Marksman Duo HR

FOXJET®

High Resolution Printing
for the **Real World**

Operations Manual

5765-313
Revision A

www.foxjet.com

1 Missouri Research Park Drive
St. Charles, MO 63304
Tel: 800-369-5384
Fax: 636-300-2188

Duo HR Controller

Section 1: Introduction

This manual describes the operation of the Marksman Duo HR controller. Is includes programming instructions to create and edit print messages for the controller. The Duo controller is used in conjunction with the Marksman Pro Print heads including the Wax print head.

This manual covers the operation of the Marksman© Duo Ink Jet Printing System, Marksman© Duo Controller and Print Heads.

Section 2: Safety

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

Wear safety goggles when performing the procedure described!

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

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

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

Only trained personnel should operate and service the equipment.

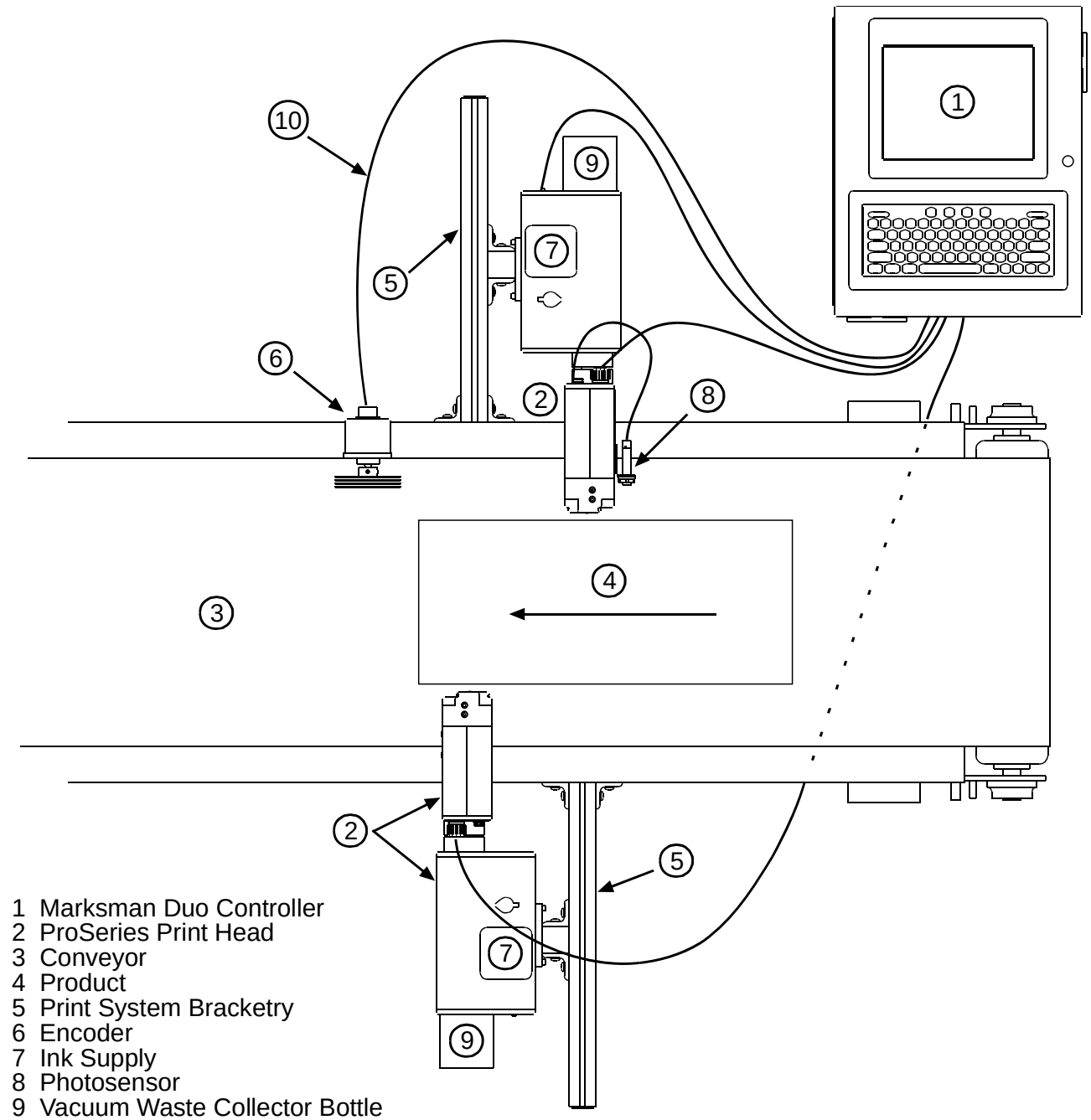
NOTE: It is extremely important to:

- 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 CAN/CSA-22.2 NO.60950-00 * UL 60950 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 3: System Components

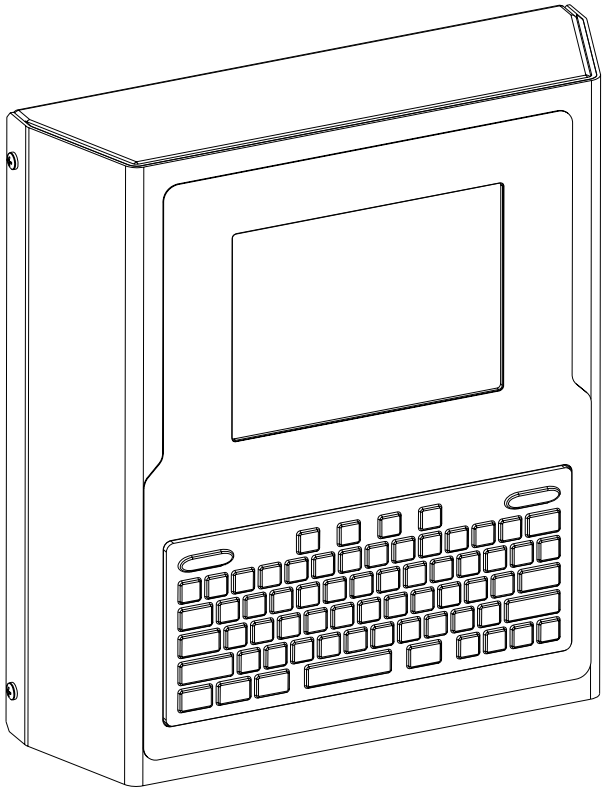


1 Marksman Duo Controller
2 ProSeries Print Head
3 Conveyor
4 Product
5 Print System Bracketry
6 Encoder
7 Ink Supply
8 Photosensor
9 Vacuum Waste Collector Bottle
10 Encoder Cable

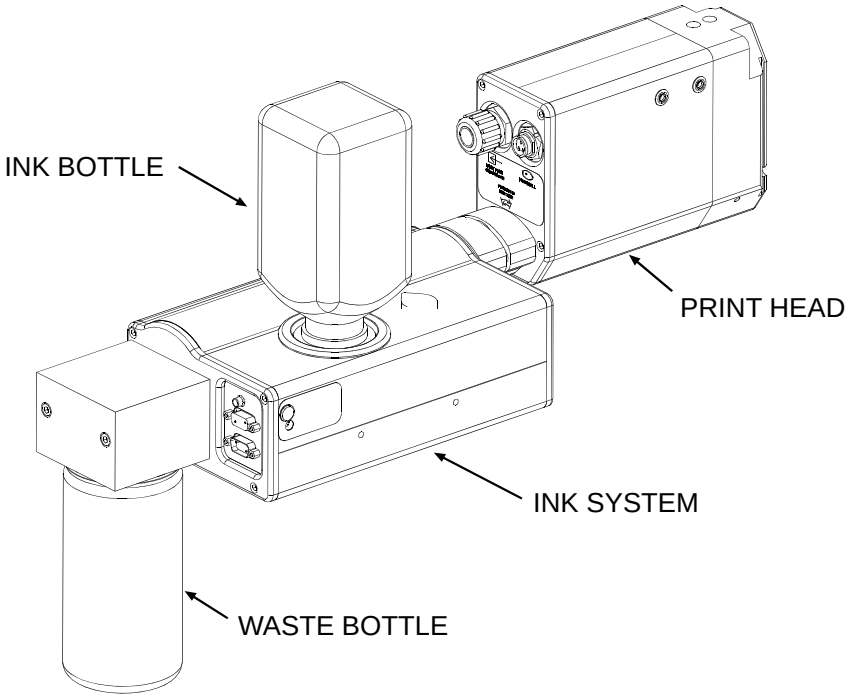
The Marksman© Duo Ink Jet System is available with the following components, options and service kits:

Part Number	Description
	Integrated Print Head
2464008	ProSeries 192, Integrated w/APS, V300
2464023	ProSeries 192, Integrated w/APS, ScanTrue II®
2464009	ProSeries 352, Integrated w/APS, V300
2464034	ProSeries 384, Integrated w/APS, ScanTrue II®
2464236	ProSeries 384, Modular
2464025	ProSeries 768, Integrated w/APS, ScanTrue II®
2464232	ProSeries 768, Modular, Vertical Orientation, ScanTrue II®
2466025D	ProSeries NP192 Print System Assembly, Domestic
2466025E	ProSeries NP192 Print System Assembly, European
2466026D	ProSeries NP192 Modular Print System Assembly, Domestic
2466026E	ProSeries NP192 Modular Print System Assembly, European
2464228	ProSeries AlphaCoder, AlphaMark
2464238	ProSeries AlphaCoder, ScanTrue II®
	Controller Assembly
5765001DPS	Controller Assembly, Marksman© Duo HR, Domestic
5765001EPS	Controller Assembly, Marksman© Duo HR, European
	Print Head/Controller Bracketry
2464550	Print Head Conveyor Mount Bracket
2464552	Retracting Bracket for 96/192 Print Head
2464553	Print Head Pivot 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 384/352 Print Head
2464565	Conveyor Mounting Bracket with Integrated Guide Rails for 384/768 Print Head
5765200	Controller Conveyor Mounting Bracket Kit
	Encoder, Photosensor, Alarm Beacon
5760820-IJ	Encoder, 2400 ppr (Includes Bracketry)
2465224	Photosensor, ProSeries
	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.
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)

Controller

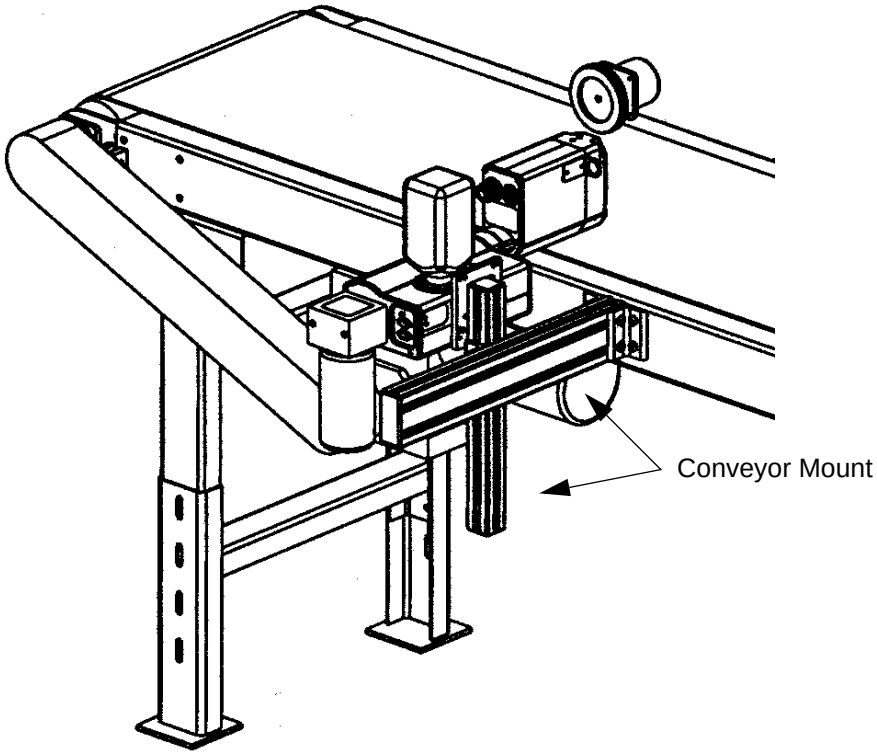


Print Head



Bracketry

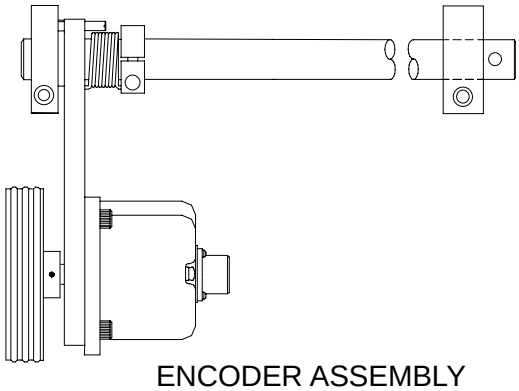
Bracketry is the structure that supports the controller, print system and other accessories. This manual details instructions for mounting all system components to a conveyor. Other mounting options for the controller and print system include the floor mount and the retracting bracket. Assembly instructions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



Photosensor

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

Encoder



ENCODER ASSEMBLY

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

The Marksman® Duo HR System uses a 2400 ppr open collector output encoder. The wheel is sized to provide the correct timing inputs to allow the print heads to print 100, 200 and 300 dpi.

Ink

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

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

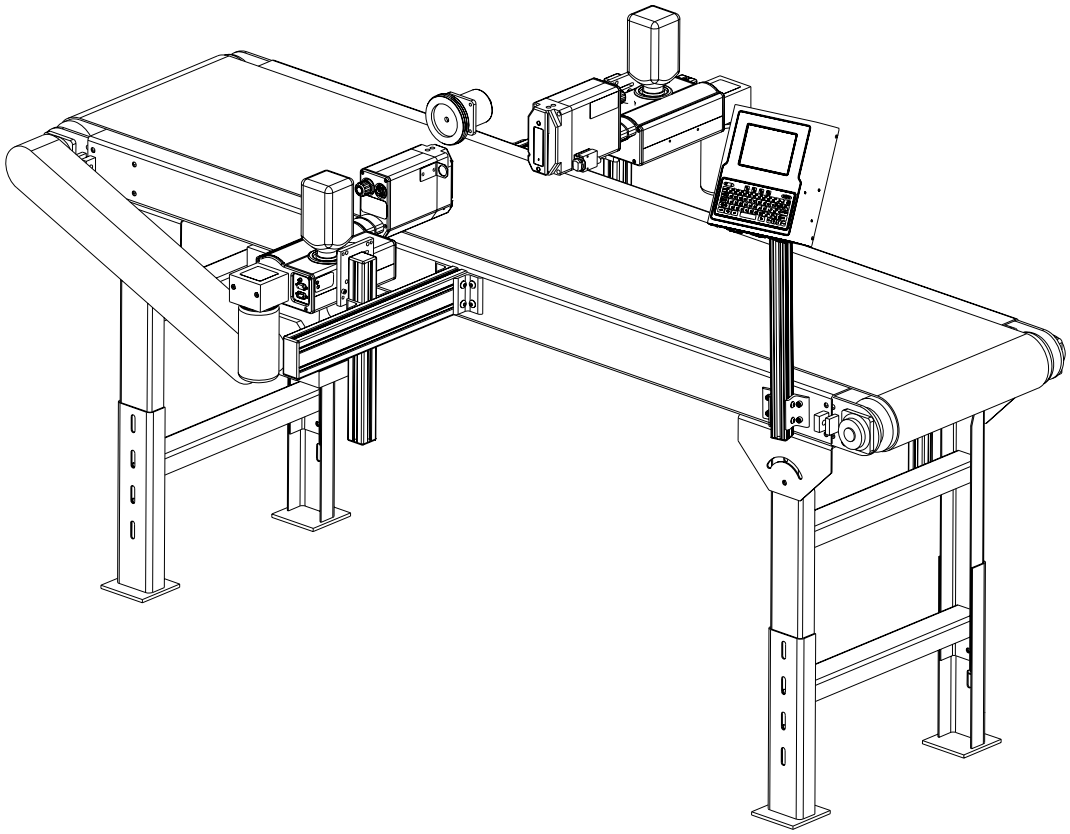
NOTE: VersaPrint™ V300 and ScanTrue® II inks are not miscible. Do NOT mix the inks.

Waste Bottle

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

Section 4: Installation

The figure below illustrates a typical conveyor-mounted 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.

System Installation Overview

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

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

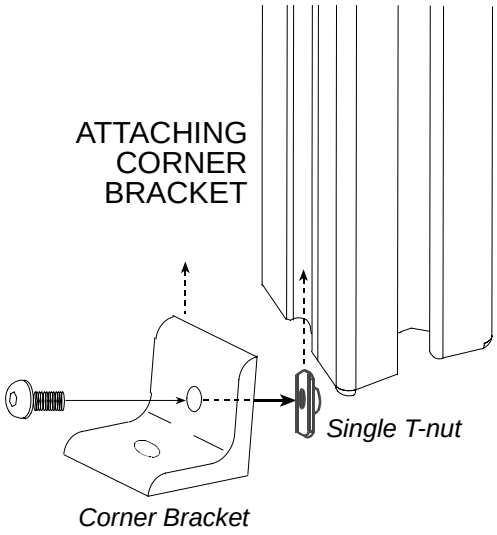
CAUTION: Remove the print head Ship Cap prior to operating the Print Heads.

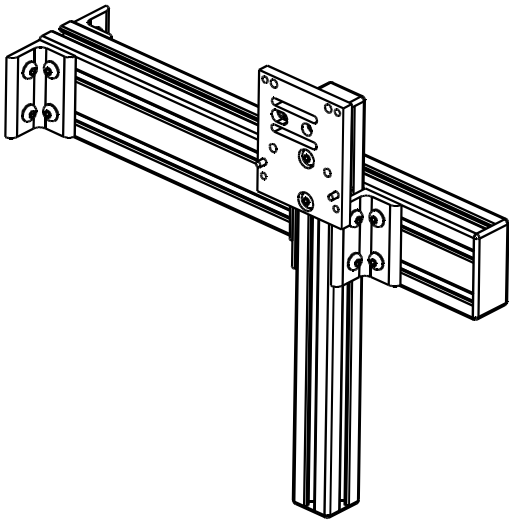
Installing Bracketry

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

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

Corner brackets are attached to aluminum bars as shown.





Mounting the Print System

Unpack the print head just before mounting to the bracketry.

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

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

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

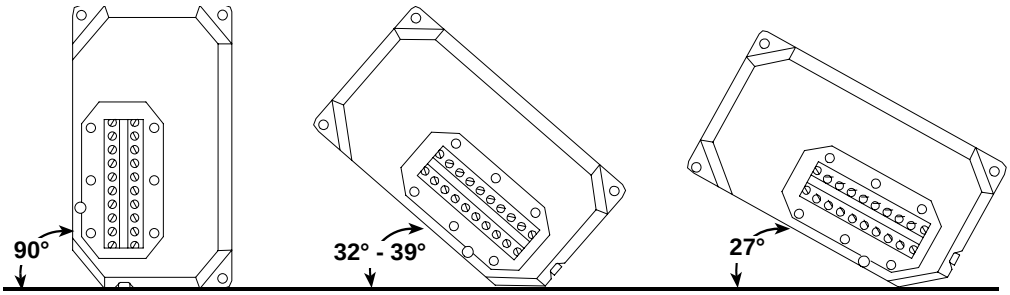
It may be necessary to vertically adjust each bracket's horizontal bar later to fine-tune message placement. This is especially true when using multiple print heads, as message lines will need to be synchronized with each other.

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

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

Setting Up the Print Head

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



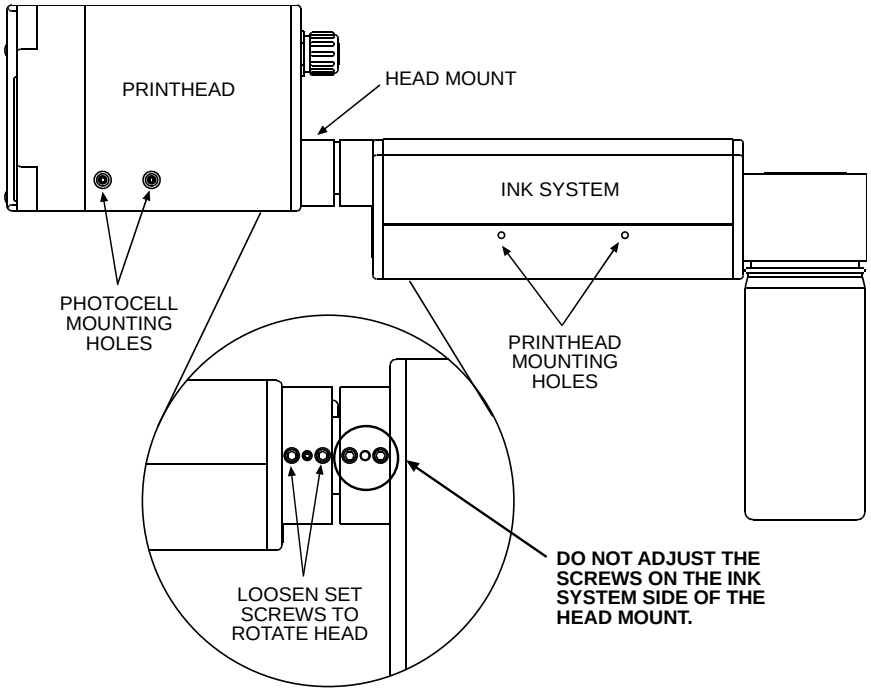
352 1.9”, 384 2” & 768 4” Print Heads

192 1” Print Head

96 3/4” Print Head

To adjust the head to its correct angle:

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



Mounting the Photosensor

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

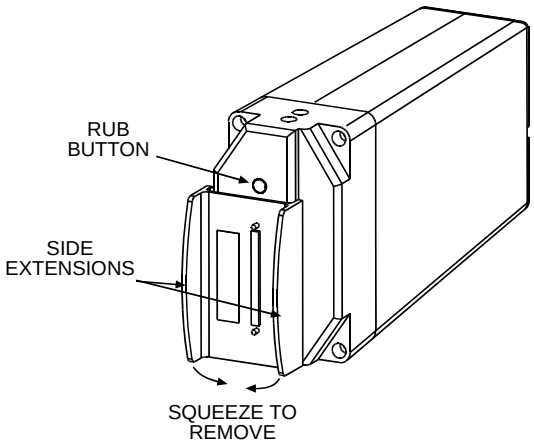
Ship Caps

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

96, 192 and 352 Print Heads:

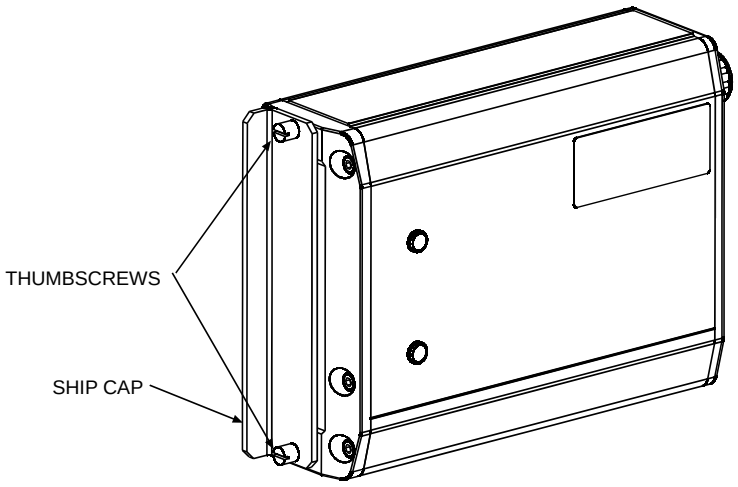
Remove the Print Head Ship Cap by squeezing the front of the side extensions together until the back releases. (See illustration at right.)

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



384/768 Print Heads

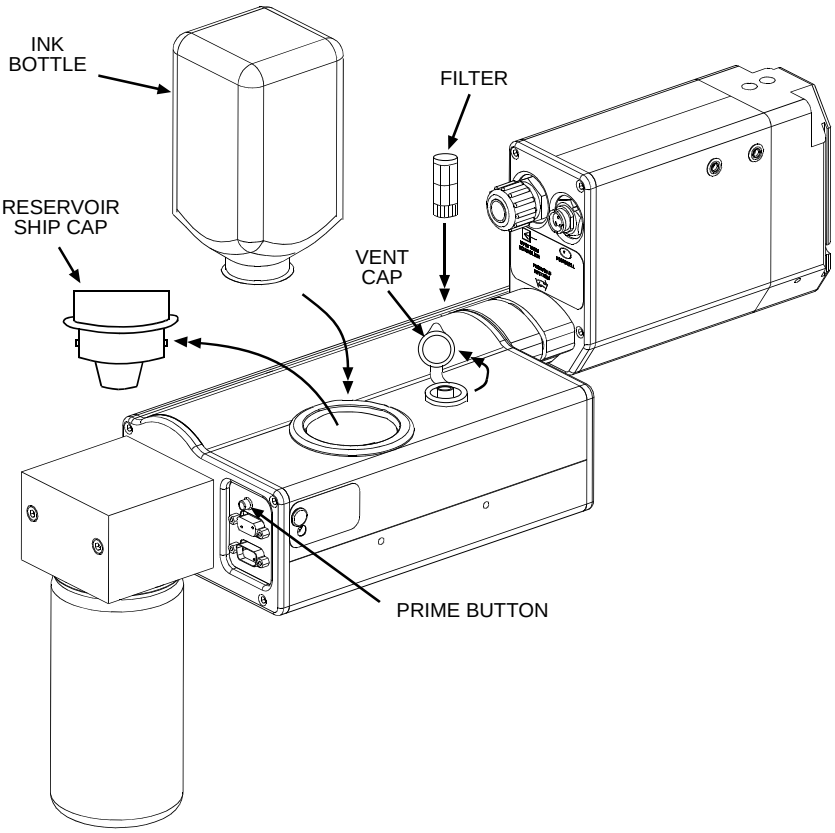
Loosen the two thumbscrews and remove the Ship Cap. (See illustration at right.)



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

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

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



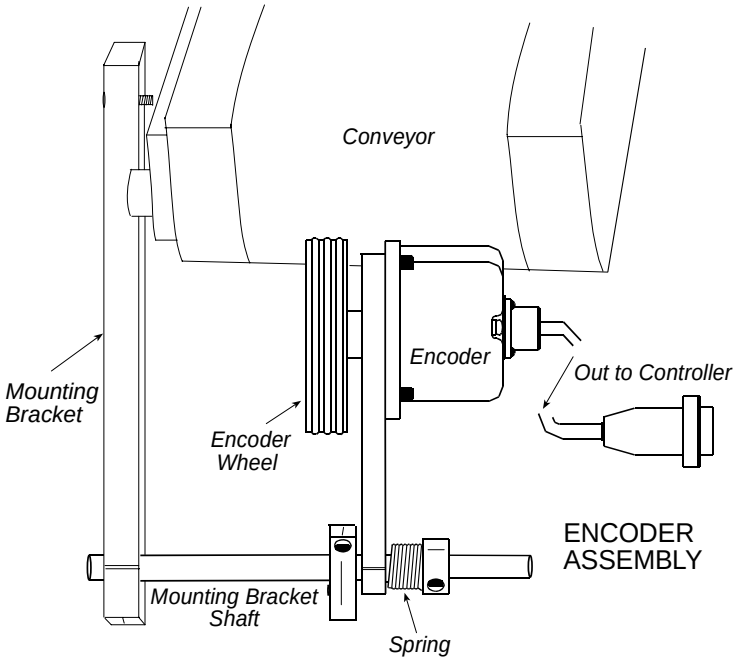
CAUTION: Do not over-tighten the ink bottle when screwing into the Reservoir. Over-tightening will damage the Reservoir.

The Encoder

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

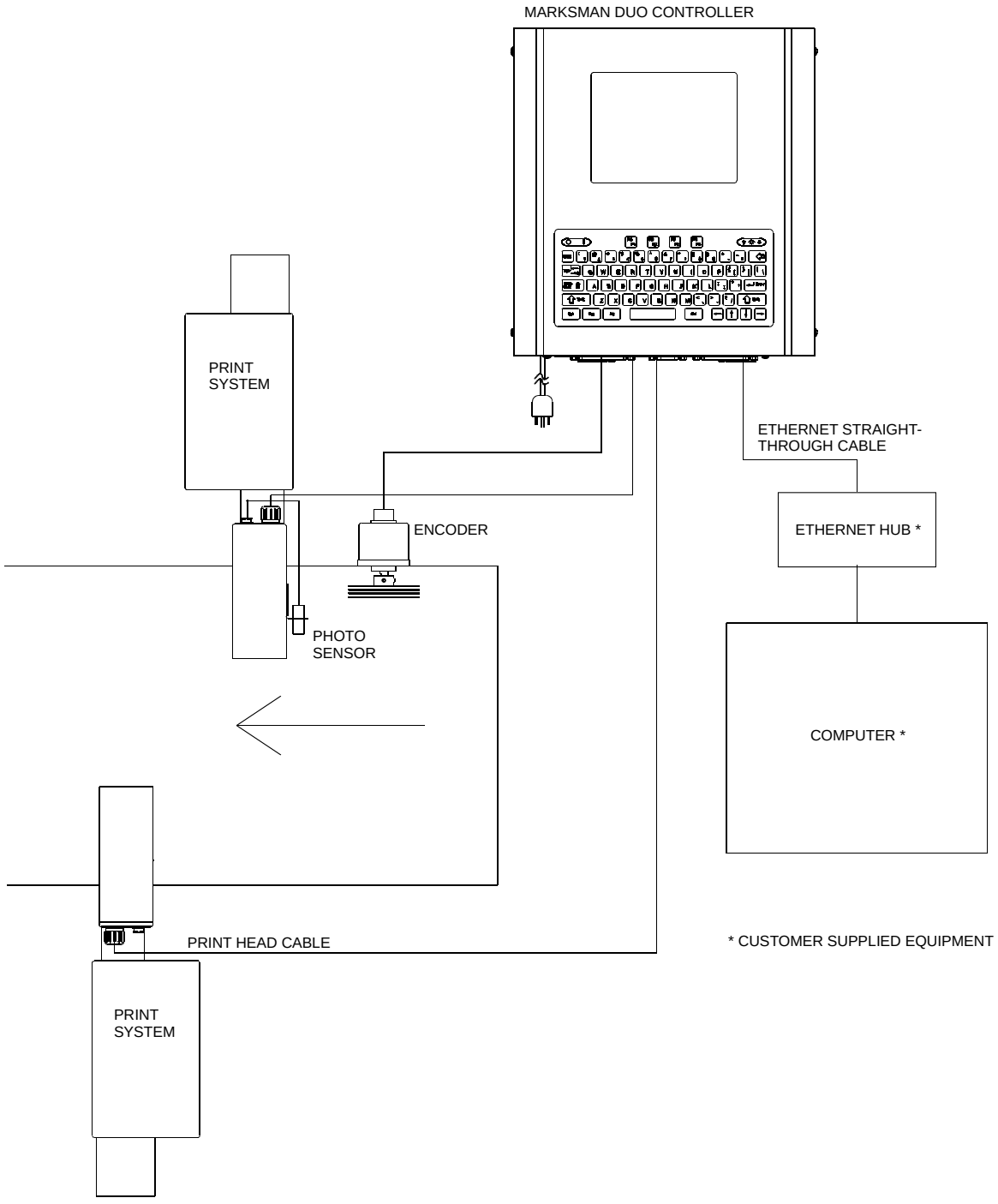
It is not necessary to install the encoder immediately adjacent to the print heads. It is more important to place it where it will accurately measure the speed of the conveyor. Install it in contact with the conveyor, or with a wheel or roller moving the same speed as the conveyor.

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

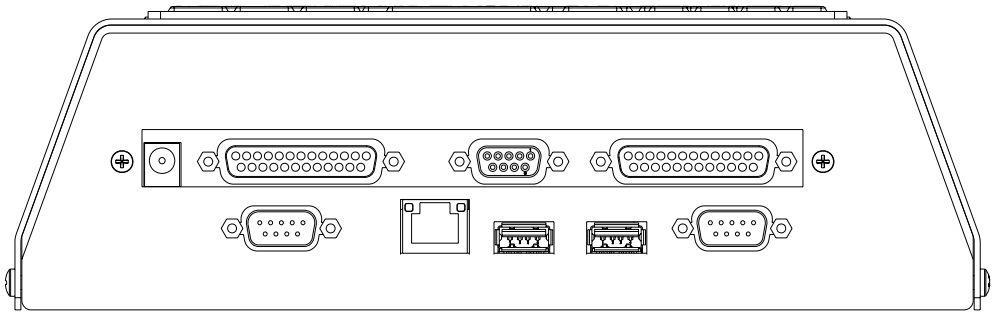


CAUTION: Do not jam the encoder wheel against the surface of the conveyor. A radial force of over 40 lbs. will reduce the life of the bearings.

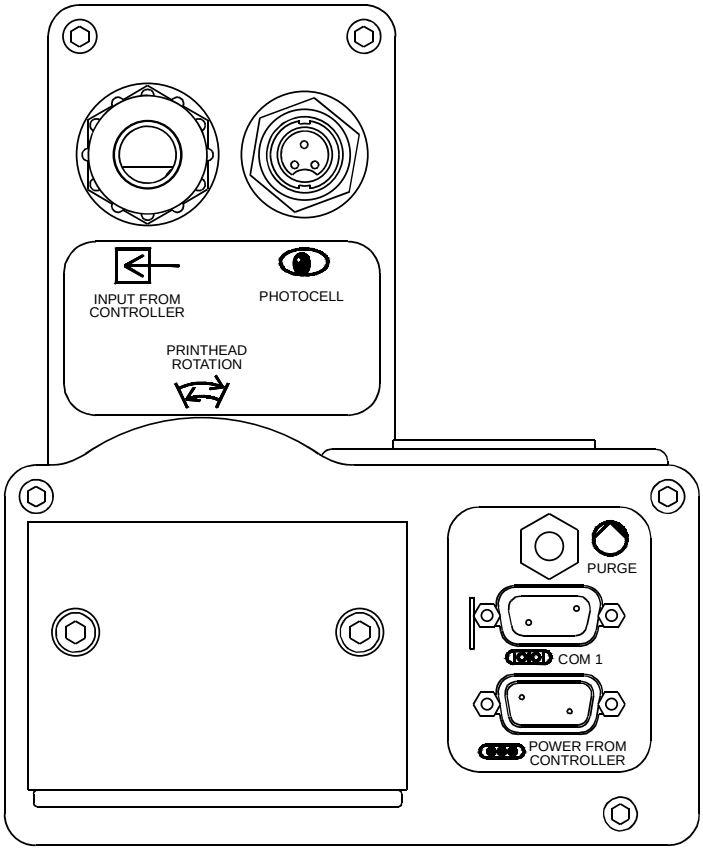
Electrical Cable Connections



Views



BOTTOM VIEW OF CONTROLLER



BACK VIEW OF PRINT SYSTEM

Priming the Print Heads

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

Manual Prime

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

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

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

APS Cycle

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

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

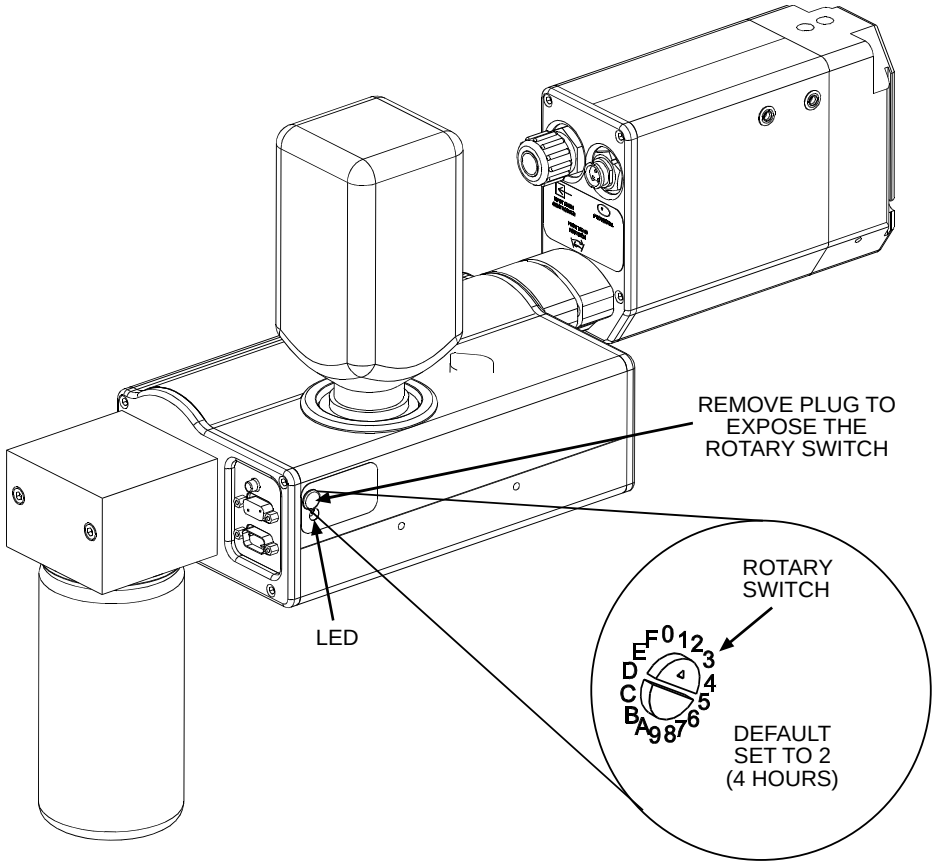
Print Head Control of APS

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

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

Timing Interval Settings

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



APS View for Pro/Classic Series Print Heads

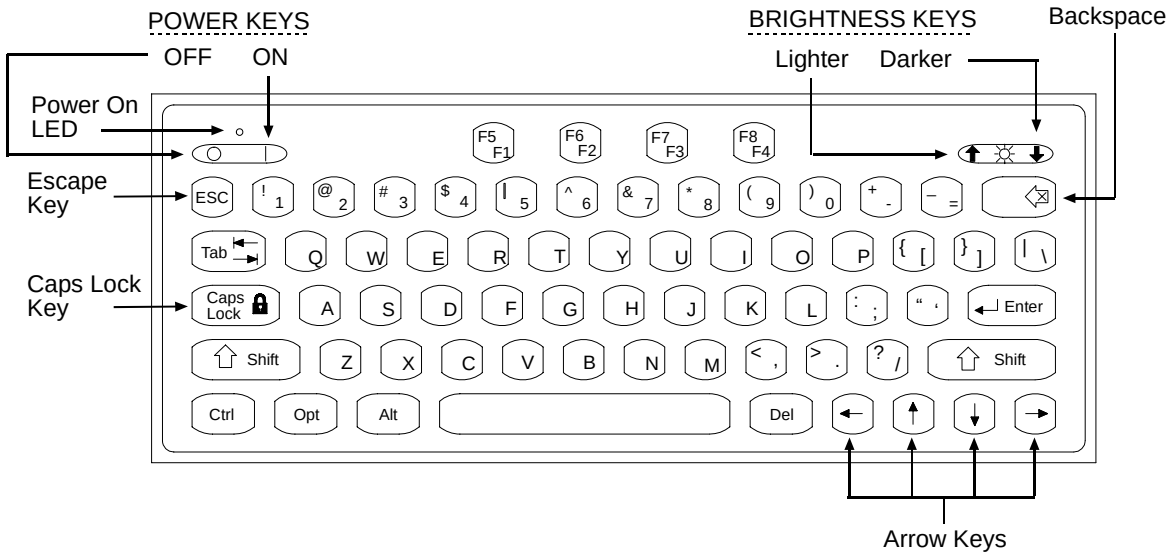
Auxiliary Photocell Input

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

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

Section 5: Getting Started

Keypad



Turning the Controller On

The power keys are located at the top left corner of the keypad. Press the **I** key to turn the controller on. Press the **O** key to turn it off. (To prevent accidental turn-off, the system will prompt for confirmation.)

CAUTION: If the system is in the Print mode when it is turned off, it will resume printing when it is turned back on. Anything that is in front of the print heads when printing resumes may get ink on it.

CAUTION: Turning the system off doesn't remove power from the unit. The power must be disconnected from the system before connecting or disconnecting heads.

Adjusting Screen Brightness

The screen brightness control keys are at the top right corner of the keypad. Press the **Up Arrow** key to make the screen lighter; press the **Down Arrow** key to make the screen darker.

Auto Repeat

The keypad has an auto repeat feature that activates when a key is held down for more than one half second.

Commands

There are three main commands given in this manual: **Highlight, Press,** and **Touch.**

Highlight

Highlight a display control to select it for further action, or to give it input focus. Different types of display controls are highlighted differently. For example, highlighted text is displayed in inverse video (light characters on a dark background), while highlighted screen buttons and message fields are displayed with a box around them.

Inverse video example: 

Press

Press a keypad key to do or complete a particular action. Examples: Press **Enter**, press **ESC**, or press the **Up/Down Arrows** to scroll through the list of items.

Touch

Touch a screen control to do or complete a particular action. Examples: Touch the **Status** button to display the Status Screen or touch a print head to view or change that print head's properties.

Screen Controls

Buttons

There are three types of screen buttons, **Text**, **Bitmap**, and **Decorated**. Touch a button to actuate its function:

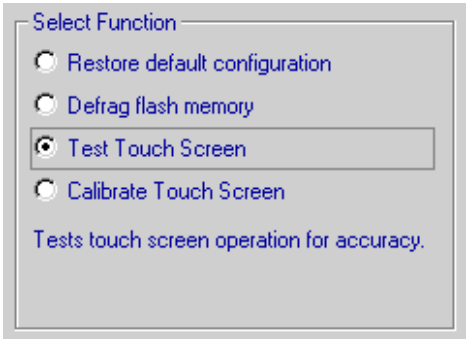
- Text button: contains a text description of its function.

- Bitmap button: contains a graphic illustrating its function.

- Decorated button: contains text and graphics.

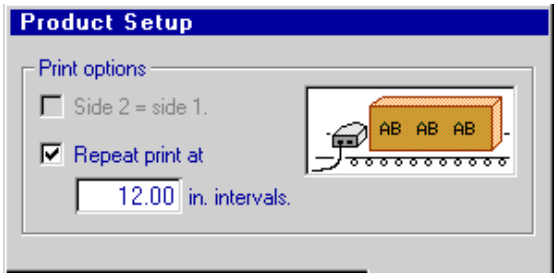
Radio Buttons

Touch a radio button or its text description to make a selection. A black dot indicates the current selection.



Check Boxes

Touch a check box or its text description to toggle an option or feature on and off. The feature or option is enabled when a checkmark appears in the box.



Value Entry Box

Touch a value entry box to highlight it, type in the desired value, and press **Enter**. Press **ESC** any time prior to pressing **Enter** to restore the original value. Touching another screen control or pressing an arrow key after entering a new value, but before pressing **Enter**, sets the new value just as if **Enter** had been pressed.

All value entry boxes have preprogrammed maximum and minimum allowable values. Enter a value greater than the allowable maximum and it automatically changes to the maximum. Enter a value less than the allowable minimum and it automatically changes to the minimum.

Depending on its usage, a value box may or may not allow decimals. When they are allowed, values are fixed at two decimal places.

Text Entry Box

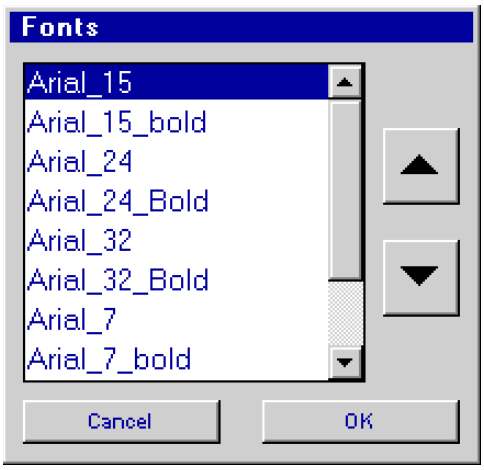
Touch a text entry box to highlight it, type in the desired text, and press **Enter**. Press **ESC** any time prior to pressing **Enter** to restore the original text. Touching another screen control or pressing the **Up** or **Down Arrow** keys after entering new text, but before pressing **Enter**, sets the new text just as if **Enter** had been pressed.

Existing text in a text entry box can be edited. Touch the box to highlight it, use the **Left** or **Right Arrow** keys to move the cursor to where text is to be added or removed, then use the **Backspace** or **Delete** key to remove unwanted text, or type in additional text.

List Box

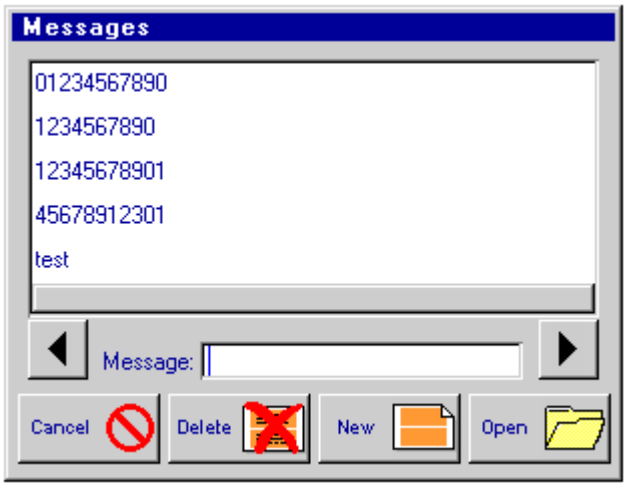
Use a list box to select an item from a number of related items, such as print heads, fonts, or date code formats. A list box is displayed in response to a button or other control being touched. (A vertical scroll bar will appear if the list contains more items than can be displayed in the list box.)

Highlight the selection by touching it, or scroll through the list using the up and down screen buttons or the up and down keys on the keypad. After an item has been selected from the list, touch the **OK** screen button, or press **Enter** on the keypad.



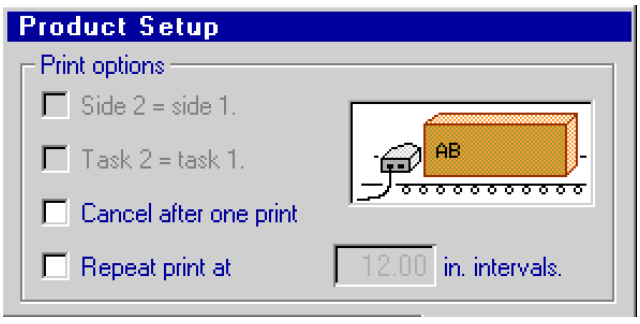
Message Selection Box

Use the message selection box to select a print message for printing, editing, deleting, etc. Select a print message by touching its name, by using the arrow keys on the keypad to move through the message names until the desired one is highlighted, or by typing the name in the box provided. After a message is selected, touch the screen button for the operation to be performed.

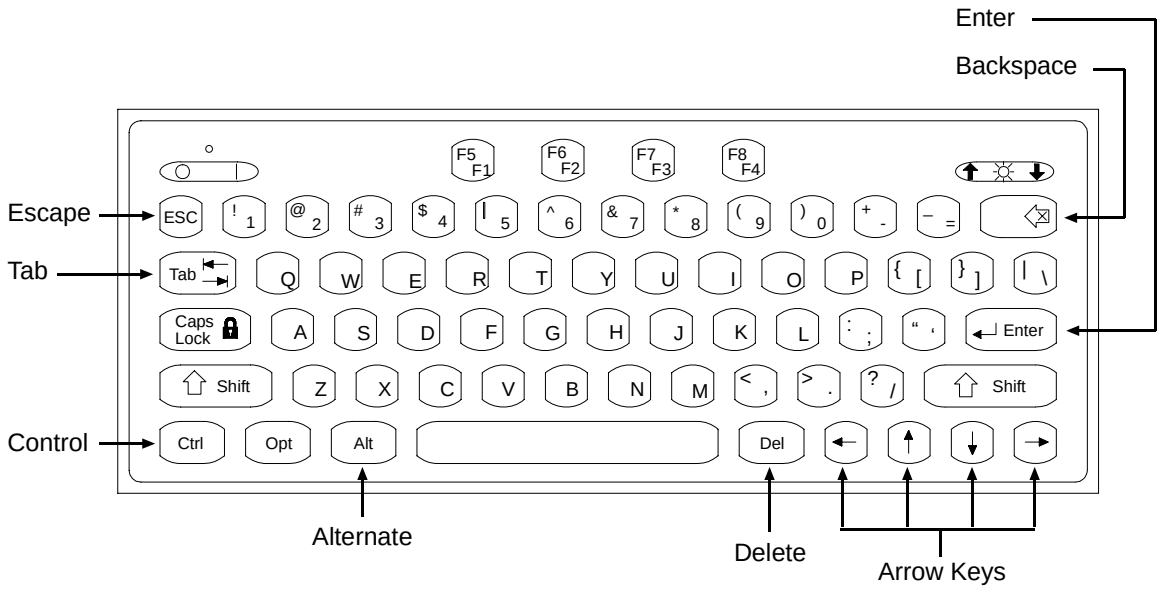


Inactive Controls

When a screen control has no function within the context of the current situation, it is made inactive or "grayed out" (the control is displayed entirely in shades of gray). For example, if the system is set up for printing on one side of a product only, the **Side 2 = Side 1** check box on the Print Options screen has no function and is grayed out. Likewise, the repeat intervals value entry box is grayed out if repeat print is not selected.



Keypad Controls



The following keypad keys can be used to navigate through a screen:

ESC (Escape):

Press **ESC** to close the current window, dialog box, or menu. Any changes made in the window or dialog box that have not been saved will be discarded. Pressing **ESC** is the only way to close a menu without performing any of the menu's functions.

If a text entry box or value entry box has input focus and the existing contents of the box have been changed but not set (by pressing Enter), press **ESC** to restore the original contents. Press **ESC** again to close the window or dialog box that contains the text or value entry box.

Arrow Keys:

Press the **Arrow** keys to shift input focus from one screen control to another. Focus will shift to the next control in the general direction of the key pressed. If no control lies in that direction, input focus remains where it is.

When a text-type screen control has input focus, the **Left** and **Right Arrow** keys move the cursor through the text; the **Up** and **Down Arrow** keys will shift focus to the next screen control above or below the box.

Tab:

Press **Tab** to shift input focus from one screen control to another. Input focus shifts from control to control in the order in which they were added to the display.

Tab also frees the input focus when it gets "stuck" in a window. For example, when scrolling through the message list window on the Message Selection Box, the arrow keys cannot be used to leave the confines of the window. To shift input focus out of the window, press **Tab**.

Enter:

Enter key behavior is determined by the screen control that has input focus.

- Press **Enter** to actuate a Text button, Bitmap button, or Decorated button.
- Press **Enter** to choose a Radio button selection.
- Press **Enter** to toggle a Checkbox option on and off.
- Press **Enter** to terminate data entry on Text and Value Entry boxes.

Backspace or Delete:

Press the **Backspace** or **Delete** button to delete individual characters or entire text strings when editing text. **Backspace** removes characters to the left of the cursor, **Delete** removes characters to the right of the cursor.

Ctrl (Control):

The **Ctrl** key is used in the Edit Screen to amplify the action of the arrow keys (see *"Moving Around the Edit Screen" on page 32"*), and to alter the function of the Enter key.

Alt (Alternate):

The **Alt** key is used in the Edit Screen to alter the action of the arrow and Enter keys. (See *"Editing a Message" on page 62"*.)

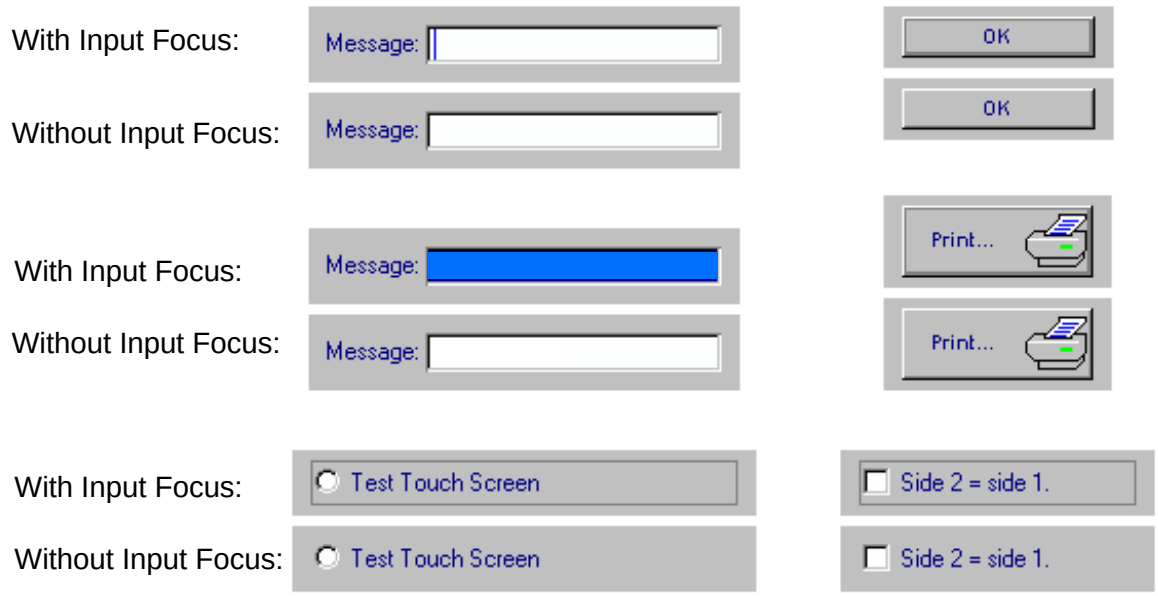
F4/F8:

The **F4/F8** key pulls up the extended characters dialog.

Input Focus

A screen control that receives keypad inputs has input focus. A screen control is assigned input focus by touching the control, or by using the Tab or arrow keys on the keypad to shift focus from control to control. A screen control that has input focus is highlighted in some way: text based controls display a cursor that indicates the text insertion point or are displayed in inverse video; buttons and message fields have a box around them.

Examples of screen controls with and without input focus:



Home Screen

The Home Screen is usually the first screen displayed at power on. The major parts of the Home Screen are the **Message Window**, the **Task 1** control buttons, the **Show Menu / Hide Menu** button, and the system controls and access buttons. (The system controls and access buttons' functions are described later in this manual.)

Message Window

The Message Window displays the current print message as it will look the next time it is printed. If no message is loaded to print, the window is empty. The message window is updated approximately every seven seconds, so it likely will not show each print.

Long print messages that do not fit completely within the Message Window can be viewed by using the **F1** and **F2** keys to scroll the message left and right, respectively.

The appearance of the message window reflects the system setup. Each numbered white or beige bar represents a print head in the daisy chain. The text on a bar is the text printed by that print head. If printing on a single side of the product, only one window is shown. Two windows are displayed when utilizing two-sided printing, with the top window always being side 1 or the side closest to the controller.

The window's header displays which task the print message is being printed on and the file name of the message being printed. If no message is loaded to print, "**None**" is displayed.

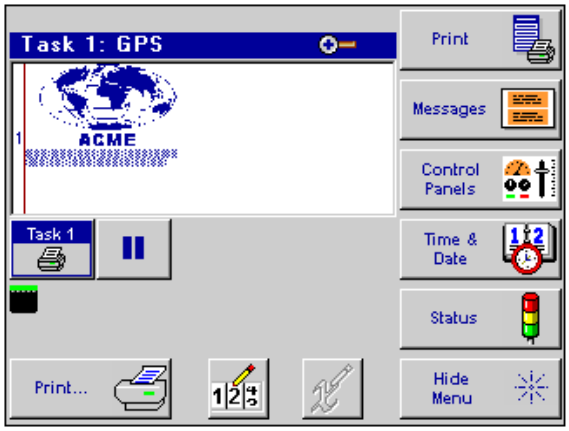
Ink Level Icon

Green = Ink Level OK

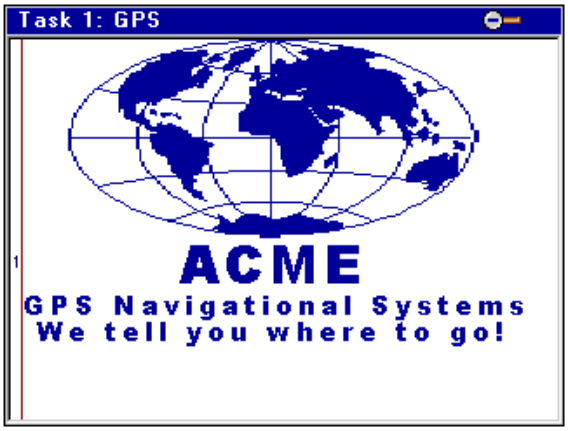
Yellow = Low Ink

Red = Out of Ink

On print tasks configured with 768 or 384 graphics print heads, a **Zoom** button on the right side of the window header expands the message window to full screen and magnifies the print message so that fine details may be seen (see illustrations below). When zoomed in, use the **F1, F2, F5** and **F6** keys, or the **Arrow** keys, to scroll the message left, right, up and down. Use the **Zoom** button or the **ESC** key to zoom back out.



Normal Message Window



Message Window Zoomed In

Task 1 Button

Touch the **Task 1** button to display the Task 1 message in the Message Window.

The printer icon on the task buttons indicates the current print status. If the printer is shown covered with a red circle and slash, the task is either paused or no print message is loaded to print. If the red circle and slash is not displayed, the task is printing.

Print/Pause Button

Touch the **Print/Pause** button to toggle the task between printing and not printing (paused). The icon on the button indicates what action will be taken when the button is touched. That is, if blue double bars are shown, touch the button to **pause** print. If a green arrow is shown, touch the button to **resume** printing. The **Print/Pause** button is always active; a task's message does not have to be displayed in the message window for its **Print/Pause** button to work.

When a task is empty (no message is loaded to print), its **Print/Pause** button displays both an arrow and the double bars, and is grayed out.

The Print/Pause button looks like this when the task is printing. Touch the button to pause printing.

The Print/Pause button looks like this when the task is paused. Touch the button to resume printing.

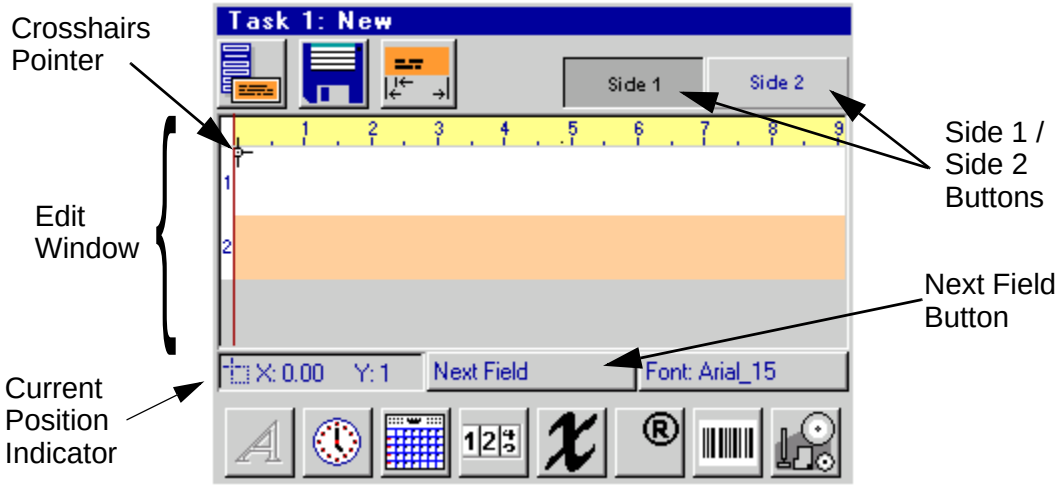
The Print/Pause button looks like this when the task is empty.

Show Menu/Hide Menu Button

Touch the **Show Menu/Hide Menu** button to show or hide the Home Screen menu. The functions associated with the menu buttons are described later in this manual.

Home Screen with Menu Displayed

Moving Around the Edit Screen



Edit Window:

Print messages are created and edited in the Edit Window. Unlike all other system screens and dialog boxes, input focus on the Edit Screen remains in one place - the Edit Window. Buttons outside of the Edit Window do function when touched, but they can't be made to function from the keypad. For information on the layout and appearance of the Edit Window see *"Creating a Print Message" on page 51*.

Crosshairs Pointer:

The crosshairs pointer indicates where a new data field is placed when added to a print message. Use the keypad keys listed below to move the crosshairs pointer around the Edit Window.

Touching the screen inside the Edit Window can also move the crosshairs pointer. The pointer moves to where the screen is touched.

The color of the crosshairs pointer changes from black to red when it moves over a data field.

Direction	96, 192, 224, 352, 384 & 768 Distance	WAX Distance	Press keypad key
up/down	3 dot row	1 dot row	up/down arrow
up/down	Height of current font	Height of current font	Shift + up/down arrow
up/down	1 dot row	1 dot	Alt + up/down arrow
down	Height of current font	Height of current font	Enter (when no fields are highlighted and the crosshairs pointer is black)
left/right	6 print columns	4 print columns	left/right arrow
left/right	54 print columns	36 print columns	Shift + left/right arrow
left/right	1500 print columns	1000 print columns	Ctrl + left/right arrow
left	6 print columns	4 print columns	Backspace/Delete (when no fields are highlighted)
left	54 print columns	36 print columns	Shift + Backspace/Delete (when no fields are high-lighted)
left	1500 print columns	1000 print columns	Ctrl + Backspace/Delete (when no fields are high-lighted)
right	6 print columns	4 print columns	Space Bar (when no fields are highlighted)
right	54 print columns	36 print columns	Shift + Space Bar (when no fields are highlighted)
right	1500 print columns	1000 print columns	Ctrl + Space Bar (when no fields are highlighted)

Next Field Button:

Touch the **Next Field** button to highlight or select the data fields in the order in which they were added to the print message. A selected field's color changes from dark blue to red and a box surrounds the field. Once a field is selected, it can be moved around the Edit Window or its contents can be edited. For instructions on editing an existing data field see *"Editing a Message" on page 62*. Use the keypad keys listed below to move a selected field around the Edit Window.

Fields cannot be moved over other fields, they must be moved around them. When a field is positioned appropriately, press **Enter** to de-select it.

A field can also be selected by moving the crosshairs pointer over it (as indicated by the crosshairs pointer turning red) and pressing **Enter**, or by touching the field directly.

:

Direction	96, 192, 224, 352, 384 & 768 Distance	WAX Distance	Press keypad key
up/down	1 dot row	1 dot rows	up/down arrow
up/down	9 dot rows	36 dot rows	Shift + up/down arrow
up/down	1 dot row	1 dot	Alt + up/down arrow
left/right	6 print columns	4 print columns	left/right arrow
left/right	54 print columns	36 print columns	Shift + left/right arrow

Current Position Indicator:

The Current Position Indicator displays the current location of the crosshairs pointer, selected field, or edit cursor. The X position is given in inches from the left edge of the active print area. The Y position is given in dot rows from the top of the active print area.

Side 1/Side 2 Buttons:

Touch the **Side 1** or **Side 2** button to display side 1 or side 2 of the print message. The button that appears pressed or pushed indicates which side is currently displayed.

Section 6: Setup Functions

Tasks

A task consists of all operations associated with a single interface board.

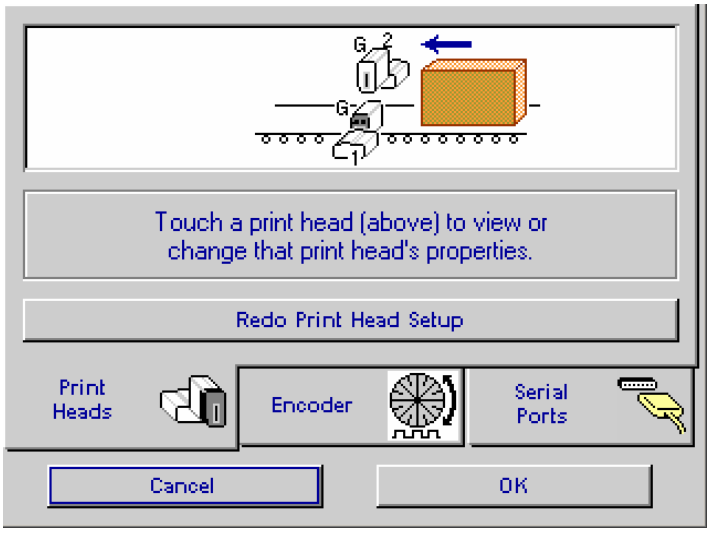
Configuring the Print Station

Print Head Setup Screen

On the **Home Screen**, touch **Show Menu**, **Control Panels**, then **System Setup**.

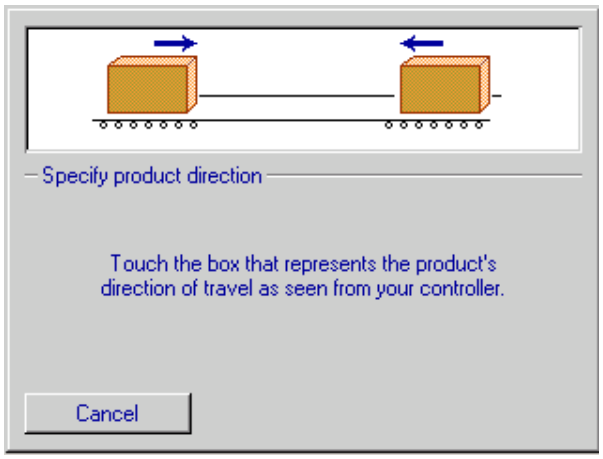
Screen prompts guide the user through the step by step print head setup procedure. Once begun, the procedure may be aborted (by pressing **Cancel** or the **Escape** key) at any time without changing the current print head setup.

To begin the print head setup procedure, touch the **Redo Print Head Setup** button. The next screen prompts the user to specify product direction.



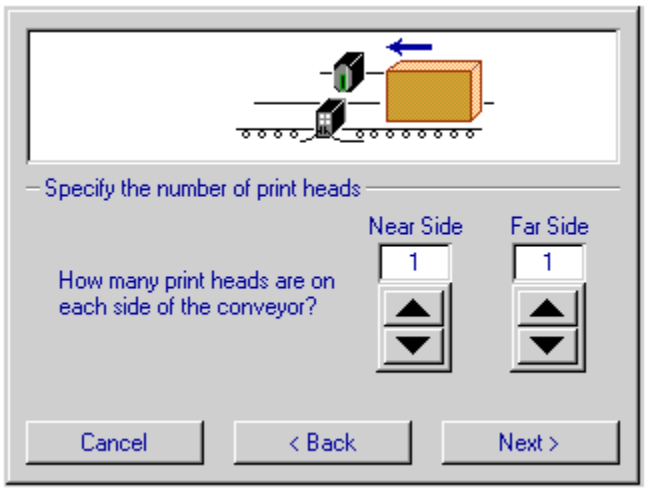
Specifying Product Direction

Touch the box that represents the direction the product will move on the conveyor. The next screen will appear automatically.



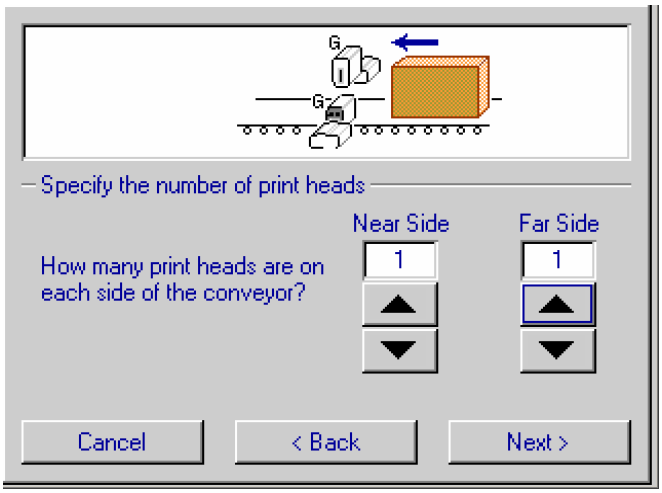
Specifying Number of Print Heads

Touch the **Up/Down Arrows** to set the number of print heads on each side of the conveyor. The illustration at the top of the screen will automatically change to reflect the choices. In the example below, one print head has been specified on the near side and one on the far side of the conveyor. Touch the **Next>** button.



Setting Head 1 and Head 2

Both print heads are displayed, and the user is prompted to indicate head number 1. Touch the print head that represents head number 1. Once this is done, the **Print Head Properties** screen appears.

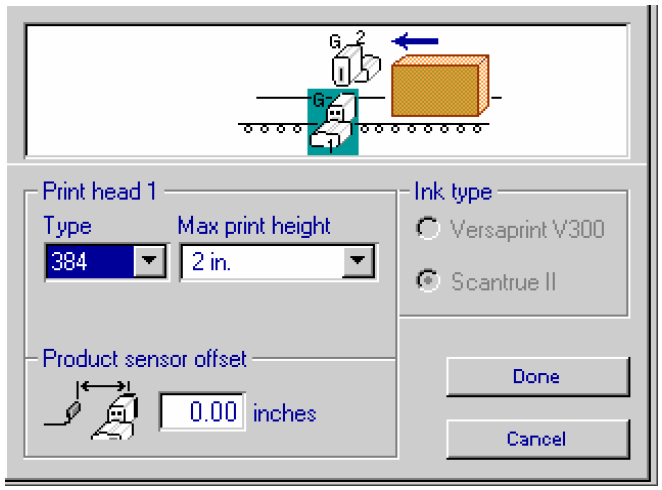


NOTE: The first print head should be the top print head in the system, as this one will be printing the top line of data and will be the first one prompted to enter data.

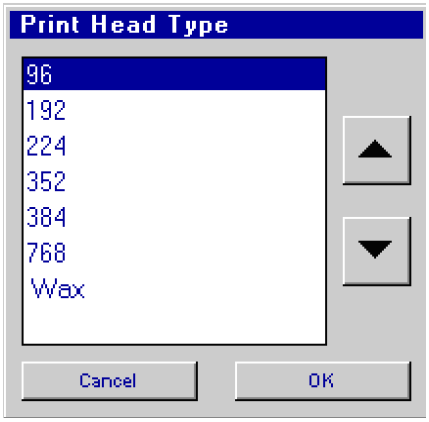
Defining Print Head Properties

The final step in print head configuration is defining the properties of the individual print heads.

Beginning with print head number one and working in numerical order, the following will need to be defined:



- **Print head type and size:**



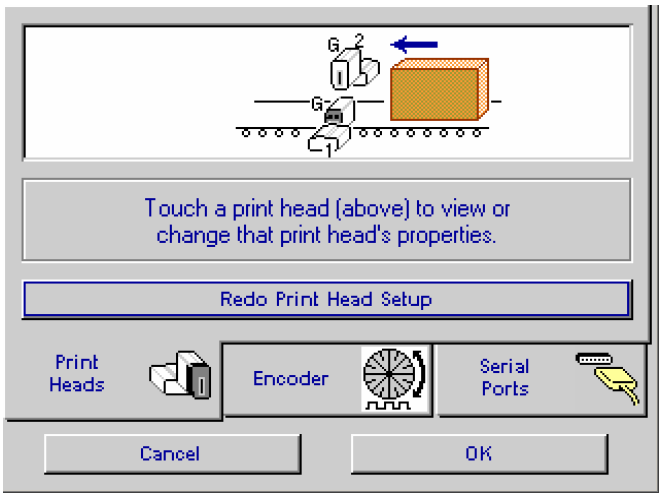
- **Product sensor offset:** Enter the distance between the photosensor and the print head, in inches. This may need to be fine-tuned after print setup.

  The maximum sensor offset is 52" for 96, 192, 224, 352 and WAX Print Heads. The maximum sensor offset for the 384 and 768 Print Heads is 27".

- **Ink Type** indicates the type of ink used for the selected print head.

After a print head's properties are defined, touch the **Next Head** button to move to the next one; or just touch a print head on the display to highlight it.

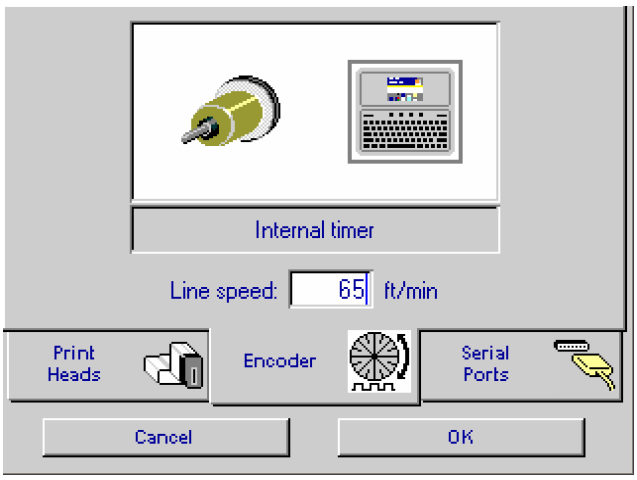
After the last print head is defined, touch the **Done** button to display the following screen. Print Head setup is now complete.



Touch any print head on the display to review or change the properties for that head. Touch the **Redo Print Head Setup** button to repeat the setup procedure using the new setup as the default. Touch **OK** to return to the **Home Screen**.

Encoder Setup

Touch the **Encoder** tab at the bottom of the **System Setup** screen to access encoder options.



Select either the 300 ppi external encoder at left or the internal timer at right.

A gray box surrounds the current encoder selection.

Use an external encoder if the line speed varies or the line makes frequent starts and stops. External encoder resolution is fixed at 300 ppi (pulses per inch).

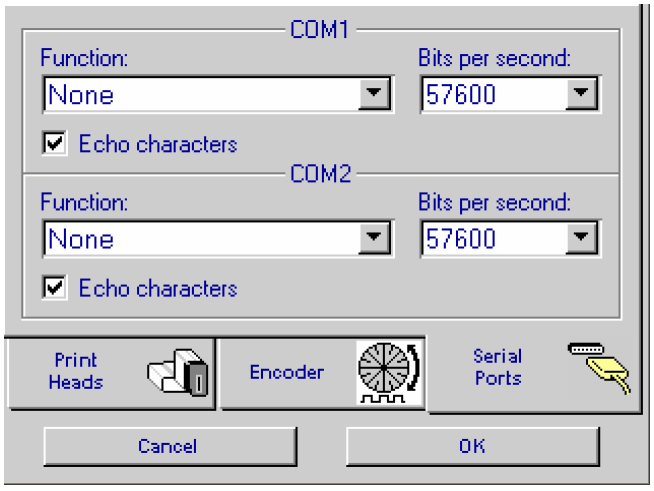
Use the internal timer if the line speed is constant, with a minimum of starts and stops. When choosing the internal timer, enter the conveyor's speed into the **Line Speed** box.

Touch **OK** to return to the **Home Screen**.

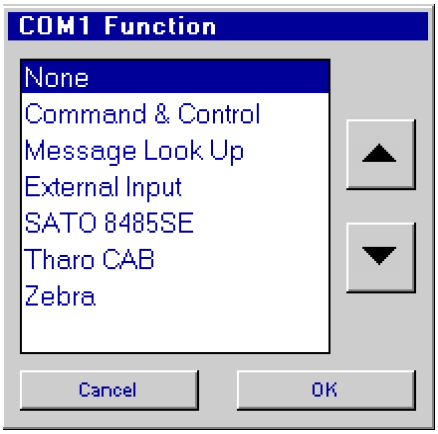
Serial Port Setup

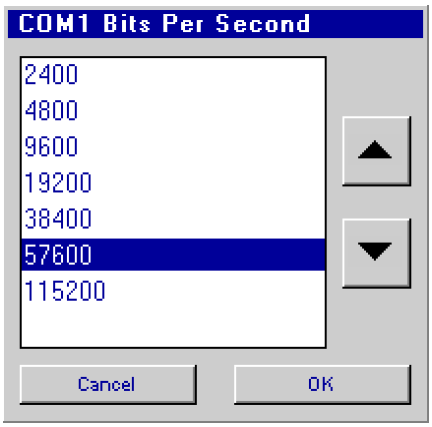
To set the COM1 and COM2 serial port device type and baud rate:

1. On the **Home screen**, touch the **Control Panels** button to open the Control Panels Menu.
2. Touch the **System Setup** button on the Control Panels Menu to open the System Setup screen.
3. Touch the **Serial Ports** tab on the System Setup screen to display the Serial Ports page.



4. Touch the COM1 or COM2 **Function** box to open a list box and select a device for the related port.
5. Touch the COM1 or COM2 **Bits per second** box to open a list box and select a baud rate for the related port.





NOTE: The following settings are fixed on the system and cannot be changed. Any device connected to a serial port must be configured to match these settings:

Data Bits: 8

Stop Bits: 1

Parity: None

Flow Control: None

Using a Bar Code Scanner

A bar code scanner attached to a serial port can be used for message lookup, that is, loading a message for printing, or to insert variable field data into a printing message.

- **Command & Control:** When this function is utilized, the controller will use predefined scripts to modify various parameters of the controller. (See the Software Interface Document, item number 5760-113.)
- **Message Look Up**: When used for message lookup, a scanner attached to COM1 will load print messages *only* into Task 1. To configure a serial port for message lookup, select **Message Look Up** as the port device and set the baud rate to match that of the scanner.

NOTE: The name of the print message scanned must *exactly* match the name of a print message stored in the system. If it does not, or no message with the name scanned exists, the current print message is cancelled and printing stops.

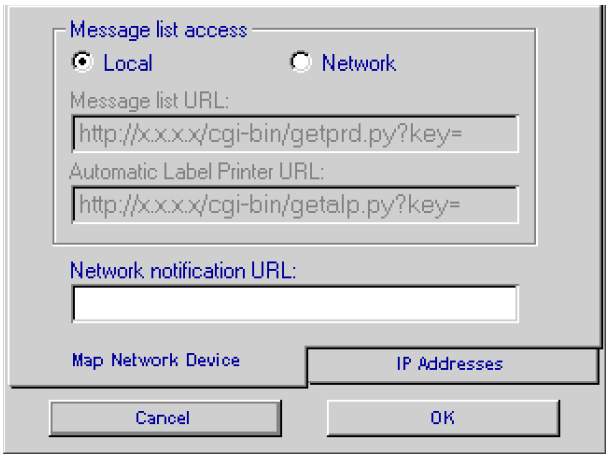
- **Variable Field Data Input**: When used to input variable field data, a scanner (or scale, or other external device) on either serial port will work with messages printing on either task. The serial port used must match the one specified when the message and variable field are created (see *"Adding a Variable Field" on page 57*). To configure a serial port for variable field data input, select **External Input** as the port device and set the baud rate to match that of the device.
- **SATO 8485SE:** When this function is utilized, the controller will communicate to a PA/5000LT with a Sato 8485SE print engine when adding an element to a message. (See *"Section 7: Message Functions" on page 51*.)
- **Tharo CAB** or **Zebra:** When either of these functions are utilized, the controller will communicate to a PA/4500 when adding an element to a message. (See *"Section 7: Message Functions" on page 51*.)

Network Setup

If the system is being used in a network application, the factory programmed network settings may need to be changed. If the network application is not being utilized, this section can be skipped.

To display the Network Setup screen:

1. On the **Home Screen**, touch the **Control Panels** button to open the Control Panels Menu.
2. Touch the **Network** button on the Control Panels Menu to open the Network Setup screen.



The controls on the Map Network Device page of the Network Setup Screen apply only if the system is running on a network controlled by a PC using the network software.

Message List Access

The **Message list access** controls determine whether the print messages listed in the Print...Message Selection box are local (stored in the system's internal memory) or on the network. Touch the radio button appropriate to the application.

If **Network** is chosen, the **Network message list URL** and **Automatic Label Printer URL** text entry boxes become active. Enter the address where the system will find the network-stored messages and, if applicable, enter the address where the system will find files for the Automatic Label Printer. For more details, contact Technical Support.

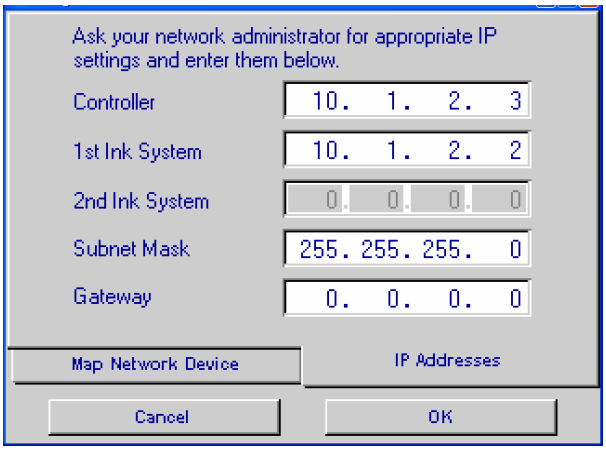
Network Notification URL

If this text entry box is filled in, the controller will send out a packet on the network to the host specified. This packet will be sent at controller boot up and at each photocell trigger input. For more details, contact Technical Support.

Setting IP Addresses

Touch the **IP Addresses** tab to display the IP Addresses page.

An IP address has four segments. The value of each segment may be from 0 to 255. Touch the entry box for the address to be set, use the Left/Right Arrow keys to highlight the desired segment, and then type in its value. After the third digit of each segment is entered, input focus automatically shifts to the next segment to the right. When a segment has less than three digits, move to the next segment by pressing the "**.**" (period) key.



(Default IP Addresses)

The 1st Ink System IP address and the 2nd Ink System IP address are not used in the Marksman Duo HR controller.

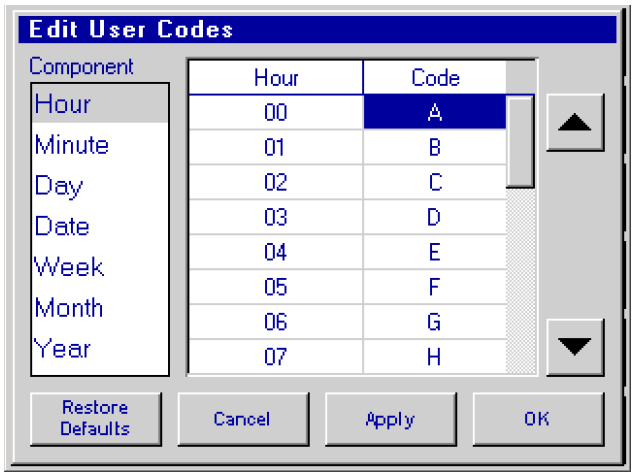
Touch the **OK** button to save the changes and return to the Home Screen. To discard any changes made and return to the Home Screen, touch the **Cancel** button or press **ESC** on the keypad.

Defining User Codes

User Codes are user-defined time and date codes for printing hour, minute, date, month, and week of the year information. Each code may be up to four characters long.

To display the Edit User Codes screen:

1. On the **Home Screen**, touch the **Control Panels** button to open the Control Panels Menu.
2. Touch the **User Codes** button on the Control Panels Menu to open the Edit User Codes screen.



To define or edit codes:

1. Touch the radio button for the appropriate component.
2. Highlight the code to be defined or edited. If the code is not visible, touch the screen **Up/Down Arrow** buttons to scroll it into view.
3. Type in the new code and press **Enter**.
4. Repeat steps 1 through 3 as desired.
5. Touch the **OK** button to save the code definitions and return to the Home screen.

Touch the **Apply** button to save the code definitions and remain on the Edit User Codes screen.

Touch the **Cancel** button or press **ESC** on the keypad to return to the Home screen without saving any changes.

Touch the **Restore Defaults** button to restore the default codes for the selected component. The default codes are:

- Hours: 24 single letter codes A through Z, except the letters I and O (which may be confused with the numbers 1 and 0).
- Minutes: 60 two-letter codes AA through AZ, then BA through BZ, then CA through CM. The letters I and O are not used.
- Date: 31 two letter codes AA through AZ, then BA through BG. The letters I and O are not used.
- Week: 53 two-letter codes AA through AZ, then BA through BZ, then CA through CE. The letters I and O are not used.
- Month: 12 three-letter abbreviations, JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, and DEC.
- Year: 99 two-letter codes AA through AZ, then BA through BZ, then CA through CZ, then DA through DZ, then EA through ED. The letters I and O are not used.

When defining user codes, avoid extremes in the number of characters for different codes within a component. For example, avoid defining hour 00 as 'A' and hour 03 as 'AAAA.' If print codes like 'A' and 'AAAA' must be printed, be sure to reserve enough room in the print messages so that the longest codes don't overlap adjacent fields when they print.

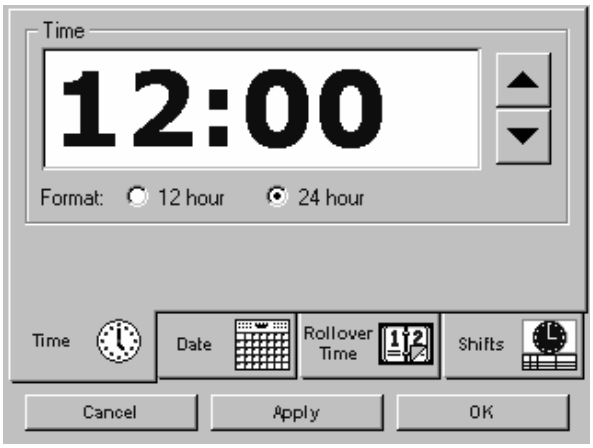
Time & Date Screens

Time and Date screens need to be properly set in order for time- and date-related auto-codes to be used.

Touch the **Time & Date** button on the **Home Screen**. The **Time** screen will appear with tabs along the bottom to set Time, Date, Rollover Time, and Shifts.

The Time Screen

Touch the **hour** or **minute** display to highlight the hour or minute and enable the Up/Down Arrows. Touch the **Up/Down Arrows** to adjust the hour or minute. Touch the **12 hour** or **24 hour** radio button to select the desired format. The time display changes immediately to reflect the selection. Note that this only sets the format for the time as it is displayed on the screen, and does not affect time-type autocodes. Touch **Apply** to save the new time, or **OK** to save and return to the **Home Screen**.

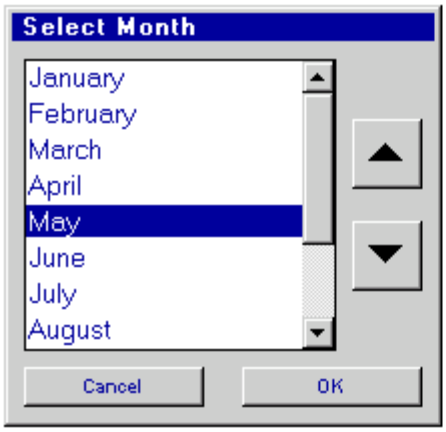


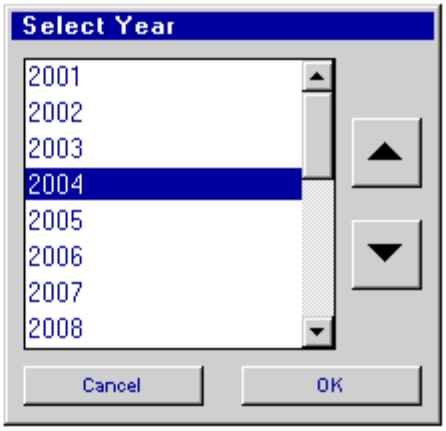
The Date Screen

The Date Screen displays the system's current month and year settings and the days for that month and year. The selected date is the current date setting.

To change the date within the current month, touch the desired date.

To change the month, touch the **Left** or **Right Arrow** buttons at the upper left and right to move backward or forward through the calendar, or select the month from the list displayed when the **Month** control at the top left center of the screen is touched (see below left).





To change the year, touch the **Year** control at the top right center of the screen and select the year from the list displayed (see above right).

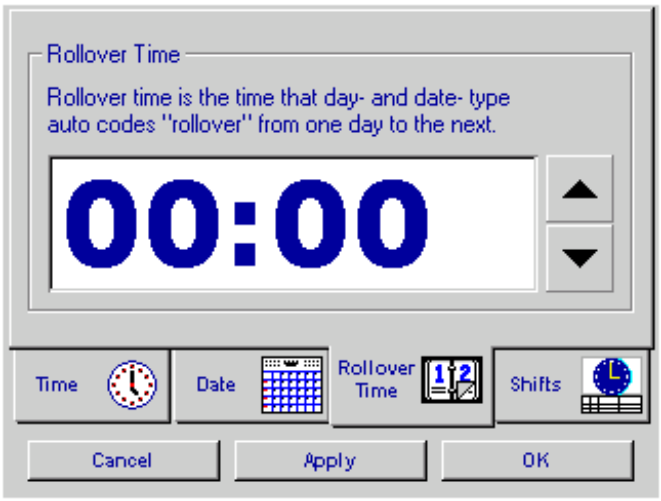
Touch the **Apply** button to save any changes made to the date.

Touch the **OK** button to save the new date and return to the Home Screen.

Touch the **Cancel** button to return to the Home Screen without saving any changes.

The Rollover Time Screen

Touch the **hour** or **minute** display to highlight the hour or minute and activate the Up/Down Arrows. Touch the **Up/Down Arrows** to adjust the hour or minute. Touch **Apply** to save the new time, or **OK** to save and return to the **Home Screen**. (AM or PM will show only if a 12-hour clock is chosen on the **Time** screen.)

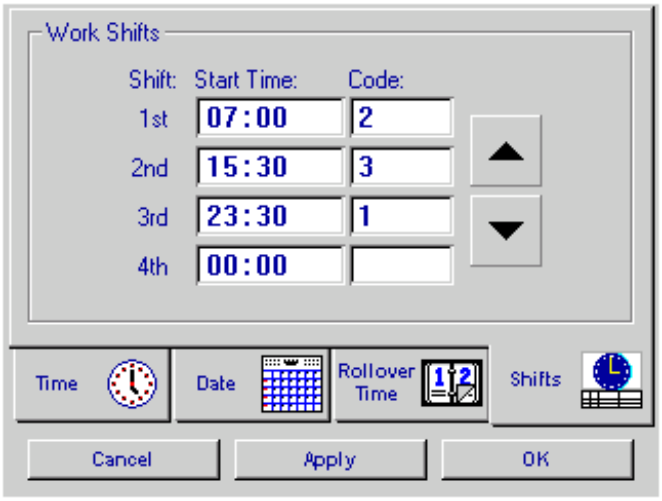


NOTE: Rollover times between 12:00 PM and 11:59 PM will change the day/date of autocodes before midnight; rollover times between 12:00 AM and 11:59 AM will change the day/date of autocodes on or after midnight.

The default rollover time is 12:00 AM (00:00 on the 24-hour clock.)

Shifts

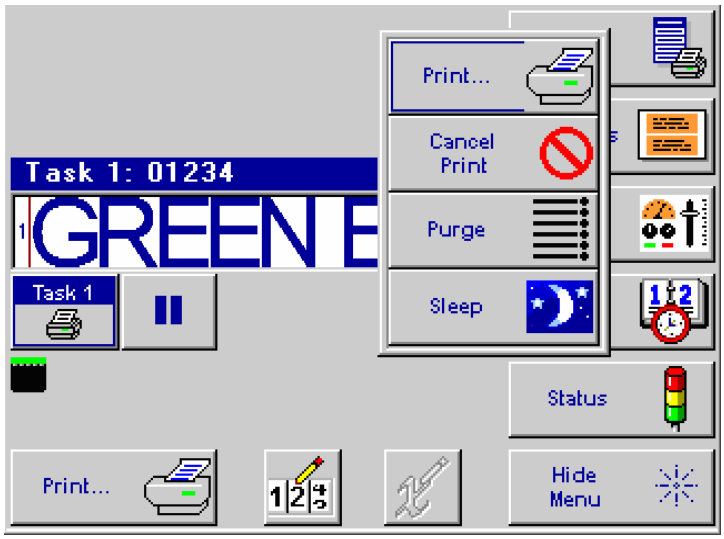
Use this screen to assign autocodes to work shifts. For a shift to be valid, the code boxes must be filled in; shifts with empty code boxes are ignored. Shifts may be entered in any order, but will be sorted by the system and displayed chronologically the next time this screen is accessed.



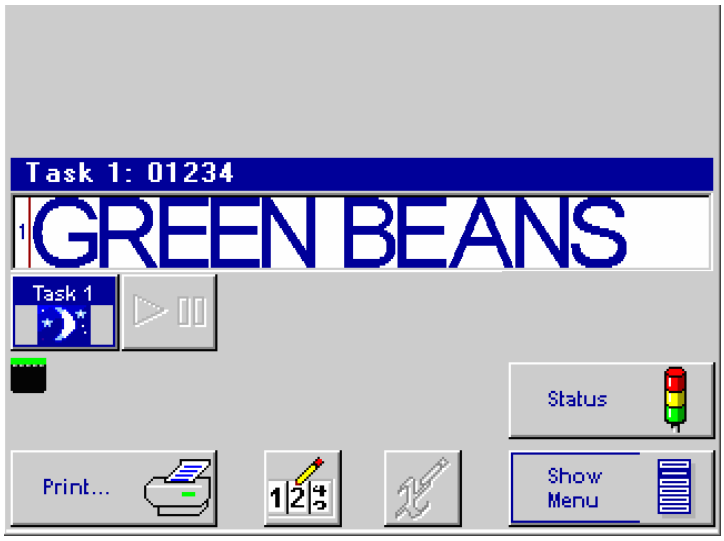
Sleep Mode (for WAX Tasks only)

Sleep Mode lowers the temperature of the WAX Print Heads and the Wax Delivery System from their operating temperatures to 90°C (194°F). Use Sleep Mode to maintain the viability of the wax when the system is left on during long periods of printer inactivity (eight hours or longer).

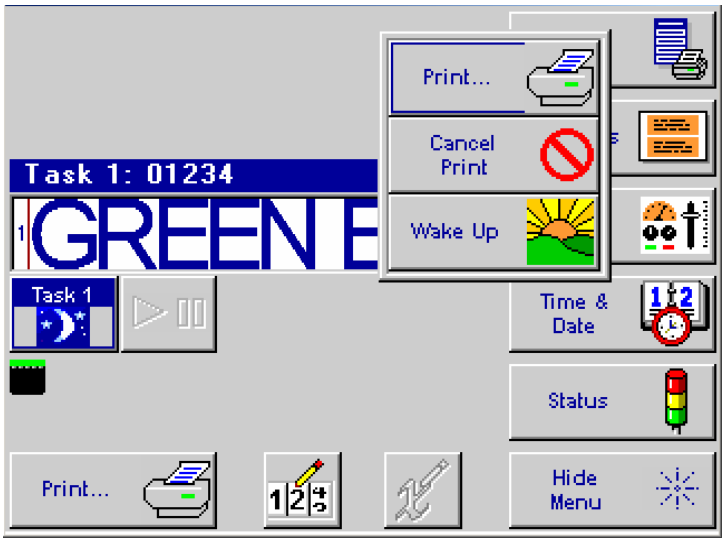
To place a WAX task into sleep mode, touch the **Task** button, then open the **Print Menu** and touch the **Sleep** button.



The "moon and stars" icon displayed on a task button indicates the task is in the Sleep Mode. Print is disabled on a sleeping task.



To awaken a sleeping task, select the task by touching its corresponding **Task** button, then touch the **Wake Up** button on the **Print Menu**.

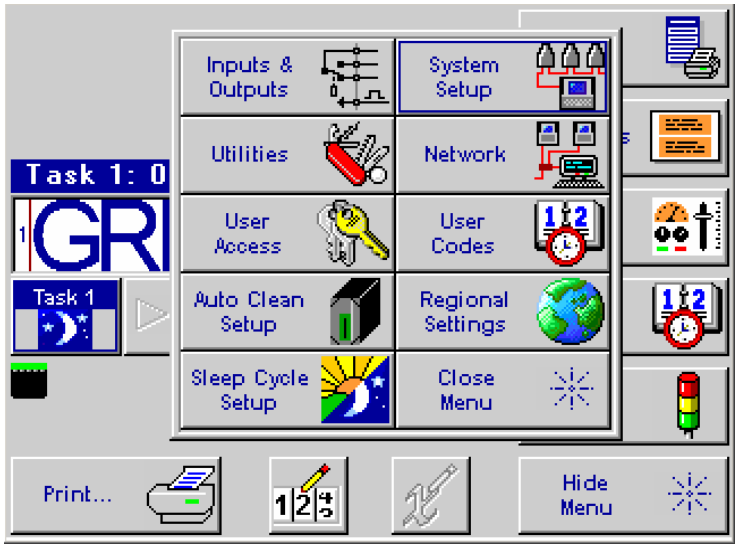


Print is re-enabled when the task's Print Heads and Wax Delivery System reach operating temperature.

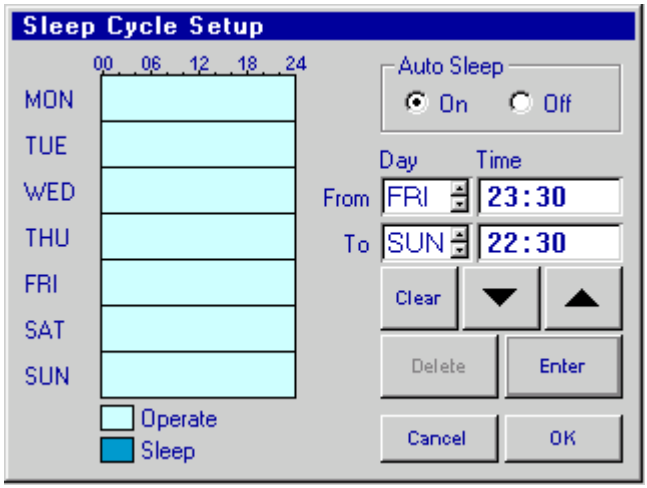
Auto Sleep

The system can be programmed to automatically put a WAX task into, and take it out of, sleep mode.

To enter, edit, or delete a sleep event, open the **Control Panels** menu and touch the **Sleep Cycle Setup** button.



The Sleep Cycle Setup screen is displayed:

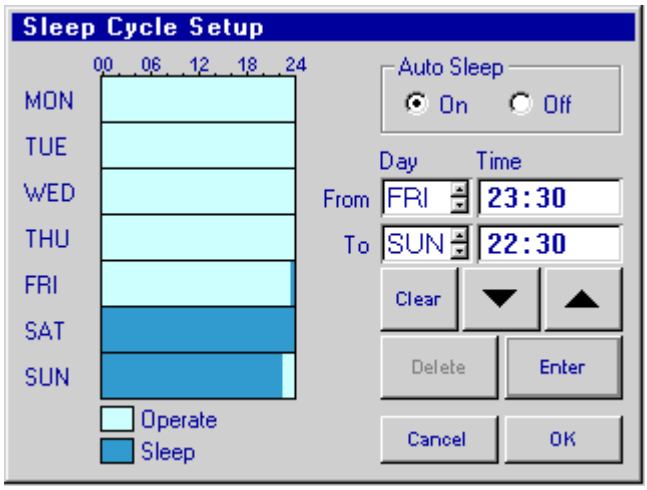


On the right side of the screen are controls for entering and deleting sleep events, and for turning Auto Sleep on and off. The left side of the screen has a chart that gives an at-a-glance look at all sleep events entered. The individual day segments (MON, TUE, WED, etc.) on the chart are also buttons that, when touched, display the specific sleep "From" and "To" times for a sleep event programmed to start on that day.

To enter a sleep event:

1. Set the day and time the system is to go to sleep:
   a. Touch the **From:Day** box.
   b. Use the **Up** and **Down Arrow** buttons to set the day. (The large ones above the **Enter** button, not the small ones in the **Day** box; those are just decorations.)
   c. Touch the **Hour** segment of the **From:Time** box.
   d. Use the **Up** and **Down Arrow** buttons to set the hour.
   e. Touch the **Minute** segment of the **From:Time** box.
   f. Use the **Up** and **Down Arrow** buttons to set the minute.
2. Set the day and time the system is to wake up.
   a. Touch the **To:Day** box.
   b. Use the **Up** and **Down Arrow** buttons to set the day.
   c. Touch the **Hour** segment of the **To:Time** box.
   d. Use the **Up** and **Down Arrow** buttons to set the hour.
   e. Touch the **Minute** segment of the **To:Time** box.
   f. Use the **Up** and **Down Arrow** buttons to set the minute.

3. Touch the **Enter** key. That part of the chart that covers the period between the **From** and **To** times is shown in blue-gray. The illustration below shows the screen after a sleep event of 23:30 (11:30 PM) Friday to 22:30 (10:30 PM) Sunday is entered.



4. Repeat steps 1, 2, and 3 for each additional sleep event.
5. Touch the **OK** button to save the events and return to the Home screen.

NOTES:

1. No more than one sleep event can begin on any given day.
2. If the time of a new sleep event overlaps any existing sleep events, the existing sleep events are deleted and replaced by the new event.
3. If the time of a new sleep event begins on the same day as an existing sleep event, the existing event is deleted and replaced by the new event.
4. Sleep events may be manually overridden using the **Sleep/Wake Up** button on the **Print Menu** on the Home screen.
5. Sleep events are not task-specific. If your system is configured for two WAX tasks, both tasks will enter and exit sleep mode at the programmed times.

To view or edit an existing sleep event:

1. Touch the chart segment for the day on which the sleep event begins. The event's **From** and **To** times are displayed. If no event is programmed to start on the day touched, the **From** and **To** boxes display dashes.
2. Make changes to the **From** and **To** times as desired then touch **Enter**.
3. Touch the **OK** button to save the changes and return to the Home screen.
4. Touch the **Cancel** button to return to the Home screen without saving the changes.

To delete a sleep event:

1. Touch the chart segment for the day the sleep event begins. The event's **From** and **To** times are displayed.
2. Touch the **Delete** button. The blue-gray area on the chart covering the event's time period is removed and the **From** and **To** boxes display dashes.
3. Touch the **OK** button to save the deletions and return to the Home screen.
4. Touch the **Cancel** button to abandon the deletions and return to the Home screen.

Section 7: Message Functions

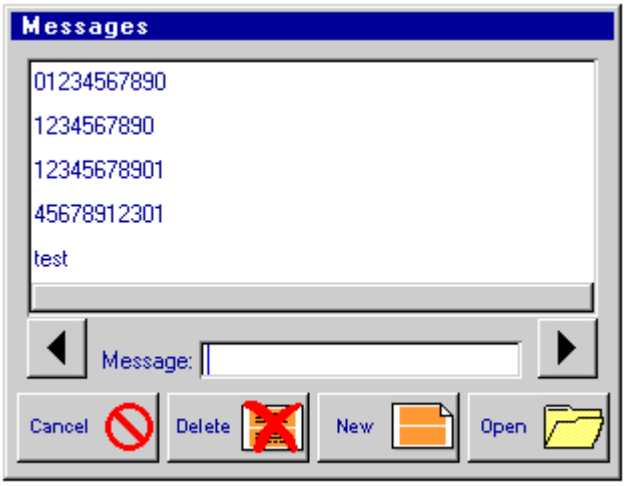
Creating a Print Message

A print message has one or more data fields containing a text or graphic element. Text fields may contain fixed text, variable text, a date code, a time code, or a product count. Graphic fields contain either a logo or a bar code.

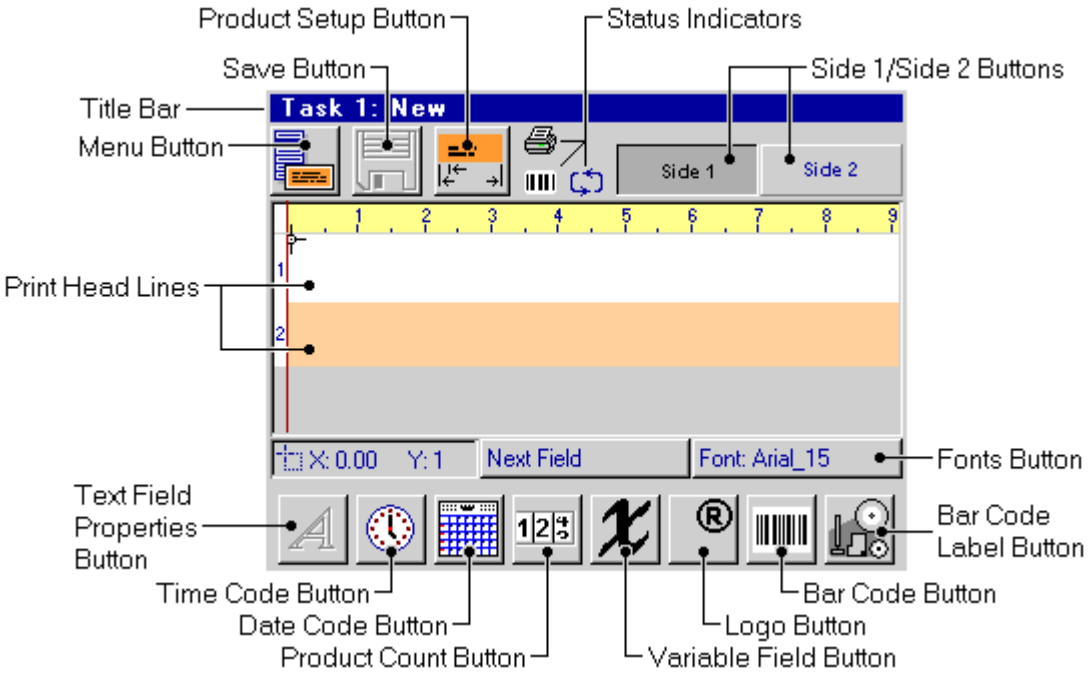
NOTE: Please read *"Moving Around the Edit Screen" on page 32* before continuing.

To create a print message:

Step 1: On the **Home Screen**, touch the **Messages** button. The Messages dialog box is displayed.



Step 2: On the Messages dialog box, touch the **New** button. The Edit Screen is displayed.



Edit Screen Controls and Features

Title Bar: The Title Bar shows the task for which the message is being created and the name of the message. All new messages have the name "New" until they are saved.

Menu Button: Touch the **Menu** button to display the Message menu. From the Message menu, the user can:

- Create a new message.
- Open an existing message for editing or viewing.
- Save a message.
- Do a test print of a message.
- Undo all changes made to a message (Revert).
- Delete all fields from a message (Clear).
- Compute a message's ink consumption (Ink Usage).
- Return to the Home Screen (Exit).

Save Button: Touch the **Save** button to save any changes made to the print message currently in the editor. A dark blue **Save** button indicates changes made to the message have not yet been saved. The button is "grayed out" when no changes have been made or the changes have been saved.

Product Setup Button: Touch the **Product Setup** button to:

- Set the product's length.
- Set the print margins.
- Set the print resolution (dpi).
- Select print options.

Status Indicators:


Displayed when **Test Print** is selected from the Message menu.


Displayed when the message in the editor is configured for repeat print.


Displayed when the message in the editor is configured to apply a bar code label via a print and apply label applicator attached to the system.

Side 1/Side 2 Buttons: Touch **Side 1** or **Side 2** to switch the editor to the corresponding side of the print message. The button that appears pressed or pushed indicates which side is currently displayed. If the system is not configured for two-sided printing the Side button that is not needed is "grayed out" and inactive.

NOTE: When the system is properly configured, **Side 1** is always the near side of the conveyor, **Side 2** is always the far side.

Print Head Lines: A print message being created or edited is displayed on the Print Head Lines. One line is shown for every print head in the system's configuration. All fields or parts of a field on a print head line are printed by the line's corresponding print head.

Fonts Button: Touch the **Fonts** button to select the font for the next field to be added to the print message, or to change the font of an existing field. The name of the current font selection is displayed on the button.

Text Field Properties Button: Touch the **Text Field Properties** button to change the properties of a new or existing fixed text field. This button is active and functional only when a fixed text field is selected.

Time Code Button: Touch the **Time Code** button to add a time code to a print message, or to edit an existing time code.

Date Code Button: Touch the **Date Code** button to add a date or expiration date code to a print message, or to edit an existing date or expiration date code.

Product Count Button: Touch the **Product Count** button to add an incrementing or decrementing product count or pallet count to a print message, or to edit an existing count.

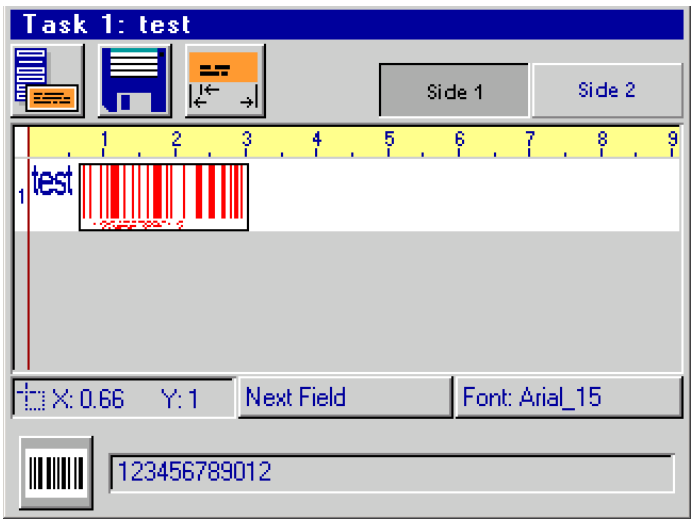
Variable Field Button: Touch the **Variable Field** button to add a variable field to a print message, or to edit an existing variable field.

Logo Button: Touch the **Logo** button to add a logo to a print message, or to exchange an existing logo for another one.

Bar Code Button: Touch the **Bar Code** button to add a bar code to a print message, or to modify an existing bar code.

Label Button: Touch the **Label** button to add a bar code label element to a print message. This button is visible only when the COM1 function is set to SATO 8485SE or Tharo CAB. See *"Serial Port Setup" on page 40* for instructions on configuring the COM port.

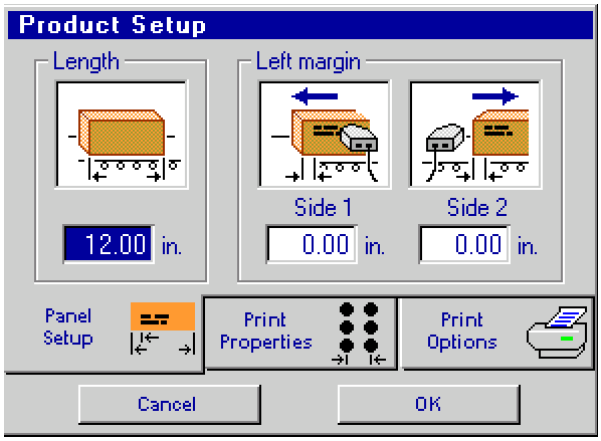
For all fields except the Logo and Label buttons, the text box will show the actual text content of the highlighted field.



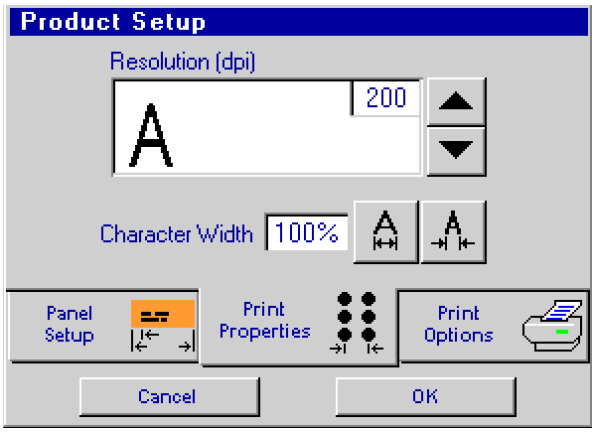
Next Field Button: Touch the **Next Field** button to select a field for review or editing. The fields are selected one after another in the order in which they were added to the print message. See *"Editing Fields" on page 63* more information.

Step 3: Set up your product. Touch the **Product Setup** button to display the Product Setup dialog box:

Enter the product's length, and the left margin for side one and two, if applicable.



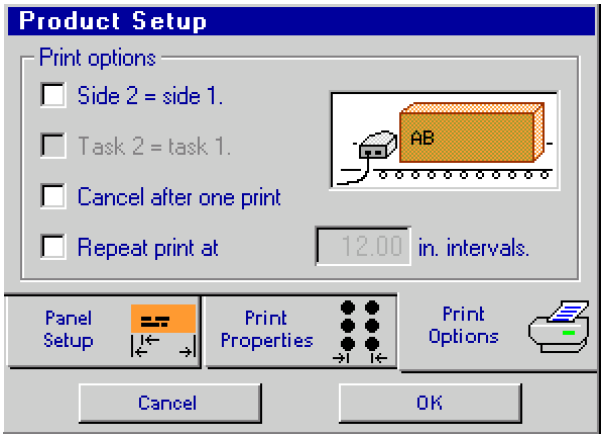
Touch the **Print Properties** tab. Use the up/down arrows to select the desired print resolution: 100, 150, 200 or 300 dots per inch (dpi).



NOTE: Bar codes must use a resolution of 200 dpi.

Character Width is used to change the width of all text fields within the message.

Touch the **Print Options** tab to select the desired print options.



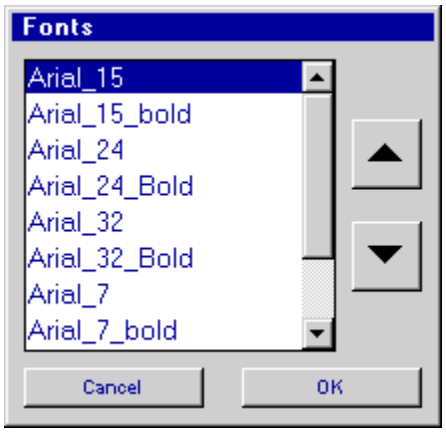
Select **Side 2 = side 1** to automatically copy to side 2 all fields entered on side 1. The **Side 2 = side 1** option is available only when both sides have the same number of vertical print dots.

Select **Cancel after one print** to self-cancel the message after printing only once. This option is typically used with Message Lookup. See *"Serial Port Setup" on page 40* for an explanation of Message Lookup.

Select **Repeat print at…** when printing on continuous material, and specify the print interval (the interval box becomes active when **Repeat print** is selected). The print interval is defined as the distance from the start of one print to the start of the next.

Touch the **OK** button to save the settings and close the Product Setup dialog box.

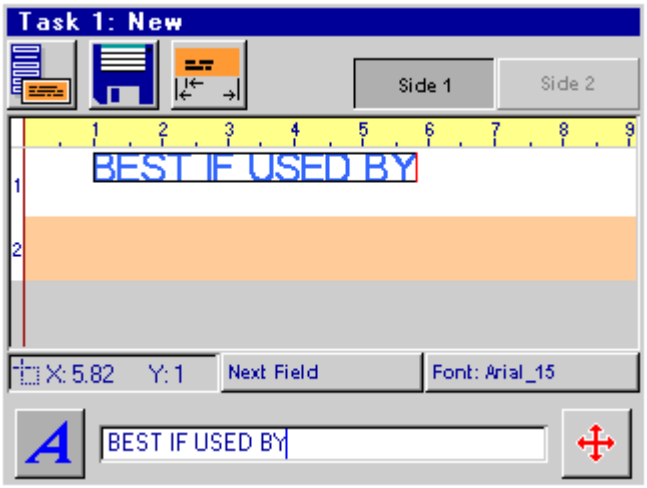
Step 4: Select the desired font for the first field. Touch the **Font** button to display the list of available fonts, highlight the selection, and touch the **OK** button.



Step 5 Add data fields to the print message, changing the font (as needed) before the addition of each new field.

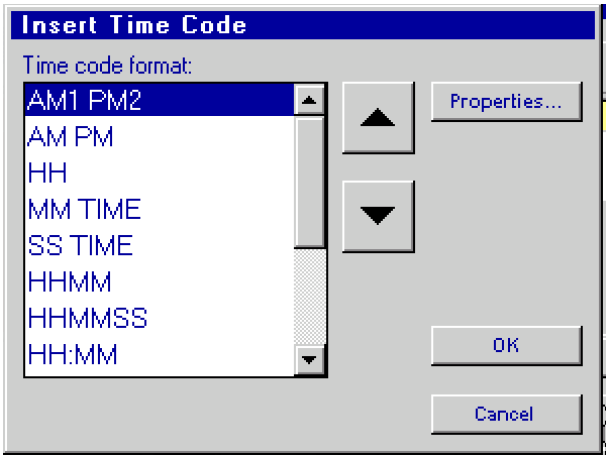
Adding a Text Field

To add a text field to the print message, move the crosshairs pointer to the desired field location and begin typing. The text is displayed (in light blue) on the Edit Screen as it is typed. It is also displayed in a box that appears at the bottom of the screen. To start a new line (a text field may have up to ten lines of text), press and hold the **Ctrl** key and press **Enter**. When finished, press **Enter.** (The field's color changes to red.) If the field is not exactly where it should be, use the arrow keys to reposition it. Press **Enter** again when the field is at the desired location. (The field's color is now dark blue.)

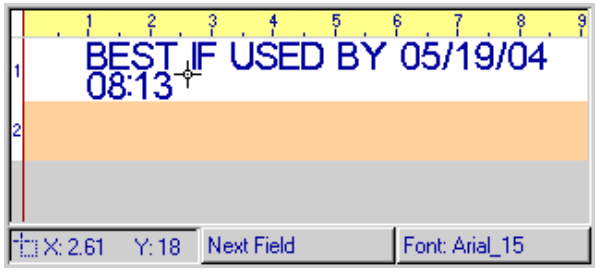


Adding a Time Code

To add a time code to the print message, move the crosshairs pointer to the desired location and touch the **Time Code** button; the Insert Time Code dialog box is displayed. Select a format for the time code from the list, then touch the **OK** button to close the dialog box and insert the time code into the print message.



If the time code is not exactly where it should be, use the arrow keys to reposition it. Press **Enter** when the time code is at the desired location.

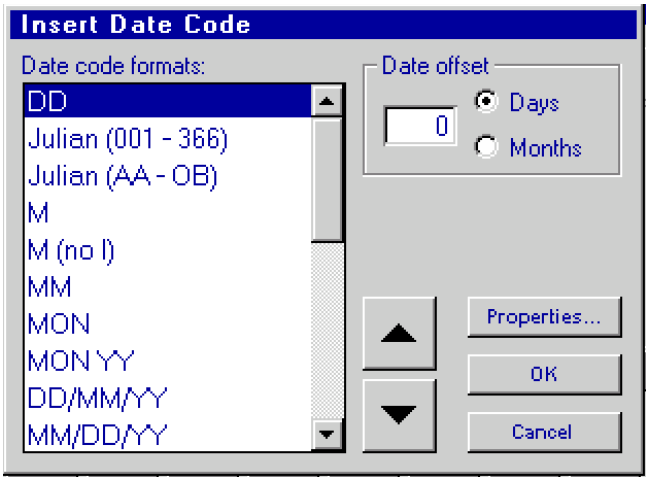


Message with time code

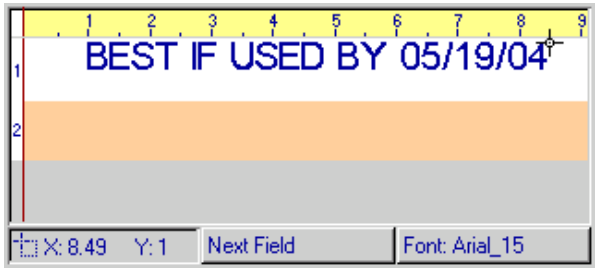
Adding a Date Code

To add a date code to the print message, move the crosshairs pointer to the desired location and touch the **Date Code** button; the Insert Date Code dialog box is displayed. Select a format for the date code from the list and, if the date code is for a future date, enter the number of days or months until that date in the **Date offset** box.

Touch the **OK** button to close the dialog box and insert the date code into the print message.



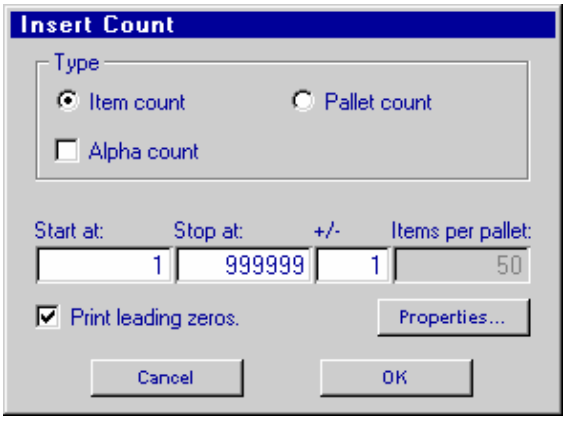
If the date code is not exactly where it should be, use the arrow keys to reposition it. Press **Enter** when the date code is at the desired location.



Message with date code

Adding a Product or Pallet Count

The system can print increasing or decreasing item and pallet counts, with or without leading zeros, in numeric or alpha format. A numeric count may be up to nine digits long; an alpha count may be up to seven digits long.



Product count: To add a product count to the print message, move the crosshairs pointer to the desired location and touch the **Product Count** button; the Insert Count dialog box is displayed.

Increasing count: Enter a **Stop at** value that is greater than the **Start at** value.

Decreasing count: Enter a **Start at** value that is greater than the **Stop at** value.

Pallet count: Touch the **Pallet count** radio button and enter the number of items per pallet. A pallet count is incremented or decremented every *n* items, where *n* is the number of items per pallet.

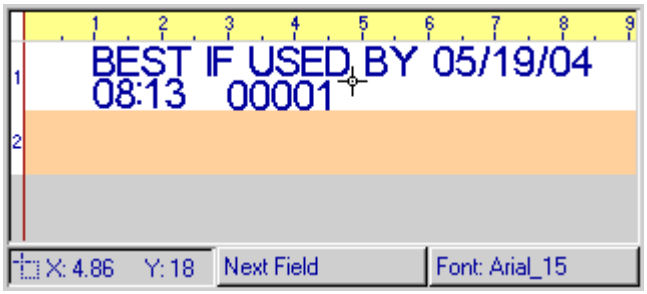
Alpha count: To count with letters instead of numbers touch the **Alpha count** check box. When **Alpha count** is checked, the contents of the **Start at** and **Stop at** boxes change from numbers to their equivalent alpha values.

There are two alpha count formats. Use the **Print leading zeros** check box to select the format desired.

1. **Print leading zeros** checked. When printing leading zeros, A = 0 by definition, so B = 1, C = 2, etc. The counting sequence is AB, AC, AD, … AY, AZ, BA, BB, BC, …
2. **Print leading zeros** not checked. Without leading zeros, A = 1, B = 2, C = 3, etc. The counting sequence is A, B, C, … Y, Z, AA, AB, AC, …

The +/- box: A product count is normally increased or decreased by 1 after every print cycle. To increase or decrease the count by a value other than 1, enter that value in the **+/-** box.

Touch the **OK** button to close the dialog box and insert the product count into the print message. If the count is not exactly where it should be, use the arrow keys to reposition it. Press **Enter** when the count is at the desired location.

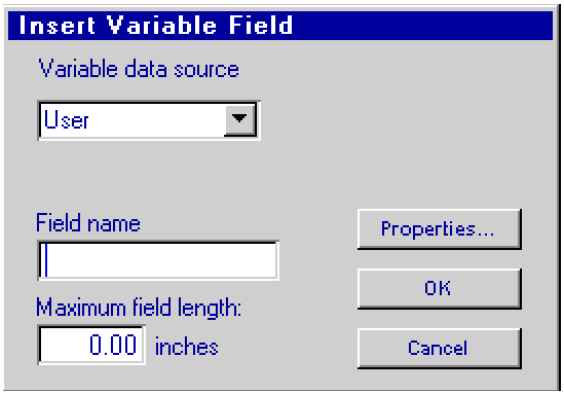


Message with product count

Adding a Variable Field

A variable field is a text field whose contents may change from use to use or print to print. The data printed may be specified by the user, or come through the COM1, COM2, or Ethernet port.

To add a variable field to the print message, move the crosshairs pointer to the desired location and touch the **Variable Field** button; the Insert Variable Field dialog box is displayed.



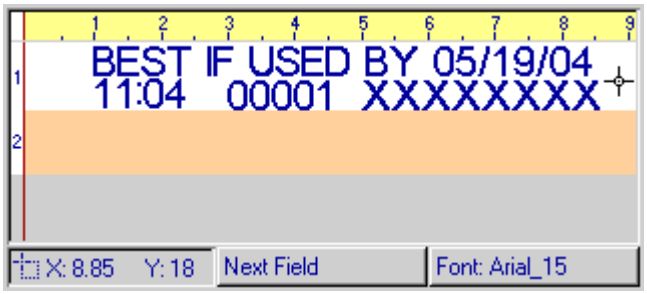
- Select the data source:

  User: The user is prompted to enter the data to be printed when the message is loaded to print.

  Data 1 - Data 10: Select Data 1 through Data 10 to use a common variable field in multiple locations. Data (1-10) can be selected and assigned a field name. This variable field can be placed multiple times in a message. When the message is printed, the field name will be prompted once for input, and will print the variable data in all locations where Data (1-10) was placed. The field length must be set for each location, as the font size can be changed for each data field. Up to ten different data fields can be placed in multiple message locations.

COM1, COM2: Select **COM1** or **COM2** when the data to be printed is from an external device such as a scale or bar code scanner. Multiple variable fields can use COM1 or COM2, but all will have the same information.

- Enter a field name. The field name identifies which variable field gets what data when **User** or **Data** is selected as the data source. It is not required for COM1 or COM2. For data variable fields, only one of each data lot can have a name.
- Enter a maximum field length to reserve space within the print message for the variable field.
- Touch the **OK** button to close the dialog box and insert the variable field into the print message. Variable fields are represented on the Edit Screen by a string of Xs. If the field is not exactly where it should be, use the arrow keys to adjust its position. Press Enter when the field is at the desired location.

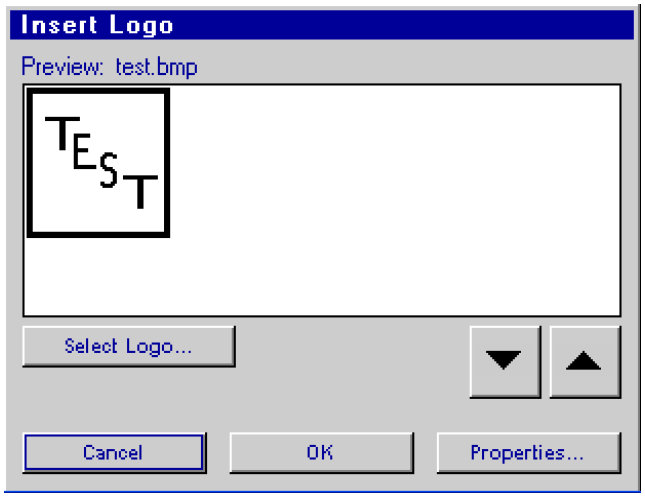


Message with variable field

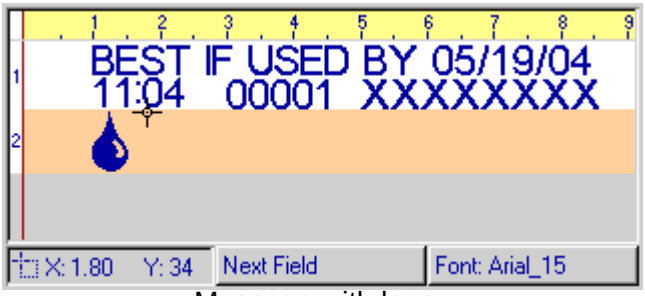
Adding a Logo

To add a logo to the print message, move the crosshairs pointer to the desired location and touch the **Logo** button; the Insert Logo dialog box is displayed.

Use the up/down arrows to select a logo. Touch the **OK** button to close the dialog box and insert the logo in the print message.

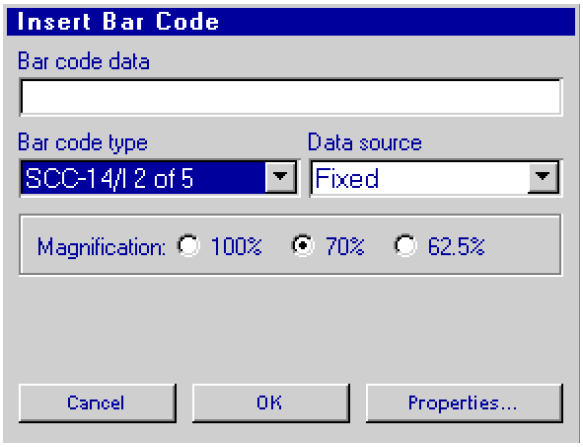


If the logo is not exactly where it should be, use the arrow keys to reposition it. Press **Enter** when the logo is at the desired location.



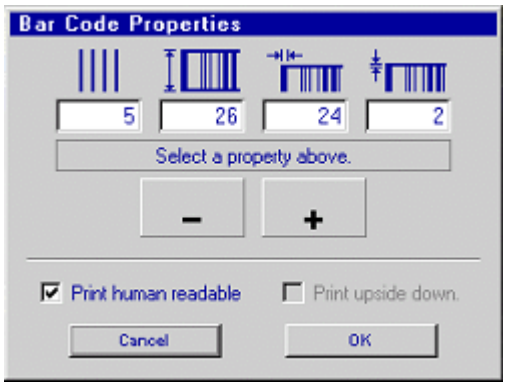
Message with logo

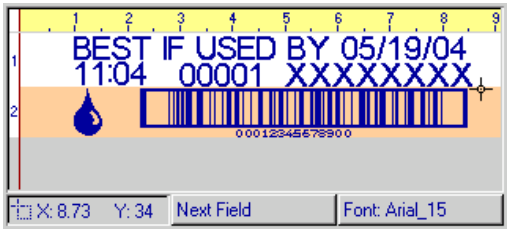
Adding a Bar Code



To add a bar code to the print message, move the crosshairs pointer to the desired location and touch the **Bar Code** button; the Insert Bar Code dialog box is displayed.

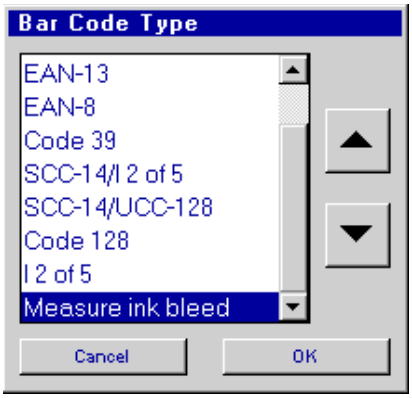
- Touch the **Bar Code Type** control to display a list of available bar code types and make a selection.
- Choose the Data Source for the bar code data (Fixed is the default). If the user will enter the bar code data when the message is selected to print, then choose User Data Source, and provide a prompt and sample bar code data. COM1, COM2 and Data 1-10 will select the data for the bar code from the respective location when the message is selected to print.
- Select the bar code magnification factor.
- Enter the bar code data. Except for Code 3 of 9, the system automatically calculates the checksum character and adds it to the end of the bar code data.
- If human readable data is not to be printed with the bar code, touch **Properties**, then the **Print human readable** check box to remove the checkmark. (Printing human readable is the default setting.)
- Touch the **OK** button to close the dialog box and insert the bar code into the print message. If the bar code is not exactly where it should be, use the arrow keys to reposition it. Press **Enter** when the bar code is at the desired location.
- The following section describes how to adjust barcodes to accommodate variations in ink bleed on different substrates.

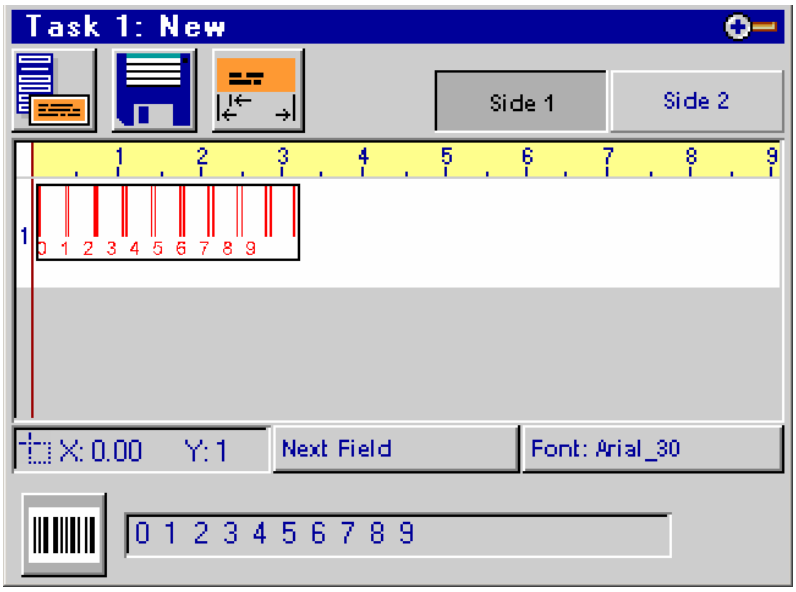




Message with bar code

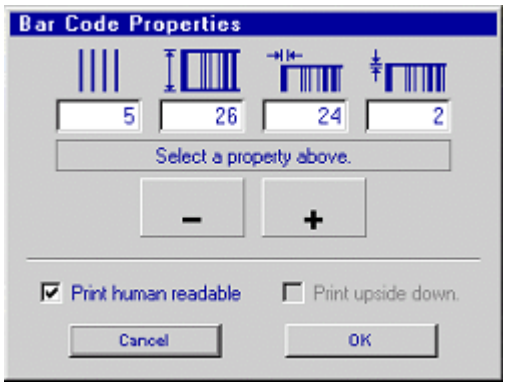
Measuring Ink Bleed: Ink bleed can be easily measured for various substrates by printing a message that contains a "Measure ink bleed" bar code field. Insert the bar code field by touching the bar code field button at the bottom of the Edit Screen, then selecting the **Measure ink bleed** bar code type from the drop-down list. Print the message on a sample of the substrate to be used in the application and allow it to bleed for at least 24 hours before reading the measurement.





The measurement is determined by inspecting the printed bar code. The numbers below the bar code represent the number of printed columns separating each set of bars. The correct amount of bleed is determined by identifying the first set of bars that have not bled together. The number below the set of bars determined to have the correct ink bleed, is the "Ink bleed measurement". In the example, the bleed measurement is 5 (columns).

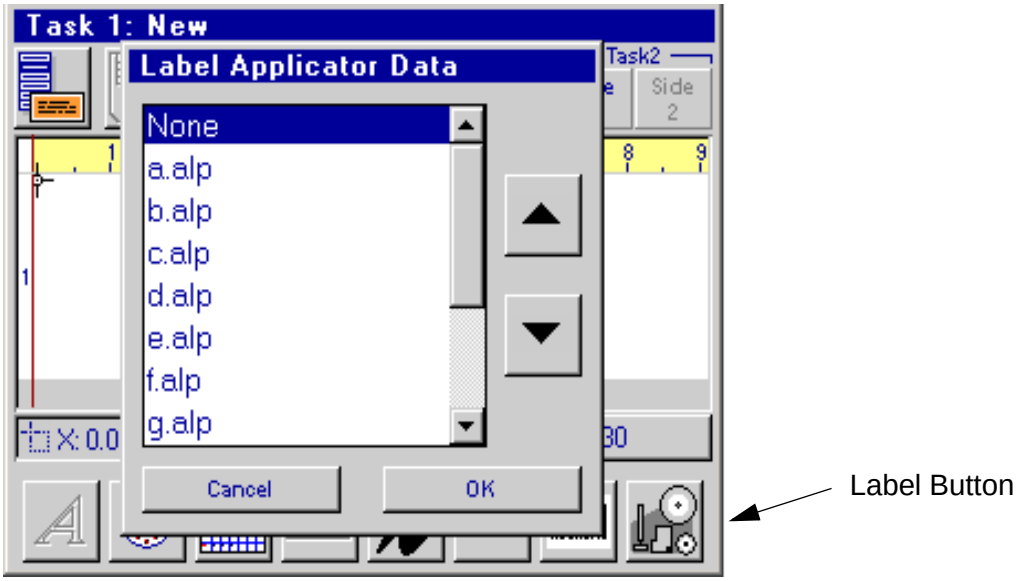
When the measurement has been determined, it can be set in all bar code fields printed on the substrate. The measurement is set by selecting a bar code field, then the field type button followed by the properties button. The factory default setting is set for printing based on the ink type selected.



Adding a Label Element

When a print message with a bar code label element is loaded to print, the system instructs an attached Print and Apply Label Applicator to apply a label as described by the attached .alp file. The attached file can be created using label creating/editing software (EasyLabel, NiceLabel, etc.) with a "Print to file" feature and giving the file a .alp extension. The .alp file should then be uploaded to the Controller.

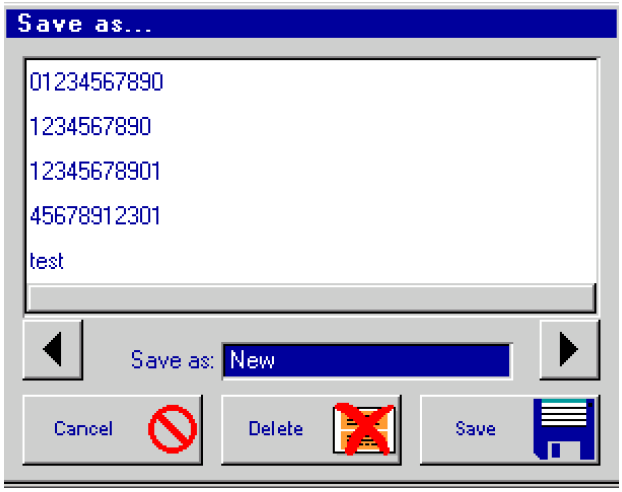
To add a label element to the print message, touch the **Label** button. The Label Applicator Data dialog is displayed.



- Select the file to be sent to the Label Applicator.
- Touch the **OK** button to close the dialog box and add the bar code label element to the print message. Note that the Label Applicator indicator is now displayed on the Edit Screen.

Step 6 Save the print message. Touch the **Save** button to display the Save dialog box.

Enter a unique name for the message and touch the **Save** button.



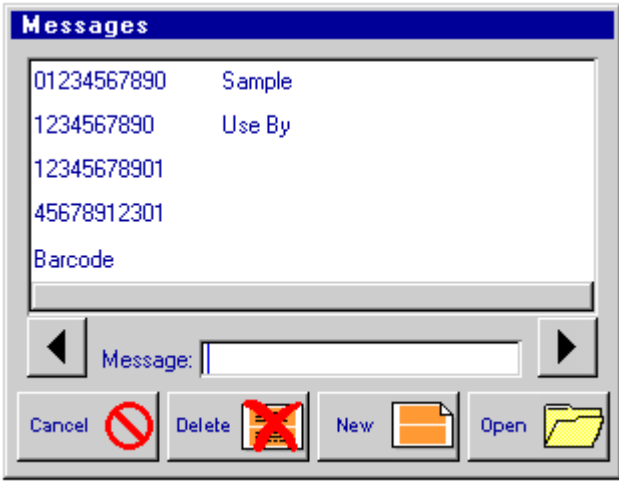
Editing a Message

From the Home Screen:

1. Touch the **Messages** button. The Messages dialog box is displayed.

2. Select the message you wish to edit from the list, or type the message name in the **Message** box.

3. Touch the **Open** button. The Messages dialog box closes and the Edit Screen is displayed with the selected message in the edit window.



From the Edit Screen:

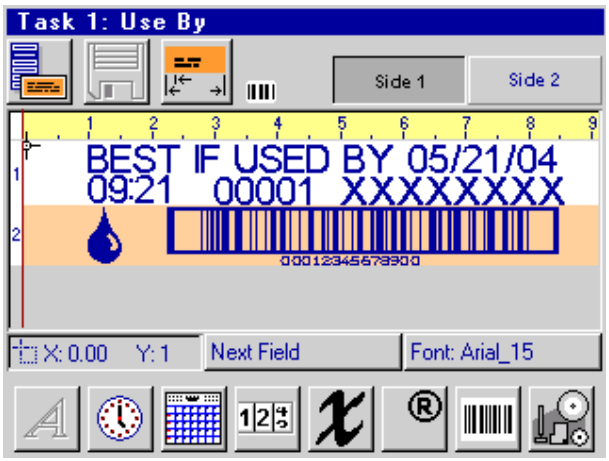
1. Touch the **Menu** button.

2. On the menu, touch the **Open** button. The Messages dialog box is displayed.

3. Select the message you wish to edit from the list, or type the message name in the **Message** box.

4. Touch the **Open** button. The Messages dialog box closes and the message selected is displayed in the edit window.

Editing Fields

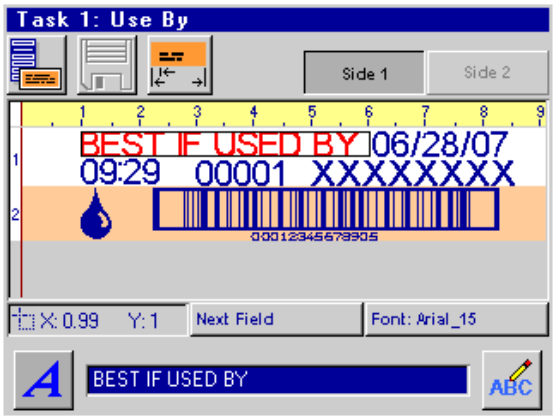


A field must be selected before it can be edited. When selected, all field types, except text fields, are displayed in red and outlined by a black box. When a text field is selected, it is first displayed in light blue. The light blue color indicates the text in the field can be edited. Press **Enter** and the field color changes to red, indicating the field can be moved.

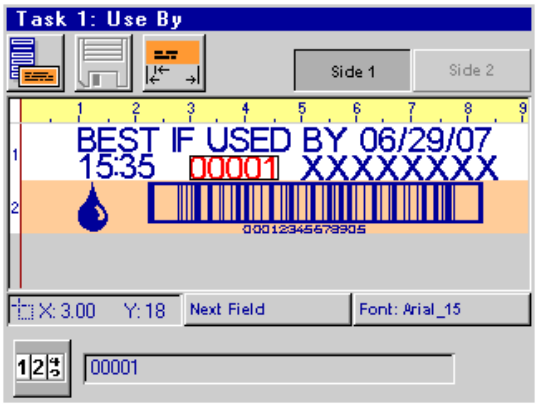
A field can be selected by touching the **Next Field** button, by pressing the **Tab** key, or by touching the field directly. When using the **Next Field** button or **Tab** key, the fields are selected one after another in the order in which they were added to the print message.

When a field is selected, the background of its corresponding field type button becomes dark gray to identify the field type. If the field contains text, the field type button moves to the left side of the display and a text box containing the field's text is displayed at the bottom of the screen. (See the following examples.)

Release a selected field by pressing the **Enter** key, or by selecting another field.



Text field selected



Count field selected

Editing a Text Field:

1. Select the field; its color changes from dark blue to light blue.
2. To edit the existing text:
   - •Use the **Left** and **Right Arrow** keys to move the cursor to the edit point.
   - •Press the **Backspace** key to delete characters to the left of the cursor.
   - •Press the **Delete** key to delete characters to the right of the cursor.
   - •Insert new text at the cursor point by typing.
3. To completely replace the existing text:
   - •Press the **Enter** key or touch the **Move** button at the lower right corner of the screen; the field's color changes from light blue to red.
   - •Type the new text. The new text replaces the old text.


MOVE

4. To change a text field's color from red to light blue so that its text may be edited, touch the **Edit** button at the lower right corner of the screen.
5. To release the field, press the **Enter** key once if its color is red; press it twice if its color is light blue.

EDIT

Editing All Other Field Types:

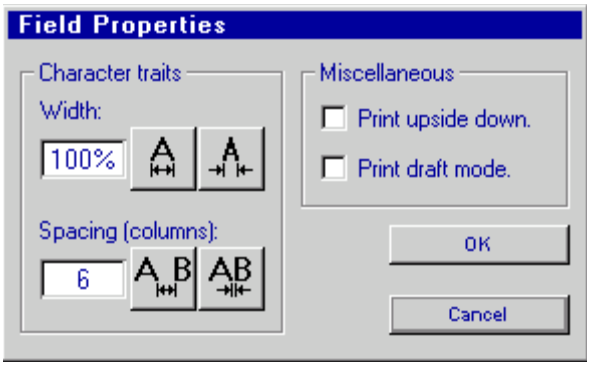
1. Select the field; its color changes from dark blue to red.
2. Touch the corresponding field type button (the button with the dark gray background); the field's Edit dialog box is displayed.
3. Make all desired changes.
4. Touch the **OK** button to close the dialog box and view the changes. Touch the **Cancel** button to discard all changes and close the dialog box.
5. Press **Enter** to release the field; its color changes from red to dark blue.

Deleting a Field:

1. Select the field; for a Text field, press **Enter** after it's selected. The field color will change from dark blue to red.
2. Press the **Backspace** or the **Delete** key.

Changing Field Properties:

Text Field:



1. Select the field; its color changes from dark blue to light blue.
2. Touch the **Text Field Properties** button; the Field Properties dialog box is displayed.
3. Change the field's properties as desired.
4. Touch the **OK** button to close the dialog box and view the changes. Touch the **Cancel** button to discard all changes and close the dialog box.
5. Press **Enter** twice to release the field; its color changes from light blue to red to dark blue.

All Other Field Types:

1. Select the field; its color changes from dark blue to red.
2. Touch the corresponding field type button (the button with the dark gray background); the field's Edit dialog box is displayed.
3. Touch the **Properties…** button; the Field Properties dialog box is displayed.
4. Change the field's properties as desired.
5. Touch the **OK** button to close the Field Properties dialog box. Touch the **Cancel** button to close the dialog box while discarding all changes.
6. Touch the **OK** button to close the Edit dialog box and view the changes. Touch the **Cancel** button to discard all changes and close the Edit dialog box.
7. Press **Enter** to release the field; its color changes from red to dark blue.

Character Width Trait will adjust the width of all characters in the selected text field. The factory default character width settings will produce characters and logos that are proportional to each print head type:

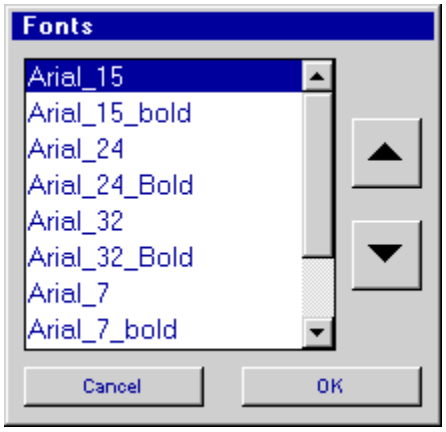
Default Character Width		
Print Head Type	***Fonts***	***Logos (.bmp)***
96, 192, 224, 352	100%	600%
384, 768	200%	300%
WAX	66%	400%

NOTE: The global DPI setting should be used to reduce or increase message width. The Character Width determines the number of printed columns in a character. The Character Width setting is intended for use with Impulse Jet print heads.

Print Draft Mode: If this box is checked, every other column of the field will print.

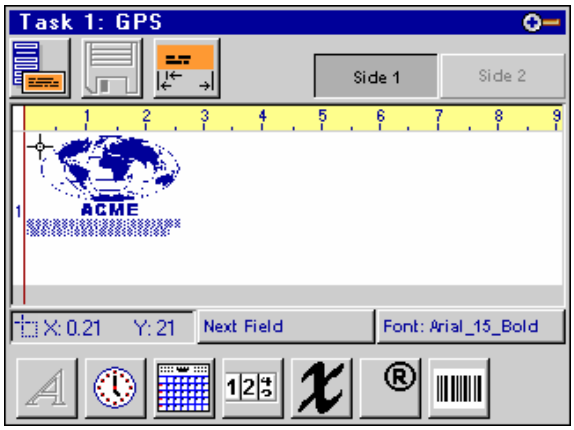
Changing a Field's Font:

1. Select the field.
2. Touch the **Fonts** button; the Fonts dialog box is displayed with the current font selection highlighted.
3. Select the new font.
4. Touch the **OK** button to close the Fonts dialog and view the change. Touch the **Cancel** button to discard the change and close the dialog box.
5. Press **Enter** to release the field.

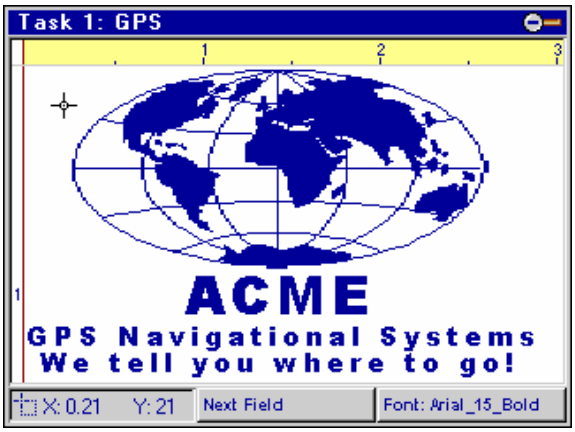


Message Zoom

On tasks configured with 768 or 384 graphics print heads, a **Zoom** button on the right end of the Edit Screen's title bar expands the edit window to full screen, and magnifies the print message so that fine details may be seen (see illustrations below).



Normal Edit Screen



Edit Screen Zoomed In

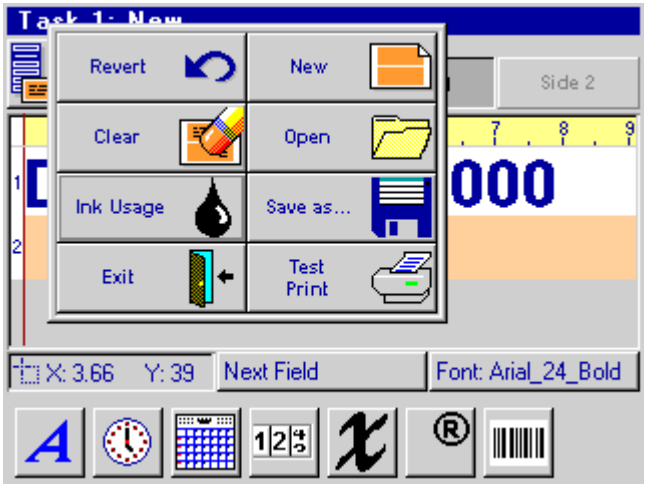
When zoomed in, fields may be selected, moved and deleted; and text fields may be added or edited. Time and date codes, product counts, variable fields, logos, bar codes and label elements cannot be added to the message when zoomed in. Use the **Zoom** button or the **ESC** key to return to the normal Edit Screen.

Edit Screen Keyboard Shortcuts

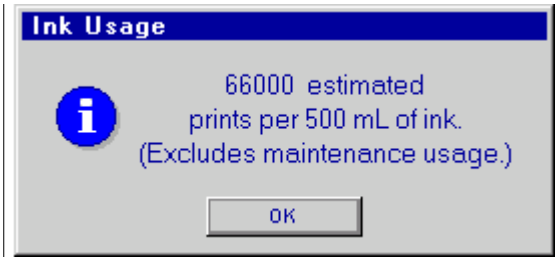
Ctrl X Cut the selected field from the print message.
Ctrl C Copy the selected field.
Ctrl V Paste (insert) the last field cut or copied at the current pointer position.
Ctrl S Save all changes made to the print message.
Ctrl O Open a message for editing or viewing.
Ctrl N Create a new print message.
Tab Move from field to field, or to the first field if no field is currently selected.
F1 Scroll the edit window left.
F2 Scroll the edit window right.
F5 Scroll the edit window up (only when zoomed in).
F6 Scroll the edit window down (only when zoomed in).
F4 Show the extended lowercase character dialog.
F8 Show the extended uppercase character dialog.

Estimating Ink Consumption

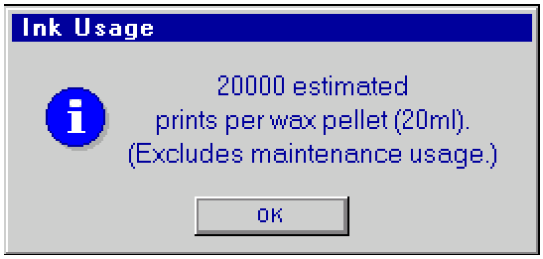
A utility available on the Edit Screen estimates a print message's ink consumption. To display the estimated ink consumption for the message being created or edited, select **Ink Usage** from the Messages Menu.



Ink consumption is reported as the estimated number of times the *entire* message will print per 500 mL of ink for an Impulse Jet task, or 20 mL of ink for a WAX task. All fields on all sides of a print message are included in the calculation. Ink consumption is calculated by multiplying the average drop volume by the total number of dots in the printed message.



Ink consumption for an Impulse Jet task.



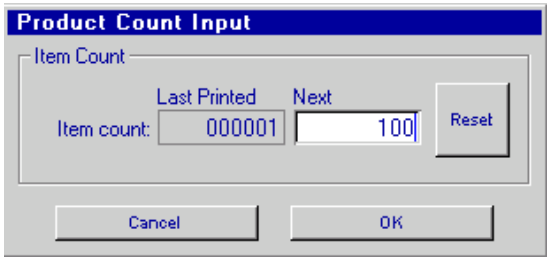
Ink consumption for a WAX task.

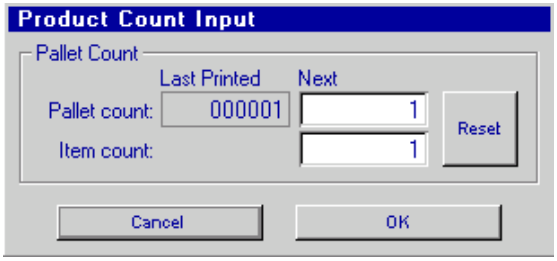
Side 2 = Side 1: When the **Side 2 = Side 1** option is selected, the total number of dots is determined by counting the number of dots on Side 1 of the message, then doubling it.

Printing a Message

1. Touch the decorated **Print** button at the top of the **Home Screen** to access print options, then touch the **Print …** button. Or, touch the **Print …** button at the bottom of the screen.
2. Type in a message name, or touch a message name on the list, and touch the **Print It** button.

   When a message with one or more count codes is loaded for printing, a dialog box is displayed showing the current value of the count and allowing the operator to preset the count to any value within its defined limits. For messages with two or more counts, separate boxes are displayed, one after another, for each count.





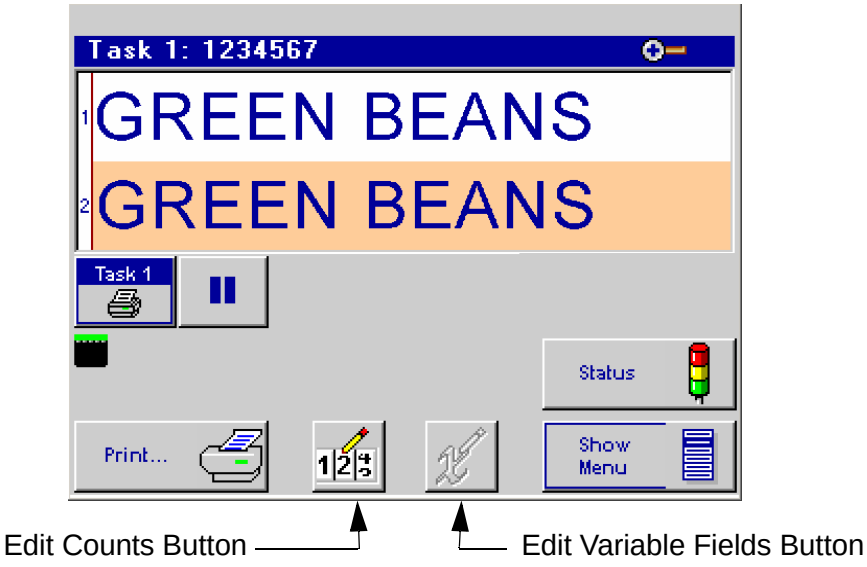
3. To stop printing at any time, open the print options list and touch **Cancel Print**. The system will prompt the user to confirm.

Deleting a Message

1. Touch the decorated **Messages** button on the **Home Screen**.
2. On the **Messages** screen, type in a message name or touch a message name on the list.
3. Touch the decorated **Delete** button. When prompted to confirm, touch **Yes**.

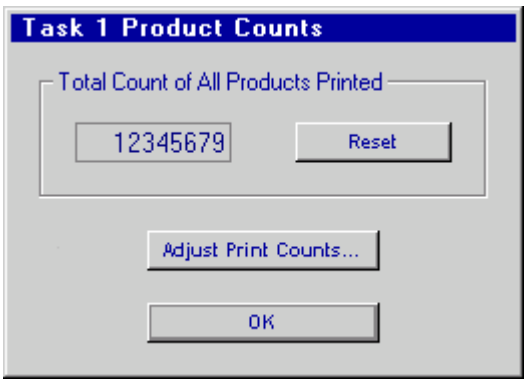
Making Adjustments During Printing

Product count and variable field data can be changed during printing, as long as the controller has not been set up for Message Look Up, Network Mode, Network Notification or Command and Control. Follow the instructions below for the type of information that needs to be changed.



Adjusting Product Counts

To adjust product counts for the current print message, touch the **Edit Counts** button on the Home Screen. The Product Counts dialog box is displayed:

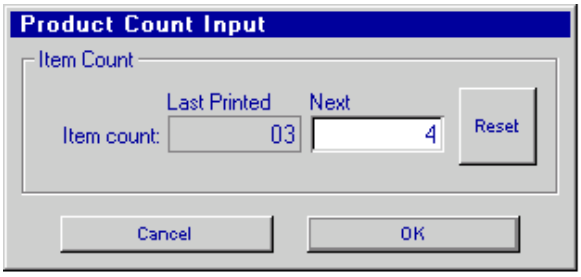


The "Total Count of All Products Printed" is a non-printing count that is incremented every print cycle. Touch the **Reset** button to reset this count to zero.

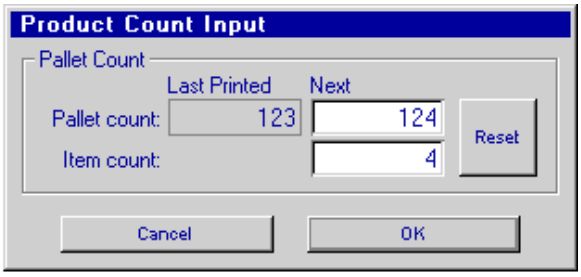
Touch the **Adjust Print Counts...** button to change the value of any printable count the current print message may have. If the current message has no counts, the **Adjust Print Counts...** button is grayed out.

Touch the **OK** button to close the dialog box and return to the Home Screen.

When the **Adjust Print Counts...** button is touched, and the current print message contains one or more counts, the Product Count Input dialog box is displayed:



Product Count Input dialog box for an item count.



Product Count Input dialog box for a pallet count.

To change the product count, touch the **Next** box, type in the new count, and press **Enter**. Enter a value lower than the count's defined minimum and it changes to the minimum. Enter a value greater than the defined maximum and it changes to the maximum.

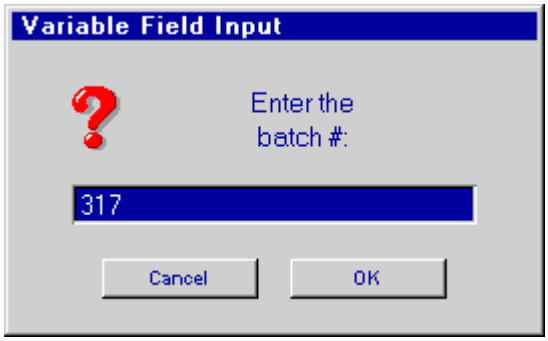
To reset a count to its starting value, touch the **Next** box, then touch the **Reset** button. Touch the **OK** button to confirm the change and return to the Home Screen, or if the message has more than one count, to go to the next count.

Touch the **Cancel** button to close the dialog box and return to the Home Screen without making any changes.

NOTE: The **Item Count** on the Pallet Count dialog is a count internal to the pallet count. It tracks the current number of items on the pallet. When this count reaches the defined items per pallet, the pallet count is incremented. This Item Count does not print. It is provided for those who want to print a pallet count only. If both a pallet count and an item count (for example, BOX 4 OF PALLET 124) are being printed, a separate Product Count Input dialog box will be shown for each count. To keep the item-pallet counts properly synchronized, the printable Item Count ('4' in the left illustration above) must match the Pallet Count item count ('4' in the right illustration above).

Changing Variable Field Data

To change the data printed in a User Variable Field or Data Variable Field using prompts, touch the **Edit Variable Fields** button. The Insert Variable Field dialog box is displayed:



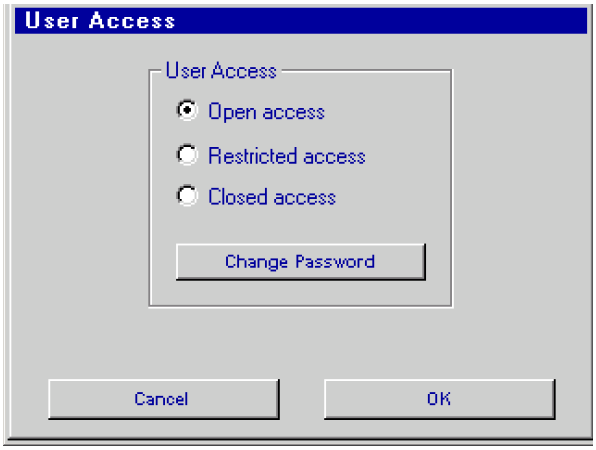
Type in the new data. Touch the **OK** button to confirm the change and return to the Home Screen, or if the message has more than one variable field, to go to the next field.

Touch the **Cancel** button to close the dialog box and return to the Home Screen without making any changes.

Section 8: Utility Functions

User Access Control

On the **Home Screen**, touch **Control Panels**, then **User Access.**



Open Access vs. Passwords

Touch the **Open access** radio button to allow all users unrestricted access to all functions.

Touch the **Restricted access** radio button to enable password protection and restrict access to all message editing and system setup functions. When password protection is enabled, the user will still be allowed to select the print message, pause and resume printing, adjust product counts and edit variable field data in the current print message, and check system status.

Touch the **Closed access** radio button to enable closed access. Closed access only allows the user to view system status.

NOTE: Restricted Access protection prevents the **Print**, **Messages**, **Control Panels**, and **Time & Date** buttons on the Home Screen from being displayed when the **Show Menu** button is touched, until the password is entered. **Closed Access** includes all the protection from Restricted Access, plus it will not allow the user to change the print message, modify counts or variable fields, or pause and resume printing. To prevent unauthorized access, make sure to return to the Home Screen and touch the **Hide Menu** button after working in restricted areas.

NOTE: Turning on **Restricted** or **Closed Access** causes the controller to request user authentication when accessing the system from a web browser. When prompted, enter a user name of **user**, and the password for the controller being accessed.

Touch the **OK** button to confirm the selection and return to the Home Screen.

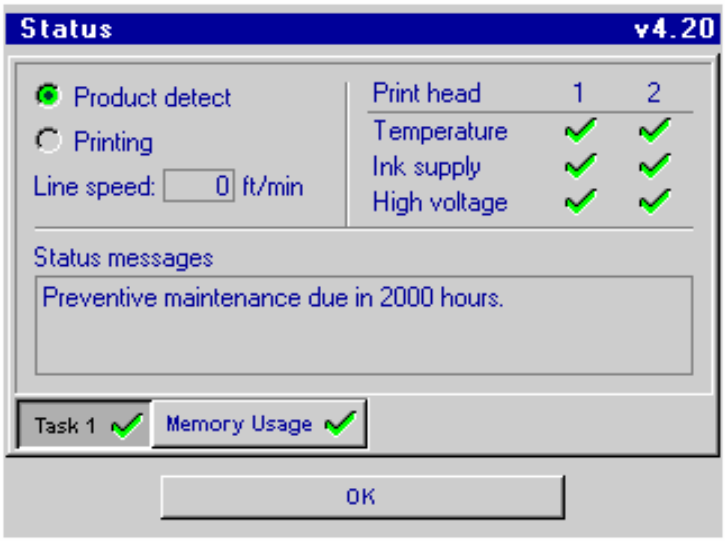
Touch the **Cancel** button to return to the Home Screen without making any changes.

Changing the Password

The factory-set password is **Manager**. To change this, touch **Change Password**. Type the old password (Manager) followed by the new one, then the new one again. Passwords can be up to 16 characters long, and may contain any alphanumeric character, symbol or punctuation mark. Passwords are case sensitive.

Status Screen

To display the Status Screen, touch the **Status** button on the **Home Screen.**



Touch the buttons along the bottom of the status window to display the current status of the Print **Task** or system **Memory Usage**. Indicators on the buttons give an "at a glance" indication of print task status and memory usage. A green checkmark indicates normal print task operation or memory usage, a yellow dash indicates an item needs attention and a red 'X' indicates a non-operational print task or maximum memory usage.

The illustration above shows the status display for an Impulse Jet task. Status displays for WAX task types are similar, showing status information common to all task types, plus task-specific information. Illustrations and descriptions of the WAX status displays appear later.

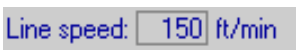
All print task status indicators are updated once very two seconds. Indicators common to all print task types are:

Indicates the task photocell is not blocked.

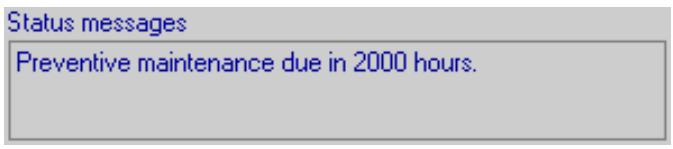
Indicates the task photocell is blocked.

Indicates the task is not ready to print. The print buffer is empty or print is paused.

Indicates the task is ready to print. A print message is in the print buffer and print is enabled (not paused).



When using an external encoder, displays the line speed as measured by the encoder. When using an internal encoder, displays the internal encoder line speed setting.



Displays status information not otherwise represented by other on-screen indicators.

Print Task Status - Impulse Jet

Indicates that the print head is at operating temperature.

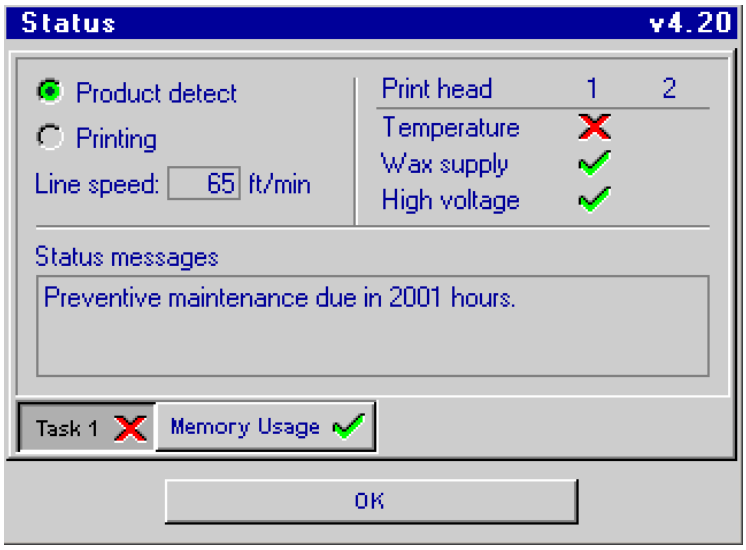
Indicates that the print head is not at operating temperature. Print head must be at operating tmperature to print.

Indicates the ink supply is OK.

Indicates that the print head ink reservoir is LOW. Ink must be added to prevent an Out of Ink condition.

Indicates that the print head reservoir is out of ink. The head will not print in an Out of Ink condition.

Print Task Status - WAX



The WAX print task status indicators for product detect, printing and line speed are the same as those for an Impulse Jet print task. The remaining status indicators differ slightly, as noted below.

Indicates the task's print head is at operating temperature.

Indicates the task is in Sleep Mode.

Indicates the task's print head is not at operating temperature.

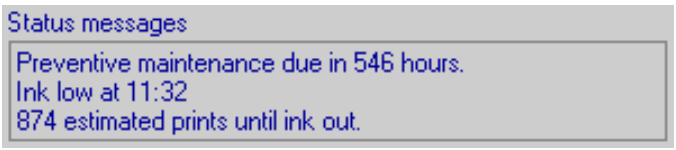
Indicates the Wax Delivery System is at operating temperature.

Indicates the Wax Delivery System is in Sleep Mode.

Indicates the Wax Delivery System is not at operating temperature.

Indicates the task's wax supply is OK.

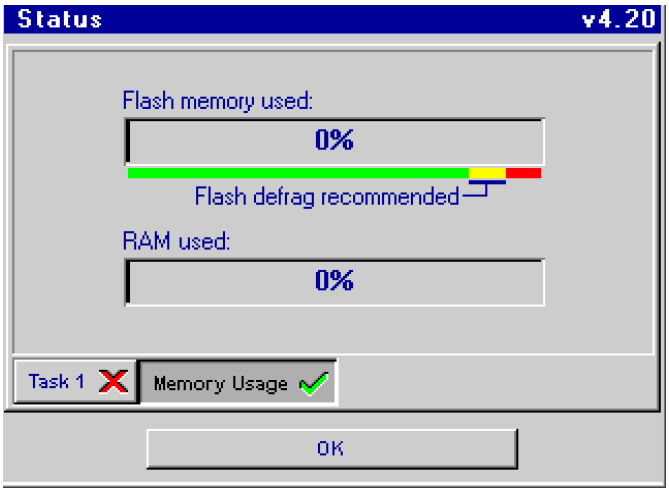
Indicates a **Wax Low** condition: wax pellets need to be added to the Wax Delivery System's melt tank. During a **Wax Low** condition, wax consumption is monitored by the Print Head Driver Assembly. If wax is not added to the melt tank before an addition 5mL of wax is used, **Wax Low** changes to **Wax Out** and printing halts. The time the **Wax Low** condition occurred is displayed in the **Status messages** box, along with an estimate of the number of prints remaining before **Wax Out** occurs (see illustration below). As it usually takes seven to ten minutes to melt enough wax to clear a **Wax Low** condition, wax pellets should be added to the melt tank as soon as possible after the **Wax Low** condition is noticed.



Indicates a **Wax Out** condition; printing halts.

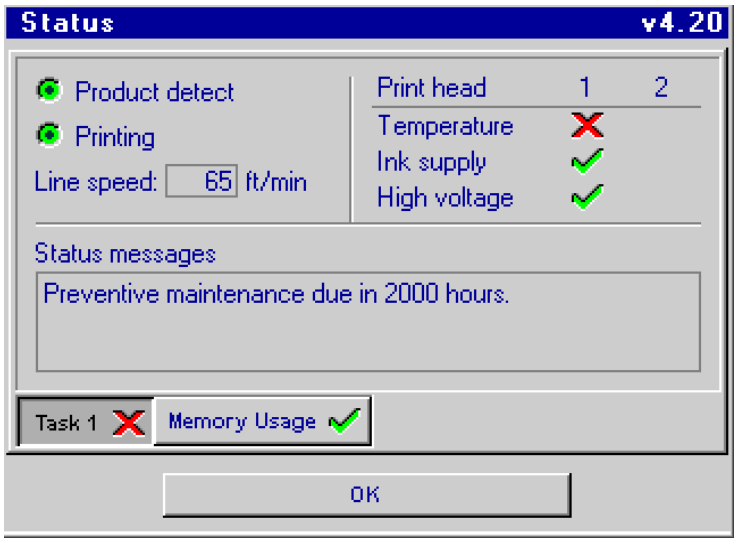
Memory Usage

Memory Usage displays the percentage of available flash memory and RAM that is currently being used.



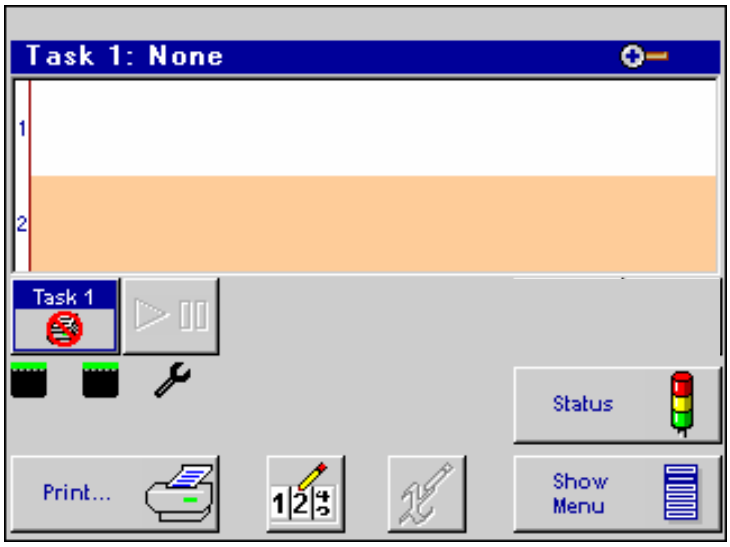
Preventive Maintenance Timer

A 2000 Hour Preventative Maintenance Timer tracks elapsed print time. The timer's progress can be seen in the **Status messages** box on the Status Screen.

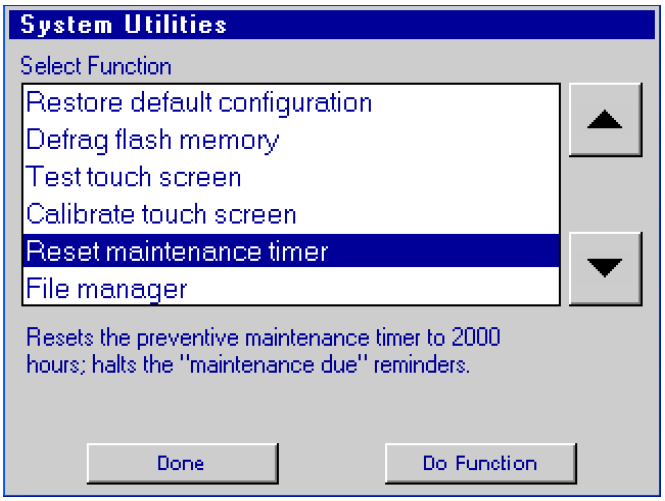


When the timer reaches zero, a dialog box is displayed, reminding the user that preventive maintenance is due.

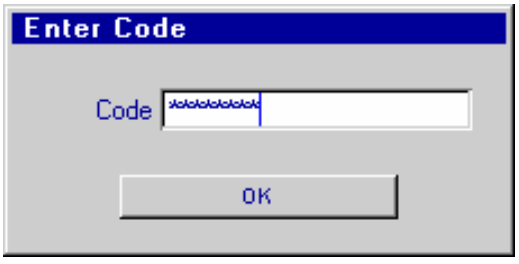
Also displayed on the Home Screen, to the right of the ink level indicators, is a small image of a wrench. The wrench remains as a reminder that maintenance is due; it disappears when the maintenance timer is reset.



To reset the timer, open the System Utilities Screen, choose the **Reset maintenance timer** and touch **Do Function**.



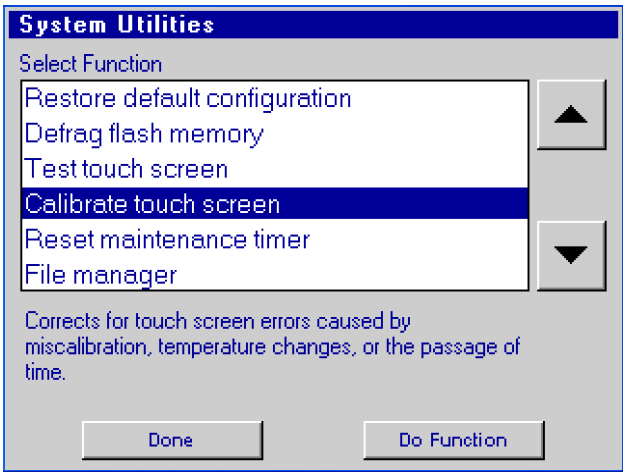
When prompted, enter the reset code and touch **OK**, or press **Enter** on the keyboard.



When the correct code is entered, a dialog box confirms that the timer has been reset.

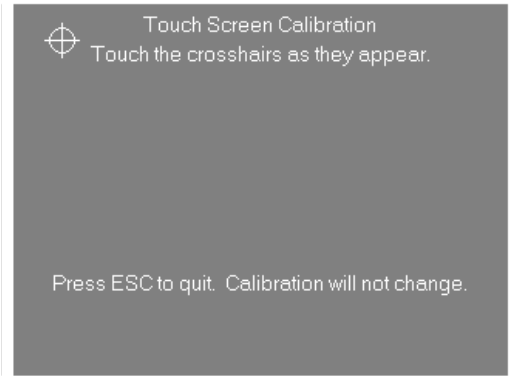
System Test

Touch Screen Calibration is completed at the factory. Re-calibration can be performed any time there are problems with the touch screen. From the **Home Screen**, select **Show Menu, Control Panels**, then **Utilities**. Choose **Calibrate Touch Screen** and touch **Do Function**.



If the touch screen is so far out of calibration that it is inoperable, you will have to call up the calibration utility using the keyboard. From the **Home Screen**, press the space bar to display the Home Screen menu (the space bar alternately hides and displays the menu), then press the "**T**" key.

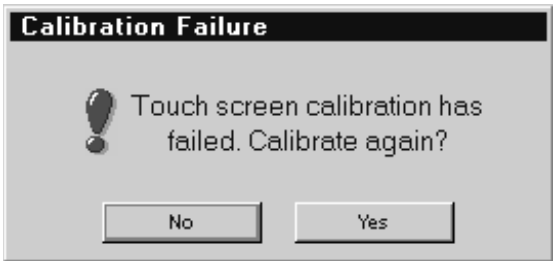
Follow the instructions on the display.



If calibration is successful, the **Success** screen appears.

Press **OK** to confirm.

If calibration is not successful, the **Calibration Failure** screen appears. Touch **Yes**, and attempt calibration again. If it continues to fail after several tries, call the Support Line.

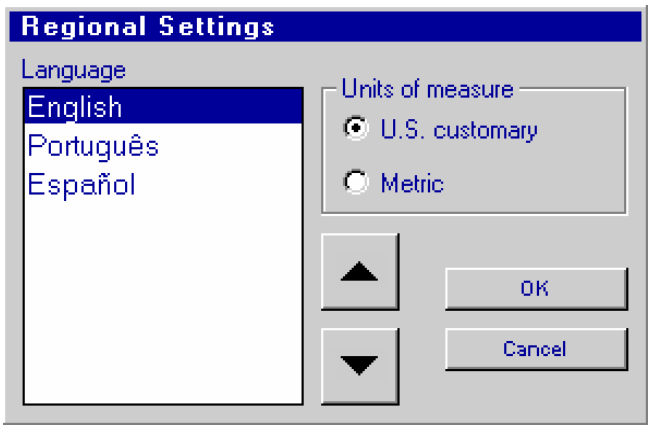


Regional Settings

On the **Home Screen**, touch **Control Panels**, then **Regional Settings**.

Choose the **Language** to be used for the system from the list of available languages.

Touch either the **U.S. customary** or **Metric** radio button to select the desired units to be shown for the items in the following table:



Units of Measure	Line Speed	Print Head Size	Margins, X Coordinate, Product Length
U.S. customary	ft/min	inches	inches
Metric	m/min	mm	cm

Touch the **OK** button to close the dialog box and save changes.

Extended characters that are not on the standard keyboard may be used for File Names, Shift Codes, User Codes and Variable Field names. To use extended characters, select the message or field to be changed. Press the **F4** key to bring up lowercase characters, or **F8** (Shift + F4) to bring up uppercase characters, then select the appropriate character.

NOTE: Extended characters are only available with Impulse Jet 384/768 fonts, from 9 to 96 dots. Extended characters are not selectable for the Arial 126 dot font.

System Reboot

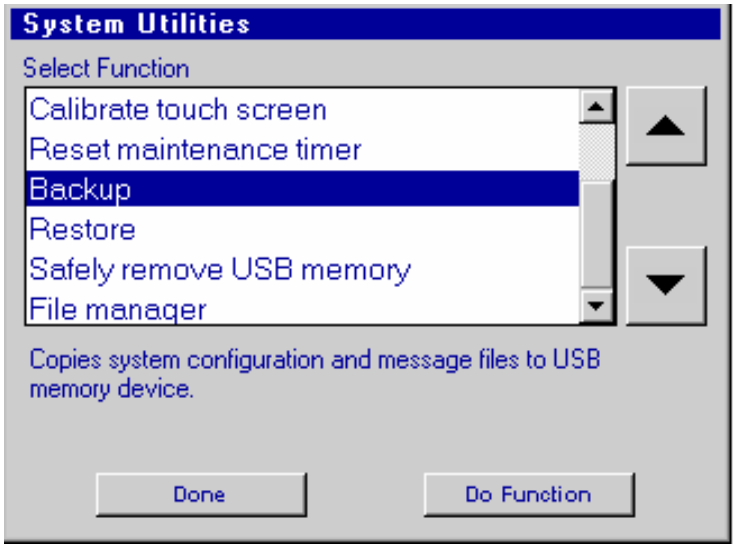
Should the system ever become unresponsive or display an "Out of memory" message, a "system reboot" must be performed. Press and hold **Ctrl** and **Alt,** then press the **Del** button.

CAUTION: Any message that was printing when the system locked up will automatically resume printing when the system reboots.

File Operations

Backup

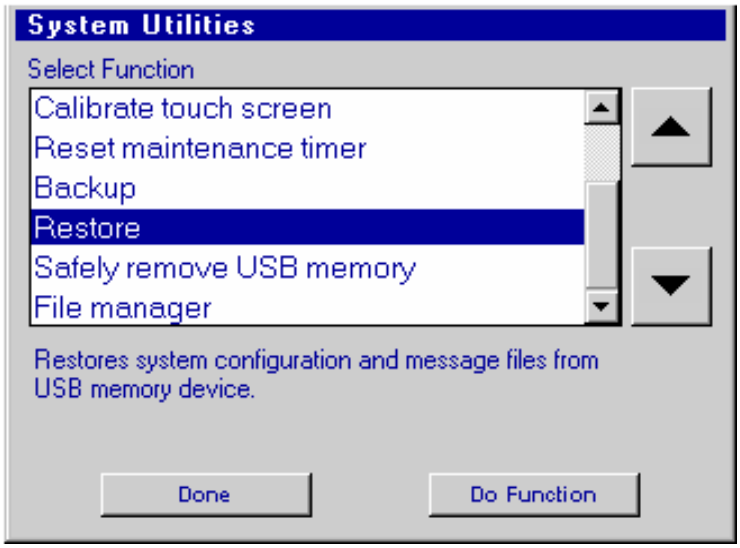
To perform a backup of the data files on the system, open the System Utilities Screen, choose **Backup**, and touch **Do Function**.



The system will then prompt for a file to save the backup file under, the default will be **backup.tgz**. If the system is unable to locate a suitable USB device for backup, an error screen will be displayed.

Restore

To perform a restore of the data files on the system from a backup file, open the System Utilities Screen, choose **Restore**, and touch **Do Function**.

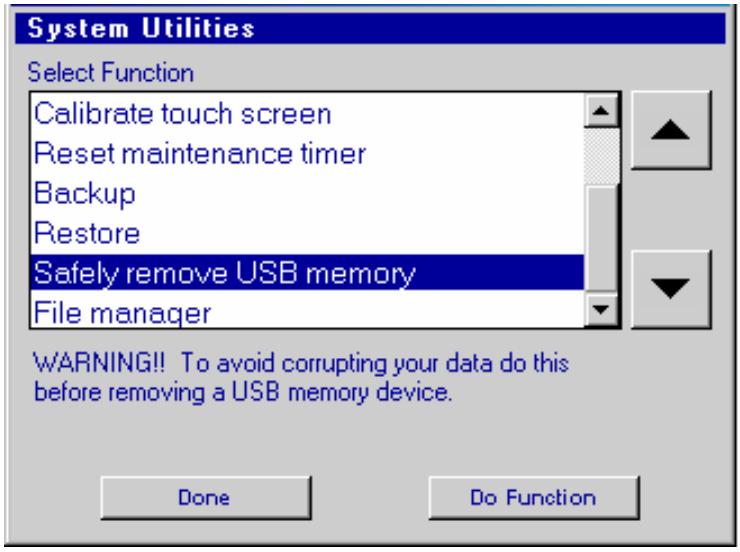


The system will prompt for a backup file from which to restore; the default file name is **backup.tgz**. If the system is unable to locate a suitable USB device for backup, an error screen will be displayed.

NOTE: The backup file is compatible with the backup that is downloaded from the controller in a web browser.

Safely Remove

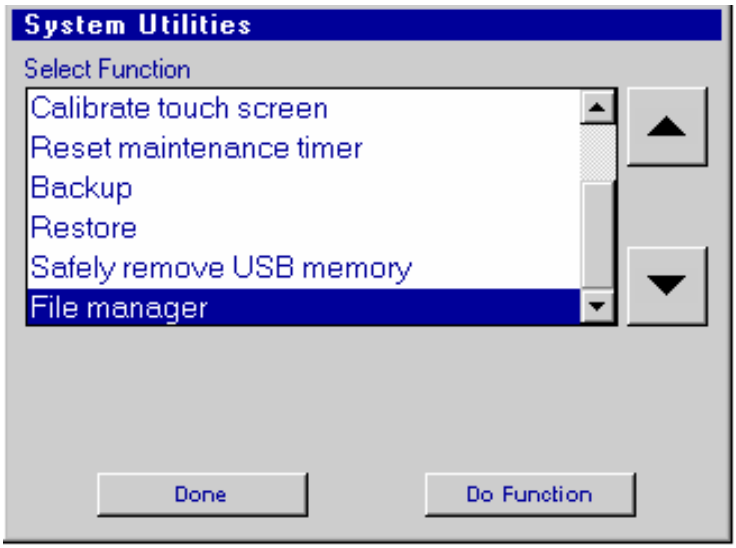
To perform a safe removal of your USB media, open the System Utilities Screen, choose **Safely remove USB memory**, and touch **Do Function**.



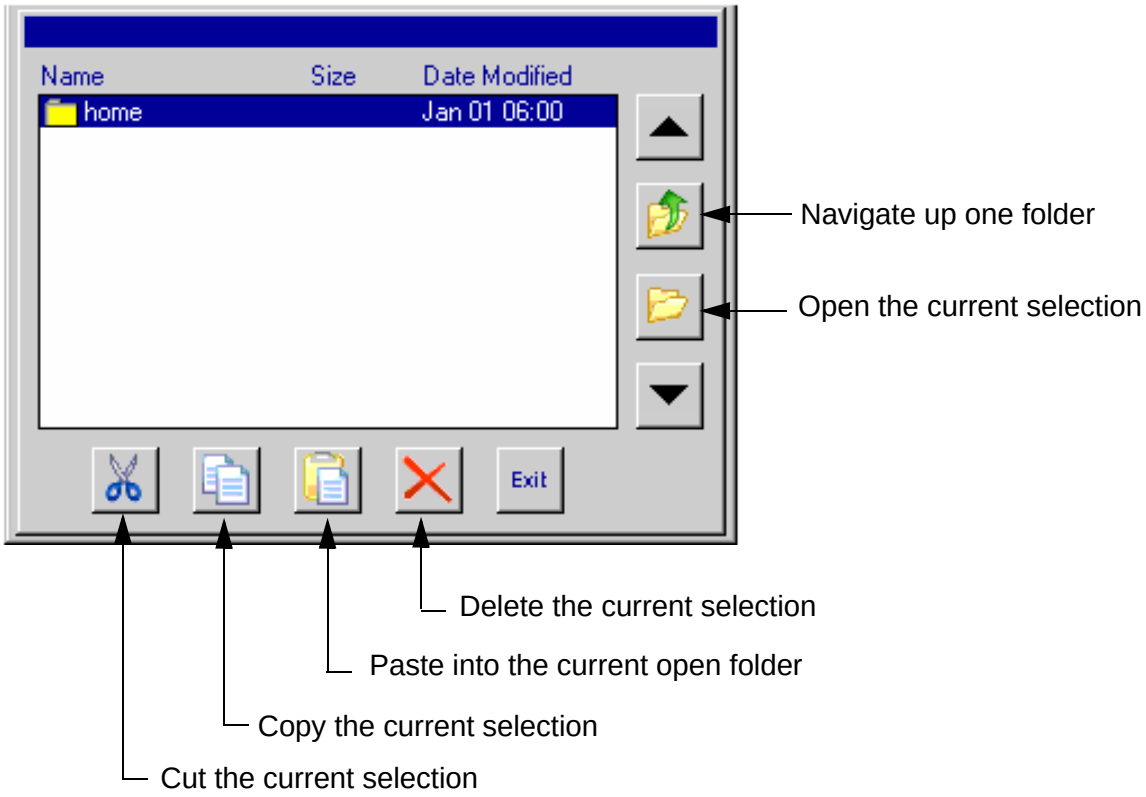
CAUTION: Corruption of data on the USB memory device can occur if this step is not performed.

File Manager

To access the file manager utility, open the System Utilities Screen, choose **File Manager**, and touch **Do Function**.



The following screen will appear. Navigation is performed by clicking the buttons on the right side of the screen. Edit functions are performed by clicking the buttons at the bottom of the screen.



Section 9: Maintenance

APS - Automatic Priming System

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

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

BEFORE APS

AFTER APS

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

Shutdown Procedures

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.

Daily - 8 Hours

- Dust touch screen and keyboard with lint-free cloth.
- inspect print head assemblies for leaks and wipe with lint-free cloth as necessary.

NOTE: Do not wipe the print head faceplate!

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

Inspect guide box rails and print head bracket for wear.

Overnight and 1 to 3 Days:

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

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

Periods of More Than 3 Days:

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

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

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

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

3 Weeks - 120 hours

- Wipe print head cases and ink reservoir covers with lint-free cloth.
- Clean printer cabinet with cloth to remove dust.
- Have qualified person open printer cabinet and inspect for dust. If necessary, blow out dust with low-pressure air that is moisture- and oil-free.

3 Months - 500 hours

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

NOTE: Do not wipe the print head faceplate!

- Clean printer cabinet with cloth to remove dust.
- Have qualified person open printer cabinet and inspect for dust. If necessary, blow out dust with low-pressure air that is moisture- and oil-free.
- With the printer off, make sure tie wraps securely hold all cables. Replace any missing tie wraps or damaged cables.

Section 10: Troubleshooting

The Marksman® Duo HR 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® Duo HR through the Ethernet.

Action:

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

Problem: The system does not print.

Action:

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

Problem: No Shaft Encoder.

Action:

- Make sure that the encoder wheel is contacting the conveyor.
- Make sure that the encoder is connected and plugged 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 photocell.
3. Check for ink on cloth.

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

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

Photosensor Sensitivity Test

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

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

1. Place the test object approximately ¼ 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, run a Prime Cycle per instructions in *Section 4: Installation*.

Problem: Missing bottom print channels.

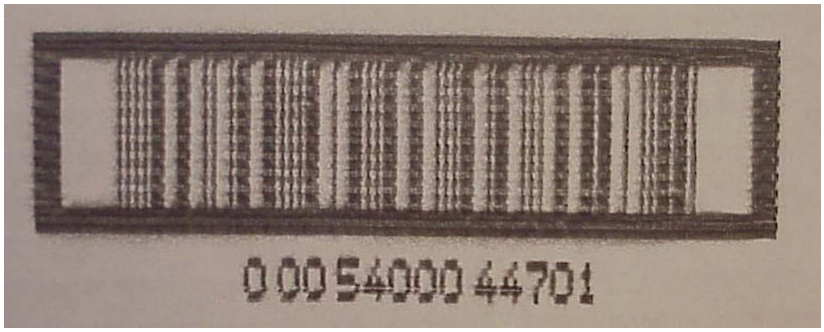
Possible Cause: Ink build-up on lower orifices.

Action: Wipe front plate and run APS.

Problem: Fuzzy print.

Possible Cause: Print head too far away from substrate.

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



Problem: Occasional checkerboard print pattern.

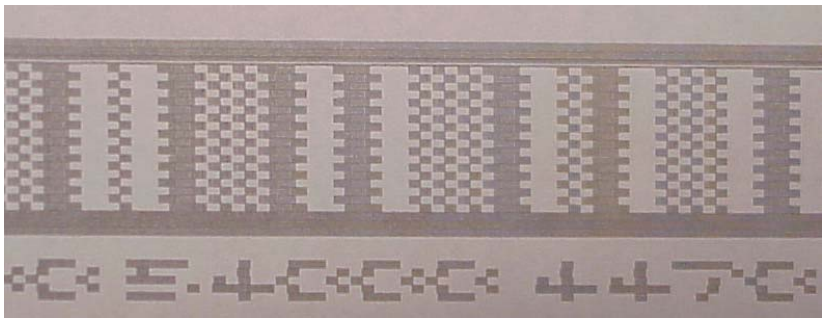
Possible Cause: Encoder slipping or bouncing on belt.

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

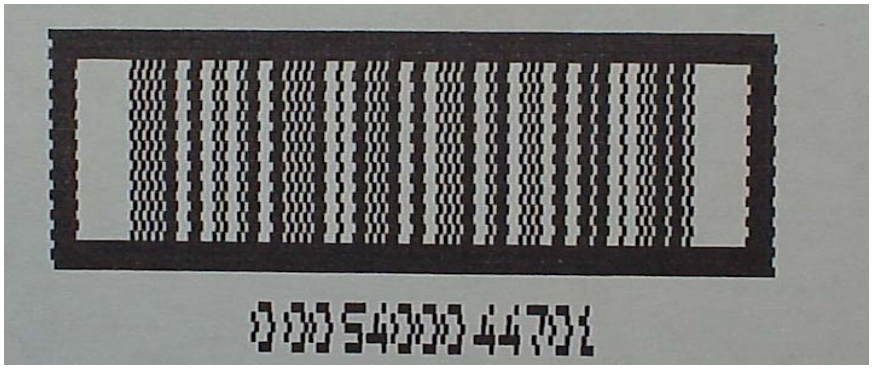
Action: Check for correct encoder (use 5000 PPR Encoder).



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

Controller

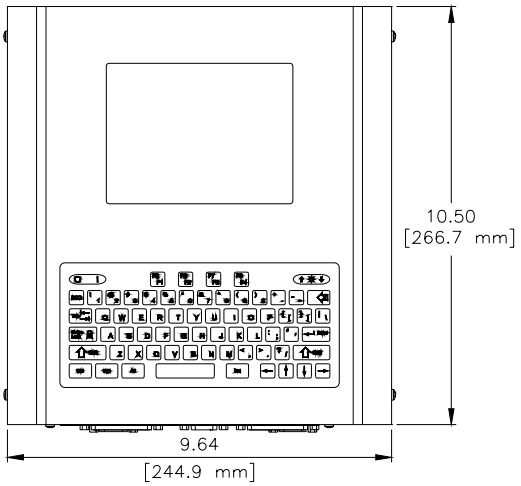
Size

Height: 10.5" [266.7mm]

Width: 9.64" [244.9mm]

Depth: 2.89" [73.4mm]

Weight: 6.6 lbs (3.0kg)



User Interface

Type: Graphical User Interface

Keyboard: 70-key, QWERTY style, elastomeric keyboard

5.7" Display: 320 x 240 color LCD with touch screen, 5.7" diagonal

Fonts

Arial style: 5, 7, 9, 15, 24 and 32 dot, standard and bold for 224 and WaxJet Heads. Arial style: 9, 15, 24, 30, 48, 63, 96, and 126 standard and bold for 384 Heads.

Storage

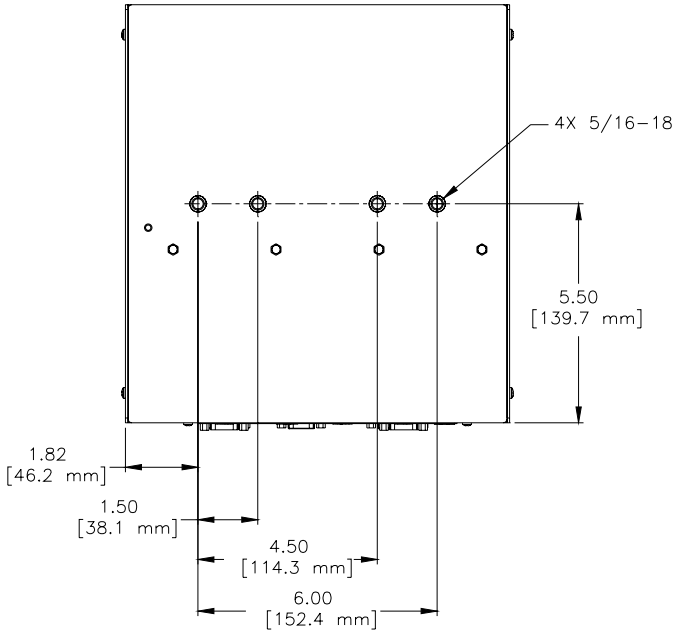
16 MB flash memory

Print Speed

Up to 200 fpm

Maximum Field Length

Up to 256 characters long (81 inches for variable field)

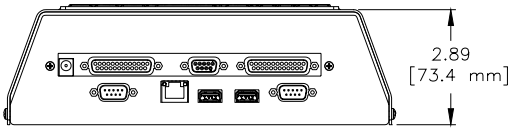


Maximum Product Length

200 inches

Maximum Repeat Print Distance

200 inches



Print Heads Supported

Two (2) 96 or ProSeries 96 Heads

Two (2) 192 or ProSeries 192 Heads

Two (2) 224 or ProSeries AlphaCoder Heads

Two (2) 352 or ProSeries 352 Heads

One (1) 768 or ProSeries 768 Head

One (1) WaxJet or ProSeries NP192 Head

Encoder
2400 ppr/300 ppi, TTL level, 5-26 VDC

Product Sensor
24 VDC, current sinking, active low

Ports
(2) RS-232 ports, (1) 100Base-T Ethernet port
(2) USB ports

Enclosure
Powder-coat painted industrial enclosure

Print Performance
Up to 10 lines of print at 200 fpm

Electrical
90-260 VAC, 50/60 Hz, 3.0A max. (power supply input)
24 VDC, 5.0A (controller input)

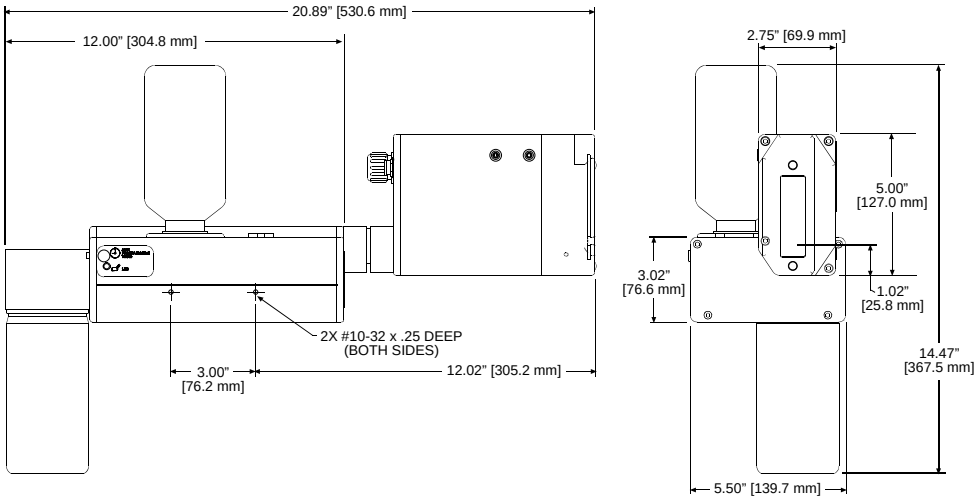
Environment
Ambient operating temperature: 40°F to 104°F (5°C to 40°C)
Operating humidity: 10 - 90%, non-condensing

Maximum Distance Between Print Head and Controller
25 feet

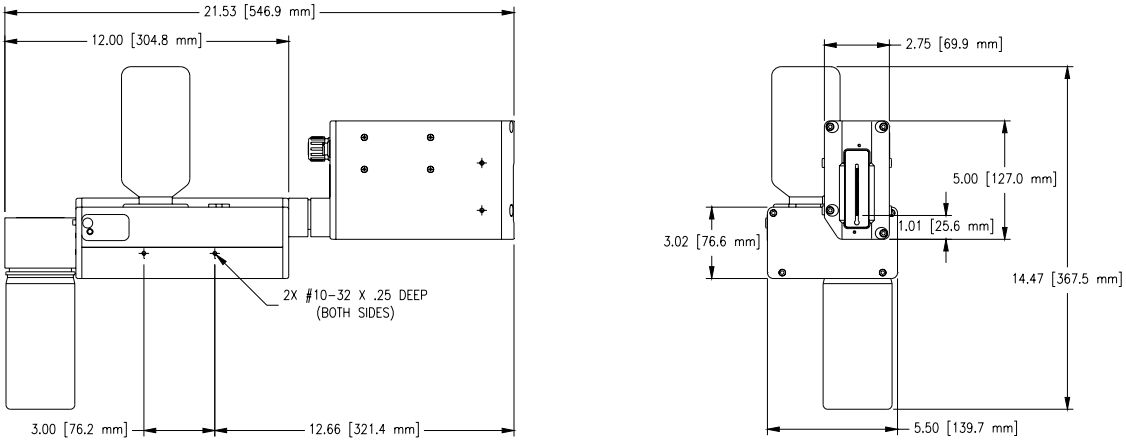
Bar Codes Supported
I 2 of 5
SCC-14 / I 2 of 5
SCC-14/UCC-128
EAN-8
EAN-13
Code 39
Code 128
UPC
UPC-E

Print Head Specifications

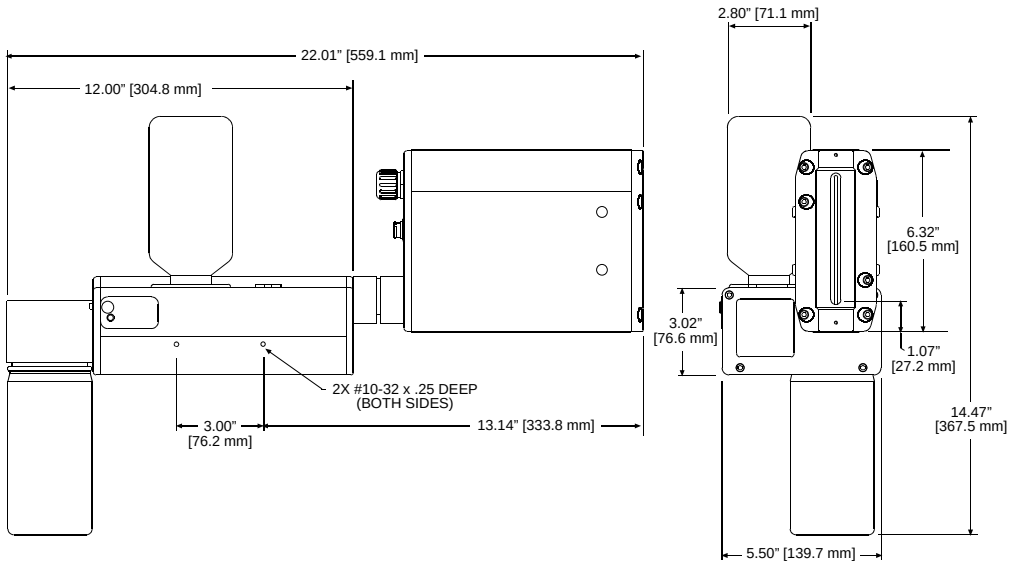
96, 192 and 352 Print Heads:



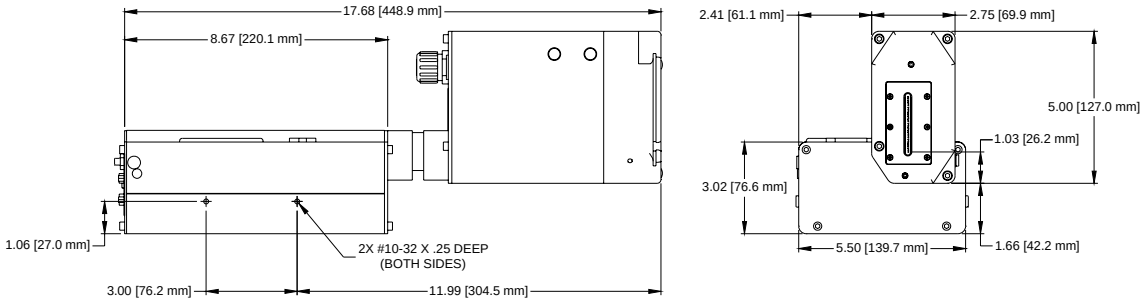
384 Print Head:



768 Print Head:



AlphaCoder or 224 Head:



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

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

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

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

Technical Data:

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

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

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

Appendix B: Theory of Operation

Functional Description

The Ink Jet System prints text, autocodes (such as product counts or time and date stamps), bar codes, and/or graphics onto products as they travel by conveyor past stationary print heads. Print can be on any one of, or a combination of, the product's sides. The conveyor speed is monitored using a variable speed encoder or a built-in fixed speed encoder. Products are detected using a photosensor. The information to be printed is defined as a message and is programmed into the controller via a user interface.

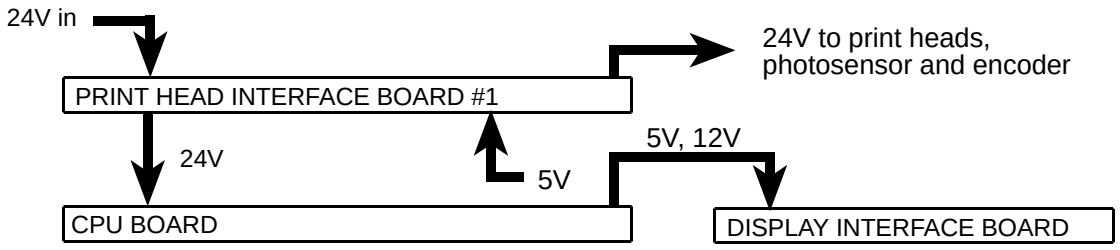
Controller Features

The Controller has a graphical user interface consisting of a color LCD, touch screen, and 70-key QWERTY keypad. Also housed in the controller are a CPU Board and a Print Head Interface Board with a Display Interface Board.

Power

Battery Backup - A 3V battery on the CPU Board (BT1) maintains the contents of system SRAM and keeps the real time clock running during power outages or when the system is not plugged into a power outlet.

Power Distribution - Refer to the illustration below. 24V from the first Print Head Interface Board only is routed to the CPU Board, where it is stepped down to the 12VDC and 5VDC used to power the rest of the system. 12V goes to the Display Interface Board where it powers the backlight inverter, and 5V is distributed throughout the CPU Board, to the Display Interface Board, and to the Print Head Interface Board(s).



POWER DISTRIBUTION

Please note that power is applied to the system even when it is "turned off." When turned off using the OFF button on the keyboard, the system enters a sleep mode where it responds to nothing but the ON button. All voltages are present while sleeping. The only way to completely remove power is to unplug the unit.

CPU Board

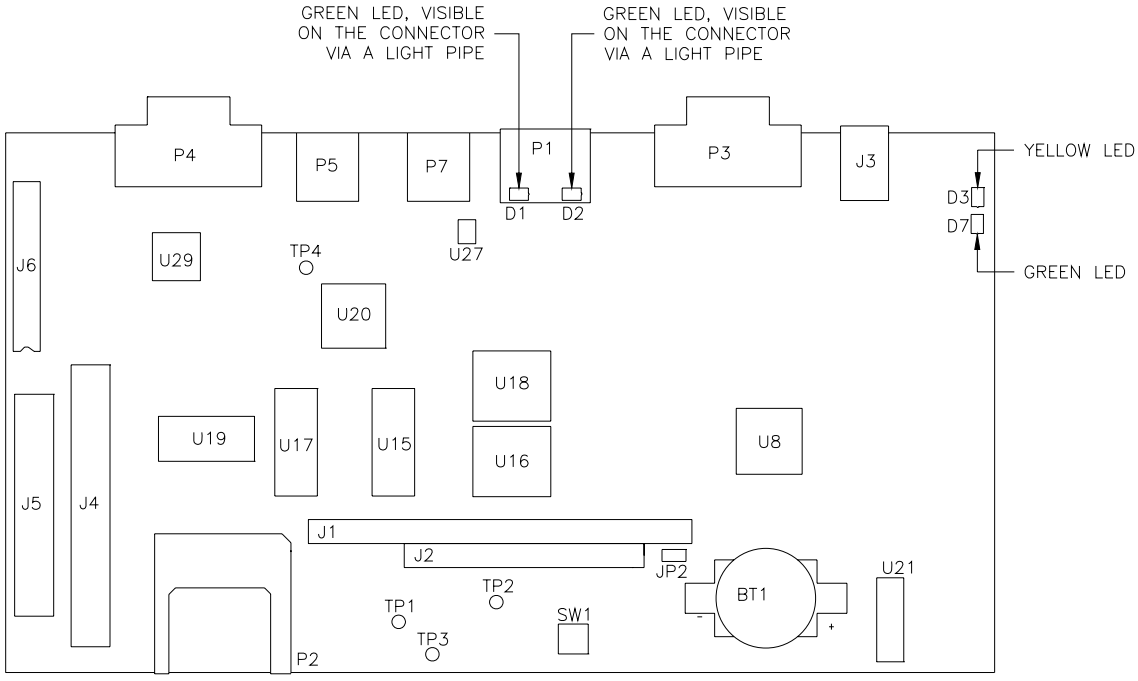
The CPU Board has a microcontroller, flash, SDRAM and SRAM memory, a touch screen controller, a real time clock/calendar, an Ethernet port, two USB 2.0 ports, two serial ports, 12V, 5V, 3.3V and 1.8V regulators, a 3V battery, PC/104 connectors and connectors for attaching the system display and keyboard assemblies.

The microcontroller (U20) is the system's central processing unit (CPU). It executes the system program from flash (U16, U18) and SDRAM (U15, U17). The CPU also directly controls the keyboard, detecting and processing key closures. The CPU's on-board LCD controller reads display data from the display memory (part of the SDRAM), formats it and sends it to the LCD with all necessary control signals. Display data is written into the display memory by the CPU.

The touch screen controller (U27) senses when the screen is touched, and sends screen coordinate data to the CPU for processing.

The real time clock/calendar (U21) keeps system time.

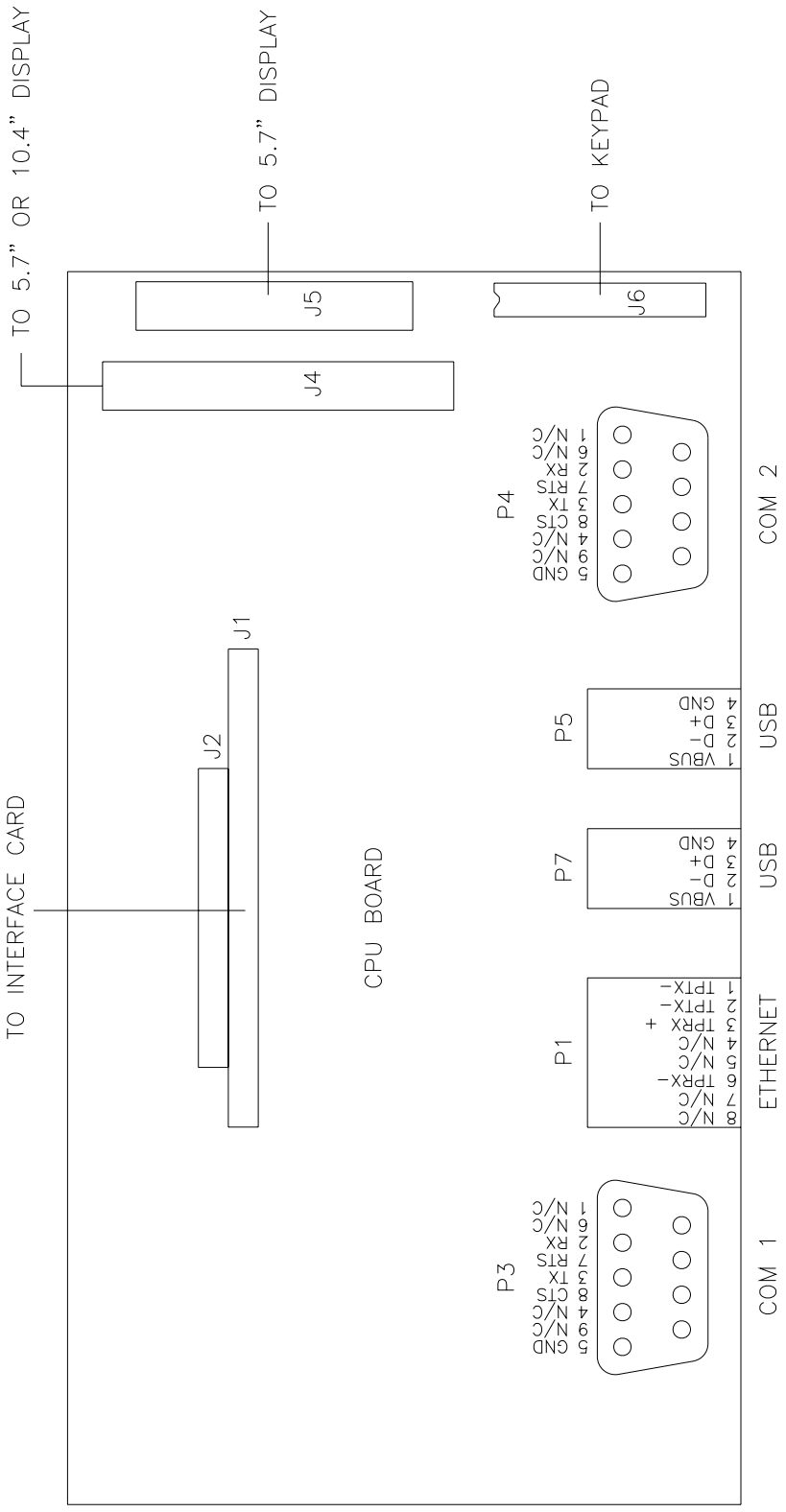
The 3V battery (BT1) preserves system data and keeps the clock running during power outages or when the system is not plugged into a power outlet.



Test Points:	TP1:	12VDC, power for display backlight. Turns on/off with soft power switch.
	TP2:	5VDC, power for 5V logic. Also supplies the input voltage to the 3.3V regulator.
	TP3:	3.3VDC, power for 3.3V logic. Also supplies the input voltage to the 1.8V regulator.
	TP4:	1.8VDC, power for the CPU core.
LEDs:	D1:	Ethernet connector, Green. Flashes to indicate network traffic.
	D2:	Ethernet connector, Green. Indicates valid network connection.
	D3:	Yellow, flashes when the CPU is running.
	D7:	Green, indicates 3.3V is present.

Interconnect Diagrams

Controller CPU Diagram



Appendix C: Parts and Supplies

Controller Battery

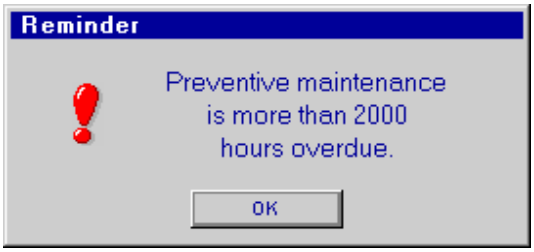
Type: CR2032, 3V (part number 5760-122; also available at department and electronics stores).

CAUTION: There is the danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

ATTENTION: Il y a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

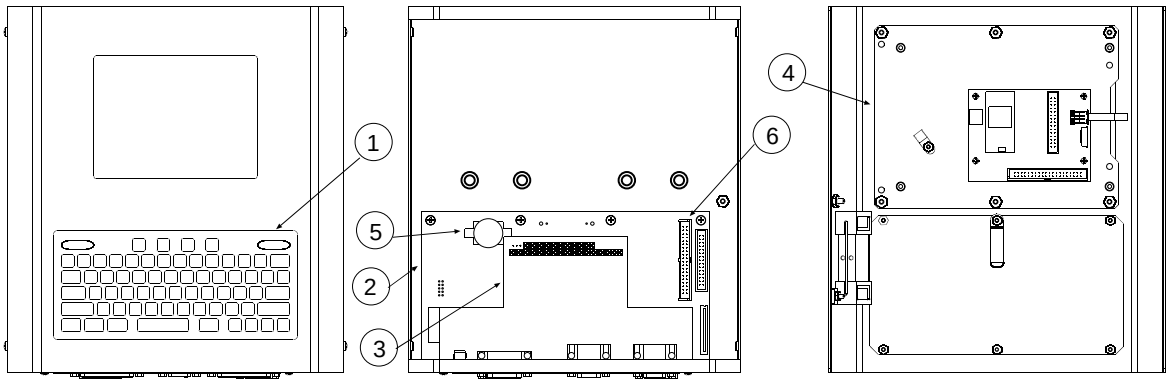
Replacing the Battery

1. Go to the **Home Screen**.
2. Cancel any currently printing messages; save the product counts, if applicable.
3. Remove power from the controller by unplugging the power supply from all print head interface boards.
4. Remove and replace the battery on the CPU board.
5. Reapply power to the print head interface boards and wait for the Home Screen to become visible. If the Home Screen does not appear after a few minutes, press the **ON** button on the keyboard.
6. Recalibrate the touch screen.
   a. If, after the Home Screen is displayed, a dialog box appears that says preventive maintenance is overdue, press the **Enter** key on the keyboard. DO NOT touch the **OK** button on the dialog box.
   b. Press the spacebar on the keyboard to display the Home Screen buttons.
   c. Press the 'T' key on the keyboard to display the Touch Screen Calibration Screen.



7. Set the time and date.
8. Restore system defaults.
9. Repeat Step 6.
10. Reset the total product counts.
11. Reset the Preventive Maintenance Timer.
12. Reload the message, if any, that was printing before the battery was replaced.

Controller Assembly Kits

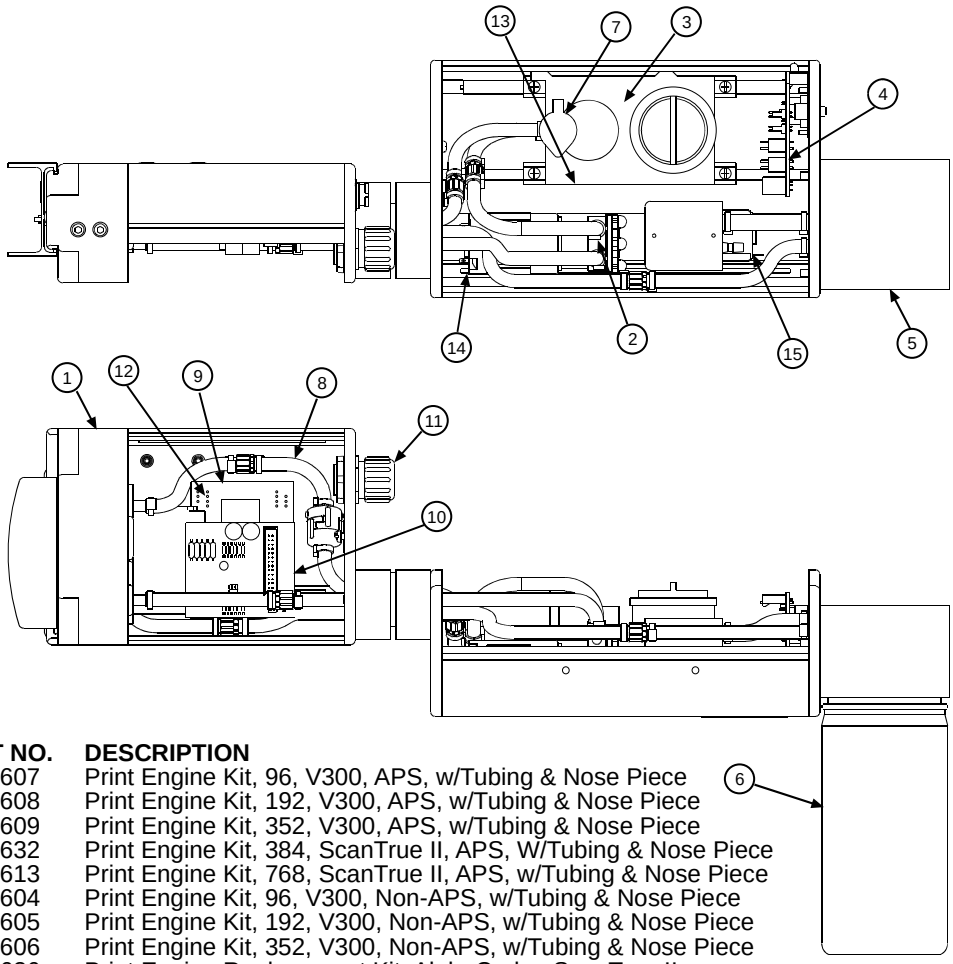


ITEM	PART NO.	DESCRIPTION
1	5765-201	Keypad Replacement Kit
2	5765-202	CPU PCB Replacement Kit
3	5765-204	Interface PCB Kit
4	5765-205	Display Replacement Kit, 5.7", with Touch Screen Controller
5	5760-122	CPU Battery (Type: CR2032)
6	5760-746	Cable, Display to CPU PCB, 40 Conductor
(not shown)	5760-713	Cable, Display to CPU PCB, 30 Conductor
(not shown)	5760-333	24 VDC Power Supply Kit

Consumables

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

Print System Service Kits



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

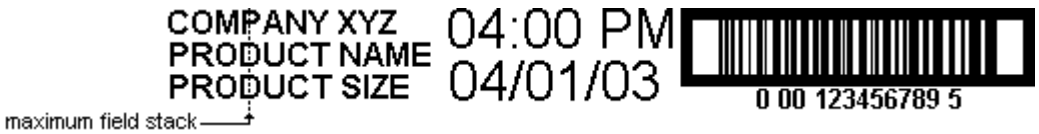
NOTE: Please refer to the ProSeries NP192 Manual (2466401) for Service and Parts Kits for the NP192 Integrated Print Head.

Appendix D: Performance Parameters

Performance Parameters of an Impulse Jet Controller

The performance of an Impulse Jet Controller is limited by the DPI setting and the sum of the maximum field stacks on each side of a message. The maximum field stack for a side is defined as the maximum number of vertically aligned fields. In the following example, Task1:Side1 has a maximum field stack of three fields and Task1:Side2 has a maximum field stack of two fields. Thus, the sum of the maximum field stacks for Task1 is five fields.

(Task1:Side1) + (Task1:Side2) = 3 + 2 = 5 fields



Task1:Side1

Task1:Side2

The following table can be used to determine the maximum line speed of a controller given a maximum field stack and dpi.

Maximum Field Stack of Controller	Max. Line Speed @ 100 dpi (ft/min)	Max. Line Speed @ 150 dpi (ft/min)	Max. Line Speed @ 200 dpi (ft/min)
10 or less	400	267	200
11	363	242	181
12	333	222	166
13	307	205	153
14	285	190	142
15	166	177	133
16	250	166	125
17	235	156	117
18	222	148	111
19	210	140	105
20	200	133	100

The **absolute** maximum line speed for an 768 print head on a Task is 200 ft/min.

The **absolute** maximum line speed for one or two print heads on a Task is 400 ft/min and 300 ft/min, respectively.

The Duo Print Head operational through-put (the maximum print speed) is determined by the density and resolution of the printed message. The print density is defined as the amount of printed dots in a given area, with a solid black image having a density of 100%. The higher the density, the higher the ink flow demand is in the print head. A typical alpha-numeric message has a print density of about 20%, while a 100% magnification I- 2 of 5 bar code, has a print density of about 40%. A full-scale logo with a heavy background can have a density of up to 70%. The following tables identify the image rate versus print speed for various densities. The data shown is based on a 6" message printing at 200 dpi horizontal resolution.

Line Speed (fpm)	20% - 40% Density # of Images per Sec.	Above 70% Density # of Images per Sec.
50	2	2
100	2	2
150	2	1
200	2	1

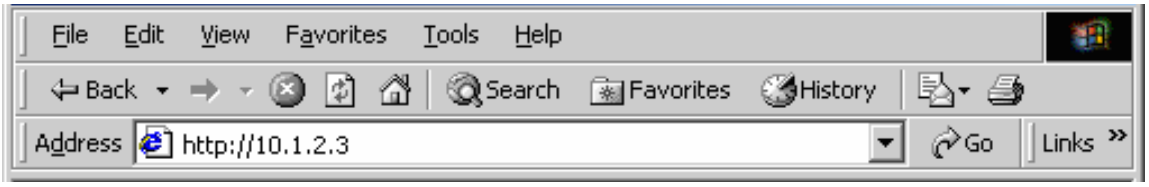
Appendix E: File Backup and Restore

Use these procedures for making archival copies of the system configuration and print message files, and for preserving the system's configuration and print messages during firmware upgrades. File types saved during a backup are .cfg, .prd, .bmp and .alp. These are the system configuration files, message files, logo files and label files, respectively.

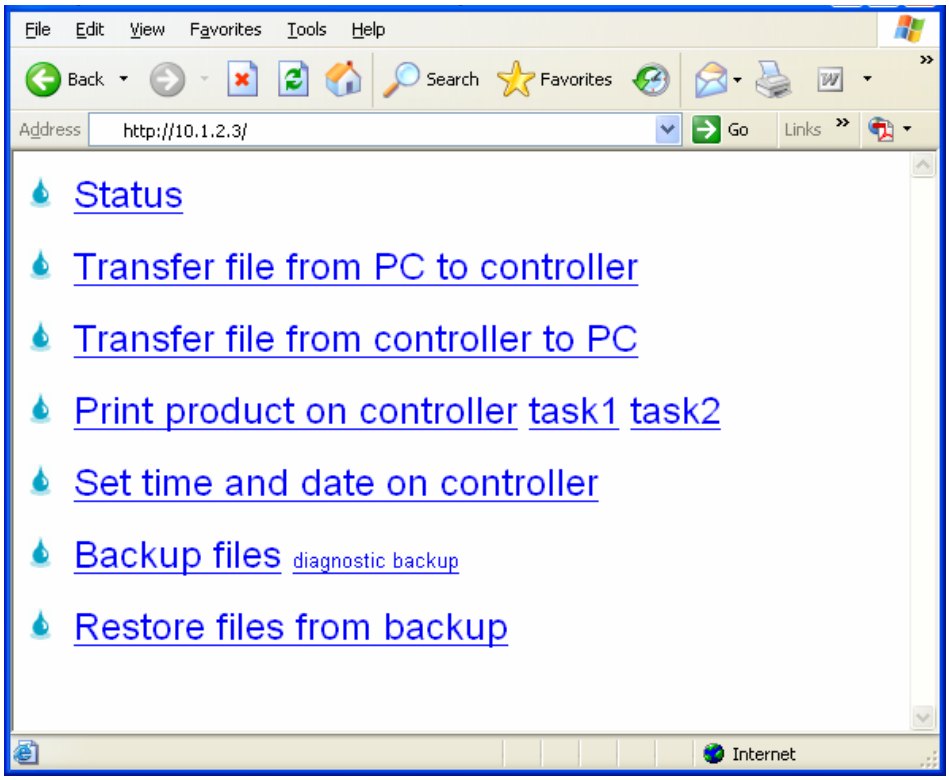
These instructions assume the Controller is already connected, via Ethernet, to a PC. If not, please refer to *"Appendix H: Configuring a PC to Communicate with the Controller" on page 119*.

1. Obtain the controller's IP address. Most controllers have an IP address of **10.1.2.3**. It may be different if the controller is networked with other systems or other devices. If the IP address is unknown, go to the controller, and from the **Home Screen**:
- Touch the **Control Panels** button to open the Control Panels Menu.
- Touch the **Network** button on the Control Panels Menu to open the Network Setup Screen.
- Touch the **IP Addresses** tab to display the system's IP addresses.
- Record the IP address (it's the top one).

2. On the PC, start Microsoft Internet Explorer (must be version 3.2 or higher) or another web browser.
3. In the browser's address box type in "http://", followed by the controller's IP address. See the illustration below:

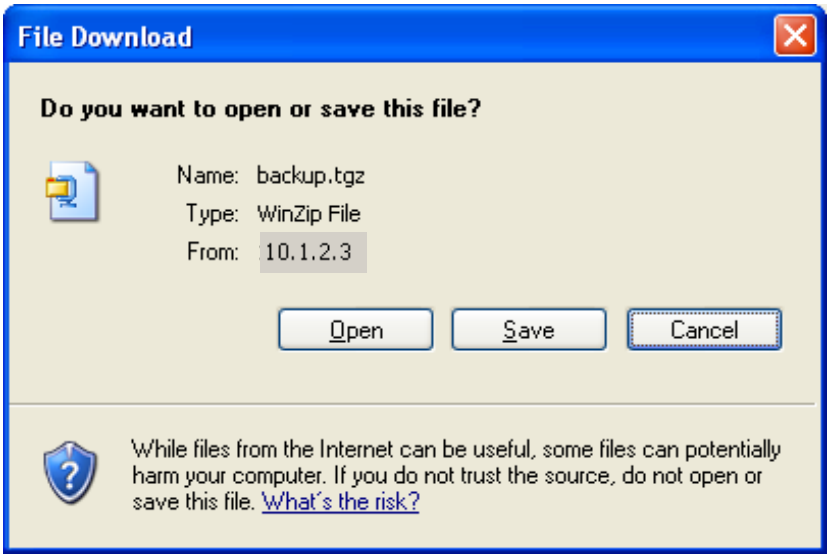


4. Press **Enter**. The web page shown below should appear.

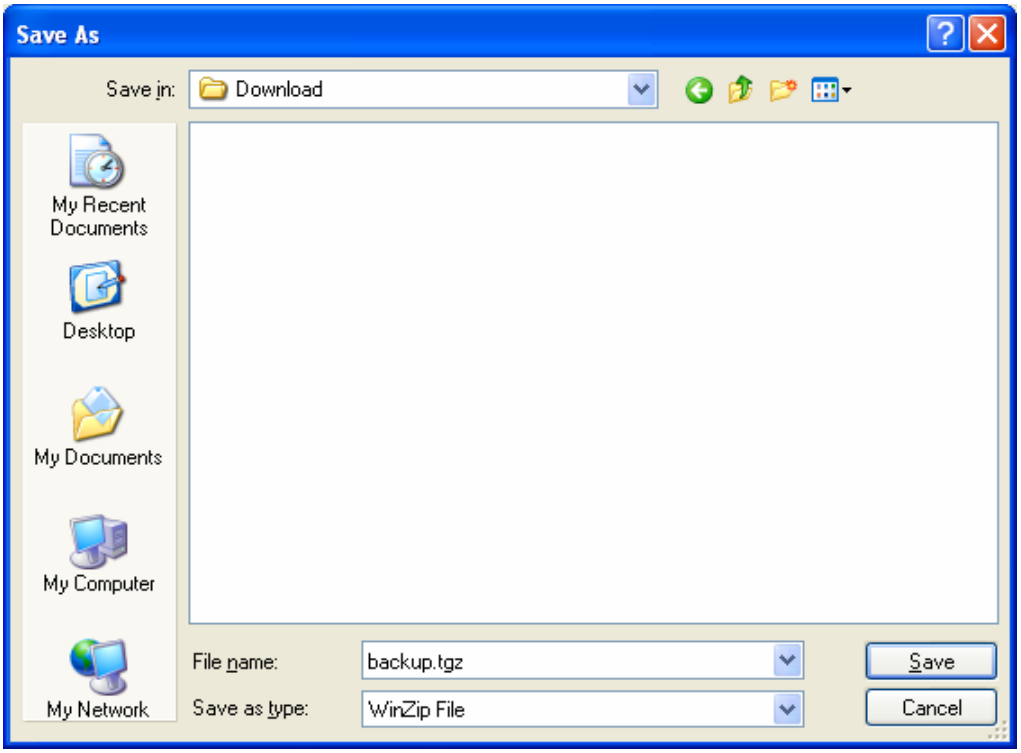


File Backup

To backup the system files, click the **Backup files** link. The dialog box shown at right (or a similar dialog box) will appear.



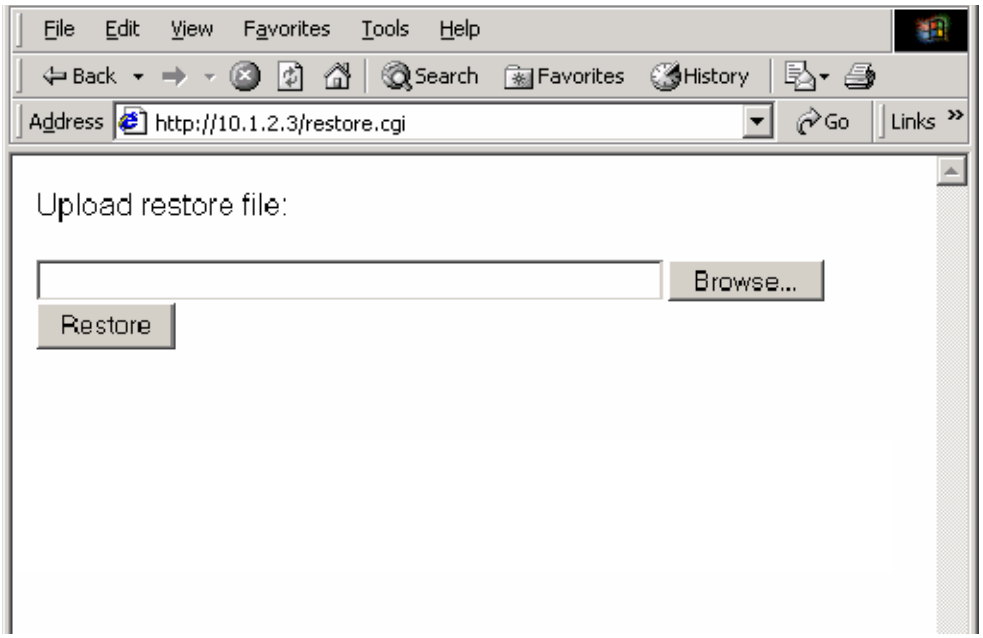
Click the **Save** button. A **Save As** dialog appears.



The files backed up are compressed and put into a single file, and are given the default name and file extension **backup.tgz**. Following normal Windows® conventions, the backup file may be renamed and given any extension, and saved in any folder desired. To save the backup file with an extension other than .tgz, open the **Save as type** combo box and select **All Files**.

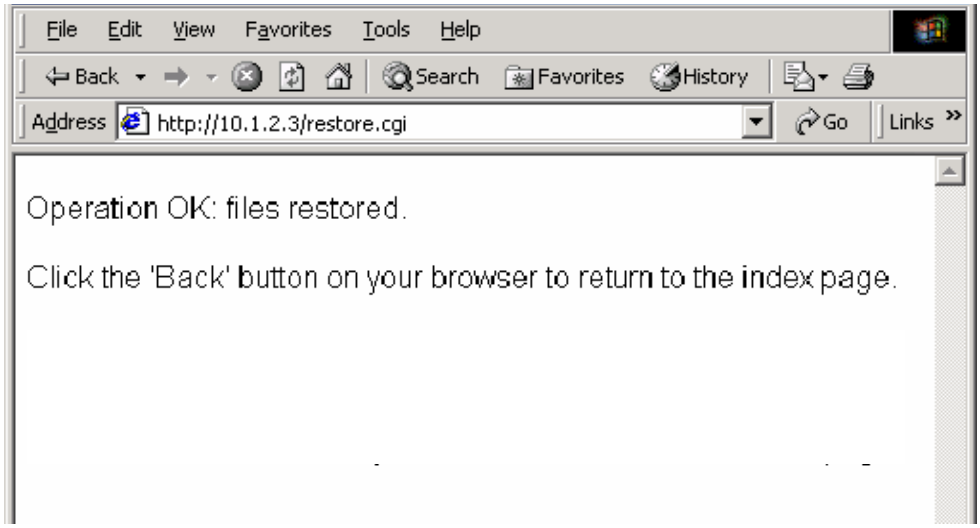
Restoring Backed-Up Files

To restore the controller's backed up system files, click the **Restore files from backup** link. The web page shown below appears.



Click the **Browse...** button to locate and select the backup file to be sent to the controller.

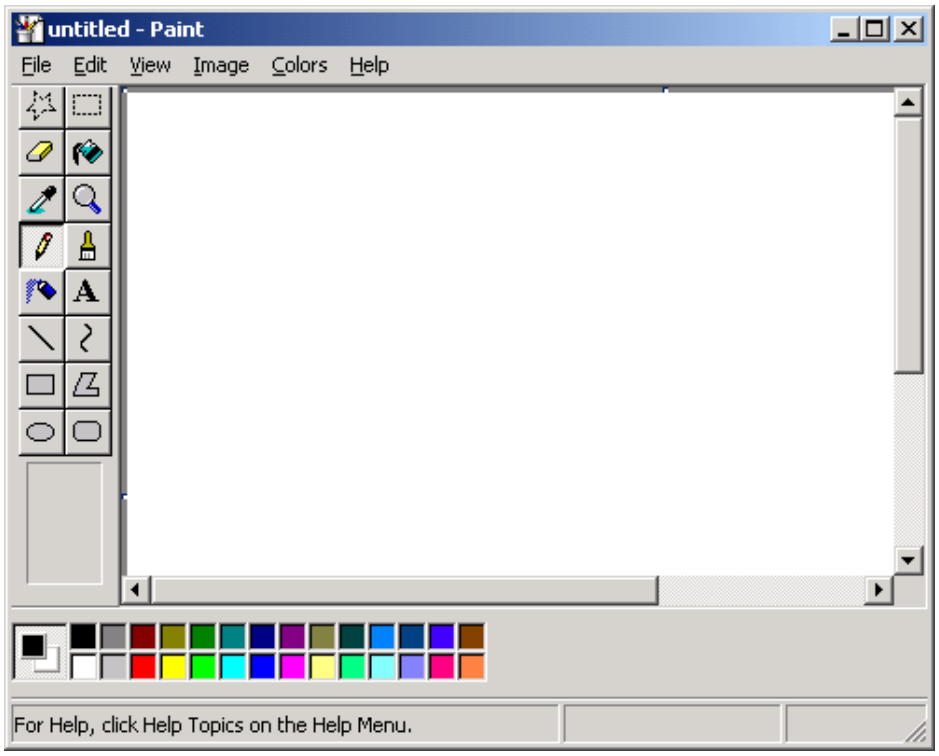
Click the **Restore** button to send the file to the controller. If the file transfer is successful, the web page shown below will be displayed.



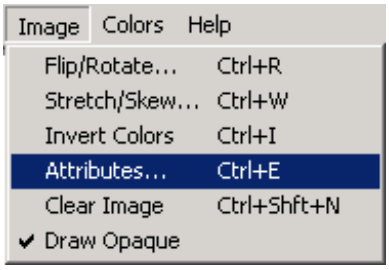
Appendix F: Creating Logo Files

Creating a Logo

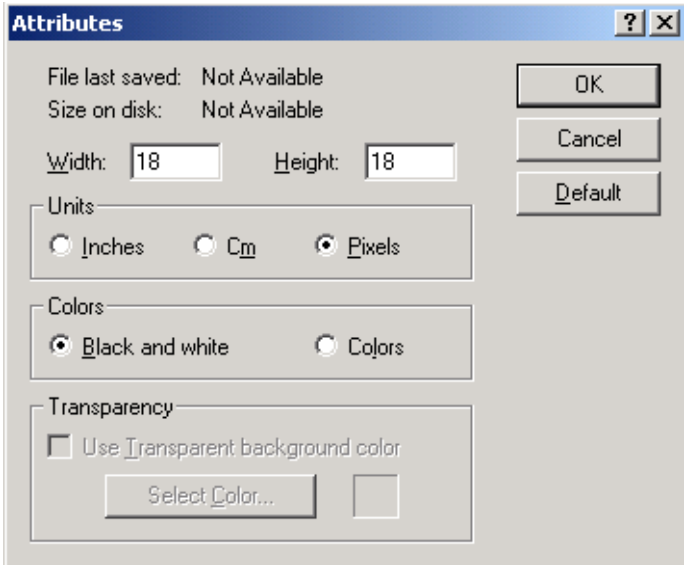
Open **Paint** from a PC by selecting **Start**, **Programs**, **Accessories**, and then **Paint**.



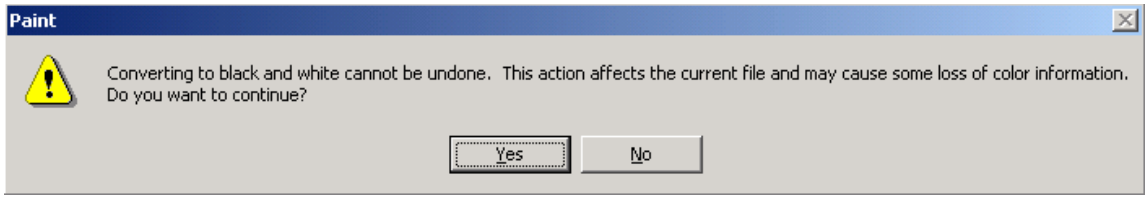
Bring up the **Attributes** dialog box by selecting **Image** and then **Attributes**.



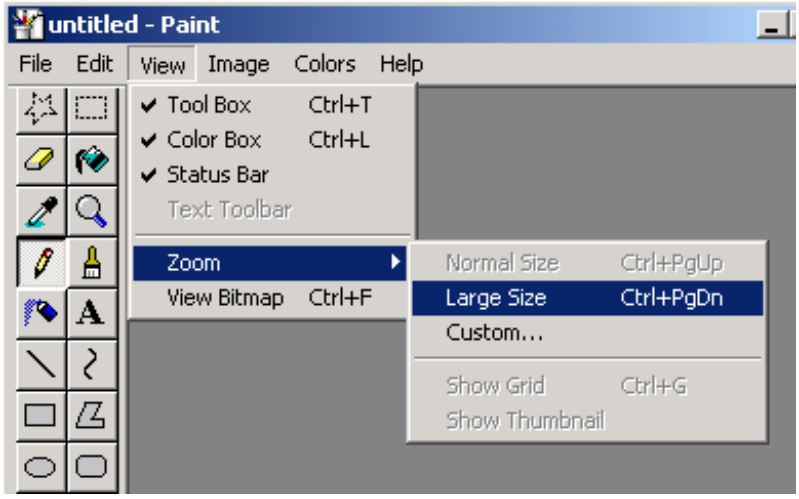
Enter the **Width** and **Height** of the logo in **Pixels**, then select **Black and white**.



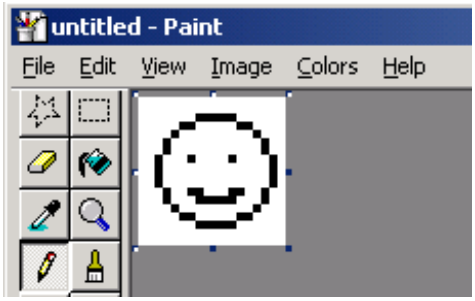
Choose **Yes** at the screen prompt to convert to black and white.



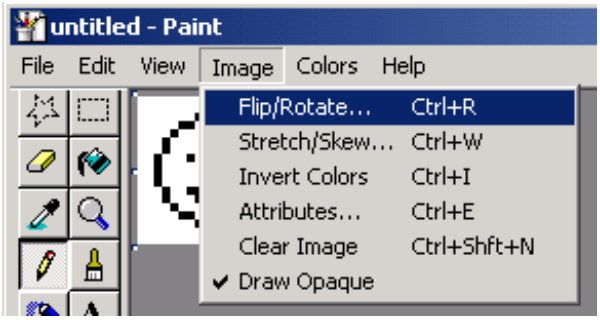
Zoom in by selecting **View**, **Zoom**, then **Large Size**. This will make defining the pixels easier.



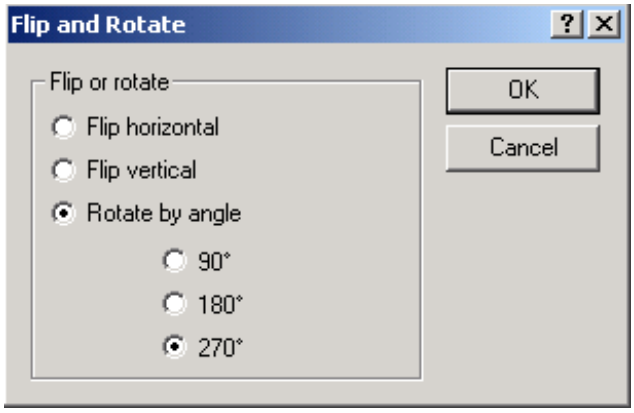
Define the pixels of the logo by using the pencil tool.



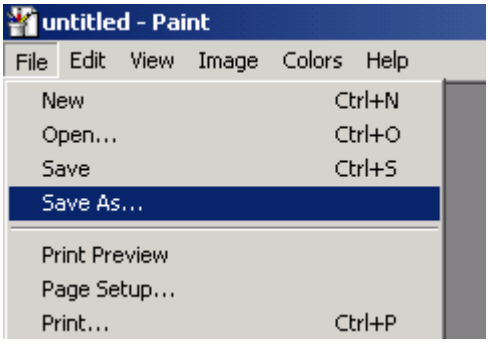
Bring up the **Flip and Rotate** dialog by selecting **Image**, **Flip/Rotate**.



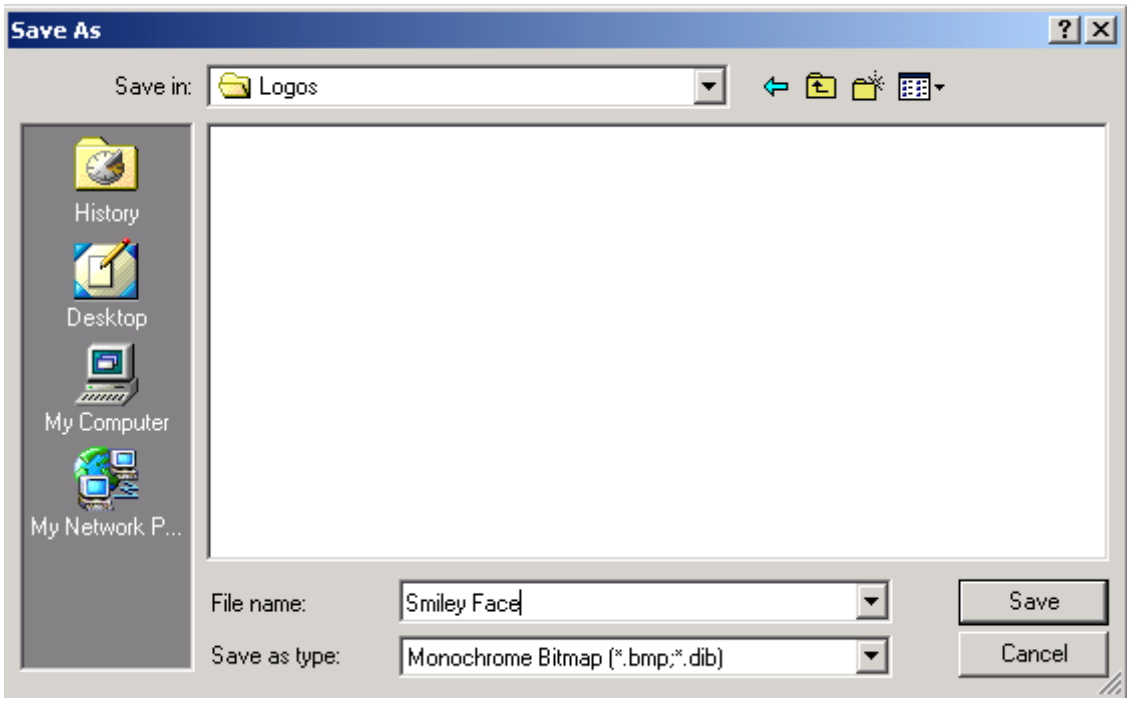
Select **Rotate by angle**, then **270°**.



From the **File Menu**, select **Save As...**



Name the logo and save it as a **Monochrome Bitmap** file in the desired folder.



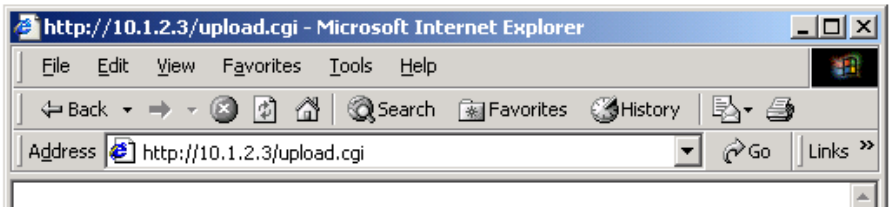
Appendix G: Transferring Logo Files

Transferring a File from a PC to a Controller

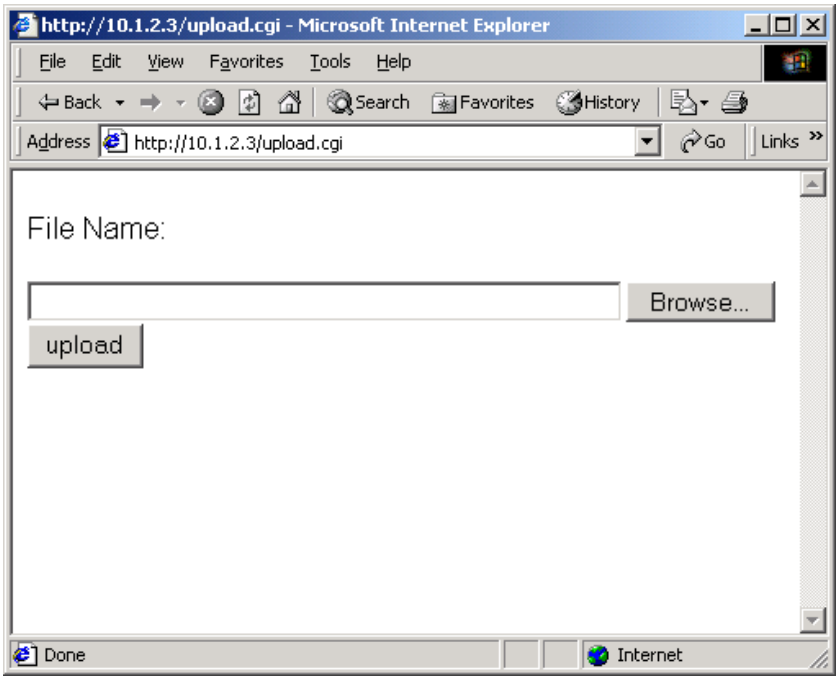
Use this procedure to transfer a font file, logo file, message file, or any other system-type file from a PC to a controller. If the controller already has a file with the same name as the one being transferred, the existing file will be replaced with the new file.

These instructions assume the Controller is already connected, via Ethernet, to a PC. If not, please contact your IT department or someone who knows how to set it up; or refer to *"Appendix H: Configuring a PC to Communicate with the Controller" on page 119*.

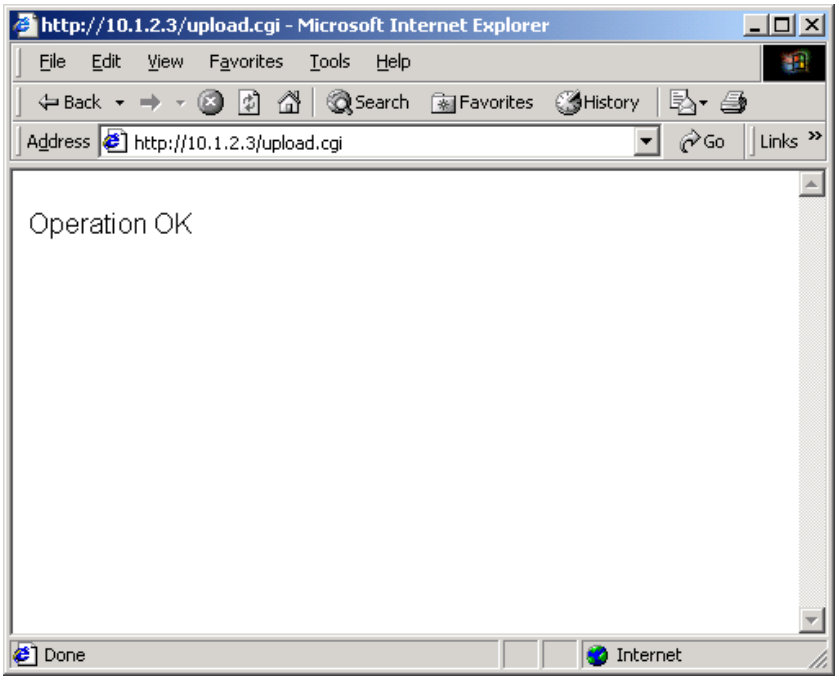
1. Obtain the controller's IP address. Most controllers have an IP address of **10.1.2.3**. It may be different if the controller is networked with other systems or other devices. If the IP address is unknown, go to the controller, and from the **Home Screen**:
   - •Touch the **Control Panels** button to open the Control Panels Menu.
   - •Touch the **Network** button on the Control Panels Menu to open the Network Setup screen.
   - •Touch the **IP Addresses** tab to display the system's IP addresses.
   - •Record the IP address (it's the top one).
2. On the PC, start Microsoft Internet Explorer (must be version 3.02 or higher) or another web browser.
3. In the browser's address box type in "http://", followed by the controller's IP address, followed by "/upload.cgi." See the illustration below:



4. Press **Enter**. The web page shown below should appear.



5. Click the **Browse…** button to locate and select the file to be sent to the controller.
6. Click **Upload** to send the file to the controller. If the file transfer is successful, the web page shown below will be displayed. If there is a problem, the page will state why the transfer failed.



7. Click the **Back** button on the browser to repeat the procedure.

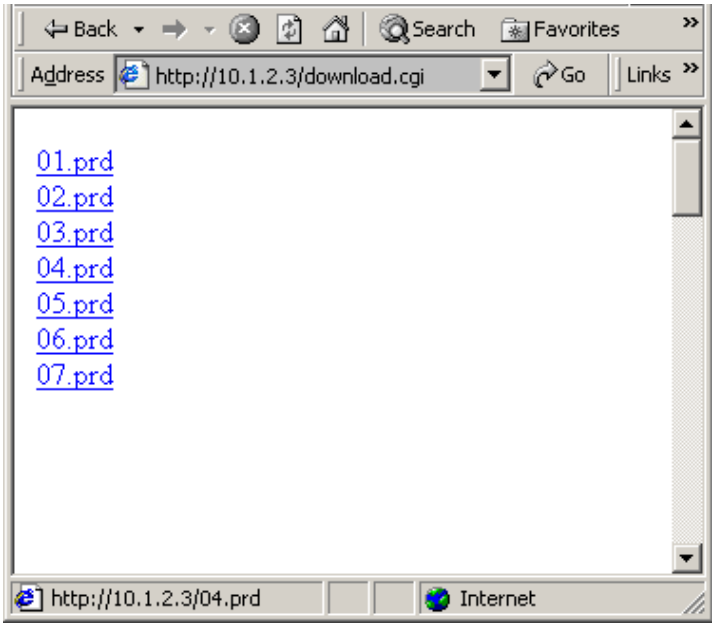
Transferring a File from a Controller to a PC

Use this procedure to transfer a font file, logo file, message file, or any other system-type file from a Controller to a PC.

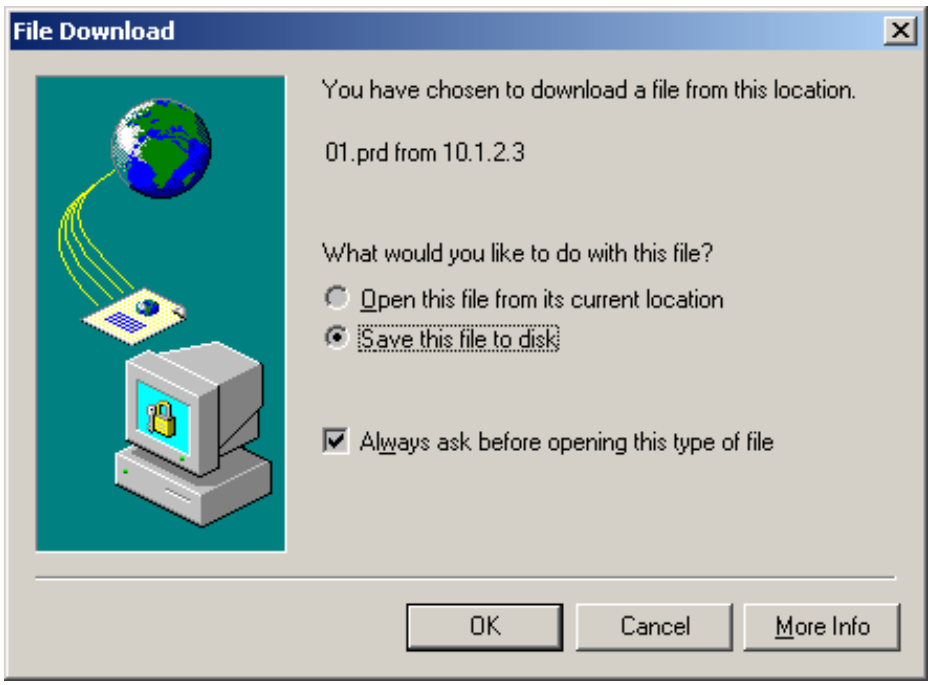
These instructions assume the system is already connected, via Ethernet, to a PC. If not, please contact your IT department or someone who knows how to set it up; or refer to *"Appendix H: Configuring a PC to Communicate with the Controller" on page 119*.

1. Obtain the controller's IP address. Most controllers have an IP address of **10.1.2.3**. It may be different if the controller is networked with other systems or other devices. If the IP address is unknown, go to the controller, and from the **Home Screen**:
   - •Touch the **Control Panels** button to open the Control Panels Menu.
   - •Touch the **Network** button on the Control Panels Menu to open the Network Setup screen.
   - •Touch the **IP Addresses** tab to display the system's IP addresses.
   - •Record the IP address (it's the top one).
2. On the PC, start Microsoft Internet Explorer (must be version 3.02 or higher) or another web browser.
3. In the browser's address box type in "http://", followed by the controller's IP address, followed by "/download.cgi". See the illustration below.

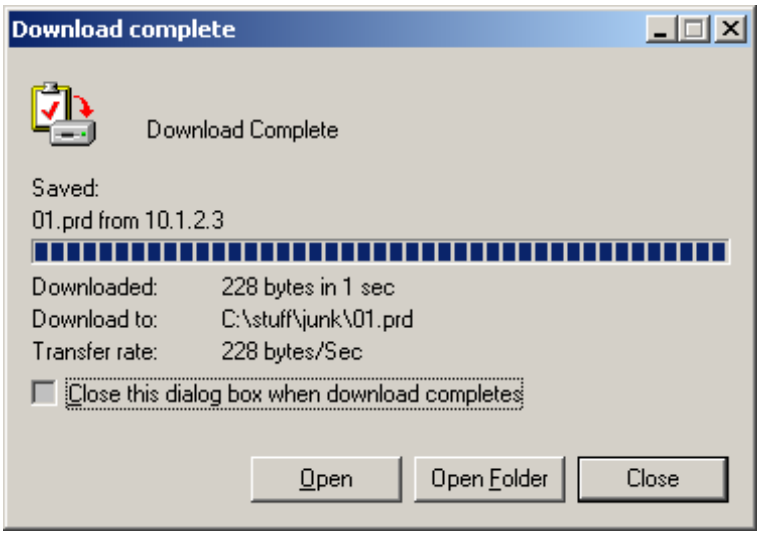
4. Press **Enter**. A web page lists all of the files on the system in alphabetical order.



5. Scroll through the list to locate the file to be transferred from the system. Click on the file name to display the Windows® "File Download" dialog box.



6. Click **OK**. A standard Windows® "Save As" dialog box is displayed.
7. Navigate to the desired folder and click **Save**. When the file transfer is done, a "Download Complete" dialog box is displayed.



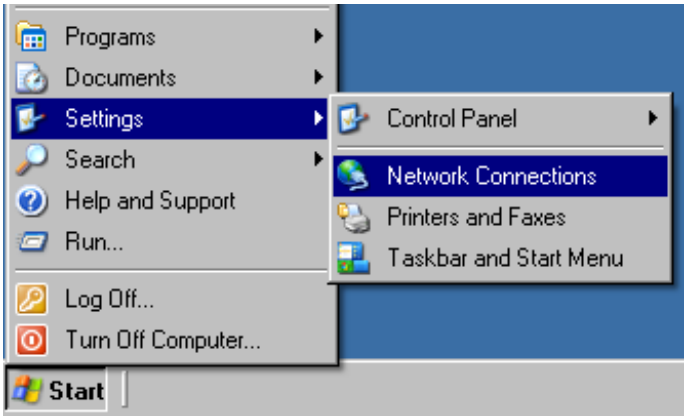
8. Click **Close**.
9. Repeat steps 5 through 8 to save additional files.

Appendix H: Configuring a PC to Communicate with the Controller

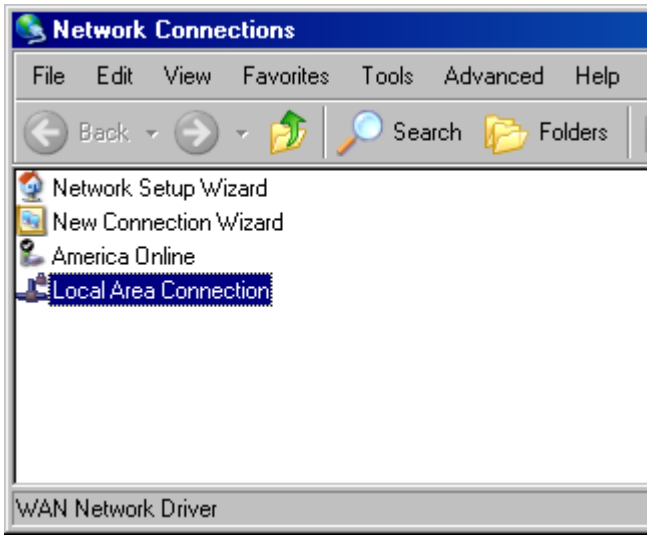
This appendix has instructions for setting the IP address and subnet mask of the PC so it can communicate with the Controller. Included are instructions for Windows XP®, Windows 2000®, Windows 98®, and Windows 95®.

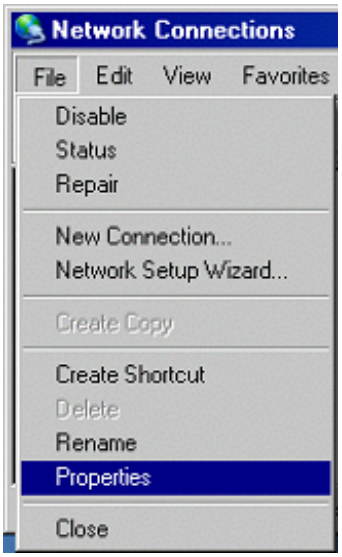
Windows XP®

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

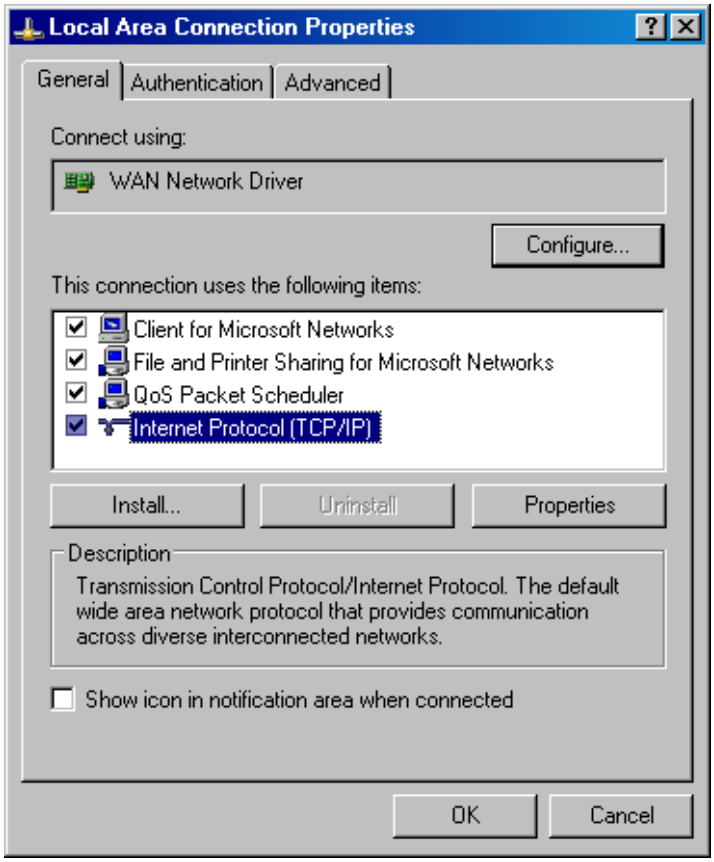


2. Click **Local Area Connection**, then open the **File** menu and select **Properties**.

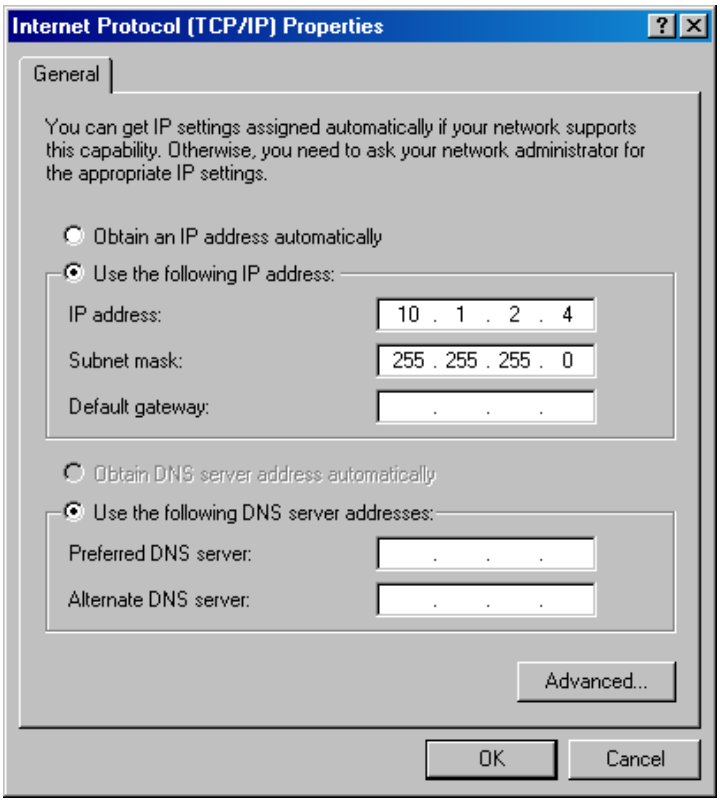




3. Select **Internet Protocol (TCP/IP)** then click the **Properties** button.

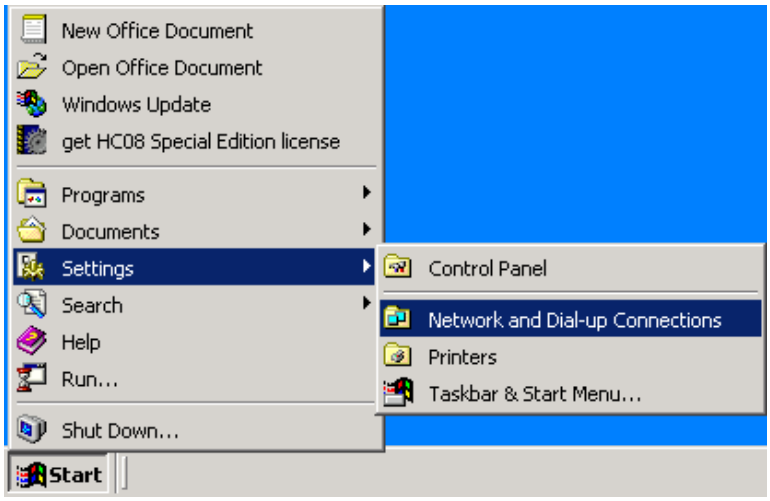


4. Click the **Use the following IP address** radio button. Enter an IP address of **10.1.2.4**, a subnet mask of **255.255.255.0**, and click the **OK** button.

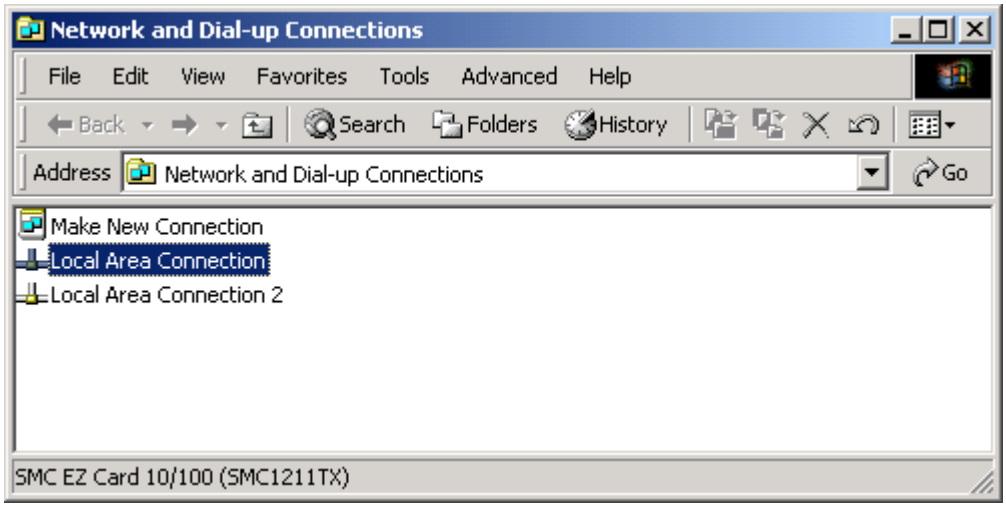


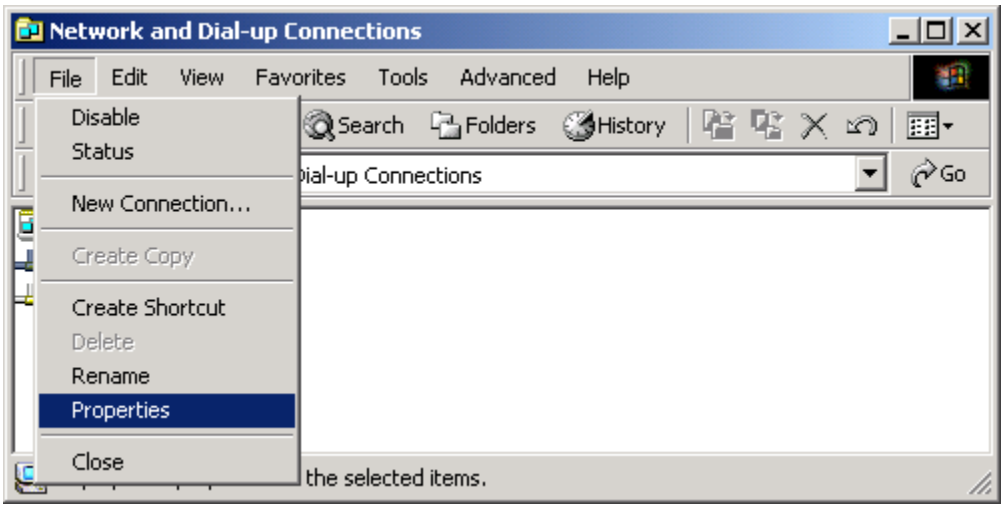
Windows 2000®

1. Open the **Start** menu; select **Settings**, then **Network and Dial-up Connections.**

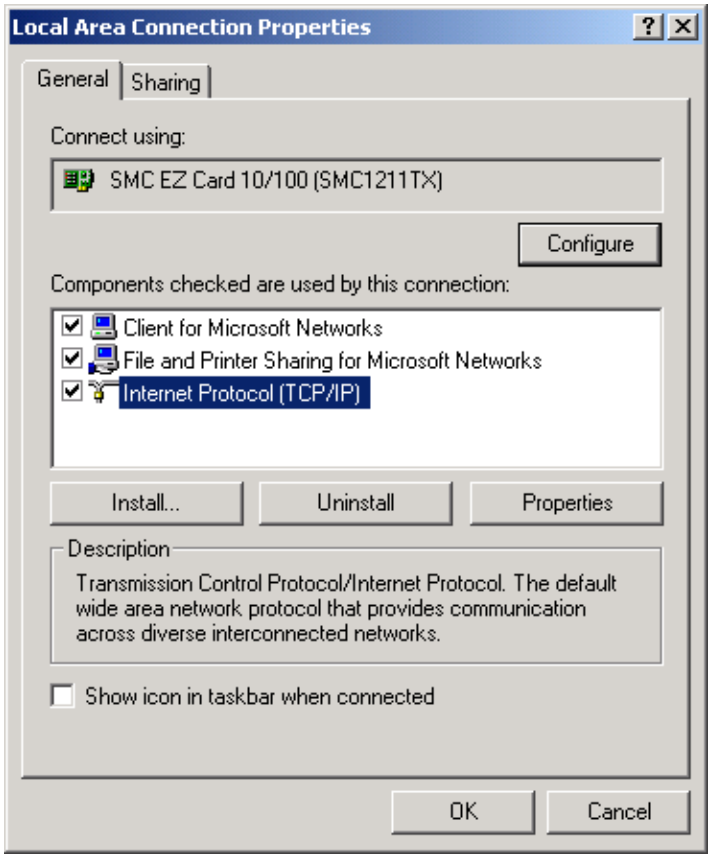


2. Click the desired connection, then open the **File** menu and select **Properties**.

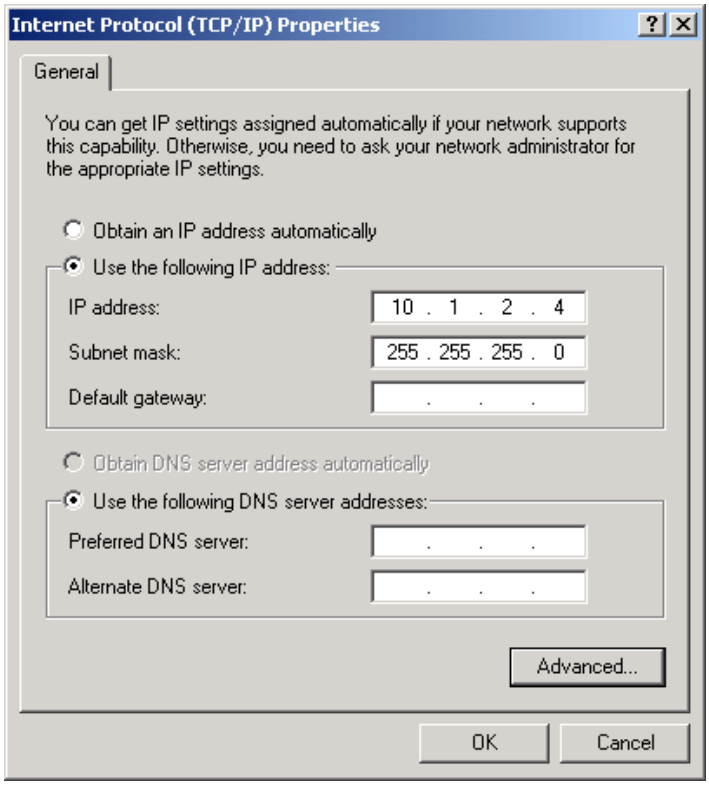




3. Select **Internet Protocol (TCIP/IP)** then click the **Properties** button.



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



Appendix I: Fonts

Character appearance is affected by weight and dots per inch (dpi). Character weights available are single dot and bold.

Fonts for 224 Print Head at 200 dpi:

Arial 32 Bold:

Arial 32:

Arial 24 Bold:

Arial 24:

Arial 15 Bold:

Arial 15:

AaBbCcDdEe 1234567

Arial 9 Bold:

AaBbCcDdEeFfGgHhIiJj 12345678

Arial 9:

AaBbCcDdEeFfGgHhIiJj 1234567890

Arial 7 Bold:

AaBbCcDdEeFfGg 1234567890

Arial 7:

AaBbCcDdEeFfGgHhIiJj 1234567890

Small 5:

AABBCCDDEEFFGGHHIIJJ 1234567890

Font for 224 Print Head at 100 dpi:

Arial 32:

Font for 224 Print Head at 150 dpi:

Arial 32:

Font for 224, 1.5" Print Head at 200 dpi:

Arial 32:

Font for 224, 2" Print Head at 200 dpi:

Arial 32:

NOTE: The fonts shown on this page are representative samples to show variations in print fonts; not all print fonts are included.

Fonts for 384 and 768 Print Head at 200 dpi:

Arial 126 Bold:

Arial 126:

Arial 96 Bold:

Arial 96:

Arial 63 Bold:

Arial 63:

Arial 48 Bold:

Arial 48:

Arial 30 Bold:

Arial 30:

Arial 24 Bold:

AaBbCcDdEeFfGg1234567890

Arial 24:

AaBbCcDdEeFfGg1234567890

Arial 15 Bold:

AaBbCcDdEeFfGgHh1234567890

Arial 15:

AaBbCcDdEeFfGgHh1234567890

Arial 9:

AaBbCcDdEeFfGgHh12345

Appendix J: Testing the Electrical Outlet

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

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

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

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

Electrical Line Transients

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

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

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

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

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

Appendix K: Standard Operating Procedures

FJSOP1 - Removal of FoxJet High Resolution Print Heads

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 print head 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 print head 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 print head (when properly installed it should cover the CP/OP).

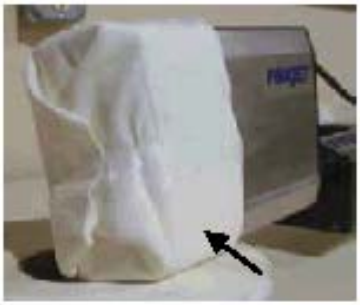
7. Insure that all print head covers are properly installed, clean and all screws are in place.

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

9. Remove screws that hold the print head to the bracketry.

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

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



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

13. If the print head 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 Print Heads

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

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

RESPONSIBILITY: Customer.

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

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

PROCEDURE:

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

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

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

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

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

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

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

   IF PRINT QUALITY IS ACCEPTABLE, PROCEED NO FURTHER.

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

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

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

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

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

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

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

    IF PRINT QUALITY IS ACCEPTABLE, PROCEED NO FURTHER.

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

Replacing APS waste ink bottles

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

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

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

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

END

FJSOP3 - Daily Maintenance for non-AMS/APS Print Heads

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

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

RESPONSIBILITY: Customer.

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

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

PROCEDURE:

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

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

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

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

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

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

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

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

   IF PRINT QUALITY IS ACCEPTABLE, PROCEED NO FURTHER.

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

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

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

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

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

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

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

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

    IF PRINT QUALITY IS ACCEPTABLE, PROCEED NO FURTHER.

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

Maintenance Requirements

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

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

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

END

FJSOP4 - Installation of FoxJet High Resolution AMS/ APS Print Heads

PURPOSE: Detail the procedure for installing a FoxJet AMS/APS high-resolution inkjet print head 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 print head is installed on the production line.

PROCEDURE:

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

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

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

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

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

END

.