



Persona® C25 Card Printer User Guide (Rev. 4.0)

Part Number: S000256

Persona® C25 Card Printer User Guide (Rev. 4.0), property of FARGO Electronics, Incorporated

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The revision number for this document will be updated to reflect changes, corrections, updates, and enhancements to this document.

Revision Control Number	Date	Document Title
Revision 4.0	15 April 2003	Persona C25 Card Printer User Guide (Rev. 4.0)

These reference documents were thoroughly reviewed to provide FARGO with professional and international standards, requirements, guidelines, and models for our technical, training, and user documentation. At all times, the *Copyright Protection Notice* for each document was adhered to within our FARGO documentation process. This reference to other

- ANSI/ISO/ASQ Q9001-2000 American National Standard, (sub-title) Quality Management Systems - Requirements (published by the American Society of Quality, Quality Press, P.O. Box 3005, Milwaukee, Wisconsin 53201-3005)
- The ASQ ISO 9000:2000 Handbook (editors, Charles A. Cianfrani, Joseph J. Tsiakals, and John E. West; Second Edition; published by the American Society of Quality, Quality Press, 600 N. Plankinton Avenue, Milwaukee, Wisconsin 53203)
- Juran's Quality Handbook (editors, Joseph M. Juran and A. Blanton Godfrey; Fifth Edition, McGraw-Hill)

documents does not imply that FARGO is an ISO-certified company at this time.

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How to use the guide

The Persona C25 Card Printer User Guide (Rev. 4.0) is, in fact, the troubleshooting and user guide for the entire Persona C25 Card Printer. The guide is designed to provide installers and technicians with quick, efficient lookup of related procedures, components, and terms. The guide can be used effectively in either soft or hard copy, depending on the preference of the installer or technician.

Refer to **Section 5: Printer Setup** (as needed).

Manual	Description
Sequence of Operations, Glossary of Terms, and Technical/Functional Specifications (hyper-linked)	You can go directly to the Sequence of Operations, Glossary of Terms, Technical Specifications, and Functional Specifications to learn how to use the processes, procedures, functions, and windows for the Persona C25 Card Printer within concise, correlative Tables.
Table of Contents (hyper-linked)	You can use the automated Table of Contents to quickly locate, for example, an error message, a procedure, the index, or an appendix.
Troubleshooting, Replacement, Removal, Diagnostic, and Navigation Procedures (in hyper-linked Sections)	You can go directly to Specifications, General Troubleshooting, Printer Adjustments, and Printer Packing to find troubleshooting, removal, and replacement procedures. The section titles are always labeled according to their function for consistent usage.
Cross-Referencing (hyper-linked)	You can use the cross-referencing links to quickly locate, for example, an error message or a procedure.
Comprehensive Index (hyper-linked)	You can use the COMPREHENSIVE INDEX to quickly locate information on the Persona C25 Card Printer, relating to a specification, a procedural step, a window or screen, a component, a term, a qualifier, or a related feature to this printer.

Safety Messages (review carefully)



Symbol	Critical Instructions for Safety purposes
<p>Danger:</p> 	<p>Failure to follow these installation guidelines can result in death or serious injury.</p> <p>Information that raises potential safety issues is indicated by a warning symbol (as shown to the below).</p> <ul style="list-style-type: none"> • To prevent personal injury, refer to the following safety messages before performing an operation preceded by this symbol. • To prevent personal injury, always remove the power cord prior to performing repair procedures, unless otherwise specified. • To prevent personal injury, make sure only qualified personnel perform these procedures.
<p>Caution:</p> 	<p>This device is electrostatically sensitive. It may be damaged if exposed to static electricity discharges.</p> <p>Information that raises potential electrostatic safety issues is indicated by a warning symbol (as shown to the below).</p> <ul style="list-style-type: none"> • To prevent equipment or media damage, refer to the following safety messages before performing an operation preceded by this symbol. • To prevent equipment or media damage, observe all established Electrostatic Discharge (ESD) procedures while handling cables in or near the Circuit Board and Printhead Assemblies. • To prevent equipment or media damage, always wear an appropriate personal grounding device (e.g., a high quality wrist strap grounded to avoid potential damage). • To prevent equipment or media damage, always remove the Persona C25 Ribbon and Cards from the printer before making any repairs, unless otherwise specified. • To prevent equipment or media damage, take jewelry off of fingers and hands, as well as thoroughly clean hands to remove oil and debris before working on the printer.

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Section 1: Specifications

Regulatory Compliances

Term	Description
FCC	<p>The Persona C25 Card Printer complies with the requirements in Part 15 of the FCC rules for a Class A digital device. These requirements are designed to provide reasonable protection against harmful interference in a residential installation.</p> <p>If, however, operation of this equipment in a residential area causes unacceptable interference to radio and TV reception, the operator is required to take whatever steps are necessary to correct the interference.</p>
UL	The Card Printer is listed under UL 1950 INFORMATION TECHNOLOGY EQUIPMENT file number E145118.
File Number	E145118, Volume 1, Section 15.
CSA	The Printer manufacturer has been authorized by UL to represent the Card Printer as CSA Certified under CSA Standard 22.2.
File Number	LR 88198.
TÜV-GS	The Card Printer has been tested and complies with IEC950 and bears the TÜV-GS mark.
License Number	S9674046
ITS-EMC	<p>The Printer has been tested and complies with CISPR 22-13 and EN55022 standards for EMI emissions and have been tested and comply with IEC801,-2,-3,-4 standards for susceptibility, Class B.</p> <p>(Note: Based on the above testing, the Printer manufacturer certifies that the Card Printer complies with all current EMC directives of the European Community and has placed the CE mark on the Card Printer.)</p>
License Number	V9674047

Agency Listings

Term	Description
Safety Standards	UL 1950, CSA C2.2 No.950-95 and TÜV-GS (IEC 950).
Emissions Standards	FCC Class B, CRC c1374, Class B and TÜV-EMC (IEC-801 -2, -3, -4; CISPR 22, Class B) CE and BCIQ Class A (Taiwan).

Technical Specifications

Term	Description
Printing Method	Dye Sublimation / Resin Thermal Printer
Printing Resolution	300 x 300 dpi (11.8 dots / mm)
Colors	Up to 16.7 million colors and 256 shades per pixel.
Print Speed	Here are the print speeds: <ul style="list-style-type: none"> • Approximately 8 seconds (K) • Approximately 15 seconds per card (KO) • Approximately 25 seconds per card (YMCO) • Approximately 30 seconds (YMCKO)
Print Area	Standard CR-80: <ul style="list-style-type: none"> • Card Size: 2.125 inches (54mm) x 3.375 inches (85.6mm) • Print Area: 2.11 inches (53.5mm) x 3.37 inches (85.5mm)
Accepted Card Sizes	<ul style="list-style-type: none"> • CR-80 (3.375 inches L x 2.125 inches W / 85.6mmL x 54mmW)
Accepted Card Width	2.1 inches to 2.13 inches W (53mm to 54mmW)
Accepted Card Length Range	<p>Single Sided: 3.25 inches to 3.88 inches L (82mm to 98mmL)</p> <p>Double Sided: 3.25 inches to 3.37 inches L (82mm to 85.3mmL)</p>

Continued on the next page

Technical Specifications (continued)

Term	Description
Accepted Card Thickness	.010 in. (.254 mil) to .030 in. (.75 mil)
Accepted Card Types	PVC or Polyester cards with polished PVC finish. Monochrome resin ribbon required for straight polyester cards.
Input Hopper Card Capacity	Accepts up to 100 standard CR-80 PVC cards (30 mil).
Print Speed	<ul style="list-style-type: none"> • Approx. 8 seconds per card / 450 cards per hour (K)* • Approx. 15 seconds per card / 240 cards per hour (B,O)* • Approx. 25 seconds per card (YMCO) • Approx. 30 seconds per card / 120 cards per hour (Y,M,C,K,O)* <p>* Indicates the ribbon type and the number of ribbon panels printed where Y=Yellow, M=Magenta, C=Cyan and K=Resin Black, O=Overlay, B=Dye Sublimation Black</p>
System Requirements	Windows 3.1x and Windows 95 driver included for IBM-PC's and compatibles. 32-Bit Print Spooler available for Windows 95
Interface	Standard 8-bit Centronics-type parallel (ECP compatible)
Operating Temperature	65 ° F to 80 ° F (18 ° C to 27 ° C).
Humidity	Non-Condensing 20% to 60%.
Dimensions	9.05" H x 17.43" W x 10.94" D (229mmH x 442mmW x 278mmD)
Weight	26 lbs. (11.8 kg).
Supply Voltage	100 to 240 VAC (2 A)
Supply Frequency	50 Hz / 60 Hz.

Functional Specifications

The Card Printer utilizes two different, yet closely related printing technologies to achieve its remarkable direct-to-card print quality for dye-sublimation and resin thermal transfer. **(Note:** The Card Printer will print from any IBM-PC® or compatible running Windows® 95/98/ME, Windows NT 4.0, Windows 2000, or Windows XP.)

The following describes how each of these technologies works:

Function	Description
Dye-Sublimation	<p>Dye-Sublimation is the print method the Persona C25 Card Printer uses to produce smooth, continuous-tone, photographic images. (Note: This process uses a dye-based ribbon roll that is partitioned by a number of consecutive color panels.)</p> <ul style="list-style-type: none"> • The panels are grouped in a repeating series of these three process colors along the entire length of the print ribbon: yellow, magenta, and cyan (YMC). • The Printer always prints the yellow panel (first), the magenta panel (second), and the cyan panel (third). • As the print ribbon passes beneath the Printhead, thermal elements within the Printhead heat the dyes on the ribbon. (Note: When these dyes are heated, the dyes vaporize and diffuse into the surface of the card. A separate pass is made for each of the three color panels on the ribbon.) <p>By combining the colors of each panel and by varying the heat used to transfer these colors, it is possible to print up to 16.7 million different shades of color. (Note: This blends one color smoothly into the next, producing photo-quality images with no dot pattern.)</p>
Resin Thermal Transfer	<p>Resin Thermal Transfer is the print method the Printer uses to print sharp black text and crisp bar codes that can be read by both infrared and visible-light bar code scanners.</p> <p>Like dye-sublimation, this process uses the same thermal Printhead to transfer color to a card from a resin-only print ribbon or the resin black (K) panel of a full color print ribbon.</p> <p>The difference, however, is that solid dots of resin-based ink are transferred and fused to the surface of the card to produce durable, saturated printing.</p>

Printer Components: Top Cover to Power Port

Component	Description
Print Top Cover	Opens to allow access to the Printhead, print ribbon, and card path. (Note: This cover must be closed in order for the Printer to begin printing.)
Cover Release Buttons	Unlatches the Top Cover.
Printhead	Printer component that prints. (Note: This component is fragile and must not be bumped or touched with anything other than a cleaning pen.)
Card Cleaning Cartridge	Automatically cleans cards for higher print quality.
LCD Display	<p>The LCD display shows the User the current status of the Printer. The top line of the LCD reports the status of the printing functions.</p> <p>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 (4MB or 16MB).</p> <p>Once the Printer has finished its startup system check, it will then display Printer Ready to indicate that the Printer is ready for operation.</p> <p>During operation, the LCD will also indicate the specific ribbon panel being printed, and if any printing errors have occurred.</p>
On LED Light	Indicates the Printer power is either ON or OFF .

Continued on the next page

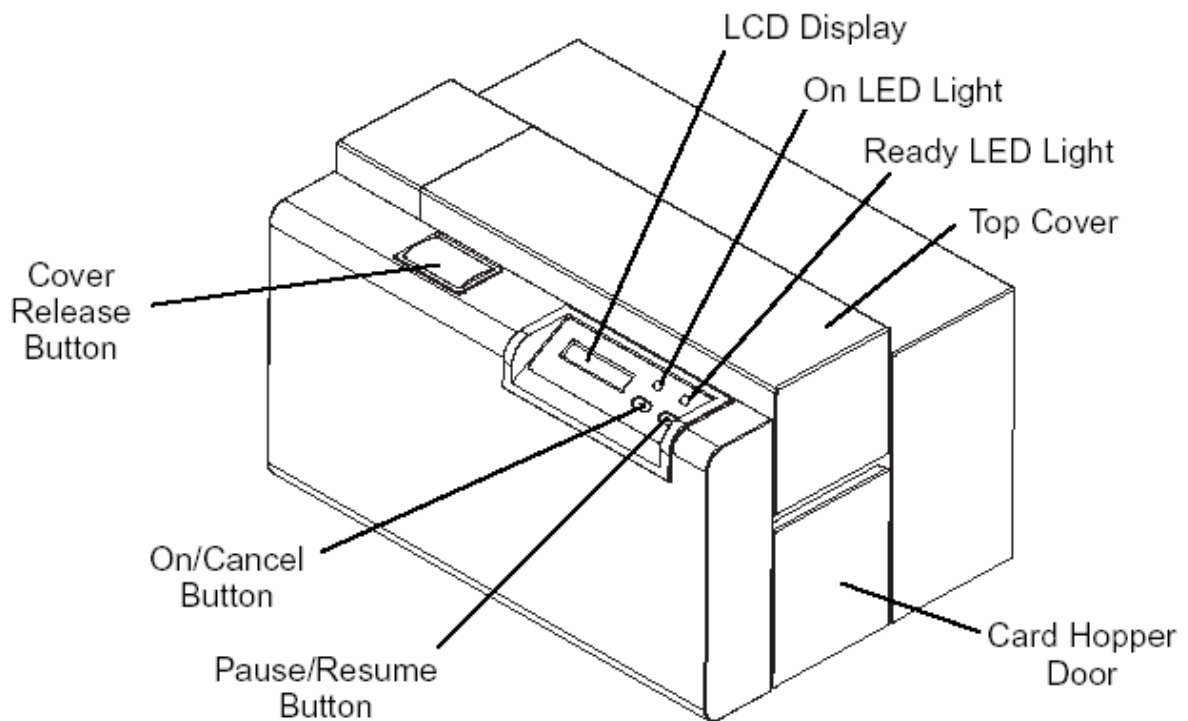
Printer Components: Top Cover to Power Port (continued)

Component	Description
Ready LED Light	<p>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.</p> <p>If this light is flashing, a Printer error has occurred. (Note: Refer to the Printer's LCD display for the specific type of error that occurred. See the LCD/SmartGuard Messages in Section 2, page 9.)</p>
On / Cancel Button	<p>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.</p> <p>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. (Note: With the Top Cover(s) open, this button can also be used to guidely rotate the feed Rollers forward. This is helpful when cleaning the Printer or if clearing jammed media.)</p>
Pause / Resume Button	<p>The Pause/Resume button allows the User to pause the Printer at any time during operation. Note, however, that the Printer will always finish its current task before pausing.</p> <p>If the Pause/Resume button is pressed in the middle of printing the magenta ribbon panel, the Printer will pause only after the entire magenta panel has printed. (Note: The Ready LED Light will turn OFF when the Printer is paused and ON again when operation is resumed. With the Top Cover(s) open, this button can also be used to guidely rotate the feed Rollers backward. This is helpful when cleaning the Printer or if clearing jammed media.)</p>
Access Card Slot	<p>This is the slot in which a SmartGuard Access Card is inserted when using the Printer's included SmartGuard Security Feature. (Note: This unique option prevents the Printer from operating unless a custom access card is inserted. It also allows the User to print custom SmartShield Security Images which glow under ultraviolet light.)</p>
Card Input Hopper	<p>Load blank cards into this Hopper.</p>

Continued on the next page

Printer Components: Top Cover to Power Port (continued)

Component	Description
Card Output Hopper	Stores printed cards; up to 100, 30 mil cards.
E-card Docking Station Port - For Smart Card Support	Provided only if the Printer includes an optional E-card Docking Station. This is necessary for support of third party smart card encoding features.
Parallel Interface Port	Connects to a Windows PC with a parallel cable.
Power Port	Connects to the included power.



Printer Components: Centronics-Type Parallel Interface

The Card Printer is equipped with a standard 8-bit Centronics-type parallel interface port. **(Note:** This communication port is the means through which the Printer receives data from the computer. 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.)

This section describes the pin assignments and signal specifications for this port.



Caution: Keep the interface cable to less than 6 feet in length.

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

Printer Components: Print Ribbons

The Card Printer utilizes both dye-sublimation and/or resin thermal transfer methods to print images directly onto blank cards. 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. (**Note:** A letter code has been developed to indicate the type of ribbon panels found on each ribbon.)

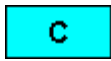
This letter code is described as follows:



= Dye-Sublimation Yellow Panel



= Dye-Sublimation Magenta Panel



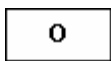
= Dye-Sublimation Cyan Panel



= Resin Black Panel



= Dye-Sublimation Black Panel



= Clear Protective Overlay Panel

Printer Components: Resin-Only Print Ribbons

Resin-only print ribbons consist of a continuous roll of a single resin color. (**Note:** No protective overlay panel (O) is provided since resin images do not require the protection of such an overlay.)

Type	Description
Standard Resin Black (K) (provides 1,000 prints)	<p>This ribbon provides high resin durability ideal for most general purpose, monochrome ID card applications.</p> <p>Resin black bar codes are readable by both infrared and visible-light bar codes scanners.</p> <div style="text-align: center; background-color: black; color: white; padding: 5px; width: fit-content; margin: 0 auto;">K</div>
Premium Resin Black (K) (provides 1,000 prints)	<p>This ribbon provides maximum resin durability that is ideal for applications such as access control where cards are repeatedly swiped through a Magnetic Stripe reader.</p> <p>Resin black bar codes are readable by both infrared and visible-light bar codes scanners.</p> <div style="text-align: center; background-color: black; color: white; padding: 5px; width: fit-content; margin: 0 auto;">K</div>
Colored Resin (provides 1,000 prints)	Colored resin ribbons are available in different colors for customizing or color-coding resin-only ID cards.
Metallic Resin (provides 1,000 prints)	Metallic resin ribbons are available for printing resin images with a unique metallic sheen.
Scratch-Off Resin (provides 1,000 prints)	A scratch-off resin ribbon is available for printing over areas of a pre-printed card in order to hide specific information such as a personal identification number.


Printer Components: Dye-Sublimation-Only Print Ribbons

A dye-sublimation-only print ribbon is available in a monochrome version. This ribbon consists of dye-sublimation ribbon panels which alternate with a clear protective overlay (O) panel. Dye-Sublimation images must have an overlay panel applied to them or they will quickly begin to wear or fade.



Caution: All color or monochrome dye-sublimation images must have the ribbon's clear overlay panel applied to them. If a protective layer is not applied, the 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.

- To apply the ribbon's clear overlay panel, select the Printer Driver's Overlay / Print Area tab. (**Note:** By default, the Printer Driver is setup to automatically apply the overlay panel for a selected a ribbon type that provides an overlay (O) panel.) (**Note:** The Printer requires specialized print ribbons in order to function properly.)

Type	Description
Dye-Sublimation Black (BO) (provides 500 prints)	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 codes scanners. 
Full-Color (YMCBO) (provides 250 prints)	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.

Printer Components: Dye-Sublimation/Resin Ribbons

The Dye-Sublimation/resin print ribbon combines the yellow (Y), magenta (M), and cyan (C) dye-sublimation panels with a resin black (K) panel.

By combining both types of ribbon panels, this ribbon can be used 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 on most ribbons to protect the dye-sublimation images. Dye-Sublimation images must have an overlay panel applied to them, or they will quickly begin to wear or fade.

Type	Description
Full-Color (YMCKO) (provides 250 prints)	This ribbon is used to print full-color photo ID cards along with resin black text and bar codes. Both infrared and visible-light bar code scanners can read bar codes printed with resin black. An overlay panel (O) is included to protect the full-color dye-sublimation printing.
Full-Color (YMCKOK) (provides 250 prints)	This ribbon is used for dual-sided printing. By supplying two resin black panels, this ribbon used to print full-color with resin black on one side and resin black-only on the other, without wasting an entirely new set of ribbon panels for the black-only side. An overlay panel (O) is also included to protect the side of the card with full-color dye-sublimation printing. No overlay is necessary for the resin black-only side. Both infrared and visible-light bar code scanners can read bar codes printed with resin black.
Full-Color (YMCKK) (provides 250 prints)	This ribbon is intended to be used for dual-sided printing. By supplying two resin black panels, this ribbon lets you print full-color with resin black on one side and resin black-only on the other, without wasting an entirely new set of ribbon panels for the black-only side. Both infrared and visible-light bar code scanners can read bar codes printed with resin black.

Printer Components: Blank Cards





Caution: 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 the Printhead. Always store the card stock in its original packaging or in a clean, dust-free container. Do not print onto cards that have been dropped or soiled. Printhead damage caused by contaminated or poor quality cards will automatically void the Printhead's factory warranty.

Type	Description
Card Size	The Standard CR-80 card size is 2.125 inches (54mm) x 3.375 inches (85.6mm). The Oversize card size is
Card Design	<p>The Printer will print onto any card with a clean, level, and polished PVC surface.</p> <p>Although the Printer is equipped with card cleaning Rollers, it is very important to always print onto cards specifically designed for direct-to-card dye-sublimation printing.</p>
Card Surface	<p>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.</p> <p>Certain types of Proximity cards have an uneven surface that will inhibit consistent color transfer.</p> <p>Certain types of smart card chips are raised slightly above the cards surface which also results in poor color transfer.</p>

Section 2: General Troubleshooting

The purpose of this section is to provide the User with specific procedures relating to the LCD/SmartGuard Messages, Communication Errors, Card Feeding Errors, Print Process Errors, Card Jam Errors, Ribbon Errors, Encoding Errors, Diagnosing Image Problem, Running the Self-Test, and Interfacing Information for the Persona C25 Card Printer.

Safety Messages (review carefully)

Symbol	Critical Instructions for Safety purposes
<p>Danger:</p> 	<p>Failure to follow these installation guidelines can result in death or serious injury.</p> <p>Information that raises potential safety issues is indicated by a warning symbol (as shown to the below).</p> <ul style="list-style-type: none"> • To prevent personal injury, refer to the following safety messages before performing an operation preceded by this symbol. • To prevent personal injury, always remove the power cord prior to performing repair procedures, unless otherwise specified. • To prevent personal injury, make sure only qualified personnel perform these procedures.
<p>Caution:</p> 	<p>This device is electrostatically sensitive. It may be damaged if exposed to static electricity discharges.</p> <p>Information that raises potential electrostatic safety issues is indicated by a warning symbol (as shown to the below).</p> <ul style="list-style-type: none"> • To prevent equipment or media damage, refer to the following safety messages before performing an operation preceded by this symbol. • To prevent equipment or media damage, observe all established Electrostatic Discharge (ESD) procedures while handling cables in or near the Circuit Board and Printhead Assemblies. • To prevent equipment or media damage, always wear an appropriate personal grounding device (e.g., a high quality wrist strap grounded to avoid potential damage). • To prevent equipment or media damage, always remove the Ribbon and Cards from the Printer before making any repairs, unless otherwise specified. • To prevent equipment or media damage, take jewelry off of fingers and hands, as well as thoroughly clean hands to remove oil and debris before working on the Printer.

LCD and SmartGuard Messages

The LCD display shows the current status of the Printer. Refer to the cause and solution Tables in this section for all possible LCD messages. (**Note:** These Tables display the LCD messages in alphabetical order. If the LCD message is communicating an error or requires an action, these Tables will also offer a solution to what should be done.)

Reviewing the Top Line LCD Messages

Message	Cause	Solution
Card Jam: Flip	A card is jammed in the Flipper Table area of the Printer.	See the Resolving the Card Jam: Flip Error Message procedure on page 39.
Card Jam: Mag	A card is jammed in the Magnetic Encoding Module, beneath the Flipper Table.	See the Resolving the Card Jam: Mag Error / Smart Error Message procedure on page 39.
Card Jam: Print	A card is jammed somewhere along the printing path, under the Printer's top-right cover.	See the Resolving the Card Jam: Print Error Message procedure on page 38.
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.	See the Resolving the Card Feeding Errors procedure on page 34.
Flipper Jam	Card Flipping Mechanism is unable to rotate.	See the Resolving the Flipper Jam error message procedure on page 37.
Flipping Card	Indicates card is being flipped for backside printing.	No action is required.
Head-down Failed	Printhead is unable to lower itself.	See the Resolving the Headlift error message procedure on page 40.

Continued on the next page

Reviewing the Top Line LCD Messages (continued)

Message	Cause	Solution
Head-up Failed	Printhead is unable to raise itself.	See the Resolving the Headlift error message procedure on page 40.
Invalid Key Card	The SmartGuard Access Card is invalid or is inserted backwards or up side down. Appears only when using the SmartGuard Security Feature.	Insert a valid SmartGuard Card or reinsert the card properly with the chip end down and facing you. See the SmartGuard User's Guide for more information.
Invalid Password	An invalid SmartGuard password was entered. Appears only when using the SmartGuard Security Feature.	Re-enter the correct password using any of the standard keyboard characters. See the SmartGuard User's Guide for more information.
Key Card Ready	Indicates SmartGuard or SmartShield data has successfully been encoded onto the SmartGuard Access Card. Appears only when using the SmartGuard Security Feature.	See the SmartGuard User's Guide for more information.
Key Disabled	Indicates the SmartGuard Security Feature has been disabled. Appears only when using the SmartGuard Security Feature.	See the SmartGuard User's Guide for more information.
Key Not Inserted	Attempts are made to print without the SmartGuard Access Card inserted. Appears only when using the SmartGuard Security Feature.	Insert a valid SmartGuard Access Card. See the SmartGuard User's Guide for more information.
Key Card Deleted	Indicates the data on the SmartGuard Access Card was successfully deleted. Appears only when using the SmartGuard Security Feature.	See the SmartGuard User's Guide for more information.

Continued on the next page

Reviewing the Top Line LCD Messages (continued)

Message	Cause	Solution
Low Ribbon/Clean	Indicates the print ribbon will soon run out.	See the <u>Resolving the Ribbon Low error message</u> procedure on page 42.
Mag encoding	Indicates the Mag Stripe is being encoded.	No action is required.
Mag Verify Error	The Mag Stripe was not encoded properly.	See <u>Resolving the Mag Verify error message</u> on page 44.
No Shield Loaded	Attempts are made to print with the Printer Driver's SmartShield option selected (even though the optional SmartGuard Security Feature is not used). OR If using the SmartGuard feature, the SmartShield image is not encoded onto the SmartGuard Access Card (currently inserted into the Printer).	If using the SmartGuard feature, insert an access card that contains a SmartShield image or encode a SmartShield image onto the current card and try your print job again. If you do not want to print a SmartShield image, deselect the Printer Driver's SmartShield option. See the SmartGuard User's Guide for more information.
Print Cover Open	Indicates that the top-right cover is not properly shut.	Check that nothing is blocking the cover from being shut and close the cover.

Continued on the next page

Reviewing the Top Line LCD Messages (continued)

Message	Cause	Solution
Rasterize Shield	Indicates the Printer is loading the SmartShield security image from the SmartGuard Access Card into its memory. Appears when a valid access card containing a SmartShield image is first inserted into the Printer. (Note: If SmartShield image is named, the name will also appear along with this message on the bottom line of the LCD Display. Appears only when using the SmartGuard Security Feature.)	See the SmartGuard User's Guide for more information.
Reading Key Data	Indicates the Printer is reading the data from the SmartGuard Access Card. Appears when a valid access card is first inserted into the Printer. Appears only when using the SmartGuard Security Feature.	See the SmartGuard User's Guide for more information.
Rib Calib Failed Error	Indicates that an attempt at calibrating the ribbon Sensor through the Printer Driver has failed.	See the Resolving the Skipping Ribbon Panel problem procedure on page 40.
Ribbon Error/Out Error	Indicates either the print ribbon is out or a ribbon error has occurred.	See the Resolving the Ribbon Low error message procedure on page 42.
Ribbon Jam/Out Error	The print ribbon has become jammed in the Printer Rollers, it is stuck to the surface of the card, or it is out.	See the Resolving the Ribbon Breaking problem procedure on page 43.

Continued on the next page

Reviewing the Top Line LCD Messages (continued)

Message	Cause	Solution
Ribbon Low Error message	Indicates either the ribbon is running low or is out.	See the Resolving the Ribbon Low error message procedure on page 42.
Smart Card Error	Unable to encode smart card.	See the Resolving the Printer cannot read Encoded Data problem on page 44.
Smart Encoding	Indicates the Printer is writing or encoding data onto the SmartGuard Access Card. Appears only when using the SmartGuard Security Feature.	See the SmartGuard User's Guide for more information.
Writing Key Data	Indicates the Printer is writing or encoding data onto the SmartGuard Access Card. Appears only when using the SmartGuard Security Feature.	See the SmartGuard User's Guide for more information.
Wrong Ribbon Error	The wrong print ribbon is installed.	See the Resolving the Wrong Ribbon error (being displayed incorrectly) procedure on page 41.

Continued on the next page

Reviewing the Bottom Line LCD Error / Status Messages

Message	Cause	Solution
Clearing Jam	Indicates the error or jam is being cleared.	See the Resolving the Card Feeding Errors procedure on page 34.
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.	See the SmartGuard User's Guide for more information.
Delete Key Data? RESUME=Delete	Appears when deleting a SmartGuard Access Card. Appears only when using the SmartGuard Security Feature.	See the SmartGuard User's Guide for more information.

Continued on the next page

Reviewing the BOTH Line LCD Error / Status Messages (continued)

Message	Cause	Solution
Insert New Key RESUME=Duplicate	Appears when trying to duplicate a SmartGuard Access Card. Appears only when using the SmartGuard Security Feature.	See the SmartGuard User's Guide for more information.
Invalid Shield Send New Shield	Appears if the SmartShield data on the SmartGuard Access Card has somehow become corrupt. Appears only when using the SmartGuard Security Feature.	See the SmartGuard User's Guide for more information.

Communications Errors

Resolving the Communication Errors

Symptom(s): Incorrect output, communications error on PC or Printer, stalling, no response from Printer, no job printed, “paper out” error.

Step	Procedure
1	Confirm that the system meets the minimum requirements, as shown here: <ul style="list-style-type: none"> • IBM-PC or compatible • Windows 95/98/ME/NT/2000/XP Pentium™ class 133 MHz computer with 32 MB of RAM or higher • 200 MB free hard disk space or higher • ECP Parallel Port with DMA access
2	Confirm the correct installation of the Printer Driver. <ol style="list-style-type: none"> a. Close the software program and check the Printer Driver. b. Reboot the computer. c. Make sure the Printer Driver is installed correctly. (Note: Especially if an obsolete Driver was recently removed.) d. Be sure the correct setup options within the Printer Driver are selected. e. Confirm that the Driver is current by checking at: www.fargo.com
3	Verify the use of an adequate data cable. <ol style="list-style-type: none"> a. Use a double-shielded parallel cable (no longer than six feet in length). (Note: Data transmission failure can be attributed to a long or faulty parallel cable.) b. Use an I-EEE 1284 compliant cable to reduce the effect of radio emissions from computers, monitors, and other equipment that may broadcast Radio frequency interference (RFI).

Continued on the next page

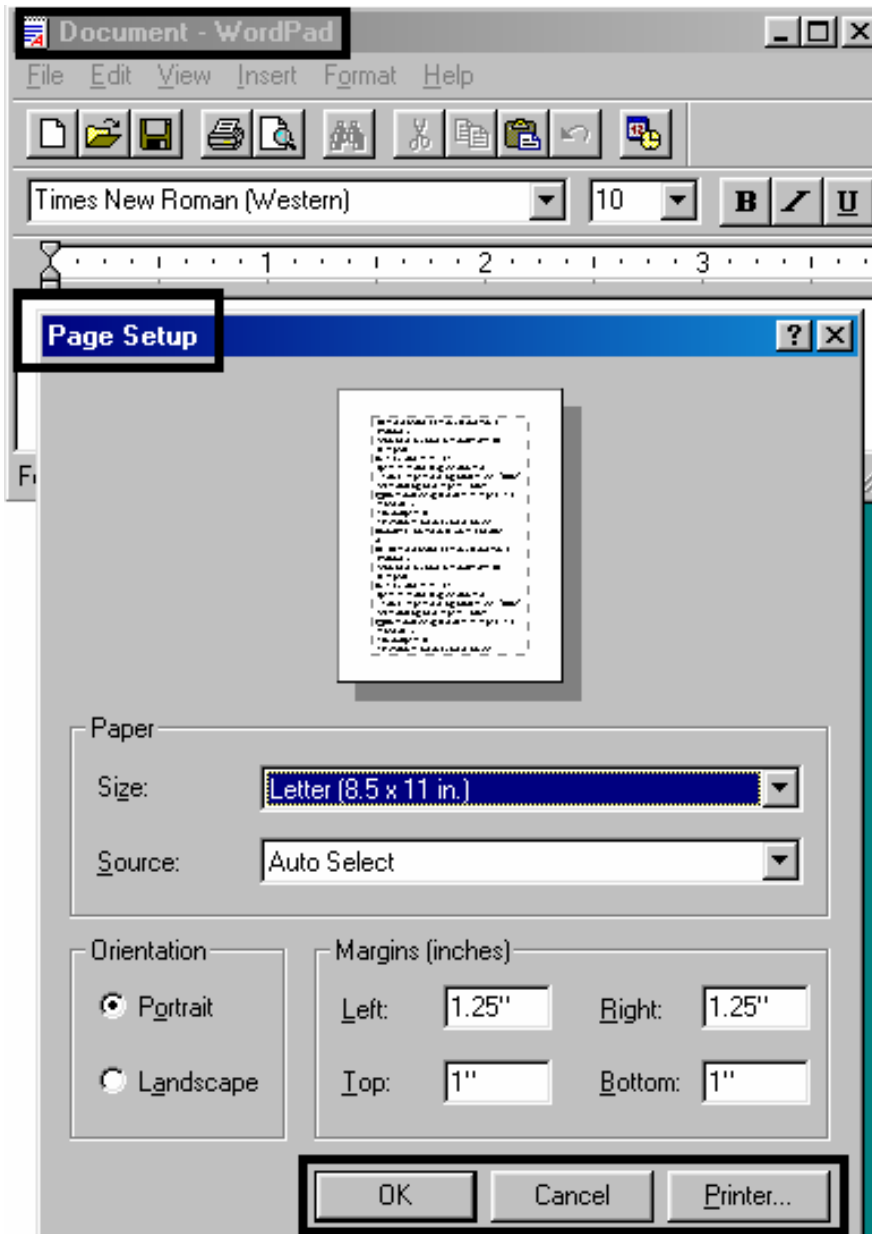
Resolving the Communication Errors (continued)

Step	Procedure
4	<p>Determine if there is interference from an external device.</p> <p>a. Do not use an A/B Switch Box or other peripheral in line with the parallel cable.</p> <ul style="list-style-type: none"> • If using a switch box or other peripheral, remove it while testing communication between the Computer and the Printer. • If needed, replace the Switch Box or other peripheral (once it is determined that the cause of the interference is not the Switch Box or peripheral). <p>b. Alternative: Add a second Parallel Port into the computer (if a second Printer is required).</p>
5	<p>Determine the problem with printing from the application.</p> <p>a. Print a self-test from the Printer as described in the <u>Running the Standard Self Test Print</u> procedure on page 57, to ensure that the Printer (itself) is functioning properly.</p> <p>b. Print the Windows test page that is located in the General tab of the Driver.</p> <p>c. Use WordPad (a Windows 95/ 98/ ME/ NT/ 2000/XP word processing program in the Accessories Program Group). See the next page.</p> <ul style="list-style-type: none"> • Open the program and type: This is a Test. • Select File > Print on the Menu Bar.
6	<p>Determine if the Parallel Port mode is set correctly or incorrectly.</p> <p>a. Ensure that the Parallel Port is set to the Enhanced Communication Port (ECP) mode. (Note: The port mode can be determined by checking the Device Manager tab in the system control panel.)</p> <p>b. If the port mode is not set to ECP, it will need to be changed in the computers BIOS. (Note: Refer to the appropriate computer guide for instructions on how to change the Parallel Port mode.)</p>


Continued on the next page

Resolving the Communication Errors (continued)

See the previous procedure.




Resolving the Communication Errors (continued)

Step	Procedure
7	<p>Determine whether there is adequate or inadequate hard drive space.</p> <p> Caution: A large volume of temporary files on the computer can cause communications errors.</p> <p>Access the temporary files by following this process:</p> <ul style="list-style-type: none">• Search for all folders called TEMP. Once found, clear out the contents of the folders.• If using Windows 95/98/ME/2000/XP, run the System Tool - Disk Defragmenter found in the Accessories folder of the Start Menu.• Use a disk cleanup utility (such as Disk Cleanup found in the System Tools folder of the Start menu) or use a third party application.

Card Feeding Errors

Resolving the Card Feeding Errors

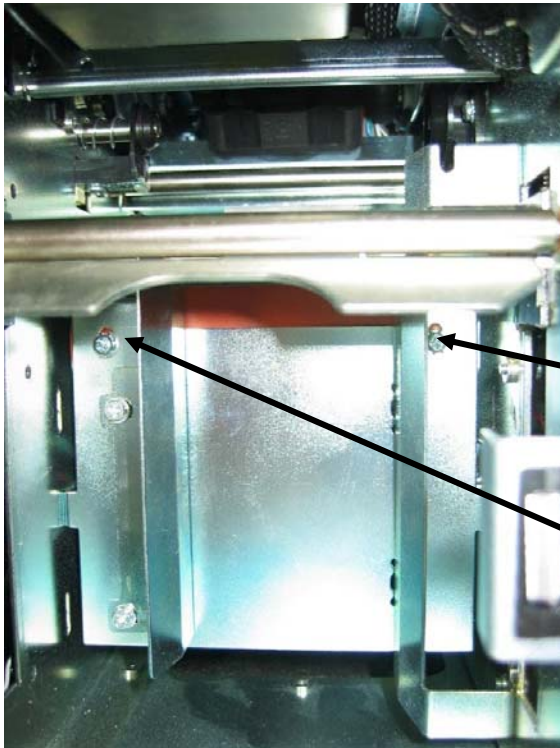
Symptom: Two or more cards feed at the same time, or the cards will not feed at all.

Step	Procedure
1	<p>Clean the Input Roller.</p> <ol style="list-style-type: none"> a. Unplug the power from the Printer. b. Open the Printer's Top Cover, and remove all card and print ribbon from the Printer. Leave the Printer power ON and the Top Cover open throughout this procedure. (Note: The Card Cleaning Cartridge can remain within the Printer during this cleaning process.) c. Get a Cleaning Card from the Printer Cleaning Kit, and remove its adhesive backing paper. d. Insert the Cleaning Card into the Card Hopper, above the Card Input Tray, as you normally would any other type of card. <p> Caution: Ensure that the shortest non-adhesive end of the Cleaning Card enters the Printer first and that the sticky side is facing upward. (Note: If the card is inserted with the sticky side facing downward, it will stick to the Card Input Tray and will not feed.)</p> <ol style="list-style-type: none"> e. Once the Cleaning Card is properly inserted into the Card Hopper, hold down the Pause/Resume button and reapply power to the Printer. f. This will cause the Printer to begin to print a self-test. <p>(Note: When the Printer errors out, open the top cover and use the On/Cancel button to feed the card through the rest of the Printer.)</p> <ol style="list-style-type: none"> g. Repeat this cleaning procedure as needed. h. 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.

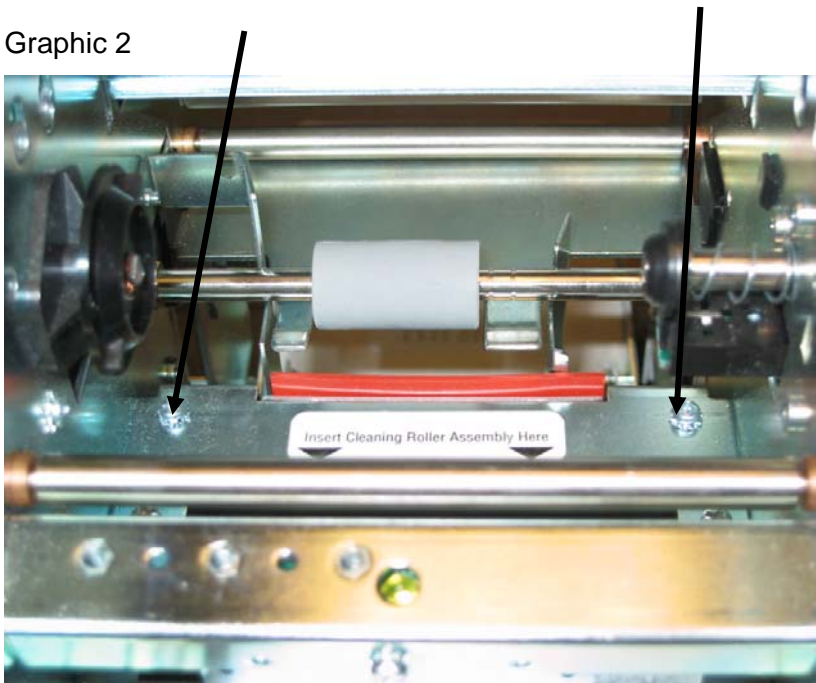
Resolving the Card Feeding Errors (continued)

Step	Procedure
2	<p>Ensure the Card Separator Flap is set correctly</p> <ol style="list-style-type: none"><li data-bbox="358 411 1372 474">a. Loosen the two screws on either side of the card width guides in the Input Hopper. See Graphic 1.<li data-bbox="358 495 743 527">b. Open the Top Print Cover<li data-bbox="358 548 1372 611">c. Adjust the screws on either side of the orange card separator flap to raise or lower the separator flap to the desired height. See Graphic 2.

Graphic 1



Graphic 2



Resolving the Flipper Jam error message

Symptom: A Flipper Jam error is displayed on the LCD.

Step	Procedure
1	Check for an obstruction. <ol style="list-style-type: none"> a. Open the Top Cover. b. Manually rotate the Flipper Table a full 360 degrees. c. Clear the path of the Flipper Table's rotation.
2	Verify the Flipper Clutch operation. <ol style="list-style-type: none"> a. Unplug the Printer. Open the Top Cover. b. Reapply power to the Printer. <p>(Note: The Flipper Table should rotate and stop level with the card feed path.)</p>
3	Verify the Motor operation. <ol style="list-style-type: none"> a. Open the Top Cover. b. Press and hold the On/Cancel button. Ensure that: <ul style="list-style-type: none"> • The Rollers on the Printer should begin to roll. • The Card feed Rollers on the card path and on the Flipper Table should be rolling. • The Platen Roller and the Flattener Roller should be rolling. c. If any one of the Rollers are not turning, inspect the gear configuration in the front of the Printer.

Card Jam Errors

Resolving the Card Jam: Print Error Message

Symptoms: The card is physically jammed in the Printer, or a Card Sensor is reporting a card is present.

Step	Procedure
1	<p>Look for a jammed card in the Printer.</p> <ol style="list-style-type: none">a. Open the Printer's top cover.b. Remove the ribbon from the Printer.c. Check to see if a card is jammed in the print station of the Printer.d. If a card is jammed in the Printer, use the Pause / Resume button, and the On / Cancel buttons to move the feed Rollers and free the card. (Note: The card can then be fed out of the Printer.)e. If no card was found in the print station, continue to Step 2.
2	<p>Clean the inside of the Printer.</p> <ol style="list-style-type: none">a. Open the Print and Top Covers.b. Use a can of deionized to blow any dirt or debris from the Printer.

Resolving the Card Jam: Mag Error / Smart Error Message

Symptoms: The Card Jam: Mag Error or Card Jam: Smart Error is displayed on the LCD.

Step	Procedure
1	Look for a jammed card in the Printer. <ol style="list-style-type: none"> a. Open the Printer's top cover. b. Remove the ribbon from the Printer. c. Check to see if a card is jammed in the print station of the Printer. d. If a card is jammed in the Printer, use the Pause / Resume button, and the On / Cancel buttons to move the feed Rollers and free the card. (Note: The card can then be fed out of the Printer.)

Resolving the Card Jam: Flip Error Message

Symptom: A Card Jam: Flip Error is displayed on the LCD.

Step	Procedure
1	Run a Self-test. <ol style="list-style-type: none"> a. Clear any card jams. b. Unplug power from the Printer. c. While holding down the Pause / Resume button, reapply power. d. Release the Pause / Resume button once the self-test has begun. (Note: A test card will be printed.) e. If successful, this will ensure proper flipper operation on a simple double-sided print.

Print Process Errors

Resolving the Headlift error message

Symptom: A Head Up/Down Error or Roller Up/Down Error is displayed on the LCD

Step	Procedure
1	Cycle the Headlift Motor (820579). <ol style="list-style-type: none"> a. Open both the and the Print Covers. b. Press both buttons on the front control panel. <ul style="list-style-type: none"> • The Headlift Motor will cycle.

Ribbon Errors

Resolving the Skipping Ribbon Panel problem

Symptom: The Printer is using more than one set of ribbon panels to print one side of a card.

Step	Procedure
1	Calibrate the Ribbon Sensor (820564). <ol style="list-style-type: none"> a. Reset the Printer to clear any Error message by removing Power and reapplying. b. From the Computer, open the Printer control panel. <ul style="list-style-type: none"> • If using Windows 95/98/ME, right click on the Persona C25 Card Printer Icon and select properties. • If using Windows NT 4.0, right click on the Persona C25 Card Printer and select Document Defaults. • If using Windows 2000/XP, right click on the Persona C25 Card Printer and select Printing Preferences. c. Click on the Calibrate tab in the Persona C25 Card Printer Driver. d. Click on the Sensors button. e. Remove the Ribbon and close the top cover. f. Click on the Send button for a Ribbon Sensor Calibration. <ul style="list-style-type: none"> • The Printer should beep twice and the LCD should display Sensor Calibrate.

Resolving the Wrong Ribbon error (being displayed incorrectly)

Symptom: A Wrong Ribbon Error is displayed on the LCD even though the correct ribbon is installed in the Printer.

Step	Procedure
1	<p>Determine if the ribbon type option is set correctly.</p> <ol style="list-style-type: none"> a. From the Computer, Open the Printer control panel. <ul style="list-style-type: none"> • If using Windows 95/98/ME, right click on the Persona C25 Card Printer Icon and select properties. • If using Windows NT 4.0 right click on the Persona C25 Card Printer and select Document Defaults. • If using Windows 2000/XP, right click on the Persona C25 Card Printer and select Printing Preferences. b. Click on the Device options tab in the Persona C25 Card Printer Driver. c. Ensure that the Ribbon Type setting that is listed matches the ribbon that is installed in the Printer. <p>(Note: It may be possible to have Driver settings that are different from those found in the Printer control panel through your software. Check any page setup functions in your software to ensure that the Ribbon type matches.)</p>

Resolving the Wrong Ribbon error (being displayed incorrectly) (continued)

Step	Procedure
2	<p>Determine if the Ribbon ID Sensor (820593) is working properly.</p> <ol style="list-style-type: none"> a. Unplug the Printer. b. On the back of DIP switches in the corner of the main board, flip switches 3 and 4. c. With the top covers closed, apply power to the Printer while holding down the Pause/Resume button. d. Once the LCD screen displays RUNNING SELF TEST #12, release the Pause/Resume button. e. Open up the top Print cover. f. Slowly rotate the supply side of the ribbon. <ul style="list-style-type: none"> • As the spool is rolling, the Printer should emit a beep every time a metal pin from the ribbon ID core passes the Sensor. g. Replace the Ribbon ID Sensor: <ul style="list-style-type: none"> • If the Printer responds by emitting no beeps. <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • If one long set of beeps is emitted regardless of the ribbons position.

Resolving the Ribbon Low error message

Symptoms: The Printer beeps just before each ribbon panel is printed.

Step	Procedure
1	<p>Determine if the ribbon is running low. (Note: This indicates the print ribbon is running low and that it will soon run out.)</p> <ol style="list-style-type: none"> a. Print until the ribbon is gone, and replace the ribbon when necessary.

Resolving the Ribbon Breaking problem

Symptom: Either the Ribbon breaks when printing or the LCD displays the Ribbon Jam Error.

Step	Procedure
1	<p>Calibrate the Ribbon Sensor (820564).</p> <ol style="list-style-type: none"> a. Reset the Printer to clear any Error message by removing Power and reapplying. b. From the Computer, open the Printer control panel. <ul style="list-style-type: none"> • If using Windows 95/98/ME, right click on the Persona C25 Card Printer Icon and select properties. • If using Windows NT 4.0, right click on the Persona C25 Card Printer and select Document Defaults. • If using Windows 2000/XP, right click on the Persona C25 Card Printer and select Printing Preferences. c. Click on the Calibrate tab in the Persona C25 Card Printer Driver. d. Click on the Sensors button. e. Remove the Ribbon and close the top cover. f. Click on the Send button for a Ribbon Sensor Calibration.
2	<p>Adjust the Image Placement.</p> <ol style="list-style-type: none"> a. Disconnect power from the Printer. b. Remove the Rear Cover. c. Adjust the Potentiometer labeled RP3 one-quarter turn counter clockwise. d. Run a self-test by holding down the Pause/Resume Button while reapplying power. e. Once printed, the green and red bars on the self-test card should be of equal length. If they are not, a further adjustment may be needed.

Encoding Errors

Resolving the Mag Verify error message

Symptoms: A Mag Verify error is displayed on the LCD when attempting to encode.

Step	Procedure
1	Check to ensure that the cards are loaded with the Magnetic Stripe facing down and towards the back of the Printer.
2	Verify the Driver settings if cards are loaded properly. (Note: Properly loaded cards will be oriented with the mag stripe facing down and toward the back of the Printer. See the Magnetic Track options tab in the Persona C25 Card Printer Driver.

Magnetic Offset Adjustment

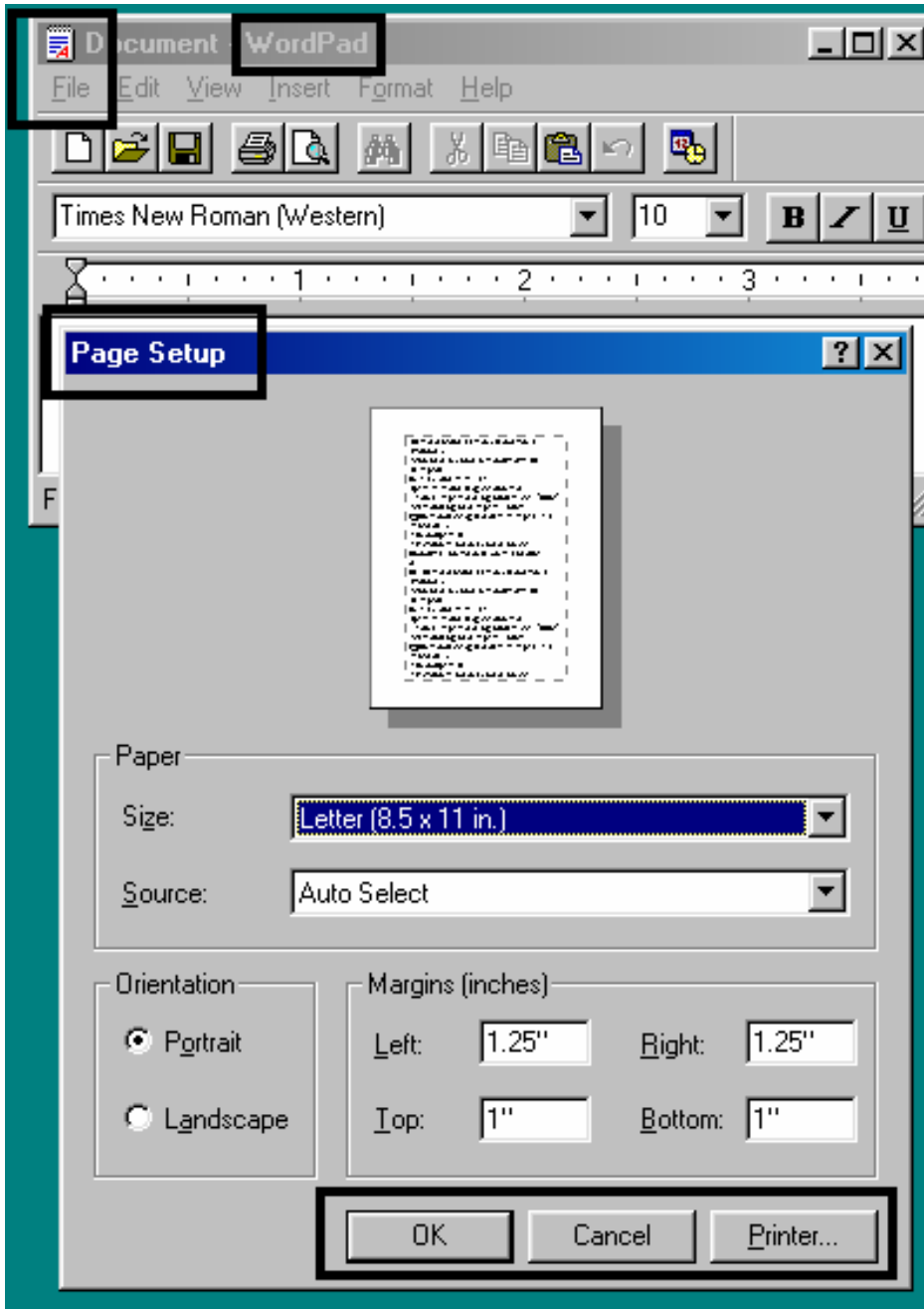
Resolving the Printer cannot read Encoded Data problem

Step	Procedure
1	Verify that the cards are loaded properly with the Magnetic Stripe facing down and towards the back of the Printer.
2	Verify that the card is encoded with magnetic data by using a Magnetic Imager or Developer Solution.
3	Use WordPad (a Windows 95/ 98/ ME/ NT/ 2000/XP word processing program in the Accessories Program Group). <ol style="list-style-type: none"> a. Go to the File menu and select Page Setup. b. Click on the Printer button and select the Persona C25 Card Printer. c. Click OK and reset all four margins to zero. (Note: The WordPad will automatically replace the values with its minimum margins.) d. Open the program and type: “~1%JULIEANDERSON^1234567890?” then, go to File on the menu bar and select Print. (Note: The Printer should then feed a card into the Encoder and magnetically encode it.)
4	Verify that the coercivity of the cards matches the setting in the Driver.
5	Compare the settings for the Card Reader to the settings in the Driver.
6	Verify that the Magnetic Stripe on the card is free of scratches or voids.

Resolving the Data intended for the Magnetic Stripe (printed on the Card) problem

Step	Procedure
1	Confirm that the application is formatting the magnetic string correctly. See Using the Magnetic Track Selection option on page 72.
2	<ol style="list-style-type: none">a. Use WordPad (a Windows 95/ 98/ ME/ NT/ 2000/XP word processing program in the Accessories Program Group), as shown on the next page.b. Go to the File menu and select Page Setup.c. Click on the Printer button and select the Persona C25 Card Printer.d. Click on OK and reset all four margins to zero. (Note: WordPad will automatically replace the values with its minimum margins.)e. Open the program and type: “~1%JULIEANDERSON^1234567890?” then, go to File on the menu bar and select Print. (Note: The Printer should then feed a card into the Encoder and magnetically encode it.)

Resolving the Data intended for the Magnetic Stripe (printed on the Card) problem (continued)



Diagnosing Image Problem

Resolving the Pixel Failure problem

Symptom: A thin line or scratch travels the entire length of the card.

Step	Procedure
1	Check the card stock for scratches. Replace the cards (as needed).
2	Examine the Printhead for visible damage.
3	Clean the Printhead. See the Cleaning the Printhead procedure on page 131.
4	Clean the Cleaning Rollers. See the Cleaning the Card Feed Rollers procedure on page 133.
5	Clean the Platen Roller. See the Cleaning the Platen Rollers procedure on page 138.
6	If the problem persists, replace the Printhead. See the Replacing the Printhead (820199) procedure on page 131.



Resolving the Card Surface Debris problem

Symptom: Prints have "spots" (white or colored voids) and/or dust on them.

Step	Procedure
1	Be sure the cards are clean and stored in a dust-free environment. Cards with embedded contaminants in the surface should not be used.
2	Clean the inside of the Printer. See the Cleaning the Printer's Interior procedure on page 132.
3	Clean the Cleaning Rollers. See the Cleaning the Card Feed Rollers procedure on page 133.
4	Clean the Platen Roller. See the Cleaning the Platen Rollers procedure on page 138.



Resolving the incorrect Image Darkness problem

Symptom: Printed cards are too dark or too light.

Step	Procedure
1	Run a self-test to ensure that the issue is not with the Driver settings. See the Running the Standard Self Test Print procedure on page 57.
2	Reduce the Dye-Sub Intensity setting within the Picture Control tab of the Printer Driver to control the overall darkness and lightness of the printed image.



Resolving the Ribbon Wrinkle problem

Symptom: Printed cards have off-colored lines or streaks on them.

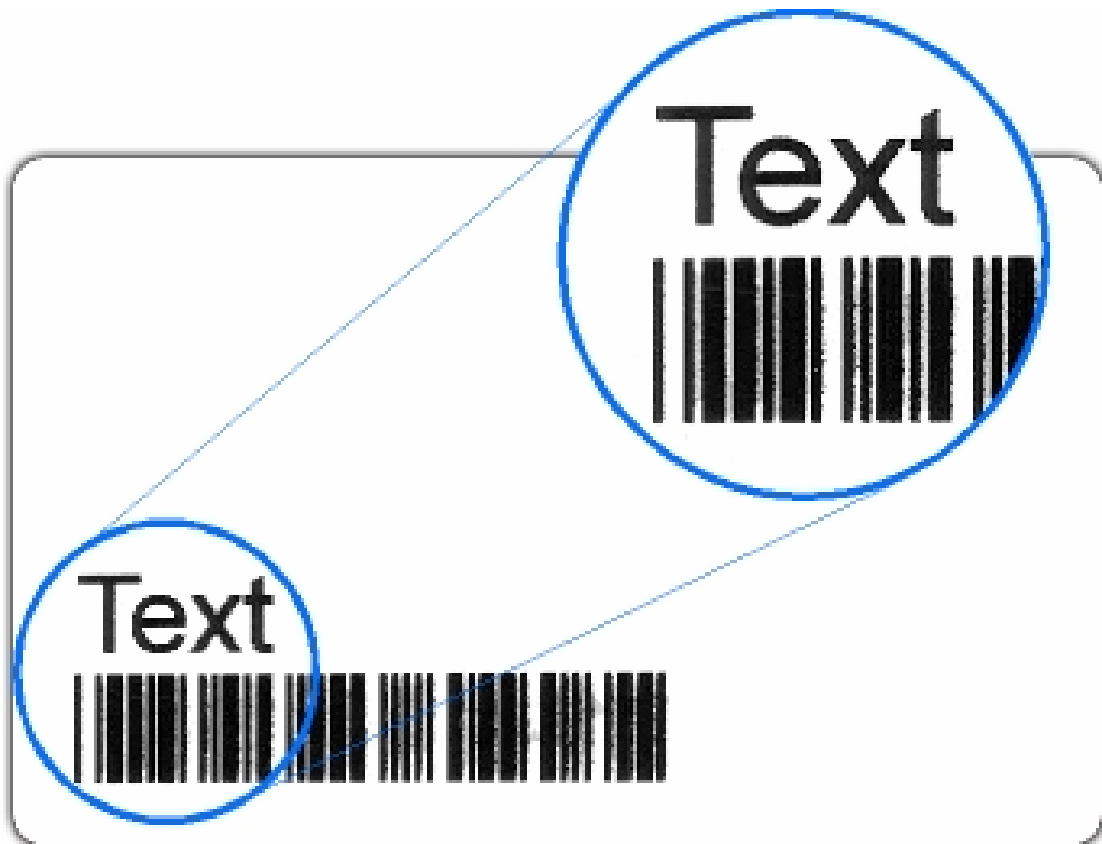
Step	Procedure
1	Confirm that the Printer is using the most current Driver from: http://www.fargo.com
2	Reduce the Dye-Sub Intensity setting within the Picture Control tab of the Printer Driver to control the overall darkness and lightness of the printed image.



Resolving the excessive Resin Printing problem

Symptom: Black resin text and barcodes appear smeared or too thick.

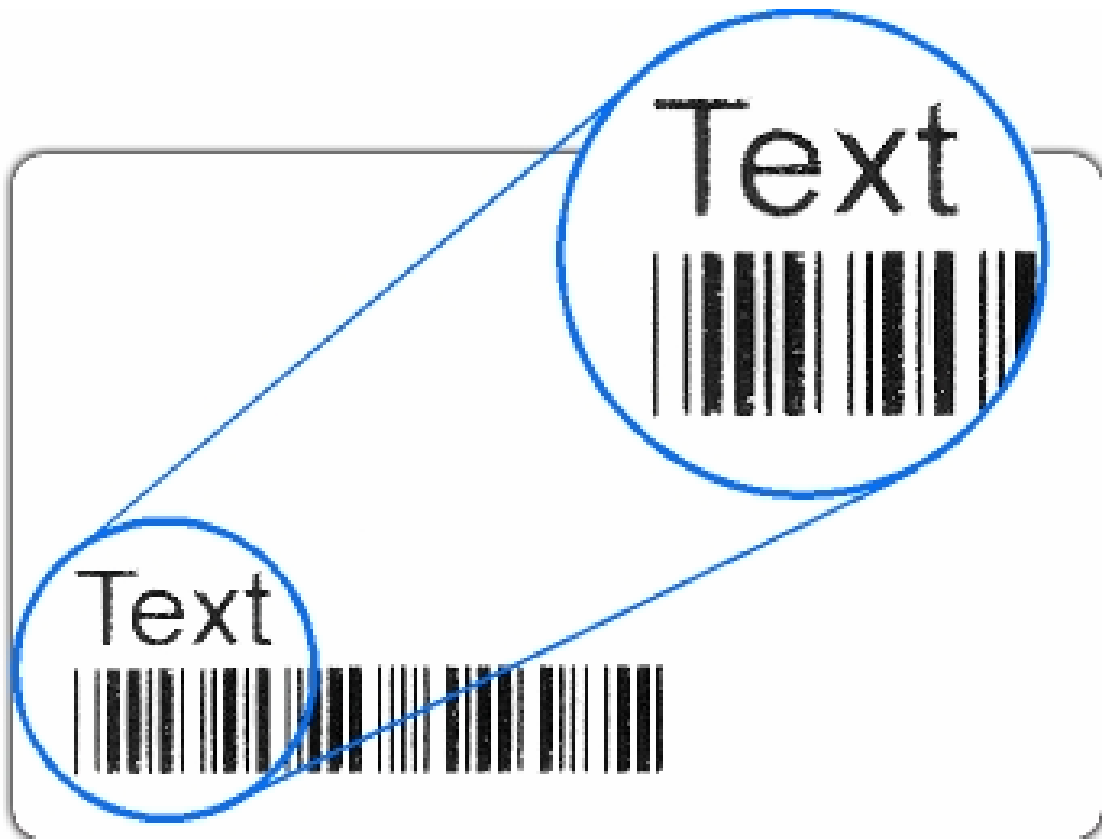
Step	Procedure
1	Reduce the Resin Heat setting within the Picture Control tab of the Printer Driver.
2	Reduce the Dye-Sub Intensity setting within the Picture Control tab of the Printer Driver to control the overall darkness and lightness of the printed image.



Resolving the incomplete Resin Printing problem

Symptom: Black resin text and barcodes appear faded or too light.

Step	Procedure
1	Increase the Resin Heat setting within the Picture Control tab of the Printer Driver.
2	Increase the Dye-Sub Intensity setting within the Picture Control tab of the Printer Driver to control the overall darkness and lightness of the printed image.



Resolving the Image Placement problem

Symptom: Printing is cut off or is not centered on the card, or a white border appears.

Step	Procedure
1	<p>Determine if the Image Placement option within the Calibrate tab is set correctly.</p> <ol style="list-style-type: none"> a. From the Computer, open the Printer control panel. <ul style="list-style-type: none"> • If using Windows 95/98/ME, right click on the Persona C25 Card Printer Icon and select properties. • If using Windows NT 4.0 right click on the Persona C25 Card Printer and select Document Defaults. • If using Windows 2000/XP, right click on the Persona C25 Card Printer and select Printing Preferences. b. Click on the Calibrate tab in the Persona C25 Card Printer Driver. c. Adjust the Vertical and/or Horizontal Image Placement settings based on where the white border is on the card.
2	<p>Adjust the Image Placement</p> <ol style="list-style-type: none"> a. Disconnect power from the Printer. b. Remove the Rear Cover. c. Adjust the Potentiometer labeled RP3 one-quarter turn clockwise. d. Run a self-test by holding down the Pause/Resume Button while reapplying power. e. Once printed, the green and red bars on the self-test card should be of equal length. If they are not, a further adjustment may be needed.

Continued on the next page

Resolving the Image Placement problem (continued)

Symptom: Printing is cut off or is not centered on the card, or a white border appears.

Step	Procedure
3	<p>The Card Guide Bar may need to be adjusted.</p> <ol style="list-style-type: none">Open the Top Print Cover.Loosen the three screws that hold the Card Guide Bar in Place.Carefully move the guide bar an equal distance on both sides.Tighten the three screws that hold the guide bar in place.

Continued on the next page



Resolving the Image Placement problem (continued)



Resolving the poor Image Quality problem

Symptom: Photos on the cards look pixilated or grainy, as shown below.

Step	Procedure
1	<p>Use high-resolution, 24-bit color images to capture an image (a) at a 24-bit color setting, (b) at 300 dpi, and (c) at the same size (that it will be printed on the card, as captured either with a scanner or with a digital camera).</p> <p>If a small or low-resolution image is stretched or blown up, a pixilated or grainy effect will occur when printing, as shown below.</p>



Good




Bad

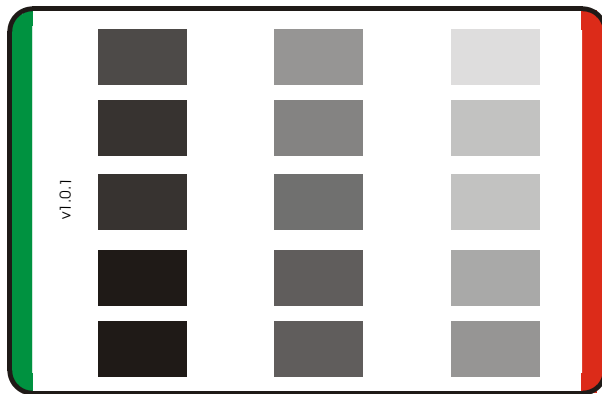
Diagnostics and Calibration

Running the Standard Self Test Print

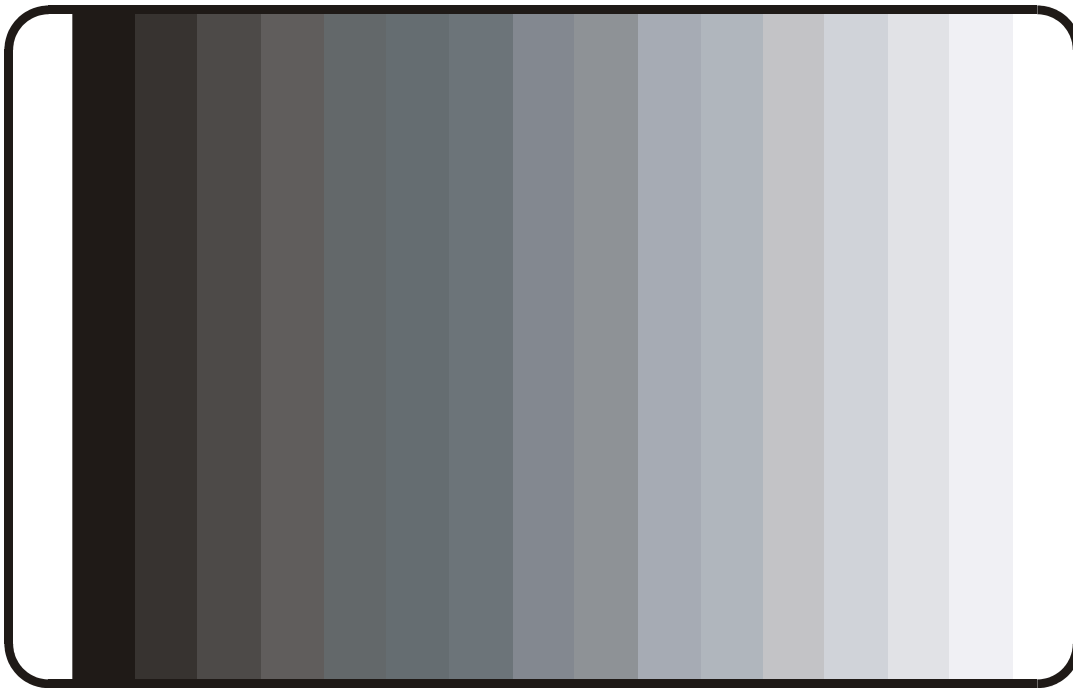
Perform a standard self-test (a) after initial setup of the Printer, (b) after a calibration procedure has been conducted, or (c) after a part has been replaced to check for proper operation of the Printer. Review the self-test print below.

Step	Procedure
1	 Caution: If power is ON, disconnect the power cable from the Printer's rear panel. Verify that a full-color ribbon is installed and that cards are properly loaded.
2	Press and hold the Pause/Resume button.
3	While holding down the Pause/Resume button, plug the power cable back into the Printer.
4	a. Once the On LED illuminates, release the button. <ul style="list-style-type: none"> • The Flipper Table will re-align itself, then the Printer will print a 3-color process gray scale on the front, flip the card and print the monochrome black panel on the back. The overlay pass is not printed during the self-test. • The card will be ejected with the backside face up. b. Reverse the card to look at the front side and examine the gray scale pattern with the green bar at the top (above the EPROM version number) and a red bar at the bottom of the card.

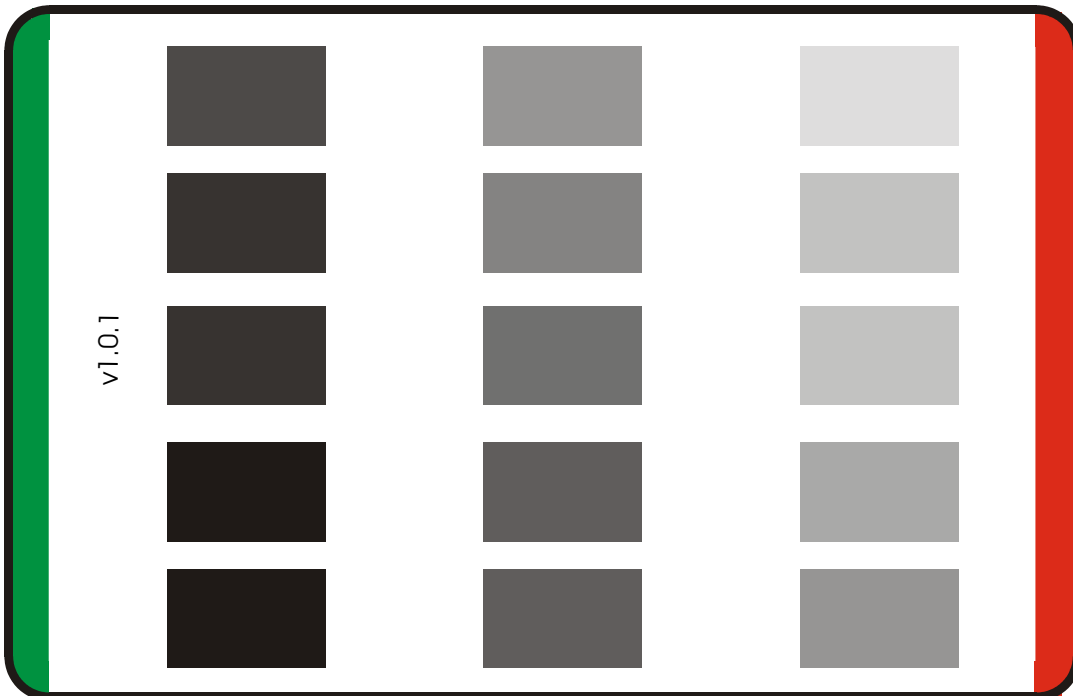
Reviewing the Standard Self Test Print



Reviewing the 15 Shade Self Test



Reviewing the Standard Self test



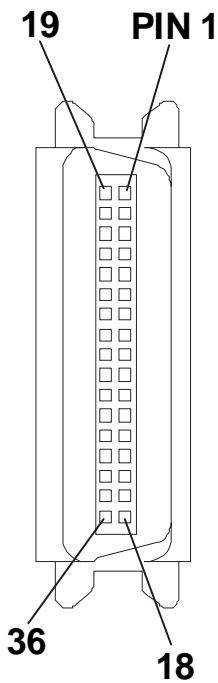
Interfacing Information

The Printer is equipped with a standard 8-bit Centronics-type Parallel Data Communications Port. (**Note:** The Printer's Parallel Interface Connector is a standard 36-pin Amp type with two metal-wire retaining clips. It mates with a standard PC to Printer parallel cable.)

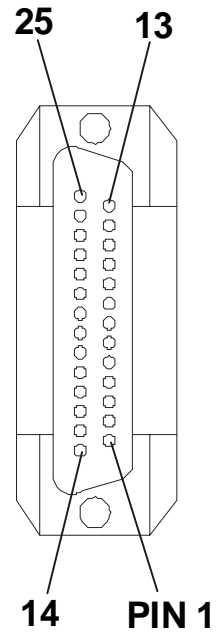


Caution: For best results, keep the Interface Cable to less than six (6) feet.

Reviewing the Pin Assignments



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



Reviewing the Centronics Parallel Pin Assignments

Pin No.	Signal	Direction	Description
1	_____ Strobe	In	A LOW pulse greater than 1 μ s causes the printer to read one byte of data.
2	Data 0	In	Data bit 0
3	Data 1	In	Data bit 1
4	Data 2	In	Data bit 2
5	Data 3	In	Data bit 3
6	Data 4	In	Data bit 4
7	Data 5	In	Data bit 5
8	Data 6	In	Data bit 6
9	Data 7	In	Data bit 7
10	_____ Acknlg	Out	A LOW pulse is sent by the printer to indicate that a byte of data has been accepted and that it is ready for more data.
11	Busy	Out	A HIGH logic level is sent to the printer to indicate to the host that it cannot receive data due to data entry, error status, or a full buffer.
12	Paper Error	Out	Low = OK, High = media error
13	Ready	Out	Low = off-line, High = on-line
14, 15			Not Used
16	Sig Gnd		
17	Chassis Gnd		

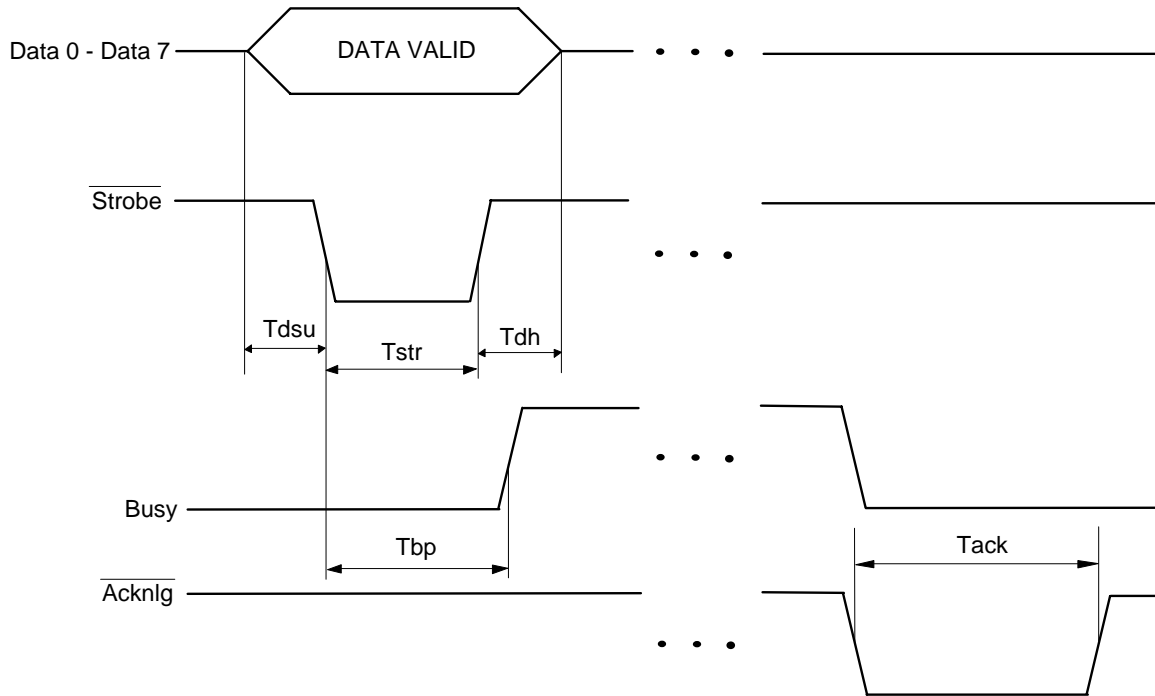
Continued on the next page

Reviewing the Centronics Parallel Pin Assignments (continued)




Pin No.	Signal	Direction	Description
18	HI	Not Used	
19 to 30	Sig Gnd		
31	<u> </u> Reset/Input Clean	Not Used	
32	<u> </u> Error	Out	Low = printer error, High = OK
33 to 36		Not Used	

Reviewing the Printer Timing Diagram

The timing diagram (below) illustrates the data and handshake lines during the transfer of one data byte to the Computer.





Reviewing the Printer Timing

Interval	Description	Minimum Value	Typical Value
Tdsu	Data setup time	0.5 μ s	
Tstr	Data  strobe width	1 μ s	
Tack	Acknlg pulse width 		3.75 μ s
Tdh	Data hold time	0.5 μ s	
Tsb	Busy delay time from data strobe 	0.5 μ s (max.)	

Section 3: Printer Adjustments

This Section covers the replacement of key components of the Card Printer. Be sure to reverse the disassembly steps to reassemble the Card Printer.

Safety Messages (review carefully)

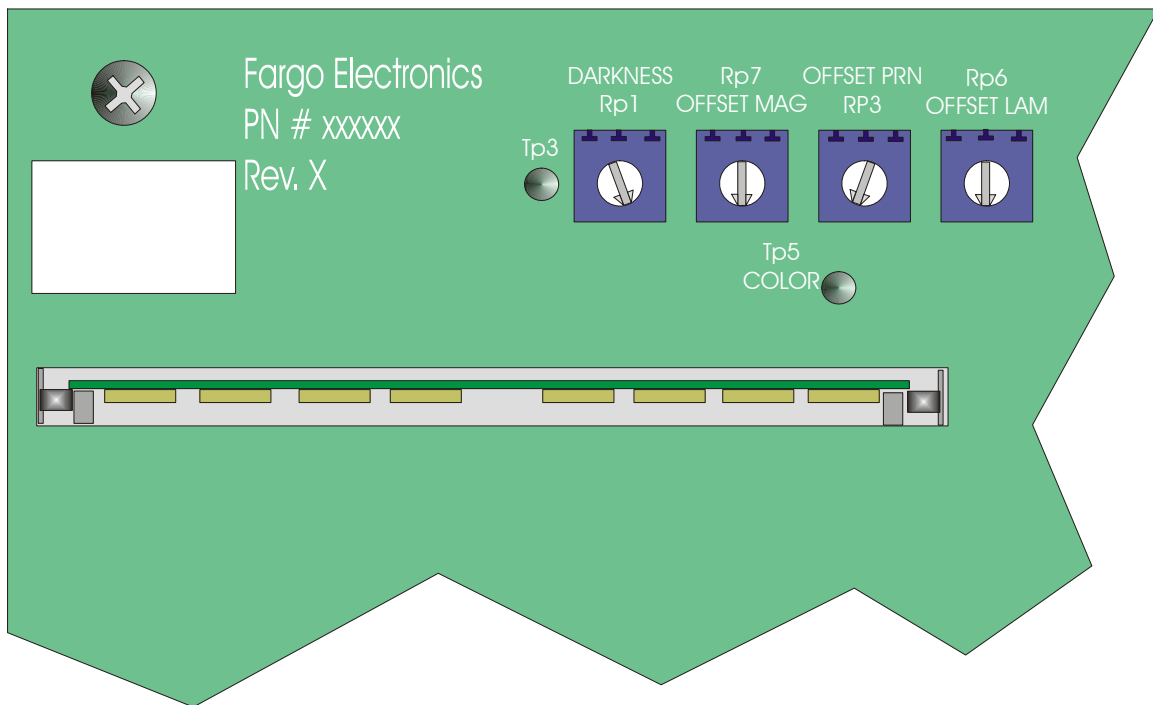
Symbol	Critical Instructions for Safety purposes
<p>Danger:</p> 	<p>Failure to follow these installation guidelines can result in death or serious injury.</p> <p>Information that raises potential safety issues is indicated by a warning symbol (as shown to the below).</p> <ul style="list-style-type: none"> • To prevent personal injury, refer to the following safety messages before performing an operation preceded by this symbol. • To prevent personal injury, always remove the power cord prior to performing repair procedures, unless otherwise specified. • To prevent personal injury, make sure only qualified personnel perform these procedures.
<p>Caution:</p> 	<p>This device is electrostatically sensitive. It may be damaged if exposed to static electricity discharges.</p> <p>Information that raises potential electrostatic safety issues is indicated by a warning symbol (as shown to the below).</p> <ul style="list-style-type: none"> • To prevent equipment or media damage, refer to the following safety messages before performing an operation preceded by this symbol. • To prevent equipment or media damage, observe all established Electrostatic Discharge (ESD) procedures while handling cables in or near the Circuit Board and Printhead Assemblies. • To prevent equipment or media damage, always wear an appropriate personal grounding device (e.g., a high quality wrist strap grounded to avoid potential damage). • To prevent equipment or media damage, always remove the Ribbon and Cards from the Printer before making any repairs, unless otherwise specified. • To prevent equipment or media damage, take jewelry off of fingers and hands, as well as thoroughly clean hands to remove oil and debris before working on the Printer.

Dye-Sub and Resin Intensity Adjustments

Reviewing the RP1 Potentiometer location (Printhead Darkness RP1 Pot)

RP1 is the baseline level control for the Printhead intensity.

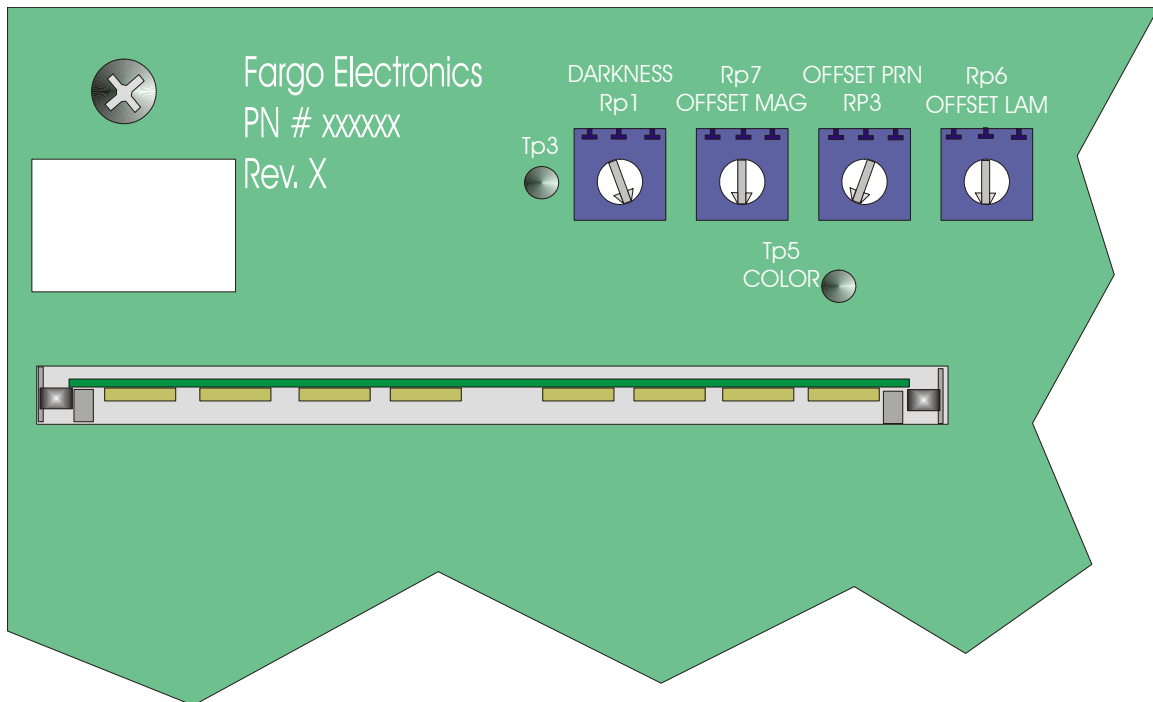
Step	Procedure
1	a. Turn the RP1 potentiometer counter-clockwise in 1/8 th turn increments to increase the overall darkness level, and affect both Dye-Sub and Resin transfer levels. b. Turn the pot clockwise by the same amount, which causes the output to lighten the intensity.
2	a. When the Printhead is replaced or if using another brand of blank cards, run the self-test. See the Performing the Standard Self Test procedure on page 57. b. Use the results of the Standard self test to make appropriate adjustments to the RP1 potentiometer.



Adjusting the Dye-Sub and Resin Intensity Level

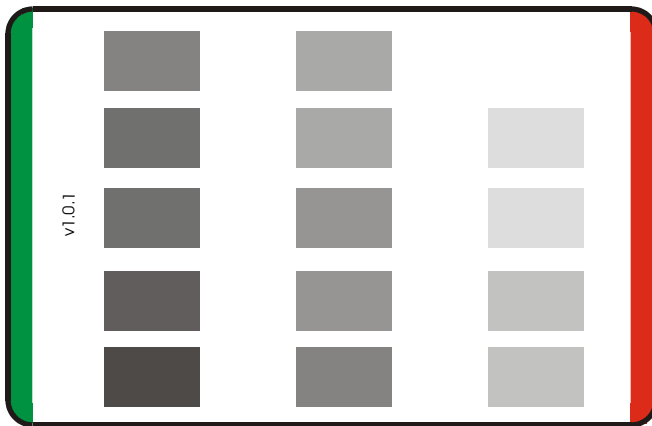
Symptoms: Color intensity is unacceptable or software adjustments fail to meet requirements.

Step	Procedure
1	Alter the intensity level of the Printhead either after replacing the Printhead or identifying certain color intensity problem with a particular brand of cards. Two independent adjustments are needed for the Dye-Sub and Resin intensity levels. (Note: The software adjustments are more precise and may meet the normal requirements.)
2	Adjust the RP1 potentiometer on the Main Circuit Board if the software adjustments fail to meet the requirements (until those requirements are met).

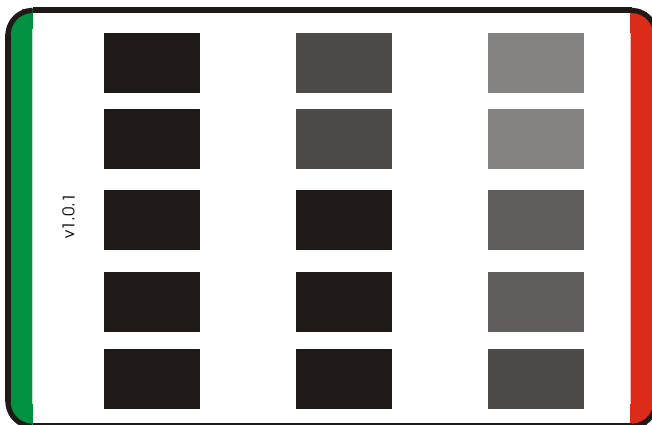


Reviewing the Self Test Output Samples (RPI Potentiometer)

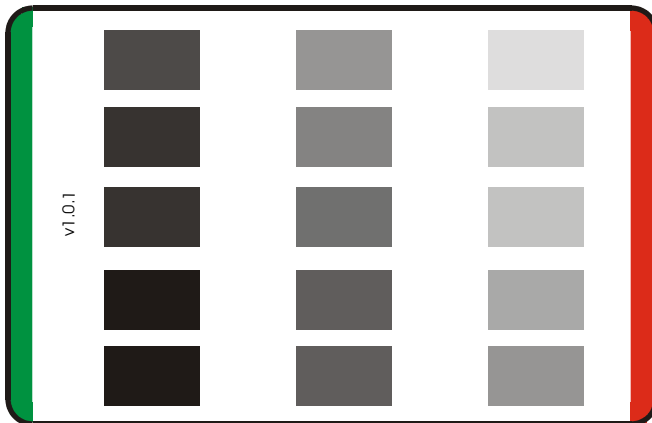
The output is too light, the last gray fill box does not appear. The RP1 potentiometer should be turned Counter-Clockwise to increase the darkness level.



The output is too dark. The RP1 potentiometer should be turned Clockwise to reduce intensity.



The output is correct. The last gray fill intensity is barely visible.



Card Offset Adjustments

Adjusting the Card Offset for the Print Station

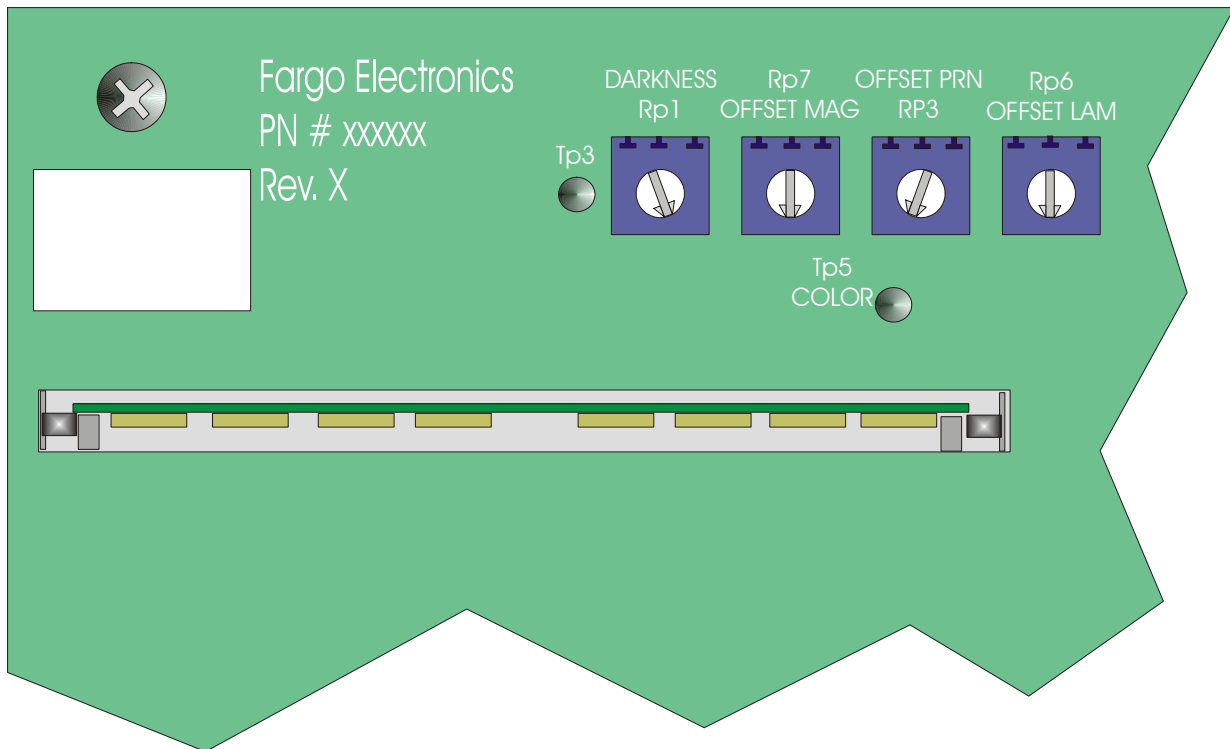
When the factory calibrates the Printer, the output print on the card is centered horizontally.



Caution: For ribbon breakage between the yellow and the clear panel of the ribbon, or a card jam just as the card is being presented to the Printhead, adjust the card offset RP3 potentiometer (as needed). See below.

Adjusting the RP3 Card Offset Location

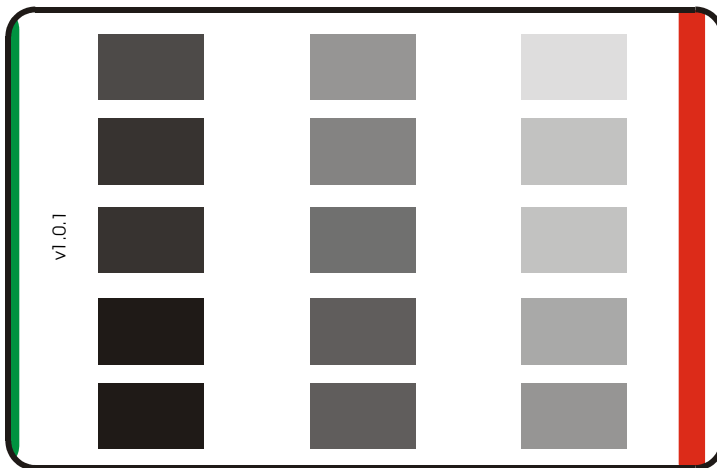
Step	Procedure
1	To adjust the RP3 potentiometer counter-clockwise in 1/8 th turn increments while running the standard self test, feed more of the card's leading edge beneath the Printhead as the card is printed. See the Performing the Standard Self Test procedure on page 57.
2	To center the print more precisely on the card, such as printing full edge-to-edge, use the Printer's software Driver's calibration controls. See the Selecting the Print Edge-to-Edge checkbox procedure on page 96.



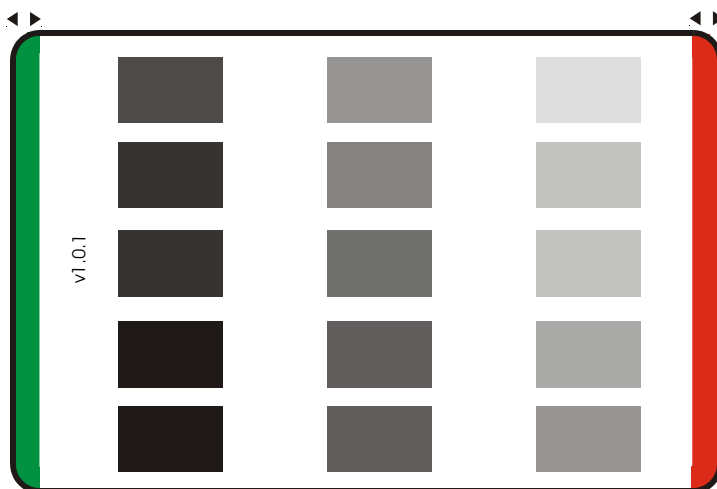
Adjusting the RP3 to center print the Card

Step	Procedure
1	Adjust the RP3 counter-clockwise to center the print onto the card. (Note: The narrow green bar at the leading edge of the card.) See Display A.
2	Ensure that the width of the green and red bars (at the leading and trailing edges of the card) is equal to each other for centered print. See Display B.

Here is Display A.

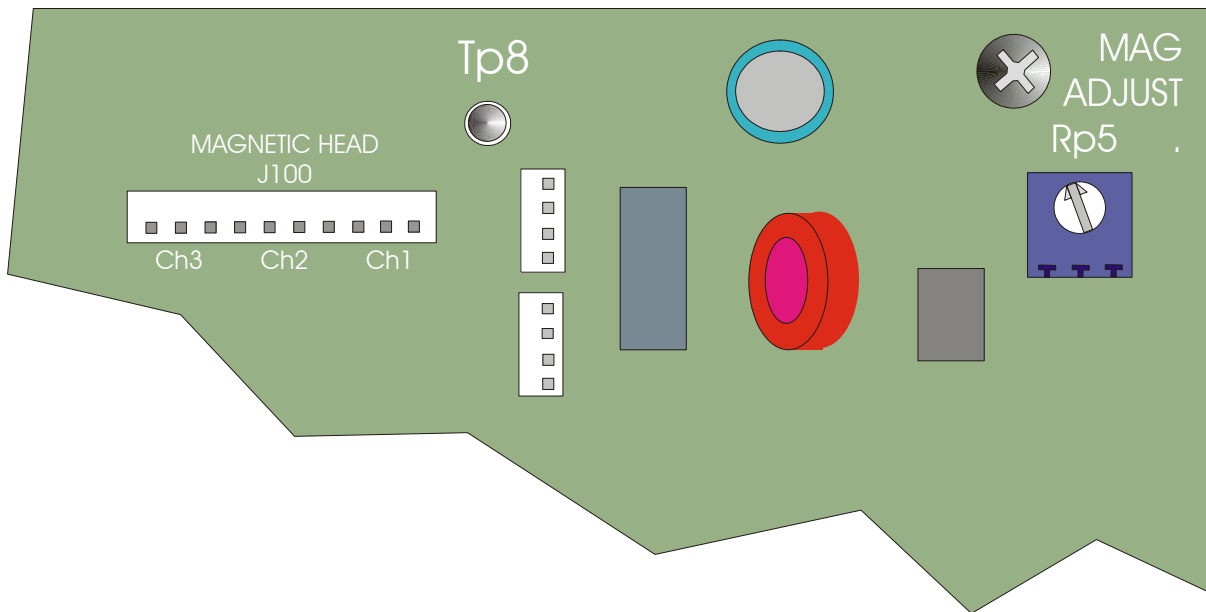


Here is Display B.



Calibrating the RP5 Potentiometer

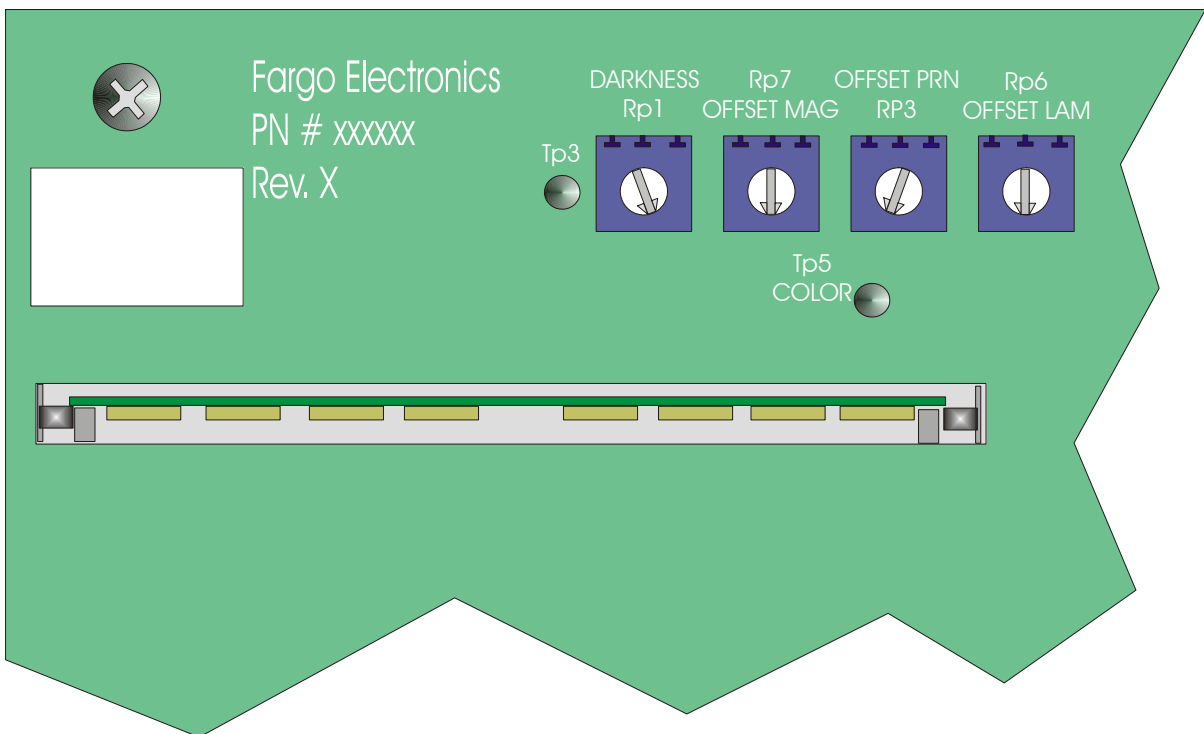
Step	Procedure
1	Before attempting to calibrate the RP5 potentiometer, the magnetic encoder head must be plugged into the J100 connector.
2	A digital DC volt meter is also required. Set the meter to read in a range of 0-10 volts, DC.
3	Attach the black ground lead of the meter to the bare metal chassis of the Printer and touch the red positive lead of the meter to the TP8 solder pad on the Main Circuit Board, as shown below.
4	With power applied to the Printer, you should read 6 volts DC at TP8. This value indicates that the magnetic head is calibrated for 2750 Oersteds.
5	To raise the Oersted level to 4000, adjust RP5 until the voltage reading at TP8 reads 8 volts DC. See the RP5 Magnetic Adjustment below.



Magnetic Offset Adjustment

Using the Magnetic Offset (RP7 Potentiometer Location)

Step	Procedure
1	Use magnetic developer spray or a Magnetic Stripe viewer to measure the location of the start sentinel on an encoded card to accurately calibrate the RP7 potentiometer.
2	Use the Magnetic Self Test to generate test samples. See the Performing the Standard Self Test procedure on page 57.



Determining the Magnetic Card Offset (process description)

As a card is fed into the encoding module during the encoding process:


- a. The trailing edge of the card is read by a Sensor and continues to feed for a given length of a standard CR-80 sized card,
- b. The direction of the feed Motor is reversed and the magnetic data string begins to encode onto the Magnetic Stripe of the card.
- c. When the data string is encoded, it begins from the right edge of the card and proceeds across the length of the card.

Using the RP7 Offset Mag Potentiometer

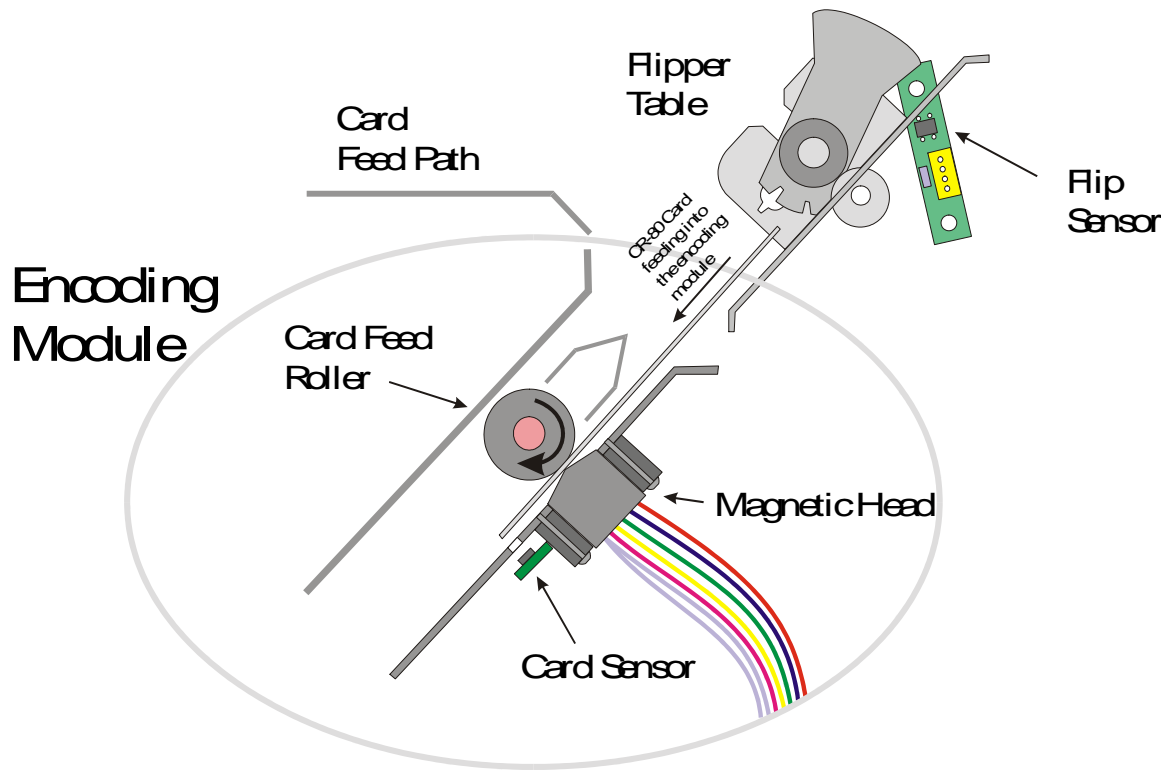
The RP7 Offset Mag Potentiometer on the Main Circuit Board is provided to control the precise distance the start sentinel of the data string is positioned from the right edge of the card (0.293 inches, +/- 0.020 tolerance).

Note #1: The RP7 potentiometer has been originally set by the factory for those Printers equipped with a magnetic encoder. (**Note:** If the card Sensor or the magnetic head is replaced, the RP7 potentiometer may require calibration.)

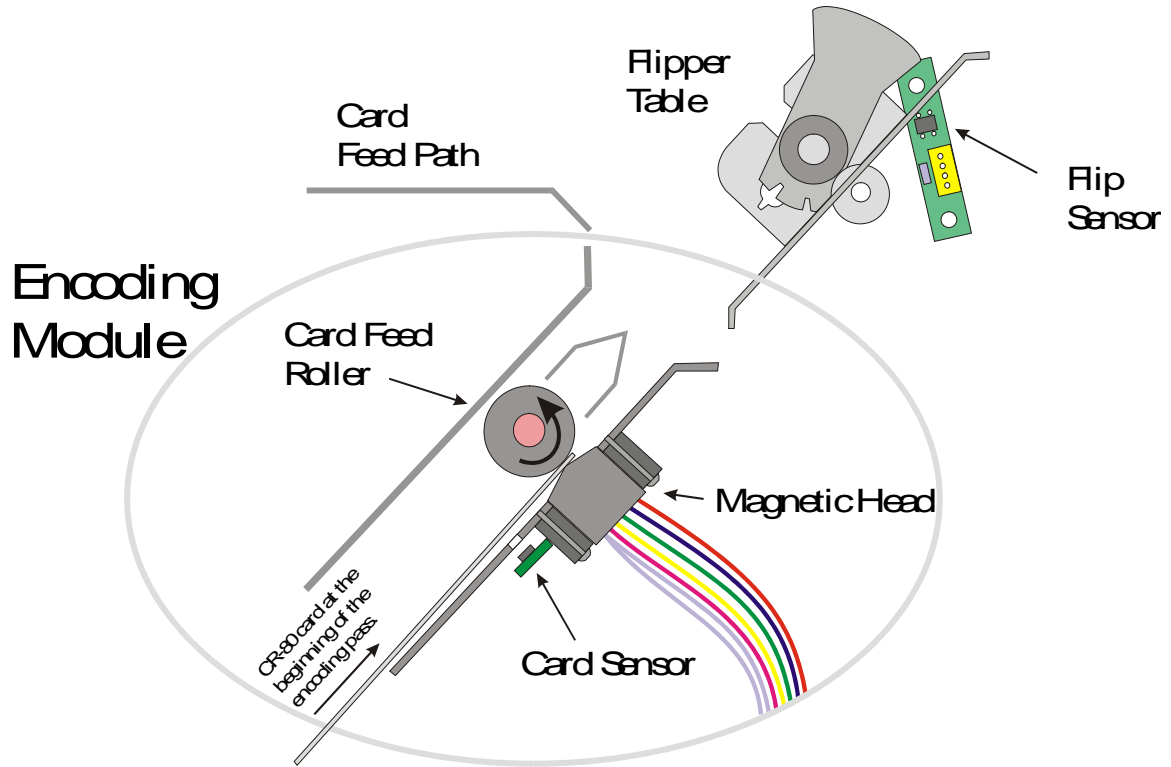
Note #2: From within the software Driver for the Printer, there is a Shift Data Left check box within the **Magnetics** option. (**Note:** This is not the same adjustment provided by the RP7 potentiometer; it is an option used to shift to the data left side of the card for use in insertion card readers.)

Step	Procedure
1	Turn the RP7 potentiometer counter-clockwise (so more of the trailing edge of the card is fed past the card Sensor) in order to decrease the distance from the start sentinel to the right edge of the card.  Caution: By turning the RP7 counter-clockwise too much, it will cause the card to overshoot the feed Roller allowing the card to fall through the Printer.
2	Turn the RP7 potentiometer clockwise to (a) allow less of the trailing edge of the card to feed past the card Sensor, and (b) increase the distance between the start sentinel and the right edge of the card.

Reviewing the Encoding Module (Display A)

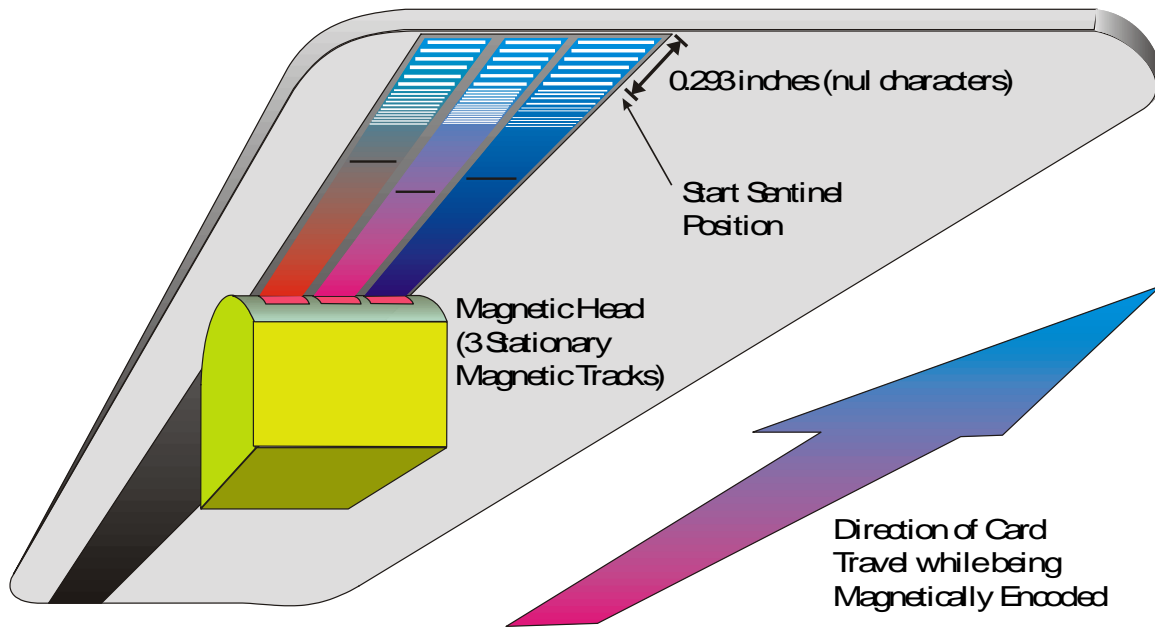


Reviewing the Encoding Module (Display B)



Reviewing the Data (being encoded to the Magnetic Stripe of Card)

See the [Determining the Magnetic Card Offset](#) procedure on page 73.



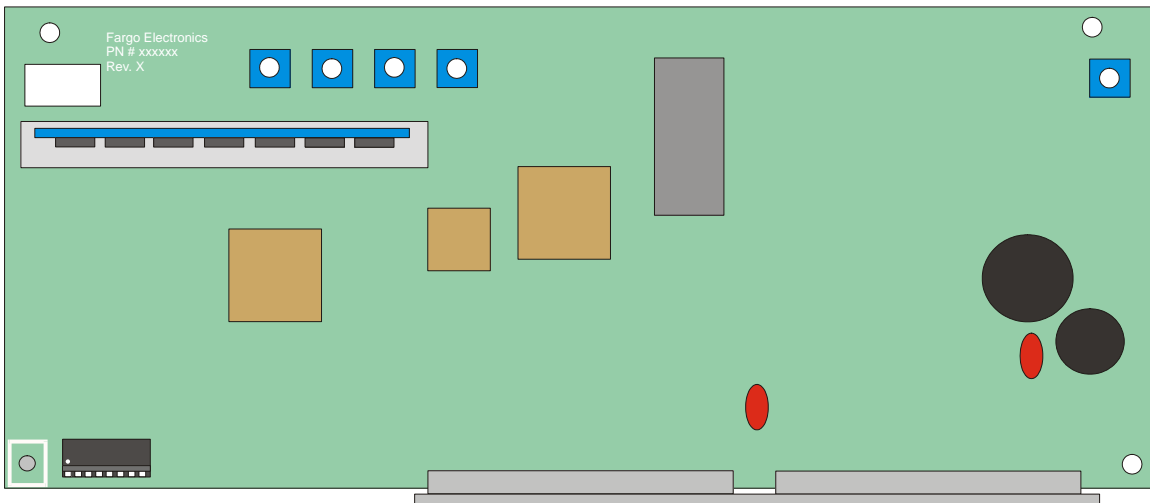
Sensor Calibration

Calibrating the Color Ribbon Sensor

Symptom: There are problems with the color ribbon skipping panels or the incorrect colors being applied to the card, requiring calibration of the Ribbon Sensor. Be certain to shade the Printer from direct sources of light (e.g., the sun, florescent or incandescent lamps).

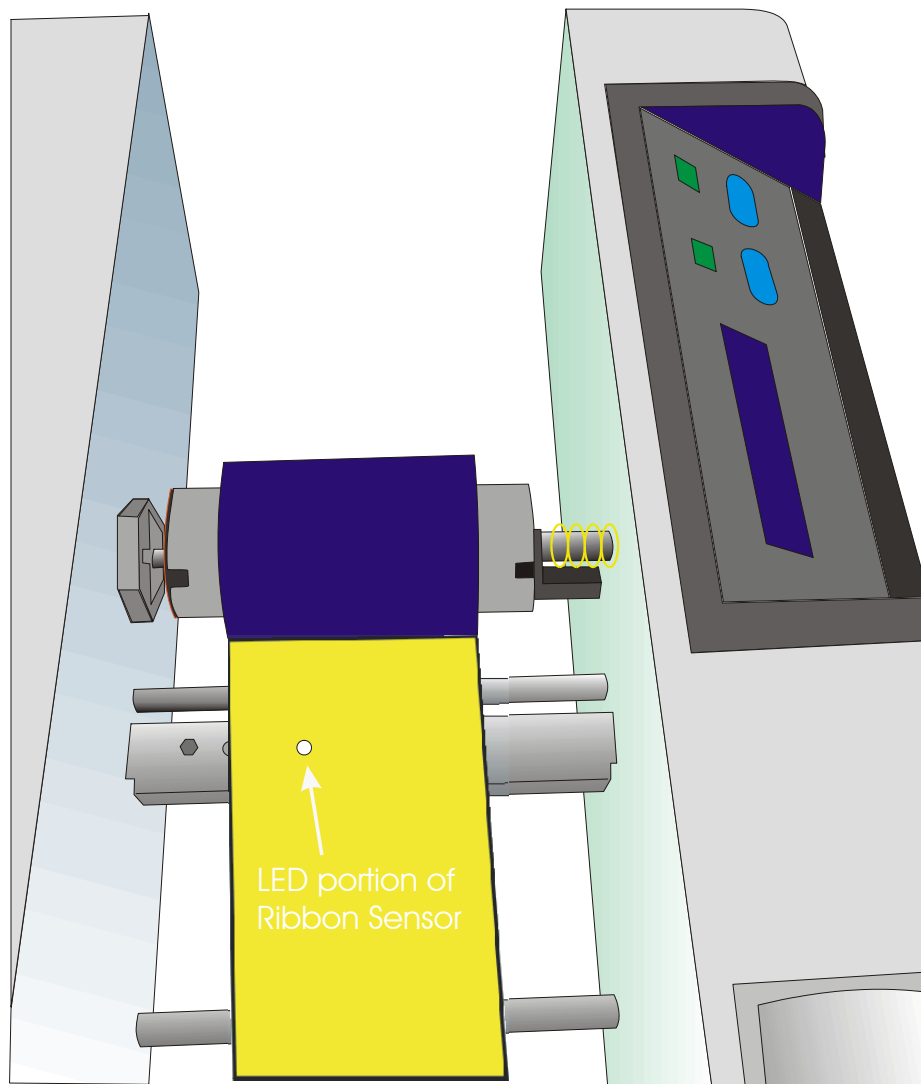
Steps	Procedure
1	Remove the back cover of the Printer and locate the DIP switches on the Main Circuit Board.
2	Set DIP switches 1, 2 and 3 to the ON position.
3	Align the color ribbon on the clear or yellow panel over the light-emitting portion of the Ribbon Sensor.
4	Close both Top Cover of the Printer.
5	Run the self-test procedure. See the Performing the Standard Self Test procedure on page 57.
6	After the Flipper Table rotates, two long beeps from the Printer will sound to indicate that the Ribbon Sensor calibration is completed.
7	Remove the power plug from the Printer.

Continued on the next page



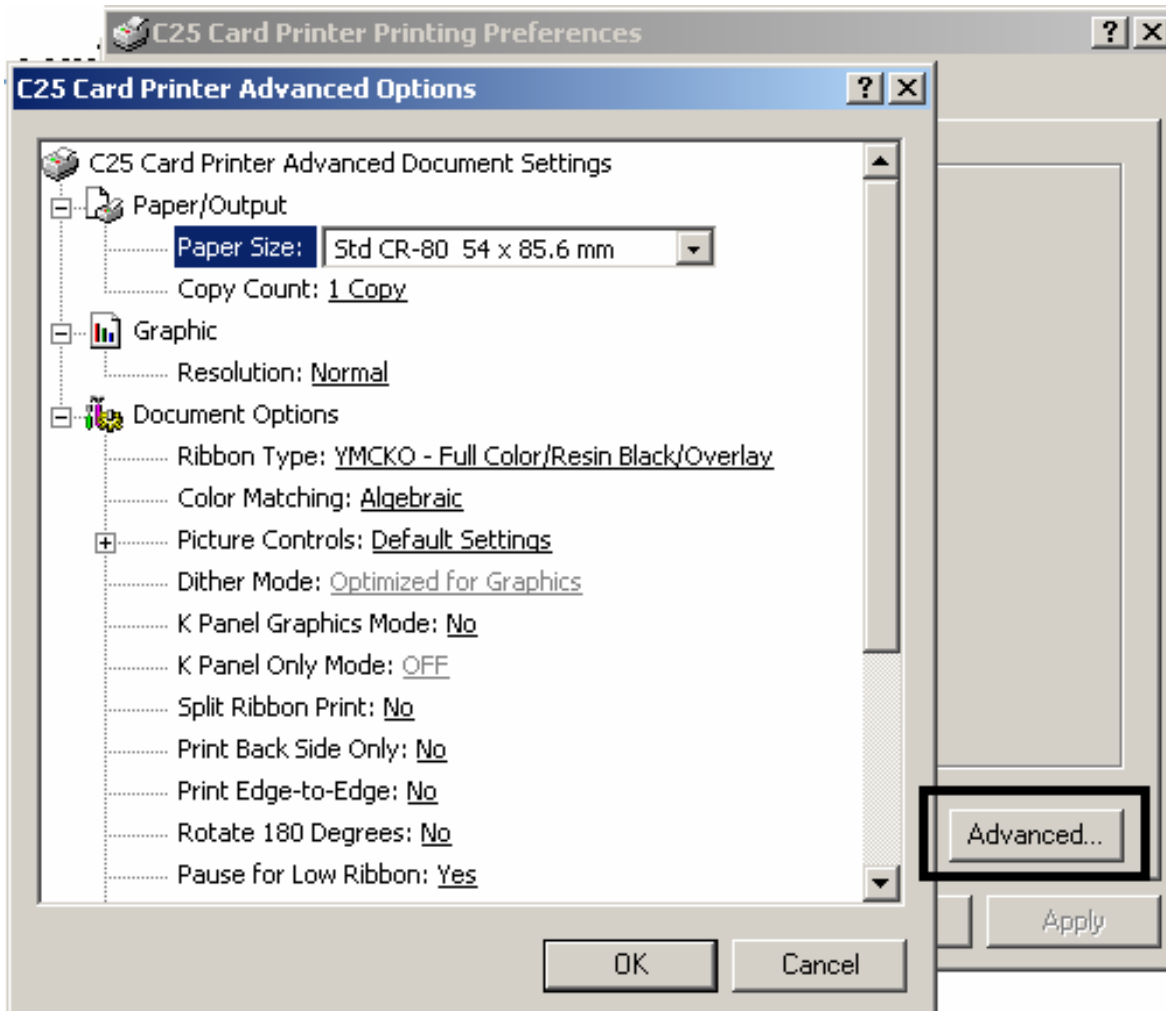
Calibrating the Color Ribbon Sensor (continued)

Steps	Procedure
8	Return the DIP switches to the normal OFF position.
9	a. Run the self-test procedure. See the Performing the Standard Self Test procedure on page 57. b. If the Printer functions properly, re-attach the back cover to the Printer.
10	Align the Clear or the Yellow panel over the LED portion of the Ribbon Sensor and close the Top cover, as shown below.



Using the C25 Card Printer Advanced Document Settings

Access the Persona C25 Card Printer Properties window via Start > Settings > Printers > Persona C25 Card Printer (icon) > Persona C25 Card Printer Printer Preferences window > **Advanced** button (which brings up the Persona C25 Card Printer Advanced Document Settings window).

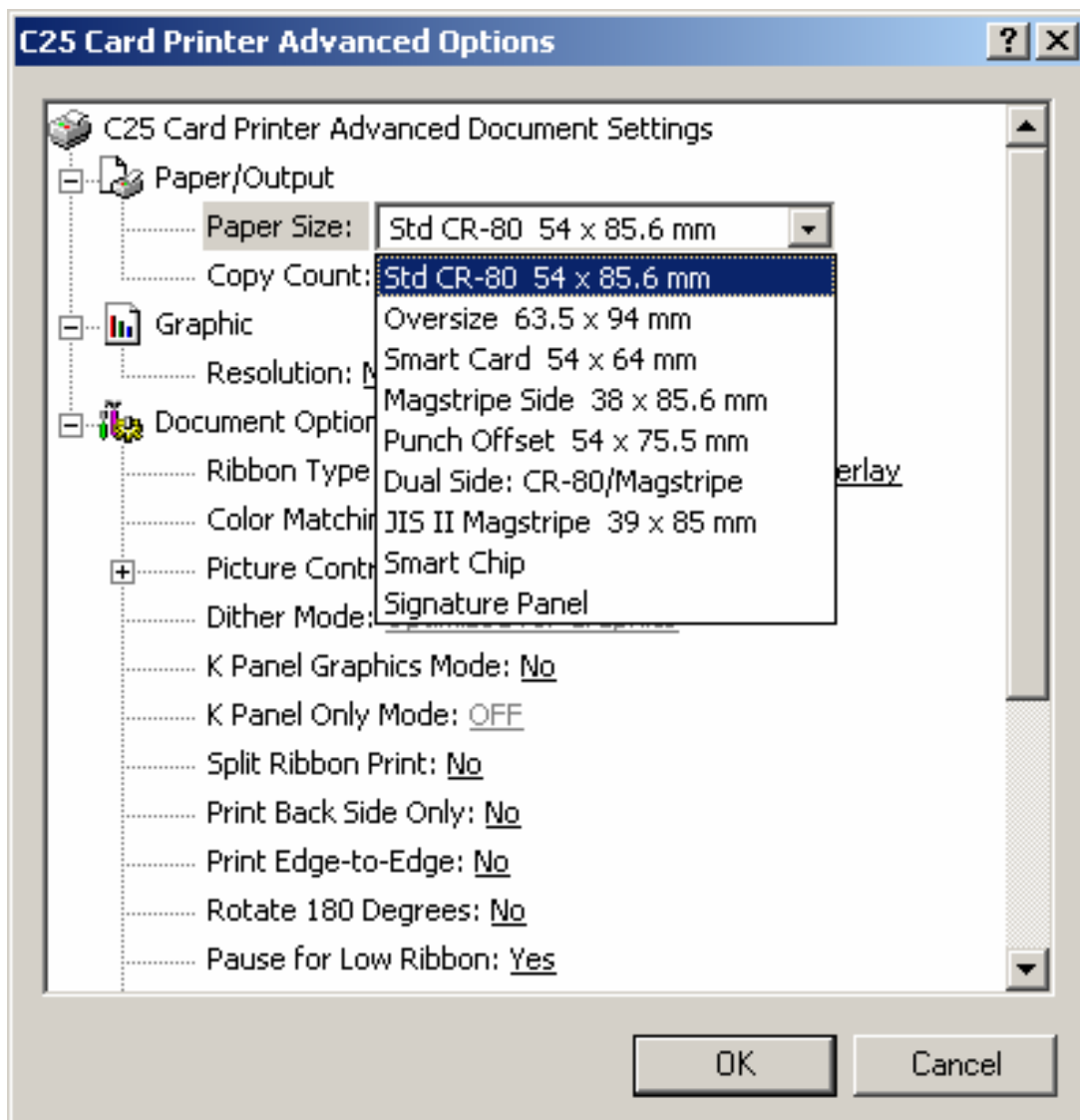


Determining Paper/Output

Selecting the Card Size

Use this dropdown menu to select the standard, credit card size CR-80 cards.

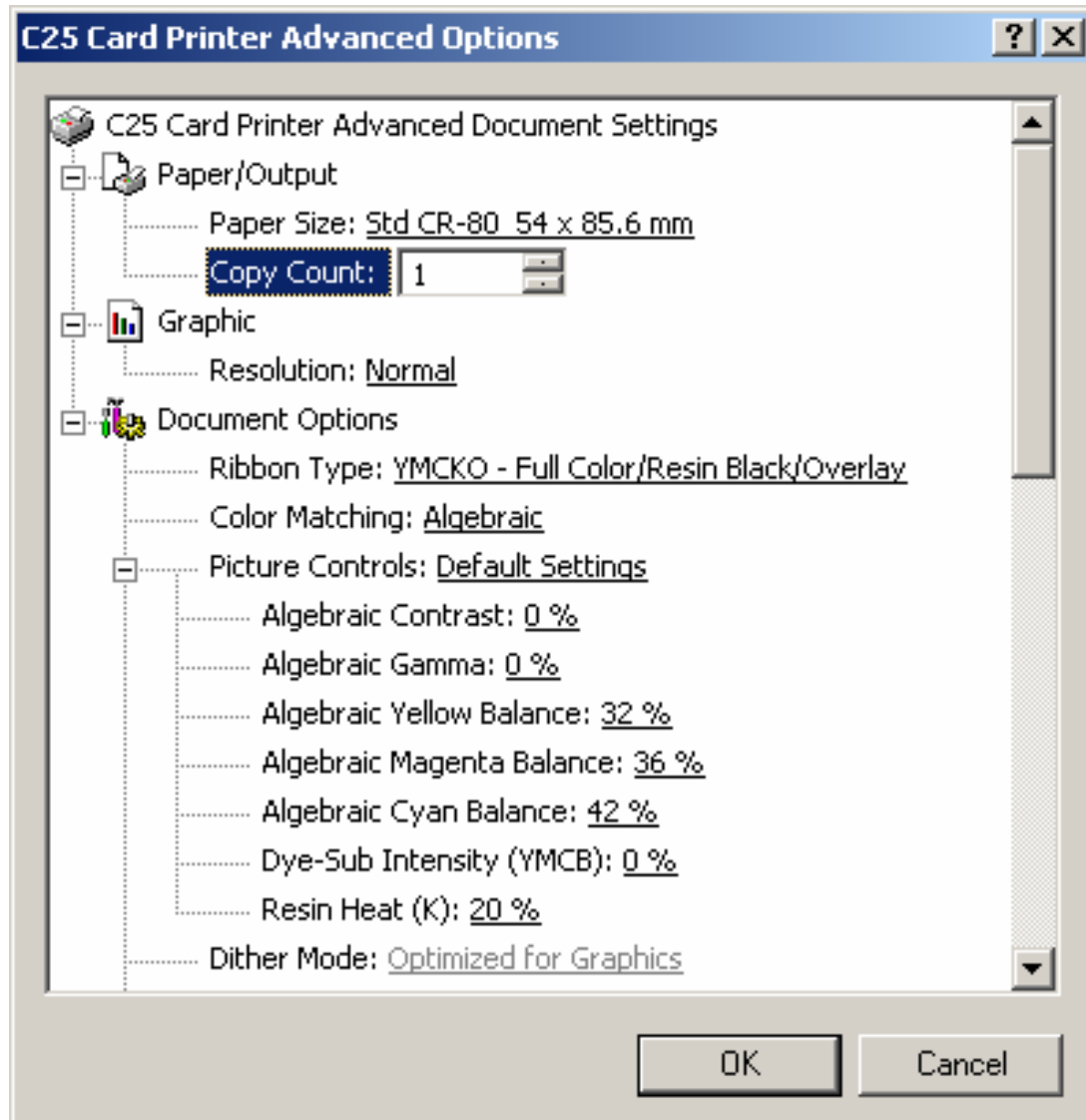
Step	Procedure
1	When designing a card format, always set the card size or page size within the card design program to the exact dimensions of a CR-80 card.



Determining the number of Copies

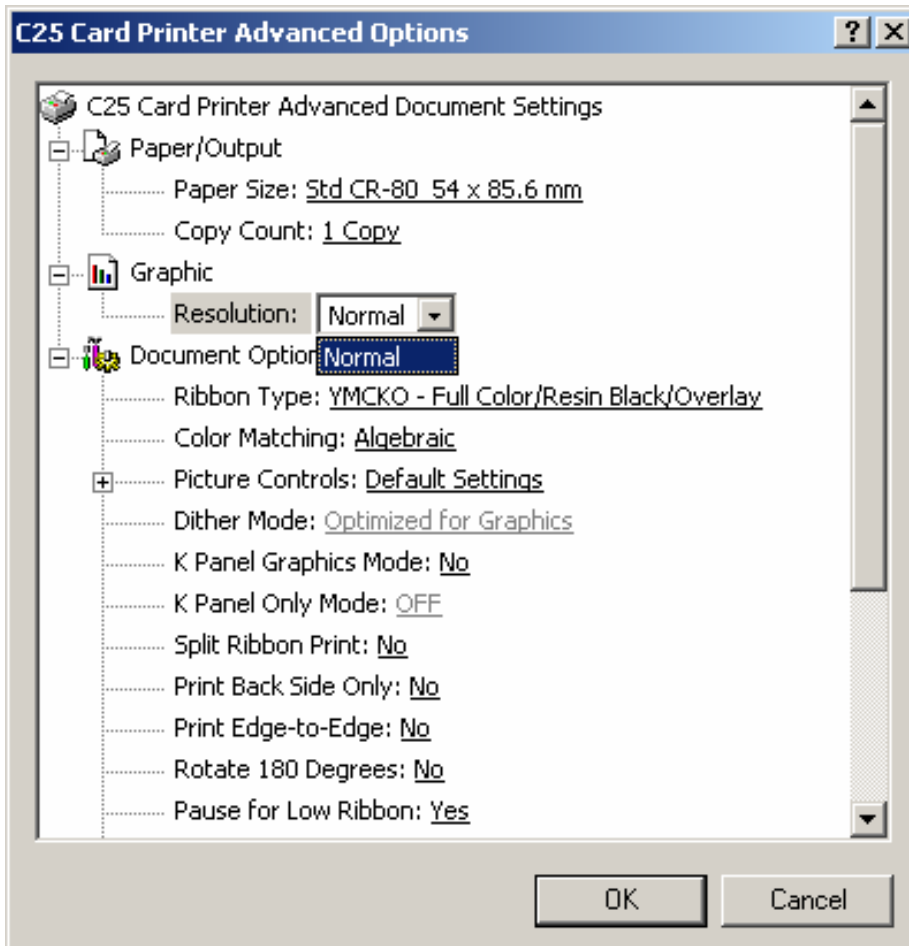
Use this function to indicate copies required.

Step	Procedure
1	Specify the number of copies to be printed by clicking on the up or down arrows.



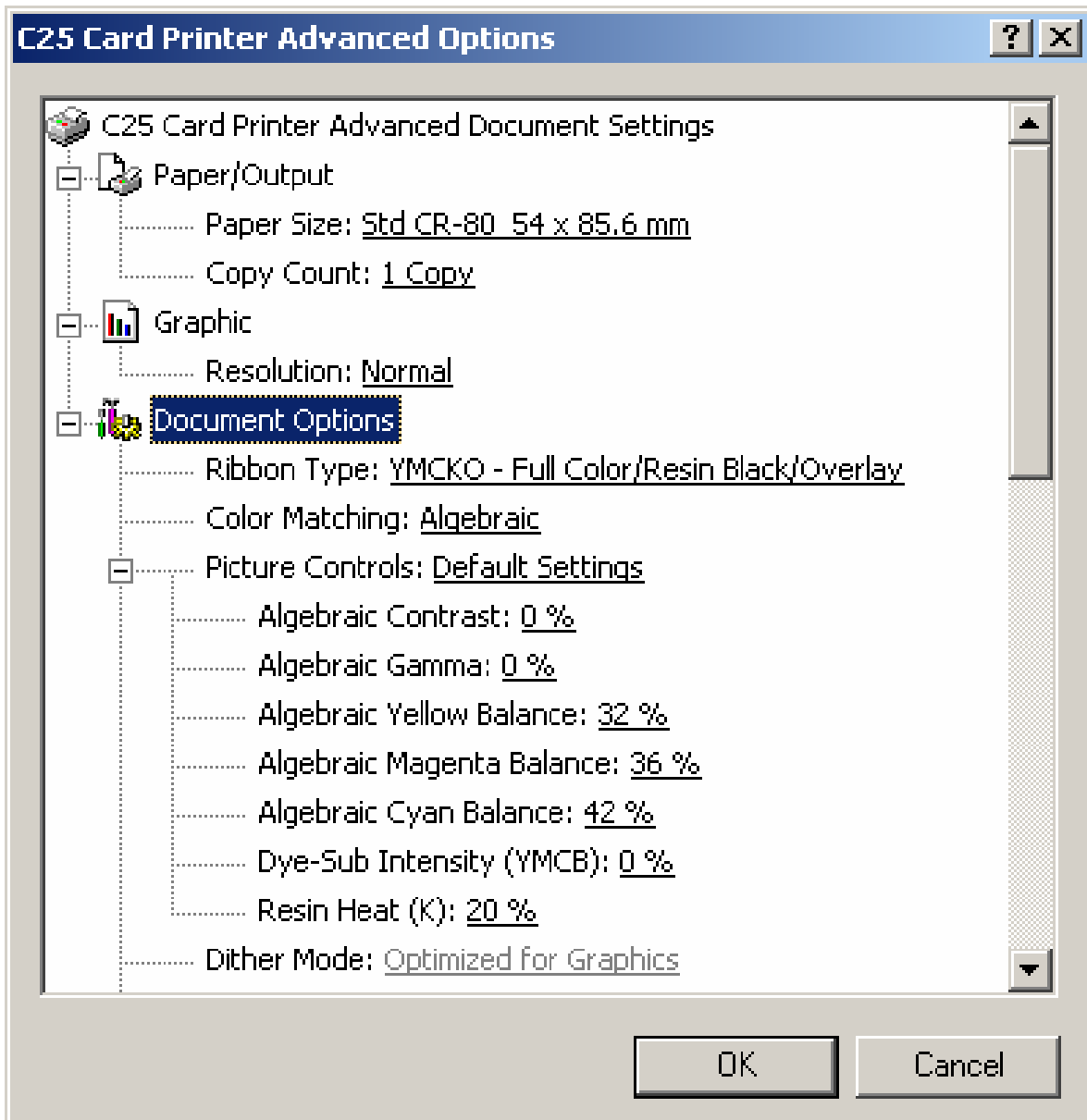
Selecting the Default Graphic Resolution

This is a default selection.



Using the Device Options

Use the Device options tab to select options that control the Printer's functions.

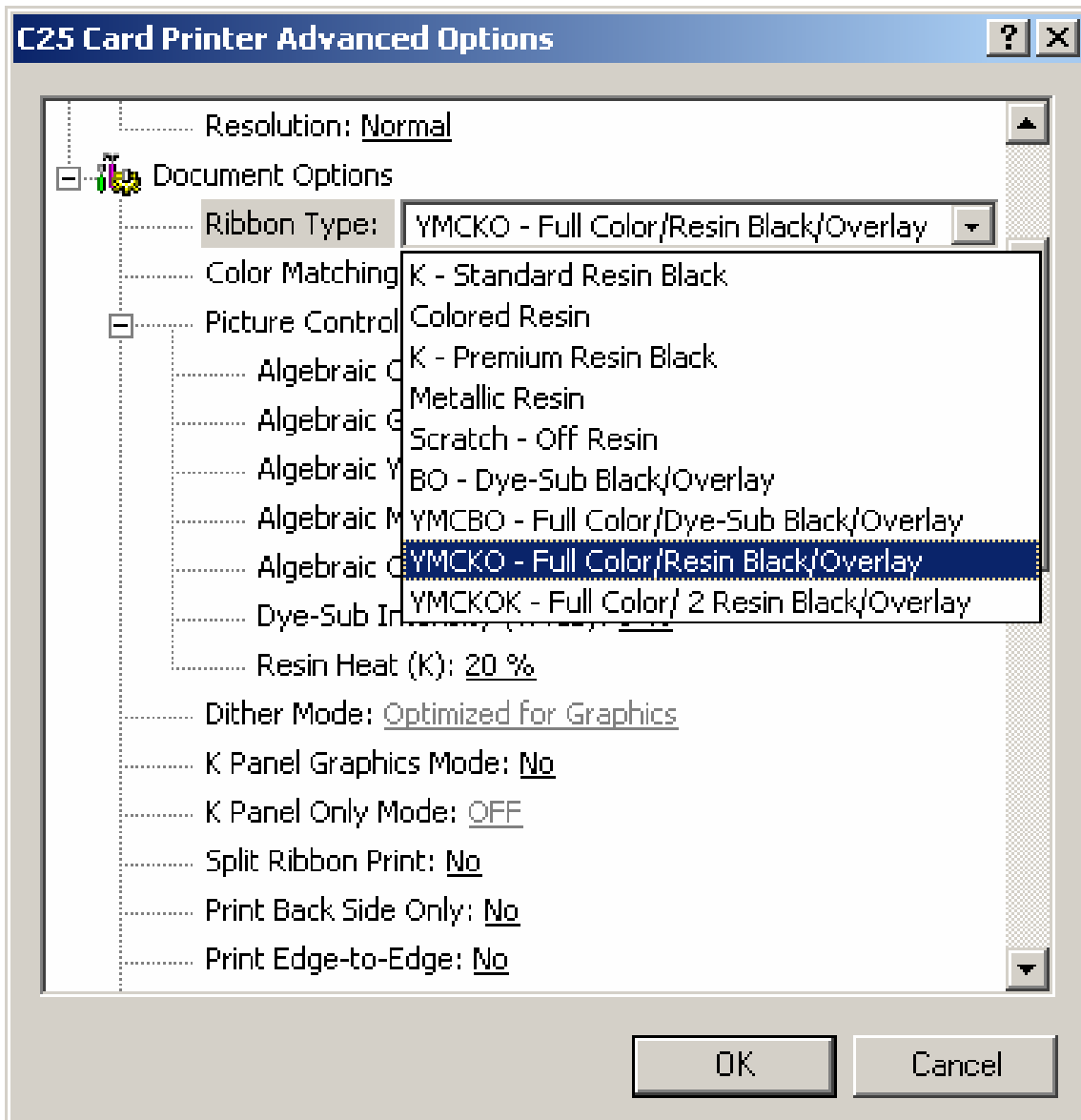


Selecting from the Ribbon Type options

Use the Ribbon Type dropdown menu to select the correct ribbon type.

Step	Procedure
1	Select Ribbon Type under Document options to change the setting.
2	<p>Select the correct Print Ribbon Type, as shown below. Adjust to match the Ribbon Type selection with the Ribbon Type already loaded in the Printer.</p> <ul style="list-style-type: none">• K - Standard Resin Black• Colored Resin: Colored Resin is available in Red, Blue, Green, or White• K - Premium Resin Black• Metallic Resin: Metallic Resin is available in Gold or Silver• Scratch-Off Resin• BO: Dye Sub Black, Overlay• YMCBO - Full Color/Dye-Sub Black/Overlay• YMCKO - Full Color/Resin Black/Overly• YMCKOK – Full Color/2 Resin Black/Overlay

Selecting from the Ribbon Type options (continued)

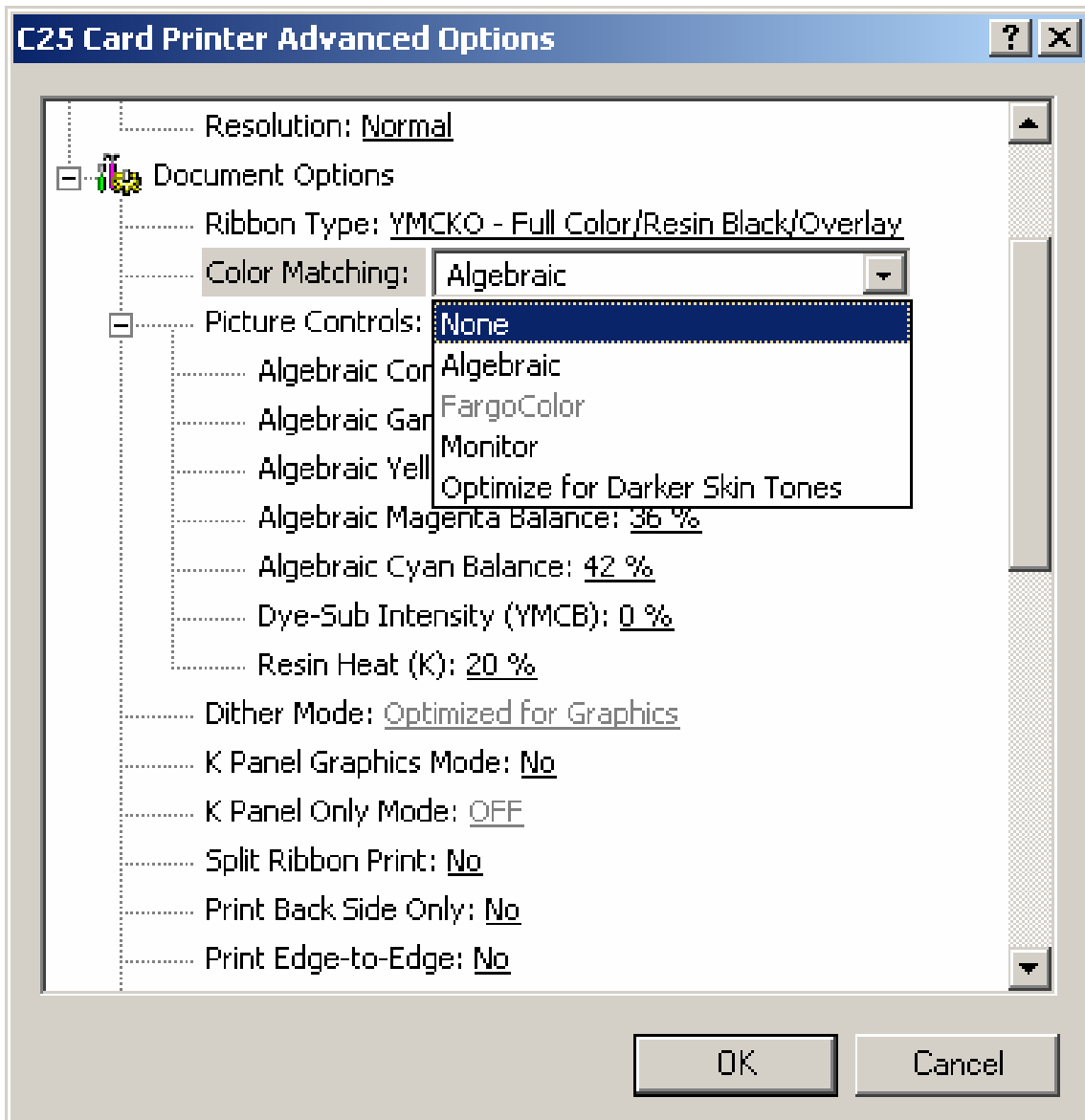


Selecting from the Color Matching options

Use this option to control where the resin black (K) panel of a full-color ribbon is printed. When printing with a resin-only ribbon type or a ribbon type that does not have a K panel, all K Panel Resin options will be grayed out. **(Note:** Resin black text is desirable due to its sharp, saturated black coloring, and resin black bar codes are often required to ensure readability when scanned.)

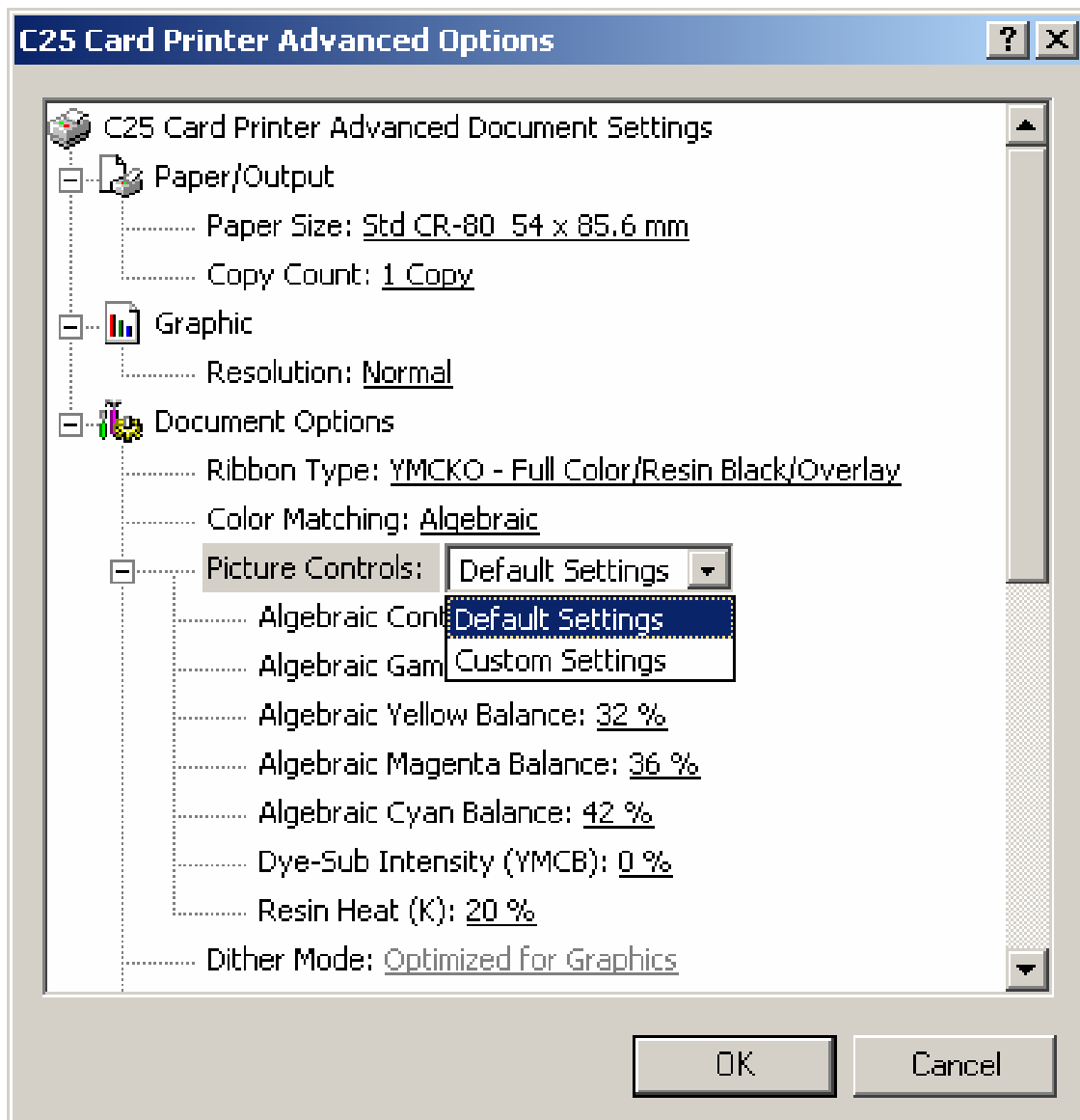
Step	Procedure
1	<p>Select None for print speed versus print color or for use of third party color matching software.</p> <p>OR</p> <p>Select Algebraic to control the Contrast and Gamma of the printed image, as well as the individual color balance of Yellow, Magenta, and Cyan. (Note: In most cases, the default settings of these options will suffice. When the Algebraic color matching option is selected, all control options will display and can be adjusted.)</p> <p>OR</p> <p>Select Monitor for the Printer Driver to make color corrections similar to the Algebraic option but through a more complex color matching algorithm. (Note: This option shifts colors to a different color model so the colors in the image will more closely match how they appear on the monitor.)</p> <p>OR</p> <p>Select Optimize for Darker Skin Tones to make appropriate adjustments.</p>

Selecting from the Color Matching options (continued)



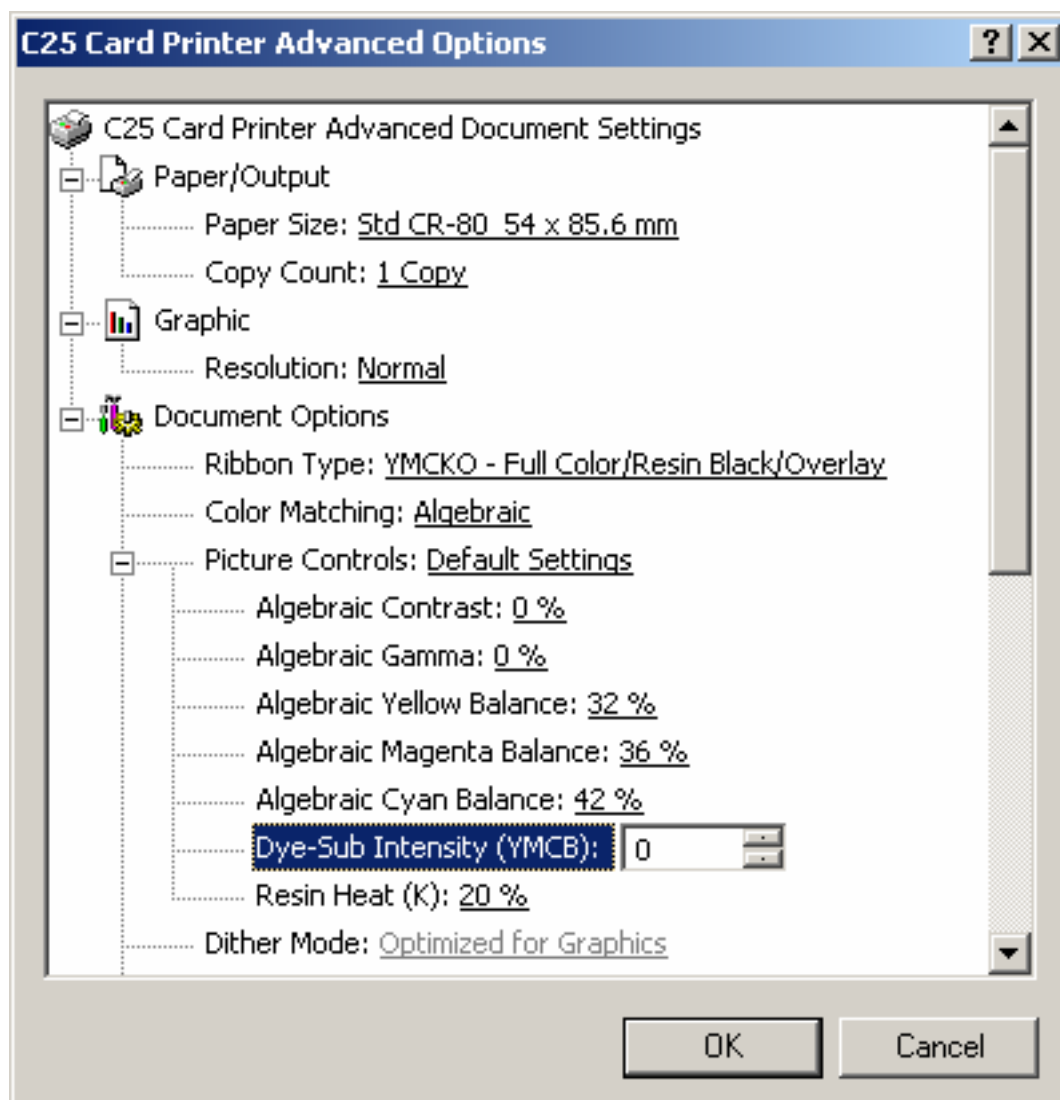
Using the Picture Controls

Use the Custom Settings option under Picture Controls to control the **Contrast** and **Gamma** of the printed image, as well as the individual color balance of **Yellow Balance**, **Magenta Balance**, and **Cyan Balance**. (**Note:** In most cases, the default settings of these options will suffice.)



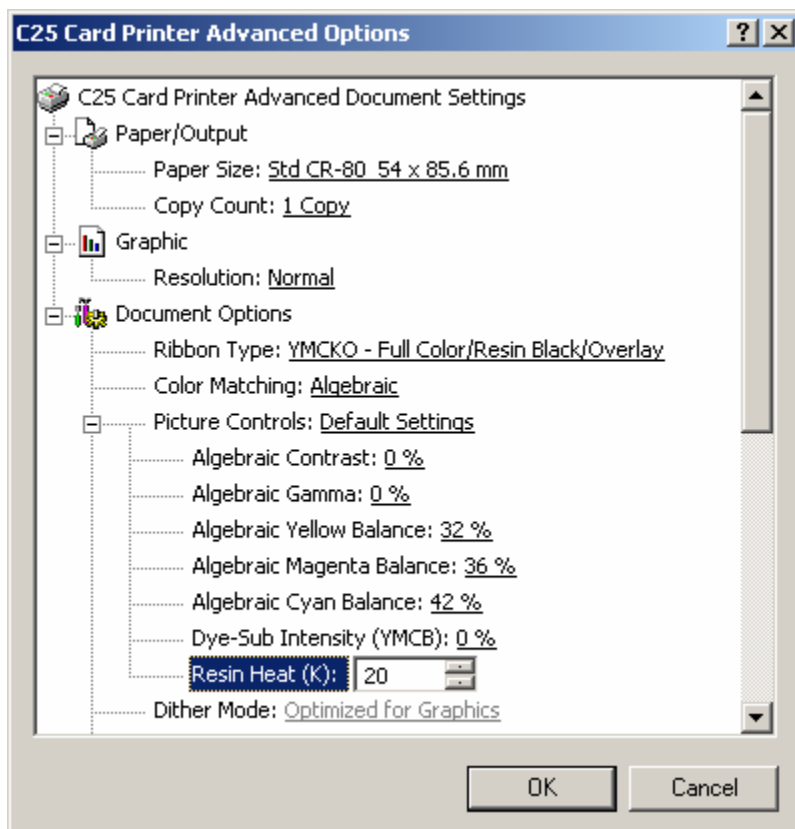
Controlling the Dye-Sub Intensity (YMCB)

Step	Procedure
1	Control the overall darkness and lightness of the printed image by adjusting the Dye-Sub Intensity slide by clicking and dragging the slide's box or by clicking on the left and right arrows.



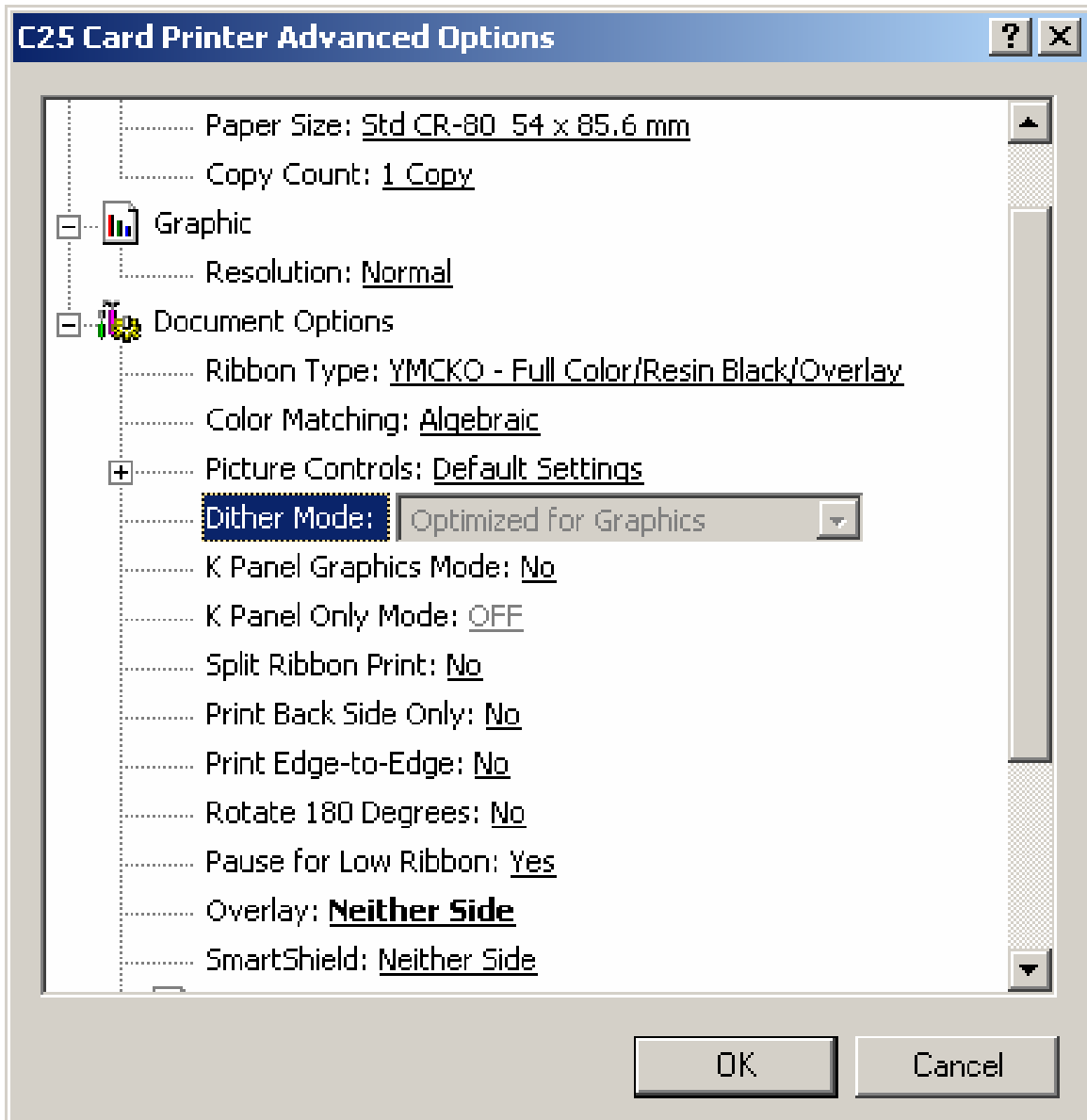
Controlling the Resin Heat

Step	Procedure
1	<p>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 by adjusting the Resin Heat.</p> <p>Note #1: This control can be helpful for fine-tuning the saturation of resin text and bar codes.) Adjust the Resin Heat (K) setting (as needed), as shown below.</p> <p>Note #2: This option only effects objects printed with a resin-only print ribbon or those objects printed on the back side of a card with the resin black panel of a YMCKO, YMCKOK, or YMCKK print ribbon.</p> <p>Note #3: Use this option 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.</p>



Using the default Dither Mode

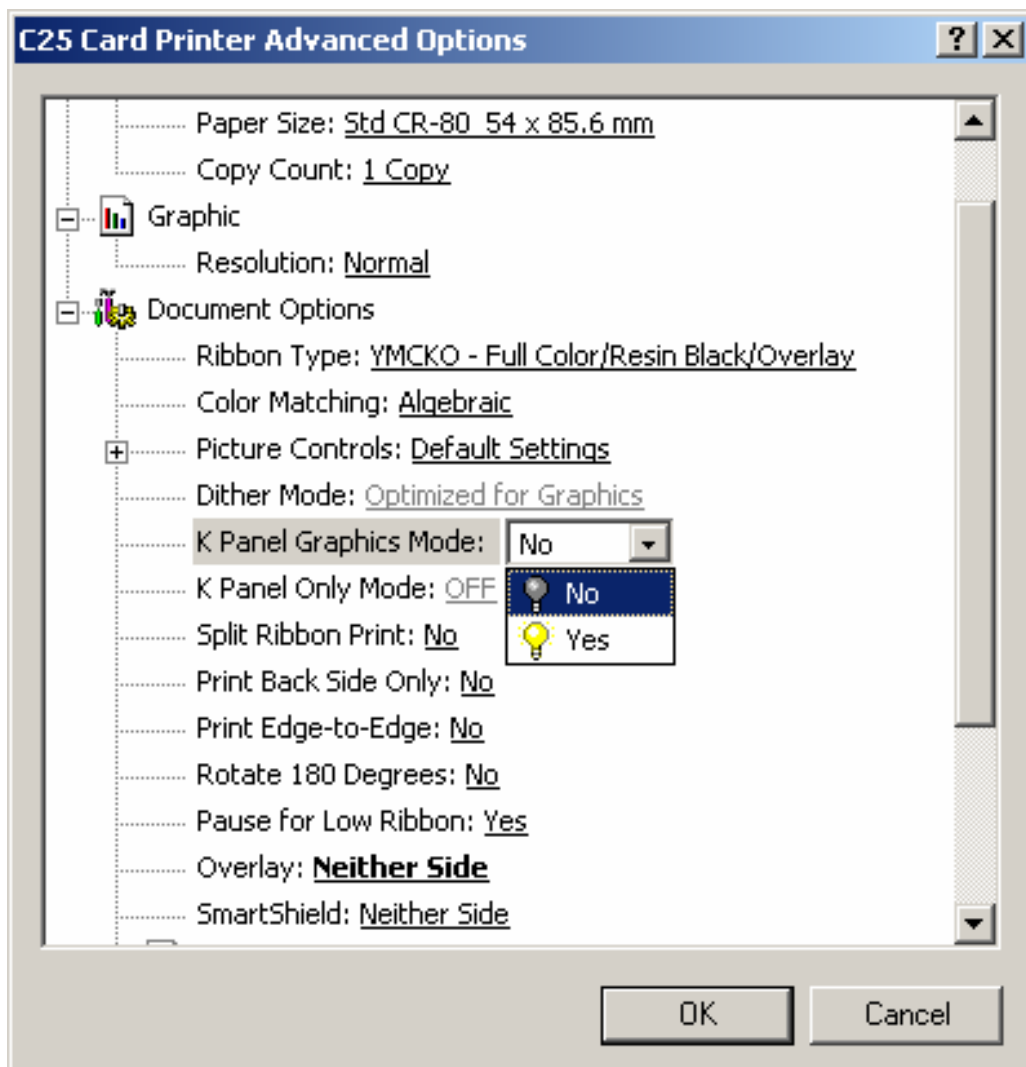
This is a default selection.



Selecting the K Panel Graphics Mode option

Use this option to control where the resin black (K) panel of a full-color ribbon is printed.

Step	Procedure
1	Select the K Panel Graphics Mode option to control where the resin black (K) panel of a full-color ribbon is printed. (Note: If printing with a resin-only ribbon type or a ribbon type that does not have a K panel, all K Panel Resin options will be grayed out. Resin black text is desirable due to its sharp, saturated black coloring, and resin black bar codes are often required to ensure readability when scanned.)

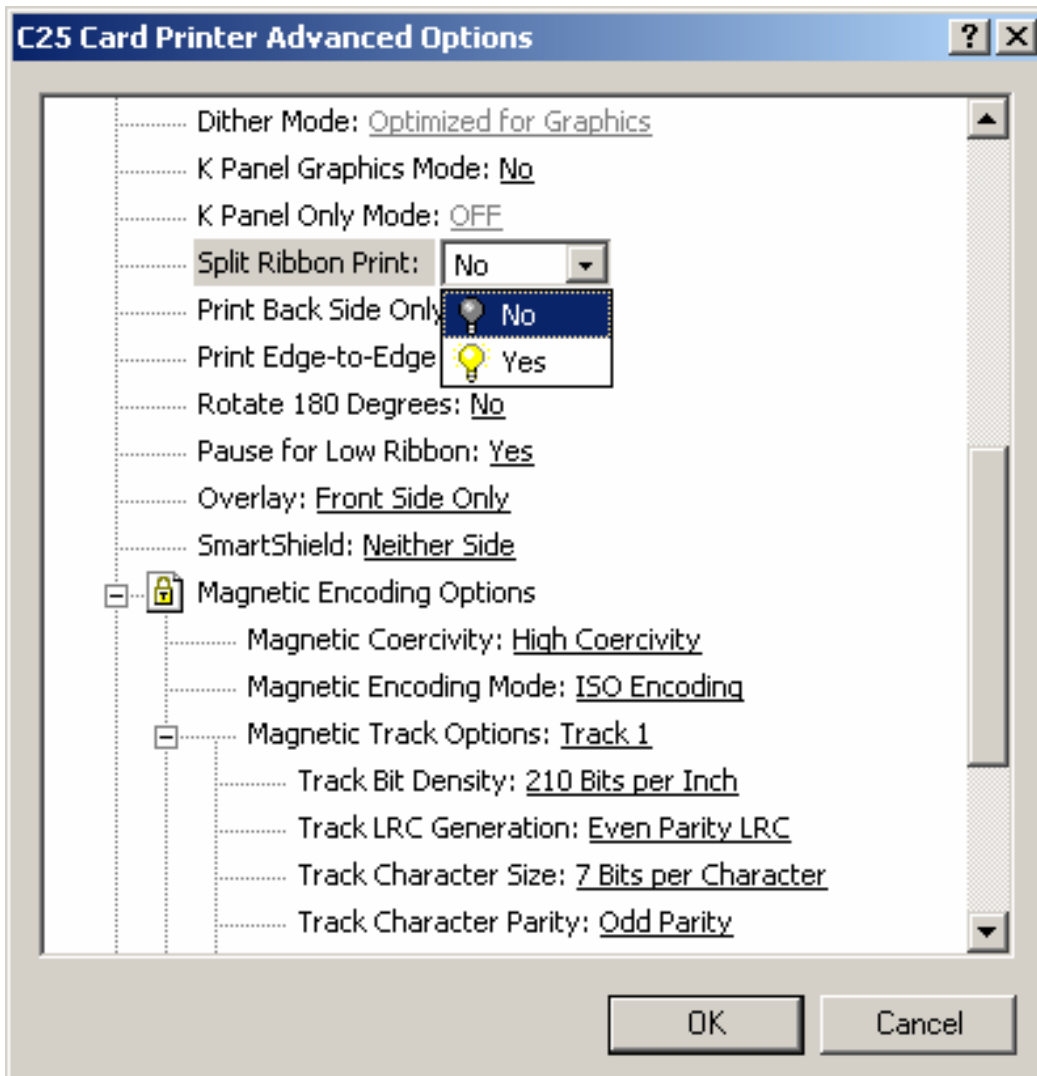


Selecting the Split Ribbon Print option

Use this option to automatically print full-color on the front of a card and resin black on the back of a card using any of the Full-Color YMC+K print ribbon types.

Step	Procedure
1	<p>Select this option to use the most economical means of printing a dual-sided card since a single set of ribbon panels is essentially split to print both the front and back sides of a card.</p> <ul style="list-style-type: none"> • If using a YMCKO ribbon type, the front of the card is printed with the ribbon's YMCO panels and the back is printed with the K panel. • If using a YMCKOK ribbon type, the front of the card is printed with the YMCKO panels and the back is printed with the second K panel. • If using a YMCKK ribbon type, the front of the card is printed with the YMCK panels and the back is printed with the second K panel. <p>(Note #1: This option is automatically enabled when the either the YMCKOK or YMCKK ribbon type is selected.)</p> <p>(Note #2: The Print Both Sides option is automatically enabled when this option is selected.)</p>

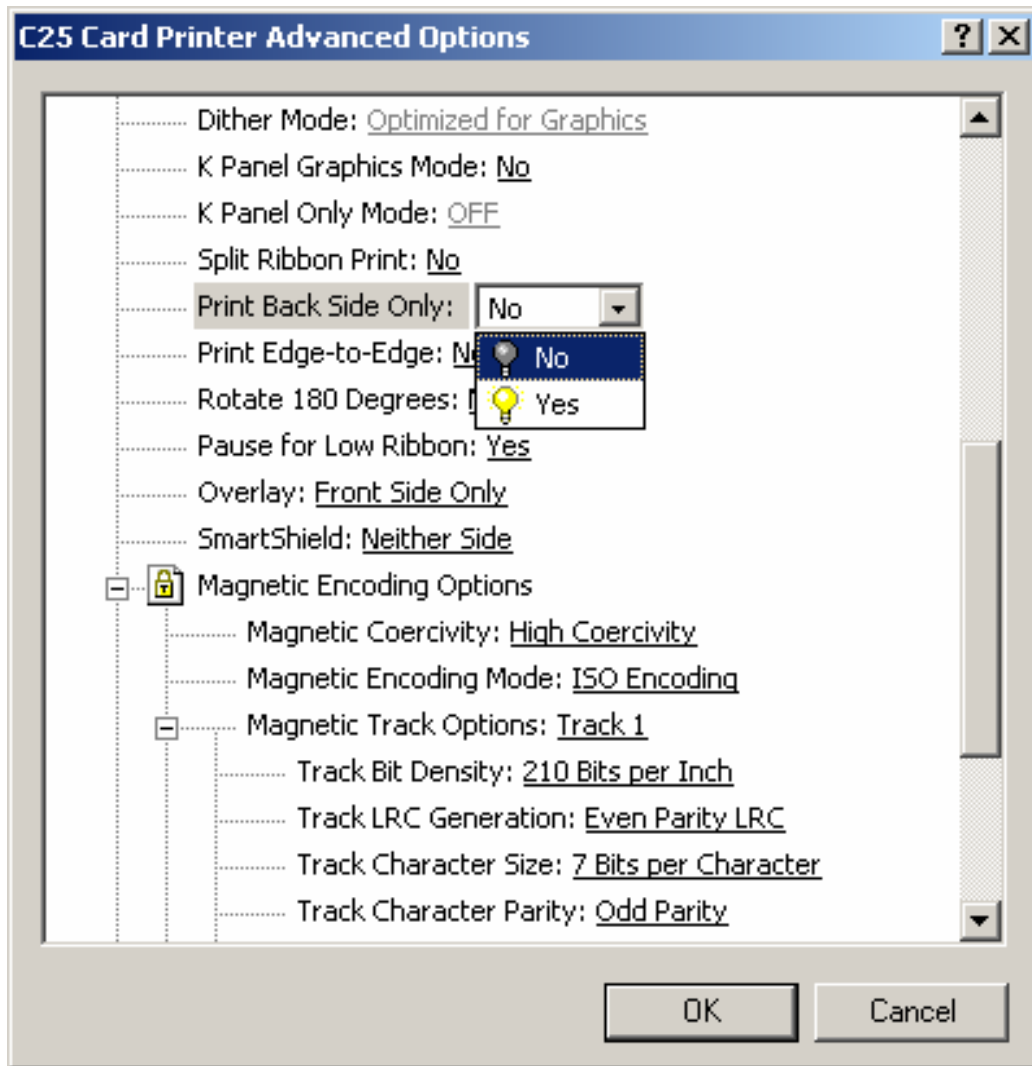
Selecting the Split Ribbon Print option (continued)



Selecting the Print Back Side Only option

Use this option to automatically print on the backside of a card.

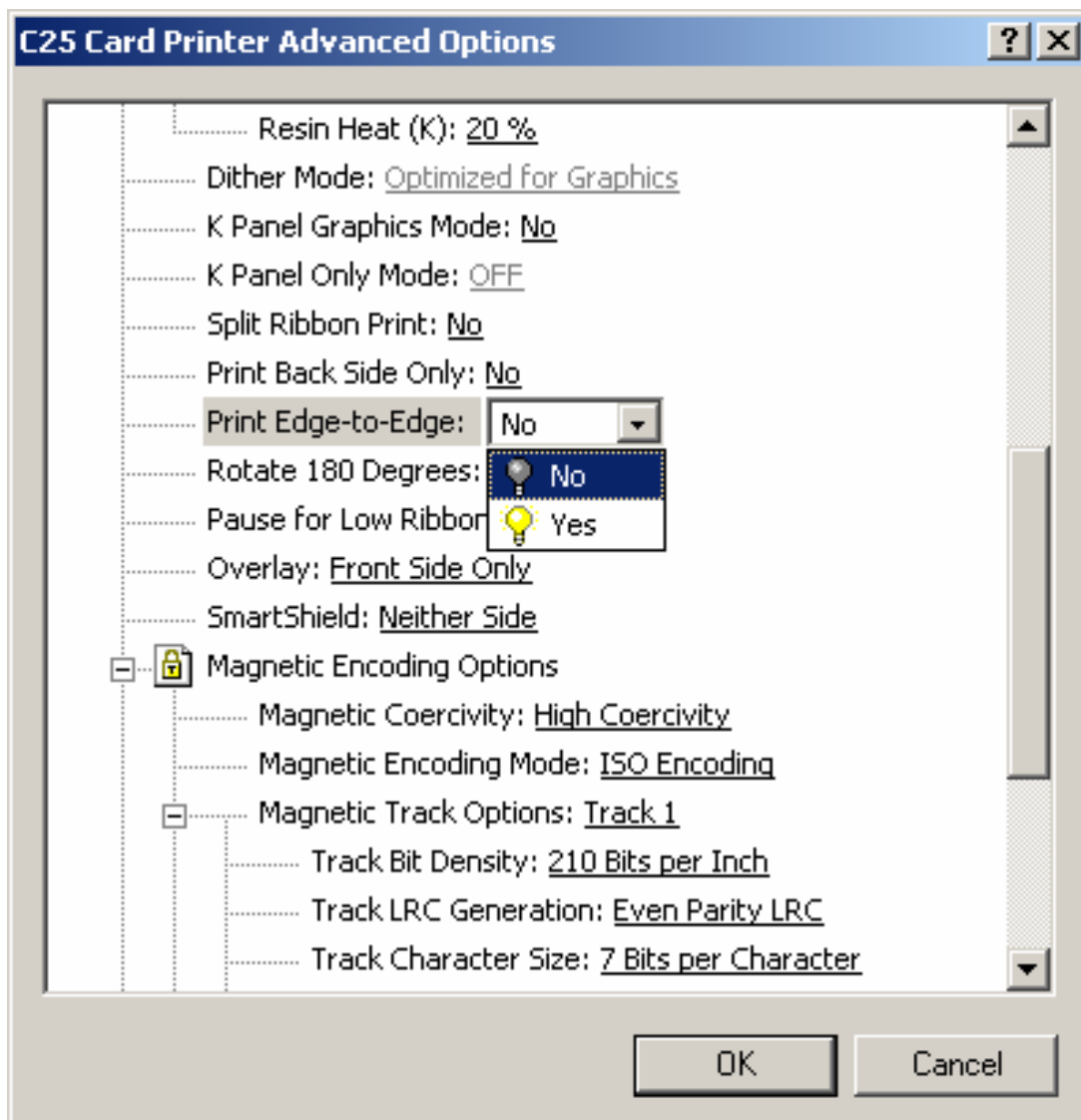
Step	Procedure
1	Select this option to conveniently print the backside of preprinted cards, which must have their Magnetic Stripe or smart card chip encoded.



Selecting the Print Edge-to-Edge option

Use this option for Edge-to-Edge type printing.

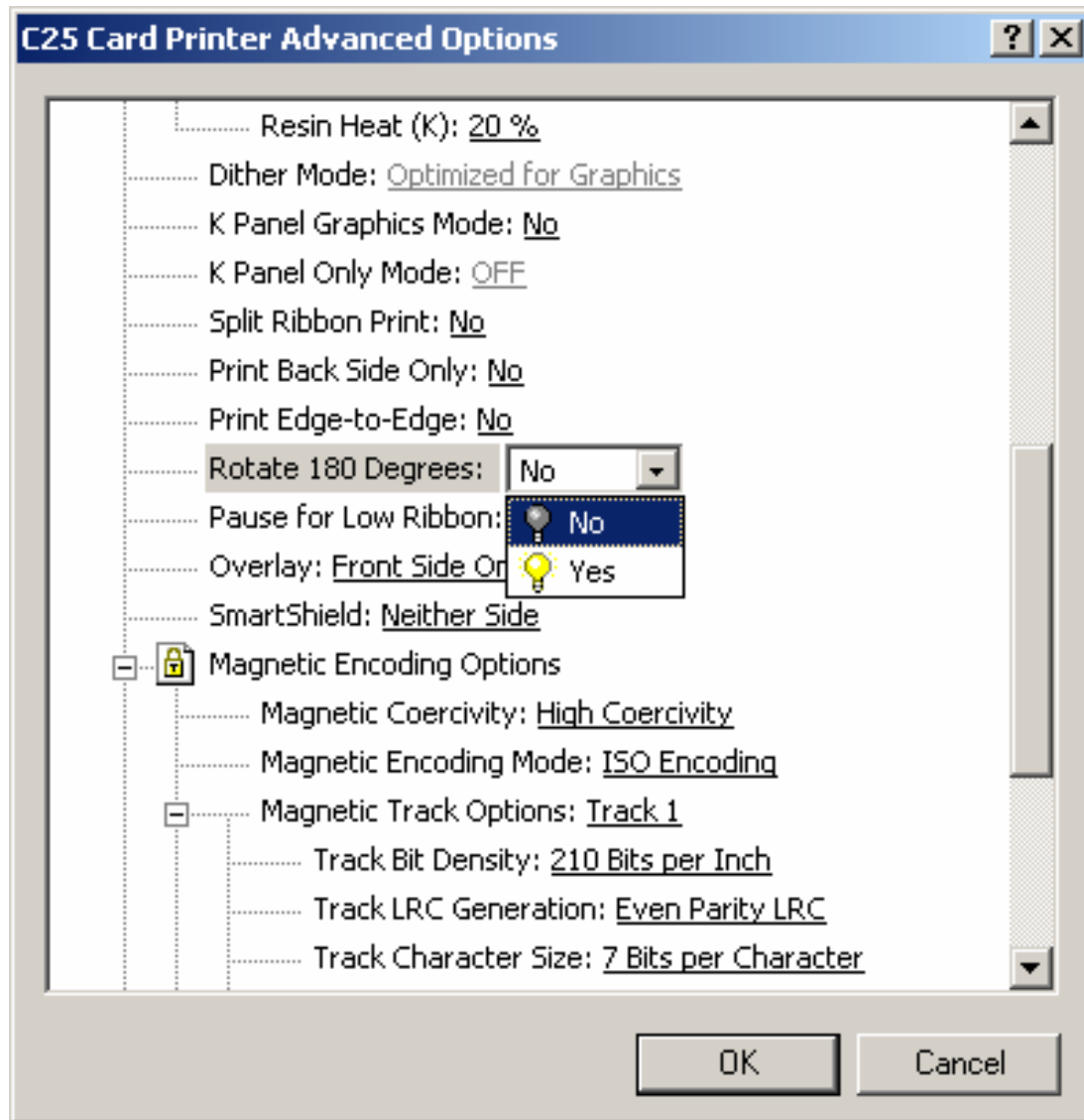
Step	Procedure
1	Select this option to adjust the maximum printable area on a card, which results in printed cards with virtually no border. See the Adjusting the RP3 Card Offset Location procedure on page 68.



Selecting the Rotate 180 Degrees option

Use this option to rotate the image on the front of the card 180 degrees when printed.

Step	Description
1	Select this option to change the position of the printed image in relation to the set location of a card's Magnetic Stripe or smart chip.

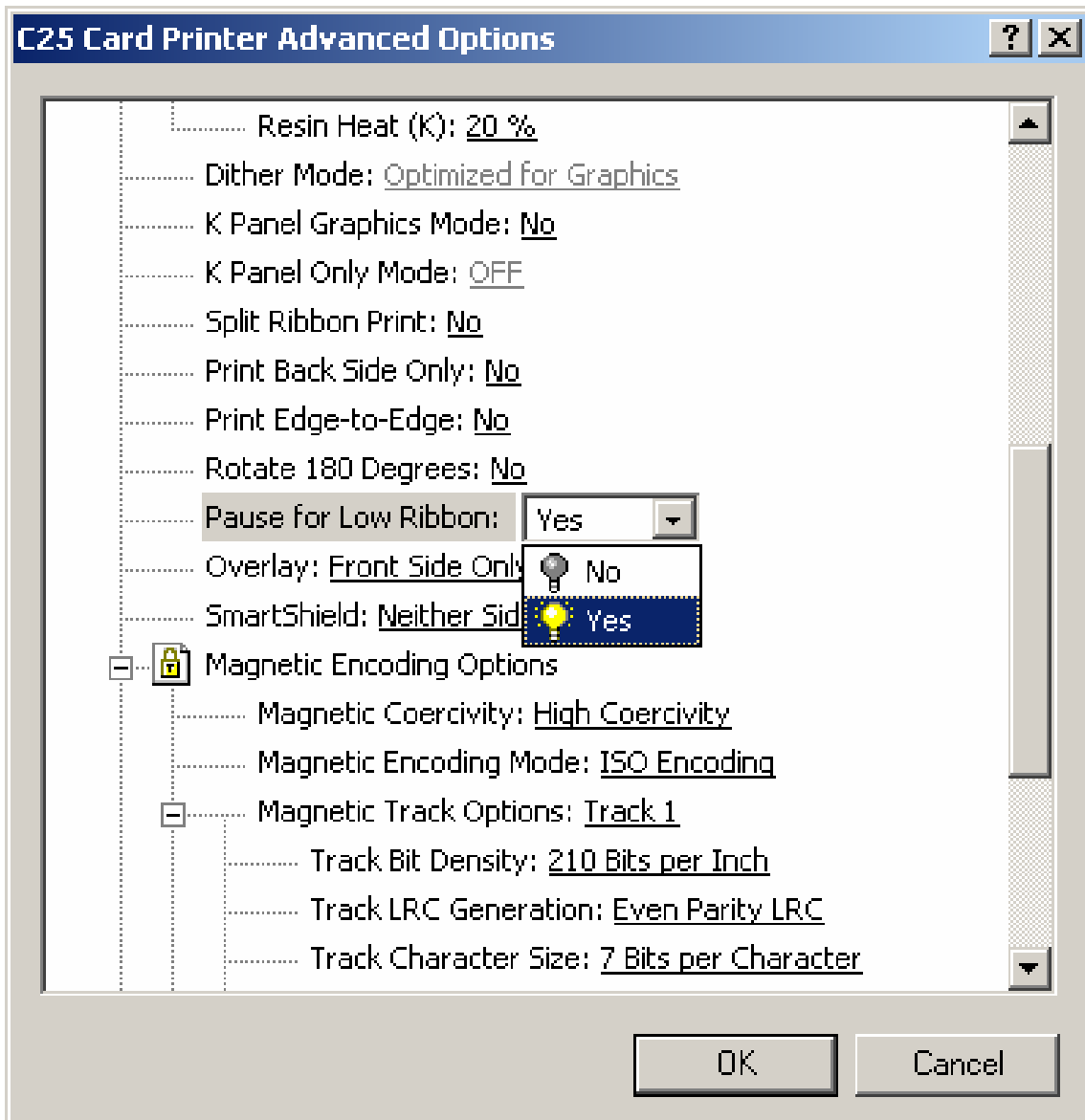


Selecting the Pause for Low Ribbon option

Use this option to generate a definitive warning when the print ribbon is running low. (**Note:** When this option is selected, the Printer will beep, pause, and the Ready LED will flash when approximately 10 to 20 prints remain on the print ribbon.)

Step	Procedure
1	<p>Replace the ribbon and press the Pause/Resume button to continue printing with a new ribbon.</p> <p>OR</p> <p>Leave the existing ribbon in the Printer and press the Pause/Resume button.</p> <ul style="list-style-type: none">• Once the Pause/Resume button is pressed, the Printer will continue printing until the end of the ribbon, but will beep once before each print job.• It will not be necessary to press the Pause/Resume button again to continue printing once it has been pressed initially during a batch print.)• The Printer will still beep once before each print job when approximately 10 to 20 prints remain on the print ribbon; however, the Printer will not pause. Instead, it will continue printing until the end of the ribbon, without User intervention.

Selecting the Pause for Low Ribbon option (continued)

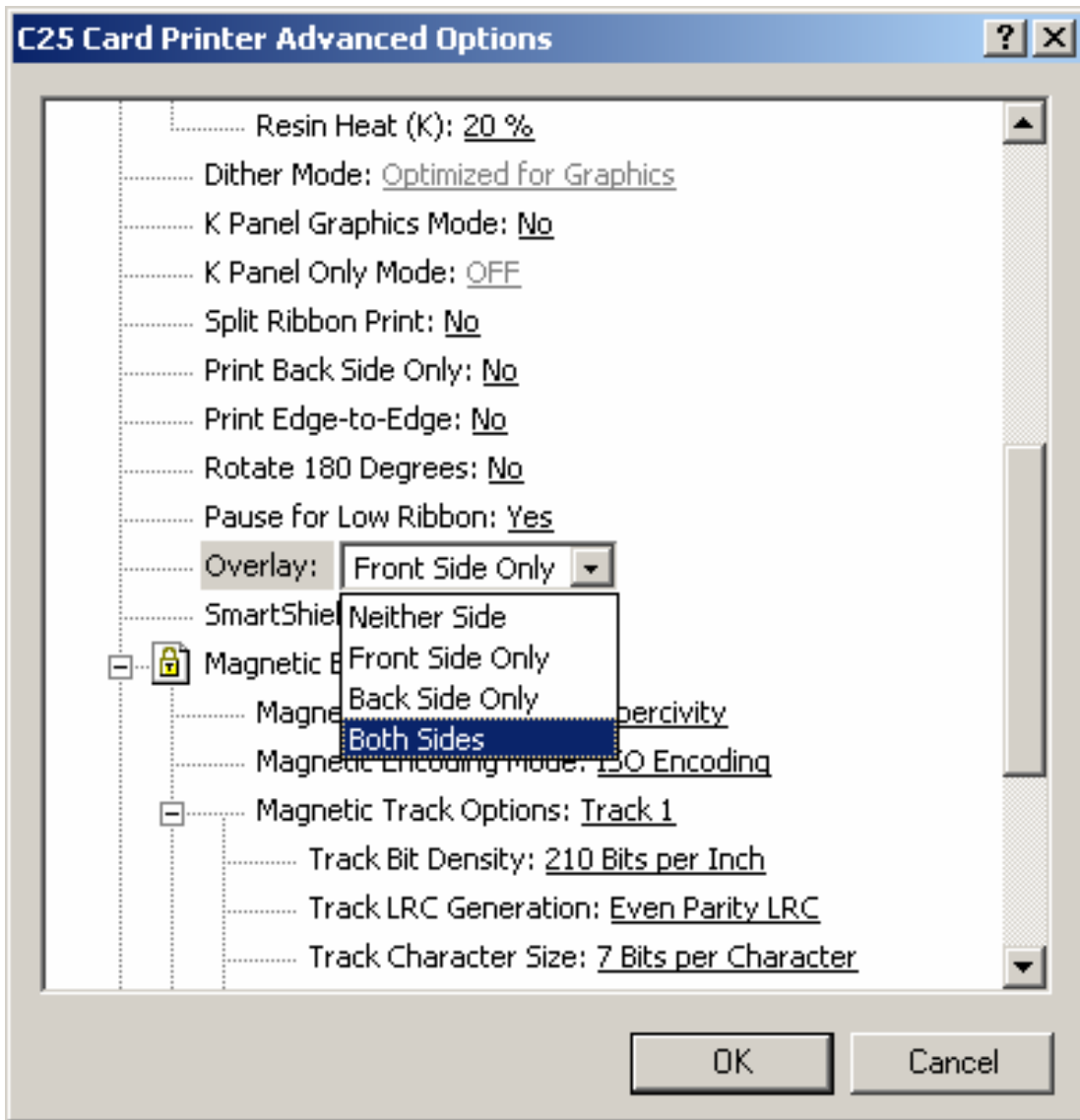


Selecting the Overlay option

Use this option to automatically print **Neither Side**, **Back Side Only**, **Front Side Only**, or **Both Sides** of a card.

Step	Procedure
1	<p>Select this option in conjunction with any application program that supports a multiple page document. (Note: In other words, the program must be able to send down two or more separate pages to be printed within the same document.)</p> <ul style="list-style-type: none"> • Select Neither Side for non-use of the Overlay option. • Select the Front Side Only, Back Side Only, or Both Sides setting to designate the side or sides of the card for the image to print on. <p>Note #1: Print a full-color ID format on the front of the card and monochrome text or bar codes on the back by creating the full-color front side of the card (on page 1) of the document and the monochrome backside (on page 2). (Note: The Printer Driver always places the odd numbered pages on the front side of the card and the even numbered pages on the backside.)</p> <p>Note #2: To customize the overlay and/or print area, select one of the options listed under Overlay. Use this option to control the overlay (O) panel and/or the print area appearing on a card; also, use it to omit or block out the overlay or printing around a card's smart chip or Magnetic Stripe. By default, this option is set to print and overlay the entire card.</p>

Selecting the Overlay option (continued)



Selecting the SmartShield option

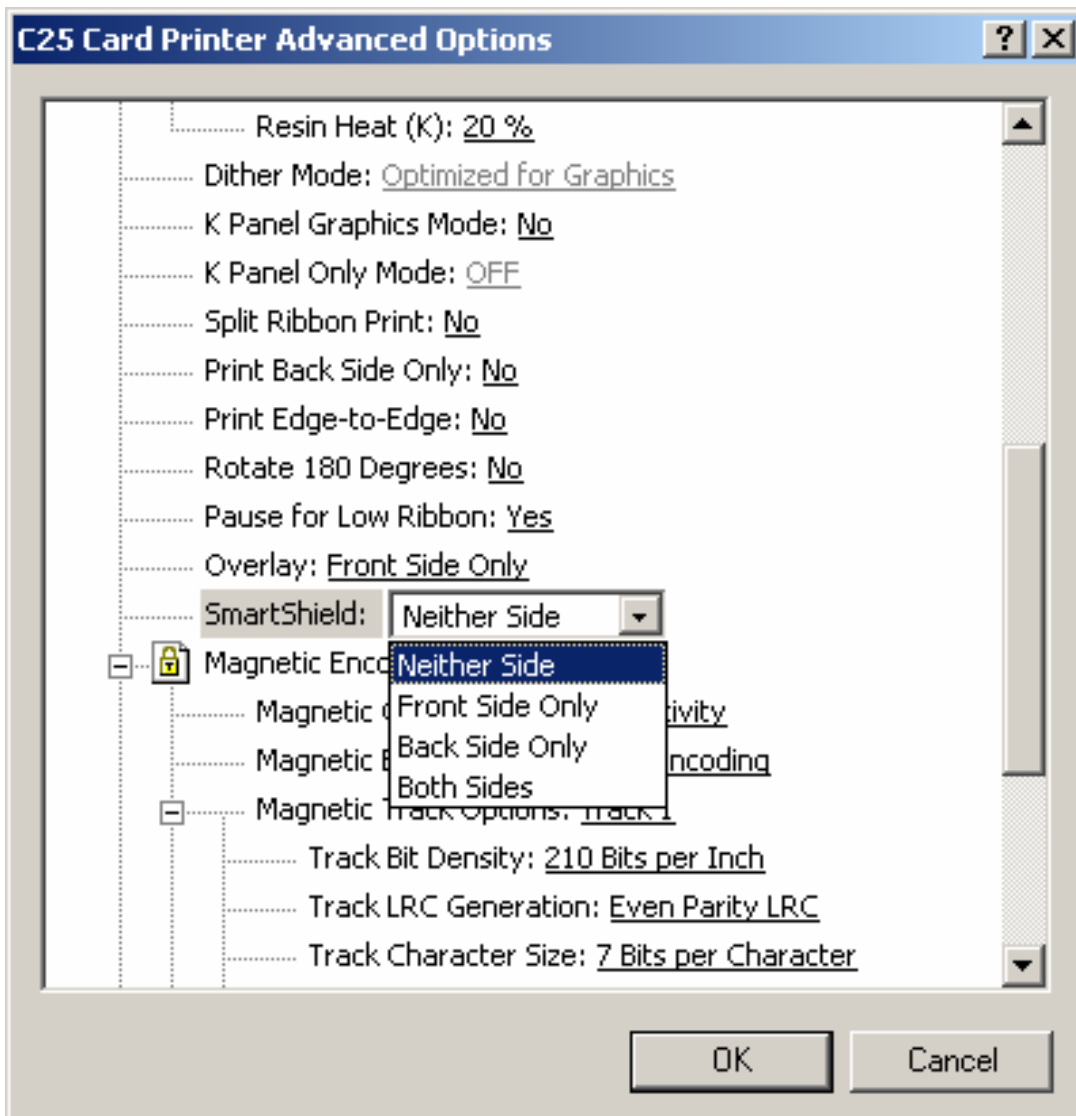
Use this option to automatically print Neither Side, Back Side Only, Front Side Only, or Both Sides of a card. Use the SmartShield Area options, which apply only if using the Printer's optional SmartGuard Security Feature, and the SmartShield option is enabled.

(**Note #1:** This is a convenient way of turning the SmartShield Security Feature ON or OFF.)

(**Note #2:** It is not possible to apply an overlay and a SmartShield image to the same side of a card.

Step	Procedure
1	<p>Select Neither Side if not using the SmartShield option or if not printing the SmartShield image (even if it is encoded on the SmartGuard Access Card).</p> <p>OR</p> <p>Customize the SmartShield area by selecting one of the options listed under SmartShield Area.</p> <ul style="list-style-type: none"> • Select the SmartShield option to print your custom SmartShield Security Image when using the Printer's optional SmartGuard Security Feature with the enabled SmartShield option.) • Select the SmartShield Front Side Only, SmartShield Back Side Only, or SmartShield Both Sides setting to designate the side or sides of the card on the SmartShield image (to print on). <p>Note #1: Select this option in conjunction with any application program that supports a multiple page document. (Note: In other words, the program must be able to send down two or more separate pages to be printed within the same document.)</p> <p>Note #2: Print a full-color ID format on the front of the card and monochrome text or bar codes on the back by creating the full-color front side of the card (on page 1) of the document and the monochrome backside (on page 2). The Printer Driver always places the odd numbered pages on the front side of the card and the even numbered pages on the backside.</p>

Selecting the SmartShield option (continued)

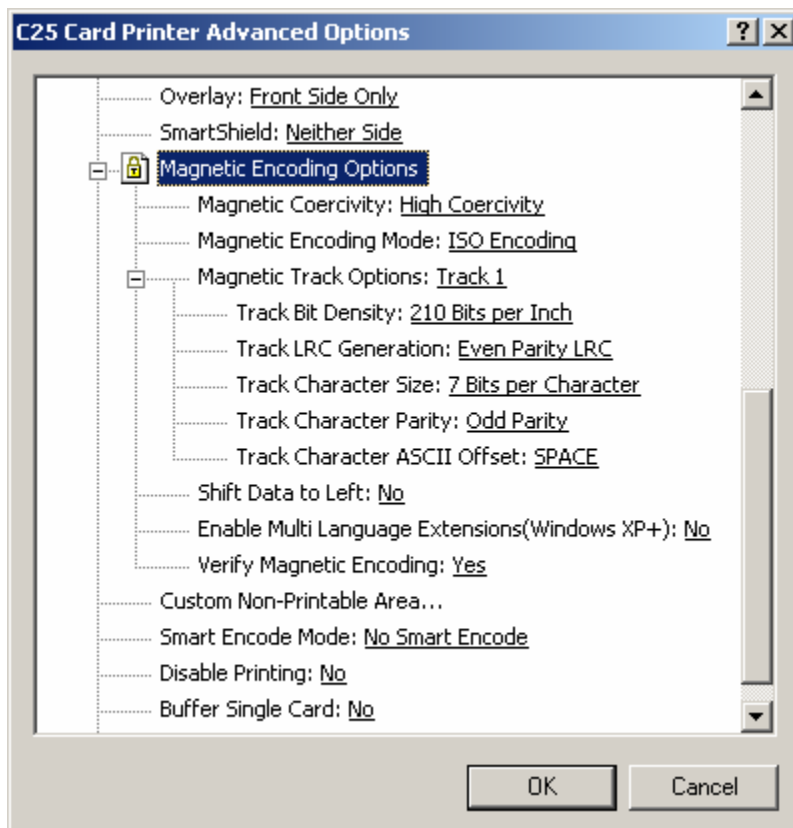


Using the Magnetic Encoding Options

Use this option only if the Printer has an optional Magnetic Stripe Encoding Module installed. (Note: This section describes these options and the Printer's Magnetic Encoding process.)

Step	Procedure
1	Select the Magnetic Encoding Options to change the encoding mode, coercivity setting, or to modify the ISO Standards for Tracks 1, 2, and 3. (Note: By default, the Printer Driver is set to encode according to ISO Standards onto high-coercivity Magnetic Stripes.)

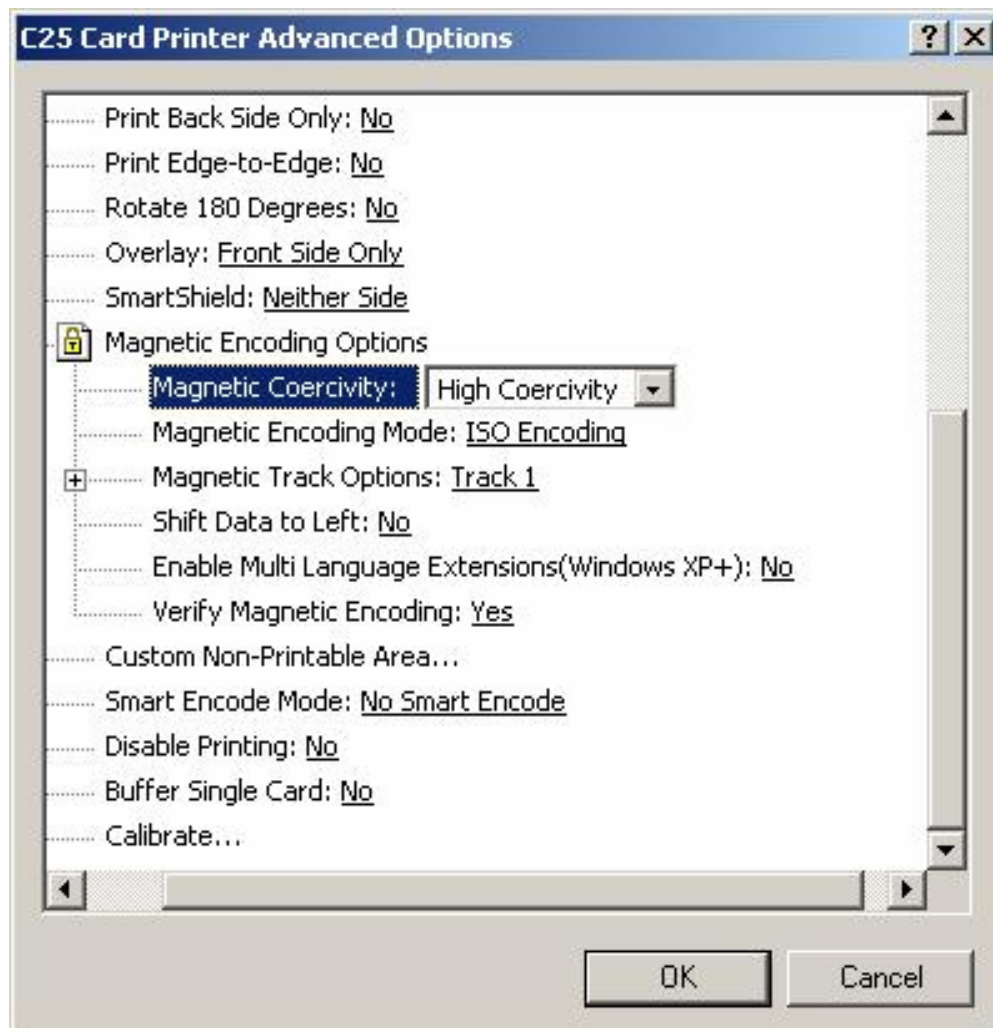
Continued on the next page



Using the Coercivity option

Use the **Coercivity** option to select the type of Magnetic Stripe to encode.

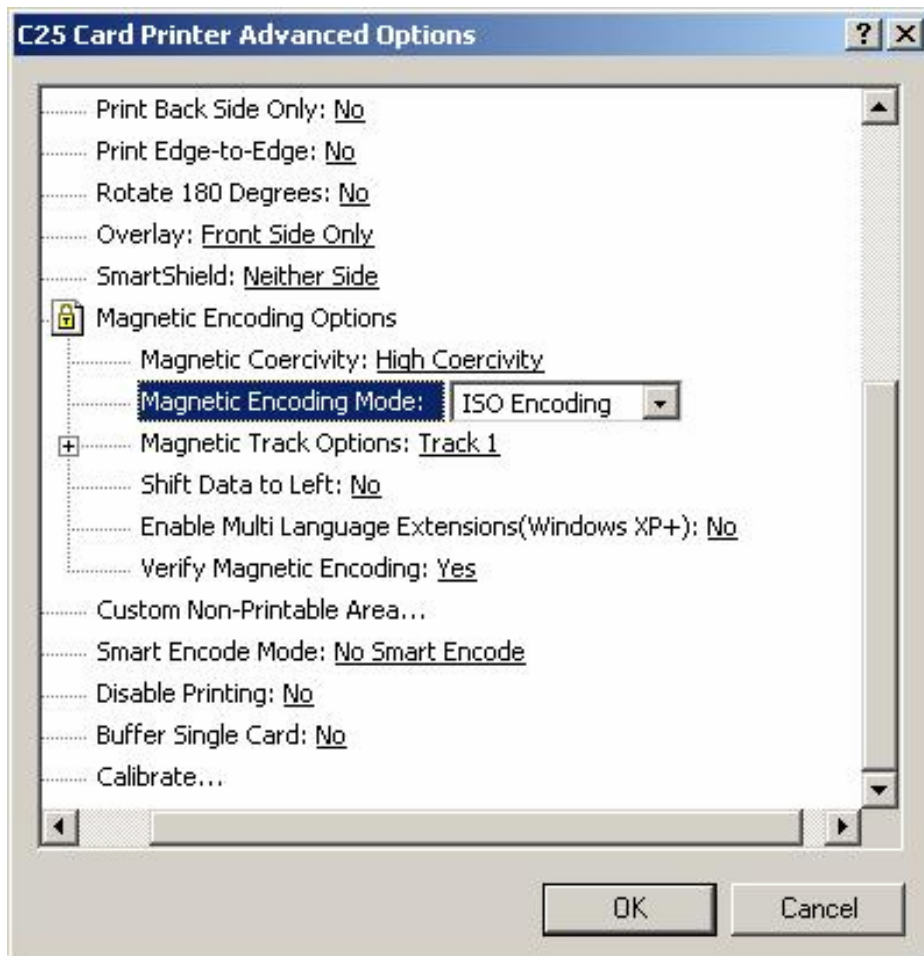
Step	Procedure
1	Select High Coercivity to set the Oersted level to 2750, as shown below. OR Select Low Coercivity to set the Oersted Level to 300.



Using the Magnetic Encoding Mode option

Use the Magnetic Encoding Mode option to specify the desired, Magnetic Encoding standard.

Step	Procedure
1	<p>Select the ISO option provides encoding capability for either high or low-coercivity cards on Tracks 1, 2, and 3. (Note: The ISO option is the industry's most standard mode of Magnetic Encoding.)</p> <p>OR</p> <p>Select the JIS II mode 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: No encoding customization options are available with the JIS II mode.)</p>



Selecting the Magnetic Track Options

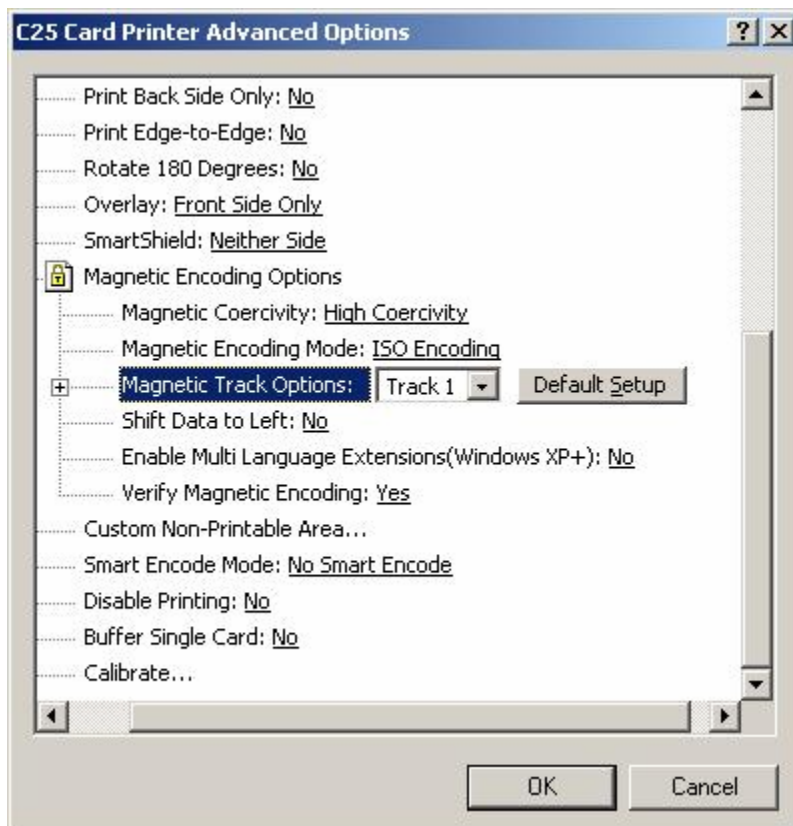
Use the **Magnetic Track** options for these purposes:

- Customize the ISO encoded data format for each of the Magnetic Stripe's three Tracks.
- Customize each Track independently of the other two.
- Specify which of the three Tracks to customize by selecting one of the three Track options.)

(**Note #1:** After making the required selection, the Magnetic Track options box displays the current set of customization options for the selected Track.)

(**Note #2:** For most applications, the default settings for these options do not need to be changed.)

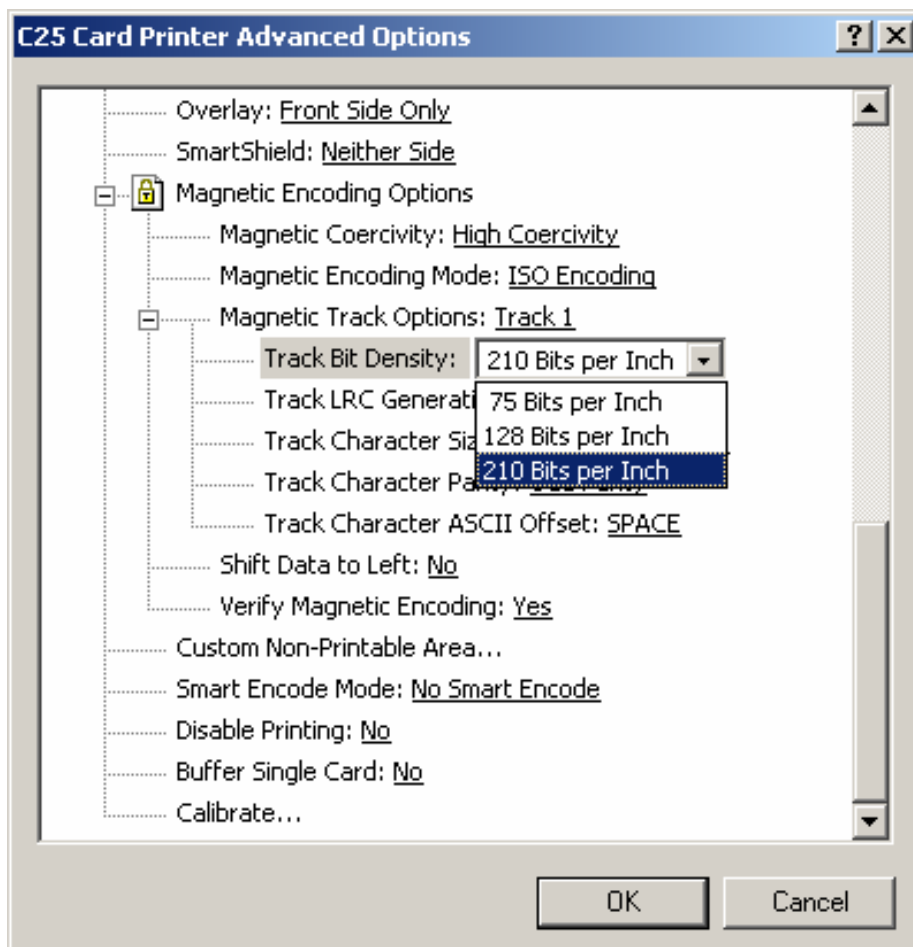
Step	Procedure
1	Properly adjust the Magnetic Encoding options to change the ISO Standards for Tracks 1, 2, and 3.



Selecting the Track Bit Density option

Use this option to customize the Bit Recording Density (Bits per Inch) used to encode the magnetic data on the currently selected Track. (**Note:** The default ISO Standard selections for this option are Track 1: 210 BPI, Track 2: 75 BPI, and Track 3: 210 BPI.)

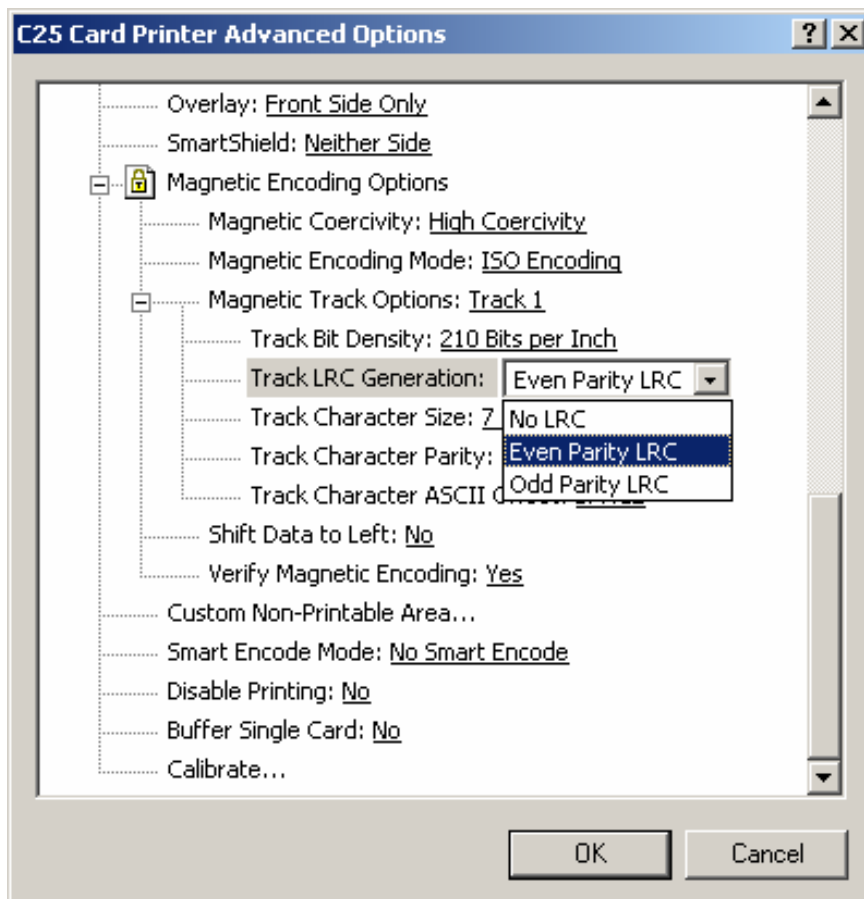
Step	Procedure
1	Select 75 BPI to change the bits per inch to 75 BPI. OR Select 128 BPI to change the bits per inch to 128 BPI. OR Select 210 BPI to change the bits per inch to 210 BPI.



Selecting the Track LRC Generation option

Use this option to customize the LRC Generation Mode (used to encode the magnetic data on the currently selected Track). (**Note:** The default ISO Standard selections for this option are Track 1: EVEN, Track 2: EVEN, and Track 3: EVEN.)

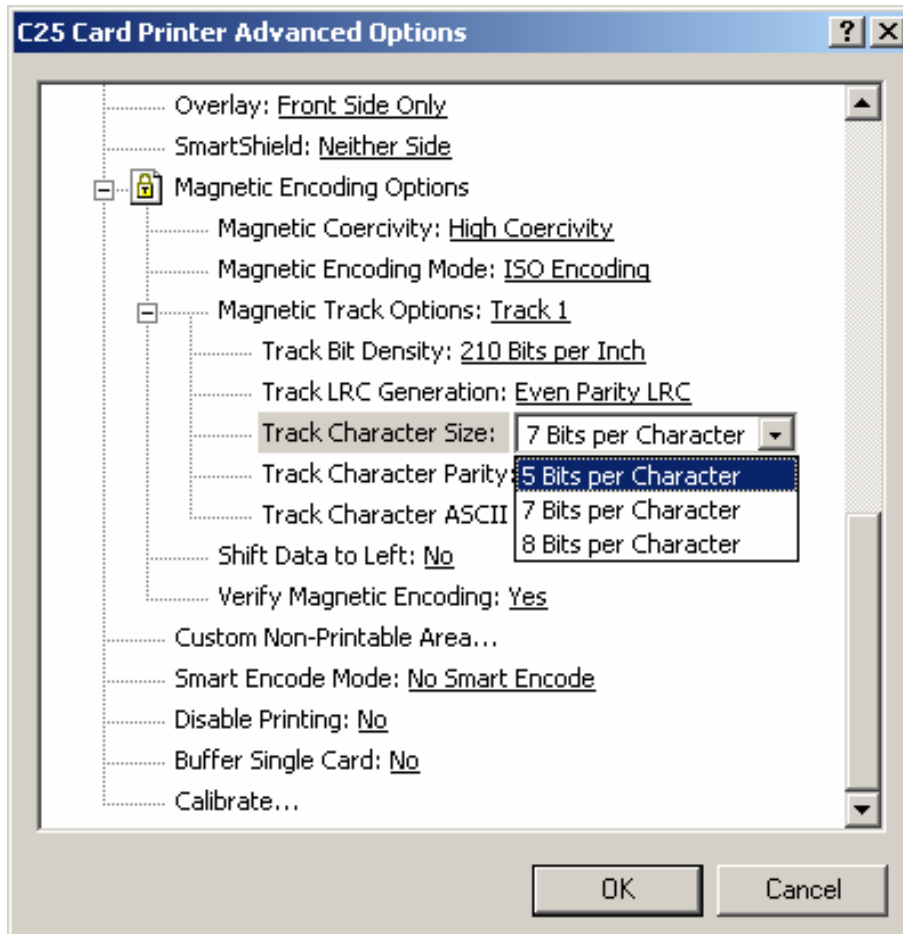
Step	Procedure
1	Select NO LRC to change the LRC Generation to none. OR Select Even Parity to change the LRC Generation to Even Parity. OR Select Odd Parity to change the LRC Generation to Odd Parity.



Selecting the Track Character Size option

Use this option to customize 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.) **(Note:** The default ISO Standard selections for this option are Track 1: 7 BPC, Track 2: 5 BPC, and Track 3: 5 BPC.)

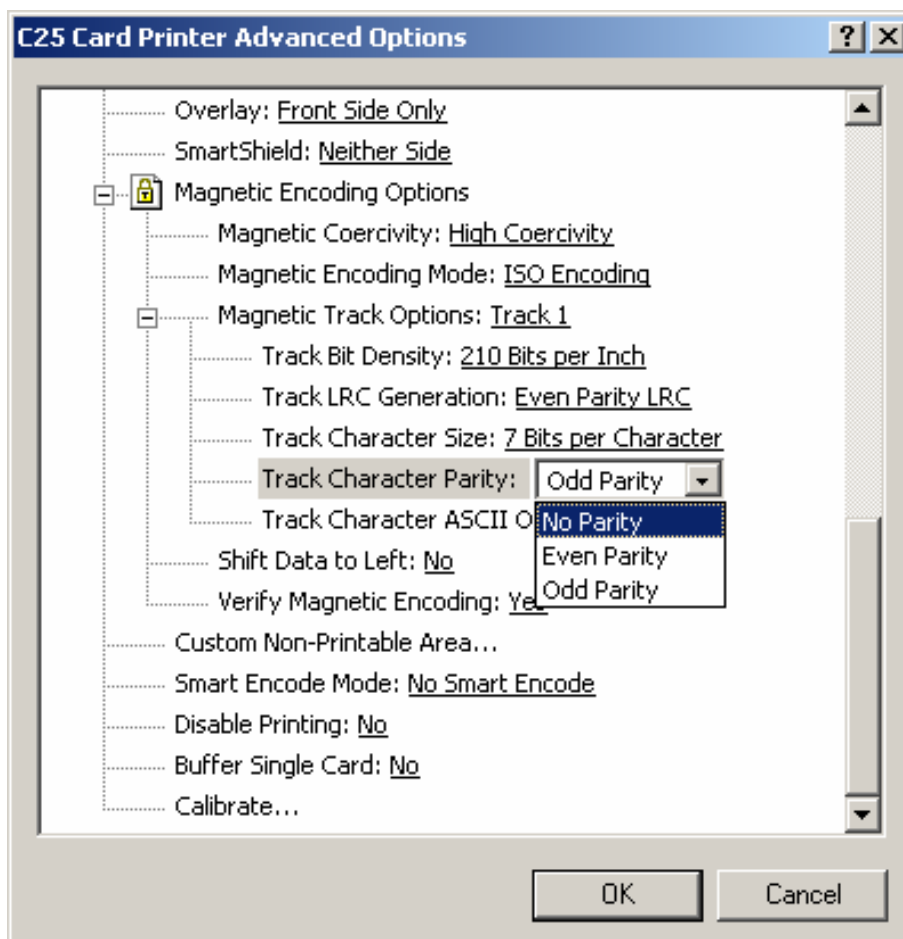
Step	Procedure
1	Select 5 Bits to change the bits per character to 5 BPC. OR Select 7 BPI to change the bits per character to 7 BPC. OR Select 8 BPI to change the bits per character to 8 BPC.



Selecting the Track Character Parity option

Use this option to customize the Character Data Parity (used to encode the magnetic data on the currently selected Track). (**Note:** The default ISO Standard selections for this option are Track 1: ODD, Track 2: ODD, and Track 3: ODD.)

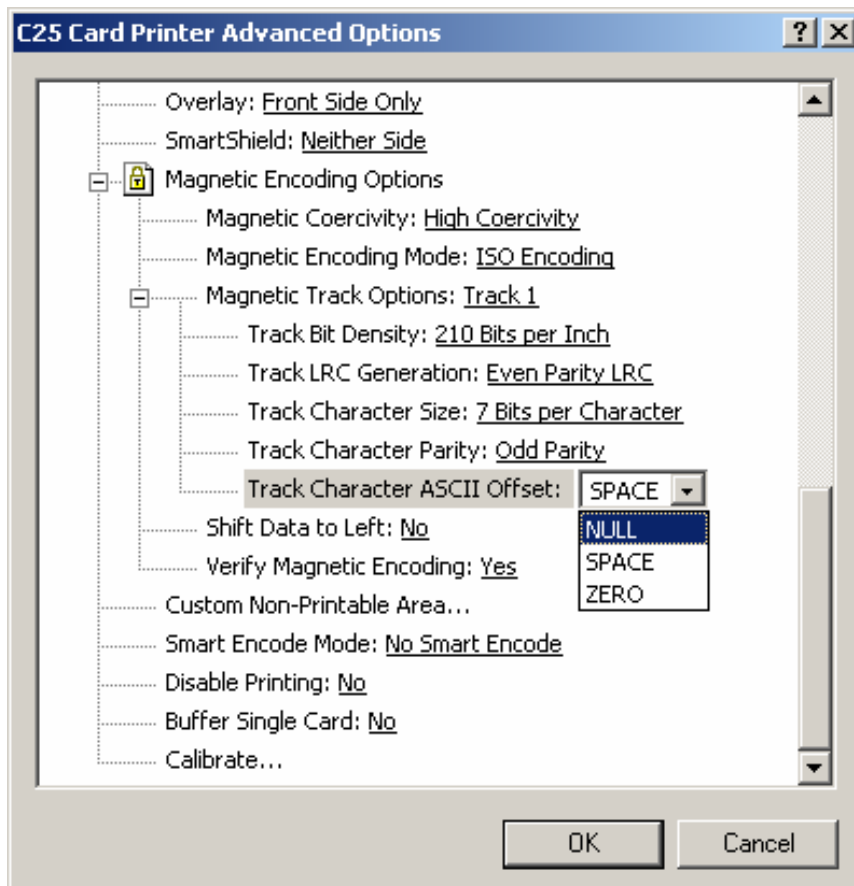
Step	Procedure
1	Select No Parity to change the Character Parity to none. OR Select Even Parity to change the Character Parity to Even Parity. OR Select Odd Parity to change the Character Parity to Odd Parity



Selecting the Track Character ASCII Offset option

Use this option to customize 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. (**Note:** The default ISO Standard selections for this option are Track 1: SPACE, Track 2: ZERO, and Track 3: ZERO.)

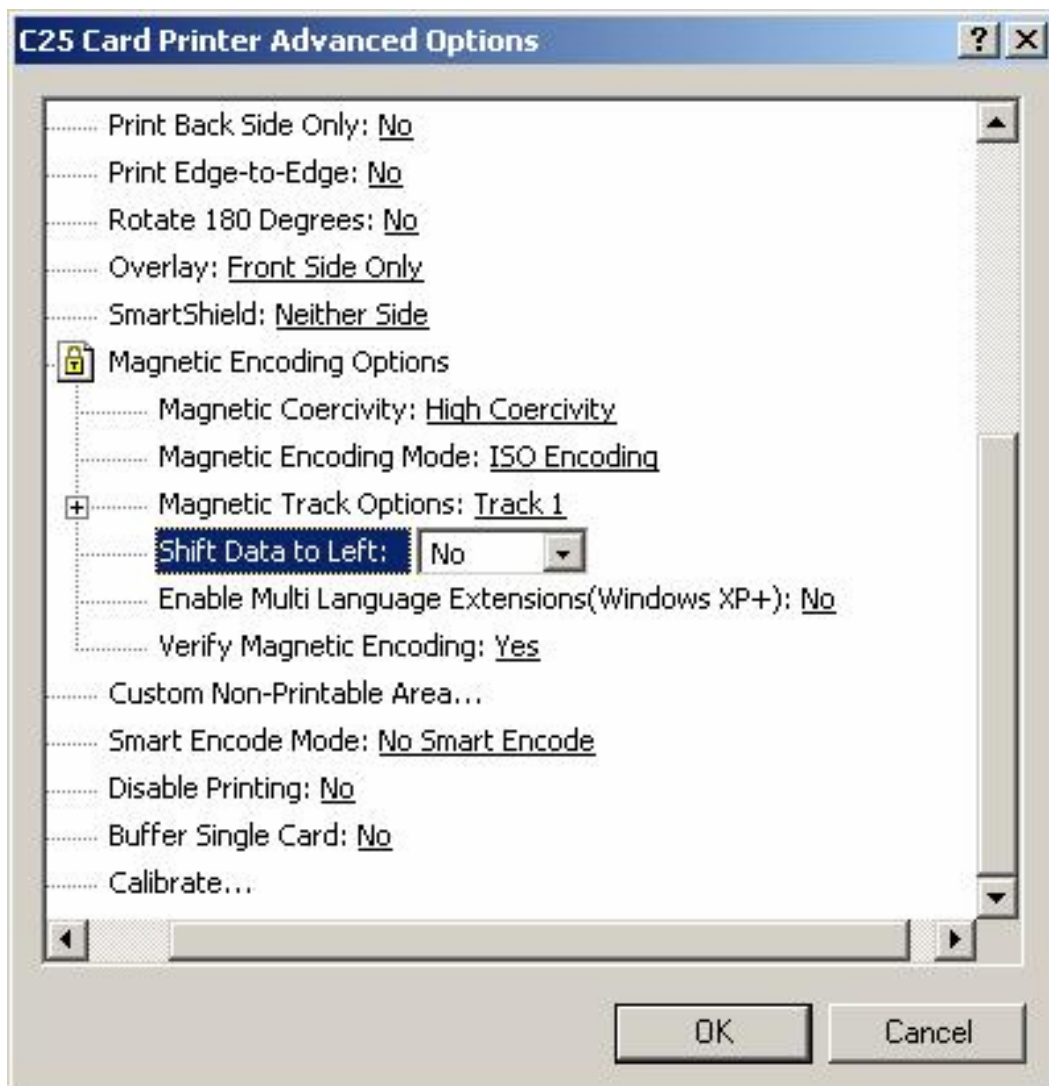
Step	Procedure
1	Select NULL to change the ASCII Offset to NULL. OR Select SPACE to change the ASCII Offset to SPACE. OR Select ZERO to change the ASCII Offset to ZERO.



Selecting the Shift Data Left option

Use this option to shift the recorded magnetic data to the left-hand side of the card's Magnetic Stripe. (**Note:** 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 side of the card.)

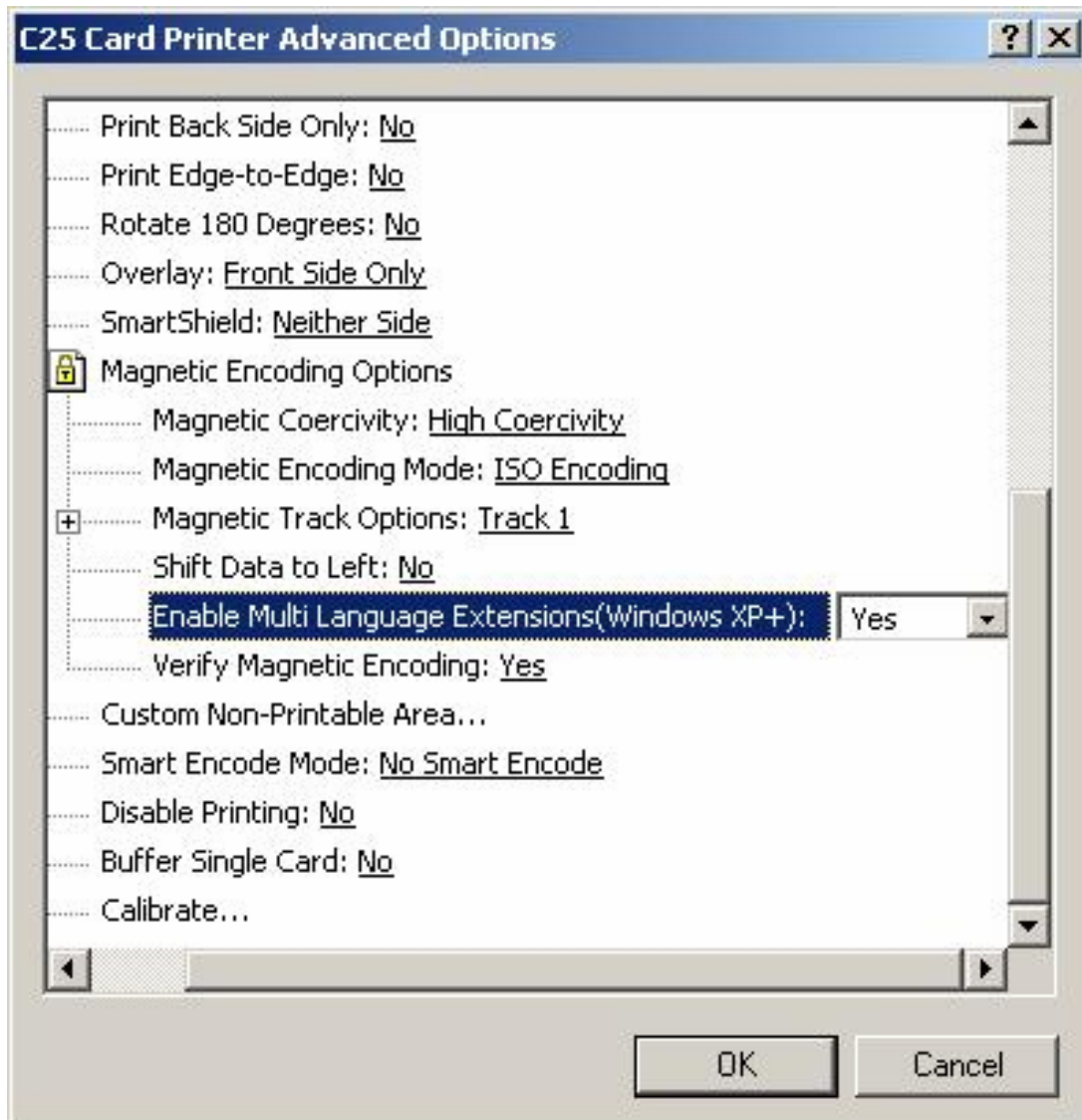
Step	Procedure
1	Select the Shift Data Left option to apply to all Tracks.



Reviewing the Enable MLE Support checkbox

Multi-Language Extension (MLE) support in Windows XP can cause text strings to be broken up into fragments. This fragmentation of the text string prevents magnetic encoding.

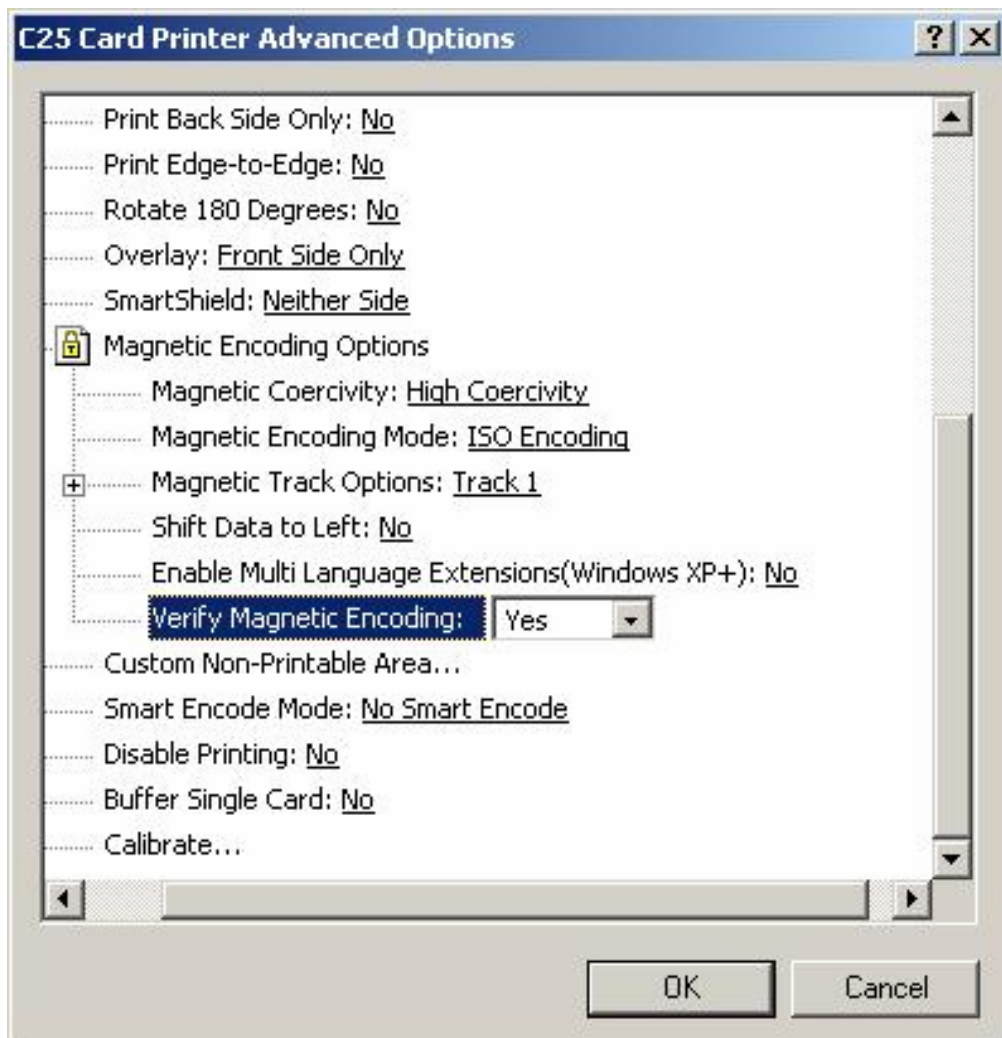
Step	Procedure
1	Select Yes from the dropdown to allow the Driver to process the fragmented text.



Selecting the Verify Magnetic Encoding option

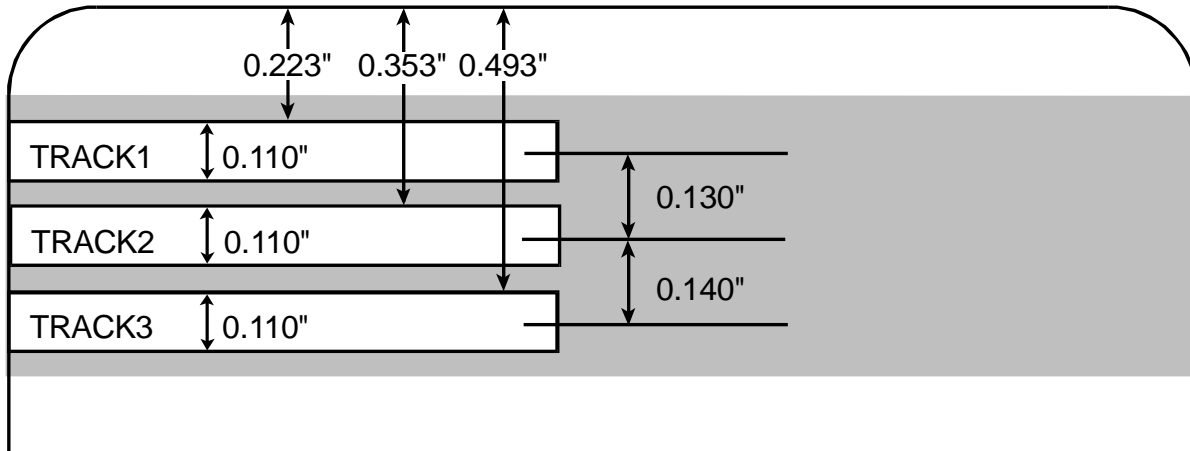
Use this option to verify the encoding settings.

Step	Procedure
1	<p>Select this option to instruct the Printer to verify that all magnetic data has been correctly encoded on each card. (Note: This option is selectable for both ISO and JIS II encoding modes.)</p> <ul style="list-style-type: none"> • 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.



Reviewing ISO Track Locations

Review the Magnetic Encoding module, which encodes onto Tracks in accordance with an ISO 7811-2 Magnetic Stripe. Refer to the diagram (below) for Track locations. (**Note:** All standard Persona C25 Card Printers are capable of printing onto oversized cards; however, a special version of the Printer is required to encode the Magnetic Stripe of oversized cards.)




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 the card design.

- **Magnetic Track Data added:** 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 or added.
- **Specific Characters added:** 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.
- **Manually or automatically added:** 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 guidely add these characters to the string of magnetic Track data.

Entering Track Information

(**Note:** 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.)

Step	Procedure
1	<p>To avoid this symptom, Track information must be entered as follows.</p> <p>When entering Track data, the "~" character is entered first, followed by the desired Track number (1, 2, or 3) used to encode the data.</p> <ul style="list-style-type: none"> • The data to be encoded should then follow. (Note: 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. (Note: The number of these characters is limited by each Track's maximum character capacity.) <p> Caution: When segmenting Track data, strictly use the appropriate Field Separator (FS).</p>

Reviewing Tracks 1, 2, and 3 (in Table format)

Review this Table, which displays 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) (See the Table below.)	78
Track 2	;	?	=	0-9, ;, =, ? (ASCII 48-63) (See the Table below.)	39
Track 3	;	?	=	0-9, ;, =, ? (ASCII 48-63) (See the Table below.)	106

Reviewing the Track Data Note

Review this Table, which displays how Track Data should be entered for Tracks 1, 2, and 3.

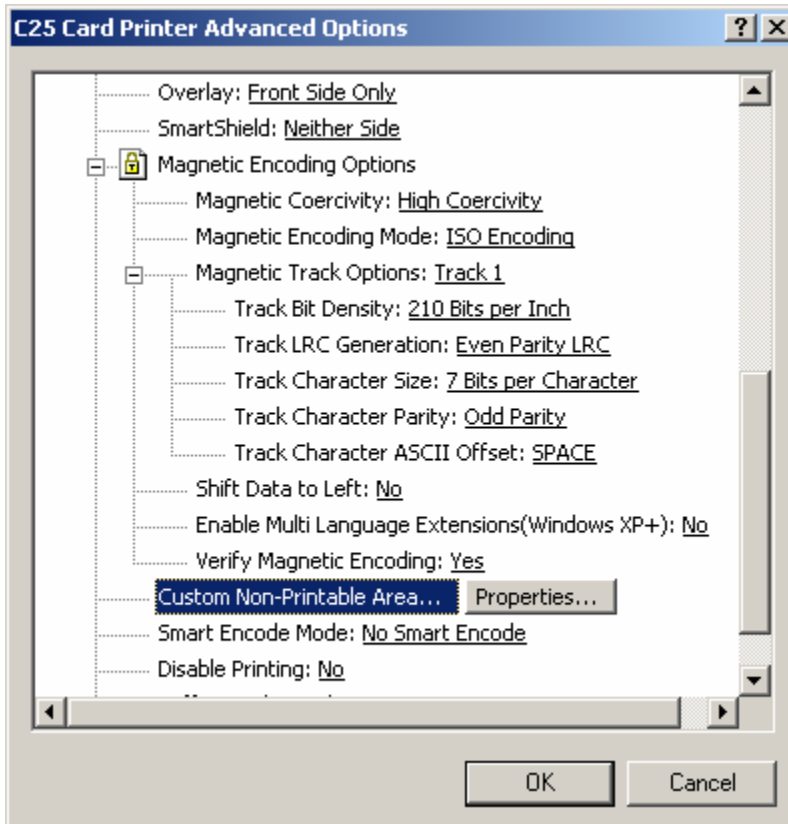
Track	Data Entry
Sending data to Track 1	~1%JULIE ANDERSON^623-85-1253?
Sending data to Track 2	~2;0123456789?
Sending data to Track 3	~3;0123456789?

Reviewing the ASCII Code and Character Table

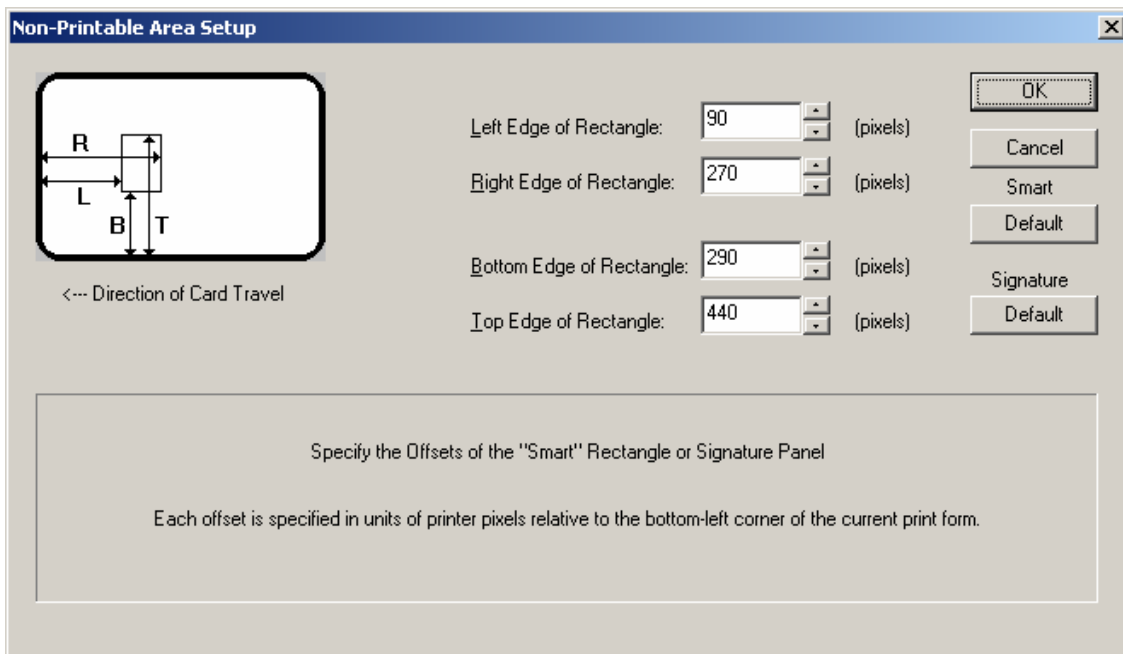
ASCII Code	Character	ASCII Code	Character	ASCII Code	Character
32	space	56	8	80	P
33	!	57	9	81	Q
34	"	58	:	82	R
35	#	59	;	83	S
36	\$	60	<	84	T
37	%	61	=	85	U
38	&	62	>	86	V
39	'	63	?	87	W
40	(64	@	88	X
41)	65	A	89	Y
42	*	66	B	90	Z
43	+	67	C	91	[
44	'	68	D	92	\
45	-	69	E	93]
46	.	70	F	94	^
47	/	71	G	95	_
48	0	72	H		
49	1	73	I		
50	2	74	J		
51	3	75	K		
52	4	76	L		
53	5	77	M		
54	6	78	N		
55	7	79	O		

Selecting the Custom Non-Printable Area

Use this option to bring up the Non-Printable Area Setup window, shown on the next page.

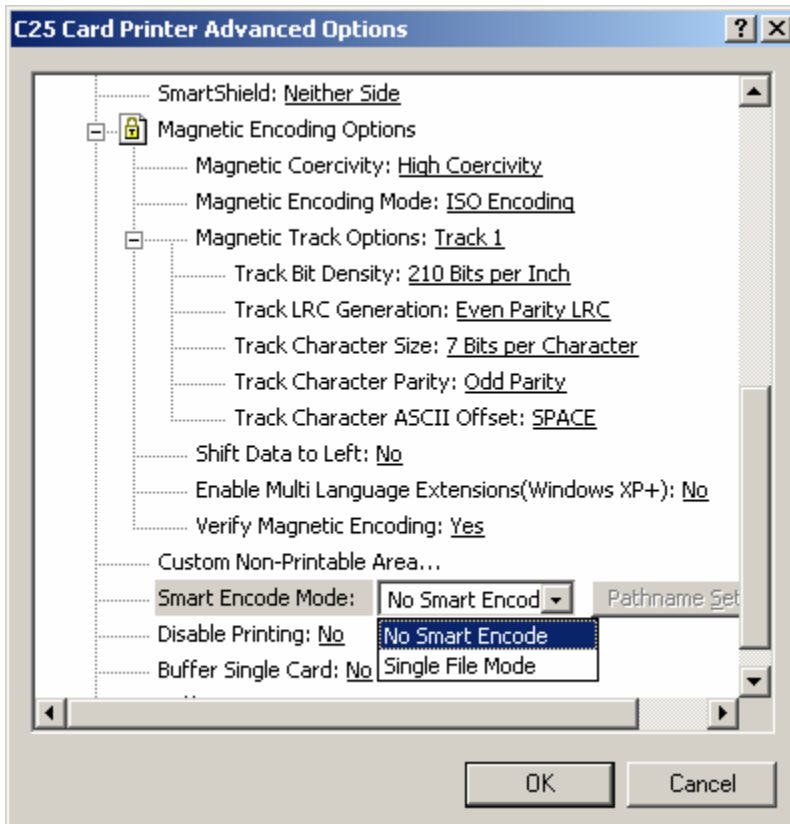


Using the Non-Printable Area Setup window



Selecting the Smart Encode Mode option

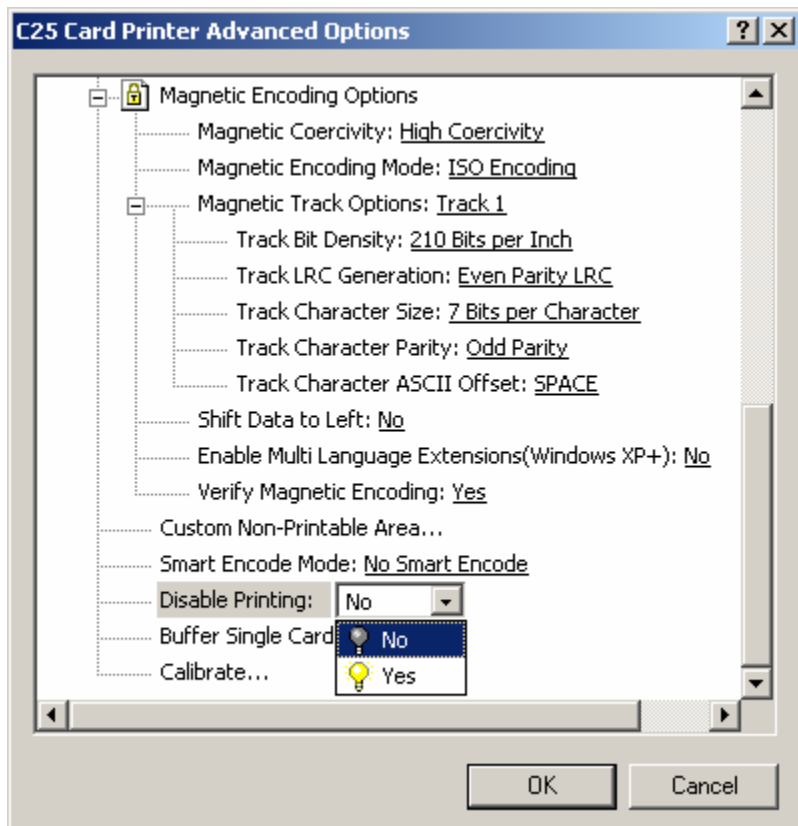
Use this option to select either the No Smart Encode or the Single File Mode.



Selecting the Disable Printing option

Use this option to disable the printing capabilities of the Printer and still allow the Printer to encode cards.

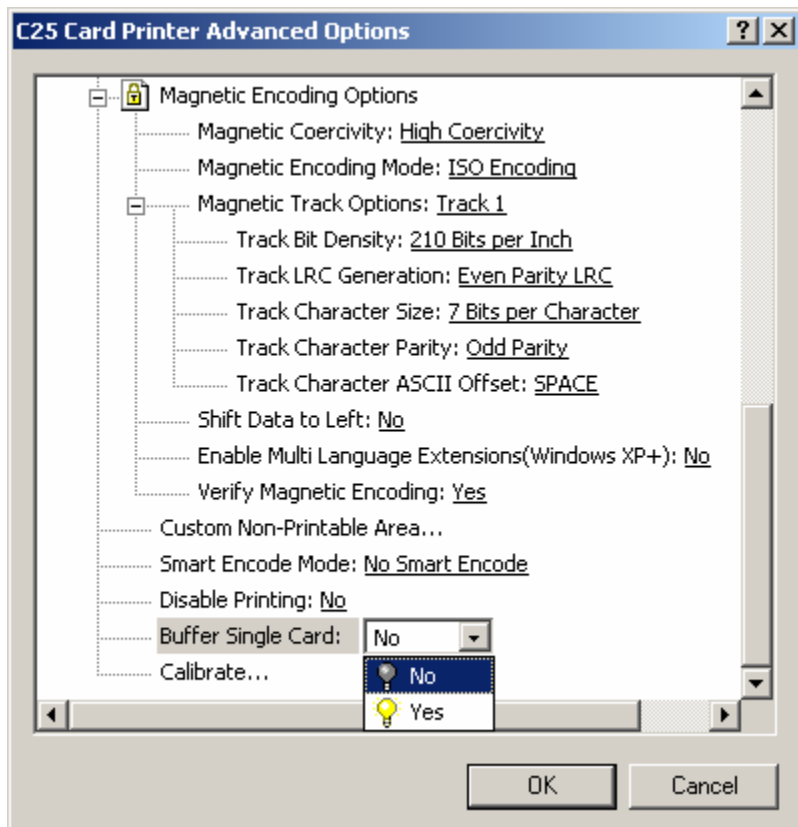
Step	Procedure
1	Select this option: <ul style="list-style-type: none"> • To encode or re-encode preprinted cards without wasting additional time, effort, or printing supplies. • To ensure that all encoding instructions will be sent according to how they are configured within the software (even though all print data will not be sent to the Printer).



Selecting the Buffer Single Card option

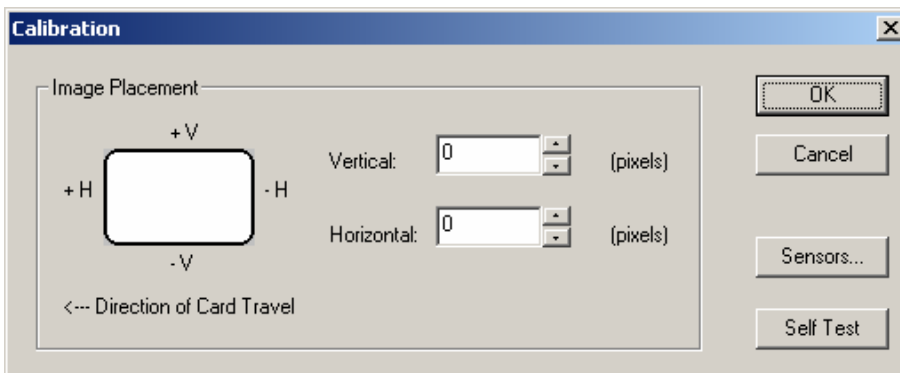
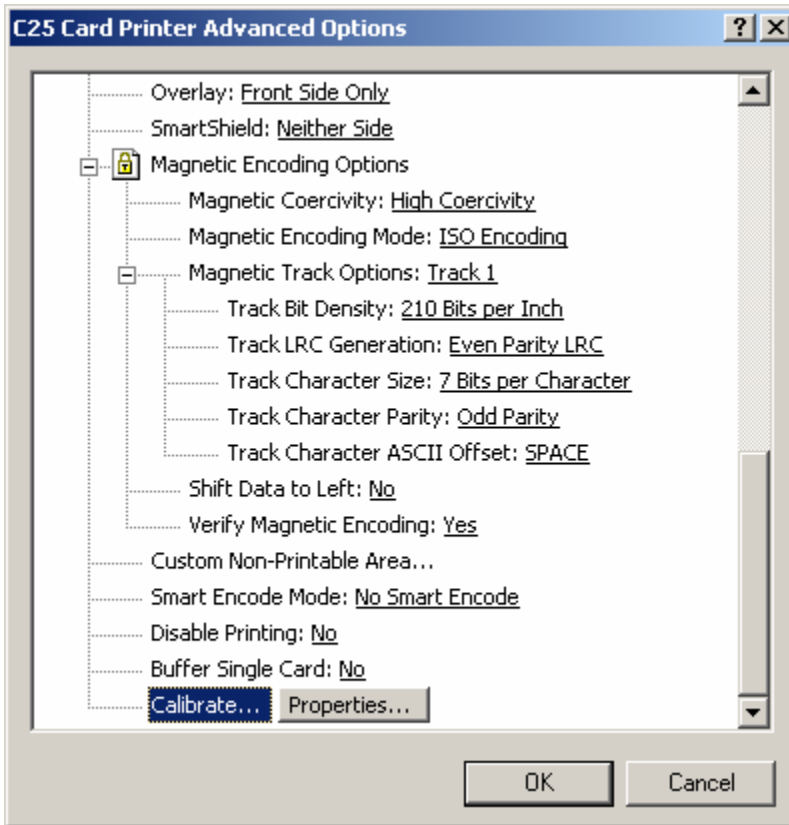
Use this option to force the Printer's memory to buffer, or hold, only one print job at a time.

Step	Procedure
1	Select this option only to print to multiple Printers sharing print jobs over a network. (Note: In this case, this option ensures all print 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's memory is full. This is ideal for most applications where Printers are not networked together.)



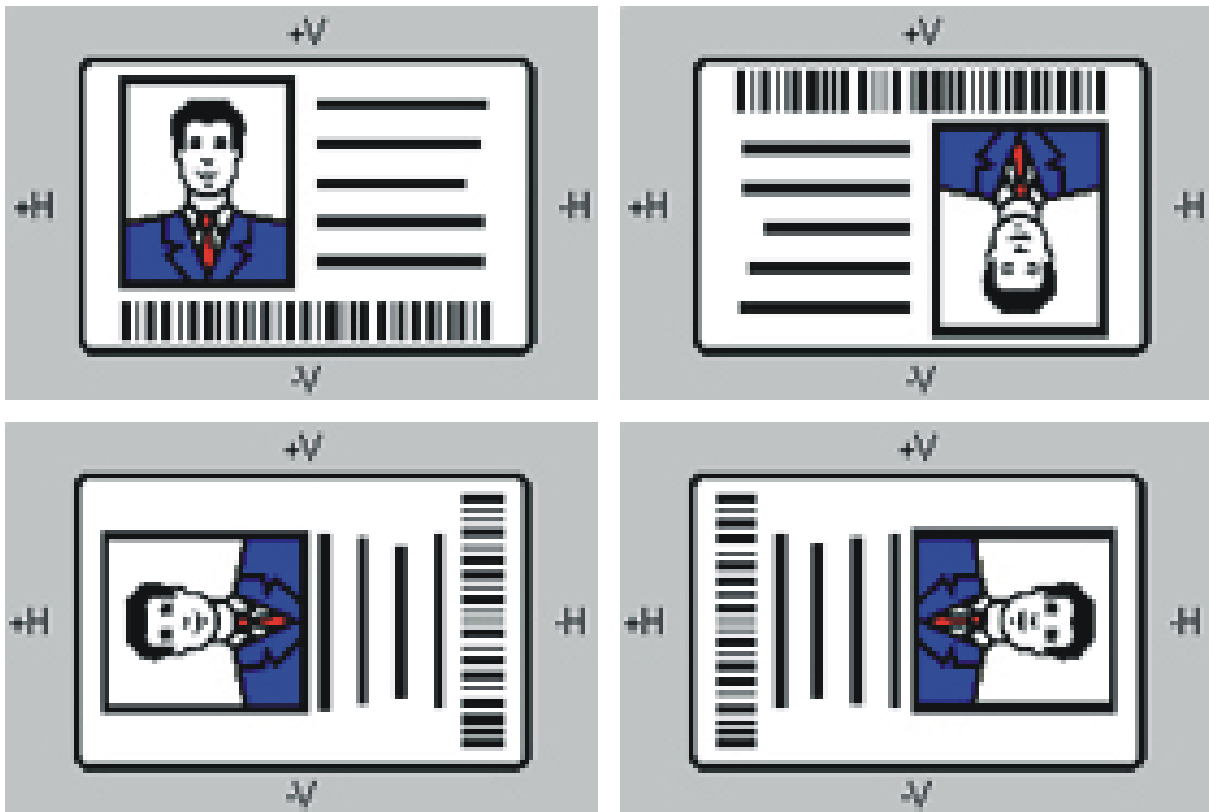
Selecting the Calibration window

Use this option to (a) control the position of the printable area in relation to the card, (b) calibrate Sensors, and (c) adjust the internal Printer settings.



Using the Image Placement controls

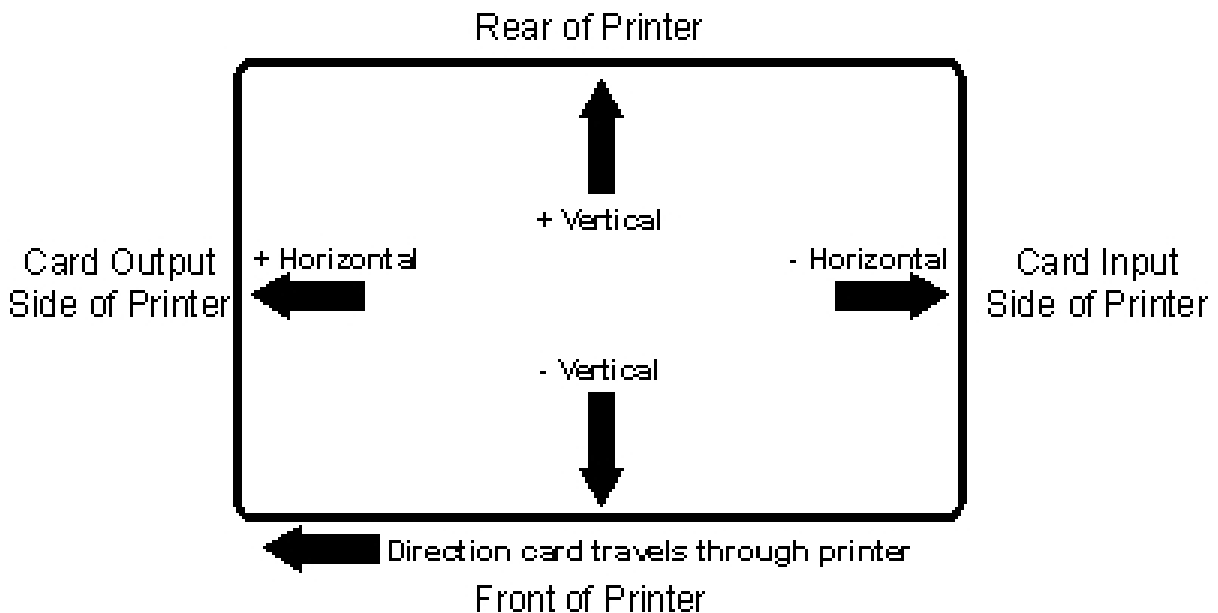
Step	Procedure
1	<p>Click on the Vertical and Horizontal adjustment arrows to adjust the Image Position values.</p> <ul style="list-style-type: none"> When adjusting these values, keep in mind that cards always remain in the same position while moving through the Printer, regardless of image orientation. To illustrate this, the card illustration shown in the Image Position box will flip and rotate according to the Portrait, Landscape, or Rotate 180 Degrees selection. The outline around the illustration will always remain in the same Landscape orientation.




Using Image Placement controls (continued)

Review the Image Position diagram, which displays how the printed image will move in relation to the fixed card position as positive and negative image placement values are entered.

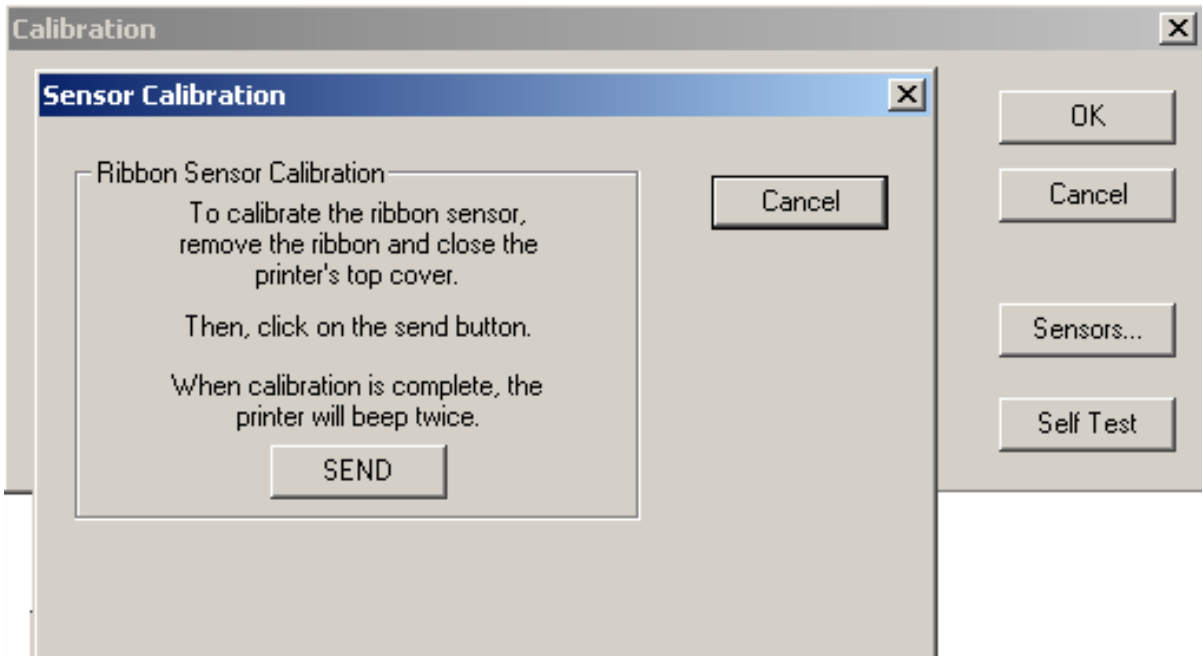
Step	Procedure
2	<p>Use the Vertical adjustment to move the image:</p> <ul style="list-style-type: none"> • Move toward the rear of the Printer if a positive number is entered. • Move toward the front of the Printer if a negative number is entered. <p>OR</p> <p>Use the Horizontal adjustment to move the image:</p> <ul style="list-style-type: none"> • Move toward the card output side of the Printer if a positive number is entered. • Move toward the card input side of the Printer if a negative number is entered. <p>(Note #1: The maximum value for the Vertical and Horizontal adjustments is ± 100 pixels (10 pixels = about .03"/. 8mm).)</p> <p>(Note #2: The Vertical and Horizontal adjustment arrows point to within the Image Position window, which represents the direction that the printed image moves.</p>



Using the Sensor Calibration

Step	Procedure
1	Use the Sensors button in the Calibration window to bring up the Sensor Calibration window for calibrating the Printer's ribbon and Sensors, as shown on the next page.
2	<ol style="list-style-type: none"> a. Select the Ribbon Sensor Calibration to calibrate the Ribbon Sensor, remove the Ribbon, and close the Printer's top cover. b. Click on the Send button. c. Wait for the Printer to beep twice to indicate a completed calibration.
3	<p>Click on the Self Test button to send a Self Test Print to the Printer. (Note: Use this test print procedure to ensure the computer is effectively communicating with the Printer, and that the Printer is functioning properly.)</p> <div style="display: flex; align-items: center;">  <p>Caution: There must be a full-color print ribbon installed.</p> </div>

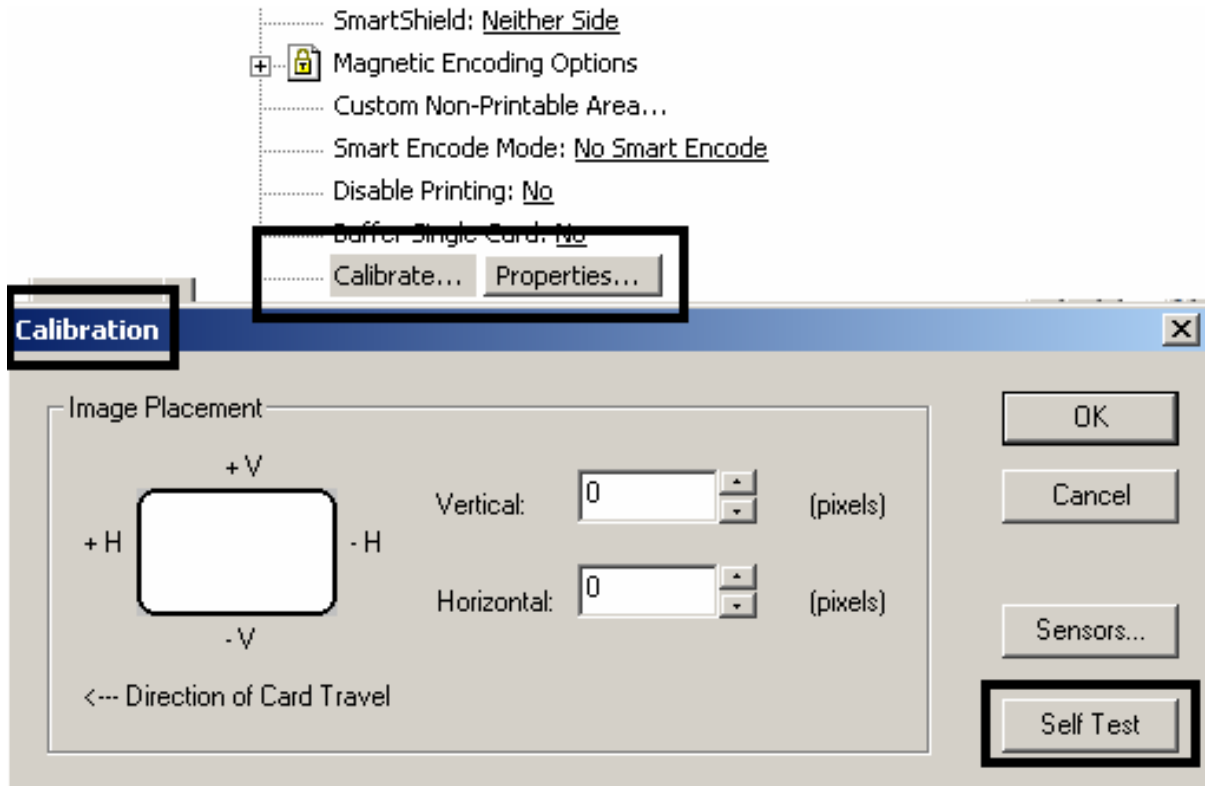
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Selecting the Self Test button

Use this option to send a Self Test page to the Printer.

Step	Procedure
1	Click on the Self Test button to print out a test page and ensure that the computer is effectively communicating with the Printer, and that the Printer is functioning properly.



Section 4: Cleaning

This section deals with the Printer's internal and external maintenance in regards to the unit's cleaning and general upkeep. The Printer should be cleaned on a regular basis to insure that the Printer consistently produces high quality output.



Danger: Be sure to disconnect the Printer's power cord whenever performing any type of maintenance procedure unless otherwise directed.

Safety Messages (review carefully)


Symbol	Critical Instructions for Safety purposes
<p>Danger:</p>	<p>Failure to follow these installation guidelines can result in death or serious injury.</p> <p>Information that raises potential safety issues is indicated by a warning symbol (as shown to the below).</p> <ul style="list-style-type: none"> • To prevent personal injury, refer to the following safety messages before performing an operation preceded by this symbol. • To prevent personal injury, always remove the power cord prior to performing repair procedures, unless otherwise specified. • To prevent personal injury, make sure only qualified personnel perform these procedures.
<p>Caution:</p>	<p>This device is electrostatically sensitive. It may be damaged if exposed to static electricity discharges.</p> <p>Information that raises potential electrostatic safety issues is indicated by a warning symbol (as shown to the below).</p> <ul style="list-style-type: none"> • To prevent equipment or media damage, refer to the following safety messages before performing an operation preceded by this symbol. • To prevent equipment or media damage, observe all established Electrostatic Discharge (ESD) procedures while handling cables in or near the Circuit Board and Printhead Assemblies. • To prevent equipment or media damage, always wear an appropriate personal grounding device (e.g., a high quality wrist strap grounded to avoid potential damage). • To prevent equipment or media damage, always remove the Ribbon and Cards from the Printer before making any repairs, unless otherwise specified. • To prevent equipment or media damage, take jewelry off of fingers and hands, as well as thoroughly clean hands to remove oil and debris before working on the Printer.

Cleaning the Printhead

This procedure should be performed approximately every **250 prints** or as needed depending on the cleanliness of your card stock and the environment in which the Printer is located. This procedure should also be performed if you notice a streak on the card where color was not transferred.




Caution: Never use a sharp tool or a metal object of any kind to clean the Printhead. Remove watches, rings, bracelets, and other jewelry before touching any internal components of the Printer.

Step	Procedure
1	Open the Printer's Print Top Cover. (Note: Manually roll up any dust and / or other particles laying on the surface of the ribbon into a take-up roll. Dust may settle on the top surface of the ribbon and cause print quality problems.)
2	Use a Printhead Cleaning Pen from the Printer Cleaning Kit to firmly wipe back and forth across the surface of the Printhead. OR Use a soft, lint-free cloth (slightly moistened with isopropyl alcohol) to wipe dust and other accumulated particles off the surface of the printhead.  Caution: If using a cloth, be extremely careful not to use too much alcohol. It must not be allowed to drip into the Printer.
3	Once the Printhead is completely dry, close the Printer. If a streak persists, repeat this process.

Cleaning the Printer's Exterior


The Printer has a durable casing that should retain its luster and appearance for many years.

Steps	Procedures
1	<p>Clean it only with a Cleaning Pad from the Printer Cleaning Kit.</p>  <p>Caution: Do not use cleaning solvents of any kind or spray the cabinet with a cleaner.</p>

Cleaning the Printer's Interior

The Printer may generate dust and other particles inside the Printer. These particles are attracted to the print ribbon or blank card by static produced during printing and can contaminate the printed card causing spots or speckles to appear.

Periodically, use the following procedure to remove dust and other contaminants:

Steps	Procedures
1	Open the Printer's Top Cover.
2	Remove the print ribbon from the Printer.
3	<p>Use a Cleaning Pad from the Printer Cleaning Kit to wipe out all visible areas inside the Printer. Remove any debris that may be inside.</p>  <p>Caution: Be extremely careful not to let any alcohol drip inside the Printer.</p>
4	Re-install the printing supplies, and close the Printer.

Cleaning the Card Feed Rollers

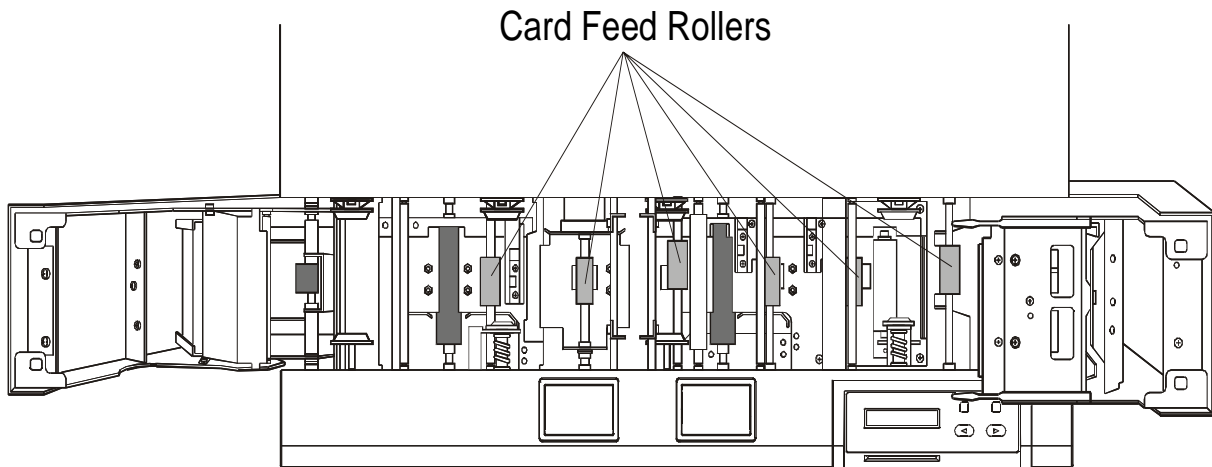
The Card Feed Rollers move the card throughout the print process.





Caution: Clean these Rollers to prevent card jams and card contamination, and to provide better print quality and extended Printhead life.

Step	Procedure
1	a. Ensure consistent Printer operation by cleaning these Rollers approximately every 250 prints or as needed depending on the cleanliness of the card stock and the environment in which the Printer is located. b. Clean if the Rollers appear dirty or if the cards start showing speckles or debris on the printed surface. c. Refer to Steps 2 to 5 (in this procedure) to clean all these Rollers through a single, easy process:
2	a. Open the Printer's Top Cover, and remove all card, print ribbon, from the Printer. b. Leave the Printer power ON and the Top Cover open throughout this procedure. (Note: The Card Cleaning Cartridge can also remain within the Printer during this cleaning process.)
3	Get a Cleaning Card from the Printer Cleaning Kit, and remove its adhesive backing paper.

Continued on the next page



Cleaning the Card Feed Rollers (continued)

Step	Procedure
4	<p>a. Insert the Cleaning Card into the Card Hopper, above the Card Input Tray, as normally done with any other type of card.</p> <p>b. Be sure, however, that the shortest non-adhesive end of the Cleaning Card enters the Printer first and that the sticky side is facing UPWARD.</p> <p> Caution: If the card is inserted with the sticky side facing downward, it will stick to the Card Input Tray and will not feed.</p>
5	<p>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 the second gray feed Roller grabs and begins feeding the card.</p>
6	<p>a. Continue to hold down the On/Cancel button until the Cleaning Card has fed completely through the Printer.</p> <p>b. Repeat this cleaning procedure as needed.</p> <p>c. 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.</p>
7	<p>Be sure to use either clear tape or masking tape. (Note: If the cleaning kit is not available, adhesive tape is also an effective method for removing lint and debris from the Rollers.)</p> <p> Caution: Do not use duct or strapping tape. These adhesives leave a gummy residue behind.</p>
8	<p>a. Open the lid, and use the Pause/Resume and On/Cancel buttons to rotate the main feed Rollers, while applying the tape.</p> <p>b. Alternatively, use 99% pure alcohol wipe. Do not use these wipes for every cleaning because this could eventually deplete the tact from the Roller's rubber.</p> <p>(Warning: Do not use alcohol to clean the Cleaning Roller Assembly.)</p>

Cleaning the Drive Rollers

Clean the Printer's Drive Rollers during every ribbon change or after every 250 prints. (**Note:** This helps to prevent jams and maintain uninterrupted service. Perform this procedure if the Roller is visibly dirty.)

Step	Procedure
1	Leave the Printer power ON, and open the Top Cover of the Printer.
2	Remove the Ribbon Rolls.
3	Locate the Drive Rollers.
4	Use a Cleaning Pad from the Printer Cleaning Kit or a soft, lint-free cloth slightly moistened with isopropyl alcohol to wipe the Rollers clean. Press the On / Cancel and Pause / Resume buttons to move the Rollers back and forth while cleaning.
5	Replace the print supplies and close the Printer's covers.

Maintaining the Cleaning Rollers

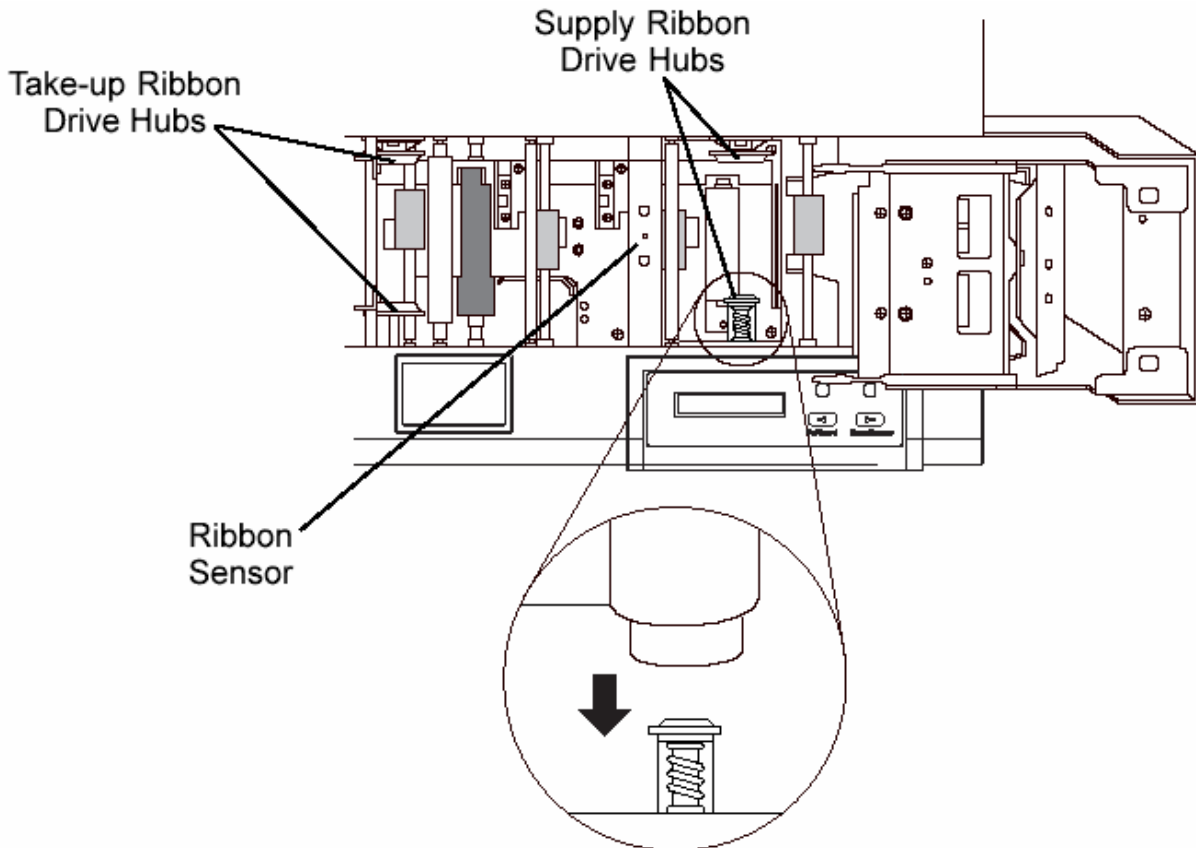
Clean these Rollers to prevent contaminated cards from passing beneath the Printhead, extend the Printhead's life, and maintain higher quality output. Clean the Cleaning Rollers during every ribbon change or after **every 250 prints**. (**Note:** The Cleaning Rollers remove the dust particles from the top and bottom of a blank card as it feeds into the Printer.)

Step	Procedure
1	Open the Top Cover of the Printer by pressing its Cover Release button.
2	Remove the Ribbon.
3	Locate the Cleaning Ribbon Assembly (the two black Rollers stacked beneath the Supply Ribbon Drive Hubs on the Printer's right-hand side). See the display on the next page.

Continued on the next page

Maintaining the Cleaning Rollers (continued)

Step	Procedure
4	Reach down in between the empty Ribbon Drive Hubs and lift the Cleaning Roller Assembly straight up and out of the Printer. (Note: It may help to push in the spring loaded Ribbon Drive Hub when removing or inserting the Cleaning Roller Assembly.)
5	Once the Cleaning Roller Assembly is removed, clean the Rollers using one of the adhesive-backed Cleaning Cards from the Printer Cleaning Kit. <ul style="list-style-type: none"> • With the card's adhesive backing paper removed, slide the card in between the two Rollers until all dust particles are removed from both Rollers. • If you do not have a Cleaning Card, use a piece of standard clear adhesive tape. • Use the stick side of the tape to life dust from the Rollers.
6	Once all dust is removed from the Rollers, place the Roller Assembly back into the Printer, replace the Ribbon, and close the Printer's cover.



Cleaning the Platen Rollers

Clean the Printer's Platen Roller approximately **every 1,500 prints** or as needed depending on the cleanliness of the card stock and the environment in which the Printer is located.

Step	Procedure
1	Clean if the Roller appears dirty or if the cards start showing speckles or debris on the printed surface. See Steps 2 to 6 (below).
2	Leave the power ON, and open the Printer's Top Cover.
3	Remove the print ribbon.
4	Locate the Platen Roller.
5	<ol style="list-style-type: none">a. Use a Cleaning Pad from the Printer Cleaning Kit to wipe the Rollers clean.b. Press the On/Cancel button and the Pause/Resume button to move the Rollers back and forth while cleaning.
6	After the Roller is clean and completely dry, replace the printing supplies and close the Printer.

Cleaning the Magnetic Encoder

Clean the Magnetic Encoder approximately **every 1,500 prints** or as needed depending on the cleanliness of the card stock and the environment in which the Printer is located.

Step	Procedure
1	Remove the ribbon, cards and Cleaning Roller Assembly from the Printer.
2	<p>Insert the felt card into the card Hopper.</p> <ul style="list-style-type: none"> • Alcohol-moistened, felt cleaning cards designed for use in credit card/Magnetic Stripe readers are excellent for cleaning the card path, Rollers and magnetic encoder. • Occasional use of these cards is recommended for cleaning the encoder when the reliability of card encoding is suspect.) <p>From the software application, execute a print job that includes information for Magnetic Encoding.</p> <ul style="list-style-type: none"> • The card will be passed through the encoder twice in an attempt to write data and to verify. • The Printer will be unable to read any data and will eject the card from the Printer.
3	Press the On/Cancel button twice to reset the Printer.

Section 5: Printer Setup

Choosing a good location

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

Step	Procedure
1	Use the dimensions specified in Section 9 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.
2	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.

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.

Unpacking and Packing the Printer

Unpacking the Persona C25 Card Printer

The purpose of this section to provide the User with a specific unpacking procedure for the Persona C25 Card Printer.

Step	Procedure
1	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, Cleaning Roller Assembly (pre-installed), Software Installation CD, Warranty Statement, and Registration Card.
2	Save the carton and packing materials.

Packing the Persona C25 Card Printer

The purpose of this section to provide the User with a specific packing procedure for the Persona C25 Card Printer.

Follow this instruction to pack the Card Printer for transport.

Step	Procedure
1	Clean the inside of the Printer with deionized air. Wipe it down with a lint-free cloth.
2	Clean the Printhead with a Printhead pen.
3	Pack the Printer in the original carton and packing materials.
4	Be sure to enclose any necessary paperwork, test cards, etc.

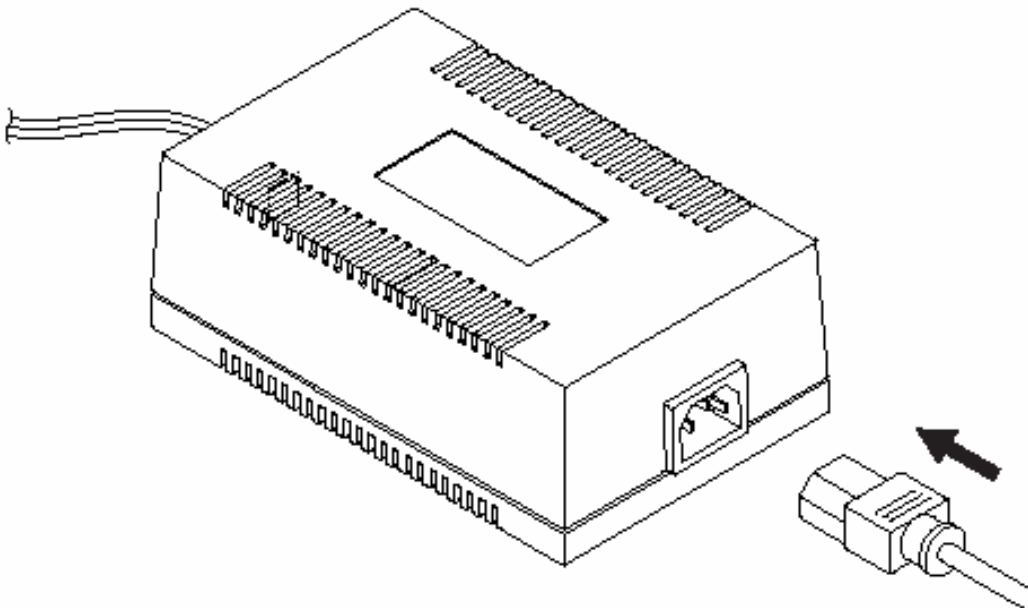
Applying Power

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:



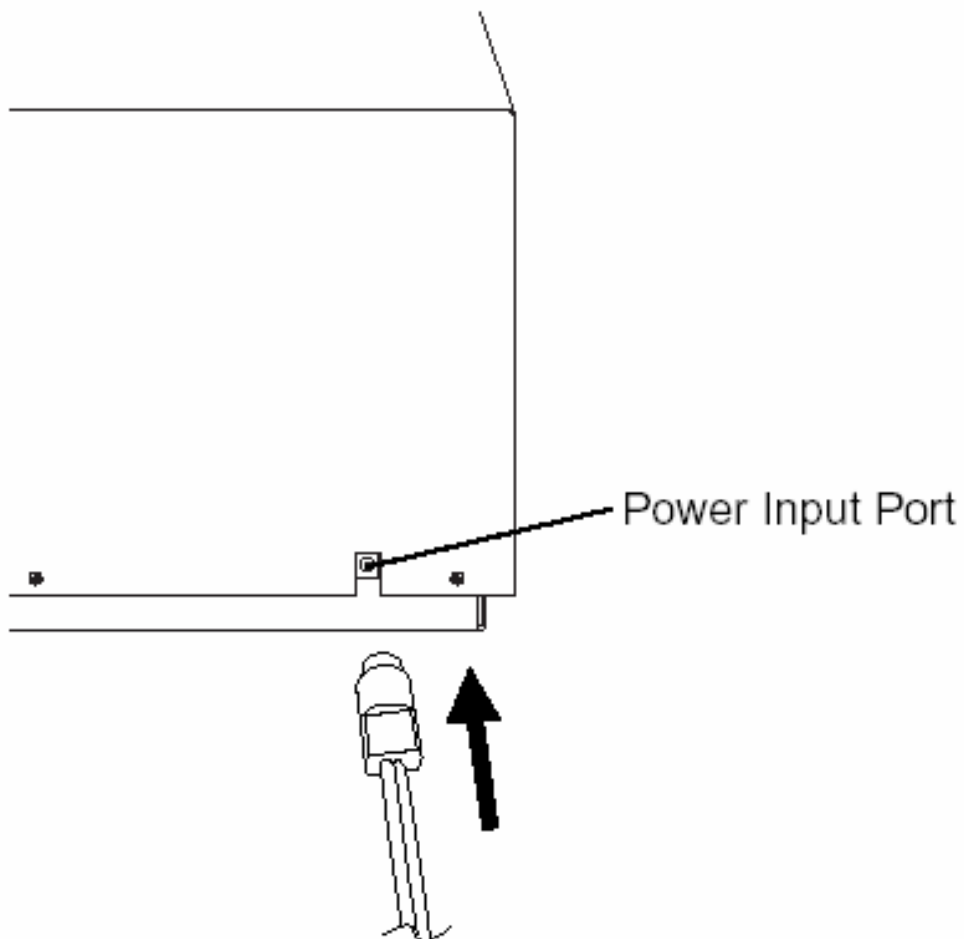
Caution: The included power supply is designed for use only with the color ID card printer. If you have any doubt about the plug configuration or voltage, do not attempt to use the printer. Contact your authorized reseller for information on the correct power supply configuration.

Step	Procedure
1	Place the power cord into the power cord port of the power supply.



Applying Power (continued)

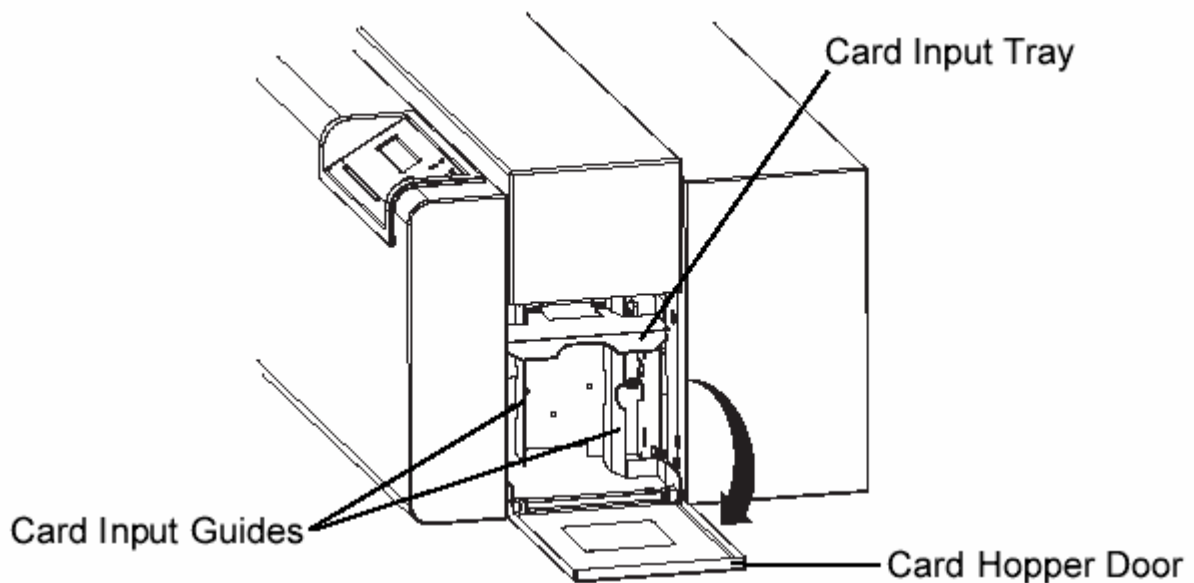
Step	Procedure
2	Place the DC power plug end of the power supply cord into the printer's Power Input Port.
3	Place the AC power plug end of the power supply cord into an available wall outlet. Power is automatically applied to the printer when it is plugged in. Press the On/Cancel button if you wish 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.



Loading Cards into the Printer

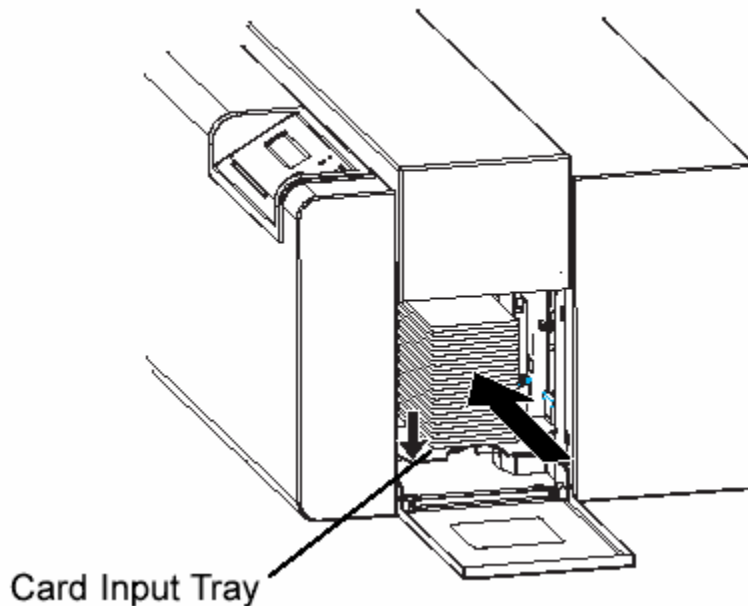
The printer will hold a maximum of 100 cards in its Card Hopper (based on a standard CR-80 card size). The Printer automatically feeds each card and adjusts to each card's particular size and thickness. Significantly larger or thicker cards, however, may require slight printer adjustments for consistent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

Step	Procedure
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 can impair print quality.
2	Open the Card Hopper Door located on the right-hand side of the printer is exterior by grasping the top of the door and pulling down. Allow the door to swing completely open.



Loading Cards into the Printer (continued)

Step	Procedure
3	<p>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. Always load cards with the top or primary print side facing up.</p> <ul style="list-style-type: none"> • 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 prepunched slot, be sure the smart card chip is positioned upward and that the chip or slotted end of the card is inserted first.
4	<p>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.</p> <p>Note: The printer's 100 card capacity is figured using a standard CR-80 3.375" L x 2.125" W x .030" (85.6mm L x 54.0mm W x .75mm) card size. Please be aware of this when inserting cards of varying thicknesses.</p>



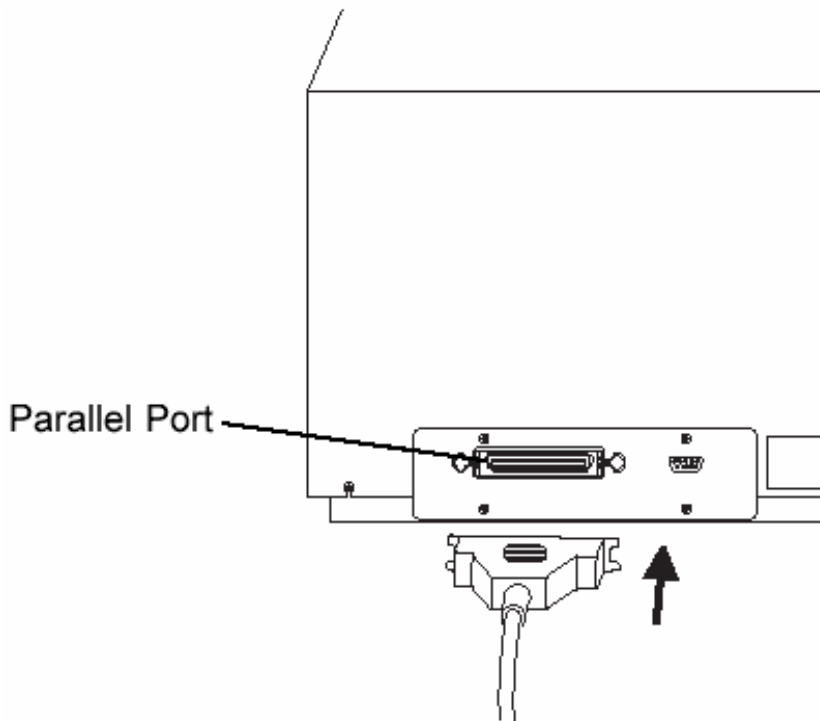
Using your Card Printer

Connecting the Printer to your Computer

Your card printer is designed to be used with nearly 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.

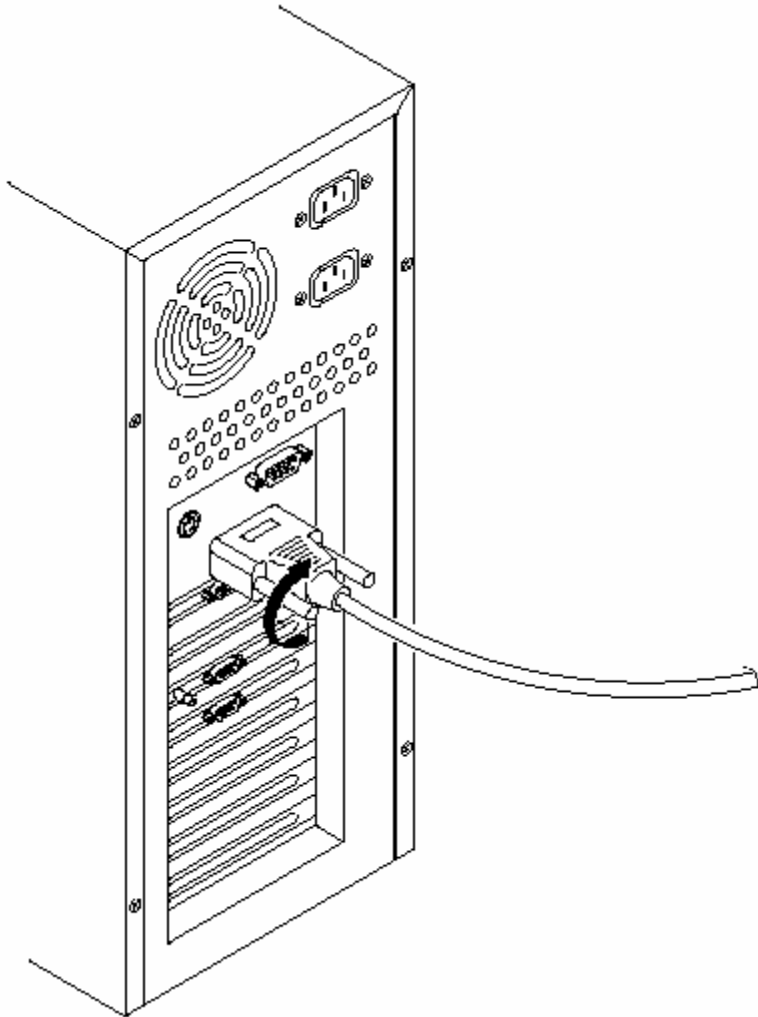
The printer is equipped with an ECP-compatible, high-speed Centronics parallel port. This port is the means through which the printer receives data from your computer. To connect the printer to your computer, obtain a shielded, bi-directional parallel cable and refer to the following steps:

Step	Procedure
1	<p>Connect the Centronics-type parallel side to the printer.</p> <p>Snap the fastening clips into place. (Note: The extra port shown in the previous illustration is an Auxiliary Port (subminiature-D connector) included and used only on units equipped with an optional smart card contact station.)</p> <p>If your unit is equipped with a contact station and you have questions regarding its use, please contact your authorized reseller.</p>



Connecting the Printer to your Computer (continued)

Step	Procedure
2	Connect the other side to the back of your PC at the PARALLEL connector. (Note: The printer must have its Ready LED light illuminated to receive data.) If the light is not ON, press the Pause/Resume button.



Installing the Windows Printer Driver

Your card printer can be used with virtually any Microsoft Windows 3.1x, Windows 95/98, Windows NT 4.0, or Windows 2000 software application program. This is accomplished through what is called a Printer Driver.

The printer driver is simply software which gives the printer all the information needed for printing. The printer driver software is located on the Software Installation CD included with your printer. (**Note:** The Windows 3.1 printer driver is not included with your printer or on the Software Installation CD. If you would like to use this driver, please contact your authorized reseller.)

- If you are reading this on your computer screen from the Online User's Guide, you have already installed the printer driver and this guide using this CD.
- If you would like to provide others with these instructions, however, the following describes how to install the printer driver for the first time. The latter part of this section also describes how to install printer driver updates.

Installing the Printer Driver From the Software Installation CD

To install the printer driver, close down all other programs and insert the Software Installation CD into your computer's CD drive. The CD will automatically open and prompt you to click on the photo of your specific printer model to begin installation.

- If the CD does not automatically open, use "My Computer" or "Windows Explorer" to view the contents of the CD. Then, double-click on the **Setup.exe** file listed on the CD.
- Follow the on-screen instructions to complete installation. Once installed, the icon for your specific printer model will appear in the Printers folder. The Online User's Guide will also automatically install along with the printer driver.
- An icon for this will appear in the **Start->Programs->Fargo** folder. Select the **Online User Guide** icon to open the Online User's Guide any time you have a question about operating your printer.

Installing Printer Driver Updates

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, select Start, Programs and point to the Card Printer folder. Then, select the **Uninstall Printer Driver** icon for your specific printer model.

Once the existing printer driver is deleted, the updated version can be installed. The best way to get printer driver updates is to download them from your reseller's or the printer manufacturer's website.

See the procedures to download and install updated printer drivers.

Downloading

The downloadable printer driver files have names ending in ".exe" and are selfextracting PKZip archives. A PKZip archive is a package, containing one or more files, that has been "zipped" to make it smaller and provide easy downloading of numerous files simultaneously. An archive that is self-extracting is capable of "unzipping" itself.

- To download the latest printer driver version, click on the printer driver's highlighted ".exe" file name on the web site. You will then be prompted to "Save this program to disk."
- Click **OK**, then choose the folder in which you would like to save the printer driver file. You may wish to save it in an empty folder to prevent mingling its files with others already on your computer.
- Once the file has completely downloaded to your computer, unzip the contents of the file by simply double-clicking on it. (**Note:** The archive will "unzip" itself, revealing its contents as a new list of files within the folder.)

Installing

Step	Procedure
1	Click the Start button, point to Settings , and select Printers .
2	Double-click on the Add Printer icon.
3	Follow the on-screen instructions to begin installation. (Note: When prompted, click on the Have Disk button; the Install From Disk window will appear.)
4	Click on Browse , navigate to the folder containing the printer driver files you just downloaded and unzipped, and click on OK . Click on OK again to close the Install From Disk window, then click on NEXT .
5	Follow the remainder of 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 while you were setting up your printer. Once installed, the driver's icon will appear in the Printers folder.

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 located on the Software Installation CD and 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 ID cards or for printing larger file formats (1 MB or more). (**Note:** 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 can be installed automatically from the Software Installation CD. (**Note:** To do so, close down all other programs and insert the Software Installation CD into your computer's CD drive.)
- The CD will automatically open and prompt you to click on the photo of your specific printer model to begin installation.

Note: If the CD does not automatically open, use "My Computer" or "Windows Explorer" to view the contents of the CD. Then, double-click on the **Setup.exe** file listed on the CD. Follow the on-screen instructions to complete installation. Once installed, the "32-Bit Print Spooler" icon will appear in the **Start->Programs->Fargo** folder.

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 D of this section. (**Note:** When this option is selected, the print spooler will automatically open and close with the start and finish of each print job. You can also manually open the 32-Bit Print Spooler simply by selecting its icon from the **Start->Programs->Fargo** folder.)

Installing the 32-Bit Print Spooler for Windows 95/98 (continued)

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. (**Note:** 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. (**Note:** 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. (**Note:** 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. (**Note:** 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. (**Note:** 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.)

Setting up the Printer Driver

Once the appropriate printer driver 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.

Most applications allow you to change these same printer driver options from their own Print screens. This means that you do not 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 open the printer driver setup window, please refer to the following steps for your specific operating system:

Windows 95/98

Step	Procedure
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

Step	Procedure
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.

Section 6: FARGO Technical Support

The purpose of this section to provide the User with an efficient, step-by-step procedure to be used when contacting FARGO Technical Support as needed for the Persona C25 Card Printer.

Contacting FARGO Technical Support

Step	Procedure
1	<p>Read the suggested Sections of the service guide in order to troubleshoot a Persona C25 Card Printer. As needed, contact the FARGO Technical Support Group by phone at (952) 941-0050 or by fax at (952) 941-1852 for additional, technical assistance.</p> <p>OR</p> <p>Contact FARGO Technical Support via the Web: http://www.fargo.com/tech_support/contact_tech_support.asp</p>
2	<p>Position a phone near the Printer and Computer so FARGO technicians can help to help troubleshoot the Printer(s).</p>
3	<p>Please have a self-test and a sample card ready when calling FARGO Technical Support.</p>

Glossary of Terms

Term	Definition
24-bit color	A color depth for an image that uses 8 bits for each color (red, blue, green) combining the possible 256 shades to provide a color depth of 16.7 million colors.
AC - Alternating Current	An electrical current that reverses its direction at regular intervals (typically 50 - 60 times a second).
Access Card	The card for the SmartGuard security system. A card with embedded electronics that can be removed from the Printer, locking the Printer and preventing unauthorized use.
Adhesion	The firm attachment of a material to the card surface, confirmed by using the Tape Test -pulling an applied piece of adhesive tape (Scotch 600 or equivalent) off the card at 1 sec/in to see if any material is pulled off by the tape.
Algebraic	A type of color matching that takes the colors value of pixels and applies them to an algebraic equation to adjust the levels of hue, saturation, and brightness.
ANSI (American National Standards Institute)	The United States Representative to ISO, providing standardization for U.S. Manufacturers prior, or in addition, to acceptance by ISO.
AS400	An IBM operating system running on a main frame. DTC500 Fargo Printers are built with fonts saved in the Printer memory so users of AS400 can write escape codes and print from the Printer.
ASCII (American Standard Code for Information Interchange)	A standard for processing information in computer processors. An 8-bit character set of 255 decimal numbers, each assigned to numbers, letters, punctuation, and special characters.
AT	Refers to an IBM standard in early computing with regard to the chipset and function of the Parallel Port, set up in the BIOS.
B (Black)	Black Dye-Sublimation panels are distinguished from the black panel using resin by the use of B for dye-sublimation black. K denotes resin black.

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Reviewing the Glossary of Terms (continued)

Term	Definition
Barcodes	A series of alternating black and white stripes, of varying widths (each character denoted by a set number and width of black stripes) that allows characters to be optically read by a computer.
Batch print	A file sent down from the computer that contains commands to print a number of cards, sequentially.
Battery Back-up	A power supply that can keep AC electronic equipment running for a short time when power is interrupted, allowing enough time for the user to save data and close the machine properly.
Bi-directional	A communication standard that allows two-way data transfer between PC and Printer.
BIOS (Basic Input/Output System)	The part of the operating system in a computer that handles communication between the PC mainboard and its peripherals. Typically residing in chip-based, non-volatile memory.
Bit	An abbreviation for binary digital. Each bit is an element of information that can have two states: off and on.
Bit map	A graphic produced by an array of pixel elements with the color hue, brightness and saturation information stored in bits. The more bits, the more values and thus the greater variety. 1 bit color is black and white, 8-bit color produces 256 shades of gray, and 24-bit color can produce 16.7 million colors.
Board	A term used for the circuit board, a hard Mylar plate made of many layers, that holds the electronic circuit elements and wire traces.
Boot-up	A series of operations that the Printer runs through when power is first applied including a series of initializing, status testing, and a diagnostics program to ensure a ready state.
Buffer	A block of memory, in the Printer or PC, that holds print files until the processor is ready to print them.
Cable	A set of conductors wrapped together and often concealed within insulation, used for signal transfer from one device to another, with connectors on either end that allows the cable to be removed.

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Reviewing the Glossary of Terms (continued)

Term	Definition
Cache	A type of memory buffer to store data temporarily, used to hold information that is most often exchanged between controller and peripheral, to expedite data transfer.
Calibrating	A procedure to adjust an electro-mechanical device so that it operates within established parameters.
Cleaning Roller	High tack Rollers positioned just after the input Hopper to lift debris off the card as it rolls over it. A clean card surface improves print quality.
CD (Compact Disc)	A 4.75-inch (12 cm) optical disk that stores data, written to and read from using a laser.
DMA (Direct Memory Access)	Channels designated within the Windows operating environment that are used for dedicated high-speed communication between the PC and the Printer port.
Centronics	A parallel communications interface that has become the standard for connections to Printers, designed by the Centronics Corp.
Coercivity	The property of a Magnetic Stripe that indicates the amount of force needed before magnetic saturation, measured in Oersted (Oe).
Color matching	The process of adjusting color hue, saturation, and brightness, to duplicate a desired color. An algorithm within the Driver, which adjusts the color balance and provides output with the desired color, automates this process.
Compressed air	Air stored in a tank or produced by an aerosol can, delivered by through nozzle at a high speed. Used in the Printer to blow out debris.
Contrast	The degree of difference in luminance of two areas.
Control panel	The panel on the Printer from which the user can control Printer functions. The Printer is usually composed of the control buttons and an LED or LCD display.

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Reviewing the Glossary of Terms (continued)

Term	Definition
CR-79	A card dimension standard of 2.0625" L X 3.3125" W (+/-0.002" W, +/-0.005" L) or 52.400 X 84.150 mm.
CR-80	A card dimension standard of 2.125" X 3.370" (+/-0.002" W, +/-0.005" L) or 53.975 X 85.598 mm.
CR-90	A card dimension standard of 2.375" X 3.625" (+/-0.002" W, +/-0.005" L) or 60.325 X 92.075 mm.
CR-100	A card dimension standard of 2.625" X 3.875" (+/-0.002" W, +/-0.005" L) or 66.675 X 98.425 mm.
Cursor	The marker in the LCD Display Window that indicates the active selection.
Darkness	A reference to color saturation.
DB-9	A 9 pin, D-shaped connector, typically used in serial port interfaces.
DC Motor	A Motor that works on DC with continuous motion.
DC (Direct Current)	Electronic flow that is unidirectional, flowing from the positive (+) to negative (-) of a power source.
Default	A setting or parameter that comes preset from the factory in Driver or firmware. Performance parameters may be customized in the Driver, but can be reset to the factory values usually through the push of the default button. The default values for the firmware are usually denoted on a label attached to the Printer.
Defrag	Abbreviation for defragmenting. The process of reformatting data on a hard drive so that it uses space more efficiently.
DIP switches (Dual In-line Package Switches)	A small array of mechanical switches installed on the board that can be configured to change Printer operations including providing a variety of self-tests.

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Reviewing the Glossary of Terms (continued)

Term	Definition
Direct-to-Card (DTC) Printing	The Direct-to-Card printing process prints digital images directly onto any plastic card with a smooth, clean, glossy PVC surface.
Dither	A system of distributing dots to control the hue, brightness, and/or saturation. In monochrome printing, this controls the brightness. In color printing, dithering can supply a larger color gamut than non-dithering. In the Driver, dither modes can be selected to provide better image quality depending on the type of image to be printed.
Dongle	A peripheral that attaches to a port to act as a key for an installed application. The PC is able to run that application only when the dongle is installed. Typically, it works as a pass-through device and is connected in serial to the parallel cable.
Dot	The smallest unit of an image that the Printer is able to produce. The smaller the dot, see dot pitch, the sharper the image.
Dot pitch	A measurement of image sharpness denoting the width of the dots that makes up a pixel. The smaller the pitch, the sharper the image.
Download	The transfer of a data file from one device to the other over a network or cable, typically from the Internet to a PC.
DPI (Dot Per Inch)	A measurement of the Printer resolution indicating how many dots a Printer can produce in a linear inch.
DRAM (Dynamic Random Access Memory)	A microchip based volatile memory storage device. The Printer uses this to buffer a print job, transferred from the PC, until the Printer controller is able to process the packet.
Driver	Software utility installed in Windows, that interfaces an application to rasterize image data and include command codes so the Printer can process the file.
Duplex Printing	Printing on the front and the back of the card.

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Reviewing the Glossary of Terms (continued)

Term	Definition
Dwell Time	The speed at which the card moves across the lam Roller, measured in seconds/inch (sec/in). This may be adjusted in the Driver to ensure adhesion and card flatness.
Dye Migration	The diffusion of dye out of the card surface and into another receptive surface, such as a vinyl pouch card holder, resulting in a faded image.
Dye-Sublimation	Also called dye diffusion/thermal transfer, it is the process of heating a dye suspended in a cellulous substrate until the dye can flow, diffusing into the dye receptive surface of the card or InTM. This produces the image in the surface of the card.
E-card	An abbreviation for electronic card. A generic term used to reference any card with built-in electronic devices such as smart cards or prox cards.
E-card Docking Station	The device in the Printer that accepts smart cards with an ISO smart card contact station. This allows the user to write to the smart card chip with a standard RS-232 interface in the back of the Printer or with the optional built-in encoder.
Edge-to-Edge	Refers to the maximum printable area on a card resulting in printed cards with virtually no border.
ECP Mode (Enhanced Capabilities Port Mode)	A type of Parallel Port mode, developed by Microsoft, to increase the port throughput and improve performance.
EE Memory	An abbreviation for EEPROM.
EEPROM (Electrically Erasable Programmable Read Only Memory)	A microchip based non-volatile memory storage device that can be rewritten in the field. The chip can hold new values as the Printer adapts its operational parameters.
Encoder (smart card)	An electro-mechanical interface to transfer data from the PC to a chip or Magnetic Stripe built into the card.

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Reviewing the Glossary of Terms (continued)

Term	Definition
Encoder (wheel)	An electromechanical device, attached to a shaft that detects the change in rotational position, incremented to count ticks per revolution. The Printer's encoder wheel both detects motion and measures the amount of rotation in the movement of the ribbon.
Engine	A generic term for a collection of systems and mechanisms that is dedicated to executing a specific function. A Printer that also laminates would have both a print engine and an engine.
EOF (End Of Form)	The trailing edge of the card, detected to indicate when the Printer should stop printing.
EPP (Enhanced Parallel Port)	A type of Parallel Port mode, developed by Intel, to increase the port throughput.
EPROM (Electrically Programmable Read Only Memory)	A microchip based non-volatile memory storage device that cannot be rewritten in the field. Firmware for many Fargo Printers is stored on these chips and so a change of the chip is necessary for an upgrade.
Escape sequence	A string or control character that indicates to the processor that what follows is a command and not data.
ESD (ElectroStatic Discharge)	The discharge of static electricity (high voltage, low current) that can damage electronic devices.
Ethernet	A system of networking a series of computers for the sharing of data or peripherals.
Film	A thin flexible transparent sheet used to carry dye-impregnated material or resin to be transferred to the card.
Firmware	The instruction set, stored in chip memory, inside the Printer that controls functional and operational data. Some models require a chip change for updates; some firmware can be changed by reprogramming from the PC.

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Reviewing the Glossary of Terms (continued)

Term	Definition
Flash Memory	A microchip based non-volatile memory device that holds its data when power is removed. This allows for field reprogramming of the Printer commands, such as Printer firmware upgrades, without the necessity of changing chips.
Font	A character set similar in style and form. Fonts can be graphical or mathematical constructs, represented by a series of dots or an assembly of curves and lines.
FPGA (Field Programmable Gate Array)	A microchip with configurable logic circuits installed that is programmed to act as the Printer's central processor.
Full bleed	Printing that covers the entire card surface.
Gamma	The degree of contrast of an image or the display of a monitor determined by the slope of a characteristic curve relating optical density to relative log exposure.
Glossy / Matte	A smooth polished surface in comparison to a rougher matte surface. Fargo matte cards have a surface index (Ra) of approximately 65 micro inches while glossy have a Ra = 3.
Glossy PVC	A card made of PVC with a smooth polished surface (Surface roughness of approximately 0 - 10 micro-inches). This is required for direct to card dye-sublimation printing.
Graphical Device Interface (GDI)	A Windows standard for protocol between Drivers and applications and the Windows interface. An application uses a Driver to rasterize the data in the format necessary for the Printer but also for the Windows interface to execute the print commands.
Gray Scale	A graduation through the various brightness levels from white to black.
Halftoning	A process in monochrome printing that simulates continuous tone by using changes to the distribution of single dots. Increasing the number of dots in a given area increases the darkness even though the individual dots stay the same size.

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Reviewing the Glossary of Terms (continued)

Term	Definition
Hard Drive	A high capacity storage device in a PC consisting of non-removable magnetically encodable platters.
Hardware	Physical components of a system such as the Printer, the PC, the power supply.
HDP (High Definition Printing™)	The High-Definition Printing process prints full-color images onto clear HDP transfer film (InTM). The HDP film is then fused to the card through heat and pressure via a heated Roller. The printhead is capable of 256 shades with a sharper print and better color match.
Head	Abbreviation for printhead.
Heat sink	A device used to dissipate heat into the ambient.
Heat Seal	A resinous film transferred by the printhead onto the back of an HDP intermediate transfer film to facilitate adhesion.
HiCo (High Coercivity)	The coercivity value of magnetic media between 2500 - 4000 Oe (ISO 7811-6). Fargo's High Coercivity encodes at 2750 Oe.
HTML (HyperText Markup Language)	A standard protocol used to format text files for use in a browser or on the Internet.
HTTP (HyperText Transfer Protocol)	A standard protocol by which computers can transfer data, compatible through multiple platforms.
IC (Integrated Circuit)	An electronic device that contains many individual circuits interconnected and placed within a discrete package.
ID (Identification)	An abbreviation for identification.

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Reviewing the Glossary of Terms (continued)

Term	Definition
IEEE 1284 (Institute of Electrical and Electronics Engineers 1284)	A standard method of signaling for a bi-directional parallel interface on personal computers. To ensure proper Printer communications and image output, Fargo recommends a parallel interface cable that complies with this specification.
Image	A collection of pictures or graphical elements that compose the visual features on a card. Also refers to the digital representation.
Input	Any data or material being transferred to the Printer.
Input Hopper	The area of the Printer that stores the blank cards, ready to print.
Intermediate Transfer Media (InTM)	A thin flexible material coated with a resin material into which the dye is transferred from the ribbon by the printhead. The film is then transferred to the card surface by the hot Roller.
ISO	For the Greek, "iso", meaning same. Used to represent data from the International Organization for Standardization.
JIS II (Japanese Industrial Standard)	The standard for encoding to a Magnetic Stripe provided by the Japan Standards Association. The single Track is as wide as ISO Tracks 1 and 2 combined and in the same approximate location as those Tracks but on the front of the card. The coercivity level is 600 Oe.
K Panel	An area of a multicolored ribbon (e.g., YMCK) that contains black resin for transfer to the card surface. Also used in reference to the application of preference to items printed on the card - those using the black panel in lieu of a process (YMC) black.
Lamination	The application of a film or resinous substance, fused by heat and pressure, to the surface of a card.
LAN (Local Area Network)	An array of several computers connected through a series of data transfer cables for the sharing of data and peripherals.

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Reviewing the Glossary of Terms (continued)

Term	Definition
Landscape	A document layout that is viewed with the document's long axis in a horizontal orientation.
LCD (Liquid Crystal Display)	A device that contains a liquid crystal between two pieces of polarized film through which reflected or ambient light can pass. When a current is applied, the liquid's polarity changes and blocks the passage of the light resulting in an opaque area of the display. The areas are arrayed to form characters.
LED (Light Emitting Diode)	A semiconductor that emits light when a current is applied.
Media	A generic reference to anything onto which the Printer can transfer an image including cards, ribbon, and film.
LoCo (Low Coercivity)	The coercivity value of magnetic media between 250 - 600 Oe (ISO 7811-2). Fargo's Low Coercivity encodes at 300 Oe.
LPT Port (Line Printer Port)	The system abbreviation for a PC's parallel Printer port.
Mag encoding	The process of orienting successive magnetic bits to produce a serial data string.
Magnetic Stripe	An area of the card with an applied or impregnated ferrous material that may hold encoded data through a series of prescribed polarity changes.
Mag Track	An area of a magnetic strip running the length of the card, with a given width and position, constitutes a Track. This is the area dedicated to one data string, restricted to specific rules of format. ISO Standards specify three magnetic Tracks on the back of a card. The JIS standard specifies one Track on the front.
Mag Verify	A process to confirm proper Magnetic Encoding. After encoding, the information is read off back and compared to the intended string.

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Reviewing the Glossary of Terms (continued)

Term	Definition
MB (Megabyte)	A unit of storage that equals 1,048,576 bytes.
Memory	A generic term for any device that stores digital information using magnetic media or digital chip storage device.
Menu	A descriptive list of headings above nested functions that aid navigation to a specific operation. These are found in computer applications, with the heading at the top of a subset of like functions. They are also on the Printer LCD control panel.
Monochrome	An image composed of a single color.
Network	A series of computers connected by data transfer cable for communication and sharing of functions and peripherals.
Oersted (Oe)	The unit of magnetic field strength named after Dutch scientist Hans Christian Oersted who found the science of electromagnetism.
Offset	The prescribed distance between a reference point and the target point. The offset in card printing may refer to the position of the image relative to the leading edge or the distance of the start of Magnetic Encoding from the leading edge of the card.
O-Ring	A rubber ring used as a belt in several media driving applications.
OS (Operating System)	The instructions installed on the computer hard drive that run the computer's operations and applications. The Driver used for any given OS will differ from other platforms. The correct version Driver must be loaded for the Printer to interface with the OS and the application to print.
Output	Any product of the Printer including card image, encoded data, and lamination.
Output Hopper	The portion of the Printer that accepts the completed cards.
Overlay	A resin-like substance that is transferred by the printhead to the card surface over a printed dye image to prevent image fading, increase abrasion durability, and prevent dye migration.

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Reviewing the Glossary of Terms (continued)

Term	Definition
Oversized Cards	Oversized cards are used for more efficient visual identification and are available in many non-standard sizes. The most popular sizes are CR-90 (3.63" x 2.37"/92mm x 60mm) and CR-100 (3.88" x 2.63"/98.5mm x 67mm).
Overlamine	Protective clear or holographic material to increase security and durability applied over the printed surface with a hot Roller.
Parallel	A method of data transfer in which serial data is divided into sections, and sent simultaneously down parallel wires to speed transfer rate.
Parallel Port	A communication socket on a device that allows for parallel data transfer.
PC (Personal Computer)	A stand-alone, programmable, electronic device that can store, retrieve, and process data consisting of a CPU, mouse, keyboard, and monitor.
PCB (Printed Circuit Board)	A solid, multi-layered plate on which electronic elements are attached, either through the board or on the surface.
Peel	The removal of a film or ribbon from a card surface (at a perpendicular angle) to ensure proper transfer, then separation, from the card surface.
Peel-Off	A bar on the section that holds the film at the correct position and provides proper peel angle.
Peripheral	Any device that is attached externally to a PC. These often share the same data cable or port as a Printer and may be the source of communication problem.

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Reviewing the Glossary of Terms (continued)

Term	Definition
Pinch Roller	A free spinning (non-driven) Roller that presses the card against the drive Roller, on the opposite side, to ensure an adequate normal force for proper traction.
Pixel	Short for picture element. The smallest element of a graphic.
Platen	The hard rubber Roller that drives the media through the Printer, providing support to the backside of the media during printing or laminating.
PET	Abbreviation for polyester terephthalate, often called polyester. Sheets of PET are laminated with sheets of PVC to produce thermal acceptance composite cards.
Port	A communication interface, serial or parallel, used for the transference of data.
PolyGuard Overlaminates	A 1-mil or .6-mil thick polyester material that enhances card security and durability applied over the printed surface with a hot Roller. Available as clear or with embedded holographic-type security images.
Portrait	A document layout that is viewed with the document's long axis in a vertical orientation.
Potentiometer	An electronic resistor with a variable resistance value that can be mechanically set.
Print Driver	A software utility that serves as an interface between the Printer and the Windows GDI (Graphical Device Interface), making the Printer's functions available through the software application. It also provides the format information for the rasterizing of the print file including any necessary escape or function commands.
Print Job	A file of one or more cards for the Printer to print, including image data and Printer functions, transmitted through the parallel interface and at times stored temporarily in the print buffer and spooler.
Print Server	A device used to connect and control a Printer on a network.

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Reviewing the Glossary of Terms (continued)

Term	Definition
Printhead	The device on a Printer that produces the image on the media.
PVC	Abbreviation for polyvinyl chloride, often called vinyl. PVC is the component of the 0.002" thick clear, dye receptive film on the surface of the identification card, and is the primary component of the identification card cores.
Queue	A sequence of files or sets of data, awaiting transmission or processing.
Proximity ("Prox") Card	Proximity cards allow access and Tracking utilizing contactless technology, usually by communicating through a built-in antenna.
Prox Card Encoder	The FARGO prox card encoder uses an HID ProxPoint® Plus reader mounted on the e-card docking station inside the Printer/encoder. The ProxPoint is a "read only" device producing a Wiegand signal that is converted to RS-232 using a Cypress Computer Systems CVT-2232. Application programs can read information from HID prox cards via a RS-232 signal through a dedicated DB-9 port on the outside of the Printer labeled "Prox."
RAM (Random Access Memory)	A storage device for digital information to be held temporarily, to facilitate processing.
Rasterize	The process of converting the elements of a graphic into a bitmap to be printed.
Reboot	Cycling the power to the Printer so that it resets and reinitializes.
Registration	The quality of the alignment of the separate primary-color images: YMCK.
Resident Font	A set of characters loaded into the Printer memory that can be programmed to print those characters on the card without rasterizing the image.
Resin	A semi-solid material.

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Reviewing the Glossary of Terms (continued)

Term	Definition
Resolution	The number of individual pixels in a graphic, taken over a given length, used to indicate the sharpness of the picture and the level of detail. The number of elements in the printhead determines Fargo Printer resolution.
RFI (Radio Frequency Interference)	Electromagnetic waves radiated by poorly shielded cables or electronic devices that interferes with the operation or data transfer of another device.
RFID (Radio Frequency Identification)	Indicates a way of transmitting information via radio frequency. Data is sent from an RFID transceiver to an RFID tag that is embedded in a Resin Ribbon.
RGB (Red/Green/Blue)	The three primary colors of the luminance, or additive, model. Combinations of these three colors can produce practically all the colors of the spectrum that humans can detect. Computer monitors operate on an RGB model.
Ribbon	The dye impregnated film that is used for color printing.
Ribbon cable	Parallel wires held flat in a row by plastic insulation.
RibbonTraq	A FARGO Electronics method of placing bar code-like marks on the transition area between color panels. These marks are arranged for detection by a reflective Sensor array for the identification of ribbon type and the ribbon position.
RMA number (Return Merchandise Authorization number)	A number, acquired from FARGO Support, which authorizes the return of merchandise for repair or credit.
Roller	Elements of the Printer used for the transport of media consisting of a rotating steel shaft (for ribbon) or a rotating steel shaft with a rubber cylinder installed at the shaft midpoint (for moving cards).

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Reviewing the Glossary of Terms (continued)

Term	Definition
RS-232	An interface standard, established in 1969 by the Electronic Industries Association, regarding the connecting of computer peripherals.
Saturation	A measure of the degree of color, from gray, with the same brightness.
Self-test	A pre-determined print file used to confirm Printer operation typically sent from the Driver or stored in the Printer's memory.
Sensor	An electro-mechanical/electro-optical device used to indicate a change in state in the Printer such as when a card reaches a certain location.
Serial communications	The transfer of data, one bit at a time and in sequential order, using a single wire.
Serial interface	A sub D 9 pin input/output port on the Printer, used for serial communication with the PC for AS400 operating systems or for e card encoding.
SIMM (Single In-Line Memory Module)	An array of memory chips, attached to a printed circuit board that installs in a slot on the main board.
Simplex	Single-sided printing.
SmartGuard	An application from FARGO Electronics that allows users to prevent access to the Printer through the use of a personally encoded smart card.
SmartGuard™	SmartGuard is a Printer security option that uses a custom access card and a built-in reader to restrict Printer access. Only a valid access card can enable the Printer to print cards.
SmartShield™	This option allows the Printer to print custom, security images on the card that reflect under a black or UV light source.
Smart Card	Smart cards have an embedded computer circuit that contains either a memory chip or a microprocessor chip. There are several types of smart cards: Memory, Contact, Contactless, Hybrid (Twin), Combi (Dual Interface), Proximity and Vicinity.

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Reviewing the Glossary of Terms (continued)

Term	Definition
Software	Instructions saved in computer memory that directs the computer to perform certain tasks and functions.
Spooler	A computer application that allows the spooling of print jobs.
Spooling	Rather than moving a print job directly to the Printer, the job is written to the disk so that the user can access the application faster while Windows takes care of printing in the background.
SS (Start Sentinel)	The character denoting the end of a magnetic data string.
Stacker	The device that moves the finished cards onto the output column, ordering them First In, First Out.
Stepper Motor	A Motor whose shaft turns in discrete steps, rather than continuously.
String	A sequence of characters that form a line of data.
Surface mount	A method of mounting circuit elements onto the surface of a circuit board, attached at solder pads, rather than through holes in the board.
Surge Protector	An electronic device, placed in serial to the Printer's power supply, that prevents damage to the Printer from electronic surges and electrical current that is outside of the normal parameters.
Switch box	An electromechanical device to which a user may connect several peripheral devices to the Parallel Port simultaneously, yet using the selector switch to designate the active port.
TAC	Thermal Acceptance Composite cards. Card stock produced by laminating sheets of PVC with sheets of PET for better thermal distortion resistance. Ultra III cards.
Temp file	A temporary file, generated automatically by Windows, to store the information for an active document. Windows should delete these files when the application is closed.

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Reviewing the Glossary of Terms (continued)

Term	Definition
Test-print	A file stored in or generated through windows that is sent to the Printer to test basic functionality.
Thermistor	An electronic resistor on the printhead with a resistance value that varies in proportion to the heat to which it is exposed.
Thermocouple	A device for measuring temperature using a junction of two wires of dissimilar metals that produce a voltage when heated that varies proportionally with the temperature.
Thin Film Overlamine	A 0.25-mil thick resin material that enhances card security and durability applied over the printed surface with a hot Roller. Available as clear or with embedded holographic-type security images.
Through-hole	A method of mounting circuit elements with the leads passing through holes in the circuit board and soldered on the opposite side.
Timeout	An interruption of a print job that occurs when a function is not completed in the time allotted by the operating system.
TOF (Top of Form)	The leading edge of the card, as it travels through the Printer.
Track	The area on a mag stripe designated to contain the magnetic data string.
Troubleshooting	The process of investigating and determining the cause of a problem.
TrueType (TT)	A font format that produces each character using a mathematical equation, rather than a graphical representation, resulting in a much sharper, cleaner image.
UltraCard	The FARGO brand of card stock recommended for use in FARGO Printers, with the necessary glossy surface and composed of PVC.
UltraCard III	The FARGO brand of card stock, recommended for use in FARGO Printers that laminate, with the necessary glossy surface and composed of PVC and PET to prevent heat distortion.

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Reviewing the Glossary of Terms (continued)

Term	Definition
Update	The process of installing a new revision of software or firmware to implement new changes to the Printer's command codes and procedures.
UPS (Un-interruptible Power Supply)	An AC power supply, typically powered by batteries, which provides temporary power to the PC or Printer during an interruption of the supply voltage.
USB (Universal Serial Bus)	A 1.5M/sec (12Mbit/sec) serial communication interface that can support 127 separate devices consisting of 4 wires: power, ground, data in, and data out.
Virtual Memory	A technique used by Windows when chip memory is exhausted, in which data is written to the hard to hold data temporarily and support Window's operations.
Wrinkle	The appearance in the card image of wavy or arched lines, either colored or clear, caused by improper film or ribbon tension.
Write Direct to Port	UI function for specific, older operating systems where it is necessary to bypass the layers of the operating system in order to connect directly to the Printer port. Do not use this option for newer operating systems because it will disable the Printer Management function.
YMC	The designation of colored ribbon by the panels of color in the order in which they are printed: Yellow (Y), Magenta (M), and Cyan (C).
YMCK	The designation of colored ribbon by the panels of color in the order in which they are printed: Yellow (Y), Magenta (M), Cyan (C), and Black (K).
YMCKH	The designation of colored ribbon by the panels of color in the order in which they are printed: Yellow (Y), Magenta (M), Cyan (C), Black (K), and Heat Seal (H).

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Reviewing the Glossary of Terms (continued)

Term	Definition
YMCKK	The designation of colored ribbon by the panels of color in the order in which they are printed: Yellow (Y), Magenta (M), Cyan (C), Black (K), Black (K) (the second K is for backside, black only printing).
YMCKO	The designation of colored ribbon by the panels of color in the order in which they are printed: Yellow (Y), Magenta (M), Cyan (C), Black (K), and Overlay (O).
YMCKOK	The designation of colored ribbon by the panels of color in the order in which they are printed: Yellow (Y), Magenta (M), Cyan (C), Black (K), Overlay (O), and Black (K) (used for backside, black only printing).

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