Pertech ®

A470e IMPACT VALIDATION PRINTER

Users Guide

220292A-03 3/06

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Web site

http://www.pertechresources.com/

Federal Communications Commission (FCC) Radio Frequency Interference Statement

Warning

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and , if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Information to the User

This equipment must be installed and used in strict accordance with the manufacturer's instructions. However, there is no guarantee that interference of radio communications will not occur in a particular commercial installation. If this equipment does cause interference, which can be determined by turning the equipment off and on , the user is encouraged to contact Pertech immediately.
Pertech is not responsible for any radio of television interference caused by unauthorized modification of this equipment, or the substitution of attachment or connection cables and equipment other than those specified by Pertech. The correction of interferences caused by such unauthorized modification, substitution or attachment will be the responsibility of the user.

Industry Canada

This Class A digital apparatus complies with Industry Canada Standard ICES-003.
Cet appareil numérique de la classe A est conforme à la norme NMB-003 d'Industrie Canada.

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Important Information to the User

In order to ensure compliance with the Product Safety, FCC, and CE marking requirements, you must use the power supply, power cord, and interface cable, which were shipped with this product or which meet the following parameters:

Power Supply

Input power to this product must be provided by one of the following:
(1) A NRTL Certified power source with a Limited Power Source.
(LPS) output for use in North America, input rated 100-240 Vac, 1.5 A, 50/60 Hz, output rated 24 Vdc at 2.5 A. Maximum and 60W Maximum, or
(2) A Power source with a Limited Power Source (LPS) output Certified by an agency recognized in the country of installation, input rated 100-240 Vac, 1.5 A, 50/60 Hz, output rated 24 Vdc at 2.5 A. Maximum and 60W Maximum.
Use of this product with a power supply other than the Pertech power supply will require you to test this power supply and Pertech printer for FCC and CE mark certification.

Interface Cable

A shielded (360 degree) interface cable must be used with this product. The shield must be connected to the frame or earth ground connection or earth ground reference at EACH end of the cable.
Use of a cable other than described here will require that you test this cable with the Pertech printer and your system for FCC and CE mark certification.

Power Cord

For North America a NRTL recognized detachable power cord must be used. For applications where the power supply module may be located on the floor, or, a power cord with Type SJT marking must be used.
For applications outside North America, power cords which meet the country of installation's certification and application requirements must be used.
Use of a power cord other than described here may result in a violation of safety certifications which are in force in the country of use.

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Preface

This manual has been written to help you install, operate and maintain your new Pertech A470e Printer. Feel free to contact us if you need further assistance after reading this manual. Please see the Troubleshooting Printer Problems section of this manual and determine the complete part number of your printer prior to calling. Pertech provides technical support Monday through Friday from 8:00 AM to 5:00 PM MST at 307-856-4821.

Every effort has been made to insure the information in this manual is complete and accurate. Feel free to contact us with any comments concerning this manual. Pertech assumes no responsibility for errors.

Where to Get Additional information

The following publications contain more information about the A470e printer. Contact your Pertech sales representative to obtain additional copies of this Owners Manual or any of the publications listed below.

Title	Part Number
A470e Transaction Printer: Setup Guide	220291
A470e Transaction Printer: Users Guide	220292
A470e Transaction Printer: Parts Identification Manual	220293
A470e Transaction Printer: Programming Manuals:	
Native A470	220282
Advanced Command Language	220283
DO214	220284
ZC2979	220285
ZC5979	220286

Chapter 1: About the Printer

The A470e printer is a fast reliable printer designed to meet your immediate and long term needs.
Industry standard RS-232 and USB interfaces allow for connection to any host computer or terminal system .The A470e printer features a one button configuration setup with five compatibility modes for easy integration into existing systems.
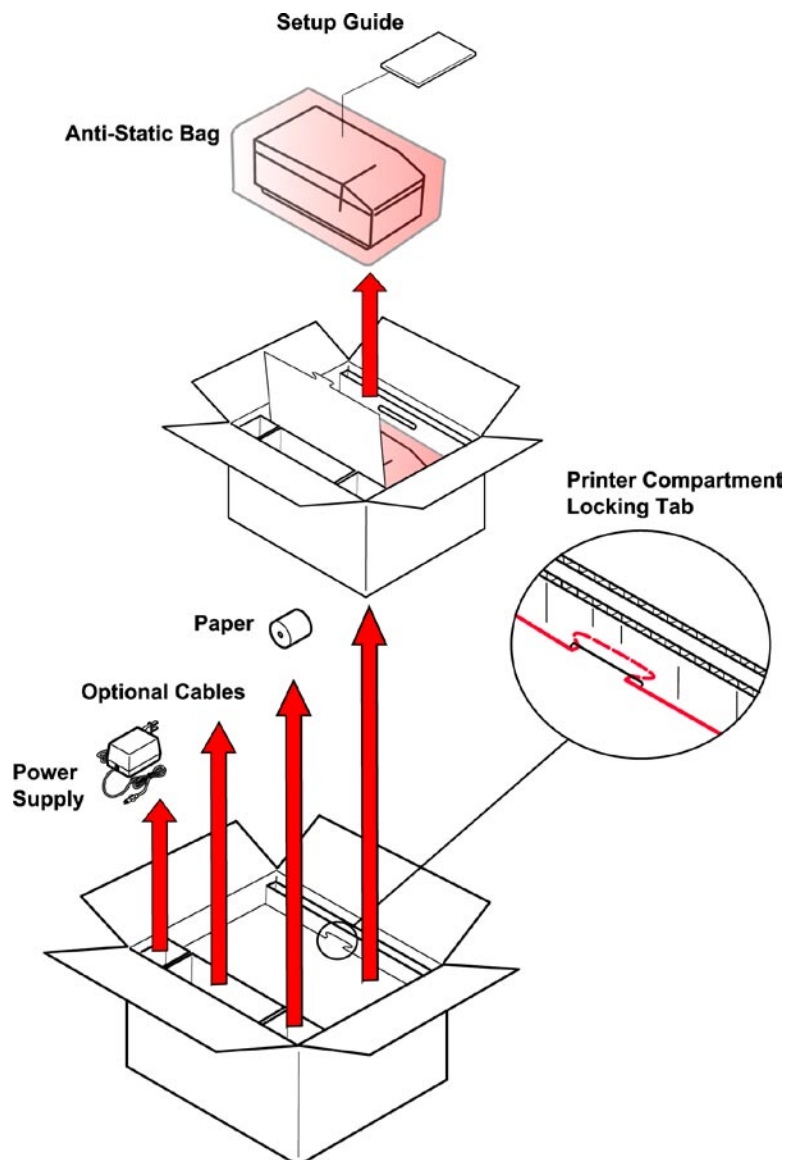
When you receive your new A470e printer it will be packed in impact resistant foam packing. Remove the foam packing and anti static bag from the printer. The printer comes with a auto ranging power supply and the setup guide. This Users Guide is available at www.pertechresources.com under Service Support \ Downloads fo this product.

Features and Options

This manual covers several models and describes features and options which do not apply to all versions. Refer to the model list below to determine which features your printer supports.

Standard Features:

Interfaces	RS-232 DB9 Serial, USB.
Memory/Firmware	Flash Memory.
Resident Character Sets	A470 PCL; US, UK, French, German, Italian, Spain I
Dual Cash Drawer	Connectors for two Cash Drawers.
Paper Low Sensor	Status (LED) indicator on front of printer.
Form In Sensor	Slip In (LED) indicator on front of printer.
One Button Setup	No dip switches, access to printer settings through one button configuration menu.

Model specific features:

MODEL	REWIND	RECEIPT	VALIDATION	FEED TYPE *	CASE SIZE
4810	Y	Y	N	-	LONG 11.54"
4811	Y	Y	Y	I	LONG 11.54"
4812	Y	Y	Y	C	LONG 11.54"
4870	N	Y	N	-	SHORT 8.3"
4871	N	Y	Y	I	SHORT 8.3"
4872	N	Y	Y	C	SHORT 8.3"
4874	N	N	Y	-	SHORT 8.3"

* FEED TYPE:

I - Independent feed printers provide **either** roll paper **or** validation media feed at any given time depending on which print mode has been selected. This feature saves roll paper media during validation printing.

C - Concurrent feed printers provide **both** roll paper **and** validation media feed at the same time. This feature provides a roll paper copy of the printed validation message when self-contained roll paper is used. Validation media is not required for normal roll paper printing.

V - Validation only printers do not support roll paper printing functions.

Ordering Paper and Supplies

The following section lists the paper and supplies available for order. In addition to paper and ribbons, parts, service and repair may be obtained by calling **800-800-6614.**

Paper:

Paper Ply	Part Number
One	103292016
Two	103292017
Three	103292021

Ribbons:

Description	Part Number
Standard Life Ribbon	
Purple ink	105109001
Black Ink	105109002
Long Life Ribbon	
Purple Ink	105109008
Black ink	105109006
Purple Ink -- Black Case	105108001
Black ink -- Black Case	105108002

Cables

Description	Part Number
RS232 DB9F TO DB9F Serial	106356010
USB	106356011

Documentation:

Title	Part Number
A470e Transaction Printer: Setup Guide	220291
A470e Transaction Printer: Users Guide	220292
A470e Transaction Printer: Parts Identification Manual	220293
A470e Transaction Printer: Programming Manuals:	
Native A470	220282
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ZC5979.	220286

Chapter 2: Operating the Printer

This chapter describes the printer controls and provides procedures for loading Paper and Ribbons . Additionally, the adjustment procedures for setting the Air Gap, Document Stop and Low Paper Sensor are provided,

Using the Controls
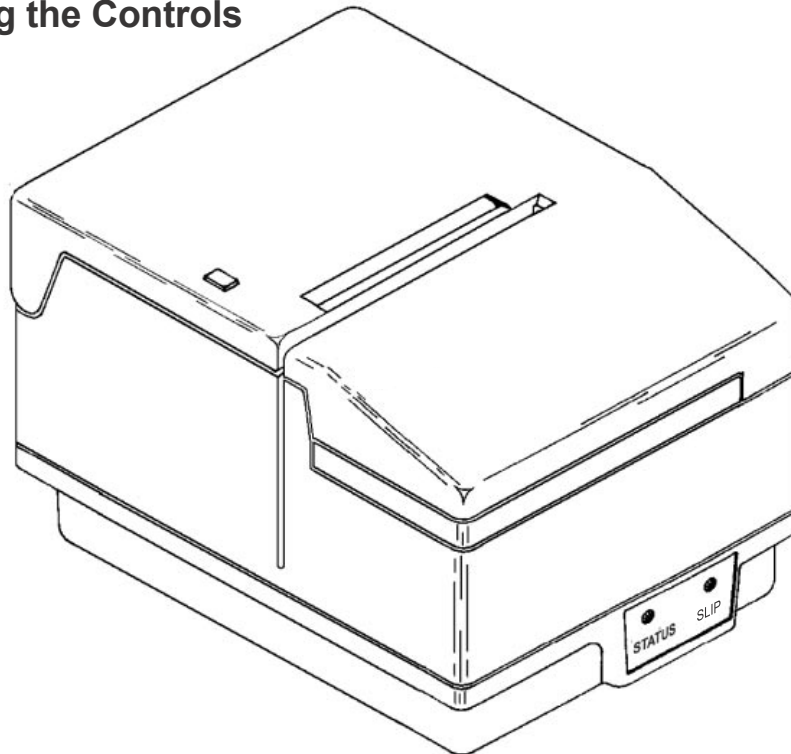
The A470e printer includes the following controls:
Paper feed button used to advance paper
Power switch used to turn the printer on and off

The A470e also includes a Slow Down mode which prevents damage to the printer by reducing the print speed during long periods of continuous printing. The printhead automatically returns to normal speed when usage returns to normal. Do not cycle the printer power or Reset the printer while in Slow Down mode or damage could result.

Paper Loading

Roll paper must be 3.25 inches wide with a maximum diameter of 3.5 inches. Receipt / Journal printers can accommodate 1, 2 or 3 ply paper. Paper and other printer consumables may be purchased from Pertech by calling **1-800-800-6614**.

To load paper the power must be turned ON. Refer to the pictorial paper loading instructions in the lid of the printer. Specific steps may vary depending on the printer configuration. Follow the instructions on this page for model 487x printers. Use the following page for 481x models.

Failure to load paper correctly may result in a paper jam.
To remove paper that has jammed, it is advisable to:
1) Tear off any paper that fed out of the top of the mechanism
2) Press downward on the metal release bracket
3) While pulling the remaining paper out of the mechanism backwards

487X Paper Loading Instructions

1 Raise cover and remove the spent roll. Insert the new roll so the paper exits from the bottom of the roll

2 Insert the leading edge of the paper into the roller on the black block.

3 Press and hold downward on the green paper loading button...

4 ... Until six inches of paper exits from the mechanism.

5 Insert the paper through the receipt slot and lower the cover

481X Paper Loading Instructions

1. Raise cover and remove the spent roll. Flip the green paper loading chute to the raised position.

2. Install the new roll so the paper exits from the bottom of the roll.

3. Insert the leading edge of the paper into the green loading chute.

4. Press and hold downward on the green paper loading button ...

5. ... Until one foot of paper exits from the mechanism

6. Flip the green paper loading chute to the lowered position.

7. Separate the paper plies if more than one ply is used.

8. Fold and insert the leading edge of the back ply into the rewind spool slot. Rotate as shown to wind up slack.

9. Replace the rewind spool in the printer and snap into place.

10. Insert the receipt ply through the receipt slot and lower the cover.

Ribbon Cartridge Replacement

To replace the ribbon raise the printer cover. Leave the printer power on. Press on the Ribbon Interlock Tab and ribbon will disengage from the innerframe. Lift the old Ribbon Cartridge up and out of the printer and discard. Remove new cartridge from the plastic bag and rotate the advance tab until all slack is removed. Align the new cartridge so the exposed ribbon is between the printhead guide and the first silver roller. Lower the cartridge into place. Do not turn the advance tab after the cartridge has been installed. Close the printer cover.
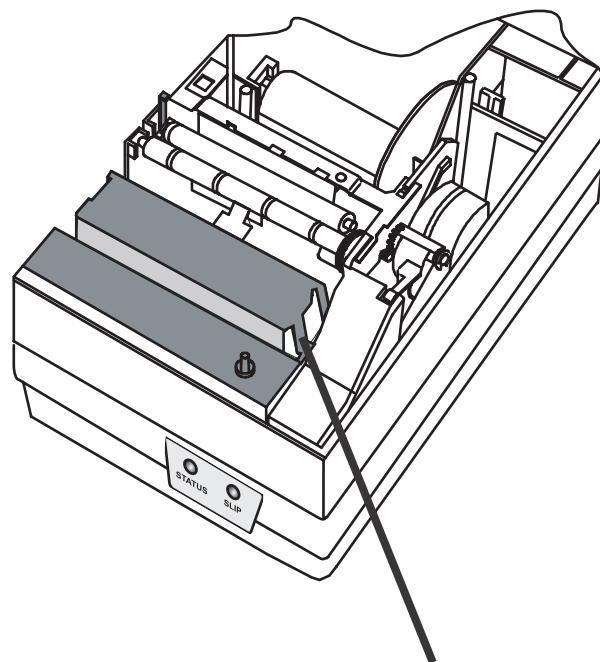
Ribbon Interlock Tab

CAUTION: METAL SURFACES OF PRINTHEAD MAY BE HOT - AVOID CONTACT! Call 1-800-800-6614 to order replacement ribbon cartridges.

Validation

A Validation Form can be inserted from the top or top and left once the clamp has opened. The printer will automatically clamp the form when it has been detected. Wait until the printer has finished printing and released the form prior to removal.

Adjustable Features

Air Gap Adjustment

The air gap may need adjustment if 3 ply roll paper is used. If adjustment is required it will be evidenced by ink smudge on a Self Test printout. Most 3 ply paper can be accommodated by turning the 2 adjustment screws clockwise 1/8 of a turn.
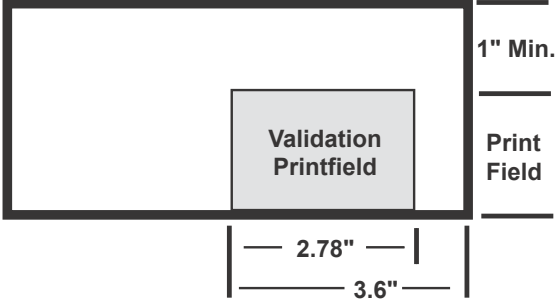
CAUTION: Metal surfaces of printhead may be hot - avoid contact! The air gap is the distance between the print head and the print bar. This space must be large enough to accommodate the ribbon material and the print media. Too great an air gap will cause light print or missing dots and too small an air gap will produce ink smudge on the media. The air gap can be changed by turning the 5/64 hex socket drive screws near each end of the print bar. These screws are visible once the cover is raised and the ribbon cartridge is removed. Clockwise adjustment will increase the air gap and counter-clockwise adjustment will decrease the air gap.
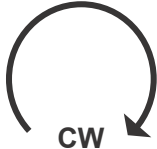
5/64 Adjustment Screws
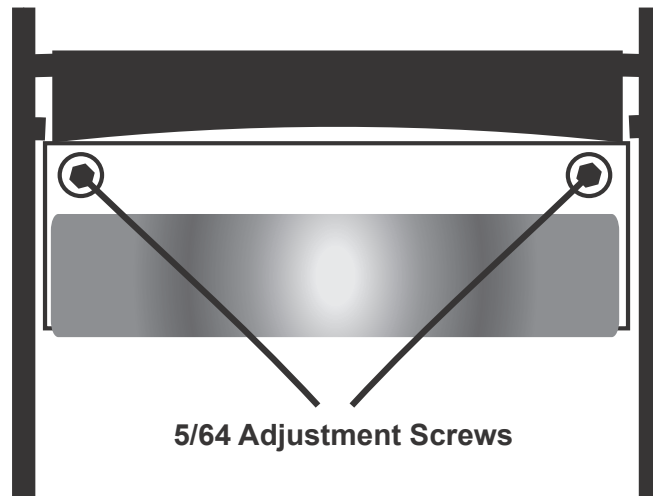
Document Stop Adjustment

The Document Stop limits the depth an inserted form can be placed into the Validation Slot. This defines the validation printfield height. Printers are manufactured with the maximum printfield setting of 2.16 inches but the dimension can be reduced to 1.44 inches by turning a slotted screw in the bottom of the printer case counter-clockwise (CCW). Each CCW revolution raises the document stop and decreases the printfield height 1/32" (.03125") or .79375 mm. DO NOT ATTEMPT TO ADJUST THE DOCUMENT STOP OUTSIDE THE PRESCRIBED LIMITS OR DAMAGE TO THE PRINTER COULD RESULT. The validation form must be at least 1 inch taller than the selected printfield.
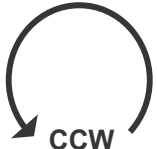
Printfield Height

Ccw Rev	Inches	Mm
0	2.16	54.9
1	2.13	54.1
2	2.10	53.3
3	2.07	52.5
4	2.04	51.7
5	2.00	50.9
6	1.97	50.1
7	1.94	49.3
8	1.91	48.5
9	1.88	47.7
10	1.85	46.9
11	1.82	46.1
12	1.79	45.3
13	1.75	44.5
14	1.72	43.8
15	1.69	43.0
16	1.66	42.2
17	1.63	41.4
18	1.60	40.6
19	1.57	39.8
20	1.54	39.
21	1.50	38.2
22	1.47	37.4
23	1.44	36.6

Validation Printfield

1" Min.

Print Field

2.78"

3.6"

Clockwise rotating lowers the document stop and increases the print field.

CW

Counter clockwise rotation raises the document stop and decreases the print field.

CCW

Verification of the desired document stop setting can be made by printing a Configuration Report Self Test on validation media and measuring the printfield. A Configuration Report Self Test is initialized by turning the printer power off, pressing and holding the Paper Feed Button, inserting a form into the printer and turning the power back on. The validation rollers can be opened manually by raising the printer cover and pressing downward on the yellow sector gear if the printer will not accept a form. The printfield dimension is measured from the top of the first line of print to the bottom of the form.

Low Paper Sensor Adjustment
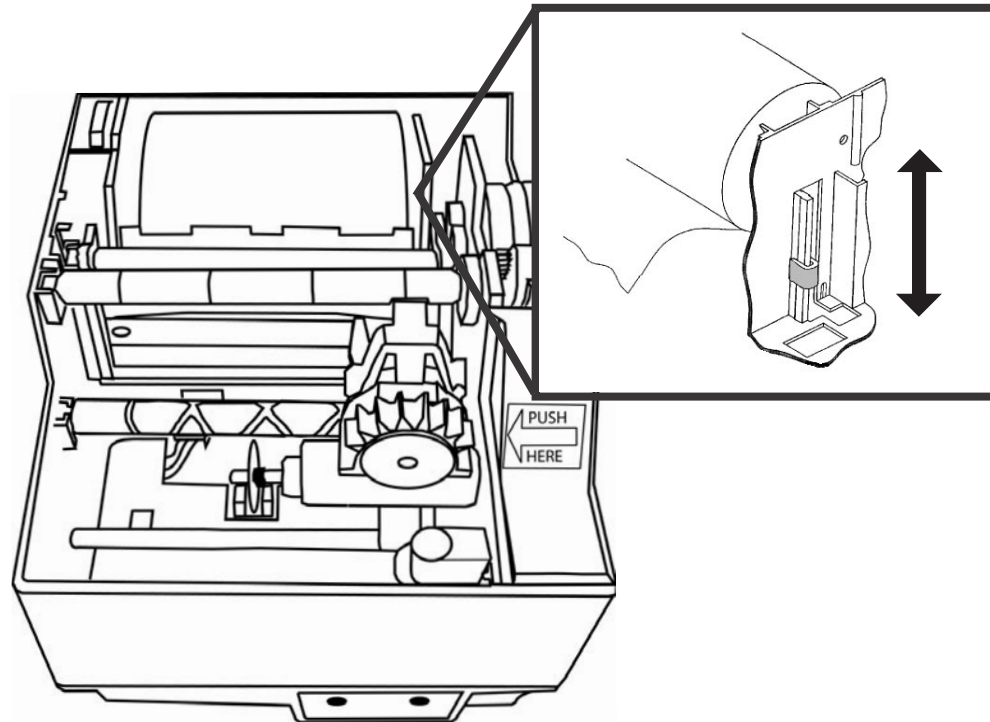
The Low Paper Sensor is located on the inner-frame to the right side of the paper roll.
This sensor is a reflective optical device that can be adjusted to accommodate various roll core
diameters and quantities of paper present when low paper indication occurs. The sensor mounts
on a friction bracket and can be adjusted up or down. Lowering the bracket will cause the low
paper indication to occur earlier and raising the bracket will cause the low paper indication to
occur later.

Caution! The Low Paper Sensor will be disabled if the bracket is raised enough to "see" the
paper roll core.

Maintaining The Printer

There is no customer maintenance required for the A470e printer, however, you may occasionally clean lint and paper dust out of the mechanism using low pressure canned air. It is recommended that this is done on a regular basis, such as after every ribbon change. Clean the cabinet as needed to remove finger marks and dust. Use any household cleaner designed for plastics, but test it first on a small, unseen area. The cabinet finish and materials are durable and resistant to the following:

     Cleaning Solutions
     Lubricants
     Fuels
     Cooking Oils
     Ultraviolet Lights

Caution: Do not spray or try to clean the printhead or the inside of the printer with any kind of cleaner. This may damage the printhead or the electronics.

Printers gather paper dust and other debris through normal use. Continued accumulation will eventually prevent operation of the printer. A preventive maintenance program can help reduce unnecessary failures and downtime. Pertech can offer a regular service program to meet your needs. For more information call 800-800-6614.

Chapter 3: Print Tests and Setup Mode

Two reports are available:
Configuration Report : Includes read and write tests of internal RAM; and a printed report listing the serial number, firmware, control language, font, serial parameters, USB, hardware settings, memory information, tallies, and the printer compatibility mode.

Extended Self Test: Checks printhead pin firing, vertical line adjustment, fonts, validation clamp, pitches and character sets.

Printer Configuration Mode can be entered after the Configuration Report is printed. The Configuration Mode offers a variety of optional settings for the printer. See Configuration Mode later in this chapter.

Configuration Report

The A470e produces a printout listing the current configuration settings. A sample printout is included on the following page. Receipt and Receipt/Journal printers will print a Configuration Report if the Paper Advance Button on the top cover is depressed and held while the printer power is turned ON.

Validation printers will print a Configuration Report if the Paper Advance Button is pressed and held down when the printer is powered on. It will take several inserted forms to print the entire Configuration Report.

To print the configuration report, complete the following steps.

1. If necessary turn the printer off.

2. Press and hold the Paper Feed Button and then press the Power Button to the ON position. Release the Paper Feed Button when the Slip LED begins flashing. The printer will begin to print the Configuration Report.

3. If you want to change the configuration settings or run the Extended Self Test , when prompted press the Paper Feed Button, otherwise, wait ten seconds for the printer to return to normal operation.

```
Serial Number:          ********
Main Firmware
   Revision:            * ** ***
   CRC                  ****
Boot Firmware
   Revision:            * ** ***
   CRC                  ****


Printer Control Language
   PCL:                 A470 Language
   Diag Mode:           Standard Print
   Auto LF:             CR=CR

Font:
   Char/Line:           40
   Intl Char Set:       USA
   Code Page:           437 USA
   Receipt LPI:         6 Lines Per Inch
   Validation LPI       6 Lines Per Inch

RS232 Serial (when used)
   Baud Rate:           9600
   Data Bits:           8 Bits
   Stop Bits:           1
   Parity:              None
   Flow Control:        Hardware

USB (when used)
   Descriptor:          Model Number

Hardware
   Mechanism Model:     A470e-48X1
   LED Usage:           Status/Slip
   Validation Clamp:    Closed
   Paper Low Sensor:    Enabled
   Paper Out Sensor:    Disabled
   Paper Low Stop Print:  Disabled

Memory
   Installed RAM:             128K
   Installed ROM:             512K
   Logo/Font Storage:         128K

Tallies
   Printed Lines:             xxxxxx
   Hours On;                  xxxxxx
   Flash Updates:             xxxxxx
   Cover Opens:               xxxxxx


Diagnostic:
     0    0     0

   ================================
   Press paper feed to change configuration



              SET-UP INSTRUCTIONS
```

PRESSING THE PAPER FEED BUTTON WHILE
THE GREEN LIGHT IS FLASHING WILL REJECT
THE LAST PRINTED PARAMETER. IF THE BUT-
TON IS NOT PRESSED WITHIN 5 SECONDS. THE
PARAMETER WILL BE ACCEPTED AND THE NEXT
SET-UP OPTION WILL BE LISTED.

PRESS THE PAPER FEED BUTTON NOW TO
REJECT THE CURRENT CONFIGURATION AND
CONTINUE WITH THE PRINTER SET-UP.

Configuration Mode

For journal and receipt printers, at the completion of the Configuration Report, the printer will allow access to the Configuration Mode. Validation only printers will need to be configured through the use of Command Codes. To enter the Configuration Mode press the Paper Feed Button within 10 seconds. If the button is not pressed within this time limit, the printer will resume normal operation. When the printer is in the Configuration Mode each configuration option will be printed and the user will have 10 seconds to either change that option or to continue on to the next option. Changes are made by pressing the Paper Feed Button. After the user has completed the configuration the printer will print out its new configuration and return to normal operation.

The first option for each available option is the default setting. Some options are only available for specific Control Languages.

Printer configuration options:

Printer Control Language:

PCL:
- A470 Language
- ACL Mode(Advanced Command Language)
- Mode 1 (DO214)
- Mode 2 (ZC2979)
- Mode 3 (ZC5979)

Diagnostic Mode:
- Standard Print
- Hex Dump

Auto line feed:
- CR=CR + LF (Line Feed)
- CR =CR (Carriage Return)

ACK on CR (ZC5979 Only)
- Enabled
- Disabled)

Soft Fault Recover (ACL Mode Only).
- Host Controlled
- Automatic

Font:

Font:
  All Modes Except A470: Standard , Compressed , Expanded
  A470 Mode: 40 , 33 , 36 , 44 , 50 , 57 , 66

Intl Char Set: (Available Character Sets Vary with Control Language .)
  USA , UK , German , French , Italian , Spain I , Hebrew,
  Denmark I, Sweden, Japan, Norway, Denmark II

Code Page:
  437-USA , 850 Latin I , 860 Portuguese , 863 Canadian-French
  865 Nordic , Katakana, 858 Latin I + Euro, 1252 Latin I.

Receipt LPI: 6 , 5 , 7 , 8
Validation LPI: 6 , 5 , 7 , 8

RS232 Serial (when used)

Baud: 38.4K , 19.2K , 9600 , 4800 , 2400 , 1200

Data Rate: 8-bits

Stop Bits: 1-Bit, 2-BIT

Parity: None , Even , Odd

Flow Control: Hardware, Busy Handshaking: If the Serial interface
is used the following busy handshake options are available:
Software =XON/XOFF, Hardware =(DTR/DSR).

USB (when used)
Descriptor: Serial Number, Model Number

Hardware

Mechanism Model:

A470E-48X1	Independent Validate
A470E-48X0	Receipt Only
A470E-4812	Concurrent Validate With Rewind
A470E-4872	Concurrent Validate
A470E-4874	Validate Only

The Mechanism Model Option is Not Selectable in Configuration Mode.
Setup for this option is done via Command Codes. Setting the mechanism model incorrectly could result in damage to the printer.
Please contact your Pertech service representative if you are unsure of the model your printer should be set to.

LED Usage
  Status / Slip
  Power / Paper Low

Validation Clamp: (A470 Mode Only).
  Closed
  Open

Form Insert Wait (ACL Mode Only):
  0-15 Minute

Paper Low Sensor:
  Enabled
  Disabled

Paper Out Sensor
  Disabled
  Equals Paper Low
  Virtual Paper Out
    2FT   4FT   6FT   8FT   10FT   12FT

Extended Self Test

At the completion of the Configuration Report Self Test, the printer will prompt for access to the Configuration Mode, let the option for the Configuration Mode expire. The printer will then prompt for the Extended Self Test. To begin the Extended Self Test press the Paper Feed Button within 10 seconds. If the button is not pressed within this time limit, the printer will resume normal operation.
The Extended Self Test performs a printhead pin firing test, character drop test, checks the vertical line adjustments, fonts, validation clamp, pitches and character sets.

Chapter 4: Communication

The A470e comes with two communication interfaces, RS-232 Serial or USB. Additionally, the printer is configured with dual cash drawer ports and a 3 Pin Mini-Din power coupling. The RS-232 interface connector is a DB-9 Male connector and requires a Null Modem Serial cable for standard PC to printer connections. The USB is a Standard Version 1.1 compatible interface. Two RJ-11 ports provide a unique cash drawer Interface, capable of running two cash drawers. All connectors are located on the back of the printer in the order listed below.

3 Pin Mini-Din Power Connector   **RJ-11 Cash Drawer Connector**   **DB9 Male Serial Connector**   **USB Connector**
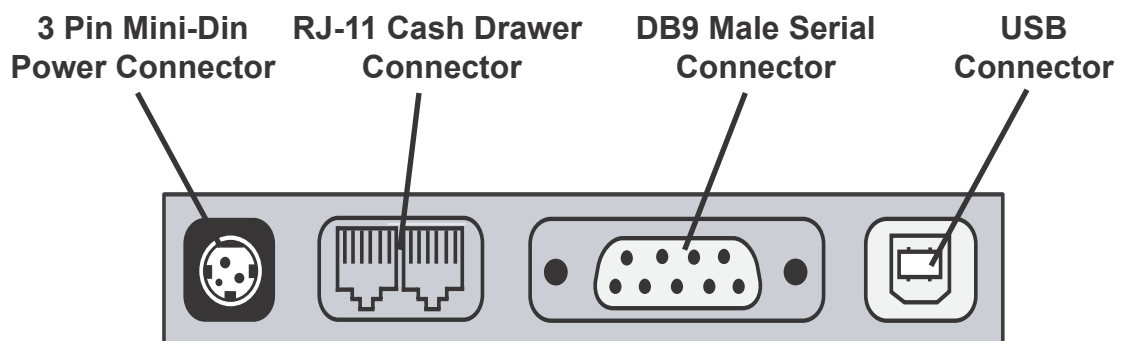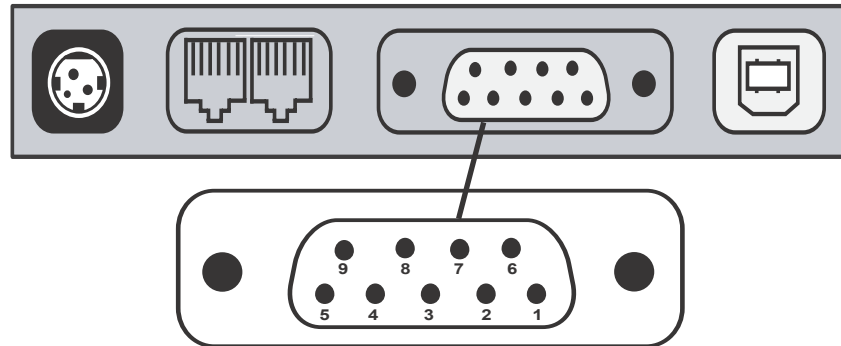
Warning: use of incompatible cables will damage the printer and will void the warranty. When purchasing a cash drawer for this product please make sure the vendor is aware of the product specifications. This Cash Drawer Pinout is unique to Pertech Resources A470 / DH Technology 4700 series printers.

RS232 Serial Interface

The A470e printer serial interface has a DB9 Pin Male connector. The cable must be Null Modem Serial for standard PC communications compatibility. The Baud Rate and Parity and Flow Control are selectable through Command Codes or via the Configuration Mode. The settings for the port on the PC must be configured the same as the printer or communication will fail.

Serial Interface Pinout

Printer		Computer
DB-9M		**DB-9M**
Pin		**Pin**
1 N/C		1 N/C
2.RXD	←	3
3 TXD	→	2
4 DTR	→	6
5 SIG. GND.	←	5
6 DSR	←	4
(TTL FORM IN)	→	
7 RTS	→	8
8 CTS	←	7
(TTL LOW PAPER)	→	
9. N/C		N/C

DB9F to DB9F Serial Interface Cable Pertech Part Number 106356010
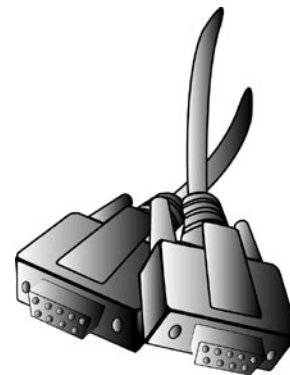
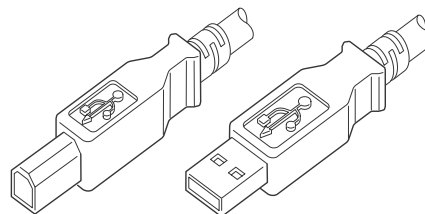## Flow Control

The RS-232 interface uses either XON/XOFF(Software) or DTR/DSR(Hardware) protocol. This is set in the Configuration Mode under the serial interface selections for Flow Control for XON/XOFF, a particular character is sent back and forth between the host computer and the printer to regulate the communication. For DTR/DSR, changes in the DTR/DSR signal coordinate the information flow.

USB Interface

The USB interface is compatible with USB 2.0 Specification. Using the USB interface with the printer requires that you have USB drivers installed. The USB driver is installed automatically by most standard operating systems.

The USB cable may be attached or detached when the system is on. When Using the USB interface the Windows® Operating System will automatically install the USB port driver. Pertech has available printer drivers at www.pertechresources.com.
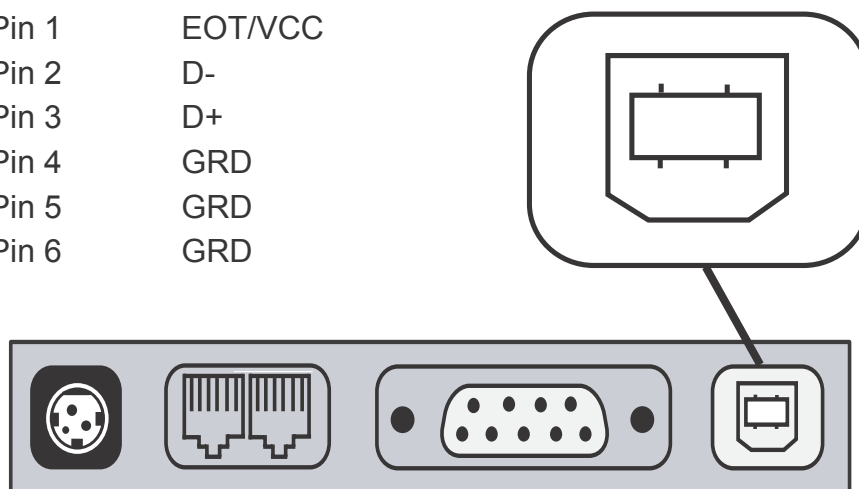
Warning: When Hot Swapping USB cable make sure that cable is installed into the correct connectors or damage to the printer could result.
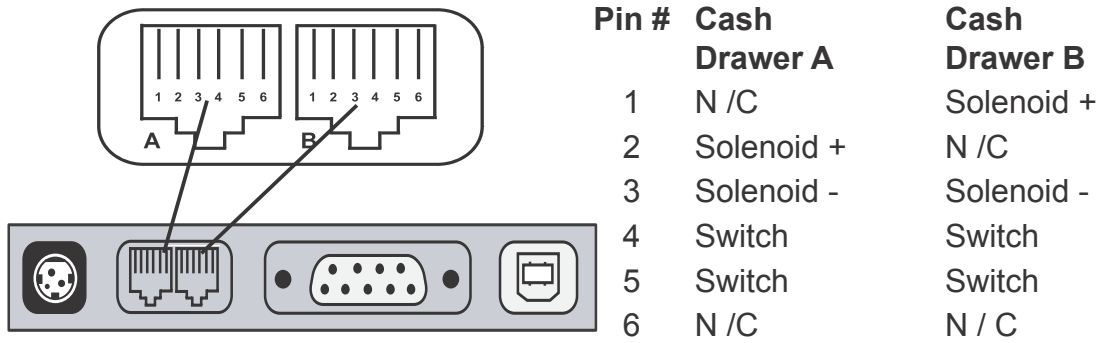
Printer end of USB Cable   Computer end of USB Cable

USB Cable Part Number 106356011

USB Interface Cable PinOut

Pin 1	EOT/VCC
Pin 2	D-
Pin 3	D+
Pin 4	GRD
Pin 5	GRD
Pin 6	GRD

Cash Drawer

Each cash drawer driver will source 24 volts for 75 ms to the "solenoid +" pin of the appropriate RJ-11 jack when the proper cash drawer command is executed. The cash drawer command must be preceded by a line terminator. The command for the cash drawer may vary for the Compatibility Mode selected.

Pin #	Cash Drawer A	Cash Drawer B
1	N /C	Solenoid +
2	Solenoid +	N /C
3	Solenoid -	Solenoid -
4	Switch	Switch
5	Switch	Switch
6	N /C	N / C

Advanced Command Language Cash Drawer Command

Immediate Peripheral

ASCII	Hex	Decimal
DLE DC4	10 14	16 20

s m n

s: Peripheral Select
m: Peripheral On Time
n: Peripheral Off Time

Immediately generates a pulse of (m x 2 msec) followed by an off time of (n x 2 msec) on the peripheral output. If s = 00, the first peripheral on pin 2 is activated and if s =01, the second peripheral on pin 1 is activated.
Off Time should be set so that it is greater than or equal to On Time.

Buffered Peripheral Pulse

ASCII	Hex	Decimal
ESC p	1B 70	27 112

s m n

s: Peripheral Select
m: Peripheral On Time
n: Peripheral Off Time

Generates a pulse of (m x 2 msec) followed by an off time of (n x 2 msec) on the peripheral output. If s = 00, the first peripheral on pin 2 is activated and if s =01, the second peripheral on pin 1 is activated.
Off Time should be set so that it is greater than or equal to On Time.

A470 Command Language Cash Drawer Commands

Synopsis	ASCII	Hex	Decimal
Cash Drawer "A"	ESC BEL	1B 07	27 7
Cash Drawer "B"	ESC BS	1B 08	27 8

Warning: This Printer is designed for use only with Pertech Resources A470 / DH Technology 4700 compatible cash drawers. Damage can result if the A470e is connected to a cash drawer that is incompatible. The cash drawer solenoid resistance must be at least 25 ohms or damage to the printer could result.

Power Supply

The A470e printer uses a NTRL Certified external switching power source with a Limited Power Source (LPS) output for use in North America, input 100-240 Vac, 50/60 Hz, 1.5 A, with a maximum power consumption of 60 watts, output is rated at 24 Vdc,2.5A.

The following illustration shows the power cable connector and the pin assignments. The power cable connector is a 3 pin Mini-Din plug and is located at the back or the printer.
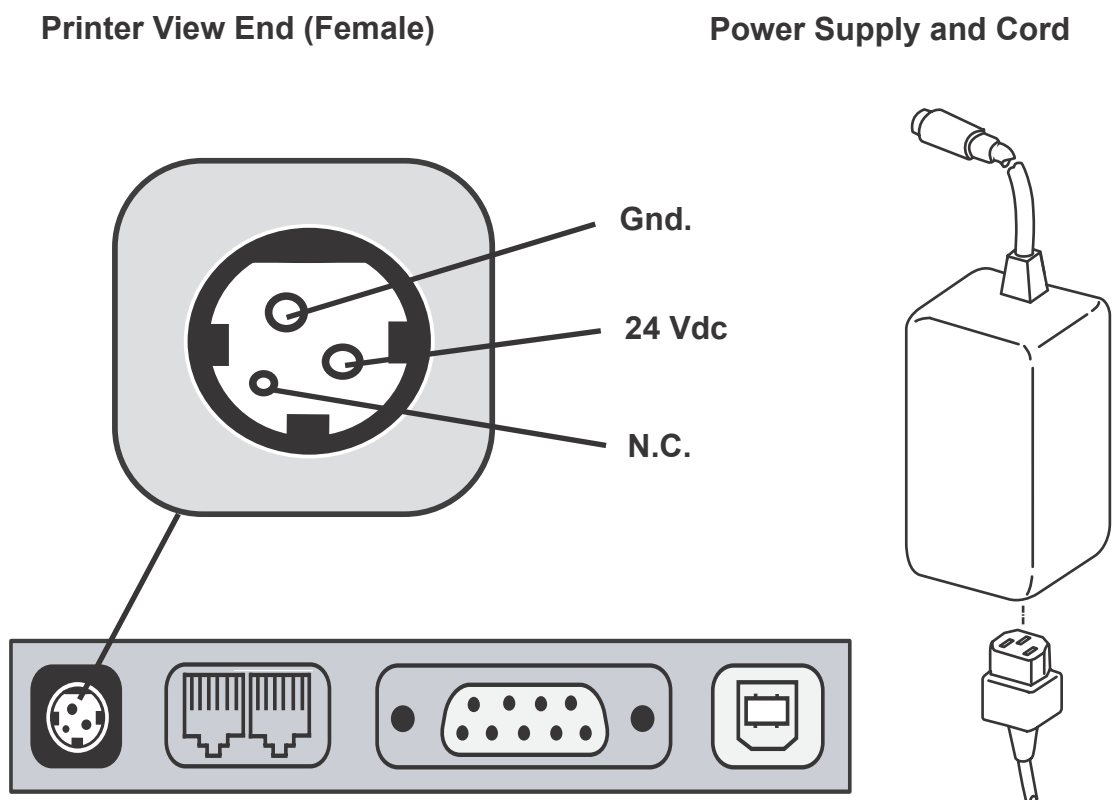
Printer View End (Female)   **Power Supply and Cord**

Gnd.

24 Vdc

N.C.

Use of this product with a power supply other than the Pertech power supply will require you to test this power supply and Pertech printer for FCC and CE mark Certifications. (See FCC Radio Frequency Interference Statement on page iii of this manual).

Chapter 5: Trouble Shooting Printer Problems

Trouble Shooting General Issues

Following are symptoms your printer may exhibit and simple solutions the printer operator could implement.

• Printer failed to print after the roll paper was replaced.
    The top cover must be closed for the printer to print.

• The power switch is turned ON but the printer is dead. The Green Status light is Off.
    Make sure the outlet has power and the power cord is plugged into the
    back of the printer.

• The printer will print a Configuration Report but will not respond to the system commands.
    Check to see that the interface cable is connected to the back
    of the terminal/ PC, and to the back of the printer.

• Printer prints too light to read easily.
    Replace the ribbon cartridge and check the Air Gap adjustment. See Chapter 2 Operating the Printer \
    Adjustable Features \ Air Gap Adjustment.
    Call 1-800-800-6614 to order new Ribbon Cartridge's'.

• Flashing Red Status LED indicator.
    Lid open or paper is low/out.

• System reports low paper even though the roll is nearly new
    See Chapter 2 Operating the Printer \ Adjustable Features \ Low Paper Adjustment.

• Colored stripe on the receipt.
    Paper Low, adjust the paper low sensor, replace
    the paper. See Chapter 2 Operating the Printer \
    Adjustable Features \ Low Paper Adjustment..

Low Paper Sensor Adjustment
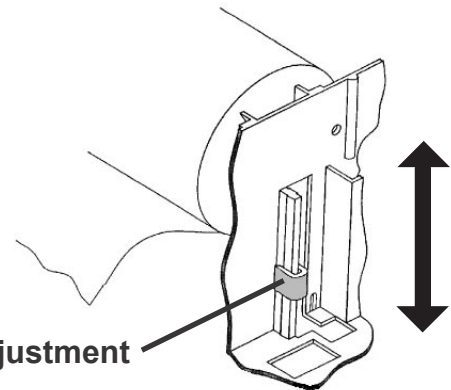
• Receipt does not come all the way out.
        Printer is jammed.

To remove paper that has jammed, it is
advisable to:
        1) Tear off any paper that fed out of
        the top of the mechanism
        2) Press downward on the metal
        release bracket
        3) While pulling the remaining
        paper out of the mechanism
        backwards

• Status light is Red (not Green) and printer will not respond.
        Remove the ribbon cartridge and paper roll. Using Low Pressure Canned Air spray out the
        areas around the three sensors. (See Illustration below).

• Printer prints when the Power is turned On even though the form is not inserted.
        Spray air in the validation slot and make sure no paper pieces are blocking the sensor.

Form In Sensor

There are three sensors in the
area directly under where the
Ribbon Cartridge is installed.
Check these to make sure that
they are free from dust and
debris. Reinstall the Ribbon
Cartridge and Paper. Close the
Lid and Print a Configuration
Report. If the Status Light
remains red see "Fault" later in
this chapter.

Margin Sensor

Motor Sensor
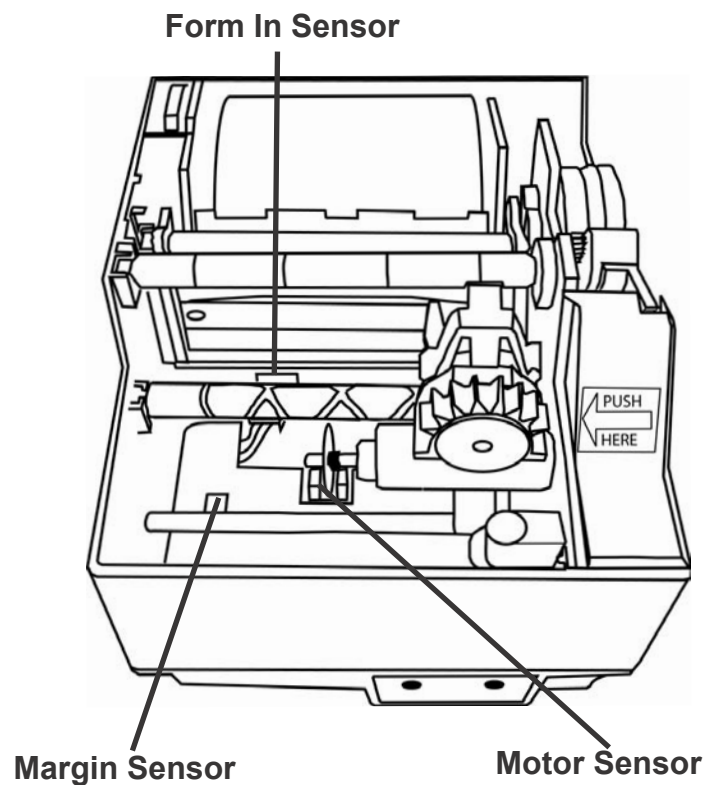
Trouble Shooting Other Issues

Fault Mode

The printer will enter a Fault Mode and will not operate when certain failure conditions are encountered. Confirmation of this condition can be accomplished by the host on the DTR (pin 8) or status with an RS-232 interface.

The color of the LEFT LED on the front panel of the printer will change from Green to Red if a fault condition is encountered. Depressing the paper feed button on the printer cover will cause the printer to enter diagnostic mode. This will cause the LED to flash a 3 bit code to define the specific reason the printer entered Fault Mode. The error code is followed by a delay before being repeated. The diagnostic code will toggle the DTR line and flash the Red LED if the RS-232 interface is selected.

STATUS SLIP

POWER LOW PAPER

STATUS SLIP
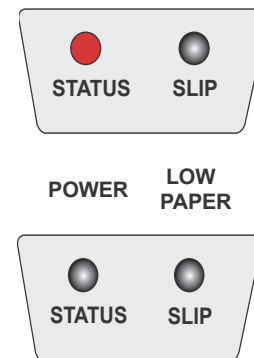
Error code				Diagnosed failure
● ● —	Short	Short	Long	No motor sensor signal
● — ●	Short	Long	Short	Ram test failure
● — —	Short	Long	Long	Firmware Error
— ● ●	Long	Short	Short	No margin sensor signal
— — —	Long	Long	Long	Head drive motor stalled

The printer will remain in FAULT Mode until the power is cycled or the printer is reset with the <ESC> <NUL> command. (A470 Mode Only).

Getting Service and Technical Support

Service

You can rely on Pertech for fast turnaround, flexibility, and a highly trained and dedicated staff to return your equipment back in first class working order. As part of Pertech, we are very familiar with all Pertech printers. This affiliation gives us the technical and production capabilities, as well as the financial resources and materials access, to provide product quality unequaled in the industry

Maintenance Agreement

To keep your Pertech Product in top working order, we recommend the Pertech Maintenance Agreement program. This service provides cleaning and upgrading for most of the printer products we manufacture and service. Once per year, or whenever necessary, we give your units the once over for routine maintenance, cleaning and applicable upgrades. The units are disassembled, print heads cleaned, firmware upgraded, necessary parts replaced, and then returned to you for another year of flawless use. Contact your Pertech Representative for details on this and other available service and extended warranty programs.

Technical Support

Pertech provides Technical Support for this product by calling 307-856-4821 between the hours of 8AM to 5PM Monday through Friday MST, or by submitting a Support Inquiry at the Pertech web site. www.pertechresources.com under the service/support section.

The Model Number, Revision, Date, and Serial Number can be located on the Label attached on the inside of the printer behind the paper roll. Please have this information available when you contact Pertech.

		MADE IN THE USA
MODEL	A470e	487100-001A
REV	00	
DATE	YY/MM	*Pertech*
SERIAL	00 00 0000	
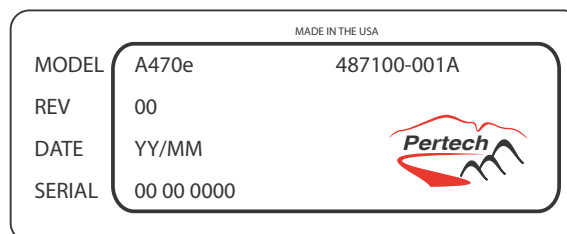
Appendix A: Specifications

Some features listed in this specification do not apply to all products in the Pertech A470e series. Refer to Chapter 1: Features and Options of this manual to determine which features apply to a particular model.

Media

Roll Paper Width... 3.25 +/-.03 Inches
Roll Paper Plies .... 1, 2 Or 3
Roll Diameter .... 3.5" Maximum
Roll Paper Thickness Per Ply .... .003"-.005"
Roll Paper Thickness Total .... .003"-.012"
Maximum Form Thickness............................ .020"
Maximum Total Media Thickness.................. .020"

Operating

Print Speed.. 3.85 Lines Per Second
Paper Feed Speed .... 3.47 Inches Per Second
Validation .... Up To 17 Lines
Printed Line Width .... 2.78" (70.6 Mm)
Pitch/font Combinations............................... 14
Pitch Range .... 6 To 24
Characters Per Line..................................... 16 To 66
Character Sets... 6
Characters Per Set 224
Graphics .... 9 Wire
Line Pitch.. 5.33, 6.0. 6,86 & 8.0 LPI

Environment

Storage Temperature .... -40°c To +65°c
.... -40°f To +150°f
Humidity (Non-condensing) .... 0% To 90%
Operating Temperature .... 0°c To +50°c
.... +32°f To +122°f
Humidity (Non-condensing) .... 0% To 90%

Electrical

Interfaces .... RS-232 And USB
Baud Rates .... 1200 To 38400
Buffer .... 7 K
RS-232 Connector .... DB9 Male
USB Connector .... Standard Male
Cash Drawer Drivers .... 2 With Sense
Cash Drawer Connectors .... 6 Post. RJ-11 Female.
External Supply Input .... 90 To 264 Vac
Supply Input Frequency .... 50 To 60 Hz
Power
    Maximum .... 55 Watts
    Standby .... 2.5 Watts

Hardware

Print Head .... 9 Wire Impact
Wire Diameter .... .012"
Center To Center Dimension .... .0139"
Width .... 6.34" (161 Mm)
Height .... 5.57" (141 Mm)
Length (471x) .... 11.54" (293 Mm)
Length (477x) .... 8.3" (211 Mm)
Printer Weight (471x) .... 6.5 Lbs (2.95 Kg)
Printer Weight (477x) .... 5.7 Lbs (2.59 Kg)
Power Supply Weigh .... 1.1 Lbs (.50 Kg)

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Pertech® 2006

Warranty

Warranty

Pertech Resources warrants all of its transaction printers against defects in material and workmanship for a period of 24 months from date of shipment by Pertech Resources or the rated maximum number of transactions for the specific product – whichever comes first. Kiosk printers, mechanisms and distributed products carry warranties specific to their application or manufacturers' warranty. Contact **warranty@pertechresources.com** for details on the specific product warranty.

Pertech Resources does not consider damage caused by replacement ribbons or replacement parts supplied by parties other than Pertech Resources to be a defect in material or workmanship. This is a limited warranty, limited exclusively to its terms, including the exclusive remedies set forth below. In addition, this warranty is void if the product has been altered, misused, taken apart or otherwise abused. All other warranties, expressed or implied are excluded, including but not limited to the implied warranties of merchantability and fitness for particular purpose. Any warranty claims must be supported by proof of purchase, represented by reference to the customers' purchase order.

Buyer's Remedies

Pertech Resources' obligations and liabilities under the foregoing warranty are limited to repair or replacement of the product without charge, provided it is shipped prepaid to Pertech Resources, 860 College View Drive, Riverton, WY 82501-2298. A charge is made for repairs after the expiration of the warranty period. In addition, if a printer is returned and replacement ribbons or other replacement parts not supplied by Pertech Resources have caused the printer damage, a reasonable charge for repair will be assessed. Printers returned under warranty discovered to be a "no fault found" will be charged the standard repair cost plus return freight. In no event shall Pertech Resources be liable for claims based upon breach of expressed or implied warranty or negligence or any other damages whether direct, immediate, foreseeable, consequential or special or for any expenses incurred by reason of the use or misuse, sale or fabrications of products which do not conform to the terms and conditions of this contract.

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