BoxWriter®

for Marksman Net

and Marksman NEXT

FOXJET®

User Manual

2464-308
Revision F
Version 3.54

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FOXJET® AN ITW COMPANY

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Marksman© Net
Ink Jet System
User Manual

2464-308

Marksman Net

Warranty:

The Marksman© Net Ink Jet system, including all components unless otherwise specified, carries a limited warranty.

The inks and conditioners used with the Marksman© Net Ink Jet system carry a limited warranty.

For all warranty terms and conditions, contact the Distributor for a complete copy of the Limited Warranty Statement.

BoxWriter Net Software

Section 1: Introduction

This manual covers the installation, operation, and maintenance of the Marksman© Net Ink Jet Printing System. Also included is a troubleshooting section and parts list.

The Marksman Net is a single print head controller that can be used on any of the Pro-Series print heads. A system can range from a single head application to a multiple head print station controlled from a PC connected to the Marksman Net via an Ethernet connection and running BoxWriter Net software. BoxWriter software is required to configure and control the Marksman Net.

The system, as sold, is configured for a single head application. Each controller drives one print head. The controllers can be daisy-chained together with an additional cable to share encoder and photocell signals. In addition, the BoxWriter© Net Software allows the Marksman© Net controllers to be accessed and controlled via one piece of software. If more devices are required to be connected to the network, consult your network administrator for proper cables and hubs. A Marksman© Hub can be placed on the same network to allow for connection to an Alarm Beacon/Strobe (for error indications) or other peripheral devices (such as a scanner).

Standard message mode vs. Single message mode: The system can be configured for two different modes, Standard mode or Single message mode. The default mode is the standard mode in which all the messages are downloaded and stored on the Marksman Net. This mode works fine for users that do not foresee exceeding the Marksman Net storage capability. If the application requires over 200 messages and/or several logos per Marksman Net, then the Single message mode would need to be selected. In this mode when the message is started, it is downloaded to the Marksman Net and all others are erased so that there is only one message on the Marksman Net. Therefore, the number of messages is limited only by the size of the hard dive of the PC.

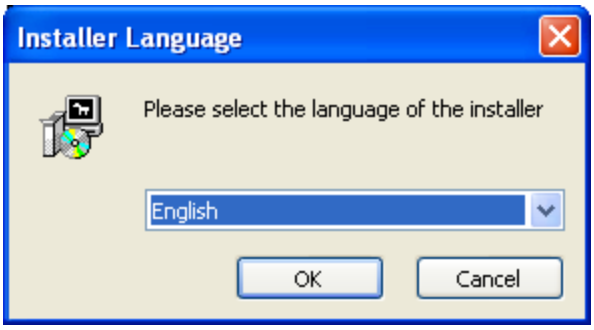
NOTE: If BoxWriter is to be used to control Marksman Nets, it must stay connected to them. Database errors could occur if the software is routinely disconnected.

System Requirements for BoxWriter© Net Software

PC with 300MHz or higher
Memory: 128MB
Hard Disk: 1.5GB
Network Adaptor
OS: Windows XP

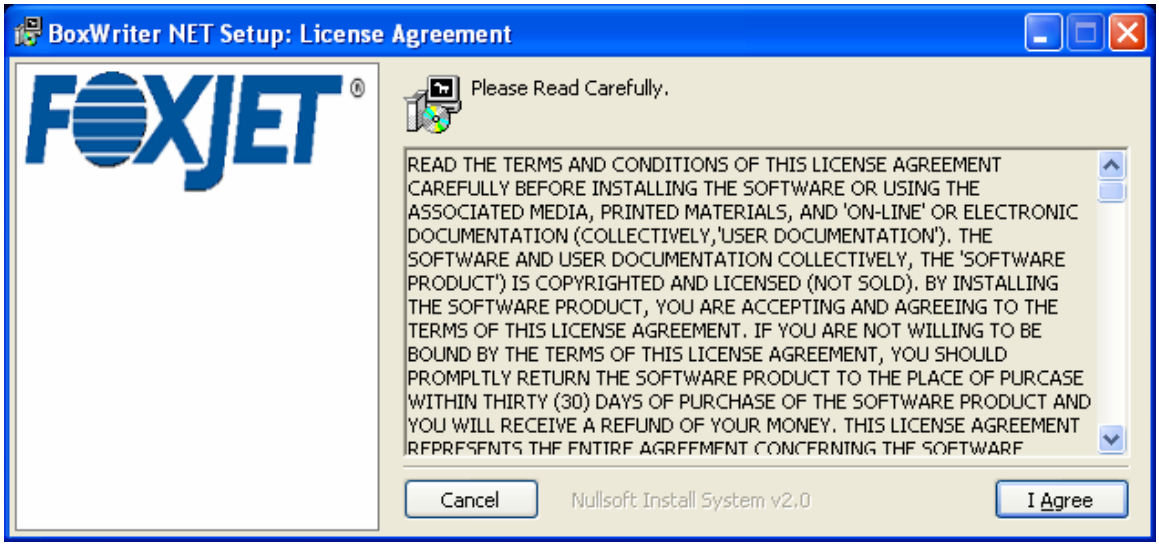
Software Installation

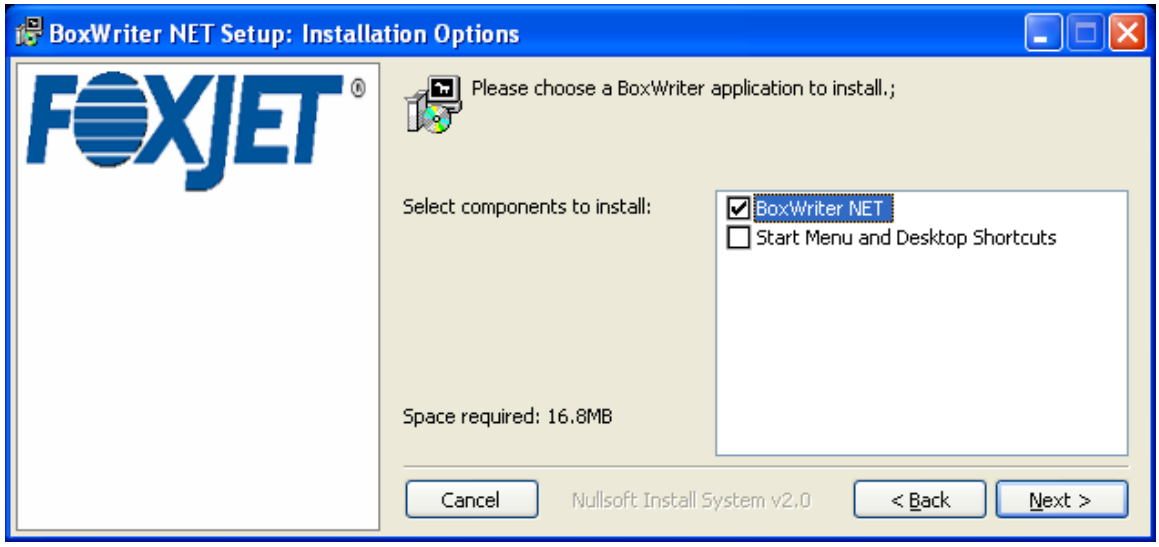
Insert the BoxWriter© Net Software installation disk into the computer and go to the Start menu. Select Run, type "D:\BwNetSetup" (without quotation marks, where "D" is the applicable drive letter) and click OK. Or, go to the CD drive, select the BwNetSetup icon and the appropriate files will be loaded.

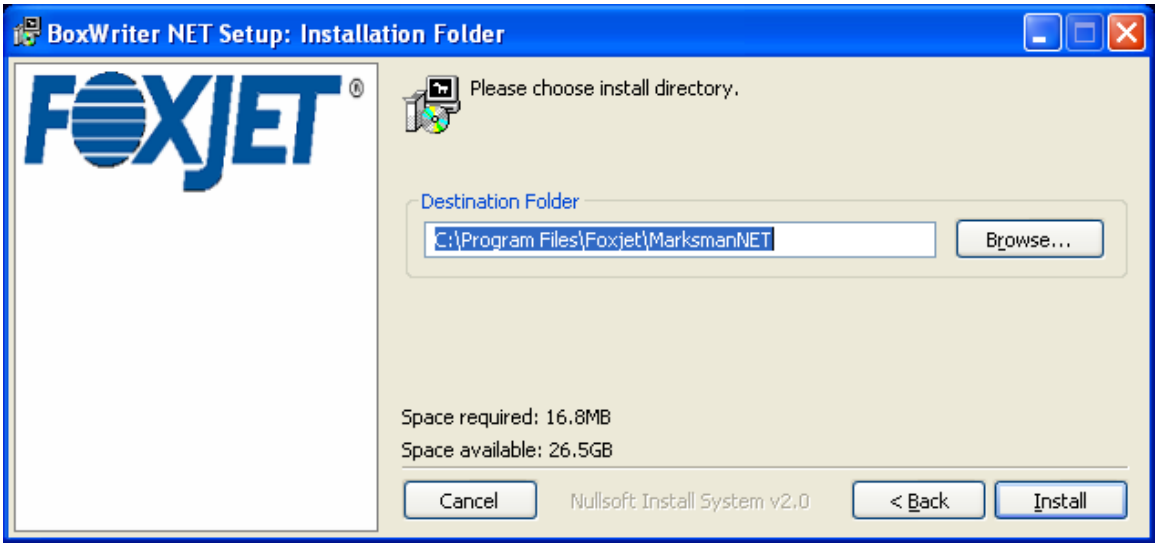


Select the language of the **install program** only. (After the program has been installed, refer to *"Section 6:BoxWriter© Net, Security, Translate"* to select a language other than English for the BoxWriter software.)

When the setup program is started, the Nullsoft® installation wizard will guide you through the installation process. You will be instructed to close all other programs and to agree or disagree with the software license. (If you disagree with the license, the software will not be installed.)







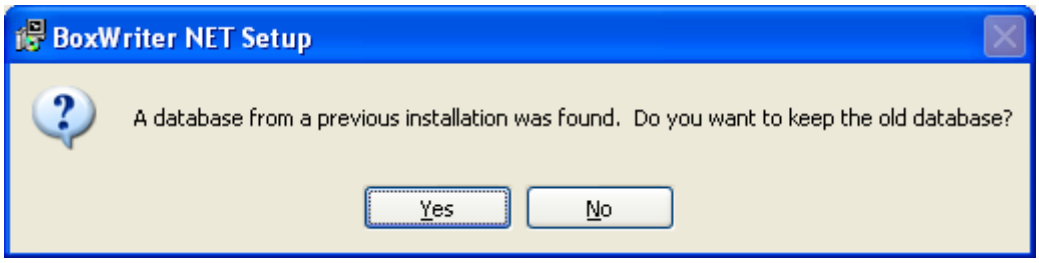
If the installation is successful, the user will be prompted with the default username and password. This is needed to log in to the Marksman Net Controller.

Username: ADMIN

Password: FOXJET

NOTE: Usernames and passwords are not case sensitive.

If a database was already installed (in the case of an upgrade, or reinstallation) the user will be prompted with the following dialog. Choosing "No" will result in all previously saved data being erased.



Section 2: Safety

Following is a list of safety symbols and their meanings, which will be found throughout this manual. Pay attention to these symbols where they appear in the manual.

Wear safety goggles when performing the procedure described!

Caution or Warning! Denotes possible personal injury and/or damage to the equipment.

Caution or Warning! Denotes possible personal injury and/or equipment damage due to electrical hazard.

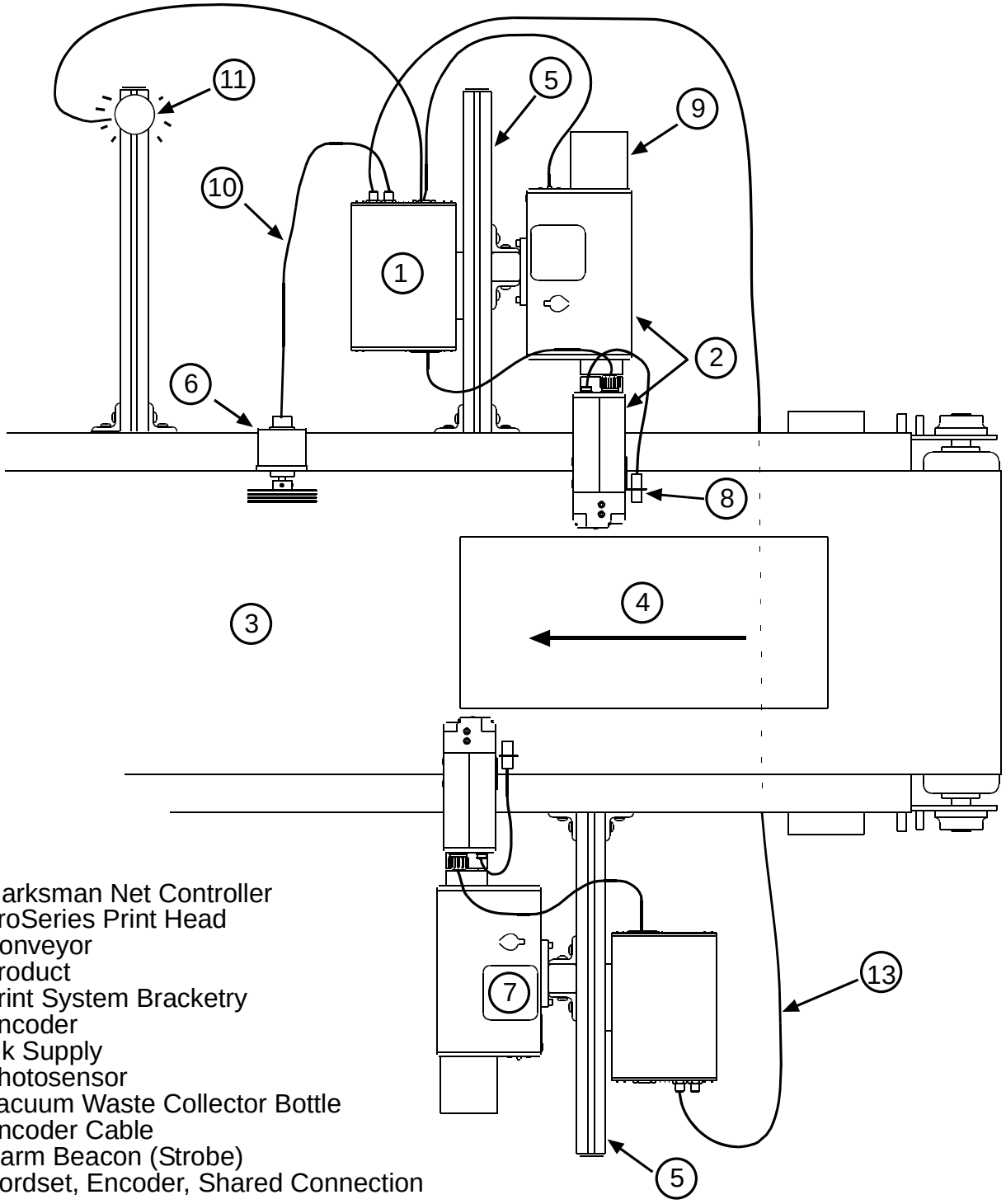
NOTE:

Only trained personnel should operate and service the equipment.

It is extremely important to:

- Clean up all ink spills with the appropriate conditioners immediately and dispose of all waste according to local and state regulations.
- Wear safety glasses and protective clothing, including gloves, when handling all inks and conditioners.
- Store inks and conditioners under the recommended conditions found on the MSDS.

Section 3: System Components

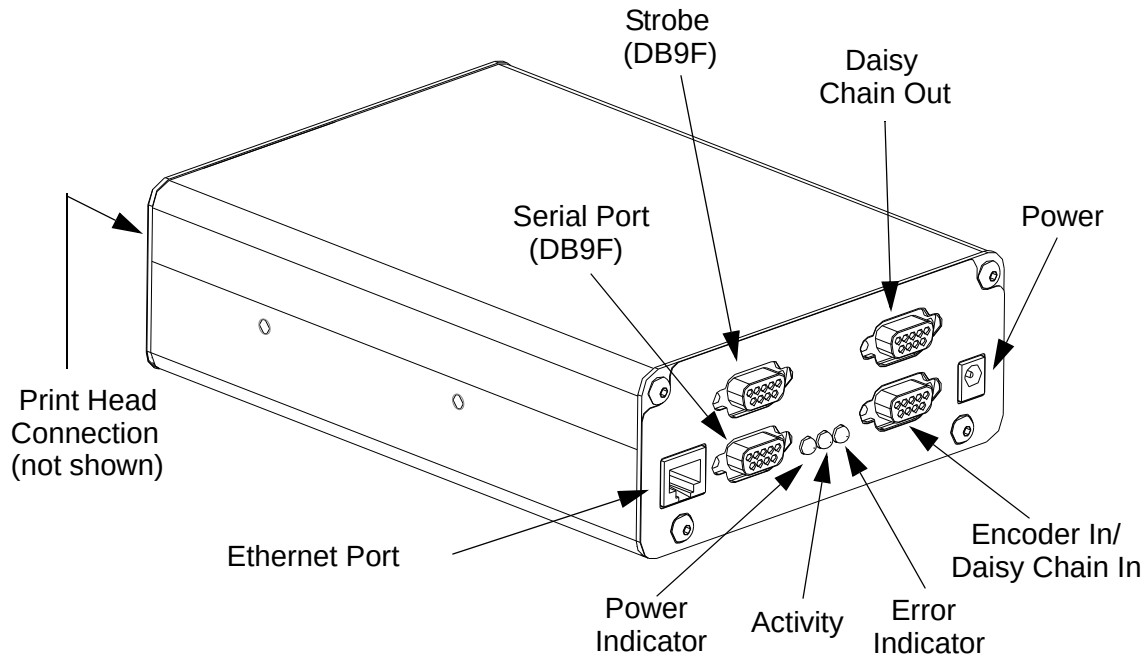


1 Marksman Net Controller
2 ProSeries Print Head
3 Conveyor
4 Product
5 Print System Bracketry
6 Encoder
7 Ink Supply
8 Photosensor
9 Vacuum Waste Collector Bottle
10 Encoder Cable
11 Alarm Beacon (Strobe)
12 Cordset, Encoder, Shared Connection

The Marksman© Net Ink Jet System is available with the following components, options and service kits:

Part Number	Description
	Integrated Print Head
2464008	ProSeries 192, Integrated w/APS, V300
2464023	ProSeries 192, Integrated w/APS, ScanTrue II®
2464009	ProSeries 352, Integrated w/APS, V300
2464034	ProSeries 384, Integrated w/APS, ScanTrue II®
2464236	ProSeries 384, Modular w/APS, ScanTrue II®
2464025	ProSeries 768, Integrated w/APS, ScanTrue II®
2464232	ProSeries 768, Modular, w/APS, ScanTrue II®
2466025D	ProSeries NP192 Print System Assembly, Domestic
2466025E	ProSeries NP192 Print System Assembly, European
2466026D	ProSeries NP192 Modular Print System Assembly, Domestic
2466026E	ProSeries NP192 Modular Print System Assembly, European
2464228	ProSeries AlphaCoder, AlphaMark
2464238	ProSeries AlphaCoder, ScanTrue II®
	Controller Assembly
2464325	Controller Assembly, ProSeries, Marksman© Net, Domestic
2464326	Controller Assembly, ProSeries, Marksman© Net, European
	Print Head Bracketry
2464550	Conveyor Mount Bracket
2464552	Retracting Bracket for 96/192 Print Head
2464553	Pivot Bracket
2464561	X-Y Axis Linear Adjustment, Tool-Less Bracket
2464562	Conveyor Mount/Roller Bracket for 768 Print Head
2464563	Floor Mount Bracket Kit
2464564	Conveyor Mount/Roller Bracket for 384/352 Print Head
2464565	Conveyor Mounting Bracket with Integrated Guide Rails for 384/768 Print Head
	Encoder, Photosensor, Alarm Beacon
5760820-IJ	Encoder, 2400 ppr (includes bracketry)
2465224	Photosensor, ProSeries
2465504	Alarm Beacon (Strobe)
	Cabling
5760150-010	Cordset, System Configuration, DB9, 10 Ft. (One is included with the Controller.)
5760256	Cable, Ethernet Crossover, 10 Ft. (One is included with the Controller.)

Controller

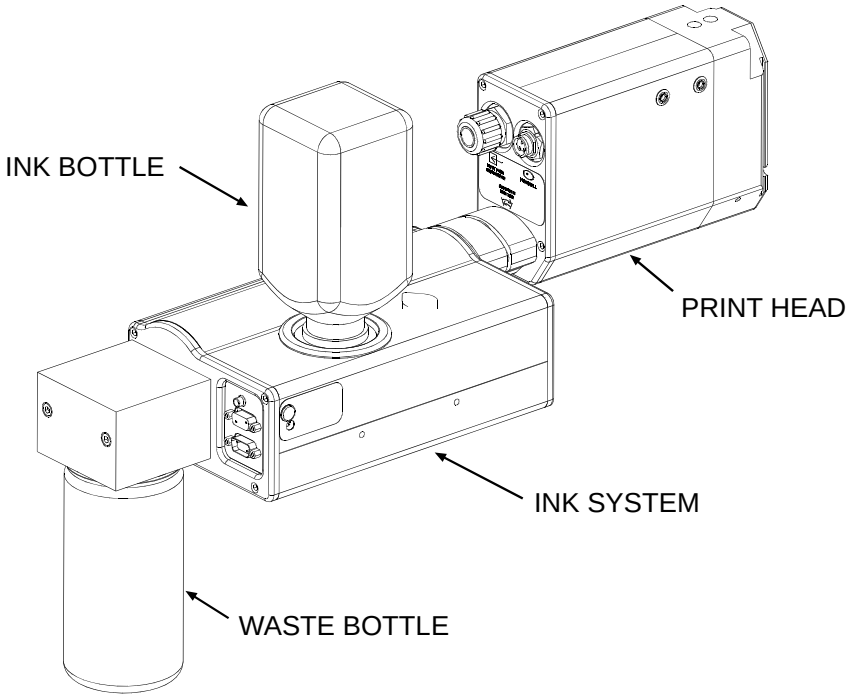


Power Indicator Light
- Green indicates power is on.

Activity
- Green LED, flashes on and off in normal operation.

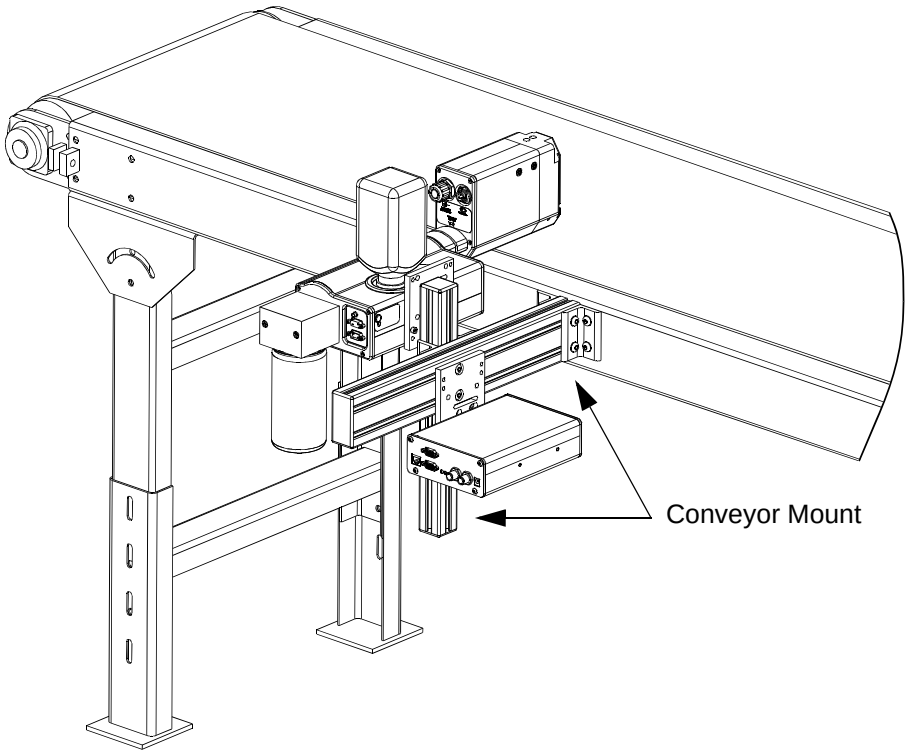
Error Indicator Light, Red
- Solid light indicates low ink or the ink collection bottle needs to be changed.
- Flashing light indicates any error (other than low ink) that prevents the system from printing.

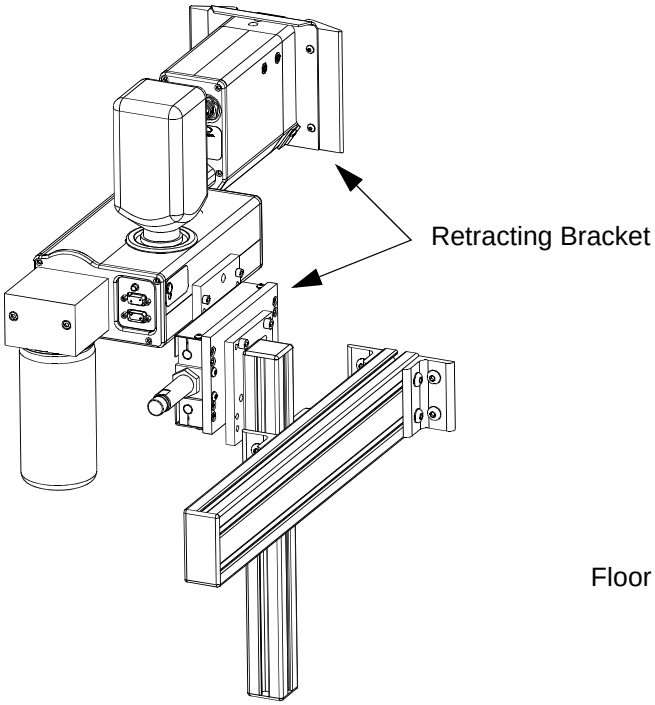
Integrated Print Head

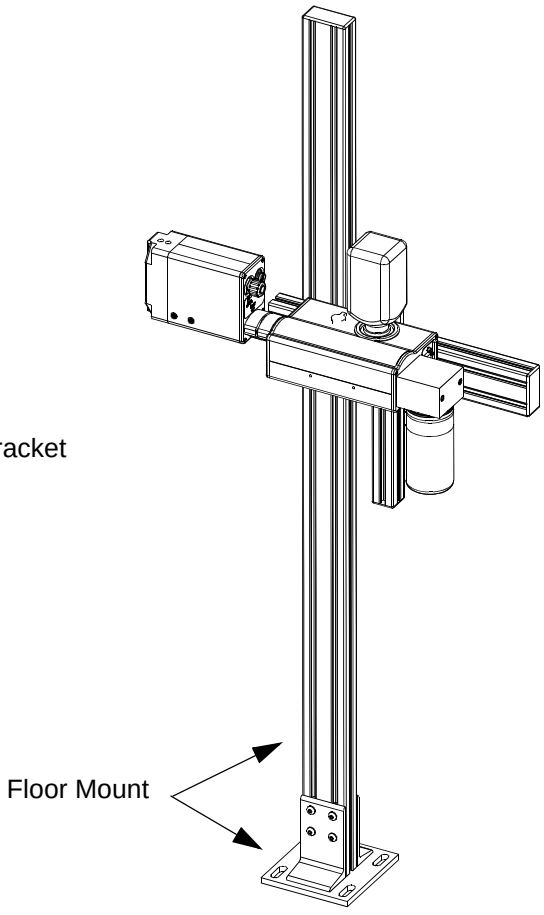


Bracketry

Bracketry is the structure that supports the controller, print system and other accessories. This manual details instructions for mounting all system components to a conveyor. Other mounting options for the controller and print system include the floor mount and the retracting bracket. Assembly instructions are included with parts kits.







Photosensor

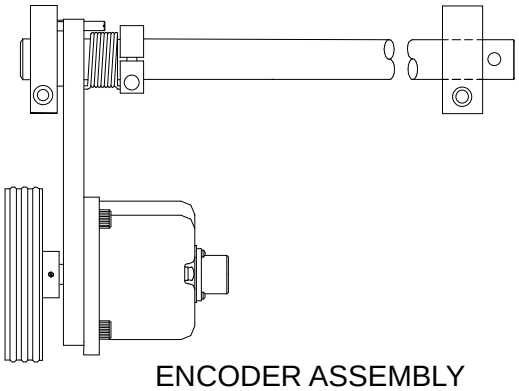
The photosensor is both a light source and a sensor. It emits light and detects the arrival of a product when the product reflects the light source back to the sensor. The sensor then sends a signal to the controller to start the printing cycle.

Encoder

The encoder assembly provides conveyor line speed information to the controller.

In addition to providing line speed information, the encoder also allows automatic disabling of printing when the line stops.

The Marksman© Net System uses a 5000 ppr open collector output encoder. The wheel is sized to provide the correct timing inputs to allow the print heads to print from 150 to 300 dpi.



ENCODER ASSEMBLY

Ink

Ink is supplied via 500 mL plastic containers. Ink types include glycol-oil based VersaPrint™ V300 for general purpose printing and ScanTrue® II pigmented ink for high edge definition printing. Both inks are formulated for use on porous substrates.

NOTE: Check the label on the Print Head for correct ink type.

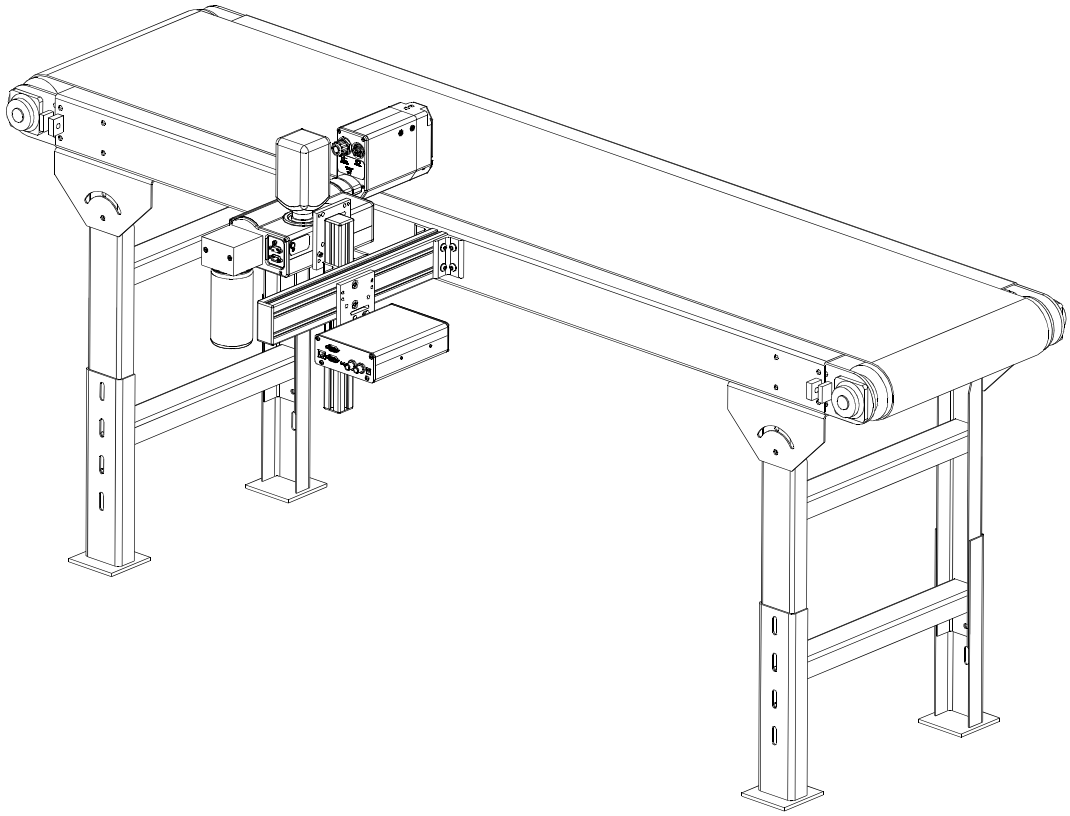
NOTE: VersaPrint™ V300 and ScanTrue® II inks are not miscible. Do NOT mix the inks.

Waste Bottle

The APS includes a Waste Collection Bottle mounted on the rear of the Print Head assembly. This bottle must be changed when full to prevent improper operation of the system. Instructions for waste disposal are on the collection bottle.

Section 4: Installation

The figure below illustrates a typical conveyor-mounted install. (Cables and ink lines are not shown.)



Materials Required for Installation

You will need the following items:

- Lint-free wipes
- Safety goggles
- Level
- Tape measure

Use appropriate safety equipment and procedures. Leave print heads in their shipping cartons until all bracketry is in place and tightened down.

System Installation Overview

NOTE: The following steps give an overview of the procedure to properly install the Marksman© Net print system. Refer to the appropriate section for details.

1. Carefully plan the mounting location of the equipment. Keep in mind bracketry hardware location and printer equipment size.
2. Remove equipment from packaging.
3. Assemble all bracketry to the floor, conveyor, or other bracketry per bracketry installation section.
4. Mount the print system to its appropriate bracketry. Do not connect to power outlet.
5. Assemble the optional retracting bracket to each print head, if applicable.
6. Mount the print head(s) to their appropriate bracketry and in the approximate location relative to the carton.
7. Mount the photosensor, optional bracketry, and optional encoder per procedure.

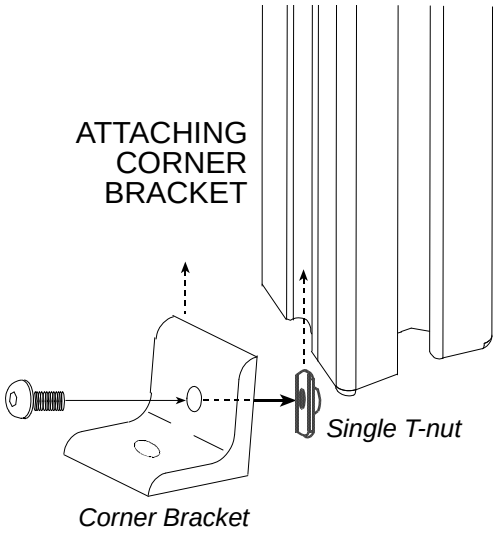
CAUTION: Remove the print head Ship Cap prior to operating the Print Heads.

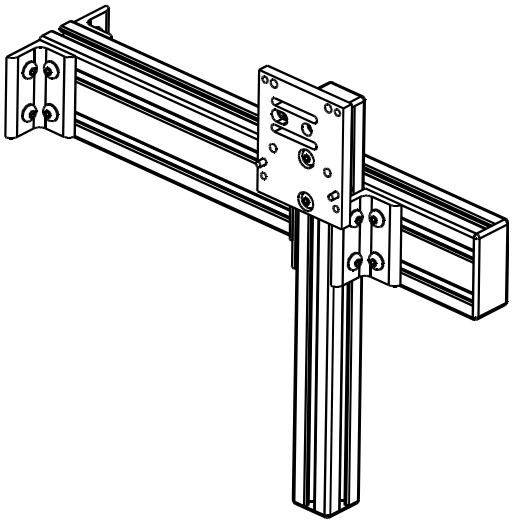
Installing Bracketry

This section shows controller bracketry mounted to a conveyor. This is the most common mounting method, and the most stable, as all bracketry is bolted directly to the conveyor. Detailed assembly instructions are included with the parts kit.

Other mounting options, including parts kit numbers, are listed in *Section 3, System Components*.

Corner brackets are attached to aluminum bars as shown.





Mounting the Print System

Unpack the print head just before mounting to the bracketry.

Attach the print head to the bracketry with a print head mounting bracket.

The print head must be mounted in close proximity to the product. To maintain consistent print, the head should be mounted no more than 1/8" from the substrate. An optional retracting bracket is available to mount the head and control the distance from the head to the substrate. The retracting bracket allows the head to bump the product and retract as required to maintain a consistent throw distance. (See *"Section 3: System Components"* for bracketry options.)

NOTE: Install optional retracting bracket kit on the print head prior to mounting the print head to the conveyor bracket.

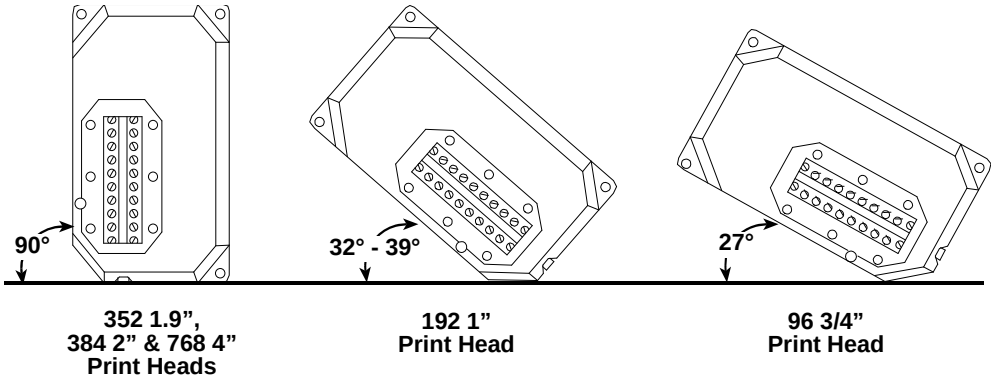
It may be necessary to vertically adjust each bracket's horizontal bar later to fine-tune message placement. This is especially true when using multiple print heads, as message lines will need to be synchronized with each other.

NOTE: When adjusting the horizontal bar or print head mounting bracket, always support the print head with your hand to keep it from falling forward onto the conveyor.

NOTE: The ProSeries print heads work on gravity and capillary ink feed, internal in the print head. The head must be mounted in a level position from front to back to prevent leakage.

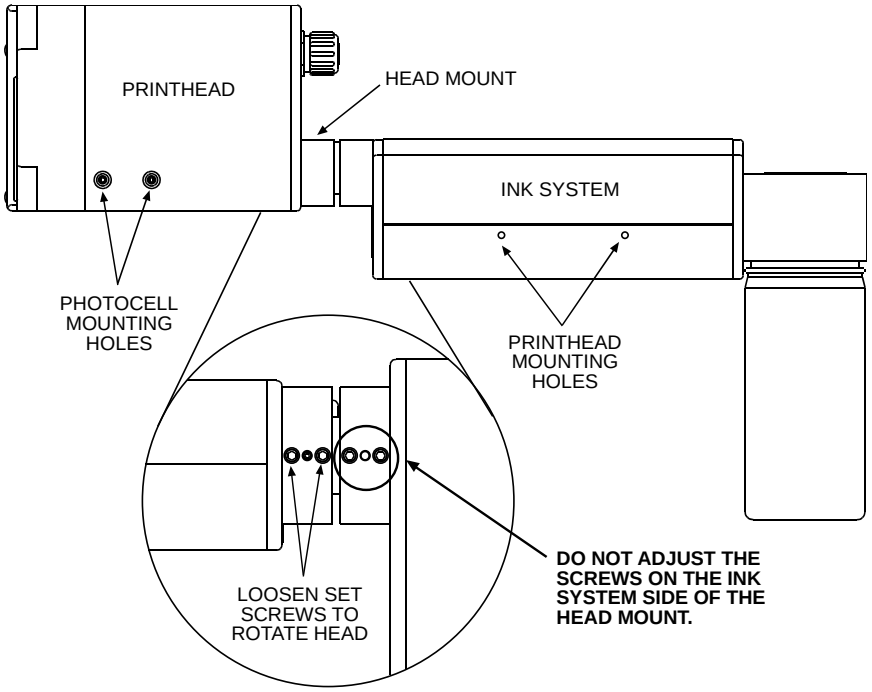
Setting Up the Print Head

The Pro/Classic Series print heads are mounted using the 10-32 tapped holes on the right or left side of the Ink System bottom case. The print head angle can be set between 0° and 90°. Common settings are shown below.



To adjust the head to its correct angle:

1. Loosen the two set screws (1/8" hex head) on the print head side of the head mount.
2. Rotate the head to the desired angle.
3. Secure the set screws.



Mounting the Photosensor

The product detect Photocell can be mounted on either side of the print head, depending on the direction of print. Remove the plugs or set screws (3/32" hex head) in the photocell mounting holes, then attach the Photocell Mounting Bracket with the 10-32 x 1/2" screws provided with the bracket.

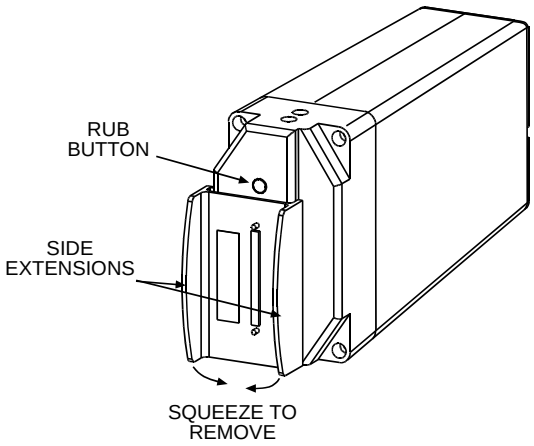
Ship Caps

CAUTION: Do not operate APS Print Heads with the Print Head Ship Cap installed! Operating a closed system can cause a siphoning effect which can drain the ink supply.

96, 192 and 352 Print Heads:

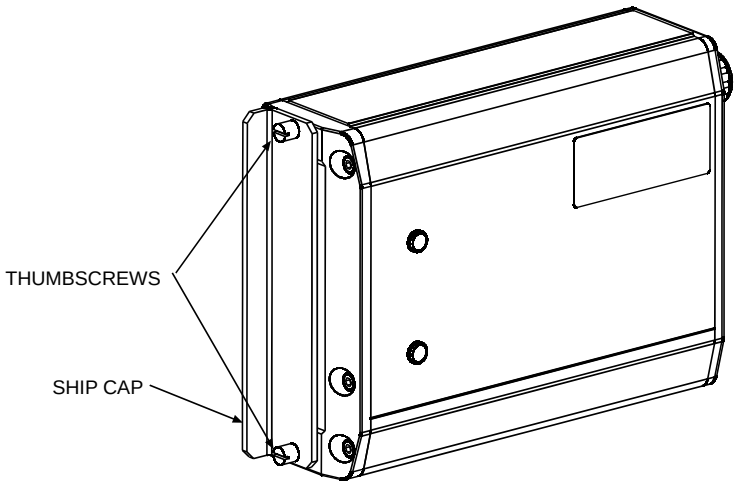
Remove the Print Head Ship Cap by squeezing the front of the side extensions together until the back releases. (See illustration at right.)

When replacing the Print Head Ship Cap, take care to align the rubber tips on the back of the cover with the rub buttons on the face of the print head.



384/768 Print Head

Loosen the two thumbscrews and remove the Ship Cap. (See illustration at right.)

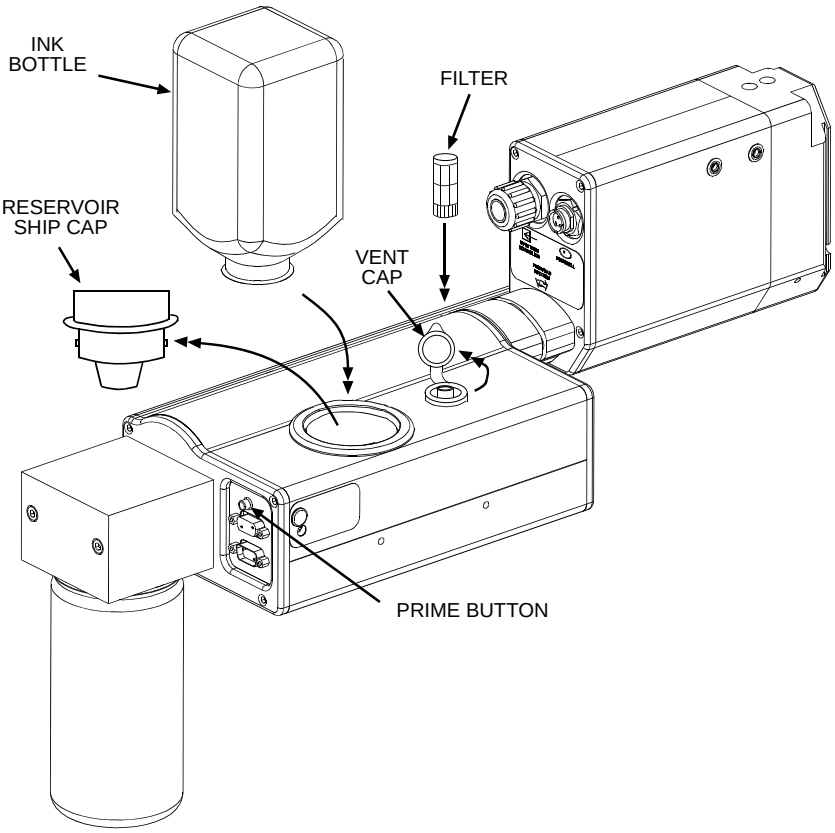


NOTE: If you place the Print Head Ship Cap on a hot print head and do not fasten it securely, the print head will weep ink until the head has cooled down.

NOTE: Ink may accumulate behind the ship cap during shipping.

Open the Reservoir Vent Cap and Install the Filter. Remove the Reservoir Ship Cap and Install the Ink Bottle. Save caps in a zip-lock bag for future use.

CAUTION: Do not over-tighten the ink bottle when screwing into the Reservoir. Over-tightening will damage the Reservoir.

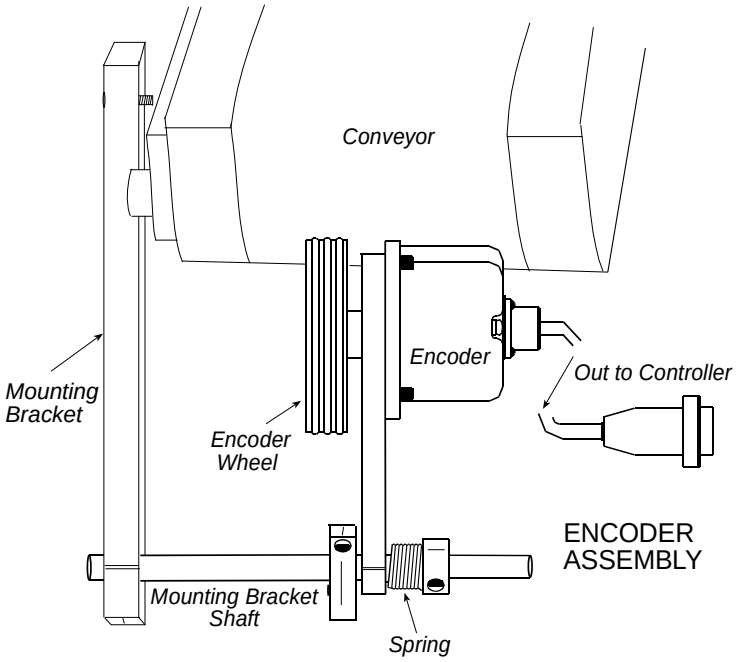


The Encoder

The encoder uses a wheel that rolls against the conveyor line to track the speed. It sends a signal to the controller, which makes adjustments for reported changes in the line speed.

It is not necessary to install the encoder immediately adjacent to the print heads. It is more important to place it where it will accurately measure the speed of the conveyor. Install it in contact with the conveyor, or with a wheel or roller moving the same speed as the conveyor.

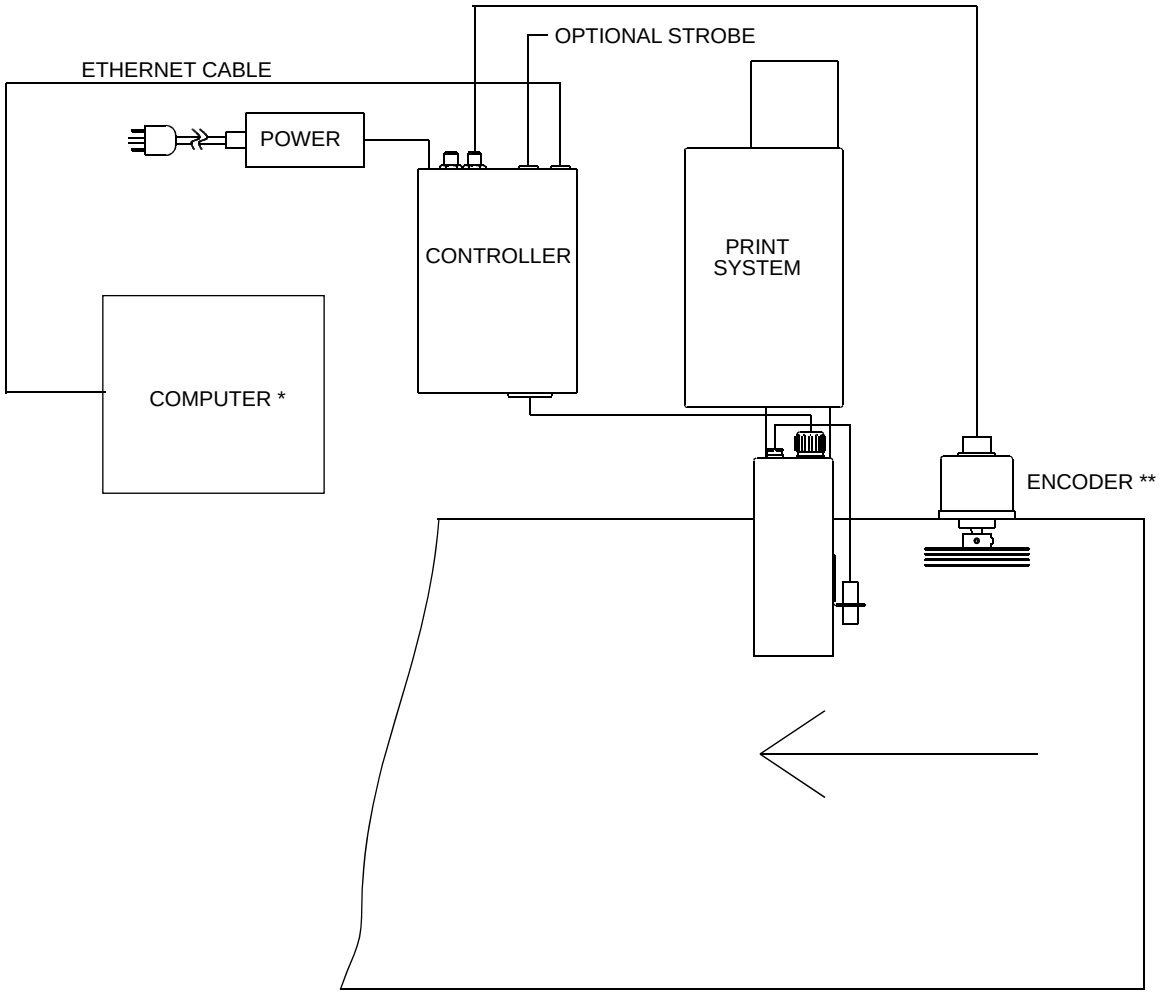
The encoder's mounting bracket is spring-loaded. Adjust the spring collar to ensure that the encoder maintains stable contact with the conveyor.



CAUTION: Do not jam the encoder wheel against the surface of the conveyor. A radial force of over 40 lbs. will reduce the life of the bearings.

Electrical Cable Connections

Single Head System:

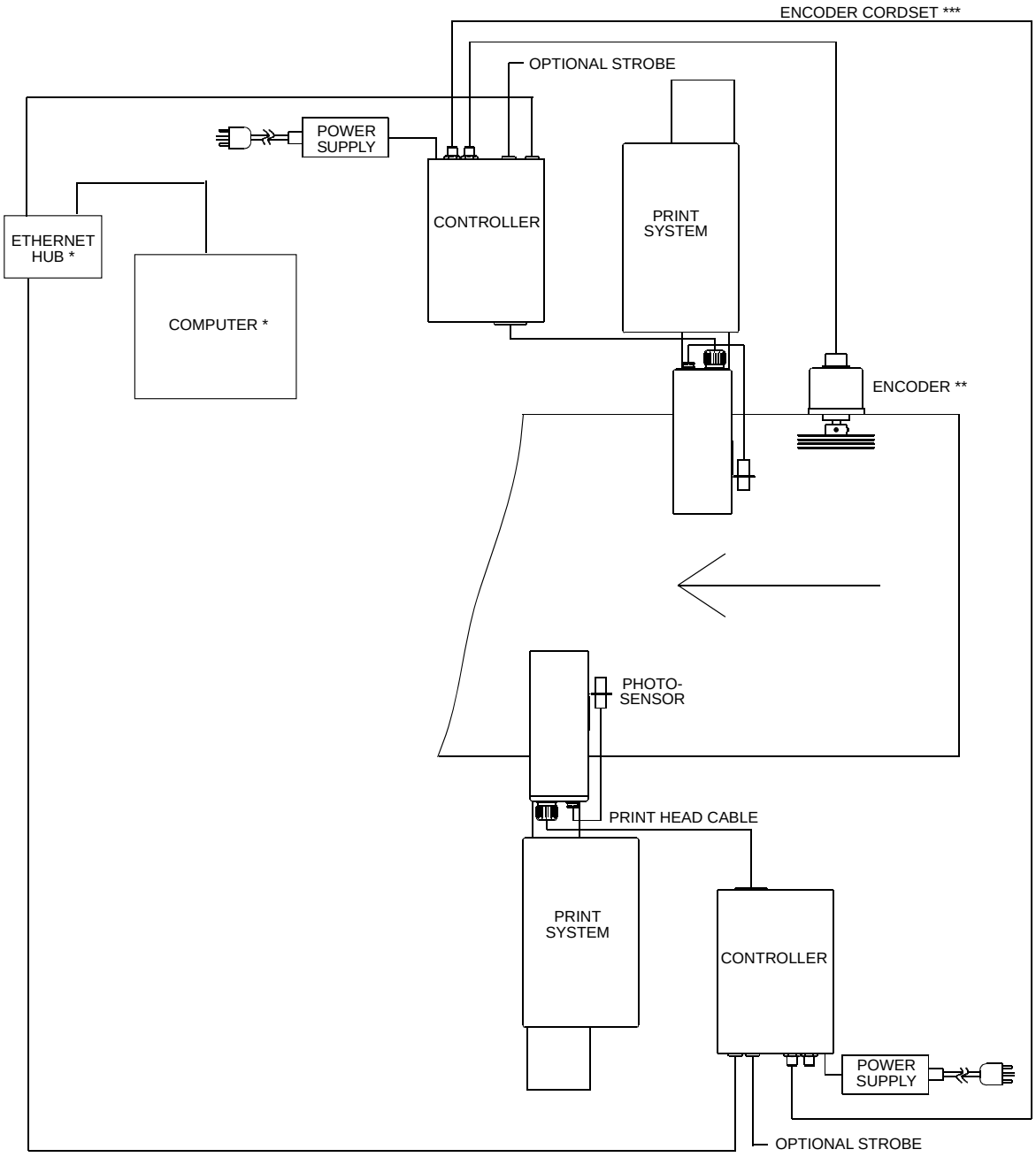


NOTES:

* Customer Supplied Equipment

** Encoder: To Controller "ENCODER INPUT"

Multiple Head System with Optional Marksman© Hub:



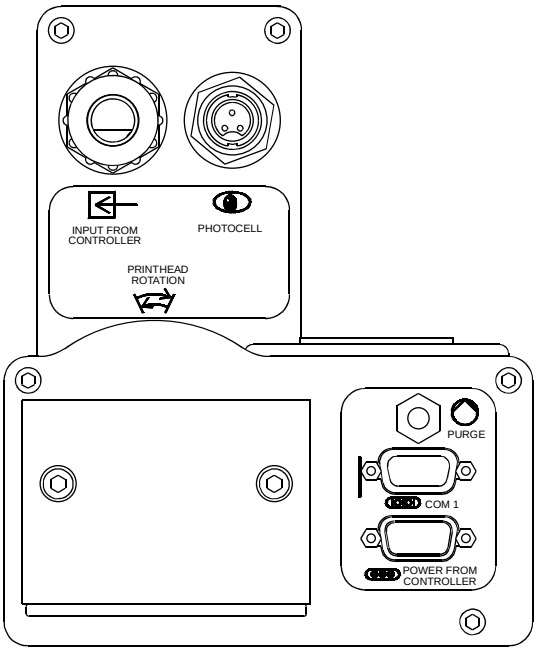
NOTES:

* Customer Supplied Equipment

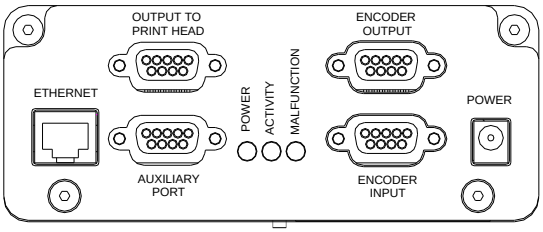
** Encoder: To Controller "ENCODER INPUT"

*** Encoder Cordset (shared): From the master Controller (the one with the Encoder attached) "ENCODER OUTPUT" to the slave Controller "ENCODER INPUT"

Views



BACK VIEW OF PRINT SYSTEM



BACK VIEW OF CONTROLLER

Priming the Print Heads

NOTE: The system will not prime either manually or automatically if there is a low ink indication. Low ink indication is caused by either low ink in the reservoir or full ink in the waste collection bottle.

Manual Prime

NOTE: Place a wipe in front of the maintenance plate to catch excessive ink.

A manual prime can be accomplished by depressing the push-button switch on the rear of the ink system housing. Pressing and holding the button for longer than one second will start the pump for a manual prime. It will continue to run as long as the button is depressed, or up to five seconds. If additional priming is required, release and press the button again.

Pressing for less than 0.5 seconds will initiate a maintenance cycle. If the system has started a maintenance cycle and the button is pressed, the manual prime will not operate. (The Priming Sequence and the Vacuum Cycle are less than 10 seconds long.)

APS Cycle

The APS (Automatic Priming System) cycle is a means for re-priming channels in the head if some are missing. The APS system does this by using a priming pump to force ink out of the channels and a vacuum pump and collection bottle to collect the ink waste. The APS cycle can be manually started by momentarily pressing the prime button.

NOTE: The system may not print during an APS cycle or manual prime.

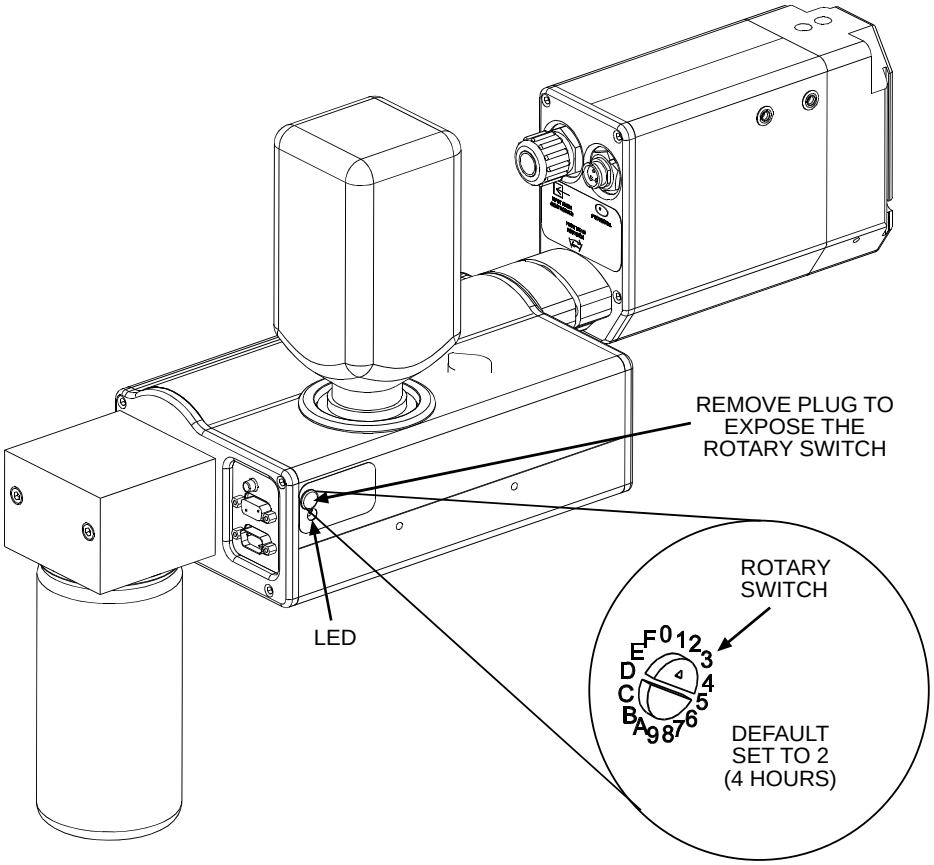
Print Head Control of APS

Print Head control of the APS (Automatic Priming System) cycle is accomplished by a programmed timing interval set by the user at the print head (each head, if more then one is used). It can be set to run as often as necessary, from once every 2 hours to once every 18 hours for the UJII heads; or from once every hour to once every 12 hours for the graphic heads. The default setting is once every 4 hours (Switch Setting 2 for a UJII head or Switch Setting C for a graphics head). The interval can be adjusted by means of a rotary switch (Programmable Timer) mounted on the APS Controller PCB. (See the illustration below.) See the following Table for the hour interval for each setting of programmable timer.

0= No APS		UJII Heads									Graphics Heads					
Switch Setting	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Interval (Hours)	0	2	4	6	8	10	12	14	16	18	1	2	4	6	8	12

Timing Interval Settings

The priming sequence will perform three separate consecutive primes of approximately four milliseconds each. The required time for the priming sequence is less than five seconds, with an additional 20 seconds for the vacuum cycle. As with pervious Trident print heads, printing cannot occur during the priming sequence.



APS View for Pro/Classic Series Print Heads

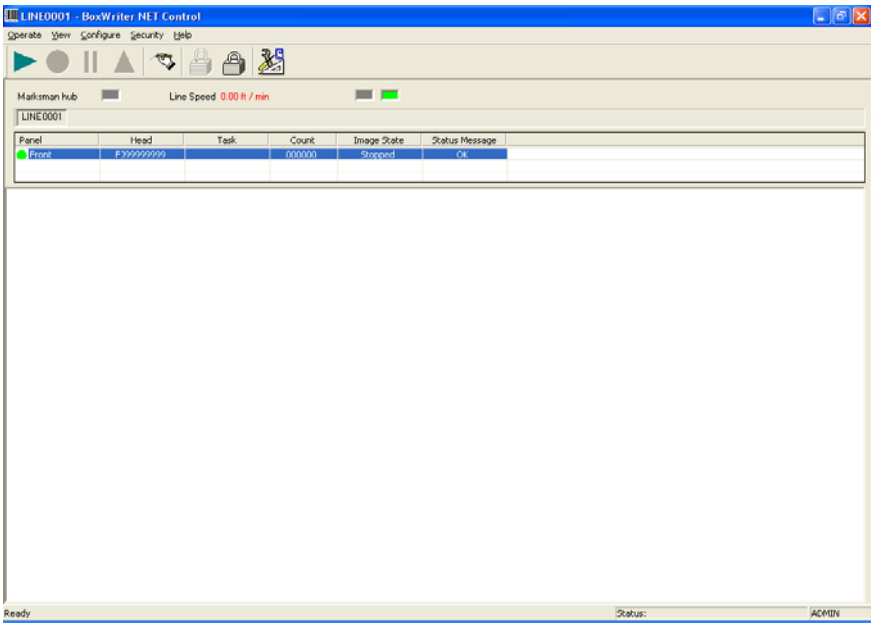
Auxiliary Photocell Input

An Auxiliary Photocell input is available to insure a print cycle is not missed during the automatic priming sequence. Connecting the Auxiliary Photocell will retard a prime sequence until there is enough time to complete the sequence without missing a print cycle. The default delay setting is three (3) seconds after the product passes the photocell. Multiple heads can share the Auxiliary Photocell by using the Photocell "Y" Cable. To change the default setting, perform the following steps:

1. Insure that the rotary switch is not in the "0" position.
2. Place a box in front of the photocell.
3. While the photocell is on, set the rotary switch to 0.
4. When the LED stays illuminated continuously, set the rotary switch to a new number (1 through F) representing the number of seconds (1 through 15) you want to delay. **Note:** "0" is not an available user setting.
5. Press and hold the Prime button until the LED starts flashing.
6. Release the Prime button.
7. Remove the box from in front of the photocell.
8. Set the rotary switch back to the desired hour setting.

Section 5: Getting Started

The Marksman© Net BoxWriter© Software provides a windows graphical user interface to a Marksman© Net Controller. The main dialog for the control application is shown below:



To log on, click the "Unlock" icon, then enter the Username and Password. (Note: Usernames and Passwords are not case sensitive.)

Username: ADMIN

Password: FOXJET

The menu tree to the right shows all the menus and sub-menu options available from within the control application.

Menu options are configurable and may be unavailable for operators with limited access. The operator must have administrative privileges to access all menu options.

The operator may also use the tool bar for quick access to the **Start**, **Stop**, **Resume**, **Idle**, **Edit**, **Login** and **Logout** menu selections.

Marksman© Hub: A green icon indicates that the device Hub is connected; a red icon indicates that the device Hub is not connected; and a gray icon indicates that the Hub is disabled.

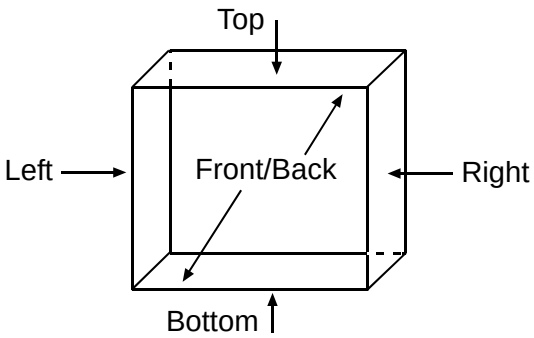
Production Line: The production line name is selected and viewed by selecting the tabbed folders. The production line configuration provides for a means of grouping print heads. Up to two production lines can be created and configured.

Line Speed: Line speed is the conveyor speed that the master head is set at.

Marksman© Menu Tree

- Operate
  - Start
  - Stop
  - Resume
  - Idle
  - Print Test Pattern
  - Edit
  - Change User Elements
  - Change Counts
  - Exit
- View
  - Printer Report
  - Scan Report
  - Diagnostic Dialog
  - Preview
  - Refresh
  - Zoom
- Configure
  - Print Heads
  - Production Line
  - System
    - Barcode Parameters
    - Date/Time Codes
    - Shift Codes
    - Dynamic Table
    - General Settings
    - Strobe
- Security
  - Users
  - Group Options
  - Login
  - Logout
- Help
  - About
    - Firmware
  - Translate

Panel: The panel name indicates a specific side of a rectangular cube representing the product container. Each of the six panel names may be utilized to aid in describing the physical location of a print head in relation to the product.



Head: The print head name indicates a user-defined alphanumeric name associated with a physical print head. Up to eight print heads may be defined. Each print head name must be unique to the system.

Task: A task refers to one to six panels that are to be printed together as a label.

Count: The count indicates the number of times that a task has been printed.

Image State: The image state indicates the current image status for a task. The Image State may be Running, Paused, Idle or Stopped.

Status Message: The status message displays messages pertaining to the print head status. A status message may include one of the following: OK, Low Ink, Out of Ink, Low Temp, or Voltage Error.

The system will not print if the status message is: "Out of Ink," "Low Temp" or "Voltage Error."

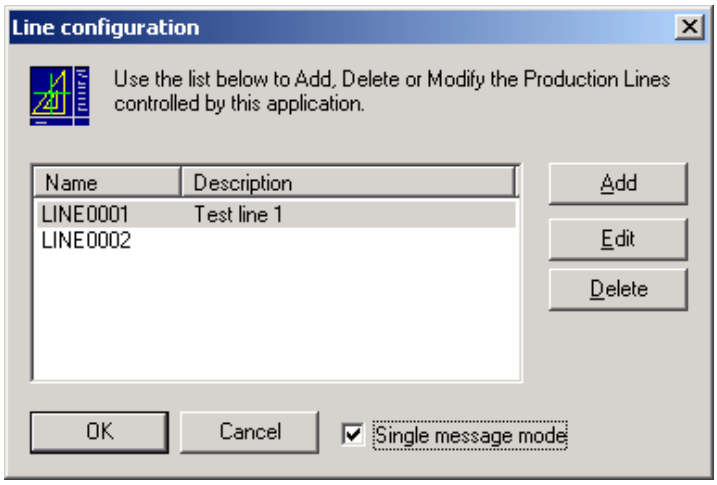
Status Line: The status line is used to display other system messages and system status. The name of the user currently logged in is also shown.

Section 6: BoxWriter© Net

Configuration

Production Line Configuration

The production line configuration allows for grouping of settings that relate to a particular setup. Select **Configure**, then select **Production Line** from the menu. To edit a line, select it and click **Edit**; or double-click the line.



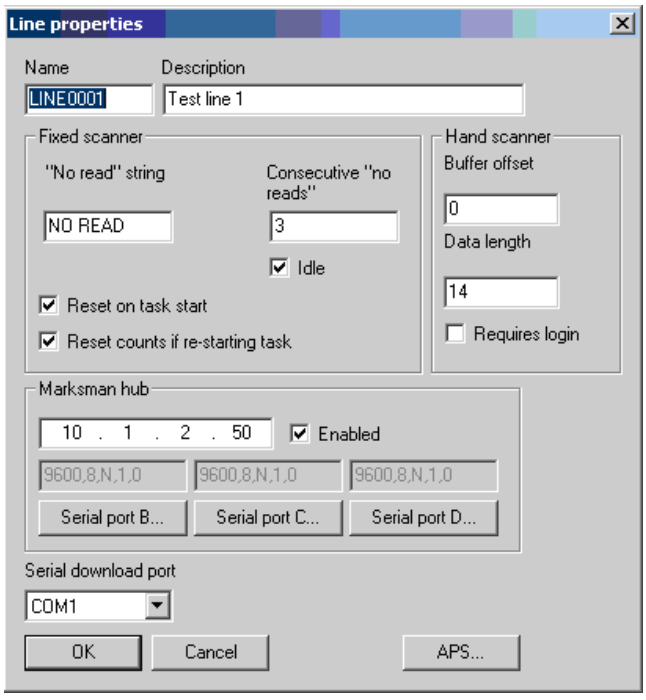
Add: The Add button allows for the addition of up to eight production lines.

Delete: The Delete button allows for the removal of a production line from the configuration. All messages/tasks created for this production line will be deleted.

Description: The description field is used to help define the production line.

Single Message Mode: This mode will send only the current message to be printed to the Marksman Net. This is beneficial when the number of messages used exceeds the storage capability of the MK Net.

Fixed Scanner



This group defines the parameters for a fixed scanner that may be connected to the Marksman© Hub. The data is stored under the Scan Report. (See *View Scan Report" l*ater in this section.)

No Read String: The No Read String must match the No Read string that is transmitted from the fixed scanner.

Consecutive No Reads: The Consecutive No Reads field is used to perform a quality check on barcodes that are printed. This value determines the maximum number of consecutive No Reads that may be transmitted by a fixed scanner. The printing will be stopped upon reaching the maximum value.

Reset on Task Start: The Reset on Task Start check box determines that the current number of consecutive No Reads will be reset to zero upon a task start operation.

Reset Counts if Re-starting Task: If this box is checked, counts will be reset to zero when re-starting the task through the Serial Port.

Hand Scanner

This group defines the parameters for parsing the data stream transmitted by a hand scanner. The data transmitted by the hand scanner must contain a valid task name in order to allow the task to start.

Buffer Offset: The Buffer Offset value determines the number of characters to offset into the buffer as transmitted by the hand scanner.

Data Length: The Data Length value determines the number of characters to extract from the data buffer that will form a task name.

Requires login: Check this option if a user is required to be logged into the system before the scanner can be used to start a Task.

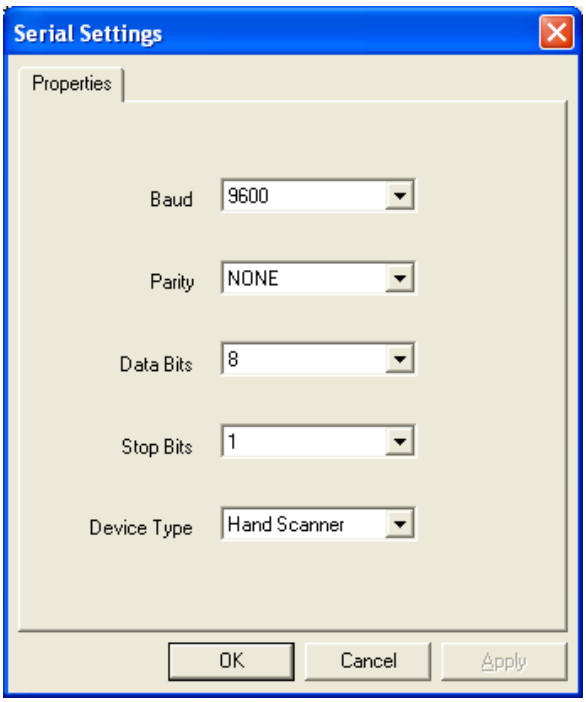
Marksman© Hub:

The Marksman© Hub may be connected to the Marksman© Net through a TCP/IP connection. The device provides additional interface methods such as serial ports. A proper IP address must be entered and the Enabled field selected to connect to the device. The main dialog screen will display a green LED when communicating with the device.

IP Address: The IP Address dialog contains the IP address of the Marksman© Hub.

Enabled: The Enabled button determines if a connection to a Marksman© Hub should be attempted. Click the button to toggle the option between enabled and disabled.

Serial Port: Select the appropriate button to edit the setup parameters for a serial port on the Marksman© Hub. The available properties for the serial ports are shown in the Serial Settings dialog box.



Each of the properties may be selected using the corresponding drop-down menu choices. When selections are complete, click **Apply**. The default selections are shown in the screen at right.

Baud: The Baud option determines the speed of the transferred data and may be set to 9600, 19200, 38400, 57600 or 115200.

Parity: Parity determines the type of parity bit to be used. It may be set to None, Odd or Even.

Data Bits: Data Bits determines the number of data bits used. It may be set to 7 or 8.

Stop Bits: Stop Bits determines the number of stop bits to be used: 1 or 2.

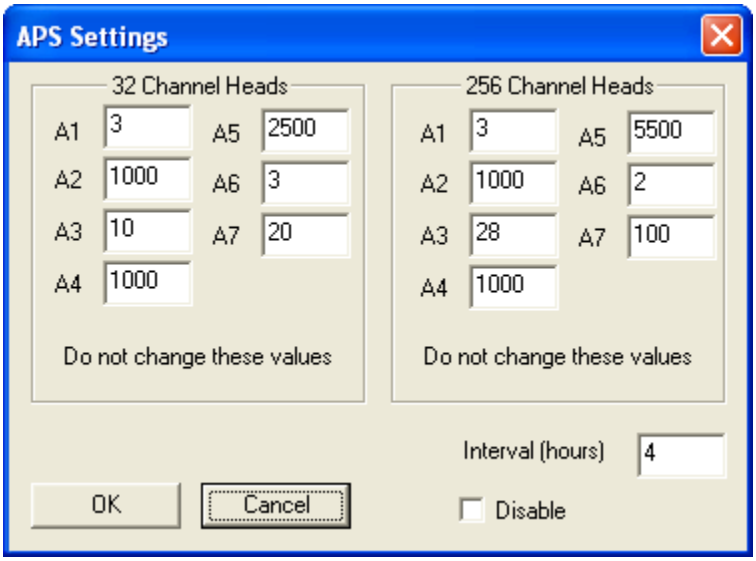
Device Type: Select a device that is going to be attached to the serial port of the Hub: Hand Scanner, Fixed Scanner or Remote/PC. This tells the computer what to do with the string of information when it is received.

Serial Download Port

Select the port to be used to send the data out if it is required to be transmitted to a device at the start of each task. The data is entered through the Editor Task properties.

APS Settings

Interval (hours) is the interval in hours at which the heads on the production line will perform an APS function. (The other settings listed are for information only.) APS can be disabled by selecting the Disable box.

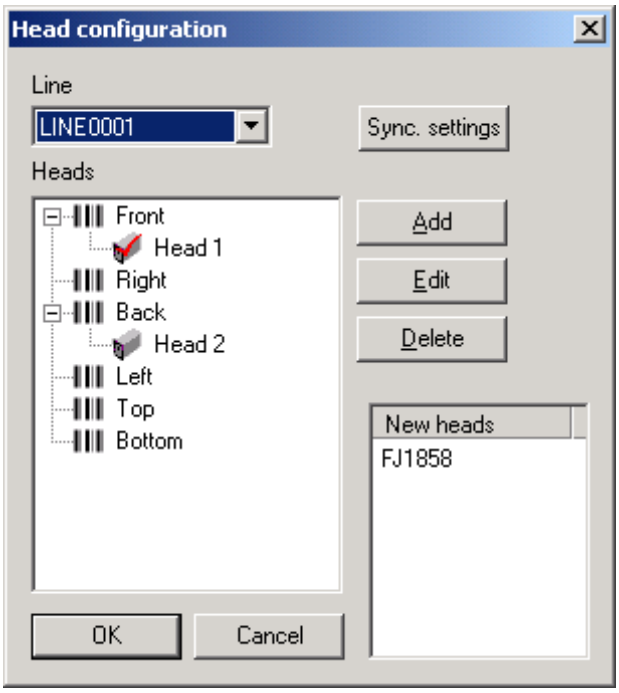


NOTE: When an APS cycle is performed, the system will not print until the cycle is complete.

Print Head Configuration

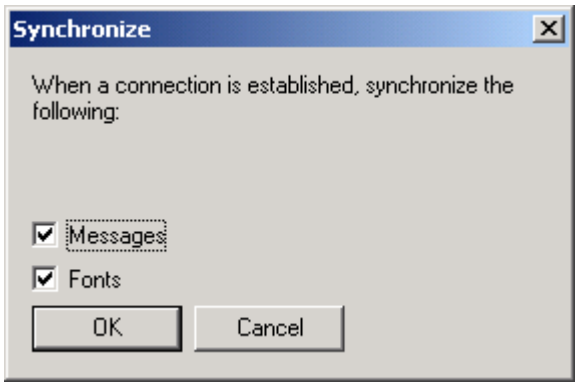
Select **Configure**, then select **Print Heads** from the menu. Select a line, then select a panel and click on a head. A head may be added or removed by clicking the appropriate Add/Remove button. To edit a head, select it and click **Edit**; or double-click it.

("New Heads" will only show up if there are un-used Heads/Nets available.)



Sync. settings: Allows the operator to select what information to send to the Net at start-up. This will prevent the system from downloading information that is already on the Net.

Synchronizing Messages and/or Fonts will replace any messages or fonts that are on the Net with those from the BoxWriter; any additional messages or fonts will remain on the Net.



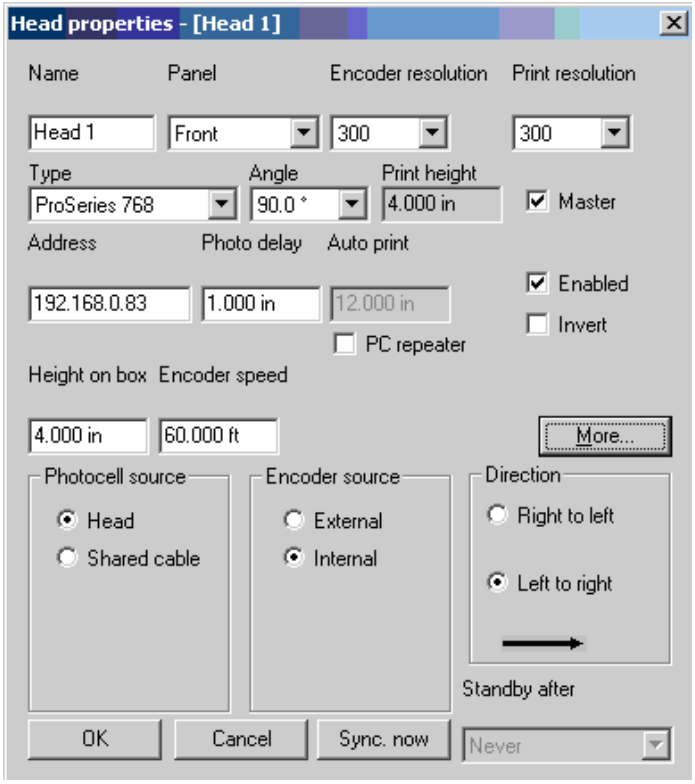
Name: The head's user-defined name.

Panel: The panel which the head will print on.

Enc. Res: Encoder Resolution indicates the resolution of the external encoder. Valid values for Encoder resolution are: 246, 300 or 600 dpi.

Print Res: Print Resolution represents the desired dots per inch (dpi) print resolution. Print resolution depends on Encoder resolution. Valid values are:

- 246, 123, 82 or 61 for Encoder resolution of 246 dpi
- 300, 150, 100 or 76 for Encoder resolution of 300 dpi
- 600, 300, 200 or 150 for Encoder resolution of 600 dpi



Head Type: Select a head type from the drop-down menu list.

Angle: Select the angle of the head with respect to the conveyor. Each head type has a set of mounting angles that are selectable.

Print Height: The print height is the maximum print coverage of a single print head at a selected angle.

Master: Each line must have a master head. The master print head receives/distributes the signals for the photocell and encoder to the remaining heads. Only one controller may be selected as the master print head.

Address: This is the IP address for the Marksman© Net Controller. The network administrator should determine this address.

Photo Delay: Photo Delay is the horizontal distance (in inches) measured from the photo-cell to the print head.

PC Repeater: The system will continue to perform print cycles at a distance determined by the Auto Print Inches as long as the photocell is tripped.

Height on box: Height on box is the vertical distance in inches measured from the lower part of the product or conveyor to the print head nozzle zero.

Enc. Speed: Encoder Speed is the desired internal encoder speed measured in feet per minute. The default is 60 feet/min.

More Button: Used to configure the serial port that is located on the Net.

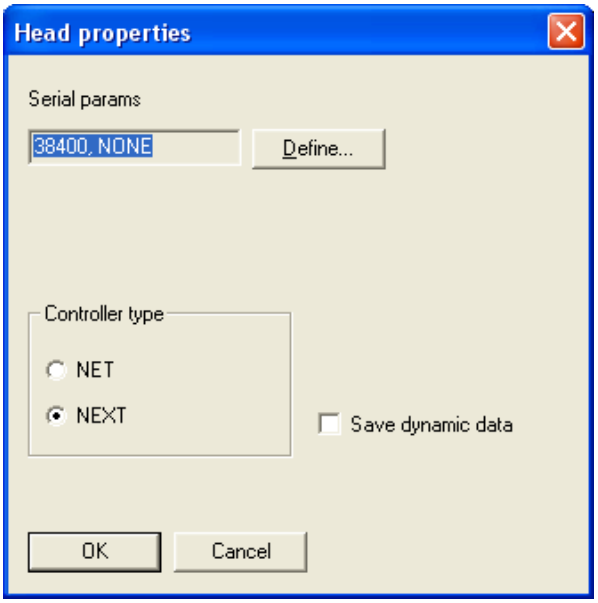
The serial port on the Net can be used for:

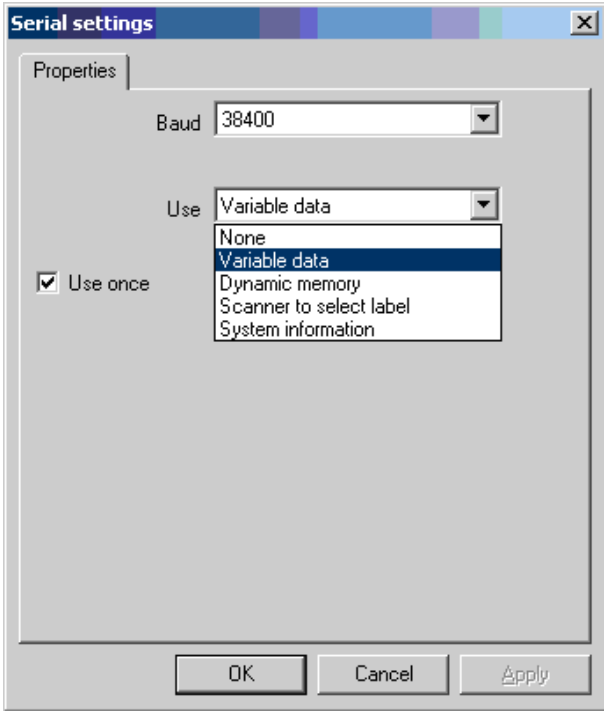
- None: Selected when the serial port is not used.
- Variable data: Data that is sent directly to the Net to be printed. Select the **Use once** box to ensure that the data is only printed once, then discarded.
- Dynamic memory: Function is not supported.
- Scanner to select label: Used to select a message from a serial string. Select the **Use once** box to print the label once, then stop.
- System information: Can be used as a diagnostic tool if instructed by Technical Support.

Select the controller type:

- Net
- Next

Save Dynamic Data: This will allow dynamic data to be stored on the controller in case of a power failure. This option should not be used if the data changes with each print.





Photocell source: Select "Head" if a Photocell is attached directly to the print head that the controller is using. Select "Shared cable" if the photocell is coming from another controller connected to the back using the encoder extension cordset.

Encoder source: The source of the encoder signal may be External (externally plugged in) or Internal (internally generated).

Direction: The direction of travel of the product may be right-to-left (RtoL) or left-to-right (LtoR), as viewed from behind the print head.

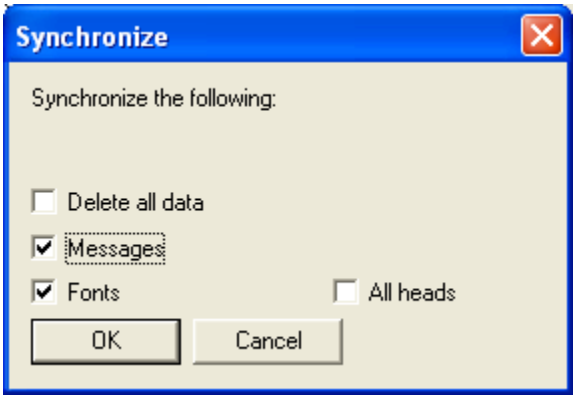
Standby: This option can only be used when the NP 192 type head is chosen. If the head has not printed within the selected number of hours, the system will go into standby mode. Standby mode will lower the head and reservoir temperatures and put the system into idle. To bring the system out of standby, simply start the task.

Sync. Now: Allows the user to force the BoxWriter to download the current messages and/or fonts to the Net or all Nets.

Checking the "Delete all Data" box will remove all information currently on the Net Controller.

Synchronizing Messages and/or Fonts will replace any messages or fonts that are on the Net with those from the BoxWriter; any additional messages or fonts will remain on the Net.

Checking the "All Heads" box will perform the selected task(s) on all heads on the line.



System

Barcode parameters

Refer to *Section 7: BoxWriter Editor, Define, "Barcode Parameters".*

Date/Time Codes

Refer to *Section 7: BoxWriter Editor, Define, "Date/time codes".*

Shift codes

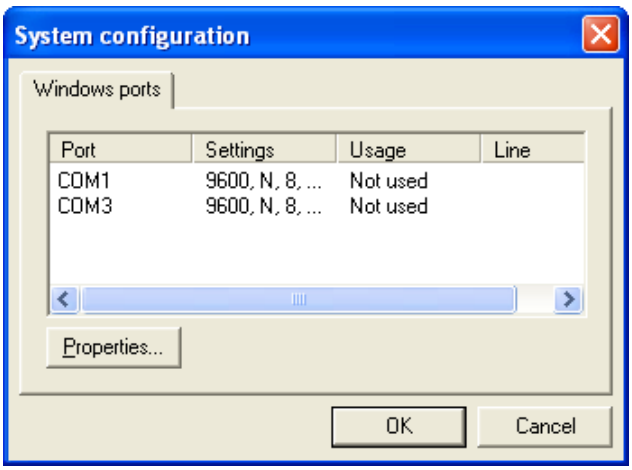
Refer to *Section 7: BoxWriter Editor, Define, "Shift codes".*

Dynamic table

Refer to *Section 7: BoxWriter Editor, Define, "Dynamic Table".*

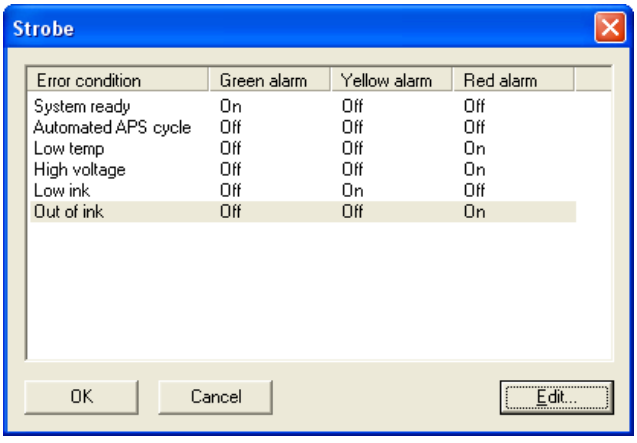
General settings

Allows for the parameter setting of the COM ports available on the PC. Please refer to *Section 6: BoxWriter Net, "Configuration"* for additional information.



Strobe

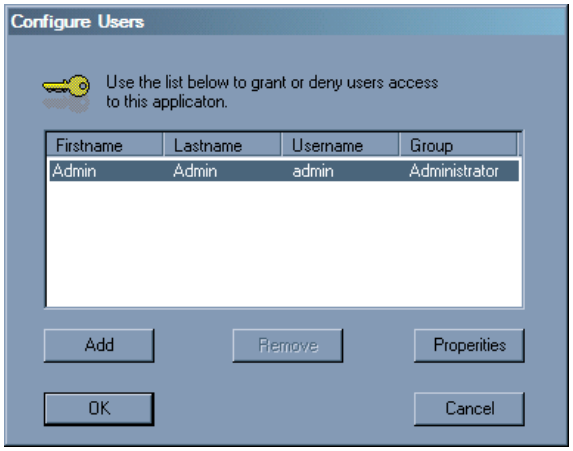
Configure how the strobe reacts based on the error or lack of error on the Next controller.



Security

Configure Users

The security feature of the Marksman© Net allows the system administrator to configure users and access rights. Select **Securit**y, then **Users** from the menu.



Add: Select the **Add** button to create a user account.

Remove: Select the **Remove** button to delete a user account.

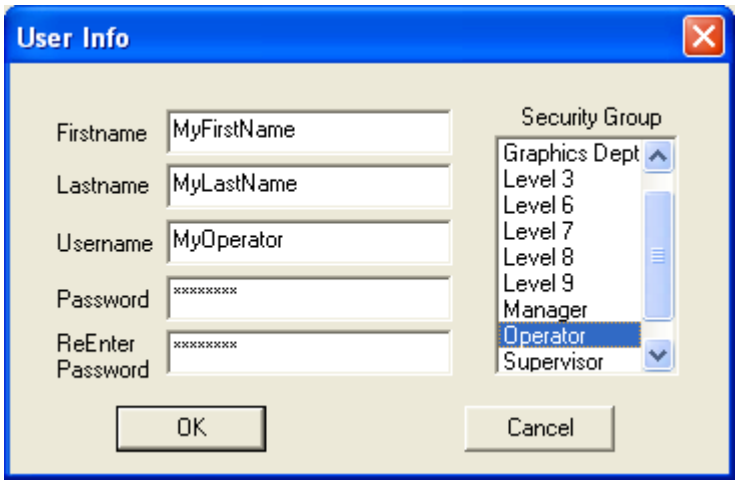
Properties: Select the **Properties** button to modify or view the user account information.

Firstname: Enter the user's first name in this edit box.

Lastname: Enter the user's last name in this edit box.

Username: Enter a unique user account name in this edit box.

Password: Enter a unique alphanumeric user password in this edit box.



ReEnter Password: Enter the same password again for confirmation.

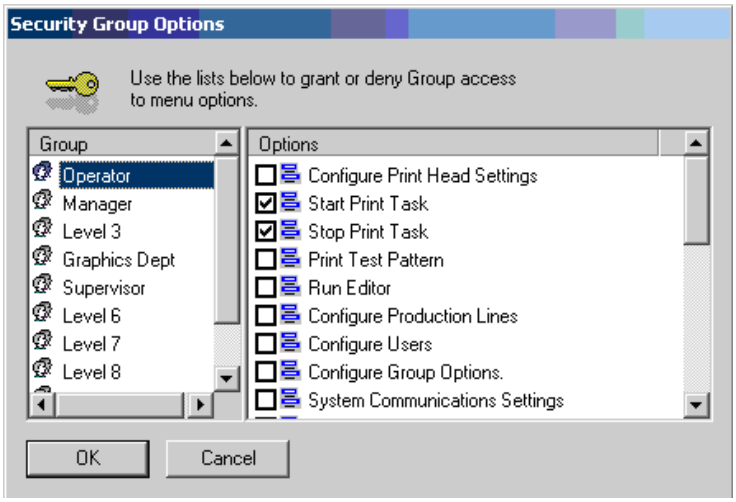
Security Group: Select a security group that provides the access level desired for the user. The user's security group options may be modified or the user may be assigned a different group at a later date.

Click **OK** to save entries and exit the User Info dialog.

Group Options

Security groups allow the administrator to assign similar users with a specific set of access rights. Select **Security**, then **Group Options** from the menu.

Ten configurable security groups are available. A user must be assigned to one group. Group names may be modified to better describe the access level. Select a Group, then select or unselect Options. Click on **OK** to accept changes and close screen.



The default access rights for each security group is shown in the following table:

Security Group / Option Access Table	Operator	Manager	Level 3	Graphics	Supervisor	Level 6	Level 7	Level 8	Level 9	Administrator
Configure Print Head Settings		X	X		X	X				X
Start Print Task	X		X							X
Stop Print Task	X		X	X	X					X
Print Test Pattern										X
Run Editor										X
Configure Production Lines			X	X		X				X
Configure Users										X
Configure Group Options										X
System Communication Settings										X
View Printer Report										X
View Scanner Report										X
Configure Date/Time Codes										X
Define Global Bar Code Parameters										X
Define the Shift Codes										X
Quit the Application										X
Database Start										X
Modify User Element Data										X
Change Count										X
Enable/Disable Preview Mode										X
Refresh Preview										X
Configure Task Start Database										X
Configure Dynamic Data Table										X
Configure General Windows Settings										X
Configure the Output Table										X
Translate the Software										X
Configure Strobe										X

Login

Each user must log in to the Marksman© Net application. The user may log in using the system menu or by selecting the open padlock icon from the tool bar. The shortcut key combination **Ctrl+L** may also be used.

User Name: Enter the user name assigned by the system administrator. The username is not case sensitive.

Password: Enter the password assigned by the system administrator. The password is not case sensitive.

Press the **OK** button to log in.

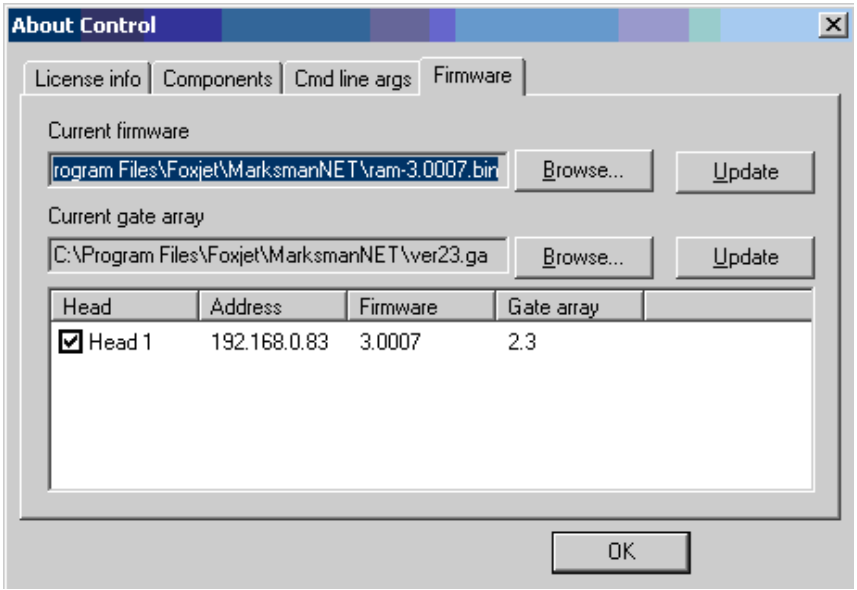
Logout

Each user should log out of the Marksman© Net application to enforce the security restrictions. The user may log out using the system menu option **Security > Logout**. The user may also select the closed padlock icon from the toolbar. The system will continue operating in its current state. All menu options are disabled after the user logs out with the exception of the Login, About, View Diagnostic Dialog and View Preview items.

Update Firmware

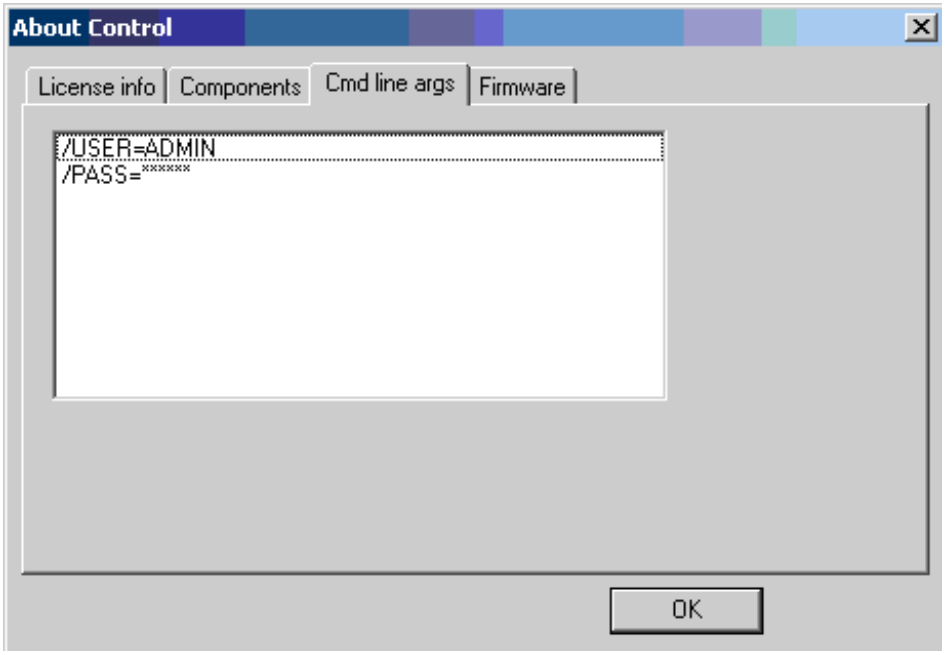
NOTE: It is extremely important that power is NOT removed from the Net or computer until the firmware update process is complete. A screen will appear when it is safe to re-boot. The process will take about two minutes to complete.

There may come a time when the Firmware (the code residing in the Marksman Net) will need to be updated. This can be accomplished through the Update Firmware function. Select **Help, About** from the menu, then select the file location from the **Firmware** tab. When the firmware has been updated, each Net will have to be powered down and back up again.



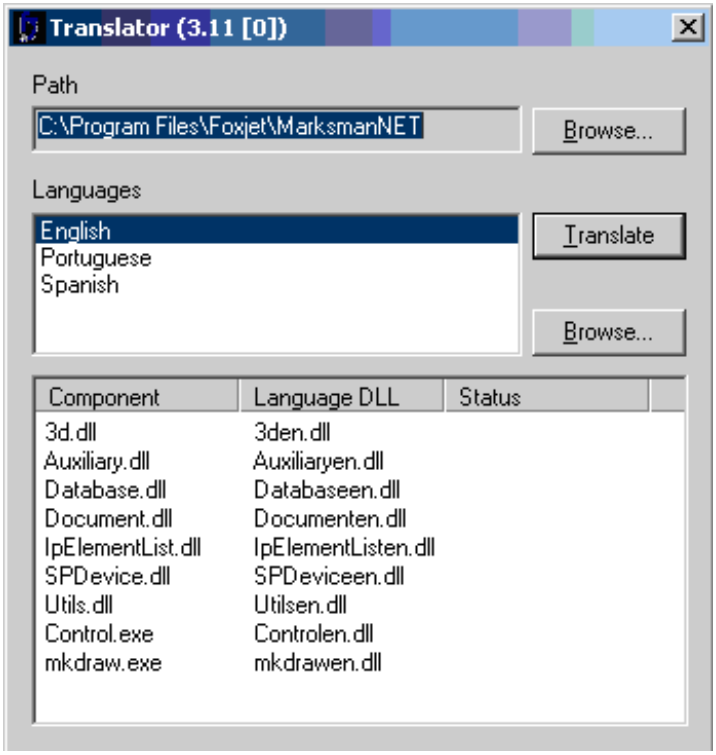
To upgrade the firmware on the Net, use the Browse button to select the version of firmware to upgrade to. Select the Head or Net to be upgraded, then select Upgrade.

Command line fields that are entered during the installation of the software.



Translate

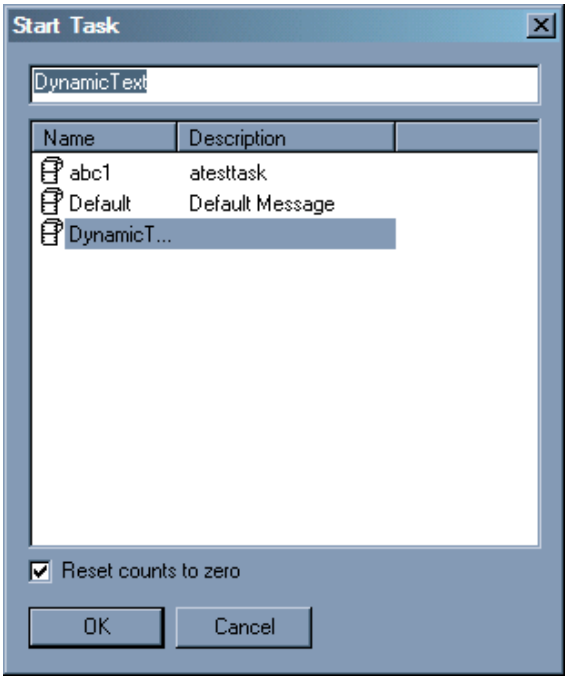
Access **Help, Translate** to select the desired language to be converted to. When the files have been translated, the application will be re-started in the desired language.



Operation

Operate Start Task

The Start Task function is used to ready the system to print a label or image that is created with the BoxWriter© Editor.



Select **Operate**, then **Start** from the system menu. Select the desired task from the list and press the **OK** button.

The Start Task icon may be selected from the tool bar, or the shortcut key combination **Ctrl+S** may also be used to start a task.

Reset Count to zero: This allows the count value to accumulate if needed or to be reset on every task.

Operate Stop Task

Stopping a task halts all printing related to the selected production line. The product count is reset to zero.

Select the desired production line from the folder tabs; then choose the menu options **Operate**, then **Stop** to halt printing.

The Stop Task icon may be selected from the tool bar to stop the task on the selected production line; or the shortcut key combination **Ctrl+End** may be used to stop a task from printing.

Operate Idle Task

The Idle Task option causes the printing to pause on the selected production line. The product counts are halted until the current task is resumed.

Select the menu options **Operate**, then **Idle** to pause printing.

The Idle Task icon may be selected from the tool bar to invoke the idle function; or the shortcut key combination **Ctrl+I** may be used to idle a running task.

Operate Resume Task

The Resume Task option causes the printing to resume on the selected production line. The product counts are restored from the previously idled task.

Select the menu options **Operate**, then **Resume** to restore printing.

The Resume Task icon may be selected from the tool bar to initiate the resume function; or the shortcut key combination **Ctrl+R** may be used to resume a task.

Operate Edit

The Edit menu option launches the Marksman© BoxWriter© Editor application. The user must have the required access rights to use this feature.

The Edit icon may be selected from the tool bar or the shortcut key **Ctrl+E** may be used to launch the editor.

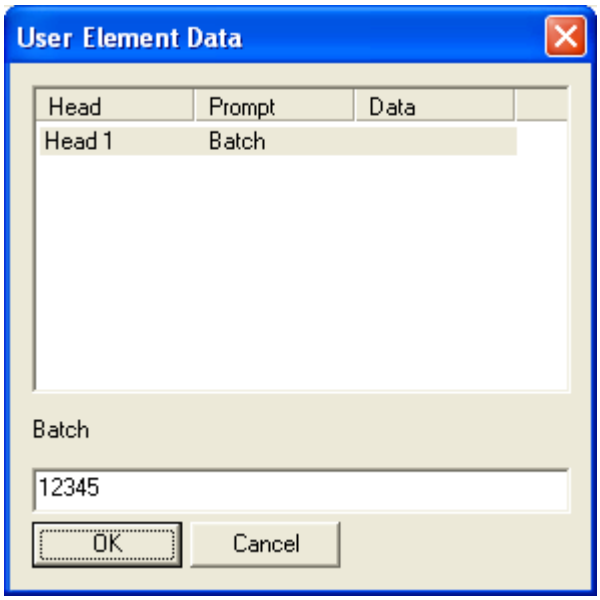
(See *"Section 7: BoxWriter© Editor"* for additional documentation.)

Print Test Pattern

This function is not available in the Net.

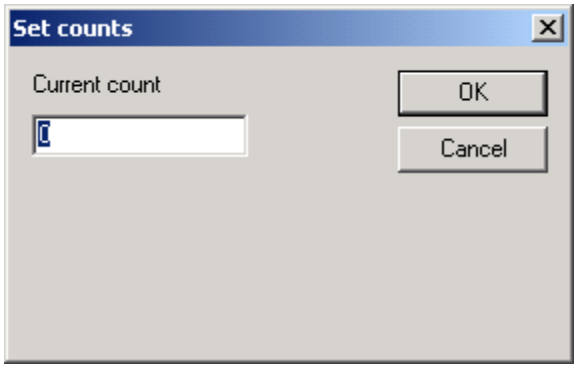
Operate Change User Element

If a message was created with a Dynamic Text field, then the data can be entered into the message here. The information can be changed as often as necessary.



Operate Change Counts

Set Counts: The count values being printed can be changed by entering the value and pressing **OK**.



Operate Exit

The user may exit the Marksman© Net application if the proper security level is assigned. Under normal circumstances there should be no reason to exit the application.

View

View Print Report

The Print Report contains historical information regarding the printing operation. The print report is a table named **reports** within a Microsoft® Access® Database named Marksman-Net. Click on **View**, then select **Printer Report** from the menu.

Time: Time is the date and time that the action occurred.

Action: Action indicates the event such as Start or Stop Task.

User: User is the name of the user who was logged in at the time the action occurred.

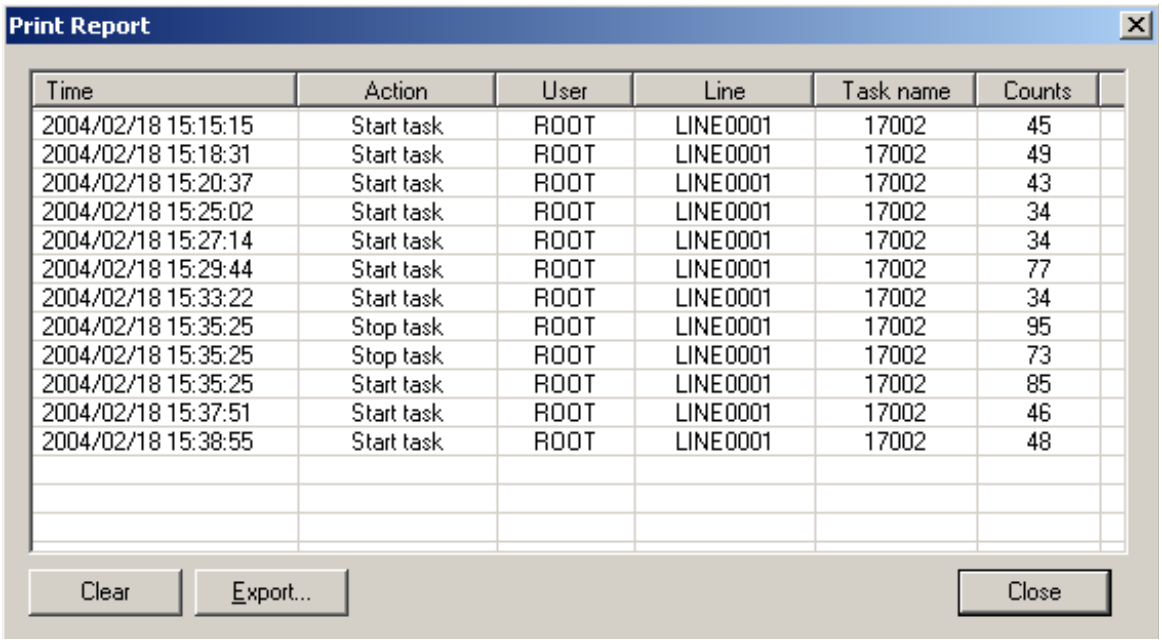
Line: Line is the print line that the information is for.

Task name: Task name is the name of the task for which the action applies.

Counts: Counts is the product count of the task for which the action applies.

Export: Export allows the information to be saved in a comma delimiter format so it can be used in other software applications.

A sample Print Report is shown below:



Select **Clear** to remove all items from the report.

View Scan Report

The Scan Report contains information relating to the current task and scan results of a printed barcode. The scan results are received through the RS232 port from a barcode scanner properly configured and connected to the Marksman© Net controller.

NOTE: A Marksman© Hub is required to connect a scanner to the Marksman© Net Controller.

Select **View**, then **Scan Report** from the menu.

Date: Date is the date the scan event occurred.

Line: Line is the production line that the scan event occurred on.

Task name: Task name is the task name operating while the scan event occurred.

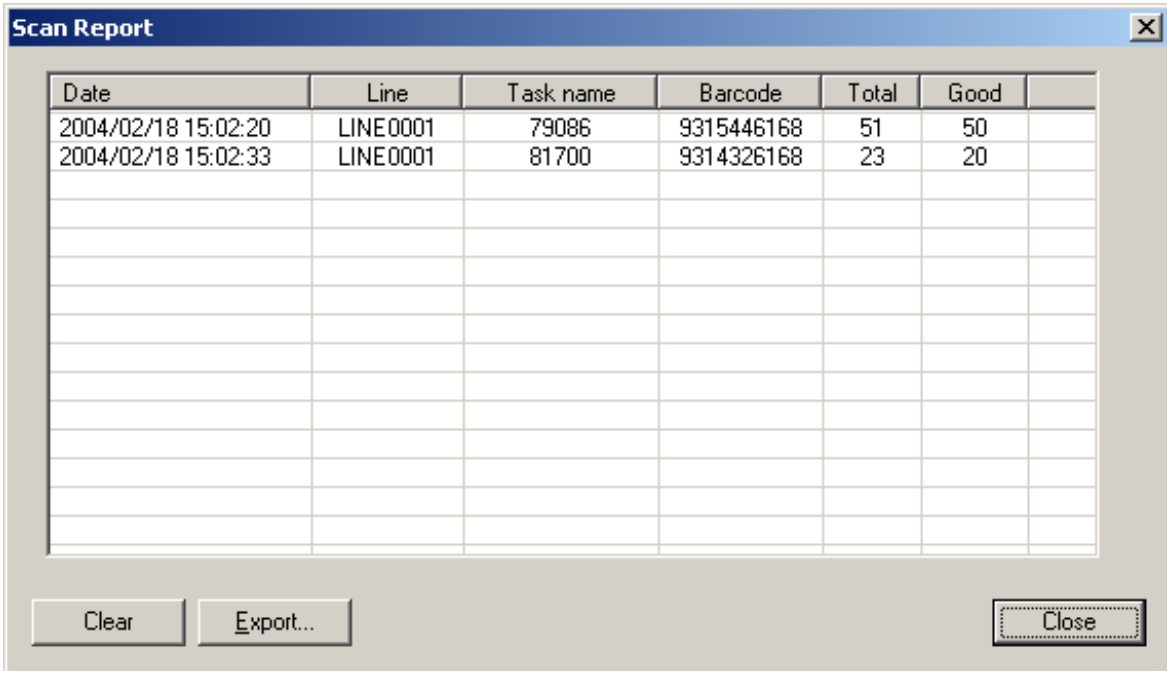
Barcode: Barcode is the barcode data scanned and received. The contents of this field may contain the words NO READ if the barcode could not be decoded.

Total: Total indicates the total number of decode attempts, including successful and failed decodes.

Good: Good indicates the number of successful decodes of the scanned barcode.

Export: Export allows the information to be saved in a comma delimiter format so it can be used in other software applications.

A sample Scan Report is shown below:

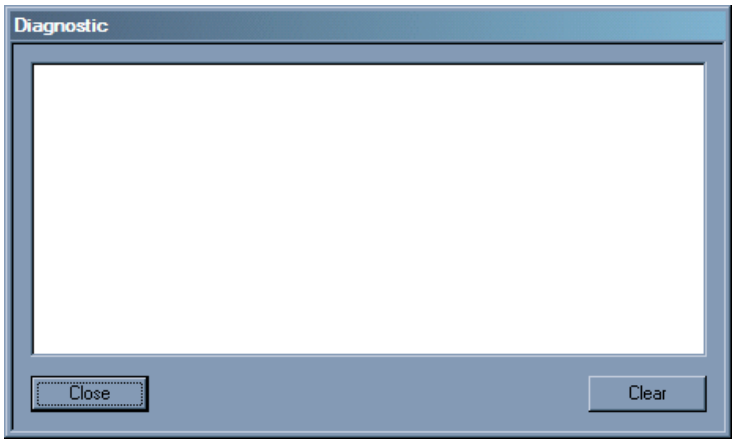


Select **Clear** to remove all items from the report.

View Diagnostic Dialog

The Diagnostic Dialog is designed to aid in debugging and verifying the data stream from the serial ports on the Marksman© Hub. Select **View**, then **Diagnostic Dialog** from the menu.

The most common use is to verify that a data string has been received from a device connected to the Marksman© Hub and that is in the proper format.

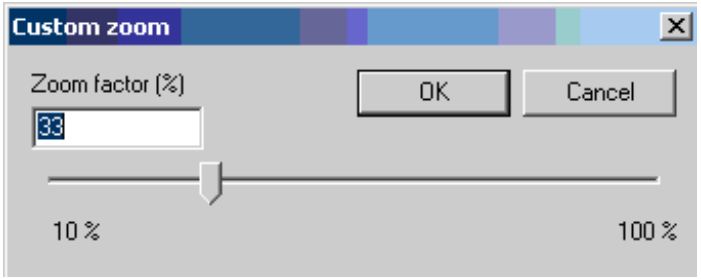


Select **Clear** to remove all items from the dialog.

Preview

By selecting Preview, the task that is selected will be displayed on the main screen. It may be necessary at times to disable this feature to improve the performance of the system.

Zoom used with the Preview screen. Zoom in or out based on print heads being used.

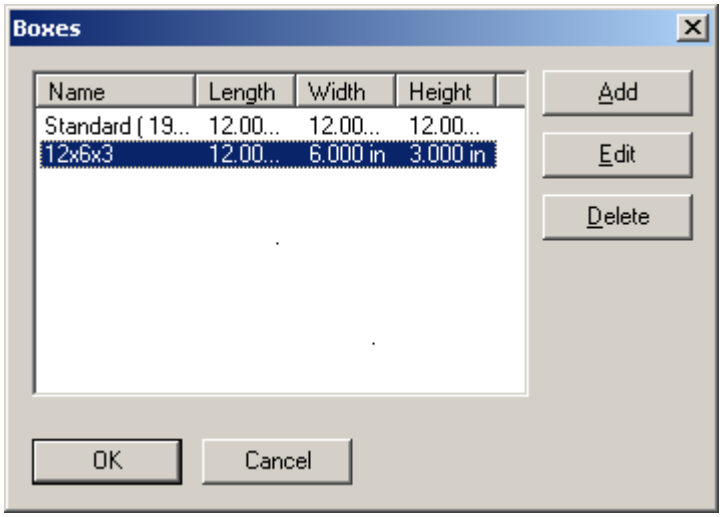


Section 7: BoxWriter© Editor

Define

Boxes

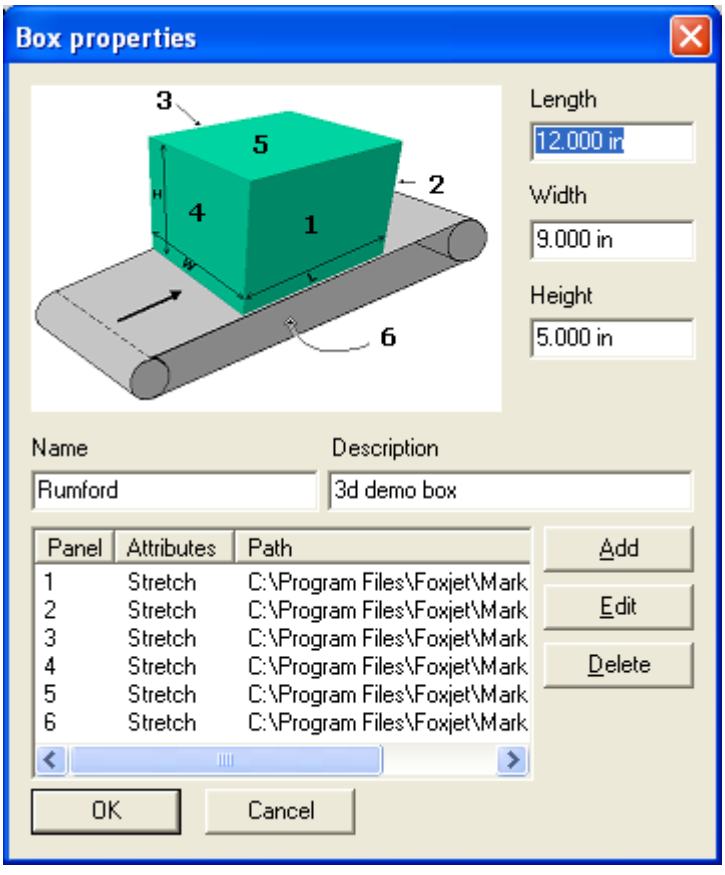
To define boxes, select **Define**, then **Boxes**.



To add a new box, click **Add**. Enter the length, width, height and name. The description field is optional. The length, width and height fields must be between 1 and 40 inches. Click **OK**.

To edit an existing box, select it and click **Edit**, or double-click the item.

To delete an existing box, select it and click **Delete**. Multiple boxes can be selected by using the shift and/or control keys. Boxes that are currently in use in a task cannot be deleted. The task's box property must be changed before the box can be deleted here.



Pre-printed information can be added to the box to give the operator a true representation of how the box will look as it is being printed on.

Add: Allows the operator to assign a .bmp or .jpg file to a panel on the box.

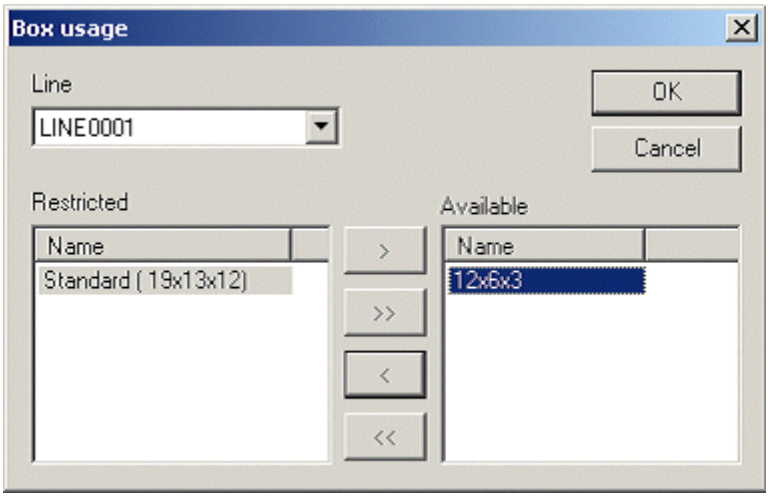
Edit: Allows the operator to change which .bmp or .jpg file is assigned to a panel of the box.

Delete: Will remove the file from the panel.

Box usage

To define box usage, select **Define**, then **Box usage**.

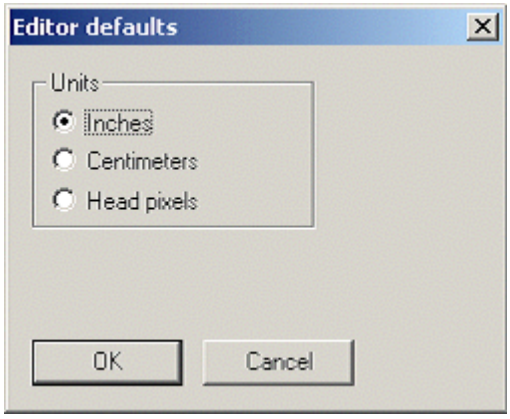
If it is desirable to restrict a box from a given line, it can be done here. By default, all new boxes are available on all lines. To restrict a box, select the line, then select the box. It can then be moved to the Restricted list by clicking the "<" key. Clicking the "<<" moves all boxes for a given line to the restricted list, regardless of selection. Conversely, the ">" and ">>" keys move boxes to the Available list.



Editor defaults

To define editor defaults, select **Define**, then **Editor defaults**.

This dialog controls the Editor's display units. To change the defaults, click the desired units, then click **OK**.

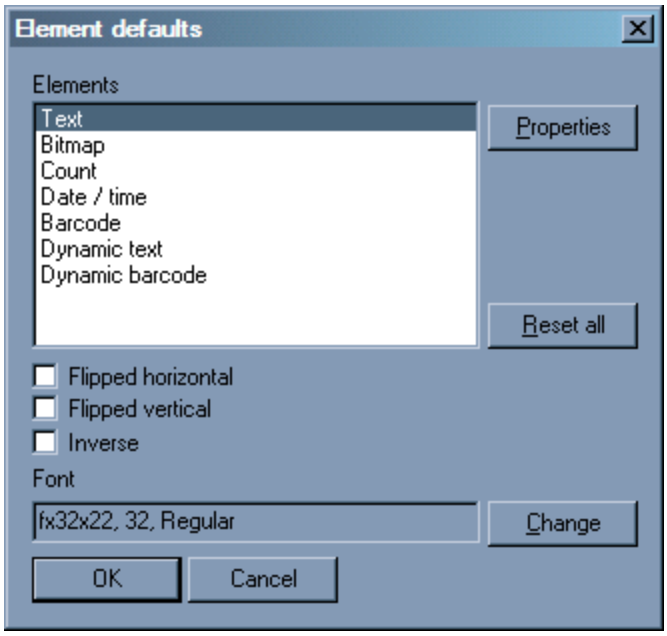


Element defaults

To define element defaults, select **Define**, then **Element defaults**. To change the defaults, select an element type and click **Properties**, or double-click the item.

The elements listed here define how new elements are created. (For a description of the individual elements, refer to the section on *"Elements" on page 63 and following.*

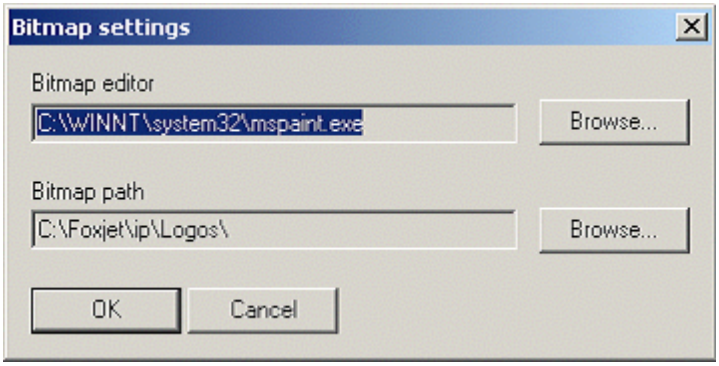
To change the font, click the **Change** button. (For a description of the font dialog, refer to *"Fonts" on page 50*.)



Bitmap settings

To define bitmap settings, select **Define**, then **Bitmap settings**.

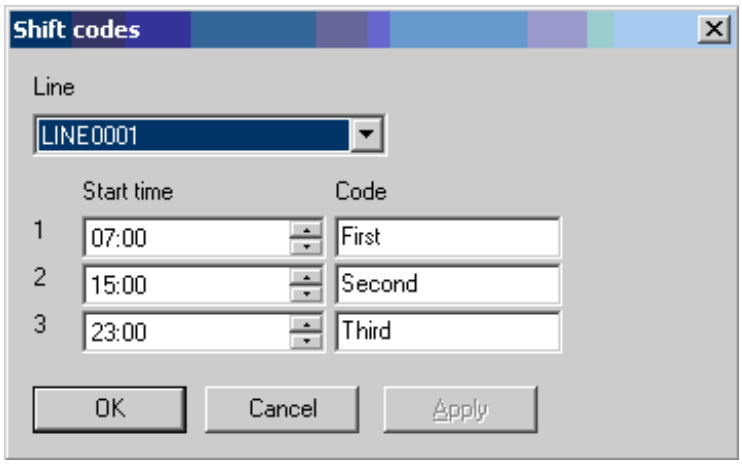
The Bitmap editor field defines the program used to edit bitmaps. By default, it is Microsoft® Paint. To change it, click the **Browse** button and select the program to be used. Click **OK** to save changes and exit screen.



The Bitmap path field defines where bitmaps used by the Marksman® Net are stored. Note that all bitmaps must reside in this directory. The software does not support sub-directories in the Bitmap path.

Shift codes

Shift codes are used by Date / Time elements that have their Format field set to "SHIFT".



To define shift codes, select **Define**, then **Shift codes**. (From the Net, select **Configure**, **System**, then **Shift codes**.)

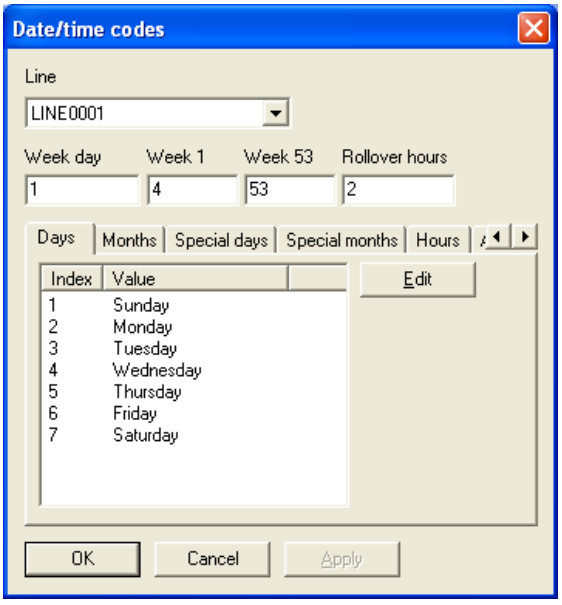
Line: Line determines the production line for the shift code definitions.

Select the appropriate production line. Enter the shift start times and any user-defined codes. The shift start times must be entered in 24-hour format. The length of a shift code must be from 1 to 15 alphanumeric characters. The times must be in order from least to greatest (i.e., code 1 cannot be later than code 2 or 3). Select **Apply** to apply the changes and leave the window open; select **OK** to save the changes and exit the window.

The sample dialog shows shift 1 starting at 7:00 AM, shift 2 starting at 3:00 PM and shift 3 starting at 11:00 PM.

Date/time codes

This dialog defines parameters used by Date / time elements.



To define date/time codes, select **Define**, then **Date/time codes**. (From the Net, select **Configure**, **System**, then **Date/Time codes**.)

Line: Line indicates the production line selected.

Week day: Week day is the first day of the week. The default is Sunday.

Week 1: Week 1 indicates the number of days in the first week of the year.

Week 53: Week 53 is the number of print weeks in a complete year. A partial week counts as a week.

Rollover hours: The Rollover hours value indicates the number of hours after midnight at which the system will start a new date. A rollover value of 2 will advance the printed date at 2:00 AM; a rollover value of 0 will advance the date at midnight.

Click on the tabs to access the date/time code tables. Select an entry in the table by clicking on the desired row. Click on **Edit** to modify the data for the selected table entry.

Click **OK** to exit and save changes or **Cancel** to exit without saving changes.

Days: Days represents the string values that are used in date codes for standard days of the week.

Months: Months represents the string values that are used in date codes for the standard months of the year.

Special Days: The Special days table represents the string values that are used in custom date codes for days of the week.

Special Months: The Special months table represents the string values that are used in custom date codes for months of the year.

Hours: The Hours table stores the twenty-four codes for the hours of the day. The codes may be customized for special coding.

AM/PM: This indicates the AM and PM designators. These may be modified for custom codes.

Select **Apply** to apply the changes and leave the window open; select **OK** to save the changes and exit the window.

The following table designates how the Date / time codes are used:

Tab	Date/Time Element "Format" Field
Days	DAYWKA
Months	MONTHA
Special Days	DAYWKA
Special Months	MONTHA
Hours	HOURA
AM/PM	AMPM

All string values here must be between 1 and 15 characters.

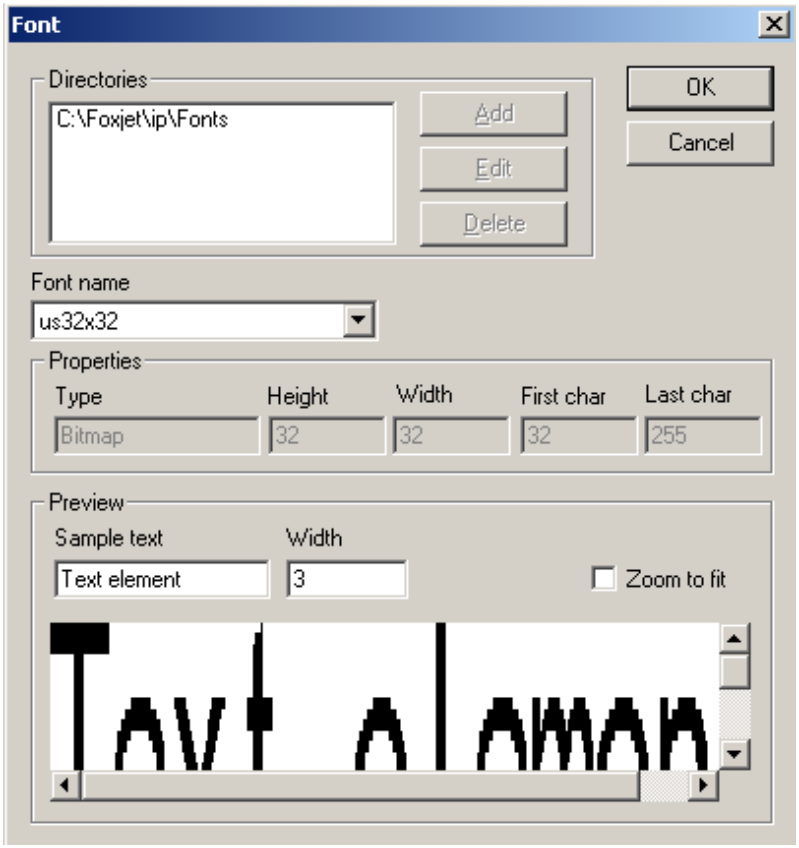
Note that Special days and Special months are only used when the "Use 'special' code" property is set on the Date / time element. See *“Date / time” on page 67* for more information.

Fonts

To define fonts, select **Define**, then **Fonts**.

Font properties can be viewed here by selecting a given font in the Font name list.

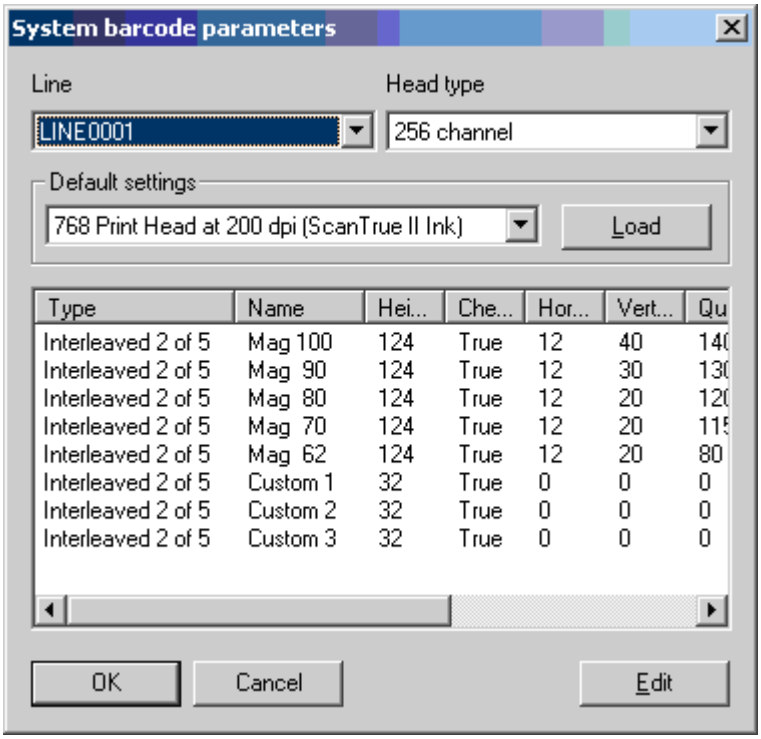
The font directory can be changed here as well.



Barcode Parameters

The barcode parameter dialog allows the system administrator to modify the properties of the barcode symbologies. Only a person having advanced knowledge of barcode and ink-jet printing systems should change these parameters. An unusable barcode may be printed using improper settings.

To define barcode parameters, select **Define**, then **Barcode parameters. (From the Net, s**elect **Configure**, **System**, then **Barcode parameters**.)



Select the line, then select the head type. Heads with 32 channels have their own set of barcode parameters, as do 256/128 channel heads.

Line: Line determines the production line to which the settings will apply.

Head type: Head type determines the channel configuration of the print head.

The barcodes available for editing are shown in the list at right.

Default barcode parameters can be loaded for certain configurations. They are:

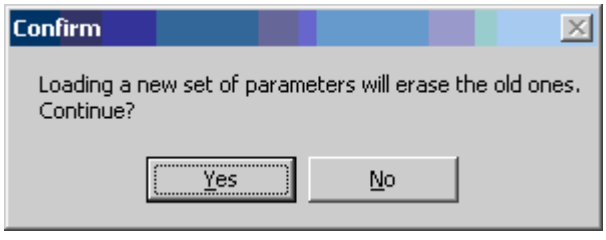
32 Channel Heads:

- 352 Print Head at 150 dpi (V300 Ink)

256 Channel Heads:

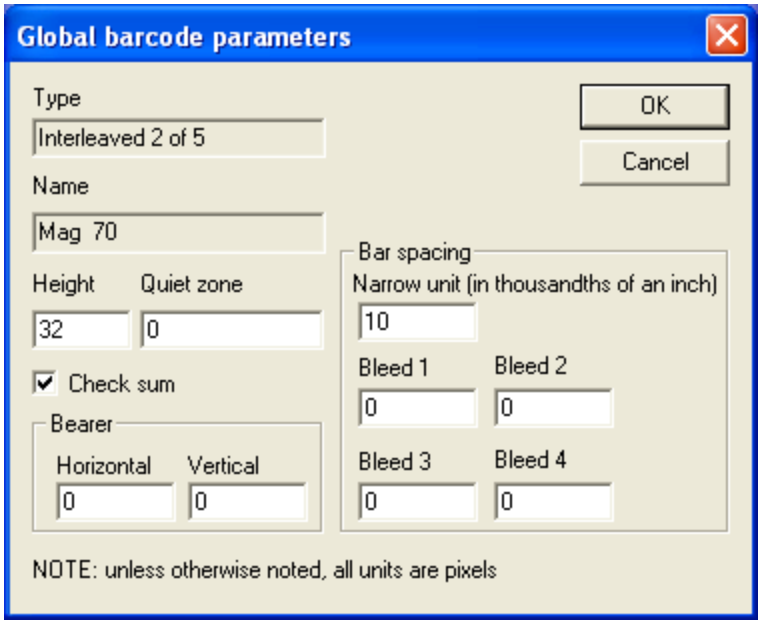
- 768 Print Head at 200 or 300 dpi (ScanTrue® II Ink) (Also used for 384 Heads.)
- Code 128 at 300 dpi

To load these pre-defined defaults, select the applicable set under "Default settings" and click **Load**. The user will be prompted with a confirmation message like the one at right.



Click **Yes** to overwrite the old parameters, or **No** to cancel.

To view or edit a set of barcode parameters, select it then click **Edit**, or double-click the item. Bar height, quiet zone, bearer bars, check sum, narrow bar spacing and bleed factors are specified here.



Unless otherwise noted, all units are in pixels.

Type: Type determines the specific barcode symbology. The symbology currently available is Interleaved 2 of 5, Code 39 and Code 128.

Name: Name indicates the specific magnification of the barcode symbology.

Height: Height indicates the vertical height of the barcode in pixels.

Quite zone: Quiet zone indicates the width of the quiet zone in pixels on either end of a barcode. The quiet zone is a minimum of 10 times the narrow bar width.

Checksum: Checksum determines if a checksum is calculated and appended to the barcode and displayed in the human readable data. The use of a checksum is recommended for most barcode applications.

Bearer bars:

- Horizontal - This indicates the height (in pixels) of the upper and lower horizontal bearer bars.
- Vertical - This indicates the width (in pixels) of the left-most and right-most vertical bearer bars.

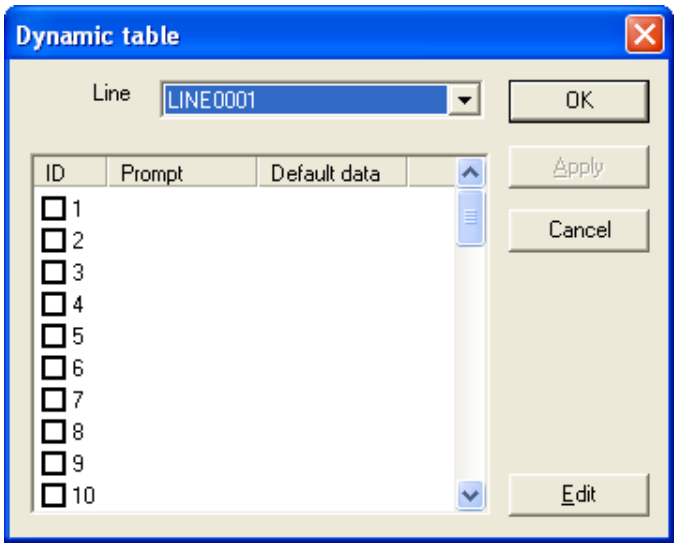
Bar spacing:

- Narrow unit (in thousandths of an inch) - This is the X-dimension of the narrow bar of a barcode.
- Bleed factors 1 through 4 - These factors should not be changed; consult the Distributor.

Select the **OK** button to exit and save changes. Select the **Cancel** button to exit without saving.

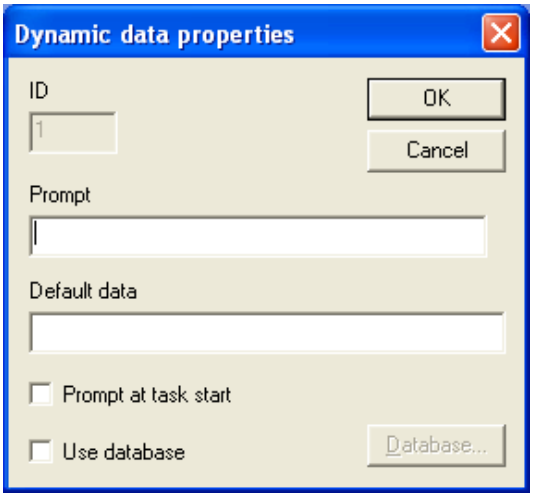
Dynamic Table

Dynamic Table is used in conjunction with Dynamic Text and Dynamic Barcode. The Dynamic Table is used to set the default data and configure the field to prompt the operator to enter in data before starting the task. The data to be printed may also come from a database if "Use database" is selected.



When the dynamic fields are inserted into a message, they allow the operator a means of inputting information to be printed without giving them access to the Editor.

To select an item for editing, click on the line number, not the ID check box.



File

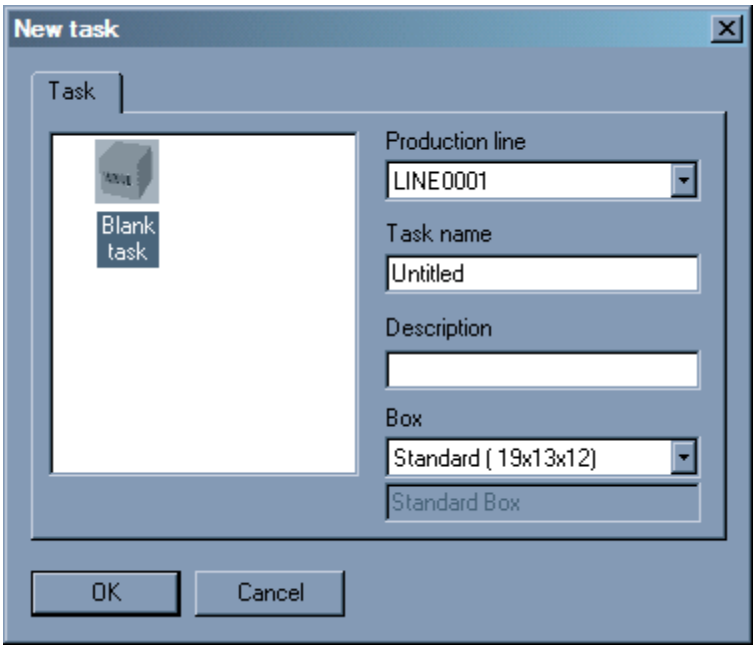
New

To create a new task, choose **File**, then **New**.

You will be presented with the dialog at right. Pick the production line the task is to be created for, give it a name (and description, if desired) and select the box it will be printed on.

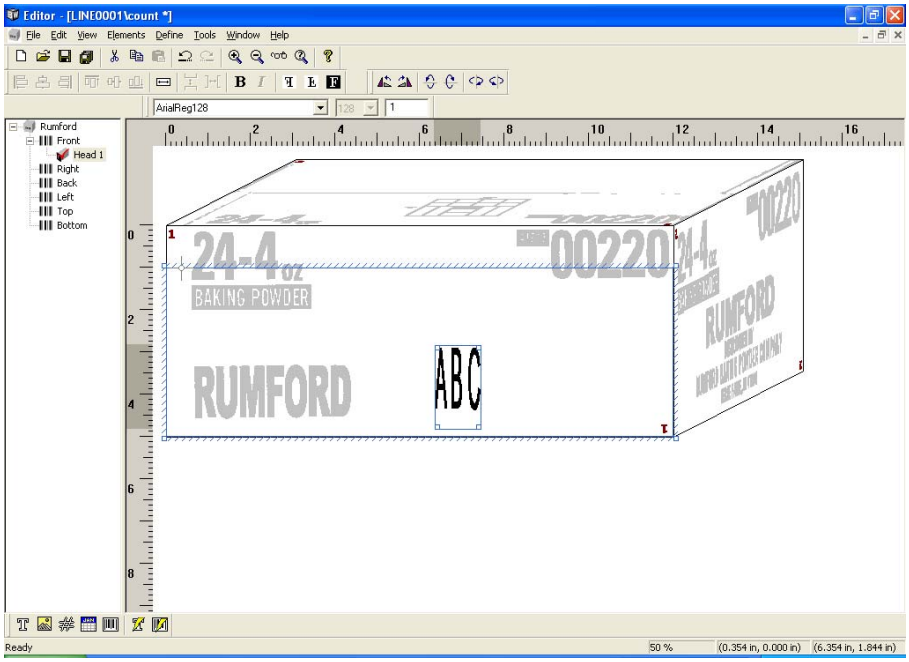
The Task name field must contain only letters and numbers. No spaces or special characters are allowed. The maximum number of characters is 32.

Click **OK**.

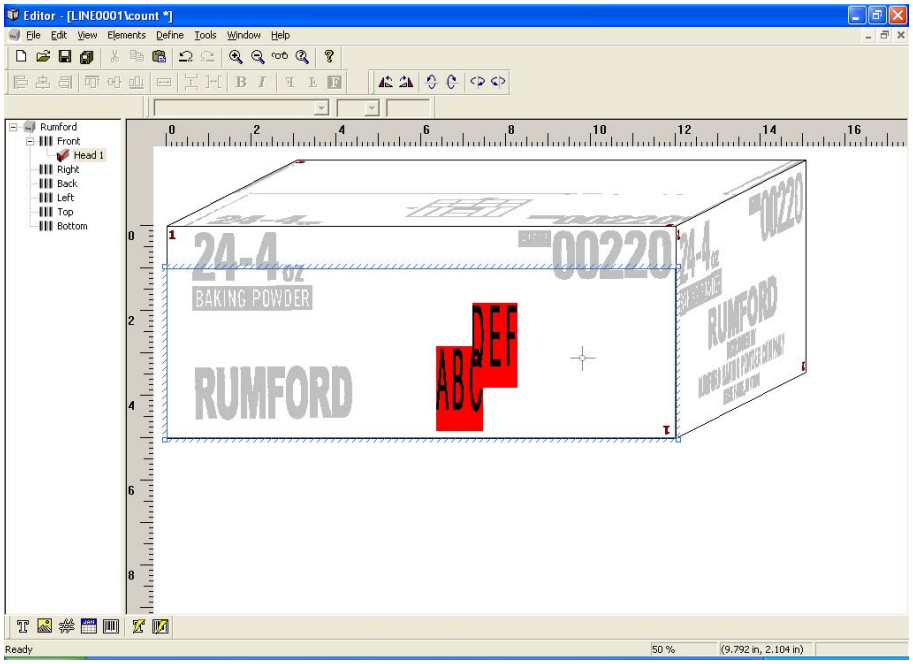


Creating a Task

The next step is to insert elements into the label to be printed. The box is shown with highlighted areas showing where heads have been placed on the box. The printing areas cannot be changed from the editor because the information about the heads and their relationship to the box comes from the system configuration, which is limited by physical devices installed. Different panels can be selected to add elements to the task. Once a head has been chosen, select an element to be placed on the box. The process is repeated until all the desired information needed on all sides of the box are completed. The next step would be to save the task. (Refer to appropriate sections in this manual relating to Elements and Saving Files.)



NOTE: If two elements overlap each other they both will show up in red. This is to let the operator know that a problem may occur. The operator will also be told before saving the task.



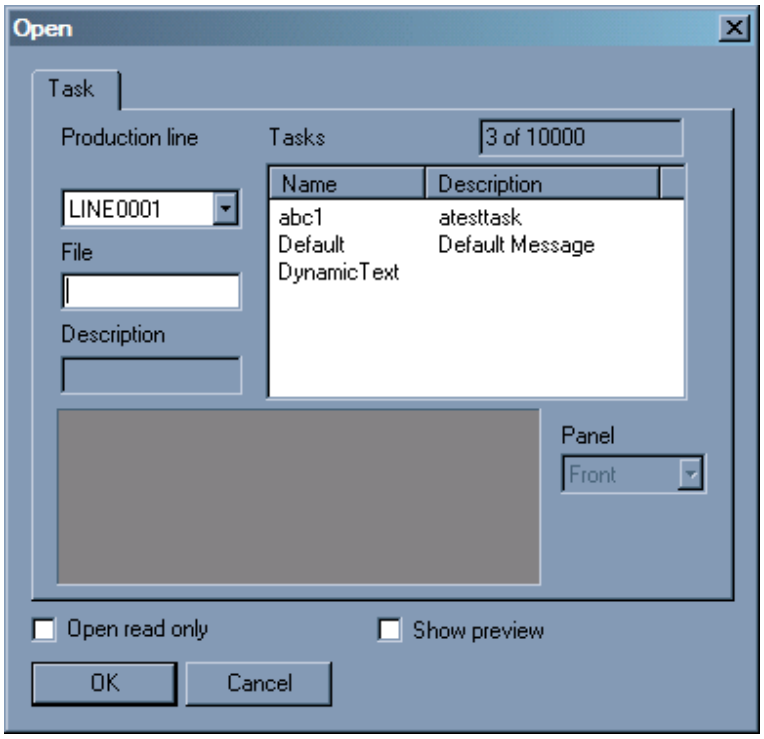
Open

To open an existing task, choose **File**, then **Open**.

Select the task you want to open, and click **OK**; or double-click the task you want to open.

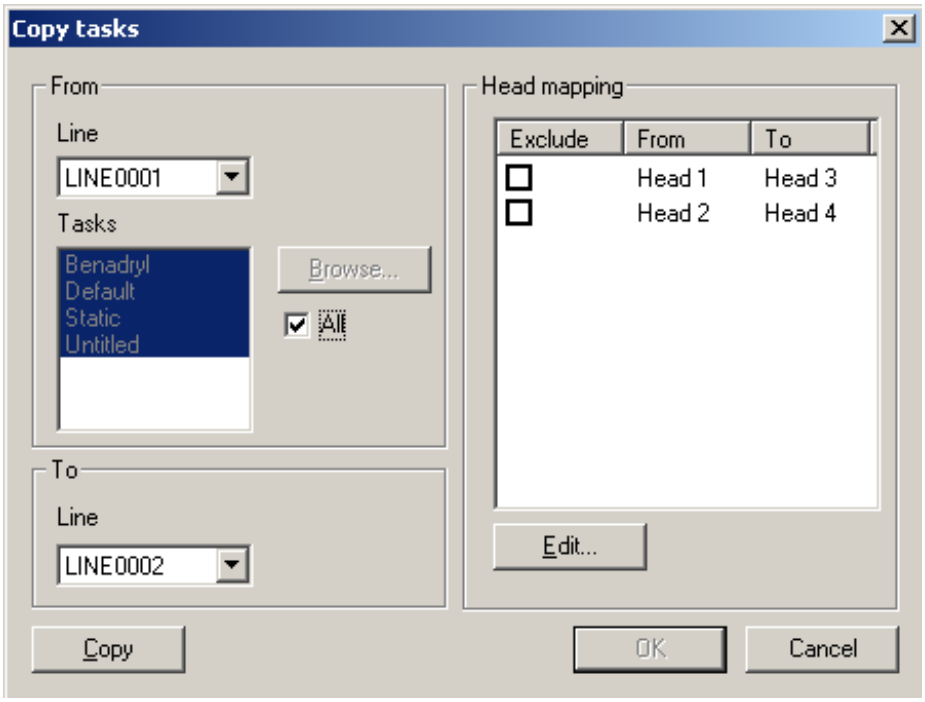
Checking the "open read only" box will open the task in read-only mode (i.e., you will not be able to modify the task).

Checking the "show preview" box will show a preview of the selected task. For large tasks, it may take several seconds to generate the preview.



Copy

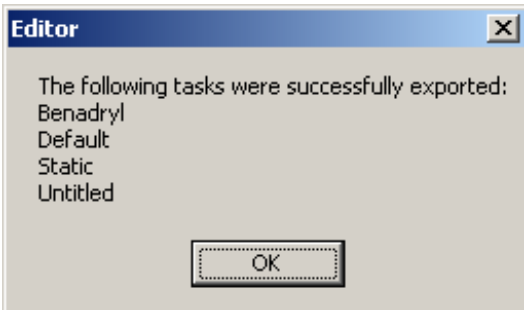
To copy tasks from one line to another, choose **File**, then **Copy**.



Select the line to copy from, then select the tasks to be copied. Checking the "all" box will automatically select all existing tasks for the given line.

When the desired tasks are selected, click **Copy**.

If successful, a confirmation message similar to the one at right will appear.

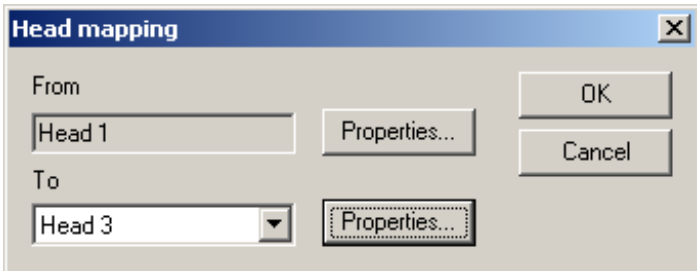


The user may change both the "To" and "From" lines and perform the copy function multiple times.

Click **OK** to save the changes.

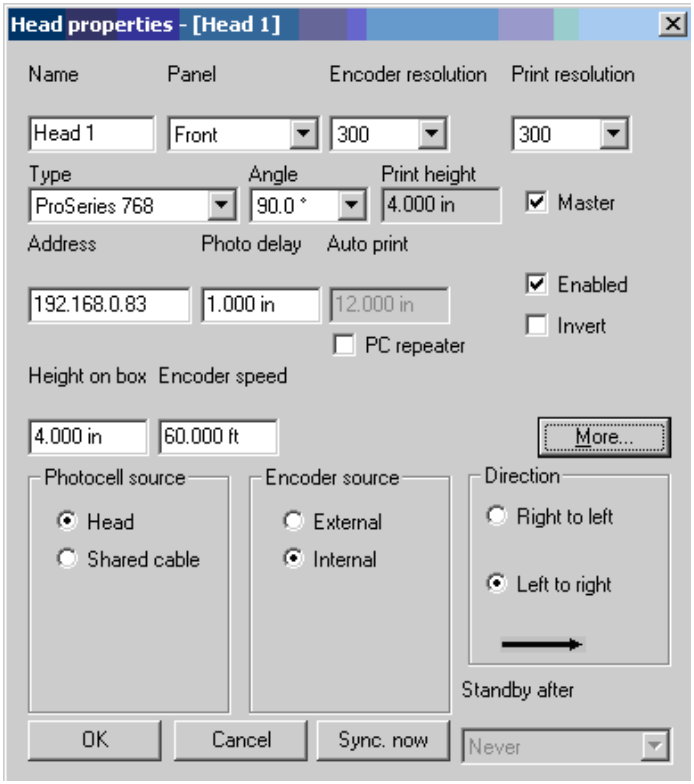
This function works best when both the "To" and "From" lines have identical head configurations. However, if they do not, the user may elect to configure the head mapping. To do this, select the head to be to mapped and click **Edit**, or double-click the item.

At the dialog, select the head to be mapped to in the "To" field and click **OK**.



Clicking **Properties** will bring up the Head properties dialog.

Note that head properties are read-only in the Editor.

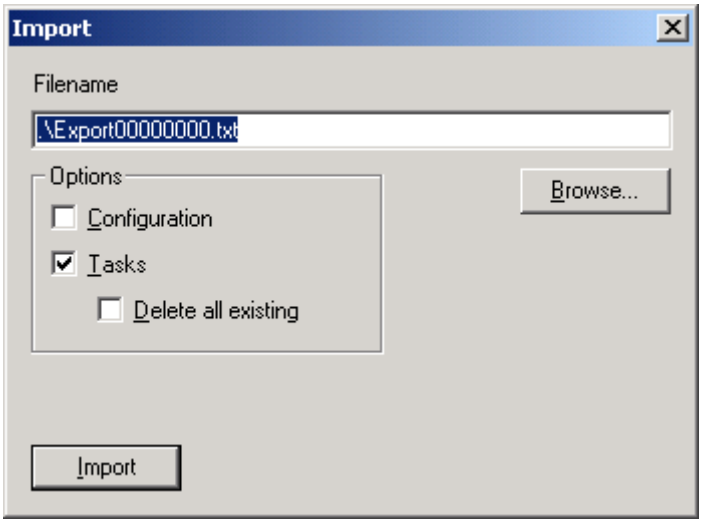


Import

NOTE: It is recommended that all printing tasks be stopped until the Import function has been successfully completed and that the current database be exported for backup purposes.

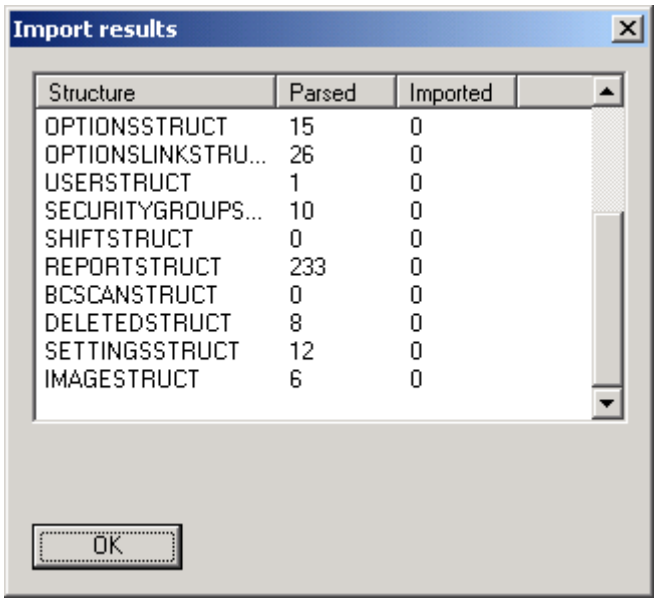
To import all tasks that were previously exported, choose **File**, then **Import**.

In the "filename" field, input the name of the file (full path) the exported tasks were saved to; or browse for the file by clicking the **Browse** button.



If there is data on the controller that the user does not want to lose, click **Yes** on the following screen.

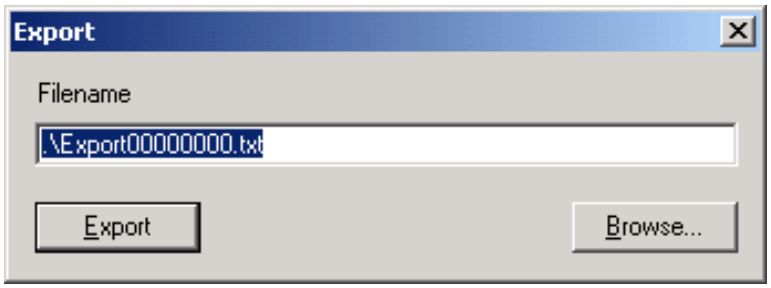
The screen at right will appear at the completion of the Import function.



Export

NOTE: It is recommended that all printing tasks be stopped until the Export function has been successfully completed.

To export all existing tasks, choose **File**, then **Export**.



Input the name of the file to export to, or browse for an existing file by clicking the **Browse** button. Click the **Export** button. If the file already exists, the user will be prompted to overwrite the file or cancel the request.

If successful, a confirmation message will appear.

Delete

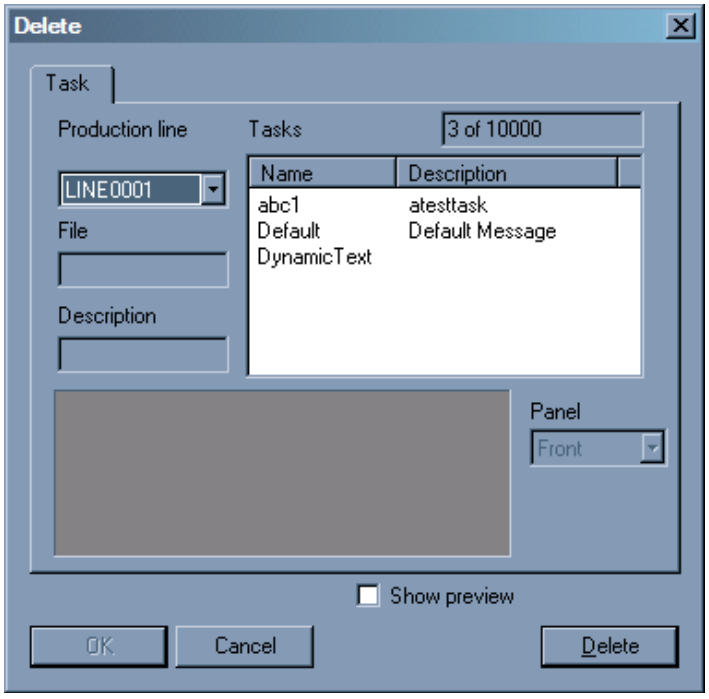
To delete existing tasks, choose **File**, then **Delete**.

Select the task to be deleted, or select multiple tasks by using the control and/or shift keys. When the selection has been made, click **Delete**.

The delete function may be used several times without closing the window. Tasks on other lines may also be deleted.

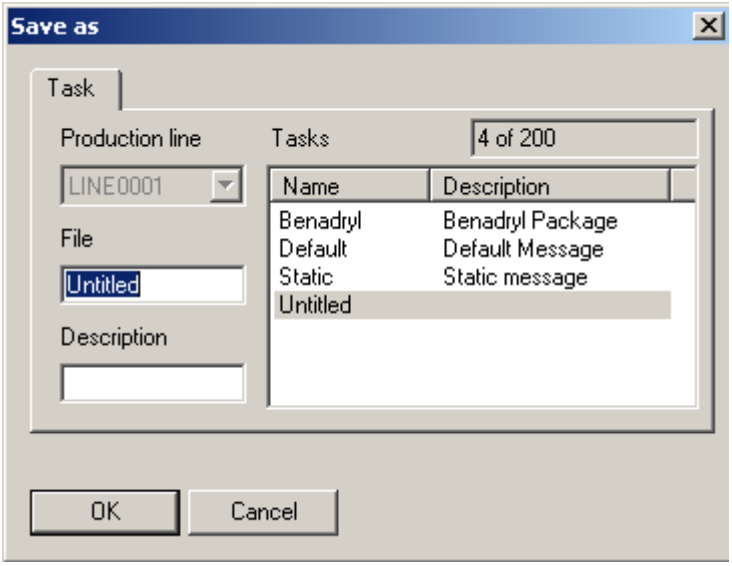
Click **OK** to save the changes.

Checking the "Show preview" box will show a preview of the selected task. For large tasks, it may take several seconds to generate the preview.



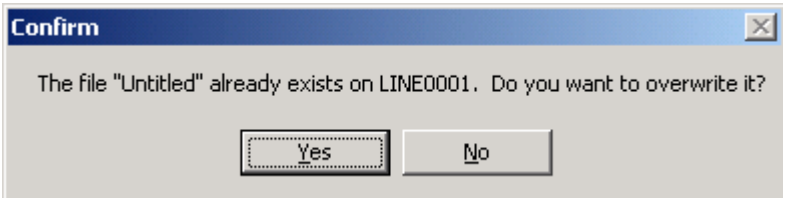
Save as

To save an open task under a different name, choose **File**, then **Save as**.



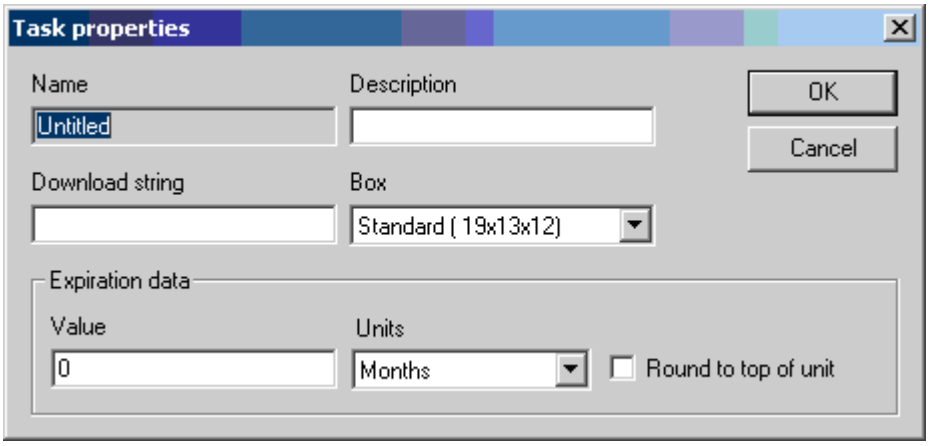
The File field must contain only letters and numbers; no spaces or special characters are allowed. The maximum number of characters is 32.

If the name entered matches a task already in the database, the user will be prompted with a confirmation dialog, like the one at right.



Properties

To change an open task's properties, choose **File,** then **Properties**. The task's description, download string, box and/or expiration data may be changed using this dialog.



Expiration Data: The value and units entered here will be used in calculating an Expiration or Rollover Expiration type Date/Time Element.

The following table lists special ASCII characters that can be entered in the "Download String" field. (For example, to send 0012345 terminated by a carriage return, enter "0012345<CR>" in the Download String.)

Character	Description		Character	Description
<NULL>	Null		<SLE>	
<SOH>	Start of heading		<DC1>	Device control 1
<STX>	Start of text		<DC2>	Device control 2
<ETX>	End of text		<DC3>	Device control 3
<EOT>	End of transmission		<DC4>	Device control 4
<ENQ>	Enquiry		<NAK>	Negative acknowledge
<ACK>	Acknowledge		<SYN>	Synchronous idle
<BEL>	Bell		<ETB>	End of transmission block
<BS>	Backspace		<CAN>	Cancel
<HT>	Horizontal tab		<EM>	End of medium
<LF>	NL Line feed, New line		<SIB>	Substitute
<VT>	Vertical tab		<ESC>	Escape
<FF>	NP Form feed, New page		<FS>	File separator
<CR>	Carriage return		<GS>	Group separator
<SO>	Shift out		<RS>	Record separator
<SI>	Shift in		<US>	Unit separator

Exit

To exit the Editor, choose **File**, then **Exit**.

Elements

Element Bar

Using the Element bar, the user can add new elements to a task. Element types, from left to right, are as follows:

- Text
- Bitmap
- Count
- Date / time
- Barcode
- Dynamic text
- Dynamic barcode

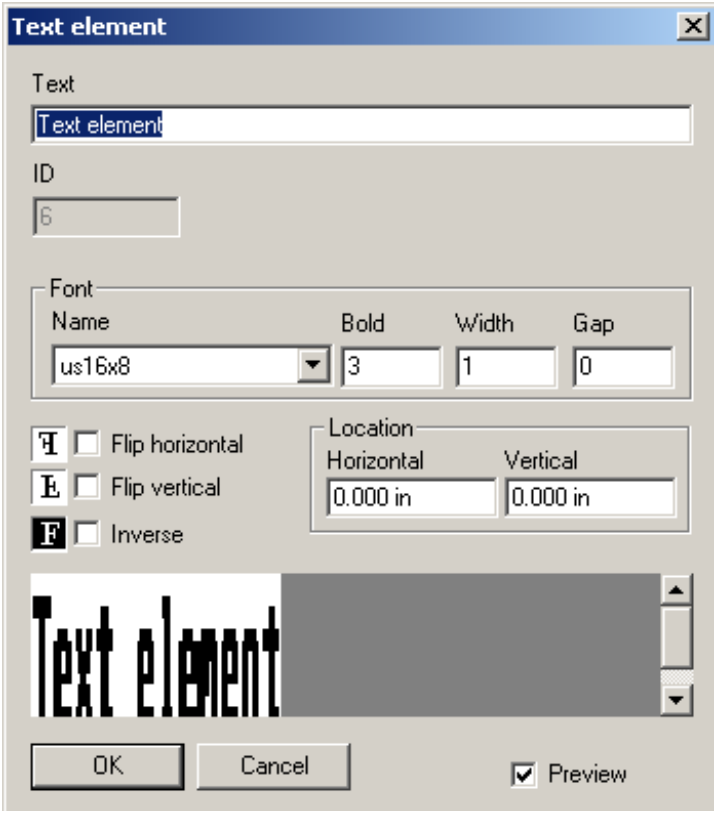
New elements can be created by clicking one of the buttons on the Element bar, by right-clicking on the printable area of the box, or by using the **Elements > Add** menu.

When creating a new element, its x, y position (top left corner) is set to the current location of the crosshairs.

To edit an existing element's properties, select the element by clicking it, then choose **Elements > Edit** from the menu (or press **Enter**). You may also double-click an element to edit its properties. Only one element can be selected at a time to edit.

Text

The Text element properties dialog is shown at right. The maximum number of characters allowed in the Text field is 256. The supported character set depends on the selected font.



Field	Minimum Value	Maximum Value
Bold	0	9
Width	1	9
Gap	0	255

The "Bold" value is used to lengthen the image by means of duplicating each imaged column the number of times specified.

The "Width" value is used to lengthen the image by means of inserting the specified number of white columns between each imaged column.

The "Gap" value specifies the number of white columns added between each character.

The following are examples of various bold, width and gap values:

Figure 1: Bold: 0, Width: 1, Gap: 0

Figure 2: Bold: 3, Width: 1, Gap: 0

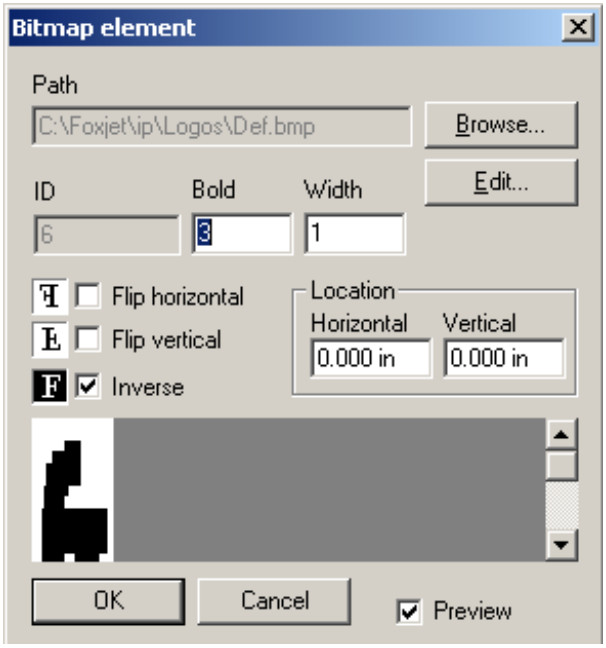
Figure 3: Bold: 0, Width: 5, Gap: 0

Figure 4: Bold: 0, Width: 1, Gap: 50

See *“Alignment bar” on page 79* for a description of the Flip horizontal, Flip vertical, and Inverse attributes.

Bitmap

The Bitmap Properties dialog is shown at right.



Field	Minimum Value	Maximum Value
Bold	0	9
Width	1	9

The user may browse for a different bitmap by clicking the **Browse** button.

The user may edit the currently selected bitmap by clicking the **Edit** button. This will invoke the bitmap editor, which by default, is Microsoft® Paint.

Note that all bitmaps must reside in the same directory.

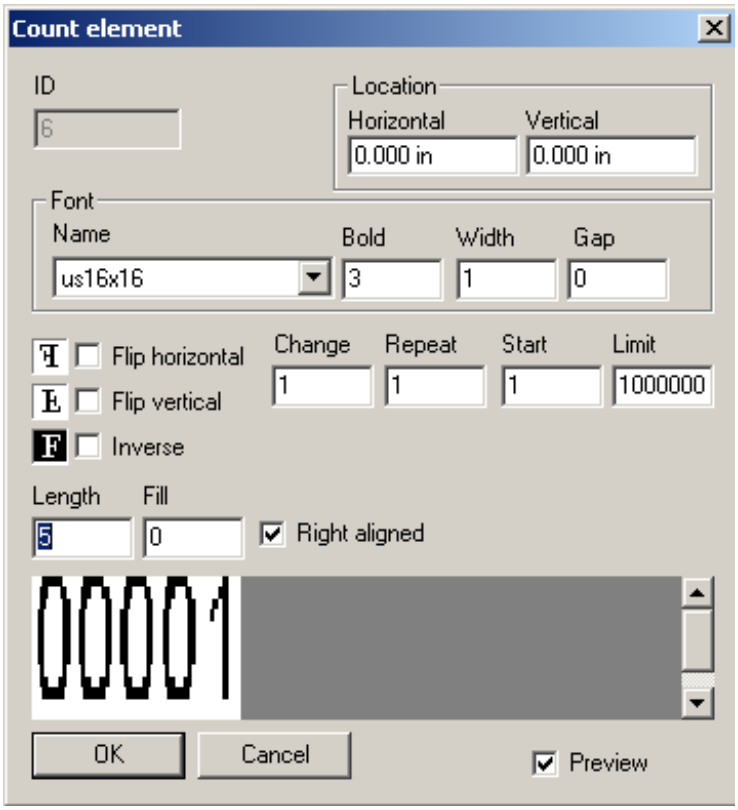
To change the default bitmap editor, or the bitmap directory, see *"Bitmap settings" on page 47*.

See *"Text" on page 63* for a description of the Bold and Width attributes.

See *"Alignment bar" on page 79* for a description of the Flip horizontal, Flip vertical, and Inverse attributes.

Count

The Count Properties dialog is shown at right.



Field	Minimum Value	Maximum Value
Bold	0	9
Width	1	9
Gap	0	255
Change	1	999
Repeat	0	134217727
Start	0	134217727
Limit	0	134217727
Length	0	9

The Change field is used to increment the current count (i.e., a Change of 2 would cause the element to print 1, 3, 5, etc.).

The Repeat field determines how many times the current count is printed (i.e., a Repeat of 2 would cause the element to print 1, 1, 2, 2, 3, 3, etc.).

The Start field determines the initial value of the counter when the task is started.

The Limit field determines the maximum value to be printed. When the current count exceeds the Limit, it will roll over back to the Start value.

The Length field determines the minimum number of characters imaged (i.e., a Length of 5 would cause the element to print 00001, 00002, 00003, etc.).

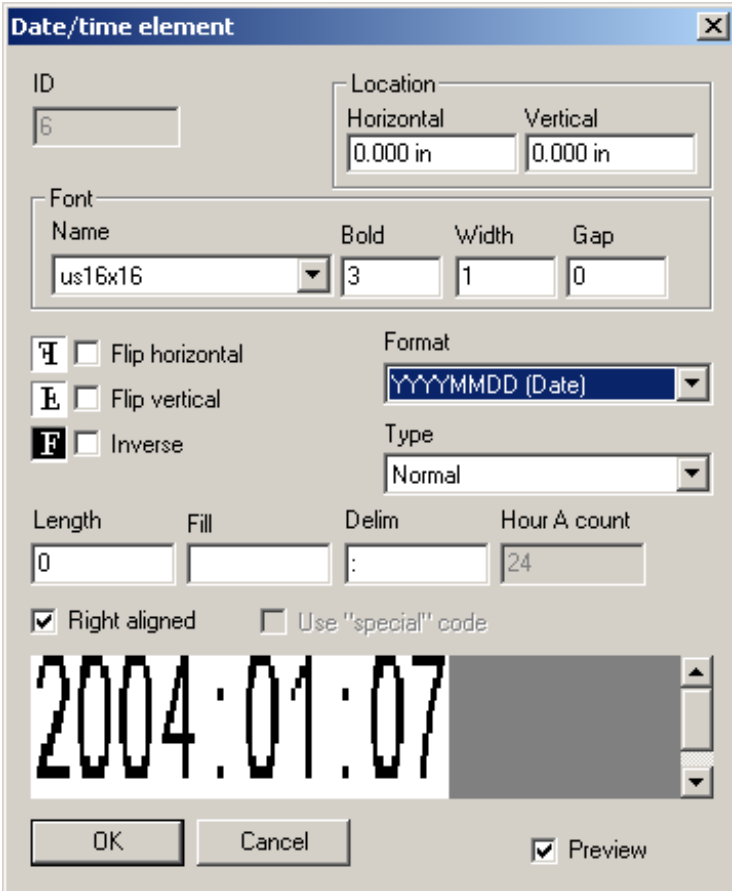
The Fill field is used to pad the element with a specified character if it is right aligned. This field will accept any alpha-numeric character.

See *"Text" on page 63* For a description of the Bold, Width, and Gap attributes.

See *"Alignment bar" on page 79* for a description of the Flip horizontal, Flip vertical, and Inverse attributes.

Date / time

The Date/time Properties dialog is shown at right.



Field	Minimum Value	Maximum Value
Bold	0	9
Width	1	9
Gap	0	255
Length	0	9

The Format field determines the type of date / time data to be printed. See *"Date/time codes" on page 48* for information on how to change the defaults.

Format Type	Sample
YYYYMMDD	2004:01:08
DDMMYYYY	08:01:2004
MMDDYYYY	01:08:2004
YYYY	2004
MM (date)	01
DD	08
YYMMDD	04:01:08
DDMMYY	08:01:04
MMDDYY	01:08:04
YY	04
DAYWK	5
WK	1
JULIAN	8
MONTHA	January
DAYWKA	Thursday
HHMMSS24	18:02:13
HHMMSS12	06:02:13
HHMMSS12M	06:02:13PM
HHMM24	18:02
HHMM12	06:02
HHMM12M	06:02PM
HH	18
MM (time)	02
SS	13
AMPM	PM
HOURA	Nineteen
SHIFT	2nd

NOTE: All samples in the above table are based on the date and time of January 8, 2004, 6:02:13 PM.

Possible values for the Type field are:

- Normal - current date
- Expiration - current date plus expiration value (See *"Properties" on page 62* to configure expiration parameters.)
- Rollover - time at which the system starts a new date (See *"Date/time codes" on page 48*.)
- Rollover expiration - the values for Rollover Hours and Expiration Data will be combined to get the result for this field type

The Length field determines the minimum number of characters imaged (i.e., a Length of 5 would cause the element to print 00001, 00002, 00003, etc.).

The Fill field is used to pad the element with a specified character if it is right aligned. This field will accept any alpha-numeric character.

The Delimiter field specifies the delimiter to be inserted between the components of the Date / time element (i.e., in the example of 6:02:13, the ":" character is the delimiter).

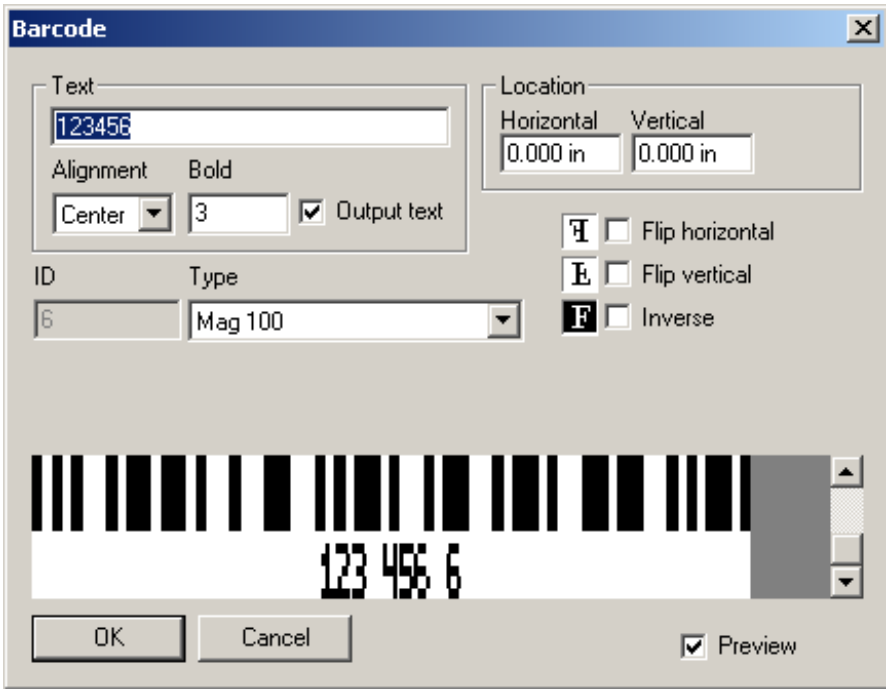
The Hour A Count field is only applicable when the "HOURA" format is selected.

See *"Text" on page 63* for a description of the Bold, Width, and Gap attributes.

See *"Alignment bar" on page 79* for a description of the Flip horizontal, Flip vertical, and Inverse attributes.

Barcode

The Barcode Properties dialog is shown at right.



Field	Minimum Value	Maximum Value
Bold	0	9

The Text field contains the data to be encoded in the barcode. Up to 32 numeric characters can be encoded.

The Alignment attribute determines how the barcode's caption is formatted. The following are examples:

Figure 5: Right aligned

Figure 6: Left aligned

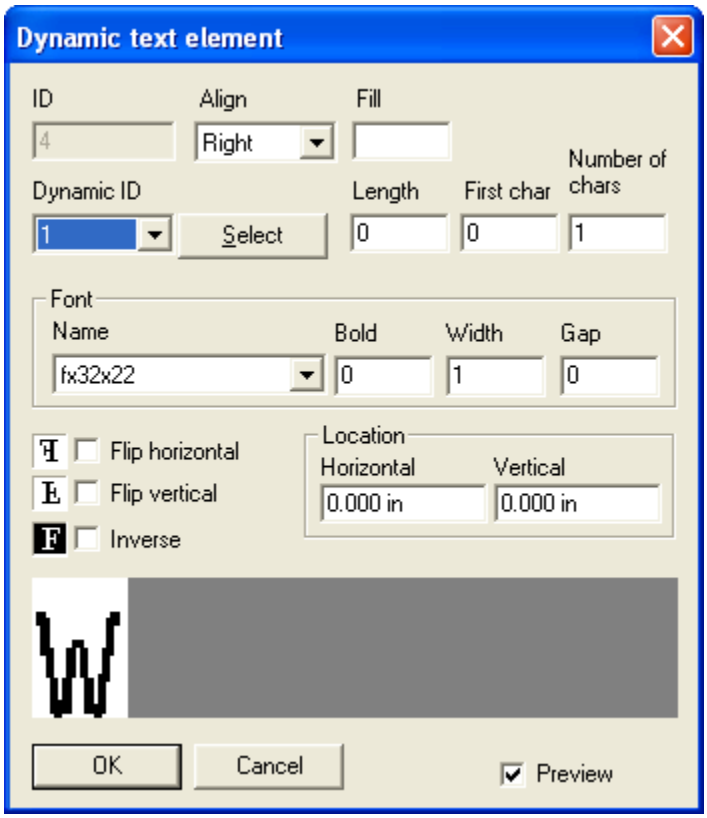
Figure 7: Center

See *“Text” on page 63* for a description of the Bold attribute.

See *“Alignment bar” on page 79* for a description of the Flip horizontal, Flip vertical, and Inverse attributes.

Dynamic Text

The Dynamic text properties dialog is shown at right.



Dynamic ID is used in conjunction with the Dynamic Table; the ID number links the two fields together.

Data can also come from a serial device connected directly to the COM port of the Net. The **First char** is where the data to be printed starts at, and the **Number of chars** is how many characters are to be printed from the string.

Length: Sets the length of the string of characters to be printed. If the length is longer than the Number of Characters, then Fill Characters will be inserted.

First char: Select the first character of the serial string to be printed.

Number of chars: Select the number of characters in the string that is to be printed.

Example:

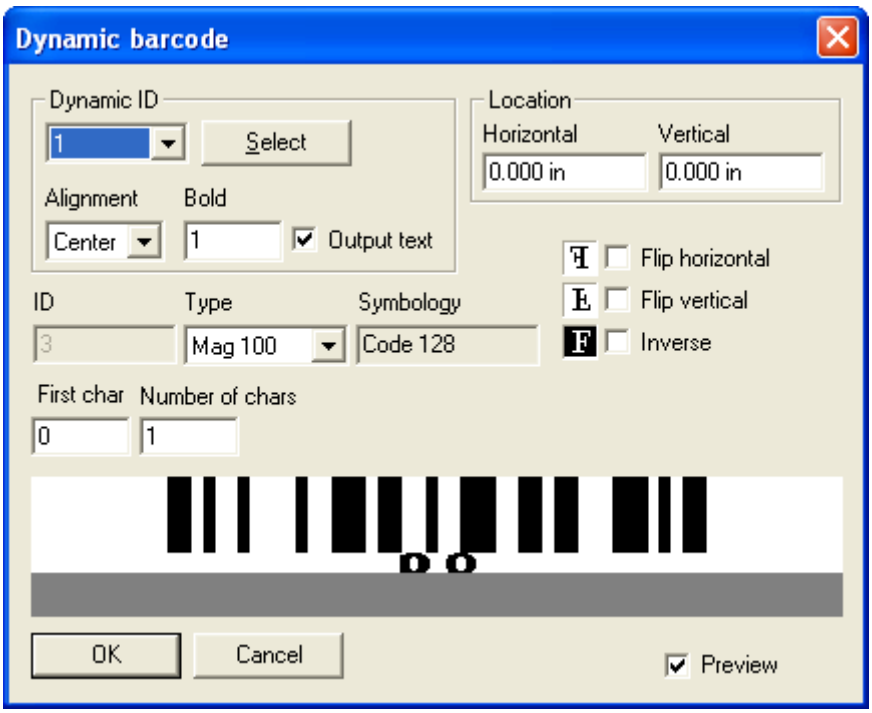
Serial string "10/10/2005 001.25lbs 23:05". The weight 001.25 lbs, needs to be printed from the string. The start character is 12, and the number of characters = 9.

Dynamic Barcodes

The Dynamic barcode properties dialog is shown at right

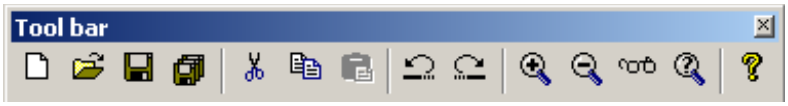
Dynamic ID is used in conjunction with the Dynamic Table; the ID number links the two fields together.

If the barcode data is to come from a serial device connected directly to the COM port of the Net, the **First char** is where the data to be printed starts at, and the **Number of chars** is how many characters are to be printed from the string.



Toolbars

Toolbar



Toolbar icons are listed in the table below in order from left to right:

Button	Menu Command	Keyboard Shortcut
New	File > New	Ctrl + N
Open	File > Open	Ctrl + O
Save	File > Save	Ctrl + S
Save all	File > Save all	
Cut	Edit > Cut	Ctrl + X
Copy	Edit > Copy	Ctrl + C
Paste	Edit > Paste	Ctrl + V
Undo	Edit > Undo	Ctrl + Z
Redo	Edit > Redo	Ctrl + Y
Zoom in	View > Zoom > In	+
Zoom out	View > Zoom > Out	-
Zoom normal	View > Zoom > Normal	
Zoom custom	View > Zoom > Custom	
About	Help > About	F1

New

Creates a new task. See *“New” on page 54*.

Open

Opens an existing task. See *“Open” on page 56*.

Save

Saves the task currently being edited.

Save all

Saves all open tasks.

Cut

Cuts the selected elements and places them on the clipboard.

Copy

Copies the selected elements to the clipboard.

Paste

Pastes the contents of the clipboard into the current task.

New elements created by this operation will have their position set relative to the current cross hair position.

Undo

Undoes the most recent operation.

Redo

Redoes the most recent Undo operation.

Zoom in

Zooms the current view in by increments of 25%.

Zoom out

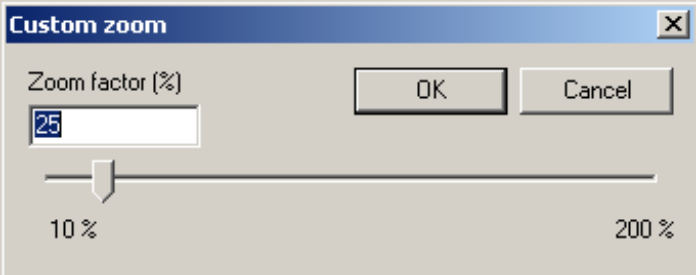
Zooms the current view out by increments of 25%.

Zoom normal

Sets the current view's zoom to 100%.

Zoom custom

This command allows the user to set an arbitrary zoom factor for the current view. Valid zoom factors are in the range of 10% to 200%.



About

This command displays the About dialog. This dialog lists all the major components of the editor and their version numbers.

Font bar

The Font bar allows the user to change the font properties of any selected elements that have a font (i.e., Text, Count and Date / time elements).

Font bar fields, from left to right, are as follows:

- Name
- Size
- Width

Name

The name of the currently selected font - See *“Fonts” on page 50* for more information.

Size

The font's size - For bitmap fonts, each font listed in the Name list only has one size.

Width

Width factor of the font - Valid ranges are between 1 and 9.

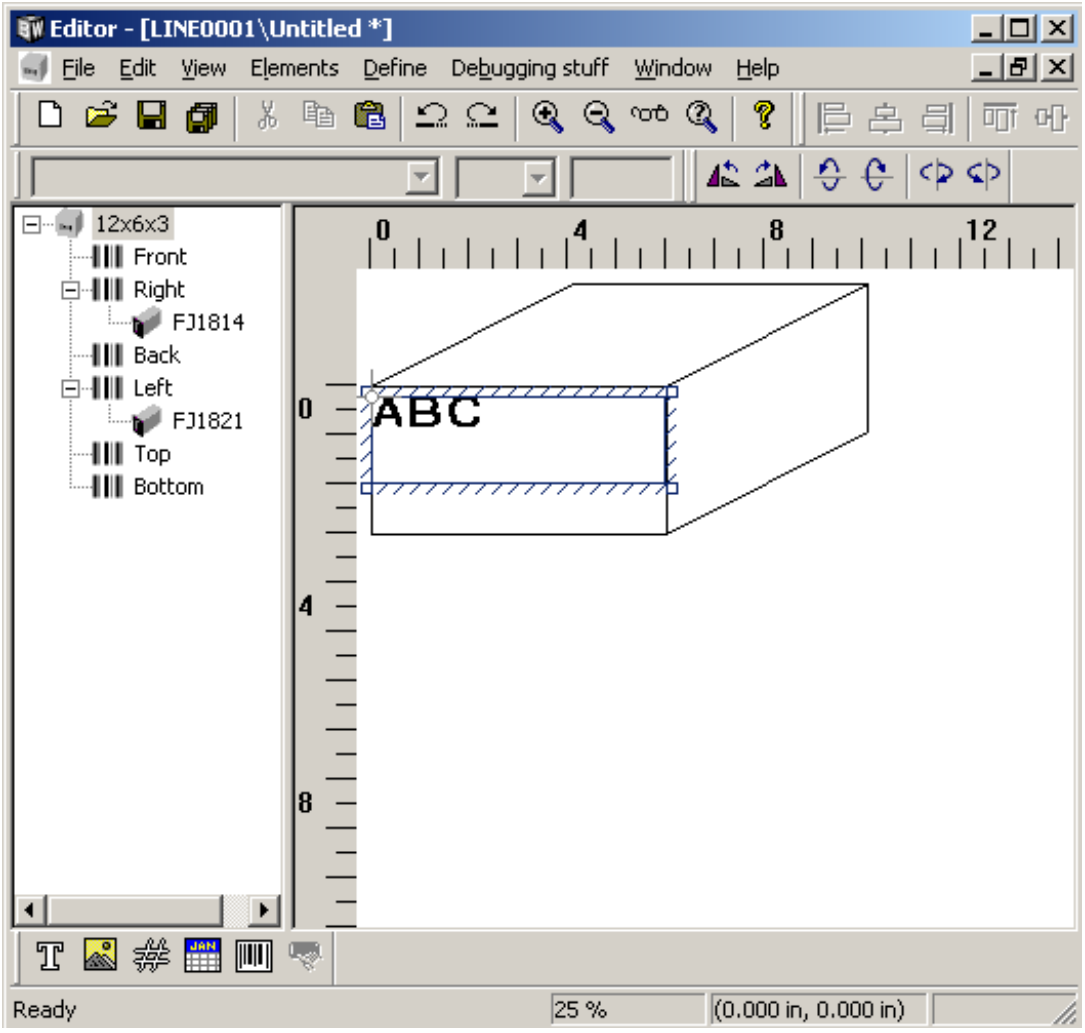
Rotation bar

The Rotation bar allows the user to change the box's orientation, relative to the print heads.

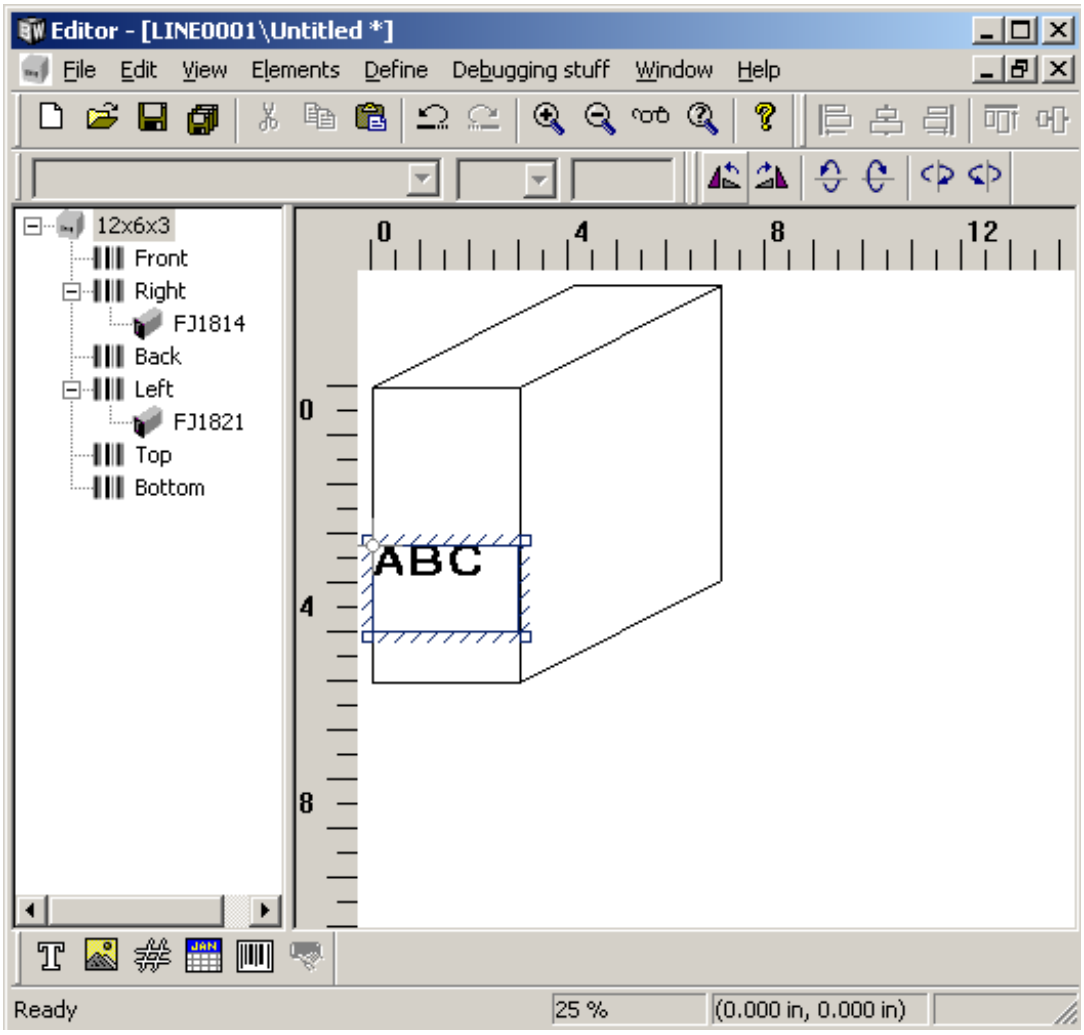
The buttons rotate the box in the following order (starting from the left-most button):

- Counter-clockwise
- Clockwise
- Down
- Up
- Left
- Right

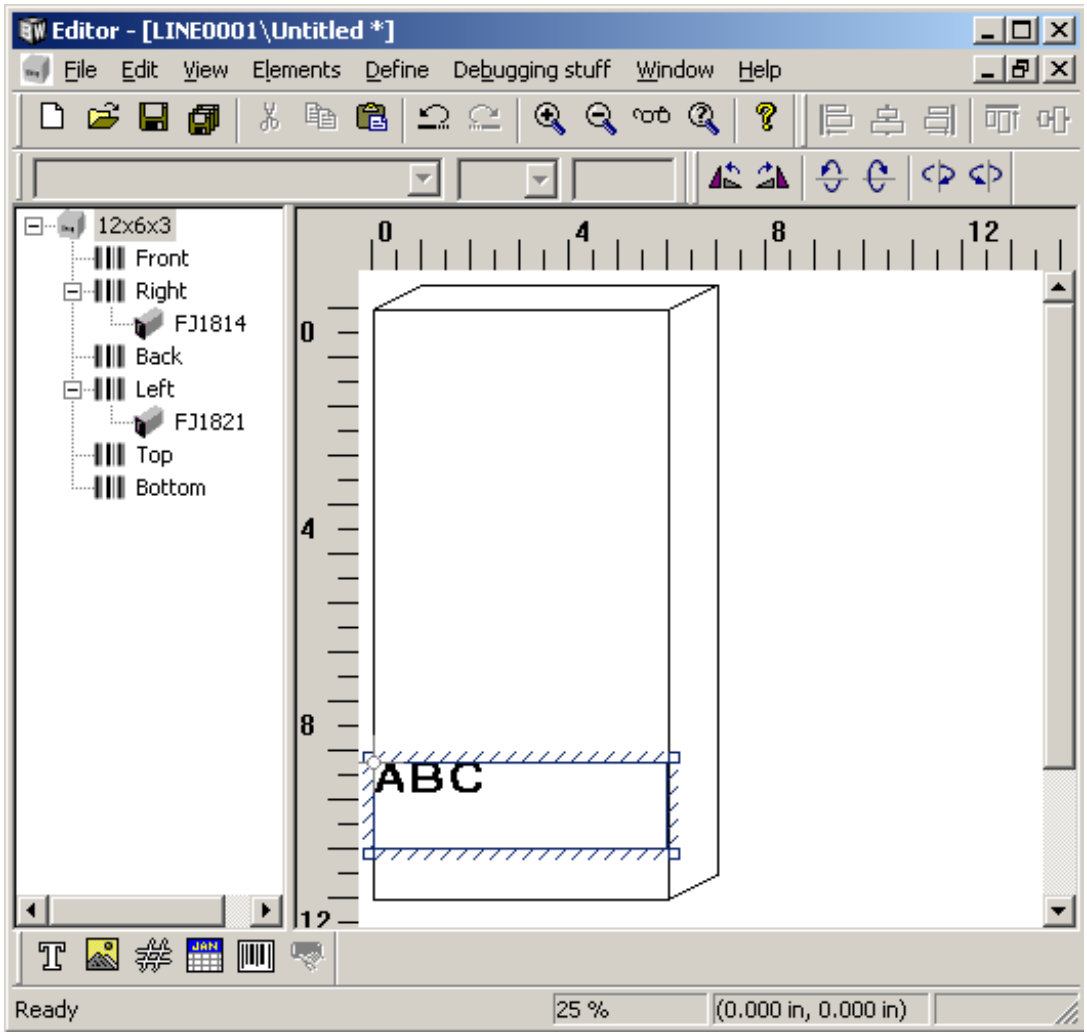
The following are illustrations of some possible rotations. First, suppose our box has a length, width and height of 12 inches, 6 inches and 3 inches, respectively. By default, it has the following orientation in a new task: 3 inches tall, by 6 inches long of printable area.



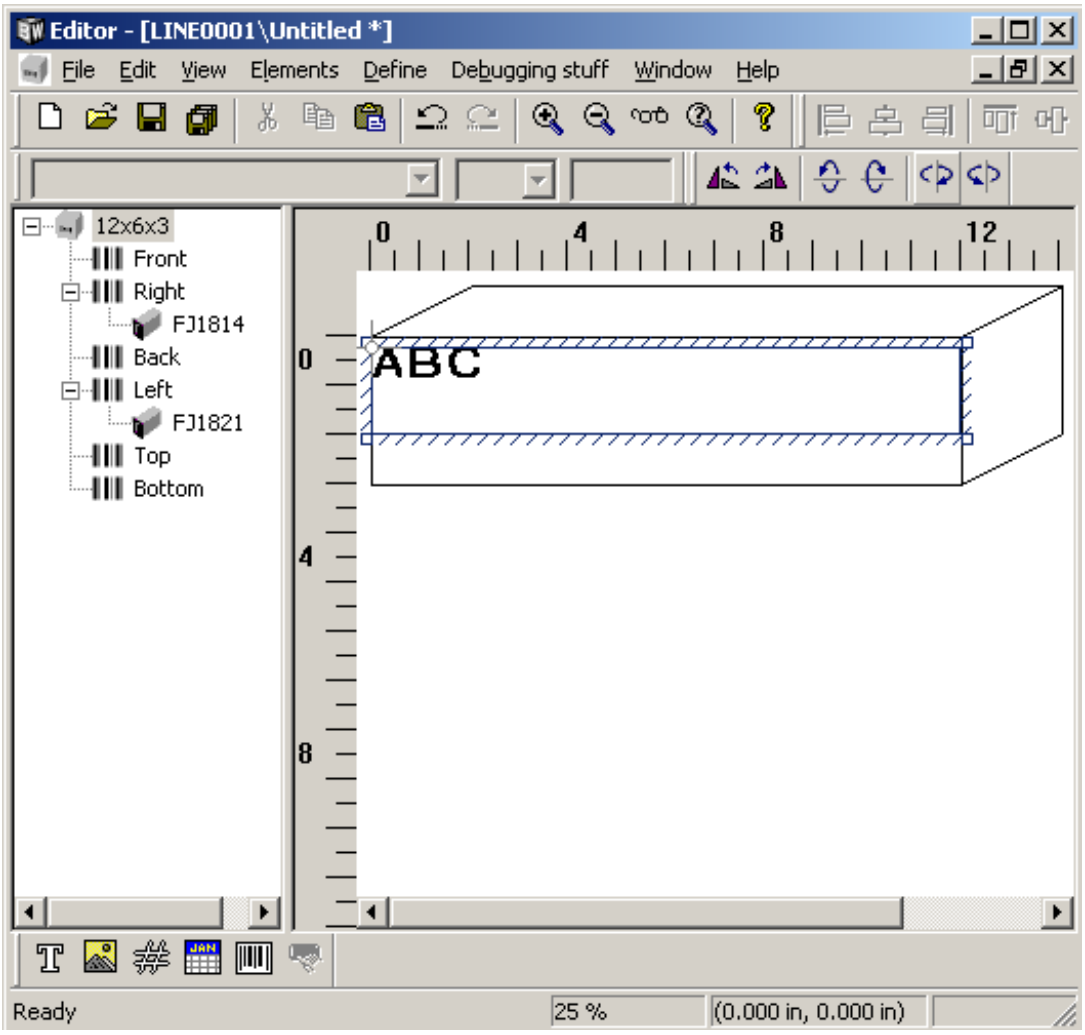
Spinning the box clockwise (or counter clockwise) will result in a printable area that is now 6 inches tall, by 3 inches long.



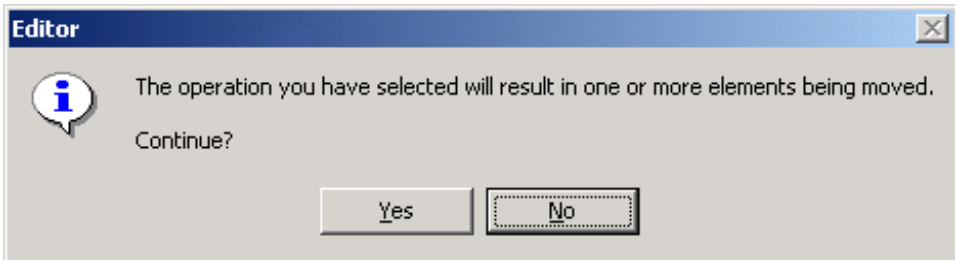
Spinning the box up (or down) will result in a printable area that is now 12 inches tall, by 6 inches long.



Spinning the box left (or right) will result in a printable area that is now 3 inches tall, by 12 inches long.



Sometimes changing the box's orientation will result in some elements being forced outside the printable area. When this happens, the Editor will warn the user with the following message:



If it is acceptable to move the affected elements, click **Yes** and they will automatically be repositioned. Otherwise, click **No** and the box will be returned to its original orientation.

Alignment bar

The Alignment bar allows the user to apply various transformations to the currently selected elements.

Alignment bar icons are listed in the table below in order from left to right:

Button	Keyboard Shortcut	Minimum number of elements that must be selected
Left		2
Center		2
Right		2
Top		2
Middle		2
Bottom		2
Center (on box)		1
Distribute evenly vertically		3
Distribute evenly horizontally		3
Bold	Ctrl + B	1
Italic		(currently not implemented)
Flip horizontally		1
Flip vertically		1
Inverse		1

Figure 1: Left aligned

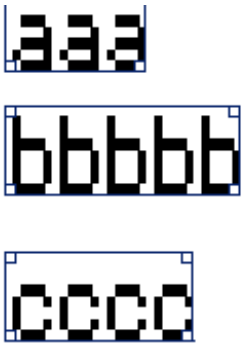


Figure 2: Center aligned

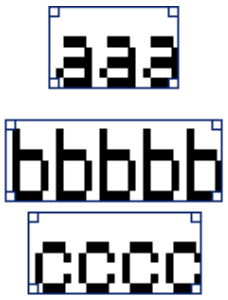


Figure 3: Right aligned

Figure 4: Top aligned

Figure 5: Middle aligned

Figure 6: Bottom aligned

Figure 7: Center (on box)

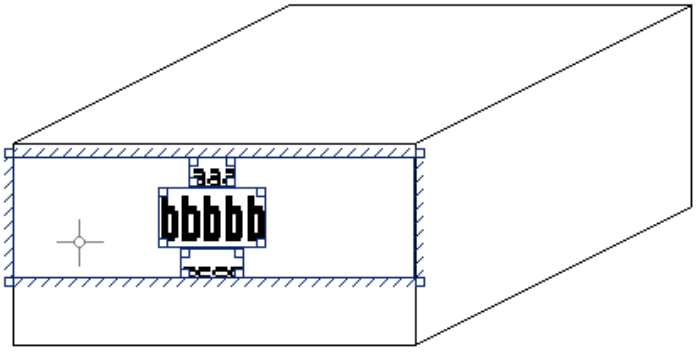


Figure 8: Distribute evenly vertically

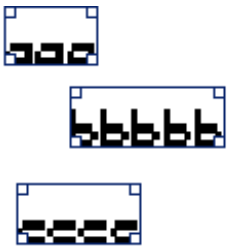


Figure 9: Distribute evenly horizontally

Figure 10: Text element with no bold factor

Figure 11: Bold factor of 3

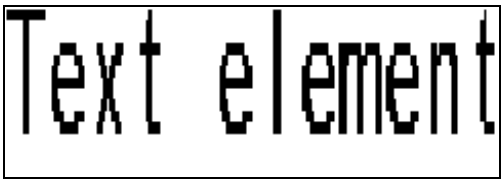


Figure 12: Flip horizontally

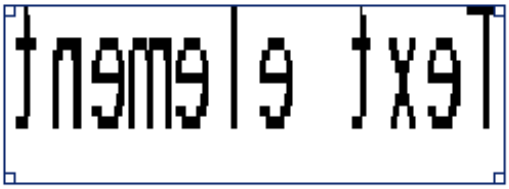


Figure 13: Flip vertically

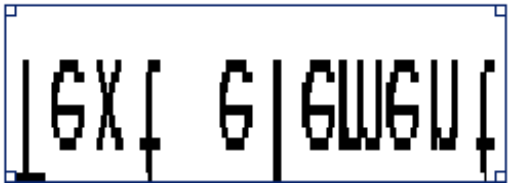


Figure 14: Inverse

Perspective

To change the perspective of the box view, select **View**, then **Change perspective**.

The x and y axis perspectives must be between -90 and 90 degrees.

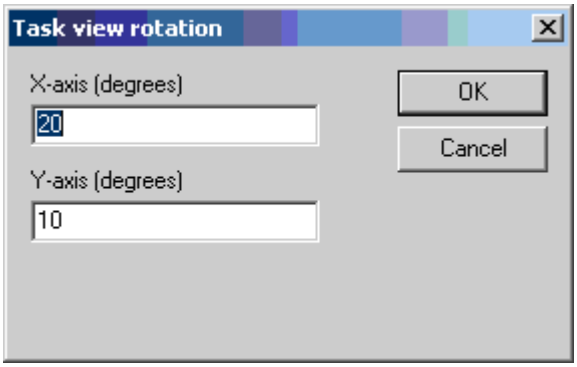


Figure 1: Perspective as viewed with [x, y] set to 20, 10.

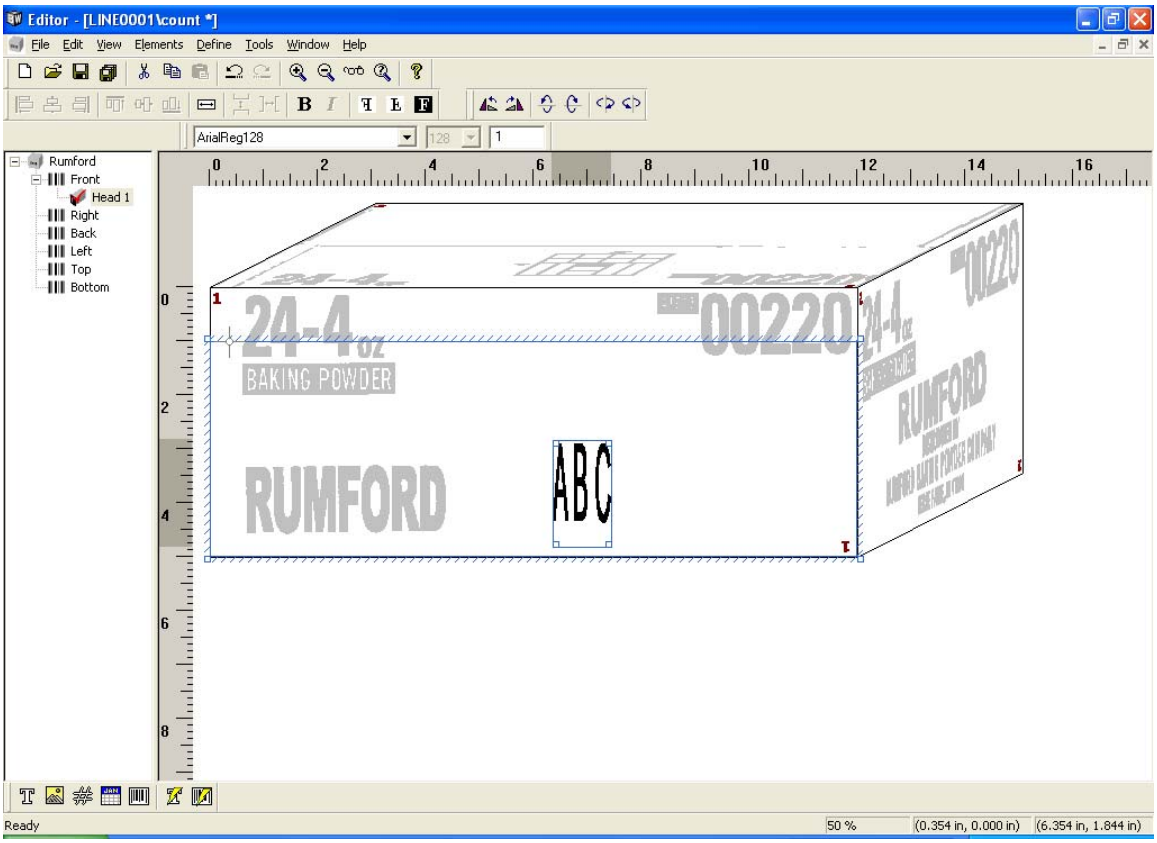
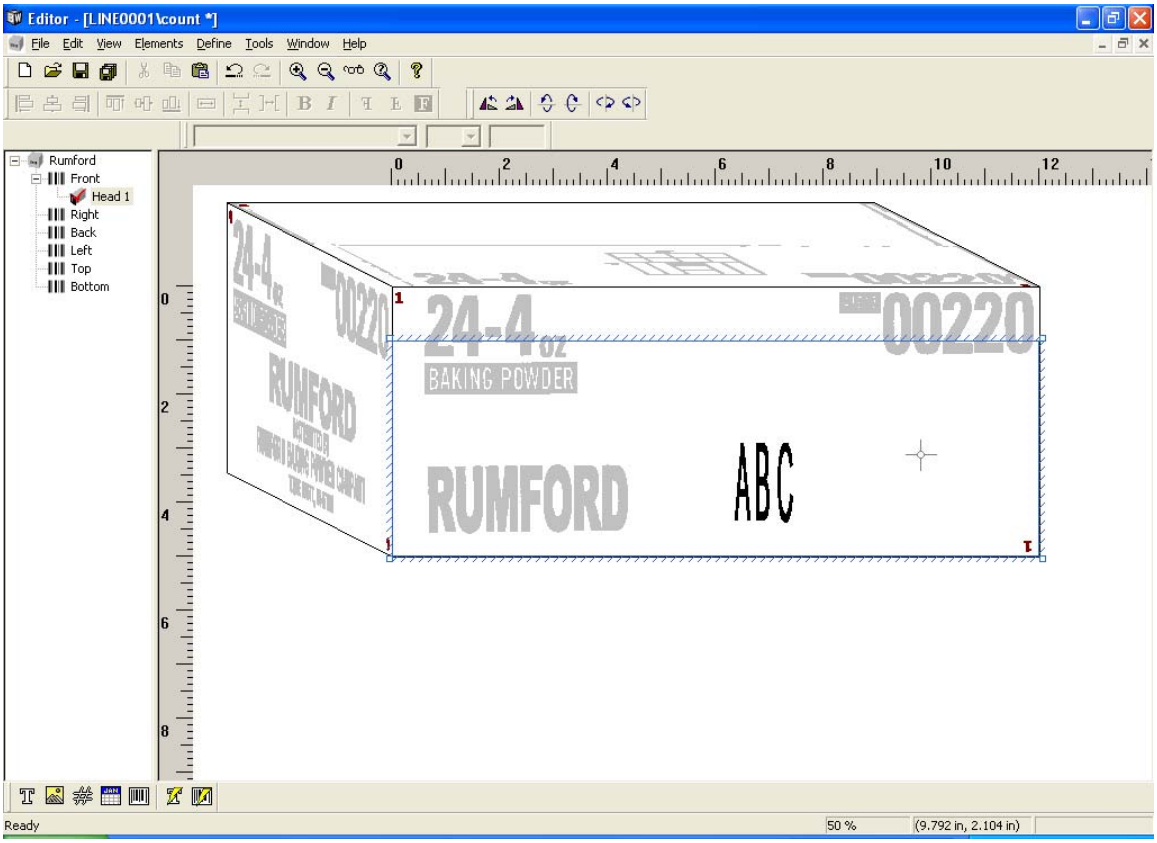


Figure 2: Perspective as viewed with [x, y] set to -20, 10.



Section 8: Maintenance

APS - Automatic Priming System

NOTE: The system will not prime either manually or automatically if there is a low ink indication. Low ink indication is caused by either low ink in the reservoir or full ink in the waste collection bottle.

The APS is an invaluable tool for routine cleaning of loose debris from the print engine face. The images below demonstrate print before and after the APS.

BEFORE APS

AFTER APS

NOTE: The duration of the APS cycle is approximately 5 - 10 seconds.

Shutdown Procedures

Daily - 8 Hours

- Dust touch screen and keyboard with lint-free cloth.
- Make sure the cabinet fan(s) are working.
- inspect print head assemblies for leaks and wipe with lint-free cloth as necessary.

NOTE: Do not wipe the print head faceplate!

- Inspect for broken or worn electrical connections.
- If missing channels occur in printed message, purge print head.

Inspect guide box rails and print head bracket for wear.

Overnight and 1 to 3 Days:

Idle the system through the software to avoid any misprinting. It's OK to leave the system powered up during this time.

Use the priming and purging procedure after this period of inactivity to remove any dust or debris that might have collected on the print head faceplate.

Periods of More Than 3 Days:

If the heads are not to be used for longer than three days, it is recommend that the controller be turned off.

- Exit the software.
- Power the system down.
- Close the reservoir vent cap.
- Replace the Ship Cap.

Upon power up, allow the head to heat up and perform a visual inspection on the heads before using. Run an APS cycle to insure all the channels are clear.

- Remove the Ship Cap.
- Open the reservoir vent cap.
- Power up the system.
- Use one of the priming procedures to remove any air or debris that may have entered the print head or faceplate.

3 Weeks - 120 hours

- Wipe print head cases and ink reservoir covers with lint-free cloth.
- Clean printer cabinet with cloth to remove dust.
- Have qualified person open printer cabinet and inspect for dust. If necessary, blow out dust with low-pressure air that is moisture- and oil-free.
- Inspect the fan filter and replace if necessary. See below for procedure.
- Make sure the fan turns freely.

3 Months - 500 hours

- Wipe print head cases and ink reservoir covers with lint-free cloth.

NOTE: Do not wipe the print head faceplate!

- Clean printer cabinet with cloth to remove dust.
- Have qualified person open printer cabinet and inspect for dust. If necessary, blow out dust with low-pressure air that is moisture- and oil-free.
- Replace fan filter and inspect for bearing wear. Replace if necessary. To replace fan filter, simply remove the louver plates on the outside side panels of the Marksman©. The filter is located under this plate. The fan filter can be cleaned with low-pressure air. For thorough cleaning, clean with soap and water and allow to dry before re-installing.

With the printer off, make sure tie wraps securely hold all cables. Replace any missing tie wraps or damaged cables.

Section 9: Troubleshooting

The Marksman© Net ink jet system incorporates advanced designs, both in hardware and in software. However, if the system ever fails to perform properly, some built-in indicators will help in troubleshooting. This section will help minimize system downtime and explain some of the diagnostic features built into the system.

If the flash memory ever gets corrupted in the Marksman Net, it will automatically load the default settings. This includes the IP address of the Marksman Net. The default IP address is 10.1.2.100. If it is suspected that the Net has loaded the default IP address, simply power up the Marksman Net for one minute then remove power and re-apply power to the Net. The Marksman Net will detect that the IP address was set to the default setting and then set it back to the pre-fault value.

Troubleshooting Notes

Most controller problems will be the result of improperly connected cables. Check all connections, including power interface, print heads, encoder, and photosensor. (See *"Appendix B: Theory of Operation" on page 103* for details.)

Problem: Cannot communicate to the Marksman© Net through the Ethernet.

Action:

- Power down, then power up the computer and the Marksman© Net.
- Check for proper Ethernet cabling.
- Verify that the IP addresses are valid for the computer and the Marksman© Net.

Problem: The system does not print.

Action:

- Check that there are no errors on the head.
- Check that the encoder is active.
- Check that the photocell is enabled, sensing a product.
- Check that the configuration is correct for the head being used.
- Check that a valid label is selected.

Problem: No Shaft Encoder.

Action:

- Make sure that the encoder wheel is contacting the conveyor.
- Make sure that the encoder is connected and plugged in to the proper port.
- Check the configuration for proper setup.

Troubleshooting Tests

Print Test

This test will determine if the print heads are printing.

1. Place cloth in front of print head front plate.
2. Initiate print cycle by turning on conveyor and tripping photocell.
3. Check for ink on cloth.

Printed dots on cloth indicate that the system is printing. Check product sensor offset settings, product length, or product margins if print is not seen on carton.

No ink on cloth indicates that the system is not printing. Review system status to determine other possible causes of system not printing, including a test of the photosensor and encoder to ensure operation.

Photosensor Sensitivity Test

This test will determine if the photosensor sensitivity is adjusted correctly for the application.

1. Place object approximately ¼ inch in front of photosensor; photosensor should sense object.
2. Place object near the center of the guide rails; photosensor should sense object.
3. Place object on far guide rail; photosensor should not sense object.
4. Check that objects on the far side of conveyor do not trip the photosensor.
5. Check that color differences in product do not cause multiple photosensor trips at the farthest sensing distance.

NOTE: The test object should be a sample of the actual product.

NOTE: If the red LED on the photosensor fails to illuminate when an object is placed in front of (but not touching) it, this is an indication that the photosensor is disconnected, or the power supply or photosensor has failed.

Network Test

Ping the Marksman Net: From a Command Prompt type: C:\ping "IP address of the Net being tested" <enter>

Example if IP address of Net being tested is 10.1.2.100:

C:\ping 10.1.2.100 <CR>

Good connection:

Pinging 10.1.2.100 with 32 bytes of data:

Reply from 10.1.2.100: bytes=32 time =1ms TTL=60
Reply from 10.1.2.100: bytes=32 time <10ms TTL=60
Reply from 10.1.2.100: bytes=32 time <10ms TTL=60
Reply from 10.1.2.100: bytes=32 time <10ms TTL=60

Ping statistics from 10.1.2.100:
    Packets: Sent = 4, Received = 4, Lost = 0 <0% loss>,
Approximate round trip times in milliseconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

Bad connection:

Pinging 10.1.2.100 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics from 10.1.2.100:
    Packets: Sent = 4, Received = 0, Lost = 4 <100% loss>,
Approximate round trip times in milliseconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

Print Quality Troubleshooting

This section shows examples of various print problems and actions which should be taken to improve the print.

Problem: Minor fractures in print channels.

Possible Cause: Debris on front plate, air in channel.

Action: Run APS. Add brushes and positive air flow to minimize debris build-up.

Problem: Missing channels and channel fractures in print channels.

Possible Cause: Excessive debris on front plate, air in channel.

Action: Wipe front plate and run APS. Add brushes and positive air flow to minimize debris build-up.

Problem: Missing print channels.

Possible Cause: Air in channel.

Action: Run APS. If air cannot be removed, run a Prime Cycle per instructions in *Section 4: Installation*.

Problem: Missing bottom print channels.

Possible Cause: Ink build-up on lower orifices.

Action: Wipe front plate and run APS.

Problem: Fuzzy print.

Possible Cause: Print head too far away from substrate.

Action: Move print head to within 1/8" from product.

Problem: Occasional checkerboard print pattern.

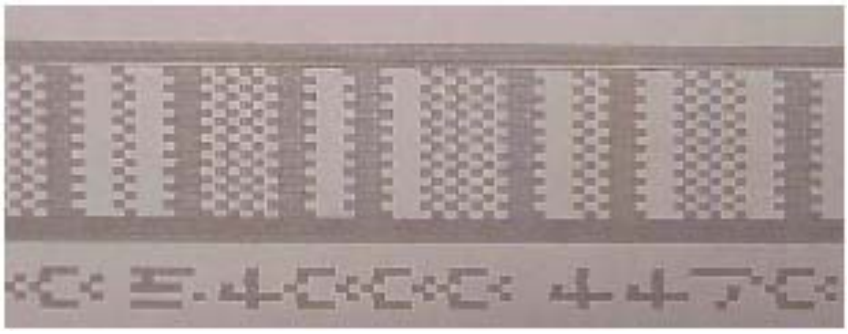
Possible Cause: Encoder slipping or bouncing on belt.

Action: Tighten encoder on belt; replace encoder o-rings, if required; or replace conveyor belt with smooth seamless belt.

Problem: Stretched out, light print, checkerboard pattern.

Possible Cause: Incorrect encoder, or incorrect line speed (set too low) if using internal encoder.

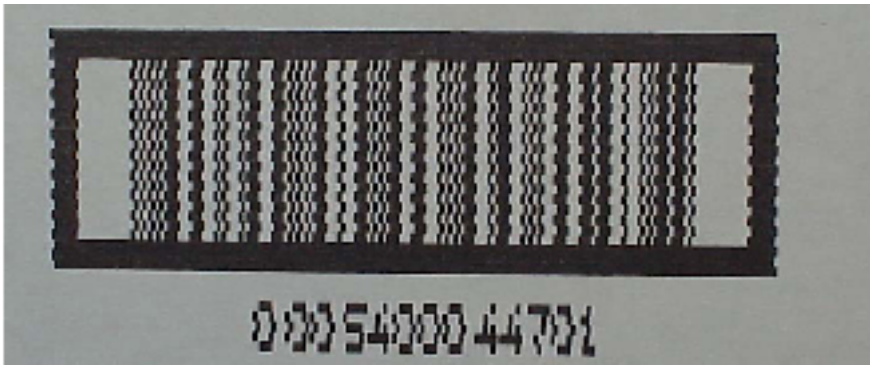
Action: Check for correct encoder (use 5000 PPR Encoder).



Problem: Short image, dark print, checkerboard pattern.

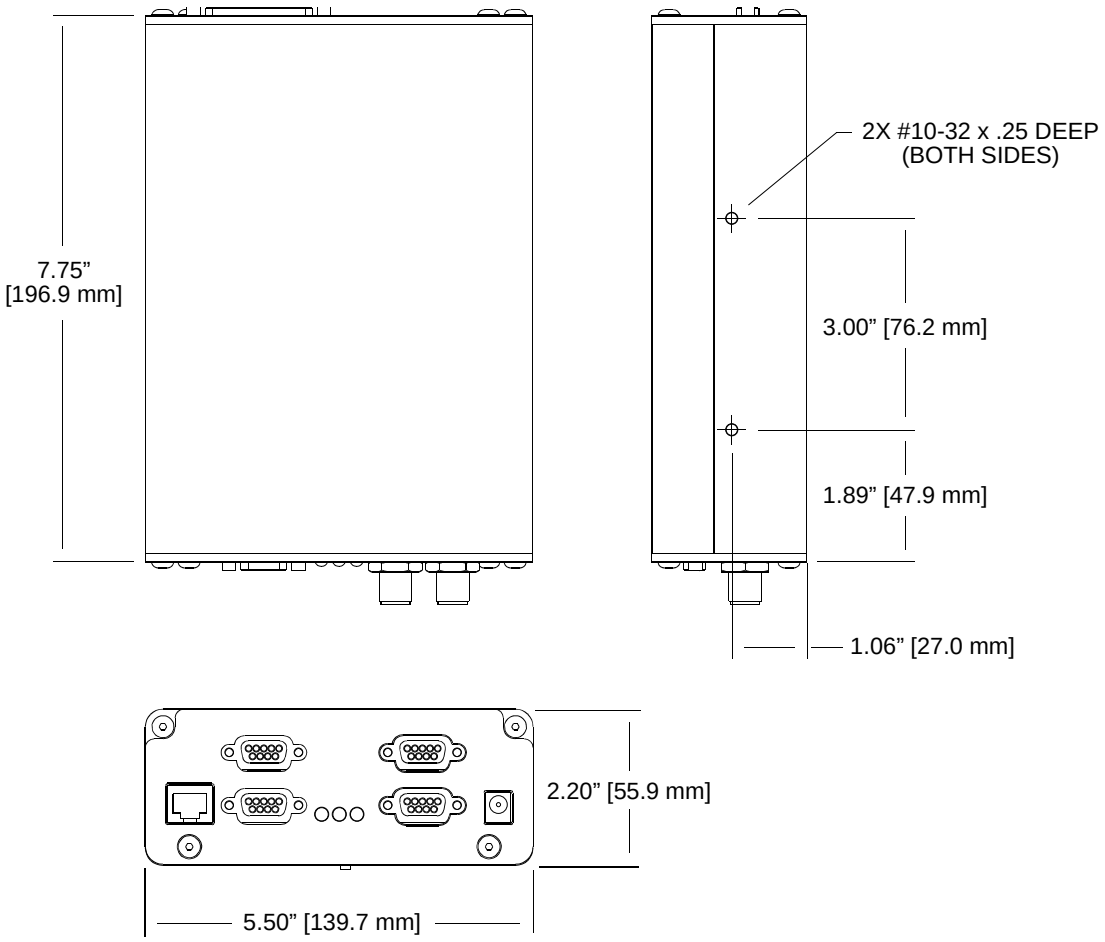
Possible Cause: Incorrect encoder or wheel size, or incorrect line speed (set too high) if using internal encoder.

Action: Check for correct encoder (use 5000 PPR Encoder).



Appendix A: Specifications

Controller Specifications

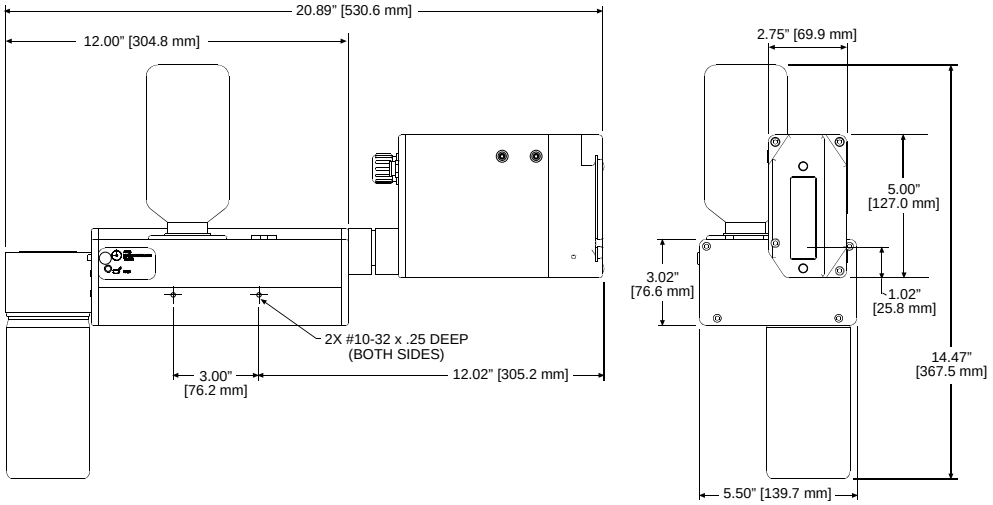


Processor:	Digi NS9215, operating at 150 MHZ
Supply Input:	100-240VAC, 50-60Hz at 1.5A max
Ports:	RS232
	Strobe, 3-Color
	10/100 Base-T Ethernet
	Power, 24VDC at 3.0A
	Print head, ProSeries
	Encoder/PC Input
	Encoder/PC Output
Enclosure:	Extruded aluminum
Weight (Controller only):	2.3 lbs
Indicators:	Power: Green
	Activity: Green, flashing
	Malfunction: Red, Low Ink, Low Temp, No HV, Out of Ink

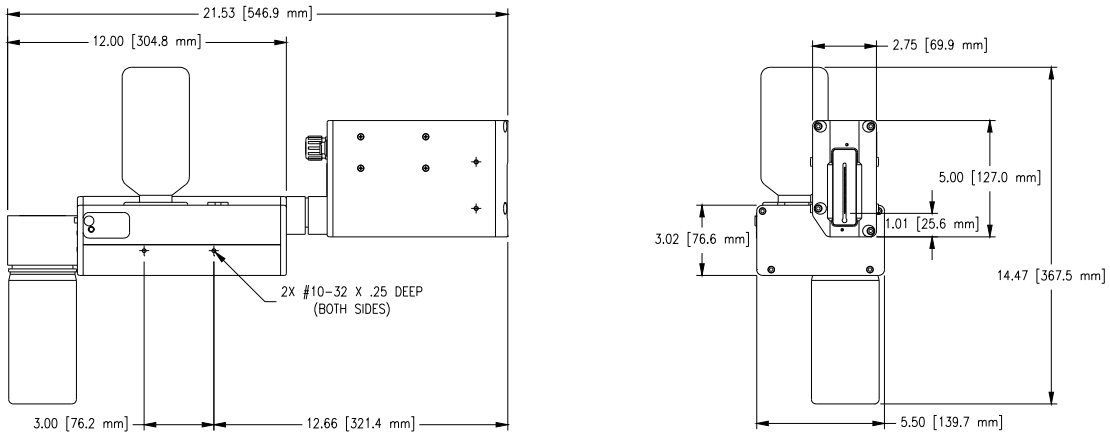
User Interface:	Marksman© Net Application, or equivalent, is required
Environment:	Ambient operating temperature: 40° to 104° F (5° to 40° C) Operating humidity: 10-90%, non-condensing
Printheads:	1 ProSeries print head
Storage:	4 Meg Flash Memory for logos, fonts and messages
Alarms:	24V 3-Color optional beacon

Print Head Specifications

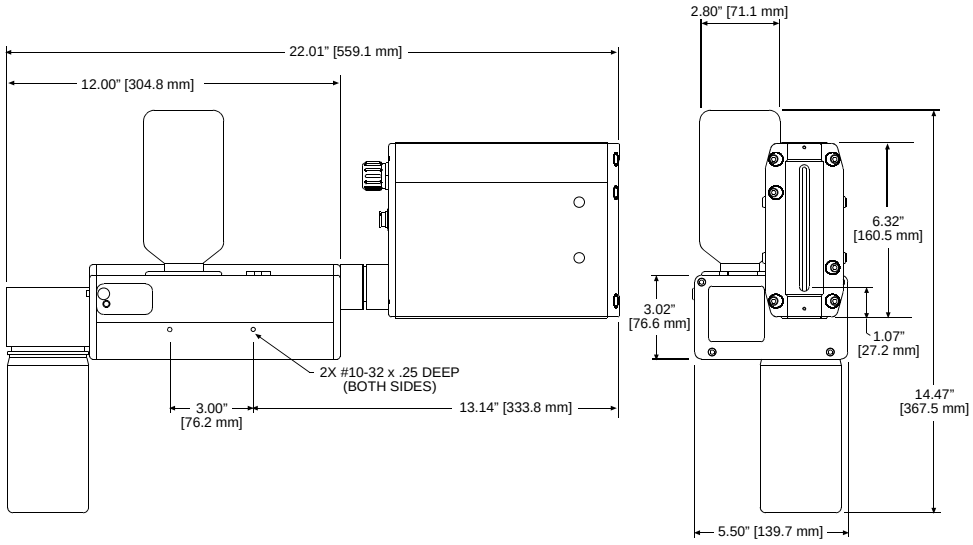
96, 192 and 352 Print Heads:



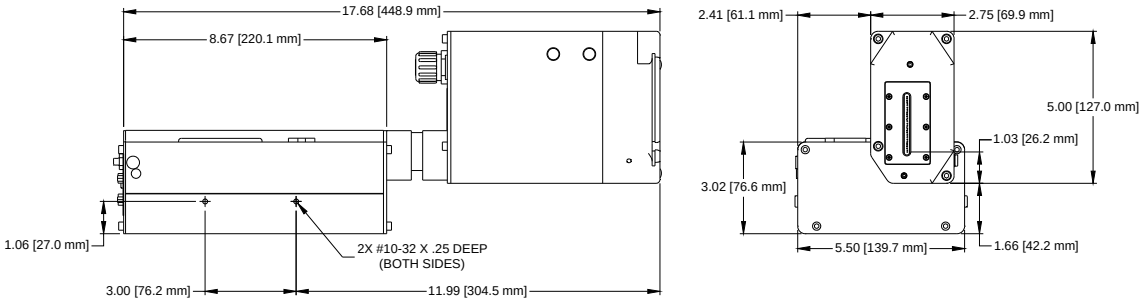
384 Print Head:



768 Print Head:



AlphaCoder Head:



Electrical Connections: Standard 30" (.76m) length
Optional 25’ (7.5m) length extension cable

Print Orientation: Integrated - Horizontal or horizontal angle (for incline printing)

Ink System: Non-pressurized capillary feed technology
Priming: Automatic Priming System (not included with Alpha-Coder Print Heads)
Float switch sensor: Low ink and full waste bottle detection (waste detection not included with AlphaCoder Print Heads)

Ink Specifications: ScanTrue II® (192, 384, 768 and AlphaCoder Print Heads), Pigmented oil-based for porous surfaces
VersaPrint™ V300 (192 and 352 Print Heads), Glycol-oil based for porous surfaces

Technical Data:

	192 Head	352 Head	384 Head	768 Head	AlphaCoder Head
Image Area:	.2" - 1" (5 - 25mm)	.38" - 1.9" (10 - 48mm)	.38" - 2" (10 - 51mm)	.38" - 4" (10 - 102mm)	.75" - 1.9" (19 - 48mm)
Channels:	32	32	128	256	32
Orifices:	192	352	384	768	224
Horizontal Resolution:	150 or 300 dpi	150 or 300 dpi	150 or 300 dpi	150 or 300 dpi	150 or 300 dpi
Lines of Print:	1 - 5	1 - 5	1 - 21	1 - 42	1 - 5

Operating Conditions: Temperature: 50° - 104° F (10° - 40° C)
Relative Humidity: 20 - 80% (non-condensing)

Storage Conditions: Temperature: 32° - 109°F (0° - 43° C)
Relative Humidity: 20 - 80% (non-condensing)

Labels

Message Size:	No fixed limit - limited by RAM
	20 elements/types per message
Customer Memory:	2 megabytes for fonts, images and messages
	ProSeries: 12 fonts, 100 bitmaps, up to 2000 average-size labels*
	Graphics: 3 fonts, 20 bitmaps, up to 200 average-size labels*
	***NOTE:** These figures are estimates only; the actual amounts will vary based on label and font sizes.
Fonts:	Bitmapped fonts at various heights and widths
Message Elements:	Text
	Barcodes
	Counters
	Date / Time
	Bitmaps
	Dynamic Image
Text Elements:	256 characters
Barcode Elements:	I 2 of 5
	Code 128
Counter Elements:	Start value
	Limit value (maximum or minimum)
	Rollover value (after Limit value is exceeded)
	Direction - count up or count down
	Increment value
	Repeat value - number of messages (e.g. pallet counter)
Date / Time Options:	Normal
	Expiration
	Rollover
	Expiration + Rollover
Date / Time Formats:	YYYYMMDD
	DDMMYYYY
	MMDDYYYY
	YYMMDD
	DDMMYY
	MMDDYY
	MM
	DD
	YYYY
	YY
	Day of Week number
	Week number
	Julian Day number
	Month alphabetic string

	Day of Week alphabetic string
	HHMMSS - 24 hour, 12 hour, 12 hour with AM/PM
	HHMM - 24 hour, 12 hour, 12 hour with AM/PM
	HH
	MM
	SS
	AM/PM - alphabetic string
	Hour alphabetic string
	Shift Code alphabetic string - up to three shift codes
	Delimiter may be chosen for numeric values (12:59:59)
	Alphabetic values are up to 15 characters
	Alphabetic codes for Month, Day, and Hour have two versions
	All Formats are available for all Time Options
Bitmaps:	May be stretched horizontally with Bold and Width values
Dynamic Image:	Not implemented
All Message Elements:	Bold (stretch horizontally with additional ink) (except Barcode)
	Width (stretch horizontally without additional ink) (except Barcode)
	Negative (black/white change)
	Invert (top/bottom inversion)
	Reverse (left/right reversal)
	Horizontal position
	Vertical position
	Concatenate to previous element
	Vertical Align with previous element

Ethernet Interface

IP Address:	Fixed IP address
	Dynamic IP address using DHCP
Symbolic Address:	Printer ID (includes factory-assigned serial number)
	Customer supplied name

Web Browser - Internal HTTP server supports browser pages for:

Status and Indicators for temperature, voltage, ink, etc.

TCP/IP:	Interface to support all of the above through TCP/IP messages
	Available to any software - editor, controller, reporting

FTP - Internal FTP server to send and receive:

Fonts
Bitmaps
All customer information for backup and restore

Web Browser:	Windows 95 - Internet Explorer 5.5 or newer
	Other Operating Systems - Internet Explorer 6.0 or newer

Appendix B: Theory of Operation

The Marksman© Net

The Marksman© Net controller is based on the NETsilicon Net+Arm chip, which is a chip that contains a processor, Ethernet MAC and other peripherals required for an embedded networking application, excluding memory. The other items, memory, real time clock and driver chips are also included on the board. The Marksman© Net includes three types of memory, SDRAM which is the system's memory required for the processor to operate, Flash memory where messages and the program are stored and SRAM which is battery backed-up and is used to store the current label and counts. The real time clock/calendar provide date and time to the system.

The Marksman© Net connects to a standard 10/100 Base-T network where it becomes a file server that can be used to set up or control the Marksman© Net. Documents on the Marksman© Net are sent to a client in HyperText Mark-up Language (HTML) format. To access or view these documents only requires a web browser and a network connection. To access the Net over a network with a web browser, a valid IP address must be entered and the user must have a proper networking connection.

Print Heads

The Marksman© Net supports all the Pro series printheads. A typical printhead includes a reservoir section, drive electronics, and a print engine. The information and power needed for printing are sent to the print head through the DB25. The DB9 is used for APS control.

The drive electronics include a Universal Driver Board and Marksman© Driver Board. The Universal Board takes 24VDC and generates the high voltage needed by the print engine. The Marksman© Driver Board (only on UJII engines) converts the serial data from the controller to parallel high voltage data required to control the print engine channels.

The **APS** includes an ink collection bottle, vacuum pump, APS board, purge pump and reservoir. The APS cycle is controlled by the Marksman© Net via a DB9 cable. Parameters are set through the software. It is important for the cable to be connected. The power and low ink signals are sent to the Marksman© Net through the DB25 cable. The ink collection bottle stores the used ink from the APS cycles. If the bottle becomes full, or the reservoir is low, the APS is disabled and the error LED is set.

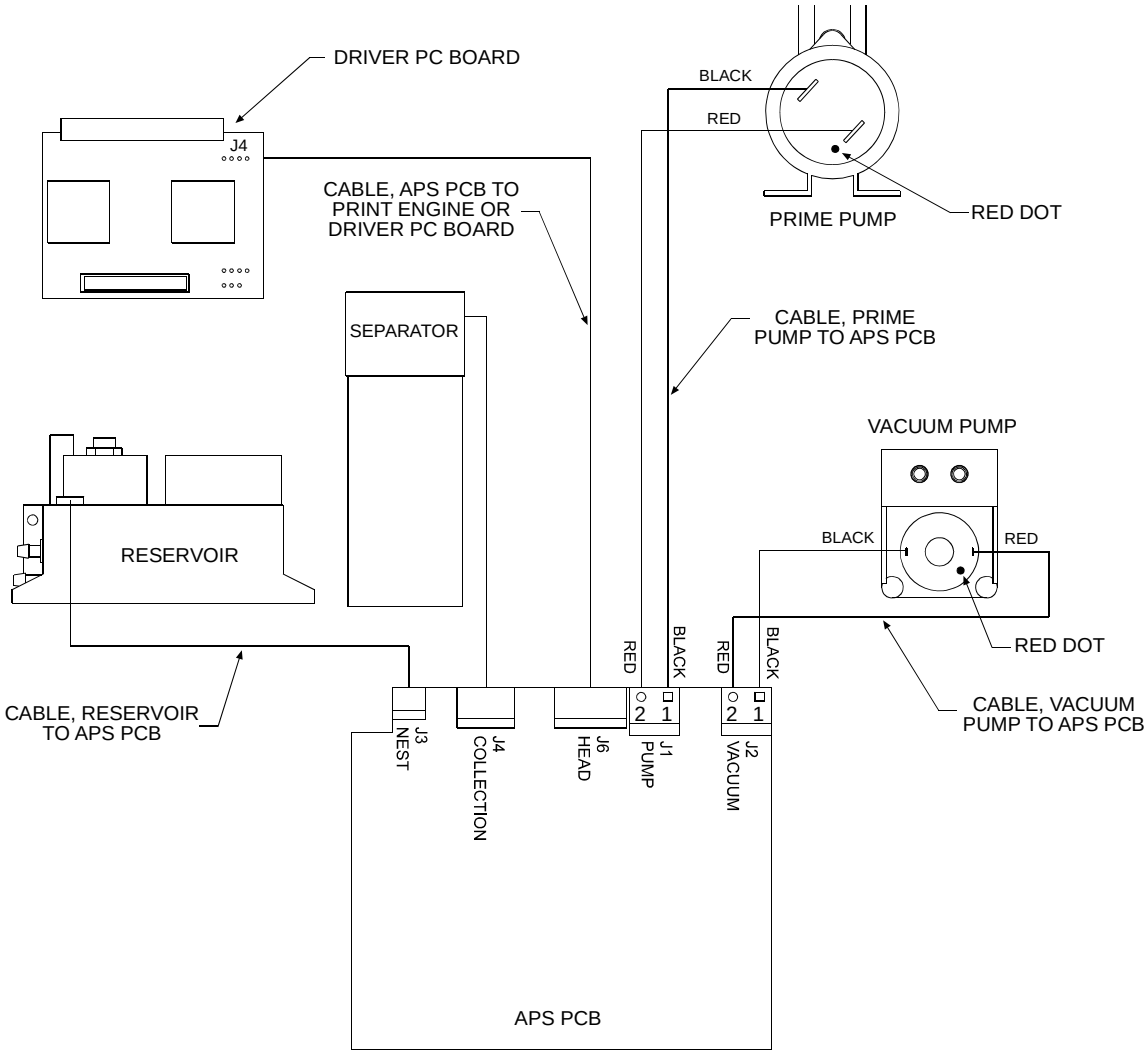
Photosensor

The photosensor detects a product as it passes in front of the sensor. The signal starts the printing process. Once the printing process has started it will continue until the label is complete, regardless of what the photosensor signal does.

Encoder

The encoder is used to signal the controller when to print another column of ink. There are two encoder options, external or internal. The external encoder rides on the conveyor to determine how often to print a column of ink. As the conveyor's speed changes so will the period of time between the printing of the columns of ink. The internal encoder is timed-based so that if the speed of the conveyor changes the print will be stretched or compressed until the encoder speed is corrected.

Interconnect Diagram



Appendix C: Parts and Supplies

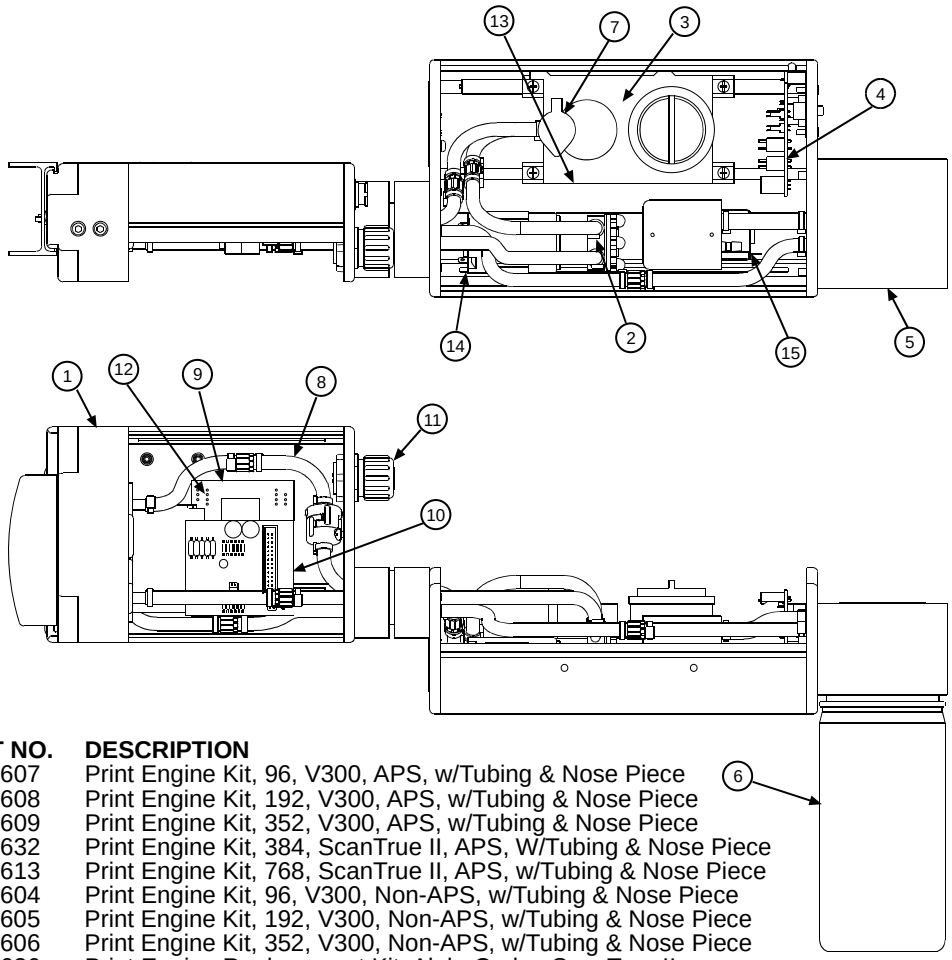
Consumables

Part Number	Description
001-0732-01F	Ink, 500mL Bottle, V300 Black
001-0598-01F	Ink, ScanTrue II®
032-6001-01	Ink, 500mL Bottle, AlphaMark
2464619	Kit, Ink Waste Bottle, V300 Ink (APS only)
2464620	Kit, Ink Waste Bottle, ScanTrue II® Ink
2464621	Kit, Vent Filter Replacement
X30001-001	Print Head Wiping Cloth (300/pkg)

Service Kits

Part Number	Description
2464646	Kit, Marksman Next PCB
5760333	Kit, 24 VDC Power Supply

Print System Kits



ITEM NO.	PART NO.	DESCRIPTION
1	2464607	Print Engine Kit, 96, V300, APS, w/Tubing & Nose Piece
	2464608	Print Engine Kit, 192, V300, APS, w/Tubing & Nose Piece
	2464609	Print Engine Kit, 352, V300, APS, w/Tubing & Nose Piece
	2464632	Print Engine Kit, 384, ScanTrue II, APS, W/Tubing & Nose Piece
	2464613	Print Engine Kit, 768, ScanTrue II, APS, w/Tubing & Nose Piece
	2464604	Print Engine Kit, 96, V300, Non-APS, w/Tubing & Nose Piece
	2464605	Print Engine Kit, 192, V300, Non-APS, w/Tubing & Nose Piece
	2464606	Print Engine Kit, 352, V300, Non-APS, w/Tubing & Nose Piece
	2464636	Print Engine Replacement Kit, AlphaCoder, ScanTrue II
	2464642	Print Engine Replacement Kit, AlphaMark
2	2464614	Prime Pump Replacement Kit, V300
	2464625	Prime Pump Replacement Kit, ScanTrue II
3 & 8	2464615	Reservoir & Ink Line Tubing Replacement Kit, V300
	2464616	Reservoir & Ink Line Tubing Replacement Kit, ScanTrue II
	2464641	Reservoir & Tubing Replacement Kit, AlphaMark
4	2464617	APS PCB Replacement Kit
5	2464618	Ink Seperator Replacement Kit
6	2464619	Ink Waste Bottle Kit, V300 Ink (APS Only)
	2464620	Ink Waste Bottle Kit, ScanTrue II Ink
7	2464621	Vent Filter Replacement Kit
9	2464623	Marksman Driver Board Replacement Kit
10	2464624	Universal Driver Board Replacement Kit
11	2464120	Communications Cable
12	2464144	Cable, Driver Board to APS PCB
13	5760527	Cable, Reservoir to APS PCB
14	2464146	Cable, Prime Pump to APS PCB
15	2464147	Cable, Vacuum Pump to APS PCB
16	2464629	HV PCB Replacement Kit, 384 and 768 Heads only (Not shown)

NOTE: Please refer to the ProSeries NP192 Manual (2466401) for Service and Parts Kits for the NP192 Integrated Print Head.

Appendix D: Testing the Electrical Outlet

CAUTION: The outlet must be installed near the equipment and must be easily accessible.

ATTENTION: On doit installer à côté de l'appareil une prise de courant facilement accessible.

Before installing the system, verify the integrity of the 115VAC (US and Canada only) sourced power, in accordance with the National Electric Code (NEC) (US only) and approved local electrical codes. If using a standard AC outlet, use the following procedure to verify the integrity of your outlet.

1. Place an outlet tester into the socket. (You can purchase an outlet tester at most hardware stores).
2. If the outlet tester indicates that the outlet is wired correctly, proceed with the installation.
3. If the outlet tester indicates that the outlet is wired incorrectly, inform plant maintenance immediately and do not use the outlet until it has been re-wired.

Electrical Line Transients

Transients on the incoming AC power line can be in the form of voltage spikes and transients, over- and under-voltage events, or noise caused by poor grounding or interference. Symptoms of power related problems can be unexplained loss of controller memory (loss of message), garbled print, and unexplained hardware resets.

The best way to eliminate these types of problems is to install the controller on a dedicated line with a line conditioner. A dedicated line refers to an AC line that only the system components are plugged in to. This is most effective when the source is at the building main service entrance.

Good quality line conditioners will provide protection against all AC line problems with the exception of power outages; if power outages are a problem at the installation, an uninterruptible power supply (UPS) should be installed.

CAUTION: Not for use in a computer room as defined in the Standard for the Protection of Electronic Computer/Data Processing Equipment, ANSI/NFPA 75 (US and Canada only).

ATTENTION: Ne peut être utilissé dans une salle d'ordinateurs telle que définie dans las norme ANSI/NFPA 75 Standard for Protection of Electronic Computer/Data Processing Equipment.

Appendix E: Setting the IP Address

Setting the IP Address on the Controller

To set the Marksman© Net's IP address, the Marksman© Net has to be connected to a computer via the serial port. This is done using a DB9 straight-through cable connecting the serial port on the Marksman© Net to an open serial port on the computer. (If the Controller does not connect, review *Section 10: Troubleshooting*.) Once properly connected, complete the following steps:

- Open Hyper Terminal.
- Configure Hyper Terminal to:

  Baud rate=38400, Data Bits=8, Parity =None, Stop Bits=1, Flow Control = None.
- Power up Marksman© Net.
- Follow the commands to change the IP address.

Connect the MK Next to a serial port on a computer to set the IP address. The default IP address is 10.1.2.100. The following was done using HyperTerminal:

Default serial port settings:

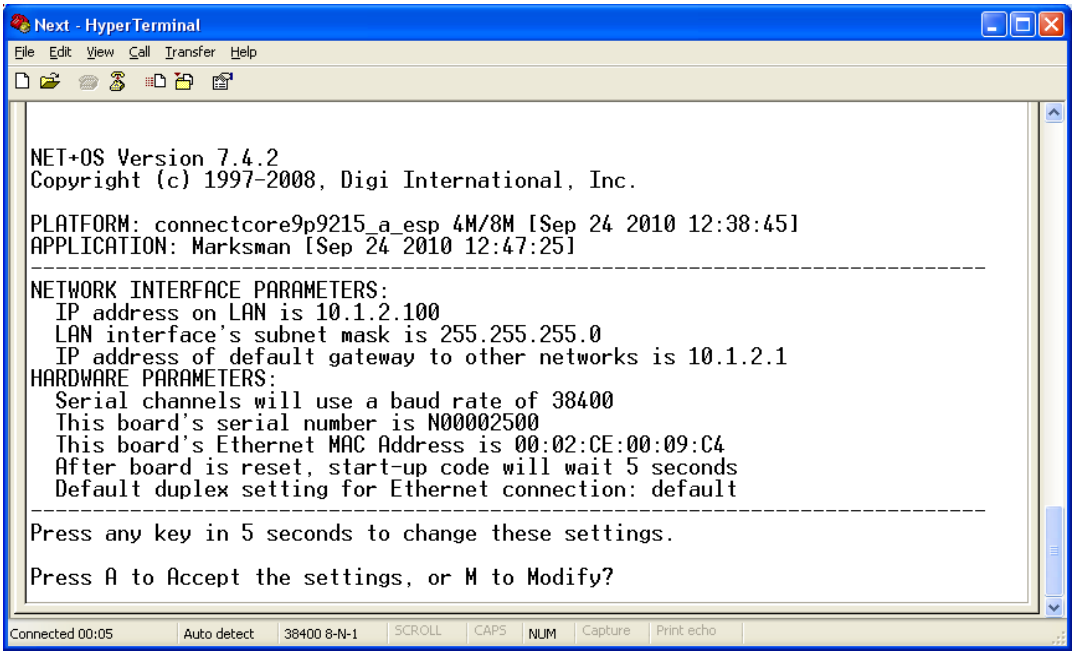
Baud rate: 38400

Data bits: 8

Parity bits: none

Stop bits: 1

When the serial port is configured and connected, apply power to the MK Next to start the set up. The following will appear if everything is set-up properly.



Press any key in five seconds to change these settings. Press a character to enter set-up.

Press A to Accept the settings, or M to Modify? **M <Enter>**

Enter the root password: **password <Enter>**

Reset configuration to default values [N]? **n<Enter>**

For each of the following questions, you can press <Return> to select the value shown in braces, or you can enter a new value.

ETHERNET INTERFACE SETTINGS:
Obtain IP settings automatically using DHCP for Ethernet interface [N]? **<Enter>**

IP address [10.1.2.100]?
Subnet mask [255.255.255.0]?
Gateway address [10.1.2.1]?

Enable DHCPv6 for the Ethernet interface [N]? **<Enter>**

Enable static IPv6 for the Ethernet interface [N]? **<Enter>**

Ethernet duplex setting (default, full, half)? [default] **<Enter>**

SERIAL CONSOLE PORT SETTINGS:

Set the baud rate of the serial console port [38400]?
9600, 19200, 38400, 57600, 115200 **<Enter>**

SECURITY SETTINGS:

Would you like to update the Root Password [N]? **<Enter>**
Would you like to update the Administrator 'admin' Password [N]? **<Enter>**

MISCELLANEOUS SETTINGS:

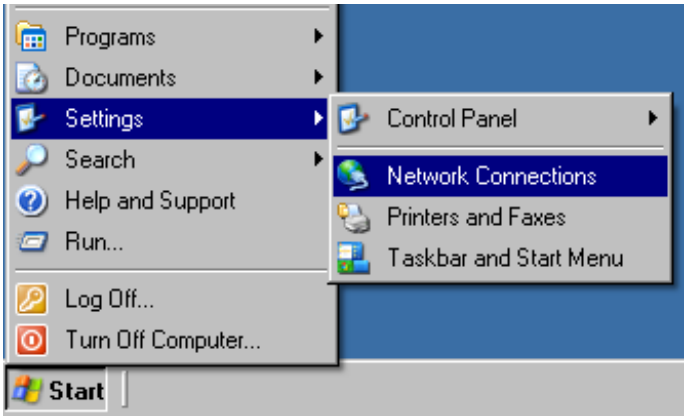
How long (in seconds) should CPU delay before starting up [5]? **<Enter>**

Saving the changes in NV memory...Done.

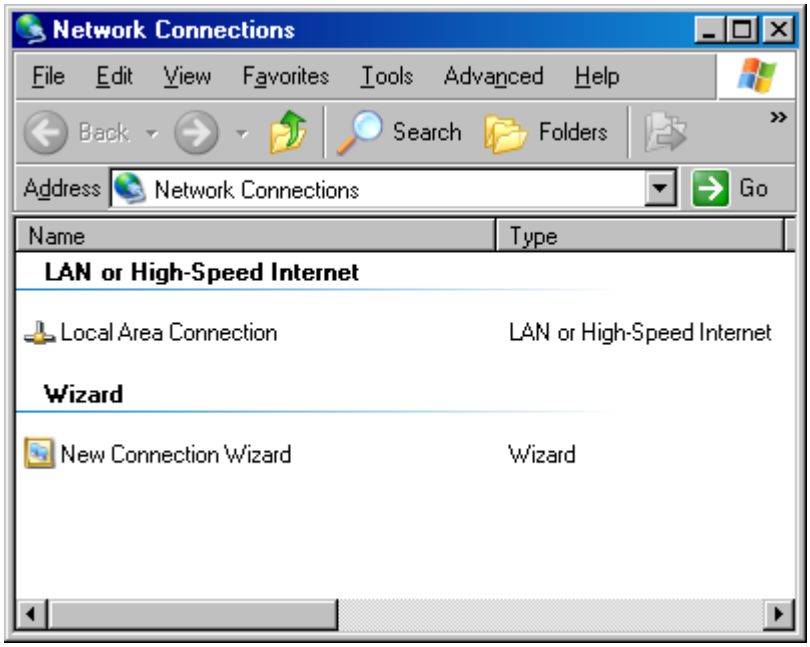
Setting the IP Address on the Computer

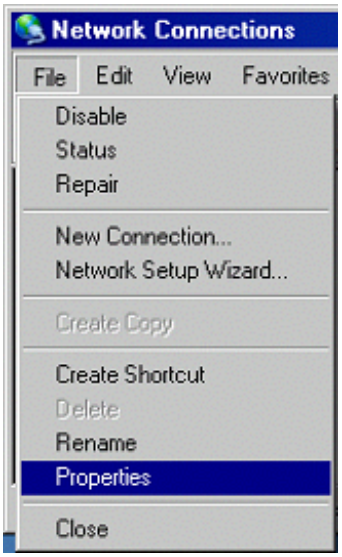
This section has instructions for setting the IP address and subnet mask of the PC so it can communicate with the Marksman© Net Controller. The instructions are for Windows XP®.

1. Open the **Start** menu; select **Settings**, then **Network Connections**.

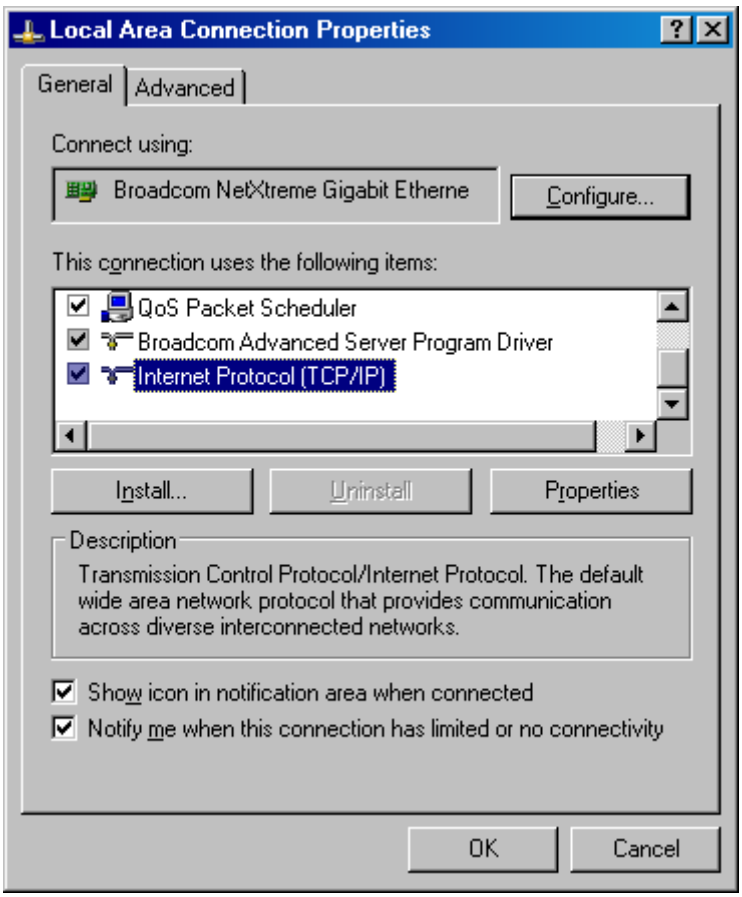


2. Right click **Local Area Connection**, then open the **File** menu and select **Properties**.

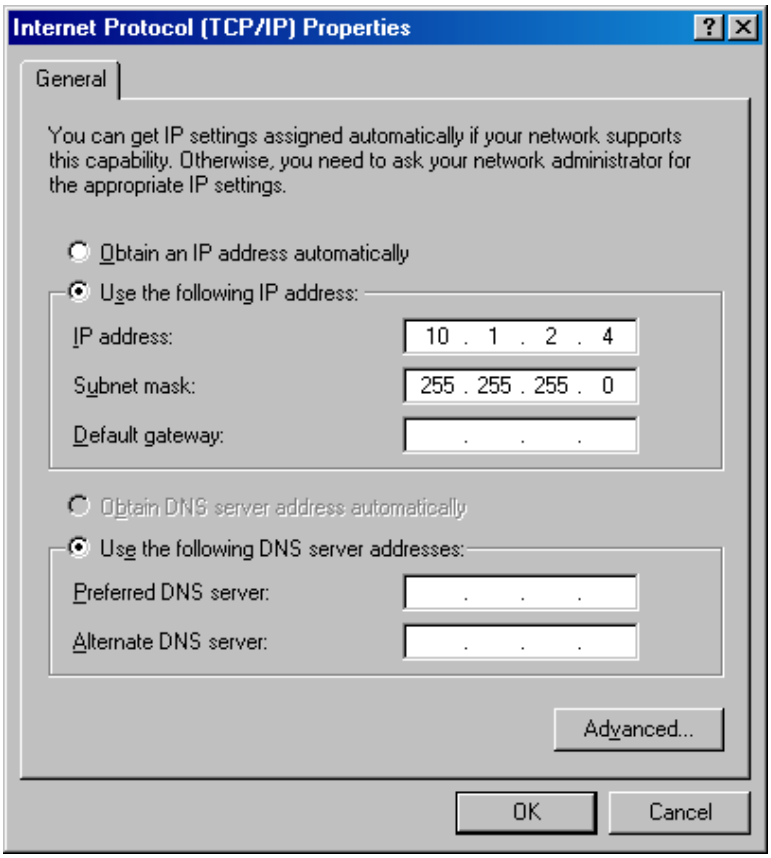




3. Select **Internet Protocol (TCP/IP)** then click the **Properties** button.



4. Click the **Use the following IP address** radio button. Enter an IP address of 10.1.2.4, a subnet mask of 255.255.255.0, and click the **OK** button.



Appendix F: Fonts

Following is a list of available fonts. (Contact the Distributor for special fonts, special characters or new fonts.)

Arial Regular

ArialReg24
ArialReg32
ArialReg48
ArialReg64
ArialReg96
ArialReg128

Arial Bold

ArialBold24
ArialBold32
ArialBold64
ArialBold96
ArialBold128

Times New Roman Regular

TimesReg24
TimesReg32
TimesReg48
TimesReg64
TimesReg96
TimesReg128

Times New Roman Italic

TimesIt24
TimesIt32
TimesIt64
TimesIt96
TimesIt128

Miscellaneous (ProSeries 96, 152 and 352 fonts)

fx5x6
fx7x6
fx10x10
fx12x12
fx16x8
fx16x10
fx16x12
fx16x16
fx32x22
fx32x24
fx32x24bold
fx32x32

Font Samples

The following samples are for a ProSeries 768 Print Head with a Bold of 0 and a Width of 1 at 300 dpi.

Arial Bold 128:

Arial 128:

Arial Bold 96:

Arial 96:

Arial Bold 64:

Arial 64:

Arial Bold 32:

Arial 32:

Arial Bold 24:

Arial 24:

Times New Roman 128:

Times New Roman Italic 128:

Times New Roman 96:

Times New Roman Italic 96:

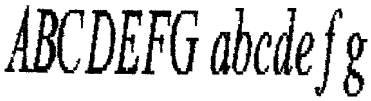
Times New Roman 64:

Times New Roman Italic 64:

Times New Roman 48:

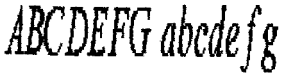
Times New Roman 32:

Times New Roman Italic 32:



Times New Roman 24:

Times New Roman Italic 24:



Appendix G: Standard Operating Procedures

FJSOP1 - Removal of FoxJet High Resolution Printheads

PURPOSE: To detail the procedure for removing a Foxjet High-Resolution inkjet printhead from a production line.

RESPONSIBILITY: Customer or authorized FoxJet Distributor technician.

SAFETY: All personnel performing this procedure must wear proper eye protection and latex gloves.

FREQUENCY: Each time a printhead is to be removed from a production line.

PROCEDURE:

1. Initiate the proper controller shutdown procedure, TURN OFF AND UNPLUG THE CONTROLLER from electrical power source to avoid possible electrical problems and/or electric shock.

2. Disconnect all printhead cables from the controller.

3. Remove the ink bottle and install the Reservoir Ship Cap.

4. Remove vent cap filter (if applicable) and close the vent cap.

5. For an AMS/APS system, remove Waste Ink Bottle and reinstall the Short Black Protective Shipping Bottle.

6. Install the faceplate cover on the front of the printhead (when properly installed it should cover the CP/OP).

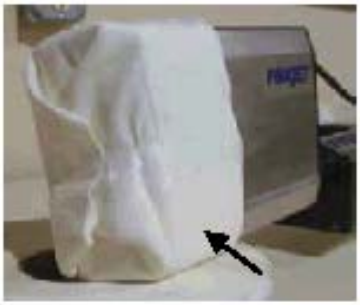
7. Insure that all printhead covers are properly installed, clean and all screws are in place.

8. Remove all photocell and photocell brackets from the printhead, if applicable.

9. Remove screws that hold the printhead to the bracketry.

10. Wrap a clean shop cloth around the front of the printhead to catch any ink that may leak out and secure the cloth with masking or packing tape.

11. Place a plastic bag over the printhead assembly and secure it with tape.



12. If the printhead is to be stored for later use, it should be stored in a cool, dry location.

13. If the printhead is to be shipped, it should be well padded and packed in its original shipping box.

CAUTION:

Observance and practice of this procedure is critical to insure no damage occurs during shipping.

FoxJet will replace, and charge for, any items found to be missing before it can be returned.

FoxJet may deny warranty coverage if the printer or part has failed as a result of abuse, neglect, improper maintenance, improper shipping, or unapproved modification(s). Please refer to the Master Warranty Statement.

END

FJSOP2 - Daily Maintenance for AMS/APS Printheads

SCOPE: All AMS/APS (Automatic Priming System) Printheads.

PURPOSE: Detail the procedure for performing the required maintenance routine for Foxjet AMS/APS High-Resolution inkjet printheads.

RESPONSIBILITY: Customer.

SAFETY: All personnel performing this procedure must wear proper eye protection and latex gloves.

FREQUENCY: This procedure is to be performed daily, or as often as required, depending on print quality.

PROCEDURE:

1. Using a lint-free Texwipe, carefully clean any corrugated dust, hot melt glue strings and/or other debris from the CP/OP area. Be sure to wipe across the CP/OP in one direction, NOT UP AND DOWN OR BACK AND FORTH, to lessen the likelihood of debris being pushed into the orifices. Failure to wipe in the appropriate direction will damage the CP/OP.

2. Press and release the purge button to initiate an automatic prime/purge cycle (observe that the ink is vacuumed off the CP/OP).

3. Wipe across the CP/OP with a lint-free Texwipe in one direction to remove excess ink, if necessary.

4. Verify that all screws are in place and that covers are clean and properly installed.

5. Insure that the front of the printhead is parallel to, and within 6mm (0.25") or less, of the side of the carton as it passes in front of the printhead.

6. Insure that the conveyor guides are adjusted to prevent cartons from contacting the printhead.

7. Run a print sample to ensure all the channels are printing and producing good print quality.

   IF PRINT QUALITY IS ACCEPTABLE, PROCEED NO FURTHER.

8. If there are several channels not printing, take several lint-free Texwipes and press them against the front of the CP/OP to catch the ink during the next step in the maintenance process.

9. Press and hold the purge button for three to four seconds to prime the system or purge air from the printhead.

10. Spray the proper maintenance fluid, as identified below, on a dry wipe card or folded Texwipe.

    10.1 For Printheads using VersaPrint ink, use FoxJet P/N X31003-001 spray.

    10.2 For Printheads using ScanTrue II ink, use FoxJet P/N X31027-001 spray.

11. Wipe across the CP/OP with the wipe card or lint-free Texwipe to remove any excess ink and/or maintenance spray.

12. Run a print sample to ensure all the channels are printing and producing good print quality.

    IF PRINT QUALITY IS ACCEPTABLE, PROCEED NO FURTHER.

13. If there are any channels that still do not print, repeat steps 8 through 12 as required.

Replacing APS waste ink bottles

FoxJet APS systems have waste ink catch bottles installed to the rear of the printhead/ink system and employ a waste ink detection circuit to disengage the APS feature when the bottle becomes full. Failure to replace a full waste ink bottle will disengage the APS system.

To maximize equipment longevity and increase performance, preventive maintenance routines must be performed on pre-defined daily, weekly, and/or monthly schedules.

If performing these measures is not already a regular practice, it should be immediately established as a top priority to prolong the life of the system.

FoxJet may deny warranty coverage if the printer or part has failed as a result of abuse, neglect, improper maintenance, or unapproved modification(s). Please refer to the Master Warranty Statement.

END

FJSOP3 - Daily Maintenance for non-AMS/APS Printheads

SCOPE: All non-AMS/APS (Automatic Priming System) Printheads.

PURPOSE: Detail the procedure for performing the required maintenance routine for Foxjet non-AMS/APS High-Resolution inkjet printheads.

RESPONSIBILITY: Customer.

SAFETY: All personnel performing this procedure must wear proper eye protection and latex gloves.

FREQUENCY: This procedure is to be performed daily, or as often as required, depending on print quality.

PROCEDURE:

1. Using a lint-free Texwipe, carefully clean any corrugated dust, hot melt glue strings and/or other debris from the CP/OP area. Be sure to wipe across the CP/OP in one direction, NOT UP AND DOWN OR BACK AND FORTH, to lessen the likelihood of debris being pushed onto the orifices. Failure to wipe in the appropriate direction will damage the CP/OP.

2. Fold 2 Texwipes over and hold them against the face of the printhead to catch the ink during the next step in the maintenance process.

3. Press and hold the priming button for three to four seconds to prime the system or purge air from the printhead.

   There are two types of Non AMS/APS Heads on the Market:

   A: With a motorized priming pump and button to energize it.

   B: With a prime bulb mounted to the rear of the Print Head Assembly. With this type printhead, only push the bulb in. Do not squeeze or pinch the bulb, which can damage the bulb and/or the valve internal to it.

4. Wipe across the CP/OP in one direction with a lint-free Texwipe to remove excess ink.
5. Verify that all screws are in place and that printhead covers are clean and properly installed.
6. Insure that the front of the printhead is parallel to, and within 6mm (0.25") or less, of the side of the carton as it passes in front of the printhead.
7. Insure that the conveyor guides are adjusted to prevent cartons from contacting the printhead.

8. Run a print sample to ensure all the channels are printing and producing good print quality.

   IF PRINT QUALITY IS ACCEPTABLE, PROCEED NO FURTHER.

9. If there are several channels not printing, fold two Texwipes over and hold them against the face of the printhead to catch the ink during the next step in the maintenance process.

10. Press and hold the priming button for a maximum of five seconds to prime the system or purge air from the printhead.

11. Spray the proper maintenance fluid, as identified below, on a dry wipe card or folded Texwipe.

    11.1. For Printheads using VersaPrint ink, use FoxJet P/N X31003-001 spray.

    11.2. For Printheads using ScanTrue II ink, use FoxJet P/N X31027-001 spray.

    11.3. For Printheads using AlphaMark ink, use Ethyl Alcohol (commercially available).

12. Wipe across the CP/OP with the wipe card or folded Texwipe to remove any excess ink and/or maintenance spray.

13. Run a print sample to ensure all the channels are printing and producing good print quality.

    IF PRINT QUALITY IS ACCEPTABLE, PROCEED NO FURTHER.

14. If there are any channels that still do not print, repeat steps 8 through 12 as required.

Maintenance Requirements

To maximize equipment longevity and increase performance, preventive maintenance routines must be performed on pre-defined daily, weekly, and/or monthly schedules.

If performing these measures is not already a regular practice, it should be immediately established as a top priority to prolong the life of the system.

FoxJet may deny warranty coverage if the printer or part has failed as a result of abuse, neglect, improper maintenance, or unapproved modification(s). Please refer to the Master Warranty Statement.

END

FJSOP4 - Installation of FoxJet High Resolution AMS/ APS Printheads

PURPOSE: Detail the procedure for installing a FoxJet AMS/APS high-resolution inkjet printhead onto the production line.

RESPONSIBILITY: Customer or Distributor.

SAFETY: All personnel performing this procedure must wear proper eye protection and latex gloves.

FREQUENCY: Every time a printhead is installed on the production line.

PROCEDURE:

1. Remove packing materials and retain for possible future use.
2. Insure that all printhead covers are properly installed, clean and all screws are in place and tight.
3. Position the printhead and install the screws that hold the printhead to the printhead bracketry.
4. Adjust bracketry so that the front of the printhead is parallel to, and no more than 6mm (0.25”) away from, the side of the carton as it passes in front of the printhead.
5. Insure that conveyor guides are adjusted so that the cartons CANNOT hit the printhead.
6. Remove the Reservoir ship cap and install the ink bottle (insure the expiration date on the ink bottle has not yet occurred).
7. Open the vent cap and install a clean vent cap filter (FoxJet PN X40119-001).
8. If not installed, install an ink waste bottle (FoxJet PN X01240-002).
9. Remove the faceplate cover from the front of the printhead (Save the faceplate cover and Reservoir ship cap for use when you remove the printhead from the production line).
10. Switch controller power OFF.
11. Unplug controller from power source, if applicable.
12. Connect the printhead cable to the controller.
13. Connect the photocell cable to the printhead, if applicable.
14. Plug the system into a dedicated source of clean electric power.
15. Turn the power on to the printhead and wait for it to heat to temperature, which should take approximately five to ten minutes. (A Marksman Net or UJII 352/32 Printhead may take up to 30 minutes. On Marksman Net and Marksman Pro Series controllers, it may take approximately 30 minutes to bring a ProSeries printhead to the appropriate temperature.)

16. Take several lint-free Texwipes and press them against the front of the CP/OP to catch any ink.
17. Press the purge switch for three to four seconds to purge any air out of the system.
18. Spray the proper maintenance fluid, as identified below, on a dry wipe card or folded Texwipe.

    18.1 For Printheads using VersaPrint ink, use FoxJet P/N X31003-001 spray.

    18.2 For Printheads using ScanTrue II ink, use FoxJet P/N X31027-001 spray.
19. Momentarily press the purge switch to initiate an automatic prime/purge cycle.
20. Wipe across the CP/OP with the wipe card or lint-free Texwipe to remove any excess ink and/or maintenance spray.
21. Run a print sample to ensure all the channels are printing and producing good print quality.

    IF PRINT QUALITY IS ACCEPTABLE, PROCEED NO FURTHER.
22. If all channels are not printing properly, repeat steps 16 through 21. If the printhead has not been in use for several months, it may take 30+ minutes for all channels to print.

END