PRINTRONIX®

Online Data Validator User's Manual

The Printronix T5000^e series of Thermal Printers

The Printronix T5000^e series of Thermal Printers

Online Data Validator User's Manual

PRINTRONIX®

170895-001H

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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.

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Avis de conformite aux normes du ministere des Communcations du Canada: Cet appareil numerique de la classe A est conform á norme NMB-003 du Canada.

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Zulassungsbescheinigung Gesetz über die elektromagnetische Verträglichkeit von Geraten (EMVG) vom 30. August 1995

Dieses Gerät ist berechtigt in Übereinstimmung mit dem deutschen das EG-Konformitätszelchen - CE - zu führen.

Der Außteller der Konformitätserklärung ist die Printronix......(1)

Informationen in Hinsicht EMVG Paragraph 3 Abs. (2) 2:

Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und
EN 55022 Klasse A.

EN 55022 Klasse A Geräte bedürfen folgender Hinweise:

Nach dem EMVG: "Geräte dürfen an Orten, für die sie nicht asreichend entstört sind, nur mit besonderer Genehmigung des Bundesminesters für Post und Telekommunikation oder des Bundesamtes für Post und Telekommunikation betrieben werden. Die Genehmigung wird erteilt, wenn keine elektromagnetischen Störungen zu erwarten sind." (Auszug aus dem EMVG, Paragraph 3, Abs. 4) Dieses Genehmigungsverfahren ist nach Paragraph 9 EMVG in Verbindung mit der entsprechenden Kostenverordnung (Amtsblatt 14/93) kostenpflichtig.

Nach der EN 55022: "Dies ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funkstörungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen durchzuführen und dafür aufzkommen."

Anmerkung: Um die Einhaltung des EMVG sicherzustellen sind die Geräte, wie in den Handbüchern angegeben, zu installieren und zu betreiben.

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to European Standard EN 55022. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

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1 *Installation Instructions*

Overview

The online data validator (validator) is an external bar code scanning device attached above the paper exit of the printer. When activated, it scans the printed output looking for bar codes. When it finds a bar code, it determines what type of bar code it is and monitors the bar code quality as it passes through the scan area.

After the entire bar code has passed under the scanning beam, the validator grades the bar code and sends a report to the printer. How the printer responds is determined by the validator settings, explained in "Configuring The Validator" on page 43.

Operational Parameters

The design parameters of the validator are as follows:

- The validator can track the performance of up to four horizontal bar codes at one time.

- The validator requires a minimum distance of 1/2 inch or 20 times the minimum element width (x-dimension), whichever is greater, between bar codes.

- The validator recognizes the following linear, picket fence bar codes: Codabar, Code 39, Code 93, Code 128, Interleaved 2 of 5, and UPC/EAN + add-ons.

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- The validator can also evaluate PDF 417 bar codes. For PDF 417 Limited, the validator works best with security level 5 or higher, using the current default printer settings for Defects Percentage, Percent Decode, and Decodeability. For lower security levels, lower the Defects Percentage to 5% to enable checking for bar code damage.

- Stacked, 2D, and vertical (ladder) bar codes are not supported.

- Bar codes must have a minimum x-dimension of 10 mil (0.010 inch) to be recognized by the full width of the scanning beam. The validator can recognize bar x-dimension as narrow as 6.6 mil (0.0066 inch) for 300 dpi printers, and 10 mil (0.010 inch) for 203 dpi printers. The validator cannot recognize x-dimensions smaller than 6.6 mil (0.0066 inch) or larger than 40 mil (0.040 inch).

Refer to Table 1 for the minimum x-dimension requirements for each printer size of a 300 dpi printer.

Table 1: Minimum X-Dimension and Beam Width for a 300 dpi Printer

Printer Size	Beam Width	Minimum X-Dimension
4 inch	4.5 inches	6.6 mil
6 inch	6.5 inches	10 mil
8 inch	8.5 inches	13 mil

Tools And Materials You Will Need

- Static Wrist Strap
- 3 mm Allen key
- 2.5 mm Allen key
- *T5000 User's Manual*

Parts List

- Validator/Upper Bracket
- Lower Bracket
- Cable Assembly
- Ferrite
- Grommet
- Wire Saddle
- Overlays
- Bar Code Calibration Card

Safety Notices

The validator is a Class 2 laser product. The following notices apply at all times when the printer is powered on and the validator is active:

WARNING **Class 2 laser light. Do not stare into the laser beam or a reflected image of the laser beam.**

WARNING **Using controls, making adjustments, or performing procedures other than those specified herein may result in hazardous radiation exposure.**
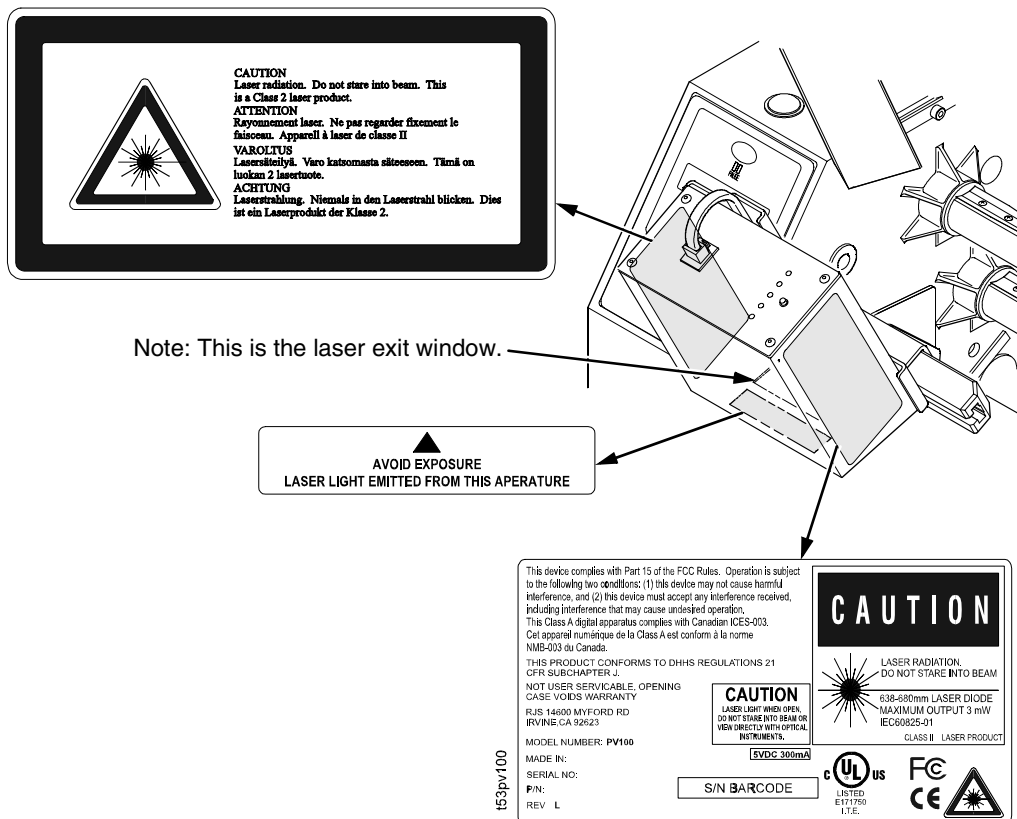

CAUTION
Laser radiation. Do not stare into beam. This is a Class 2 laser product.
ATTENTION
Rayonnement laser. Ne pas regarder fixement le faisceau. Apparell à laser de classe II
VAROLTUS
Lasersäteilyä. Varo katsomasta säteeseen. Tämä on luokan 2 lasertuote.
ACHTUNG
Laserstrahlung. Niemals in den Laserstrahl blicken. Dies ist ein Laserprodukt der Klasse 2.

Note: This is the laser exit window.

AVOID EXPOSURE
LASER LIGHT EMITTED FROM THIS APERATURE

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: **PV100**
MADE IN:
SERIAL NO:
P/N:
REV **L**

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

5VDC 300mA

S/N BARCODE

CAUTION
LASER RADIATION, DO NOT STARE INTO BEAM
638-680mm LASER DIODE MAXIMUM OUTPUT 3 mW
IEC60825-01
CLASS II LASER PRODUCT

LISTED
E171750
I.T.E.

t53pv100

Figure 1. Safety Warnings

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Installation

Prepare The Printer

1. Set the printer power switch to O (Off).

WARNING   **Always unplug the printer power cord from the printer or power outlet before doing any installation procedure. Failure to remove power could result in injury to you and damage the equipment. You will be instructed when to apply power.**

2. Unplug the printer power cord from the printer or the AC power source.

Install The Ferrite

IMPORTANT   **If your printer has a factory installed validator, then the cable, ferrite, wire saddle, and grommet have already been installed. Go to "Install The Brackets" on page 23.**

1. Loosen the two captive screws securing the top of the frame side cover. (Figure 2.)

2. Tilt the frame side cover back from the top and lift it until the tabs along the lower edge disengage from the slots in the printer frame.

Captive Screw (2)

t53bkgutt
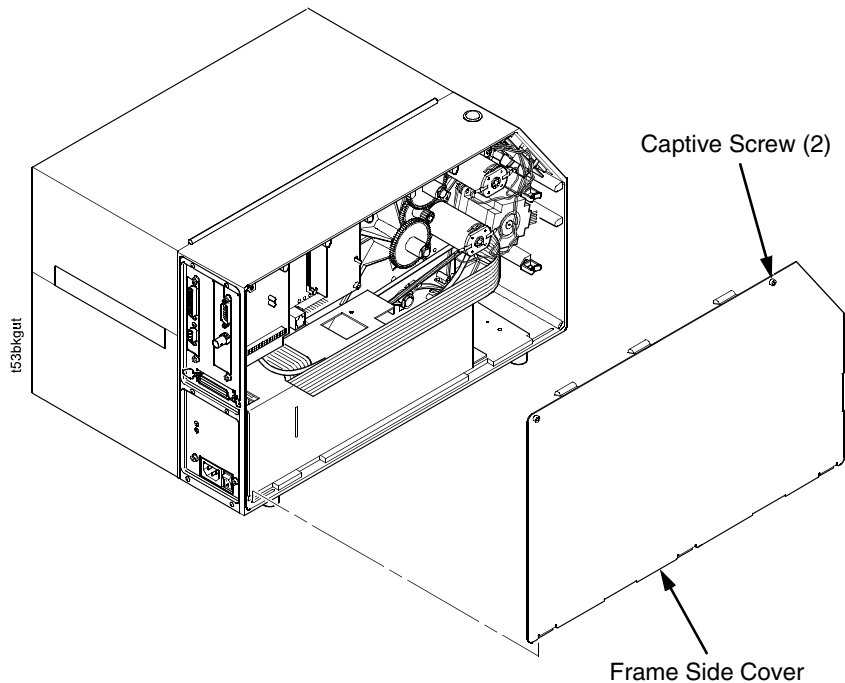
Frame Side Cover

Figure 2. Removing the Frame Side Cover

3. If you have the expansion-CT option:

   a. Loosen one screw and remove the other screw that secures the expansion-CT subassembly to the rear of the printer frame. (Figure 3.)

   b. Carefully lift the expansion-CT subassembly and CT adapter plate out of the frame cutout.

   c. Unplug the expansion-CT cable from the expansion-CT port on the controller PCBA and set the expansion-CT subassembly aside.

Expansion-CT Port

Controller PCBA

Screw (2)

Expansion-CT
Cable

t53ctrem

Expansion-CT
Subassembly

CT Adapter Plate
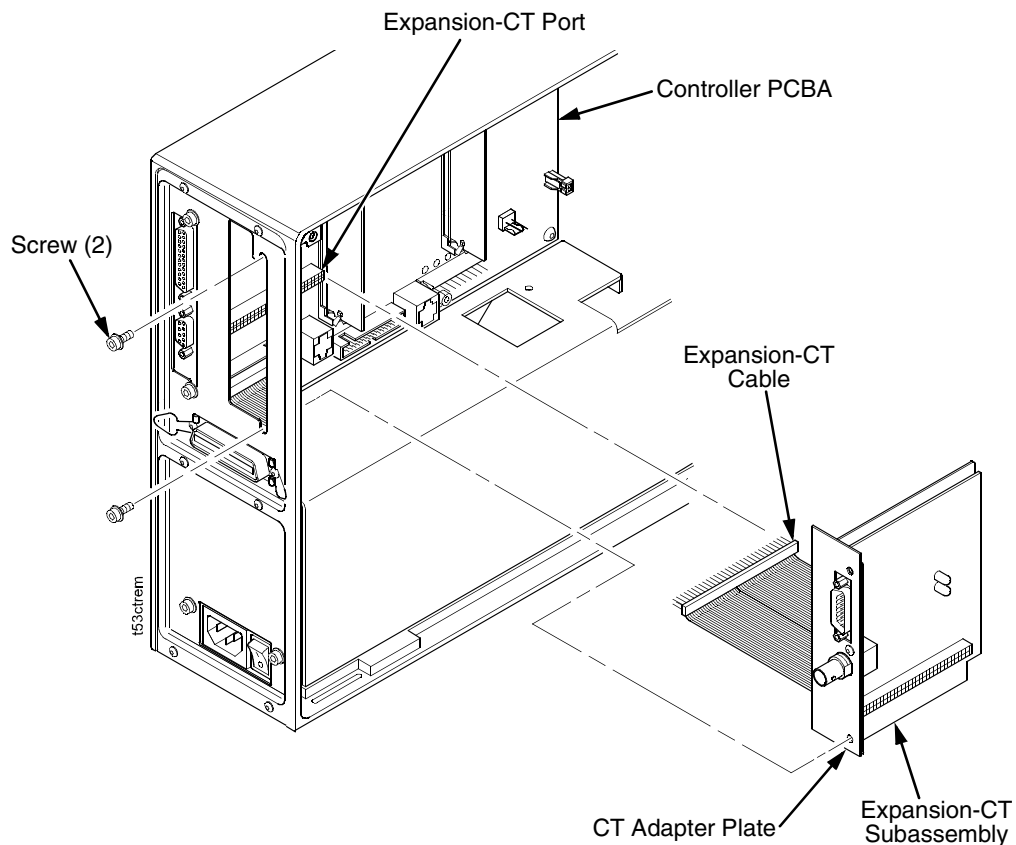
Figure 3. Removing the Expansion-CT Subassembly

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Power/Data Cable
First Wrap

Ferrite

Long Connector
(To Validator)

20.0 ± 0.5
inches

t53val10

Short Connector
(To Controller Board)

Power/Data Cable
Second Wrap
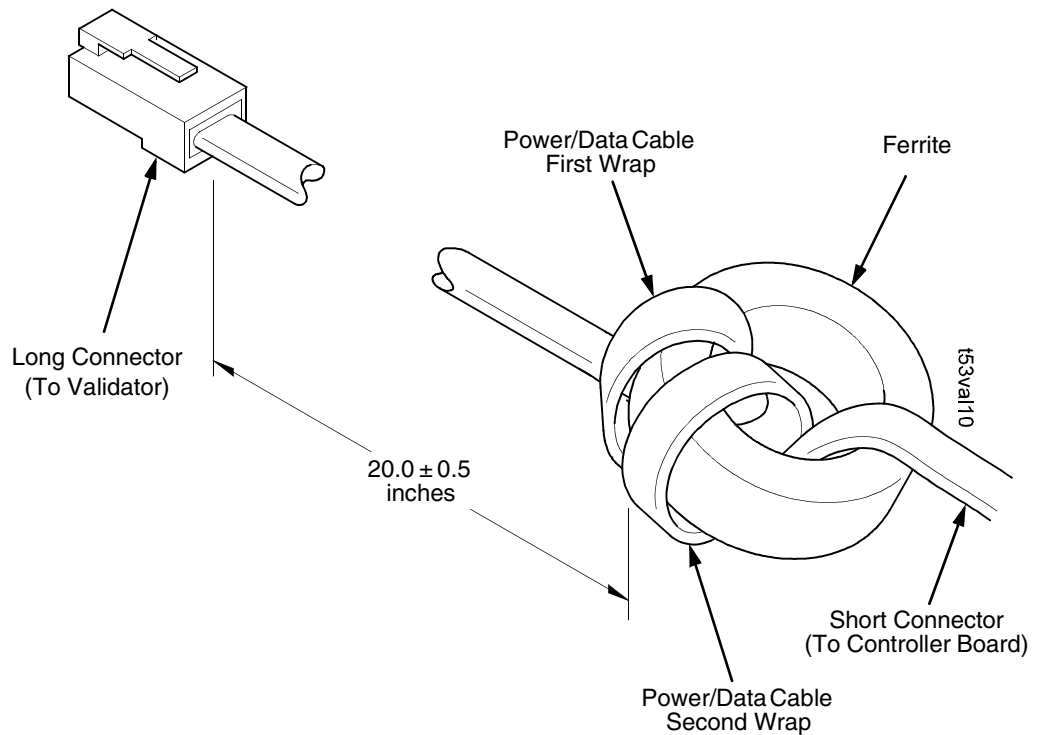
Figure 4. Wrapping the Power/Data Cable Around the Ferrite

4. Using the end of the power/data cable with the short connector, insert the cable through the ferrite. (Figure 4.)

5. Wrap the power/data cable around the ferrite twice.

6. Adjust the position of the ferrite so that the length from the ferrite to the long connector is 20 ± 0.5 inches.

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Frame Boss

Wire Saddle

t53wrsdl
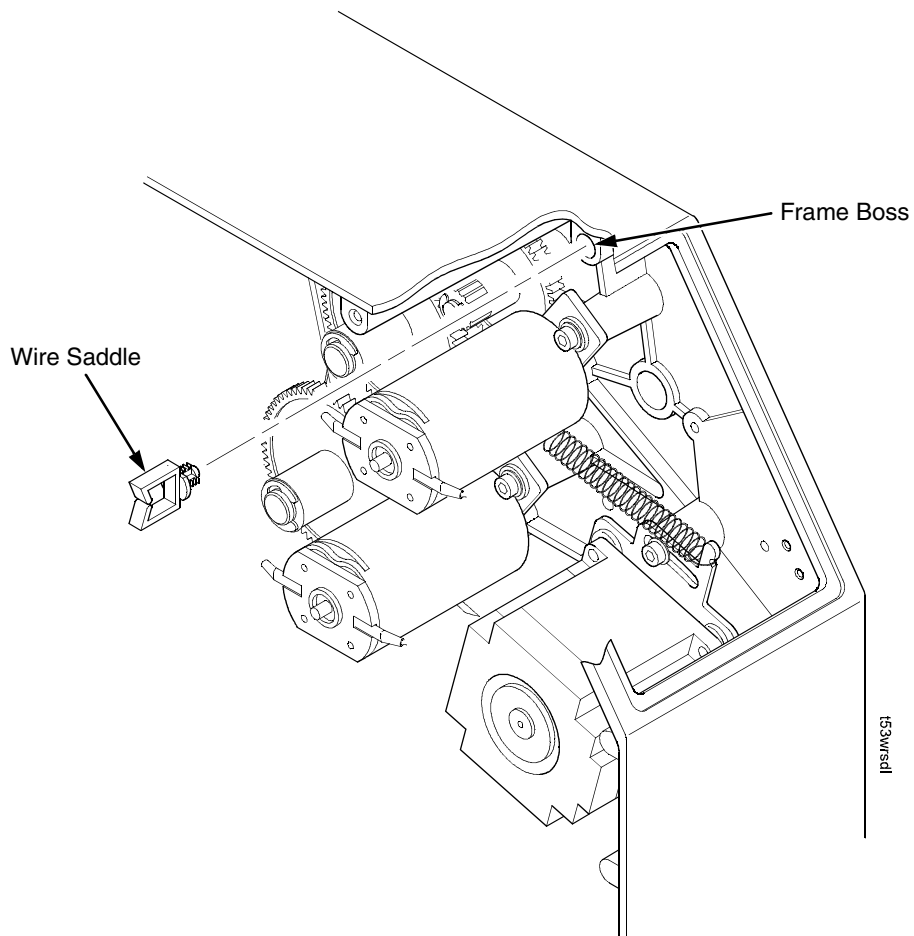
Figure 5. Inserting the Wire Saddle Into the Frame Boss

7. Insert the wire saddle into the frame boss. (Figure 5.)

Wire Saddle

Long Connector
(To Validator)

t53vald4

Ferrite

Hole in the
Frame Wall
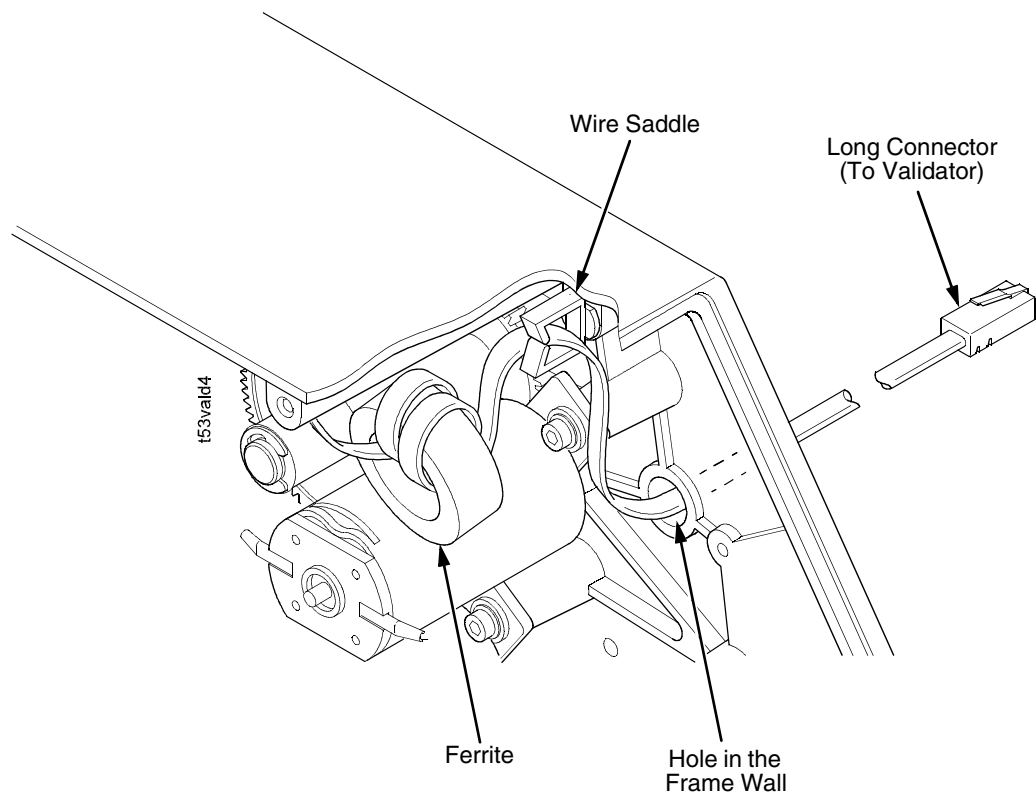
Figure 6. Inserting the Power/Data Cable Through the Hole in the Frame Wall

8. Raise the media cover and remove the solid grommet from the hole in the frame wall.

9. On the electronics side of the printer, insert the long connector end of the power/data cable through the hole in the frame wall. (Figure 6.)

10. Insert the power/data cable through the wire saddle.

Long
Connector

Grommet

Inserted Grommet
(Media Side)

Power/Data Cable
(approximately
17 inches exposed)

t53vald5
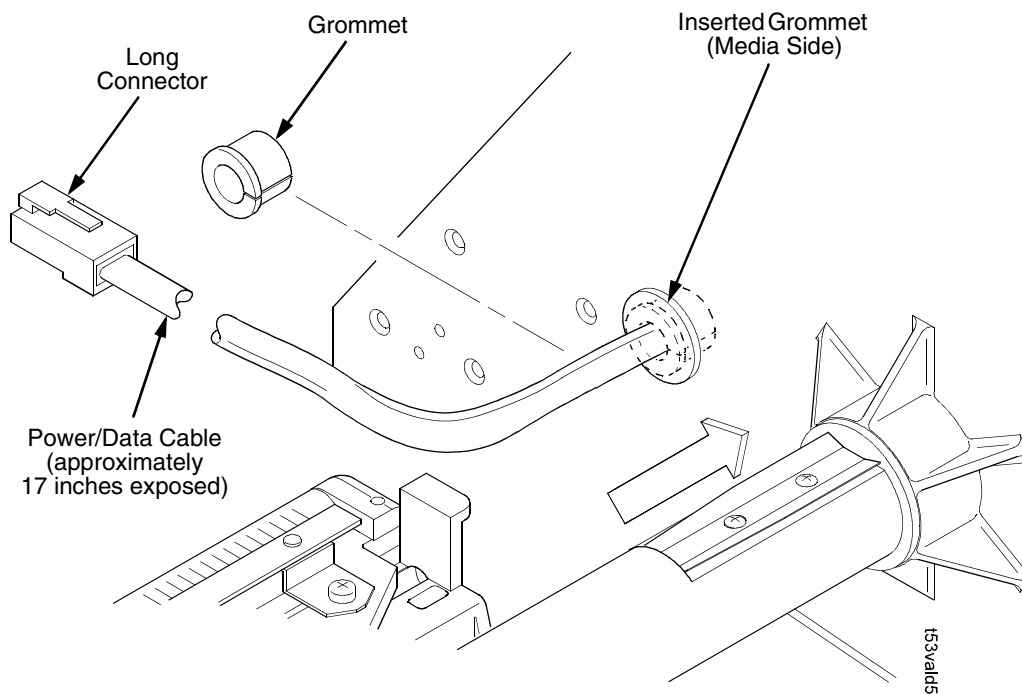
Figure 7. Adding the Grommet to the Power/Data Cable

11. On the media side of the printer, slide the grommet onto the power/data cable and insert it into the hole in the frame wall. (Figure 7.)

12. Inspect the power/data cable to ensure approximately 17 inches of cable is exposed from the grommet to connect it to the validator.

NOTE: You will plug the power/data cable into the validator later.

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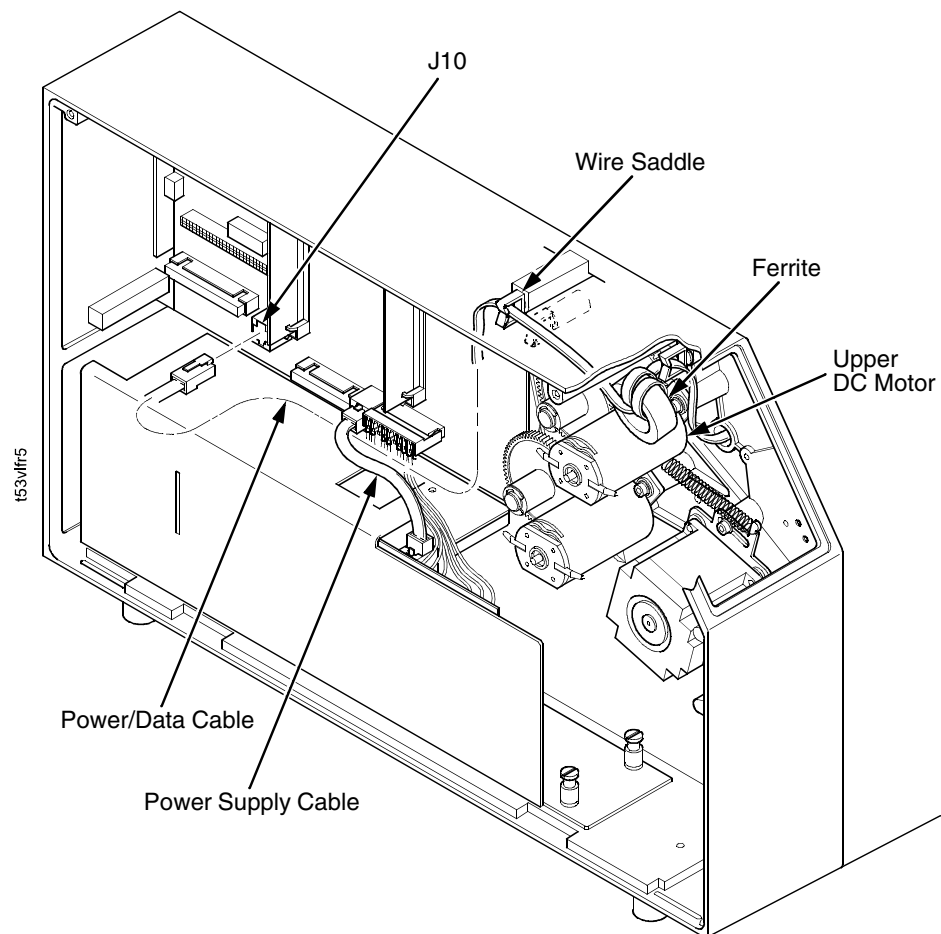
Figure 8. Position the Ferrite

13. On the electronics side of the printer, position the ferrite on top of the upper DC motor. (Figure 8.)

14. Route the power/data cable through the wire saddle, then under the power supply cable as shown in Figure 8.

15. Plug the power/data cable into the J10 receptacle on the controller board.

16. Install the expansion-CT subassembly, if you removed it in step 3, page 17.

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Install The Brackets
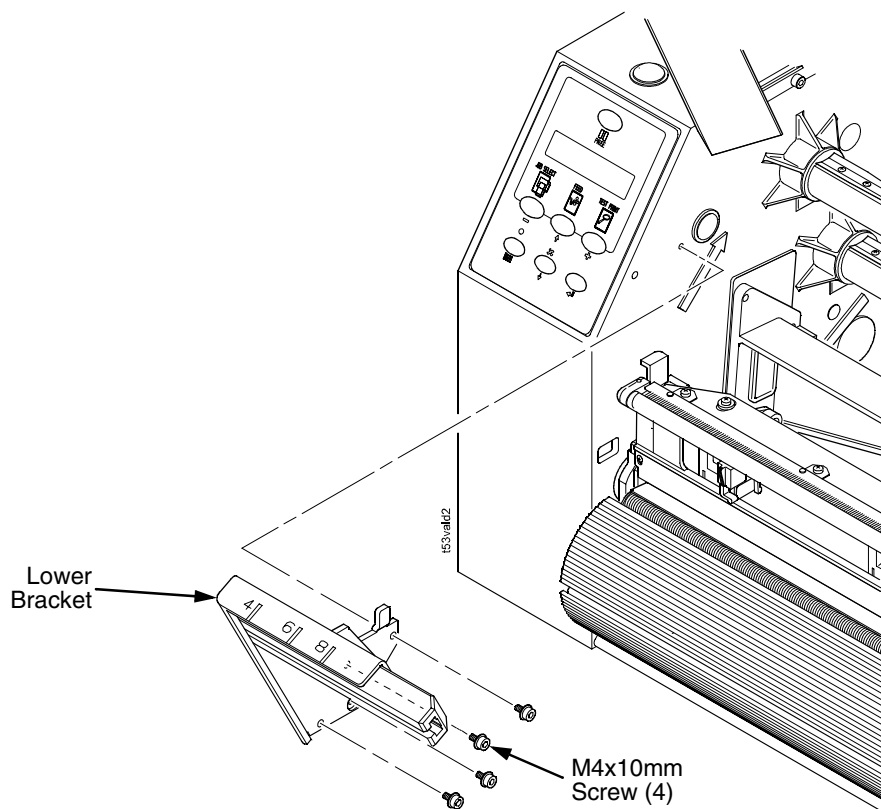
Figure 9. Installing the Lower Bracket

1. Using the four M4x10mm screws, install the lower bracket as shown in Figure 9.

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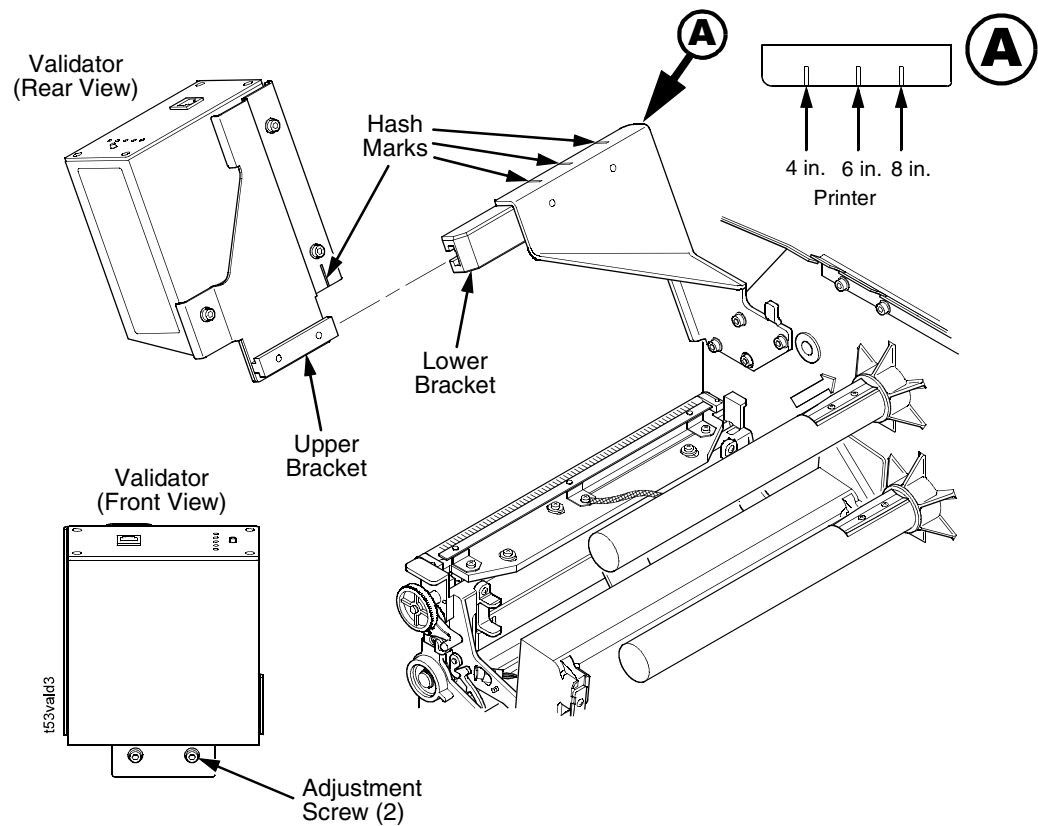
Figure 10. Installing the Validator/Upper Bracket Unit onto the Lower Bracket

2. Face the front of the printer while installing the validator/upper bracket unit.

3. Loosen the two adjustment screws on the bottom of the validator.

4. Slide the validator/upper bracket unit onto the lower bracket and align the hash marks accordingly. Refer to Figure 10, Detail A for location of the validator hash mark for each printer model size.

NOTE: The printer model size is also inscribed on the lower bracket.

5. When the unit is positioned correctly, tighten the two adjustment screws on the validator to lock the unit into place.

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Attach The Power/Data Cable To The Validator
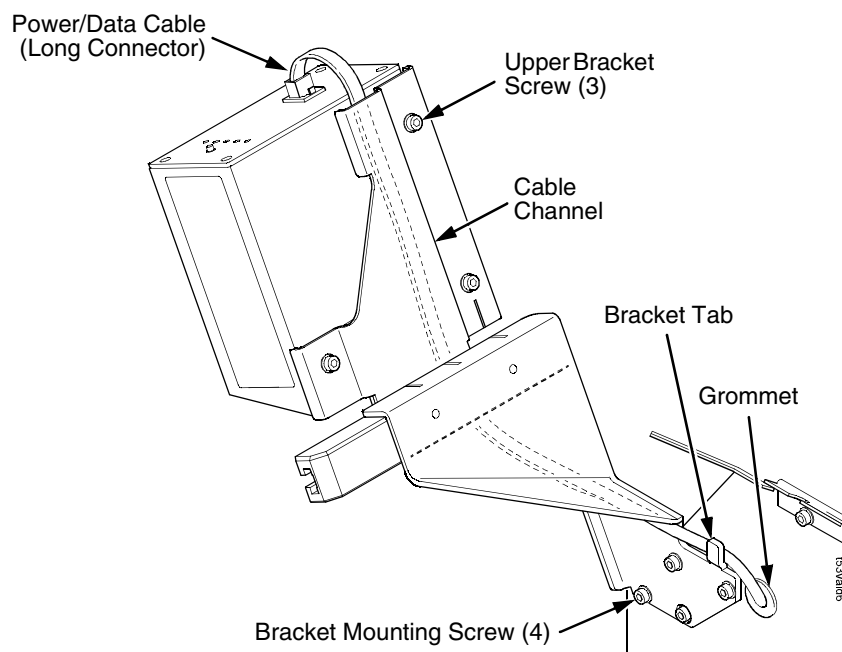
Figure 11. Attaching the Power/Data Cable

1. Loosen the three upper bracket screws and route the power/data cable through the cable channel in the upper bracket, as shown in Figure 11.

2. Plug the long connector end of the power/data cable into the validator.

3. Route the power/data cable behind the bracket tab, as shown in Figure 11.

NOTE: If necessary, loosen the bracket mounting screws enough to slip the power/data cable behind the bracket tab, then retighten the bracket mounting screws.

4. Pull the cable to minimize the slack behind the lower bracket. Push any excess slack through the grommet.

5. Tighten the three upper bracket screws.

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Restore The Printer To Operation

1. Lower the media cover.
2. Engage the tabs on the bottom of the frame side cover in the slots in the printer frame.
3. Rotate the cover into position.
4. Tighten the two captive screws. (Figure 2.)
5. Plug the AC power cord into the printer and the power source.
6. Set the printer power switch to | (On).

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Enable The Validator

Later version software can automatically detect the validator. When the printer is powered up with the validator installed, the VALIDATOR menu appears and Validator Funct. is automatically set to Enable in the QUICK SETUP and VALIDATOR menus.

NOTE: You may need to load the Factory Config. in the CONFIG CTRL menu to allow the VALIDATOR menu to appear.

With earlier software that cannot automatically detect the validator, the default value for Validator Funct. is Disable so that printers without validators do not stop and wait for the validator at boot up. These printers with validators installed need to have Validation Funct. set to Enable. This is a one-time setting if the save configuration command is issued.

1. Press ≔ to take the printer offline and place the printer in Menu mode.

2. If necessary, press ↓ and ↵ at the same time to unlock the ↵ key. (This key combination can be changed by the user. Use the customer's key combination if necessary.)

3. If necessary, press ≔ until "VALIDATOR" displays.

4. Press ↓ until "Validator Funct." displays.

5. Press **+** or **–** until the "Enable" displays.

6. Press ↵ to enable the validator. An asterisk (*) should appear after "Enable." Once enabled, the printer will command the validator to begin scanning and reporting errors, and the counters will be incremented.

7. Press ↓ and ↵ at the same time to lock the ↵ key, then press **PAUSE** to take the printer offline.

8. Press **PAUSE** again to put the printer online.

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Adjust The Scanning Beam

NOTE: Make sure the printer is on and the scanning beam is on. If the beam is off, press the **RESET** button for less than 2 seconds to turn on the beam.

When the validator is first installed, the scanning beam may need to be aligned with the two notches on the sides of the tear bar, as shown in Detail A of Figure 12. When the scanning beam is properly aligned it will line up with the two notches.
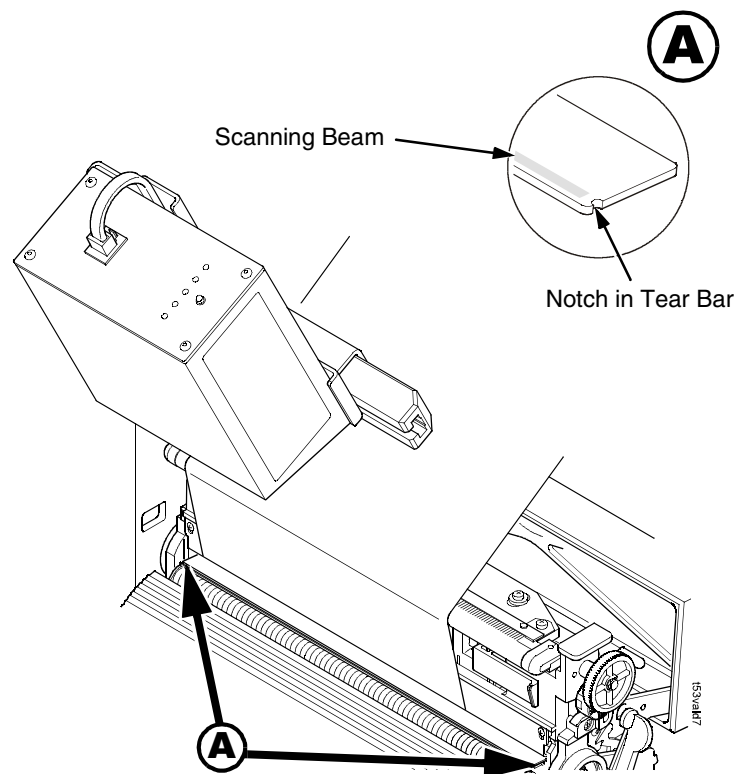

Figure 12. Aligning the Scanning Beam

If your printer is configured for Peel-Off Media Handling mode (use of optional internal rewinder), you may need to align the beam further behind the notches (0.20 to 0.30 inches [5.08 mm to 7.62 mm] from the front edge of the tear bar) so that the peeled label remains on the tear bar and the trailing edge of the last bar code can still pass completely under the scanning beam. See Figure 13.
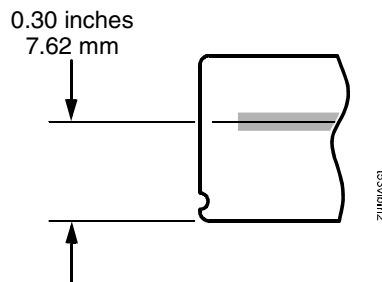

0.30 inches
7.62 mm

t53vlbm2

Figure 13. Aligning the Scanning Beam – Peel-Off Media Handling Mode

If your printer has a cutter installed, align the beam with the notches at each side of the opening on the hinged upper lid, as shown in Detail A of Figure 14.
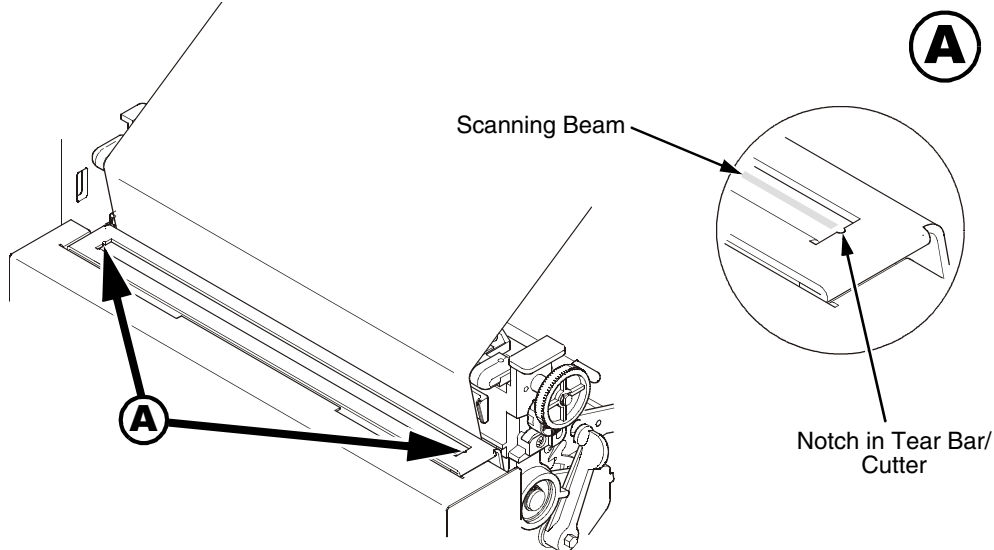

A

Scanning Beam

Notch in Tear Bar/
Cutter

A

Figure 14. Aligning the Scanning Beam – Cutter Installed

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Top Left Screw

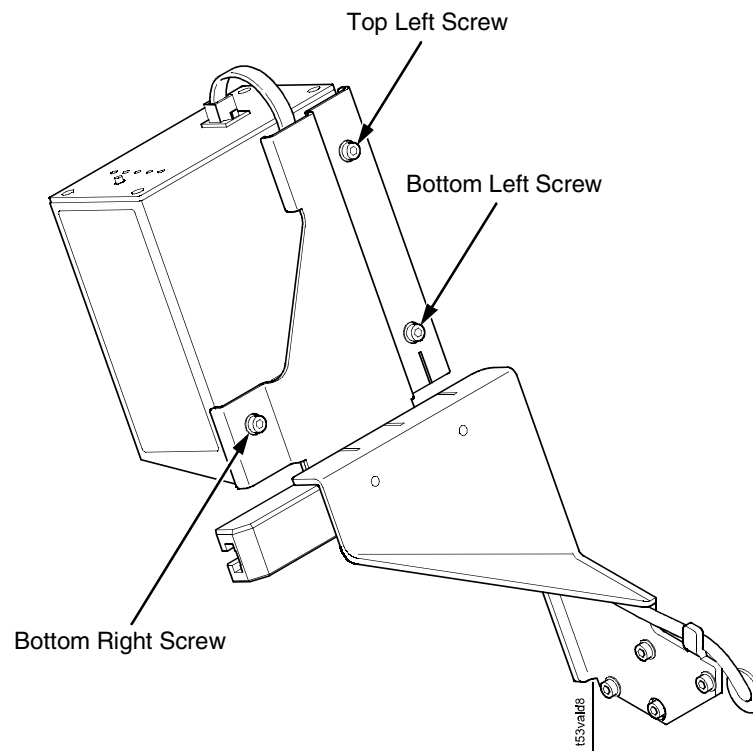Bottom Left Screw

Bottom Right Screw

f53vald8

Figure 15. Scanning Beam Adjustment Screws

Figure 15 shows the screws used to adjust the parallelism and position of the scanning beam. The positions of the screws assume that you are in front of the validator unit and facing the printer. The following instructions and illustrations show how to adjust the validator according to how the beam appears.

1. Power the printer on and make sure the scanning beam is on. If the beam is off, press the **RESET** button for less than 2 seconds to turn on the scanning beam.

2. Use the Allen key provided to adjust the screws.

NOTE: You may have to loosen all three screws and allow the rubber spacers to expand (relax) before making any adjustments.

Correct alignment of the scanning beam. The beam lines up with the end notches and is parallel to the long edge of the tear bar.
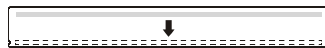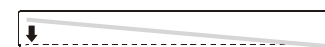
Tighten the top left screw to move the scanning beam downward. If the screw is already tight, loosen both bottom screws to lower the beam.

Tighten both bottom screws to move the scanning beam upward. If they are already tight, loosen the top left screw to move the beam upward.
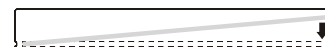
Loosen the bottom right screw to rotate the scanning beam clockwise. If it is already loose, tighten the bottom left screw.

Loosen the bottom left screw to rotate the scanning beam counterclockwise. If it is already loose, tighten the bottom right screw.

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Summary Of Scanning Beam Adjustment

To Move Beam Down	To Move Beam Up	To Rotate Beam Clockwise	To Rotate Beam Counterclockwise
Tighten top left screw	Tighten both bottom screws	Loosen bottom right screw	Loosen bottom left screw
or	or	or	or
Loosen both bottom screws	Loosen top left screw	Tighten bottom left screw	Tighten bottom right screw

NOTE: If the printer does not have a tear bar with notches at the ends, adjust the scanning beam so that the center of the beam is approximately 0.06 inches (1.52 mm) from the lower edge as shown in Figure 16.
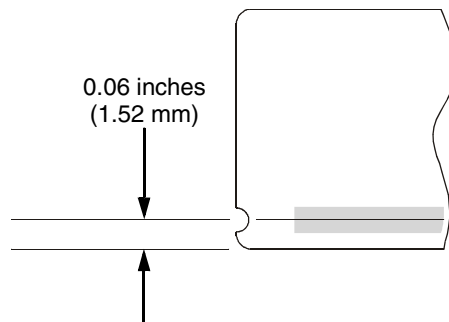

0.06 inches
(1.52 mm)

Figure 16. Adjusting the Center of the Scanning Beam

Shifting The Scanning Beam

This option enables you to shift the scanning beam horizontally to the left or right. The left edge of the beam should be approximately 0.13 inches (3.3 mm) from the left edge of the tear bar. After you set this value, save it as part of the configuration for future use.

The value range is from -99 to 99. The default is 0. Lower values will move the beam to the left.

NOTE: You must set Admin User to Enable in the PRINTER CONTROL menu to access the Beam Shift option. (Refer to the *User's Manual.*)

1. Press ≔ to take the printer offline and place the printer in Menu mode.

2. If necessary, press ↓ and ↵ at the same time to unlock the ↵ key.

3. If necessary, press ≔ until "VALIDATOR" displays.

4. Press ↓ until "Validator Funct." displays.

5. Make sure the "Enable" option is selected.

6. Press ↓ until "Beam Shift" displays.

7. Press **+** or **–** to scroll through the values: -99 to 99. The default is 0. Lower values will move the beam to the left. Press ↵ to accept the shift value.

    Keep selecting the new value until the beam width is at the desired position. The left edge of beam should be approximately 0.13 inches (3.3 mm) from the left edge of the tear bar.

8. Save the configuration for future use.

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Calibration

WARNING **Class 2 laser light. Do not stare into the laser beam or a reflected image of the laser beam.**

WARNING **Using controls, making adjustments, or performing procedures other than those specified herein may result in hazardous radiation exposure.**

The validator should be calibrated when it is first installed or when the printer displays the "Calibration warning" message. A special calibration bar code card is included with the validator package.

1. Make sure the printer is on and the scanning beam is on. If the beam is off, press the **RESET** button for less than 2 seconds to turn on the beam.

Table 2. RESET Button Settings

Time RESET Button Is Depressed	Result
Less than 2 seconds	Turns on scanning beam
More than 4 but less than 6 seconds	Validator goes into calibration mode
More than 6 seconds	Resets validator to factory calibration and turns off scanning beam

2. Raise the media cover. Open the pivoting deck by rotating the deck lock lever fully clockwise. The pivoting deck will swing upward, exposing the bottom of the printhead assembly.

3. If the printer has the cutter option, put the cutter in the open (down) position.

4. Remove the calibration bar code card from its protective sleeve and slide it into the open printhead and under the scanning beam. (Figure 17.)

5. Make sure the bar code is under the scanning beam and the CALIBRATION light is on.

6. Press and hold the **RESET** button on the validator until the CALIBRATION light begins flashing.

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CALIBRATION Light

RESET Button

Deck Lock
Lever

Calibration Bar Code Card
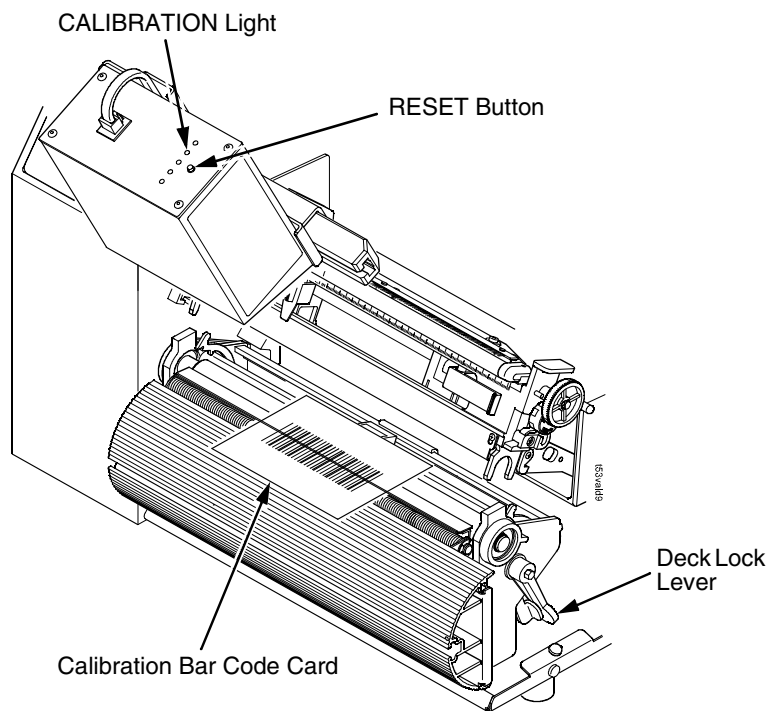
Figure 17. Calibrating the Validator

7. The scanning beam should turn off for a few seconds then back on, and the CALIBRATION light should turn off. This indicates a successful calibration.

NOTE: If the scanning beam does not turn back on and/or the calibration light is still on or flashing, the calibration has failed. In this case, refer to Table 2 on page 34 to repeat the calibration procedure or to reset the validator settings back to factory default.

8. Once you have a successful calibration, remove the calibration bar code card.

9. Close the pivoting deck and rotate the deck lock lever fully counterclockwise.

10. Close the media cover.

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11. Power the printer off, wait a few seconds, then power the printer on.

    If the calibration was successful, the scanning beam is on and the CALIBRATION light is off.

    If the calibration was not successful, the scanning beam remains on and the CALIBRATION light stays lit without flashing. Repeat the calibration procedure. If repeated attempts fail, check the room for excessive ambient light, including direct sunlight. You may need to move the printer to a darker area of the room.

NOTE: In some cases the validator can detect and indicate to the printer that calibration is required. See "Calibration warning" in Table 4, page 64.

Bar Code Validation Demo Page

The bar code validation demo page allows you to test or demonstrate the validator operation without a host computer. This page contains some text and two good bar code symbologies: one in Code 39, the other in Code 128.

To print and validate the bar code validation demo page:

1. Load the factory default configuration. (Refer to the *User's Manual.*)

2. In the VALIDATOR menu, set Validator Funct. to Enable.

3. In the CALIBRATE CTRL menu, set Gap/Mark Sensing to Gap.

4. Load media.

5. In the CALIBRATE CTRL menu, run Auto Calibrate for proper gap sensing.

6. The printer must be offline. If the printer is in Menu mode, press the **PAUSE** key to take the printer offline.

7. Press the **TEST PRINT** key to enter the Test Print menu. Continue to press **TEST PRINT** until "Barcode Demo" displays.

8. Press the ↵ key to print and validate the demo page. (If the ↵ key is locked, unlock it by pressing ↓ and ↵ at the same time.)

9. The printer will print one demo page containing two good bar codes.

NOTE: In the QUICK SETUP or MEDIA CONTROL menu, if Label Length is set between 0.5 and 1.0 inches, only one good bar code will print.

If Label Length is less than 0.5 inches and Label Width is less than 2.0 inches, no demo page will print.

10. To demonstrate a bad bar code reading, block the scanning beam with an opaque object while the bar code moves under the beam. When you block the beam, the validator will generate a reading error and will perform a default error action. The default setting for the Validator Action in the VALIDATOR menu is Retry Form.

11. Press **PAUSE** to take the printer offline.

12. Press ↓ and ↵ at the same time to lock the ↵ key, then press **PAUSE** to put the printer back online.

Chapter 1 Calibration

2 *Operation*

Basic Validator Setup

Unit Positioning

The validator must be positioned so that the scanning beam covers the entire area containing the bar codes, including the area required for quiet zones. The validator can be moved along the lower bracket and aligned with any of the inscribed hash marks, depending on the size of the labels printed and the positioning of the bar codes on those labels. In addition, the beam width can be moved horizontally to the left or right. See "Summary Of Scanning Beam Adjustment" on page 32.

If a bar code is completely outside of the scanning area, straddles an edge, or does not pass completely under the scanning beam, the validator interprets it as a missing bar code and generates error conditions.

Validator Front Panel

The front panel of the validator has the following controls and indicators:

- **POWER:** Indicates the validator is at full power.

- **CALIBRATION:** Flashes when the validator is in calibration mode. See page 34 for calibration instructions.

- **READ:** Flashes when the validator is reading a bar code.

- **1** and **2:** Used for maintenance purposes only.

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- **RESET:** This button is used in the calibration procedure and possible troubleshooting situations. Except in these specific circumstances, the RESET button should not be used.

Table 3. RESET Button Settings

Time RESET Button Is Depressed	Result
Less than 2 seconds	Turns on scanning beam
More than 4 but less than 6 seconds	Validator goes into calibration mode
More than 6 seconds	Resets validator to factory calibration and turns off scanning beam

CAUTION **Do not lift the printer by the validator unit or by the lower bracket.**

CAUTION **The validator contains sensitive electronic equipment. Do not jar or drop the unit.**

Validator Menu Structure

VALIDATOR

Validator Report page 44

Auto Report page 44 — Disable* — Enable

Clear Data page 45

Good Barcodes page 47 — 0

Good Forms page 47 — 0

Overstrike Forms page 47 — 0

Average BWD page 47 — 0%

Last BWD page 48 — 0%

Validator Funct. page 43 — Disable* — Enable

Telemetry Path page 45 — Disabled* — Serial Port — Network Port

Telemetry Data page 46 — Short Report* — Full Report — Validation Mode

Number of Codes page 48 — Auto* — 1 to 99

Validator Action page 62 — Retry Form* — Stop — Overstrike

Notes:

* = Factory Default

Italicized items are available only when you enable Advanced User (in the PRINTER CONTROL menu).

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**VALIDATOR
(cont. from previous page)**

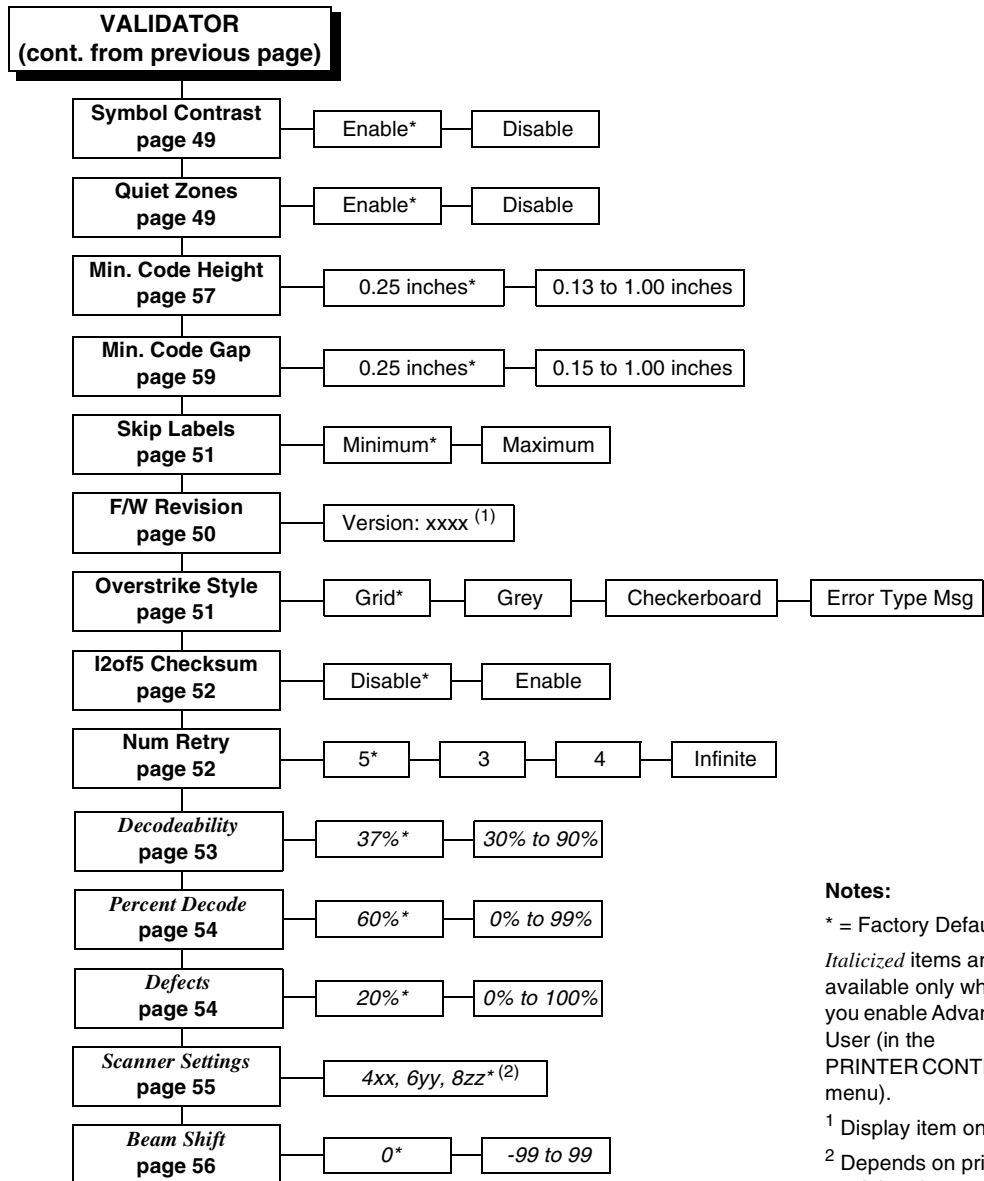|				
Symbol Contrast page 49	Enable*	Disable		
Quiet Zones page 49	Enable*	Disable		
Min. Code Height page 57	0.25 inches*	0.13 to 1.00 inches		
Min. Code Gap page 59	0.25 inches*	0.15 to 1.00 inches		
Skip Labels page 51	Minimum*	Maximum		
F/W Revision page 50	Version: xxxx [1]			
Overstrike Style page 51	Grid*	Grey	Checkerboard	Error Type Msg
I2of5 Checksum page 52	Disable*	Enable		
Num Retry page 52	5*	3	4	Infinite
Decodeability **page 53**	*37%**	*30% to 90%*		
Percent Decode **page 54**	*60%**	*0% to 99%*		
Defects **page 54**	*20%**	*0% to 100%*		
Scanner Settings **page 55**	*4xx, 6yy, 8zz** [2]			
Beam Shift **page 56**	*0**	*-99 to 99*		

Notes:

* = Factory Default

Italicized items are available only when you enable Advanced User (in the PRINTER CONTROL menu).

[1] Display item only

[2] Depends on printer model and custom files. *xx, yy, zz* = file revision numbers.

Configuring The Validator

Setting validator options is done through the printer configuration menu. The validator comes equipped with a default setting for each configuration option, and it works without having to change any of these options. However, in some cases it is necessary to adjust these options, which are described below.

Enabling And Disabling The Validator

1. Press ☰ to take the printer offline and place the printer in Menu mode.
2. If necessary, press ↓ and ↵ at the same time to unlock the ↵ key.
3. If necessary, press ☰ until "VALIDATOR" displays.
4. Press ↓ until "Validator Funct." displays.
5. Press **+** or **–** until "Enable" displays.
6. Press ↵ to enable the validator. An asterisk (*) should appear after "Enable." Once enabled, the printer will command the validator to begin scanning and reporting errors, and the counters will be incremented.
7. Press ↓ and ↵ at the same time to lock the ↵ key, then press **PAUSE** to take the printer offline.
8. Press **PAUSE** again to put the printer online.

NOTE: To disable the validator once it has been enabled, repeat steps 1–8 and select the "Disable" option in step 5.

Validator Reporting

After any completed print job, you can request a report from the printer which describes the validation statistics since the printer was turned on, or since the last data reset (for information on resetting data, see page 45).

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Requesting A Validator Report

This procedure prints a summarized validator report on the printer itself.

1. Press ☰ to take the printer offline and place the printer in Menu mode.
2. If necessary, press ↓ and ↵ at the same time to unlock the ↵ key.
3. If necessary, press ☰ until "VALIDATOR" displays.
4. Press ↓ until "Validator Report" displays.
5. Press ↵ to print the report.
6. Press ↓ and ↵ at the same time to lock the ↵ key, then press **PAUSE** to take the printer offline.
7. Press **PAUSE** again to put the printer online.

Setting Auto Report

This function allows you to disable or enable an automatic validator report printout after a batch job. The factory default is Disable.

You can determine the end of a batch job in two ways:

*   by using an Execute command, or
*   a timeout of more than 10 seconds.

To enable Auto Report:

1. Press ☰ to take the printer offline and place the printer in Menu mode.
2. If necessary, press ↓ and ↵ at the same time to unlock the ↵ key.
3. If necessary, press ☰ until "VALIDATOR" displays.
4. Press ↓ until "Auto Report" displays.
5. Press **+** or **–** to scroll through the choices: Enable or Disable. The default is Disable.
6. When Enable displays, press ↵ to activate Auto Report.
7. Press ↓ and ↵ at the same time to lock the ↵ key, then press **PAUSE** to take the printer offline.
8. Press **PAUSE** again to put the printer online.

Resetting Validator Data

The validator reports on all bar codes it detects since the last data reset. For example, you print a large batch of labels with bar codes and then print a validator report. Then you print another batch of labels with bar codes and print another report. The report will contain information on both batch jobs. However, if you reset the validator data between batch jobs, the second report will only contain information on the second batch job.

To reset Validator Data:

1. Press ⊟ to take the printer offline and place the printer in Menu mode.

2. If necessary, press ↓ and ↵ at the same time to unlock the ↵ key.

3. If necessary, press ⊟ until "VALIDATOR" displays.

4. Press ↓ until "Clear Data" displays.

5. Press ↵ to clear validator data.

6. Press ↓ and ↵ at the same time to lock the ↵ key, then press **PAUSE** to take the printer offline.

7. Press **PAUSE** again to put the printer online.

Defining The Data Output Destination (Telemetry Path)

You may want to send a streaming flow of validation data to an external device during the print job. Follow the procedure below to select the data output destination.

1. Press ⊟ to take the printer offline and place the printer in Menu mode.

2. If necessary, press ↓ and ↵ at the same time to unlock the ↵ key.

3. If necessary, press ⊟ until "VALIDATOR" displays.

4. Press ↓ until "Telemetry Path" displays.

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5. Press **+** or **–** to cycle through the choices:

    - **Disabled.** Default setting. The validator does not send any data to an external device.

    - **Serial Port.** The printer outputs the bar code analysis and underlying data from the validator to a device connected to the serial port, so the validator data can be seen and analyzed with the optional remote management software.

    - **Network Port.** The printer outputs the bar code analysis and underlying data from the validator to a device connected to the network port so the validator data can be seen and analyzed with the optional remote management software.

    NOTE: Only one port can be used at a time. If you select Network Port, the printer front panel will display "DEACTIVATING HOST SERIAL."

    If you later change the setting to Serial Port, the printer front panel will display "REACTIVATING HOST SERIAL."

6. When your selection displays, press ↵ to activate it. All future reports are output to your selection.

7. Press ↓ and ↵ at the same time to lock the ↵ key, then press **PAUSE** to take the printer offline.

8. Press **PAUSE** again to put the printer online.

Selecting The Type Of Report For the Data Output Destination (Telemetry Data)

By default, the validator sends the Short Report to the selected data output destination, but there are two other report options available: Full Report and Validation Mode.

1. Press :≡ to take the printer offline and place the printer in Menu mode.

2. If necessary, press ↓ and ↵ at the same time to unlock the ↵ key.

3. If necessary, press :≡ until "VALIDATOR" displays.

4. Press ↓ until "Telemetry Data" displays.

5. Press **+** or **–** to cycle through the choices:

    *   **Short Report.** Default setting. Provides the encoded failure cause or pass indication and the bar width deviation, shown as a percentage.

    *   **Full Report.** Provides a completed report of all the data captured by the validator.

    *   **Validation Mode.** Provides the same data as the Short Report, but adds the actual bar code data read.

6. When your selection displays, press ↵ to activate it.

7. Press ↓ and ↵ at the same time to lock the ↵ key, then press **PAUSE** to take the printer offline.

8. Press **PAUSE** again to put the printer online.

Validator Statistics

The validator displays a number of statistics directly on the printer LCD, without having to print a report. To view any of the statistics:

1. Press ≔ to take the printer offline and place the printer in Menu mode.

2. If necessary, press ↓ and ↵ at the same time to unlock the ↵ key.

3. If necessary, press ≔ until "VALIDATOR" displays.

4. Press ↓ to scroll through the following statistics on the printer display:

    *   **Good Barcodes:** The number of bar code reports sent from the validator since the last Clear Data command.

    *   **Good Forms:** The number of forms printed since the last Clear Data command.

    *   **Overstrike Forms:** The number of forms containing a bar code that fell below the minimum acceptable level since the last Clear Data command.

    *   **Average BWD:** The average of all Bar Width Deviations reported since the last Clear Data command, shown as a percentage.

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- **Last BWD:** The Bar Width Deviation included in the most recent report received from the validator, shown as a percentage.

NOTE: A bar code's Bar Width Deviation is determined by comparing the bar width the validator expects to the bar width that is actually printed. For example, if the bar width is printed exactly as the validator expects, the BWD is 0%. However, if the bar width as printed is 25% wider or narrower than the validator expects it to be, it reports a BWD of 25%.

5. Press ↓ and ↵ at the same time to lock the ↵ key, then press **PAUSE** to take the printer offline.

6. Press **PAUSE** again to put the printer online.

Defining Validator Options

A number of validator options which define specific parameters for certain print jobs can be set from the printer configuration menu.

Setting Number Of Bar Codes On A Form

You can define how many bar codes the validator should expect on a form. This setting is required when bar codes are produced as a part of a larger bitmapped image. When set to a specific number, the printer checks after a form has printed and passed the validator and determines if it has received an analysis report for each bar code. If the printer does not have as many reports as it expects, it can assume a gross bar code failure.

When Auto is selected, the printer only expects as many bar code analyses as bar codes printed using printer bar code commands defined by the host software.

1. Press ⌸ to take the printer offline and place the printer in Menu mode.

2. If necessary, press ↓ and ↵ at the same time to unlock the ↵ key.

3. If necessary, press ⌸ until "VALIDATOR" displays.

4. Press ↓ until "Number of Codes" displays.

5. Press **+** or **–** to scroll through the choices: Auto, 1 to 99. The default is Auto.

6. Press ↵ to select the desired value.

7. Press ↓ and ↵ at the same time to lock the ↵ key, then press **PAUSE** to take the printer offline.

8. Press **PAUSE** again to put the printer online.

Setting The Symbol Contrast

Symbol Contrast represents the contrast between the bars and spaces in the bar code. The bar code must have a certain level of contrast to be recognized by the validator. When you enable the Symbol Contrast parameter, the bar code contrast is included as part of the pass/fail criteria.

1. Press ≔ to take the printer offline and place the printer in Menu mode.

2. If necessary, press ↓ and ↵ at the same time to unlock the ↵ key.

3. If necessary, press ≔ until "VALIDATOR" displays.

4. Press ↓ until "Symbol Contrast" displays.

5. Press **+** or **–** to scroll through the choices: Enable or Disable. The default is Enable.

6. Press ↵ to select the desired value.

7. Press ↓ and ↵ at the same time to lock the ↵ key, then press **PAUSE** to take the printer offline.

8. Press **PAUSE** again to put the printer online.

Checking Quiet Zones

Quiet zones are the white spaces surrounding the bar code. Each bar code requires a minimum quiet zone distance in order for the bar code to be scanned properly.

NOTE: The validator requires a minimum distance of 1/2" or 20 times the minimum element width (x-dimension), whichever is greater, between bar codes.

When the Quiet Zones parameter is enabled, then the bar code quiet zone is included as part of the pass/fail criteria.

1. Press ≔ to take the printer offline and place the printer in Menu mode.

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2. If necessary, press ↓ and ↵ at the same time to unlock the ↵ key.

3. If necessary, press ⸬ until "VALIDATOR" displays.

4. Press ↓ until "Quiet Zones" displays.

5. Press **+** or **–** to scroll through the choices: Enable or Disable. The default is Enable.

6. Press ↵ to select the desired value.

7. Press ↓ and ↵ at the same time to lock the ↵ key, then press **PAUSE** to take the printer offline.

8. Press **PAUSE** again to put the printer online.

NOTE: The validator does not recognize x-dimensions greater than 40 mil with Quiet Zones enabled.

Checking The Firmware Revision Number

For troubleshooting purposes, you may need to reference the firmware revision number.

1. Press ⸬ to take the printer offline and place the printer in Menu mode.

2. If necessary, press ↓ and ↵ at the same time to unlock the ↵ key.

3. If necessary, press ⸬ until "VALIDATOR" displays.

4. Press ↓ until "F/W Revision" displays. The firmware version number displays.

5. Press ↓ and ↵ at the same time to lock the ↵ key, then press **PAUSE** to take the printer offline.

6. Press **PAUSE** again to put the printer online.

Setting For Skip Labels

This option is used for skipping blank labels after bad labels have been marked. It is useful when you want to have extra blank labels in between bad and good ones. The settings are Minimum (the default) and Maximum. Minimum allows one blank label, and Maximum allows two blank labels.

NOTE: Minimum and Maximum blank labels are only applicable for forms 2 inches (5.08 cm) high or more. For labels less than 2 inches high, the minimum and maximum blank labels may vary.

1. Press ≔ to take the printer offline and place the printer in Menu mode.

2. If necessary, press ↓ and ↵ at the same time to unlock the ↵ key.

3. If necessary, press ≔ until "VALIDATOR" displays.

4. Press ↓ until "Skip Labels" displays.

5. Press **+** or **–** to scroll through the choices: Minimum or Maximum. The default is Minimum.

6. Press ↵ to select the desired value.

7. Press ↓ and ↵ at the same time to lock the ↵ key, then press **PAUSE** to take the printer offline.

8. Press **PAUSE** again to put the printer online.

Setting Overstrike Style

This option is used for marking bad labels with different overstrike styles: Grid, Grey, Checkerboard, or Error Type Msg.

1. Press ≔ to take the printer offline and place the printer in Menu mode.

2. If necessary, press ↓ and ↵ at the same time to unlock the ↵ key.

3. If necessary, press ≔ until "VALIDATOR" displays.

4. Press ↓ until "Overstrike Style" displays.

5. Press **+** or **–** to scroll through the choices: Grid, Grey, Checkerboard, or Error Type Msg. The default is Grid.

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6. Press ↵ to select the desired value.

7. Press ↓ and ↵ at the same time to lock the ↵ key, then press **PAUSE** to take the printer offline.

8. Press **PAUSE** again to put the printer online.

Setting I2of5 Checksum

This option allows you to include or exclude the checksum option in the Interleaved 2 of 5 code as part of the grading. For example, if you enable this option, then any incoming bar code data without checksum digits will be graded as a failure, and a Checksum Failure error will display.

1. Press ⠿ to take the printer offline and place the printer in Menu mode.

2. If necessary, press ↓ and ↵ at the same time to unlock the ↵ key.

3. If necessary, press ⠿ until "VALIDATOR" displays.

4. Press ↓ until "I2of5 Checksum" displays.

5. Press **+** or **–** to scroll through the options: Enable or Disable. The default is Disable.

6. Press ↵ to accept the desired value.

7. Press ↓ and ↵ at the same time to lock the ↵ key, then press **PAUSE** to take the printer offline.

8. Press **PAUSE** again to put the printer online.

Num Retry

This option allows you to set a number of retries for overstrike before the printer stops.

The options are 3, 4, 5, and Infinite. The factory default is 5.

NOTE: This setting is utilized only if Validator Action is set to Retry Form. See "Error Action" on page 62.

For the 3, 4, and 5 options, the printer will stop after the specified number of retry attempts. After you clear the error message, the printer will print the next label.

For the Infinite option, the printer will stop every 5 retry attempts. After you clear the error message, the printer will attempt to print the same label. It will not attempt to print the next label until the previous (problem) label has printed correctly.

Advanced Validator Options

The following items are considered advanced items and are only visible if the Advanced menus are selected. Refer to the configuration section of your *User's Manual* for more information.

Decodeability

You can determine how strict the validator grades the wide/narrow bars and spaces which compose the bar code by setting the Decodeability parameter to a percentage value from 30% to 90%. The higher the percentage value chosen, the stricter the validator grades.

For example, if the Decodeability value is set to 37%, the validator gives the bar code a failing grade if the decodeability of the bar code is at or below 37%.

1. Press ⌇ to take the printer offline and place the printer in Menu mode.

2. If necessary, press ↓ and ↵ at the same time to unlock the ↵ key.

3. If necessary, press ⌇ until "VALIDATOR" displays.

4. Press ↓ until "Decodeability" displays.

5. Press **+** or **–** to scroll through the percentage values: 30% to 90%. The default is 37%.

6. Press ↵ to select the desired value.

7. Press ↓ and ↵ at the same time to lock the ↵ key, then press **PAUSE** to take the printer offline.

8. Press **PAUSE** again to put the printer online.

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Percent Decode

You can set how strict the validator grades each bar code. For example, the Percent Decode default value is 60%. This means that 60% of the scanned bar code must be readable for the validator to give the bar code a passing grade. You can set the Percent Decode parameter to a percentage value from 0% to 99%. The higher the percentage value chosen, the stricter the validator grades.

1. Press ⬌ to take the printer offline and place the printer in Menu mode.

2. If necessary, press ↓ and ↵ at the same time to unlock the ↵ key.

3. If necessary, press ⬌ until "VALIDATOR" displays.

4. Press ↓ until "Percent Decode" displays.

5. Press **+** or **–** to scroll through the percentage values: 0% to 90%. The default is 60%.

6. Press ↵ to select the desired value.

7. Press ↓ and ↵ at the same time to lock the ↵ key, then press **PAUSE** to take the printer offline.

8. Press **PAUSE** again to put the printer online.

Defects

You can set how strict the validator grades the irregularities such as voids and spots found within elements and quiet zones for each bar code. For example, the default value for Defects is 20%. This means that if the bar code and quiet zone defects exceed 20%, the validator gives the bar code a failing grade. You can set the Defects parameter to a percentage value from 0% to 100%. The lower the percentage value chosen, the stricter the validator grades.

1. Press ⬌ to take the printer offline and place the printer in Menu mode.

2. If necessary, press ↓ and ↵ at the same time to unlock the ↵ key.

3. If necessary, press ⬌ until "VALIDATOR" displays.

4. Press ↓ until "Defects" displays.

5. Press **+** or **–** to scroll through the percentage values: 0% to 100%. The default is 20%.

6. Press ↵ to select the desired value.

7. Press ↓ and ↵ at the same time to lock the ↵ key, then press **PAUSE** to take the printer offline.

8. Press **PAUSE** again to put the printer online.

Scanner Settings

This option has two purposes:

• Allows the validator to upload an optimized setting for a particular printer size at power up. This will use the full scanner beam width and improve the performance and efficiency of the validator.

• Allows you to customize a special scanner setting for a specific application. The file can then be downloaded to the printer by using normal printer download procedures and must be saved as part of the power up configuration. For more information, contact the Printronix Customer Solutions Center at 714-368-2686.

To set this option when a special setting has been downloaded:

1. Press ≔ to take the printer offline and place the printer in Menu mode.

2. If necessary, press ↓ and ↵ at the same time to unlock the ↵ key.

3. If necessary, press ≔ until "VALIDATOR" displays.

4. Press ↓ until "Scanner Settings" displays.

5. Press **+** or **–** to scroll through the options: Default or a special file name. Default is the default.

6. Press ↵ to accept the desired value.

7. Save this configuration and set it as the Power-Up configuration in the CONFIG CTRL menu.

8. Recycle power for the new setting to take effect.

9. The beam may need to be moved horizontally. See "Beam Shift" on page 56.

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Beam Shift

This option enables you to shift the scanning beam horizontally to the left or right. The left edge of the beam should be approximately 0.13 inches (3.3 mm) from the left edge of the tear bar. After you set this value, save it as part of the configuration for future use.

The value range is from -99 to 99. The default is 0. Lower values will move the beam to the left.

NOTE: You must set Admin User to Enable in the PRINTER CONTROL menu to access the Beam Shift option. (Refer to the *User's Manual*.)

1. Press ⌷ to take the printer offline and place the printer in Menu mode.

2. If necessary, press ↓ and ↵ at the same time to unlock the ↵ key.

3. If necessary, press ⌷ until "VALIDATOR" displays.

4. Press ↓ until "Validator Funct." displays.

5. Make sure the "Enable" option is selected.

6. Press ↓ until "Beam Shift" displays.

7. Press **+** or **–** to scroll through the values: -99 to 99. The default is 0. Lower values will move the beam to the left. Press ↵ to accept the shift value.

   Keep selecting the new value until the beam width is at the desired position. The left edge of beam should be approximately 0.13 inches (3.3 mm) from the left edge of the tear bar.

8. Save the configuration for future use.

Operation

There are a number of factors which contribute to successful bar code validation, including printer speed, demand print settings, calibration, and ambient light. The following sections describe how to ensure your bar code validator is scanning and reporting properly.

Print Speed Limits

Two factors in the validation process affect the printer's speed limit: bar code height and the validation report type selected.

Bar Code Height (Min. Code Height)

The validator cannot function at the highest speed possible by the printer. It requires a minimum number of scans per bar code to make a reliable assessment, so the speed of the printer is limited by the height of the bar code. If the bar code is very short, printing needs to be slowed down to allow sufficient scans to occur. If the print speed exceeds this limit, the message, "Speed Exceeds Validator Limit" will display. Print speed will be lowered automatically if required, but will not automatically reset to a higher speed.

The printer cannot predict how high all the bar codes in a given job will be, so it cannot automatically limit or adjust the print speed to insure the code height/speed requirement is being met. When the bar code is too short for the selected speed, the printer produces a missing bar code error condition. Therefore, printer speed must be set manually to compensate for bar code height.

Use this formula to determine printer speed in relation to bar code height:

$$\frac{\text{Bar Code Height In Inches}}{0.04} = \text{Maximum Printer Speed In Inches Per Second}$$

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For example, a bar code 1 inch in height can scan successfully at a printer speed of 25 inches per second; a bar code 1/8 inch in height can scan successfully at no more than 3 inches per second.

By changing the Min. Code Height, the printer and slew speeds will be changed automatically.

To change the Min. Code Height:

1. Press ≔ to take the printer offline and place the printer in Menu mode.

2. If necessary, press ↓ and ↵ at the same time to unlock the ↵ key.

3. If necessary, press ≔ until "VALIDATOR" displays.

4. Press ↓ until "Min. Code Height" displays.

5. Press **+** or **–** to scroll through the choices: 0.13 to 1.00 inches in 0.01 inch increments. The default is 0.25 inches.

6. Press ↵ to select the desired value. The printing and slew speeds will be changed after ↵ is pressed.

7. Press ↓ and ↵ at the same time to lock the ↵ key, then press **PAUSE** to take the printer offline.

8. Press **PAUSE** again to put the printer online.

**To set the printer speed manually:**

1. Press ≔ to take the printer offline and place the printer in Menu mode.

2. If necessary, press ↓ and ↵ at the same time to unlock the ↵ key.

3. Press ≔ until "MEDIA CONTROL" displays.

4. Press ↓ until "Print Speed" displays.

5. Press **+** or **–** to scroll through the choices.

6. Press ↵ to select the desired value.

7. Press ↓ and ↵ at the same time to lock the ↵ key, then press **PAUSE** to take the printer offline.

8. Press **PAUSE** again to put the printer online.

Validation Report Type

Another factor that limits print speed is the type of validation report selected. The printer automatically examines the selected report type and sets the defined maximum slew (vertical paper movement) and print speeds to insure proper operation. If the current speed selected in the menus is higher than the maximum, the value is changed to equal the maximum. If the current menu setting is lower than the newly set maximum, no change in speed occurs.

Min. Code Gap

Min. Code Gap
Distance from the
bottom of a bar code to the
top of the next bar code

Bar code
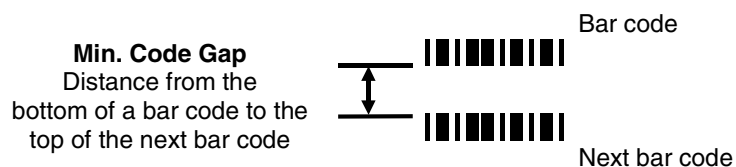
Next bar code

Minimum Code Gap represents the distance between the closest bar codes within a print job. The distance is measured from the bottom of one bar code to the top of the next bar code. The closest bar codes can be located on two separate labels or on the same label.

This distance is important because it affects how fast the Print Speed can be set. If the bottom-most bar code on one label is very close to the top-most bar code on the next label, the printer could have trouble distinguishing which bar code correlates with which label. To avoid the risk of miscorrelation, the printer automatically set its Print Speed.

Factory Default = 0.25 inches*
(Range = 0.15 to 1.00 inches in 0.01 inch increments.)

To change the Min. Code Gap:

1. Press ☰ to take the printer offline and place the printer in Menu mode.

2. If necessary, press ↓ and ↵ at the same time to unlock the ↵ key.

3. If necessary, press ☰ until "VALIDATOR" displays.

4. Press ↓ until "Min. Code Gap" displays.

5. Press **+** or **–** to scroll through the choices: 0.15 to 1.00 inches in 0.01 inch increments. The default is 0.25 inches.

6. Press ↵ to select the desired value.

7. Press ↓ and ↵ at the same time to lock the ↵ key, then press **PAUSE** to take the printer offline.

8. Press **PAUSE** again to put the printer online.

NOTE: To avoid the risk of miscorrelation, the printer automatically sets its Print Speed based on the information that has been selected to ensure validation results are accurate.

Demand Printing Modes

In order for each bar code to be successfully validated, the entire bar code must pass completely under the scanning beam, even when the printer is set up for demand printing mode. In cases where the bar code is close to the bottom of a label and the printer is in a demand print mode, the printer automatically pushes the label past the scanning beam. Once the bar code is validated, the printer retracts the label back to be cut or torn off.

Because the printer has to push out and then retract labels in demand modes, the extra movements slow the printing process. You can avoid this by adjusting the form so that the bar code appears early enough on the form so that it will pass completely under the scanning beam during normal printing. This may involve rotating the form or moving the bar code to a different position on the form.

Bar Code Failures

The validator tells the printer to announce a fault condition in two situations:

•   if the validator detects a bad bar code

•   if the validator detects no bar code where it expects to find one.

How the printer reacts to these faults is determined by the printer's configuration settings, as described below.

Bad Bar Code Error Detection

The validator examines every bar code that passes under the scanning beam and sends an analysis report to the printer. If a bar code is reported to have failed to meet any of the acceptance criteria, an error condition is reported. How the printer then reacts is described in "Error Action" on page 62.

Missing Bar Code Error Detection

A bar code may print so poorly that the validator cannot detect it, and the printer does not receive an analysis report for the code. To catch this problem, the printer tracks the position of the last label printed and knows when it should have completely passed the scanning beam. It can then compare the number of bar code analysis reports it expected to the number it received. If the printer does not receive enough bar code reports, it enters an error condition. How the printer then reacts is described in "Error Action" on page 62.

The number of bar codes expected is determined one of two ways:

•   If "Auto" is selected for the "Number of Codes" parameter, and you are using LinePrinter Plus®, IGP®/PGL®, IGP Code V™, or IPDS™ graphics software, the printer compares the number of bar code commands it receives from the software to the number of analysis reports it receives from the validator.

- You can set the number of bar codes generated by a bitmapped image that the printer should expect per form by selecting a value in the "Number of Codes" parameter.

For more information on choosing a value for the "Number of Codes" parameter, see "Setting Number Of Bar Codes On A Form" on page 48.

Error Action

Whether the error stems from a bad or missing bar code, the printer response is the same. The printer response is determined by the "Validator Action" setting in the VALIDATOR menu:

1. Press ⫶☰ to take the printer offline and place the printer in Menu mode.

2. If necessary, press ↓ and ↵ at the same time to unlock the ↵ key.

3. If necessary, press ⫶☰ until "VALIDATOR" displays.

4. Press ↓ until "Validator Action" displays.

5. Press **+** or **–** to scroll through the choices:

   - **Stop**

   - **Overstrike**

   - **Retry Form** (default)

   These options are described in detail below.

6. Press ↵ to select the desired value.

7. Press ↓ and ↵ at the same time to lock the ↵ key, then press **PAUSE** to take the printer offline.

8. Press **PAUSE** again to put the printer online.

Stop

If the system detects a bar code failure, the print job stops, the printer status indicator lamp flashes, the alarm sounds, and the appropriate error message displays.

The printer remains in a fault condition until you press the PAUSE key. This clears the error message and takes the printer offline. You must correct any condition that may have caused the fault. When ready, the printer can be put back online and it will resume printing where it left off.

Overstrike

Use Overstrike mode when you want bad labels to be marked, but not reprinted (i.e., when using pre-numbered labels).

If the system detects a bar code failure, the print job stops, the printer status indicator lamp flashes, the alarm sounds, and the appropriate error message displays.

Without pausing, the printer then automatically reverses to the top of the form containing the failing bar code. It then prints an obliterating pattern over the form and any other forms partially printed prior to the physical stop. By default, the obliterating pattern is a grid of fine lines which clearly marks the label as bad but allows you to read what was originally printed.

In the VALIDATOR menu, the Overstrike Style options are: Grid, Grey, Checkerboard, or Error Type Msg.

NOTE: To see the error message printed on the bad label as the Overstrike Style, select the Error Type Msg option.

After the overstrike printing, the printer clears the error message and stops the alarm, then resumes normal printing at the point the job was stopped. The overprinted labels are lost and a separate print command is required to resend them from the host, if needed.

Retry Form

This mode is similar to the Overstrike mode, however, instead of resuming printing where the printer had left off, the printer will attempt to reprint the bad form.

NOTE: The number of times the printer will attempt to reprint the bad form is determined by the Num Retry setting. See "Num Retry" on page 52.

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The printer will stop, indicate an error, and overstrike as described above. Then it will skip a number of blank labels, depending on the setting for Skip Labels (see "Setting For Skip Labels" on page 51). It will then slew to the next top of a blank form and reprint the entire form that contained the bad bar code and any other forms that were perhaps interrupted by the error.

NOTE: Because of physical differences between the location of the print head and the scanning beam, it is likely that a second form will be started before the first form has finished being assessed. Therefore, the reprint operation will need to reprint more than just the form with the error.

If the printer has to reprint the same form five times in a row, the print job stops completely and behaves the same as in Stop mode.

Error Messages

The validator can detect a number of errors. When one of these errors occurs, the validator alerts the printer to perform the currently selected error action (see "Error Action" on page 62) and show the appropriate error message on the printer display. Validator error messages are explained in Table 4.

Table 4. Message List

Message	Explanation	Solution
Bar Code Improper Data Format	Data validation error: the bar code is not properly encoded. For example, a check sum is incorrect, a required number of characters is not met, or the required terminator characters are not included. This problem is almost always caused by incorrect form or host application design.	Fix the application so it sends data in the correct bar code format.

Table 4. Message List

Message	Explanation	Solution
Bar code quiet zone too small	Data validation error: the blank zone(s) left or right of the bar code is not big enough to meet the minimum requirement. Typically, this occurs in forms where bar codes are placed too close to other elements, the bar code is too close to an edge of the media, or the media's position is shifting. The minimum quiet zone on each end of the bar code should be ten times the minimum element width or 1/4 inch, whichever is greater. In addition, between bar codes, the validator requires a minimum distance of 20 times the minimum element width or 1/2 inch, whichever is greater.	1. Fix the application. 2. Disable Quiet Zone in the VALIDATOR menu.
Calibration warning	The validator has detected that it needs calibration. This message is a reminder and does not halt printing.	Press **PAUSE** to clear the message. Calibrate the validator. See "Calibration" on page 34.
Checksum Failure	The bar code data fails the checksum check or is missing the checksum digit.	Verify that the checksum digit exists in the bar code and that it is the correct value.

Table 4. Message List

Message	Explanation	Solution
Contrast too low Check media	Data validation error: the contrast between bars and spaces is not sufficient. This can be caused by too little heat in the thermal transfer or by use of colored media or ribbons.	Increase Print Intensity or reduce Print Speed in the QUICK SETUP menu or via host software, change media, or disable Symbol Contrast in the VALIDATOR menu.
Poor scanning Check heat&head	Data validation failure: decodeability. The difference between wide and narrow elements is too close for the validator to reliably discern. This usually indicates an improperly set heat/speed/ pressure combination or the loss of a printhead element.	1. Adjust Print Intensity and Print Speed in the QUICK SETUP menu or via host software. 2. Adjust the printhead pressure. (Refer to the *Quick Setup Guide* or *User's Manual.*)
Poor scanning Check media	Data validation failure: percent decode. The validator detected gross inconsistencies within the height of the bar code. These types of failures are likely attributed to large blemishes within the bar code, caused by ribbon wrinkle or debris on media.	1. Check for a wrinkled ribbon or debris on media. Roll wrinkled area onto take-up spindle. 2. Adjust the printhead pressure blocks. (Refer to the *Quick Setup Guide* or *User's Manual.*)

Table 4. Message List

Message	Explanation	Solution
Poor scanning Inspect head	Data validation failure: hardware defect. The validator detected unexpected dark spots in spaces or light spots in bars. This usually indicates a poor ribbon/media combination, a dirty printhead, or a burned pixel.	1. Check that paper and ribbon are clean, unwrinkled, and installed correctly. 2. Clean the printhead. 3. If message reappears, replace the printhead.
Speed Exceeds Validator Limit	Print Speed is set above 6 IPS as the Power-Up configuration with the validator option installed. An attempt was made to set Print Speed above 6 IPS in the QUICK SETUP menu or via host software.	Change Print Speed in the QUICK SETUP menu or via host software to 6 IPS or less when using the validator option and save the new value as the Power-Up configuration in the CONFIG CTRL menu.

Table 4. Message List

Message	Explanation	Solution
Unscannable code check media	Data validation error: missing bar code. An expected bar code is missing or was printed so poorly that the validator cannot detect it.	1. Check that paper and ribbon are clean, unwrinkled, and installed correctly. 2. Run a print job and check that the validator beam is not obstructed; remove obstructions as necessary. 3. Run a print job and check that the READ LED flashes as bar codes exit the printer. If the READ LED does not flash, cycle power and run the job again. If the READ LED does not flash, inspect the cables and the cable connections. If the cables are undamaged and the connections are good, replace the validator. 4. Press **PAUSE** to clear the message. 5. In the VALIDATOR menu, press ↓ until "Clear Data" displays, then press ↵.
Validator not communicating	The Validator Funct. = Enable in the VALIDATOR menu, but when the printer was first powered up it could not communicate with it.	Check that the validator signal cable is securely connected to the validator unit.

Troubleshooting

If you are having problems with the validator, consult Table 5 for a list of symptoms and possible solutions.

Table 5. Troubleshooting the Validator

Symptom	Solution
The scanning beam does not come on.	1. Make sure the power/data cable is plugged into the validator and the controller board on the printer. See "Installation" on page 15. 2. Make sure the validator has not been disabled in the VALIDATOR menu. See "Enabling And Disabling The Validator" on page 43. 3. Print a bar code validation demo page (page 36). 4. Call your service representative if the problem persists.
The scanning beam does not cover the entire width of the labels being printed.	1. Adjust the validator along the length of the lower bracket so that the scanning beam covers the complete width of labels printed. See "Installation" on page 15. 2. Use "Beam Shift" to move the beam horizontally to cover the entire width of the labels. See "Shifting The Scanning Beam" on page 33.
Printing 3 mil or 5 mil x-dimension width bar codes constantly causes error messages.	The validator does not recognize x-dimensions as small as 3 mil or 5 mil. If you have to print bar codes this size, disable the validator to prevent error reports. See "Enabling And Disabling The Validator" on page 43.

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Table 5. Troubleshooting the Validator

Symptom	Solution
The printed labels look clean, but the validator is still reporting an error message.	The validator glass may be dirty, distorting the report results. Power down the printer and clean the glass using a household glass cleaner and a dry, lint-free cloth.
The printed bar codes are causing error conditions.	There are a number of factors which could be causing validation errors: • The scanning beam is not properly aligned with the two notches on the tear bar of the printer. See "Adjust The Scanning Beam" on page 28. • Make sure the entire bar code passes completely under the scanning beam. • The validator and printer are not properly communicating. Test the validator operation without using a host. See "Bar Code Validation Demo Page" on page 36. • Bar code width. The validator can recognize x-dimensions as narrow as 6.6 mil for 300 dpi printers, and 10 mil for 203 dpi printers. The validator cannot recognize x-dimensions smaller than 6.6 mil or larger than 40 mil. • Bar code size. A minimum height of 1/8 inch is required for validation. • Bar code type. The validator only recognizes the following linear, picket fence bar codes: Codabar, Code 39, Code 93, Code 128, Interleaved 2 of 5, and UPC/EAN + add-ons. Stacked, 2D, and vertical (ladder) bar codes are not supported.

Table 5. Troubleshooting the Validator

Symptom	Solution
	• Bar code spacing. The validator requires a minimum distance of 1/2 inch or 20 times the minimum element width, whichever is greater, between bar codes. • Printer speed. See "Print Speed Limits" on page 57. • Be sure the bar code is not printing on the extreme edges of the label. • Check the number of bar codes being validated concurrently. The validator can track the performance of up to four bar codes at one time.

Maintenance

WARNING   **Class 2 laser light. Do not stare into the laser beam or a reflected image of the laser beam.**

WARNING   **Using controls, making adjustments, or performing procedures other than those specified herein may result in hazardous radiation exposure.**

The validator is a self-contained unit that requires only periodic cleaning. Every so often, power down the printer and use a household glass cleaner and a dry, lint-free cloth to clean the glass.

If the problem with the printer is not fixed by one of these troubleshooting methods, call your authorized service representative or the Printronix Customer Solutions Center.

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Chapter 2 Maintenance

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