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Technical Specifications

User's manual

JAVELIN® J420i

www.nbstech.com

JAVELIN

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Rev. 1.3
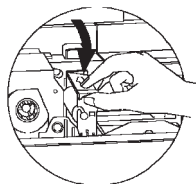
Quick Start!

Before starting to work with your new JAVELIN card printer, please refer to this Quick Start guide.
For more complete information regarding all aspects of your printer's operation, please refer to the main chapters of the printer user's manual.
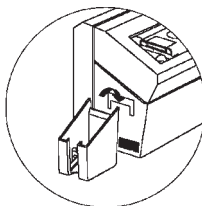
1. Install card cleaning cartridge

The card cleaning cartridge is packed separately from the printer in a protective plastic bag. Remove carefully and peel off tape from the cleaning roller before installing it.
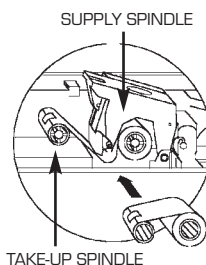
Refer to printer user's manual chapter 2 for more information about the cleaning cartridge.

2. Install card output hopper

This two items are delivered separately from the printer in protective plastic bags.

Refer to printer user's manual chapter 2 for more information.

SUPPLY SPINDLE

3. Loading ribbon

First, turn on the power to the printer and raise the printhead. Ribbon loading involves the placement of the ribbon onto the supply and take-up spindles. As soon as the ribbon is installed and the printhead is locked down, the spindles will automatically rotate to take up any slack and to synchronize the ribbon to the correct panel.

TAKE-UP SPINDLE
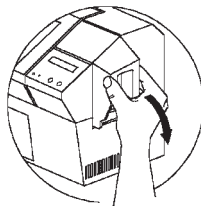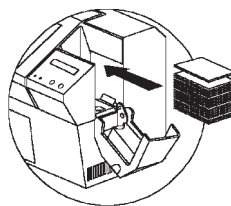
Refer to printer user's manual chapter 2 for more instructions.
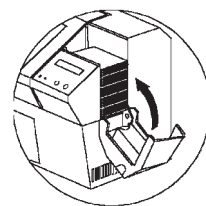
4. Loading cards
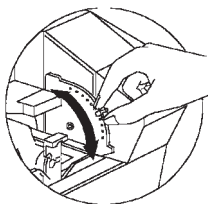
Step 1   Step 2   Step 3

First shuffle a stack of new cards to reduce any electrostatic charge. Always handle cards by their edges.

Refer to printer user's manual chapter 2 for more instructions.

5. Set card thickness control lever

This item can be operated by the user to set the card thickness and to prevent more than one card feeding into the printer at the same time and causing a jam. Simply move the lever to adjust correct card thickness position.

Refer to printer user's manual chapter 2 for more information.

6. Starting to print cards

First connect the interface cable and install the windows driver on your pc.

Refer to printer user's manual chapter 3 for more instructions.

User's manual

INTRODUCTION

**Thank you for choosing the Javelin J420i plastic card printer.**

These printers produce cards ideal for personalised identification, access control, visitor, membership, promotion and luggage card, badges and tags.
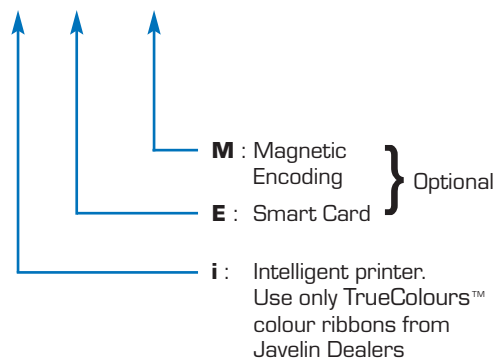
This manual guides you to an efficient start up and operation of your new card printer.

J420i PRINTER MODELS

Here is a quick review of the Javelin card printer series numbering and lettering system to help you.

The Javelin J420i plastic card printer employs dye sublimation and resin thermal transfer technologies. Model numbers include identifiers that specify options are shown using the following lettering conventions:

$$\textbf{J420i (X) (X)}$$

M : Magnetic Encoding

E : Smart Card

⎫ Optional

i : Intelligent printer. Use only TrueColours™ colour ribbons from Javelin Dealers

This information can be found on the printer serial number panel and is also shown on the test card.

ICONS

Throughout this manual, different icons highlight important information, as follows:

Important general information

Mechanical hazard, such as one associated with moving parts, capable of resulting in equipment damage or personal injury.

Electrical hazard, such as an exposed voltage point, capable of causing electrical shock and personal injury.

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1 Getting started

1.1 Unpacking your card printer

Your J420i printer ships in a carton and protective anti-static bag.
Keep all packing material in case you need to move or re-ship the printer.

While unpacking, inspect the carton to ensure that no damage occured during shipping.

Please ensure that you have a clean and nearly dust free environment for proper operation and storage of the printer.
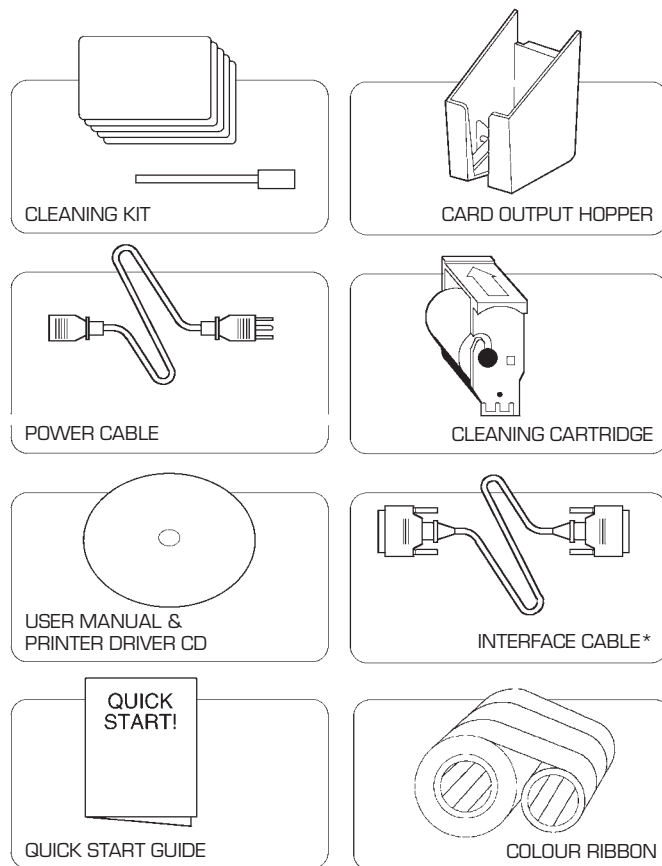
In addition to user documentation, make sure the following items are included with your J420i printer:

CLEANING KIT

CARD OUTPUT HOPPER

POWER CABLE

CLEANING CARTRIDGE

USER MANUAL &
PRINTER DRIVER CD

INTERFACE CABLE*

QUICK
START!

QUICK START GUIDE

COLOUR RIBBON
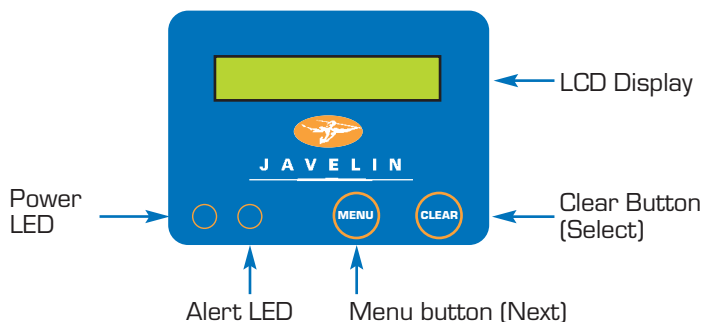
*Not supplied with Ethernet option

If any items are missing, please contact your dealer.

To reorder, please refer to Appendix D of this manual.

1.2 Indicators and Controls

Your J420i printer has an LCD Display, two LEDs and two panel buttons.

LCD Display

Power
LED

Clear Button
(Select)

Alert LED   Menu button (Next)

LCD DISPLAY :

The 16 character LCD Display is used for :
- Showing the printer's current status
- Providing operator and service messages (Chapter 5)

LEDS :

The two LEDs are used for :
- Green: Power LED
- Amber: Alert LED (with beeper)

This alert LED is on when an error condition exists.
The beeper will sound three alert "beeps" and the LCD display will show the associated error message.

PANEL BUTTONS:

The menu button (left) is a push button used for:
- Bringing printer into menu mode when pressed with the printer showing READY on the LCD Display.
- Using in menu mode to scroll through menu options.

The Clear Button (right) is a push button used for:
- Clearing an error status (when LCD display shows an error report and alert LED is on).
- Invoking automatic retry of the operation which gave the error.
- Selecting a menu option when in menu mode.
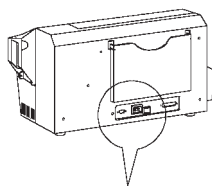
NOTE: the buttons "beep" when pressed

1.3 Printer Installation
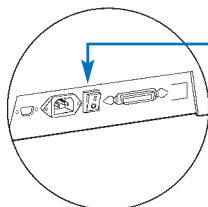
The following will guide you through the installation of your J420i printer.
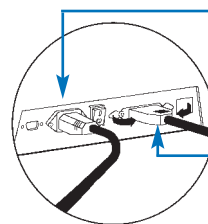
CAUTION : Limit AC power supplied to the J420i Printer to 110 - 230 V AC, 60 - 50 Hz for an associated 680 mA - 310 mA. Limit excess current draw to 16 amps or less, using an associated circuit breaker or other such device. Never operate the printer in a location where operator, computer, or printer can get wet. Personal injury could result. The printer must be connected to an earthed electrical power supply and properly protected against electrical surges and grounding faults.

1. Place the printer in a location that allows easy access to all sides. The printer should never be operated while resting on its side or upside down.

2. Place the printer's power switch in the OFF (O) position.

3. Insert the power cable to the printer power socket and attach to grounded electrical socket of the proper voltage and type.

4. Attach interface cable to printer and computer and then secure.

5. Switch power on.
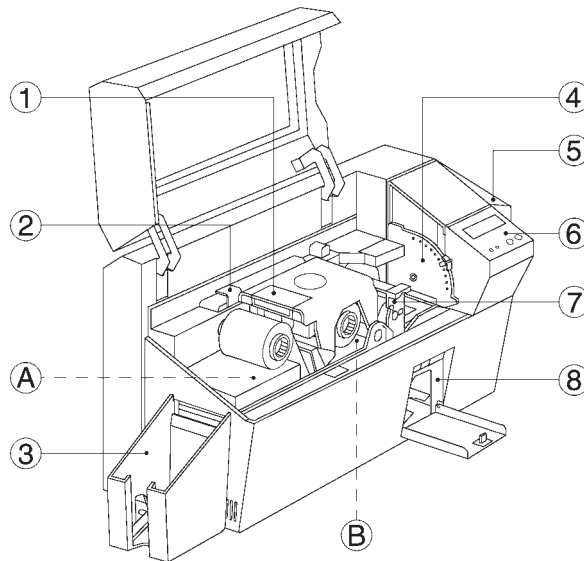
CAUTION: Intermittent or unpredictable operation may occur from unsecured connectors. If damaged, the power cable must be replaced by an exact equivalent.

Use only parallel cable under 3 metres in length.

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2 Operation

2.1 Printer Features

The following shows the features found on your J420i printer:

STANDARD FEATURES

1. Printhead
2. Printhead Unlock lever
3. Card Output Hopper
4. Card Thickness Control
5. Card Cartridge
6. LCD Display
7. Card Cleaning Cartridge
8. Reject Card Box

OPTIONAL FEATURES

A. Magnetic Encoder Station
B. Smart Card Contact Station

PLEASE NOTE : Any blue items inside the printer can be operated by the user.

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2.2 Loading Ribbons
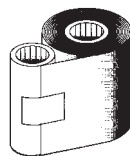
The J420i printer requires approved ribbons (See Appendix D).

The resin thermal transfer and dye sublimation ribbons are specifically designed for your J420i printer. For optimum performance and printer life (printhead), always use approved ribbons.
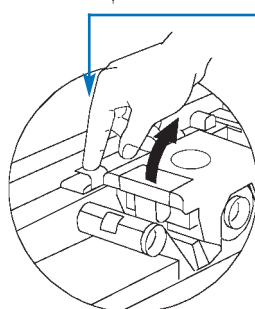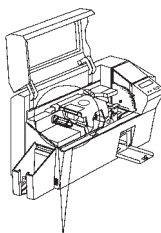
Only intelligent TrueColours™ colour ribbons purchased from Javelin dealer will work in the J420i printer

DO NOT TOUCH the print head or the electronic components on the printhead carriage. Discharges of electrostatic charge from the human body or other surfaces can damage the printhead or other electronic components used in this device.

1. Remove ribbon from packaging.

2. With printer power ON and READY status, open cover and press down on the print head unlock lever to open the print head carriage. The printhead carriage will pop open.
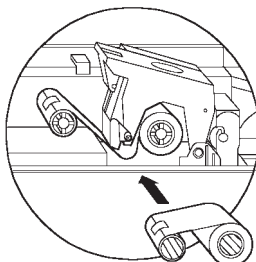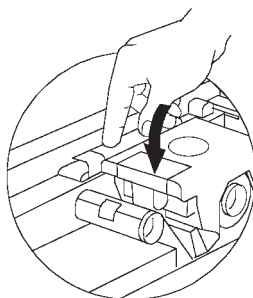
3. Load ribbon onto the supply spindle (under printhead carriage) and empty core (with tape attached) onto the take-up spindle. Make sure the ribbon comes off the top of the supply spindle and feeds to the top of the take-up spindle.

4. Push down on the print head lock lever until an audible 'click' signals the locked-down position. Please note that the ribbon automatically synchronises whenever the printhead is locked down.

5. Close cover.

Please note that the ribbon automatically synchronises whenever the printhead is locked down.

The card flipper will not operate and an error will be indicated if you try to flip a card when the cover is open.
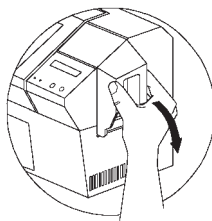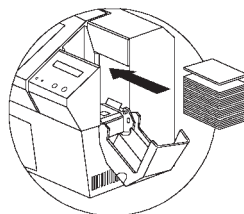
2.3 Loading Cards
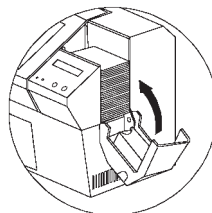
A - CARD CARTRIDGE
This item is used for loading cards.

1. Rotate clear cover down

2. Install cards as shown.

3. Close clear cover.

DO NOT bend cards or touch print surfaces as this can reduce print quality. The surface of the cards must remain clean and dust free. Always store cards in an enclosed container. Ideally, use cards as soon as possible. If cards stick together, carefully shuffle them.

* See Chapter 6, Technical Specifications, for card requirements and capacities.
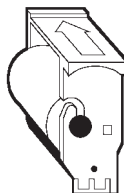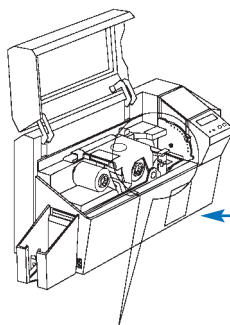
B - INSTALL CARD CLEANING CARTRIDGE
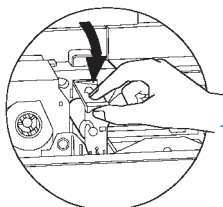
This item is used to clean the cards entering the printer and must be fitted before using the printer.

1. Remove card cleaning cartridge from packaging.

2. Open printer cover and remove the yellow reminder tape from the location for the cleaning cartridge.

3. Make sure the arrow on top of the assembly is facing toward the rear of the printer. Hook assembly into slot on printer and rotate down. Ensure the assembly locks in place.
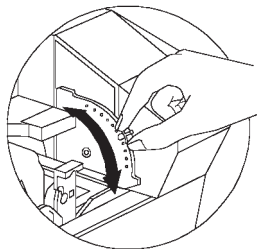
C- CARD THICKNESS CONTROL LEVER

This item is operated by the user to prevent more than one card feeding into the printer at the same time and causing a jam.

Open cover, and adjust lever to the correct position for the card thickness you are using. Repeat for different card thickness. (Factory setting is for 30mil (0.762 mm) card thickness). See diagram below :

Card thickness:
A - 60mil (1.524mm) to 50mil (1.27mm)
B - 40mil (1.016mm)
C - 30mil (0.762mm) - DEFAULT
D - 20mil (0.508mm)
E* - Less than 20mil (0.508mm)
 * Start at lowest position and move lever up to match card thickness.
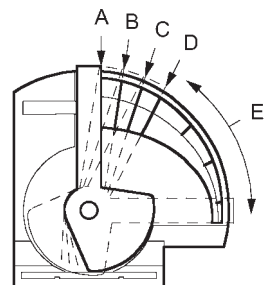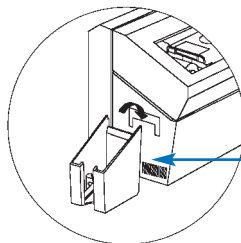
For other card thickness, start lever at lowest position and move up until cards feed.

D - CARD OUTPUT HOPPER

This item is used for collecting printed cards.

Install card output hopper to printer by hooking over bottom edge of card exit aperture.
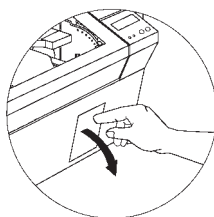
2.4 Reject Card Box

The J420i printer is equipped with a reject card box.

When an encoding can not be completed, the card is ejected into the reject card box. The J420i printer counts the number of cards which go into the reject card box. After 20 cards the printer stops, the amber LED flashes and a LCD message is displayed indicating the need to empty the reject box.

> **REJECT BOX FULL**
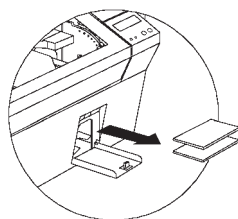
WHEN TO MAINTAIN
When LCD screen reports message

HOW TO MAINTAIN
1. Press the top of the reject card box door as shown. Allow the door to swing down and open.

2. Remove all cards from the reject card box.
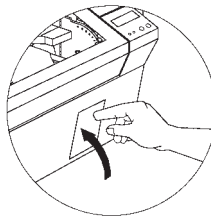
OPERATION   Rev. 1.3
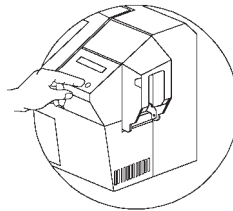
3. Swing up the reject card box door and press the top. An audible "click" signals the locked position.

4. Press the clear button on the front panel to re-start the current printer job and to clear the reject cards counter.
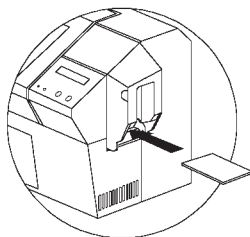
2.5 Feeding one card at a time

A manual feed slot is available on the rear of the card cartridge cover for feeding single cards. Cleaning cards are fed manually through this slot.

THE CARD CARTRIDGE MUST BE EMPTY
for manual card feeding to work properly

For one-at-a-time printing, feed cards through slot on rear of card cartridge.

Do not feed more than one card at a time.
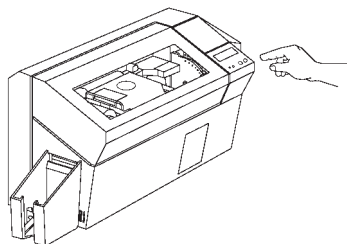
2.6 Printing a Test Card
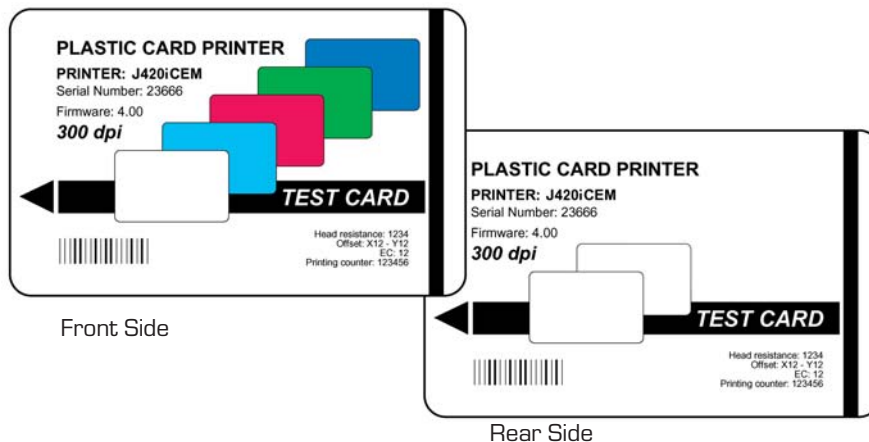
With ribbon and cards loaded, your J420i printer is ready to print.
To check the operation of the printer you should print a test card.

1. Press the menu button until the LCD screen shows "SELF TEST"

2. Then press the select button once.

3. Press select again to print a "Test Pattern".

3. A test card will print after a few seconds. LCD display will show printing status. Test card is printed on both sides of the card.

This is an example of the test card.

PLASTIC CARD PRINTER
PRINTER: J420iCEM
Serial Number: 23666
Firmware: 4.00
300 dpi
TEST CARD
Head resistance: 1234
Offset: X12 - Y12
EC: 12
Printing counter: 123456

Front Side

PLASTIC CARD PRINTER
PRINTER: J420iCEM
Serial Number: 23666
Firmware: 4.00
300 dpi
TEST CARD
Head resistance: 1234
Offset: X12 - Y12
EC: 12
Printing counter: 123456

Rear Side

2.7 Printer Menu Information

The printer is equipped with a LCD Display and two key buttons
which gives access to printer menus.
Select the menu button to enter the menu mode.
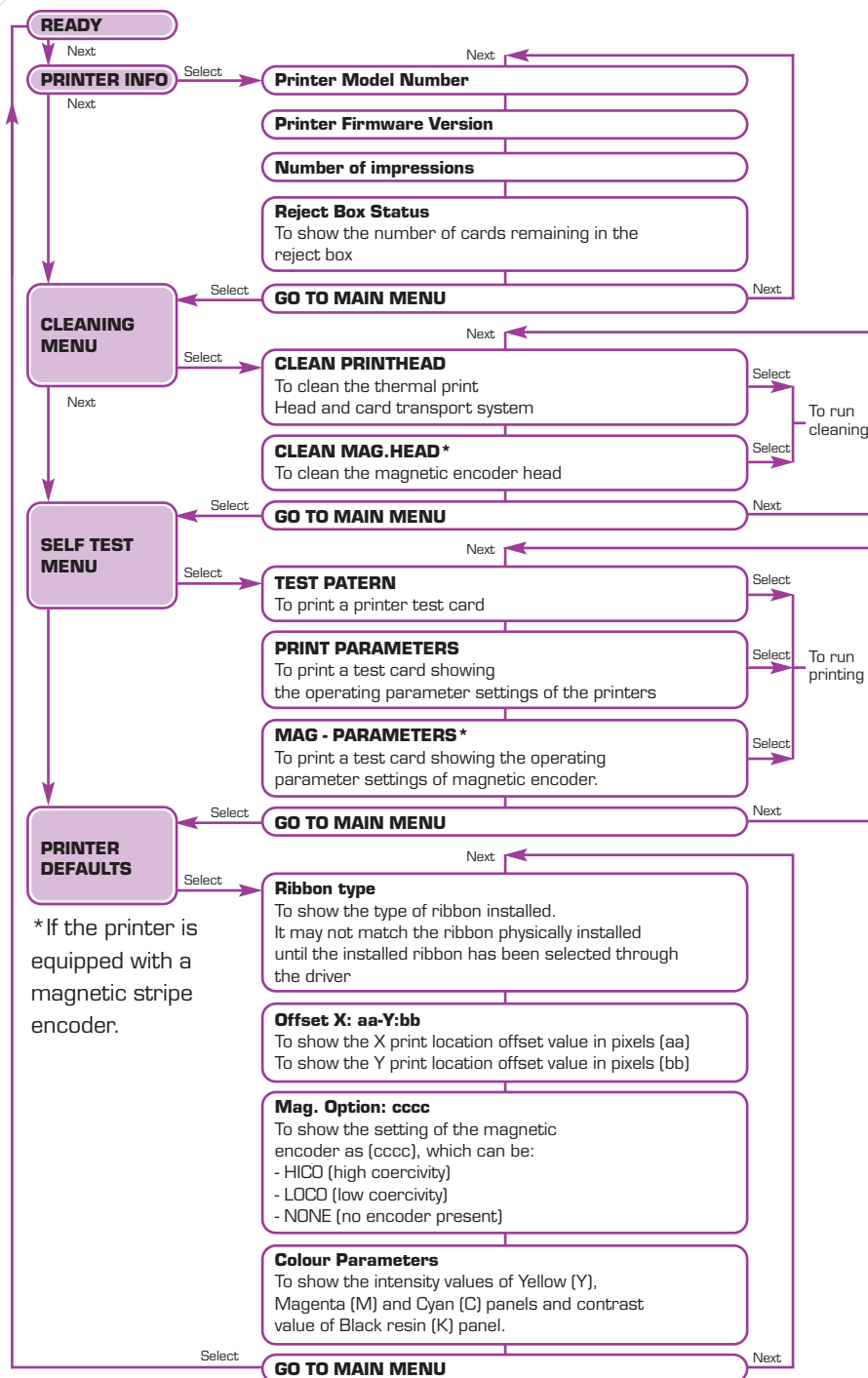
Menu Button
[NEXT] → Menu   Clear ← **Clear Button**
[SELECT]

The top line display shows menu information. The second line of
display clarifies the function of the two [NEXT] and [SELECT] key
buttons relative to the current menu item.

The printer will return to READY mode if either of the two key
buttons is not pressed within ten seconds of entering menu mode.

J420i LCD MENU TREE
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READY

Next

PRINTER INFO — Select →

Next

Printer Model Number

Printer Firmware Version

Number of impressions

Reject Box Status
To show the number of cards remaining in the reject box

Select — **GO TO MAIN MENU** — Next

CLEANING MENU — Select →

Next

Next

CLEAN PRINTHEAD
To clean the thermal print
Head and card transport system — Select →

CLEAN MAG.HEAD*
To clean the magnetic encoder head — Select →

To run cleaning

Select — **GO TO MAIN MENU** — Next

SELF TEST MENU — Select →

Next

TEST PATERN
To print a printer test card — Select →

PRINT PARAMETERS
To print a test card showing
the operating parameter settings of the printers — Select →

To run printing

MAG - PARAMETERS*
To print a test card showing the operating
parameter settings of magnetic encoder. — Select →

Select — **GO TO MAIN MENU** — Next

PRINTER DEFAULTS — Select →

Next

*If the printer is equipped with a magnetic stripe encoder.

Ribbon type
To show the type of ribbon installed.
It may not match the ribbon physically installed
until the installed ribbon has been selected through
the driver

Offset X: aa-Y:bb
To show the X print location offset value in pixels (aa)
To show the Y print location offset value in pixels (bb)

Mag. Option: cccc
To show the setting of the magnetic
encoder as (cccc), which can be:
- HICO (high coercivity)
- LOCO (low coercivity)
- NONE (no encoder present)

Colour Parameters
To show the intensity values of Yellow (Y),
Magenta (M) and Cyan (C) panels and contrast
value of Black resin (K) panel.

Select — **GO TO MAIN MENU** — Next

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3 Printing a sample card

Printing with the J420i printer requires the Windows Printer Driver, your card design/issuing software or printer command level programming through the printer interface.

The J420i card printer can be used with Windows 98, ME, 2000, XP or NT 4.0 operating system, using the drivers provided with the printer. Updated drivers can be downloaded from the NBS website www.nbstech.com

This section contains information on the printing of a dual-sided card in colour (using the 6-Panel colour ribbon YMCKOKi) and the Windows Printer Driver.

⚠️ BEFORE installing updated printer driver versions, always delete the existing printer driver version from your computer.

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3.1 To install the J420i printer driver automatically, use the Javelin Install Wizard

The Wizard will:

- Automatically launch when the driver CD is inserted.

- Check to see which operating system you are using.

- Delete previous versions of the driver and clean up any necessary Registry entries.

- You must select "Remove" from the install options to remove any previous driver versions.

- Shut down of PC if necessary.

- Install the new driver files and Registry entries to their correct locations.

- Shutdown of PC is not required, but it is advised.

The install Wizard will walk you through the appropriate steps.

> ⚠️ Do not power the printer with USB attached.
> The driver will prompt you for USB installation.

3.2 Set Printer Driver Options:

The J420i printer screen appears. Change the options as follows:

1. On the Device Settings tab the magnetic encoder feature is automatically enabled. If you need to change settings for a Magnetic Encoder, select Magnetic Encoder settings button.

2. On the Advanced tab select card orientation:
Landscape or portrait - Select "Landscape".
(in NT, this is located under Document Defaults. In Windows 2000, it is located under Print preferences.)

3. In the Ribbon section, the ribbon type is automatically detected and enabled for you.

4. In the same tab, go to Black Panel area and select Text Only. This option allows the text printing using the Black Resin Panel from the Colour Ribbon.

5. Close the Javelin J420i Printer screen.

Now that you have loaded media and set up the printer driver, the J420i printer is ready to print.

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3.3 Printing a sample card:

Follow the steps below to print your first card.

1. Go to the Microsoft Word software.

2. If the printer was not selected as the default printer, go to the file menu and select printer and choose Javelin J420i card printer in the printer names list. Then close the print dialog box.

3. Come back to file menu and choose page setup.

4. Select size tab and in paper size choose card. Then select the orientation: "landscape".

5. Go to margins tab, set the top, bottom, left and right margins to 0 (zero) values.

6. Press OK to close page setup window.

7. The card appears on the screen.

8. Design a card with both black and colored text and with colored pictures as follows:

9. Once you are ready to print, go to file and select print

10. The printer will feed in a card and start printing (the data download time will vary depending on the complexity of the card design and the processing speed of the computer).

11. Once the printing job is achieved, the card is ejected from the printer.

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4 Cleaning

> **PROTECT YOUR FACTORY WARRANTY !**
>
> The recommended maintenance procedures must be performed to maintain your factory warranty.
>
> Other than the recommended cleaning procedures described in this manual, allow only NBS authorised technicians to service the J420i printer.
>
> **NEVER** loosen, tighten, adjust, or bend, etc. a part or cable inside the printer.
>
> **NEVER** use a high pressure air compressor to remove particles in the printer.

4.1 Cleaning System

Your J420i printer includes a simple cleaning system using the pre-saturated cleaning cards provided. The regular use of these cards will clean and maintain important parts of your printer: including the printhead, and transport rollers.
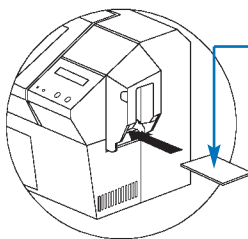
CLEAN PRINTER ← **WHEN TO CLEAN**
When LCD screen reports message.

HOW TO CLEAN
1. Leave power on.
Open cover and release print head bracket
to remove ribbon

2. Remove any normal cards from the card cartridge.
Insert one pre-saturated cleaning card (provided)
through slot on the rear of the card cartridge.
Close the printhead bracket.
Close the cover.

3. Press the right panel button for a few seconds.
The card will feed into printer and carry out the
cleaning process.
Repeat the process with a new cleaning card
if necessary.
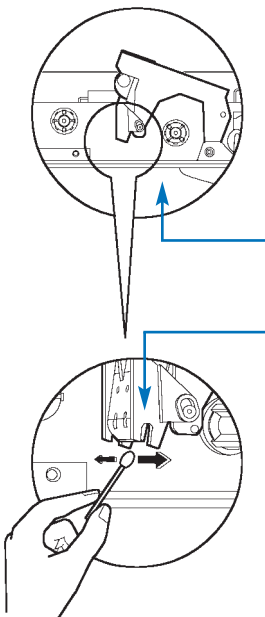
Note: For a printer cleaning prior to the WHEN TO CLEAN signal, press the left panel button until the LCD screen shows "CLEANING MENU". Press the right panel button to select and one more time again to run the cleaning process (Repeat first steps 1 & 2 above).

⚠️ Although the CLEAN PRINTER message is displayed until the cleaning process has been performed, the printer will continue to operate.

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4.2 Cleaning the Printhead

Cleaning the printer using the cleaning system with cards usually suffices. However, cleaning the printheads using swabs can remove more stubborn deposits when print anomalies persist. To avoid deposits, only use foam-tipped swabs.

**1**. Raise print head and remove the ribbon.

2. Clean print head by moving the alcohol moistened swab tip side-to-side across print head elements. Only use moderate force.
(To re-order swabs see Appendix C).

Never use a sharp object to scrape deposits from the printhead. Permanent damage will result.
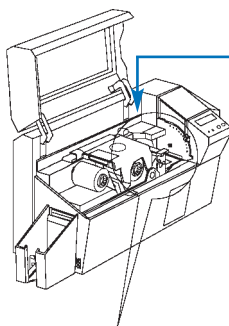
4.3 Card Cleaning Cartridge

Your J420i printer also has a card cleaning cartridge. This item cleans the cards entering the printer. To ensure print quality, the adhesive cleaning roller requires periodic replacements.

CLEAN PRINTER ←
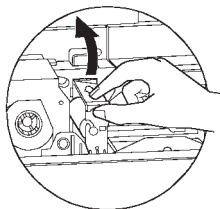
WHEN TO MAINTAIN
When LCD screen reports message.
Run a printer cleaning first .
(see 4.1 Cleaning System for more instructions.)

HOW TO MAINTAIN

1. Open cover and locate cleaning cartridge.

2. Gently remove cleaning cartridge by rotating up and away from printer.
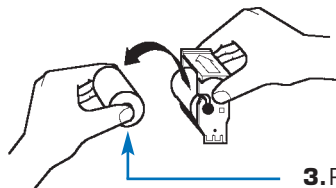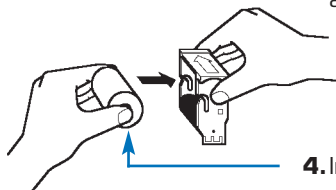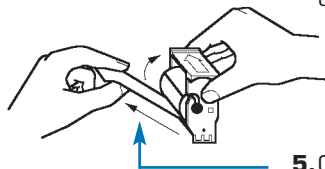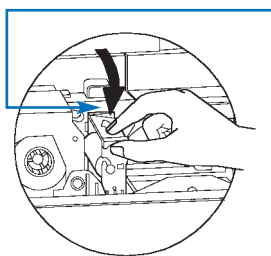
3. Remove the adhesive cleaning roller from cartridge and discard.

4. Install new cleaning roller into cartridge*. To avoid contamination, always hold the cleaning roller assembly by the ends.

5. Carefully peel off wrapper from new cleaning roller while in cartridge.

6. Replace cartridge into printer. Make sure the arrow on top of the assembly is facing toward the rear of the printer. Hook assembly into slot on printer and rotate down. Ensure the assembly locks in place.

DO NOT touch the roller surface that contacts the cards.

7. Close cover

* See Appendix D for replacement cleaning rollers.

⚠️ Although the CLEAN PRINTER message is displayed until maintenance has been performed, the printer will continue to operate.

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5 Troubleshooting

This section offers solutions to potential problems you may experience with your J420i printer. The table below lists the screen messages that will be displayed on the printer's LCD, both during normal operation and to alert operator of any error conditions. There is also some additional information dealing with quality issues concerning printing onto cards.

5.1 Interpreting LCD Display messages

SCREEN MESSAGE	MEANING	ACTION
INITIALISING	The printer is performing an internal test before use	Wait for READY message
READY	Ready for use	
WAIT TEMPERATURE	Print head cool down mode	Wait for READY message
SELF TEST	Self test card printing	Wait for test card
DOWNLOADING DATA	The card data is being transmitted	Wait for card printing to start
PRINTING YELLOW	The yellow panel is being printed	
PRINTING MAGENTA	The magenta panel is printing	
PRINTING CYAN	The cyan panel is printing	

| SCREEN MESSAGE	MEANING	ACTION
PRINTING BLACK	A monochrome panel is being printed	
PRINTING VARNISH	The overlay is printing	
PRINT HOLOGRAM	A hologram overlay is printing	
CLEAN PRINTER	The printer is prompting the operator maintenance	Carry out the cleaning procedure as detailed in section 4 of this manual
CLEAN MAG HEAD	The printer is prompting the operator	Carry out the cleaning procedure as detailed in Appendix B of this manual
CLEANING	The printer is performing an internal cleaning routine	
REMOVE RIBBON	The ribbon has not been removed while the cleaning operation is in progress	Remove ribbon
OUT OF RIBBON	The printer ribbon has run out	Replace printer ribbon
MECHANICAL ERROR	The printer has an error moving the card internally	Remove the jammed card. Ensure that the card is not out of specification. Ensure the cleaning cartridge is correctly fitted
OUT OF CARD	The card cartridge is empty, or the card has mis-fed	Add more cards or adjust the card feeder to accept the cards
ROTATION ERROR	The printer has an error moving the card in the flipper	Remove card
COVER OPEN	The cover is open	Close the cover
HEAD OPEN	The printhead is not locked into position	Lock the printhead in its lower position
COMMAND ERROR	The data being sent from the host is not recognised	Check that the data is suitable for printing. Try reprinting a card from known 'good' data
PARAMETERS ERROR	The features of the card are not recognised	Check the Windows driver options, magnetic data and printer type
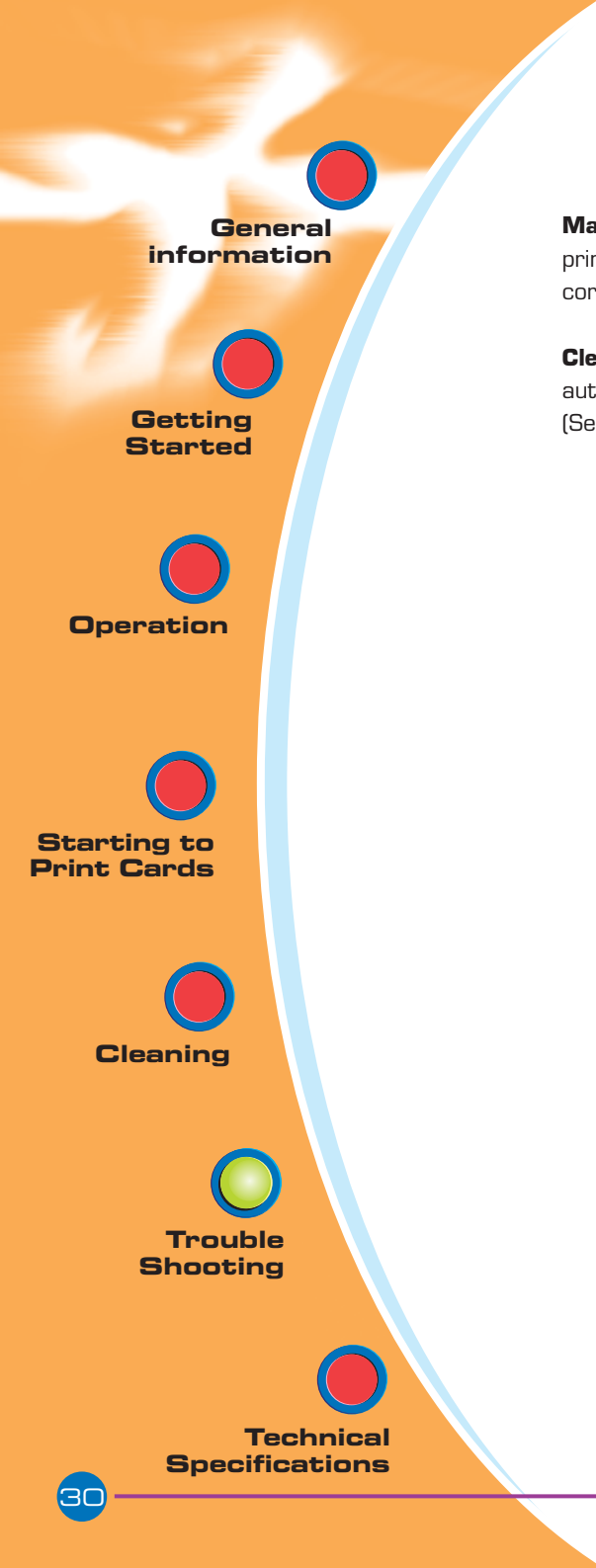
SCREEN MESSAGE	MEANING	ACTION
ENCODING ERROR	Data cannot be written or read from the card's magnetic stripe	Check that the cards are loaded with the magnetic stripe in the correct orientation. Check whether high or low coercivity cards have been specified. Check that the data conforms to ISO specifications. See Appendix B of this manual for further information.
READING ERROR	Data cannot be read from the card's magnetic stripe	Check that the cards are loaded with the magnetic stripe in the correct orientation. Check whether high or low coercivity cards have been specified. Check that the data conforms to ISO specifications. See Appendix B of this manual for further information.
REJECT BOX FULL	The reject box is full	Empty the reject box and press the right panel button
MAGNETIC ERROR	The printer cannot detect a magnetic stripe on the card.	Check the card orientation
FLASH ERROR		Contact your dealer for technical support.
NO ACCESS		

Ribbon Errors: Check that the print ribbon has not 'run out'. Lock and then unlock the print head assembly; this resynchronises the ribbon automatically. When using a colour ribbon, it should advance automatically so that the leading edge of the yellow panel is beneath the print head. Ensure that the correct ribbon type has been specified in the Windows driver.

Card Feed & Mechanical Errors: Ensure that the card thickness adjustment has been set-up correctly to allow one card to feed.

Magnetic Encoding Errors: Check that the cards are inserted correctly in the printer. Ensure that the cards are low or high coercivity as required, and are set-up correctly in the printer driver.

Cleaning Alert: The printer has counted the number of cards printed and has automatically flagged that a cleaning routine needs to be carried out.
(See Chapter 4).

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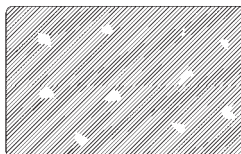
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5.2 Print Quality Issues

This section will help you resolve print quality problems. The print quality is dependent on several factors. The two most important factors that will increase your print quality are cleanliness and card stock. To diagnose and fix print quality problems, follow the troubleshooting procedure below:

- **Small spots appear on the printed card with a non-printed area or a different colour.**

Possible Cause
A. Contamination on the card surface.
B. Dust inside the printer and/or dirty cleaning roller.

➔ **Solution**
 A1. Check that cards are stored in a dust free environment
 A2. Use a different supply of cards.
 B1. Perform a cleaning of the printer (see cleaning section).
 B2. Replace cleaning roller (see cleaning section).

- **There are non-printing horizontal lines (white) on the card surfaces.**

Possible Cause
A. Ribbons is not correctly positioned.
B. Print head may be dirty.
C. Print head elements may have been damaged
  (e.g. scratched or burnt).

➔ **Solution**
 A1. Open cover and press down the printhead unlock lever to open the printhead carriage. The print head will move up.
 A2. Check that the ribbon is properly rolled onto the ribbon cores and there are no wrinkles in the ribbon.
 A3. Push down on the print head lock lever until an audible "click" signals the locked-down position.
 A4. Ribbon will automatically synchronize.
 A5. Print again.

 B1. Perform a cleaning of the printhead (see 4.2 Cleaning the print head.)

 C1. Call service for print head replacement information.

• Printing shows very pale or inconsistent results.

Possible Cause

A. Ribbon may have been stored improperly or is damaged.
B. Cards may not meet specifications.
C. Contrast and/or Intensity may be set to values which are too high.
D. Dust or embedded contamination on elements of the Printhead.

➜ **Solution**

A1. Change ribbon and print again.
B1. Use a different supply of cards.
C1. Adjust contrast and/or Intensity values in software
D1. Perform a cleaning of the Printhead (see 4.2 Cleaning the printhead.)

• Printing shows blurry printed image.

A

Possible Cause

A. Ribbon may not be correctly positioned
B. Ribbon may not be synchronized on the correct colour panel position.
C. Cards may not meet specifications.
D. Dust inside the printer and/or dirty cleaning roller.

➜ **Solution**

A1. Open cover and press down the printhead unlock lever to open the printhead carriage. The printhead will move up.
A2. Check ribbon is properly rolled on ribbon cores.
A3. Push down on the printhead lock lever until an audible ¨click¨ signals the locked-down position.
A4. Ribbon will automatically synchronize.
A5. Print again.

B1. Open cover and press down the printhead unlock lever to open the printhead carriage. The printhead will move up.
B2. Push down on the printhead lock lever until an audible «click» signals the locked-down position.
B3. Ribbon will automatically synchronize.
B4. Print again.
C1. Use a different supply of cards.
D1. Perform a cleaning of the printhead (see 4.2 Cleaning the printhead.)
D2. Replace cleaning roller (see 4.3 Cleaning cartridge.) Printing shows blurry printed image.

• **No printing on the card.**

Possible Cause
A. Ribbon may not be installed in the printer
B. Cards may not meet specifications.
C. Cable on printhead may be disconnected.
D. Printhead elements may be scratched or burnt.

→ **Solution**
A1. Check for ribbon in the printer.
B1. Use a different supply of cards.
C1. Power off the printer and check the printhead cable connections.
D1. Call service for printhead replacement information.

For optimum print quality, always keep cover of the printer closed except during ribbon loading and card thickness control procedures.
The card flipper will not operate and an error will be indicated if you try to flip a card with the cover open.

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6 Technical Specifications

General
- High speed printing, over 102 cards/hour edge to edge in full colour (YMCKOKi) throughput
- Small footprint
- Windows Drivers for 98, NT 4.0, 2000, XP.

Colour Printing
- Colour dye sublimation or monochrome thermal transfer printing
- 35 seconds per card 2 sides (YMCKOKi) throughput
- 300 dpi (11.8 dots/mm) print resolution
- Edge to edge printing standard

Fonts
- Resident: Arial Normal 100, Arial Bold 100
- True Type fonts available via Windows Driver

Cards
- Types PVC, Composite
- Card width/length: ISO CR-80 - ISO 7810, 2.125" (54mm) by 3.375" (86mm)
- Option: Magnetic Stripe - ISO 7811
- Option: Smart Card - ISO 7816-2
- Card thickness: 0.25mm to 1.524mm
- Card feeder capacity: up to 300 cards (10mil), up to 100 cards (30 mil)
- Card output hopper capacity: 300 cards (10mil), up to 100 cards (30 mil)

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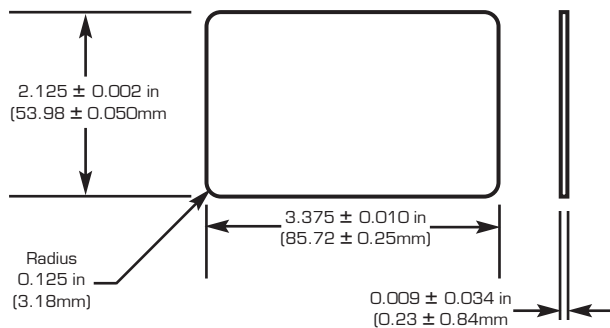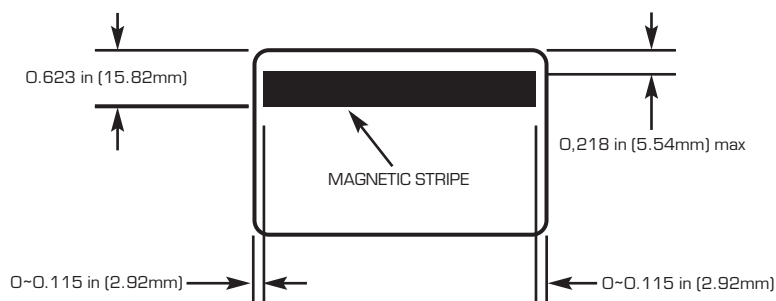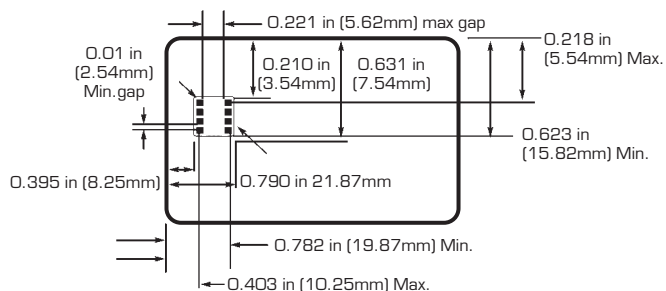
CARD DIMENSIONS

ISO STANDARD DIMENSIONS FOR PLAIN CARD

2.125 ± 0.002 in
(53.98 ± 0.050mm)

3.375 ± 0.010 in
(85.72 ± 0.25mm)

Radius
0.125 in
(3.18mm)

0.009 ± 0.034 in
(0.23 ± 0.84mm)

ISO STANDARD DIMENSIONS FOR MAGNETIC STRIPE CARD

0.623 in (15.82mm)

0,218 in (5.54mm) max

MAGNETIC STRIPE

0~0.115 in (2.92mm)

0~0.115 in (2.92mm)

CHIP POSITION FOR SMART CARD

0.221 in (5.62mm) max gap

0.01 in
(2.54mm)
Min.gap

0.210 in
(3.54mm)

0.631 in
(7.54mm)

0.218 in
(5.54mm) Max.

0.623 in
(15.82mm) Min.

0.395 in (8.25mm)

0.790 in 21.87mm

0.782 in (19.87mm) Min.

0.403 in (10.25mm) Max.

Ribbons*
- Monochrome: 1000 cards/roll
  Monochrome colours: black, red, blue, green,
  silver, gold, white, scratch-off
- Monochrome: 1500 cards/roll (black only)
- K-resin + O: 500 cards/roll
- K-dye + O: 500 cards/roll
- YMCKOi: 200 or 330 cards/roll
- YMCKOKi: 170 cards/roll

Thermal transfer (Resin) ribbons offer more durability
than dye sublimation, with greater resistance to
scratches and UV-induced fading.

Dye Sublimation printing requires dye sublimation ribbons,
with either black or cyan, magenta, and yellow
(plus black resin) panels.

Overlay Varnish
- Thermal transfer
- 4 microns thick
- Clear and holographic options:
  - Clear
  - Genuine/Secure Hologram
  - Custom Hologram

Interfaces
- Centronics Parallel Standard
- RS-232C Serial (Optional)
- USB port
- Ethernet (Optional)

Mechanical
- Width: 20.90" (531 mm†)
- Depth: 10.17" (258 mm)
- Height: 10.76" (273 mm)
- Weight: 27.5 lbs (12.5 kg)

† Measured without card feeder and output hopper.

Electrical
- 110 ~ 230 Volts AC, 60 ~ 50 Hz
- FCC Class A, CE, UL, and CUL approved

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Environmental
- Operating Temperature: 60 to 86°F (15 to 30°C)
- Operating Humidity: 20 to 65% non condensing
- Storage Temperature: -23 to 158°F (-5 to 70°C)
- Storage Humidity: 20 to 70% non condensing
- Ventilation: Free air

Options & Accessories
- Centronics Cable (1.8 or 3.0 metres)
- RS-232C serial port
- Large input stacker: up to 350 cards (0.76mm)
- Smart Card Contact Station (0.76mm cards only)
- Magnetic Encoder (0.76mm cards only)
- Contactless MIFARE Card Encoder
- Cleaning supplies
- Service Manual

*For best results use only NBS-approved card and TrueColours™ ribbon media. Using non-approved cards or ribbon media can void your warranty.

Refer to the Accessories section for more information about cards and ribbon media available from NBS.

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Appendix A

JAVELIN®i Series:
Intelligent Printing System
Fequently Asked Questions

1   What is the Javelin i Series?
The i Series is a new line of Javelin plastic card printers that incorporates an innovative, intelligent card printing system.

2   What is the i Series Intelligent Printing System?
The i Series Intelligent Printing System is combination of design features implemented in Javelin card printers, printer drivers, and Javelin printer ribbons that ensure easy, economical, high quality card printing on Javelin-brand card printers.

3   What are the benefits of the new i Series Intelligent Printing System?
- Easy to Use: printer automatically detects the ribbon type and configures the driver, eliminating extra steps and potential errors when setting up or changing print jobs. Ribbon low alert tells the operator when there are 20 card images remaining on the ribbon and a replacement ribbon will be required soon.

- Excellent Print Quality: wider ribbon for edge-to-edge applications; new HC (High Colour) ribbon formulation for fuller, richer colours; advanced image data processing for greater detail, sharpness and control.

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**4   What are the printer features of the new i Series
     Intelligent Printing System?**

- Image Data Processing: Uses a method of data processing in the printer
firmware to optimise how the image is printed. The printer is able to
process a wider range of colours resulting in greater image detail, sharper
images, and better colour control.
- Ribbon Type Detection: The printer deploys RFID technology to detect the
type of ribbon installed and interacts with the driver to ensure
optimisation for printing with the type of ribbon detected.

**5   What are the ribbon features of the new i Series
     Intelligent Printing System?**

- New HC (High Colour) Ribbon Formulation: Prints in fuller, richer colours for
improved colour reproduction with more vibrant colour range.
- New Wider Ribbon: Covers full range of edge to edge printing for better
print quality and increased operating and density range to minimise potential for
ribbon wrinkle.
- RFID Intelligence: Factory pre-programmed ribbon type and image count
information is communicated to the printer and driver at installation.
- Image Counter: Counts and saves "number of images printed" information.
This information is used to provide "ribbon low" status to the driver.
The number of images printed is continuously updated and saved in the smart
chip on the ribbon cartridge or core, so the ribbon "knows" how many card
images have been printed. This means ribbons can be removed or exchanged,
even if not fully used, and reinstalled for use of the remaining panels.

**6   What are the software/driver features of the i Series
     Intelligent Printing System?**

- Automatic Driver Configuration: Printer detects the i Series ribbon type and
the driver automatically configures the driver to select correct ribbon type.
- Javelin Image Profile: A software tool for Windows 98 and 2000
environments that enhances colours, minimises whitewashing, and enhances
colour contrasts.
- Ribbon Low Notification and Messaging: Alerts user when ribbon is running
low (20 card images remaining) and that a replacement ribbon will soon be
required.
- Changed Ribbon Type Notification: Notifies user and requests confirmation
when a newly installed ribbon is different than the previous ribbon used.
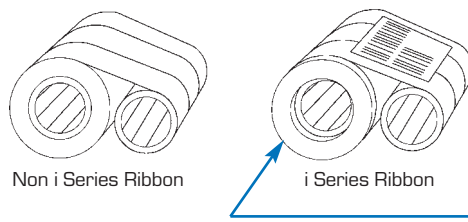
7   How do I know if I have an i Series ribbon?
The i Series designation is part of the ribbon description. i Series TrueColours' ribbons are packaged in blue boxes and are clearly identified on ribbon packaging and labelling. In addition, all i Series ribbons part numbers are different from non-i Series ribbon part numbers.

Non i Series Ribbon   i Series Ribbon

A flange on the supply side of the ribbon core easily identifies unpackaged i Series ribbons.

Flange

8   What is the difference between i Series and non-i Series ribbons?
i Series multi-panel ribbons have RFID technology that enables the printer and driver features of the Intelligent Printing System, High Colour (HC) ribbon formulation, and are wider for improved edge to edge printing.The i Series ribbons are supplied with a replacement cleaning roller included in the box.

9   Will i Series ribbons work on non-i series printers?
Yes. An i Series ribbon will work with a non i Series printer, but when installed on a non i Series printer, the ribbon will not be enabled through RFID technology. This means the resulting colour imaging will not be as optimal as it would be if it were used with an i Series printer.

10 Will non-i Series ribbons work on i Series printers?
- No. i Series printers require use of i Series ribbon for full colour printing or printing with multi-panel ribbons.
- Non-i Series monochrome, single panel ribbons function on i Series printers.

11 Where can I buy i series ribbons?
Javelin i Series ribbons are available only from authorised Javelin card printer dealers.

12 Do i - Series ribbons require any special care or handling?
No. The storage and handling requirements are the same as non i Series ribbons.

13 Who do I contact if I have any other questions?
Contact your Javelin dealer for any questions related to Javelin card printers.

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Appendix B

Magnetic Card Stripe Encoder

This section contains information on the additional operations of the J420i printers with magnetic card stripe encoder. (See Chapter 2 for location.)

INTRODUCTION

Operation and maintenance requirements for the J420i printer with the optional magnetic card stripe encoder. (See Chapter 2 for location).
The magnetic encoder can be set for either high or low coercivity.
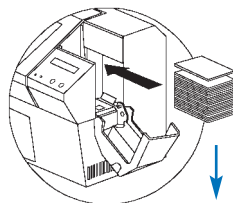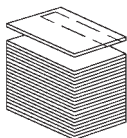
A. MEDIA LOADING ORIENTATION
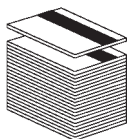
The magnetic encoder is a factory installed item with the read/write head positioned below the card path, available with HICO encoding or LOCO encoding .

STRIPE
DOWN

When loading cards into the card cartridge, please ensure that the magnetic stripe is facing down and closest to the rear.
Also available are printer models with the magnetic read/write head positioned above the card path, with HICO encoding or LOCO encoding .

STRIPE
UP

When loading cards, please ensure that the magnetic stripe is facing up and closest to the rear.

Approved HICO & LOCO PVC cards are available. (See Appendix D).

ONLY USE cards that comply with ISO 7810 & 7811 standards for magnetic stripe cards. The magnetic stripe must be flush to the surface of the card to work properly. Never use taped-on magnetic stripes.
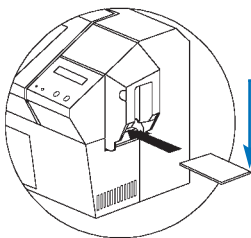
B. MAGNETIC ENCODER CLEANING

There exists two different processes to clean the magnetic stripe encoder.
The first process consists of a standard cleaning of the printer. This cleans the
most important parts of the printer; including the printhead, transport roller
and magnetic stripe encoder (refer to chapter 4 Cleaning for more instructions).

The second process consists of a cleaning of the magnetic encoder using the
menu button from the LCD Display.
To access the magnetic encoder cleaning menu proceed as below:

1. Leave power on.

2. Remove cards from the card cartridge

3. Insert one pre-saturated cleaning card (provided)
through slot on the side of the card cartridge.

4. Press the menu button until the LCD screen
shows CLEANING MENU.

5. Press the select button to select.

6. Press the menu button again until the LCD screen
shows CLEAN MAG HEAD.

7. Run this operation by pressing the select button.

ISO STANDARD ENCODING

Track #	Field Separato	Track density	Valid Characters	# of characters
1	^	210BPI*	Alphanumeric (ASCII 20~95†)	79‡
2	=	75BPI*	Numeric (ASCII 48~62)	40‡
3	=	210BPI*	Numeric (ASCII 48~62)	107‡

* Bit per inch
† Except the '?' character
‡Including Start, Stop and LRC characters. Also note that these 3 characters are
automatically managed by the magnetic encoder according to the ISO Standard Norms.

NOTE: Refer to the card printer programmer's manual for complete programming information.

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Appendix C

Smart Card Contact Station

This section contains information on the additional operations of the J420i printers with smart card contact stations. (See Chapter 2 for location.)

INTRODUCTION

Smart cards can be either 'memory' cards or contain memory and a microprocessor. Data can be stored such as the holder's personal details together with advanced features such as security algorithms and biometic data such as fingerprint patterns.

The Javelin J420i printer have a contact station to connect a serial interface to the smart card contacts. A suitable smart card coupler and associated software would be required external to the printer to communicate with the smart card. NBS offers a range of integrated couplers (as detailed on page 48) for both contact, contactless (Mifare) and 'combi' cards.

The J420i may be equipped with an optional contact station for programming smart cards (ISO 7816). This printer model responds to commands that position the cards at the contact station, where the printer connects to the contacts on the smart cards. All other printer operations remain the same as the standard J420i model.

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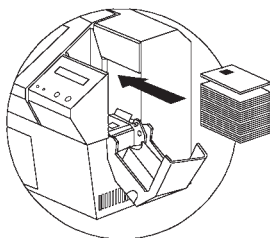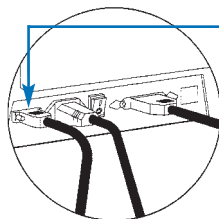
A. MEDIA LOADING ORIENTATION

Position the cards with the smart card chip at the top of the card and towards the printer.

B. SMART CARD CONTACT STATION INTERFACE

When a command to the parallel printer interface sends a card to the smart card contact station, the printer connects the smart card contact station to the female DB-9 connector on the rear of the printer.

An attached external smart card programmer can be used to program smart card chips.

DB - 9 PINS	SMART CARD CONTACT POINTS	DB - 9 PINS	SMART CARD CONTACT POINTS
1	Cl (Vcc)	6	C6 (Vpp)
2	C2 (Reset)	7	C7 (I/O)9
3	C3 (Clock)	8	C8 (RFU)
4	C4 (RFU)	9	(GND when chip is at station)
5	C5 (GND)		

Refer to the card printer programmer's manual for complete programming information.

DO NOT position printing over the smart card chip.

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Appendix D

Accessories & supplies

Please contact your Javelin dealer to place an order for accessories and supplies.

> **IMPORTANT NOTICE:**
> Only TrueColours™ colour ribbons supplied by
> Javelin dealers can be used in this printer

RIBBONS

Intelligent Javelin Encoded Ribbons

New rich colour formula - essential for intelligent J420i printer

Intelligent TrueColours Two-panel Ribbons (Inc. Cleaning Roller)		
6 11 34 509	Black (dye-sub) + overlay KdOi - for monochrome photo	(500 cards)
6 11 34 510	Black (resin) + overlay KrOi - for text and bar codes	(500 cards)

Intelligent TrueColours Full Colour Ribbons (Inc. Cleaning Roller)		
6 11 34 501	Five panel YMCKOi	(200 cards)
6 11 34 503	Five panel YMCKOi	(330 cards)
6 11 34 504	Six panel YMCKOKi	(170 cards)

Intelligent TrueColours "Value Pack" Full Colour Ribbons		
6 11 34 511	Five panel YMCKOi - 5 rolls per pack (inc. cleaning rollers)	(200 cards)
6 11 34 502	Five panel YMCKOi - 20 rolls per pack	(200 cards)

TrueColours Monochrome Ribbons		
6 11 32 101	Black	(1500 cards)
6 11 31 101	Black	(1000 cards)
6 11 31 108	Black (Value pack 100 rolls)	(1000 cards)
6 11 31 107	Black for ABS cards	(1000 cards)
6 11 31 102	Red (PMS 1795C)	(1000 cards)
6 11 31 103	Green (PMS 348C)	(1000 cards)
6 11 31 104	Blue (PMS 2935C)	(1000 cards)
6 11 31 106	White	(1000 cards)
6 11 31 111	Gold	(1000 cards)
6 11 31 112	Silver	(1000 cards)
6 11 31 121	Scratch-off	(880 cards)

Note : Y = Yellow, M = Magenta, C = Cyan, B = Black , O = Overlay

| Varnish Overlay Ribbons	
6 11 32 701	Clear (350 cards)
6 11 32 702	Genuine Secure (350 cards)

CARDS

The following plain white plastic cards are available for use in the J420i printer:

NBS Part Number	Description
9 19 00 009	Cards with no magnetic stripe
9 19 00 011	Cards with low coercivity magnetic stripe
9 19 00 007	Cards with high coercivity magnetic stripe
9 19 00 003	Self-adhesive cards to fix onto proximity cards

Many other card types are also available; ask your dealer for more information.

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ACCESSORIES

Accessories available for J420i printer are listed below:

NBS Part Number	Description
2 33 11 001	Mifare (contactless) encoding kit to be fitted to a J420i or J420iM printer. Includes integrated Mifare encoder, software tools, RS232C interface and documentation
2 33 13 000	Smart Card (contact) encoding kit to be fitted to a J420iE or J420iEM printer. Includes integrated smart card coupler, software tools, RS232 interface and documentation
2 33 12 000	Combined Smart Card (contact) & Mifare (contactless) card encoding kit to be fitted to a J420iE or J420iEM printer. Includes integrated smart card coupler, software tools, RS232C interface and documentation
6 11 00 914	Cleaning kit: cleaning cards (50) and swabs (25)
6 11 00 915	Cleaning cards (100)
6 11 00 916	Swabs (25)
6 11 00 902	Replacement printhead kit
6 11 00 912	Cleaning roller kit (5)
6 11 00 913	Card cleaning cartridge
2 39 12 212	USB cable
2 42 62 420	2.0m Centronics cable
2 42 62 421	3.0m Centronics cable
2 40 40 000	Large input stacker (up to 350 cards)

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# Appendix E
Warranty Information

PRINTERS
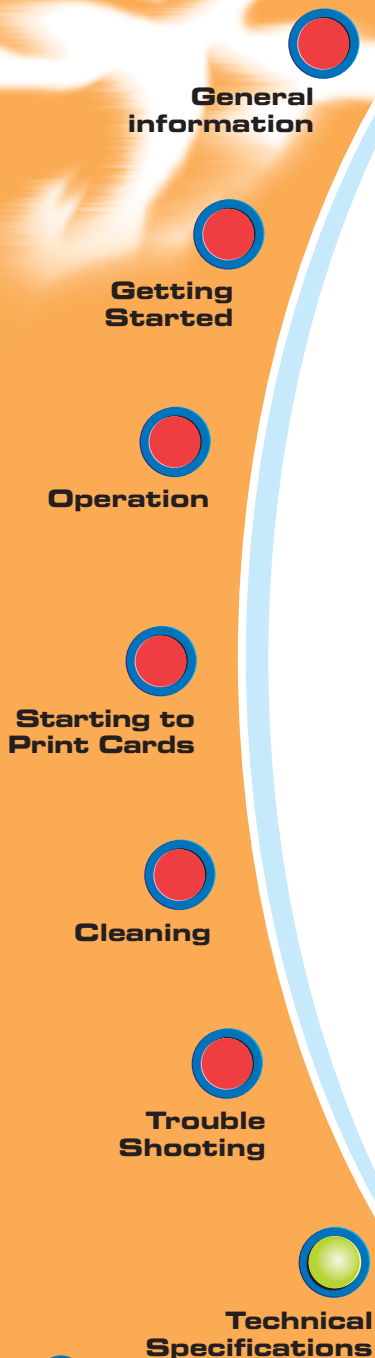
NBS JAVELIN® printers (excluding printhead) are warranted against defects in material or workmanship. Proof of purchase or shipment date is required to validate the warranty. The warranty becomes void if the equipment is modified, improperly installed or used, damaged by accident or neglect, or if any parts are improperly installed or replaced by the user.

PRINTHEADS

The original printhead is covered by an unlimited number of passes warranty. The warranty period begins on purchase date. To qualify for this warranty, the printhead must be returned to NBS or to an authorised dealer. Customers are not required to purchase NBS supplies (media and/or ribbons) for warranty qualification. However, if it is determined that the use of other manufacturers' supplies has caused any defect in the printhead for which a warranty claim is made, the user is responsible for all charges required to repair the defect. The warranty becomes void if the printhead is physically worn or damaged; also if it is determined that failure to follow the preventive maintenance schedule listed in the user's manual has caused defects in the thermal printhead for which a warranty claim is made.

SUPPLIES

These are warranted to be free from defect in material and workmanship provided the user has complied with storage, handling and usage guidelines established for supplies used with NBS Javelin printers.

SPARE PARTS

All parts, maintenance kits, options kits, and accessories are warranted to be free of defects in material and workmanship. This warranty becomes void if the item is modified, improperly installed or used, or damaged by accident or neglect.

Notes

Failure to exercise caution to protect the equipment from electrostatic discharge damage, adverse temperature and humidity conditions or physical abuse, including, but not limited to, improper packaging, shipping, service or repairs performed by personnel not authorised by NBS or an authorised dealer may void the warranty. NBS or its authorised dealer will, at its option, repair or replace the equipment or any parts which are determined to be defective within this warranty period, and which are returned to NBS or its authorised dealer.
NBS specifically disclaims the implied warranties of merchantability and fitness for a particular purpose.
For full warranty terms, please contact the Javelin dealer from whom you purchased your printer.

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Appendix F

Technical Support

If for any reason you require product technical support, please contact the distributor where you purchased your equipment. If they cannot help you, or at their direction, contact NBS.

For Support in Europe, Middle East, Africa and Asia Pacific

NBS Technologies
7 Byfleet Technical Centre
Canada Road
West Byfleet
Surrey KT14 7NB
United Kingdom

Tel: +44 1932 351531
Fax: +44 1932 351382

Email: technical.support@nbstech.com.

For Support in North and South America

NBS Technologies
10925 Bren Road East
Minneapolis MN 55343
United States of America

Tel: 1 800 524 0419 or
+1 416 840 8620
Fax: +1 952 912 9439

Email:
techsupport.cp.am@nbstech.com

Web: www.nbstech.com

HOW TO RETURN YOUR PRINTER

If you have purchased your printer from an NBS distributor, please first contact them on their return procedures.

Alternatively, contact the appropriate NBS Technical Support Department (details above) for instructions before shipping your printer.

⚠️ Only complete goods in their original packaging with a valid **Returned Materials Advice (RMA)** number clearly marked on the outside can be accepted for return to NBS.

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Appendix G

Declorations of Conformity

European Council Directive		Compliance to Standards	
89/336/EEC modified by 92/31/EEC and 93/63/EEC	EMC Directive	EN 55022-B	RF Emissions control
	EMC Directive	EN 500082-1, 1992	Immunity to Electromagnetic Disturbances
73/23/EEC modified by 93/68/EEC	Low voltage Directive	EN 60950	Product Safety

Model: J420i conforms to the following specification:
FCC Part 15, Subpart A, Section 15.107(a) and Section 15.109(a) Class A digital device

Supplemental Information:
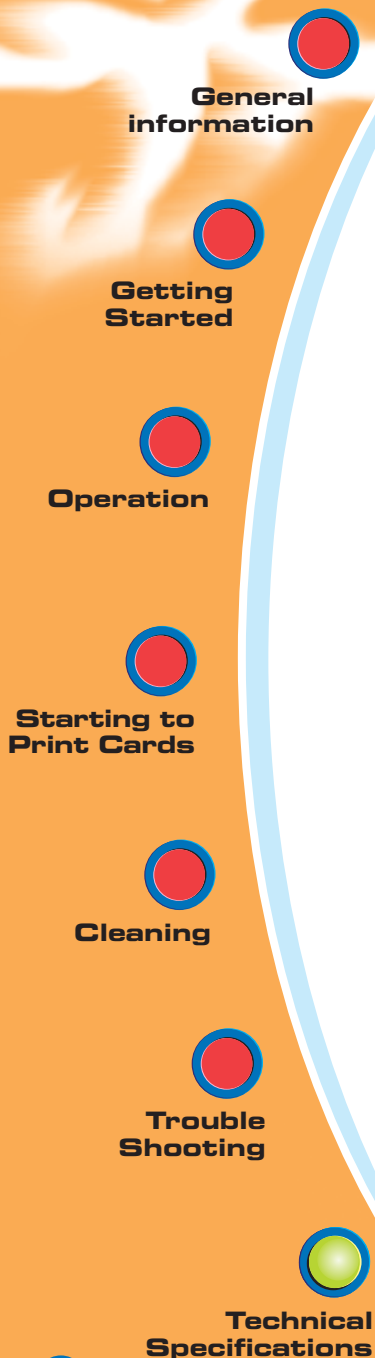
This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference , and (2) this device must accept any interference received, including interference that may cause undesired operation.

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.

INDUSTRY CANADA NOTICE

This device complies with Industry Canada ICS-003 class A requirements.

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TRADEMARKS

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