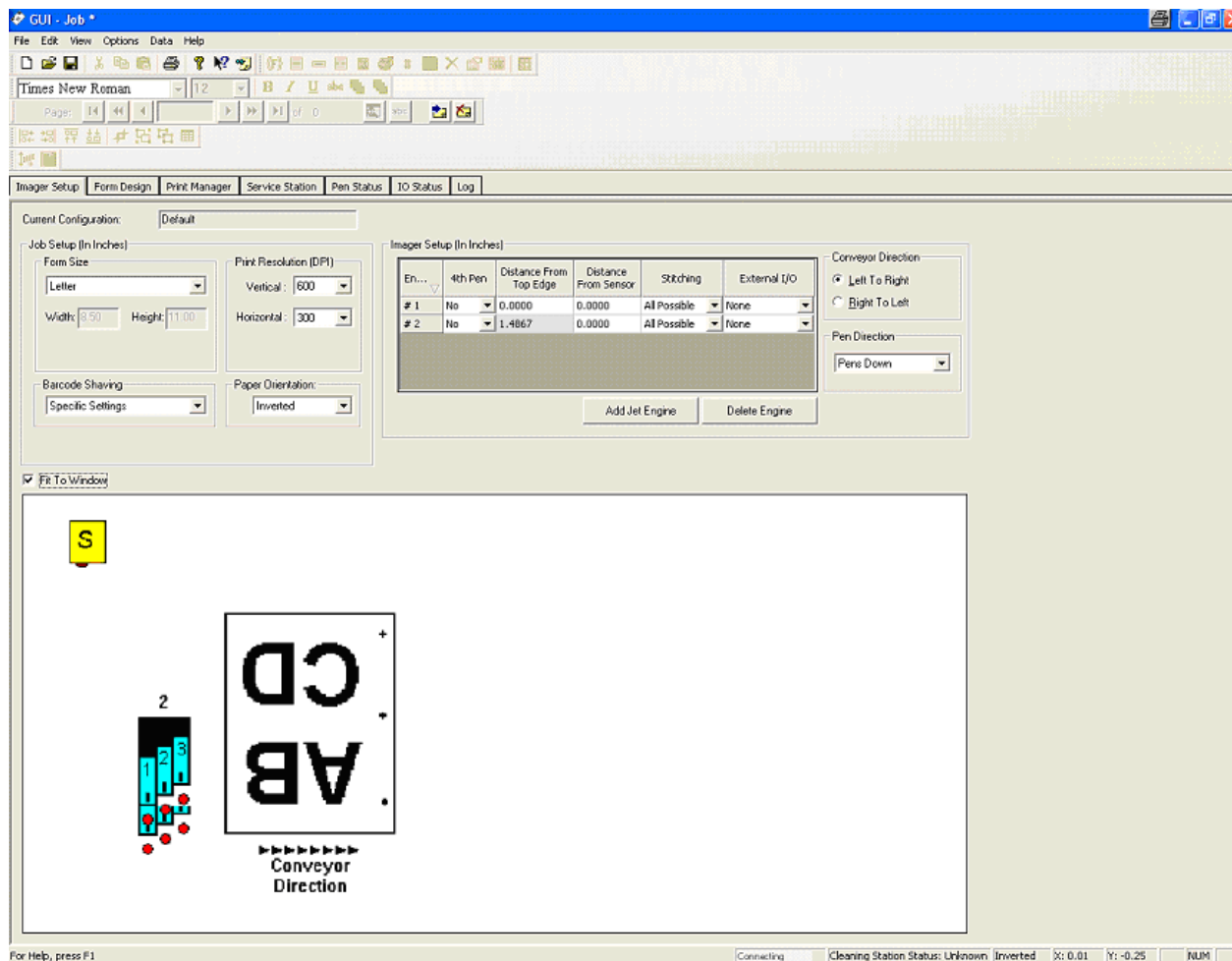
### Introduction

On the **Imager Setup** screen you can create print job configurations and store them in a file with a .ijj extension.

The **Imager Setup** main tab screen is the default screen when you open the jet.engine™GUI. The **Current Configuration** shown will be the last one used when the jet.engine™GUI was shut down. When you want to start a new print job, select **New Job** from the **File** menu, or click on the  icon. To open an already existing job, select **Open Job** from the **File** menu.

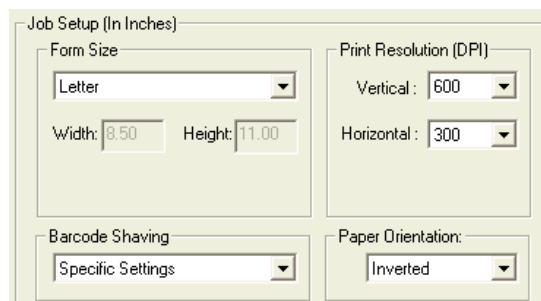
The bottom portion of the **Imager Setup** screen shows a rough graphical representation of the default **Imager Setup**. You will see the number of imagers in the system, and their orientation, and whether a fourth pen is present. It also shows the paper orientation, the print direction, and whether a fourth pen is inline (indicated as black) or remote (indicated as red). Low ink levels are indicated by a red dot adjacent to the pen. As parameters are changed, the graphic is updated.

If you are unable to see the full layout, check the box next to Fit to Window.



## Transport Settings

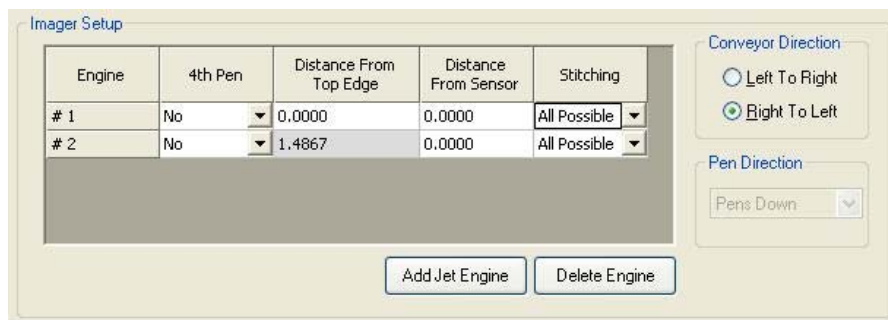
Select the appropriate **Job Setup** options.:



- **Form Size:** select from a menu of paper and envelope sizes or set up a custom size.
- **Barcode Shaving:** select **Glossy**, **Porous**, **Regular**, or **Specific Settings**, depending on how your paper accepts ink.
- **Print Resolution (DPI):** select the **Vertical** and **Horizontal** settings that agree with your transport ([conveyor](#)). It is possible to set Horizontal Resolution at 600 DPI for speeds of up to 100 inches per second.
- **Paper Orientation:** select whether the paper feeds from the **Top** or **Bottom**.
- **Repeat Length:** When Multi-Station is enabled, the Repeat Length is the distance, in inches, from the beginning of one page to the beginning of the next.

## Setting the Imagers

In the **Imager Setup** box, click on the **Add Jet Engine** or **Delete Engine** buttons until the number of Imagers matches your configuration.



The first step in setting the Imagers is to set the **Distance from the Top Edge** of the page and the **Distance from [Sensor](#)** . The Imagers should be mounted in a [fixed](#) position above the transport.

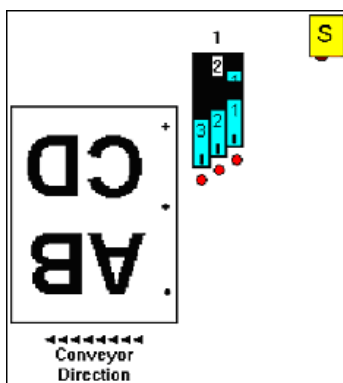
The **Distance from the Top Edge** is from the top of the page as it passes by to the first pen on the Imager.

The **Distance from Sensor** is the distance from the sensor to the first pen on the Imager. This must be set correctly or printing will not be positioned properly. The software delays printing because it counts the number of [encoder](#) ticks that correspond to the distance entered in this column before printing.

**Pen Direction** refers to the relationship of the Imager to the top of the product on the transport. [Stitching](#) can be **Internal** (across pens in an Imager) or across multiple Imagers (select **All Possible**). When [stitching](#) across Imagers, they must be mounted to the same plate with a specific overlap between Imagers.

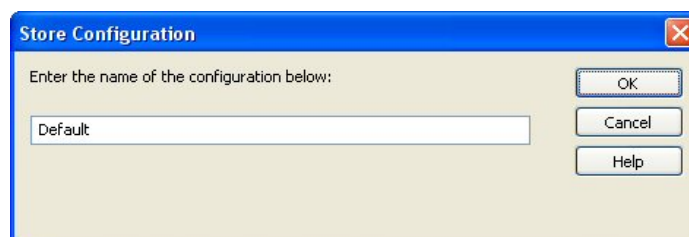
If a **4th Pen** is used, you must define it here by changing the setting from **No** to **Inline**.

Changes you make in the **Imager Setup** box will be reflected in the graphic representation of your system's configuration, at the bottom of the screen.



## Saving the Configuration

It's a good idea to save your configuration once it is complete. Select [Store Configuration](#) from the **File** menu, enter a unique name for the configuration, and click OK. To use this configuration in the future, select [Load Configuration](#) from the **File** menu.



## How To: Set Up Stitching (Align Printing)

An Imager is limited to the area it can cover and the number of pens it can contain. Similarly, pens are limited to the area they can cover. If the size of your printed document requires that you use multiple pens and/or multiple Imagers, you want to make sure that the area where one pen meets another, or where one Imager meets another, does not overlap or leave a gap in the print, and that the leading edge of images from the multiple pens or Imagers align properly. Fine tuning this process of adjusting the pen overlap and Top of Form location on Imager pens is called **Stitching**.

The Pen Overlap section of the screen is used to adjust the image intersection (overlap) between pens. This is also referred to as vertical calibration. The Process Direction Adjustment is used to adjust the beginning of page (sensor delay) for each pen. This is also known as horizontal calibration.

## Process Direction Adjustment

You can use Process Direction Adjustment to define the exact distance from the sensor to each Imager pen. Because any adjustment affects all following (downstream) pens, an automated process, described below, is available to determine the exact delay (in encoder ticks) from the sensor to each Imager pen.

You can also manually fine tune the stitching between pens by using the Manual Adjustment. This performs the same function as the Automatic Adjustment, but you must rely on your expertise to set up the parameters correctly.

 **Warning: Manual Adjustment is not recommended if you have limited experience with the jet.engine™GUI or printing with Imagers.**

You can use either Manual Adjustment or Automatic Adjustment at any one time. Once one method of adjustment is used, the other method is disabled until the Imager Configuration window is closed. Generally, initial system setup is performed using the Automatic Adjustment, and small, post-setup system adjustments are performed using Manual Adjustment.

## Pen Overlap

Pen Overlap is used to disable nozzles on the Imager pens. Using the Pen Overlap, you can electrically adjust where each image pixel is printed and compensate for most mechanical mounting errors in a system installation.

## How to Stitch (Calibrate) an Imager


### Setting up the Job

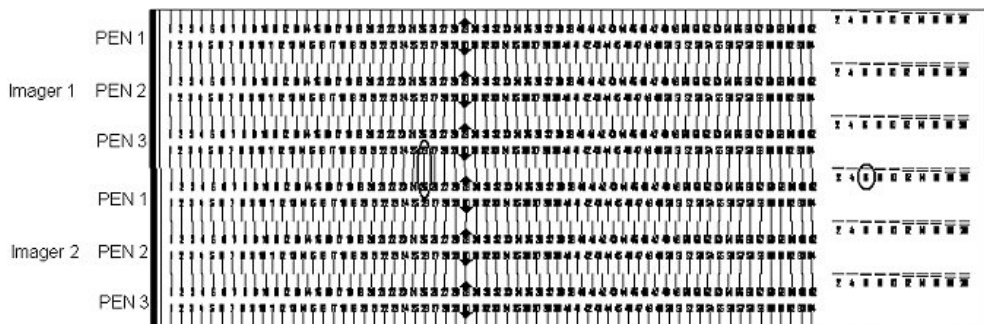
Click on the **Form Design** main tab. The layout that you see represents available print area under the Imagers. You may need to adjust the form size on the **Imager Setup** page so that all Imagers are included in the form. Stitched Imagers will show a dotted line separator, while unstitched pens will show a solid line. The rulers at the top and left of the form will change as new settings are applied. The numbers on the left correspond to the individual Imager and pen numbers available. In order to properly perform the calibration process, Imager 1 Pen 1 must be the first pen displayed at the top left of the form. This means paper orientation must be inverted for all left to right orientations, and normal for all right to left orientations.

 **Note: If the wrong paper orientation is used, stitching corrections will double the error rather than correct it.**

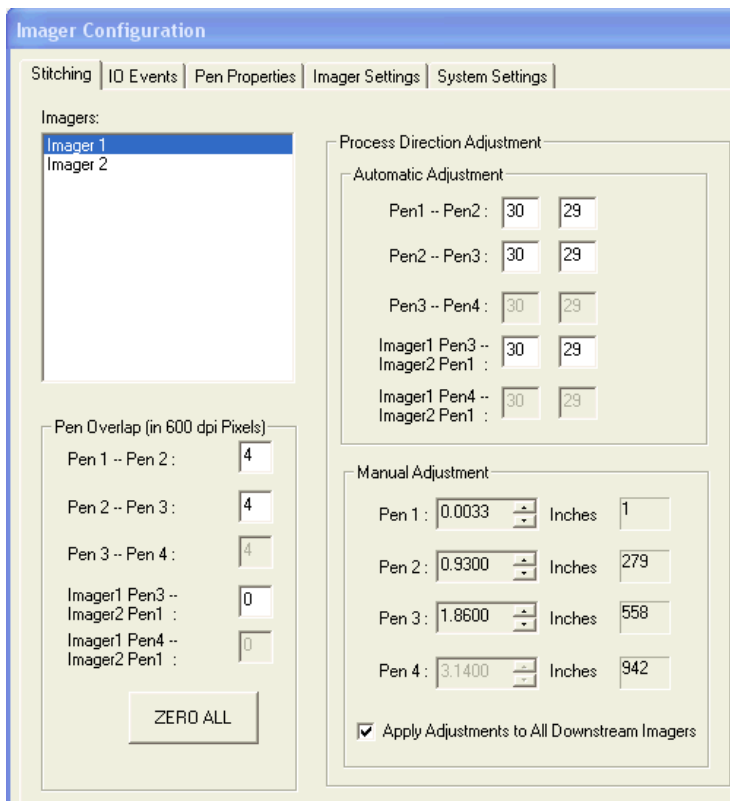
 **Note: There must be at least three pens installed in the imager before attempting calibration.**



Click the  icon to insert the appropriate calibration bitmap for your configuration . (When you install the *jet.engine*<sup>TM</sup> GUI, these files are stored in jet.engine.gui/Samples/Bitmaps.) These are named as follows: Stitch "x" imagers "y" pens.bmp, where x = the number of imagers, and y = the number of pens per imager. For example, if you are using two imagers with three pens per imager, you would use the Stitch 2 imagers 3 pens.bmp.



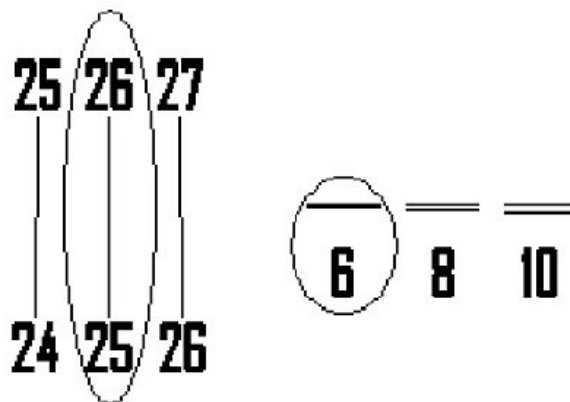
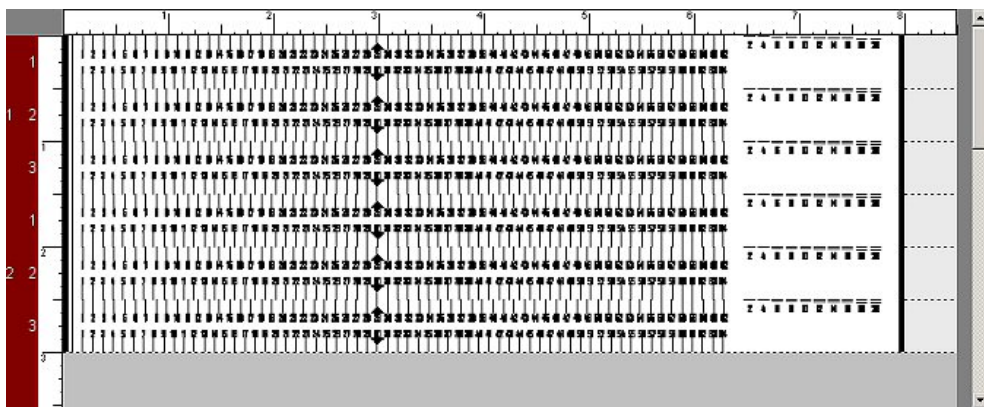
Click on the **Imager Configuration** from the **Options** menu and choose the **Stitching** tab. The Imagers have a built-in 4-jet horizontal overlap. By default, these four jets are disabled at startup and must be activated in order to properly calibrate the Imagers. You do this by clicking the **Zero All** button. Each Imager in the system must be set separately.



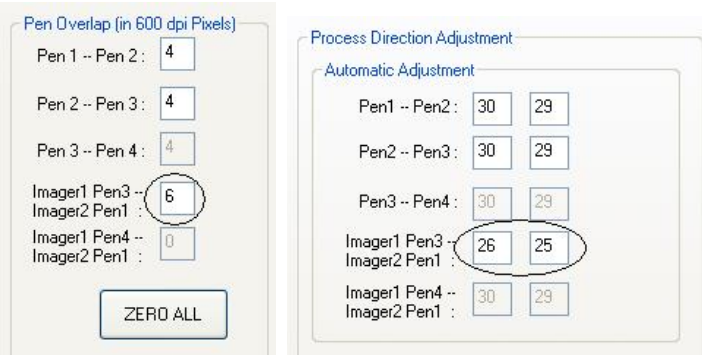
When finished, click **OK**, select the **Print Manager** main tab, and click on the **Start Print Job** button. This will send the print job to the Imager. Start the transport and send a piece of paper down the conveyor. The bitmap will be printed by the Imagers.

### Setting the Process Direction Adjustment (Horizontal Stitching)

Examine the printout. The lines on the left represent **Vertical Stitching**, while those on the right represent **Horizontal Stitching**. Note that each pen has printed the calibration pattern. Find the place where the vertical lines match between the pens, and circle the numbers. On the right, find the place for each pen where the upper and lower lines are closest together without overlapping, and circle the corresponding numbers.



Return to the **Stitching** screen and enter the numbers that were circled on the printout into the appropriate boxes. The **Pen Overlap** section of the screen is for vertical calibration, while the **Process Direction Adjustment** is for horizontal calibration. Using the examples above, 3 is entered into the box shown, because for the set of lines generated by Imager 1 pen 3 and Imager 2 pen 1, the lines at position 3 were closest together without overlapping.



In the **Process Direction** section, 26 and 25 are entered as shown. This is where the lines from Imager 1 pen 3 and Imager 2 pen 1 appeared to line up best. When you have finished entering calibration data, click the **OK** button. Reprint the calibration bitmap, and examine to verify that calibration was performed properly.

### Saving the Configuration

You can save the finished configuration with a unique name by selecting **Store Configuration** from the **File** menu. To use this configuration in the future, select **Load Configuration** from the **File** menu.



## How to: Set Up Purging

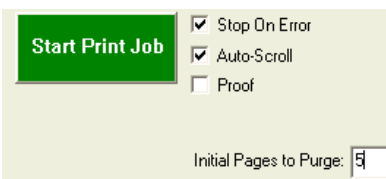
[Purging at the Start of a Print Job](#)

[Purging During Printing](#)

Purging is a means of periodically cleaning the ink jets by sending ink through every jet on the ink head. The **jet.engine.GUI** uses a **bitmap**, called **purge.bmp**, for this operation. You'll find it in the **directory where you installed the jet.engine.GUI**. You may, however, choose your own bitmap by putting a monochrome (1 bit/pixel) bitmap in the same directory.

### Purging at the Start of a Print Job

On the **Print Manager** screen, you can set a specific number of **Initial Pages to Purge**.



In the example above, five (5) pages are set to be purged at the start of the print job. This means that the first five pages printed will be used by the bitmap to clean the jets, and then the print job will start.

### Purging During Printing

You can also create an **IO Event** to purge the ink jets periodically during printing. On the **Events Setting** screen, select **Page Processed Count** as the **Trigger** and enter a number. For example, you might want to purge after every 100 pages are processed, so you would enter 100 in the box. For the resulting **Action** choose **Purge** from the **System Action** drop-down menu. (See **IO Events** for details on how to configure **Triggers** and **Actions**.)

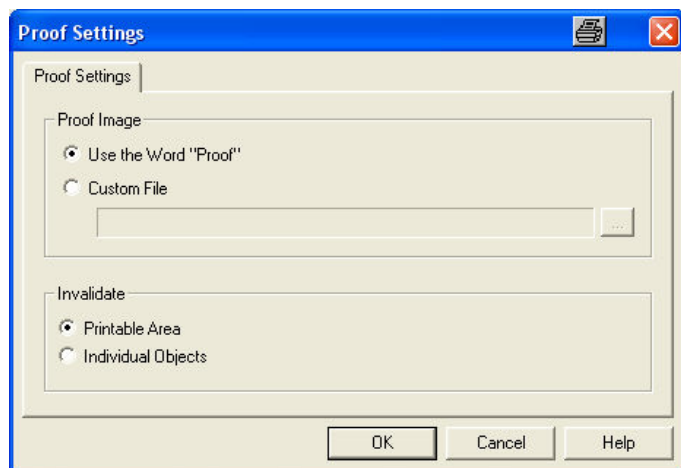
You might also want to tie a secondary **Hardware Output** to the **Purge** action, such as a divert. For example, you are printing hundreds of envelopes that will be sent to the post office. If you are doing a periodic purge during printing, you don't want the envelopes that receive the purge to go to the post office, so you need to set up another **IO Event**. For a **Trigger** you would choose **Purge (Page-Based)** from the **System Event** trigger drop-down menu (because you have already set up an event to purge every 100 pages) and you would then set up a **Hardware Output** that diverts the "purged" envelopes off the conveyor. (Again, see **IO Events** for details on how to configure **Triggers** and **Actions**.)


## How to: Proof

Before beginning a print job, or perhaps while a job is printing, you may find that you need to adjust the Imager relative to the paper being printed. To avoid using records from your print job, and having to re-print any records, the jet.engine™GUI allows you to initiate **Proof**. With this function engaged, the system selects the first record and prints over its object with either the word "PROOF" or an image you have selected, thereby invalidating that object. When **Proof** is turned off, that record is then printed normally.

While you may find you do not need to use **Proof**, it's advisable to set up **Proof Settings** as part of your configuration. If you have not done this, and want to use **Proof** during a print job, you will need to stop the print job, configure the **Proof Settings**, and then initiate **Proof**.

From the **Options** menu, select **Proof Settings**.



There are two sections to the **Proof Settings** screen. In the first section, you can choose to make the **Proof Image** either the word **PROOF**, or an image from a **Custom File** which you select using the file browser button .

In the **Invalidate** section, you can choose to print the **Proof Image** over either the entire **Printable Area** or **Individual Objects**.

Click **OK** to save the settings.

**Proof** is initiated by checking the **Proof** box on the **Print Manager** screen. You can do this either at the start of a print job, or when a print job is already running.



Once your print job is adjusted, you can turn **Proof** off by un-checking the box.

**Note:** If you start **Proof** while a print job is already running, any records already in the buffers will print before any **Proof** prints. Similarly, when you turn **Proof** off, any **Proof** prints already in the queue will print before normal printing resumes.

If you want immediate **Proof** prints while a print job is running, push the red **Stop Print Job** button, check the **Proof** box, and push the green **Start Print Job** button. To stop **Proof**, push the red **Stop Print Job** button, un-check the **Proof** box, and then push the green **Start Print Job** button to resume normal printing.

## How To: Advanced Form Design

[Introduction](#)

[Blocks](#)

[Other Toolbar Buttons](#)

[Other Form Design Properties](#)

### How To Introduction

You set up, or design, your form on the Form Design main tab. The size and settings on this tab are dependent on the settings in **Imager Setup**, i.e., **the size of the area the Imagers will print depends on the number of imagers installed as well as the Imager Setup settings.**

The top, lighter gray area is where you design the template, i.e., what the Imagers will actually print.

*jet.engine™* forms are based on arrangements of data objects, or **Blocks**. Each Block is a different type of image or text that can be inserted in the template. Blocks are added by clicking the appropriate icon in the **Block** toolbar.



When you click on one of these icons, its corresponding Block is added to the layout in the upper left hand corner of the form. From here you can relocate it either by dragging with your mouse or by using the arrows on your keyboard. You can delete a Block by highlighting it and using the Delete key on your keyboard or the Delete button on the toolbar.

### Block Types

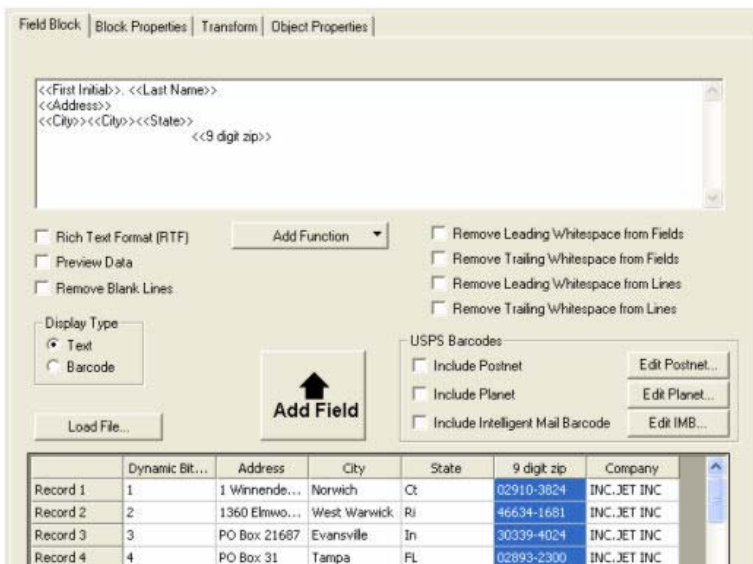
#### Field Block

In a **Field Block**, you can arrange the display of data from a data source. You can also intersperse fixed text with the fields from the data source.

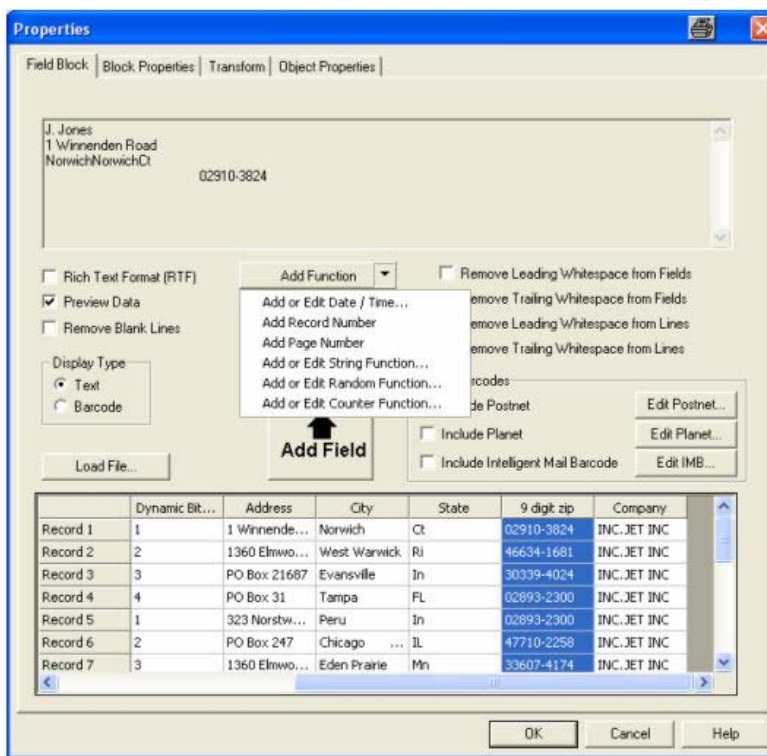
Once you have loaded the data source (see **Load Data**), and with the **Form Design** screen active, click on the  icon to place the **Field Block** in the layout. The block will be inserted at the upper left corner of the layout. You can re-position the block by dragging and dropping it, or by using the arrow keys on the keyboard.

To load a data source file, click on the **Load File** button. Your data will appear in the bottom of the window. You can place a field into the preview window by clicking on the column heading, and then clicking the **Add Field** button. To add fixed text, simply type directly in the preview window itself.

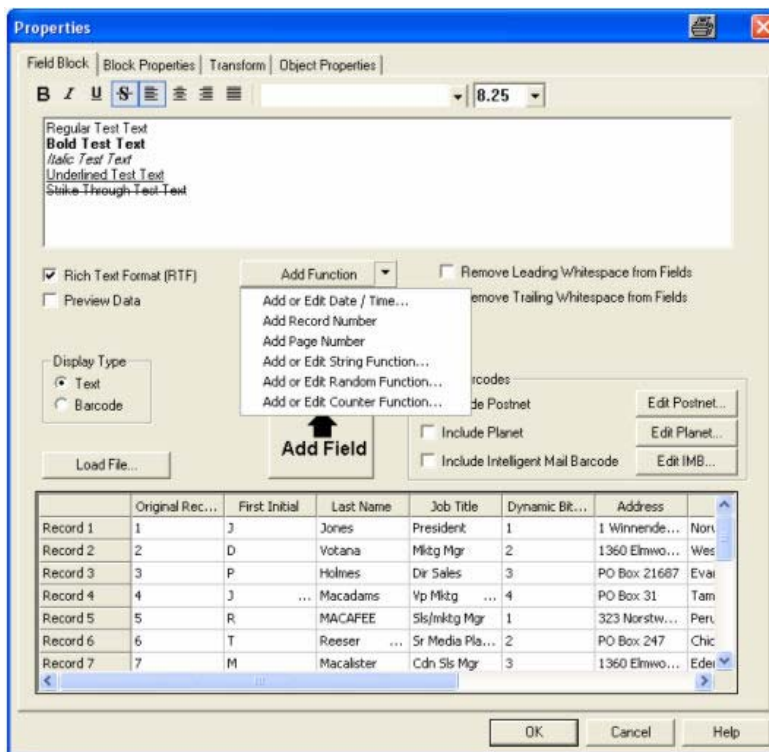
**Add Fields:**



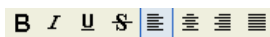
**Preview Data/Add Function:**



You can choose to make a **Field Block** either rich text format (RTF) or non-RTF. The picture (above) shows a non-RTF **Field Block** in preview window, note that the Preview Data button is selected so you can see what the actual data will look like for the fields you have selected in the preview window. The fields for the first record in the list will be previewed. You see that all the data is in the same font style and size, and all text has the same characteristics. An RTF **Field Block**, however, allows different font styles, sizes, and characteristics within one block (as shown below).



If you decide to make the block RTF (by checking the **Rich Text Format** box), a tool bar appears above the preview window from which you can choose different font characteristics, as well as the font and its size.



**Note:** When you choose the RTF check box, the check box for Remove Blank Lines will not be available and will disappear.

If you decide to make the block Non- RTF, then you select the font, its characteristics and font size from the tool bar on the **Form Design** layout page.

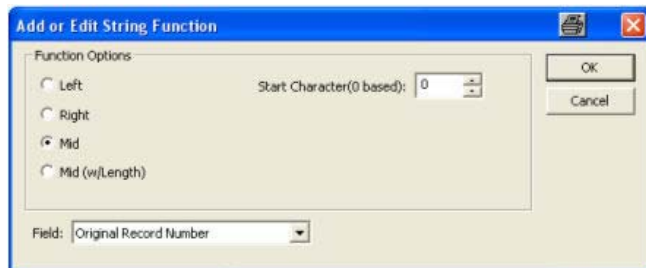
The relative position of the fields is shown in the preview window.

If you have chosen not to use the RTF format, you have the option to **Remove Blank Lines** by checking that box. You can also elect to **Remove Leading Whitespace from Fields** and **Remove Trailing Whitespace from Fields**. If you have chosen a non-RTF format, you also have the option to **Remove Leading Whitespace from Lines** and **Remove Trailing Whitespace from Lines**.

#### Add Function Select Menu:

You have several additional options in the **Add Function** drop-down menu.

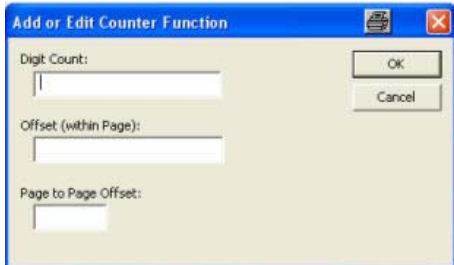
1. You can add or edit **Date/Time Formats**. <<DATETIME(mm dd yyyy, 0.000000, 0)>> Example: 09/30/08
2. You can insert the current record number into the **Field Block** as a field by choosing **Add Record Number**. <<RECORDNUMBER()>> Example: 1
3. You can insert the page number into the **Field Block** as a field by choosing **Add Page Number**. <<PAGENUMBER()>> Example: 1
4. You can add or edit the string function for a field in the Field Block by choosing Add or Edit String Function.



5. You can add or edit the random function for a field in the Field Block by choosing Add or Edit Random Function.



6. You can add or edit the counter function for a field in the Field Block by choosing Add or Edit Counter Function.



#### Add Function Select/Developer Mode:

The following are more options that are available in the Add Function drop-down menu when you are in "Developer" Software Mode.

1. You can insert the horizontal resolution into the **Field Block** so it will display as a field by choosing **Add Horizontal Resolution**.

<<HORIZONTALDPI()>> Example: 300

2. You can insert the vertical resolution into the **Field Block** so it will display as a field by choosing **Add Vertical Resolution**.

<<VERTICALDPI()>> Example: 300

3. You can insert the vertical density into the **Field Block** so it will display as a field by choosing **Add Vertical Density**.

<<VERTICALDENSITY()>> Example: 100%

4. You can insert the print speed into the **Field Block** so it will display as a field by choosing Add Print Speed.

<<PRINTSPEED()>> Example: 0.00

If you want to include a **Postnet Barcode**, simply click the **Include** box.


To set the position of the block and other characteristics, click on the **Block Properties** tab.

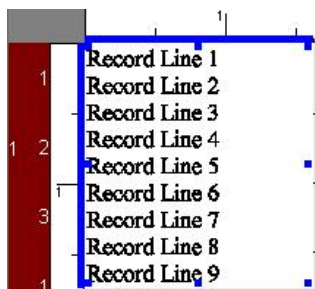
You can Transform the block during printing by clicking on the [Transform](#) tab. You will also see the transformation change on the **Form Design** screen.

With all text-based objects, including the **Field Block**, you have the option to display the data as a **Barcode**. If you choose this option, a **Barcode Properties** tab appears from which you can set the print characteristics of the Barcode.

## Record Block

A **Record Block** is used with a data source that has variable data. For example, you would use a **Record Block** if you are printing a job containing multiple names and addresses. The **Record Block** that you set up on the **Form Design** layout is actually a template that shows how you want the information from the data source to be printed. Its contents will change as each record prints.

With the **Form Design** layout active, click on the  icon. A **Record Block** is inserted at the upper left corner of the layout. You can re-position the block by dragging and dropping it, or by using the arrow keys on the keyboard.



Before using a **Record Block**, it is important to know how your data is arranged in your data source. **Record Blocks** are, by default, nine (9) lines long. Think of a **Line** as a **Field**. Here is an example of how a **Record Block** might be set up from a data source with variable data:

```
*****AUTO**3-DIGIT 110
```

Mr. C. Montgomery Burns


71 Croesus Ave

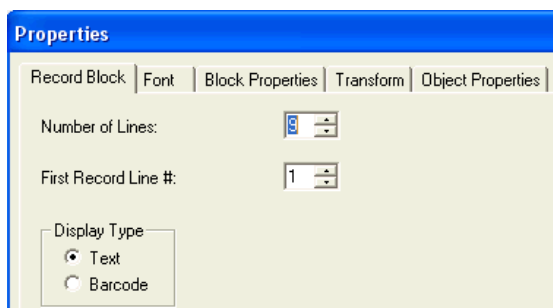
Springfield, US 11001-2554

This record has four (4) lines. Note that the person's name in this example is one field in the data source. If your data source has a name divided into different fields, e.g., first name, last name, etc., you will probably want to use a **Field Block**, rather than a **Record Block**, for setting up your print job.

Your data source may have fewer than, or more than, nine (9) lines. You can make this change on the **Field Block Properties** screen.

You can view the block's **Properties** in one of three ways:

- Double click on the block.
- Click once on the block, and then click the  icon in the toolbar.
- Right click on the block, and select **Properties** from the menu.



If the records in your data source have more or less than nine (9) lines (or fields), you can enter the correct number in the box next to **Number of Lines**.

You may want your **Record Block** to start with a line other than the first line (e.g., if "Mr." is the first line you might not want that included). In that case, in the box next to **First Record Line #**, enter the number of the line where you want the **Record Block** to start.

You can change the **Font**, as well as its style and size, on the **Font** tab.

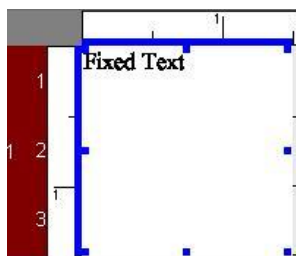
To set the position of the block and other characteristics, click on the **Block Properties** tab.

You can Transform the block during printing by clicking on the **Transform** tab. You will also see the transformation change on the **Form Design** screen.

With all text-based objects, including the **Record Block**, you have the option to display the data as a **Barcode**. If you choose this option, a **Barcode Properties** tab appears from which you can set the print characteristics of the Barcode.


## Message Line

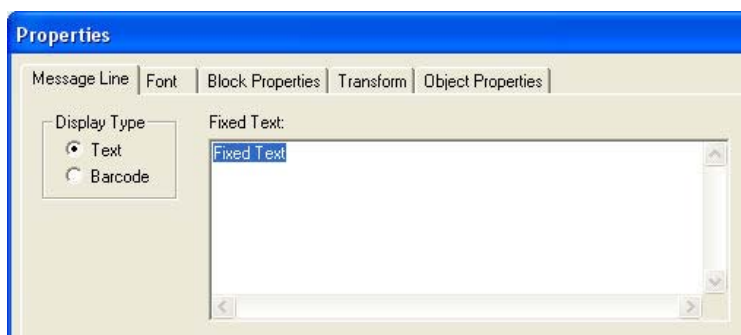
A **Message Line** is a block of fixed text that you have created. With the **Form Design** layout active, click on the  icon. The **Message Line** block will be inserted at the upper left corner of the layout. You can re-position the block by dragging and dropping it, or by using the arrow keys on the keyboard.



You can enter your text through the **Message Line Properties** screen.

You can access the block's **Properties** in one of three ways:

- Double click on the block.
- Click once on the block, and then click the  icon in the toolbar.
- Right click on the block, and select **Properties** from the menu.



On the **Message Line** tab, simply type your text in the box.

Choose the **Font** and its characteristics from the **Font** tab.


Set the **Block Properties** of your block (e.g., the position of the block on the **Form Design** layout, the position of the text within the block, the block border, etc.) on the **Block Properties** tab.

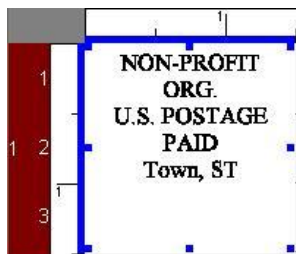
You can Transform the block during printing by clicking on the **Transform** tab. You will also see the transformation change on the **Form Design** screen.

With all text-based objects, including the **Message Line** block, you have the option to display the data as a **Barcode**. If you choose this option, a **Barcode Properties** tab appears from which you can set the print characteristics of the Barcode.


## Indicia

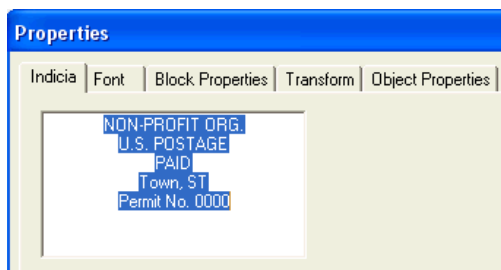
**Indicia** are similar to message boxes, except that they must be formatted within guidelines specified by the United States Postal Service in its Domestic Mail Manual. This manual is available online at <http://pe.usps.gov/text/dmm/DMMTC.htm>. The **Indicia** provided with the software is a template that you need to edit in order to comply with USPS regulations.

With the **Form Design** layout active, click on the  icon. The **Indicia** block is inserted at the upper left corner of the layout. You can re-position the block by dragging and dropping it, or by using the arrow keys on the keyboard.



You can view the block's **Properties** in one of three ways:

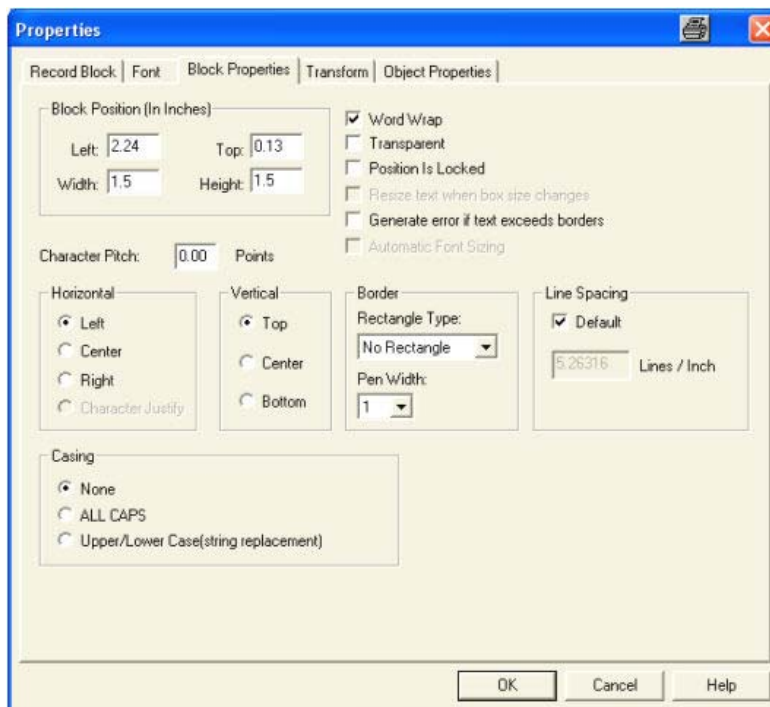
- Double click on the block.
- Click once on the block and then click the  icon in the toolbar.
- Right click on the block and select **Properties** from the menu.



Now you can edit the text by simply typing in the box.

You can change the font , font size, and font style on the **Font** tab.

You have more options on the Block Properties tab.

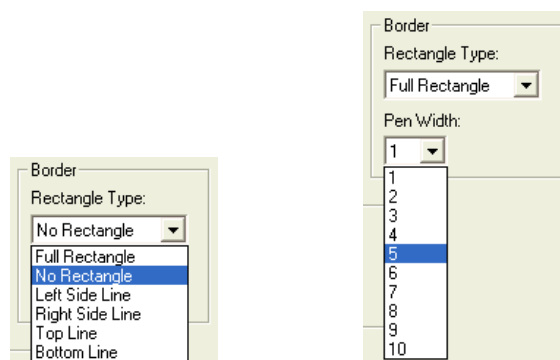


You can position the block on the **Form Design** layout by entering values in the **Left** and **Top** boxes. You can size the block entering values in the **Width** and **Height** boxes. You can also set the **Horizontal** and **Vertical** position of the text within the block.

Checking **Word Wrap** will keep the text from running outside the block. If you check the box next to **Transparent** , then the non-black portions of a bitmap become transparent. The bitmap can no longer be moved around in the layout window if you check the box next to **Position Is Locked**.

**Resize text when box size changes** means that if the size of the block is changed, the size of the font will change proportionally. However, this is true only if you resize the block from the corner. If you resize the object from the top or bottom, the text size will not change.

You have the option of choosing a Border around the block by selecting Rectangle Type, the default setting is No Rectangle. You can also choose a Full Rectangle or a Single line at the left, right, top or bottom. If you select a rectangle or a line, the Pen Width can be selected for the rectangle or line that you have selected.




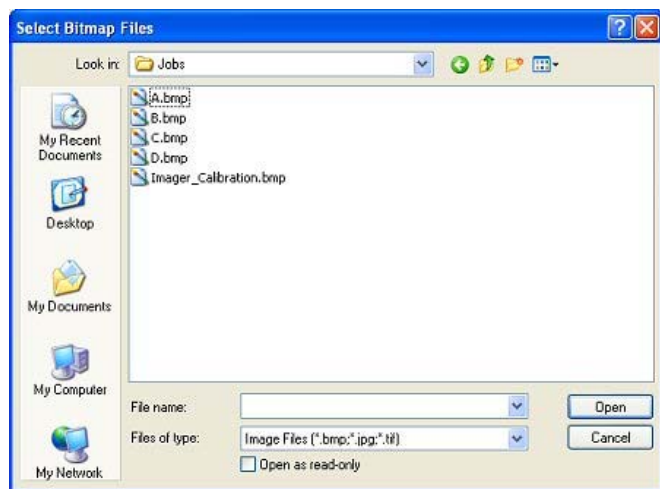
You can also have the system **Generate error if text exceeds borders**. This means that if any of the text exceeds the boundaries of the object, you will receive an error during printing. If you do not choose this option and the condition occurs, text will appear truncated or cut off.



You can Transform the block during printing by clicking on the [Transform](#) tab. You will also see the transformation change on the **Form Design** screen.


## Fixed Bitmap

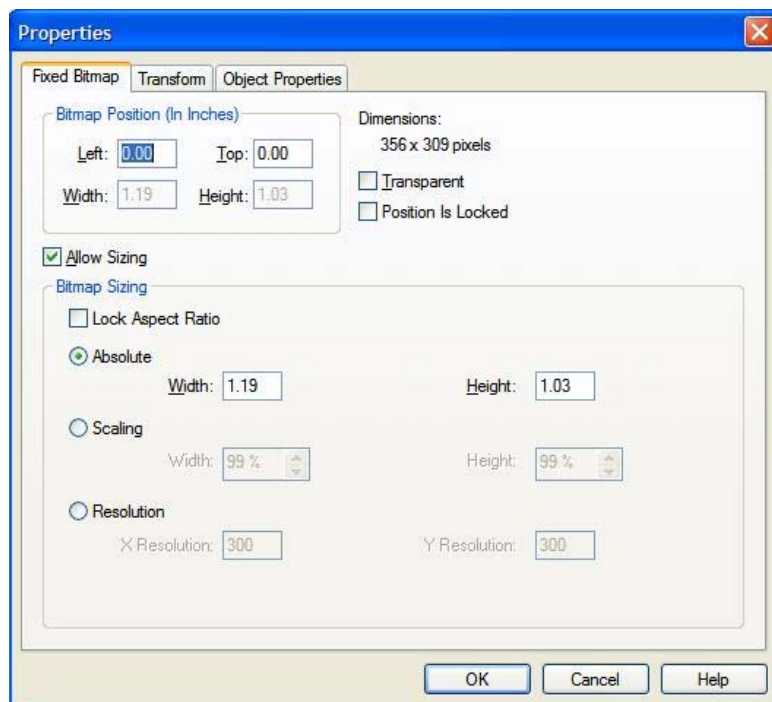
A **Fixed Bitmap** is one which cannot be changed. You can add a **Fixed Bitmap** to the **Form Design** screen by clicking on the  icon. This opens the **Select Bitmap Files** window, which works like any Windows file browser.



Simply select the .bmp file and click **Open**, or double-click on the .bmp file name. The bitmap will be inserted at the upper left corner of the **Form Design** layout. You can re-position the bitmap by dragging and dropping it, or by using the arrow keys on the keyboard.

You can view the bitmap's **Properties** in one of three ways:

- Double click on the bitmap.
- Click once on the bitmap, and then click the  icon in the toolbar.
- Right click on the object, and select **Properties** from the menu.



From the **Fixed Bitmap** window, you can change the **Bitmap Position** by entering values in the **Left** and **Top** edit boxes. If you check the box next to **Position Is Locked**, then the bitmap can no longer be moved around in the layout window.

If you check the box next to **Transparent**, then the non-black portions of a bitmap become transparent.

Bitmaps cannot actually be resized in the GUI. You have to use Microsoft Paint or a similar application to do that. However, if the box next to **Allow Sizing** is checked, you can change the **Scaling** of the bitmap in one of three ways:

- You can enter **Absolute** (specific) **Width** and **Height** values.


- You can enter **Scaling** percentages in the **Width** and **Height** boxes.
- You can enter DPI (dots per inch) **X Resolution** and **Y Resolution** values.

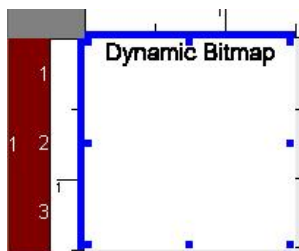
If you check the **Lock Aspect Ratio** box before you make changes, the scaling changes proportionally. For example, if you change the **Absolute Width** to 1.5, the same value is automatically entered for the **Height**. If you change the **Scaling** percentage to 150% for the **Width**, the **Height** automatically changes by 150% as well. If you change the **X Resolution** value to 600, then the **Y Resolution** is automatically changed to 600, too.

You can Transform the block during printing by clicking on the [Transform](#) tab. You will also see the transformation change on the **Form Design** screen.


## Dynamic Bitmap

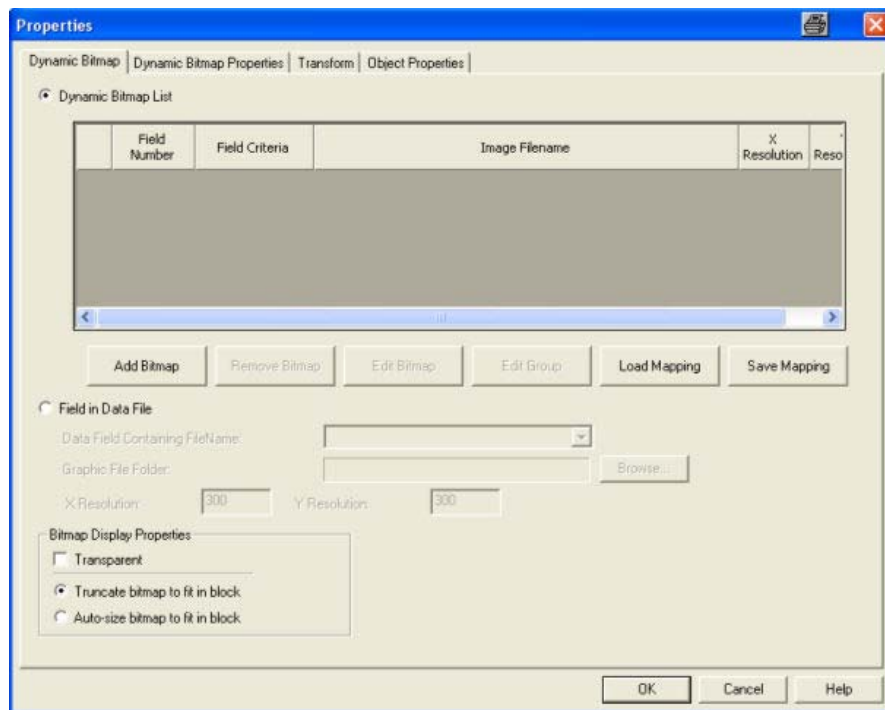
The **Dynamic Bitmaps** feature gives you the ability to use an assortment of bitmaps during a print run.

With the **Form Design** screen active, click on the  icon in the toolbar. The **Dynamic Bitmap** block will be inserted in the upper left corner of the layout. You can re-position the bitmap by dragging and dropping it, or by using the arrow keys on the keyboard.

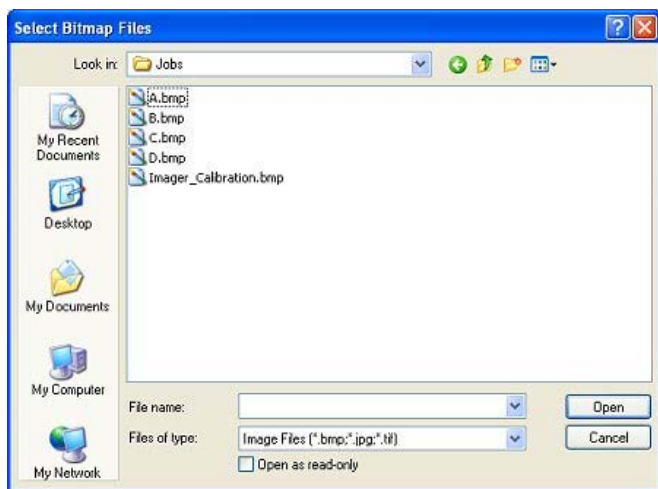


You can view the dynamic bitmap's **Properties** in one of three ways:

- Double click on the bitmap.
- Click once on the bitmap, and then click the  icon in the toolbar.
- Right click on the object, and select **Properties** from the menu.



To add each bitmap, click on **Add Bitmap**. This opens the **Select Bitmap Files** window, which works like any Windows file browser.



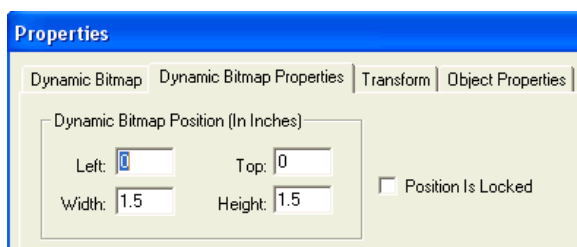
Simply select the .bmp file and click **Open**, or double-click on the .bmp file name. The bitmap will be added to the list. Repeat this action until you have added all the bitmaps. You can see on the **Properties** screen above that each bitmap selected is connected to a field in your data source and a criterion specified for that field. When a field criterion for a given bitmap matches the value in the data source, that bitmap will be printed.

If you want to remove a bitmap from the list, click once in the block to the left of the row that contains the bitmap you want to delete. This will highlight the entire row. Then click on the **Remove Bitmap** button.

From the **Dynamic Bitmap Properties** tab, you can change the **Dynamic Bitmap Position** by entering values in the **Left** and **Top** edit boxes.

If you check the box next to **Transparent**, then the non-black portions of a bitmap become transparent.

If you check the box next to **Position Is Locked**, then the bitmap can no longer be moved around in the layout window.

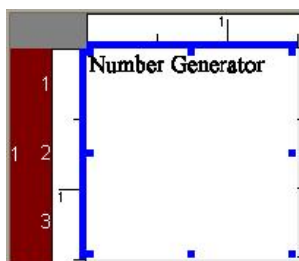


You can Transform the block during printing by clicking on the [Transform](#) tab. You will also see the transformation change on the **Form Design** screen.

## Number Generator


The **Number Generator** object is used for jobs that require the printing of a sequence of numbers, with each page having a different number. For example, if you were printing tickets that have seat numbers on them, you would need to set up a **Number Generator** so that the tickets are printed with individual numbers in a sequence.

With the **Form Design** main tab screen active, click on the  icon. A **Number Generator** block is inserted in the upper left corner of the layout.



You can re-position the block by dragging and dropping it, or by using the arrow keys on the keyboard.

In order to configure the **Number Generator** you need to access the block's **Properties**, which you do in one of three ways:

- Double click on the block.
- Click once on the block, and then click the  icon in the toolbar.
- Right click on the block, and select **Properties** from the menu.

The **Start #** is the number that will start the sequence, and is limited to 19 characters. A **Start #** can be simply a number, or it can contain an alphanumeric combination. In the example above, which could be a **Number Generator** for printing tickets, the **Start #** indicates that each ticket will be printed with the word "Titans", followed by a (-), then a number.

The **Mask** controls the way that each character is handled by the software. There are four different types of masks controlled by **Mask Options**.

1. **Counter Digits** are the dynamic, or changing, characters in the number. They will change according to a user-defined formula. Make sure you allow enough blank spaces for the number to sequence properly, or it will roll back to zero. **Counter Digits** are always used in calculating the check digit. This is indicated by a "#" character in the mask box.
2. **Static Characters** do not change. They can be included in the **Checksum** calculation. Only numeric characters can be **Checksummed**. This is indicated by a "+" in the mask box. A "." in the mask box means that the static character is not used in the **Checksum** calculation.
3. Alpha characters, such as "TITAN" in the example above, generate a **Static Character (Not Checksummed) Mask** (".").
4. The **Check Digit** is the number that is generated as a result of the **Checksum Method** selected. This number can be read by a barcode scanner or OCR reader to verify that a code has been properly printed and read.

**Weighting** allows more sophisticated **Checksum** calculations to be used by giving more "weight" to certain numbers.

Once you determine your numbering format, you can set up the method for sequencing the numbers. The number will increase (or decrease) based on the values entered into the **Count/Every** boxes. The format for the values in these boxes is two numbers, separated by a forward slash ("/"). The first number is the amount that the counter increases when the record is seen. The second number is the number of records that must be seen to trigger an increase. In the **Count/Every** example above, 2/1, the number will increase by 2 for each (1) record. So, if the first number is "TITANS-0001", the next number is "TITANS-0003", then "TITANS-0005", and so on.

Negative values can also be used. If the **Count/Every** value is "-2/1", the number will decrease by two for every record it sees. So, if the first number is "TITANS-0300", the next number would be "TITANS-0298", then "TITANS-0296", and so on.

You can set up quite complex counting patterns. For example, suppose you need to cycle through the same 1000 serial numbers continually. By entering '1/1' and '-1000/1000' the number will increase by one every time until it gets to one thousand. At that point, it will decrease by one thousand, thus returning to the start. Since you can enter up to ten values, you can do quite sophisticated counting.

The **Checksum Method** and **Modulus** pull-down menus work together to calculate the **Checksum** digit in a variety of ways.

- **DR-Divide, use Remainder** takes the numeric string that comprises the **Checksum** (the number whose **Mask** is #) and divides it by the **Modulus** number. Discard the quotient and keep the remainder. For example, if the string value is 1257 and the **Modulus** operator is 8, the calculation is as follows:  $1257 \text{ mod } 8 = 1257/8 = 157 \text{ R } 1$ . Discard the 157 and the resulting **Checksum** digit is 1.
- **DSR-Divide, Subtract Remainder** is similar except that the remainder is subtracted from the **Modulus** number. For the number 1257 used in the example above, the remainder 1 is subtracted from the **Modulus** 8, resulting in a **Checksum** digit of 7.
- **ADR-Add Digits, Divide Remainder** takes the digits in the **Checksum** number and adds them together. It divides the result by the **Modulus** number and uses the remainder. So,  $1+2+5+7 = 15$ ,  $15 \text{ mod } 8 = 15/8 = 1 \text{ R } 7$ . Discard the 1 and the **Checksum** is 7.
- **ADSR-Add Digits, Subtract, Divide Remainder** is similar to the above method, except that the remainder is subtracted from the **Modulus** number. Using

the example above, the remainder 7 would be subtracted from the **Modulus** 8, resulting in a checksum of 1.

- A **Checksum** generator for **Code 128 B Barcode**, a common barcode, is also provided.

You can change the **Font** , as well as its style and size, on the **Font** tab.

To set the position of the block, and other characteristics, click on the **Block Properties** tab.


You can Transform the block during printing by clicking on the **Transform** tab. You will also see the transformation change on the **Form Design** screen.

With all text-based objects, including the **Number Generator**, you have the option to display the data as a **Barcode**. If you choose this option, a **Barcode Properties** tab appears, from which you can set the print characteristics of the **Barcode**.

## PDF File

The **PDF File (Portable Document Format)** capability is a function that is licensed from Printing Technology Services, Inc., and requires a key for you to use it. To obtain a key contact Printing Technology Services, Inc. at [info@printingtechnology.net](mailto:info@printingtechnology.net).


There are two instances in which you might use a PDF file: either you have constructed a PDF file with variable data in it, or you have a PDF file with which you want to print variable data (i.e., you want to overlay parts of the PDF file with variable data, or you want to print the PDF file with variable data next to it).

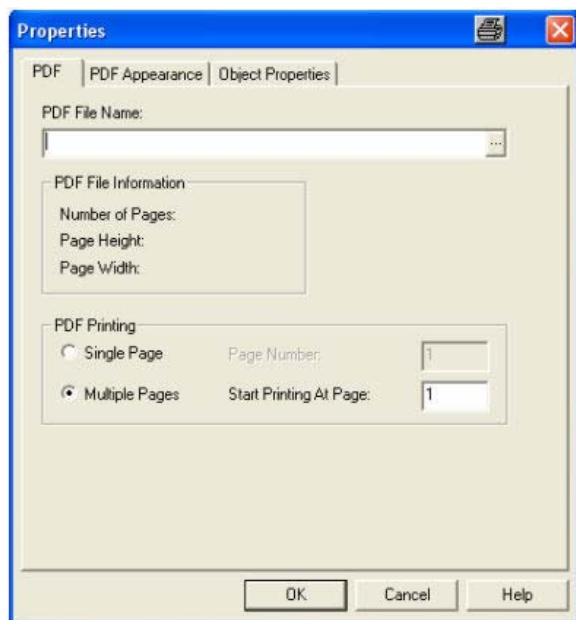
To insert a **PDF File**, make the **Form Design** screen active, and click  on the tool bar. A **PDF Block** is inserted in the upper left corner of the layout.



You can re-position the block by dragging and dropping it, or by using the arrow keys on the keyboard.

In order to load a **PDF File**, you need to access the block's **Properties** , which you do in one of three ways:

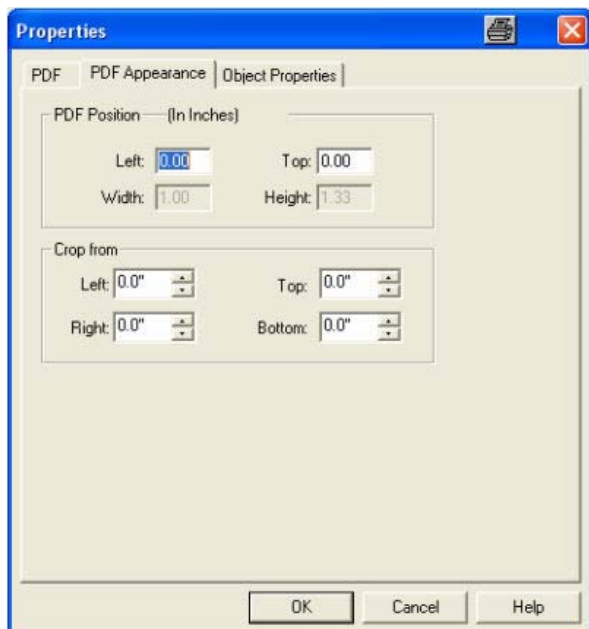
- Double click on the block.
- Click once on the block, and then click the  icon in the toolbar.
- Right click on the block, and select **Properties** from the menu.




To locate a **PDF File**, click on the button at the right edge of the **PDF File Name** box. This opens a typical Windows browser from which you locate a file. Once you select a file, you see that the **PDF File Information** for that file (**Number of Pages**, **Page Height** and **Page Width**) is automatically displayed.

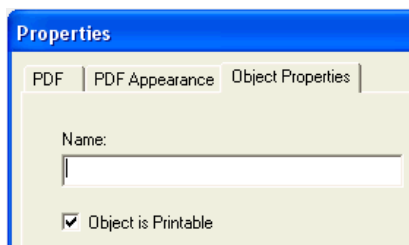
You have two options for **PDF Printing**. If you choose **Single Page**, and enter the number of the page to print, the system will print the same page repeatedly. If you choose **Multiple Pages**, and enter the number of the page where you want the printing to start, all pages in the **PDF File** from that point will be printed.

From the **PDF Appearance** tab, you can determine how the **PDF File** appears on the **Form Design** layout.



To set the **PDF Position**, you enter values in the **Left** and **Top** boxes.


You can **Crop**, or delete portions of, the **PDF File**, using the **Crop from** boxes. For example, if you want to delete the bottom inch of your **PDF File**, simply enter "1" in the **Bottom** box. You can also crop the **PDF File** directly on the **Form Design** layout. Click once on the **PDF File** block to select it. On the tool bar, click on , the **Crop** button. Then, using the blue handles on the edges of the block, and holding down the left mouse button, **Crop** the block.



The Object Properties tab allows you can give a unique name to the object you have created. You can also indicate in the checkbox whether or not the Object is Printable.

## Other Toolbar Buttons

### Toggle Grid

The grid is the line of evenly spaced dots that you see across the **Form Design** screen. You can use the Toggle Grid button  to switch between showing the grid lines and not showing the grid lines.

### Toggle Snap to Grid

Use the Toggle Snap to Grid button  to switch between aligning or not aligning objects to the grid lines.

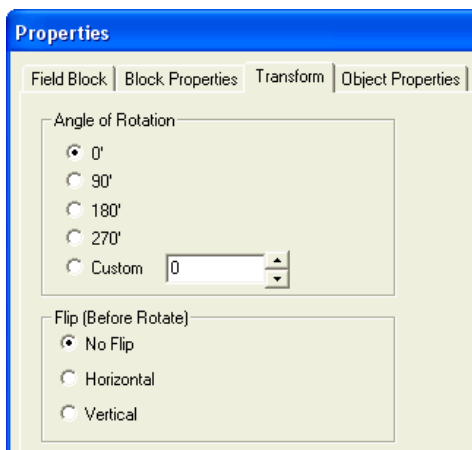
## Other Form Design Properties

### Transform

From the Transform tab on the **Properties** screen, you can change the Angle of Rotation of a block or bitmap in 90° increments. For some blocks or bitmaps, you also have the option of entering a **Custom** degree of your choice.


Flip Horizontal mirrors the object relative to the horizontal axis. Flip Vertical mirrors the object relative to the vertical axis. An object may be flipped Before or After Rotate.

You will see the transformation change on the **Form Design** screen.



## Barcode Properties

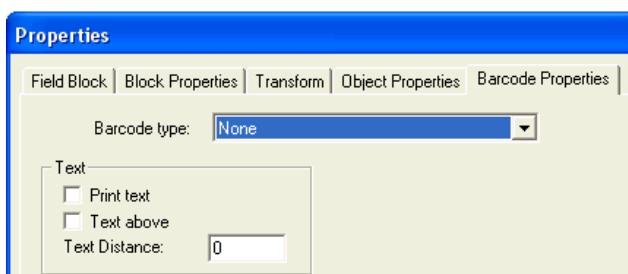
With some text-based blocks, you have the option to display the block as a barcode. You do this by opening the **Properties** dialog in one of three ways:

- Double click on the object.
- Select the object, and click the  icon.
- Right click on the object, and select **Properties** from the menu.

Here you will find a box on the screen titled **Display Type** from which you can choose either **Text** or **Barcode**.



If you check the button next to **Barcode**, you'll see that a **Barcode Properties** tab appears. You can use this page to define a **Barcode Type** and its properties.

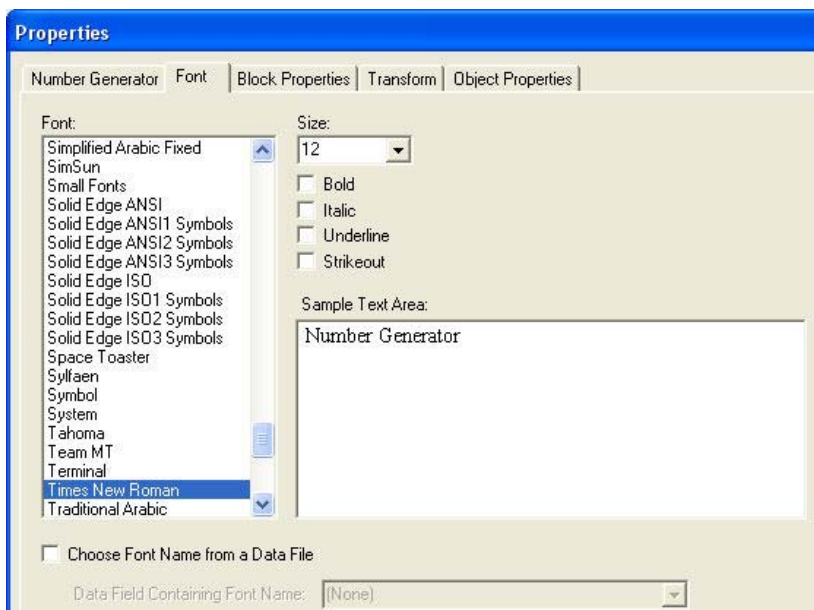


First, choose a **Barcode type** from the drop-down menu (see **Postnet Barcode** for information on using that type). From the **Text** box, you have the option to **Print text** with the **Barcode**. You can also elect to place **Text above** the **Barcode** and set the **Text Distance** in 1/1000 mm increments.

For information on the settings at the bottom of the screen see **Advanced Barcode Settings**.

## Font Properties

The **Font** tab is available in the **Properties** window of many blocks. This is where you can choose the font, font style, and font size for the block. You also have options for **Underline** and **Strikeout** (put dashes through the text, e.g., ~~strikeout~~). The **Sample Text Area** displays the font with the characteristics you have chosen.



Click on this [Choose Font Name from Data File](#) link for more information on this feature.

## Block Properties Block Properties

A block's properties (e.g., position on the layout, border characteristics, etc.) are set on the [Block Properties](#) tab in the **Properties** screen.

## Object Properties Object Properties

The [Object Properties Tab](#) allows you can give a unique name to the object you have created.

You can also indicate in the checkbox whether or not the Object is Printable.

## Transform Transform

From the [Transform](#) tab on the **Properties** screen, you can change the Angle of Rotation of a block or bitmap in 90° increments. For some blocks or bitmaps, you also have the option of entering a **Custom** degree of your choice.

Flip Horizontal mirrors the object relative to the horizontal axis. Flip Vertical mirrors the object relative to the vertical axis. An object may be flipped Before or After Rotate.

## How To: Read *jet.engine™* GUI Debug Logs

The jet.engine™ GUI Log is used mainly for debugging purposes. Here you'll find a fairly detailed record of the process the jet.engine™ GUI goes through when communicating with the Imager. For information on enabling Logging refer to [System Settings](#).

There are several types of messages displayed in the jet.engine™ GUI **Log**. Some are self self-explanatory while others are not. This section covers the latter type. The message headers are explained below.

### CFilePage

#### CFilePage::OnRasterBufferReadyForData [additional data]

Messages in this format represent calls to internal jet.engine™ GUI functions. These may be actions as a result of jet.engine™ GUI programming, or of events that took place during printing. In the example above, the jet.engine™ GUI received a message from the Imager that it was ready for more data. Once received, the jet.engine™ GUI fired this routine to supply the Imager with the requested data. This would most likely followed by a >>Send message.

### >>Send

#### >>Send, Imager: #, MessageId: #, [additional data], [command]

This type of message represents a command or message being sent to the Imager from the jet.engine™ GUI. This displays to which Imager the command was sent, the Message ID, any additional data, and the command name corresponding to the Message ID. For example, the following message:

```
>>Send, Imager: 3, MessageId: 0x3, Buffer=4, ReadyToPrint=1, Raster Buffer Data
```



means that the jet.engine™ GUI sent Raster Buffer data to the fourth buffer of imager number 3.

## <<Receive

### <<Received ACK, Imager: #, Ack MessageId: # [command]

Messages starting with <<Received ACK or <<Receive are messages and responses sent from the Imager to the jet.engine™ GUI.

The following message is simply an acknowledgement:

```
<<Receive, Imager: 1, MessageId: #, [additional data], [command]
```

This is sent when the Imager receives and processes a command. It sends back the acknowledgement along with the command it received.

The second type is the Imager sending a command to the GUI. In the following example

```
<<Receive, Imager: 1, MessageId: 0x6, Buffer=1, BufsRemaining=3, Page=10, Raster Buffer Ready For Data
```

In this message, Imager #1 is telling the jet.engine™ GUI that Buffer #1 has been printed and needs to be refilled, and that it has three filled buffers remaining. Again, the Message ID 0x6 corresponds to the **Raster Buffer Ready For Data** command.

## SYSTEM

Any message beginning with SYSTEM means that it contains information about the computer running the jet.engine™ GUI. An example is:

```
7:15:734 (476) [DIAG] SYSTEM 522224 KB

07/01/2004 14:27:15:734 (476) [DIAG] SYSTEM 942636 KB Free on C:

07/01/2004 14:27:15:734 (476) [DIAG] SYSTEM ProcessorName: Intel(R)

Pentium(R) 4 CPU 3.06GHz

07/01/2004 14:27:15:734 (476) [DIAG] SYSTEM ProcessorIdentifier: x86

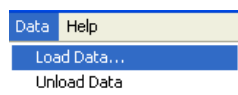
Family 15 Model 2 Stepping 9


07/01/2004 14:27:15:734 (476) [DIAG] SYSTEM ProcessorMhz: 3.06 Ghz
```

## How To: Work with Data Sources

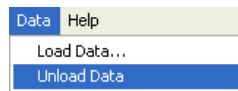
In order to print records, you must first load the data to be printed.

To do this, you can either choose Load Data from the Data menu,



or click on the Load Data Source icon  in the toolbar. This opens a browser window, from which you can locate and select the appropriate data source.

If you need to Unload Data, you can either choose Unload Data from the Data menu,



or click on the **Unload Data Source** icon .

