4250
4225
CARD PRINTER

User's Manual

Notices

The information in this document is subject to change without notice.

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Patent Pending

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Printing History

Edition 1.0, #981023

For Users in the United States:

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 in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.
- Use of a shielded cable is required to comply with the Class A limits of Part 15 of the FCC Rules.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate and/or obtain warranty service for this equipment.

For Users in Canada:

This digital apparatus does not exceed the Class A limits for radio noise for digital apparatus set out on the Radio Interference Regulations of the Canadian Department of Communications.

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la class A prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada.

For Users in Taiwan:

警 告 使 用 者 ：

這 是 甲 類 資 訊 產 品 ， 在 居 住 環 境 中 使 用
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Introduction 1

Thank You...

for choosing a 4200 Series Card Printer. This printer has been designed to provide you with stunning, photo-quality output on a variety of different card sizes and thicknesses. It offers many features which easily allow you to create photo ID cards complete with high resolution graphics, text, bar codes, and much more.

A. HOW YOUR CARD PRINTER WORKS

The 4250 Color Card Printer utilizes two different, yet closely related printing technologies to achieve its remarkable, direct-to-card output — dye-sublimation and resin thermal transfer. The 4225 Monochrome Card Printer, uses only the resin thermal transfer technology. The following describes how each of these technologies work:

Dye-Sublimation

Dye-sublimation is the process your printer uses to print smooth, continuous-tone images that look truly photographic. This process uses a dye-based ribbon roll that is partitioned by a number of consecutive color panels (see Section 4-A for more ribbon information). The panels are grouped in a repeating series of the four process colors — yellow, magenta, cyan, and black — along the entire length of the ribbon. The printer always prints the yellow panel first, followed by the magenta panel, the cyan panel, and finally the black panel.

As the ribbon and card pass simultaneously beneath the Printhead, hundreds of thermal elements within the Printhead heat the dyes on the ribbon. When these dyes are heated, they vaporize and diffuse into the surface of the card. By varying

the heat intensity of each thermal element within the Printhead, it is possible for each transferred dot of color to vary in hue, thus blending one color smoothly into the next and producing photo-realistic images.

Resin Thermal Transfer

Resin Thermal Transfer is the process your printer uses to print sharp black text and crisp bar codes which can be read by both infra-red and visible-light bar code scanners. It is also the process used to print ultra-fast, one-color ID cards. Like dye-sublimation, this process uses the same thermal Printhead to transfer color from the ribbon roll to the card. The difference, however, is that solid dots of color are transferred in the form of a resin-based ink which fuses to the surface of the card when heated. This produces very durable, single-color images. For more information on resin ribbons, please refer to Section 4-A.

B. SPECIAL FEATURES

Your 4200 Series Card Printer has many distinct advantages over other card printers. Its 100 card capacity Card Hopper allows for automatic card feeding which reduces the time and personnel required to create a photo ID card. In addition, the printer offers:

- Edge-to-edge printing in full-color or monochrome
- Simultaneous dye-sublimation/resin thermal transfer printing capability for printing continuous-tone photos and crisp, readable bar codes (4250 only)
- Optional magnetic stripe or smart card encoding capabilities
- A fast print speed of just 35 seconds per full-color card or 6 seconds per monochrome card
- Fast, 32-bit print spooler for Windows 95/98
- Automatic card cleaning
- 2MB memory
- Optional color matching software (4250 only)
- LCD Display

And best of all, operation of the printer is simple and straight forward. Your 4200 Series Card Printer will print from any IBM-PC® or compatible running Windows® 3.1x, Windows 95/98, or Windows NT or any Macintosh®. This means that you can use the printer with virtually any software package running under these operating systems without any special set-up or configuration beyond the initial installation of the specific software driver and interface cable.

To begin using your new printer, please refer to the remaining sections of this manual in the order in which they appear. Note that this manual explains the operation of both the 4250 Color Card Printer and the 4225 Monochrome Card Printer. Where necessary, the sections that apply only to one or the other of these printer models will be specified. This User's Manual is your complete step-by-step guide to setting up and printing with your new 4200 Series Card Printer.

Safety Precautions 2

Before operating the unit, please read the following safety precautions carefully.

WARNINGS

> **CAUTION!**
>
> **TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THE UNIT TO RAIN OR MOISTURE. TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE FRONT, TOP OR BACK PANELS. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.**

■ Operate the unit only on 100-240 VAC, 50/60 Hz. If you have any doubt as to whether you have a unit with the correct voltage rating for your country's power supply, **DO NOT** attempt to use the unit. Contact your dealer or the factory.

■ Stop operation immediately if any liquid or solid object should fall into the cabinet. Unplug the unit and have it checked by qualified service personnel.

■ Unplug the unit's power transformer from the wall outlet if you do not use the unit for a long time. Disconnect the cord by grasping the plug. Never pull the cord itself.

■ The unit is not disconnected from the main power source as long as the power transformer is plugged into the wall outlet, even if the unit itself has been turned off.

■ Do not disassemble the cabinet. Refer servicing only to qualified personnel.

■ Service personnel: parts of this device may be damaged if exposed to static electrical discharges generated by various means, such as walking on a carpeted floor. To avoid potential damage, always wear an appropriate personal grounding device, such as a wrist strap (with integral resistor) connected to an ESD ground. Or, at a minimum, make positive contact with the bare metal chassis of the printer with your hand prior to touching any internal electrical components.

Sicherheitsmaßnahmen

Machen Sie sich vor Inbetriebnahme des Geräts mit den Sicherheitsmaßnahmen gründlich vertraut.

SICHERHEITSHINWEISE

VORSICHT!

ZUR VERHÜTUNG VON FEUERGEFAHR ODER ELEKTRISCHEN SCHLÄGEN DAS GERÄT VOR REGEN ODER FEUCHTIGKEIT SCHÜTZEN. UM DIE GEFAHR VON STROMSCHLÄGEN ZU VERHINDERN, OBERE, SEITLICHE UND HINTERE ABDECKUNG NICHT ABNEHMEN. DAS GERÄT ENTHÄLT KEINE TEILE, DIE VOM BENUTZER GEWARTET WERDEN KÖNNEN. WARTUNGSARBEITEN DÜRFEN NUR VON QUALIFIZIERTEM FACHPERSONAL DURCHGEFÜHRT WERDEN.

- Das Gerät nur mit 100-240 V 50/60 Hz Wechselstrom betreiben. Wenn Sie nicht sicher sind, ob Ihr Gerät mit der Spannung des örtlichen Stromnetzes arbeitet, **DAS GERÄT NICHT IN BETRIEB NEHMEN**. Wenden Sie sich an Ihren Händler oder den Hersteller des Geräts.

- Den Betrieb sofort unterbrechen, wenn ein Gegenstand in das Gehäuse gefallen oder Flüssigkeit eingedrungen ist. Den Netzstecker ziehen und das Gerät von qualifiziertem Wartungspersonal überprüfen lassen.

- Wenn das Gerät längere Zeit nicht verwendet wird, den Netzstecker des Transformators ziehen. Immer am Stecker, nicht am Kabel ziehen.

- Solange der Transformator ans Netz angeschlossen ist, steht das Gerät unter Spannung, auch wenn es ausgeschaltet ist.

- Keine Gehäuseteile abnehmen. Wartungsarbeiten nur von qualifiziertem Fachpersonal durchführen lassen.

Consignes de sécurité

Avant d'utiliser l'appareil, prière de lire attentivement les consignes de sécurité suivantes.

AVERTISSEMENTS

ATTENTION !

POUR EVITER TOUT RISQUE D'INCENDIE OU D'ELECTROCUTION, NE PAS EXPOSER L'APPAREIL A LA PLUIE OU A L'HUMIDITE. POUR EVITER TOUTE DECHARGE ELECTRIQUE, NE PAS RETIRER LES PANNEAUX AVANT, SUPERIEUR OU ARRIERE. NE PAS TENTER DE REPARER SOI-MEME LES PIECES A L'INTERIEUR DE L'APPAREIL. CONFIER L'ENTRETIEN DE L'APPAREIL A UN PERSONNEL QUALIFIE.

■ Faire fonctionner l'appareil uniquement sur courant alternatif de 100/240 V, 50 ou 60 Hz. En cas de doute sur la compatibilité entre la tension nominale de l'appareil et le courant du pays d'utilisation, **NE PAS TENTER D'UTILISER L'APPAREIL**. Contacter le revendeur ou l'usine.

■ Arrêter immédiatement le fonctionnement si un liquide ou un solide venait à s'infiltrer à l'intérieur de l'armoire. Débrancher l'appareil et le faire vérifier par un personnel qualifié.

■ Débrancher le transformateur de la prise murale si l'on prévoit de ne pas utiliser l'appareil pendant un certain temps. Pour débrancher le cordon d'alimentation, tirer sur la prise. Ne jamais tirer sur le cordon.

■ L'appareil sera connecté à la source d'alimentation principale aussi longtemps que le transformateur de tension restera branché sur la prise murale, même si l'appareil lui-même a été mis hors tension.

■ Ne pas démonter l'appareil. Confier l'entretien de l'appareil uniquement à un personnel qualifié

Precauciones de seguridad

Antes de operar la unidad, haga el favor de leer detenidamente las siguientes precauciones de seguridad.

ADVERTENCIAS

¡PRECAUCION!

PARA EVITAR PELIGROS DE INCENDIO O CHOQUE ELECTRICO, NO EXPONGA LA UNIDAD A LA LLUVIA NI A LA HUMEDAD. PARA REDUCIR EL RIESGO DE CHOQUE ELECTRICO, NO QUITE LOS PANELES FRONTALES, SUPERIORES, LATERALES NI DE FONDO. EL INTERIOR NO TIENE PIEZAS REPARABLES POR EL USUARIO. PARA SERVICIO DE REPARACION Y MANTENIMIENTO SOLICITE LA ATENCION DE UN TECNICO DE SERVICIO AUTORIZADO.

■ Opere la unidad sólo a 100-240 VAC, 50/60 Hz. Si no está seguro que la unidad que tiene es compatible al voltaje de la corriente eléctrica de su país, **NO INTENTE USAR LA UNIDAD**. Llame al representante de ventas o a la fábrica.

■ Detenga la operación inmediatamente si algún líquido u objeto sólido cayera en el armario. Desenchufe la unidad y hágala revisar por un técnico de servicio autorizado.

■ Desenchufe el transformador del tomacorriente si no va a usar la unidad por un período de tiempo prolongado. Desenchufe el cordón jalando del enchufe. Nunca jale del cordón mismo.

■ La unidad no estará desconectada de la fuente de alimentación principal mientras el transformador esté enchufado en el tomacorriente, incluso si la unidad hubiese sido apagada.

■ No desarme el armario. Para servicio de mantenimiento, solicite la atención de un técnico autorizado.

Precauzioni per la Sicurezza

Prima di dare inizio al funzionamento dell'unità, siete pregati di leggere attentamente le seguenti precauzioni di sicurezza.

AVVERTENZE

> **ATTENZIONE!**
>
> **ONDE EVITARE IL PERICOLO DI INCENDIO O SCOSSA ELETTRICA, NON ESPORRE L'UNITÀ ALLA PIOGGIA OD UMIDITÀ. EVITARE DI RIMUOVERE I PANNELLI ANTERIORE, SUPERIORE, O POSTERIORE PER RIDURRE IL RISCHIO DI SCOSSA ELETTRICA. LA MANUTENZIONE DELLE PARTI INTERNE DELL'UNITÀ NON É DI COMPETENZA DELL'UTENTE. AI FINI DELLA RIPARAZIONE RIVOLGERSI AL PERSONALE DI COMPETENZA.**

■ Negli Stati Uniti e Canada l'unità funziona solo con alimentazione a 100-240 VAC, 50/60 Hz. Qualora non abbiate la certezza che il trasformatore e la spina di cui disponete siano quelli adeguati all'alimentazione erogata nel vostro paese, **NON USARE L'UNITÀ**. Rivolgersi piuttosto al rivenditore o la fabbrica del luogo.

■ Arrestare immediatamente il funzionamento dell'unità qualora si verifichi un versamento di liquido o la caduta di un oggetto solido all'interno del suo alloggiamento.

■ Staccare la spina del trasformatore dell'unit à dalla presa a muro qualora non ne prevediate l'utilizzo per un protratto periodo di tempo. Disconnettere il cordone elettrico afferrandone la spina, evitando sempre di tirare il cordone stesso.

■ L'alimentazione alla unità non è interrotta se la spina del trasformatore di tensione rimane collegata alla presa a muro, anche quando l'unit à stessa risulta spenta.

■ Non smontare la struttura dell'alloggiamento. Le riparazioni sono competenza soltanto di personale qualificato.

Precauções de Segurança

Antes de operar esta unidade, leia cuidadosamente as seguintes precauções de segurança.

ADVERTÊNCIAS

CUIDADO!

PARA EVITAR PERIGO DE CHOQUES ELÉTRICOS OU INCÊNDIO, NÃO EXPONHA A UNIDADE À CHUVA OU UMIDADE. PARA REDUZIR O RISCO DE CHOQUES ELÉTRICOS, NÃO REMOVA OS PAINÉIS DIANTEIRO, SUPERIOR OU TRASEIRO. NENHUMA PEÇA NO INTERIOR DESTA UNIDADE PODE SER CONSERTADA PELO USUÁRIO. PEÇA ASSISTÊNCIA AO PESSOAL DE MANUTENÇÃO QUALIFICADO.

- Opere esta unidade somente em 100-240 VAC, 50/60 Hz. Se você não souber se a sua unidade tem a voltagem correta para o sistema elétrico do seu país, **NÃO TENTE USAR ESTA UNIDADE**. Entre em contato com seu revendedor ou com a fábrica.

- Pare imediatamente a operação se qualquer líquido ou objeto sólido cair em seu gabinete. Desligue a unidade e mande examiná-la por pessoal qualificado.

- Desligue o transformador de força da unidade conectado à tomada de corrente elétrica da parede se você não usar a unidade por um longo período de tempo. Desconecte o fio segurando o plugue. Nunca puxe o próprio fio.

- A unidade não está desconectada da fonte de força principal enquanto o transformador de força estiver ligado à tomada da parede, mesmo que a própria unidade esteja desligada.

- Não desmonte o gabinete. Peça assistência somente ao pessoal qualificado.

安全預防措施

在使用本機件前請先詳讀下列安全預防措施。

警告

注意！

不要使本機件淋雨或浸濕以免發生火警或觸電事故，不要拆去本機件前、後頂面或兩邊板壁以減少觸電危險事件。本機件內部並無用戶可以自行維修的零件。若需要維修應請來合格的維修人員。

- 本機件祇能接用於100-240伏50赫或60赫交流電源。如對機件之額定電壓是否配合當地供電電壓有任何疑問，則切勿使用本機件。請與承銷商或製造廠商聯絡。

- 如有任何液體或固體物件進入機盒之內則應立刻停止操作。拔出插頭，再請合格維修員前來檢查。

- 如使用本機件時間短暫應將變壓器之供電電源切斷。切斷電源時應用手握住插頭自牆壁插座內拔出。切不可握住電纜將插頭拔出。

- 祇要變壓器與牆壁插座之電源並未切斷，即或機件本身已關閉，供電至機件之電源事實上仍未切斷。

- 不可拆開機盒，應由合格人員從事維修工作。

安全注意事項

機械を操作する前に次の安全注意事項を熟読してください。

ワーニング

注意！

火災や電撃事故防止のために、機械を雨水や湿気に晒さないでください。電撃リスクを減少するために、前、上、横、後各々のパネルを取り外してはいけません。ユーザーが自分で修理出来る部品は入っていませんので、修理は専門の修理員に依頼してください。

- 機械は１００−２４０ＶＡＣ、５０／６０Ｈｚでのみ操作してください。
  自国の電源用の適切な電圧定格になっているかどうか疑わしい場合は、**機械を使用せずに、販売店か工場に御問い合わせください。**

- キャビネットへ液体又は個体物が落ち込んだ場合は、直ちに操作を中断し、プラグを抜いて、専門の修理工員にチェックしてもらってください。

- 機械を長時間使用しない場合は、壁のソケットから電源トランスフォーマーのプラグを抜いてください。その際、プラグを掴んでコードをはずします。コードだけを引っ張らないでください。

- 機械自体の電流が切ってあっても、電源トランスフォーマーが壁のソケットに差し込んである間は、機械は電源から遮断されていません。

- キャビネットを分解しないでください。**修理は必ず専門の修理工員に依頼してください。**

إحتياطات الأمان

قبل تشغيل الآلة يجب قراءة إحتياطات الأمان الآتيه بدقة.

تـحـذيـرات

إحترس!

لتـجنب وتقليل أخطار الحريق أو الصـدمـة الكهربيـة ، لا تعرض الآلة للمطر آوالرطوبة . لتـجنب خطر آي صـدمـة كـهـربيـة؛ لا تزيل غطاء الخزانة الأمامي أو العلوي أو الخلفي. لا يصح للمستعمل محاولة ضبط أو تغيير أي قطع بالداخل ؛ بل يجب الإستعانة بمتخصصي الخدمة.

۔ يتم تشغيل الآلة بتيار كهربي ۱۰۰-۲٤۰ ڤولت ، ٥۰/٦۰ هرتز فقط. لا تستعمل الآلة إذا كان لديك أى شك في أن مواصفات الكهرباء المتوفرة في بلد التشغيل تطابق مواصفات الكهرباء المطلوبه للآله. إتصل بوكيلك أو المصنع .

۔ أوقف التشغيل فورا إذا لاحظت تساقط أي سائل أو مادة صلبة بداخل الخزانة . أفصل الآلة عن الكهرباء وأطلب من متخصص الخدمة الكشف عليها .

۔ أفصل التيار الكهربي عن المحول بنزع الفيشة من مصدر الكهرباء في حالة عدم إستخدام الآلة لمدة طويلة . ويتم نزع الفيشة نفسها باليد وليس عن طريق شد السلك .

۔ لا تعتبر هذه الآلة مفصولة عن مصدر الكهرباء مادامت فيشة المحول الكهربي متصلة بمصدر الكهرباء حتي لو كانت الآلة نفسها مطفئة .

۔ لا تفك خزانة الآلة . أستعين بمتخصصي الخدمة فقط .

Getting Started 3

A. CHOOSING A GOOD LOCATION

Place the unit in a location with adequate air circulation to prevent internal heat build up.

■ Use the dimensions specified in Section 10 as a guideline for the minimum clearances to the unit.

NOTE: *Allow for adequate clearance above the unit to accommodate the height of the unit with its cover open.*

■ Do not install unit (a) near heat sources such as radiators or air ducts, or (b) in a place subject to direct sun-light, excessive dust, mechanical vibration or shock.

B. ABOUT MOISTURE CONDENSATION

If the unit is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense inside the unit. Should this occur, print quality may not be optimum. Leave the unit turned OFF in a warm, dry room for several hours before using. This will allow the moisture to evaporate.

C. UNPACKING AND INSPECTION

While unpacking your printer, inspect the carton to ensure that no damage has occurred during shipping. Make sure that all supplied accessories are included with your unit. The following items should be included with your printer:

■ Printer
■ Power Supply (see Section 3-D)
■ Cleaning Roller (see Section 3-F)
■ Printer Driver Software (see Section 5)
■ 32-bit Print Spooler Software; for Windows 95/98 only (see Section 5-C)
■ Warranty Statement and Registration Card
■ This manual and other printed information

Save the carton and packing materials. They will come in handy when transporting the unit.

D. APPLYING POWER

The power supply included with the printer is a universal power supply properly configured for the power used in your country. To connect this power supply to the printer, locate the appropriate power cord for your country and refer to the following steps:

CAUTION! *THE INCLUDED POWER SUPPLY IS DESIGNED FOR USE ONLY WITH THE COLOR ID CARD PRINTER. IF YOU HAVE ANY DOUBTS ABOUT THE PLUG CONFIGURATION OR THE VOLTAGE, **DO NOT ATTEMPT TO USE THE PRINTER.** CONTACT YOUR AUTHORIZED RESELLER FOR INFORMATION ON THE CORRECT POWER SUPPLY CONFIGURATION.*

1. Place the power cord into the power cord port of the power supply.
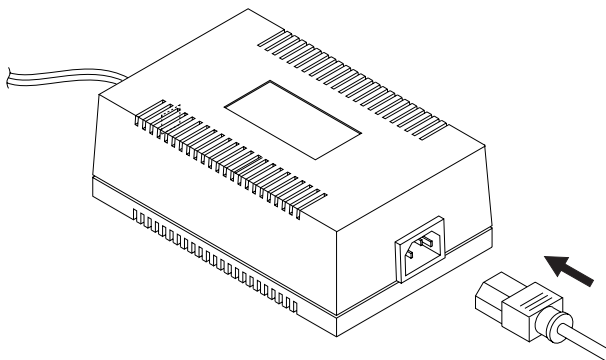
2. Place the DC power plug end of the power supply cord into the printer's Power Input Port.
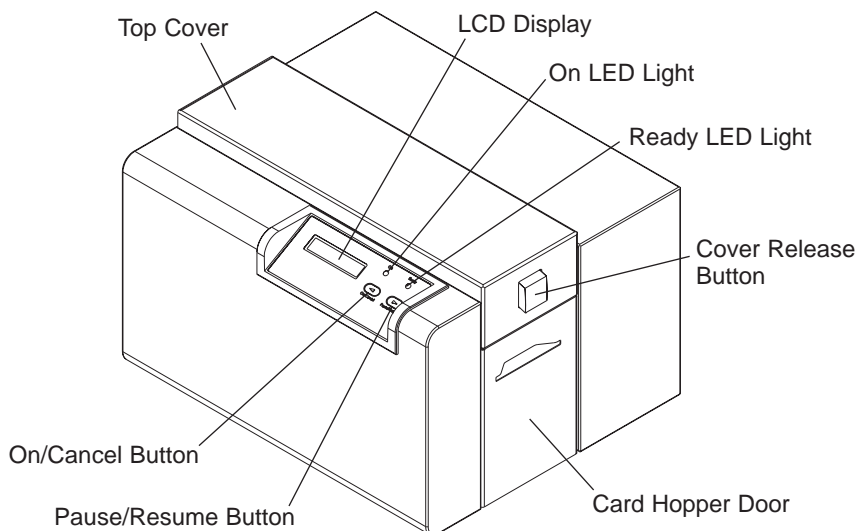

Power Input Port
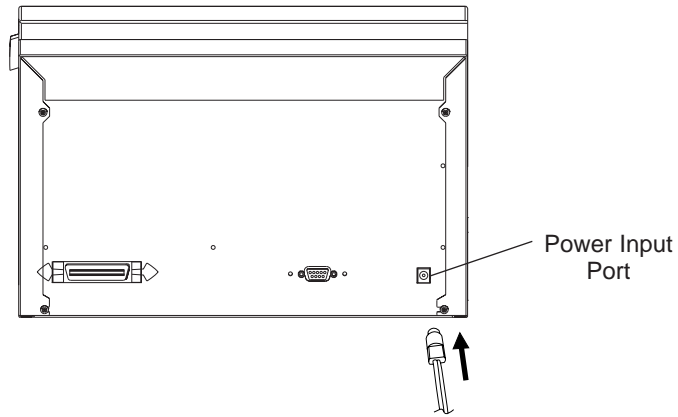
3. Place the AC power plug end of the power supply cord into an available wall outlet.

Power is automatically applied to the printer when it is plugged in. Press the On/Cancel button if you wish to turn the printer OFF. If the printer will not be used for a long period of time, unplug the power supply cord from the wall outlet.

E. IDENTIFYING THE PARTS

This illustration shows all of the features found on the front of the printer.

Top Cover
LCD Display
On LED Light
Ready LED Light
Cover Release Button
On/Cancel Button
Pause/Resume Button
Card Hopper Door

LCD Display

The LCD display shows you the current status of the printer.

When the printer is first powered ON, the printer's startup screen will appear displaying the current firmware version and the amount of installed printer memory (2.0 MB). Once the printer has finished its startup system check, it will then display **Printer Ready** to indicate that the printer is ready for operation. During operation, the LCD will indicate the specific ribbon panel being printed and if any specific printing errors have occurred. For a complete list of possible LCD prompts, see Section 9-A.

On LED Light

Indicates the printer power is either ON or OFF.

Ready LED Light

When ON, this light indicates the printer is ready for operation. When OFF, this light indicates the printer is either OFF or paused and will not operate. If this light is flashing, a printer error has occurred. Refer to the printer's LCD display for the specific type of error that occurred. See also Section 9-A for a complete description of all possible LCD error prompts.

On/Cancel Button

The On/Cancel button turns the printer power ON and OFF. It also serves to cancel the current print job and reset the printer for the next print job if an unrecoverable print error has occurred. If a card is left within the printer after a print job is canceled, it will automatically be ejected when the printer is turned back ON. With the Top Cover open, this button can also be used to manually wind the feed rollers forward. This is helpful when cleaning the printer or if clearing jammed media.

Pause/Resume Button

The Pause/Resume button allows you to pause the printer at any time during operation. Please note, however, that the printer will always finish its current task before pausing. For example, if the Pause/Resume button is pressed in the middle of a printing pass, the printer will pause only after the entire printing pass is completed. The Ready LED Light will turn OFF when the printer is paused and ON again when operation is resumed. With the Top Cover open, this button can also be used to manually wind the feed rollers backward. This is helpful when cleaning the printer or if clearing jammed media.

F. INSTALLING THE CLEANING ROLLER

The printer is shipped with a Cleaning Roller separately packaged. When installed, the Cleaning Roller removes dust particles from a blank card as it feeds into the printer. By cleaning the cards, this roller helps prevent contaminated cards from passing beneath the Printhead, thus extending the Printhead's life and allowing for higher quality output. Refer to the following steps to install the Cleaning Roller:

1. Remove the Cleaning Roller from its packaging.

2. Open the Top Cover of the printer by pressing the Cover Release Button. (If you have already installed the ribbon, remove it from the printer.)

3. Lower the Cleaning Roller down into the Cleaning Roller Bracket which resides just below the Ribbon Sensor. Note that this roller should be cleaned every 250 prints to maintain print quality and extend the life of the Printhead. Refer to Section 7-J for cleaning instructions.
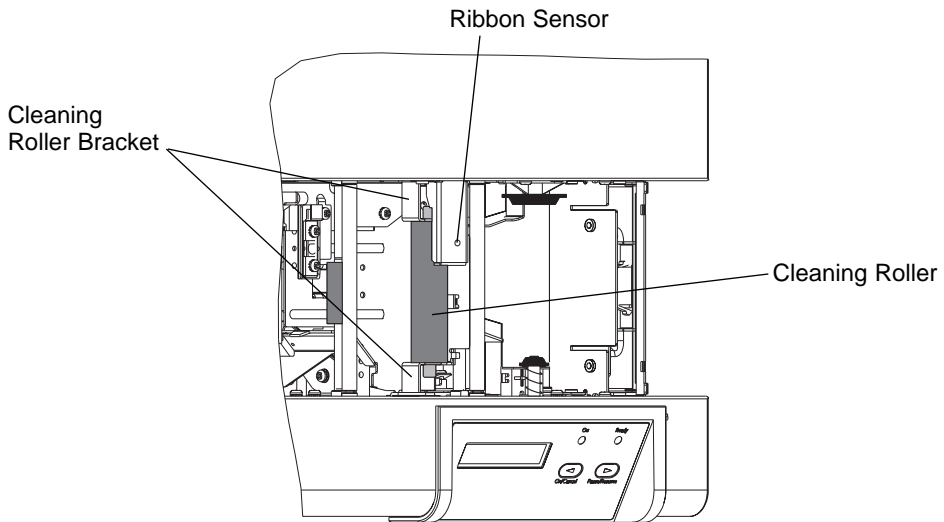
G. EXTENDING THE CARD OUTPUT DRAWER

The printer has a Card Output Drawer which, when extended, will catch the cards after they are printed. If the Card Output Drawer is not extended, the cards will simply be ejected onto the desktop. To extend the Card Output Drawer, simply grasp the top, center of the Card Output Drawer and pull the drawer out until it stops.

Card
Output
Drawer
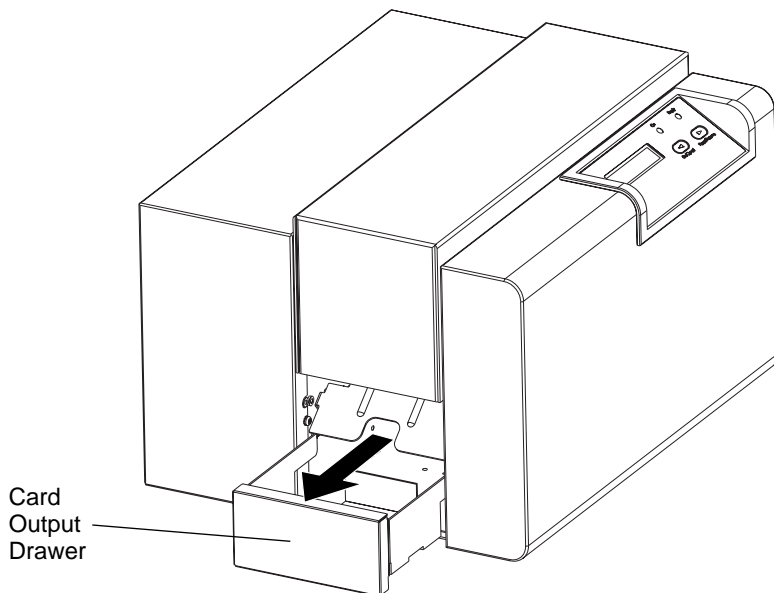
Ribbons and Cards 4

A. ABOUT RIBBONS

As described in Section 1-A, the 4250 Card Printer utilizes both dye-sublimation and resin thermal transfer printing methods while the 4225 utilizes only the resin thermal transfer method. Since the dye-sublimation and the resin thermal transfer print methods each provide their own unique benefits, print ribbons are available in resin-only, dye-sublimation-only, and combination dye-sublimation/resin versions.

To make it easier to remember which ribbons are which, a letter code has been developed to indicate the type of ribbon panels found on each ribbon. This letter code is as follows:

| Y | = Dye-Sublimation **Yellow** Panel |

| M | = Dye-Sublimation **Magenta** Panel |

| C | = Dye-Sublimation **Cyan** Panel |

| B | = Dye-Sublimation **Black** Panel |

| K | = **Resin Black** Panel |

| O | = Clear Protective **Overlay** Panel |

Resin-Only Ribbons (for 4250 and 4225)

Resin-only ribbons consist of a continuous roll of a single resin color. No protective overlay panel (O) is provided since resin images do not require the protection of such an overlay. The following resin-only ribbon types are available:

Standard Resin Black (K) (provides 1,000 prints) K	This ribbon provides high resin durability ideal for most general purpose monochrome ID card applications. Resin black bar codes are readable by both infra-read and visible-light bar code scanners.
Colored Resin (provides 1,000 prints)	Several colored resin ribbons are available in a variety of colors for customizing or color coding resin-only ID cards.
Premium Resin Black (K) (provides 1,000 prints) K	This ribbon provides maximum resin durability ideal for applications such as access control where cards are repeatedly swiped through a magnetic stripe reader. Resin black bar codes are readable by both infra-read and visible-light bar code scanners.
Metallic Resin (provides 1,000 prints)	Metallic resin ribbons are available for printing resin images with a metallic sheen.

Dye-Sublimation-Only Ribbons (for 4250 only)

Dye-sublimation-only ribbons are available in either monochrome or full-color versions. These ribbons consist of a series of dye-sublimation ribbon panels which alternate with a clear protective overlay (O) panel. Dye-sublimation images must have either an overlay panel or a separate overlaminate applied to them or they will quickly begin to wear or fade. The following dye-sublimation-only ribbon types are available:

Dye-Sublimation Black (BO) (provides 500 prints) B O	This ribbon provides a dye-sublimation black panel (B) along with an overlay panel (O) and is used to print smooth, photo-quality black and white photo ID cards. Dye-sublimation bar codes are readable only by visible-light bar code scanners.
Full-Color (YMCBO) (provides 250 prints) Y M C B O	This ribbon allows you to print full-color photo ID cards. Since the black panel of this ribbon is dye-sublimation black (B), bar codes printed with this ribbon can only be read by visible-light bar code scanners.

Dye-Sublimation/Resin Ribbon (for 4250 only)

Dye-sublimation/resin ribbons combine the yellow (Y), magenta (M), and cyan (C) dye-sublimation panels with a resin black (K) panel. By combining both types of ribbon panels, these ribbons allow you to print full-color, photo-quality images with the dye-sublimation panels along with sharp, black text and bar codes with the resin black panel. A clear overlay panel (O) is also included to protect the dye-sublimation images. Dye-sublimation images must have either an overlay panel or a separate overlaminate applied to them, or they will quickly begin to wear or fade. The following dye-sublimation/resin ribbon type is available:

Full-Color (YMCKO) (provides 250 prints)	This ribbon allows you to print full-color photo ID cards along with resin black text and bar codes. Bar codes printed with resin black can be read by both infra-red and visible-light bar code scanners.
Y M C K O	

IMPORTANT! *All color or monochrome dye-sublimation images MUST have either the ribbon's clear overlay panel or a separate overlaminate applied to them. If neither of these types of protective layers are applied, your card's dye-sublimation image will quickly begin to wear or fade. Cards printed solely with monochrome resin text, bar codes, or images do not require any type of protective overlay or overlaminate.*

To apply the ribbon's clear overlay panel, select the Apply Ribbon Overlay option within the printer driver setup window. For more information on this option, refer to Section 5-F.

Please note that 4200 Series Card Printers require specialized ribbons in order to function properly. To order additional ribbons, contact your authorized reseller.

B. LOADING RIBBON INTO THE PRINTER

Follow these steps to load ribbon into the printer:

IMPORTANT! *Watches, rings, bracelets, and other jewelry can damage the Printhead if accidentally bumped against it. For best results, remove such items before installing or removing ribbons. Also, DO NOT touch the glass substrate of the Printhead. Oil or dirt from your fingers can cause premature Printhead wear. If you do touch the Printhead, clean it according to Section 7-B before attempting to print.*

1. Remove the ribbon from its packaging. Do not touch the colored portion of the ribbon. Oil or dirt from your hands can impair print quality.

2. The supply end of the ribbon is the side with the fresh, unused ribbon on it. The ribbon take-up is the other end.
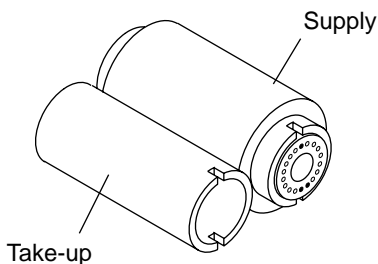
3. Open the Top Cover of the printer by pressing the Cover Release Button.

4. With the cover open, place the supply end of the ribbon in between the two black Ribbon Drive Hubs located on the right-hand side of the printer's interior. Make certain that the ribbon is fed from underneath the ribbon roll. *HINT: The Ribbon Drive Hub nearest you, as you are looking into the printer from the front, is spring loaded. Use the end of the ribbon supply core to push in this Ribbon Drive Hub when inserting the ribbon.*
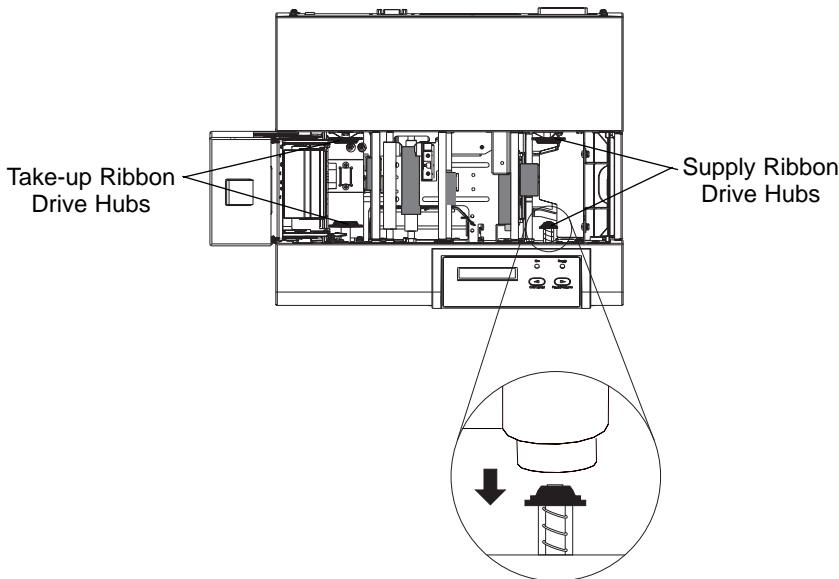
5. Place the take-up end of the ribbon roll in between the two black Ribbon Drive Hubs located on the left-hand side of the printer's interior. Load the ribbon take-up end of the ribbon just as you loaded the ribbon supply end in step 4. When loaded properly, the ribbon should feed underneath both ends of the ribbon roll as shown in this side view illustration.

Take-up Roll · · · · · · Supply Roll
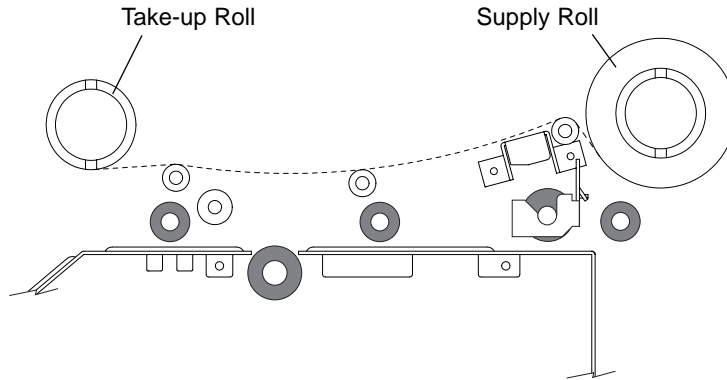
6. Close the cover. When you start to print, the Ribbon Drive Hubs will automatically engage the ribbon core notches.

IMPORTANT! *Do not reverse the ribbon. Damage may occur to the thermal Printhead!*

C. ABOUT CARDS

Your 4200 Series Card Printer accepts a variety of different card sizes and thicknesses and will print onto any card with a clean, level, polished PVC surface (see Section 10 for accepted card size specifications). Although the printer is equipped with a card Cleaning Roller, it is very important to always print onto cards specifically designed for direct-to-card printing.

Suitable cards must have a polished PVC surface free of fingerprints, dust, or any other types of embedded contaminants. In addition, cards must have a completely smooth, level surface in order for the printer to achieve consistent color coverage. Some types of Proximity cards, for example, have an uneven surface which will inhibit consistent color transfer. Likewise, some smart card chips are raised slightly above the cards surface which also results in poor color transfer. For information on card brands suitable for direct-to-card dye-sublimation printing, contact your authorized reseller.

IMPORTANT! *Never run cards with a contaminated, dull, or uneven surface through the printer. Printing onto such cards will ultimately lead to poor print quality and will greatly reduce the life of your Printhead. In addition, always store your card stock in its original packaging or in a clean, dust-free container. Do not print onto cards which have been dropped or soiled.* **Printhead damage caused by contaminated or poor quality cards will automatically void the Printhead's factory warranty.**

NOTE: *If printing onto smart cards, it is not recommended that you print onto the area of the card containing the smart card chip, as this could damage both the smart chip and the Printhead. For best results when printing onto smart cards, use cards with a recessed chip and select either the Smart Card or Smart Chip card size option from within your printer driver setup (see Section 5-F for printer driver information).*

Likewise, if printing onto cards with a pre-punched slot, do not print over the area of the card with the punched slot. To avoid this area when printing in portrait orientation, select the Punch Offset card size option from within your printer driver setup. When selected, this option allows the printer to print up to but not over the punched area of the card. This option does not apply to pre-punched cards intended to be printed and worn in landscape orientation. If you need to print over the entire area of a card in landscape orientation, punch the slot after the card has printed.

D. LOADING CARDS INTO THE PRINTER

The printer will hold a maximum of 100 cards in its Card Hopper (based on a standard CR-80 card size). The Printer automatically feeds each card and adjusts to each card's particular size and thickness. Significantly larger, thicker, or thinner cards, however, may require slight printer adjustments for consistent printing. See Section 8 for details on such adjustments. To load the cards into the printer, refer to the following steps:

1. Remove a stack of 100 or fewer cards from the card packaging. Do not touch the area of the card where you intend to print. Oil or dirt from your hands will impair print quality.

2. Open the Card Hopper Door located on the right-hand side of the printer by grasping the slot on the face of the door and pulling down. Allow the door to swing completely open.

Card Input Tray

Card Input Guides

Card Hopper Door
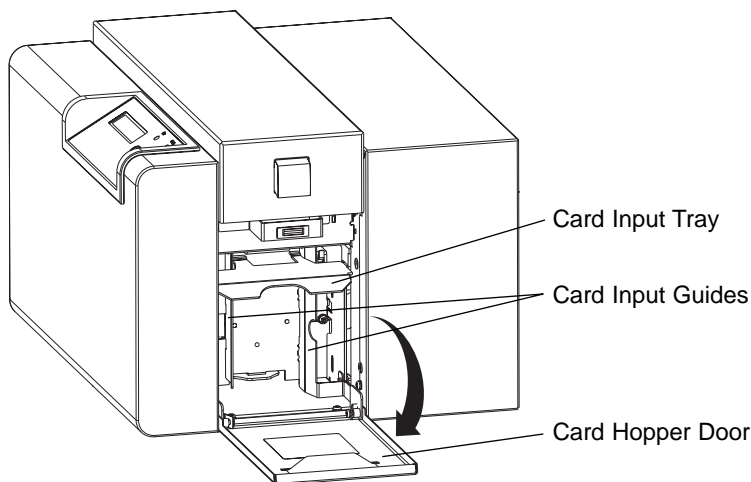
3. Insert the stack of cards into the printer by depressing the spring loaded Card Input Tray and placing the cards between the Card Input Guides (see Section 8 if you need to adjust these guides for larger card stock). Always load cards with the top or primary print side facing up. **If inserting cards with a magnetic stripe**, be sure that the magnetic stripe is positioned downward and that the stripe is oriented toward the rear of the printer. **If inserting smart cards or cards with a pre-punched slot**, be sure the smart card chip is positioned upward and that the chip or slotted end of the card is inserted first.

Card Input Tray
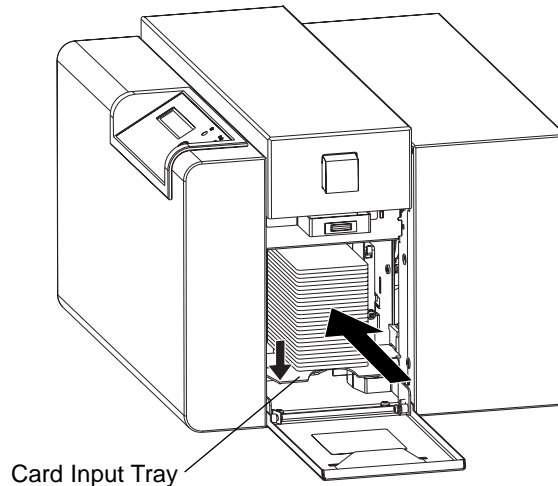
4. Once the cards have been inserted, remove the top card and throw it away if you suspect it has been contaminated with oil from your fingertips. Close the Card Hopper Door. The cards will automatically feed off the top of the stack.

NOTE: *The printer's 100 card capacity is figured using a standard CR-80 3.375"L x 2.125"W x .030" (85.6mmL x 54.0mmW x .75mm) card size. Please be aware of this when inserting cards of varying thicknesses.*

E. RUNNING THE SELF TEST

Once ribbon and cards are installed, a self test should be performed to check for proper operation of the printer. The standard self test function requires only that a ribbon and at least one card is installed. For 4250, a full-color ribbon is required. Note the standard self test function does not utilize the 4250's ribbon overlay capabilities. A sample of the self test pattern is shown on the following page.

1. If the printer is ON, turn it OFF now by pressing the On/Cancel button. The LED lights should no longer be illuminated. Verify that a ribbon is installed and that cards are properly loaded.

2. Press and hold the Pause/Resume button.

3. While holding the Pause/Resume button down, turn the printer back ON by quickly pressing and releasing the On/Cancel button.

4. Release the Pause/Resume button. The self test will begin printing approximately 5 seconds after the Pause/Resume button has been released.

4250 Self Test Example: (Actual size)
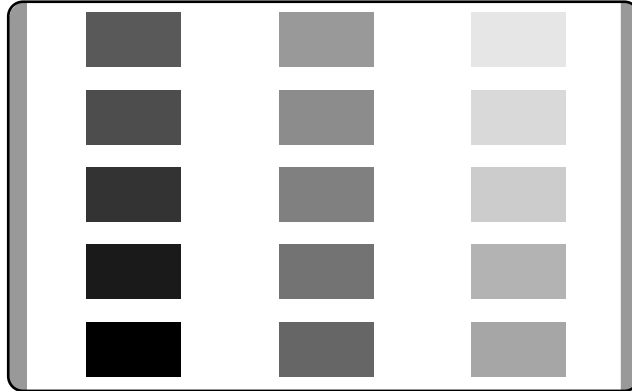
4225 Self Test Example: (Actual size)
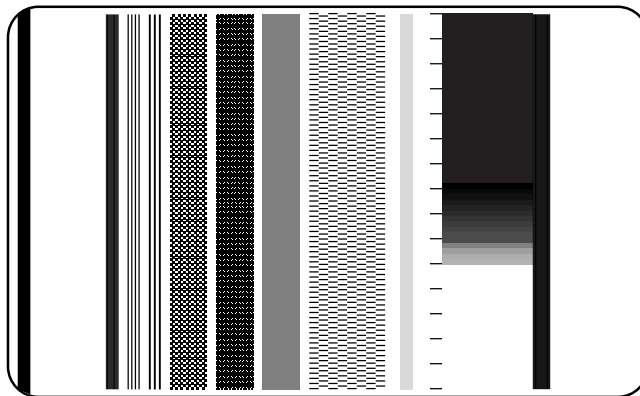
Using Your 4200 Series Card Printer

5

A. CONNECTING THE PRINTER TO YOUR COMPUTER

Depending on which printer type you purchased, the printer provides either a parallel interface port for use with an IBM-PC or a serial interface port for use with a Macintosh. Refer to the appropriate set of instructions for your computer to connect the printer.

NOTE: *The extra port shown in the following illustrations is an Auxiliary Port (subminiature-D connector) included and used only on units equipped with an optional smart card contact station. If your unit is equipped with a contact station and you have questions regarding its use, please contact your authorized reseller.*

IBM-PC

Your 4200 Series Card Printer is designed to be used with any IBM-PC or compatible running Windows 3.1x, Windows 95/98, or Windows NT. A minimum of a 486 DX class computer with 8MB RAM or higher is required. For best performance, a Pentium™ class computer with 32 MB RAM or higher is recommended.

The printer is equipped with an ECP-compatible, high-speed Centronics parallel port. This port is the means through which the printer receives data from your computer. To connect the printer to your computer, obtain a shielded, bi-directional parallel cable no longer than 6 feet, and refer to the following steps:

NOTE: *For best results, do not connect the printer through a switch box, as this can interfere with the flow of print data.*

1. Connect the Centronics-type parallel side to the printer. Snap the fastening clips into place.

Parallel Port
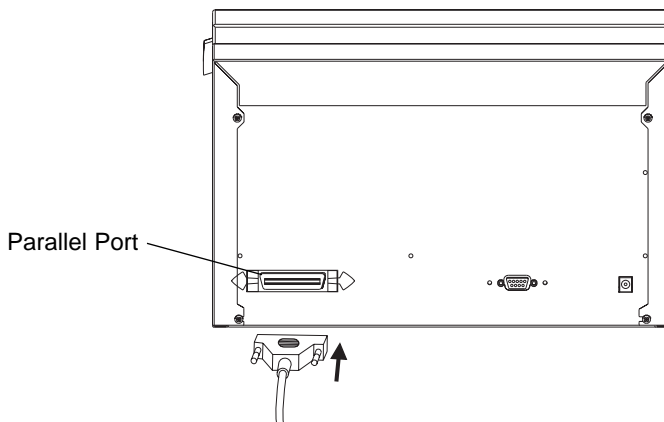
2. Connect the other side to the back of your PC at the PARALLEL connector.

The printer must have its Ready LED light illuminated to receive data. If the light is not ON, press the Pause/Resume button.

Macintosh

Your 4200 Series Card Printer is designed to be used with any Apple® Macintosh supporting Color QuickDraw™ and running system software 7.0 or higher. For best performance, a Macintosh with a 68040 processor and 8MB of RAM (or higher) or a PowerPC™ with 8MB of RAM (or higher) is recommended. The printer driver is accelerated for use with a PowerPC.
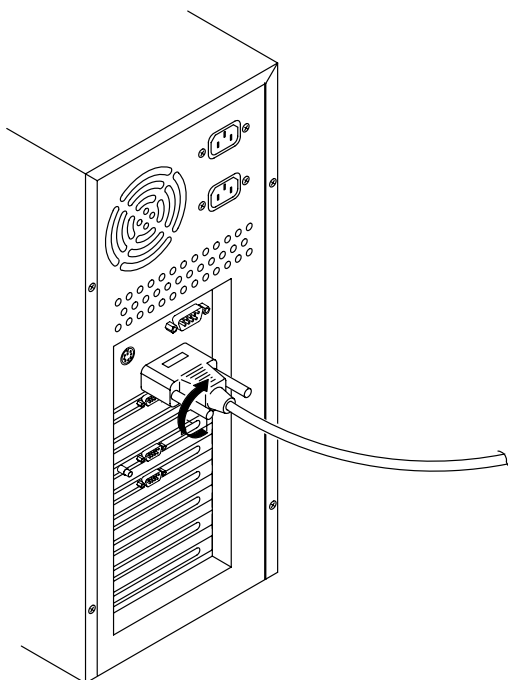
The printer is equipped with a high-speed serial port. This port is the means through which the printer receives data from your computer. This port is not AppleTalk™ compatible. To connect the printer to your computer, obtain a standard serial cable no longer than 6 feet, with an 8 pin mini-DIN connector, and refer to the following steps:

1. Connect one end of the serial cable to the printer.

Serial Port

2. Connect the other end of the cable to either the Printer or Modem port of your Macintosh.
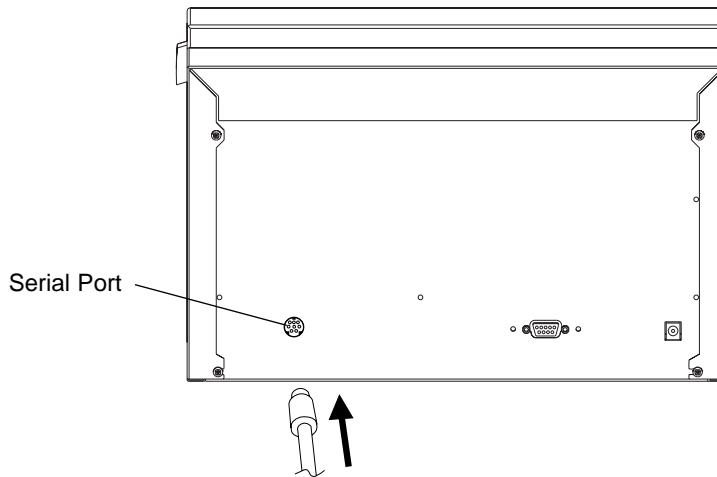
The printer must have its Ready LED light illuminated to receive data. If the light is not ON, press the Pause/Resume button.

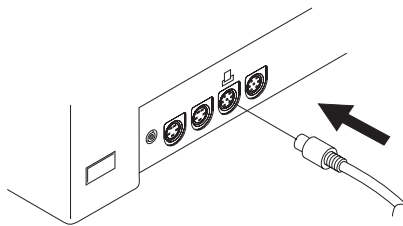## B. INSTALLING THE WINDOWS PRINTER DRIVER

The printer can be used with virtually any Microsoft Windows 3.1x, Windows 95/98, or Windows NT software application program. This is accomplished by installing what is called a "printer driver." The printer driver is simply a diskette with software on it which gives the printer all the information needed for printing.

Three separate printer driver diskettes are included and labeled for use with Windows 3.1x, Windows 95/98, and Windows NT. Install the appropriate printer driver for your system. After you've installed the driver, put the driver diskette away in a safe place for possible future use. For details on all printer driver options, refer to Part F of this section.

NOTE: *This section of the Operator's Manual assumes that you are already familiar with Windows and know how it operates. If you are not yet familiar with Windows, consult the appropriate Microsoft documentation to become familiar with the basics of Windows before proceeding.*

Windows 95/98 or Windows NT

To install the Windows 95/98 or Windows NT printer driver, refer to the following:

1. Insert the printer driver diskette into your computer's disk drive.

2. Click the **Start** button, point to **Settings**, and select **Printers**.
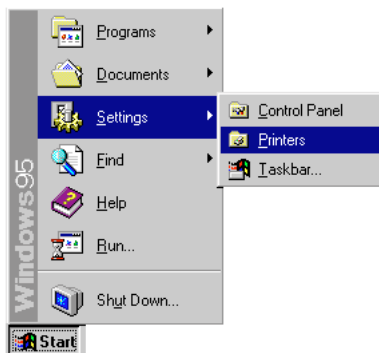
3. Double-click on the **Add Printer** icon.

4. Follow the on-screen instructions to complete installation. When prompted, do not have Windows print a test print, since you most likely performed a printer self test in Section 4. Once installed, the icon for your 4200 Series Card Printer will appear in the Printers folder.

4250 Card Printer

NOTE: *Occasionally, new printer driver versions are released which have new or updated features. Before installing an updated printer driver version, always delete the existing printer driver version from your system. To do this, simply select the printer driver icon from within the Printers folder, and press the Delete key. A message may appear saying, "Some files were used only for this printer and are no longer needed. Would you like to delete these files now?" If you have FargoColor and/or the 32-Bit Print Spooler installed, select* **NO**. *If none of these applications apply, select* **YES**.

Windows 3.1x

To install the Windows 3.1x printer driver, refer to the following:

1. After starting Windows, go to the Main program group and select **Control Panel**.

2. From the Control Panel, select **Printers**.

3. Select **Use Print Manager** from the bottom left of the Printers window.

4. Select the **Add>>** button.

5. Highlight the **Install Unlisted or Updated Printer** option from List of Printers.

6. Select the **Install** button.

7. Insert the supplied Printer Driver diskette into your computer's disk drive. If you insert the diskette in a drive other than the A: drive displayed in the Install Driver dialog box, you must change the drive designation. Select the **OK** button.

8. "4250 Card Printer" or "4225 Card Printer" should now be listed in the Add Unlisted or Updated Printer dialog box. Select the **OK** button. Your PC's disk drive will now load the printer driver. Depending upon your computer, loading will take about 10 to 20 seconds.

9. Select the **Set As Default Printer** button in the Printers window. The printer has now been selected as your default (main) printer. If you wish to use another printer later, you must de-select the Card Printer and switch back to the other printer's driver.

10. Finally, select the **Connect** button. Check that the box called **Fast Printing Direct to Port** is selected. Although this option is not necessary, it helps optimize printer driver speed and performance. Select **OK** to exit the Connect window. Select Close to exit the Printers window.

C. INSTALLING THE 32-BIT PRINT SPOOLER FOR WINDOWS 95/98

The printer ships with a print utility program called the 32-Bit Print Spooler. This print spooler is for use only with Windows 95/98. Once installed, the 32-Bit Print Spooler is able to process your print jobs and send them to the printer at consistently faster speeds than if sending print jobs through the system spooler of Windows 95/98. The 32-Bit Print Spooler is ideal for printing a large number of consecutive cards or for printing larger file formats (1 MB or more). The 32-Bit Print Spooler also allows your computer to display helpful prompts if a printer error occurs during printing.

The 32-Bit Print Spooler installs just like any other standard Windows application program. To install the 32-Bit Print Spooler, refer to the following:

1. Insert the 32-Bit Print Spooler diskette into your computer's disk drive.

2. Click the **Start** button, point to **Settings**, and select **Control Panel**.
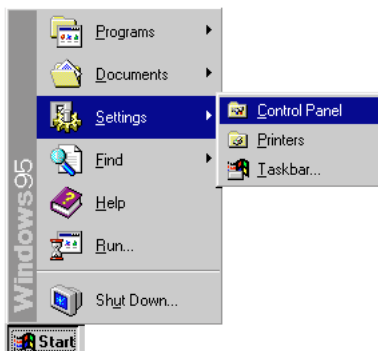
3. Double-click on the **Add/Remove Programs** icon.

4. Follow the on-screen instructions to complete installation. When installed, the 32-Bit Print Spooler will appear in the Programs group of the Start menu.

NOTE: *Occasionally, new 32-Bit Print Spooler versions are released which have new or updated features. Before installing updated 32-Bit Print Spooler versions, always uninstall the existing print spooler version from your system. To do this, simply select 32-Bit Print Spooler from the list of programs in the Add/Remove Programs Properties window, and click on the* **Add/Remove** *button.*

To print with the 32-Bit Print Spooler, you must select the **Use 32-bit Spooler** option from within the printer driver setup window as described in Part F of this section. When this option is selected, the print spooler will automatically open and close with the start and finish of each print job.

NOTE: *You can also manually open the 32-Bit Print Spooler simply by selecting its icon from the Programs group of the Start menu.*

When the 32-Bit Print Spooler is running, its icon will appear in the Windows 95/98 Task Bar. During a print job, it is sometimes helpful to click on this icon to bring the 32-Bit Print Spooler status window to the foreground of your application. This window provides a number of details about the print jobs being sent to the printer.
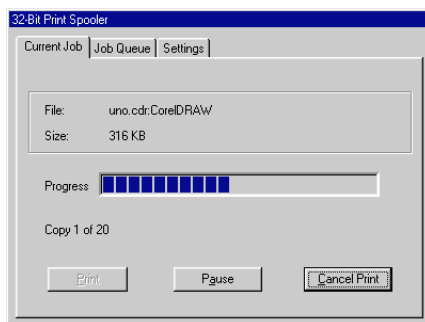
The **Current Job** tab tells you the name and size of the file printing, the progress of the overall print job, as well as the total number of copies left to print. It also provides buttons which allow you to pause or cancel the print job at any time during the printing process.

The **Settings** tab tells you the port and printer to which you are printing and allows you to configure the timeout settings. In most instances, these settings will rarely need to be changed. This tab also provides two other options called **Save last job for reprint** and **Direct to Port Mode**.

When the **Save last job for reprint** option is selected, the 32-Bit Print Spooler will automatically save the last print job you sent to the printer and allow you to instantly reprint the job without the delay of having to reprocess it. The print job will be saved in the spooler until another print job is sent and saved over it. If you do not wish to save the last print job for reprint, deselect this option. To print a saved job, simply select the **Print** button from the spooler's Current Job tab.

The **Direct to Port Mode** option is selected by default. In most instances, this option allows the spooler to send data to the printer at its optimum speed. If, however, you experience problems when printing with this option selected, simply deselect it and try your print job again.

The **Job Queue** tab appears only when a print job is being sent to the printer. This tab tells you the name and status of each job in the queue and shows you the order in which the jobs will print if you have sent multiple jobs to the printer. A control button is also provided which allows you to delete every job listed in the queue. To delete the job currently being printed, simply select the **Cancel Print** button under the Current Job tab.

D. INSTALLING THE MACINTOSH PRINTER DRIVER

The printer can be used with virtually any Macintosh software application program. This is accomplished by installing what is called a "printer driver." The printer driver is simply a diskette with software on it which gives the printer all the information needed for printing. Locate the printer driver diskette labeled for use with Macintosh and refer to the following steps to install it. After you've installed the driver, put the driver diskette away in a safe place for possible future use. For details on all printer driver options, refer to Part F of this section.

NOTE: *This section of the Operator's Manual assumes that you are already familiar with the Macintosh operating system and know how it operates. If you are not yet familiar with it, consult the appropriate documentation to become familiar with the basics before proceeding.*

1. Insert the printer driver diskette labeled for use with Macintosh into your computer's disk drive. The Card Printer Installer automatically opens.

2. Click on the READ ME file(s) to get the latest information on the driver and the installation process. When you are finished reading, select **Quit** from the file menu.

3. Double-click on the **Card Printer Installer** icon.

4. When the Installer window appears, select the options you would like to the installer program to install. In most instances, the default selections will suffice. For a description of each of these options, refer to the notes found in the box directly above these options (use the up and down arrows to scroll through the notes). Once the desired options are selected, click on **Install**. The appropriate files will automatically install onto your computer. An alert box will then display indicating that installation is complete.

5. Click on **OK** to exit the installer. Driver installation is now complete.

E. CHOOSING THE MACINTOSH PRINTER DRIVER

Once the Macintosh printer driver is installed, you must specify that you would like to use that driver by selecting it from the Chooser, a Desk Accessory in the Apple menu. This instructs your Macintosh to send print jobs to the Card Printer instead of to some other printer you may already have connect to your system. Refer to the following steps to select the Card Printer driver:

1. Select **Chooser** from the Apple menu.

2. The Chooser displays an icon for all the printer drivers installed in the System Folder. Among these, you should see the icon for the 4250 Card Printer driver you just installed. If you do not see the icon, go through the installation procedure again making sure the **Install driver and prefs** option is selected. Once you locate the icon for your 4200 Series Card Printer, click on the icon to select it.

3. Select either the **Modem** or **Printer Port** to indicate to which port the serial interface cable was connected. If the Printer port is selected, AppleTalk should remain inactive while printing unless you are using AppleTalk through your Ethernet port. AppleTalk does not apply when printing with the Modem port selected.

4. Select either **On** or **Off** to enable or disable the printer's Background Printing function. When enabled, this function allows you to work in the foreground of your application program while printing in the background. Please refer to Section 6 for more information on background printing.

The next time you open the Chooser, the selected driver will no longer be highlighted. The Chooser remembers, however, which driver is the current one but does not display it when opened.

F. SETTING UP THE PRINTER DRIVER

Once the appropriate printer driver for your computer has been installed, you will need to set the driver up with the proper print options. Although each of the included printer drivers displays the print options in a slightly different format, the basic options are the same. For this reason, *this section lists and describes each of the printer driver options in alphabetical order,* rather than displaying them in the order in which they appear within any one of the printer drivers.

NOTE: *Since the 4225 is a monochrome-only printer, its printer driver will not display all of the printer driver options provided for the 4250. Therefore, if using the 4225, simply disregard any options discussed in this section which do not appear in your printer driver setup window.*

To open the printer driver setup window, please refer to the following steps for your specific operating system:

Windows 3.1x

1. Go to the Main program group and select **Control Panel**.

2. From the Control Panel, select **Printers**.

3. Select the **Setup** button.
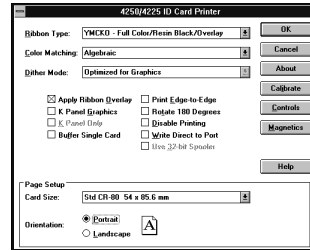
Windows 95/98

1. Click the Start button, point to **Settings**, and select **Printers**.

2. Click on the **Card Printer** icon with the right mouse button, and select **Properties**.
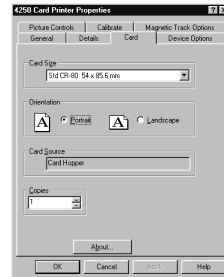
Windows NT

1. Click the **Start** button, point to **Settings**, and select **Printers**.

2. Click on the **Card Printer** icon with the right mouse button, and select **Document Defaults**.

3. Click on the **Advanced** tab of the Document Settings window.
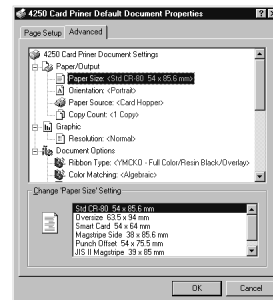
Macintosh

Select **Page Setup** from the File menu.
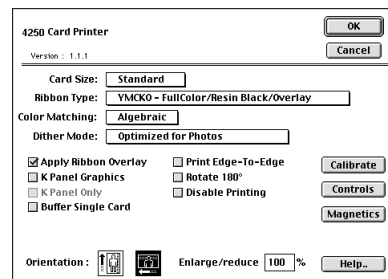
NOTE: *Most applications allow you to change these same printer driver options from their own Print screens. This means you don't have to go back to the main printer setup window each time you want to change a setting or option in the printer driver. These applications will usually give you the same choices and options, but in a slightly altered format.*

To change or verify the appropriate printer driver options for your print job, please refer to the following descriptions given in alphabetical order:

Algebraic

See Color Matching.

Apply Ribbon Overlay

This option is only applicable if you have selected a Ribbon Type with a clear overlay (O) panel. If using such a ribbon, select this option to enable the printer to place a clear, protective overlay over the entire printable area of the given card size. Remember that all dye-sublimation prints must have either the ribbon's clear overlay panel or a separate overlaminate applied to them to prevent premature wear or fading.

Buffer Single Card

Select this option to force the printer's memory to buffer, or hold, only one print job at a time. This option should only need to be selected if you are printing to multiple printers sharing print jobs over a network. In this case, this option assures all print jobs are evenly shared by all printers. Normally, when this option is not selected, the printer's memory will buffer as many print jobs as it can until the printer memory is full. This is ideal for most applications where printers are not networked together.

Calibrate

Select this option to display options for calibrating the printer's Image Placement and Ribbon Sensor or for sending a simple test print.

The **Image Placement** controls allow you to adjust the position of the overall print area to be precisely centered on a card. To adjust the Image Placement values, click on the Vertical and Horizontal adjustment arrows. When adjusting these values, keep in mind that cards always remain in the same position as they travel through the printer. The following diagram represents how the printed image will move in relation to the fixed card position as positive and negative image placement values are entered.
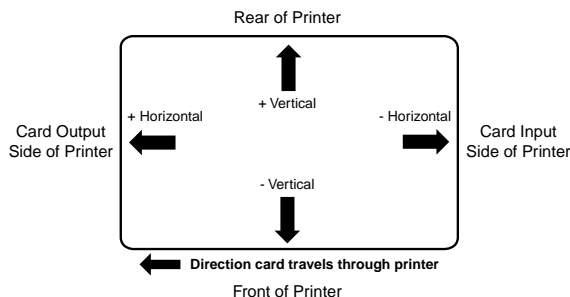
As you can see, the **Vertical** adjustment moves the image more toward the rear of the printer if a positive number is entered and more toward the front of the printer if a negative number is entered. The **Horizontal** adjustment moves the image more

toward the card output side of the printer if a positive number is entered and more toward the card input side of the printer if a negative number is entered. The maximum value for the Vertical adjustment is ±10 pixels. The maximum value for the Horizontal adjustment is ±100 pixels (10 pixels = about .03"/.8mm).

HINT: *Notice the direction the Vertical and Horizontal adjustment arrows point within the Image Placement window are representative of the direction the printed image moves on the card.*

Select the **Sensors** option to display instructions for calibrating the printer's Ribbon Sensor. This sensor may occasionally need to be recalibrated according to the instructions given the in the Calibration window. Recalibrate the Ribbon Sensor if the printer seems to skip ribbon panels, print ribbon panels out the usual YMCK order (resulting in strangely colored output), or simply wind the ribbon until the printer's Ready LED light flashes.

The Calibrate option also allows you to send a simple self test print to the printer by clicking on the **Self Test** option. This function will send a file named "IDTEST.PRN" which is automatically installed with the printer driver and stored in the c:\Windows\System directory for Windows or the Preferences Folder for Macintosh. You must have a Full-Color YMCKO ribbon installed when printing the default test print with the 4250.

This test print procedure can be helpful in assuring that your computer is effectively communicating with the printer and that the printer is functioning properly. If you would like to bypass your computer and print a self test directly from the printer, see the self test procedure described in Section 4-E.

NOTE: *If using Windows and you would like to send your own test file, simply create a PRN file, name it "IDTEST.PRN," and save it in the c:\Windows\System directory in place of the existing IDTEST file. Be sure the appropriate print supplies are installed according to the Ribbon Type option you selected when the new PRN file was created.*

Card Size

Allows you to select the appropriate card size option for the type of cards you are using. The **Std CR-80** and **Oversize** selections allows you to print and overlay the entire printable area of a standard card or oversized card. The **Smart Card, Magstripe Side, Punch Offset,** and **JIS II Magstripe** selections allow you to print and overlay only within the given card areas. The **Smart Chip** selection allows you to print and overlay anywhere on a card except over the immediate location of a standard smart card chip. These selections prevent you from printing over or damaging the area of the card containing the magnetic stripe, smart chip, or punched slot.

Color Matching

Allows you to choose the color matching option which best fits the requirements of your print job. Select **None** if you are more interested in print speed rather than print color, if you have already color corrected your image for printing, or if you are using some other third party color matching software.

Select **Algebraic** if you would like the printer driver to make very simple, yet fast, color balance adjustments. This option gives you more natural looking images without actually utilizing any specific color matching software and without slowing down the processing speed of the printer driver. When selected, this color matching method can be customized by selecting the Controls button.

Select **Monitor** if you would like the printer driver to make color corrections similar to the Algebraic option but through a more complex color matching algorithm. This option shifts colors more radically so the colors in your image will more closely match how they appear on your monitor.

The **FargoColor**™ option is only available when the printer's optional color matching software upgrade has been installed. Select this option to enable color matching profiles written specifically for your printer. The FargoColor option automatically adjusts the color of your image according to preconfigured printer profiles and default system profiles. This results in a very precise color match compliant with ICC standards. Please note that since the FargoColor option is intended to match photographic color hues as closely as possible, you may notice that some colors may appear slightly muted when printing simple spot colors.

Controls

See Picture Controls.

Disable Printing

Selecting this option disables the printing capabilities of the printer, yet still allows the printer to encode cards. This option is useful if you would like to encode or re-encode preprinted cards without wasting additional time, effort, or printing supplies. When this option is selected, all print data will **not** be sent to the printer, while all encoding instructions will be sent according to how they are configure within the printer driver.

Dither Mode

This option only effects objects printed with a monochrome resin ribbon type. Select the appropriate dither method according to the type of image you are printing.

Dye-Sub Intensity

See Picture Controls.

Enlarge/Reduce

Available only in the Macintosh printer driver, this option alters the size of the printed image between the integers of 25% and 400%. A setting of 100% indicates the document will be printed at actual size. Please note that significantly enlarging or reducing the image may cause the image to appear pixelated or "jaggy" when printed.

FargoColor

See Color Matching.

Image Placement

See Calibrate.

K Panel Graphics

In most application programs, when printing with a Full-Color YMCKO ribbon, the 4250 printer driver prints all bitmap images with the ribbon's yellow, magenta, and cyan color panels (YMC). Any black contained in these bitmap images is printed by combining equal amounts of yellow, magenta, and cyan. This type of black is called a "composite" black. The resin black (K) panel of the ribbon is only used when printing TrueType black text and TrueType bar codes.

The printer driver distinguishes between text and image objects in order for TrueType black text and bar codes to always be printed with a true resin black. Resin black is essential when printing bar codes, since only resin black bar codes can be read by both infra-red and visible light bar code scanners. Composite or dye-sublimation black bar codes can only be read by visible light bar code scanners.

In some cases, however, this print method may not be acceptable. If, for example, you are printing bar codes which are not TrueType bar codes but rather bitmap bar codes, such bar codes will be printed as a composite black (i.e., with the YMC panels only). In addition, when printing from certain application programs, the printer driver is also forced to print all objects, even black text or bar codes, with the yellow, magenta, and cyan color panels. This happens because some application programs interpret both text and image objects as bitmapped images.

If your particular application program does not differentiate between TrueType text and image objects or if you are printing bitmap bar codes, select the K Panel Graphics print option. This option forces the printer driver to print all of the black within text, bar codes, or bitmapped images with all four of the ribbon's YMCK panels.

K Panel Only

This option is only active when the K Panel Graphics option is selected. Selecting the K Panel Only option forces all of the black within text, bar codes, or bitmap images to be printed only with the ribbon's resin black (K) panel (i.e., without the YMC composite black underneath). This increases the precision of printed bitmap bar codes, thereby assuring greater accuracy when read by a bar code scanner.

Magnetics

This option only applies if your printer has an optional Magnetic Stripe Encoding Module installed. Select this button to display options for controlling the magnetic stripe encoding process. See Appendix A for more information about these options and on the printer's magnetic encoding process.

Monitor

See Color Matching.

Orientation

Select either Portrait or Landscape. Selecting Portrait causes the card to print in a vertical orientation. Selecting Landscape causes the card to print in a horizontal orientation. An icon illustrating a printed card helps represent the difference between the two.

Picture Controls

When the Algebraic color matching option is selected, this option allows you to control the **Contrast** and **Gamma** of the printed image, as well as the individual color balance of **Yellow**, **Magenta**, and **Cyan**. In most cases, the default settings of these options will suffice.

To control the overall darkness and lightness of the printed image, adjust the **Dye-Sub Intensity** slide by clicking and dragging the slide's box or by clicking on the left and right arrows. Moving the slide to the left causes less heat to be used in the printing process, thus generating a lighter print. Moving the slide to the right causes more heat to be used, thus generating a darker print. This slide only affects those images printed with dye-sublimation ribbon panels (YMCB). As a result, this slide will not appear if printing with a resin-only ribbon.

To control the amount of heat the printer uses when printing with the resin black panel(s) of a full-color ribbon or when printing with a resin-only ribbon, adjust the **Resin Heat** slide. Moving the slide to the left causes less heat to be used in the printing process, causing resin images to be lighter or less saturated. Moving the slide to the right causes more heat to be used, causing resin images to be darker or more saturated. This control can be helpful for fine tuning the saturation of resin text and bar codes.

Note that if using a Windows printer driver, all control options will display and can be adjusted as long as the Algebraic color matching option is selected. When the None, Monitor, or FargoColor option is selected, only the Dye-Sub Intensity and Resin Heat sliders will display. Likewise, if using the Macintosh printer driver, only the Dye-Sub Intensity and Resin Heat options are available.

Print Edge-to-Edge

Select this option to print full-bleed images all the way out to the edge of a card. When this option is not selected, the printer will automatically place a non-printable margin of about .10″ (2.54mm) around the entire perimeter of a card. If you have selected this option and you are still getting a slight non-printable border along one or two edges of the card, select the Calibrate option to fine-tune the position of your printed image. Please note that it is not possible to print edge-to-edge on 10 mil (.010″ / .254mm) cards

Resin Heat

See Picture Controls.

Ribbon Sensor

See Calibrate.

Ribbon Type

Allows you to select the ribbon type option that's appropriate for the type of ribbon you are using. See Section 4-A for complete ribbon information.

Rotate 180 Degrees

This option allows you to rotate your image 180 degrees when printed. Select this option if you wish to change the position of your image in relation to the set location of a card's magnetic stripe.

Self Test

See Calibrate.

Sensors

See Calibrate.

Use 32-bit Spooler

Select this option for consistently faster print processing. This option is only selectable if operating under Windows 95 or Windows 98 and if the included 32-Bit Print Spooler software has been installed. When selected, this option allows the printer driver to send all print jobs to the printer's 32-Bit Print Spooler rather than to the system spooler of Windows. See Part C of this section for complete details on the 32-Bit Print Spooler. This option and the 32-Bit Print Spooler software will not function in Windows 3.1x.

Write Direct to Port

Selecting this option provides the fastest print processing when printing exclusively from Windows 3.1x. When selected, this option allows the printer driver to bypass the Windows 3.1x Print Manager and to send all print data directly to the printer. This option devotes all of your system resources to the current print job, thereby increasing overall print speed. When the print job is finished, your system resources will again be released and devoted to the normal function of your on-screen applications.

Depending upon the processing speed and brand of your computer, you may or may not need to select this option when printing with the 4250 Card Printer. For most computers, selecting this option will enhance the speed of the rasterizing and printing process. In this case, the Write Direct to Port option should be selected. For some computers, however, this option may either not be supported by the

particular brand of PC or simply may not be necessary due to the PC's fast processing speed. In this case, the Write Direct to Port option should not be selected.

After your selections have been made, close out of the printer setup window. You are now ready to go to an application program and print. All printer driver options selected will stay the same until you change them.

G. PRINTING A CARD

Now that you've set up the printer, loaded media, and installed the printer driver, you're ready to print a card. Follow these steps to print your first card:

1. Go to the application program in which you will be creating your cards and open or create a card format.

2. Once you are ready to print, select **Print Setup** (or the equivalent) from the program's File menu to verify that the printer driver settings are correct for your card design. Remember to select the proper Card Size and Ribbon Type and, if applicable, to verify that the proper magnetic settings are selected. After you've properly configured the driver, select the **Print** button from the application's Print screen.

3. The Card Printer's RIP (raster image processing) begins. The image processing time will vary depending upon the complexity of the image and the processing speed of your computer.

4. After the image is processed and sent to the printer, the printer will feed in a card and print the first color (yellow), followed by the remaining colors (magenta, cyan, and black) if printing with a full-color ribbon. The clear overlay panel will print immediately after the last color panel, then the card will be ejected. If printing with a monochrome resin-only ribbon, the printer will feed in a card, print a single pass, then eject the card.

5. If everything looks good, you've successfully completed set-up, initial testing, and printing with your 4200 Series Card Printer. Please refer to the remaining sections of this manual for important information on printer maintenance, mechanical printer adjustments, and troubleshooting.

Using the Print Backgrounder for Macintosh

6

The printer driver for Macintosh provides a background print utility called the Print Backgrounder. This print utility is turned on or off through the Chooser. When the Backgrounder is turned on, it allows you to conveniently continue working in the foreground of your application while printing in the background. When Backgrounder is turned off, all print jobs are processed immediately in the foreground of your application. The Backgrounder offers many helpful features which are described further in this section.
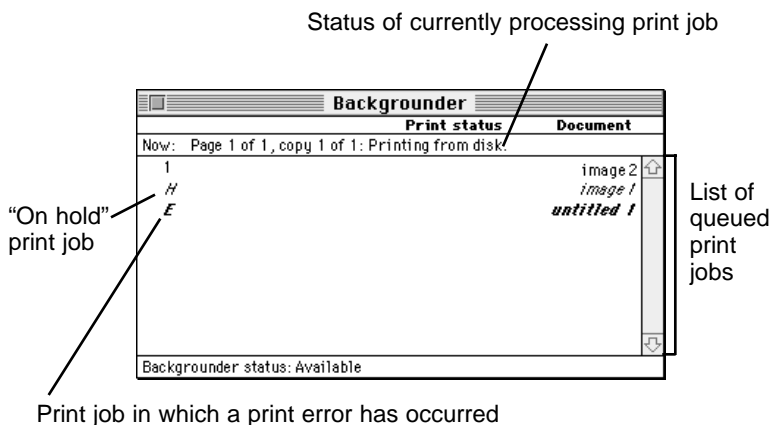
A. INSTALLING THE BACKGROUNDER

The Backgrounder is installed by selecting the **Install Background Print Utility** option from within the printer driver's installer program. This option is NOT selected by default, so if you did not select the Backgrounder option when installing the printer driver, it is most likely not installed. To install the Backgrounder, simply go through the printer driver installation procedure described in Section 5-D making sure that the **Install Background Print Utility** option is selected. The Backgrounder installs into the Extensions folder of your startup drive. Once installed, Backgrounder will automatically open and close with the start and finish of each print job. To manually open Backgrounder, double-click on the Print Backgrounder icon within the Extensions folder.

B. PRINTING WITH THE BACKGROUNDER

With the Backgrounder turned on in the Chooser, select **Print** from the File menu to print your image. A message appears telling you the image is being spooled to disk for Background/Later processing. Once the message disappears, background processing has begun so your application is free to be used for other work.

The print job is processed automatically by the Backgrounder. Other images can be printed and, in turn, will be processed by Backgrounder. While Backgrounder is running, you can quit the current application and start another without disturbing your print jobs. Backgrounder processes all print jobs in the order in which they were sent to the printer.

C. THE BACKGROUNDER STATUS WINDOW

Status of currently processing print job

"On hold" print job

List of queued print jobs

Print job in which a print error has occurred

The Backgrounder status window gives you detailed information about the status of the print job currently processing and about each print job waiting in the queue. The status of the job currently processing displays at the top of the status window. The message indicates how much of the job has been processed and displays any other relevant information. This line is blank if, for example, you manually start Backgrounder and no job is currently being processed.

The list of queued jobs displays below the current job in the order in which they were sent to the printer. Some applications, however, may put each page of the document into a separate spool file, creating a different job in the queue for each page. Print jobs are always added to the bottom of the queue. When the job currently processing is complete, the spool file for that job is deleted from the hard disk, and the top-most job in the queue is then processed.

Jobs that are "on hold" are displayed at the bottom of the job list in italic font. A job goes on hold when it has been canceled or when an error is detected during processing. An overall status message about the Backgrounder displays in the lower left corner of the window. The normal message is "Available," indicating that the Backgrounder can process jobs immediately or add them to the queue.

D. BACKGROUNDER MENUS

File menu

Open Status Window and **Close Status Window:** Opens and closes the Backgrounder status window. The Backgrounder continues to work if the status window is closed.

Log Files: The Backgrounder has the ability to create and maintain a sequential history file, or **Log** file, of Backgrounder print jobs. This Log file can be enabled and manipulated with the following commands of the File menu:

New Log File: Selects a new file in which to maintain your ongoing Backgrounder printing log.

Save Copy of Log as: Saves the current Log file to a new file name or location of your specification.

Start Recording Log: Begins logging print history. Before the Log file is started, you are asked to specify a Log file in which to save your processed print job entries. When logging begins, this option dims.

Stop Recording Log: Stops logging print history. This option dims once print logging stops.

Get Info: Provides additional information about the currently selected print job. Click on the processing job or any job in the queue, before selecting Get Info. Double-clicking on a job in the status window is a shortcut for Get Info.

Quit: Exits the Backgrounder. Note that you cannot quit while a job is being processed (see **Stop Processing** on the following page). All jobs in the queue are retained and processed when Backgrounder is next started.

NOTE: *The spool files are stored in the "Spool Folder," inside the "System Folder." If these files are deleted, the corresponding print jobs will be lost, and must be printed again.*

Admin menu

Stop Processing: Stops the Backgrounder from processing any jobs, although it will still receive them and add them to the queue. A dialog box is displayed if Stop Processing is selected while Backgrounder is processing a job, asking when the job should be put on hold. The Backgrounder status box in the lower left-hand corner of the window indicates that Backgrounder has stopped.

You cannot quit from Backgrounder while it is processing a job. **Stop Processing** must first be selected to cancel the processing job and stop Backgrounder. When Backgrounder stops, the menu changes to **Continue Processing**. When this option is selected, the server starts processing the top job in the queue.

Preferences: Presents a dialog box containing options for fine-tuning the Backgrounder. **Background printing priority** determines how much time your Mac spends processing the image, and how much time it spends in the foreground

application (interpreting mouse clicks, key presses, etc.). When the priority is set to **High**, Backgrounder processes the image faster, but the foreground application may become less responsive. With the priority set to **Low**, Backgrounder takes longer to process the image, yet the responsiveness of the other applications is improved.

Jobs menu

All commands in the Jobs menu act on the currently selected job.

Hold: Prevents an individual job from being processed. Jobs that are "on hold" are displayed in italic font at the bottom of the queue. Placing a job on hold is useful if you wish to create a print job at present, yet save its processing until later.

If **Hold** is selected on the job currently processing, the job is canceled before it is placed on hold. Canceling the current job can take some time, since the printer software may be performing a lengthy task that cannot be interrupted.

Remove Hold: Moves the job from the hold section of the list and places it at the bottom of the waiting queue.

Delete: Permanently removes the selected print job. The corresponding spool file is deleted from the Spool Folder. Use this command only when you are sure that you do not wish to process the job. Note that the job currently processing cannot be deleted (this happens automatically when it is printed successfully).

Move Job Up and Move Job Down: Adjusts the position of the selected job in the queue, allowing you to prioritize jobs. The queue is processed in top-to-bottom order.

E. PROBLEMS DURING A BACKGROUND PRINT

Errors that are detected during a background print must be reported. The Backgrounder, however, cannot simply present a dialog box as soon as the error occurs, since the dialog could obscure work that is being done in the foreground. Error dialogs appear immediately, however, if the Backgrounder is in the foreground when the error is detected.

If operating in the background, Backgrounder stops processing until it is brought to the front. When Backgrounder detects an error, it beeps and visually indicates an error condition. This error condition is signaled by alternately flashing between the Application menu and the Backgrounder icon. A small diamond symbol is also displayed next to the Backgrounder icon within the Application menu.

Complete and save any work in the foreground application before bringing the Backgrounder to the front. Once Backgrounder is in the foreground, the error dialog displays and processing continues or is canceled. Some errors force Backgrounder to stop processing all jobs.

Maintenance 7
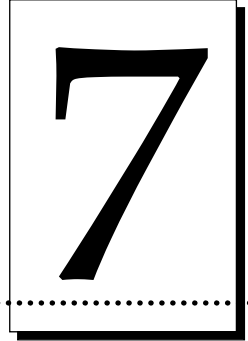
Your 4200 Series Card Printer is built to require a minimum amount of maintenance. Nevertheless, there are a few procedures you can perform on a regular basis or as needed to ensure the best possible performance.

A. SUPPLIES REQUIRED

For the maintenance procedures outlined in this section, you will need the following items:

- Isopropyl alcohol
- Acetone
- Standard clear adhesive tape or masking tape
- Soft, lint-free cloth

Or, to make these maintenance procedures more convenient, a Printer Cleaning Kit is available from your reseller. This optional kit includes the following:

- **Printhead Cleaning Pens** pre-moistened with 99.99% isopropyl alcohol for cleaning your printer's Printhead.
- **Cleaning Cards** with an adhesive backing for automatically cleaning your printer's gray Card Feed Rollers and the Cleaning Roller.
- **Cleaning Pads** pre-moistened with 99.99% isopropyl alcohol for cleaning your printer's Drive Roller and general inside area.

IMPORTANT!

1. *Never use a sharp tool or abrasive object of any kind to clean the Printhead. You will damage the Printhead!*

2. *Watches, rings, bracelets, and other jewelry can damage the Printhead if accidentally bumped against it. For best results, remove such items before touching any internal components of printer.*

3. *As with any electronic device, internal components of the printer, such as the Printhead, may be damaged if exposed to static electrical discharges. To avoid potential damage, always wear an appropriate personal grounding device, such as a wrist strap (with integral resistor) connected to an ESD ground. Or, at a minimum, make positive contact with the bare metal chassis of the printer with your hand prior to touching any internal electrical components.*

B. STANDARD PRINTHEAD CLEANING

This procedure should be performed if you notice a streak on the card where color was not transferred. This procedure should also be performed during every ribbon change or after **every 250 prints** in order to maintain consistent print quality.

Printhead
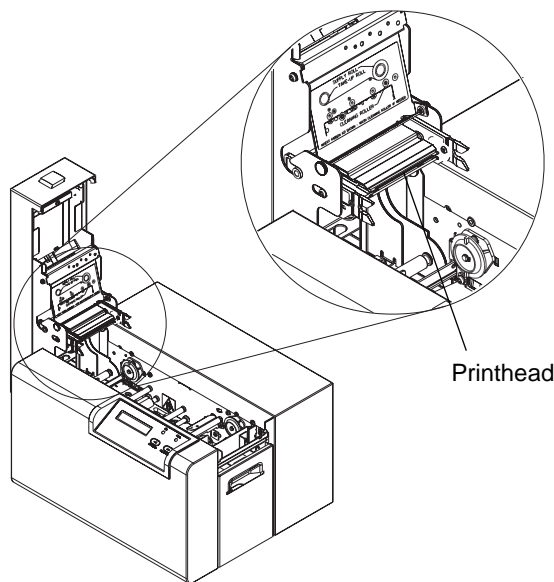
1. Open the printer's Top Cover by pressing the Cover Release Button.

2. If you observe dust and/or other particles laying on the top surface of the ribbon, manually roll it up into the take-up roll. Occasionally, dust may settle on the top surface of the ribbon and cause print quality problems.

3. Use a **Printhead Cleaning Pen** from the Printer Cleaning Kit or a soft, lint-free cloth *slightly* moistened with isopropyl alcohol and firmly wipe back and forth across the surface of the Printhead. If using a cloth, be extremely careful not to use too much alcohol. It must not be allowed to drip into the printer!

4.   Once the Printhead is completely dry, shut the cover. If a streak persists, perform the steps in Part C.

C. EXPANDED PRINTHEAD CLEANING

Perform if you have a streak on the printed output that can't be solved by the Standard Printhead Cleaning procedure. To maintain your printer's high quality of printing, this procedure should also be performed approximately **every 2,500 prints** as part of the printer's general maintenance program.

1.   Open the printer's Top Cover by pressing the Cover Release Button.

2.   Use a soft, lint-free cloth *slightly* moistened with acetone to wipe off the surface of the Printhead. Be extremely careful not to use too much acetone. It must not be allowed to drip into the printer!

CAUTION!   *ACETONE IS A VERY POWERFUL SOLVENT. DO NOT APPLY ACETONE TO ANY OTHER AREA OF THE PRINTER, SINCE IT WILL DESTROY THE FINISH OF PAINT, RUBBER, AND PLASTIC.*

3.   Allow the Printhead to thoroughly dry before closing the cover.

4.   Shut the cover. If a streak persists, contact your dealer for further assistance.

D. CLEANING THE PRINTER'S CASE

The printer has a durable casing that should retain its luster and appearance for many years. Clean it only with a soft cloth slightly dampened with water or a mild soap. Do not use excess water or cleaning solvents of any kind. Never spray the cabinet with a cleaner. Rather, spray the cloth first, then wipe down the printer.

E. CLEANING THE INSIDE OF THE PRINTER

As you use your printer, dust and other foreign particles may accumulate inside the printer's case. These particles are attracted to the underside of the ribbon by static produced during printing and can cause voids on the printed image. Periodically, use the following procedure to remove dust and other foreign particles:

1.   Open the printer's Top Cover.

2.   Remove the ribbon from the printer.

3.   Use a **Cleaning Pad** from the Printer Cleaning Kit or a soft, lint-free cloth slightly moistened with isopropyl alcohol to wipe out all visible areas inside the printer. Remove any debris that may be inside. *Be extremely careful not to let any alcohol drip inside the printer!*

4.   Once the cleaned areas are completely dry and free of foreign debris, re-install the ribbon, and close the cover.

F. CLEARING A CARD JAM

If a card becomes jammed inside the printer, the LCD Display will indicate the jam. At this point you can either try to correct the problem and continue printing with the same card, or remove the card completely and continue printing with a new card. Refer to the following steps for instructions on doing either:

1. Leave the power ON, and open the printer's Top Cover.

2. Remove the ribbon if necessary.

3. **If you would like to try to correct the problem and continue printing with the same card**, do so by pressing the On/Cancel button to advance the card or the Pause/Resume button to reverse the card. Use these buttons to help free the card from its jam. Try not to move the card too far from where it was just before the jam occurred. Once the jam is cleared, replace media, close the Top Cover, and press the Pause/Resume button to resume printing.

4. **If you would like to remove the jammed card completely**, do so by using the On/Cancel and Pause/Resume buttons to manually eject the card. Then, replace media, close the Top Cover, and press the On/Cancel button. At this point, the LCD Display will prompt you to either press the Pause/Resume button or the On/Cancel button. Pressing the Pause/Resume button will cause the printer to feed in a new card and reprint the job which originally jammed along with all subsequent jobs still being sent. Pressing the On/Cancel button will reboot the printer and cancel all jobs within the printer's memory. In this case, you must also cancel and resend the print job from your computer.

G. CLEARING A RIBBON JAM

If the ribbon becomes stuck to a card or jammed inside the printer, the LCD Display will indicate that it is jammed. Refer to the following steps to clear the jam:

1. Leave the power ON, and open the printer's Top Cover.

2. Remove the Take-Up core (the side with used ribbon on it) from in between the two black Drive Hubs.

3. Steadily pull the ribbon free from where it is jammed. If stuck to a card, pull the ribbon off the card and throw the card away. If it is jammed underneath the rollers, press and hold down the printer's Pause/Resume button as you gently pull up on the ribbon. Do not jerk the ribbon to free it, since this will increase the chance of breaking it. If it does happen to break, simply tape the broken end of the supply roll directly onto the take-up roll. Then, wind a few inches worth of ribbon from the supply roll onto the take-up roll. Be sure the ribbon is passing beneath both the supply and take-up rolls.

4. Once the jam is cleared, replace media, close the Top Cover, and press the On/Cancel button. At this point, the LCD Display will prompt you to either press the Pause/Resume button or the On/Cancel button. Pressing the Pause/Resume button will cause the printer to feed in a new card and reprint

the job which originally jammed along with all subsequent jobs still being sent. Pressing the On/Cancel button will reboot the printer and cancel all jobs within the printer's memory. In this case, you must also cancel and resend the print job from your computer.

H. CLEANING THE CARD FEED ROLLERS

To assure consistent printer operation, all of the Card Feed Rollers within the printer should be cleaned during every ribbon change **(every 250 prints)** or if the rollers are noticeably dirty. To clean these rollers, use the special adhesive-backed Cleaning Cards from the Printer Cleaning Kit. Refer to the following steps to run a **Cleaning Card** through your printer:

Card Feed Rollers
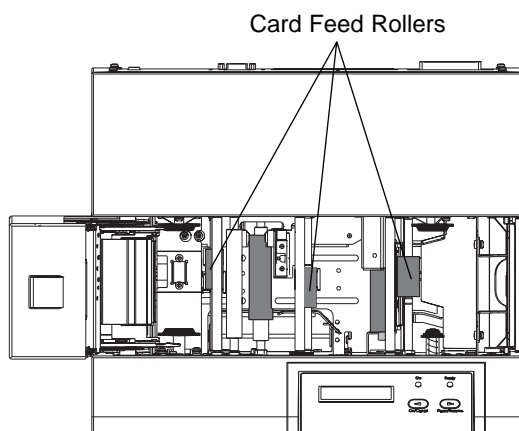
1. Open the Top Cover and remove the ribbon and cards from the printer. Leave the printer power ON and the Top Cover open throughout this procedure. The Cleaning Roller can also remain within the printer during this cleaning process.
2. Remove the Cleaning Card's adhesive backing paper.
3. Insert the Cleaning Card into the Card Hopper as you normally would any other type of card. Be sure, however, that the shortest non-adhesive end of the Cleaning Card enters the printer first and that the side of the cleaning card with the adhesive backing removed (the sticky side) is facing upward. If the card is inserted with the sticky side facing downward, it will stick to the Card Input Tray and will not feed.
4. Once the Cleaning Card is properly inserted into the Card Hopper, hold down the On/Cancel button and push the Cleaning Card into the printer until you feel the second gray feed roller grab and begin feeding the card.
5. Continue to hold down the On/Cancel button until the Cleaning Card has fed completely through the printer. Repeat this cleaning procedure if necessary. After the cleaning procedure is finished, re-install media, close the printer's Top Cover, and turn the printer power OFF and ON to reset the printer.

NOTE: *Once you have completed the above cleaning procedure, you should also clean the printer's Drive Roller according to the steps in the next procedure.*

I. CLEANING THE DRIVE ROLLER

The printer's Drive Roller should be cleaned during every ribbon change or after **every 250 prints**. This helps prevent jams and maintain uninterrupted service. Also perform this procedure if the roller is visibly dirty. Use the following steps to clean the roller:
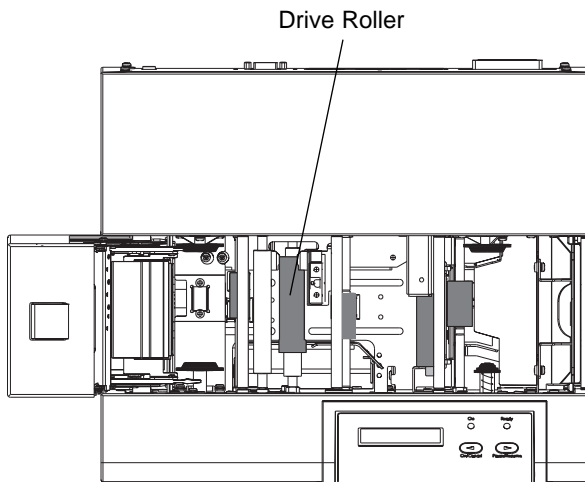
Drive Roller

1. Leave the printer power ON, and open the printer's Top Cover.
2. Remove the ribbon.
3. Locate the Drive Roller.
4. Use a **Cleaning Pad** from the Printer Cleaning Kit or a soft, lint-free cloth *slightly* moistened with isopropyl alcohol to wipe the roller clean. Press the On/Cancel and Pause/Resume buttons to move the roller back and forth while cleaning.
5. After the roller is clean and completely dry, replace the ribbon and close the printer's cover.

J. MAINTAINING THE CLEANING ROLLER

The Cleaning Roller removes dust particles from the top of a blank card as it feeds into the printer. Cleaning this roller will help prevent contaminated cards from passing beneath the Printhead, thus extending the Printhead's life and allowing for higher quality output. The Cleaning Roller should be cleaned during every ribbon change or after **every 250 prints**.

Please note that if you have already cleaned the Card Feed Rollers according to the instructions in Part H of this section, you do not need to complete the following steps since the Cleaning Roller should have also been cleaned as part of that procedure. If additional cleaning is necessary, however, please refer to the following steps
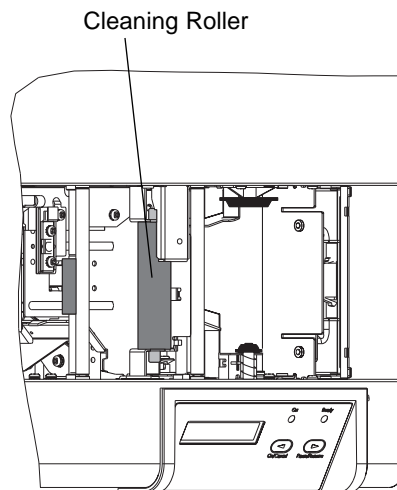
Cleaning Roller

1.   Open the Top Cover of the printer by pressing the Cover Release Button.

2.   Remove the ribbon.

3.   Locate the Cleaning Roller (the black roller next to the first In-Feed Roller on the printer's right-hand side).

4.   Reach down beneath the Cleaning Roller and lift it up and out of the printer.

5.   Once the Cleaning Roller is removed, clean the roller using one of the adhesive-backed **Cleaning Cards** from the Printer Cleaning Kit. With the card's adhesive backing paper removed, slide the card along the roller until all dust particles are removed. If you do not have a Cleaning Card, use a piece of standard clear adhesive tape. Use the sticky side of the tape to lift dust from the roller.

6.   Once all dust is removed from the Cleaning Roller, place it back into the printer, replace the ribbon, and close the printer's cover.

Mechanical Adjustments

8
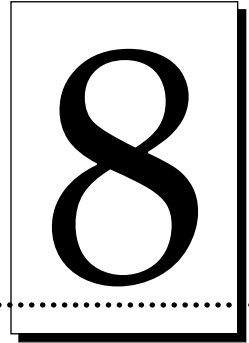
Your 4200 Series Card Printer is pre-set at the factory to accept and consistently feed and print a standard CR-80 3.375"L x 2.125"W x .030" (86mmL x 54mmW x .75mm) card size. When inserting cards which vary from this standard card size, one should make slight adjustments to the Card Guides and to the Card Separator Flap for consistent card feeding and for best output quality.
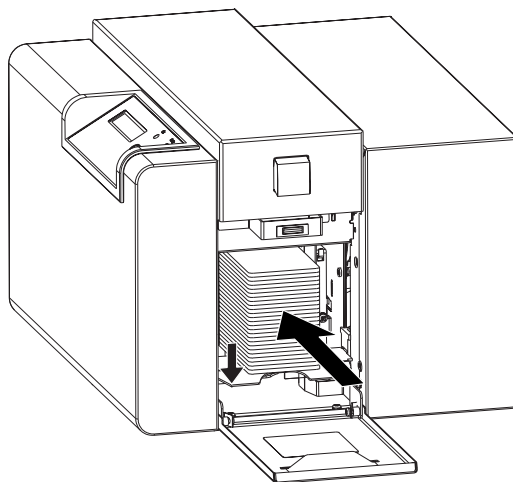
A. ADJUSTING THE CARD INPUT GUIDES

Two Card Input Guides reside within the Card Hopper. The left Card Input Guide, as you are looking straight into the Card Hopper, is adjustable to accommodate varying card widths. To adjust this Card Input Guide, refer to the following steps:

1. Open the Card Hopper Door located on the right-hand side of the printer and remove any cards which may be installed.

2. As you are looking straight into the Card Hopper, locate the Card Guide Adjustment Screw on the right-hand side of the Card Hopper and loosen it by rotating it counter-clockwise with a phillips head screw driver.
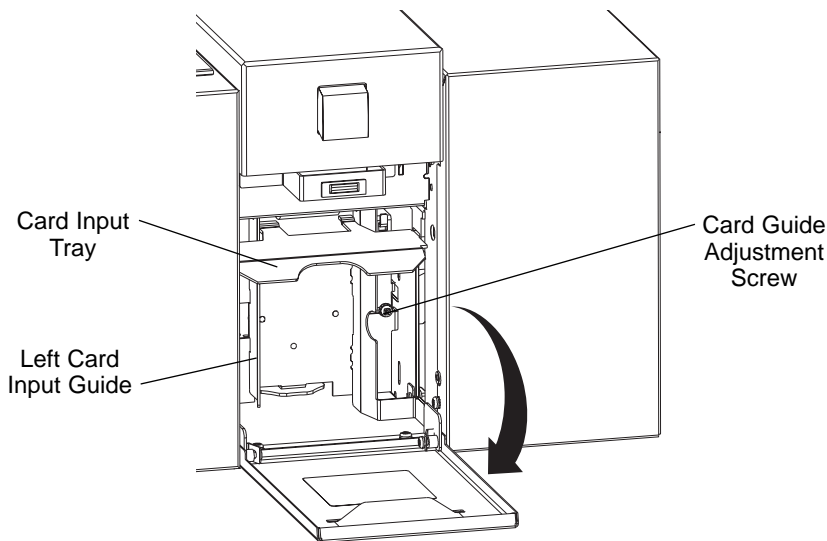
3. Once this screw has been loosened, press the Card Input Tray down and slide the left Card Input Guide to the left. Then, insert the stack of cards all the way into the Card Hopper.

4. Release both the Card Input Tray and the left Card Input Guide. Both are spring loaded and will automatically adjust to the size of your cards.

5. Tighten the Card Guide Adjustment Screw. Note that you may need to hold the left Card Input Guide slightly away from the card stack while tightening the screw if the stack seems to fit too snugly between the guides. Adjustment to the left Card Input Guide is now complete.

B. ADJUSTING THE INTERNAL CARD GUIDE

The printer is equipped with a spring-loaded Internal Card Guide which automatically adjusts to the width of your card stock. Depending on the ***thickness*** of your card stock, however, you may need to adjust the tension of the Internal Card Guide's spring. This is a very simple adjustment and is done by moving the card guide's Tension Lever to the appropriate position.

The default position of the Tension Lever is toward the front of the printer. This provides higher spring tension which is necessary for printing onto standard card sizes with a thickness of .030" / .75mm or higher. If using thinner cards, such as those with a .010" / .25mm thickness, move the Tension Lever toward the rear of the printer. This decreases the spring tension allowing the Internal Card Guide to accommodate the less rigid nature of thinner cards.

Internal Card Guide

Move here for thinner cards (.010"/.25 mm)

Move here for thicker cards (.030"/.75 mm or higher)

Tension Lever
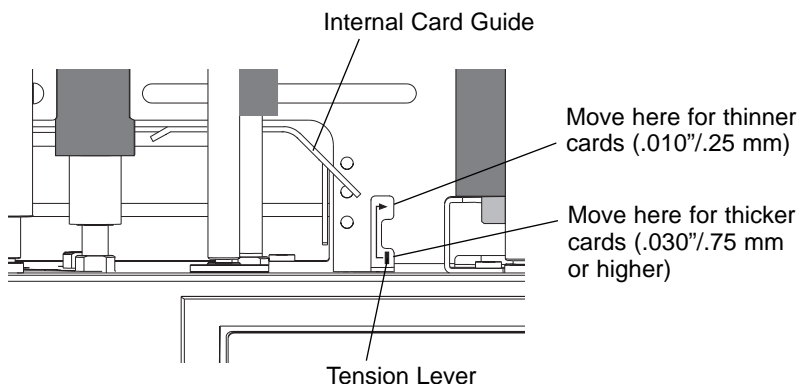
NOTE: *It is important the tension of the Card Input Guide is set properly. If spring tension is increased and you are using thinner cards, you may experience card jams. If spring tension is decreased and you are using cards with a standard thickness, printed cards may appear misregistered or blurry.*
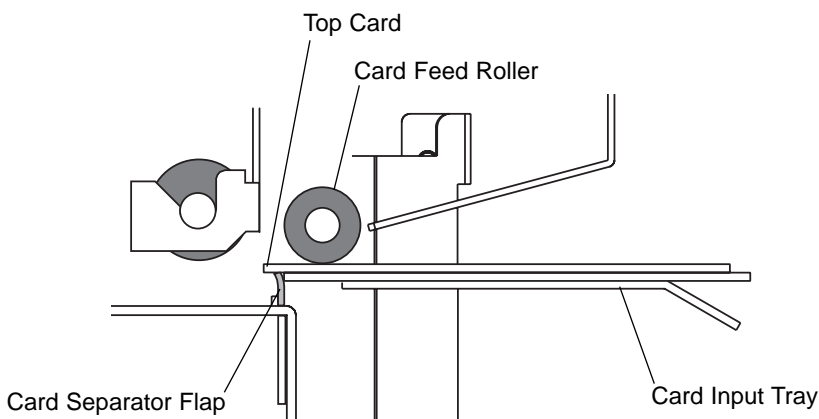
C. ADJUSTING THE CARD SEPARATOR FLAP

The Card Separator Flap resides inside the printer and helps prevent two cards from feeding simultaneously. This flap is adjustable to accommodate varying card thicknesses. Although the Card Separator Flap will automatically adjust to slight card thickness variations, a manual adjustment should be made in order for the printer to consistently feed cards which vary from the standard CR-80 .030" (.75mm) card thickness. To adjust the Card Separator Flap, refer to the following steps:

1. Open the Card Hopper Door located on the right-hand side of the printer.

2. Remove all but two cards from the Card Hopper.

3. Open the Top Cover of the printer by pressing the Cover Release Button.

4. Remove the ribbon from the printer.

5. As you are looking straight into the Card Hopper, locate the Card Separator Adjustment Wheel at the bottom center of the hopper.

Card Separator
Adjustment Wheel

Moves Card Separator Flap Upward

Moves Card Separator Flap Downward
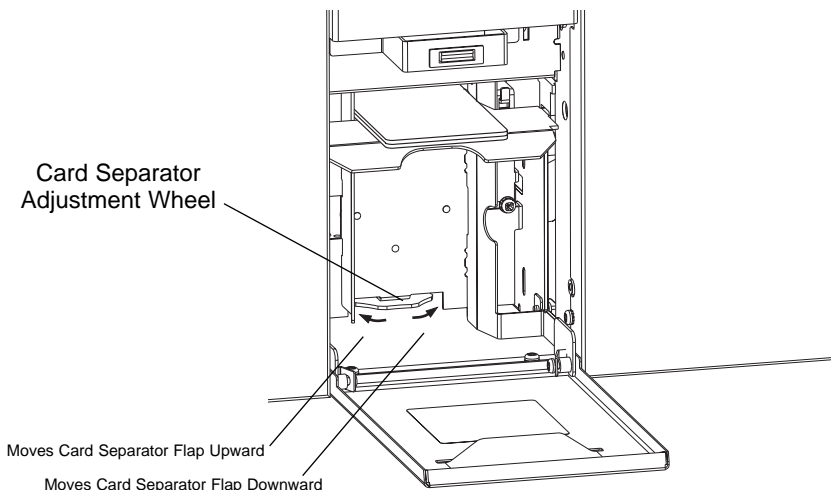
6. Rotate the adjustment wheel to the left to move the Card Separator Flap upward or to the right to move the flap downward. If inserting thinner cards, move the Card Separator Flap upward. If inserting thicker cards, move the flap downward.

7. When adjusted properly, the space between the Card Separator Flap and the first Card Feed Roller should be approximately the same as the thickness of a single card. To determine this, look inside the printer. Of the two cards left within the Card Hopper in step 2, only the top card should appear above the Card Separator Flap as shown in this side view illustration.

Top Card

Card Feed Roller

Card Separator Flap

Card Input Tray

8. Once you have adjusted the Card Separator Flap to the optimum level, re-install the ribbon and cards, and shut the printer's Top Cover and Card Hopper Door.

Troubleshooting

9
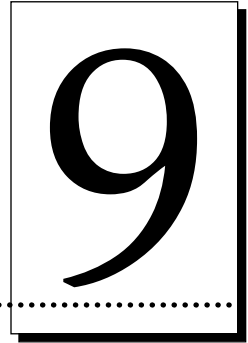
If you have difficulty operating the printer, the troubleshooting suggestions in this section should, in most cases, solve the problem. If you still have difficulty after trying these suggestions, contact your authorized reseller for technical assistance.

A. INTERPRETING LCD DISPLAY MESSAGES

The LCD display shows you the current status of the printer. Please refer to the following tables for a complete list and cause of all possible LCD messages. If the LCD message is communicating an error or requires an action, these tables will also offer a solution to what should be done. Note that not all of these messages apply if using the 4225 Monochrome Card Printer. See also Section 3-E for additional information on the printer's LCD Display.

TOP Line of LCD

Message	Cause	Solution
Card Jam	A card is jammed in the printer.	Clear the jam according to the instructions in Section 7-F.
Card Out/Not Fed	Either the Card Hopper is out of cards or the printer is unable to feed a card in from the Card Hopper.	Load more blank cards if out (see Section 4-D). Press the Pause/Resume button to continue. If the cards won't feed, check the following: • Be sure the cards fall within the .010″ to .060″ accepted card thickness range. • If feeding thicker or thinner cards, you may need to adjust the Card Separator Flap as described in Section 8-B. • The in-feed rollers may be dirty. Clean these rollers according to the directions in Section 7-H. • Be sure the cards you are using are not sticking together. Manually separate the cards if you suspect they are sticking to one another.
Clearing Jam	Indicates error or jam is being cleared.	
Feeding Card	Indicates card is feeding properly.	
Head-down Failed	Printhead is unable to lower.	Press Pause/Resume button to retry. If failure continues, call for technical assistance.
Head-up Failed	Printhead is unable to raise.	Press Pause/Resume button to retry. If failure continues, call for technical assistance.
Low Ribbon/Clean	Indicates the print ribbon will soon run out and that the printer should be cleaned.	Print until the ribbon is gone and replace it. Also, perform recommended printer maintenance according to Section 7.

TOP Line of LCD (continued)

Message	Cause	Solution
Mag Encoding	Indicates Mag Stripe is being encoded.	
Mag-down Failed	Magnetic encoding head is unable to lower.	Press the Pause/Resume button to retry.
Mag-up Failed	Magnetic encoding head is unable to raise.	Press Pause/Resume button to retry. If failure continues, verify that your printer does have a magnetic encoding head, or look for anything that may be jammed around the head. If your printer has a magnetic head, it should be located directly beneath the last Card Feed Roller on the card output side of the printer.
Mag Verify Error	The mag stripe was not encoded properly.	Press the Pause/Resume button to resume encoding.
Mag Verifying	Indicates data on mag stripe is being verified.	
Print Cover Open	The Top Cover is not properly shut.	Check that nothing is blocking the cover from being shut and close the cover.
Printer Ready	Indicates printer is ready to print.	
Printing	Indicates printer is printing.	
Printing Yellow	Indicates print ribbon's yellow panel is printing.	
Printing Magenta	Indicates print ribbon's magenta panel is printing.	
Printing Cyan	Indicates print ribbon's cyan panel is printing.	
Printing Black	Indicates the print ribbon's black panel is printing.	
Printing Overlay	Indicates print ribbon's overlay panel is printing.	
Printing Resin	Indicates a resin-only ribbon is printing.	

TOP Line of LCD (continued)

Message	Cause	Solution
Rib Calib Failed	Your attempt at calibrating the ribbon sensor through the printer driver has failed.	Be sure the ribbon is removed and that the printer's Top Cover is closed. Try calibrating again.
Ribbon Error/Out	The print ribbon is either out or a ribbon error has occurred.	Install a new ribbon if out (see Section 4-B). Press the Pause/Resume button to continue. If an error has occurred, check the following: • Is the proper ribbon type installed according to the Ribbon Type option selected in the printer driver (see Section 5-F)? • Is the ribbon installed properly according to Section 4-B? • Is the ribbon broken? If so, repair according to Section 7-G, step 3. • If the proper ribbon type is installed and the ribbon just seems to wind and wind, try recalibrating the Ribbon Sensor (4250 only; see Section 5-F).
Ribbon Jam/Out	The print ribbon has become jammed in the printer rollers, is stuck to the surface of the card, or is out.	Install a new ribbon if out (see Section 4-B). If jammed, clear according to the instructions in Section 7-G. Also, see the following prevention tips: • If the ribbon is sticking to the card, check to see that your card stock has a polished PVC finish. Cards with a dull or non-PVC surface will cause the ribbon to stick. • You may have tried to feed in a card that was too thick or perhaps two cards fed at once; this can sometimes cause the ribbon to break.

TOP Line of LCD (continued)

Message	Cause	Solution
Ribbon Jam/Out (continued)		• If the ribbon seems to be cut neatly in two, resyncronize the printhead by opening the Top Cover and pressing both the On/Cancel and Pause/Resume buttons simultaneously. Also, try setting the printer driver's Calibrate/Image Placement/ Horizontal Value to 0. If too large of a positive number is entered, a broken ribbon may result (see Section 5-F).
Sensor Calibrate	Indicates the Ribbon Sensor is calibrating.	
Smart Card Error	Unable to encode smart card.	Press Pause/Resume to continue encoding.
Smart Card Good	Indicates smart card was successfully encoded.	
Smart Encoding	Indicates smart card is being encoded.	
Smart-up Failed	Smart card is unable to be raised to the smart card contact station.	Press Pause/Resume button to retry. If failure continues, verify that your printer does have a smart card contact station, or look for a card misfeed or jam. If your printer has a smart card station, it should be attached to the metal bracket just to the left of the last Card Feed Roller on the card output side of the printer.
Wrong Ribbon	The wrong print ribbon is installed.	Check that you have the proper ribbon installed according to the Ribbon Type option selected in the printer driver setup window (see Section 5-F).

BOTH Lines of LCD

Message	Cause	Solution
CANCEL=Abort RESUME=Continue	Appears when the Pause/Resume button is pressed any time while the printer is powered ON. Also appears when the On/Cancel button is pressed during a print job.	Press the Pause/Resume button to return the printer to its "Ready" mode or, if printing, to continue operation. Press the On/Cancel button to abort the current print job and completely clear the printer's memory.
CANCEL=Abort RESUME=Reprint	Appears when the On/Cancel button is pressed *after* an error has occurred.	Press the Pause/Resume button to continue printing the current print job where it left off, once the error is cleared. Press the On/Cancel button to abort the current print job and completely clear the printer's memory.
DRAM Memory Bad! Service Required	The printer's 2 MB memory module is bad or not installed properly.	Disconnect printer's power, remove the printer's back cover, and check that the memory module is seated properly in its socket. If it is and this error message still appears, replace memory or call for technical assistance.
EE Memory Error! RESUME=Clear Mem	Indicates problem with *permanent* circuit board memory.	Remove the ribbon and press the Pause/Resume button to recalibrate the printer's memory module. Turn the printer power OFF and ON to reset.
EE Memory Error! RESUME=Retest	*Permanent* circuit board memory is bad.	Call for technical assistance.

BOTH Lines of LCD (continued)

Message	Cause	Solution
Preparing Card Count=xxxxxxxx	Appears when you initiate a card count report from the printer.	To initiate a card count report, press and hold the Pause/Resume button for about 5 seconds. A card count will appear on the LCD Display and a card with the same count report will be printed. If you do not want the card count report to print, press the Pause/Resume button and then the On/Cancel button.
Press ON to Initialize	Appears when the On/Cancel button is pressed *before* a print job is sent, when the printer is in its "Ready" mode.	Press the On/Cancel button to restart the printer and return it to its "Ready" mode.

B. GENERAL TROUBLESHOOTING SUGGESTIONS

The printer beeps just before each ribbon panel is printed.

■ This indicates the print ribbon is running low and that is will soon run out. Print until the ribbon is gone and replace the ribbon when necessary (see Section 4-B).

The printer doesn't seem to work at all.

■ Make sure that the power cord is plugged in securely on both ends and that the printer is ON. Confirm power is applied by pressing the On/Cancel button. Also, be sure the printer is ready. The On and Ready LED lights should both be illuminated when the printer is ready to print.

■ Make certain that the printer cable is securely connected. An error message in the software application telling you that the printer is not responding is usually due to a missing or defective interface cable.

I'm having problems printing from Windows 95/98.

- Print with either the 32-Bit Print Spooler or the Write Direct to Port option selected from within the printer driver setup (see Section 5-C and 5-F for more information on these options). In most cases, one or the other of these options will provide the best results when printing from Windows 95/98.

- Due to the wide variety of PC hardware and software configurations, however, some systems may print more effectively through the system spooler of Windows 95/98. If you choose not to print with either the 32-Bit Print Spooler or the Write Direct to Port option selected, but instead wish to print through the Windows 95/98 system spooler, the following steps will help you optimize your system for printing:

1. Click the **Start** button, point to **Settings**, and select **Printers**. When the Printers window appears, click on the **Card Printer** icon using the right mouse button and select the **Properties** option.

2. Select the **Details** tab, then select the **Spool Settings** button.

3. Select the **Print directly to the printer option** and click on **OK**.

4. Again from the Details tab, select the **Port Settings** button.

5. Deselect both the **Check Port state before printing** option and the **Spool MS-DOS print jobs** option, and click on **OK**.

6. Increase the Transmission retry value of the Details tab from 45 to **900**. Click on **OK** to close the Properties window.

My prints have a thin streak or line traveling the entire card length.

- There may be dust on the Printhead. Review the proper procedures for Printhead cleaning in Section 7-B.

- There may be a scratch or a burned out element in the Printhead. Contact your authorized reseller for Printhead replacement information.

My prints have "spots" (small voids) in them.

- Most likely due to dust inside the printer. Review the procedures in Section 7-E for cleaning the inside of the printer.

- May also be caused by dust or embedded contaminants on the card. Be sure the cards you are using are clean and stored in a dust free environment. Some cards have embedded contaminants in their polished surface and should not be used.

- May also be caused by a filthy Cleaning Roller. Refer to Section 7-J for instructions on maintaining the Cleaning Roller.

The photos on my ID cards look very pixelated or grainy.

■ For best photo-realistic output, you should always use high resolution 24-bit color images. If scanning an image, always scan the image at a 24-bit color setting, at the same size at which you will be printing, and at 300 dpi. If you stretch or "blow up" a small or low resolution image, you will always get a pixelated or grainy effect when printing.

■ If capturing images with a digital camera or video camera, be sure the camera has a high enough resolution for photos to be printed at about the same size at which they were captured.

The printing gets cut off or is not centered on the card.

■ Check that the correct Card Size option is selected in the printer driver setup. Improper card size settings will always send your image to the wrong area of the card.

■ If the Card Size option is set properly and the printing is still cut off or not centered, use the Calibrate/Image Placement option within the printer driver to precisely center the image.

Two or more cards feed at the same time.

■ Be sure the cards you are using are not sticking together. Manually separate the cards if you suspect they are sticking to one another. If separating cards, remember not to touch the surface of the card where you intend to print, since dirt or oil from your hands will impair print quality.

■ You may need to adjust the Card Separator Flap if feeding cards varying from the standard CR-80 .030" (.75mm) card size. See Section 8-B for adjustment instructions.

I can't get the cards in between the Card Input Guides.

■ You may be trying to load cards that are too large. Be sure the cards being loaded are within the accepted card sizes of 2.1" W x 3.25"L (53mmW x 82mmL) to 2.63" W x 3.88" L (67mmW x 98mmL). If the cards you are loading are within these specifications and still do not fit within the Card Guides, you may need to adjust the Card Input Guides. See Section 8-A for adjustment instructions.

Technical Specifications 10

Printing Methods:	**4250:** Dye-sublimation/resin thermal transfer **4225:** Resin thermal transfer
Printing Resolution:	300 dpi (11.8 dots/mm)
Colors:	**4250:** Up to 16.7 million **4225:** Up to 256 shades of gray
Print Speed:	**4250:** Approximately 6 seconds (K) Approximately 35 seconds (YMCKO) **4225:** Approximately 6 seconds (K)
Maximum Print Width:	2.24" (56.8 mm); edge-to-edge printing is available on standard CR-80, .030" (.76mm) cards only
Maximum Print Length:	3.37" (85.5mm)
Accepted Card Width:	2.1" to 2.63" W (53mm to 67mmW)
Accepted Card Length:	3.25" to 3.88" L (82mm to 98mmL)
Accepted Card Thickness:	.010" to .060" (.254mm to .75mm);
Card Types:	PVC or Polyester cards with polished PVC finish; monochrome resin ribbon required for straight polyester cards
Card Capacity:	Accepts up to 100 standard CR-80 PVC Cards
Software Driver:	Windows 3.1x, Window 95/98, Windows NT, and Macintosh
Interface:	Standard 8-bit Centronics-type parallel (ECP compatible) or Macintosh serial
Operating Temperature:	65ºF to 80ºF (18ºC to 27ºC)
Humidity:	Non-condensing 20%–60%
Dimensions:	8.4" H x 13.6" W x 12.7" D (213mmH x 345mmW x 323mmD)

Weight:	16.3 lbs. (7.4 kg)
Agency Listings:	Safety: UL 1950, CSA C2.2 and TÜV-GS (IEC-950);
	Emissions: FCC Class A, CRC c1374, Class A, TÜV-EMC (IEC-801 -2, -3, -4; CISPR 22, Class B), CE
Supply Voltage:	100-240 VAC
Supply Frequency:	50 Hz / 60 Hz
Options:	• ISO Magnetic Stripe Encoding Module, dual high- and low-coercivity, tracks 1, 2, and 3
	• JIS II Magnetic Stripe Encoding Module
	• Smart Card Encoding Module
	• FargoColor Color Matching Software
	• Printer Cleaning Kit

Appendix A: Magnetic Stripe Encoding Module

A
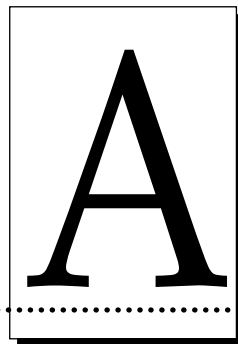
A. MAGNETIC TRACK OPTIONS

A 4200 Series Card Printer can be purchased with one of two types of factory-installed Magnetic Stripe Encoding Modules. The first, most common type is an ISO Standard encoding module with a dual-coercivity (high or low) encoding head. The second is a JIS II Standard encoding module commonly used in Japan.

By default, the printer driver is set to encode according to ISO standards onto high-coercivity magnetic stripes. To change the encoding mode, coercivity setting, or to modify the ISO standards for tracks 1, 2, and 3, simply select the **Magnetic Track Options** tab (or Magnetics button) from within the printer driver setup window. The following Magnetic Track Options will display.

NOTE: *If using the printer with a Macintosh, it is only possible to encode according to ISO Standards. These standard ISO encoding options are not listed in the printer driver and cannot be modified. The printer driver will only display options for **Coercivity**, **Verify Magnetic Data**, and **Shift Data Left**. The following lists the standard ISO settings preset in the printer driver for magnetic encoding:*

Track 1: Bit Density=210 BPI, Character Size=7 Bits, LRC Generation=Even Parity, Character Parity=Odd Parity, and ASCII Offset=SPACE

Track 2: Bit Density=75 BPI, Character Size=5 Bits, LRC Generation=Even Parity, Character Parity=Odd Parity, and ASCII Offset=ZERO

Track 3: Bit Density=210 BPI, Character Size=5 Bits, LRC Generation=Even Parity, Character Parity=Odd Parity, and ASCII Offset=ZERO
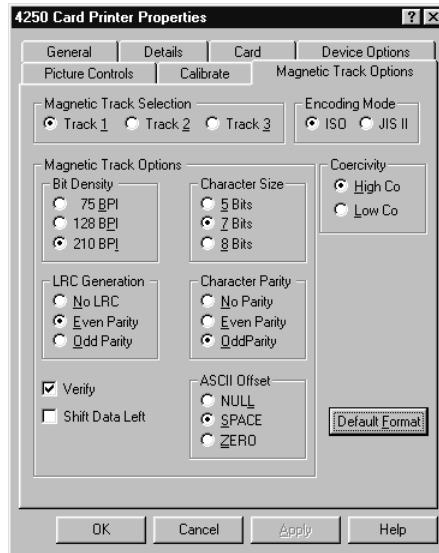
Encoding Mode / Coercivity / Track Selection

Use the Encoding Mode option to specify which magnetic encoding standard you would like to use. The **JIS II** option provides encoding compatibility with the JIS C 6220 Type II cards commonly used in Japan. When the JIS II mode is selected, only track 2 will be encoded. Note that no encoding customization options are available with the JIS II mode.

The **ISO** option provides encoding capability for either high or low-coercivity cards on tracks 1, 2, and 3 and is the industry's most standard mode of magnetic encoding. Use the **Coercivity** option to select the type of magnetic stripe you would like to encode. If your application requires customization of the standard ISO encoding process, use the **Track Selection** option to specify which track you would like to configure through the Magnetic Track Options. Although the default ISO Magnetic Track Options should be correct for almost all applications, these options can be customized if your application requires it. Please note that all options must be changed separately for each of the three individual tracks. If you would like to set these options back to the ISO standard settings once they have been changed, simply select the **Default Format** button for each of the separate tracks. Please refer to the following for a description of all Magnetic Track Options.

IMPORTANT! *The **Magnetic Track Selections** are used only for configuring the way in which each of the three magnetic tracks will encode. They DO NOT designate which tracks the printer will encode (for example, if you would like to encode only Track 2). This must be done through your specific software program. Also, note that although the printer driver will remember the settings you specified for each of the three tracks, the printer driver will always default to displaying the options for Track 1 whenever the printer driver setup screen is first opened.*

Magnetic Track Options

Use these options to customize the ISO encoded data format for each of the magnetic stripe's three tracks. Remember that each track must be customized independently of the other two. This means you must specify which of the three tracks to customize by selecting one of the three track options. After making the required selection, the Magnetic Track Options box displays the current set of customization options for the selected track. Note that for most applications, however, the default settings of these options should not need to be changed.

Encoded Bit Density

This option enables customization of the Bit Recording Density (Bits per Inch) used to encode the magnetic data on the currently selected track.

The default ISO Standard selections for this option are:

Track 1   -   210 BPI
Track 2   -   75 BPI
Track 3   -   210 BPI

Character Data Size

This option enables customization of the Character Data Size (Bits per Character) used to encode the magnetic data on the currently selected track. Note this character size includes the parity bit, if enabled.

The default ISO Standard selections for this option are:

Track 1   -   7 BPC
Track 2   -   5 BPC
Track 3   -   5 BPC

Character ASCII Offset

This option enables customization of the Character ASCII Offset used to encode the magnetic data on the currently selected track. This character offset value is subtracted from the ASCII value of each magnetic stripe data character prior to encoding on the track.

The default ISO Standard selections for this option are:

Track 1   -   SPACE
Track 2   -   ZERO
Track 3   -   ZERO

Character Data Parity

This option enables customization of the Character Data Parity used to encode the magnetic data on the currently selected track.

The default ISO Standard selections for this option are:

Track 1   -   ODD
Track 2   -   ODD
Track 3   -   ODD

LRC Generation Mode

This option enables customization of the LRC Generation Mode used to encode the magnetic data on the currently selected track.

The default ISO Standard selections for this option are:

Track 1	-	EVEN
Track 2	-	EVEN
Track 3	-	EVEN

Two other general encoding options are also available. The **Verify** option instructs the printer to verify that all magnetic data has been correctly encoded on each card. If this option is selected, any verify errors will cause the printer to signal an error condition. If this option is not selected, the verify pass will not be executed. This option is selectable for both ISO and JIS II encoding modes.

The **Shift Data Left** option is applied to all tracks when selected. This option shifts the recorded magnetic data to the left-hand end of the card. This is useful in situations that require cards to be readable with insert type readers that may not be able to read the right-hand edge of the card.

B. ISO TRACK LOCATIONS

The magnetic encoding module encodes onto tracks in accordance with an ISO 7811-2 magnetic stripe. Refer to the following diagram for track locations:
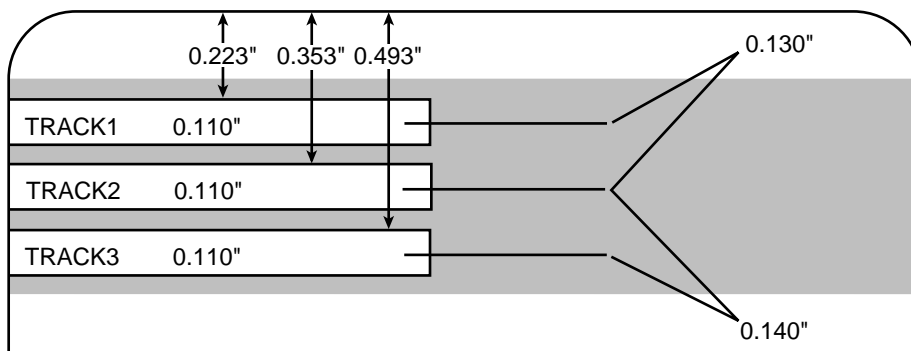
C. SENDING TRACK INFORMATION

Magnetic track data is sent in the form of text strings from the application software to the printer driver along with all of the other printable objects within your card design. In order for the printer driver to differentiate between magnetic track data and the rest of the printable objects, the magnetic track data strings must be uniquely "tagged." In other words, specific characters must be added to the

magnetic track data in order for the printer driver to know which data is to be encoded, which tracks to encode, when the track data stops and starts, and so forth. In some cases, these specific characters are automatically added to the string of track data by customized ID software applications. In most cases, however, the user must manually add these characters to the string of magnetic track data. If these characters are not added to the track data, the text intended for the magnetic track will most likely appear as printed text on the card. To avoid this, track information must be entered as follows.

When entering track data, the "~" character is entered first, followed by the track number (1, 2, or 3) on which you intend to encode the data. The data to be encoded should then follow. The first character of this data string must be the track's specific Start Sentinel (SS) and the last character must be the specific End Sentinel (ES). The characters or data in between the SS and ES can include all of the valid characters specific to each track. The number of these characters, however, is limited by each track's maximum character capacity. When segmenting track data, the appropriate Field Separator (FS) must be used. The following table shows the SS, ES, FS, and the valid characters defined for each track.

|	Start Sentinel	End Sentinel	Field Separator	Valid Characters	Maximum Number of Characters
Track 1	%	?	^	0-9, A-Z, Punct. (ASCII 32-95)	78
Track 2	;	?	=	0-9, ;, =, ? (ASCII 48-63)	39
Track 3	;	?	=	0-9, ;, =, ? (ASCII 48-63)	106

The following example illustrates how track data should be entered for tracks 1, 2, and 3:

Example: Sending data to Track 1
~1%JULIE ANDERSON^623-85-1253?

Sending data to Track 2
~2;0123456789?

Sending data to Track 3
~3;0123456789?

Appendix B: Interfacing Information

B
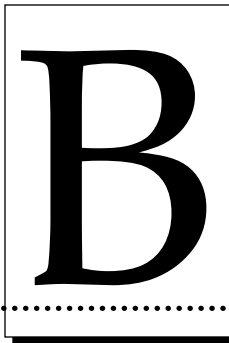
A. INTRODUCTION

Your printer is equipped with either a standard 8-bit centronics-type parallel interface port or a high-speed Macintosh serial interface port. These communication ports are the means through which the printer receives data from your computer. This section describes the pin assignments and signal specifications for each of these ports.

B. CENTRONICS-TYPE PARALLEL INTERFACE

The Centronics-type parallel interface is the most widely used printer interface due to its simplicity, speed, and standardization throughout the PC industry. The printer's parallel interface connector is a standard 36-pin Amp type with two metal-wire retaining clips and is ECP (Extended Capabilities Port) compatible. It mates with a standard, bi-directional PC to printer parallel cable. For best results, keep the interface cable to under 6 feet if possible.

WIRE DIAGRAM	
DB36P	DB25P
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
32	15
31	16
36	17
19 THROUGH 30	19 THROUGH 25
SHELL	SHELL

19   PIN 1

36   18

25   13

14   PIN 1
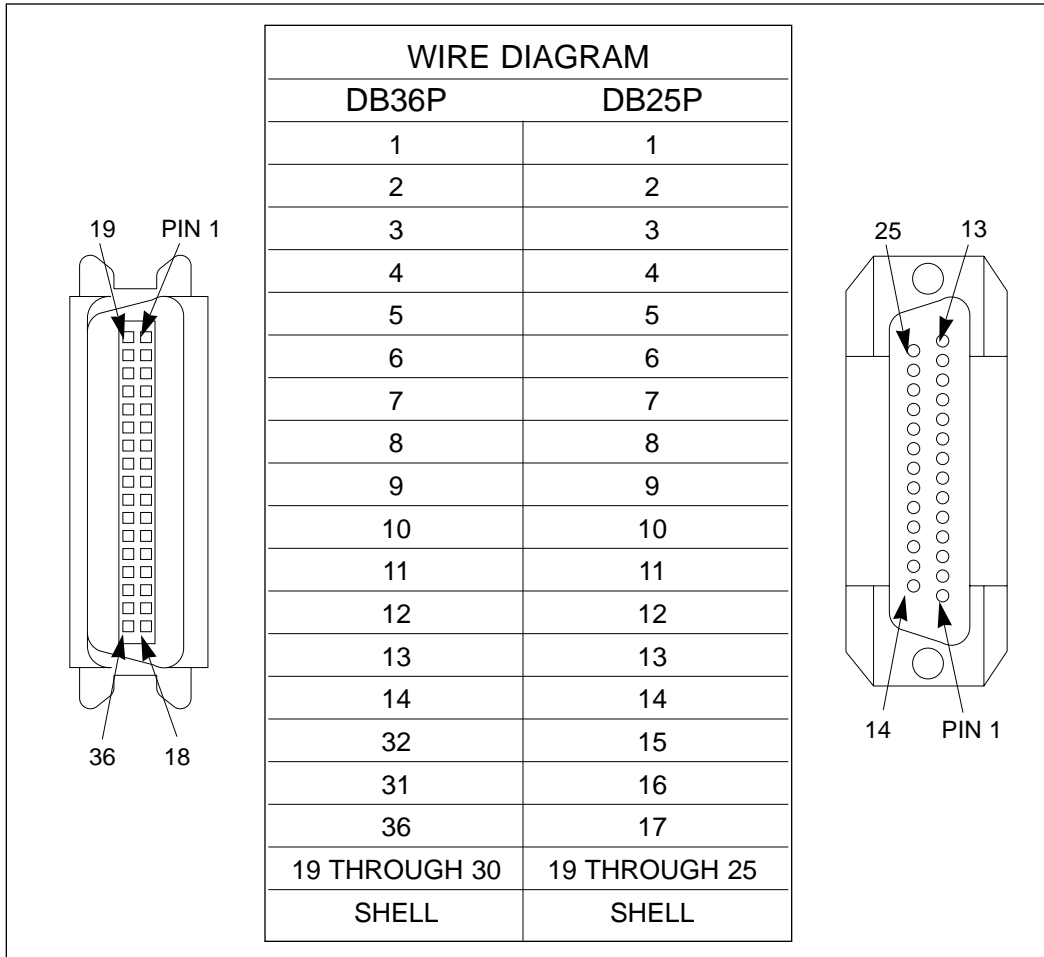
TABLE B-1: Parallel Interface Pin Assignments

C. MINI 8-PIN SERIAL INTERFACE

The mini 8-pin serial interface connector is the standard interface used by Macintosh. This serial port mates with a standard computer to printer serial cable. For best results, always use a high-quality serial cable which is less than 6 feet in length.

Pin assignments are as follows:
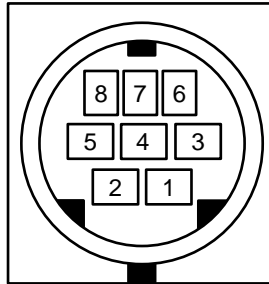
Pin Number	Signal Name	Signal Description
1	HSKo	External Clock Output ± 2V < Vout < ± 3.6V; Rout < 450Ω
2	HSKi	Not Connected
3	TxD-	Not Connected
4	GND	Signal ground. Connected to logic and chassis ground.
5	RxD-	Receive data (inverted);Vih = 0.2V; Vil = -0.2V; Rin > 12KΩ
6	TxD+	Not Connected
7	GPi	Not Connected
8	RxD+	Receive data. Received uninverted at SCC's RxD. Vih = 0.2V; Vil = -0.2V; Rin > 12KΩ

TABLE B-2: Serial Interface Pin Assignments

Appendix C: Internal Printer Settings

C
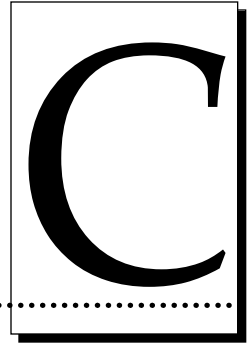
A. INTRODUCTION

Your printer is equipped with an internal adjustment mode programmable through the LCD Display. This adjustment mode allows you to change the printer's internal settings for overall Image Darkness, Image Placement, Magnetic Offset, SmartCard Offset, and Print Length. To change these settings, please refer to the remainder of this section.

CAUTION! *THESE SETTINGS ARE OPTIMIZED AT THE FACTORY AND IN MOST CASES WILL NOT NEED TO BE CHANGED. __DO NOT ALTER THESE SETTINGS UNLESS ABSOLUTELY NECESSARY__. IF YOU DO NEED TO CHANGE THESE SETTINGS, IT IS IMPORTANT TO WRITE DOWN THE ORIGINAL SETTINGS ALONG WITH THE PRINTER'S SERIAL NUMBER FOR LATER REFERENCE.*

NOTE: *If adjustment to the Image Darkness or Image Placement is required, try making these adjustments through the printer driver prior to changing the internal printer settings.*

B. ADJUSTING THE INTERNAL PRINTER SETTINGS

To enter the printer's adjustment mode, close the printer's Top Cover and press both the On/Cancel and Pause/Resume buttons at the same time. The following message will display on the printer's LCD Display:

Adjust Settings?
CANCEL or RESUME

Press the Pause/Resume button to enter the adjustment menu. Press either button accordingly to scroll backwards or forwards through the menu options. Note that the asterisk (*) on the LCD's bottom line indicates where you are in the overall menu. Once you find the menu option you would like to adjust, press both buttons again to enter that option. The following describes each menu option and how each is adjusted:

Image Darkness
-<   00   >+

This option sets the overall darkness of the printed image by increasing or decreasing the amount of heat used by the Printhead when printing. To lighten the printed image, press the On/Cancel button to enter a negative value and decrease the amount of Printhead heat. To darken the image, press the Pause/Resume button to enter a positive value and increase the amount of Printhead heat. For best results, make slight adjustments of only ±4 so you do not accidentally over-adjust the Printhead heat. If you set too high of a positive value, for example, the print ribbon may jam or even break. The maximum adjustment range is ± 32.

Image Placement
-<   00   >+

This option allows you to adjust the lengthwise or horizontal position of the printed image on a card so it appears centered. When adjusting this value, keep in mind that cards always remain in the same position as they travel through the printer. The following diagram represents how the printed image will move in relation to the fixed card position as a positive or negative Image Placement value is entered.
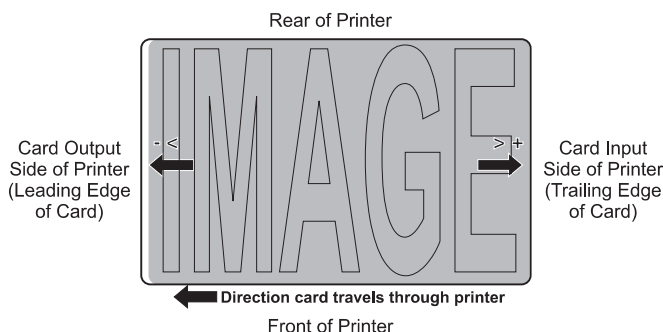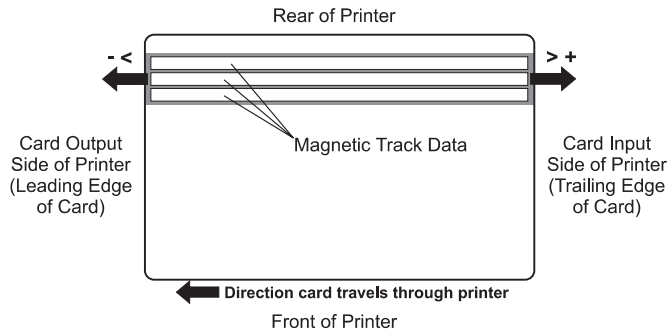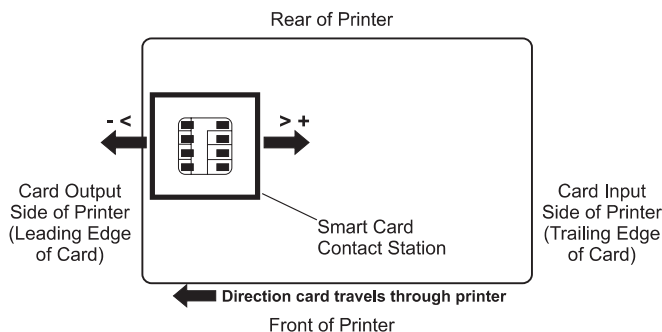
To move the printed image toward the leading edge of the card, or card output side of the printer, press the On/Cancel button to enter a negative value. To move the printed image toward the trailing edge of the card, or card input side of the printer, press the Pause/Resume button to enter a positive value. Notice the arrows on these buttons indicate the direction the printed image will move on the card. The maximum adjustment range is ± 32 pixels. As a rule, 10 pixels equals about .030"/.8mm which is about the same as the thickness of a standard CR-80 size card. Keep this in mind when adjusting this option so you do not over-adjust. If you set too high of a negative value, for example, the print ribbon may break.

Magnetic Offset
   -<   00   >+

This option applies only if the printer has a built-in magnetic stripe encoder. If so, this option allows you to shift the starting point of where the printer will begin encoding the magnetic track data on a card's magnetic stripe. When adjusting this value, keep in mind that a card and its magnetic stripe will always remain in the same relative position as the card travels through the printer. The following diagram represents how the magnetic data will move in relation to the fixed position of a card's magnetic stripe as a positive or negative Magnetic Offset value is entered.


To move the start of the magnetic data more toward the leading edge of the card, or card output side of the printer, press the On/Cancel button to enter a negative value. To move the start of the magnetic data toward the trailing edge of the card, or card input side of the printer, press the Pause/Resume button to enter a positive value. Notice the arrows on these buttons indicate the direction the magnetic data will move on the card's magnetic stripe. The maximum adjustment range is ± 32 pixels. As a rule, 10 pixels equals about .030"/.8mm. Keep this in mind when adjusting this option so you do not over-adjust. If you set too high of a negative value, for example, the printer may start encoding before the card's magnetic stripe reaches the encoding head.

SmartCard Offset
  -<   **00**   >+

This option applies only if the printer has a built-in smart card contact station. If so, this option allows you align the position of the smart card so that its smart chip makes positive contact with the smart card contact station as the card passes through the printer. When adjusting this value, keep in mind that a card and its smart chip will always remain in the same relative position during printing. The following diagram represents how the smart card contact station will be positioned in relation to a card's smart chip as a positive or negative SmartCard Offset value is entered.

Rear of Printer

- <   > +

Card Output
Side of Printer
(Leading Edge
of Card)

Smart Card
Contact Station

Card Input
Side of Printer
(Trailing Edge
of Card)

Direction card travels through printer

Front of Printer

To move the position of the smart card contact station more toward the leading edge of the card, or card output side of the printer, press the On/Cancel button to enter a negative value. To move the position of the smart card contact station more toward the trailing edge of the card, or card input side of the printer, press the Pause/Resume button to enter a positive value. Notice the arrows on these buttons indicate the direction the smart card contact station will move in relation to a card's smart chip. The maximum adjustment range is ± 32 pixels. As a rule, 10 pixels equals about .030"/.8mm.

Print Length
  -<   **00**   >+

This option allows you to reduce or lengthen the overall printable area in order to optimize edge-to-edge printing toward the trailing edge of a card. When adjusting this value, keep in mind that cards always remain in the same position as they travel through the printer. The following diagram represents how the print length will move in relation to the fixed card position as a positive or negative Print Length value is entered.
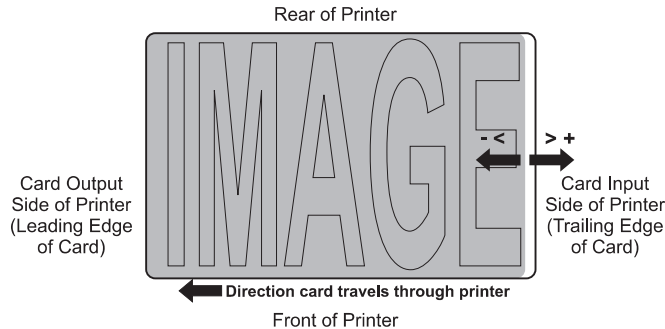
To reduce the print length and move the end of the printable area more toward the leading edge of the card, press the On/Cancel button to enter a negative value. To increase the print length and move the end of the printable area more toward the trailing edge of the card, press the Pause/Resume button to enter a positive value. Notice the arrows on these buttons indicate the direction the length of the printable area will move on the card. The maximum adjustment range is ± 32 pixels. As a rule, 10 pixels equals about .030"/.8mm which is about the same as the thickness of a standard CR-80 size card.

Once the adjustment is complete, press both buttons simultaneously to exit a specific option and return to the main menu. Once you are done making adjustments, press either button to scroll to the LCD screen which states:

<div align="center">

**To QUIT PRESS
RESUME+CANCEL**

</div>

As instructed, press both buttons to exit the adjustment mode. The LCD Display will then prompt you with the following message:

<div align="center">

**CANCEL=NO SAVE
RESUME=SAVE DATA**

</div>

Press the On/Cancel button to cancel any adjustments you just made to the Internal Printer Settings, or press the Pause/Resume button to save your adjustments. Once you have made your selection, the printer will exit the adjustment mode and return to the "Printer Ready" status.

IMPORTANT! *It is highly recommended that after making adjustments to the Internal Printer Settings you print a self test according to the instructions in Section 4-E. This self test print will help you determine if the Image Darkness, Image Placement, and Print Length are set properly. If your printer has a magnetic stripe encoder or a smart card contact station and you adjusted the Magnetic or SmartCard Offset options, test these adjustments by sending down a command to encode from your specific software program.*

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