Operating Instructions

Monarch®
938™ Verifier

AVERY DENNISON

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Avery Dennison Printer Systems Division
170 Monarch Lane
Miamisburg, OH 45342

FCC Notice

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This device generates, uses, and can radiate radio frequency energy and, if installed and used in accordance with the instruction, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this device does cause harmful interference to radio or television reception, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the computer and receiver.
- Connect the computer into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

Statement of FCC Compliance: Canada

This Class B digital apparatus meets all requirements of the Canadian interference-Causing Equipment Regulations.

Cet appareil numénque de la classe B respecte toutes les exigences du Règlement sur le maténel brouilleur du Canada.

CE:

The unit will contain NRTL and/or CE quality assurance labels.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this operator's manual, may cause harmful interference to radio communications. Operating this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the problem at his own expense.

Use with NRTL-Listed Equipment

The verifier should be used only with printers that are NRTL listed. The verifier is intended to be supplied by a NRTL Listed power supply (QQGQ) or (EPBU) or receives power from the host unit (NRTL Listed Printer), output rated 5Vdc, minimum 300mA maximum 1A.

Laser Scanner Safety

IEC Class3; CDRH Class III.

Cautions:

♦ Never stare directly into the laser beam.

♦ Never stare directly at a reflected image of the laser beam.

♦ Avoid exposure to the laser beam.

♦ Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

♦ Use the verifier only with NRTL listed bar code printers.

♦ These laser light caution labels must be affixed to your verifier: If they are not, contact Paxar immediately.]

♦ **Laser light - Do not stare into the beam.**

Paxar shall not be liable for direct, indirect, or consequential damages, costs, expenses, lost profits, or lost savings resulting from the use, operation, or malfunction of the verifier.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
This Class A digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la Class A est conform à la norme NMB-003 du Canada.
THIS PRODUCT CONFORMS TO DHHS REGULATIONS 21 CFR SUBCHAPTER J.
NOT USER SERVICABLE, OPENING CASE VOIDS WARRANTY
RJS 14600 MYFORD RD
IRVINE, CA 92623
MODEL NUMBER: SV100
MADE IN:
SERIAL NO:
SCAN DISTANCE: 5VDC 300mA

CAUTION
LASER LIGHT WHEN OPEN, DO NOT STARE INTO BEAM OR VIEW DIRECTLY WITH OPTICAL INSTRUMENTS.

CAUTION
LASER RADIATION.
DO NOT STARE INTO BEAM
636-680nm LASER DIODE
MAXIMUM OUTPUT 3 mW
IEC60825-01
CLASS II LASER PRODUCT

LISTED
E171750
I.T.E.

AVOID EXPOSURE
LASER LIGHT EMITTED FROM THIS APERTURE

Cleaning the Verifier Window

Clean the verifier window whenever the window appears to be dirty or smeared.

Caution: **Do not** use solvents (e.g., alcohol or acetone) or abrasive cleaners to clean the verifier window. This will damage the window.

1.   Moisten a soft cloth with water or a screen cleaner.

2.   Wipe the window until it is completely clean.

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GETTING STARTED

Use these *Operating Instructions* to set up, use, and configure the Monarch® 938™ verifier. The verifier works with the Monarch® 9855™ printer and 9860™ printer with knife. The verifier can scan a wide variety of one-dimensional parallel bar codes. However, it cannot scan MSI bar codes or two-dimensional bar codes.

Information in this document supercedes information in previous versions. Check our Web site (www.paxar.com) for the latest documentation and release information.

The verifier saves data from each bar code it scans. You can use immediate commands to upload scan grade data and bar code data from the verifier. Refer to the *Programmer's Addendum* available on our Web site for more information.

Using this Manual

Following is a summary of the contents of this manual:

	Chapter	Contents
1	Getting Started	Information you should know before using the verifier.
2	Installation & Setup	Installing and positioning the verifier.
3	Calibrating the Verifier	Setting up the verifier with ScanVision software.
4	Using the VCT	Changing parameters, sending files, and sample configuration packets.
5	Configuring the Printer	Setting the printer to work with your verifier.
6	Troubleshooting	Common problems and their solutions.
A	Specifications	Verifier and laser scanner specifications.

Unpacking the Verifier

After you unpack the verifier, you should have the following:

♦ 938 verifier

♦ I/O cable

♦ 9-pin communications cable

♦ base plate (with two shafts, stand, mounting block, L-bracket, and attaching parts)

♦ calibration label

♦ *SV Series Operator's Guide* (You will need to refer to this manual).

Note: **Do not** lose the calibration label! You need it to configure the verifier.

Keep the box and packaging material in case the verifier ever needs repair.

Before Installing the Verifier

♦ You need a 3/32 Hex key (wrench) to install and tighten the verifier's stand.

♦ Install the ScanVision software. The ScanVision software is found on the *Tabletops Documentation CD-ROM*. Run the file, `setup.exe` and follow the prompts as necessary.

♦ Install the Monarch® Paxar® Verifier Configuration Tool. This tool can be downloaded from our Web site. To install, run the `.exe` file and follow the prompts as necessary.

Overview

Have your System Administrator follow these steps before you use the verifier:

1. Install and set up the verifier. See Chapter 2, "Installation & Setup," for more information.

2. Configure the verifier using ScanVision. See Chapter 3, "Configuring the Verifier," for more information.

3. If necessary, create a verifier configuration file. See Chapter 4, "Using the VCT," for more information. A verifier configuration file allows you to set the verifier to check only the parameters you select. You should understand your application and which parameters you want the verifier to check.

4. Configure the printer to enable the verifier. See Chapter 5, "Configuring the Printer," for more information.

INSTALLATION & SETUP

This chapter explains how to install the verifier and connect all the cables. You need a Phillips screwdriver and a 3/32 Hex key (wrench).

Throughout this chapter, the reference to "knife setup" is for the 9860 printer; the reference to "non-knife setup" is for the 9855 printer. The verifier does not work with a 9855 printer using the Monarch® 926™ knife.

Installing the Verifier

1. Turn off the printer.

2. Place the printer on a firm work surface.

3. Remove the following items from their packaging:

(1) base plate	(2) shafts
(1) stand	(1) mounting block
(4) feet	(1) L-bracket
(1) ¼" plain cork washer	(1) ¼"-20x1¼" screw
(5) M4x12 screws with attached lock washers	
(6) #10-32x1/4" set screws	

4. Turn the base plate upside down and attach the adhesive feet in each corner. Make sure the base plate looks like the one pictured before you attach the feet. Pay attention to the pattern of the mounting
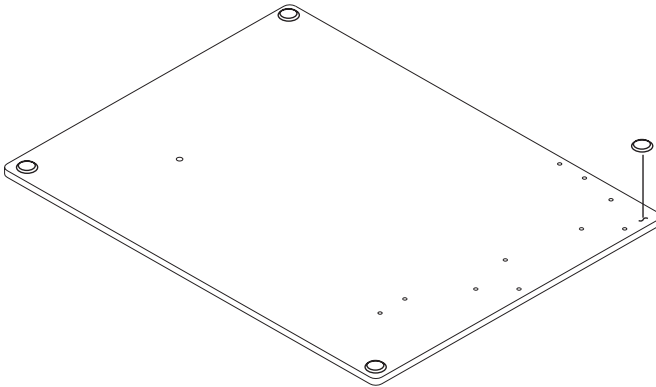
holes.

5. Turn the base plate right side up.
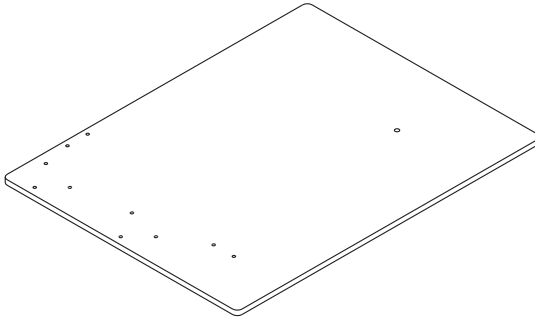
6. Using three screws with attached lock washers, attach the stand to the base plate:
For knife printers, use the three holes that are on the left side of the base plate.
For non-knife printers, use the three holes in the center of the base plate.
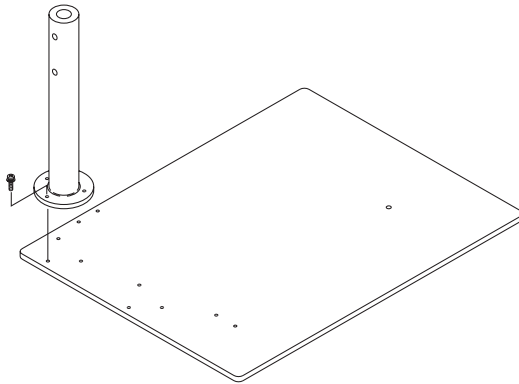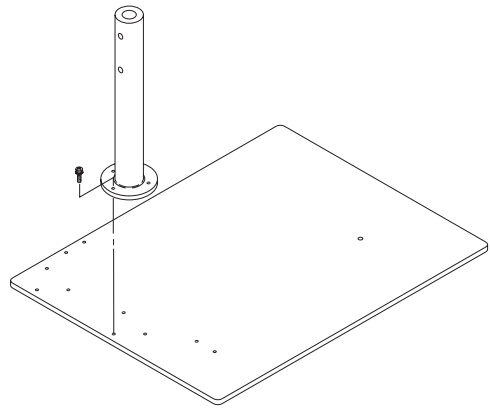
Knife Setup

Non-Knife Setup

Note: **Do not fully tighten these screws.**
It is easier to attach the shafts, bracket, and verifier before attaching the printer to the base plate.

7. Attach the L-bracket to the base plate with two screws:
For knife printers, attach the L-bracket to the left side of the base plate.
For non-knife printers, attach the L-bracket to the center of the base plate.
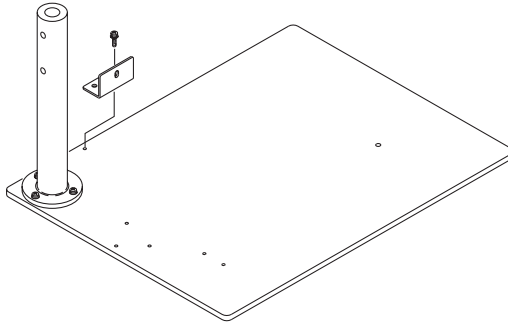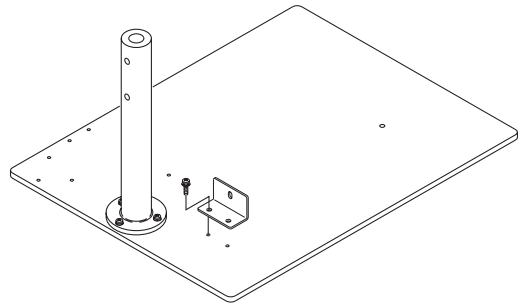
Knife Setup   **Non-Knife Setup**

Note: Do not fully tighten these screws.

8. Insert the vertical shaft into the stand until it stops. (The vertical shaft has one diameter; the horizontal shaft has two different diameters.)
Insert the set screws into the stand. Align the flat on the shaft with the set screws in the stand.
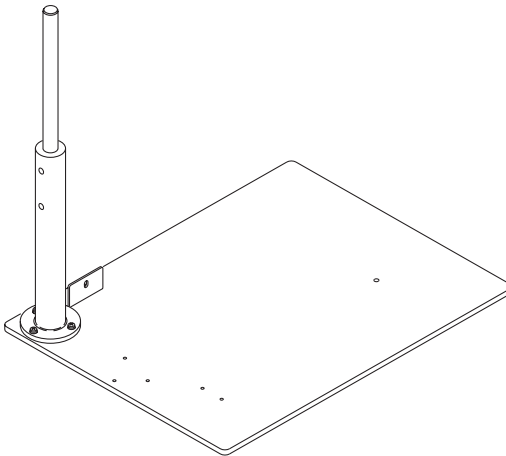
Knife Setup   **Non-Knife Setup**
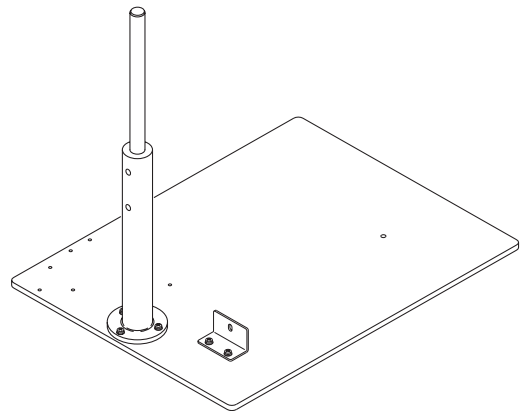
Note: Securely tighten the set screws with a 3/32 Hex key.

9. Slide the mounting block onto the shaft as far as it will go. Insert the set screws into the mounting block. Align the flat on the shaft with the set screws in the mounting block.

Tighten these set screws

Knife Setup   **Non-Knife Setup**
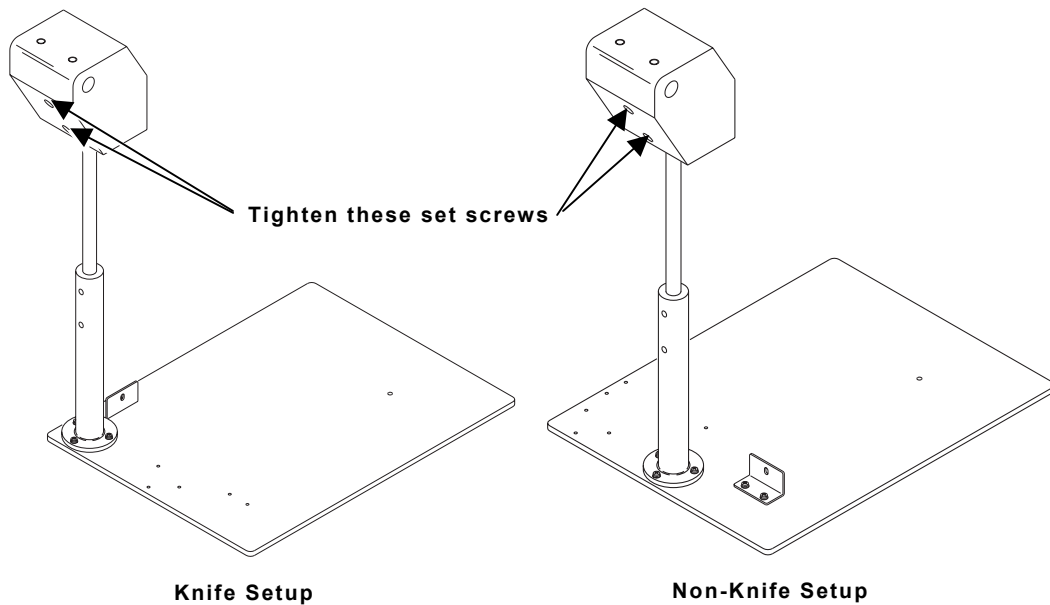
Note: Securely tighten the set screws with a 3/32 Hex key.

10. Insert the horizontal shaft (with two different diameters) into the mounting block as shown. Insert the set screws into the top of the mounting block. Align the flat on the shaft with the set screws in the mounting block.

For knife printers, the shaft should be flush with the left edge of the mounting block.

For non-knife printers, insert the shaft so the step in the shaft is flush with the right edge of the mounting block.
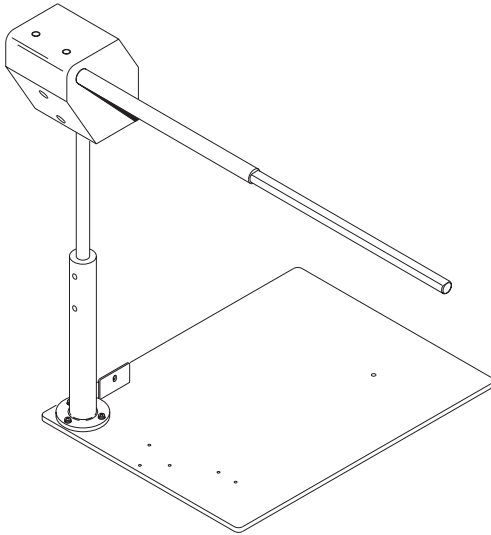
Knife Setup   Non-Knife Setup
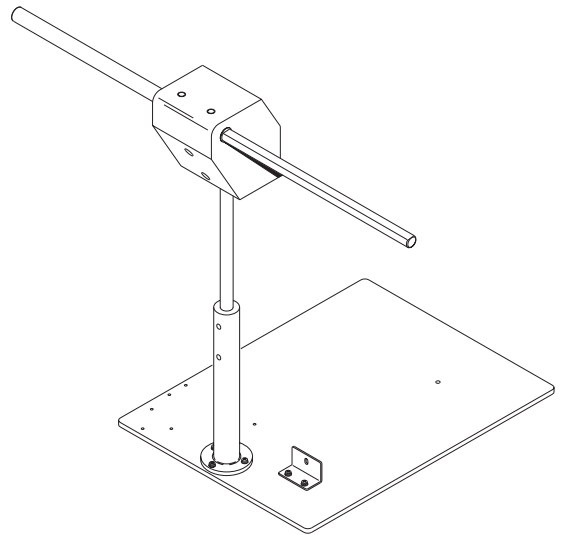
Note: Securely tighten ALL the set screws in the shaft and mounting block with a 3/32 Hex key.

11. Look at the stand from above. Adjust the stand so the horizontal shaft is parallel (aligned) with the front edge of the base plate. Securely tighten the three screws attaching the stand to the base plate.

12. Slide the verifier onto the shaft until it stops.
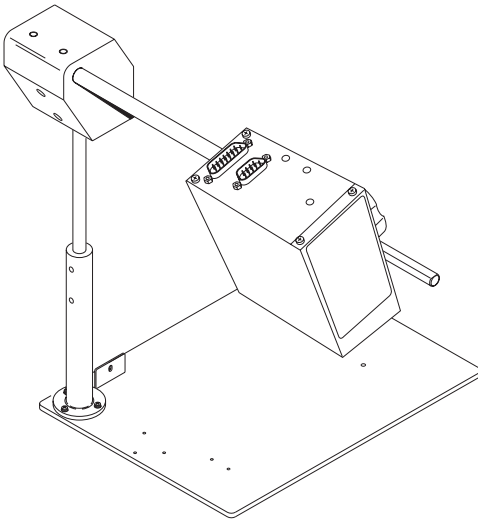
Knife Setup
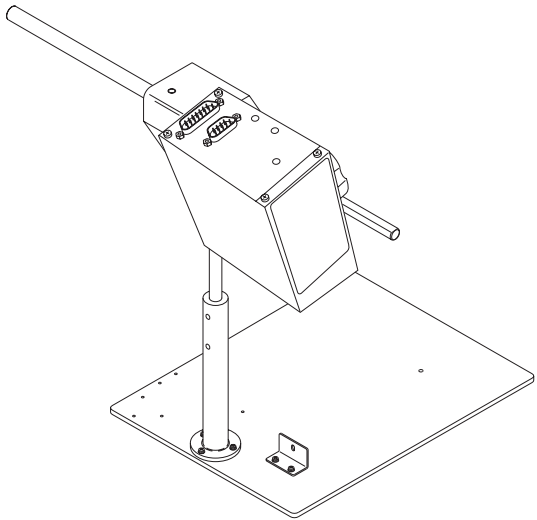
Non-Knife Setup

13. Tighten the knob.
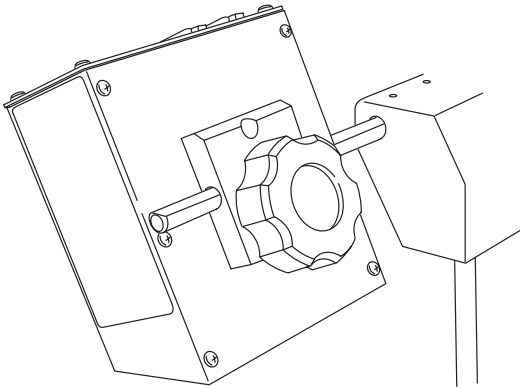
Connecting the Cables

1. Turn off the printer.

2. Connect the I/O cable to the verifier.

3. Connect the communication cable from the verifier to the printer primarily to update the verifier for each bar code on the label.

   See "Cable Summary" in Chapter 4 for more information about cable setup.

Knife Setup

Non-Knife Setup
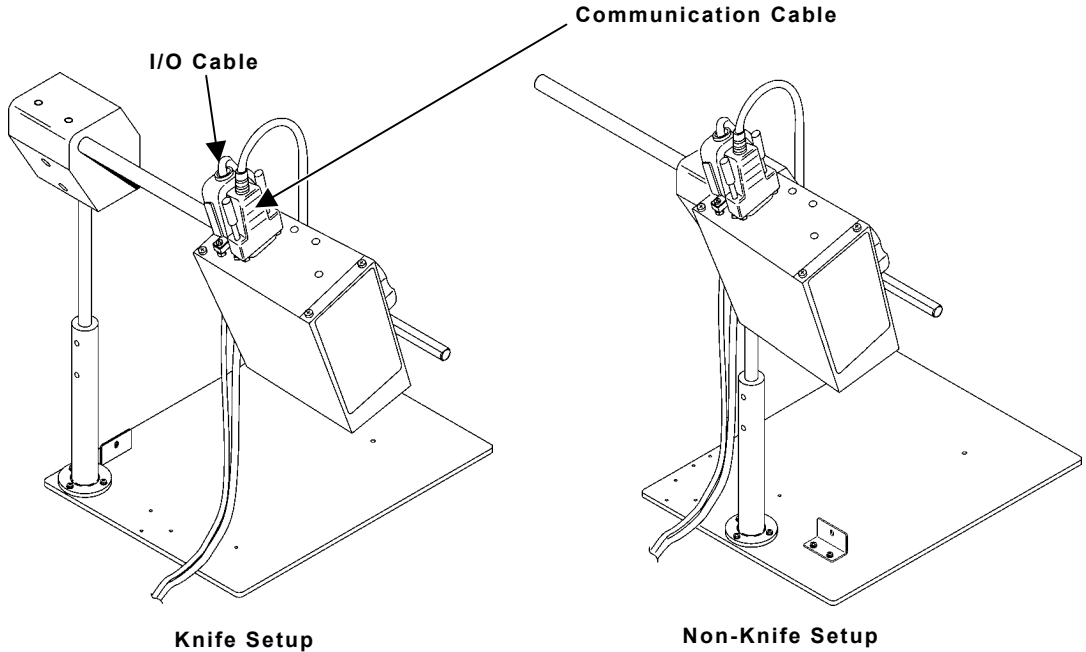
4. Lay the cables on top of the base plate (the printer sits on top of them).

Installing the Printer

1. For knife printers, remove the bottom screw from the right-hand corner of the printer's cover. Keep the screw, because you need to re-use it.
   For non-knife printers, use a Phillips screwdriver to remove the base cover. Keep the screw, because you need to re-use it. However, you can throw away the base cover.

Remove this screw

Knife Setup

Base cover

Non-Knife Setup
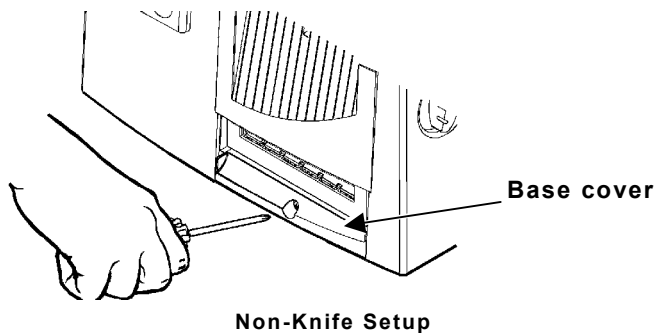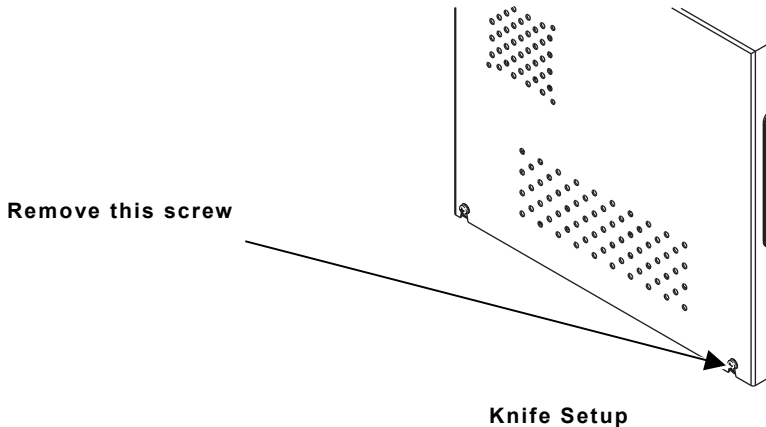
2. Align the hole in the printer over the hole in the base plate.
Make sure the cables underneath the printer are flat and not in the way.

3. Attach the printer using the shoulder screw provided without the cork washer. Tighten securely. If the printer is not held down securely, then add the cork washer provided with the printer. Use your finger to tighten this screw.

May or may not need this cork washer.
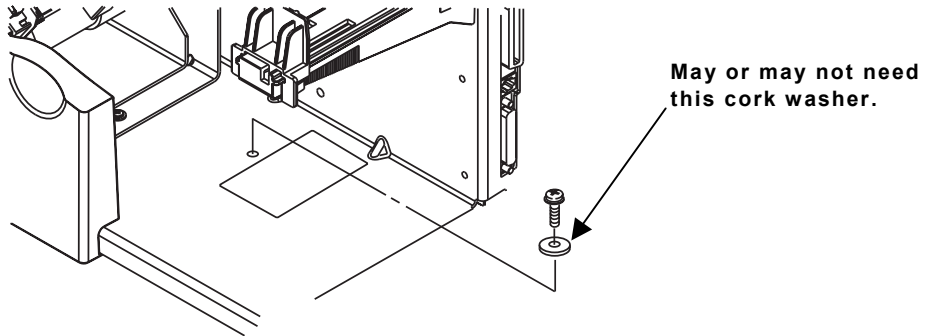
4. Attach the L-bracket to the printer using the screw you removed.
For knife printers, attach the L-bracket to the side of the printer.
For non-knife printers, attach the L-bracket to the front of the printer where the printer's base cover was attached.
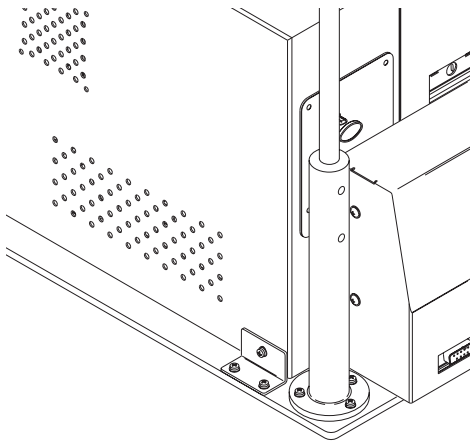
Knife Setup
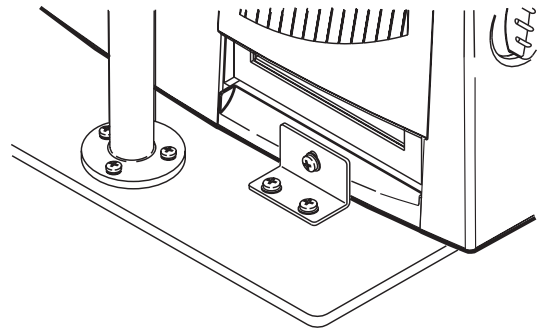
Non-Knife Setup

5. Align the printer if necessary and tighten the screws in the L-bracket.

6. Align the verifier so the verifier's beam is centered in the feed path. See "Setup" for beam positioning. **Securely tighten ALL the set screws.**

7. A cable tube is provided with each verifier to hide the cables from view. Slightly open the cable tube and slide the cables through it. Hold the cable tube against the vertical stand's shaft and secure the cable tube to the shaft with the cable ties.

Secure cable ties here
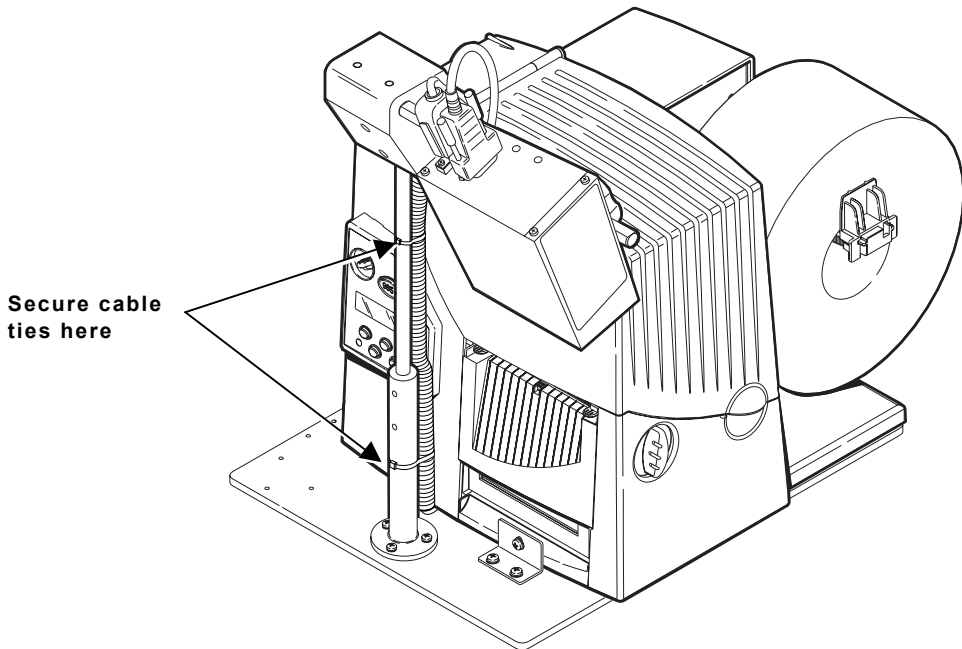
8. Connect the other end of the I/O cable (with the 8-pin mini-din connector) to the back of the printer.

9. Connect the communication cable to the port on your computer with RJS ScanVision installed.

Verifier Connector for I/O Cable

Use this 9-pin verifier port for verifier to printer connections

Use this 25-pin serial port for computer to printer connections
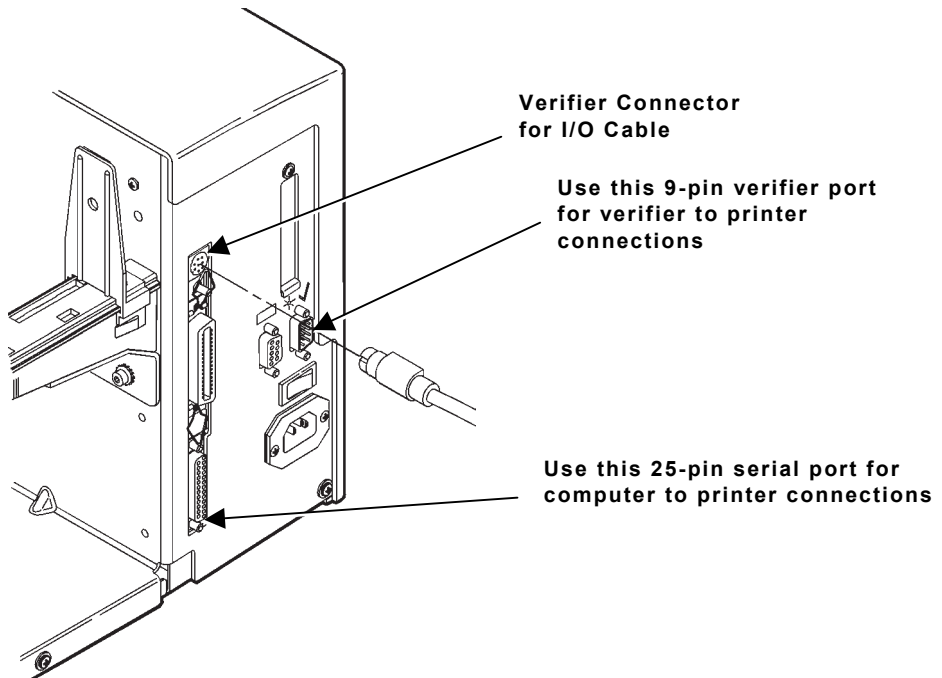
If the verifier's serial or I/O cable are disconnected from the printer, the printer displays "773 Verifier Fail." See "Detecting the Cable" for more information. Make sure the cables are connected between the verifier and printer. If error 773 appears, press **Escape/Clear** to clear the error.

Use the serial port on the computer to configure the verifier using the RJS ScanVision software.

Setup

Verifier positioning and system setup are extremely important for proper operation.

1. To control the verifier's beam (through the printer's offline menu), the 9-pin serial cable must be connected between the printer and verifier.

2. Turn on the printer. The verifier beam also turns on. See the following graphics to align the beam properly.

3. Align the verifier's red beam with the white lines as shown. The proper angle for the verifier is 22°.

Aim beam onto white line

Knife Setup

Aim beam onto white line ——————→
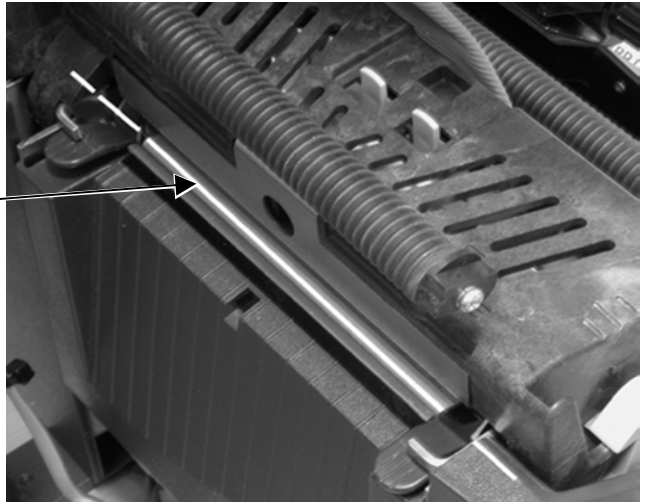
Non-Knife Setup

Note: **Do not** let the verifier's beam stop on a bar code when logging data, because it logs unwanted data.

Bar Code Travel Speed Considerations

A bar code should be present in the beam for at least five scans for most reliable operation. The verifier performs a minimum of 100 scans/analyses per second. At that rate, each analysis is accomplished in 10 milliseconds max. Therefore, a bar code must be in the beam for at least 50 milliseconds to be reliably analyzed.

Parallel Bar Code Direction

In parallel bar code (picket fence) travel direction, a bar code is in the laser beam throughout the height of the shortest bar in the code. An easy way to estimate the fastest speed the code can travel through the beam is to divide the height of the shortest bar in the code by the maximum time required for the verifier to take five scans of the code.

Example: Calculate the maximum travel speed where the shortest bar height in a code is .5 inches and the verifier being used performs a minimum of 100 scans/analyses per second. Five scans requires 50 milliseconds (.05 seconds) to gather, so .5 inches (bar code height) divided by .05 seconds (time needed to gather 5 scans) = 10 inches/second. Therefore, the maximum speed the code can travel through the beam is 10 inches per second.

Vertical distance between bar codes is also a speed consideration in parallel bar code direction. The verifier must have five continuous scans where no bar code is detected to reliably exit a bar code when operating in the standard operation mode. Assuming 100 scans per second minimum, this means the vertical distance between the codes must take at least 50 milliseconds to pass through the laser beam. Calculate the maximum speed by measuring the shortest vertical space between bar codes on a label (or between labels.) Divide this distance by .050 (seconds). The result is the fastest speed the codes can move through the beam. For more detailed information about the vertical distance between bars, refer to the *SV Series Operator's Guide*.

The slower of the two print speeds calculated above for bar height and gap height is the maximum recommended speed for parallel bar code travel direction.

Parallel Bar Code Positioning Specifications

- Four codes across maximum
- Horizontal gap between codes: 0.5 inch (13 mm) minimum
- Maximum number of codes per label: 10

No-Scan Zone

Allow approximately a 0.50-inch (13 mm) at the trailing edge of each label for the no-scan zone. The trailing edge is the edge of the label that exits the printer last; regardless of how the format is designed on the label. Do not place bar codes in the no-scan zone.

4" wide by 1.2" tall label
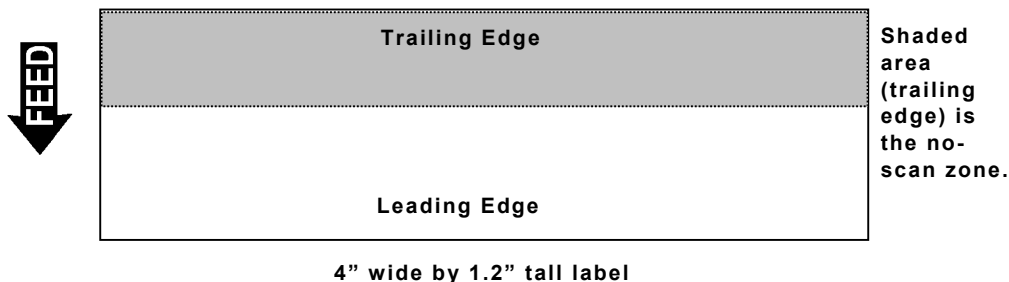
CALIBRATING THE VERIFIER   3

This chapter explains how to calibrate the verifier using the RJS ScanVision software.

The ScanVision software is found on the *Tabletops Documentation CD-ROM.* Run the `setup.exe` file and follow the prompts as necessary.

Calibrating the Verifier

At initial setup, calibrate the verifier to ensure the scanning distance and orientation is within device limits. A calibration label is included in the verifier's box. Store the calibration label in a clean location.

1. Remove all bar codes from the laser beam path.

2. Place the supplied calibration label in the laser beam in the same position (distance and angle) as the labels to be verified will be scanned.

3. Press and hold the RESET button on the verifier until the calibration LED begins to flash.

4. Release the RESET button immediately after the calibration LED begins flashing.

5. If calibration is successful, the laser beam turns off and the calibration LED turns off. Remove the calibration label from the beam path and Press the RESET button until the beam turns on.
   The verifier is ready to operate.

6. If calibration is unsuccessful, the calibration LED is either on steadily or flashing. In this case, repeat the calibration procedure.

Once calibration is successful, re-calibration is not required unless the verifier unit has been moved – either on its mounting stand or to a new location. Keep the laser beam exit window clean. Dirt, dust, fingerprints, etc. on the exit window can affect calibration. See the cleaning procedures at the beginning of this manual keep the scanning window clean.

Setting Up the Verifier with ScanVision

Use RJS ScanVision software to set up verifier by taking a Scan Profile (Reflectance).

Installation of the verifier requires proper mounting position, port configuration(s), and LED configurations to ensure reliable and accurate operation.

1. Install the verifier at the proper distance and angle. See "Installing the Verifier" in Chapter 2 for more information.

2. Connect the cables. See "Connecting the Cables" in Chapter 2 for more information.

3. Run the ScanVision software.

4. Set the verifier for parallel bar code travel direction.

5. Place a sample bar code in the center of the intended laser beam path. For best results, this sample should match the type of bar code(s) and material that is to be analyzed in the final application.

I2of 5 bar code with 9.9 mil X dimension

6. Knowing the X dimension (narrow element width) of the bar code(s) is a big plus. Refer to the *Packet Reference Manual* (on the *Tabletops Documentation CD-ROM*) for more information.

   For example, this I2of5 bar code has a density of 12 and an X-dimension (narrow element) of 9.9 mils.

Note: The Calibration label has a 10 mil X dimension unless otherwise indicated.

7. Take a Scan Profile (Reflectance) with ScanVision by clicking . Refer to the *SV Series Operator's Guide* for more information:

   a) The bar code(s) should be in the center of the scan path.
   b) The scan profile should not contain distortions from light reflecting from objects in or near the light path. One major aspect in a good profile is the low reflectance points (the bars) in the symbol are uniform all the way across the code.

Optimum signal amplitude should be adjusted so the bar code element reflectances are between the 90% and 10% marks shown in yellow on the screen. Verifier angle has the most effect on the signal amplitude.

c) Continue adjusting the verifier's placement until a good, centered scan profile is obtained. The scan angle may have to be altered slightly to achieve a good reflectance profile. If adjustment of scan angle does not produce the correct signal amplitude or placement, adjust verifier gain and offset per "Adjusting Scanner Gain and Offset" in the *SV Series Operator's Guide.*
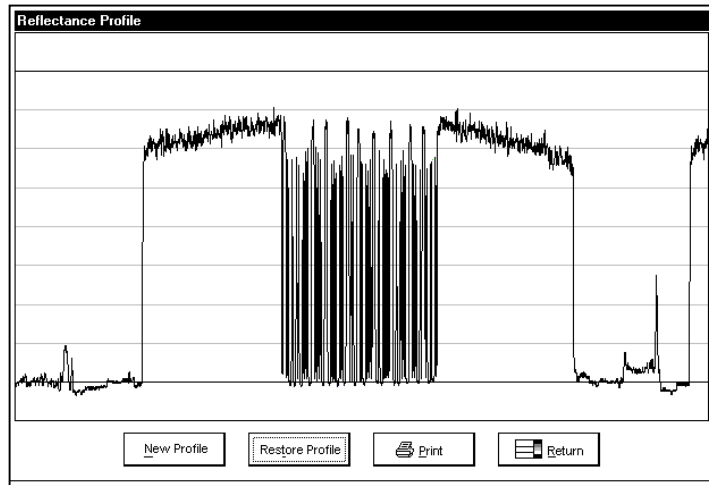
Sample Scan Profile

8. Place ScanVision in session mode (normal operating mode when ScanVision starts). Refer to the *SV Series Operator's Guide* for more information:

a) Click on the **Report an Analysis** speedbutton.

b) Ensure that X in the lower panel of the Bar Code Analysis screen matches the X dimension of the symbol within +/- .1 mil.

c) Adjust distance of the verifier from the bar code until the X dimension matches the desired value. (If X is analyzed as too large, move the verifier away; if X is too small, move it closer.)

9. Repeat steps 5 and 6 until no more mounting adjustments are required.

10. Remove the symbol from the laser beam path.

11. Calibrate the verifier if any reflectance parameters (such as symbol contrast) are programmed in this application to report to a host or activate any ports. Each verifier has a calibration label provided in the box.

Note: The *SV Series Operator's Guide* contains screen shots of the RJS ScanVision software for your reference.

The verifier is ready to operate for parallel bar codes.

USING THE VCT

This chapter explains how to use the Monarch® Verifier
Configuration Tool (VCT) to create or modify a verifier configuration
packet. This tool can be downloaded from our Web site. To install,
follow the prompts as necessary.

The verifier supports Mode 2 and Mode 19, which are standard verifier
modes. Mode 2 specifies nine different parameters to verify: ANSI
defects, decodability, and grade; quiet zones; partial decodes, decode
errors, passing percent decode; minimum number of I2of5 digits; and no
read. Mode 19 specifies all parameters from Mode 2, plus contrast
grade, wide to narrow ratio, and minimum and maximum X-dimensions.
When you start the VCT, the different parameters are grouped by type,
ready for you to change.
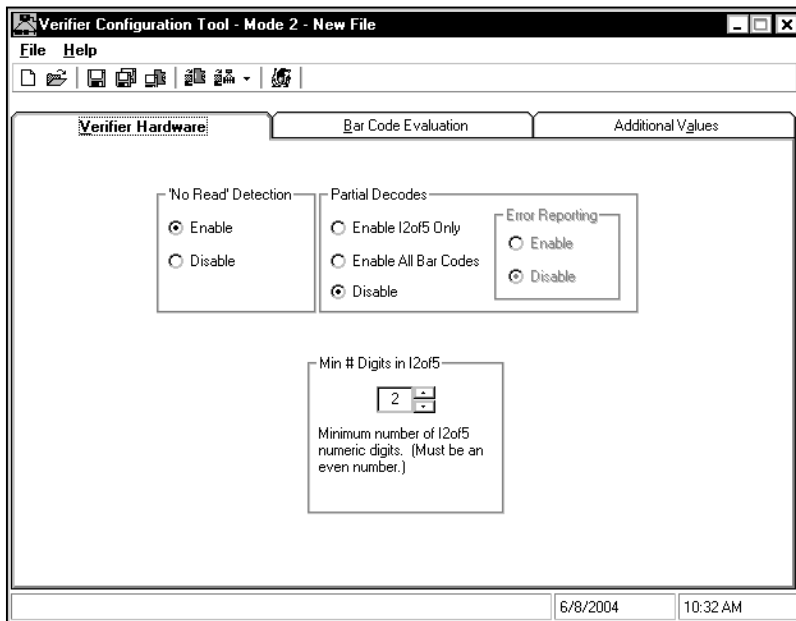
Depending on your application and which parameters you want the
verifier to check, make your selections on the Verifier Hardware, Barcode
Evaluation and (if necessary) Additional Values screens.

System Requirements

Use these system requirements for the Verifier Configuration Tool:
Personal computer with a Pentium® 400MHz processor or higher;
Microsoft® Windows® 98/2000/XP operating system with 128MB of
memory and 15MB of available disk space.

Using the Wizard

For more information about each parameter in the verification process,
use the Wizard to create your configuration file. The Wizard asks a
series of questions and based on your answers, creates a configuration
file for you.

1. To start the wizard, select **File**, **Use Wizard...** or click the Wizard
   button on the toolbar.

2. Click **Next>** to continue and make your selections as prompted.

3. When finished using the Wizard, you are ready to save and send the
   file.

Using Mode 2 or Mode 19

The verifier configuration file is based on either Mode 2 or Mode 19. The default is Mode 2.

To select a different mode:

1. Select **File**, **New...**
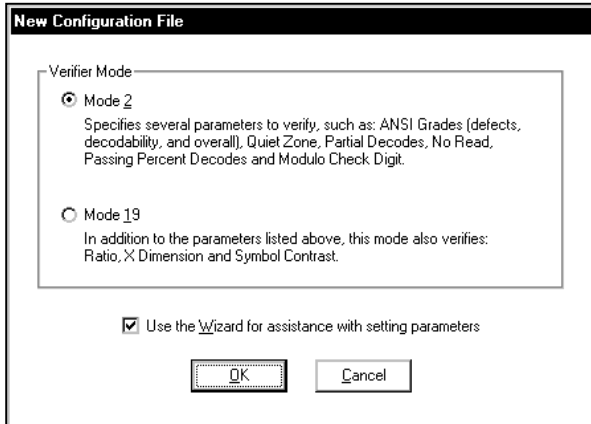
2. Select your mode.

3. Decide if you want to use the Wizard and check the box if necessary.

4. Click **OK**.

After creating the configuration file, you are ready to save and send the file.

Changing Additional Parameters

In expert mode, you can use this screen to set additional verifier commands that are not set through the Verifier Configuration Tool. The additional commands can be found in the *SV Series Operator's Guide* included with your verifier.
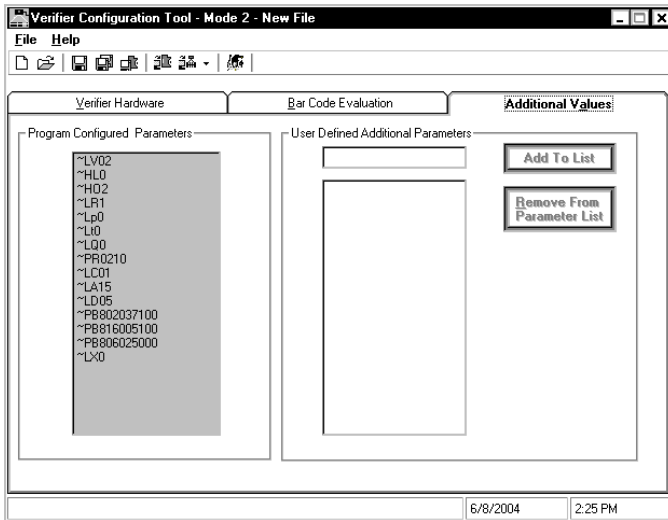
1. Click the **Additional Values** tab.

2. Type a command, for example **~os0**. This command sets the transmission data format to 0. Refer to the *SV Series Operator's Guide* for more information about this command.

3. Click **Add to List**. The command is added to the User Defined Additional Parameters list.

Saving and Sending Files

You have several options:
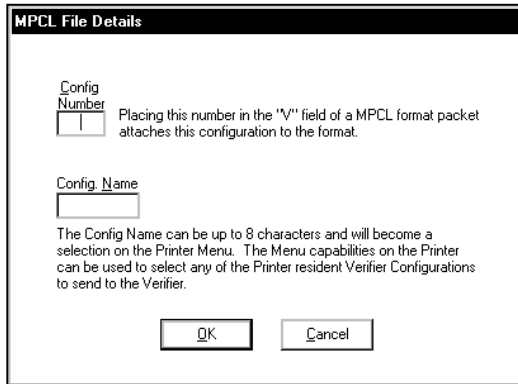
♦ Save as MPCL

♦ Store the configuration in the printer

♦ Send the configuration to the verifier (via the printer or direct connection)

Save or Save As

1. Select **File**, **Save** or **Save As**… You can also click the buttons for these options on the toolbar.

2. Enter a filename and click **Save**. The file is saved with a **.VFX** extension.

Save as MPCL

1. Select **File**, **Save As MPCL…** or click the button for this option on the toolbar. You are prompted for a filename if you have not already entered one. Click **Save**.

2. Enter a configuration number. You can attach this configuration to a particular format by using this number in the verifier field in your format. See "Defining the Verifier Field" for more information. (Earlier VCT versions prompted you for the format number.)

3. Enter a configuration name, up to eight characters. The name you enter here appears in the offline menu for the mode selection. See "Setting the Mode" in Chapter 5 for more information.

4. Click **OK**.

5. Enter a filename at the prompt.

6. Click **Save**. The file is saved with a **.MVF** extension on the host. Send the file the way you normally send data to your printer: TCP/IP, serial, or parallel port; or using MPCL® Toolbox's File Download.

Store Configuration in Printer

To store the configuration in the printer's flash memory, make sure the serial cable from your computer is connected to the printer's 25-pin serial port. A
9-to-25-pin adapter may be used on the communication cable supplied with the verifier.

Saving a configuration in the printer's flash memory allows you to reference a particular verifier configuration by number (in the verifier field of a format) or allows you to pick the configuration (by name) from the offline menu.

Before you save the configuration to the printer's flash memory, you must format flash memory.

From the Main Menu, select **Setup**, **Flash Memory**, and **Format Flash**. Formatting flash memory is only required once during initial printer setup.

1. Select **File**, **Store Configuration in Printer**... or click the button for this option on the toolbar.

2. Enter a configuration number. You can attach this configuration to a particular format by using this number in the verifier field in your format.

3. Enter a configuration name, up to eight characters. The name you enter here appears in the offline menu for the mode selection. See "Setting the Mode" in Chapter 5 for more information.

4. Click **OK**.

5. Change communication settings if necessary. The printer's default settings are **9600, N, 8, 1, DTR**. Click **OK** when finished.

Use this 25-pin serial port for computer to printer connections
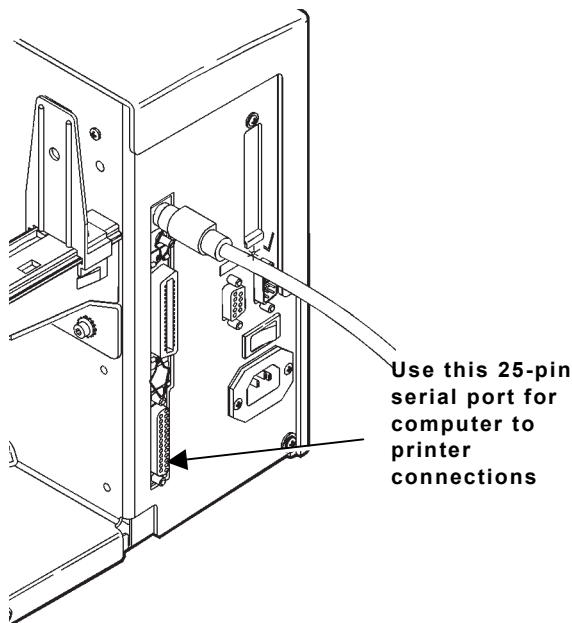
Send Configuration to Verifier (via Printer)

To send the configuration through the printer to the verifier, make sure the serial cable from your computer is connected to the printer's 25-pin serial port. This option does not save the configuration in the printer.

1. Select **File**, **Send Configuration to Verifier via Printer**.

2. Change communication settings if necessary. Click **OK** when finished.

Send Configuration to Verifier (via Direct Connection)

To send the configuration directly to the verifier from the computer, make sure the serial cable from your computer is connected to the verifier's 9-pin serial port. The verifier can save up to 50 configurations.

1. Select **File**, **Send Configuration to Verifier via Direct Connection**.

2. Change communication settings if necessary. The verifier's default settings are **115200, N, 8, 2, DTR**. Click **OK** when finished.

   See "Sample Verifier Configuration Packet" to see a sample MPCL verifier configuration packet.

Cable Summary

Some of these connections were discussed in the above sections "Store Configuration in Printer," "Send Configuration to Verifier (via Printer)," and "Send Configuration to Verifier (via Direct Connection)."

You need a serial (communication) cable for all of these connections.

Action	Connect Verifier cable
Update the verifier's configuration using ScanVision or Verifier Configuration Tool.	directly to host
Use the printer's offline menu to configure the verifier.	to printer
Update the verifier's configuration by using the verifier field in a format.	to printer
Store configuration packet in the printer's flash memory. Use **F** (Flash memory) in the configuration packet. Send configuration packet through printer to the verifier. Use **T** (Temporary) in the configuration packet.	to printer

Sample Verifier Configuration Packet

{V,1,A,T,"BEAMON"¦
D,"~LV02~HL0~HO2~LR1~Lp0~Lt0~LQ0~PR0210~LC01~LA15~LD05~PB
802037100~PB816005100~PB806025100"¦}

You can modify the verifier configuration packet or create your own using the *SV Series Operator's Guide*. However, you need to the follow the MPCLII conventions and syntax outlined below.

The printer automatically sets the following verifier commands: ~LS (minimum number of good scans per bar codes), ~LZ (Exact number of bar codes per label), ~SD/~SE (disable or enable the scan beam), and ~LE/~LI (disable or enable symbology). If you specify any values for these parameters, the printer overrides your values. For more information, refer to the *SV Series Operator's Guide* included with the verifier.

Note: You can store up to 50 different *verifier configuration packets* in the printer's memory.

Defining the Verifier Configuration Packet

Read this section if you want to create the verifier configuration packet without using the VCT.

Syntax	`{V,format#,action,device,"name"¦` `D,"vfr_comds"¦}`	
	V1. V	Verifier Configuration.
	V2. format#	Number from 0-999 to identify the format number that corresponds to this particular verifier configuration packet. However, you can assign a verifier configuration packet to any format even if the format number is not changed. See "Defining the Verifier Field," for more information.
		You can specify up to 50 different verifier configuration packets.
	V3. action	Enter **A** to add a verifier configuration.
	V4. device	Storage device. Options:
	F	Flash. Stores the verifier configuration in the printer. Packets stored in flash memory are saved with the power is turned off.
	T	Temporary. Passes the packet through the printer and stores the packet in the verifier. Packets stored in temporary memory are lost when the power is turned off.

V5. "name"	Packet name, 0-8 characters, enclose within quotation marks. The name you enter here is shown as a custom configuration on the printer's menu for MODE. See "Setting the Mode" for more information.
D1. D	Non-printable text/data field.
D2. "vfr_comds"	Verifier commands. Must be enclosed within quotation marks. Refer to the *SV Series Operator's Guide* for the complete list of verifier commands.

Example `{V,1,A,T,"BEAMON"¦`
`D,"~LV02"¦}`

The verifier's configuration packet ID is "1" and named "BEAMON." The verifier packet is added to the verifier's temporary memory. It uses Mode 2.

Defining the Verifier Field

The verifier field in a format references the verifier configuration packet ID to use for this particular format. The verifier field allows you to specify a different verifier configuration packet for each format, regardless of the format number. See "Defining the Verifier Configuration Packet," for more information.

Note: If you do not specify a particular verifier configuration packet, the last sent verifier configuration packet is used.

Syntax `V,vfrID¦`

V1. V	Verifier Field.
V2. vfrID	Unique number from 1-999 to identify the verifier configuration packet ID you want to use with this format.

Example `{F,25,A,R,M,508,508,"Fmt 25"¦`
`V,3¦`
`B,1,12,F,110,115,1,2,120,5,L,0¦`
`…}`

Specifies to use verifier configuration packet ID #3 starting with format 25 and used until another verifier configuration packet is sent or specified.

Additional Examples

`{V,1,A,T,"BEAMON"¦`	Verifier configuration packet #1 is passed directly to the verifier's temporary memory and named "BEAMON." It is not stored in the printer.
`D,"~LV02"¦}`	Additional verifier commands may be included within quotation marks. Refer to the *SV Series Opreator's Guide* for more information.
`{F,1,A,R,E,200,200,"Fmt1"¦`	Format packet #1 is stored in the printer's memory and named "Fmt1."
`…}`	Additional fields in the format are not shown.

The printer uses verifier configuration packet #1 until another verifier configuration packet is sent. Or, until a format is sent that references a different verifier configuration packet already stored in the printer's memory using the verifier field.

`{F,9,A,R,E,200,200,"Fmt9"¦`	Format #9 is stored in the printer's memory and named "Fmt9."
`V,3¦`	The verifier field calls for verifier configuration packet #3 to be used with this format (format #9).
`…}`	Additional fields in the format are not shown.

The printer uses verifier configuration packet #3 for format #9, since this format includes the verifier field. Verifier configuration packet #3 must already be stored in the printer's memory before the printer receives the format packet that references it. See "Defining the Verifier Field," for more information.

Defining Option 62

This option allows the verifier to bypass (skip) bar code(s) on a format. The verifier does not scan any bar code with option 62 applied to it.

Syntax   R,62¦

 R1. R Option Header.

 R2. 62 Option 62. The verifier does not scan the bar code associated with this option.

Note: Adjacent bar codes on a format need to start and end on the same row (be the same height). Also, both adjacent bar codes (or neither bar code) must be scanned. However, ***do not*** *apply Option 62 to all bar codes on a format or 764 errors appear*.
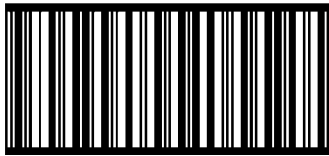
Option 62 can be applied to any bar code on this format.
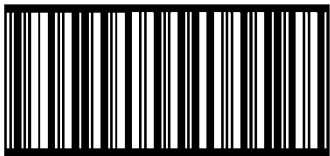
Option 62 must be applied to BOTH adjacent bar codes. The verifier's beam scans the entire width of the label. It cannot scan half of the label's width. The verifier errors if Option 62 is applied to only one of the adjacent bar codes.

Example

```
B,1,12,F,110,115,1,2,120,5,L,0¦
R,62¦
```

The verifier does not scan or verify this UPCA bar code on the format.

Verifier Information

♦ There is a 0.50-inch *no scan zone* on the trailing edge of each label. The trailing edge is the edge of the label that exits the printer last; regardless of how the format is designed on the label.

♦ You cannot verify adjacent bar codes that do not start and end on the same print row. See the following graphic.

B,3,13,V,310,28,8,4,50,8,L,0¦   *Postal Code bar code*
B,4,13,V,355,200,8,4,50,8,L,0¦   *Tracking Number bar code*
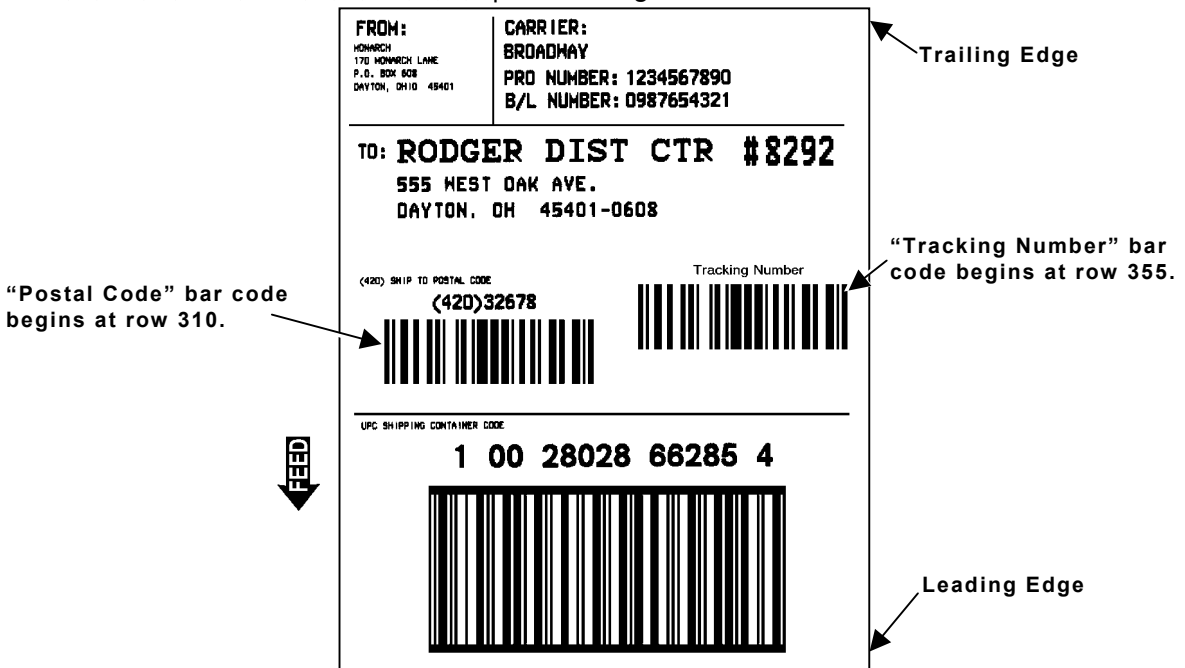
The verifier cannot verify the "postal code" and "tracking number" bar codes, because they do not start and end on the same row.

CONFIGURING THE PRINTER

This chapter explains how to configure the printer to use the verifier. You can set the state, scan beam, mode, clear data, print a summary label, and detect the cable.

Note: Make sure the printer and verifier are connected with the communications cable.

MAIN MENU

```
        ┌──────────┐
        │  Setup   │
        └──────────┘
        ┌──────────┐
        │ Verifier │
        └──────────┘
```

| State | Scan Beam | Mode | Clear Data | Print Summary | Cable Detect |
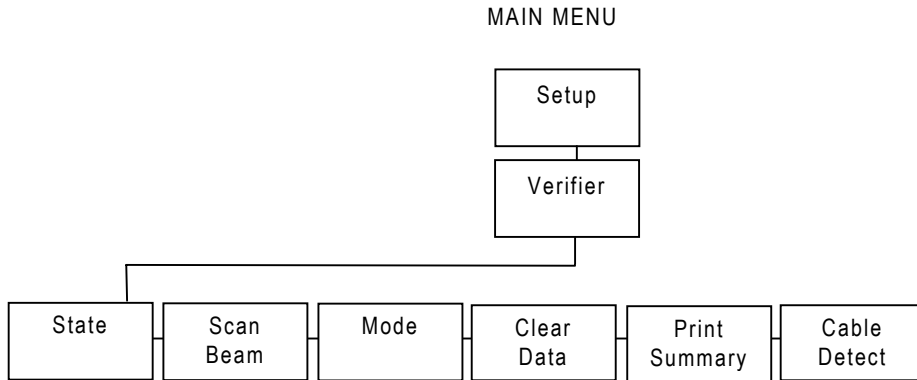
The options are listed in the following table.

Option	Choices	Default
State	Enabled/Disabled	Disabled
Scan Beam	Off When Idle/Always On	Off When Idle
Mode	Def 2/Def 19	Def 2
Clear Data	Yes/No	No
Print Summary	Yes/No	No
Cable Detect	None/I-O/I-O & Data	I-O & Data

Setting the State

The verifier must be enabled to scan and check the quality of bar codes as they are printed.

To change the setting, from the Main Menu, select **Setup**, then **Verifier**. Then follow these steps.

1. Press ← or → until you see

   ```
   VERIFIER
   State           →
   ```

2. Press **Enter/Pause**. The current setting is displayed, for example:

   ```
   VERIFIER
   Disabled        →
   ```

3. Press ← or → to see the other option. After you display the option you want, press **Enter/Pause**.

4. Press **Escape/Clear** until you see the Main Menu.

Setting the Scan Beam

You can control whether the scan beam is turned off between labels or left on continuously. Depending on your application, you may want the scan beam on continuously.

To change the setting, from the Main Menu, select **Setup**, then **Verifier**. Then follow these steps.

1. Press ← or → until you see

   ```
   VERIFIER
   ←    Scan Beam         →
   ```

2. Press **Enter/Pause**. The current setting is displayed, for example:

   ```
   SCAN BEAM
   Off When Idle      →
   ```

3. Press ← or → to see the other option. After you display the option you want, press **Enter/Pause**.

   Do not let the verifier stop on a bar code when logging data, because it continues to log data from that bar code.

4. Press **Escape/Clear** until you see the Main Menu.

Setting the Mode

You can select the verifier mode (2 or 19) or use a custom configuration. Use the Verifier Configuration Tool to create a custom verifier configuration.

Mode 2 (Def 2) specifies nine different parameters to verify: ANSI defects, decodability, and grade; quiet zones; partial decodes, decode errors, passing percent decode; minimum number of I2of5 digits; and no read.

Mode 19 (Def 19) specifies all parameters from Mode 2, plus contrast grade, wide to narrow ratio, and minimum and maximum X-dimensions.

Check with your System Administrator on which mode to use.

To change the setting, from the Main Menu, select **Setup**, then **Verifier**. Then follow these steps.

1. Press ← or → until you see

    ```
         VERIFIER
    ←    Mode        →
    ```

2. Press **Enter/Pause**. The current setting is displayed, for example:

    ```
         Select Config
         Def 2        →
    ```

3. Press ← or → to see the other options. After you display the option you want, press **Enter/Pause**.

    ```
         Are you sure?
         No
    ```

4. Select **Yes** or **No**. If you select "Yes," the file is sent immediately to the verifier. This configuration is active for all formats until another verifier configuration packet is specified. See "Defining the Verifier Field" or "Defining the Verifier Configuration Packet" for more information.

5. Press **Escape/Clear** until you see the Main Menu.

Clearing Data

The verifier keeps track of the following items:

♦ the number of labels verified sucessfully

♦ the number of labels that failed verification/scanning

Depending on your application and volume of labels printed, you may want to clear this data daily or after each batch. This data is stored and only cleared when you select "Yes" to clear data.

To change the setting, from the Main Menu, select **Setup**, then **Verifier**. Then follow these steps.

1. Press ← or → until you see

```
        VERIFIER
←       Clear Data      →
```

2. Press **Enter/Pause**.

```
        Are You Sure?
        No              →
```

3. Press ← or → to see the other option. After you display the option you want, press **Enter/Pause**.
If you select "Yes," all data collected since the last time it was cleared is erased.
If you select "No," no data is erased.

4. Press **Escape/Clear** until you see the Main Menu.

Printing a Summary Label

The summary label is based on the data collected by the verifier since the data was last cleared. You can print a summary label showing

♦ the number of labels verified sucessfully since last cleared

♦ the number of labels that failed verification/scanning since last cleared

Depending on your application and volume of labels printed, you may want to print this summary label daily or after each batch.

To change the setting, from the Main Menu, select **Setup**, then **Verifier**. Then follow these steps.

1. Press ← or → until you see

```
              VERIFIER
←        Print Summary
```

Summary Label

Good Verifier Labels

562

Bad Verifier Labels

0
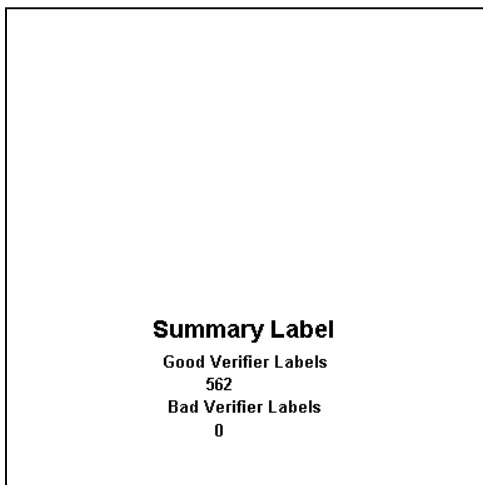
2. Press **Enter/Pause**. The summary label prints.

3. Press **Escape/Clear** until you see the Main Menu.

Detecting the Cable

You can configure the printer to detect when the serial and/or the I/O (input/output) cable is disconnected from the verifier.

To change the setting, from the Main Menu, select **Setup**, then **Verifier**. Then follow these steps.

1. Press ← or → until you see

    ```
    VERIFIER
    ←    Cable Detect
    ```

2. Press **Enter/Pause**. The current setting is displayed, for example:

    ```
    VERIFIER
    None          →
    ```

3. Press ← or → to see the other options. After you display the option you want, press **Enter/Pause**.
    If you select "None," the verifier does not detect when a cable is disconnected.
    To be notified when any cable (serial or I/O) is disconnected, select the *I/O & Data* option. If a cable is disconnected, error 773 appears. Check the connections between the verifier, printer, and host.

4. Press **Escape/Clear** until you see the Main Menu.

Setting the Error Action

The recovery action from an error condition is in the Setup, Supply menu. You can change how the printer responds to a bad scan. The choices include normal and overstrike/continue one to five consecutive bad scans. The overstrike pattern is created to prevent someone from using a bad label.

Selecting overstrike and continue 1x-5x sets the number of times the printer prints an overstrike pattern on consecutively bad labels before generating an error. The user must clear the error before operation can continue.

MAIN MENU

```
            ┌──────────┐
            │  Setup   │
            └──────────┘
                 │
            ┌──────────┐
            │  Supply  │
            └──────────┘
```

Supply Type	Ribbon	Speed	Feed Mode	Backfeed	Positioning

Dispense Position	Backfeed Distance	Separators	Skip Index	Knife Control	Error Action
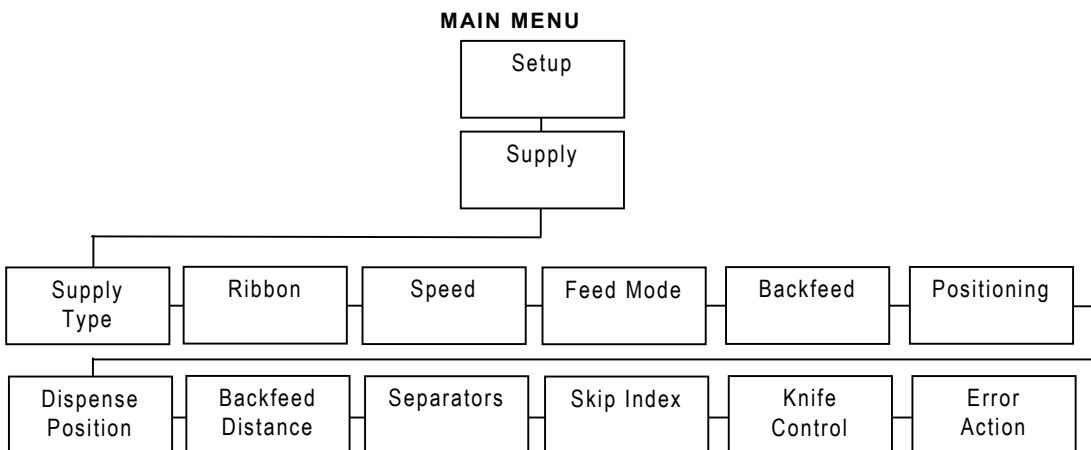
Do not use the overstrike action with

♦ Peel mode

♦ Linerless supplies

♦ String tag supplies

For more information about the error actions, see the following table:

Error Action	Standard Peel	Verifier with Peel	RFID with Peel
Overstrike/Continue 1-5	No	No	No
Normal (no overstrike)	Yes	Yes	Yes

Consider this scenario when the error action is set to overstrike/continue 3x:

If the printer errors on the first label, an overstrike pattern is printed, but the printer attempts to reprint the image up to three times. If the third consecutive label also generates an error, an overstrike pattern is printed; however, the printer stops and the error message is displayed. The operator must resolve the error condition before printing continues.

In the above example, if the third label did NOT generate an error,

♦ the batch image is printed

♦ the consecutive error counter is reset

♦ the printer continues processing the batch.

Normal (default)	The printer errors and the condition causing the error is displayed. The error must be cleared before operation can continue. An operator must press Escape/Clear to clear the error and continue printing. No overstrike pattern is printed.
Overstrike/Continue 1x Overstrike/Continue 2x Overstrike/Continue 3x Overstrike/Continue 4x Overstrike/Continue 5x	The printer prints an overstrike pattern on one, two, three, four, or five consecutive labels and stops printing after the selected number of overstrike patterns have been printed. An operator must press Escape/Clear to clear the error and continue printing. Do not use the label with the overstrike pattern. Note: The printer re-calibrates (feeds a blank label) after a motion or verifier error.

To change the setting, from the Main Menu, select **Setup**, then **Supply**. Then follow these steps.

1. Press ← or → until you see

```
         SUPPLY
←        Error Action
```

2. Press **Enter/Pause**. The current setting is displayed, for example:
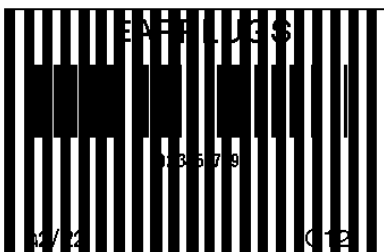
```
         ERROR ACTION
←        Ostrk/Cont 1x       →
```

3. Press ← or → to see the other options. After you display the option you want, press **Enter/Pause**.

4. Press **Escape/Clear** until you see the Main Menu.

Note: Depending on the selected error action, you may or may not see a label with the overstrike pattern.

Label with overstrike pattern

TROUBLESHOOTING

This chapter provides solutions to minor problems that may occur.
It also describes the verifier's LED indicators.

Problem	Action
Verifier does not scan the bar codes properly.	Make sure you configured the verifier to scan the bar codes on your format. Check the reflectance profile. Refer to the *SV Series Operator's Guide* for more information.
Printer imaging error.	Clear the error. Make sure the printer is configured to use the verifier. See "Setting the State," in Chapter 5 for more information. Resend the format and batch.
Verifier is not working after loading or changing supplies.	Turn off the printer. Wait several seconds and then turn on the printer. Make sure the printer is configured to use the verifier. See "Setting the State," in Chapter 5 for more information. Resend the format and batch.
A bar code on the top of the label does not scan.	Make sure the bar code is not located in the 0.50-inch no-scan zone at the trailing edge of the label.
Verifier keeps logging data.	Do not let the verifier stop on a bar code when logging data, because it logs unwanted data.
When storing a verifier configuration in the printer, a 409 error appears on printer's display.	Before you save the configuration to the printer's flash memory, you must format flash memory. From the Main Menu, select **Setup**, **Flash Memory**, and **Format Flash**. Formatting flash memory is only required once during initial printer setup.

Verifier Errors

The printer re-calibrates (feeds a blank label) after a motion or verifier error.

409 Printer memory is full. Delete unnecessary formats or graphics from memory. You may need to format flash memory. From the Main Menu, select **Setup**, **Flash Memory**, and **Format Flash**. Formatting flash memory is only required once during initial printer setup.

430 The format uses a graphic or verifier configuration packet that cannot be found. See "Using the Verifier Field" for more information.

764 Verifier scan error (bad scan) on label when using normal (no overstrike) mode. Press **Escape/Clear** to clear the error and continue printing. The printer re-calibrates (feeds a blank label) after this error.
You can change how the verifier responds to an error.
See "Setting the Error Action," for more information.
Make sure you did not apply Option 62 (do not scan a particular bar code) to all bar codes on a format. See "Defining Option 62," for more information.

772 Verifier scan error (bad scan) on label or multiple labels in a row when using overstrike and continue mode. Press **Escape/Clear** to clear the error and continue printing. The printer re-calibrates (feeds a blank label) after this error.
You can change how the verifier responds to an error.
See "Setting the Error Action," for more information.

773 Verifier Failure – the verifier is enabled, but not connected. The printer can detect if the I/O and/or serial cable are connected to the verifier. See "Detecting the Cable" for more information.

783 The printer is printing too fast for the verifier to accurately scan the bar codes. Increase the bar code height in your formats or slow the print speed.

Verifier LED Indicators

Five LED indicators are included on the verifier's back panel.

Power/Sync LED	This LED is green whenever power is applied to the verifier. Upon receipt of any sync input (hardware or serial communications) the LED blinks yellow for approximately 100 milliseconds.
Calibration LED	This yellow LED indicates calibration status. Refer to the *SV Series Operator's Guide* for more information.
Read LED	This LED is green whenever a bar code is being decoded.
Indicator LED 1 and 2	These two green LED's are user programmable exactly like the five output ports. Their functions are intended for use as indicators for specific analysis results. A common example is LED 1 programmed to light in latch mode whenever a symbol quality error is detected, while LED 2 is programmed to light in latch mode whenever a No Read error is detected. Refer to the *SV Series Operator's Guide* for more information.

SPECIFICATIONS

Height:	2.4 inches (61 mm)
Width:	4.4 inches (112 mm)
Depth:	5.2 inches (132 mm)
Verifier Weight:	2.0 lbs. (0.9 kg)
Shipping Weight:	15 lbs. (6.8 kg)
Power Source:	Supplied by printer; no external power is required.
Operating Limits:	40°F to 104°F (4°C to 40°C)
Storage:	-4°F to 140°F (-20°C to 60°C)
Humidity:	10% to 90% non-condensing
Communication Port:	DB 9-pin (male), baud rates up to 115200
Supported Bar Codes:	Code 128, Code 39, Code 93, Codabar, Interleaved 2 of 5, UPC versions A and E (including +2 and +5), EAN-13 and EAN-8 (including +2 and +5) Note: The MSI bar code and 2D bar codes are not supported.
LEDs (5):	Power/Sync, Calibration, Read, and two programmable
No-Scan Zone:	0.50-inch (13 mm) at the trailing edge of each label. The trailing edge is the edge of the label that exits the printer last; regardless of the how the format is designed on the label.
Minimum Feed Length:	1.2 inches (30 mm)

Laser Scanner

Scan Rate:	400 scans/second (s/s), +/ - 2 s/s
Laser Power:	3.0 mW, +/- 0.5mW
Wavelength:	650 – 670 nm
Scanning Performance:	100 analyses per sec 6 inch (152 mm) scan width 8 inch (203 mm) focus distance 0.0067 inches (.17 mm) minimum X dimension

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