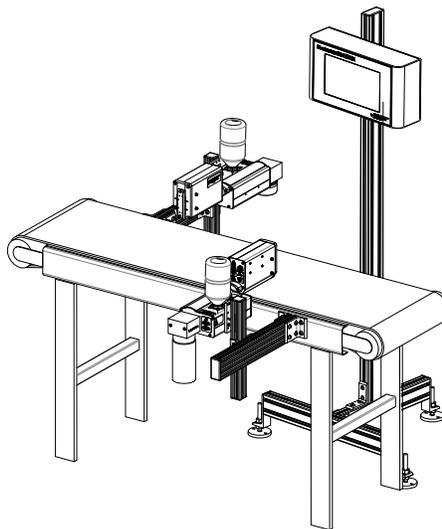


User Manual

Marksman MATRIX & ELITE

High Resolution Printing
for the Real World



2465-623
Revision F

1 Missouri Research Park Drive • St. Charles, MO 63304

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www.foxjet.com

Marksman MATRIX & ELITE Ink Jet System User Manual

2465-623

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Warranty:

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

The inks and conditioners used with the Marksman© Matrix & Elite 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.

Marksman Matrix & Elite

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Marksman Matrix & Elite

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Section 1: Safety and Ink Usage

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: (Will be followed by a brief comment or explanation.)

Only trained personnel should operate and service the equipment.



NOTE: It is extremely important to:

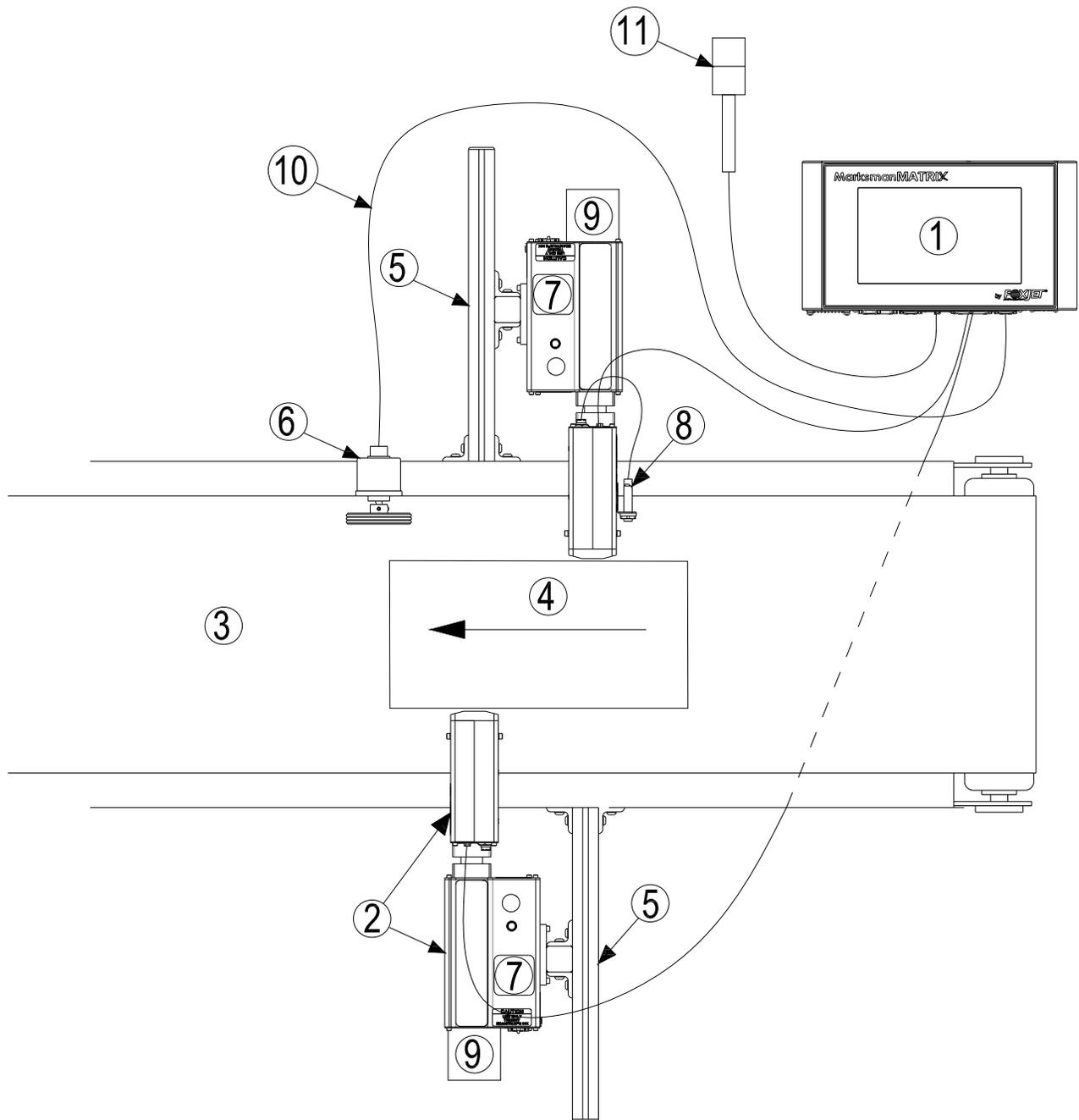
- Clean up all ink spills with the appropriate conditioners immediately and dispose of all waste according to local and state regulations.
- Wear safety glasses and protective clothing, including gloves, when handling all inks and conditioners.
- Store inks and conditioners under the recommended conditions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



PRODUCT COMPLIANCE DISCLAIMER NOTE:

This product meets the requirements of UL60950-1:2007/A2:2014, EN60950-1:2006/A2:2013, CAN/CSA C22.2 No. 60950-1:2007/A2:2014 using FoxJet an ITW Company approved items. Units are only tested and qualified with FoxJet an ITW Company approved inks, parts and accessories. Use of other inks, parts or accessories may introduce potential risks that FoxJet an ITW Company can assume no liability for.

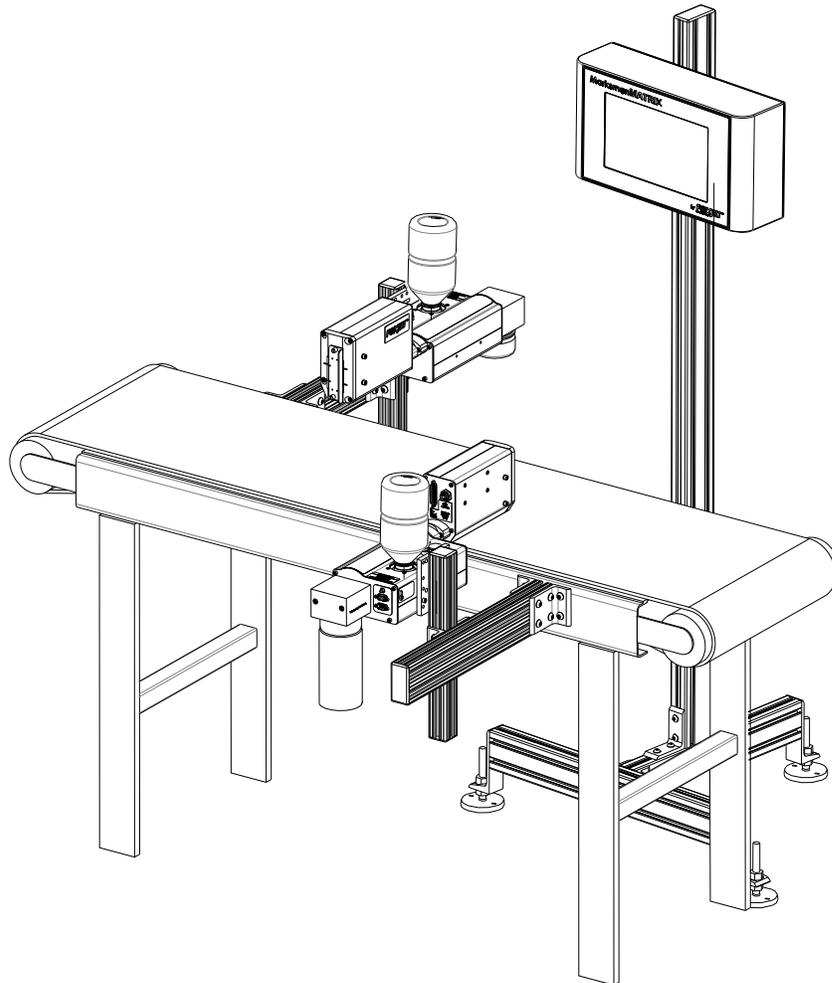
Section 2: Installation



- 1 Controller, Matrix or Elite
- 2 Proseries Print Head
- 3 Conveyor
- 4 Product
- 5 Print System Bracketry
- 6 Encoder

- 7 Ink Supply
- 8 Photo Sensor
- 9 Vacuum Waste Collector Bottle
- 10 Encoder Cable
- 11 Alarm Beacon (Strobe)

The figure below illustrates a typical conveyor-mounted installation. (Cables are not shown.)



Materials Required for Installation

You will need the following items:

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

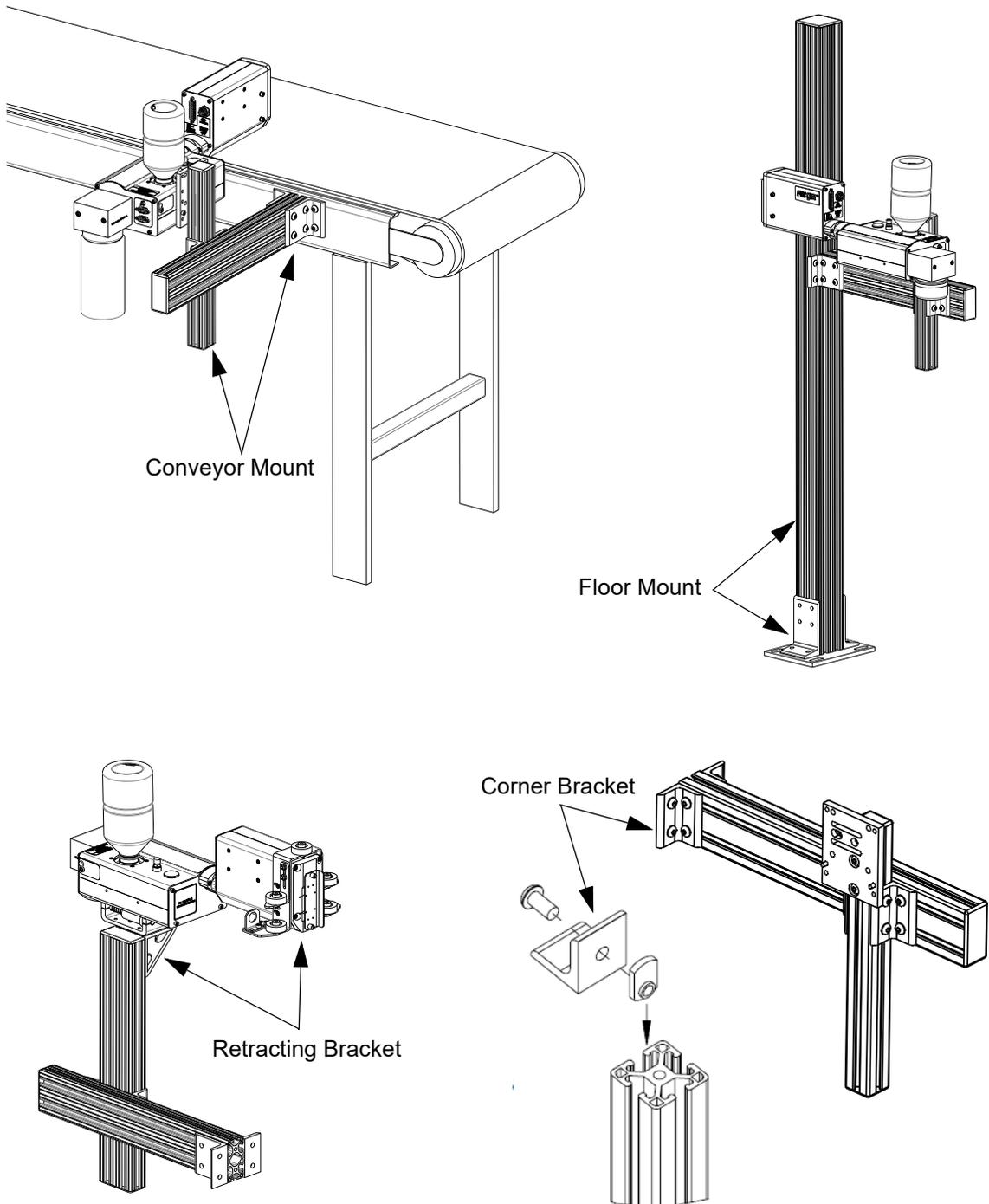
Use appropriate safety equipment and procedures. Leave print heads in their shipping cartons until all bracketry is in place and tightened down.

Step 1: Installing Bracketry

Bracketry is the structure that supports the controller, print system and other accessories. Carefully plan the mounting location of the equipment. Keep in mind bracketry hardware location and printer equipment size. Assemble all bracketry to the floor, conveyor, or other bracketry.

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 (see "Appendix C: Part Numbers" on page 83). Assembly instructions are included with mount kits.

Corner brackets are attached to aluminum bars as shown.



Step 2: 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. Do not connect to power outlet.

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 "System" on page 83 for bracketry options.)



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

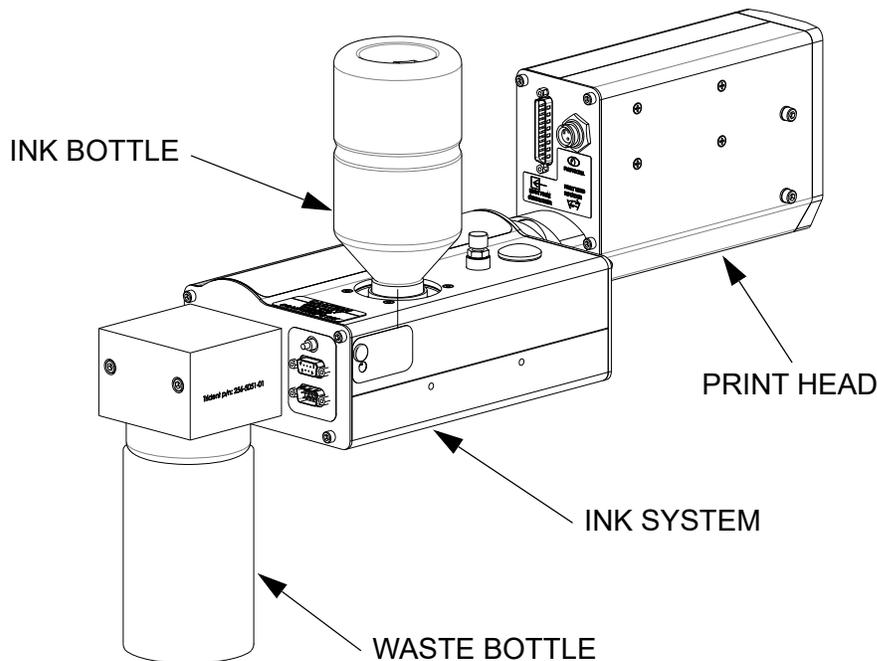
It may be necessary to vertically adjust each bracket's horizontal bar later to fine-tune message placement. This is especially true when using multiple print heads, as message lines will need to be synchronized with each other.



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: ProSeries print heads are supplied ink via capillary forces. Print heads must be mounted in a level position from front to back to prevent leakage and provide proper ink flow.

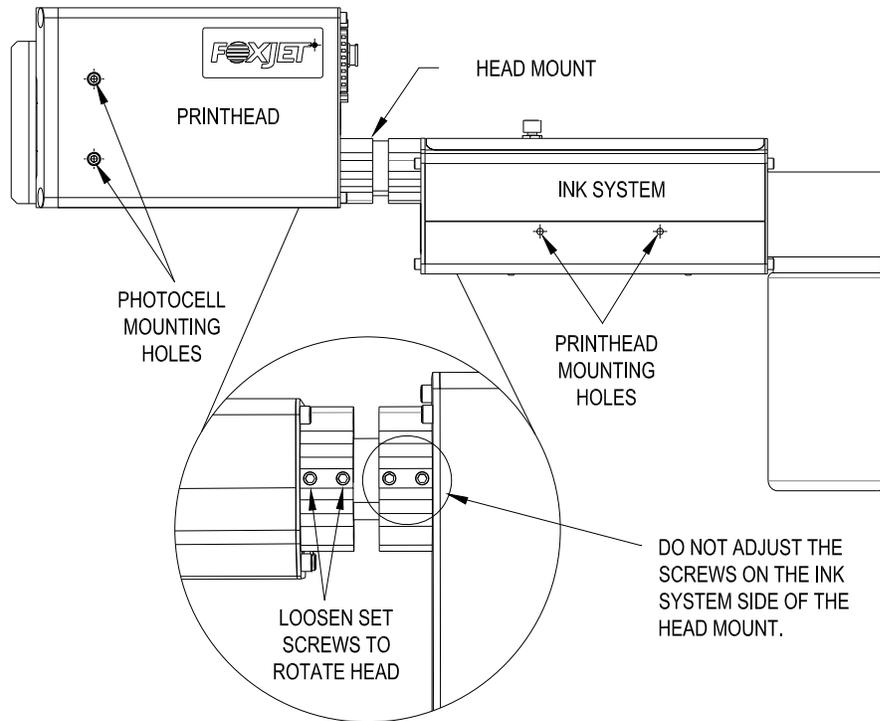


Setting Up the Print Head

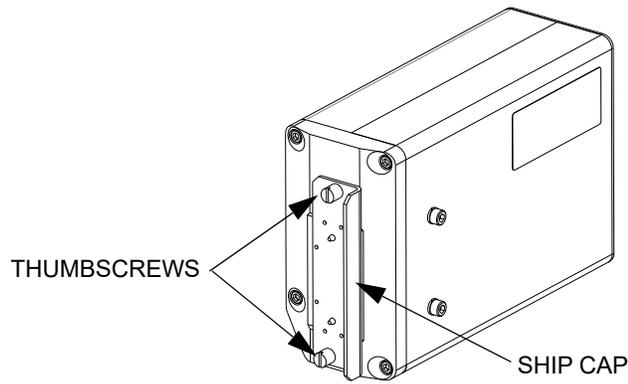
The Matrix/Classic Series print heads are mounted using the 10-32 tapped holes on the right or left side of the Ink System bottom case. The print head angle can be set between 0° and 90°. (See "FJSOP4 - Installation of FoxJet High Resolution AMS/APS Printheads" on page 97 for additional information.)

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.



Ship Caps

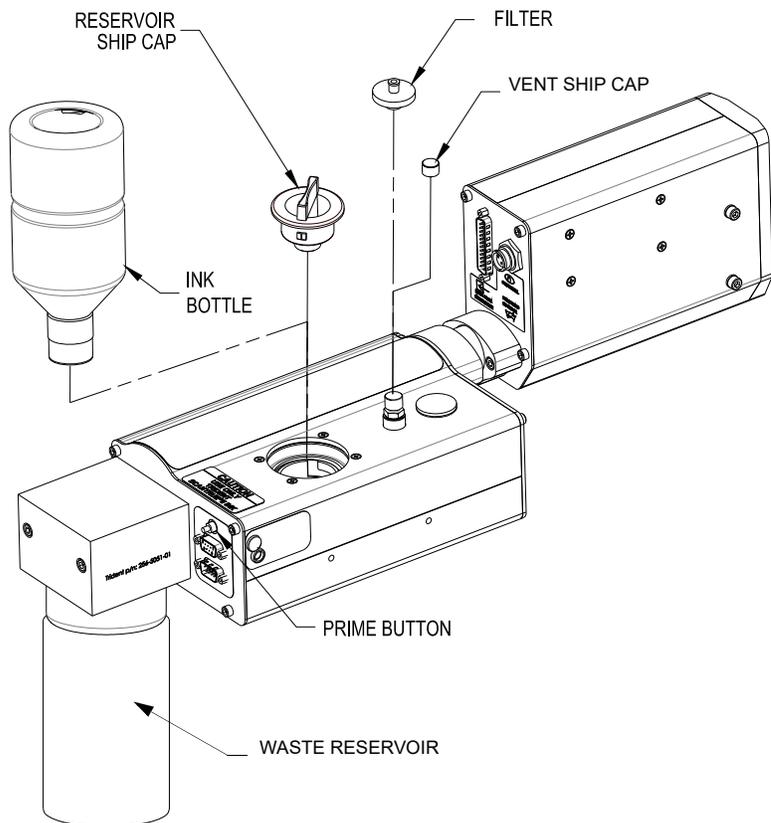


NOTE: If you place the Print Head Ship Cap on a hot print head and do not fasten it securely, the print head will weep ink until the head has cooled down.



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

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



Inks

Ink is supplied via 500 mL plastic containers. ScanTrue® II PLUS is a pigmented ink formulated for use on porous substrates.



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

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.

Do not reuse waste ink; contaminants will reduce system lifespan.

Step 3: Mounting the Photosensor and Encoder

Photosensor

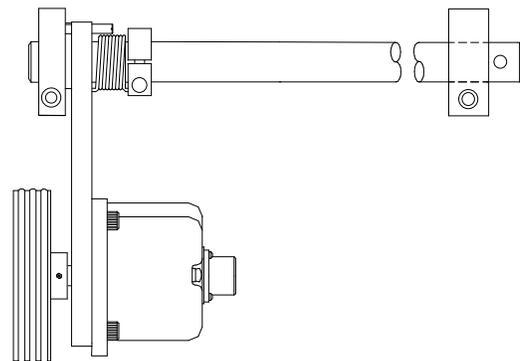
The photosensor is both a light source and a sensor. It emits light and detects the arrival of a product when the product reflects the light source back to the sensor. The sensor then sends a signal to the controller to start the printing cycle.

The product detect Photosensor should be mounted on either side of the print head so that the product passes by the sensor before the print face. Remove the plugs or set screws (3/32" hex head) in the photosensor mounting holes, then attach the Photosensor Mounting Bracket with the 10-32 x 1/2" screws provided with the bracket.

Encoder

The encoder assembly provides conveyor line speed information to the controller. It also allows automatic disabling of printing when the line stops.

The Marksman® Matrix & Elite 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.

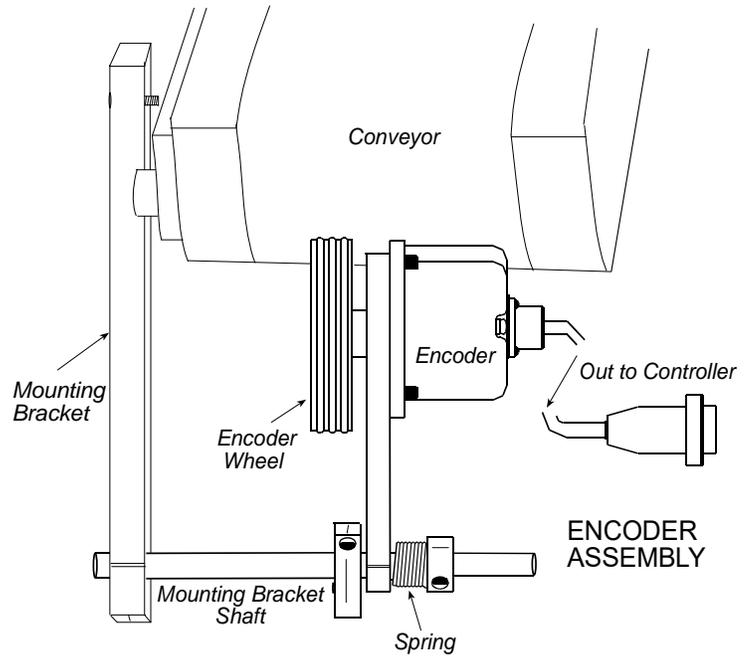


ENCODER ASSEMBLY

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

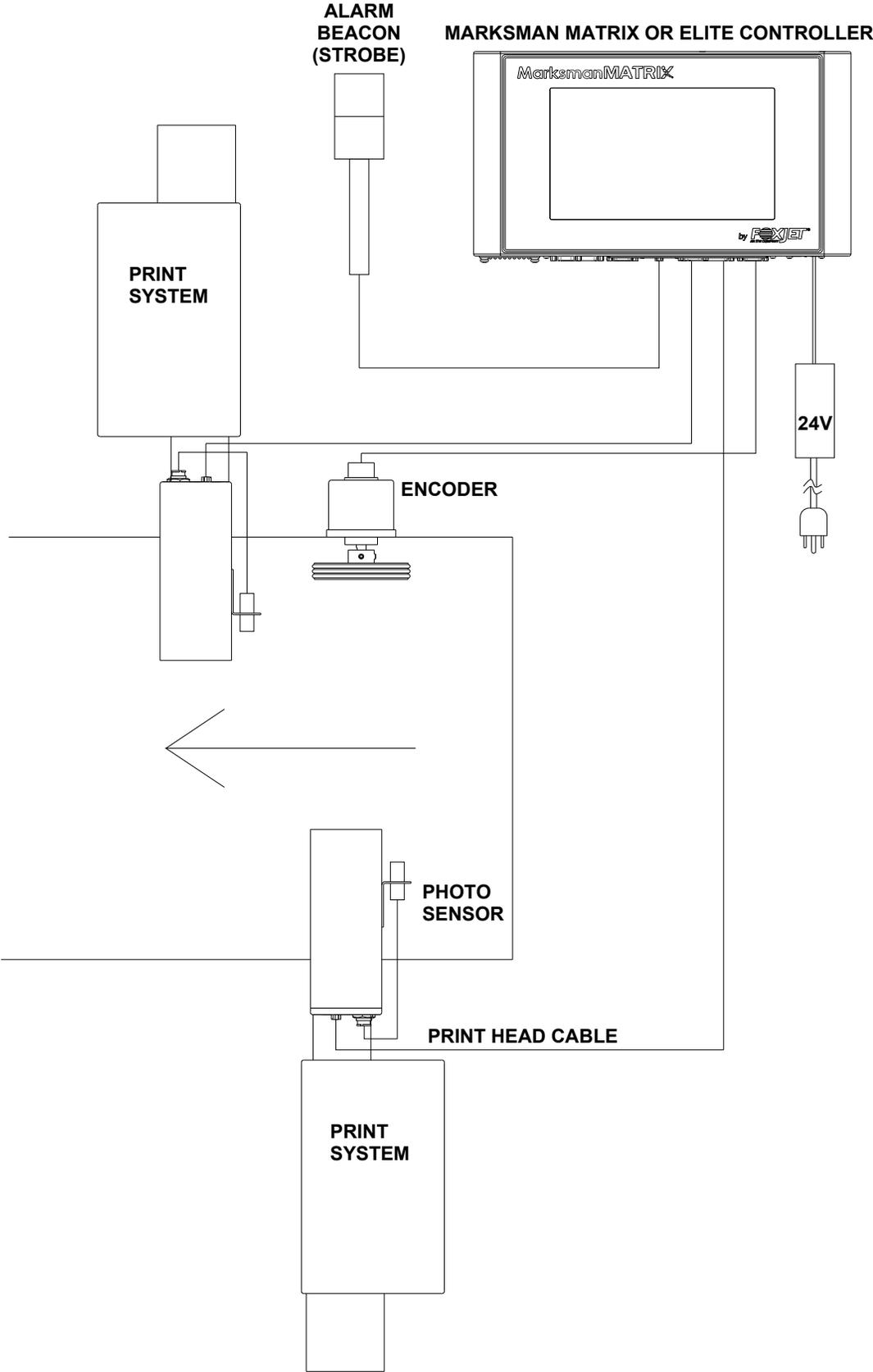
It is not necessary to install the encoder immediately adjacent to the print heads. It is more important to place it where it will accurately measure the speed of the conveyor. Install it in contact with the conveyor, or with a wheel or roller moving the same speed as the conveyor.

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



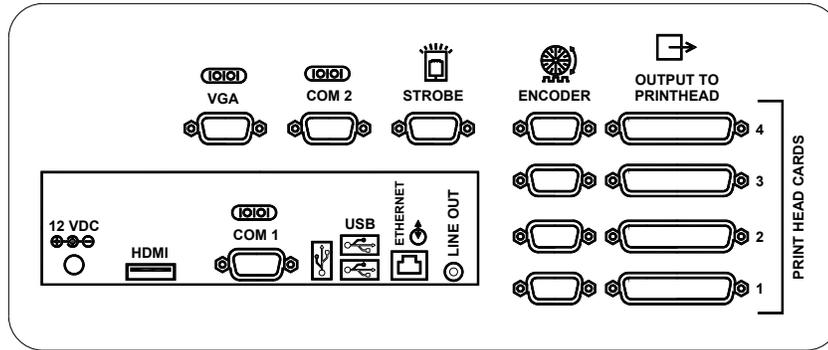
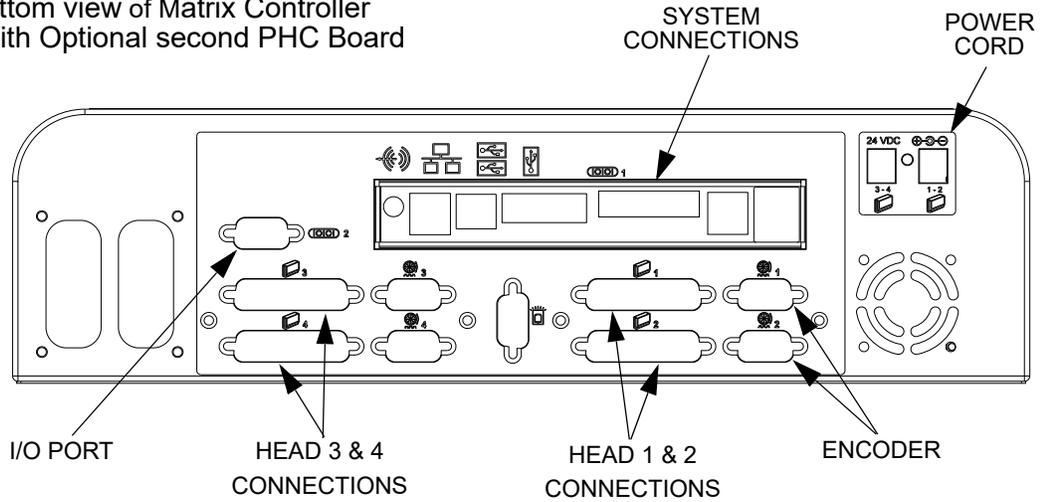
CAUTION: Do not jam the encoder wheel against the surface of the conveyor. A radial force of over 40 lbs. will reduce the life of the bearings.

Step 4: Electrical Cable Connections

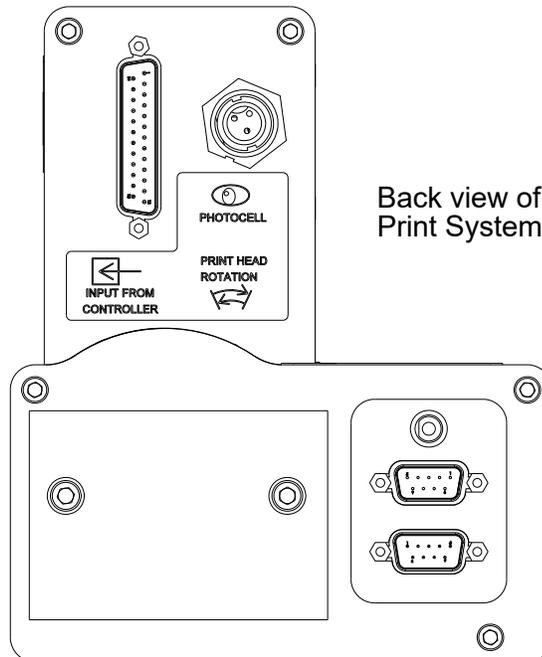


Views

Bottom view of Matrix Controller
(With Optional second PHC Board)



Bottom view of Elite Controller

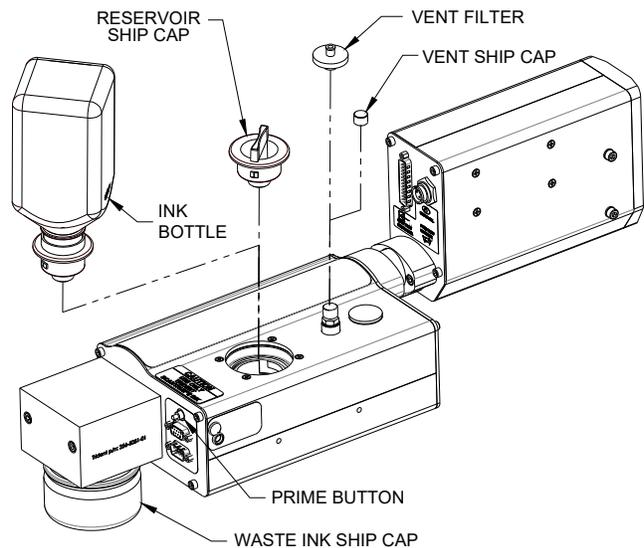
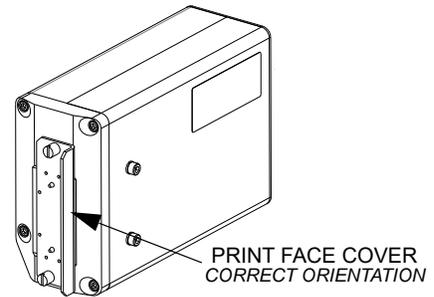


Back view of Print System

Step 5: Priming the Print Heads

Priming:

1. With the Print Face Cover installed, press and hold the Prime Button for ~10 seconds (until Ink Supply LED blinks slowly) to activate the recirculation function. Allow the system to recirculate for at least 5 minutes before pressing the Prime Button again to end the cycle.
2. Remove the Print Face Cover and store in a convenient nearby location.
3. Use a foam swab to lightly wipe the orifice plate in a vertical downward motion.
4. Prime the print head by momentarily pressing the Prime Button to manually activate the APS (Automatic Priming System) Cycle. Observe the print face for bubbles in the ink. In the case of visible bubbles, activate the APS cycle 2-3 more times or until no air is observed.
5. Verify print quality by using the Marksman Controller to print a Test Pattern (accessed via. "Configure" menu) while slowly passing a sheet of paper in front of the print face. Ensure that no gaps are present in the print and that it has printed the full available height (2" for 384 and 4" for 768).
6. If gaps are present in the print sample, follow the recommended procedure for Recirculation as necessary until the print head passes the print quality test above.
7. With all channels firing, the print head is ready to begin printing.



Recirculation

This function circulates ink through the print head to draw air out of the system. It is very effective in recovering print channels.

1. If not installed; reinstall the Print Face Cover. Ensure that ship cap is clean before reinstalling by wiping the gasket with a lint-free wipe or a foam swab.
2. Press and hold the Prime Button until the Ink Supply LED blinks slowly (~10 seconds) to activate the recirculation function. For the first 5 seconds the print head will run through the Manual Prime cycle, continue holding the button to activate the Recirculation mode. The Ink Supply LED will blink slowly while recirculation is active. Do not remove the Print Face Cover in this mode.
3. Allow the recirculation function to run for the desired length of time. Five minutes is the recommended interval.
4. Press the Prime Button to end the recirculation function. If the button is not pressed, recirculation will shut off automatically after 15 minutes.

APS Cycle

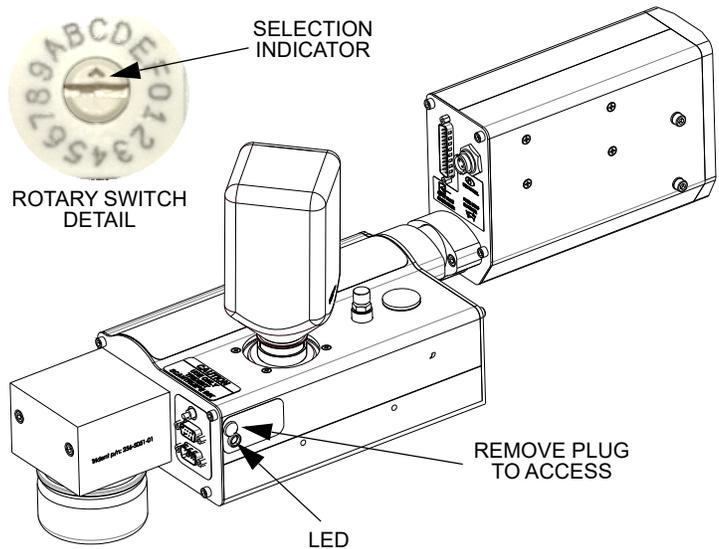
The APS Cycle is a means of maintaining print quality. The APS system does this by using a priming pump to force ink out of the channels and a vacuum pump and Waste Bottle to collect the ink waste. The APS Cycle can be manually started by momentarily pressing the prime button.

The APS Cycle will automatically activate at a designated time interval, which can be adjusted using the rotary switch on the side of the Ink System case near the Prime Button. The table below defines the settings available. Setting the rotary switch to 0 will disable both automatic and manual APS cycles.

	No APS	UJ II Print Heads									ProSeries 384/768 (e)					
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

Manual Prime

A manual prime cycle is similar to an APS cycle, except that it is a bit more powerful and uses a bit more ink. The cycle can be started by pressing and holding the Prime Button on the rear of the print head housing for longer than 1 second. The cycle will run while the Prime Button is held, up to 5 seconds total. **Make sure to release the button** before 10 seconds have passed, to avoid entering the Recirculation mode without the Print Face Cover attached.



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



NOTE: Adjustment of Print Head angle should be done according to the procedure outlined in "Setting Up the Print Head" on page 6.

Auxiliary Photosensor Input



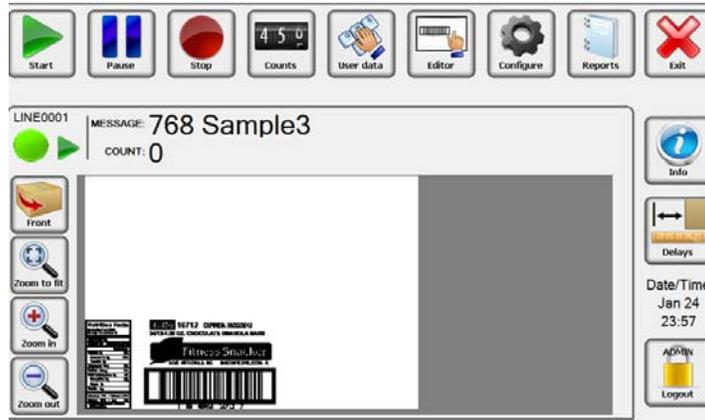
NOTE: The APS Control Cable and Auxiliary Photosensor cannot be used together.

An Auxiliary Photosensor input is available to insure a print cycle is not missed during the automatic priming sequence. Connecting the Auxiliary Photosensor will delay 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 photosensor. Multiple heads can share the Auxiliary Photosensor by using the Photosensor "Y" Cable. To change the default setting, perform the following steps:

1. Ensure that the rotary switch is not in the "0" position.
2. Place a box in front of the photosensor.
3. While the photosensor 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 photosensor.
8. Set the rotary switch back to the desired hour setting.

Section 5: Getting Started

The Marksman Matrix and Elite controllers are standalone units capable of operating up to four print heads, with the addition of an optional controller card. The software has an ICON user interface. The main difference between the two controllers is the size and the resolution of the displays. The resolutions are 1024 x 1280 for the Elite and 1024 x 600 for the Matrix. The extra room on the Elite display allows for the software keyboard to be accessible at all times. To access the keyboard on the Matrix, simply select a field that requires keyboard input and it will appear.



Matrix Keyboard

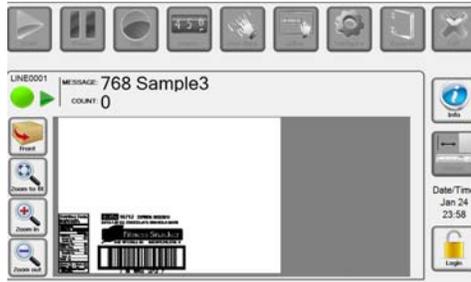


To Windows

Special Function

Change keyboard language.

Login



Before Login, Matrix



Before Login, Elite



Select the Login ICON. The following screen will appear for the Matrix. Enter a username then tab to the next field, enter a password then select the Enter button or the green check mark. Once logged in the users account will display on the lock.

Note: User names and passwords are not case sensitive.

Default Username and Password:

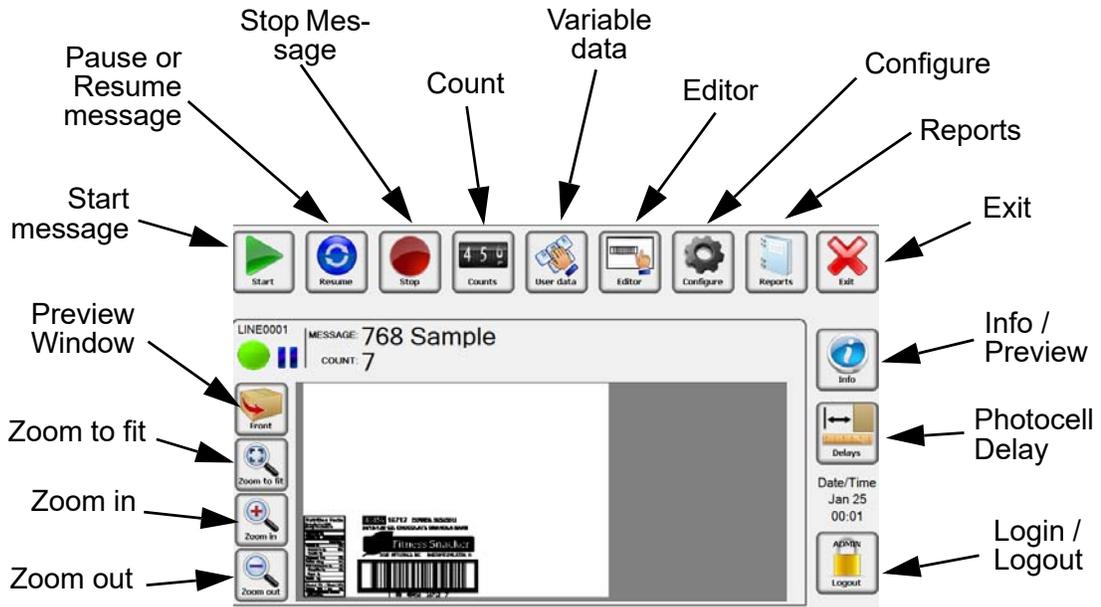
Username: Admin
Password: FOXJET
(not case sensitive)



Logout



Each user should log out of the Marksman® Elite application after use to enforce the security restrictions. The user may log out by selecting the closed padlock icon from the main display. 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, Preview options and Info.

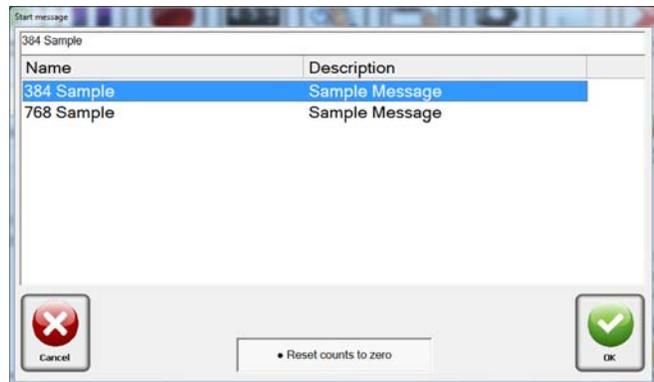


Start Message:

The start message is used to ready the system to print a label or image that was created with the BoxWriter Editor.

Select the desired message from the list, or enter the message name, and press the OK button.

Select the "Reset counts to zero" radio button to reset counts at the start of the message; unselect it to allow the count value to accumulate.



Stop Message

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

The Stop message icon may be selected from the tool bar to stop the task on the selected production line.



Idle Message

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



Resume Message

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



Exit

This will close down the all printing operation and exit out of BoxWriter software. Only operators with proper security rights can Exit the software.



Counts

Count is the current number of the box in the pallet series. It is always listed as the "last printed" box. To change the Count value, enter the current box count value. Enter a **0** to print a count of 1 on the next box.

Name	Count
Count	001583

Box Count: 1582

Pallet Count: 0

Units: 0

Maximum: 0

Buttons: Cancel, OK



User Data

User data or User elements may only be changed if the message is loaded. The message must contain user elements and be "Running" or "Idle" in order to modify the user data.

Select the **User data** ICON. Edit the data in the lower edit box and press **OK** to save changes. For multiple elements, make all data changes before pressing **OK** to save changes. Press **Cancel** to exit without saving changes.

Head	Prompt	Data
Head 1	Enter u...	Batch ...

Enter user data:

Batch code: [input field]

Buttons: Cancel, OK

Info Window / Preview Window



Select the icon to toggle between Info and Preview:

LINE	HEAD	COUNT	SPEED	STATE	STATUS	PRINT
LINE0001	Head 1	000,140	60.00 fpm	▶	🌿	🟢
LINE0001	Head 2	000,141	60.00 fpm	▶	🌿	🟢

DATA1	Default Serial Data
DATA2	
PORT	
DATA	

Clipboard

Clear

Version



Print Head Ink level or Ink Collection bottle
Green = Good
Yellow = Low
Red = Out



Print Head High Voltage
Green = Good
Red = Low

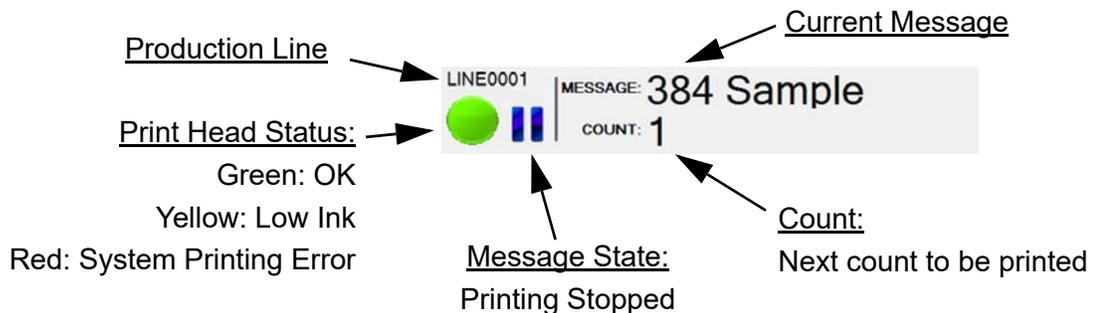
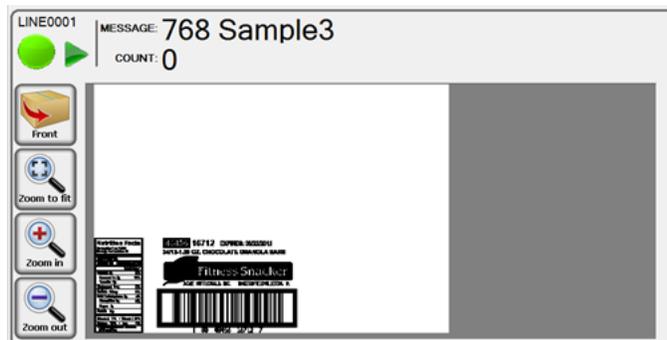


Print Head Temperature
Green = Good
Red = Low

NOTE: The system will not print if the controller is reporting a Low Voltage Error, Out of Ink condition or Low Temperature condition. If a strobe is connected to the system, this is represented by a flashing red light.



Select the icon to toggle between Info and Preview:





Configure:

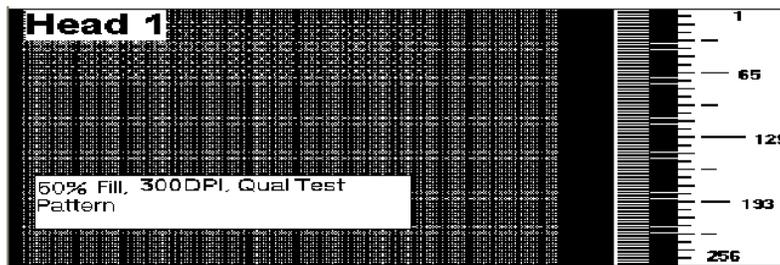
The Configure icon allows access to other options: Print Test Pattern, Database Start, Print Heads, Production Line, System, Security, Import, Export, and Help.



Configure, Print Test Pattern

This function is designed to exercise every channel of the print head to verify all are printing properly.

When the user clicks the “Test Pattern” button, a test image is generated. Each head on the currently selected line will print this pattern (along with the print head’s name). In the example below, the Test Pattern is from Head 1.

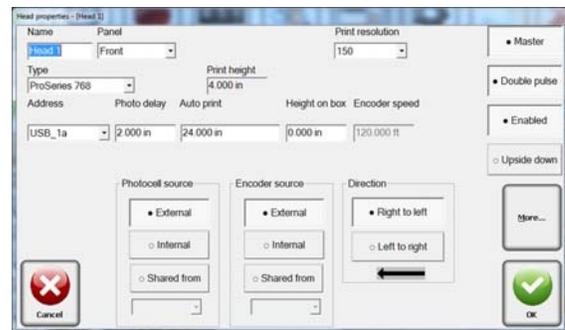


Configure, Database Start

Set a message based on data that is located in a database. The database must be setup before the option is available. Refer to “Appendix D: Database Start” on page 86.

Configure, Print Heads

Select Configure, then select Print Heads from the menu. Select a panel and click on a head. A head may be added or deleted. To edit a head, select it and click Edit; or double click it.



Name: The head’s user-defined name.

Panel: The panel which the head will print on.

Print Resolution: 150, 200 and 300 dots per inch (dpi).

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

Address: Each card is assigned two heads: 1a and 1b, or 2a and 2b. The cards have jumpers to determine which card it is. The bottom connector of the card is always the designated as "a".

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

Auto print inches: If internal photosensor source is selected, this number indicates the distance from start to start of a repeating print. For example, if it is set to 36, the internal photosensor will fire once for every 36 inches of travel of the conveyor, as indicated by the encoder. An external photosensor must be connected and tripped for this to work.

Height on box: The vertical distance in inches measured from the bottom of the product or conveyor to the bottom of print.

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

Photosensor source: Indicates whether the photosensor is external or internal. The photosensor signal from another head may also be used (shared).

Encoder source: Indicates whether the encoder is external or internal. The encoder signal from another head may also be used (shared).

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

Master: Each line must have a master head. The master print head receives/distributes the signals for the photosensor and encoder to the remaining heads. The master head is also used to determine count values.

Double pulse: Creates a darker print generally needed for the ProSeries 768e and 384e.

Enable: Activates the print control card and ability to monitor errors.

Upside Down: Used to print the entire message upside down.

More - Linked to: Ties the information to be printed to additional heads. If the information is the same on multiple sides of the box, link the heads together and the image is automatically placed on the other head.

Configure, Production Line

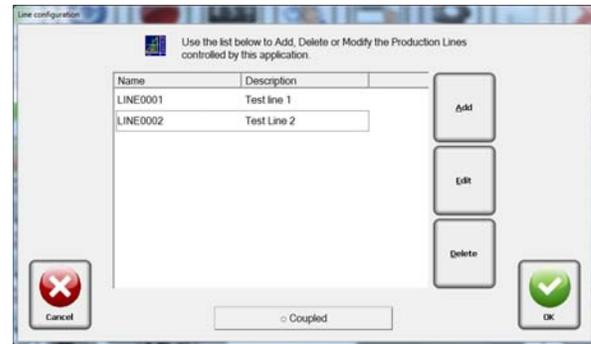
The production line configuration allows for grouping of settings that relate to a particular setup. Select **Configure**, then **Production Line** form the menu. To edit a line, select it and click **Edit**; or double click the line.

Add: The Add button allows for the addition of another production line, for a maximum of two production lines.

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

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

Coupled: If this field is checked, starting a message on one line will also start in on the other. The same is true for Stop, Idle and Resume. Note that you must have a two lines configured to use this feature.



Fixed Scanner

This group defines the parameters for a fixed scanner that may be connected to the Controller, The data is stored under the Scan Report (see “Reports” on page 28).

No Read String: The No Read String must match the No Read string that is transmitted by a fixed scanner. The printing will be stopped upon reaching the maximum value.

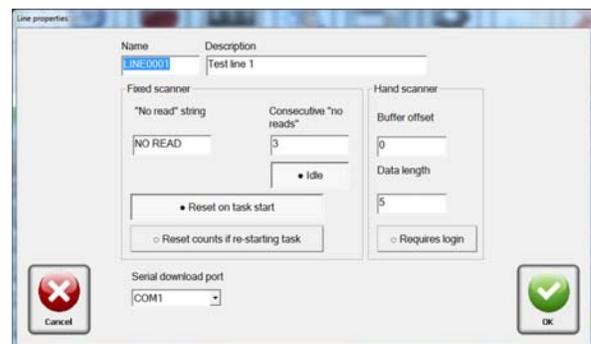
Consecutive No Reads: The consecutive No Reads field is used to preform a quality check on barcodes that are printed, This value determines the maximum number of consecutive No Reads that may be transmitted by a fixed scanner. The printing will be stopped upon reaching the maximum value.

Serial Download Port: Please 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.

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 message 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.



Configure, System

General Setting– Windows Ports

Used to configure the system COM ports, that may be used for variable data or stating a message.

Serial Port: Select the appropriate button to edit the setup parameters for a serial port on the Matrix or Elite.

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 the right.

Baud: 9600, 19200, 38400, 57600 or 115200.

Parity: 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. It may be set to 1, 1.5 or 2.

Device Type:

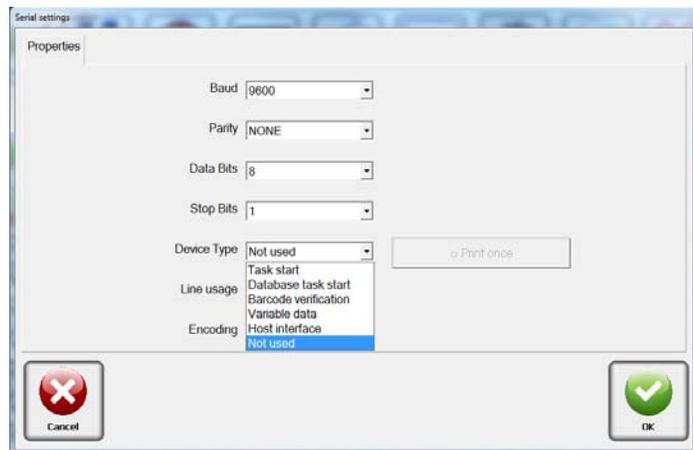
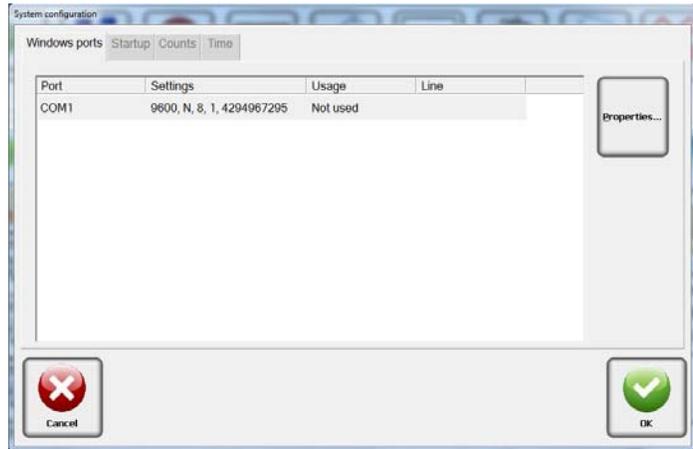
Task Start- Serial device used to select/start a message, generally a hand scanner.

Database task start- Serial device used to search database for message start.

Barcode Verification- Fixed scanner used to read each barcode after it is printed.

Variable Data- Data to be printed imported through the serial port.

Host interface- Remote control of the Controller through the serial port.



General Setting - Startup

To restart the message that was running if power is lost or the system was shut down, check the "Automatically restart last task" box. (This box is checked by default).

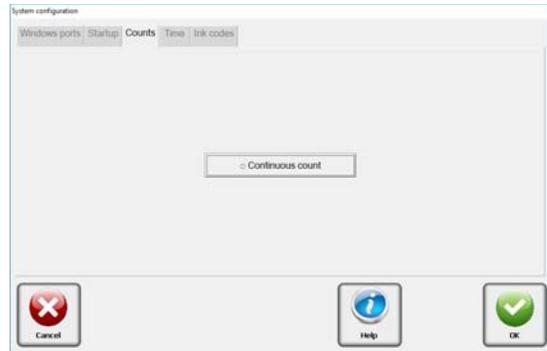
Remember user data: The data will be retained until new data is entered, even if the software is reset.

Remember serial data: The data will be retained until new data is sent, even if the software is reset.



General Setting - Counts

Continuous Count: Select this feature to cause the Count on the main screen to never reset to zero at the start of a new message.

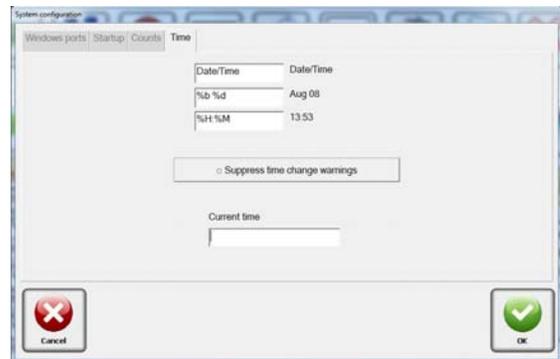


General Setting - Time:

The main screen Time and Date field format is defined in this window. There are three user controlled date and time fields that can be formatted.

Suppress time change warnings:
Used to disable software warnings of any Windows time changes.

Current time: Windows system time.



General Setting - Ink Codes

(This screen is for future enhancement.)



Configure, Security:

Users:

The security feature of the Marksman Matrix & Elite Series allows the system administrator to configure users and access rights.

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

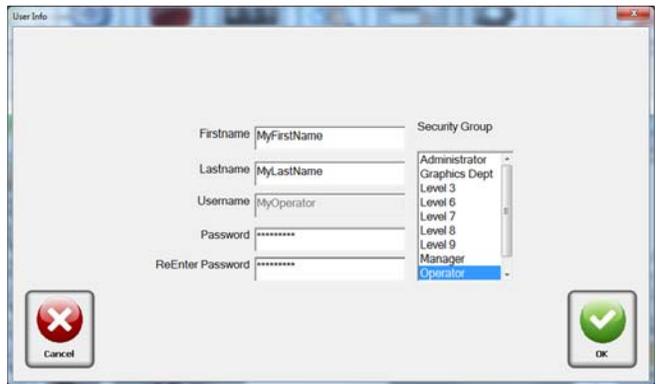
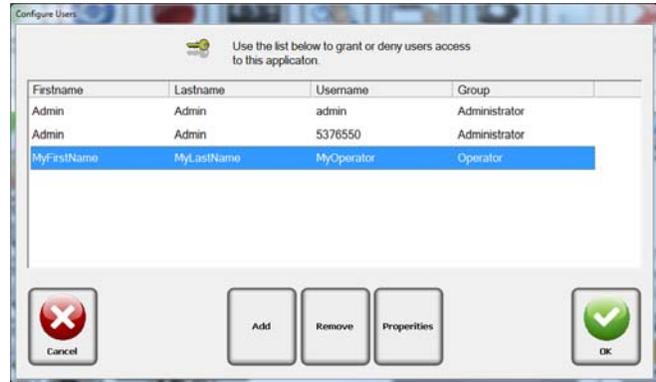
Remove: Select the Remove button to delete a user account.

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 the user's first name in this edit box.



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 OK to accept changes and close the screen.

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

Security Group/Option Access Table	Operator	Manager	Level 3	Graphics Dept.	Supervisor	Level 6	Level 7	Level 8	Level 9	Administrator
Output Table										X
Configure Print Head Settings		X	X		X	X				X
Start Message	X		X							X
Stop Message	X		X	X	X					X
Place System in Test Mode										X
Run Editor										X
Configure Production Lines			X	X		X				X
Configure Users										X
Configure Security Options										X
View/Clear Scanner Report										X
View/Clear Scanner Report										X
Translate the software										X
Configure general Windows										X
Exit Application										X
Configure task start database										X
Configure serial data format										X
Configure the strobe										X
Import										X
Export										X

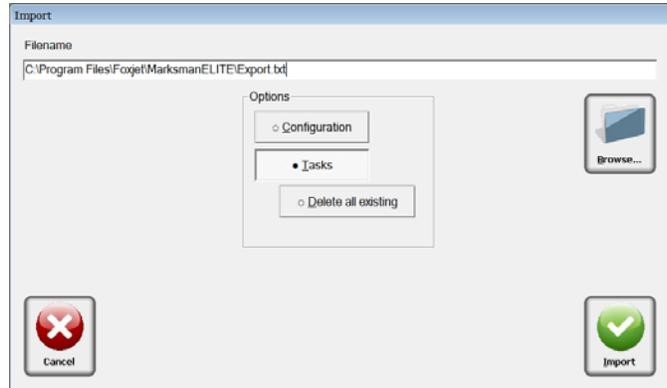
Configure, Import:

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 wants to back-up, click **Yes** on the Export option.



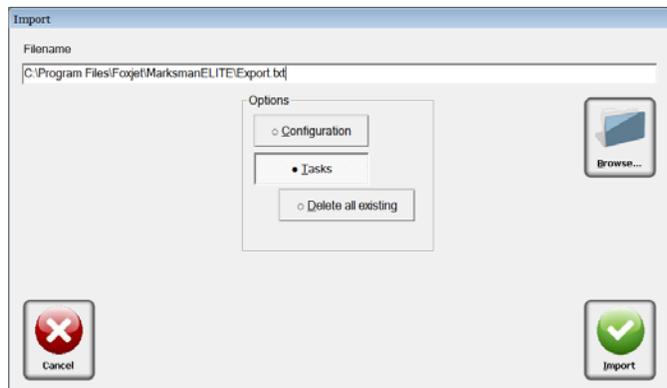
Configure, Export:

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.



Configure, Help:

About

Components: A list of the .dll that are installed and the version number.

Cmd line args: A list of the software options that are turned on.

Firmware: A list of the Gate Array version number of the Print Head controller cards.

Translate

Select the desired language to be converted to. When the files have been translated, the application will be re-started in the desired language.



Reports

Scan reports

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© controller.

Date: Date is the date the scan event occurred.

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

Message: Message is the name of the message 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 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.

Enabled: Allows for the collection of data.

Auto Export at Task Start: Exports an entry to text file defined by export path.

Print reports

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 Elite. Click on **Reports** then select **Printer Report** from the menu.

Time: Date and time that the action occurred.

Action: The event such as Start or Stop Message.

User: The User who was logged in at the time the action occurred.

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

Line: The production line that the information is for.

Message: The name of the message 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.

Auto Export at Task Start: Exports an entry to text file defined by export path.

Enabled: Allows for the collection of data.

Time	Action	User	Line	Message ...	Counts
01/28/14 19:3...	Stop task	ROOT	LINE0001	768 Sample	13
01/28/14 19:3...	Stop task	ROOT	LINE0001	768 Sample	13
01/28/14 19:3...	Stop task	ROOT	LINE0001	768 Sample	13
01/28/14 19:3...	Start task	ROOT	LINE0001	768 Sample	13
01/28/14 19:3...	Stop task	ROOT	LINE0001	768 Sample	30
01/28/14 19:3...	Stop task	ROOT	LINE0001	768 Sample	30
01/28/14 19:3...	Stop task	ROOT	LINE0001	768 Sample	30
01/28/14 19:3...	Start task	ROOT	LINE0001	768 Sampl...	0

Enabled
 Auto export at task start



Delays

This feature allows the operator to make changes to where the print starts, or change the photosensor delay. These changes are not permanent and only last until another message is selected. This may be useful do to variations in the location of pre-printed information on the box.

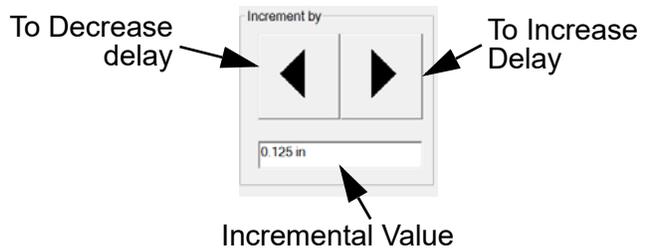


NOTE: Changes made using the Delay ICON are only temporary or until another message is started. Permanent changes to the photosensor delays must be done through the Configuration.

To make changes, Select the desired head, use the arrow buttons to decrease or increase the delay value.

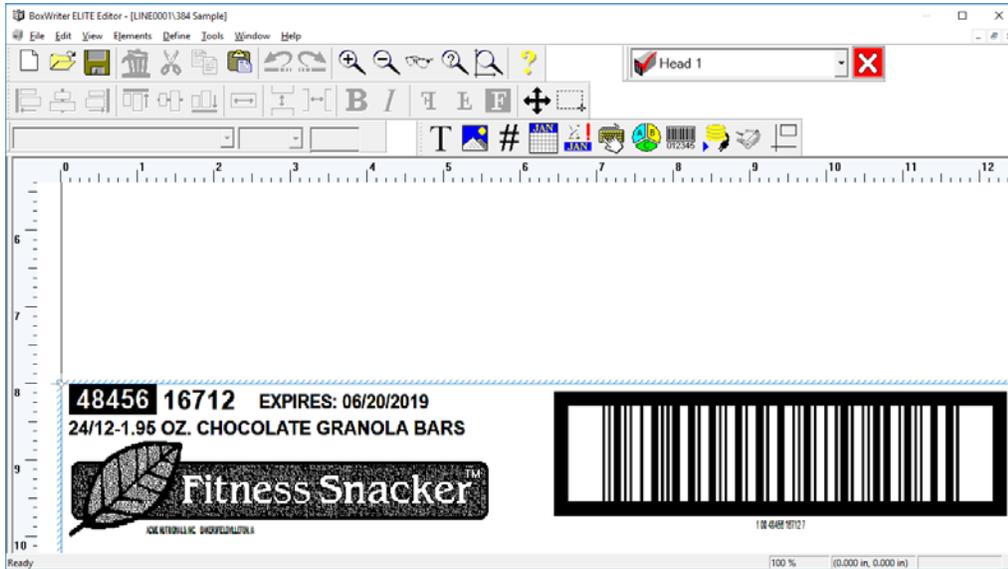
Use the **Apply** button to implement the changes. The incremental value can be changed by selecting the field.

Select **OK** when complete.



Section 6: BoxWriter© Matrix & Elite Editor

Select the Editor icon to launch the Marksman BoxWriter Editor application. The user must have the required rights to use this feature.



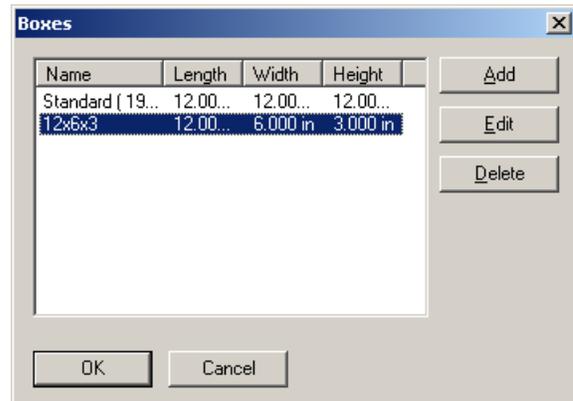
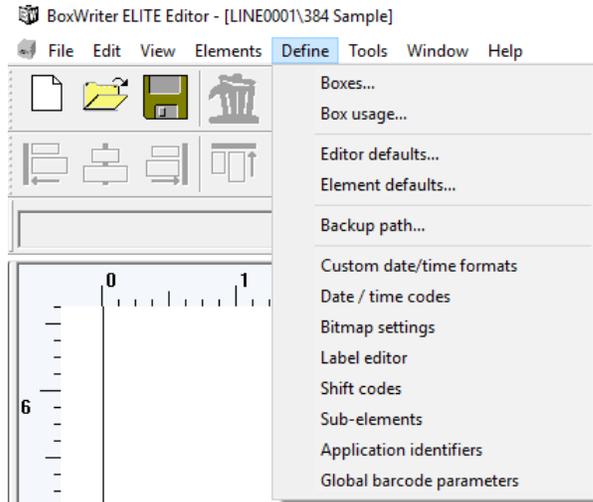
Define

Boxes

To define boxes, select **Define > Boxes** from the top of the Editor screen.

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

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



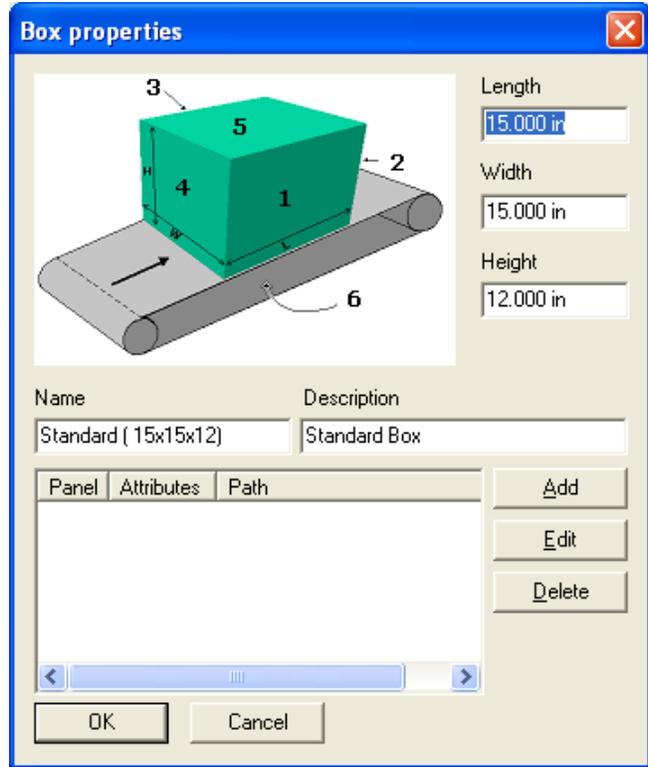
To delete an existing box, select it and click **Delete**. Multiple boxes can be selected by using the shift and/or control keys. Boxes that are currently in use in a task cannot be deleted. The task's box property must be changed before the box can be deleted here.

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.

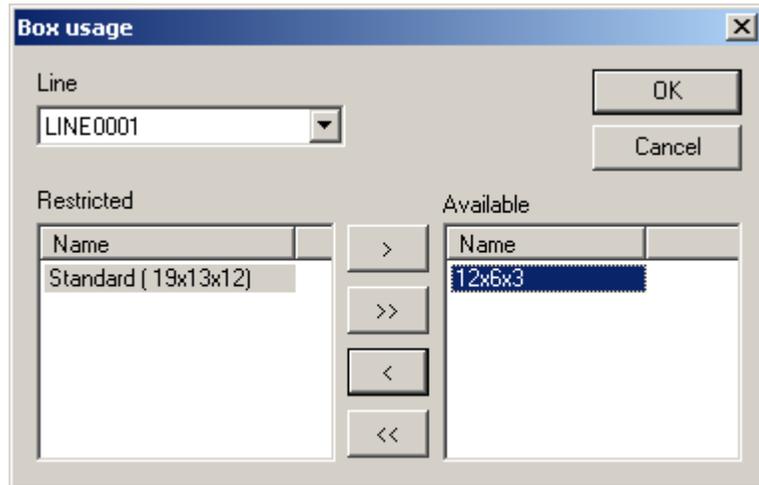
Delete: Will remove the file from the panel.



Box Usage

To define box usage, select **Define > 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 it, 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.

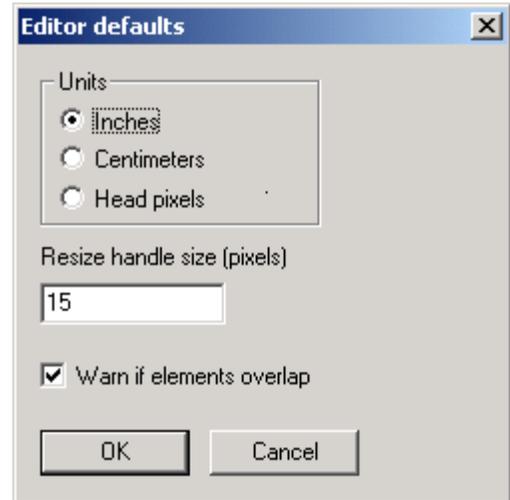


Editor Defaults

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

This dialog controls the editor's display units.

The "Resize handle size" field is used by re-sizable elements (such as a Bitmap element). Valid values range from 5 to 15. Larger values make it easier to perform a resize operation on a touch screen.



In the example at right, the eight squares around the perimeter are the resize handles.

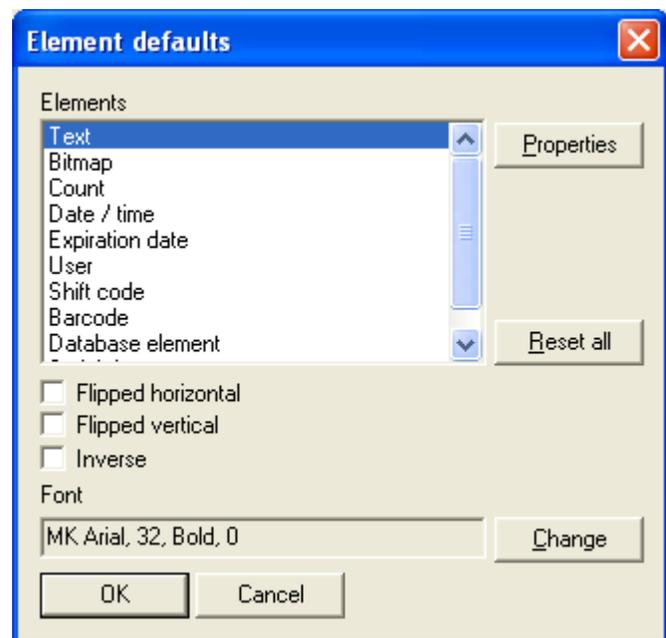


Checking the "Warn if elements overlap" box will warn the user when element fields overlap in a message.

Element Defaults

To define element defaults, select **Define > 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 *Elements* section of this manual.)

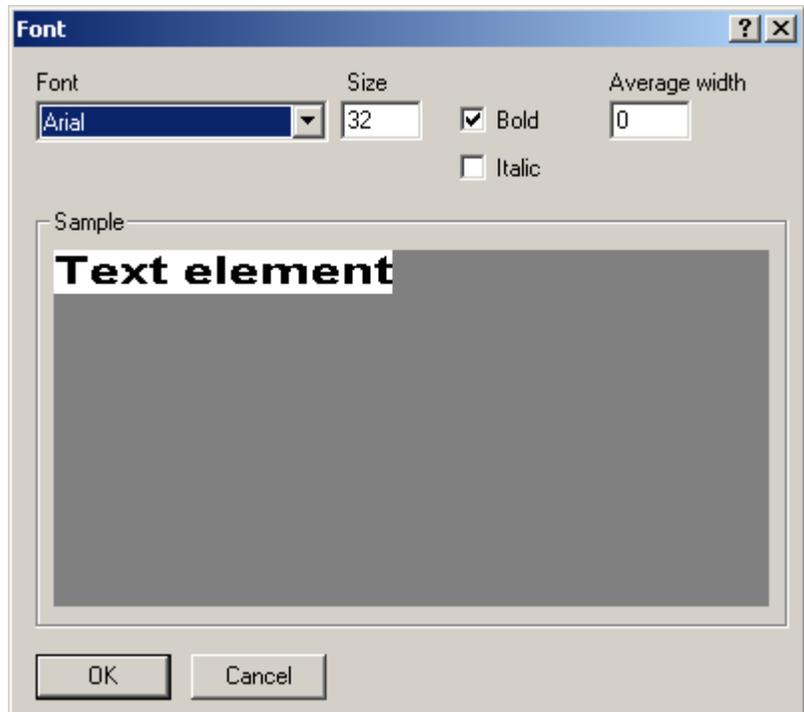


To change the font, click the **Change** button. The dialog at right is used to change the default font parameters.

The Font drop-down box will display a list of all TrueType fonts installed on the system.

The Size field refers to the height of the font in pixels.

Average width defines the average character width (in pixels). A value of 0 means that the system will use the font's default widths.



Backup Path

A backup of the Marksman Matrix & Elite database is stored in a backup location every time the application is closed. The path directs where the file is saved.

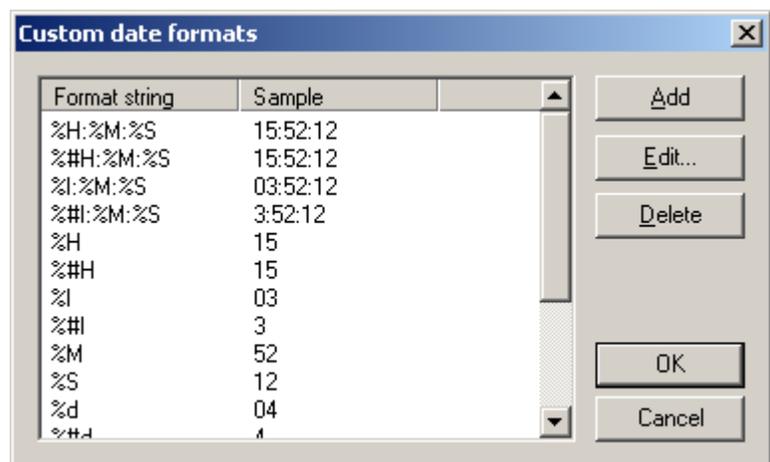
Custom Date/Time Formats

To define date/time settings, select **Define > Custom date/time formats**.

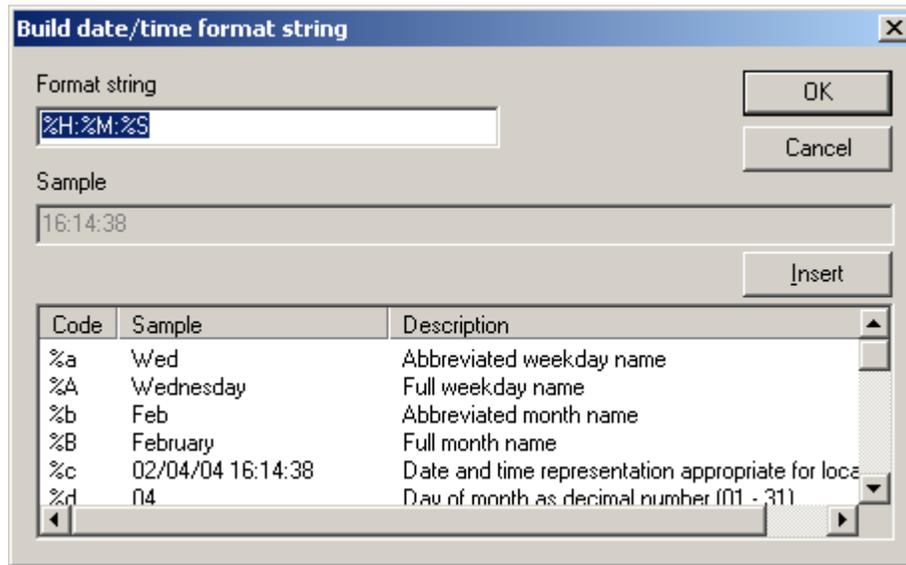
The date/time settings shown here are used by Date/time and Expiration date elements.

To create a new custom format, click **Add**.

To delete an existing custom format, select it and click **Delete**. Multiple codes can be selected by using the shift and/or control keys.



To edit an existing custom code, select it and click **Edit**, or double-click it. The Build date/time format dialog is shown below.



Format string: Contains a user-defined string consisting of format specifiers.

Sample: Shows a sample of the current Format string.

Valid format specifiers are listed at the bottom of the dialog. To insert them in the current string, select them and click **Insert** (or double-click).

Date/Time Codes

Select **Configure, System**, then **Date/Time Codes** from the menu.

Line: Line indicates the production line selected.

Click on the folder 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.

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

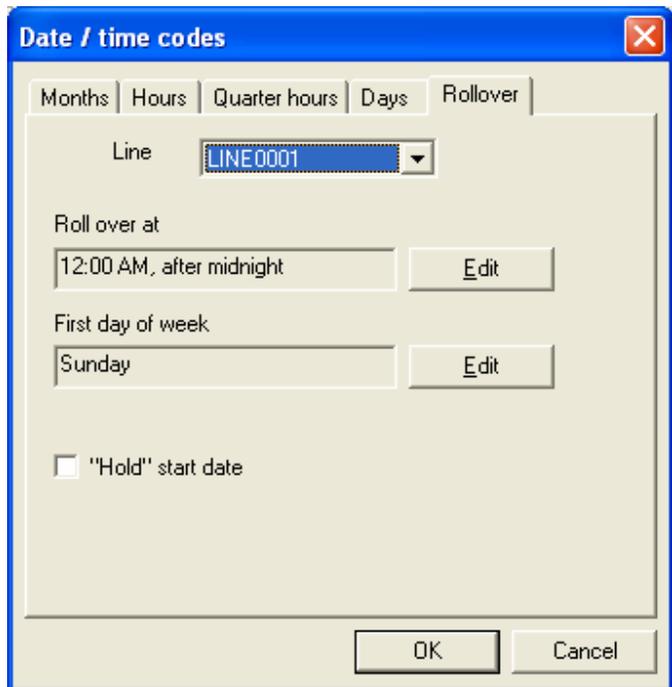
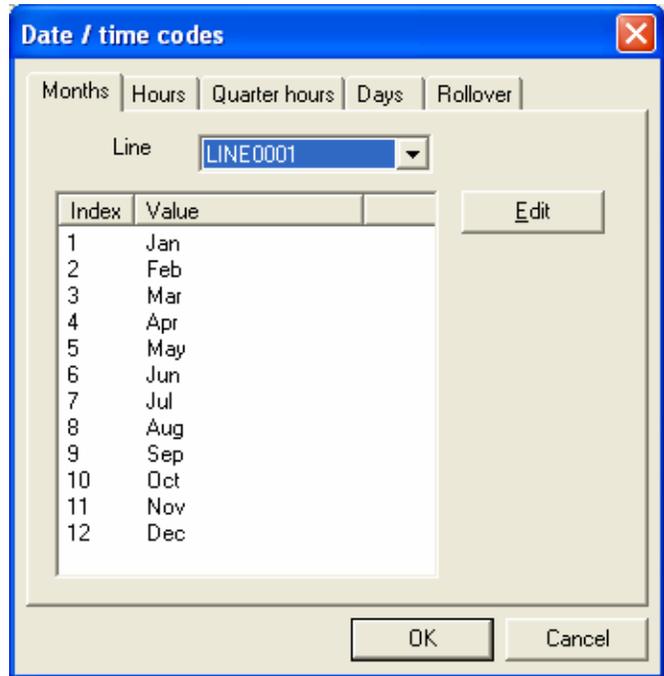
Hours: The Hours table stores the twenty-four codes for the hours of the day. The codes may be customized for special coding.

Quarter Hours: The Quarter Hours' table stores codes for 15 minute intervals.

Days: The day table holds the value to be used for the appropriate day.

Rollover: The time at which the expiration and date codes will change to a new value. The default rollover value is midnight.

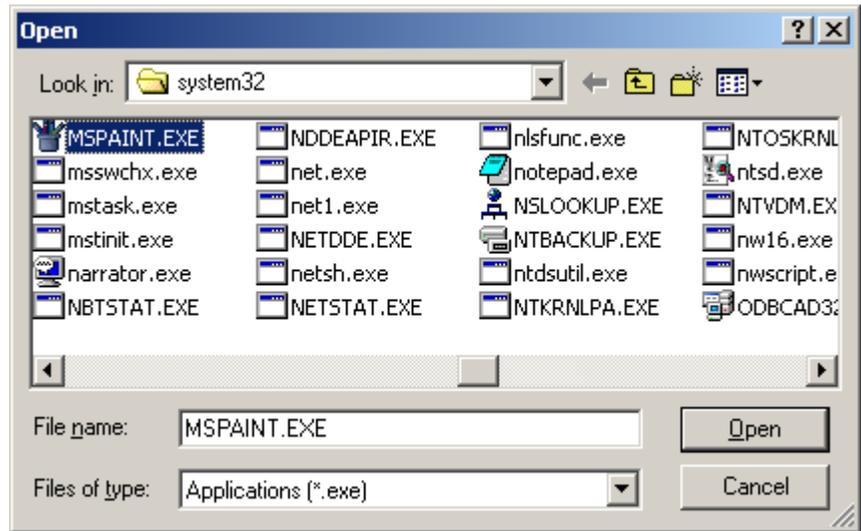
"Hold": Holds the Date or Expiration Date until the Roll over time.



Bitmap Settings

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

The "Bitmap editor" field defines the program used to edit bitmaps. By default, it is Microsoft® Paint. To change it, browse and select the program to be used.



Label Editor

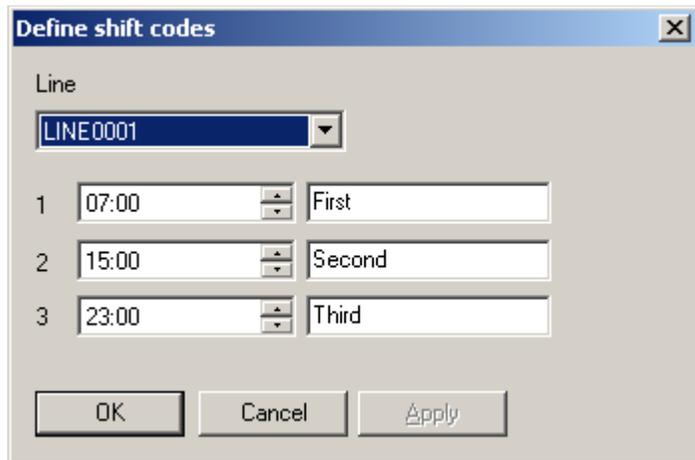
Used to configure software when the Marksman Matrix or Elite is used with a Label Applicator.

Shift Codes

To define shift codes, select **Define > Shift codes**. Shift codes are used by Shift elements.

The shift code's length must be from 1 to 15 characters. The code's times must be in order from least to greatest (i.e., code 1 cannot be later than code 2 or 3).

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



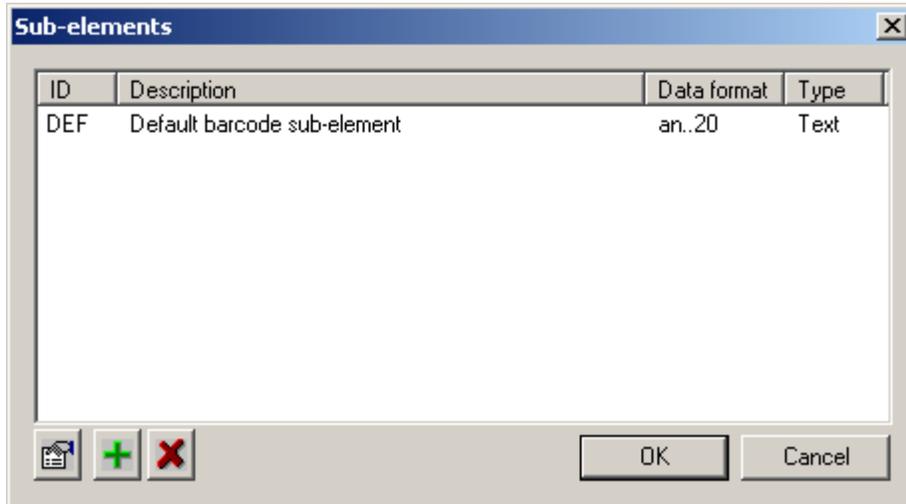
Select the appropriate production line. Enter the shift start times and any user-defined codes. The shift start times must be entered in 24-hour format. The shift code may contain a maximum of 15 alphanumeric characters.

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.

Sub-Elements

To define fonts, select **Define > Sub-elements**.

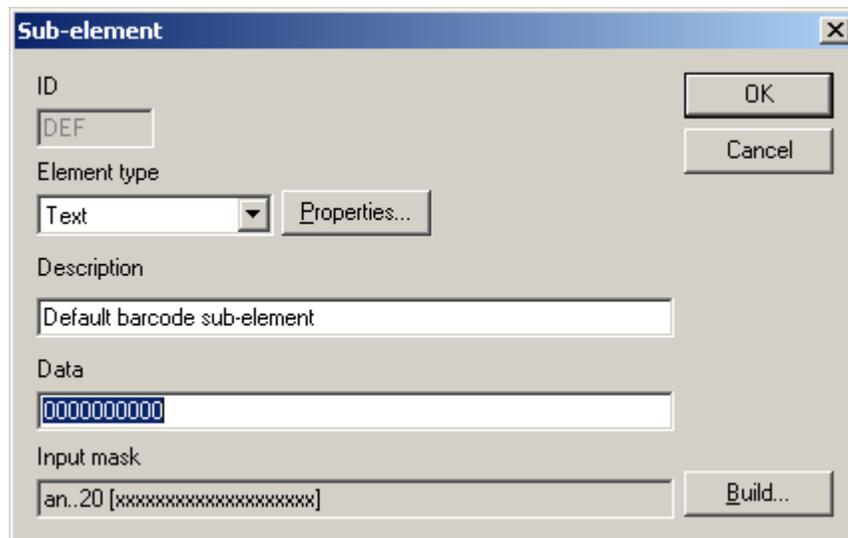
Sub-elements can be used by certain barcodes (see *“Global Barcode Parameters”* on page 40 for usage). The Sub-elements dialog is shown below.



To create a new sub-element, click the "+" button.

To delete an existing sub-element, select it and click the "X" button.

To edit an existing sub-element, select it and click the **Properties** button (the bottom, left-most button). The Sub-element properties dialog is shown below.



ID: Identifies the sub-element.

The "Element type" field defines the type of element. The following types are supported by sub-elements:

- Text
- Count
- Date / time
- Expiration date
- Shift
- User
- Serial data

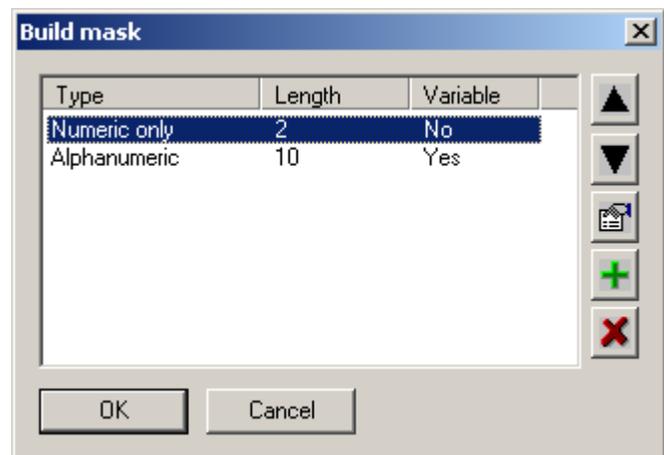
To change the element's default values, click the **Properties** button. See *"Elements"* on page 50 for examples of property dialogs for element types.

Description: Used for a long-hand description of the sub-element.

Data: Contains the default data for the sub-element. Note that the Data must satisfy the Input mask.

The Input mask defines what kind of data the sub-element can accept. To change it, click the **Build** button. The Build mask dialog is shown at right.

In this example, the mask is set up for data consisting of two digits and up to 10 alpha-numeric characters.

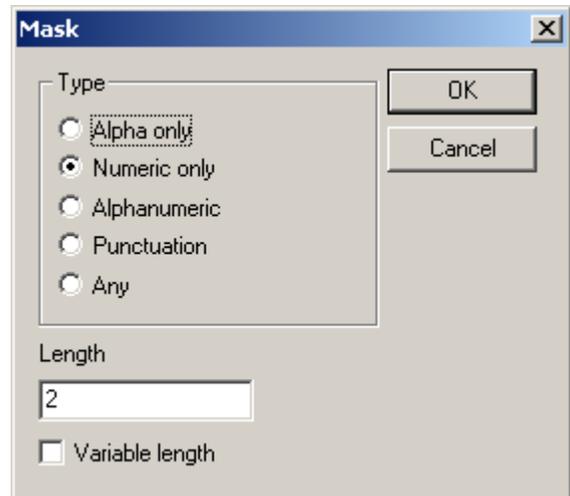


The buttons along the right side of the dialog are as follows, from top to bottom:

- Move up - moves the selected mask up.
- Move down - moves the selected mask down.
- Properties - displays the mask properties for editing.
- Add - creates a new mask.
- Delete - deletes the selected mask.

The following is an example of the Mask properties dialog:

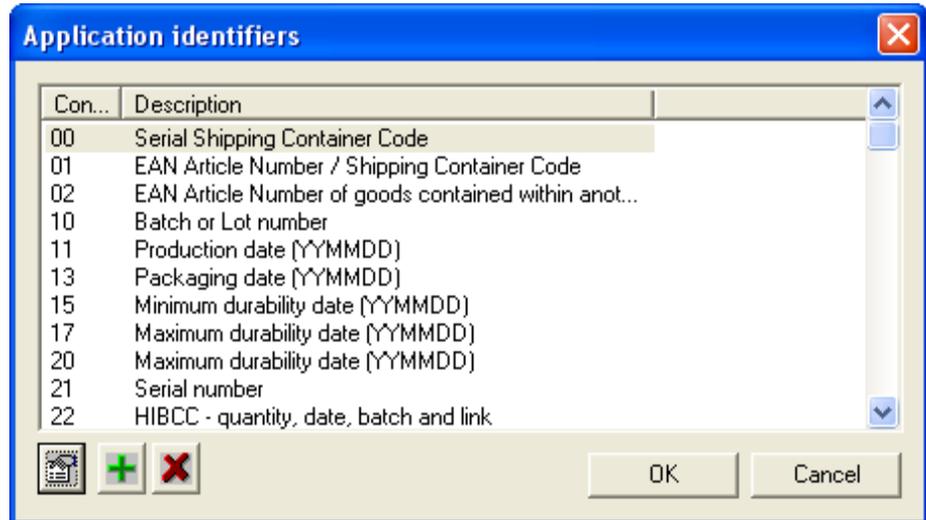
- Alpha allows uppercase A to Z.
- Numeric allows 0 to 9.
- Alphanumeric allows uppercase A to Z or 0 to 9.
- Punctuation allows characters such as "," or ":".
- Any allows any character.



Application Identifiers

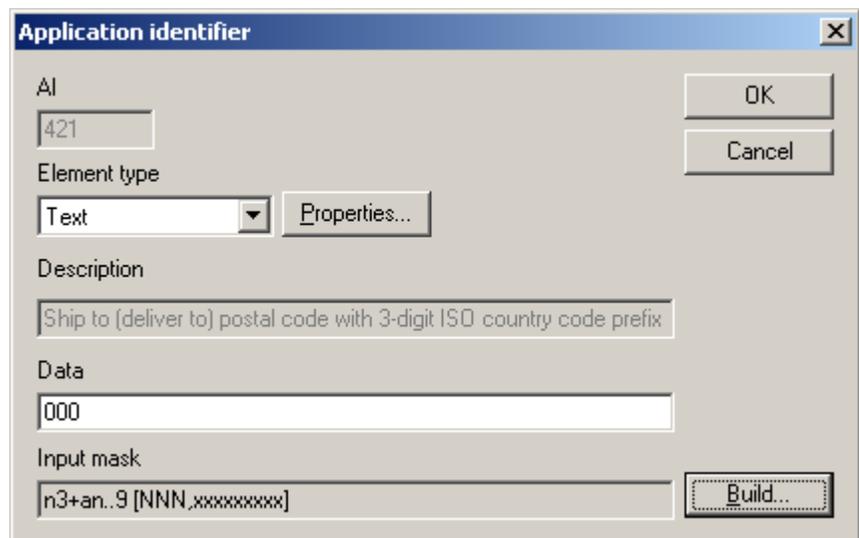
To define fonts, select **Define > Application identifiers**.

Application identifiers can also be used by certain bar-codes. They work in the same manner as sub-elements.



An example of the Application identifier properties dialog is shown at right.

Only the "Element type" and "Data" fields can be changed. See "Sub-Elements" on page 37 for descriptions of these fields.



Global Barcode Parameters

To define barcode parameters, select **Define > Global Barcode Parameters**.

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

To view or edit a set of barcode parameters, select it then click **Edit**, or double-click the item.

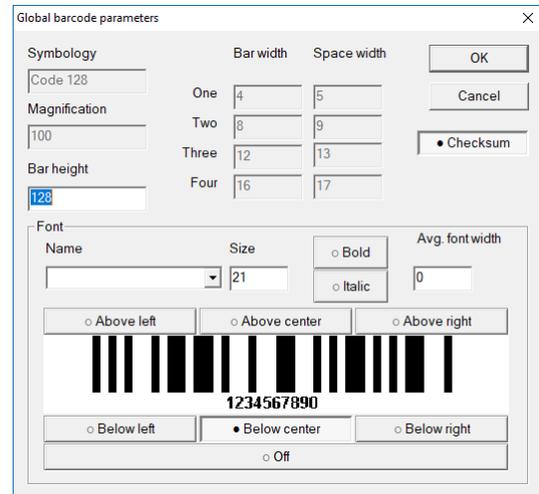
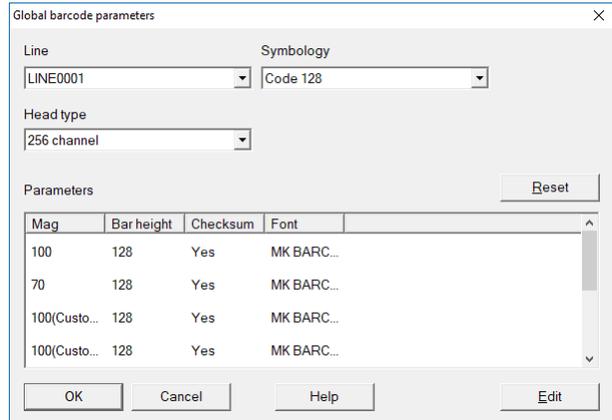


NOTES:

Only the custom bar and space parameters can be changed; and only a person having advanced knowledge of barcode and inkjet printing systems should change these parameters. An unusable barcode may be printed using improper settings.

C128, C39, C93 & I 2of5: On standard barcode parameters, the Magnification, Width, Total height and Ratio cannot be changed. Only custom parameters allow these fields to be changed.

UPC: On standard barcode parameters, the Magnification, Bar width and Space width cannot be changed. Only custom parameters allow these fields to be changed.



An example of UPCA barcode parameters is shown at right.

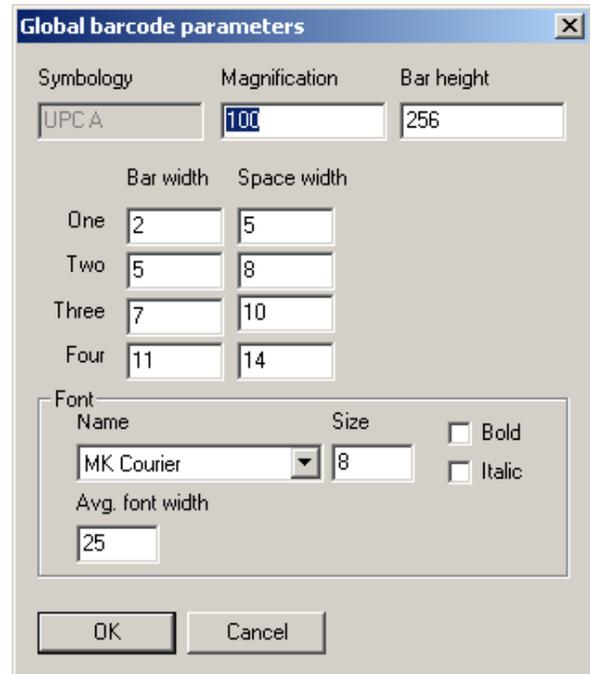
Magnification: The value displayed in the Magnification field on the Barcode element dialog.

Bar height: The total height of the symbol in pixels.

Bar width and **Space width:** Define the width, in pixels, of the symbol's bar/space modules.

Font name: Displays a list of all TrueType fonts installed on the system.

Font size: The height of the font in pixels.



Avg font width: Defines the average character width (in pixels). A value of 0 means that Windows will use the font's default widths.

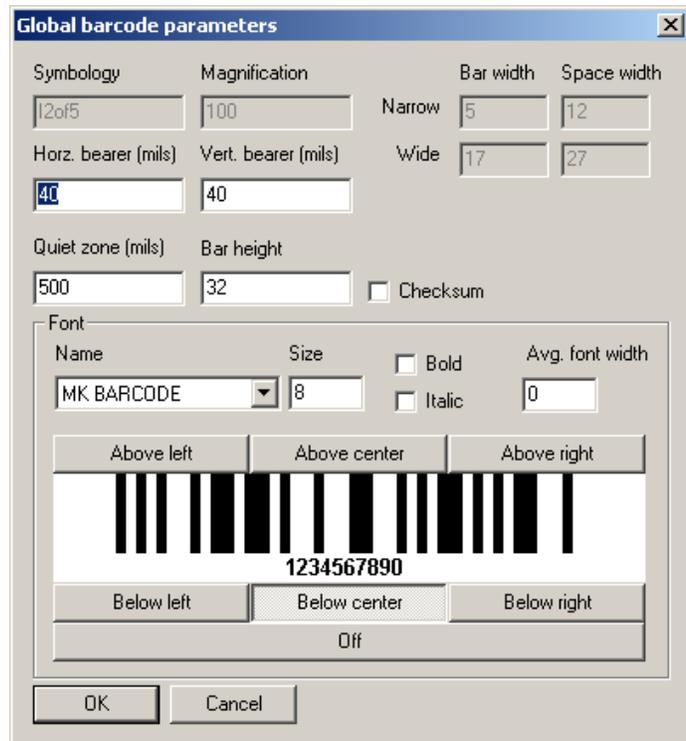
Magnification: The value displayed in the Magnification field on the Barcode element dialog.

Total height: The total height of the symbol in pixels.

Horz. bearer: Specifies the width of the symbol's horizontal bearer, in thousandths of an inch.

Vert bearer: Specifies the width of the symbol's vertical bearer, in thousandths of an inch.

Quite zone: Specifies the width of the symbol's quiet zone, in thousandths of an inch.



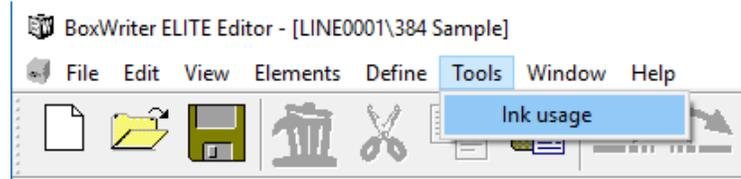
Font Name: Displays a list of all TrueType fonts installed on the system.

Font Size: Refers to the height of the font in pixels.

Tools

Ink Usage

Select **Tools - Ink usage** from the top of the Editor screen. The ink usage generator will calculate the cost of each print and how many prints you will get from each bottle.



Ink usage				
Elements				
I...	Type	Head	Pixels	Ink used (ml)
9	Bitmap	Head 1	5356	0.00070699
10	Barcode	Head 1	104850	0.01384020
11	Text	Head 1	1008	0.00013306
12	Text	Head 1	6912	0.00091238
13	Text	Head 1	1690	0.00022308
14	Text	Head 1	7536	0.00099475
15	Text	Head 1	3538	0.00046702
16	Count	Head 1	4990	0.00065868
9	Bitmap	Head 2	2678	0.00035350
10	Barcode	Head 2	52425	0.00692010
Cost per bottle		Size (ml)	Total ink	Total cost
				Prints per bottle

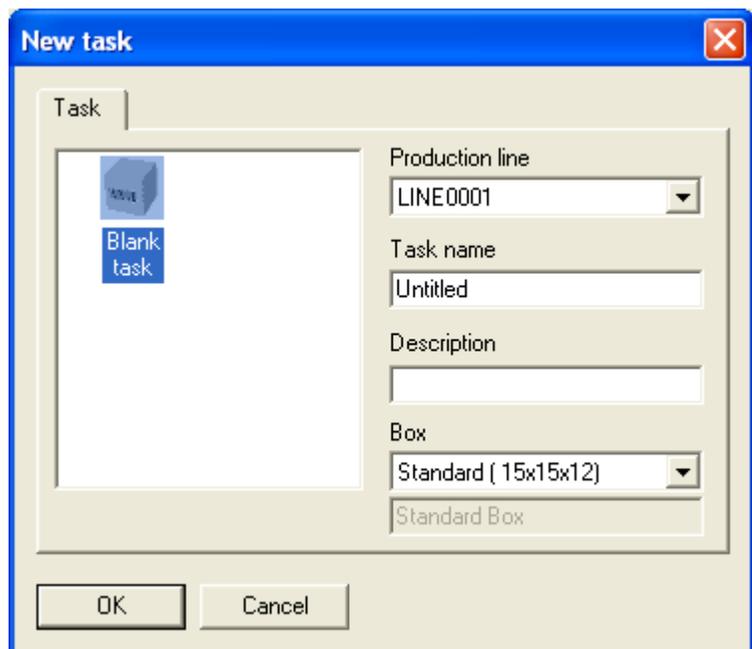
Files

New

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

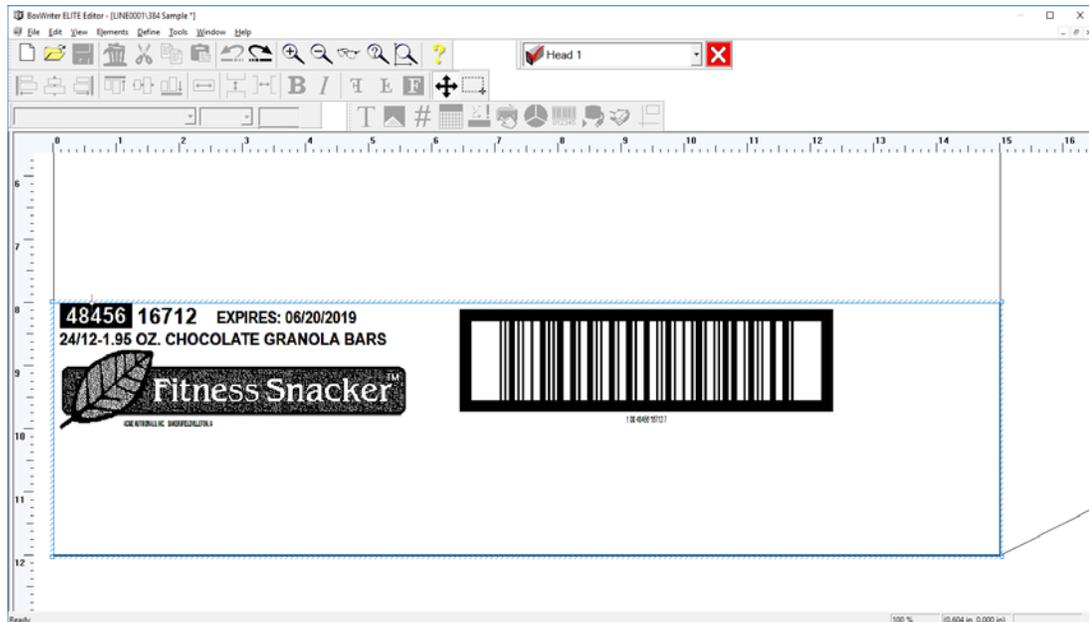
The user will be presented with the dialog at right. Pick which production line the task is to be created for, give it a name (and description, if desired) and select the box it will be printed on.

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



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” on page 50 and “Save As” on page 48.)



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.

To disable the element overlap warnings, see “*Editor Defaults*” on page 32.

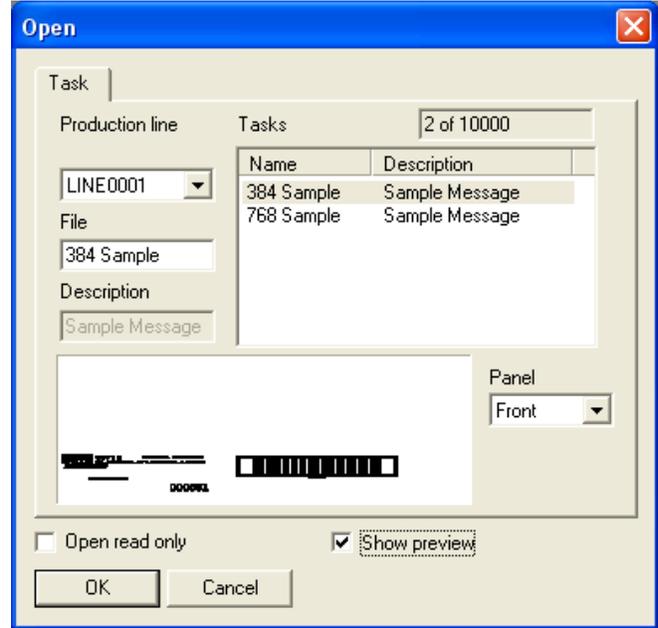
Open

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

Select the task to be opened, and click **OK**; or double-click the task to be opened.

Checking the "Open read only" box will open the task in read-only mode (i.e., the user 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 > Copy**.

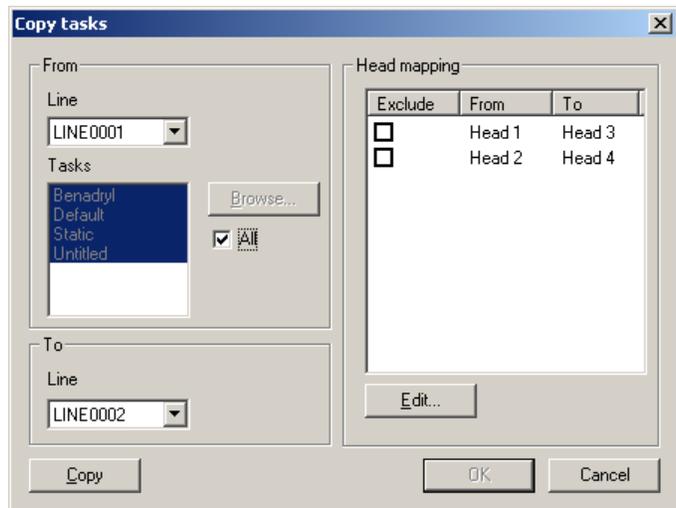
Select the line to copy from, then select the tasks to be copied. Checking the "All" box will automatically select all existing tasks for the given line.

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

If successful, you will see a confirmation message.

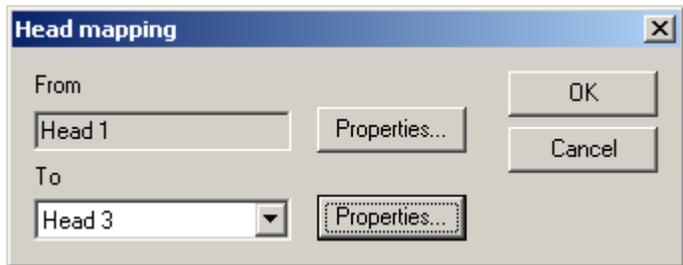
The user may change both the "To" and "From" lines and perform the copy function multiple times.

Click **OK** after to save the changes.

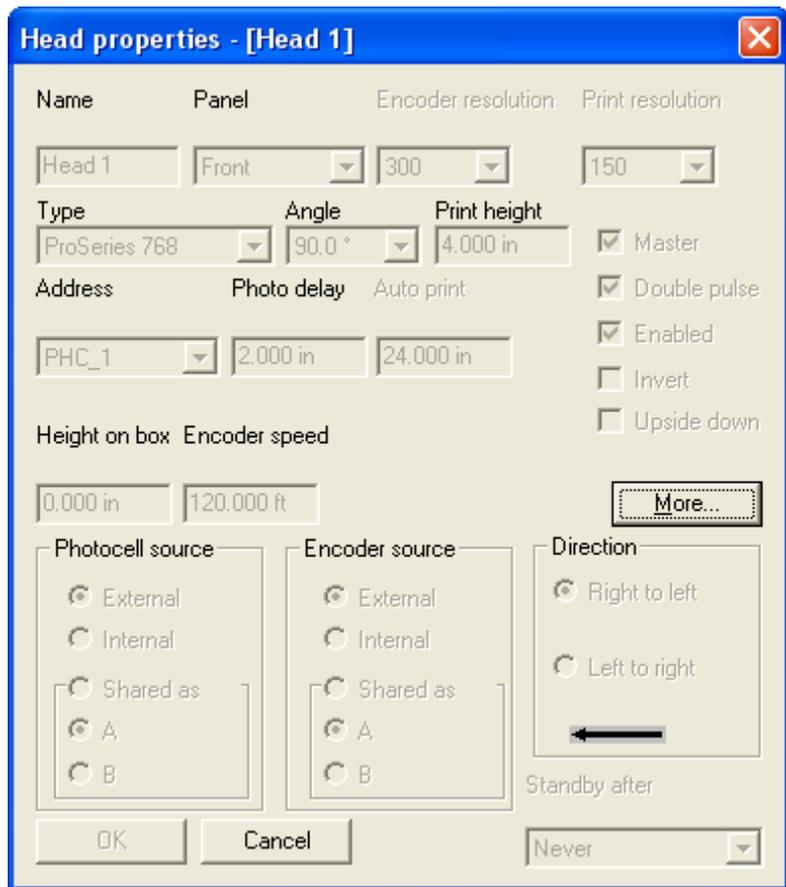


This function works best when both the "To" and "From" lines have identical head configurations. However, if they do not, the user may elect to configure the head mapping. To do this, select the head to be mapped and click **Edit** (or double-click).

The user will be presented with the dialog at right. Select the head to map 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.



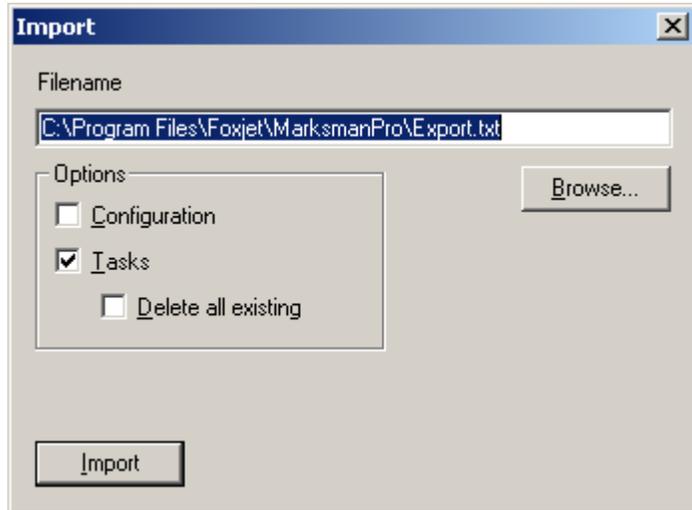
Import



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**.

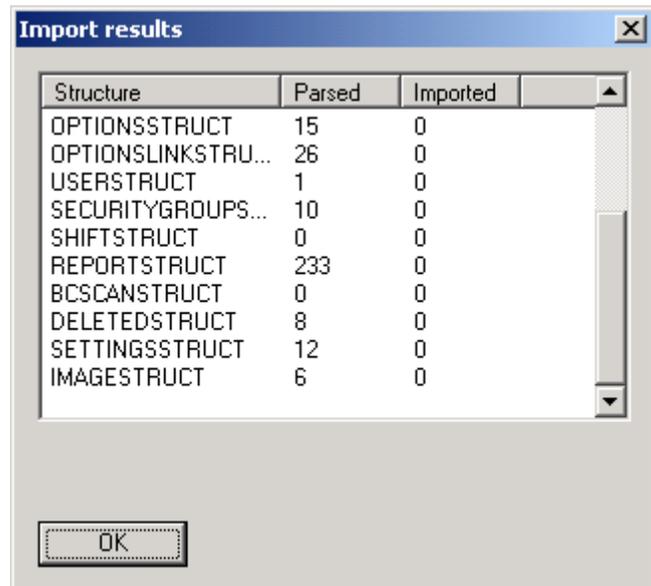
In the "filename" field, input the name of the file (full path) the exported tasks were saved to; or browse for the file by clicking the **Browse** button.



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.



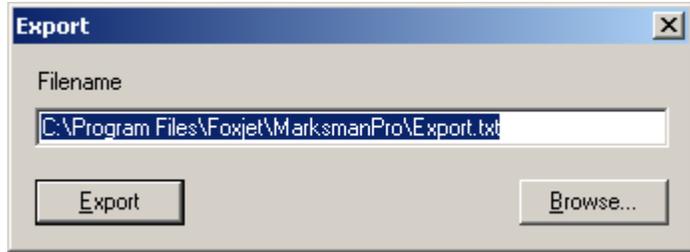
Export



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

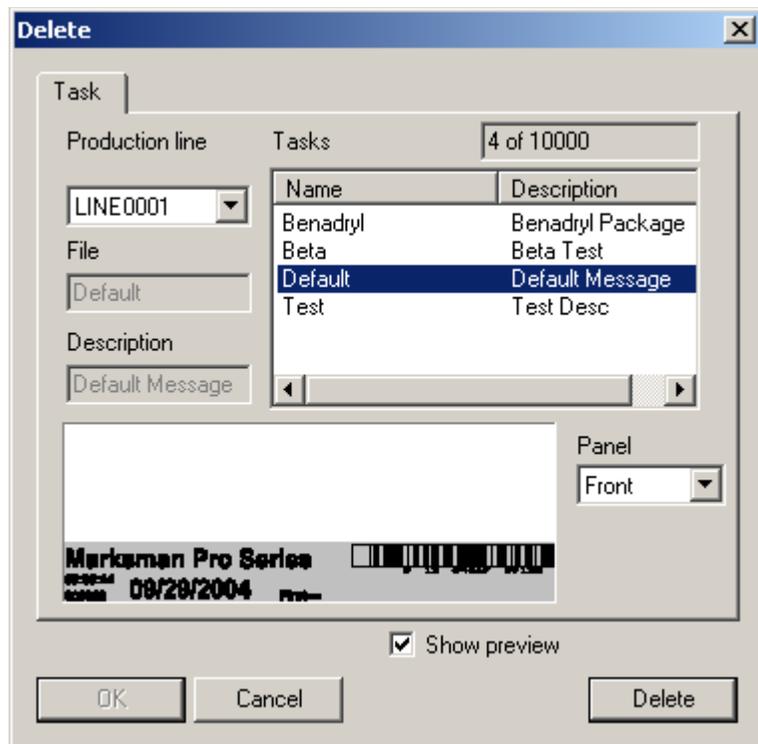
To delete existing tasks, choose **File > Delete**.

Select the task to be deleted. Multiple tasks may be selected 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.

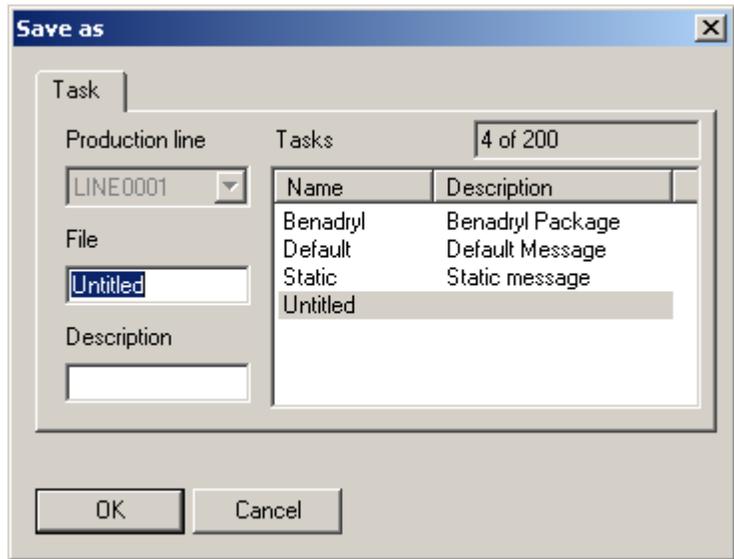
Checking the "Show preview" box will show a preview of the selected task. For large tasks, it may take several seconds to generate the preview.



Save As

To save an open task under a different name, choose **File > 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.

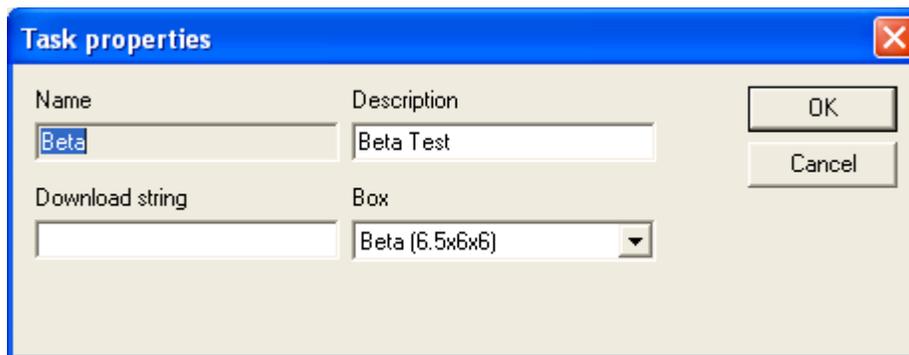


If the name entered matches a task already in the database, the user will be prompted with a confirmation dialog, like the one at right.



Properties

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



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

Exit

To exit the Editor, choose **File > 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
- Expiration date
- User Prompted
- Shift Code
- Barcode
- Database
- Serial
- Shape

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**); or double-click an element to edit its properties. Only one element at a time can be selected to edit.

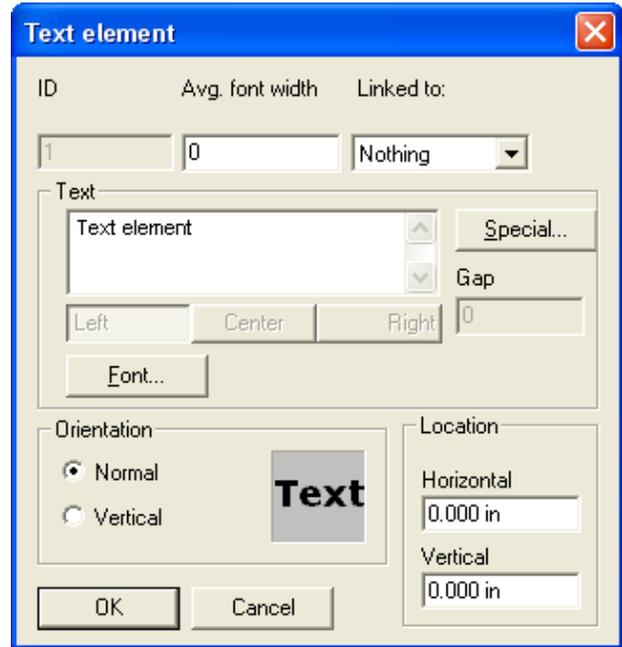
T Text

The Text element properties are shown on the right. Text can be entered into the field either a single line at a time or multiple lines, paragraph mode. To get to the next line, simply press Control and Enter at the same time. This will advance the cursor to the next line where text can also be entered.

Average width defines the average character width (in pixels). A value of 0 means that Windows will use the font's default widths.

The Text field displays the data to be printed. This field can contain between 1 and 255 characters.

The Orientation field determines if the data is printed horizontally or vertically.



Link to: Allows the user to tie a text element to a barcode element. When the barcode data is changed, the text field will automatically change.

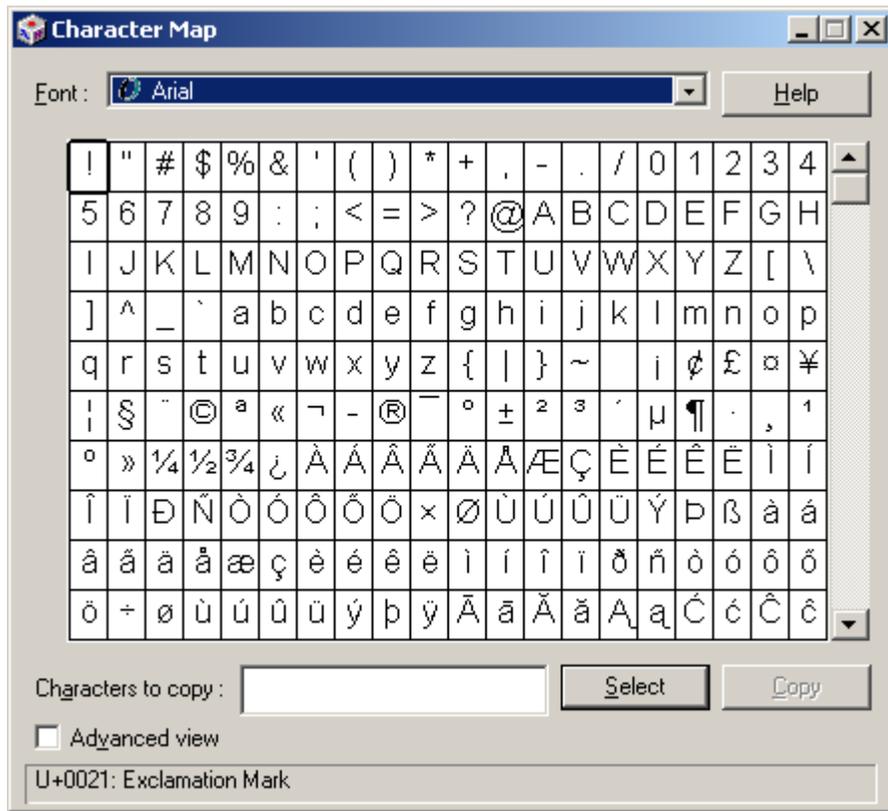
Figure 1: Horizontal orientation



Figure 2: Vertical orientation



To insert special characters, click the **Special** button. This will open the Windows Character Map utility, which can be used to copy and paste special characters.



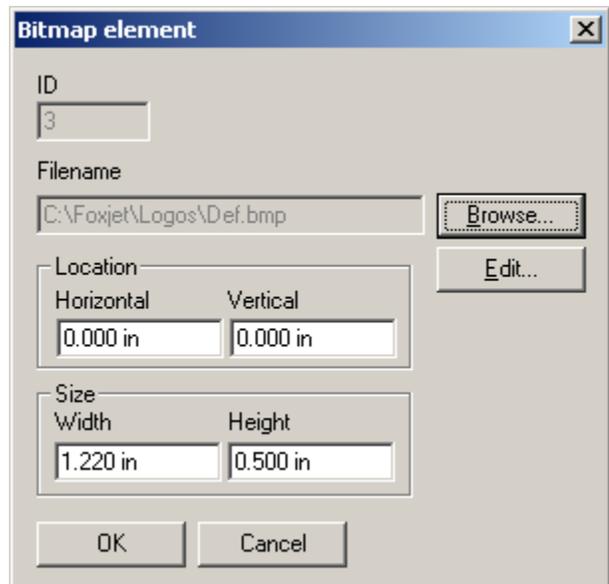
Bitmap

The Bitmap element properties dialog is shown at right.

The Filename field displays the full path and filename of the selected bitmap. To select a different bitmap, click the **Browse** button.

To edit the selected bitmap using the default bitmap editor, click **Edit**. Note that the BoxWriter© Editor will be disabled until the bitmap editor is closed. To change the default bitmap editor, see "Bitmap Settings" on page 36 of this manual.

The Width and Height fields display the size of the bitmap.



Count

The Count element properties dialog is shown at right.

Average width: Defines the average character width (in pixels). A value of 0 means that Windows will use the font's default widths.

Name: Allows the count description to be changed. There can be up to two unique counts.

Master Count: The element that can be controlled by Change Count.

Master: Indicates to the software that this count will be controlling all counts throughout the particular message and will lock out the other count settings during the start of the task.

Start value: Displays the starting value of the counter.

Roll over on: Determines when the counter rolls back to the Start value. (The maximum number of digits for this field is six.)

Increment by: The number of units added to the current count when a photosensor event is fired.

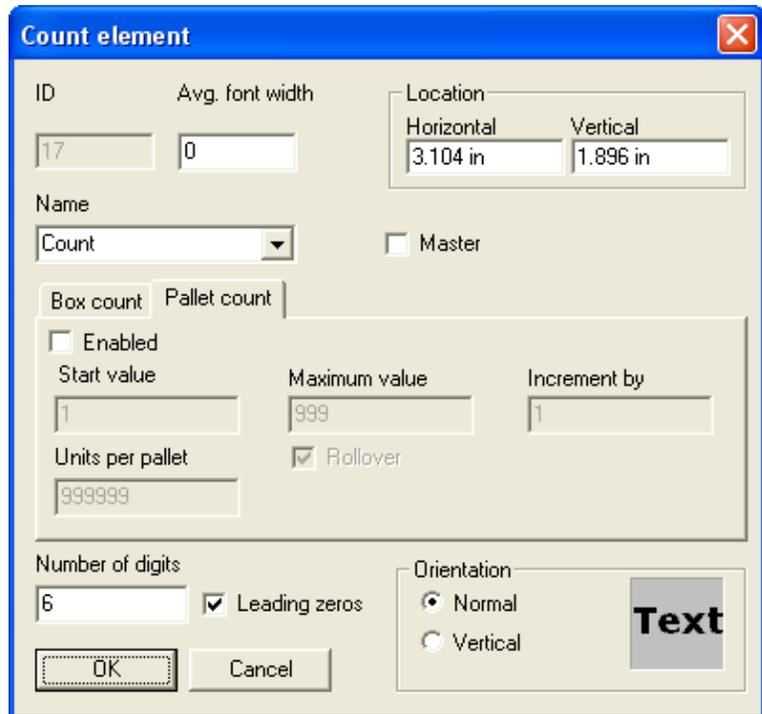
Number of digits: Determines the number of significant digits printed. If "Leading zeros" is checked, the count will be padded with zeros. For the example shown here, 000001 would be printed.

Orientation: Determines if the data is printed horizontally or vertically. See "Text" on page 51 for examples of horizontal and vertical text.

Pallet Count: For a pallet count, click the Pallet count tab and click the Enabled button. The "Start value", "Roll over on", and "Increment by" fields' semantics are identical to the ones under the "Box count" tab (see previous example).

Units per pallet: The number of boxes that are loaded onto one pallet.

The pallet count's Current count is incremented when the Units per pallet value is met. For example, if a pallet holds 144 boxes, this number would be entered into the Units per pallet field. After 144 boxes have been printed, the pallet count would increment.



Rollover: Will reset the Pallet count to the Start value when the Maximum value is reached. If unchecked, the Maximum value will be as high as the Pallet count will go.



Date / Time Element

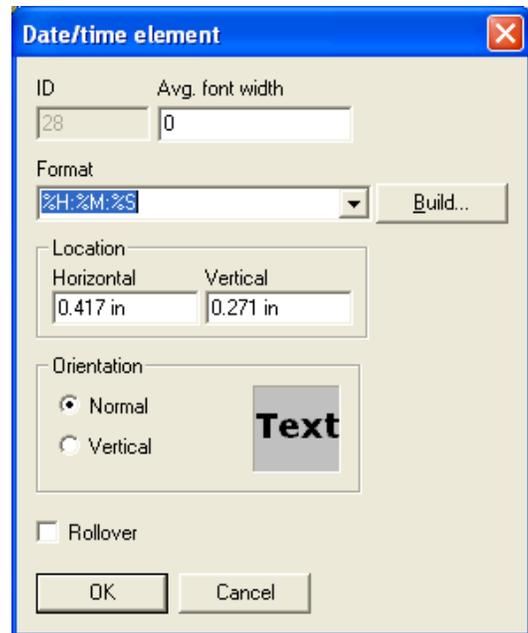
The Date / time element properties dialog is shown at right.

Avg. font width: Defines the average character width (in pixels). A value of 0 means that Windows will use the font's default widths.

Format: Determines how the current date or time is printed. For a list of pre-defined formats, see the *Define, Custom Date / Time Formats* section of this manual.

Build: To build a new format, click the Build button. For a description of the Build date/time format dialog, see "Custom Date/Time Formats" on page 33.

Orientation: Determines if the data is printed horizontally or vertically. See "Text" on page 51 for examples of horizontal and vertical text.





Expiration

The Expiration date element properties dialog is shown at right.

Avg. font width: Defines the average character width (in pixels). A value of 0 means that Windows will use the font's default widths.

Format: Determines how the current date or time is printed. For a list of pre-defined formats, see "Custom Date/Time Formats" on page 33.

To build a new format, click the **Build** button. For a description of the Build date/time format dialog, see "Custom Date/Time Formats" on page 33.

The expiration period is determined by adding the "Days" and "HH:MM:SS" fields to the current system time.

Round to top of unit: Forces the expiration code that is printed to round up to the next whole unit.

Orientation: Determines if the data is printed horizontally or vertically. See "Text" on page 51 for examples of horizontal and vertical text.

Rollover: When "Rollover" is selected, the expiration code rollover time can be changed to a different value than midnight. See the Rollover section in "Date/Time Codes" on page 35 to enter a new setting.



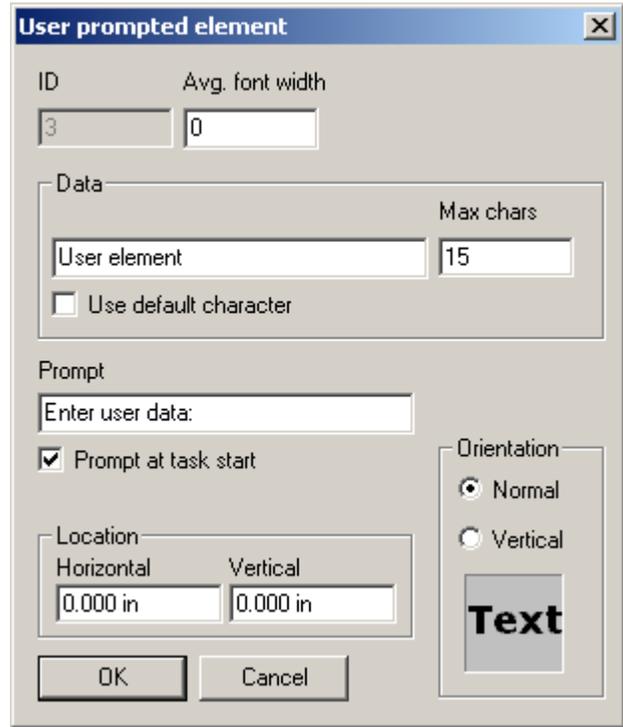
User Prompted

The User element properties dialog is shown at right.

Avg. font width: Defines the average character width (in pixels). A value of 0 means that Windows will use the font's default widths.

Data: Displays the data to be printed. If "Use default character" is checked, the data shown in the editor will be drawn with the "W" character. In this example, "WWWWWWWWWWWWWWWWWW" would be displayed in the editor (15 W's, since "Max chars" is set to 15).

Prompt at task start: When checked, the operator will be prompted by the Marksman© Matrix & Elite Control application when the task is started. The data displayed in this prompt is determined by the Prompt field.



Orientation: Determines if the data is printed horizontally or vertically. See "Text" on page 51 for examples of horizontal and vertical text.



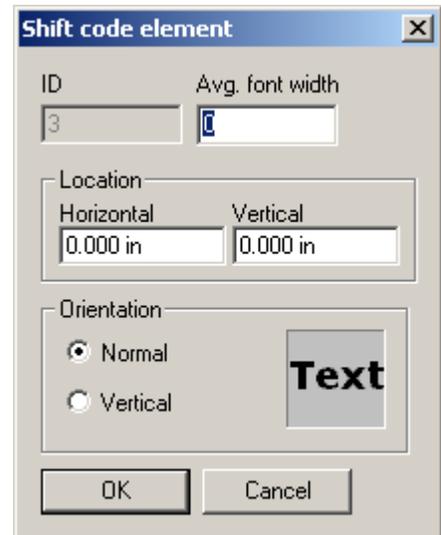
Shift Code

The Shift element properties dialog is shown at right.

A Shift element prints the current shift code. See "Shift Codes" on page 36 for more information.

Avg. font width: Defines the average character width (in pixels). A value of 0 means that Windows will use the font's default widths.

Orientation: Determines if the data is printed horizontally or vertically. See "Text" on page 51 for examples of horizontal and vertical text.



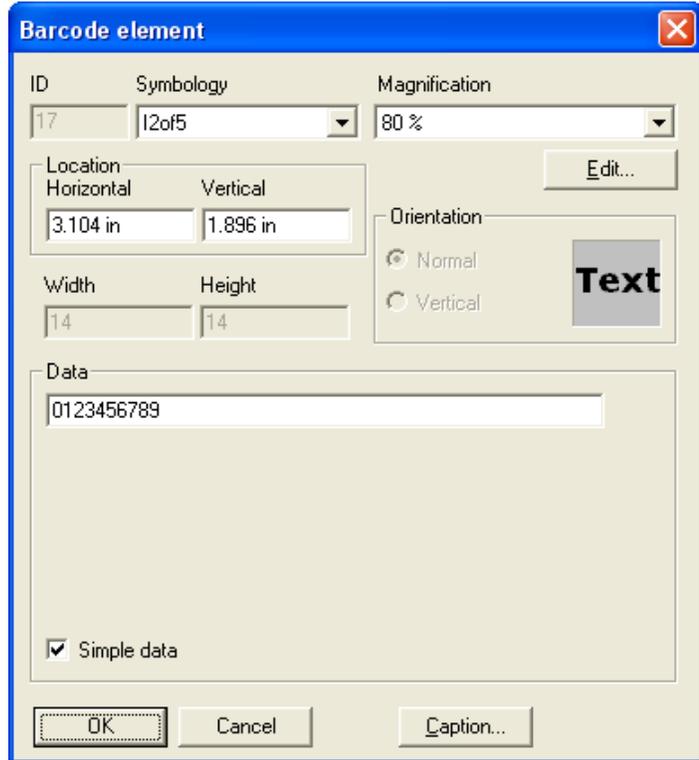


Barcode

The Barcode element properties dialog is shown at right.

Symbology: Displays the type of barcode to be printed. The following symbologies are supported:

- 128
- 39 Standard
- 93
- Datamatrix ECC200
- GS1-DataMatrix
- GS1-128
- GTIN-12 (UPC-A)
- GTIN-13 (EAN-13)
- GTIN-14 (ITF-14)
- GTIN-8 (EAN-8)
- I 2of5
- QR Code
- UPC-E



Magnification: Indicates when set of barcode parameters are used to draw the barcode. See “Global Barcode Parameters” on page 40 for information on barcode parameters.

Data: Contains the data to be encoded in the barcode.

Code 128 barcodes support sub-elements and application identifiers. To modify these, uncheck the "Simple data" box. The following is an example of a Code 128 barcode with two sub elements:

The dialog box 'Barcode element' contains the following fields and controls:

- ID:** 10
- Symbology:** GTIN-14 (ITF-14)
- Magnification:** 100 %
- Location:** Horizontal (6.438 in) and Vertical (0.083 in) options.
- Orientation:** Normal (selected) and Vertical options.
- Width:** 14
- Height:** 14
- Data Table:**

ID	Element	Le...	Description
DEF	Text	13	Default barcode sub-el...
- Simple data:** (checked)

Annotations on the right side of the dialog box:

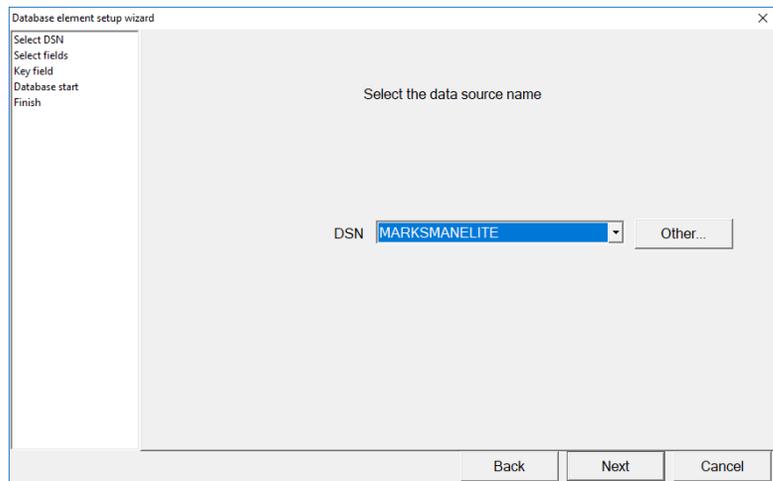
- Move item up or down in list (pointing to up/down arrow buttons)
- Properties (pointing to the document icon button)
- Insert Application Identifier (pointing to the 'AI' button)
- Insert new sub-element (pointing to the 'X' button)

See the "Sub-Elements" on page 37 and "Application Identifiers" on page 39 for more information.



Database

Click Cancel to return to the Database element screen. (This screen is for future enhancement.)



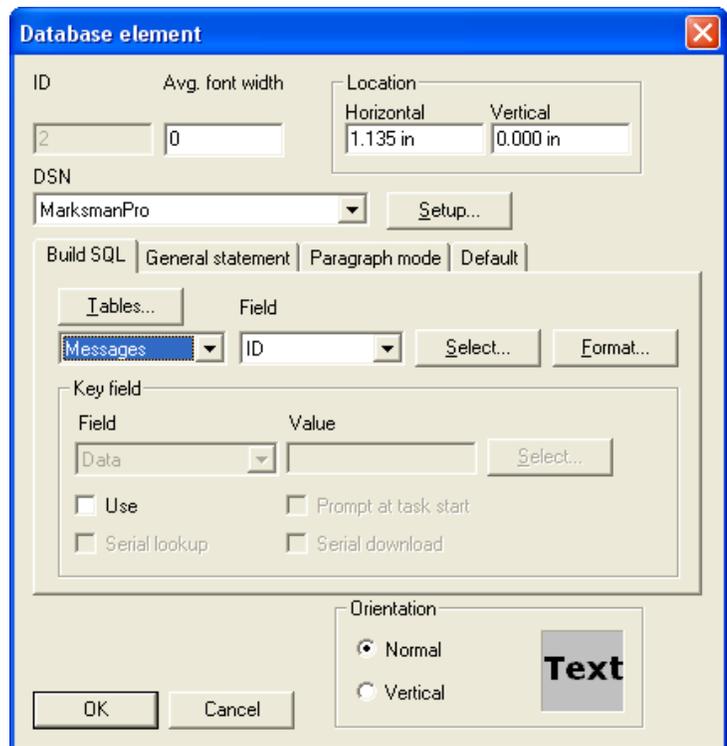
The Database element properties dialog is shown at right.

A Database element looks up a piece of data from a given database and prints it.

Avg. font width: Defines the average character width (in pixels). A value of 0 means that Windows will use the font's default widths.

DSN: Displays the name of the selected ODBC database. To select a different database, click **Browse**. The user will be presented with the "Select Data Source" dialog (see next page).

Table: Displays the table in the database to query.

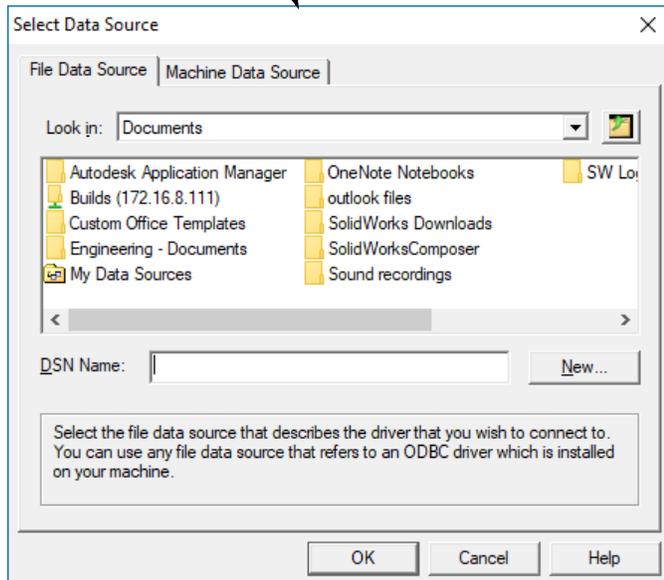
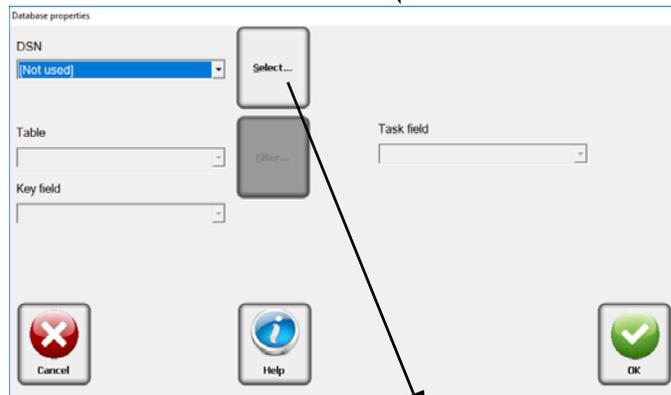
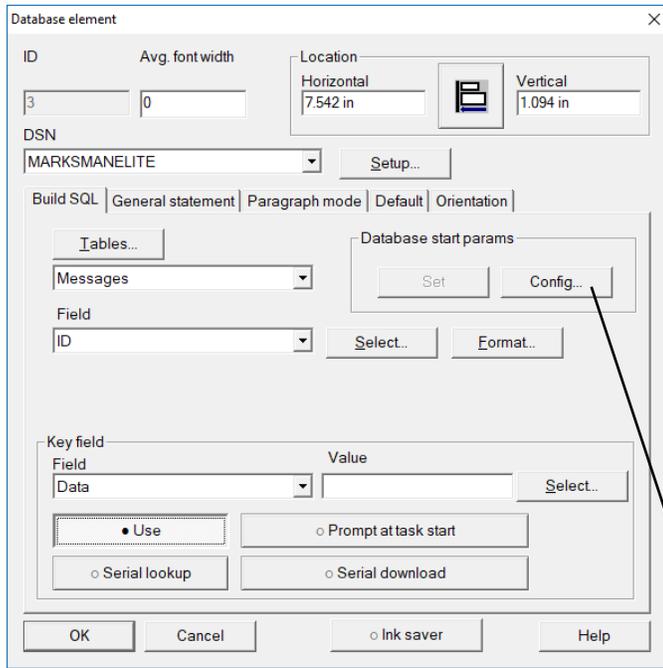


Field: Displays the field name in the selected table. The value of this field is data that will be printed. The user may also browse the fields in the current table by clicking **Select** (see the Select field dialog on the next page).

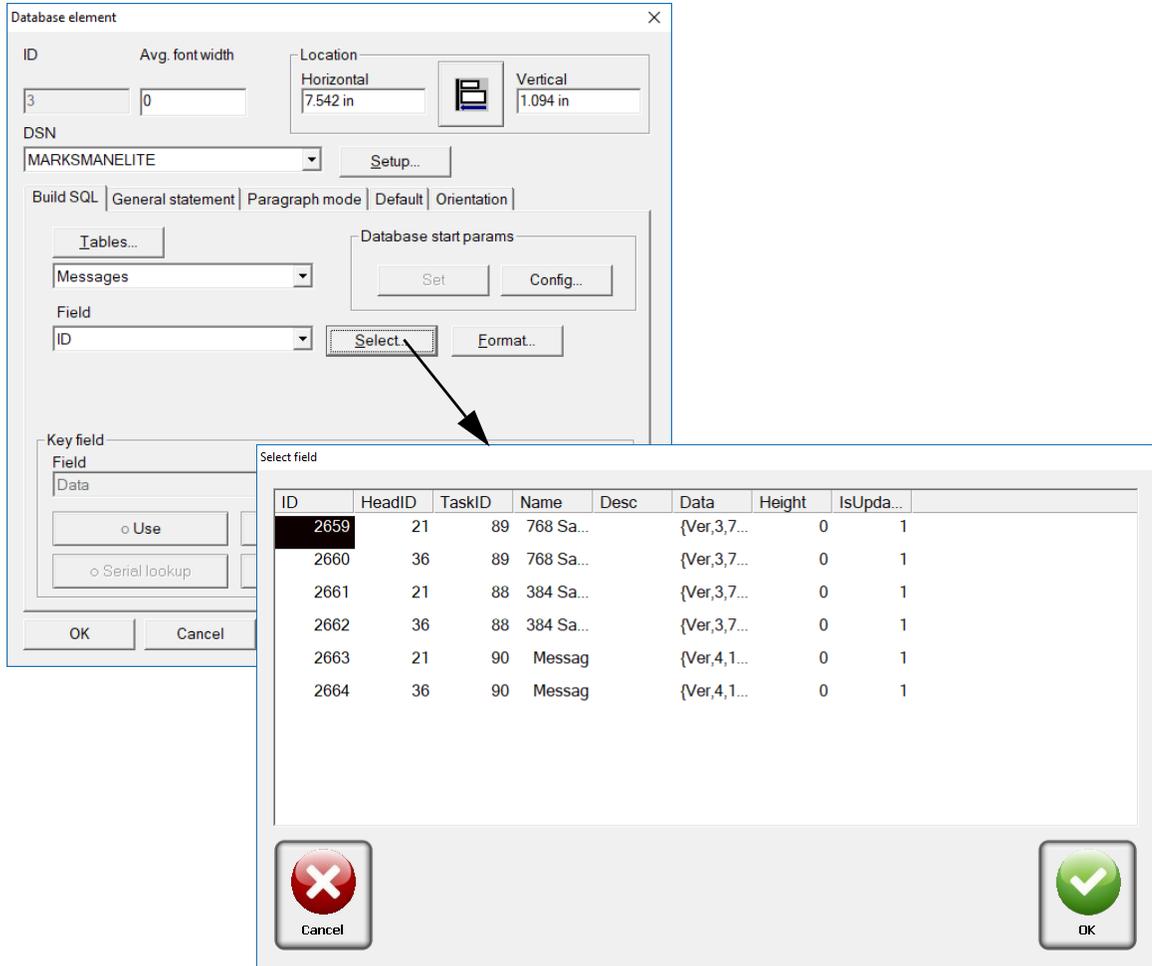
If a given record is to be retrieved by a key value, check the "Use" box under "Key field". In this example, the record from the Messages table whose ID is equal to 2434 will be selected. The value of its Name field will be printed. The Key Field may be selected by clicking the "Select" button (see the "Select field" dialog on the following pages).

Orientation: Determines if the data is printed horizontally or vertically. See "Text" on page 51 for examples of horizontal and vertical text.

Following is an example of what the "Select Data Source" dialog might look like:

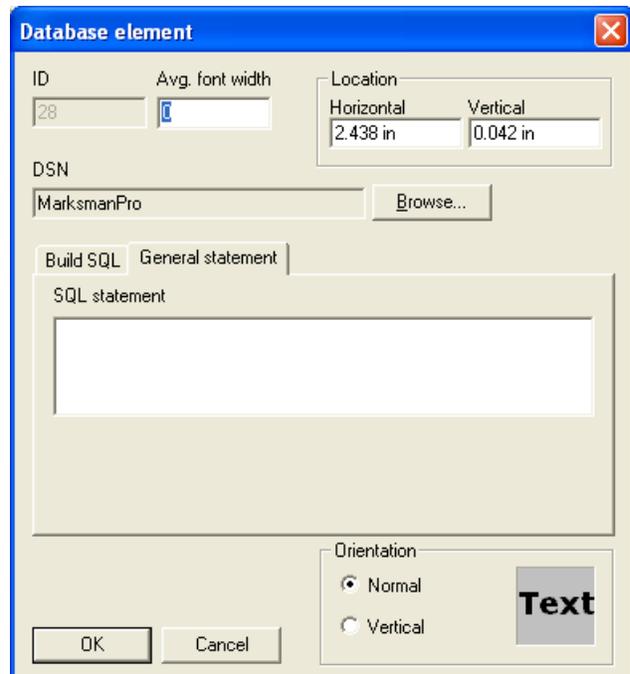


The following is an example of what the "Select field" dialog might look like:



To insert an SQL statement directly, click the "General statement" tab. An example using a general SQL statement is shown at right.

If this option is used, the first field in the first record of the result set will be the data selected to print.





Serial

The Serial element properties dialog is shown at right.

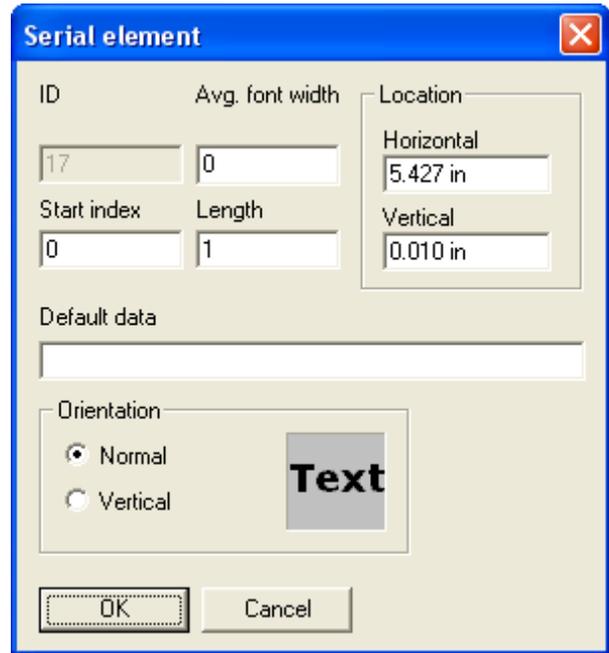
A Serial element prints data from the serial buffer. The serial buffer is defined in the Controllers Control application.

Avg. font width: Defines the average character width (in pixels). A value of 0 means that Windows will use the font's default widths.

Start index: Specifies the index in the serial buffer to start copying from.

Length: Specifies how many characters to copy from the serial buffer.

Orientation: Determines if the data is printed horizontally or vertically. See the *Text Element* section for examples of horizontal and vertical text.

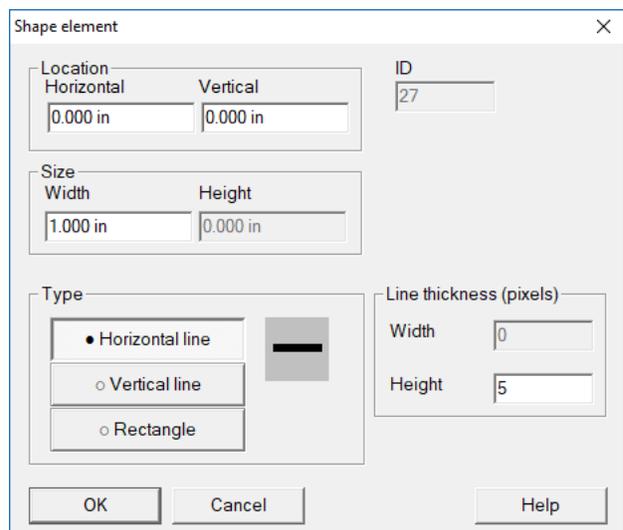


In the Editor, a Serial element will be displayed with W's. In this example, it would look like this:

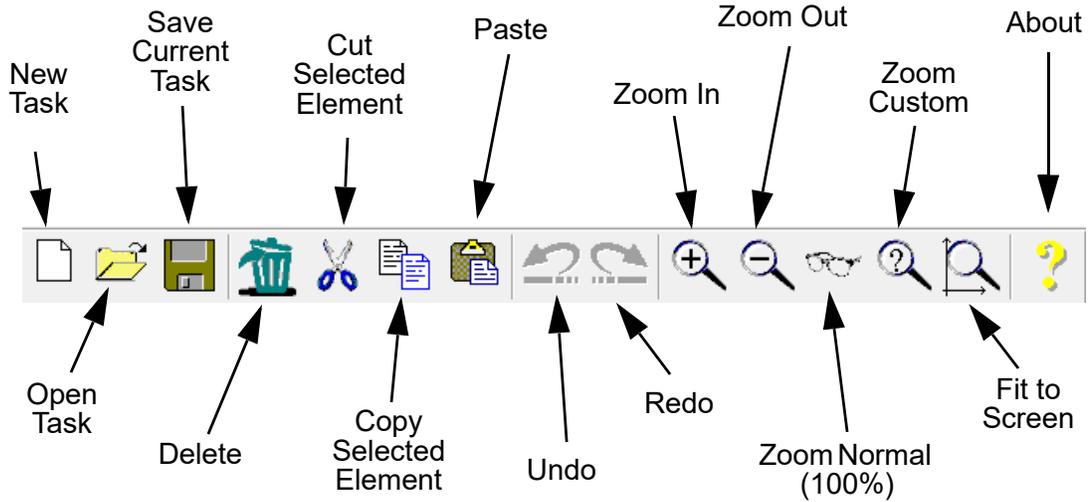


Shapes

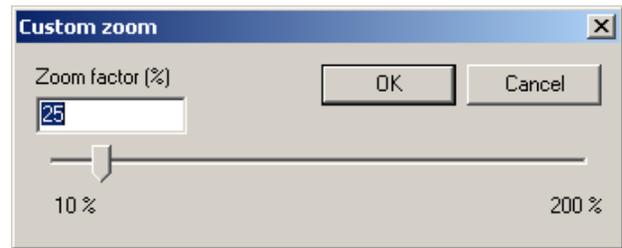
The Shape element dialog is shown at right.



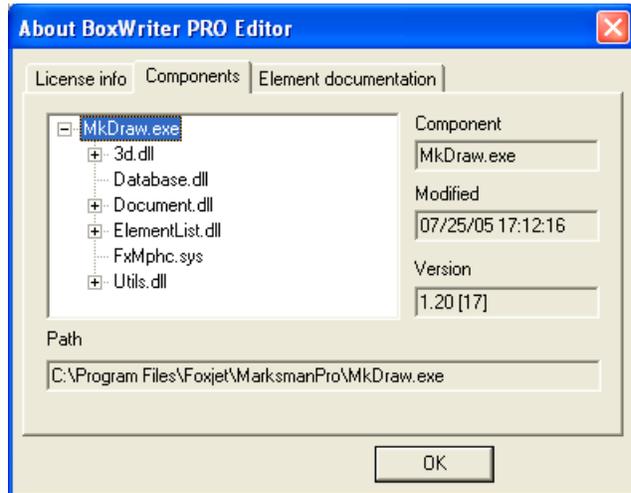
ToolBars



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.



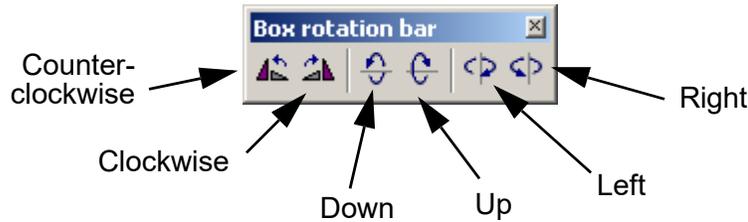
Font bar

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).

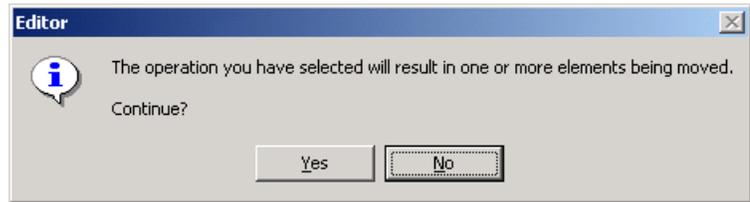


Rotation Bar

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



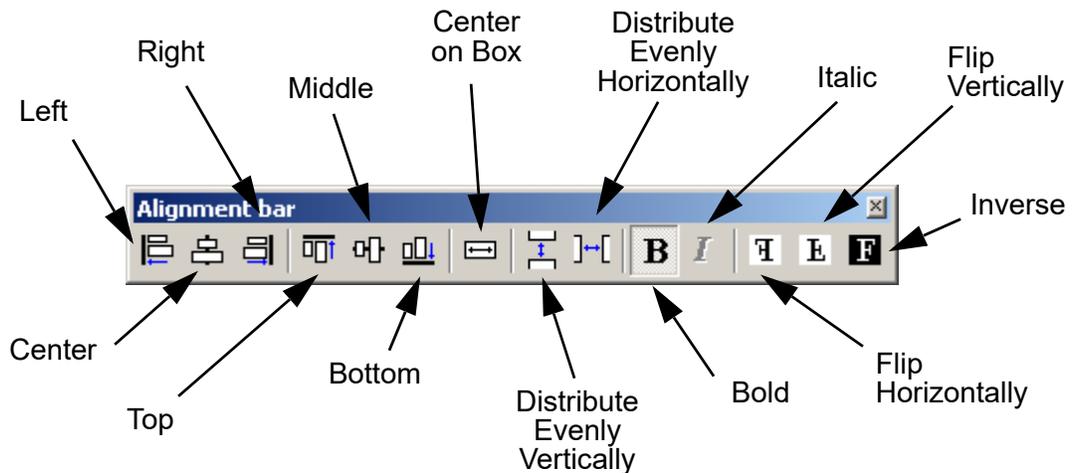
Sometimes changing the box's orientation will result in some elements being forced outside the printable area. When this happens, the Editor will warn the user.



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.

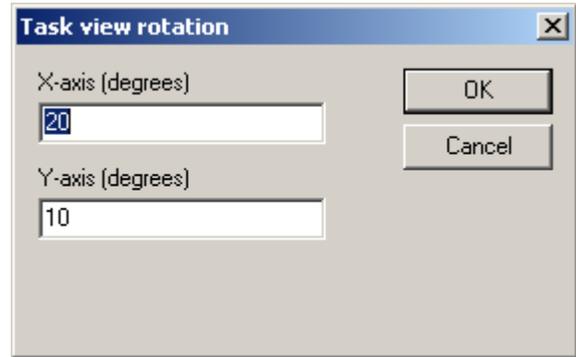


NOTE: The minimum number of elements that must be selected for Left, Center, Right, Top, Middle, and Bottom is two (2). The minimum number of elements that must be selected for Distribute evenly vertically and Distribute evenly horizontally is three (3).

Perspective

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

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



Section 7: Maintenance and Shutdowns

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. (See “FJSOP2 - Daily Maintenance for AMS/APS Printheads” on page 95 for additional information.)



BEFORE APS



AFTER APS



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

System Maintenance

Intermittent (as required):

- Be sure the photosensor is clean and free of debris.
- Be sure the O-rings on the encoder wheel are present and not worn.
- Be sure the nuts and bolts holding the bracketry in place remain tight.

Annually:

- Replace encoder O-rings (5765-206).
- Recalibrate Touch Screen.

General Maintenance:

- Dust touch screen and keyboard with lint-free cloth.
- Clean controller cabinet with cloth to remove dust.
- Inspect print head assemblies and ink reservoir for leaks and wipe with lint-free cloth as necessary.
- Use the priming procedure to remove any dust or debris that might have collected on the print head faceplate (see “Step 5: Priming the Print Heads” on page 12).
- Inspect for broken or worn electrical connections.
- Inspect guide box rails and print head bracket for wear.
- Make sure the controller cabinet fan(s) are working and that they turn freely.
- Have a qualified technician open the 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. To replace the fan filter, simply remove the louver plates on the outside side panels of the Marksman® Elite. 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.

Print Head Maintenance

Daily / Shift Startup / Periodic



Wear safety goggles when working with industrial inks or solutions!

The majority of print quality degradation is due to excessive debris deposits on the print head orifice plate that disrupt the ink droplet path. For best preventative maintenance practices, do the following:

- Pause or stop the message to avoid any misprinting. It's OK to leave the system powered up during this time.
- Remove excessive debris build-up (corrugate dust, glue strands, and the like) on and around the front of the print head by using maintenance spray n-Propanol (5760-695) on a clean lint-free cloth (6600-171) and wiping the front plate and enclosure. If debris build-up is noted on the enclosure and rear of the print head, then wipe those clean, too.

NOTE: DO NOT SPRAY N-PROPANOL MAINTENANCE SPRAY DIRECTLY ON THE PRINT HEAD OR ANYWHERE NEAR THE ORIFICE PLATE.

- Using a sponge swab (5760-832), rub the orifice plate lightly from top down in a vertical direction while ink is flowing during an APS (Automatic Priming System) cycle. The APS button is located on the rear of the print head. **DO NOT USE** maintenance spray directly on the orifice plate.
- Press the APS button one more time to ensure channel priming, but do not swab this time.
- Wipe the front plate with a clean lint-free cloth to remove any excess ink.

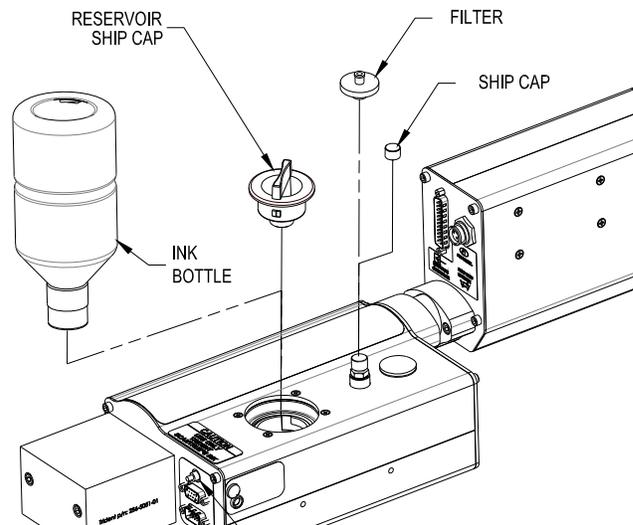


SWAB
DOWN



Annually

- Replace the vent filter on the reservoir.
- Depending on desired quality of print, print heads may need to be returned to the factory for a thorough cleaning of the print engine due to excessive debris lodged in the orifices



Shutdown Procedures

- Close the Application (double-click the **X** in the upper right hand corner).

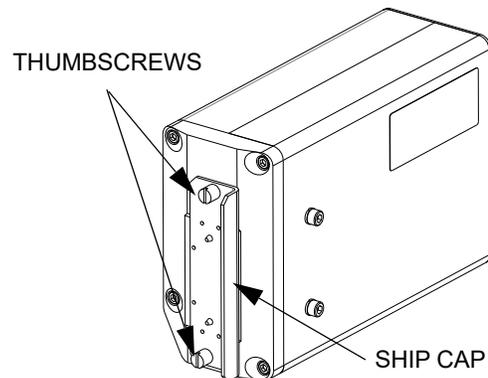


NOTE: You must have the proper security level before the application will close.

- When Windows® is at the desktop, select **Start**, then select **Turn Off Computer**.
- Select **Turn Off Computer** (Windows® will perform its shutdown sequence).
- When Windows® is done, the screen will be all white.
- It is now safe to turn the power off.

Shutdowns of 1 Week to 3 Months

- Disconnect the system from mains power.
- Spray the appropriate maintenance spray on a lint-free cloth and, before installing ship cap, lightly wipe the front of the print head to remove foreign debris.
- Remove the ink bottle, close the reservoir vent cap and install the reservoir ship cap.
- Install the ship cap onto the front of the print head.



Shutdowns of 3 Months or More

- Follow recommendations for Shutdowns of 1 Week to 3 Months (above).
- It is recommended that the print head system be flushed with ScanTrue® II Flush Solution and that ScanTrue® II Flush Solution be left in the print head during the storage period. (See “Appendix C: Part Numbers” on page 83 for consumable part numbers.) Follow instructions in document 2465-257N. Flush Solution can remain in the print head for one year from the date of flushing.

Startup

- Ensure all electrical connections are made and power up the controller.
- Allow the print head to heat up and perform a visual inspection on the heads before using.
- Open the reservoir vent cap and install a bottle of ink.
- Perform 3 to 5 prime cycles while the Ship Cap is installed.
- Remove the Ship Cap.
- Prime the print head per “Step 5: Priming the Print Heads” on page 12.

Ink Storage

Storage Life of a FACTORY SEALED Bottle of Ink

- ScanTrue II: 12 months from date of manufacture.
- ScanTrue II Plus: 18 months from date of manufacture.
- Recommended storage temperature: 4° to 40°C (40° to 104°F).
- Recommended storage relative humidity: 5 - 90% relative humidity with no condensation.

Temperatures above or below the recommended storage temperature for a period greater than one week will reduce the storage life of the ink.



NOTE: Do not shake the bottle of ink before use. Agitating the ink may introduce air into the Print Head. If shaken, the bottle must sit for at least two hours before use.

Use Life of an OPENED Bottle of Ink

- ScanTrue II: 3 months from opening.
- ScanTrue II Plus: 6 months from opening.

Exposure to air, temperature and relative humidity will affect the useful life of the ink.

Section 8: Troubleshooting

The Marksman© Matrix & Elite 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.

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* for details.)

Problem: Cannot communicate to the Marksman© Matrix or Elite through the Ethernet.

Action:

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

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 photosensor 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 into 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 a cloth in front of the print head front plate.
2. Initiate a print cycle by turning on conveyor and tripping the photosensor.
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.



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

1. Place the test object approximately $\frac{1}{4}$ inch in front of photosensor; photosensor should sense object.
2. Place the test object near the center of the guide rails; photosensor should sense object.
3. Place the test object on far guide rail; photosensor should not sense object.
4. Check that objects on the far side of the 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: 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.

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, follow procedure for "Recirculation" on page 12.



Problem: Missing bottom print channels.

Possible Cause: Ink build-up on lower orifices.

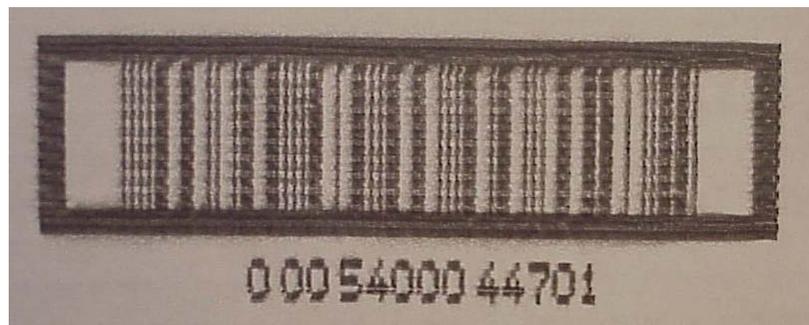
Action: Wipe front plate and run APS.



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.

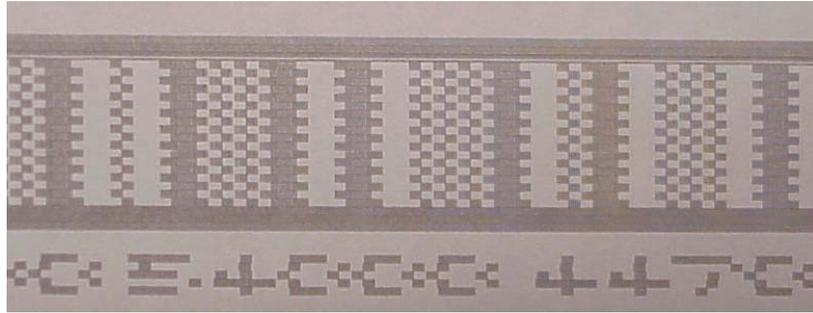
Action: Tighten encoder on belt; replace encoder o-rings, if required; or replace conveyor belt with a smooth seamless belt.



Problem: Stretched out, light print, checkerboard pattern.

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

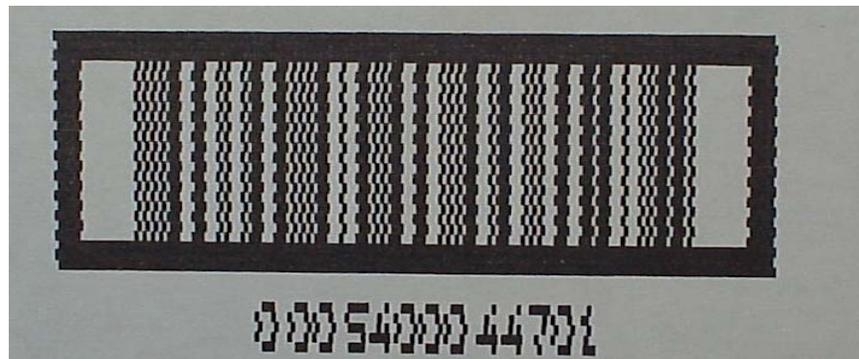
Action: Check for correct encoder (use 5000 PPR Encoder).



Problem: Short image, dark print, checkerboard pattern.

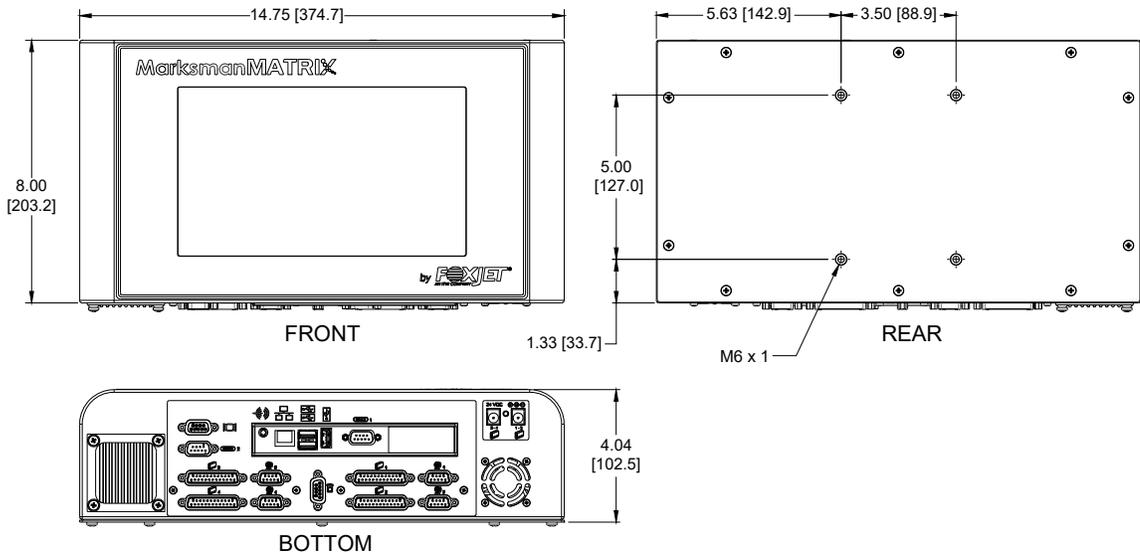
Possible Cause: Incorrect encoder or wheel size, or incorrect line speed (set too high) if using internal encoder.

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



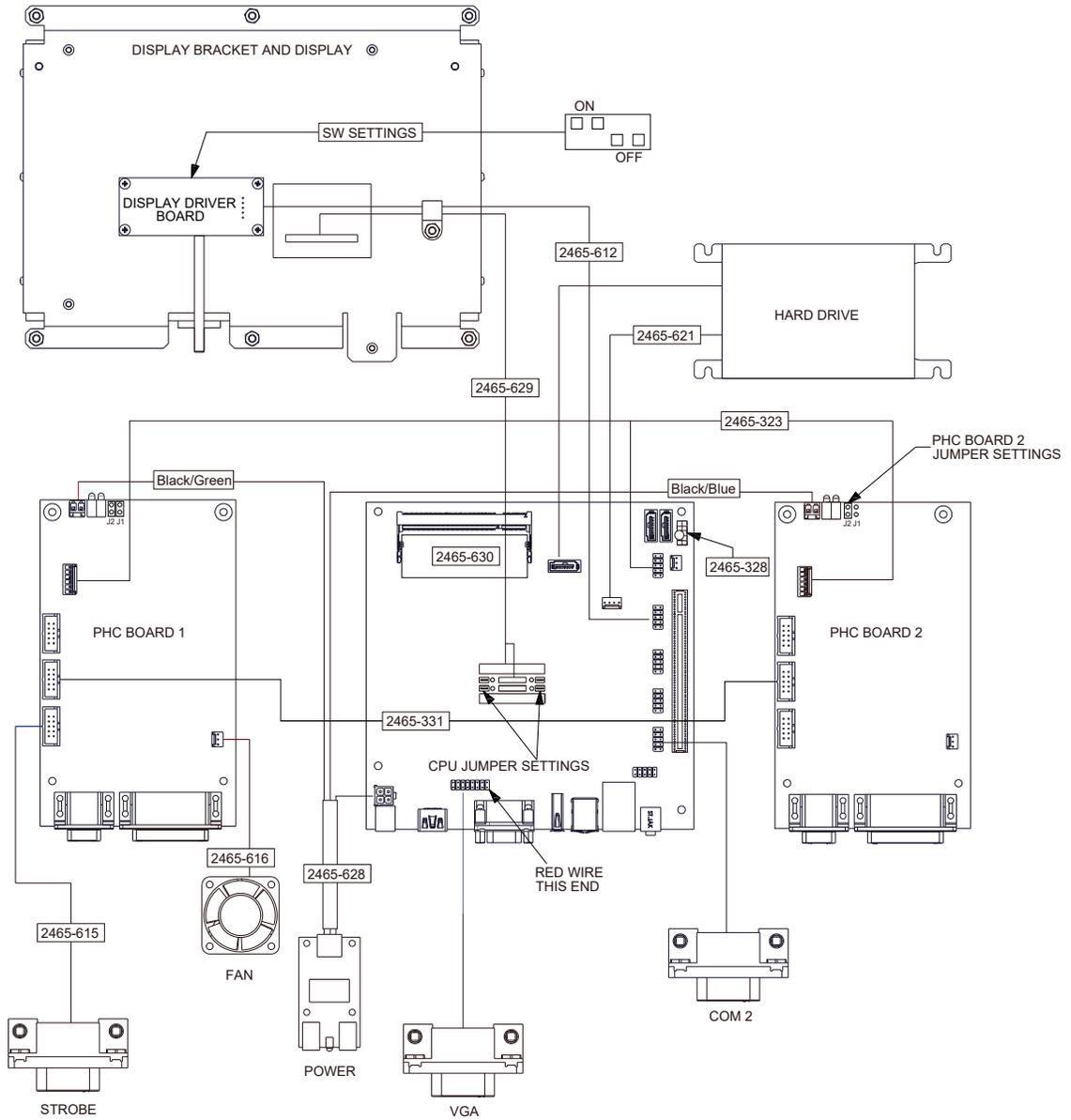
Appendix A: Specifications

Matrix Controller Specifications

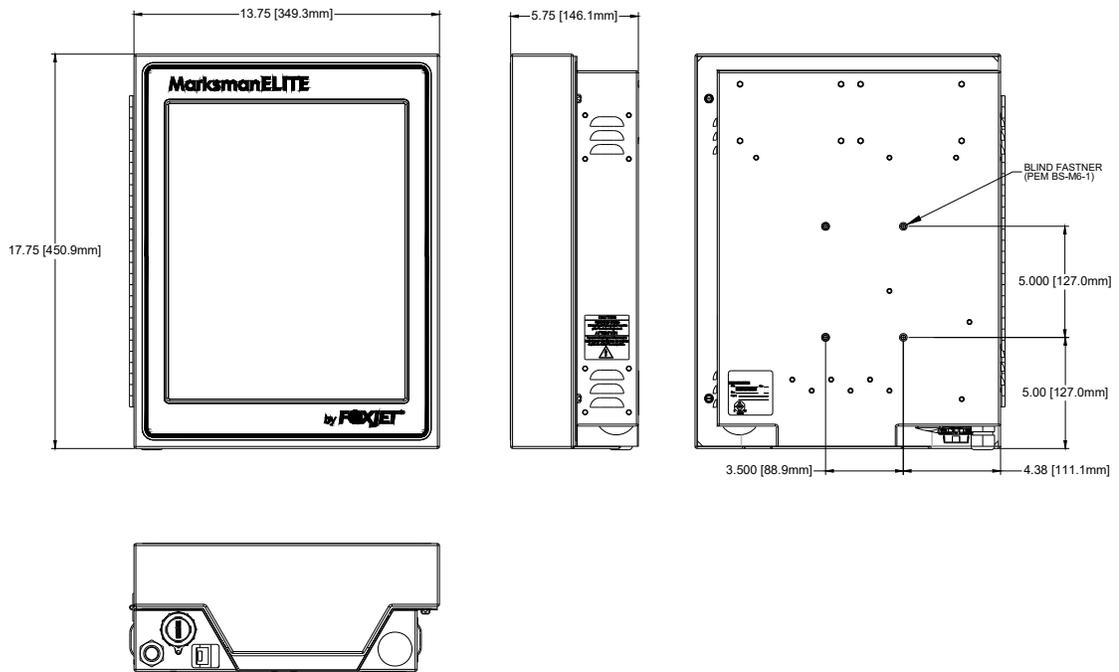


Processor:	Intel® Celeron™ N2930, 1.83GHz, Quad-Core
Ports:	2 Com Ports (Serial Ports) 1 VGA 1 Beacon 2 Print head with room for additional 2 Print head ports 2 Encoder with room for additional 2 Encoder ports 1 RJ-45 Gigabit LAN 1 Audio (Not Supported)
Memory:	2 GB, 204pin DDR3L SO-DIMM
Data Storage:	128 GB Solid State SATA drive
Alarm:	Optional 3 color LED beacon
Enclosure:	Stainless Steel
Weight:	8.13lb. (Controller only)
Operation System:	Windows® Embedded Standard 7, 32 Bit
Display:	10.2 inch 1024 x 600 LCD with Resistive touch screen.
Keypad	Software
Electrical:	90-240 VAC, 50/60Hz, 2.0A max. (power supply input) 2 each 24 VDC, 5.0A (Controller input)
Environment:	Ambient operating temperature: 40° to 104° F (5° to 40° C) Operating humidity: 10-90%, non-condensing
Print head types:	ProSeries 768e and ProSeries 384e
Operation humidity:	10% - 90%, non-condensing

Matrix Wiring Diagram



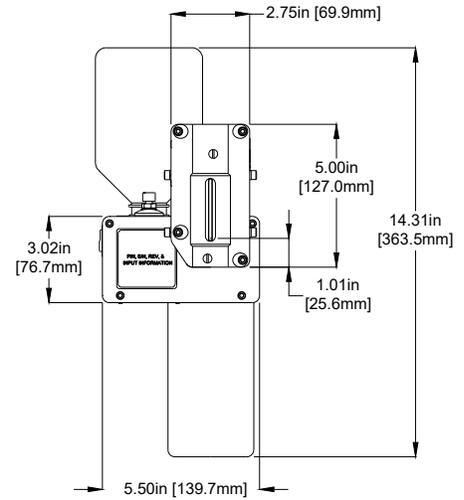
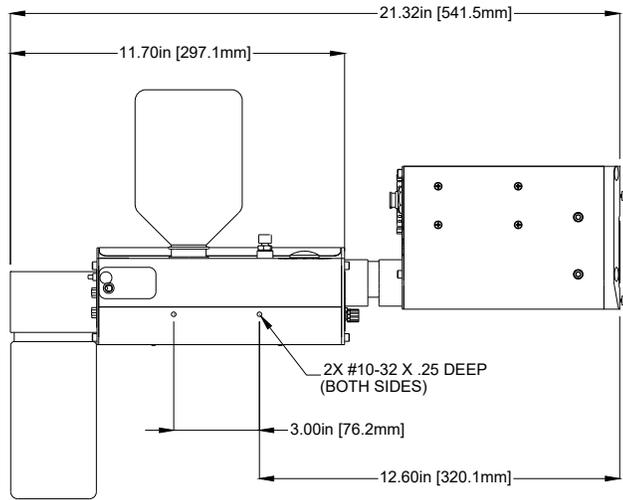
Elite Controller Specifications



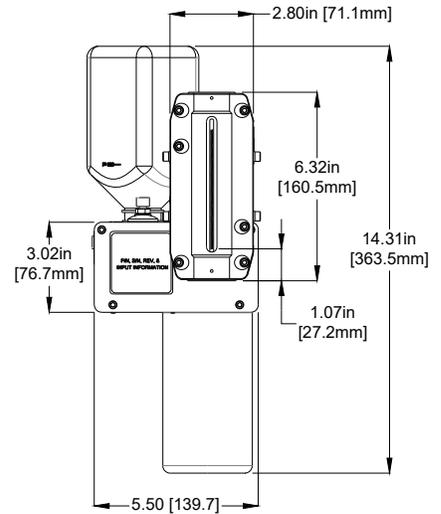
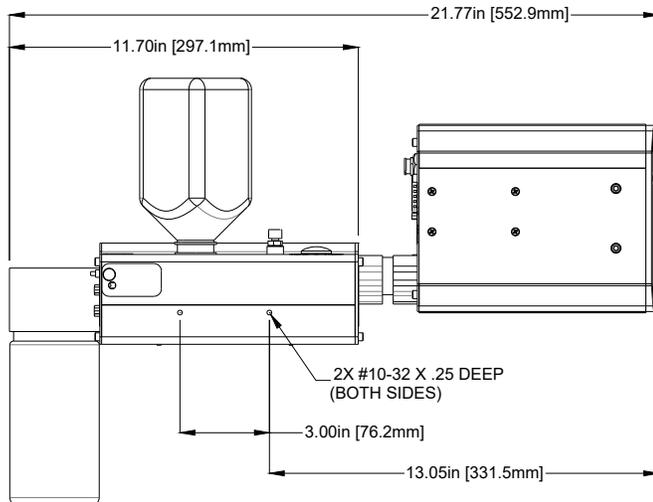
Processor:	Intel® Celeron™ N2930, 1.83GHz, Quad-Core
Power Input:	100-240VAC, 50-60Hz at 3A max
Ports:	COM1, COM2 Serial Ports RS232 10/100/1000 Mbit/sec Base-T Ethernet 2 or 4 Print Head ports 2 or 4 Encoder ports Beacon, 3 color VGA 2.0 USB ports, 1 external and 3 internal HDMI Audio
Memory:	2 GB, 204pin DDR3L SO-DIMM
Data Storage:	128 GB Solid State SATA drive
Alarm:	Optional 3 color beacon
Enclosure:	Stainless Steel
Weight:	26.5 lbs (12.0 kg) (Controller only)
Operation System:	Windows® Embedded Standard 7
Display:	17" diagonal 1280x1024 LCD with Resistive touch screen.
Keypad	Software
Environment:	Ambient operating temperature: 40° to 104° F (5° to 40° C) Operating humidity: 10-90%, non-condensing
Print head types:	ProSeries 768e and ProSeries 384e
Print head to controller:	25 ft (7.6 meters) max.

Print Head Specifications

384e Print Head:



768e Print Head:



Electrical Connections: Male DB-25 connector located on the rear of the print head.

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 PLUS (384e and 768e Print Heads), Pigmented oil-based for porous surfaces

Technical Data:

	384e Head	768e Head
Image Area:	.38" - 2" (10 - 51mm)	.38" - 4" (10 - 102mm)
Channels:	128	256
Orifices:	384	768
Horizontal Resolution:	150 or 300 dpi	150 or 300 dpi
Lines of Print:	1 - 21	1 - 42

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)

Appendix B: Theory of Operation

The Marksman© Matrix & Elite

The Marksman Elite and Matrix are high-resolution ink jet coders used to print fixed and/or variable information onto cartons as they pass in front of the print heads on a conveyor. The Marksman Elite and Matrix are industrial PC-Based controllers that use a single board computer (SBC) running Windows Embedded Systems 7 to process and generate the images to be printed. Included on the SBC are all the peripherals associated with the computer, such as the video controller, Ethernet controller and USB controllers. In addition to the SBC, there are USB print head controller boards (USBPHC). The USBPHC board is responsible for converting an image from the SBC to image data that the print head can print. The USBPHC board uses a USB port to relay head status information from the head to the SBC. The USBPHC board sends and receives data to the head through the print head cable (DB25) as needed.

Messages are entered using the touch screen display with software keyboard. All message and programs are stored on a solid state hard drive and is recalled as needed when a message is selected. For the Elite, power for the system is create from two different power supplies, 12V needed for the SBC and display and 24V for print head heaters and the DC-DC converter. The Matrix only requires an external 24V power supply. The 12V is generated internally from the 24V supply.

Print Heads

The Marksman© Matrix & Elite supports all the Marksman 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 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 **APS** includes an ink collection bottle, vacuum pump, APS board, purge pump and reservoir. The APS cycle is controlled by the Controller 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 Controller 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 red LED on top of the Ink Supply will turn on.

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.

Appendix C: Part Numbers

System

Part No.	Description
Print Head	
2464076	ProSeries 384e
2464076F	ProSeries 384e, Flushed
2464078	ProSeries 384e, 90 Degree
2464078F	ProSeries 384e, 90 Degree, Flushed
2464079	ProSeries 384e, Modular
2464079F	ProSeries 384e, Modular, Flushed
2464082	ProSeries 768e
2464082F	ProSeries 768e, Flushed
2464083	ProSeries, 768e. Modular
2464083F	ProSeries 768e, Modular, Flushed
2464084	ProSeries 768e, 90 Degree
2464084F	ProSeries 768e, 90 Degree, Flushed
Controller	
2465006D2	Marksman© Matrix, 2 Head, Domestic
2465006E2	Marksman© Matrix, 2 Head, European
2465006D4	Marksman© Matrix, 4 Head, Domestic
2465006E4	Marksman© Matrix, 4 Head, European
2465004D2	Marksman© Elite, 2 Head, Domestic
2465004E2	Marksman© Elite, 2 Head, European
Print Head/Controller Bracketry	
2464550	Print Head Conveyor Mount Bracket
2464561	X-Y Axis Linear Adjustment, Tool-Less Bracket
2464562	Conveyor Mount/Roller Bracket for 768 Print Head
2464563	Print Head Floor Mount Bracket Kit
2464564	Conveyor Mount/Roller Bracket for 384 Print Head
2465243	Kit, T-Stand, Matrix & Elite
2465244	Kit, Conveyor Mounting, Matrix & Elite
2465254	Kit, Pivot Bracket, Matrix & Elite
Encoder, Photosensor, Alarm Beacon	
5700820-IJ	Encoder, 300 DPI
2465224	Photosensor, ProSeries
2465253	Alarm Beacon (Strobe), 3-Color
2466525	Photosensor, Auxiliary, APS Controller
Cabling	
2464182-010	Cable, Straight Thru, DB9, 10 Ft.
2464182-025	Cable, Straight Thru, DB9, 25 Ft.
2464182-050	Cable, Straight Thru, DB9, 50 Ft.
2464155-002	Cable Kit, Print Head, DB25, 2 Ft.
2465155-010	Cable Kit, Print Head, DB25, 10 Ft.
2465155-025	Cable Kit, Print Head, DB25, 25 Ft.
2464312	Cable, APS Photocell Network ("Y" Cable for sharing Auxiliary Photocell)

Consumables

Part Number	Description
001-0598-01F	Ink, ScanTrue® II PLUS
001-0899-01	Flush/Storage Solution, ScanTrue® II
2464620	Kit, Ink Waste Bottle, ScanTrue® II (4/pack)
5760373	Filter, 74 Micron (5/pack)
2464649	Kit, Filter Upgrade/Replacement
6000171	Print Head Wiping Cloth (300/pack)

Matrix Spare Parts Kits

Part Number	Description
2465266	Kit, Display
2465246	Kit, Print Head Controller Board, upgrade/replacement
2465268	Kit, 24V to 12V, Board
2465278	Kit, CPU Board and Hard Drive, Matrix
5760333	Kit, Power Supply, 24V

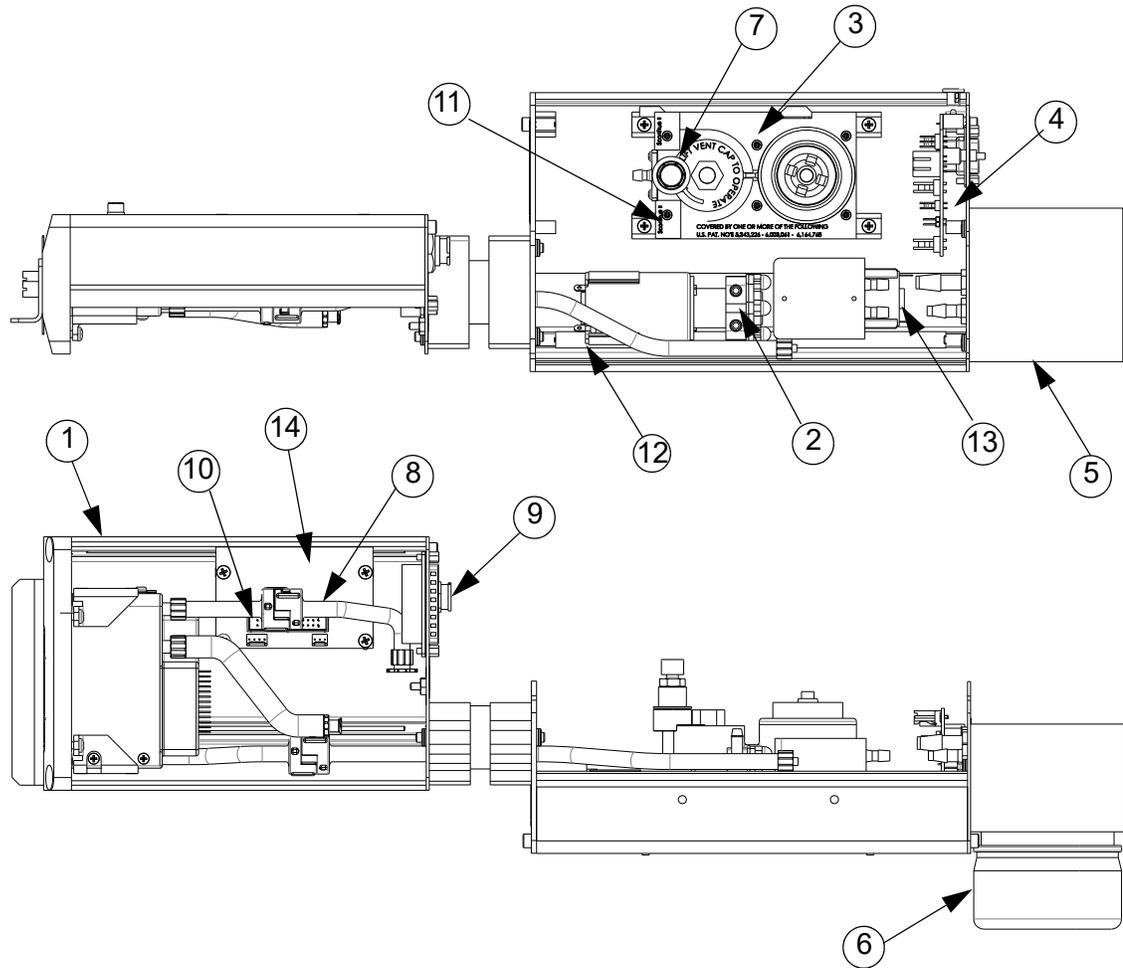
Elite Spare Parts Kits

Part Number	Description
2465245	Kit, Display
2465246	Kit, Print Head Controller Board, upgrade/replacement
2465260	Kit, CPU Board, Windows 7
2465277	Kit, CPU Board and Hard Drive, Elite
2465249	Kit, Power Supply, 12V
2465250	Kit, Power Supply, 24V
2465251	Kit, Fan, Elite

Accessories

Part Number	Description
2465253	Kit, Beacon, Matrix & Elite

384e and 768e Print System Service Kit



ITEM NO.	PART NO.	DESCRIPTION
1	2464650	Print Engine Replacement Kit, 384e, with Tubing and Fittings
	2464651	Print Engine Replacement Kit, 768e, with Tubing and Fittings
2	2464614	Prime Pump Replacement Kit
3 & 8	2464616	Reservoir & Ink Line Tubing Replacement Kit, ScanTrue® II PLUS
4	2464617	APS PCB Replacement Kit
5	2464618	Ink Separator Replacement Kit
6	2464620	Ink Waste Bottle Kit, ScanTrue® II PLUS Ink (4/pack)
7	2464649	Vent Filter Replacement Kit
9	2464414	Cable, DB-25 Connector to HV Board
10	2464144	Cable, Driver Board to APS PCB
11	5760527	Cable, Reservoir to APS PCB
12	2464146	Cable, Prime Pump to APS PCB
13	2464147	Cable, Vacuum Pump to APS PCB
14	2464629	HV PCB Replacement Kit, 384e and 768e Heads

Appendix D: Database Start

Description

Prior versions of BoxWriter allowed for the start of a task with database elements, which can then prompt the user to enter the key field value for the Controller to search the database and replace the default database element data with the data from the customer's database. In addition to those features, this version allows the Matrix & Elite to prompt for the key field value, obtain that value, look up that value in the database (which is pre configured for all messages in the Matrix & Elite), find the task field in the database, use that value to start the corresponding task, and while starting the task, use the previously entered key field value as the value for all fields in the database. Thus, the user needs only to enter one value to start the correct task **and** all data in the task. This is referred to as Database Start.

Database Start Task Routine Flowchart

1. If configured, the operator initiates a database task start routine. This can be accomplished by using the **Start** play button on the toolbar. Instead of seeing the "Start Message" screen, a new "Start Task" screen will open.

The screenshot shows a dialog box titled "Start task". It has several input fields: "DSN" with the value "Fox2", "Table" with "Sheet1\$", "Key field" with "Finished Good Code", and "Key value" with "46668". To the right of the "Key value" field are two buttons: "Select..." and "Other...". At the bottom left is a "Cancel" button with a red X icon. At the bottom center is a button labeled "Reset counts to zero". At the bottom right are two buttons: "Help" with an information icon and "OK" with a green checkmark icon.

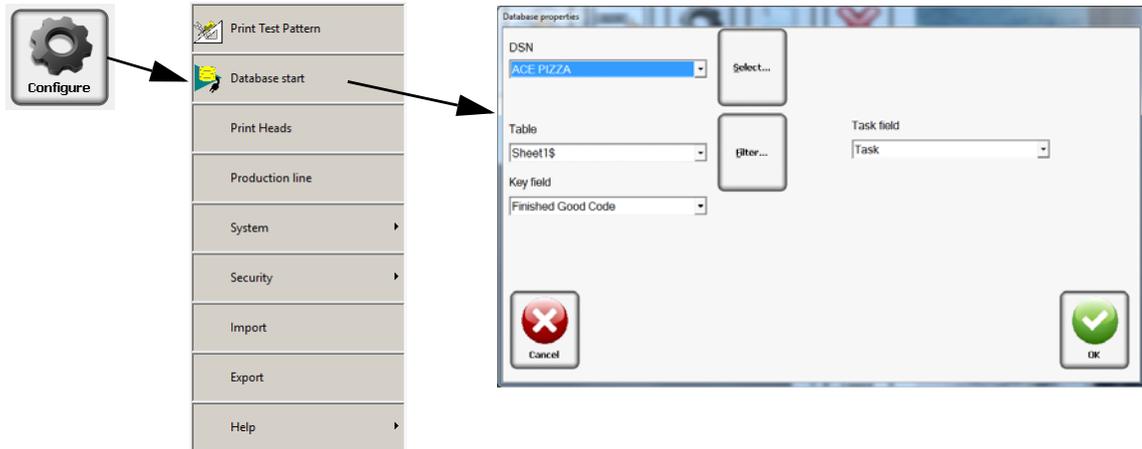
If the **Other** button is used, the Database Task Start option is

bypassed and the normal "Start Message" screen appears. Standard or Database messages can be started as normal.

2. The system will respond by prompting the user for a key field value.
3. Based on the user's input, the software goes to the predefined record source to locate the key field based on the value from step #2.
4. Once located, the software pulls up that record's information. Based on the predefined field for a task name, the system looks at that field for the task name to start.
5. The software then starts that task and any database elements that are tied to the same record (as in step #4); the system does **not** prompt the user, but instead uses the data out of that record automatically. The system is now ready to print, unless there are additional user-prompted fields necessary (see step #6).
6. If any other user-prompted information is necessary (such as database elements that specify a different record set or standard user-prompted elements), the system will prompt for these elements.
7. A new serial option called **Database Task Start** is available for use with hand scanners and/or remote systems.

Database Lookup Definition - Global Setting

In order for the Marksman Matrix or Elite to go to a customer's database for task name information, it is necessary to first globally define where that location will reside. Prior to the Database Start setup, an ODBC connection to the customer's database must be made with a unique Data Source Name (DSN). To instruct the Controller where this data will reside, the details must be entered on the new menu option **Configure, Database start**.



First, click the **Select** button to select the DSN entry to use when utilizing the database start routine.

Each of the available tables (or sheets) will be available based on the DSN entry. Select the appropriate table for use.

Next, choose the field that will be utilized for the Key field - to identify the record in which the task name will be found.

Finally, choose the field where the task name is located.

A sample table is shown below for reference (based on input above).

ACE Pizza Sample spread sheet This example is an Excel spread Sheet with a DNS named ACE PIZZA

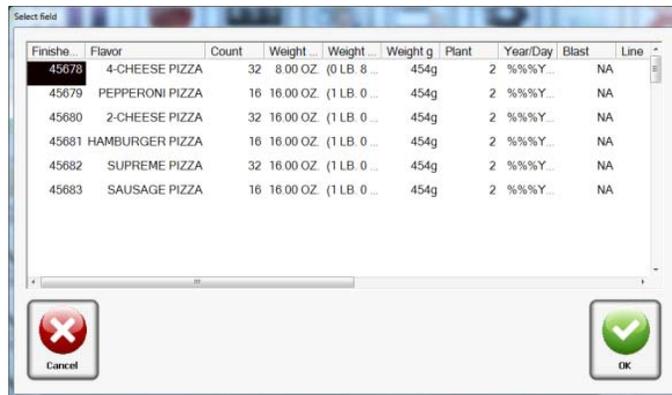
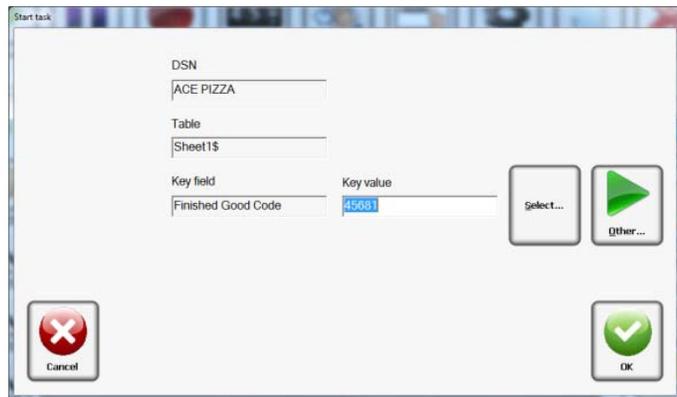
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	Finished Good Code	Flavor	Count	Weight OZ	Weight LBS	Weight g	Plant	Year/Day	Blast	Line	Time	I2of5	Rotation	Cartons	USDA Stamp	Box Size	Task
2	45678	4-CHEESE PIZZA	32	8.00 OZ.	(0 LB. 8 OZ.)	454g	2	%Y%Y%	NA	NA	%H:%m	1009876545678	%Y%M	CARTONS		Big	BigBoxNoUSDA
3	45679	PEPPERONI PIZZA	16	16.00 OZ.	(1 LB. 0 OZ.)	454g	2	%Y%Y%J	NA	NA	%H:%m	1009876545679	%Y%M	CARTONS 1999		Big	BigBoxUSDA1999
4	45680	2-CHEESE PIZZA	32	16.00 OZ.	(1 LB. 0 OZ.)	454g	2	%Y%Y%J	NA	NA	%H:%m	1009876545680	%Y%M	CARTONS		Big	BigBoxUSDA1999
5	45681	HAMBURGER PIZZA	16	16.00 OZ.	(1 LB. 0 OZ.)	454g	2	%Y%Y%J	NA	NA	%H:%m	1009876545681	%Y%M	CARTONS 1999		Big	BigBoxUSDA1999
6	45682	SUPREME PIZZA	32	16.00 OZ.	(1 LB. 0 OZ.)	454g	2	%Y%Y%J	NA	NA	%H:%m	1009876545682	%Y%M	CARTONS 1999		Big	BigBoxUSDA1999
7	45683	SAUSAGE PIZZA	16	16.00 OZ.	(1 LB. 0 OZ.)	454g	2	%Y%Y%J	NA	NA	%H:%m	1009876545683	%Y%M	CARTONS 1999		Big	BigBoxUSDA1999

Database Start Task

Press the **Start** play button on the toolbar.

The operator can either input the key field data and press toe **OK** button, or use the **Select...** button to choose from the database view.

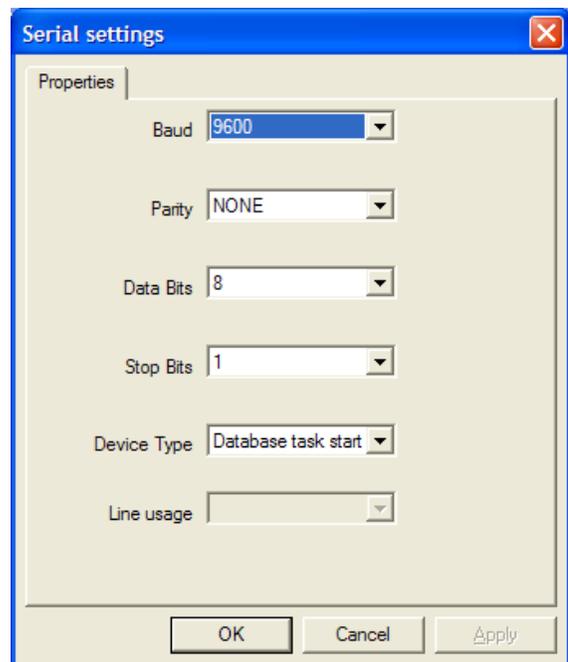
In the database **Select Field** screen, scroll down the Key Field column to the desired data, and press **OK**. This will return you to the Start task. Press **OK** to start the process.



Serial Port Modification

In addition to accessing the new menu option and toolbar button, the serial port options have been modified to allow for a "Database task start" as seen in the figure at right.

When set to the database task start setting, the system will accept serial input from the communication port and use this information as the key field value, as indicated in the Start task screen in the previous figure.



Printer Report Modification

In order to determine what key field has been selected by the operator, the printer report has been modified to indicate the chosen key field. The key field will be indicated on the preceding line under the Task Name field.

A screenshot of a 'Print Report' window. The window has a blue title bar with the text 'Print Report' and a close button (red X) on the right. Below the title bar is a table with the following data:

Time	Action	User	Line	Task name	Co...
11/05/07 17:03:28	Database start - key value	ROOT	LINE0001	456: 781756626064	
11/05/07 17:03:28	Start task	ROOT	LINE0001	456	29
11/05/07 17:03:34	Stop task	ROOT	LINE0001	456	35

Appendix E: Hand Scanner

Scan and Shoot Setup

The first step in setting up the hand scanner is determining which numbers in the barcode are to be used to select the task to be started. The following example will demonstrate the process by using 5 digits of a 12 digit UPC barcode. You will need to print this page if you plan on using the example barcode. It may be preferable to get an actual barcode that will be used.

Create a task

The task that is to be printed after the barcode is scanned must be associated with that barcode. This is done by creating a task and giving it the name of the 5 digits of the barcode being used to start the task. In the example below, the barcode being scanned is:

0 79068 **17001** 7

The part of the barcode that will be used to identify the task is highlighted: **17001**. This is the name that will be given to the task. A task should now be created using the name **17001**.



Scanner

Plug the scanner into a serial port, either the *Auxiliary Input port or Com1 port.

Setup the port that was chosen to match the scanner:

Com1:

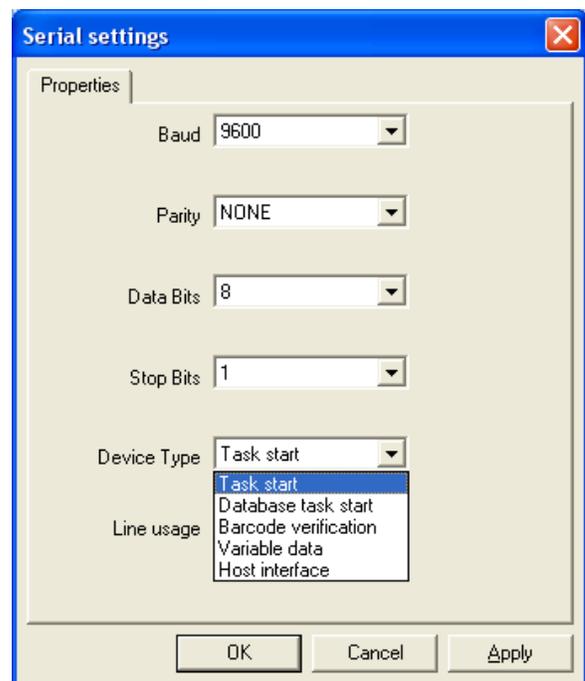
Configure/System/General Settings/
Com1/Properties

* NOTE: There is +12V on pin 1 of the auxiliary input port that is used to power the Foxjet scanner.

Set up the serial port to match the scanner:

- Baud = 9600
- Party = NONE
- Data Bits = 8
- Stop Bits = 1
- Device Type = Task start
- Line usage = N/A

The port is now set up to start a task from a serial string.



Mask task name from a serial string:

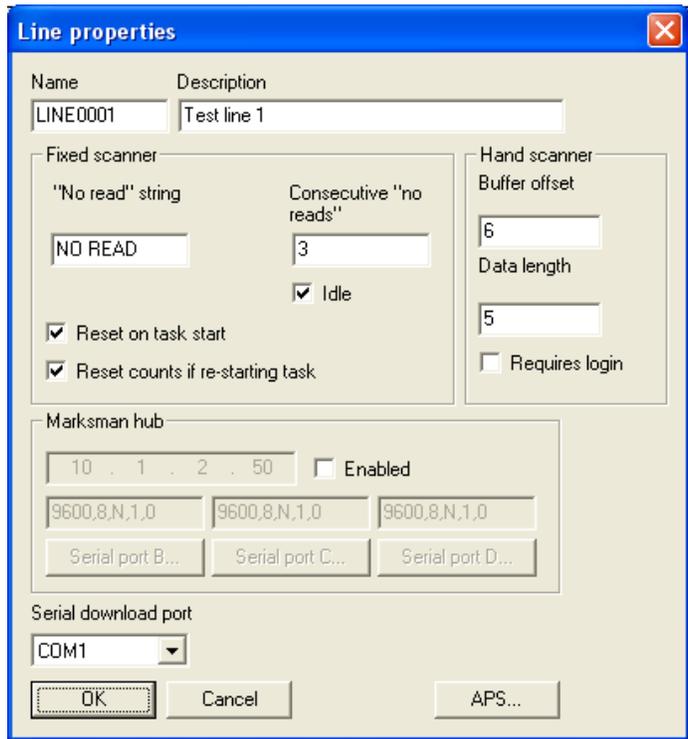
To create the mask to separate the task name from the barcode, go to the line properties: **Configure/Production Line**. Edit the line where the head is located.

Buffer offset: The number of characters in the string to the start of the task name, starting with 0. In our example the offset is 6.

Barcode characters: 0 7 9 0 6 8 1
 Buffer Offset Count: 0 1 3 2 4 5 6.

Data length: The number of characters in the task name.

17001= 5 characters



Testing the Start Task

The controller should now be set up to start a task using a hand scanner. Make sure there are no tasks running; use the **Stop** button if a task is selected.

Use the hand scanner and scan the barcode that the task was created from. If the task starts, then the controller is set up. Additional tasks can now be added as needed using the same approach as above.

If the task fails to start:

- Check that the scanner is programmed for a UPC and that it has a carriage return for a postamble.
- Check that the scanner is connected to the proper port and that it is configured correctly.
- If a "Task Failed To Start" message appears, make sure that the task is properly named and that it matches the barcode.

The Diagnostic window (**View/Diagnostic Dialog**) can be used to assist in the troubleshooting process.

Appendix F: Communicating Directly to the Controller

Refer to the Ethernet Protocol document **2465653N** when communicating directly to the controller.

Appendix G: Using Serial.cgi Commands through the Serial Port

Refer to the Marksman Duo Serial Commands document **2465654N**.

Appendix H: Using Marksman Net Software to Communicate to the Matrix

Refer to the Marksman Net/Marksman Next manual **2464308**.

Appendix I: Using the Marksman Net Protocol to Control the Matrix

Refer to the Marksman Net Commands document **2465655N**.

Appendix J Using the Print Monitor Software

Refer to the Print Monitor Software document **2465656N**.

Appendix K: 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.

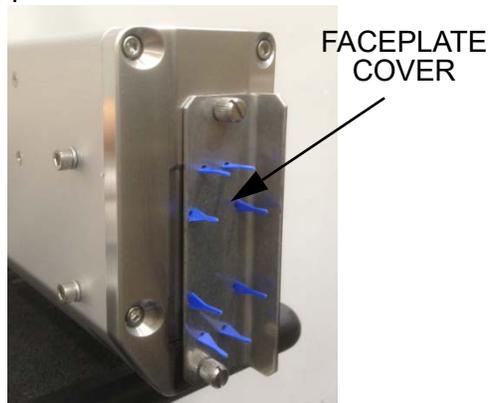
RESPONSIBILITY: Customer or authorized FoxJet Distributor technician.

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.

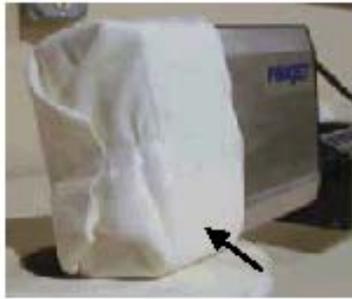
PROCEDURE:

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.



SHIPPING BOTTLE

8. Remove all photosensors and photosensor 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 cloth, carefully clean any corrugated dust, hot melt glue strings and/or other debris from the faceplate area. Be sure to wipe down the faceplate in one direction, NOT UP AND DOWN OR BACK AND FORTH, to lessen the likelihood of debris being pushed into the center slot that protects the CP/OP (nozzles). Failure to wipe in the appropriate direction may cause blockage in 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. If necessary, wipe excess ink from the bottom of the faceplate with a lint-free cloth. If ink continues to drip onto the faceplate when the Purge button is used, contact your FoxJet Service Representative.
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. Press and hold the Purge button for five seconds to prime the system or purge air from the printhead.

9. Spray the proper maintenance fluid, as identified below, onto a 5760832 Lint-Free Swab.
 - 9.1 For Printheads using VersaPrint ink, use FoxJet P/N 9001-0183-01 spray.
 - 9.2 For Printheads using ScanTrue® II PLUS ink, use FoxJet P/N 5760695 spray.
10. Wipe the CP/OP with the dampened swab in a downward direction.
11. Press and release the Purge button to initiate an automatic prime/purge cycle (observe that the ink is vacuumed off the CP/OP).
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

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 5765210).
8. Remove and the save the APS bottle labeled "For Shipping Purposes Only", and install an ink waste bottle (FoxJet PN 2464620).
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 photosensor 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.

16. Using a lint-free cloth, wipe in a downward direction, to remove any excess ink that may have dripped onto the faceplate. DO NOT WIPE IN THE CENTER SLOT THAT PROTECTS THE CO/OP (nozzles).
17. Press the Purge button for five seconds to purge any air out of the system.
18. Observe the CP/OP while pressing the Purge button (see previous step). If any air bubbles or foam emit from the CP/OP, repeat Step 17. Repeat this step until no bubbles are present in the ink flow. If there are still bubbles after ten attempts, contact your FoxJet Service Representative.
19. Run a print sample to ensure all the channels are printing and producing good print quality.

IF PRINT QUALITY IS ACCEPTABLE, PROCEED NO FURTHER.

20. If there are voids (horizontal lines) in the print, allow the Printhead to heat for four hours. If the Printhead is new or has been closed for several weeks, it could take four to twelve hours of heating to recover all of the print lines. During this time, APS cycles will accrue to help the process. If, after a day of heating, the print is not acceptable or more air bubbles show up, contact your FoxJet Service Representative.

END