FARGO

HDP® 800 Series Card Printer/Encoders Service Manual (Rev. 5.0)

- **HDP820 (Dual-Sided Card Printer/Encoders)**
- **HDP820-LC (Dual-Sided Card Printer/Encoders)**
- **HDP825 (Dual-Sided Card Printer/Encoders)**
- **HDP825-LC (Dual-Sided Card Printer/Encoders)**

Part Number: L000307

HDP® 800 Series Card Printer/Encoders Service Manual (Rev. 5.0), property of FARGO Electronics, Incorporated

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 5.0	1 January 2004	HDP® 800 Series Card Printer/Encoders Service Manual (Rev. 5.0)

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

- 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)

Any questions regarding changes, corrections, updates or enhancements to this document should be forwarded to:

FARGO Electronics, Incorporated
Support Services
6533 Flying Cloud Drive
Eden Prairie, MN 55344 (USA)
(952) 941-9470
(800) 459-5636
FAX: (952) 941-7836
www.fargo.com
E-mail: sales@fargo.com

Reviewing the HDP800 Series Printers Overview table

HDP800 Series	Input Hoppers	Card Capacity	Accepted Card Size	Encoding Modules	Lamination Module
HDP820 (Dual-Sided Card Printer/Encoders)	1	250	CR-80, CR-90 & CR-100	Optional	Optional
HDP820-LC (Dual-Sided Card Printer/Encoders)	1	250	CR-80, CR-90 & CR-100	Optional	Included
HDP825 (Dual-Sided Card Printer/Encoders)	2	200	CR-80	Optional	Optional
HDP825-LC (Dual-Sided Card Printer/Encoders)	2	200	CR-80	Optional	Included

How to use the manual

The HDP® 800 Series Card Printer/Encoders Service Manual (Rev. 5.0) is designed to provide installers and technicians with quick, efficient lookup of related procedures, components and terms. The manual can be used effectively either in soft or hard copy, depending on the preference of the installer or technician.

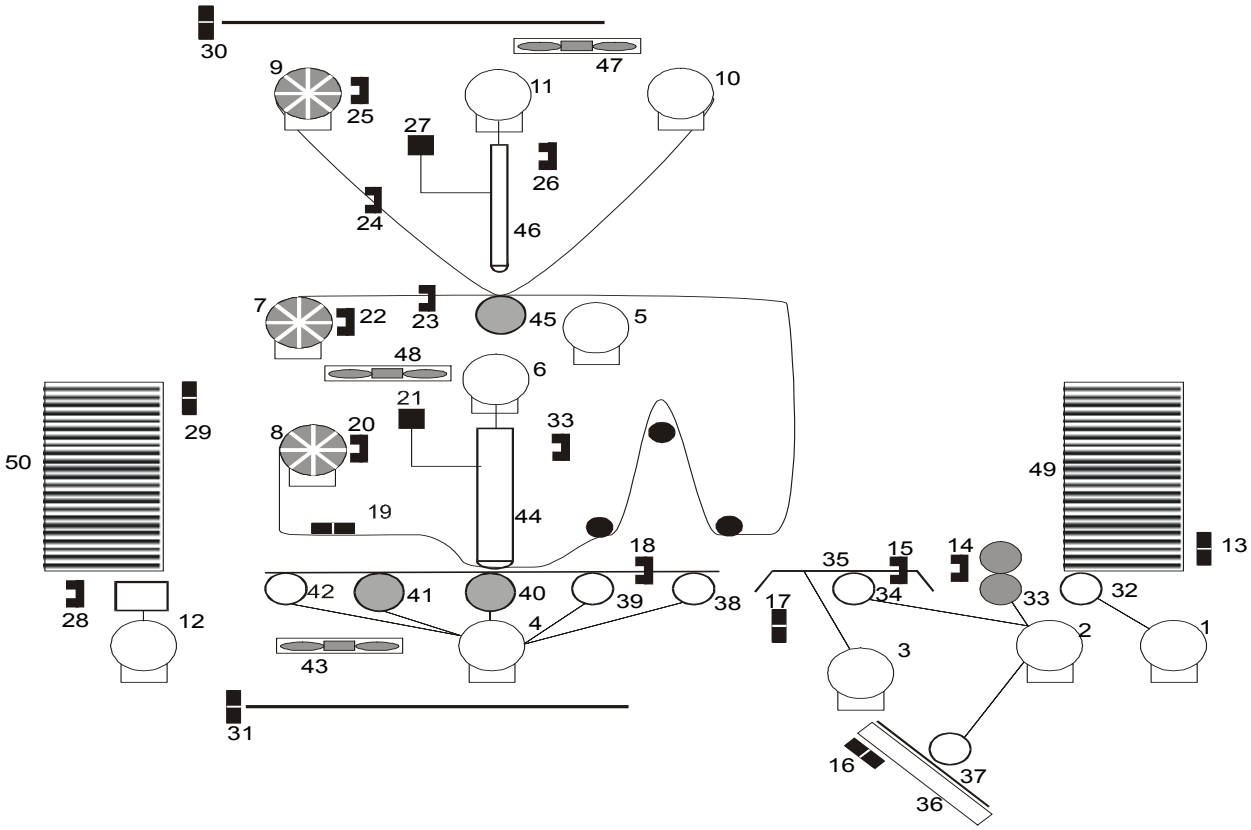
Manual	Description
Sequence of Operations, Glossary of Terms and Technical/Functional Specifications (hyper-linked)	You can go directly to the Sequence of Operations, Glossary of Terms, Technical Specifications and Functional Specifications to learn how to use the processes, procedures, functions and windows for the HDP® 800 Series Card Printer/Encoders within concise, correlative tables.
Table of Contents (hyper-linked)	You can use the Table of Contents to quickly locate 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, Parts Replacement, Printer Packing, Board Level Diagnostics, LCD On-Line Menu Navigation and Firmware Updates 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 an error message or a procedure.
Comprehensive Index (hyper-linked)	You can use the Comprehensive Index to quickly locate information on the HDP® 800 Series 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
Danger: 	**Failure to follow these installation guidelines can result in death or serious injury.** Information that raises potential safety issues is indicated by a warning symbol (as shown to the below). • **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.
Caution: 	**This device is electrostatically sensitive. It may be damaged if exposed to static electricity discharges.** Information that raises potential electrostatic safety issues is indicated by a warning symbol (as shown to the below). • **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.

HDP® 800 Series Card Printer/Encoders Overview

Reviewing the HDP® 800 Series Block Diagram



Motors	
1	Card Input
2	Card Feed Stepper
3	Flipper Stepper
4	Lamination Stepper
5	Print Stepper
6	Lamination Headlift
7	Film Supply
8	Film Take Up
9	Ribbon Supply
10	Ribbon Take Up
11	Print Headlift
12	Stacker Lift

Sensors	
13	Card Low
14	Card Detection
15	Flipper Table Card
16	Encoding TOF
17	Flipper Home
18	Card TOF
19	Lower Film
20	Film Take Up Encoder
21	Thermocouple
22	Film Supply Encoder
23	Upper Film
24	Ribbon Sensor Array
25	Ribbon Encoder
26	Print Headlift
27	Thermistor
28	Stacker Lift
29	Stacker Full
30	Cover Interlock
31	Release Lever

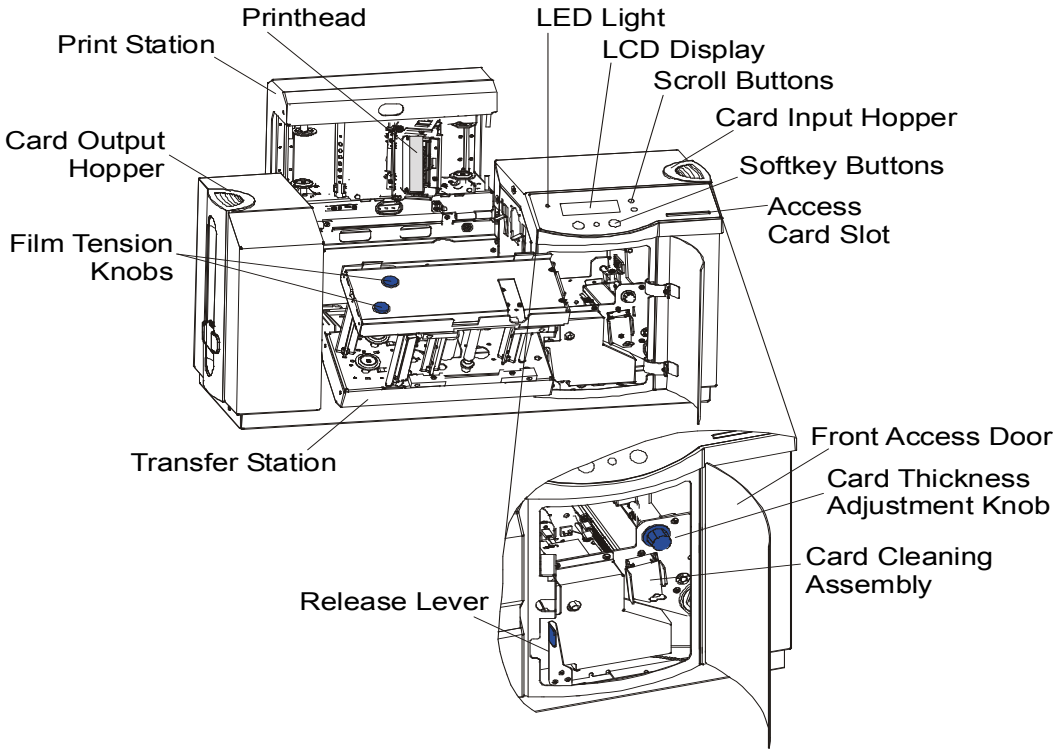
Parts	
32	Card Input Roller
33	Cleaning Cartridge
34	Flipper Table Roller
35	Flipper Table
36	Encoding Module
37	Encoding Feed Roller
38	Card Feed Roller
39	Card Feed Roller
40	Platen Roller
41	Flattener Roller
42	Card Feed Roller
43	Flattener Cooling Fan
44	Lamination Roller
45	Transfer Platen Roller
46	Printhead
47	Printhead Cooling Fan
48	Film Cooling Fan
49	Card Input Hopper
50	Card Output Stacker

Reviewing HDP® 800 Series Card Printer - Sequence of Operations

The following sequence describes a dual sided full color print job with magnetic encoding. This Printer also has an optional Card Stacker installed. (**Note:** The HDP825/825-LC Printers have two (2) Card Input Hoppers that load 100 cards in each Hopper.)

Step	Process
1	The File information is received from the PC.
2	The Heater warms up and/or maintains the heat on the hot Roller using the Thermocouple to help maintain the desired temp.
3	The Ribbon Drives turn ON and move until the correct panel is found by the Print Ribbon Sensor array (5 reflective). All stop. (**Note:** The Print Ribbon Encoder is active during this step.)
4	The Film Ribbon Drive turns ON until the Film is positioned with the Film alignment Sensor. All stop. (**Note:** The Film Ribbon Encoder is active during this step.)
5	The Headlift Motor engages, moving the Printhead down until Headlift Sensor is activated. All stop.

Continued on the next page



Reviewing HDP® 800 Series Card Printer - Sequence of Operations (cont.)

Step	Process
5	The Fan turns ON as required to keep head cool.
6	The Ribbon Drives, Film Ribbon Drive and Stepper turn ON and the Printhead burns the image data until the image data is depleted. All stop. (**Note:** The Ribbon Encoders are active during this step.)
7	The Headlift Motor engages, moving the Printhead up until the Headlift Sensor is activated. All stop.
8	The Ribbon Drives and Film Ribbon Drive advance until the Print Ribbon Encoder sees acceleration at release. (**Note:** The Ribbon Encoders are active during this step.)
9	The Ribbon Drives move until the Print Ribbon Position Sensor finds the next panel. All Motors stop. (**Note:** The Ribbon Encoder is active during this step.)
10	The Film ribbon drive turns ON until the images portion of the Film is positioned before the Printhead, using the Film Alignment Sensor. All stop. (**Note:** The Ribbon Encoder is active during this step.)
11	The Headlift Motor engages, moving printhead down until the Headlift Sensor is activated. All stop.
12	Ribbon Drive, Film Ribbon Drive and Stepper all turn ON and the Printhead burns image data until the image data is depleted. All stop. (**Note:** The Ribbon Encoders are active during this step.)
13	The Headlift Motor engages, moving the Printhead up until the Headlift Sensor is activated. All stop.
14	The Ribbon Drive and Film Ribbon Drive engage until print ribbon encoder sees acceleration at release. (**Note:** The Ribbon Encoders are active during this step.)
15	Repeat Steps 9 to 14 for the appropriate number of color/heat seal panels.

Continued on the next page

Reviewing HDP® 800 Series Card Printer - Sequence of Operations (continued)

Step	Process
16	The Ribbon Drives turn ON to advance the printed portion of the Film to a position near the heated lam Roller using the Lamination Film Alignment Sensor. The Ribbon Drive stays ON for a certain number of additional clicks after turns OFF to create a slack region between the Printer and Laminator sections. All stop. (**Note:** Ribbon encoders and dancer zero position switch are active during this step.)
17	The Ribbon Drive is used with the Lamination Film Alignment Sensor to locate the printed Film more precisely under the hot Roller. All stop.
18	This is simultaneous to Steps 1 to 17 and then Steps 19 to 24 will occur.
19	The DC Motor and Stepper Motor turn ON and run until a card is seen by the card Sensor, which will cause the Card Input Motor to stop. The Stepper will continue to run a certain number of steps to position the card on the Flipper Table. All stop. Card Low Sensor will check for cards in Input Hopper.
20	Stepper will turn ON, causing the Flipper to turn to the magnetic angular position. The Flag Sensor and counted steps are used to determine the angular position. All stop.
21	Stepper will engage to drive the card past the Mag Card Sensor and the Mag Head.
22	Stepper engages to drive the card to a centered position on the Flipper Table using the Mag Card Sensor and a step count. All stop.
23	Stepper will turn ON, causing the Flipper to turn to the default (flat) position. The Flat Sensor and counted steps are used to determine the angular position. All stop.
24	Steppers engage to move the card OFF the Flipper and to a position near the hot Roller, using Card Feed Sensors and a step count. All stop.
25	Stepper engages to move the card to a position directly under the hot Roller. The Top of Form Sensor determines card edge and number of steps to position card. All stop.

Continued on the next page

Reviewing HDP® 800 Series Card Printer - Sequence of Operations (continued)

Step	Process
26	If the heater is not at the required temperature yet, the job will pause.
27	The Headlift Motor turns ON to lower the hot Roller and will stop when the Headlift Sensor is activated. All off.
28	The Stepper and Ribbon Drive engage to laminate the printed Film onto the card. They will turn off after a given number of steps based on the position given by the card Sensor. All stop. (**Note:** The Ribbon Encoder is active during this step.)
29	The Headlift Motor turns on to raise the hot Roller, stopping when the Headlift Sensor is activated.
30	The Ribbon Drive and Stepper turn ON for a given number of clicks based on ribbon encoder, until the ribbon is released.
31	The Stepper turns ON to move the card through the flattening section and into the output hopper (based on steps from a known position). All stop.
32	The Heater and Thermocouple are maintained at a set temperature at all times when the Printer is ON. The cooling fan is ON when the Printer is ON.
33	The Stacker Lift Motor engages until the Stacker Lift Sensor is activated.
34	The Stacker Full Sensor checks for presence of cards.

Reviewing the HDP® 800 Series Card Printer/Encoders - Boot up Sequence

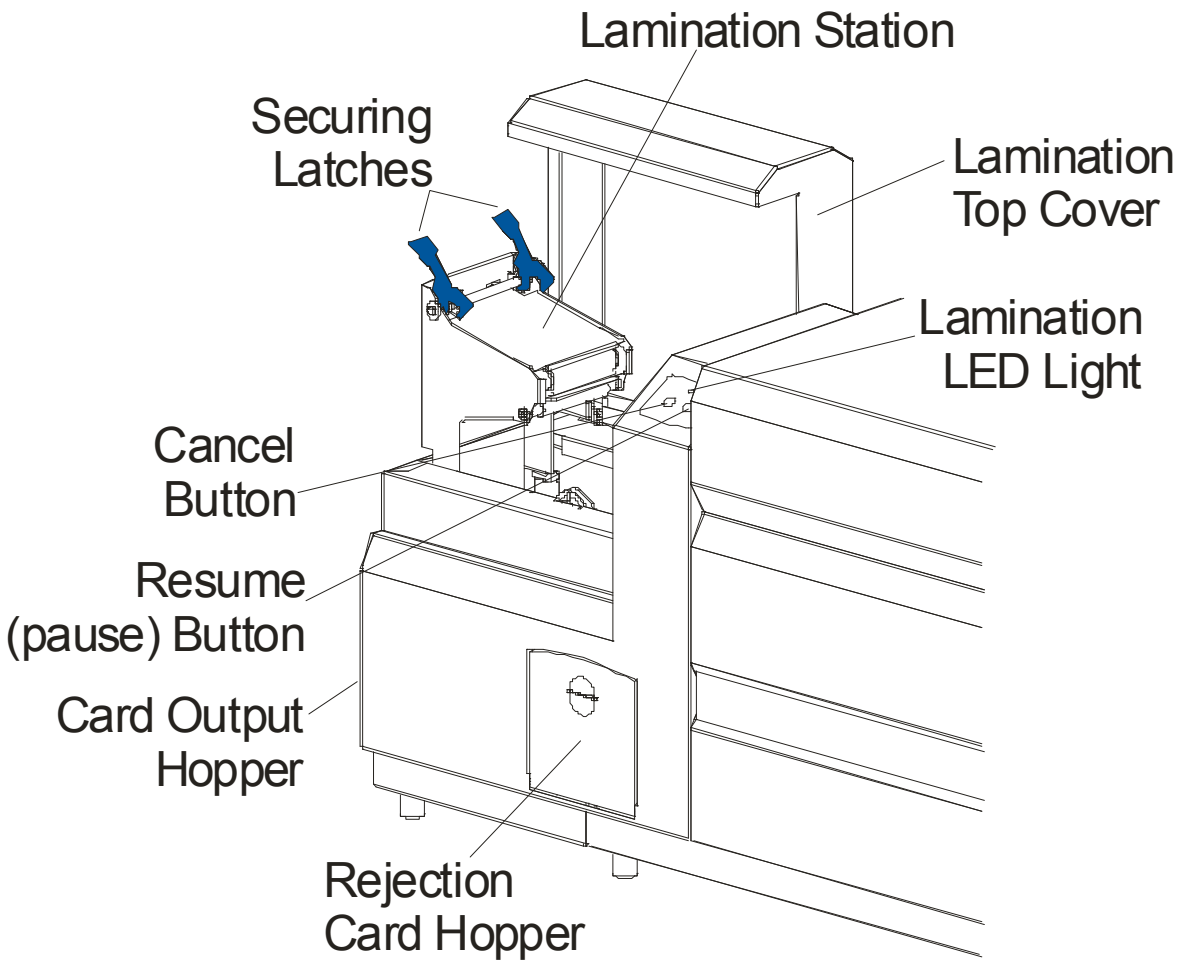
Step	Process
1	The Card feed stepper turns ON (to check for a card on the Flipper table).
2	The Lam Headlift turns until the head up position is returned from the Headlift Sensor).
3	The Film transfer take-up Motor turns ON to take up any slack in the dancer (and runs until the Dancer Down Sensor is activated).
4	The Print Headlift turns until head up position is returned from Headlift Sensor.
5	The Print Ribbon moves forward until it finds the yellow panel, pauses, advances to magenta, then backs up to yellow (the Ribbon Sensor detects marks on the ribbon).
6	The Transfer Ribbon advances forward two panels from supply (advances until the Print Film Sensor senses 2 marks on the Film).
7	The Transfer Ribbon advances forward one panel onto take up (advances until the Transfer Film Sensor senses 1 mark on the Film)
8	The Transfer Ribbon advances forward one panel from supply (advances until the Print Film Sensor senses 1 mark on the Film).
9	The Transfer Ribbon advances forward one panel onto take up (advances until the transfer Film Sensor senses 1 mark on the Film).
10	The Transfer Ribbon reverses for one panel from take up (reverses until transfer the Film Sensor senses 1 mark on the Film).
11	The Transfer Ribbon reverses for one panel onto supply (reverses until the Print Film Sensor senses 1 mark on the Film).
12	The Transfer Ribbon reverses for one panel from take up (reverses until the Transfer Film Sensor senses 1 mark up on the Film).
13	The Transfer Ribbon reverses for one panel onto supply (reverses until the Print Film Sensor senses 1 mark on the Film).

Reviewing the Lamination Module Sequence of Operations

The LAM sequence of operations begins after printing has occurred with the Card Printer.

Step	Process
1	The card is fed onto the Lamination Module Flipper Table.
2	The card is fed to the Card Position Sensor.
3	The Lamination Ribbon Motor begins cycling until the Upper Lamination Sensor detects the mark.
4	The Card Feed Motor activates to center the card on the Platen Roller.
5	The Lamination Roller Lift Motor cycles until the Lamination Roller Lift Sensor detects state change.

Continued on the next page



Reviewing the Lamination Module Sequence of Operations (continued)

Step	Process
6	The Card Feed Motor and the Lamination Ribbon Motor activate for the length of the card.
7	The Lamination Roller Lift Motor cycles until the Lamination Roller Lift Sensor detects state change.
8	The card is fed back to the Flipper Table.
9	The Flipper Table Clutch engages.
10	The Flipper Table Motor activates until the Card is inverted based on the Flipper offset setting.
11	The Flipper Table Clutch disengages.
12	The card is fed off the Flipper Table.
13	The Flipper Table Clutch engages.
14	The Flipper Table Motor activates until the Flipper Table is homed.
15	The Flipper Table Clutch disengages.
16	Repeat Steps 2 through 7.
17	The card is fed out of the Printer.

Reviewing Lamination Module Boot up Sequence

Step	Process
1	The Lamination Headlift turns until the head up position is returned from Headlift Sensor.
2	The Lamination Ribbon Motor activates to determine the presence of a roll of lamination.
3	The Lamination Flipper table homes itself.
4	The Card Sensor checks for the presence of a card and ejects it if found.

Table of Contents

Section 1: Specifications

The purpose of this section is to provide the User with specific information on the Regulatory Compliances, Agency Listings, Technical Specifications and Functional Specifications for the HDP® 800 Series Card Printer/Encoders.

Reviewing the HDP800 Series Printers Overview table

HDP800 Series	Input Hoppers	Card Capacity	Accepted Card Size	Encoding Modules	Lamination Module
HDP820 (Dual-Sided Card Printer/Encoders)	1	250	CR-80, CR-90 & CR-100	Optional	Optional
HDP820-LC (Dual-Sided Card Printer/Encoders)	1	250	CR-80, CR-90 & CR-100	Optional	Included
HDP825 (Dual-Sided Card Printer/Encoders)	2	200	CR-80	Optional	Optional
HDP825-LC (Dual-Sided Card Printer/Encoders)	2	200	CR-80	Optional	Included

Regulatory Compliances

Term	Description
CSA	The Printer manufacturer has been authorized by UL to represent the Card Printer as CSA Certified under CSA Standard 22.2. **File Number:** E145118
FCC	The Card Printer complies with the requirements in Part 15 of the FCC rules for a Class B digital device. (**Note:** These requirements are designed to provide reasonable protection against harmful interference in a residential installation.) If equipment operation 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.
ITS-EMC	The Card Printer has been tested and complies with EN55022 Class B: 1995 and EN82082-1: 1997 standards for EMI emissions. (**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.) **License Number:** J99032510
TÜV-GS	The Card Printer has been tested and complies with IEC950 and bears the TÜV-GS mark. **License Number:** S9971826
UL	The Card Printer is listed under UL 1950 INFORMATION TECHNOLOGY EQUIPMENT. **File Number:** E145118, Volume 1, Section 15

Agency Listings

Term	Description
Emissions Standards	CE, FCC, CRC c1374, BSMI, ITS (EN 55022 Class B:1995, FCC Class B, EN 82082-1:1997).
Safety Standards	UL 1950, CSA C2.2 No.950-95 and TüV-GS (EN 60950 A1-A4, A11).

Technical Specifications

Term	Description
Accepted Standard Card Sizes	**HDP820/820-LC:** • **CR-80:** 3.375 in. x 2.125 in. (85.6mm x 54mm) (corresponds to ID1) • **CR-90:** 3.63 in. x 2.37 in. (92mm x 60mm) • **CR-100:** 3.88 in. x 2.63 in. (98.5mm x 67mm); laminate with CR-90 or CR-100 size PolyGuard only if laminating with HDP800 Series-LC **HDP825/825-LC:** • **CR-80:** 3.375” L x 2.125” W/85.6mm L x 54mm W
Accepted Card Thickness	.030 in. (30 mil) to .070 in. (70 mil) (.762mm to 1.778mm). (30 mil maximum for CR-100 size cards) (.030" to .040"/.762mm to 1.02mm if laminating with HDP800 Series-LC; thicker cards are allowed to pass through the Lamination Module if you choose to print-only)
Accepted Electronic Card types	HID Proximity Cards, MIFARE Contactless Smart Cards and Contact Smart Cards
Accepted Card Compositions	ABS, PVC, PET and PETG
Colors	Up to 16.7 million colors and 256 shades per Pixel.
Card Capacity	**HDP820/HDP820-LC:** 250 cards (.030"/.762mm); auto or manual feed **HDP825/HDP825-LC:** 200 cards (.030"/.762mm) auto or manual feed
Dimensions	• **HDP820/825:** 15” H x 26.1” W x 14"D/381mm H x 663mm W x 356mmD • **HDP820-LC/825-LC:** 15” H x 34.75” W x 14"D/381mm H x 883mm W x 356mmD • **LC Module:** 14.2” H x 13” W x 10”D/362mm H x 330mm W x 254mmD

Technical Specifications (continued)

Term	Description
Display	User-friendly, SmartScreen LCD Control Panel; LED display on Card Lamination Module.
Encoding Options	• ISO Magnetic Stripe Encoding Module, dual high- and low-coercivity, Tracks 1, 2 and 3 • JIS II Magnetic Stripe Encoding Module • E-card Docking Station (required for all e-card options or 3rd party smart card encoding) • Contact Smart Card Encoder (ISO 7816), Parts 1-4; T=0 & T=1 • Contactless Smart Card Encoder (**MIFARE®**) • Prox Card Encoder (HID read-only) (**Note:** Corporate Express 1000 Cards can be used with special order Weigand/ASCII Converter)
Fargo Certified Supplies	Fargo Card Printer/Encoders require highly specialized media to function properly. To maximize printed card quality and durability, printhead life and printer/encoder reliability, use only Fargo Certified Supplies, Fargo warranties are void, where not prohibited by law, when non-Fargo Certified Supplies are used.
HDP Film Options	• Clear, 1,250 prints • Standard Holographic • Custom Holographic, special order
HDP Film Storage Temperature	77ºF (25ºC) or lower for no longer than 1.5 years.
Humidity	20% to 80% Non-Condensing.
Input Hopper Card Capacity	**HDP820/HDP820-LC:** 250 cards (.030"/.762mm) **HDP825/HDP825-LC:** 200 cards (.030"/.762mm)
Interface	• Centronics parallel, IEEE-1284 Compliant • Optional USB to Parallel Adaptor • Interfacing information for E-card Options

Continued on the next page

Technical Specifications (continued)

Term	Description
Maximum Accepted Card Width Range	(HDP825/825-LC only) 2.125 in. to 2.63 in. (54mm to 67mm).
Maximum Accepted Card Length Range	3.375 in. to 3.88 in. (85.6mm to 98.5mm).
Memory	8 MB RAM; expandable to 32 MB RAM.
Operating Temperature	65ºF to 80ºF (18ºC to 27ºC).
Options	The options are the 32MB RAM Upgrade Kit, Printer Cleaning Kit, External Print Server (Windows only; required for stand-alone networking of printer/encoders), Card Lamination Module and USB-to-Parallel Interface Cable (Windows 98/Me/2000/XP only).
Output Hopper Card Capacity	100 cards (.030"/.762mm); 250 cards with optional Card Output Stacker
Overlaminate Options (HDP800 Series-LC only)	All overlaminates are available in either clear, holographic globe design or custom holographic design. They can also be optimized for use with smart cards and Magnetic Stripes. PolyGuard available in CR-80, CR-90 and CR-100 patch sizes. Here are the options: • Thermal Transfer Overlaminate, .25 mil thick, 500 prints • PolyGuard Overlaminate, .6 mil thick, 250 prints • PolyGuard Overlaminate, 1.0 mil thick, 125 prints
Print Area	Over-the-edge on all accepted standard card sizes (YMCKH ribbon required for over-the-edge printing on CR-100 cards).
Print Method	HDP Dye-Sublimation/Resin Thermal Transfer
Printing Method	HDP™ Dye-Sublimation/Resin Thermal Transfer.
Printing Resolution	Up to 16.7 million colors and 256 shades per Pixel.

Continued on the next page

Technical Specifications (continued)

Term	Description
Print Ribbon Options	• Full color, YMC, 700 prints • Full color with resin black, YMCK, 250 or 500 prints • Full color with two resin black Panels, YMCKK, 400 prints • Full color with resin black and heat seal Panel for difficult to print surfaces, YMCKH, 400 prints; extra wide for over-the-edge printing on CR-100 cards All HDP ribbons utilize Fargo's exclusive RibbonTraq™ system for maximum print quality, performance, reliability and ease of use.
Print Speed-Batch Mode	• 35 seconds per card/112 cards per hour (YMC with transfer) • 38 seconds per card/94 cards per hour (YMCK with transfer) • 66 seconds per card/54 cards per hour (YMCKK with transfer) • 40 seconds per card/90 cards per hour (YMCK/Lamination)* • 72 seconds per card/50 cards per hour (YMCKK/Lamination)*
Resolution	300 dpi (11.8 dots/mm)
Software Drivers	Windows 95/ 98/ ME/ NT/ 2000/XP.
Supply Voltage	100 to 240 VAC, 3.75A.
Supply Frequency	50 Hz/60 Hz.
System Requirements	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 and ECP parallel port with DMA access.
Warranty	**Printer:** One year; optional Extended Warranty Program (U.S. only) **Printhead:** Lifetime; unlimited pass
Weight	**HDP820/825:** 70 lbs. (31.8kg). **HDP820-LC/825-LC:** 87 lbs./39.5kg **LC Module:** 21 lbs./9.5 kg

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. The Card Printer will print from any IBM-PC® or compatible running Windows® 98Se/Me, Windows NT 4.0, Windows 2000 or Windows XP Pro.

The following describes how each of these technologies works:

Function	Description
Dye-Sublimation	Dye-Sublimation is the print method the Card Printer uses to produce smooth, continuous-tone images that look photographic. (**Note:** This process uses a dye-based ribbon roll that is partitioned by a number of consecutive color Panels.) • **Process colors:** The Panels are grouped in a repeating Series of three process colors - yellow, magenta and cyan (YMC), along the entire length of the Print Ribbon. • **Panels:** The Printer always prints the yellow Panel first, followed by the magenta Panel and the cyan Panel. • **Printhead:** As the Print Ribbon passes beneath the Printhead, hundreds of thermal elements within the Printhead heat the dyes on the ribbon. (**Note:** When these dyes are heated, they vaporize and diffuse into the surface of the card. A separate pass is made for each of the three color Panels on the ribbon.) • **color Shades:** 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 absolutely no dot pattern.) • **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.

Continued on the next page

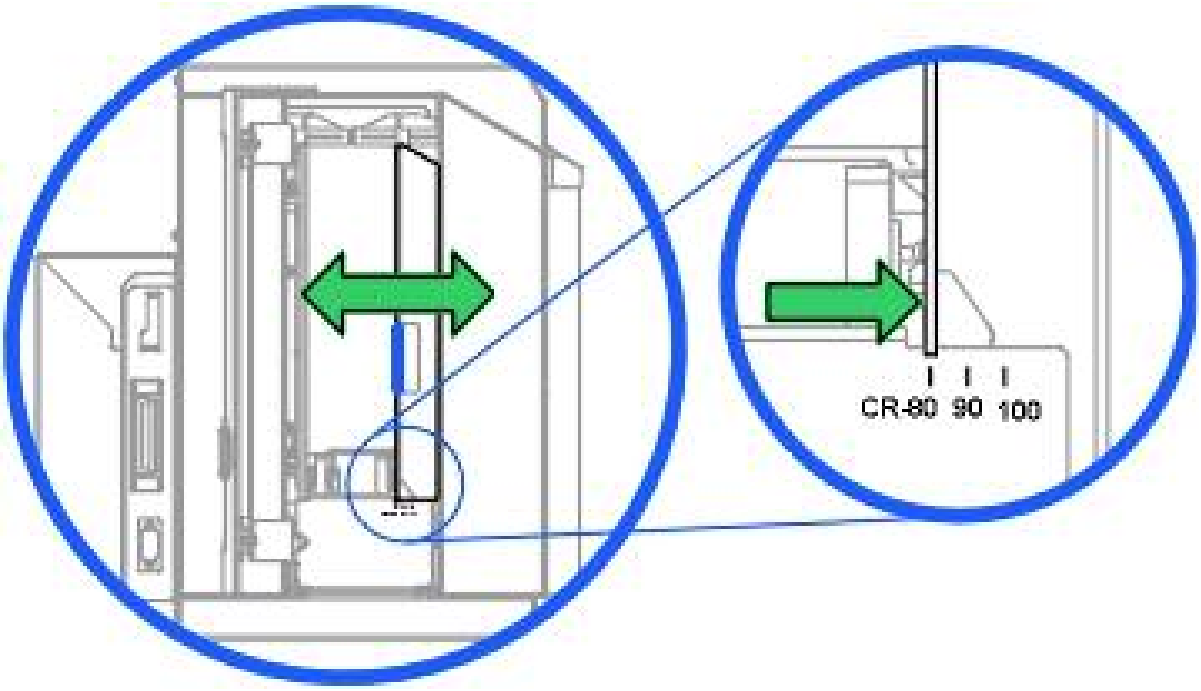
Printer Components: Access Card Slot to Parallel Interface Port

Component	Description
Resin Thermal Transfer	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. 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. The difference, however, is that solid dots of resin-based ink are transferred and fused to the surface of the card. (**Note:** This produces very durable, saturated printing.)
Access Card Slot	If using the Printer's optional SmartGuard Security Feature, this is the slot in which a SmartGuard Access Card is inserted.
Card Input Hopper	Load blank cards into this hopper.
Card Output Hopper	Stores printed cards.
Card Lamination Module	Works in conjunction with the Printer to apply a variety of different overlaminates to printed cards, providing increased card durability and security. The Module has its own LED indicator light and control buttons; so it can be operated separately from the Printer. (**Note:** When printing a batch of cards, the Printer can be encoding and printing one card while the Lamination Module laminates another card.) See Section 3: Card Lamination Module on page 136.

Continued on the next page

Printer Components: Access Card Slot to Parallel Interface Port (continued)

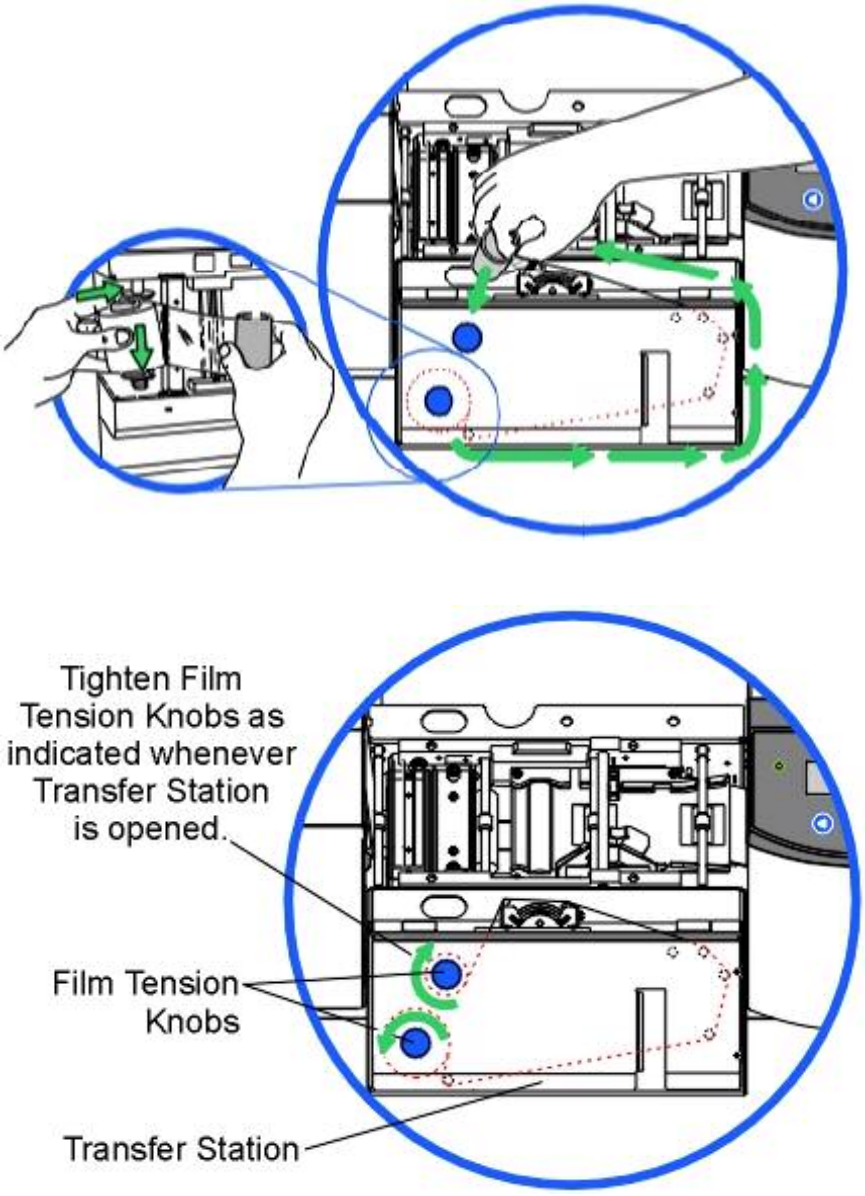
Component	Description
Card Output Guide	If the Printer is equipped with an optional Card Output Stacker, adjust the stacker's Card Output Guide to the proper card size prior to printing, as shown below. (**Note:** This will ensure consistent card ejecting and stacking.)



Printer Components: Access Card Slot to Parallel Interface Port (continued)

Component	Description
Film Tension Knobs	Allows you to manually tighten the HDP film after loading or whenever the Transfer Station is opened, as shown below.

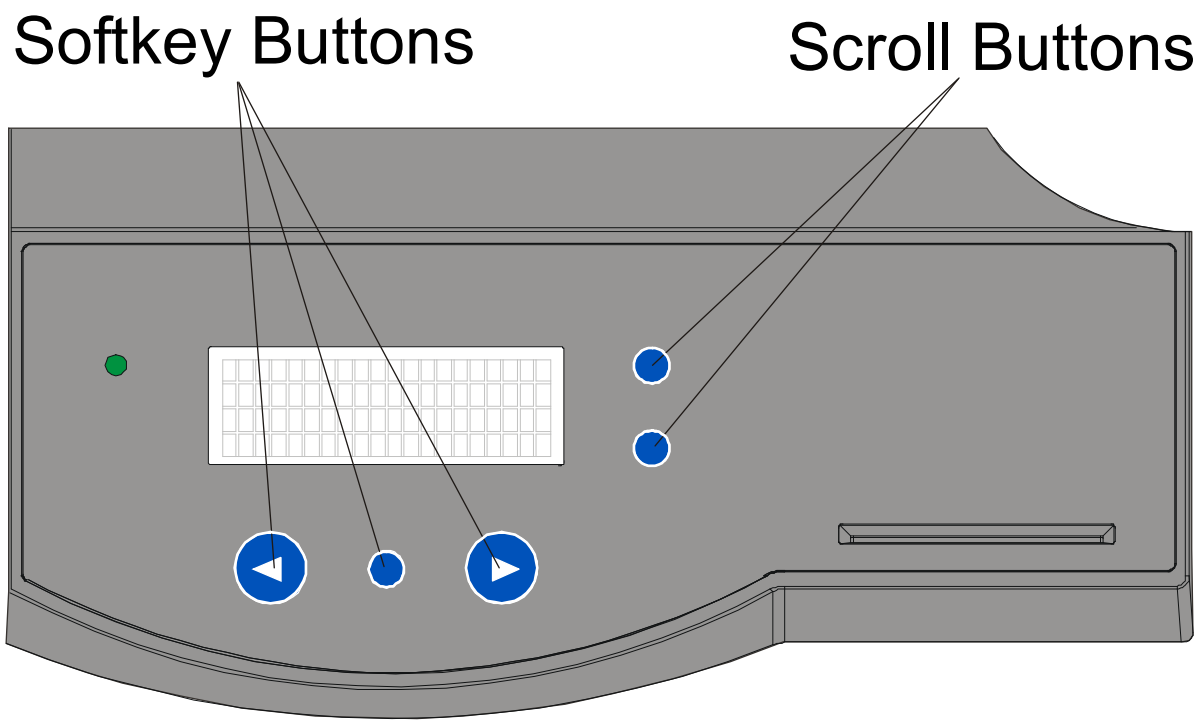
Continued on the next page



Printer Components: Access Card Slot to Parallel Interface Port (continued)

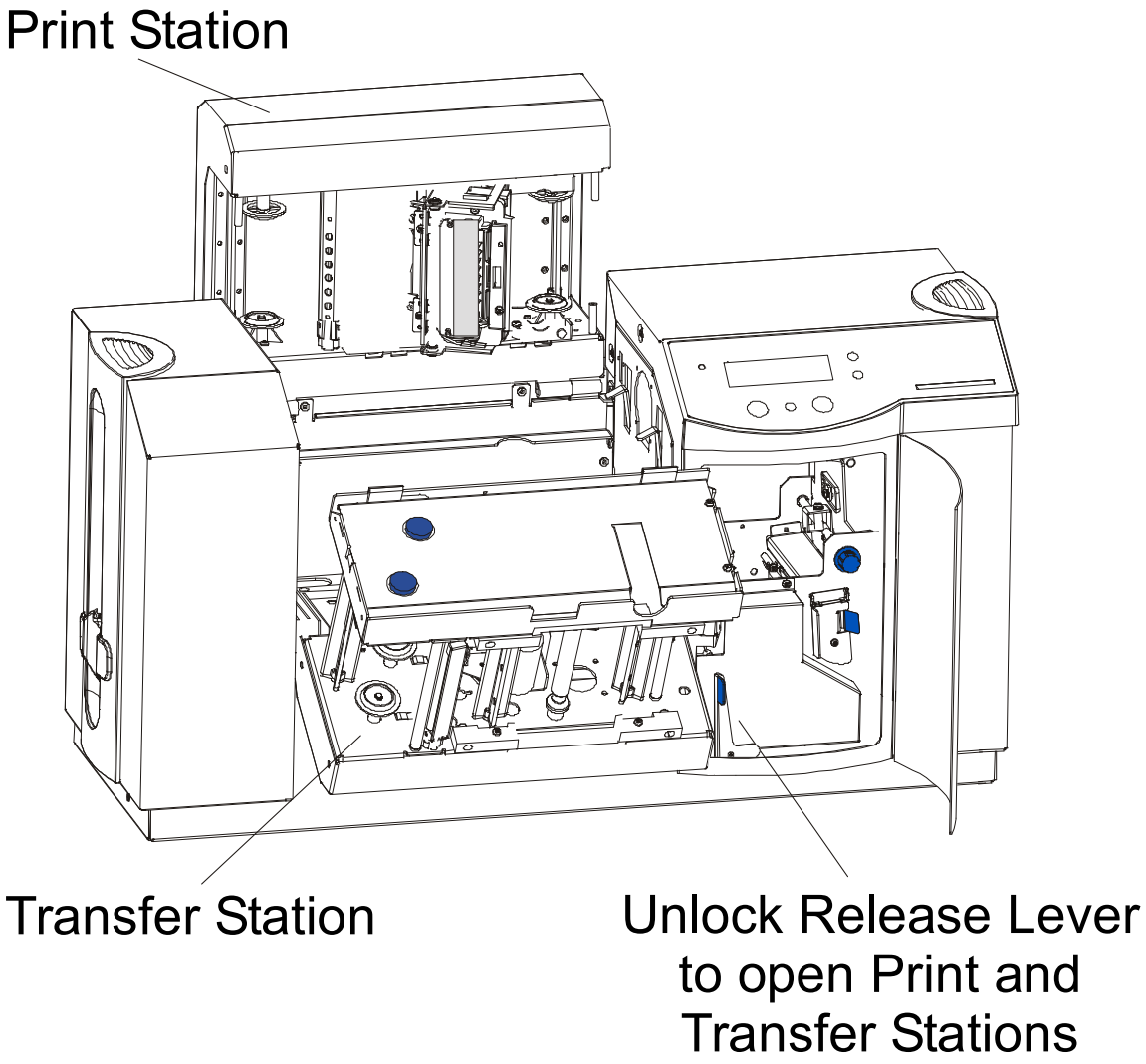
Component	Description
Front Access Door	Opens to allow access to the inside of the Printer.
LCD Display	Displays the current status of the Printer.
LED Light	Indicates the Printer ON, OFF, pause and error conditions.
Print Station	Prints images onto the HDP film.
Printhead	The component of the Print Station that actually does the printing. This component is fragile and must not be bumped or touched with anything other than a cleaning pen.
Softkey Buttons	Current function is displayed above the button and will change depending upon the Printer's mode of operation.

Continued on the next page



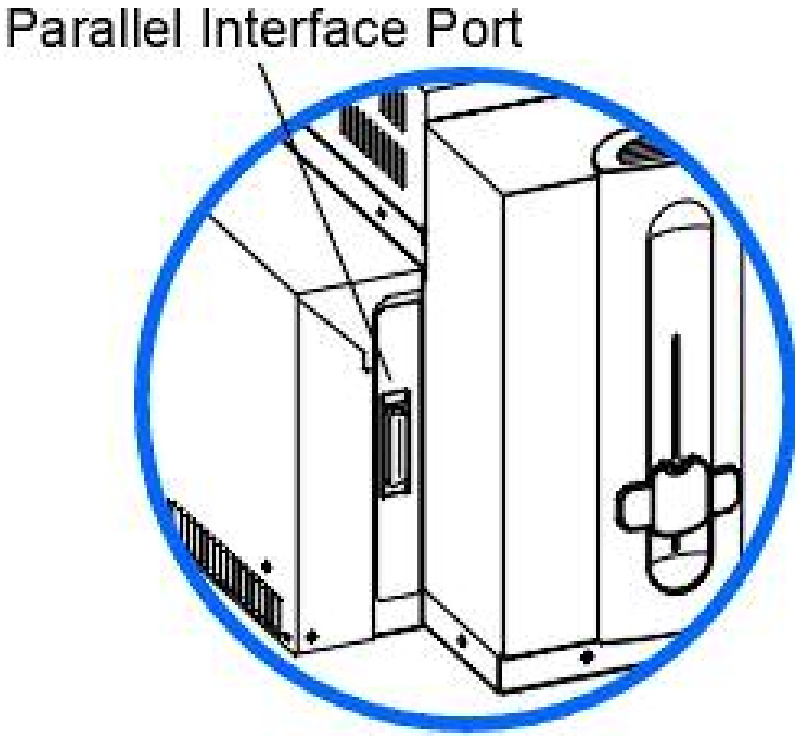
Printer Components: Access Card Slot to Parallel Interface Port (continued

Component	Description
Scroll Buttons	Used to scroll through menus and sub-menus and to adjust certain menu options.
Transfer Station	Transfers printed images and the HDP film to blank cards.



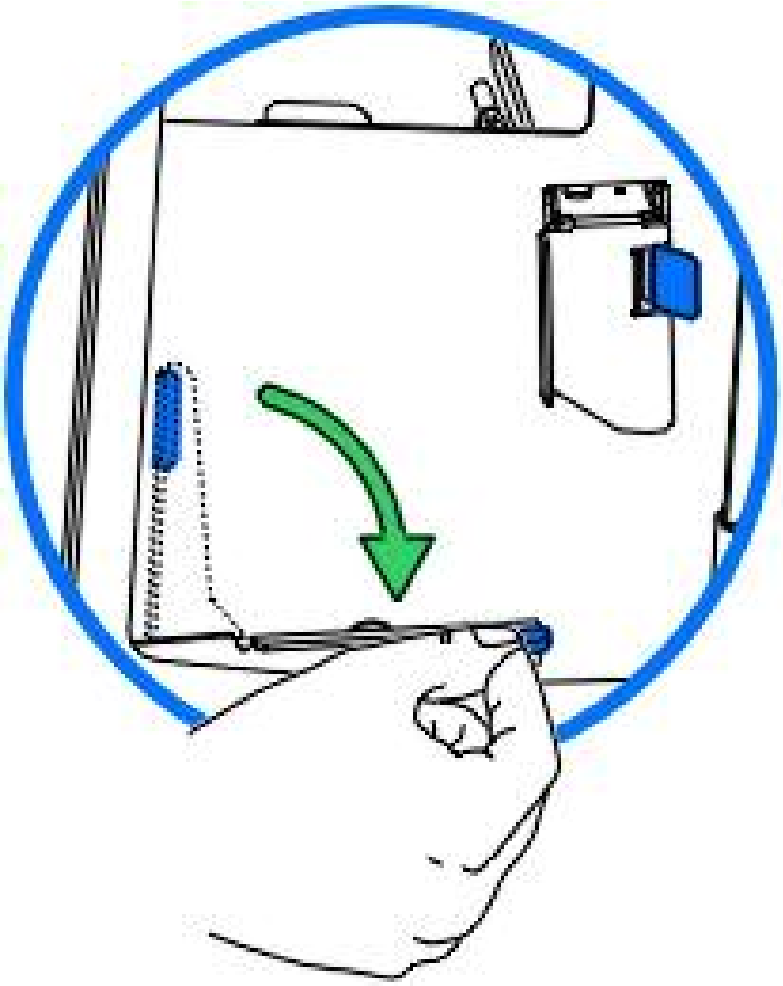
Printer Components: Access Card Slot to Parallel Interface Port (continued)

Component	Description
Card Thickness Adjustment Knob	Adjusts the Printer to feed varying card thicknesses.
Card Cleaning Assembly	Automatically cleans cards for higher print quality. (**Note:** Clean this assembly after every 250 cards or as needed.)
Power Switch	Turns the Printer power ON and OFF.
Power Port	Connect to the included power cord.
Parallel Interface Port	Connect to a Windows PC with a parallel cable. See below.



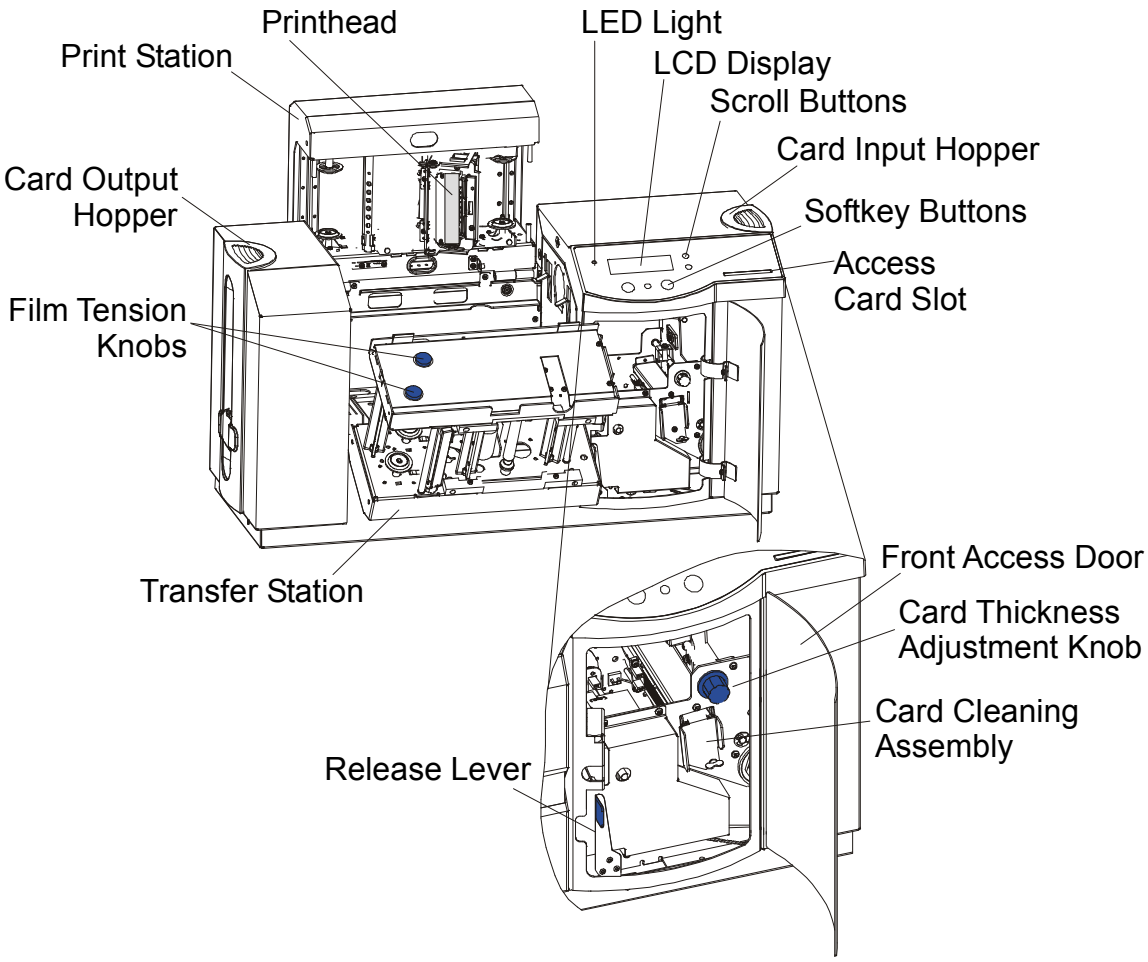
Printer Components: Access Card Slot to Parallel Interface Port (continued)

Component	Description
Release Lever	Locks and unlocks the Print and Transfer Stations so they can be opened and closed. (**Note:** This lever must be in its locked position in order for the Printer to begin printing.)



Printer Components: Access Card Slot to Parallel Interface Port (continued)

Refer to the previous table.



Printer Components: LCD and Softkey Control Pad

The Printer provides a four line, eighty (80) character LCD Displays that can communicate helpful information about the Printer's operation.

- The top three lines of the LCD Display will always be used to communicate print status, error messages and menu options.
- The bottom line of the LCD Display will always be used to communicate the current function of the Printer's softkey buttons.

This section describes how the LCD Display and Softkey Control Pad work together.

Component	Description
Softkey Buttons	The Printer has three **softkey buttons** that appear below the LCD Display. Their current function is indicated by the words appearing above them. This function will change according to the Printer's current mode of operation. • Press the corresponding softkey button under the choice you want to select. If no word appears above a particular button, this indicates it has no function in that particular mode of operation. The Printer also has another type of button on its control pad called scroll buttons. These buttons are located just to the right of the LCD Display. • Use these buttons to scroll through help text, to navigate through the Printer's menus and to adjust certain Printer settings.
LCD Display	The Printer's LCD Display will change according to the Printer's current mode of operation.
System Check Screens	When the Printer is first powered ON, the Printer's system check screens will briefly appear to display and test the amount of installed Printer memory, align the Print Ribbon and HDP film and lastly to display the READY screen and current Firmware version.

Continued on the next page

Printer Components: LCD and Softkey Control Pad (continued)

Component	Description
Ready/Printer Open Screens	Once the Printer has finished its system check and with the Print and Transfer Stations closed, the Printer will display READY to indicate that the Printer is ready for operation. (**Note:** The Printer will stay in this mode until it receives a print job or it is turned OFF.) • If the Release Lever is unlocked, the Release Lever Unlocked screen will appear to remind you this item is open. • If the Print and Transfer Stations are opened, the Printer Open screen will appear. Press either the **Forward** or **Back** buttons to move the Printer's card path rollers in the indicated direction. Use the scroll buttons to select between moving the Print-Side Card Rollers or the Input-Side Card Rollers. This is helpful when cleaning the Printer or if clearing jammed media. In any of these screens, the Printer will always display the **Menu** option above the center softkey button. Press this button to access the Printer's menu options. (**Note:** The **Menu** option is available only in the Ready/Printer Open screens.) • If the Printer is equipped with the Card Lamination Module and the Lamination Station is opened, no LCD message will appear. Instead, the Lamination Module's LED will flash. (**Note:** To move the Lamination Module's rollers, push the Module's **Cancel** or **Resume** buttons.) • If both the Print Station and Lamination Station are open, the LCD's **FORWARD** and **BACK** softkey buttons will move ALL rollers. In any of these screens, the Printer will always display the **MENU** option above the center softkey button. Press this button to access the Printer's menu options. (**Note:** The **MENU** option is available only in the READY/PRINTER OPEN screens.)

Continued on the next page

Printer Components: LCD and Softkey Control Pad (continued)

Component	Description
Print Status Screen	During operation, the LCD will indicate the current Print Status by showing you the area of the Printer that is active. It does this by displaying the following icons on the second line: • FDR Indicates the Feeder Station is feeding a blank card into the Printer. • ENC Indicates the Encode Station is encoding a card (appears only if you are using a Printer with an optional built-in Encoding Module). • PRT Indicates the Print Station is printing onto the HDP film. • TFR Indicates the Transfer Station is transferring an image to a blank card. • LAM indicates the Lamination Station is applying an overlaminate to a card (appears only if using a Printer equipped with the optional Card Lamination Module. See Section 3: Card Lamination Module on page 136. Since the Printer is capable of performing several of these functions simultaneously, one or all of these icons may appear at once, depending on if you are printing just one card or a batch of cards. The Print Status screen always displays **Cancel** in the lower left and **Pause** in the lower right.

Continued on the next page

Printer Components: LCD and Softkey Control Pad (continued)

Component	Description
The **Cancel** button	Use this button to cancel print jobs and reset the Printer for the next print job. • This **Cancel** function will cancel all print jobs in the Printer and will completely reset the Printer. In this case, be sure to cancel the print jobs from the PC before pressing **YES**. • Canceling all print jobs (in the middle of a batch print) will force the Printer to waste or delete any images that may already have printed on the HDP film.  **Caution:** To avoid this, select the **Print in Single Card Mode** option from the Printer Driver before sending the next print job. If a card is left within the Printer after a print job is canceled, it will automatically be ejected.
The **Pause** button	Use this button to pause the Printer at any time during operation. Note the Printer will always finish its current task before pausing. When the Printer is paused, the LED Light will flash and the **Pause** softkey button will change to **Resume**. Press **Resume** to continue Printer operation.
The LED Light	This light works in conjunction with the Printer's LCD Display to help communicate the Printer's current status. It is especially effective when you are too far away from the Printer to read the LCD Display. The following explains how to interpret both LED Lights on the exterior of the Printer. • **Off:** Indicates the Printer power is OFF. • **Solid GREEN:** Indicates the Printer is powered ON and ready for operation. • **Flashing GREEN:** Indicates a Printer ERROR or ATTENTION condition. Refer to the Printer's LCD Display for information.

Continued on the next page

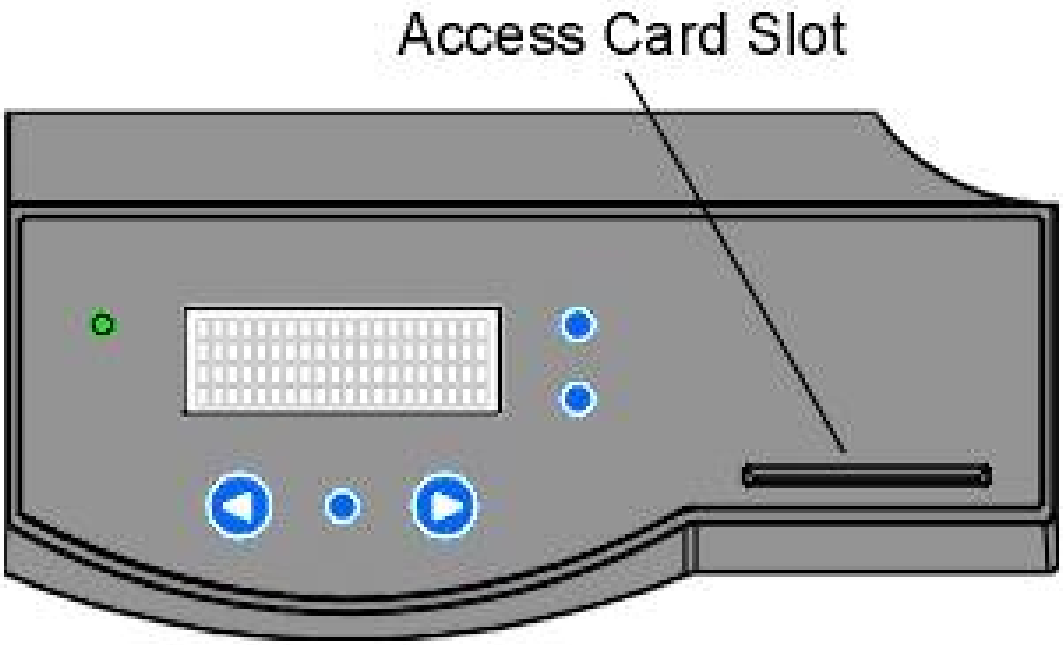
Printer Components: LCD and Softkey Control Pad (continued)

Component	Description
Error/Attention Screens	The Printer is capable of communicating two similar yet different types of message or prompt screens: The first is called an ERROR screen. (**Note:** This screen appears if an error occurs and will completely stop Printer operation. In this case, the LCD will display ERROR on the first line and a brief description of the error on the second line. If multiple errors occur at the same time, the first line will display ERROR 1 of 2 or whatever the total number of errors may be. To see the other error(s), use the scroll keys.) • Press the **Help** button if you would like a more detailed explanation of the error message. This will bring up the help screen explaining the nature of the error and how to correct it. If necessary, use the scroll buttons to scroll down the paragraph of help text. • Press **Quit** when you are done reading. Once the error is corrected, resume operation or reset the Printer according to how you were instructed in the help screen. The second type of prompt is called an Attention screen. (**Note:** This screen will not stop Printer operation and serves to communicate helpful reminders, such as if you are running low on print supplies and also communicates any other Printer conditions of which you should be aware. In this case, the LCD will display Attention on the first line and a brief description of the condition on the second line.) • If multiple messages need to be communicated at the same time, the first line will display Attention 1 of 2 or whatever the total number of messages may be. • Like error messages, help text explaining the particular condition can also be accessed by pressing the **Help** button.

Continued on the next page

Printer Components: LCD and Softkey Control Pad (continued)

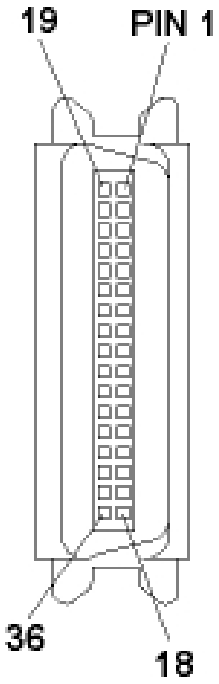
Component	Description
Access Card Slot	This is the slot in which a SmartGuard Access Card is inserted if you are using the Printer's SmartGuard Security Feature. (**Note:** This unique feature prevents the Printer from operating unless a custom access card is inserted.) • To use the SmartGuard feature, refer to the instructions included with it for information on how to enable and use this security feature. • To avoid using the SmartGuard feature, do not insert an access card to operate the Printer.



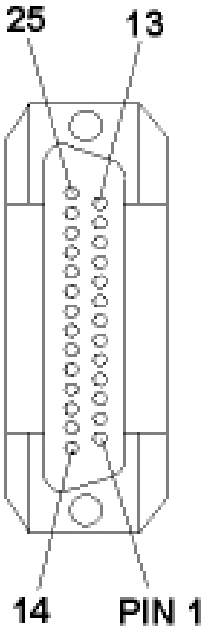
Printer Components: Centronics-Type Parallel Interface

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

- The Centronics-type parallel interface is a widely used Printer interface due to its standardization throughout the PC industry.
- The Printer's parallel interface connector is a standard 36-pin Amp type with two metal-wire retaining clips and is ECP (Extended Capabilities Port) compatible. (**Note:** It mates with a standard, bi-directional PC to Printer parallel cable. For best results, keep the interface cable to under 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 dye-sublimation-only and combination dye-sublimation/resin versions.

To make it easier to remember which Print Ribbons are which, a letter code has been developed to indicate the type of ribbon Panels found on each ribbon.

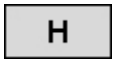
This letter code is as follows:

= Dye-Sublimation Yellow Panel

= Dye-Sublimation Magenta Panel

= Dye-Sublimation Cyan Panel

= Resin Black Panel



= Heat Seal Panel

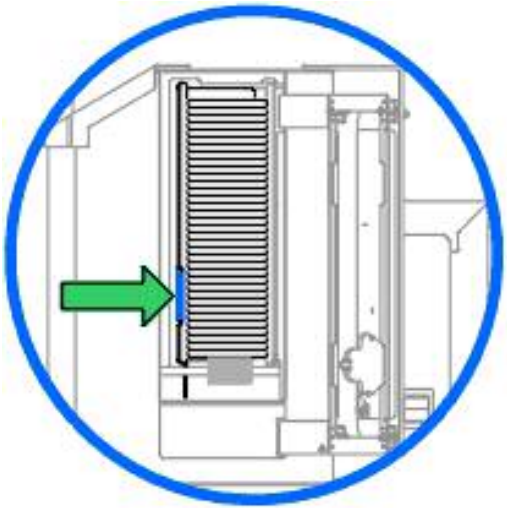
Printer Components: Blank Cards

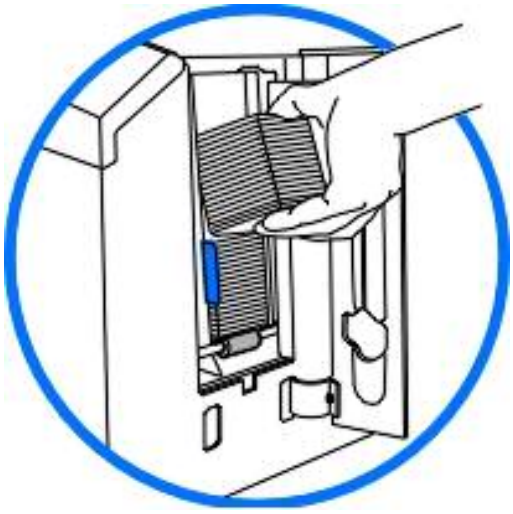
 **Caution:** Never run cards with a contaminated, dull or uneven surface through the Printer. Printing onto such cards will ultimately lead to poor print quality. Always store the card stock in its original packaging or in a clean, dust-free container. Do not print onto cards that have been dropped or soiled.

Type	Description
Card Size	The HDP825 and HDP825-LC Card Printers accept only standard CR-80 sized cards (3.375” L x 2.125” W/85.6mm L x 54mm W) with a thickness of 30 mil (.030"/.762mm) to 70 mil. The HDP820 Card Printers accept CR-80 to CR-100 sized cards.
Card Design	The Printer will print onto any card with a clean, level and polished PVC surface.
Card Surface	Suitable cards must have a polished PVC surface free of fingerprints, dust or any other types of embedded contaminants.
UltraCard stock	Due to the importance of using high-quality blank cards, a factory-approved card stock called UltraCard™ is available and recommended for best results. • UltraCard stock has a glossy PVC laminate on top and bottom and is optically inspected to provide the cleanest, most scratch and debris-reduced cards possible. • Two types of these cards are available: UltraCard and UltraCard III. **UltraCard** stock has a PVC core and offers medium card durability. **UltraCard III** stock has a 40% polyester core and offers high durability. Both types of UltraCards produce printed images with a glossy, photo-quality finish.

Printer Components: Card Input Hopper (HDP820/820-LC)

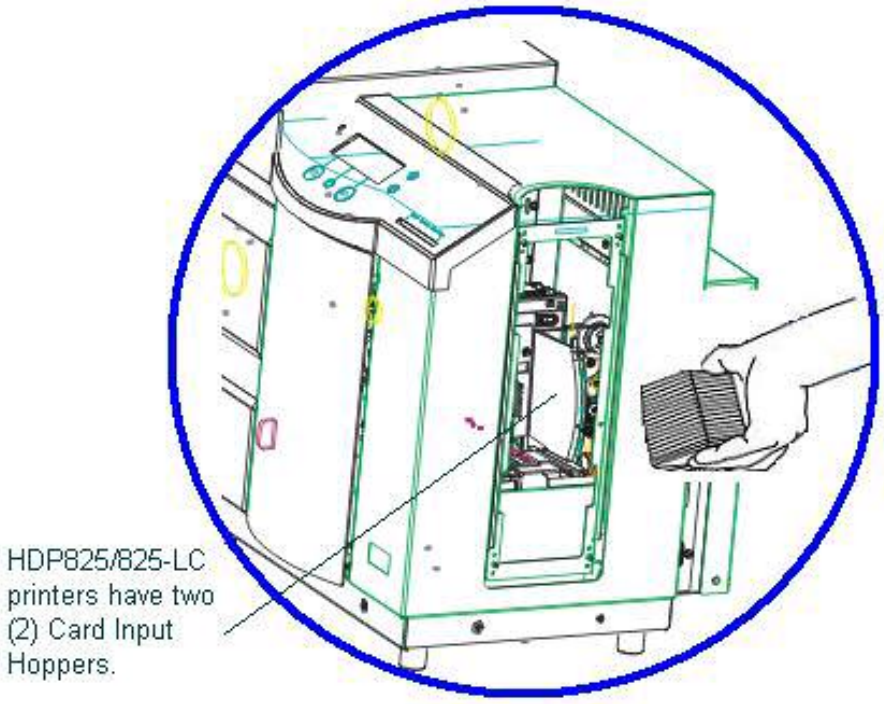
Type	Description
Card Input Hopper (HDP820/820-LC printer)	The Card Input Hopper is where cards are initially loaded for printing. The Printer's hopper provides a large door that opens up wide to make card loading simple and closes securely to help protect the card stock. (**Note:** The Printer will hold a maximum of 250 cards (**HDP820/820-LC**) in its one (1) Card Input Hopper, based on a standard 30 mil. card thickness.) See the Technical Specification. • Load 250 cards into the one (1) Card Input Hopper in the HDP820/820-LC printers.





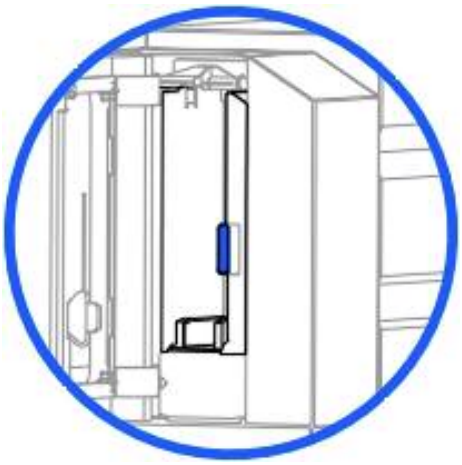
Printer Components: Card Input Hopper (HDP825/825-LC)

Type	Description
Card Input Hopper (HDP825/825-LC printers)	The Card Input Hopper is where cards are initially loaded for printing. Your printer's hopper provides a large door that opens widely to make card loading simple and closes securely to help protect your card stock. The printer will hold a maximum of 200 cards (HDP825/825-LC has two Card Input Hoppers; load 100 cards per Hopper) (based on a standard 30 mil card thickness). • Load 100 cards in each of the two (2) Card Input Hoppers in the HDP825/825-LC printers.



Printer Components: Card Output Hopper

Type	Description
Card Output Hopper	All standard HDP Card Printers provide a 100-card capacity Card Output Hopper (based on a standard 30 mil card thickness). (**Note:** This hopper stores the cards after they are printed.) • As an option, the Printer can also be configured with an automatic Card Output Stacker. If the Printer is configured with this option, the Card Output Stacker will stack printed cards in a first-in, first-out order. (**Note:** This option is useful if you need to keep the printed cards in a specific order, such as when printing cards with a serialized number.) • The Card Output Stacker also holds a maximum of 250, 30 mil cards. When the Card Output Stacker reaches this maximum capacity, the Printer will pause operation and the LCD will alert you by displaying OUTPUT HOPPER FULL. (**Note:** To make sure the cards remain neatly stacked in the Card Output Hopper, always keep the hopper door closed during printing.) Both the Card Input Hopper and the Card Output Stacker are initially configured to automatically feed and print standard CR-80 sized cards. (**Technician Note #1:** The HDP820 Printer is also capable of printing onto CR-90 and CR-100 sized cards.) (**Technician Note #2:** The Optional Output stacker is not compatible with the Card Lamination Module.)



Printer Components: Lamination Roller

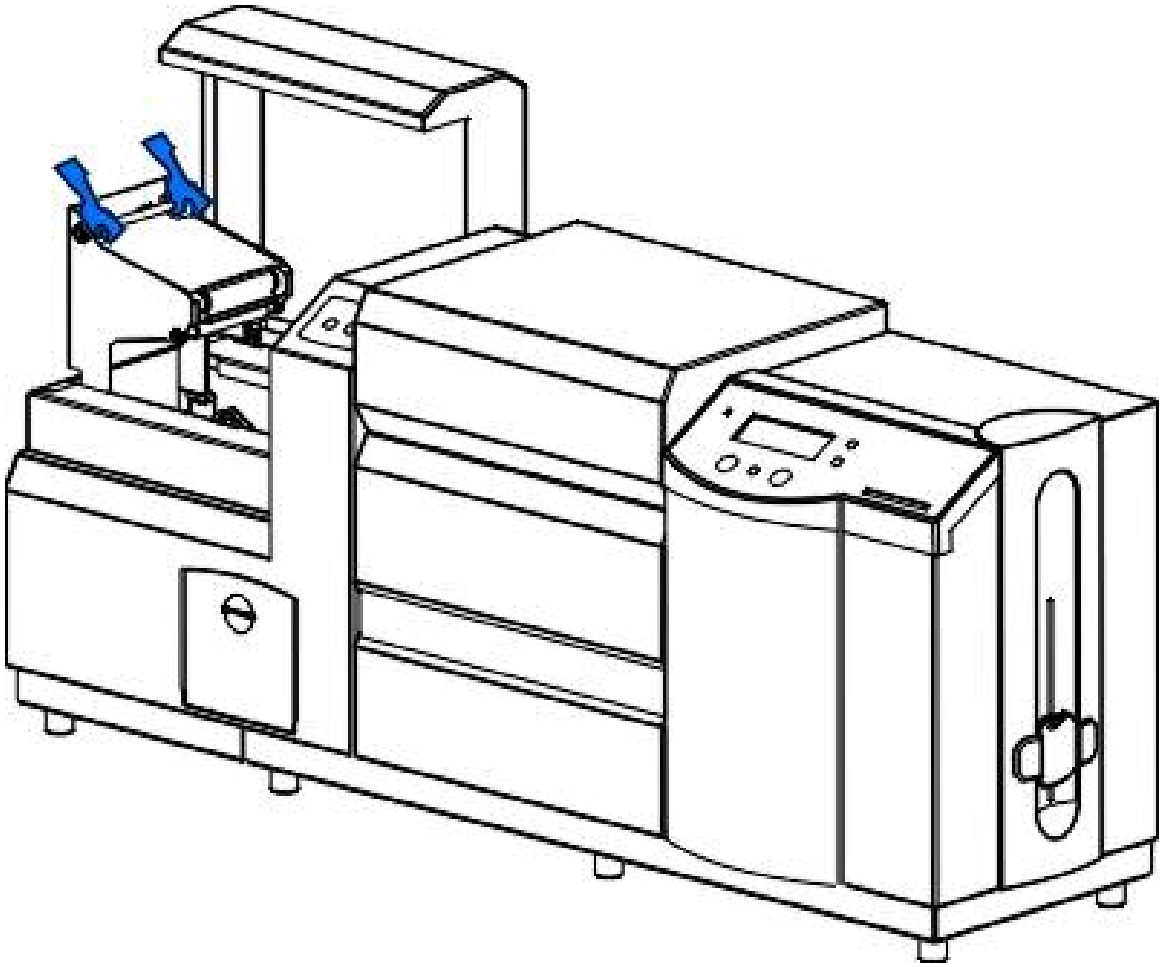
 **Danger:** The Printer's Lamination Roller can reach temperatures exceeding 350 degree F (175 C). Use extreme caution when operating the Laminator. Never touch the Lamination Roller unless the Printer Power has been turned off for at least 20 to 30 minutes.

Type	Description
Controls	Both the Printer itself and the Printer's software Driver control the built-in laminator.
Temperature Adjustment	To change the temperature of the laminator, adjust its temperature through the Lamination tab within the Printer Driver setup window. Once adjusted, the new temperature settings will be sent down with the next print job along with the rest of the Printer Driver information.
New Temperature Setting	Before printing begins, the laminator will automatically adjust itself to the new temperature setting. (**Note:** This new temperature setting will remain programmed within the Printer until it is once again changed within the Printer Driver or until the Printer is turned OFF.) Whenever the Printer is turned OFF, the laminator will automatically reset itself and return to its default temperature the next time the Printer is turned ON. • Flip the Power Switch to OFF. **OR** • Disconnect the Printer's power cord. (**Technician Note:** Both the Power Switch and the Printer's power cord serve to reset the laminator to its default temperature. The temperature setting within the Printer Driver, however, will stay the same until it is changed.)

Reviewing the Card Lamination Module

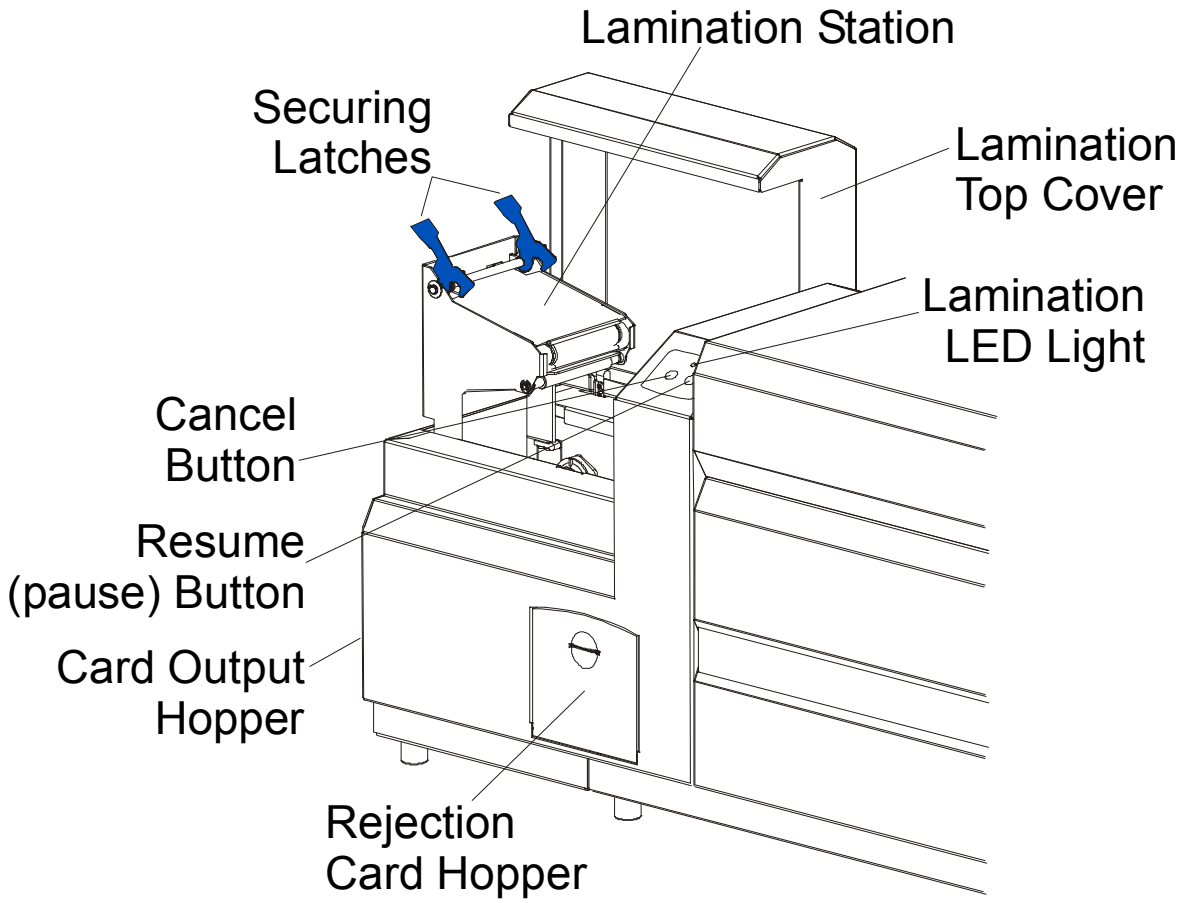
Danger: The Printer's Lamination Roller can reach temperatures exceeding 350° F (175° C). Use extreme caution when operating the Laminator. Never touch the Lamination Roller unless the Printer has been turned off for at least 20 to 30 minutes.

Select Printer models support the attachment of an optional Card Lamination Module. This Module can be ordered pre-installed on your Printer from the factory or can be ordered separately as a field upgradeable Module.



Reviewing the Lamination Top Cover and Station

Component	Description	Reference
Lamination Top Cover	Opens to allow access to the Lamination Station, overlaminate and card path.	See the Opening the Card Lamination Module procedure in Section 3, page 137.
Lamination Station	Transfers overlaminates onto cards via its heated Lamination roller. The Lamination Station must be closed in order for the Printer to begin laminating.	See the Loading the Overlaminate procedure in Section 3, page 140.



Reviewing the Securing Latches and Lamination LED Light

Component	Description	Reference
Securing Latches	Locks the Lamination Station securely in place when closed.	See the Using the Lamination tab (only with the Card Lamination Module) in Section 5, page 238.
Lamination LED Light	The Lamination LED Light works in conjunction with the Printer's LCD Display to help communicate the Printer's current status. The following explains how to interpret the LED Light. • **Off:** Indicates the Printer and Lamination Module power is OFF. • **Solid Green light:** Indicates the Card Lamination Module is ready for operation. • **Slow Flashing Green light:** Indicates the **Lamination Module's (pause)** button was pushed and that the Lamination Module is paused. This also occurs when the Lamination Station is open. • **Fast Flashing Green light:** Indicates the Lamination Module is in need of attention due to an error or an error condition. Refer to the Printer's LCD Display for information.	See the the Reviewing LCD Messages in Section 2, page 50.

Reviewing the Cancel button

Component	Description	Reference
Cancel Button	The **Cancel** button serves to cancel the current Lamination job and reset the Card Lamination Module for the next Lamination job. • If a card is left within the Lamination Module after a print job is canceled, it will automatically be ejected into the Rejection Card Hopper. (**Note:** With the Lamination Module's Transfer Station open, this button can also be used to manually rotate the feed rollers forward. This is helpful when cleaning the rollers or if clearing jammed media.) • If you are printing and laminating simultaneously and you would like to cancel both the print and Lamination jobs, press the Printer's **CANCEL** softkey button. (**Note:** This will cancel all jobs in the Printer. Any card currently laminating will finish and eject. The Lamination Module's **Cancel** button cancels only the Lamination job.)	See the Using the Lamination tab (only with the Card Lamination Module) in Section 5, page 238.

Continued on the next page

Reviewing the Resume (pause) button

Component	Description	Reference
Resume (pause) button	Press the **Resume** button to resume operation after an error condition is cleared. • If an error occurs, the Lamination Module's LED will flash and the Printer's LCD will report the specific error. • If this happens, correct the error and press the Lamination Module's **Resume** button to continue printing. Press this button to pause the Lamination Module during normal operation. (**Note:** The Lamination Module will always finish its current task before pausing.) • If this button is pressed while a card is being laminated, the Lamination Module will pause only after the current card has finished laminating and the Lamination Module has reached a safe stopping point.) • If the Printer is paused, the LED Light will flash slowly and will return to solid when operation is resumed. (**Note:** With the Lamination Station open, the **Pause** button can also be used to manually rotate the feed rollers backward. This is helpful when cleaning the rollers or when clearing jammed media.)	See the Using the Lamination tab (only with the Card Lamination Module) in Section 5, page 238.

Reviewing the Rejection Card Hopper and Card Output Hopper

Component	Description	Reference
Rejection Card Hopper	The Rejection Card Hopper helps to separate potentially bad cards from a stack of good cards, which eject into the Card Output Hopper. The Printer will automatically eject cards into this hopper to indicate: • There is a printing error, laminating error or encoding error. • There is a card is left in the Printer after a print job is canceled or the Printer restarted.	See the Using the Lamination tab (only with the Card Lamination Module) in Section 5, page 238.
Card Output Hopper	Stores up to 100 printed cards (30 mil cards). a. When the hopper has reached its maximum capacity of cards, note that the operation pauses and an Output Hopper Full message appears on the Printer's LCD Display. b. Remove the stack of cards from the hopper. c. Press the Lamination Module's **Resume** button to continue. (**Note:** If printing onto oversized cards, the Card Output Hopper Door should be placed in the open position in order for these larger cards to eject properly.)	See the Using the Lamination tab (only with the Card Lamination Module) in Section 5, page 238.

Reviewing the Module and Printer interaction

Term	Description	Reference
Module and Printer interaction	The Card Lamination Module works in conjunction with the Printer to apply a variety of different overlaminates to printed cards, providing increased card durability and security. The Lamination Module features its own LED indicator light and control buttons so it can conveniently be operated separately from the Printer. (**Note:** This means that when printing a batch of cards, for example, the Printer can be encoding and printing one card while the Lamination Module laminates another card for maximum efficiency.) In fact, you can even open the Lamination Module to replace the overlaminate while the Printer is printing or encoding and vice versa.	See the Using the Lamination tab (only with the Card Lamination Module) in Section 5, page 238.

Reviewing the Module and LCD Display interaction

Term	Description	Reference
Module and LCD Display interaction	For ease of operation, the Card Lamination Module works in tandem with the Printer's LCD Display to communicate status message such as when an error occurs or when it is time to replace the overlaminate material. If a Lamination error does occur, the Lamination Module's LED will flash and an attention level message will appear on the Printer's LCD Display. (**Note:** Since it is an ATTENTION level message, it will not interrupt printing.) a. Correct the error. b. Press OK to clear the LCD's ATTENTION message. c. Press the Lamination Module's **Resume** button to resume operation or its **Cancel** button to cancel the current Lamination job and accept the next. (**Note:** If canceled, the canceled card will eject into the Rejection Card Hopper.)	See the Using the Lamination tab (only with the Card Lamination Module) in Section 5, page 238.

Continued on the next page

Reviewing the Module's Programmed Default Temperature

Term	Description	Reference
Programmed Default Temperature	Upon initial power up, the Lamination Module is programmed to heat the Lamination roller up to its default temperature. • **Target Temperature:** If a print job is sent while the Lamination Module is heating up, the Printer's LCD Display will read Laminator Warming. This will alternate with **LAM Temp: [current] [target]** which shows the current temperature of the Lamination Roller and the target temperature it is trying to reach. (**Note:** This indicates that the Lamination roller is heating to its preset temperature.) • **Initial Heating Process:** The initial heating process will generally take about 3 to 4 minutes. (**Note:** The LCD Display will read **Laminator Warming** or **Laminator Cooling** whenever the Lamination Roller is heating up or cooling down to the prescribed temperature. When the Lamination Module has reached its target temperature, Lamination will begin.)	See the Using the Lamination tab (only with the Card Lamination Module) in Section 5, page 238.

Reviewing the Laminator Temperature Adjustment

Term	Description	Reference
Laminator Temperature Adjustment	To change the temperature of the Laminator, adjust its temperature through the Lamination tab within the Printer Driver setup window. • **New Temperature Settings:** Once adjusted, the new temperature settings will be sent down with the next print job along with the rest of the Printer Driver information. Before printing begins, the laminator will automatically adjust itself to the new temperature setting. (**Note:** This new temperature setting will remain programmed within the Printer until it is once again changed within the Printer Driver or until the Printer is turned OFF.) • **Automatic Reset:** Whenever the Printer is turned OFF, the laminator will automatically reset itself and return to its default temperature the next time the Printer is turned ON. (**Note:** Pressing the Lamination Module's or Printer's **Cancel** button or switching the Printer power OFF and ON both serve to reset the Laminator to its default temperature.) • **Consistent Temperature:** The temperature setting within the Printer Driver stays the same until it is changed.	See the Using the Lamination tab (only with the Card Lamination Module) in Section 5, page 238.

Reviewing the Overlaminates

IMPORTANT! Fargo Card Printers require highly specialized overlaminates to function properly. To maximize Printer life, reliability, printed card quality and durability, you must use only Fargo Certified Supplies. For this reason, the Fargo warranty is void, where not prohibited by law, if you use non-Fargo Certified Supplies. To order additional materials, please contact the authorized reseller.

Reviewing the Thermal Transfer Film and PolyGuard Overlaminates

Term	Description	Cross Reference
Thermal Transfer Film and PolyGuard Overlaminates	The Card Lamination Module will accept either a Thermal Transfer Film overlaminate or a Polyester Patch Overlaminate called PolyGuard™. • **Thermal Transfer Film:** The Thermal Transfer Film overlaminate is a relatively thin material which covers a card Edge-to-Edge and provides a medium level of card durability and security.) • **PolyGuard Overlaminate:** PolyGuard is a much thicker material which does not cover Edge-to-Edge, but provides an extremely high level of card durability and security. (**Note:** PolyGuard is available in either a 1.0 or .6 mil thickness and should always be used for those applications requiring the highest degree of card durability and security.)	See the Loading the Overlaminate procedure in Section 3, page 140.

Reviewing the CR-90 or CR-100 Patch Size

Term	Description	Cross Reference
CR-90 or CR-100	PolyGuard Overlaminate is available in a standard CR-80 patch size as well as a CR-90 and CR-100 patch size for laminating oversized CR-90 or CR-100 cards. (**Note:** Thermal Transfer Film overlaminate will accommodate CR-80 and CR-90 card sizes, but is not recommended for CR-100 cards.)	See the Loading the Overlaminate procedure in Section 3, page 140.

Reviewing the Overlaminate Design

Term	Description	Cross Reference
Design	Both PolyGuard and the Thermal Transfer Film overlaminates are available in either a clear or generic secure holographic-type design. (**Note:** Custom holographic-type overlaminates are also available with specific designs, patterns, logos and security features.) Please contact the authorized reseller for more information about custom Overlaminates..	See the Loading the Overlaminate procedure in Section 3, page 140.

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, Encoding Errors, Printing Process Errors, Transfer Process Errors and Diagnosing the Image Problems for the HDP 820 Card Printer.

IMPORTANT! Fargo Card Printers require highly specialized print ribbons to function properly. To maximize Printer life, reliability, printed card quality and durability, you must use only Fargo Certified Supplies. For this reason, your Fargo warranty is void, where not prohibited by law, if you use non-Fargo Certified Supplies. To order additional materials, please contact your authorized reseller.

LCD/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 LCD Messages

Message	Cause	Solution
Add Cards	Indicates there is not an adequate supply of cards in the Card Input Hopper.	Add cards to the input hopper and press Resume to continue printing.
Aligning Film	If this appears as a prompt, the HDP Film is self-aligning to the proper position for printing.	If this appears as an error, see the the Resolving the Film Sensor errors procedure in Section 2, page 93.
Aligning Ribbon	If this appears as a prompt, the print ribbon is self-aligning to the proper position for printing.	If this appears as an error, see the Resolving the Ribbon Alignment Error Message procedure in Section 2, page 85.
Card Jam	A card is jammed in the Transfer Station or card flipping area of the Printer.	See the Resolving the Card Jam Error Message procedure in Section 2, page 74.
Card Jam: Flipper	A card is jammed in the card flipping area of the Printer.	See the Resolving the jammed Cards on the Flipper Table procedure in Section 2, page 71.

Continued on the next page

Reviewing LCD Messages (continued)

Message	Cause	Solution
Card Jam: Mag	A card is jammed in the magnetic encoding area of the Printer.	See the Removing the Card jam in the Printer's Magnetic Encoding Area in Section 2, page 82.
Card Jam: Smart	A card is jammed in the smart card encoding area of the Printer.	See the Removing the Card jam in the Printer's Magnetic Encoding Area in Section 2, page 82.
Card Jam: Transfer	A card is jammed in the Transfer Station of the Printer.	See the Resolving the Card Jam Error Message procedure in Section 2, page 74.
Cards Low	Indicates there is not an adequate supply of cards in the Card Input Hopper.	Add cards to the input hopper and press Resume to continue printing.
Data Input	The print data sent to the Printer is corrupt or has been interrupted.	See Communication Errors in Section 2, page 60.
Data Timeout	The print data sent to the Printer is corrupt or has been interrupted.	See Communication Errors in Section 2, page 60.
Door/Lever Unlocked	You are trying to print with the Front Access Door open or the Release Lever in the unlocked position.	See the Resolving the Printer Open Error Message procedure in Section 2, page 90.
DRAM Memory Error	The Printer's memory Module is bad or not installed properly.	See the Resolving the DRAM Memory Error procedure in Section 8, page 439.
EE Checksum Error	Permanent circuit Board memory is bad.	See Resolving the EE Memory Error procedure in Section 8, page 438.

Continued on the next page

Reviewing LCD Messages (continued)

Message	Cause	Solution
EE Memory Error	Permanent circuit Board memory is bad.	See the Resolving the EE Checksum Error procedure in Section 7, page 438.
Ejecting Used Card	The system Firmware has detected a card already in the Printer and is ejecting it.	See Card Feeding Errors in Section 2, page 65.
Film (lower) Film (upper)	The HDP Film is not installed properly or has run out, jammed, broken or been damaged.	If this appears as an error, see the the Resolving the Film Sensor errors procedure in Section 2, page 93.
Film Out	The HDP Film has run out. Install new Film and press RESUME to continue.	If this appears as an error, see the the Resolving the Film Sensor errors procedure in Section 2, page 93.
Film Sensing	The Printer was unable to sense the HDP Film properly while printing.	If this appears as an error, see the the Resolving the Film Sensor errors procedure in Section 2, page 93.
Flipper Alignment	Unable to align flipper.	See the Resolving the Flipper Alignment Error Message procedure in Section 2, page 72.
FPGA	An unexpected hardware error has occurred.	See the Resolving the FPGA Error procedure in Section 8, page 439.
FPGA Load Fail	Indicates an unexpected hardware error has occurred.	See the Resolving the FPGA Error procedure in Section 8, page 439.

Continued on the next page

Reviewing LCD Messages (continued)

Message	Cause	Solution
Film Low	The HDP Film will soon run out. Install new film and press Resume to continue.	If this appears as an error, see the the Resolving the Film Sensor errors procedure in Section 2, page 93.
Flattener Time out	The card flattener was unable to reach optimum temperature.	See Resolving the Temperature Timeout Error Message procedure in Section 2, page 99.
FPGA Timeout	An unexpected hardware error has occurred.	See the Resolving the FPGA Error procedure in Section 8, page 439.
Head Lift	The Printer was unable to raise or lower the Printhead.	See the Resolving the Headlift Error Message in Section 2, page 88.
Head Resistance Error	Please enter a value for head resistance in the LCD Printer Setup menu.	See the Setting the Printhead Resistance procedure in Section 9, page 459.
Head Voltage Error	A hardware fault has prevented setting the correct Printhead voltage.	See the Resolving the Printhead Temp Error Message procedure in Section 2, page 90.
Heat Source Off	The Transfer Roller and Flattener were turned off to save energy while idle.	Press OK to turn the Heat source back on.
Initializing	Indicates the Printer is beginning its startup system check.	See Printer Components: LCD and Softkey Control Pad in Section 1, page 25.
Job Mismatch	The Feed Module is out of sequence with the Transfer section.	See Resolving a Job Mismatch error in Section 2, page 81.

Continued on the next page

Reviewing LCD Messages (continued)

Message	Cause	Solution
Mag Encode Failed	The magnetic stripe was not encoded properly.	See the Resolving the Failed Magnetic Encode Error Message procedure in Section 2, page 77.
Multiple Cards Fed	Two or more cards fed from the Card Hopper.	See the Resolving the Card Feeding problem in Section 2, page 65.
No ENC Response	There is no response from the Encoder control Module.	See the Resolving the No ENC Response Error Message procedure in Section 2, page 76.
No MAG Encoder	You are trying to send encoding data, but the Printer is not configured with this Encoder type.	See the Resolving the No Magnetic Encoder Error Message procedure in Section 2, page 76.
No Prox Encoder	You are trying to send encoding data, but the Printer is not configured with this Encoder type.	See the Resolving the No Prox Encoder Error Message procedure in Section 2, page 83.
No SMART Encoder	You are trying to send encoding data, but the Printer is not configured with this Encoder type.	See the Resolving the Failed Smart Encode Error Message procedure in Section 2, page 84.
Output Hopper Full	The output stacker is full of cards; empty the output stacker to avoid a jam.	Remove cards from the Output Hopper and press OK to continue.

Continued on the next page

Reviewing LCD Messages (continued)

Message	Cause	Solution
Pause...	Indicates the Printer is paused.	See Printer Components: LCD and Softkey Control Pad in Section 1, page 25.
Print Data	The print data sent to the Printer is corrupt or has been interrupted.	See Communication Errors in Section 2, page 60.
Print Ribbon	The print ribbon is not installed properly or has run out, jammed, broken or been damaged.	See the Resolving the Print Ribbon Error Message procedure in Section 2, page 86.
Print Ribbon Low	The print ribbon will soon run out.	Pause the current print job and replace the ribbon.
Print Ribbon Out	The print ribbon has run out.	See Resolving the Print Ribbon Out Error Message in Section 2, page 87.
Print Timeout	The Printer was unable to complete the print process.	See Communication Errors in Section 2, page 60.
Printer Open	You are trying to print with the Print and/or Transfer Station open.	See the Resolving the Printer Open Error Message procedure in Section 2, page 90.
Printhead Temp	The Printhead temperature regulator is not functioning properly.	See the Resolving the Printhead Temp Error Message procedure in Section 2, page 90.
Program Exception	The system Firmware has detected an error while attempting to process the current print job.	See Communication Errors in Section 2, page 60.

Continued on the next page

Reviewing LCD Messages (continued)

Message	Cause	Solution
Realigning Film	Indicates the Printer is aligning the HDP Film to the proper position for printing. Usually occurs after the Printer has finished a print job.	No action required.
Smart Encode Failed	The card's smart chip was not encoded properly.	See the Resolving the Failed Smart Encode Error Message procedure in Section 2, page 84.
Starting Self-test	Indicates the self-test print is preparing to print.	See the Printing a Test Image procedure in Section 2, page 132.
Temperature Timeout	The Transfer Roller is unable to reach the optimum temperature.	See Resolving the Temperature Timeout Error Message procedure in Section 2, page 99.
Testing Memory	Indicates the Printer's memory is being tested.	See Printer Components: LCD and Softkey Control Pad in Section 1, page 25.
Transfer Cooling	The Printer's Transfer Roller is cooling to the proper temperature.	See the Resolving the Transfer Cooling Error procedure in Section 2, page 97.
Transfer Lift	The Printer was unable to raise or lower the transfer roller.	See Resolving the Transfer Lift Error Message procedure in Section 2, page 99.
Transfer Timeout	The Printer was unable to complete image transfer.	See Transfer Process Errors in Section 2, page 91.

Continued on the next page

Reviewing LCD Messages (continued)

Message	Cause	Solution
Transfer Warming	The Transfer Roller is warming to the proper temperature.	No action required.
Unable To Feed Card	The Printer is unable to feed a card from the Card Hopper.	See the Resolving the Card Feeding problem procedure in Section 2, page 65.
Update Firmware Now	The system Firmware MUST be updated.	See the Updating the Printer's Firmware procedure in Section 8, page 471.
Unknown Ribbon Type	The Printer does not recognize the print ribbon that is installed in the Printer.	See the Resolving the Unknown Ribbon Type Error Message procedure in Section 2, page 88.
Upgrade Failed	The Printer was unable to complete a Firmware upgrade.	See the Updating the Printer's Firmware procedure in Section 10, page 471.
Wrong Print Ribbon	The print ribbon installed in the Printer does not match the ribbon type selected in the Printer Driver.	See the Replacing the Wrong Print Ribbon Error Message procedure in Section 2, page 87.

Reviewing SmartGuard™ Error and Status Messages

Message	Cause	Solution
Access Card Deleted	The data on the SmartGuard Access Card was successfully deleted.	Press the **OK** button to continue.
Access Card Ready	The SmartGuard data has successfully been encoded onto the SmartGuard Access Card.	Press the **OK** button to continue.
Delete Card Data?	To delete the SmartGuard Access Card data, press the **Yes** button.	To cancel the deletion process, press the **NO** button.
Insert Access Card	You are trying to print without the SmartGuard Access Card inserted.	Insert a valid SmartGuard Access Card.
Insert New Card	To duplicate the SmartGuard Access Card, remove the valid access card and insert a blank access card.	Press the **Copy** button to complete duplication or press **Cancel** to cancel duplication.
Invalid Access Card	The SmartGuard Access Card is invalid or is inserted backwards or up side down.	Insert a valid SmartGuard card or reinsert the card properly with the chip end down and facing you.
Invalid Password	You have entered an invalid SmartGuard password.	Re-enter the correct password using any of the standard keyBoard characters.
Reading Access Card	Indicates the Printer is reading the data from the SmartGuard Access Card.	Press the **OK** button to continue.

Continued on the next page

Reviewing SmartGuard™ Error and Status Messages (Cause and Solution Table) (cont.)

Message	Cause	Solution
SmartGuard Disabled	Indicates that the SmartGuard Security Feature has successfully been disabled. Indicates that you no longer need to insert an access card to operate the Printer.	Press the **OK** button to continue.
SmartGuard Enabled	Indicates that all data has successfully been encoded onto the SmartGuard Access Card. • The SmartGuard Security Feature now protects the Printer. • From now on, you must insert a valid access card to operate the Printer.	Press the **OK** button to continue.
Writing Access Card	Indicates the SmartGuard Access Card is being encoded.	Press the **OK** button to continue.

Communications Errors

Resolving the Communication Errors

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

Step	Procedure
1	Confirm that the system meets the minimum requirements, as shown here: • IBM-PC or compatible. • Windows 98Se/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. 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 inadequate data cable. 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 a double-shielded, 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	Determine if there is interference from an external device. a. Do not use an A/B switch box, dongle key or other peripheral in line with the parallel cable. b. If using a switch box, dongle key or other peripheral, remove it while testing communication between the computer and the Printer. c. If needed, replace the switch box, dongle key or other peripheral (once it is determined that the cause of the interference is not the switch box or peripheral). d. **Alternative:** Add a second parallel port into the computer (if a second Printer is required).
5	Determine the problem with printing from the application. a. Print a self-test from the Printer as described in the Printing a Test Image procedure in Section 8, page 132, to verify that the Printer (itself) is functioning properly. b. Print the Windows test page that is located in the **General** tab of the Driver. c. Use **WordPad** (a Windows 95/ 98/ ME/ NT/ 2000/XP word processing program in the Accessories Program Group). • Open the program and type: This is a Test. • Select **File > Page Setup** and click on the **Printer** button. • Ensure that the HDP800 Series Card Printer is selected and click **OK.** • Change all the margin settings to **zero (0)** and click **OK.** • Select **File > Print** on the Menu Bar.
6	Determine if the parallel port mode is set correctly or incorrectly a. Verify that the parallel port is set to Enhanced Communication Port (ECP) mode. (**Note:** Determine the port mode by checking the Device Manager tab in the system control panel.) b. Change the port mode to ECP in the computers BIOS if the port mode is not set correctly. (**Note:** Refer to the computer manual for instructions on how to change Parallel Port mode.)

Continued on the next page

Resolving the Communication Errors (continued)

Step	Procedure
7	Determine whether there is adequate or inadequate hard drive space.  **Caution:** A large volume of temporary files on the computer can cause communications errors. Access temporary files by following this process: • Search for all folders called TEMP. Once found, clear out the contents of the folders. • 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. • If using Windows 98Se/ME/2000/XP, run the system utility **Disk Defragmenter** found in the Accessories folder of the Start Menu.
8	Printing from a network. (**Note:** Some network configurations can cause communications issues with the Printer.) a. Disconnect the Printer from the network jack. b. Directly connect the Printer to a parallel port on a computer to determine if the network is the source of communications problems.

Firmware Errors

Resolving the Upgrade Failed error

Symptom: An Upgrade Failed error is displayed on the LCD during the upgrade process

Step	Procedure
1	Determine if there is interference from an external device. a. Do not use an A/B switch box, dongle key or other peripheral in line with the parallel cable. b. If using a switch box, dongle key or other peripheral, remove it while testing communication between the computer and the Printer. c. If needed, replace the switch box, dongle key or other peripheral (once it is determined that the cause of the interference is not the switch box or peripheral). d. **Alternative:** Add a second parallel port into the computer (if a second Printer is required).
2	Ensure that the proper procedure is being used. a. Be sure to follow the instructions on the attached HDP Firmware Upgrade Guide to insure that the correct data is being transferred to the Printer. b. It is possible that the Firmware Update Program is corrupt. In this case, the entire program should be uninstalled from the PC and the newest version of the program should be downloaded and installed from Fargo's web site: http://www.fargo.com

Continued on the next page

Resolving an Upgrade Failed error (continued)

Step	Procedure
3	Ensure that the proper procedure is being used. a. Be sure to follow the instructions on the attached HDP Firmware Upgrade Guide to insure that the correct data is being transferred to the Printer.
4	a. It is possible that the Firmware Update Program is corrupt. In this case, the entire program should be uninstalled from the PC and the newest version of the program should be downloaded and installed from Fargo's web site: http://www.fargo.com
5	Update from the 32-bit Print Spooler. a. Install and open the 32-bit Print Spooler program. b. Click on **File** in the menu and select the **Open** option. c. Then point this window to the directory of where the latest HDP Firmware is located on the PC. (This Firmware file will always have a *.s19 extension) d. Once the Firmware file is selected, the HDP needs to be restarted into SYSTEM UPGRADE mode: • At the PRINTER READY screen, select the "menu" option. • Then press the DOWN arrow, until the brackets are around the System Upgrade. • Then press the **Select** option. • When the screen Displays "Are you sure you want to continue?" Select YES. • When the Printer reboots, it will be in System Upgrade mode and will begin to count down from 60 seconds to 0 sec. • As the HDP LCD display begins its countdown, click the "Print" button on the 32-bit Print Spooler. e. The HDP Display should then run through its Update process. After it has completed, reboot the Printer. Turn the power off and then back on and then test.

Card Feeding Errors

Resolving the Card Feeding problem (HDP820/820-LC)

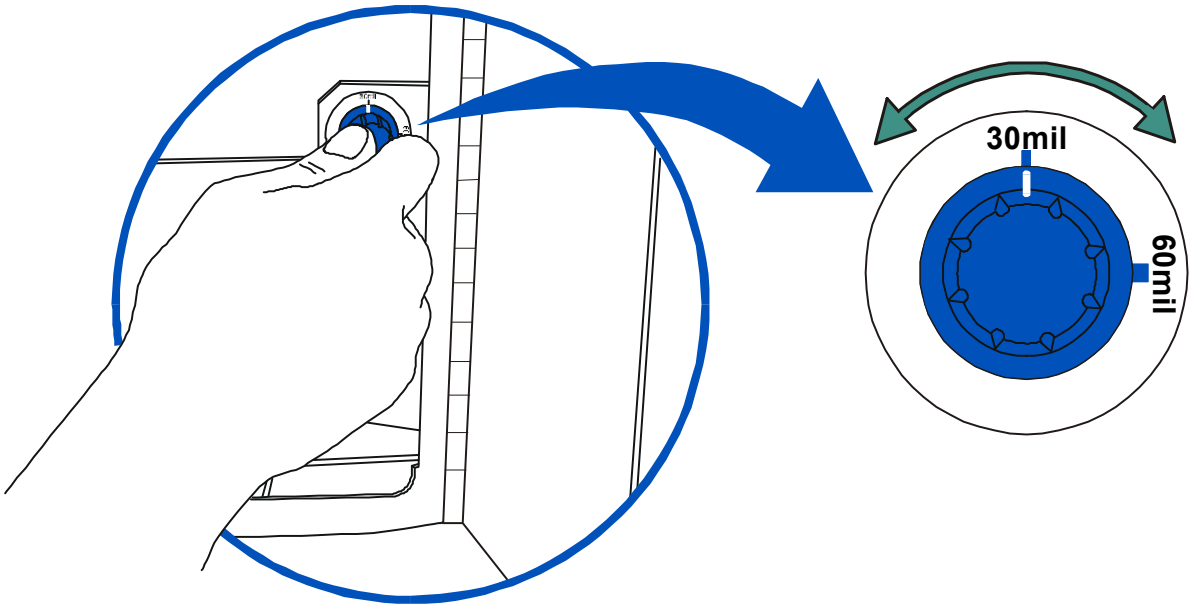
Symptom: Two or more cards are feeding at the same time or cards are not feeding properly

Step	Procedure
1	Remove the stack of cards. (**Note:** Ensure that the cards are not sticking together. Manually separate them if needed.)  **Caution:** Do not touch the surface of the card because dirt or oil from the hands can damage card quality.
2	Slide the left wall of the Input Hopper to the proper location. (**Note:** The wall of the card hopper should be within .030” (.75mm) of the stack of cards.)

Resolving a Card Feeding problem (HDP820/820-LC) (continued)

Step	Procedure
3	When loading cards, ensure that Card Thickness Adjustment Knob is properly set to ensure that the Printer feeds in only one card at a time. a. Open the Front Access Door b. Locate the Card Thickness Adjustment Knob. c. Adjust this knob to the setting that matches the card thickness. For fine scale changes, see the Fine Tuning the Card Separator Adjustment Assembly (D840995) procedure in Section 3, page 165.

Continued on the next page



Resolving a Card Feeding problem (HDP820/820-LC) (continued)

Step	Procedure
4	Clean the Cleaning Rollers. a. Open the Front Access Door of the Printer. b. Depress the Cleaning Roller Lock. c. Pull the Cleaning Roller Assembly out of the Printer. d. Clean the rollers with one of the adhesive-backed Cleaning Cards from the Printer Cleaning Kit. e. Remove the card's adhesive backing paper and slide the card between the rollers until all dust particles are removed. f. Flip over the Cleaning Card to clean both the top and bottom Cleaning Rollers. (**Note:** Alternatively, placing the assembly under lukewarm water may clean the Cleaning Roller.) g. Once cleaned, replace the Cleaning Roller Assembly and close the Front Access Door. (**Caution:** Ensure that the Cleaning Roller Assembly is completely dry before reinstalling into the Printer.)
5	Inspect the Card Feed Motors for proper operation. a. Leave the power **ON** and open the Print and Transfer Stations. b. Press the **FORWARD** button to advance the card or the **BACK** button to reverse the card. Use these buttons to move the card through the Printer.

Resolving the Card Feeding Errors (HDP825/825-LC)

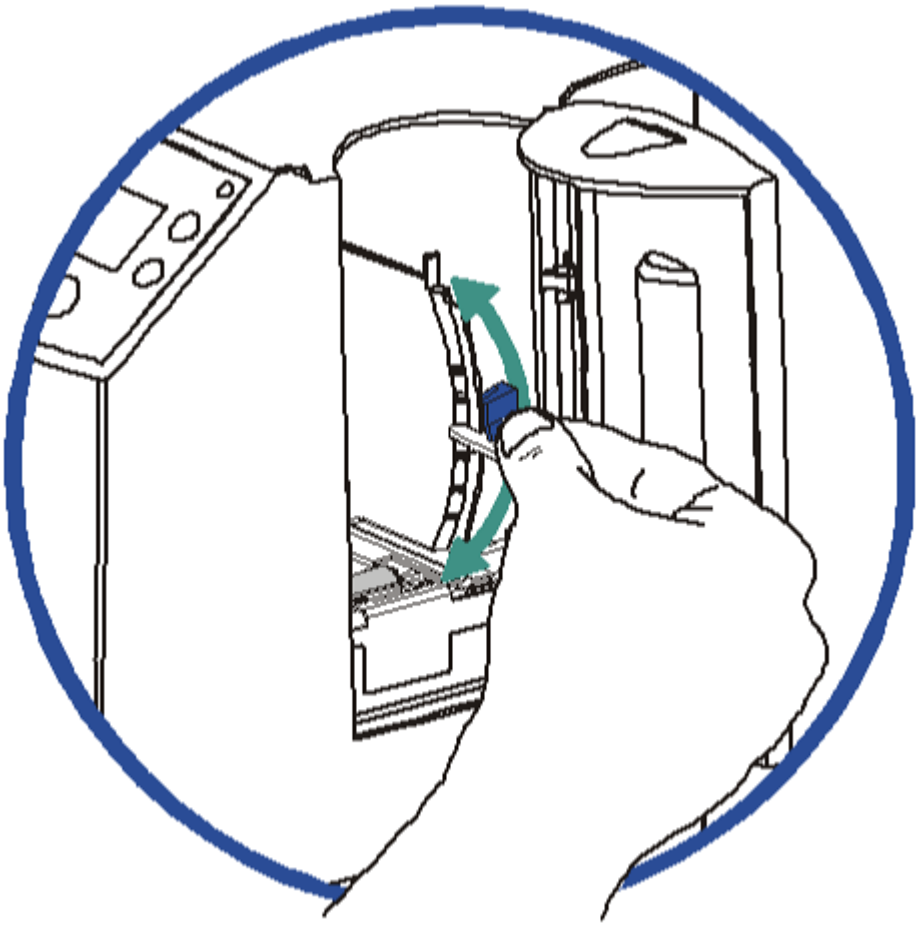
Symptom: Two or more cards feed at the same time or the cards will not feed at all.

Step	Procedure
1	Clean the Input Roller. a. Open the Printer's top covers and remove all cards and print Ribbons from the Printer. b. Leave the Printer power **ON** and the top covers open throughout this procedure. (**Note:** The card-cleaning cartridge can also remain within the Printer during this cleaning process.) c. Use a cleaning card from the Printer Cleaning Kit and remove its adhesive backing paper. d. Insert the cleaning card into the Exception Card Slot until the card stops. • Verify that the longest non-adhesive end of the cleaning card enters the Printer first and that the sticky side is facing DOWNWARD e. Press the FORWARD button several times to feed the Cleaning Card all the way through the Printer.

Continued on the next page

Resolving the Card Feeding Errors (HDP825/825-LC) (continued)

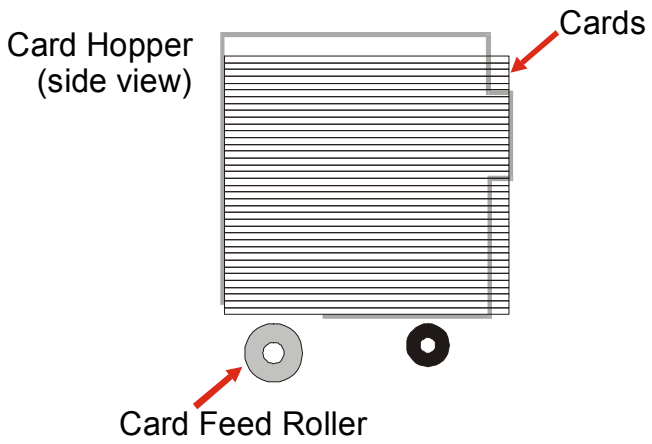
Step	Procedure
2	Ensure the Card Thickness Lever is set correctly, as shown below. a. Press the Card Thickness Lever Lock and then push the Card Thickness Lever up or down to the appropriate setting. b. with any of the **Card Thickness** settings, move the slide slightly toward a higher setting until the cards begin feeding (if the Printer seems unable to feed cards at the selected setting). c. Move the slide slightly toward a lower setting (if the Printer seems to double-feed cards). (**Note:** The card thickness slide is adjustable to accommodate card thickness variations that often occur even within standard card sizes.)



Resolving the Card Feeding Errors (HDP825/825-LC) (continued)

Step	Procedure
3	a. Check for static build up between cards. (**Note:** Occasionally, a static charge will build up between the surfaces of two or more cards causing them to stick together.) b. Reduce or eliminate this static charge by separating the cards manually before placing them in the input hopper.
4	Ensure that the cards are loaded properly in the Input Hopper. a. Load the cards into the Printer by inserting them straight into the hopper and setting them on the feed Roller.
5	Verify that the Hopper Lift (A000124) is operational. a. Reset Power to the Printer. b. Open the Card Hopper Door and watch to verify that the Hopper Cycles on startup. c. If the Hopper does not cycle on startup, remove the top cover and verify that the Hopper Lift Motor is plugged in properly. d. If the Hopper Lift Motor is plugged in, disconnect it and attach a 9-volt battery to the leads. e. If the Motor turns, replace the Main Board (as needed).

Insert cards neatly stacked.



Resolving the stalled Cards on or at the Feed Rollers

Step	Procedure
1	Clear the stalled card. a. Open the Print and Transfer Station. b. Use the arrows on the LCD panel to move the card forward or backward to free the card.
2	Inspect the Card Feed Roller Motors for proper operation. a. Leave the power **ON** and open the Print and Transfer Stations. b. Press the **FORWARD** button to advance the card or the **BACK** button to reverse the card. (**Note:** Use these buttons to move the card through the Printer.) c. Verify that there is nothing obstructing the card as it travels through the Printer.

Resolving the jammed Cards on the Flipper Table

Step	Procedure
1	Clear the jammed card. a. Open the Print and Transfer Station. b. Use the arrows on the LCD panel to move the card forward or backward to free the card.
2	Inspect the Card Feed Roller Motors for proper operation. a. Leave the power **ON** and open the Print and Transfer Stations. b. Press the **FORWARD** button to advance the card or the **BACK** button to reverse the card. (**Note:** Use these buttons to move the card through the Printer.)
3	Adjust the Flipper Offset. a. Select the Menu on the LCD Display. b. Select the Setup Printer. Scroll down to the Flipper Offset. c. Change the setting on small increments. (**Note:** A positive adjustment will lower the side of the Flipper Table closest to the Exit Hopper.) d. Press **Select** to save the new value.

Resolving the Flipper Alignment Error Message

Symptom: A Flipper Alignment error was displayed on the LCD.

Step	Procedure
1	Check for any obstruction. a. Open the Front Access Door. b. Ensure that there are no obstructions.
2	Verify Motor Operation. a. Test the Flipper Table Home Sensor (140407) by entering the FLIPPER OFFSET in the PRINTER SETUP menu on the LCD display. b. Without making any adjustment, press the **Select** button. (**Note:** This should cause the Flipper Table to attempt to home itself. If this is not the case, continue to Step 3, below.)
3	Test the Flipper Home Sensor (140407). a. Remove the screws from the rear cover. b. Tilt the back cover outwards from the Printer c. Using a Digital Voltmeter, connect the negative lead to its ground. d. Connect the positive lead to Pin 4 of J58 on the Lamination Board. • If **covered**, the voltage should read approximately .9 VDC. • If **uncovered**, the Sensor should read 3.0 to 3.3 VDC. e. If the voltages from the Flipper Home Sensor do not match, replace the Sensor.

Resolving the Cards being fed improperly off the Flipper Table

Symptom: Cards feed off the Flipper Table over the card feed path or under the card feed path.

Step	Procedure
1	Adjust the Flipper Offset. a. Select Menu on the LCD Display. b. Select Setup Printer and Flipper Offset. c. Change the setting in small increments. (**Note:** A positive adjustment will lower the side of the Flipper Table closest to the Exit Hopper.) d. Press **Select** to save the new value.
2	Ensure the roller tension Spring is tensioned properly. a. Manually insert a card under the Flipper Table Roller. b. There should be sufficient resistance from the tensioning Spring to hold the card in place when rotating the Flipper Table perpendicular to the card feed path. c. If the card falls off the Flipper Table when rotated, flip the Flipper Table over and inspect the U-Shaped Spring (810480) that holds the white tensioning roller in place. d. Either replace the U-shaped Spring or remove and attempt to bend the arms of the Spring down to provide more tension.
3	Verify Card Thickness a. Ensure that the card stock that is being used conforms to the accepted card thickness specification. (**Note:** Cards should be between 0.030” and 0.070” (.762mm to 1.778mm).)
4	Test the Flipper Home Sensor (140407). a. Remove the screws from the rear cover. b. Tilt the back cover outwards from the Printer c. Using a digital voltmeter, connect the negative lead to its ground. d. Connect the positive lead to Pin 4 of J58 on the Lamination Board. • If **covered**, the voltage should read approximately .9 VDC. • If **uncovered**, the Sensor should read 3.0 to 3.3 VDC..

Resolving the Card Jam Error Message

Symptom: If a card becomes jammed inside the Printer, the LCD Display will indicate approximately where it is jammed. At this point you can either try to correct the problem and continue printing with the same card or remove the card completely and start the print job over.

Step	Procedure
1	Leave the power ON and open the Print and Transfer Stations.
2	If you would like to try to correct the problem and continue printing with the same card, do so by pressing the **FORWARD** button to advance the card or the **BACK** button to reverse the card. Use these buttons to help free the card from its jam. Try not to move the card too far from where it was just before the jam occurred. Once the jam is cleared, replace media, close the Printer and press the **RESUME** button to resume printing.
3	If you would like to remove the jammed card completely, do so by using the **FORWARD** and **BACK** buttons to manually eject the card. Then, close the Printer. Press the **CANCEL** button to reset the Printer and cancel all jobs within the Printer's memory. In this case, you must also cancel and resend the print job from the computer. (**Note:** For best results, cancel the job from the computer first and then press the Printer's **CANCEL** button.)
4	If the Printer is equipped with the Card Lamination Module and a card is jammed in this area, open the Lamination Module's Top Cover and Lamination Station. Push the Module's **Cancel** or **Resume** buttons to move the Lamination Module's rollers and clear the card jam. • If you only slightly moved the card to clear the jam, close the Lamination Module and press its **Resume** button to try laminating again. • If you completely removed the card, press the Lamination Module's **Cancel** button to reset the Lamination Module for the next card. The Lamination Module buttons only affect the card in the Lamination section. The Printer's LCD softkey buttons affect any card in either the Print Station or the Lamination Station (e.g., the Lamination Module's **Cancel** button cancels only the Lamination job; the Printer's **CANCEL** softkey button cancels both the print and Lamination jobs). • If both the Print Station and Lamination Station are open, the LCD's **FORWARD** and **BACK** softkey buttons will move ALL rollers. • If only the Lamination Module is opened, only the Lamination Module buttons will move the Lamination rollers.

Resolving the Card Jam: Lam Error Message

Symptom: The Card Jam: Lam Error is displayed on the LCD.

Step	Procedure
1	Look for a jammed card in the Printer. 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 Lam Station of the Printer. d. If a card is jammed in the Printer, use the **Pause**/**Resume** button and the **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 Lam Station, continue to Step 2.
2	Test the TOF Sensor. (**Note:** If the Printer has begun laminating the card and then jams, it may be possible that the centering of the Lamination of the card has caused the jam.) a. Inspect the card and determine if the Lamination is centered on the card. b. If the Lamination is hanging off the leading or trailing edge of the card, see the Resolving the Card Lamination Placement errors procedure in Section 3, page 103.
3	Test the Card Detection Sensor (D840624). a. Remove the rear cover. b. Using a Digital voltmeter, connect the negative lead to ground. c. Connect the positive lead to Pin 1 of J6. • If **blocked**, the voltage should read 4.9 to 5.5 VDC. • If **unblocked**, the Sensor should read 0.15 to 0.18 VDC. d. If the voltages do not read correctly, replace the Sensor.

Magnetic Encoding Errors

Symptom: Either (a) no output is encoded, (b) it is unable to read encoded data on card or (c) an LCD error occurs.

Resolving the No ENC Response Error Message

Step	Procedure
1	Verify connections. a. Ensure that the two wires to J62 on Lamination Board are properly seated.
2	Verify if the Lamination Board is bad. a. Replace the Lamination Board. See the Replacing the Lamination Board (140402) procedure in Section 5, page 368. b. See if the error repeats itself.

Resolving the No Magnetic Encoder Error Message

Symptom: The Printer is receiving encoding data, but the Printer is not configured with this Encoder type.

Step	Procedure
1	Verify if the LCD Setting is incorrect. a. Press Select on the LCD. b. Select Setup Printer. Scroll down to Encoder Settings. c. Change the Mag Setting from None to Installed.
2	If the encoding data was sent in error, check the in-house, software user's manual for encoding instructions.

Resolving the Failed Magnetic Encode Error Message

Symptom: The magnetic stripe was not encoded properly.

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	Check the Magnetic Offset Setting. a. Press Menu on the LCD b. Select Setup Printer. Scroll down to Encoder Settings. c. Select Magnetic TOF d. Verify that the current value matches the default value listed on the back of the Printer.
3	Verify the Driver Settings. a. Ensure that the coercivity setting in the Driver corresponds to the type of cards that are being used. • High Coercivity = 2750 Oersted • Low Coercivity = 300 Oersted (**Note:** See the Using the Magnetic Encoding tab procedure in Section 3, page 218.)

Removing the Card jam in the Printer's Magnetic Encoding Area

Symptom: A card is jammed in the magnetic encoding area of the Printer.

Step	Procedure
1	Clear the jammed card. a. Open the Print and Transfer Station. b. Use the arrows on the LCD panel to move the card forward or backward to free the card.
2	Inspect the Card Feed Roller Motors for proper operation. a. Leave the power **ON** and open the Print and Transfer Stations. b. Press the **FORWARD** button to advance the card or the **BACK** button to reverse the card. Use these buttons to move the card through the Encoder.
3	Ensure that the cards are feeding into the Encoding Module properly. a. Reset power on the Printer to clear any error messages. b. Open the Front Access Door. c. Select the Menu from the LCD. d. Select the Print Test Image from the menu. e. Select the Magnetic Test from the menu. f. A card is then fed from the input hopper onto the Flipper Table and rotated into the Encoding Module. g. If the card appears to jam against the components of the encoding assembly, the Flipper Offset may need to be adjusted.
4	Adjust the Flipper Offset. a. Select the Menu on the LCD Display. b. Select the Setup Printer. Scroll down to the Flipper Offset. c. Change the setting on small increments. (**Note:** A positive adjustment will lower the side of the Flipper Table closest to the Exit Hopper.) d. Press **Select** to save the new value.

Resolving the Printer being unable to read Encoded Magnetic track 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). a. Open the program and type: "~1%JULIEANDERSON^1234567890?" b. Select **File > Page Setup** and click on the **Printer** button. c. Ensure that the HDP800 Series Card Printer is selected and click **OK.** d. Change all the margin settings to **zero (0)** and click **OK.** e. Select **File > Print** on the Menu Bar. f. Go to **File** on Menu Bar and select **Print**. (**Note:** The Printer should then feed a card into the Encoder and magnetically encode it.)
4	Ensure 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	Ensure that the magnetic stripe on the card is free of scratches or voids.

Resolving the magnetic stripe Data being printed on a Card problem

Step	Procedure
1	Confirm that the application is formatting the magnetic string correctly. See the Sending the Track Information procedure in Section 3, page 227.
2	Use **WordPad** (a Windows 95/ 98/ ME/ NT/ 2000/XP word processing program in the Accessories Program Group). a. Open the program and type: "~1%JULIEANDERSON^1234567890?" b. Select **File > Page Setup** and click on the **Printer** button. c. Ensure that the HDP800 Series Card Printer is selected and click **OK.** d. Change all the margin settings to **zero (0)** and click **OK.** e. Select **File > Print** on the Menu Bar. f. Go to **File** on Menu Bar and select **Print**. (**Note:** The Printer should then feed a card into the Encoder and magnetically encode it.)

E-card Encoding Errors

Resolving the Job Mismatch error

Symptom: The Job Mismatch error is displayed on the LCD while running a batch print job with E-card Encoding

Step	Procedure
1	Cancel the current print job.
2	Remove any cards that are still in the Printer.
3	Visually check the last card that was printed properly.
4	Restart the print job using the last successfully printed card as a reference for where to start.

Removing the Card jam in the Printer's Smart Card Encoding Area

Symptom: A card is jammed in the smart card encoding area of the Printer.

Step	Procedure
1	Clear the jammed card. a. Open the Print and Transfer Station. b. Use the arrows on the LCD panel to move the card forward or backward to free the card.
2	Inspect the Card Feed Roller Motors for proper operation. a. Leave the power **ON** and open the Print and Transfer Stations. b. Press the **FORWARD** button to advance the card or the **BACK** button to reverse the card. Use these buttons to move the card through the Encoder.
3	Ensure that the cards are feeding into the Encoding Module properly. a. Reset power on the Printer to clear any error messages. b. Open the Front Access Door. c. Select the Menu from the LCD. d. Select the Print Test Image from the menu. e. Select the Magnetic Test from the menu. f. A card is then fed from the input hopper onto the Flipper Table and rotated into the Encoding Module. g. If the card appears to jam against the components of the encoding assembly, the Flipper Offset may need to be adjusted.
4	Adjust the Flipper Offset. a. Select Menu on the LCD Display. b. Select Setup Printer and Flipper Offset. c. Change the setting on small increments. (**Note:** A negative adjustment will lower the side of the Flipper Table closest to the Exit Hopper. d. Press **Select** to save the new value.

Resolving the No Prox Encoder Error Message

Symptom: The Printer is receiving encoding data, but the Printer is not configured with this Encoder type.

Step	Procedure
1	Verify that the LCD Settings are correct. a. Press **Select** on the LCD. b. Select Setup Printer. Scroll down to Encoder Settings. c. Change the Prox Setting from None to Installed.
2	Check the appropriate software user's manual for specific encoding instructions if the encoding data was sent in error.

Resolving the No Smart Encoder Error Message

Symptom: The Printer is receiving encoding data, but the Printer is not configured with this Encoder type.

Step	Procedure
1	Verify that the LCD Setting are correct. a. Press **Select** on the LCD. b. Select Setup Printer. Scroll down to Encoder Settings. c. Change the Smart Setting from None to Installed.
2	Check the software user's manual for encoding instructions if the encoding data was sent in error.

Resolving the Failed Smart Encode Error Message

Symptom: The card's smart chip was not encoded properly.

Step	Procedure
1	Check to ensure that the cards are loaded with the smart chip facing up and are being fed into the Printer first.
2	Verify that the card is entering the E-card Docking station properly. a. Open the front access door. b. Send an encoding print job from the computer. c. Watch the card feed into the Printer and enter the E-card Docking Station. d. If the card is not feeding into the E-card Docking Station properly, the Flipper Offset may need to be adjusted. See Resolving the Cards being fed improperly off the Flipper Table in Section 2, page 73.

Printing Process Errors

Resolving the Ribbon Alignment Error Message

Step	Procedure
1	Check that the ribbon is loaded properly and completely seated on the Hubs.
2	Check that the marks on the ribbon are complete.
3	Check the motor operation to ensure that the ribbon moves in both **Forward** and **Backward** directions on **Power Up**.
4	Test the Ribbon Sensor. a. Remove the back cover and locate the connector labeled J65 on the main Board. b. Check the voltage for each of the five (5) Ribbon Sensors (140404 and 140407) at their connection to the main Board. c. Use a Multimeter to ground the negative lead to the chassis and put the positive lead on pins 3, 5, 7, 9 and 11 of J65 on the main Board. d. Place a RibbonTraq™ mark over the Ribbon Sensor. (**Note:** The voltage should be less than 1 VDC.) e. Remove the RibbonTraq mark from the Ribbon Sensor. (**Note:** The voltage should be greater than 3.5 VDC.) f. Replace the Sensor if the voltages are incorrect.
5	Install a new ribbon and press the **Resume** button to continue if the ribbon is out.
6	Clear the jam and reboot the Printer if the ribbon is jammed.
7	Repair the ribbon if the ribbon breaks. a. Repair the ribbon by taping it back on to the take-up core if the ribbon is broken. b. Press the **Resume** button to continue or **Cancel** to reset the Printer.
8	Ensure that the ribbon is not stuck to the film. a. Open the Print and Transfer Stations. b. Verify that the ribbon is not stuck to the transfer film. c. If the ribbon is stuck to the transfer film, increase the ribbon tension in increments of +5.

Resolving the Print Ribbon Jam

Symptom: If the print ribbon becomes stuck to the HDP film or jammed inside the Printer, the LCD Display will indicate that it is jammed. Refer to the following steps to clear the jam:

Step	Procedure
1	Leave the power ON and open the Print and/or Transfer Stations.
2	Remove the Take-Up core (the side with used ribbon on it) from in between the two black Drive Hubs.
3	Steadily pull the print ribbon free from where it is jammed. • If stuck to the HDP film, pull the ribbon off the film. Do not jerk the ribbon to free it, since this will increase the chance of breaking it. • If it does happen to break, simply tape the broken end of the Supply Roll directly onto the Take-up roll. Then, wind a few inches worth of ribbon from the supply roll onto the Take-up roll. Be sure the print ribbon is passing behind both the Supply and Take-up rolls.
4	Once the jam is cleared, replace media and close the Printer. At this point, the LCD Display will prompt you to either press the **RESUME** button or the **CANCEL** button. • Press the **RESUME** button to retry printing (depending on the error and how far the card or ribbon have been moved, this may not be possible). • Press the **CANCEL** to reboot the Printer and cancel all jobs within the Printer's memory. In this case, cancel and resend the print job from the computer. For best results, cancel the job from the computer first, then press the Printer's **CANCEL** button.

Resolving the Print Ribbon Error Message

Symptom: The Print Ribbon is not installed properly or has run out, jammed, broken or been damaged.

Step	Procedure
1	See the Resolving the Ribbon Alignment Error Message procedure in Section 2, page 10, for details.

Resolving the Print Ribbon Out Error Message

Symptom: The Print Ribbon has run out.

Step	Procedure
1	Install a new ribbon and press **Resume** to continue.

Resolving the Wrong Print Ribbon Error Message

Symptom: The Print Ribbon installed in the Printer does not match the ribbon type selected in the Printer Driver.

Step	Procedure
1	Verify that the ribbon is installed properly. a. Ensure that the ribbon is loaded with the supply side closest to the Card Output Hopper and rolling from the top of the spool to the top of the take up spool.
2	Verify if the Driver has been set correctly. a. Open the Printer control panel from the computer. • If using Windows 98Se/ME, right click on the HDP800 Series Card Printer Icon and select **Properties**. • If using Windows NT 4.0, right click on the HDP800 Series Card Printer and select **Document Defaults**. • If using Windows 2000/XP, right click on the HDP800 Series Card Printer and select **Printing Preferences**. b. Click on the Device Option tab. c. Verify that the Ribbon Type setting (that is listed) matches the ribbon (that is installed in the Printer). (**Note:** It may be possible to have Driver settings that are different from those found in the Printer control panel through the software.) d. Check any page setup functions in the software to verify that the Ribbon type matches.

Resolving the Unknown Ribbon Type Error Message

Symptom: The Printer is unable to determine the type of ribbon installed.

Step	Procedure
1	Verify the ribbon type. a. Ensure that the print ribbon installed in the Printer is an HDP ribbon. (**Note:** Although similar in appearance, a DTC ribbon installed in an HDP Printer will produce an Unknown Ribbon Type error message.)
2	Test the Ribbon Sensor. a. Remove the back cover and locate the connector labeled J65 on the main Board. b. Check the voltage for each of the five (5) Ribbon Sensors (140404 and 140407) at their connection to the main Board. c. Use a Multimeter to ground the negative lead to the chassis and put the positive lead on pins 3, 5, 7, 9 and 11 of J65 on the main Board. d. Place a RibbonTraq™ mark over the Ribbon Sensor. (**Note:** The voltage should be less than 1 VDC.) e. Remove the RibbonTraq mark from the Ribbon Sensor. (**Note:** The voltage should be greater than 3.5 VDC.) f. Replace the Sensor if the voltages are incorrect.

Resolving the Headlift Error Message

Symptom: The Printer was unable to raise or lower the printhead.

Step	Procedure
1	Press the **Resume** button to retry.
2	If the Headlift does not rotate, check the Headlift Motor to ensure that it is running.
3	If the Headlift Motor is not running, replace the Headlift Motor as described in the Replacing the Headlift Motor Assembly (D840980) procedure in Section 5, page 292.
4	If the head cycles but does not stop at the position every time, check the Headlift Sensor as described in Sensor Testing in Section 7, page 440.
5	If the Headlift Sensor is failing, replace it. See the Replacing the Headlift Sensor Assembly procedure (D804983) in Section 5, page 294.

Resolving the Printer pausing between Panels problem

Symptom: The Printhead Fan is not operating properly.

Step	Procedure
1	Confirm that the fan operates correctly. a. Upon power up, the fan should run momentarily and shut off. b. Verify that the fan is plugged into the Main Print Board properly on J67.
2	Check the Printhead fans for pinched wires. a. Inspect the wires that are routed under the top cover and through to the back of the Board to ensure that they are not pinched.
3.	Verify if the thermal regulator on the Printhead has failed. a. Remove the Printhead and reseat cable connections. b. If problem persists, replace with a new Printhead, as described in the Replacing the Printhead (D840854) procedure in Section 5, page 281.
4	Ensure that the Printer has received data (at the speed that it requires). See Communication Errors in Section 2, page 60.

Resolving the Printhead Temp Error Message

Symptom: The Printhead temperature regulator is not functioning properly.

Step	Procedure
1	Reboot the Printer. • If the problem persists, remove the Printhead and ensure that the Printhead Cables are seated properly. • Remove the back cover (as needed) to verify the Printhead Cable connection to the Main Print Board.
2	Replace the Printhead if after checking the Printhead Cable connection at both the Printhead and the Main Print Board (the error is still displayed on startup). See the Replacing the Printhead (D840854) procedure in Section 5, page 281.
3	Confirm that the cooling fan above the Printhead is operating properly. (**Note:** Upon power up, the fan should run momentarily and shut off.)
4	Replace the Main Print Board if problem still remains. See Replacing the Main Print Board (A000271) procedure in Section 5, page 367 for instructions.

Resolving the Printer Open Error Message

Symptom: The Printer is operating with the Print and/or Transfer Station open.

Step	Procedure
1	Ensure that both the Print and Transfer Stations are completely closed and that the release lever is secured.
2	If the Print and Transfer Stations are completely closed, check the Sensor (140107) as described in Sensor Testing in Section 7, page 440.

Transfer Process Errors

Resolving the Upper and Lower Film errors

Symptom: Lower or Upper Film Sensor may have failed.

Step	Procedure
1	Verify if the Lower Film Sensor (840199) has failed. a. Check the voltage for the Film Sensor where it connects to the Lamination Board. b. Place a Film mark over the Film Sensor. (**Note:** The voltage should be less than 1 VDC.) c. Remove the Film mark from the Film Sensor. (**Note:** The voltage should be greater than 3.4 VDC.) d. Replace the Sensor if the voltages are incorrect.
2	Verify if the Upper Film Sensor (D841023) is out of calibration. See the Reviewing the Transfer Station Components photograph to see the location of the Upper Film Sensor on page 265. a. Position the Transfer Film so that the clear portion is between the slotted optical Sensor. b. Turn the potentiometer on the Sensor Board with a small slotted screwdriver until the LED on the Board turns **ON**. c. Back the potentiometer off until the LED just turns **OFF**.
3	Verify if a wire has broken off the Ribbon Drive Motor D840980. a. Verify that both motors are connected to J66 on the Lamination Board. b. Disconnect the motors. (**Note:** 9-VDC battery connected to the motor leads should make it turn.) c. If the motors do turn, verify the wire connections at the motor and replace or solder those connections as needed.
4	Verify if the Print or Lamination Boards has failed. a. Replace the Print Board. See Replacing the Main Print Board (A000271) procedure in Section 5, page 367 for instructions. b. Replace the Lamination Board. See the Replacing the Lamination Board (140402) procedure in Section 5, page 368.

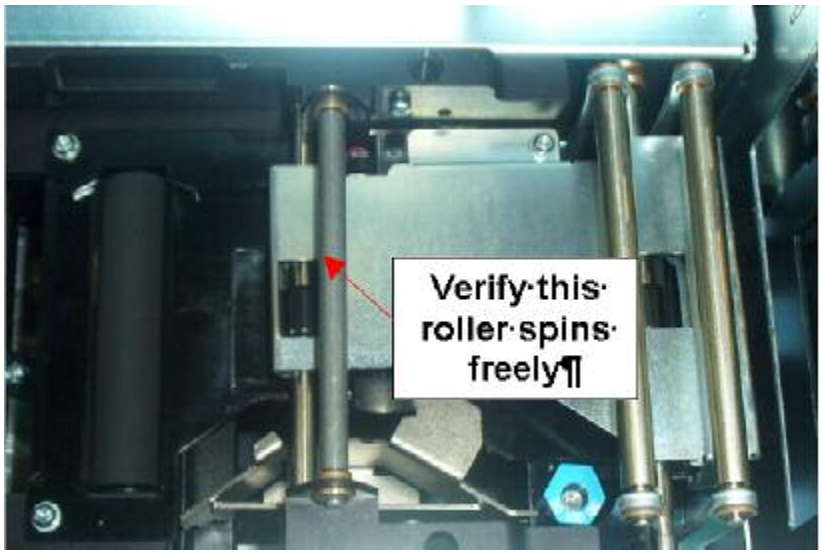
Continued on the next page

Resolving the Upper and Lower Film errors (continued)

Step	Procedure
5	Verify Film placement on the core. a. Remove the transfer film from the Printer. b. Ensure that the film is straight on the core. c. If the film is not between 5 and 15mm from the ribbon drive side of the transfer station, replace the film with a new roll using the Ribbon Telescopic process.
6	Ensure that the ribbon is not stuck to the film. a. Open the top cover. b. Verify that the ribbon is not stuck to the transfer film. c. If the ribbon is stuck to the transfer film, increase the ribbon tension in increments of +5.

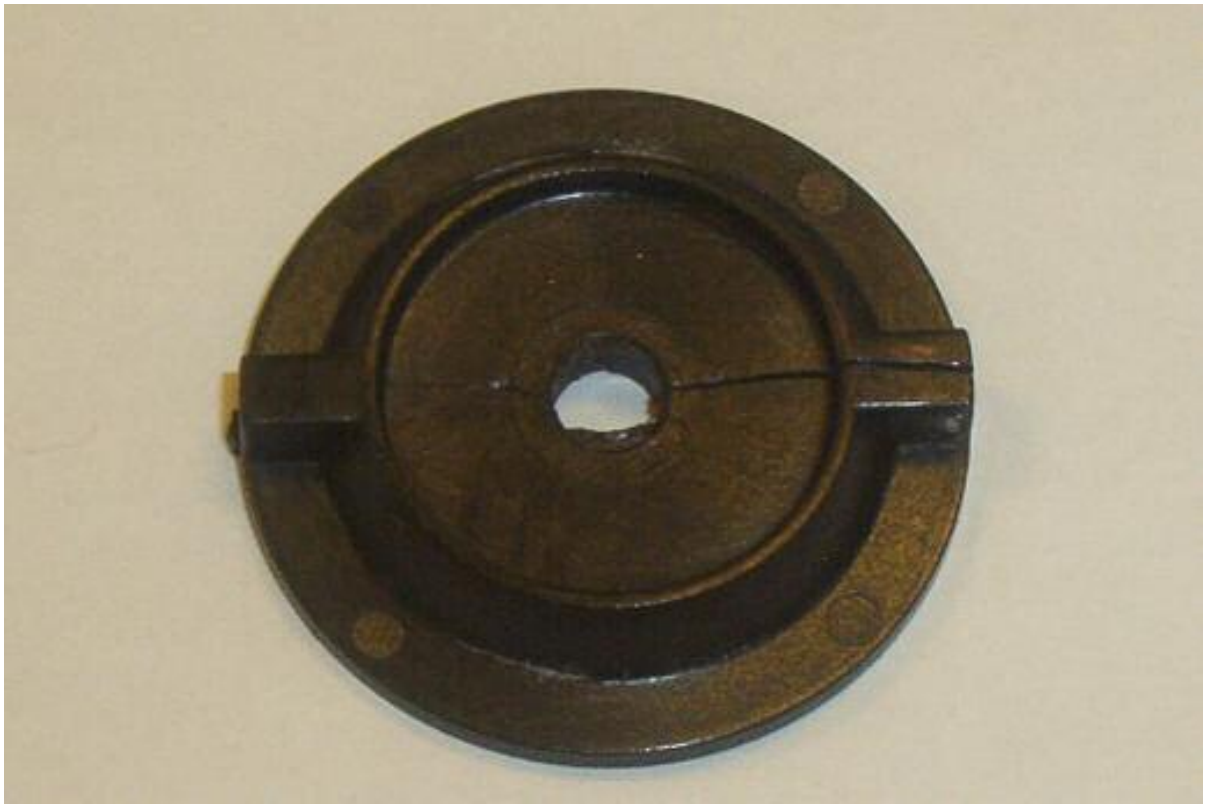
Resolving the Film Sensor errors

Step	Procedure
1	Check that all LCD settings are set as follows: • Film Drive: 0 • Ribbon Drive: 0 • Transfer Tension: +5 • Ribbon Tension: +5 (**Technician Note #1:** Transfer tension can be set higher than +5 if it is observed that the Film Take-up Motor delays at the beginning of Lamination.) (**Technician Note #2:** Ribbon tension can be set higher than +5 if it is observed that the Ribbon is sticking to the Film during printing.)
2	a. Verify the base Film Drive Idler Roller (D840867) moves freely (see picture).



Resolving the Film Sensor errors (continued)

Step	Procedure
3	Check for cracked Film Drive Hubs (D840952). (**Note:** A cracked Film Drive hub will not allow the film to be moved at the appropriate speed resulting in Sensor errors.)



Resolving the Film Sensor errors (continued)

Step	Procedure
4	Check for broken Lamination Roller Cover Hinges. (**Note:** A broken Lamination Roller Cover Hinge (840255) will not allow the Lamination doors to open properly which will result in poorly printed cards and film errors.)

Resolving the Film Sensor errors (continued)

Step	Procedure
5	Check the covered and uncovered voltages of the Lower Film Sensor (840199). This can be measured at J65 Pin 8 on the Lamination circuit Board (140402). • When the Sensor is covered, the voltage should be lower than .9 Volts. • When the Sensor is uncovered, the voltage should be above 3.4 volts.
6	Re-calibrate the upper film Sensor assembly (A000222). (**Note:** For proper calibration, the clear portion of the film must be installed between the Sensor when making any adjustments.) • (**Technician Note #1:** The LED light should be OFF when there is no mark present.) • (**Technician Note #2:** The LED should be ON when a mark is present.)
7	Check to see if the lower film Sensor assembly (840199) contains spacers. • (**Technician Note #1:** These spacers are not needed and should be removed to improve the lower film Sensor signal.) • (**Technician Note #2:** Units that are between these serials numbers are at risk for having these spacers (A1450365 - A2150092).)
8	Verify the lower Film Sensor bracket (840323) has a flat black finish in the mounting hole for the Reflective Sensor. (**Note:** If paint does not cover the entire hole, the Sensor performance will be negatively affected.) Replace the lower Film Sensor bracket if it does not. See the Replacing the Lower Film Sensor Assembly (840199) procedure in Section 6 on page 328.
9	Verify the Film is located correctly on the roll. (**Note:** The film placement on the roll should be 10mm (+/-) .5mm.)
10	Update to the latest version of Firmware. See the Firmware Updater Application Program procedure in Section 10, page 468.

Resolving the Transfer Cooling error

Symptom: The LCD indicates a Transfer Cooling error for an extended period of time. Driver Settings may be too extreme.

Step	Procedure
1	Verify if the Driver settings are too extreme. a. Run a self-test from the Printer. b. Select Menu from the LCD. c. Select Print Test Image from the menu. d. Select Gray/Align Self test from the Menu. (**Note:** This will cause the Laminator to attempt to operate at the default temperature.) e. If the Transfer Cooling message is not displayed for an extended period of time, the transfer temperature setting in the LCD is set too high.
2.	Adjust the Transfer Temperature setting a. Press Menu on the LCD. b. Select Setup Printer, scroll down, and then select Transfer Temp from the menu. c. Reduce the current value by 5. d. Press OK and exit out of the menu. e. Run a self-test. f. If the Transfer Cooling message still appears, repeat steps a through e. g. If the Transfer Cooling message is not displayed, continue printing.
3	Verify if the Thermocouple has failed. a. Check the Thermocouple by using a Multimeter to check the leads across the Thermocouple Control C111 on the Lamination Board. (**Note:** The voltage should be equal to the desired temperature (degrees C) divided by 100 with an accuracy of +/- 10 degrees C (e.g., 150 degrees equals 1.5VDC). b. If the correct value is not retuned, the Thermocouple may need to be replaced.
4	Verify if the Lamination Board is functioning properly. Replace the Lamination Board (as needed). See the Replacing the Lamination Board (140402) procedure in Section 5, page 368.

Resolving the Card Jam Error Message

Symptom: Card may be blocked or restricted in the Transfer Station.

Step	Procedure
1	Continue printing with the same card by leaving the power **ON** and opening the Print Station and Transfer Station. a. Press the **Forward** button to advance the card or the **Back** button to reverse the card. b. Try not to move the card too far from where it was just before the jam occurred. c. Once the jam is cleared, close the Printer and press the **Resume** button to resume printing.
2	Remove the jammed card from the Printer by leaving the power **ON** and opening the Print Station and Transfer Station. a. Use the **Forward** and **Back** buttons to manually eject the card. b. Close the Printer. (**Note:** The LCD Display will then display a prompt to either press the **Resume** button or the **Cancel** button.) c. Press the **Cancel** button to reboot the Printer. d. Cancel all jobs from the Printer memory. (**Note:** All current print jobs will be canceled and will need to be resent from the computer.)

Resolving the Temperature Timeout Error Message

Step	Procedure
1	Run a self-test from the Printer a. Select Menu from the LCD. b. Select Print Test Image from the menu. c. Select Gray/Align Self test from the Menu. If no error occurs, the Transfer Temperature settings in Driver may be too high or too low. See the Adjusting the Image Transfer tab procedure in Section 3, page 204, for instructions on how to adjust the transfer settings.
2	Resolve the Transfer Roller not being able to reach the optimum temperature. a. Turn the Printer **OFF** and **ON** to reset and try reprinting. b. If the problem persists, see the Resolving the Transfer Cooling error procedure in Section 2, page 97, to test the Thermocouple.

Resolving the Transfer Lift Error Message

Symptom: The Printer cannot determine the placement of the Lamination Roller.

Step	Procedure
1	Check to ensure that the Transfer Lift Motor (840130) is running. a. Disconnect the motor from the Lamination Board. b. Connect a 9-VDC battery to the motor's leads. c. Replace the Transfer Lift Sensor if the motor does turn. See the Replacing the Transfer Lift Sensor procedure in Section 5, page 336. d. Replace the Transfer Lift Motor if the motor does not turn. See the Replacing the Transfer Lift Motor procedure in Section 5, page 337.

Resolving the Output Stacker errors

Symptom: The Cards feed into the Output Stacker, but they are not lifted up into place.

Step	Procedure
1	Check operation with these steps. a. Reset the power on the Printer. b. Visually confirm that the stacker cycles on power-up.
2	Verify that the wires (840121 and 840115) from the Output Stacker are connected properly and are well seated in the wire harness.
3	Ensure that the Output Stacker is set to the correct card size. a. Slide the wall of the Output Stacker to the correct card size.
4	Test the operation of the Stacker Lift Motor. a. Disconnect the cable connector. b. Connect a 9-Volt battery to the wires. c. Replace the motor if it does not turn. d. Replace the Lam Board as needed if the motor does turn. See the Replacing the Lamination Board (140402) procedure in Section 5, page 368.

Card Lamination Errors

Resolving the Overlaminate Jam

Symptom: This section only applies if the Printer is equipped with an optional Card Lamination Module. If the overlaminate becomes stuck to the card or jammed inside the Printer, the LCD Display will indicate that it is jammed.

Step	Procedure
1	Leave the power ON and open the Top Cover and Lamination Station.
2	Remove the Take-Up core (the side with used overlaminate on it) from in between the two black Drive Hubs.
3	Steadily pull the overlaminate free from where it is jammed. If it is stuck to the card, pull the overlaminate off the card. • **Jammed or Wrapped:** If it is jammed or wrapped around the rollers, press and hold down the Lamination Module's **Resume** button while gently pulling on the overlaminate.  **Caution:** Do not jerk the overlaminate to free it, since this will increase the chance of breaking it. • **Broken:** If it does happen to break, remove and tape the broken end of the supply roll directly onto the take-up roll. Then, wind a few inches worth of overlaminate from the supply roll onto the take-up roll. (**Note:** Ensure the overlaminate is passing beneath both the supply and take-up rolls.)

Continued on the next page

Resolving the Overlaminate Jam (continued)

Step	Procedure
4	a. Once the jam is cleared, replace the media and close the Lamination Module. b. Press the Lamination Module's **Resume** button to retry Lamination (depending on the error and how far you moved the card or overlaminate, this may not be possible). c. Press the Lamination Module's **Cancel** button to reset the Lamination Module for the next card. (**Note:** The Lamination Module buttons only affect the card in the Lamination section.) The Printer's LCD softkey buttons affect any card in either the Print Station or the Lamination Station (e.g., the Lamination Module's **Cancel** button cancels only the Lamination job; the Printer's **CANCEL** softkey button cancels both the print and Lamination jobs). • If both the Print Station and Lamination Station are open, the LCD's **FORWARD** and **BACK** softkey buttons will move all rollers. • If only the Lamination Module is opened, only the Lamination Module buttons will move the Lamination rollers.

Resolving the Card Lamination Placement errors

Symptom: The PolyGuard Overlaminate is not centered horizontally on the card

Step	Procedure
1	Adjust the Lamination TOF a. Select **MENU**, **Setup Printer** and **Lamination TOF**. b. **Trailing Edge Adjustment:** Adjust the current value to a more positive number to move the Lamination closer to the trailing edge. c. **Leading Edge Adjustment:** Adjust the current value to a more negative number to move the Lamination closer to the leading edge of the card. d. Press OK to save the new value.
2	Calibrate the Lamination Sensor. a. Reset the Printer to clear any Error Messages by removing Power and reapplying it. b. Open the Printer control panel from the Computer. • If using Windows 98Se/ME, right click on the HDP800 Series Card Printer Icon and select **Properties**. • If using Windows NT 4.0, right click on the HDP800 Series Card Printer and select **Document Defaults**. • If using Windows 2000/XP, right click on the HDP800 Series Card Printer and select **Printing Preferences**. c. Click the Lamination tab. d. Click on the **Sensors** button. e. Remove the Laminate ribbon and close the top cover. Click on the **Send** button for a Lamination Sensor Calibration.

Resolving the Lam Error/Out Error Message

Symptom: The Printer seems to skip PolyGuard overlaminate patches or simply wind the overlaminate until the Printer's Ready LED flashes.

Step	Procedure
1	Check that the proper Over-Laminate type is installed according to the **Lamination Type** option selected in the Printer Driver. a. Open the Printer control panel from the Computer. • If using Windows 98Se/ME, right click on the HDP800 Series Card Printer Icon and select **Properties**. • If using Windows NT 4.0, right click on the HDP800 Series Card Printer and select **Document Defaults**. • If using Windows 2000/XP, right click on the HDP800 Series Card Printer and select **Printing Preferences**. b. Click on the Lamination tab. c. Ensure that the Lamination Type (selected) matches the Lamination type installed in the Printer.
2	Calibrate the Lamination Sensor. a. Reset the Printer to clear any Error Messages by removing Power and reapplying it. b. Open the Printer control panel from the Computer. • If using Windows 98Se/ME, right click on the HDP800 Series Card Printer Icon and select **Properties**. • If using Windows NT 4.0, right click on the HDP800 Series Card Printer and select **Document Defaults**. • If using Windows 2000/XP, right click on the HDP800 Series Card Printer and select **Printing Preferences**. c. Click the Lamination tab. d. Click on the **Sensors** button. e. Remove the Laminate ribbon and close the top cover. f. Click on the **Send** button for a Lamination Sensor Calibration.

Continued on the next page

Resolving the Lam Error/Out Error Message (continued)

Step	Procedure
3	Check the Laminate Ribbon Clutch to determine if it is too loose. a. Remove the back cover. b. Use a 7/16” wrench to tighten the nut on the end of the Encoder wheel by ½ - turn.
4	Test the Encoder Sensor (D870198). a. Remove the back cover. b. Using a Digital voltmeter, connect the negative lead to ground. c. Connect the positive lead to Pin 4 of J13. • If **blocked**, the voltage should read 4.9 to 5.5 VDC. • If **unblocked**, the Sensor should read 0.15 to 0.18 VDC. d. If the voltages do not read correctly the Sensor should be replaced.

Resolving the Lamination (not adhering to the card surface) problem

Symptom: The Lamination will not transfer to the card or is easily peeled off the card.

Step	Procedure
1	Ensure the Card quality by verifying that these requirements are met: a. **Requirement 1:** That the Printer does print onto any card with a clean, level and polished PVC surface. (**Note:** 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 to ensure proper print quality.) b. **Requirement 2:** That suitable cards display a polished PVC surface free of fingerprints, dust or any other types of embedded contaminants. (**Note:** In addition, cards must have a completely smooth, level surface in order for the Printer to achieve consistent color coverage.) c. **Requirement 3:** That certain types of Proximity cards with an uneven surface (which can inhibit consistent color transfer) are identified. (**Note:** Likewise, some smart card chips are raised slightly above the cards surface, which also results in poor color transfer.) d. **Requirement 4:** That only Fargo approved HDP Laminate is used in the Printer. Approved Laminate part numbers and descriptions are available on the HDP800 Series-LC Price List. e. **Recommendation:** That high-quality blank cards (e.g., a factory-approved card stock called UltraCard™ are in use. • UltraCard stock has a glossy PVC laminate on top and bottom and is optically inspected to provide the cleanest, most scratch and debris-reduced cards possible. • UltraCard stock, which has a PVC core and offers medium card durability. UltraCard III stock has a 40% polyester core and offers high durability. • Both types of UltraCards produce printed images with a glossy, photo-quality finish. For the flattest possible cards when laminating, it is recommended use of UltraCard III card stock.)

Continued on the next page

Resolving the Lamination (not adhering to the card surface) problem (cont.)

Step	Procedure
2	Check the Lamination Temperature. a. Open the Printer Control Panel from the Computer. • If using Windows 98Se/ME, right click on the HDP800 Series-LC Card Printer Icon and select **Properties**. • If using Windows NT 4.0, right click on the HDP800 Series-LC Card Printer and select **Document Defaults**. • If using Windows 2000/XP, right click on the HDP800 Series-LC Card Printer and select **Printing Preferences**. b. Click on the Lamination tab. c. Increase the Lamination Temperature by +5 degrees. d. Click on the **OK** button. e. Print and Laminate a card from the software. f. Continue to adjust the **Lamination Temperature** until the Lamination adheres completely and cannot be peeled off. g. Adjust (as needed) the card flattener if increased temperature is causing the cards to bow.

Diagnosing the Image Problems

Resolving the Pixel failure problems

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. a. Remove watches, rings, bracelets and other jewelry. b. Open the Print Station. c. Use a Printhead Cleaning Pen from the Printer Cleaning Kit to firmly wipe back and forth across the surface of the Printhead. d. Close the Print Station once the Printhead is completely dry.
4	Clean the Cleaning Rollers. a. Open the Front Access Door of the Printer. b. Depress the Cleaning Roller Lock. c. Pull the Cleaning Roller Assembly out of the Printer. d. Clean the rollers with one of the adhesive-backed Cleaning Cards from the Printer Cleaning Kit. e. Remove the card's adhesive backing paper and slide the card between the rollers until all dust particles are removed. f. Flip over the Cleaning Card to clean both the top and bottom Cleaning Rollers. (**Note:** Alternatively, placing the assembly under lukewarm water may clean the Cleaning Roller.) g. Once cleaned, replace the Cleaning Roller Assembly and close the Front Access Door.  **Caution:** Ensure that the Cleaning Roller Assembly is completely dry before reinstalling into the Printer.

Continued on the next page

Resolving the Pixel failure problems (continued)

Step	Procedure
5	Clean the Platen Rollers. a. Leave the Printer power ON and open the Print and Transfer Stations. b. Remove the print ribbon and HDP Film. c. Locate the Print Platen Roller, as shown below. d. Use a Cleaning Pad from the Printer Cleaning Kit to wipe the roller clean. e. Locate the Transfer Platen Roller, as shown below. f. Use a Cleaning Pad from the Printer Cleaning Kit to wipe the roller clean. Press the **FORWARD** and **BACK** buttons to move the roller back and forth while cleaning. g. Replace the printing supplies and close the Print and Transfer Stations after the rollers are clean and completely dry.
6	Replace the Printhead See the Replacing the Printhead (D840854) procedure in Section 5, page 281.

Resolving the Card surface debris problems

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.  **Caution:** Cards with embedded contaminants in the surface should not be used.
2	Clean the inside of the Printer. a. Open the Print Station and Transfer Station. b. Remove the print ribbon and HDP Film from the Printer. c. Use a can of compressed air to blow out all visible areas of the Printer interior. d. If you do not have a can of compressed air, use a cleaning pad from the Printer Cleaning Kit to wipe out all visible areas inside the Printer. e. Remove any debris that may be inside.  **Caution:** Be extremely careful not to let any alcohol drip inside the Printer! f. Re-install the printing supplies. g. Close the Print and Transfer Stations.

Resolving the Card surface debris problems (continued)

Step	Procedure
3	Clean the Cleaning Rollers. a. Open the Front Access Door of the Printer. b. Depress the Cleaning Roller Lock. c. Pull the Cleaning Roller Assembly out of the Printer. d. Clean the rollers with one of the adhesive-backed Cleaning Cards from the Printer Cleaning Kit. e. Remove the card's adhesive backing paper and slide the card between the rollers until all dust particles are removed. f. Flip over the Cleaning Card to clean both the top and bottom Cleaning Rollers. (**Note:** Alternatively, placing the assembly under lukewarm water may clean the Cleaning Roller.) g. Once cleaned, replace the Cleaning Roller Assembly and close the Front Access Door.  **Caution:** Ensure that the Cleaning Roller Assembly is completely dry before reinstalling into the Printer.

Continued on the next page

Resolving the Card surface debris problems (continued)

Step	Procedure
4	Clean the Platen Roller. a. Leave the Printer power ON and open the Print and Transfer Stations. b. Remove the print ribbon and HDP Film. c. Locate the Print Platen Roller, as shown below. d. Use a Cleaning Pad from the Printer Cleaning Kit to wipe the roller clean. e. Locate the Transfer Platen Roller, as shown below. f. Use a Cleaning Pad from the Printer Cleaning Kit to wipe the roller clean. Press the **FORWARD** and **BACK** buttons to move the roller back and forth while cleaning. g. Replace the printing supplies and close the Print and Transfer Stations after the rollers are clean and completely dry.

Resolving the incorrect Image Darkness problems

Symptom: Printed cards are too dark or too light.

Step	Procedure
1	Run a self-test from the Printer. a. Select Menu from the LCD. b. Select Print Test Image from the menu. c. Select Gray/Align Self test from the Menu. d. If the Self test card does not appear to have the same darkness issues, continue to step 2 (Adjusting the Dye sub intensity). e. If the self test card does appear to have the same darkness issues, continue to step 3 (Adjusting the image darkness).
2	Adjust the Dye-Sub Intensity setting within the Image Color tab of the Printer Driver. a. Open the Printer control panel from the computer. • If using Windows 98Se/ME, right click on the HDP800 Series Card Printer Icon and select **Properties**. • If using Windows NT 4.0, right click on the HDP800 Series Card Printer and select **Document Defaults**. • If using Windows 2000/XP, right click on the HDP800 Series Card Printer and select **Printing Preferences**. b. Click on the Image Color tab. c. If the image is too light, adjust the Dye-Sub Intensity to a more positive value. d. If the Image is too dark, adjust the Dye-Sub Intensity to a more negative value. **OR** Correct the Image Darkness in the LCD. a. Select Menu from the LCD. b. Select Setup Printer and then select Image Darkness. c. If the image is too light, adjust the current value to a more positive number. d. If the Image is too dark, adjust the current value to a more negative number.

Continued on the next page

Resolving the incorrect Image Darkness problems (continued)

Resolving the Ribbon wrinkle problems

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	Adjust the Dye-Sub Intensity setting within the Image Color tab of the Printer Driver. a. Open the Printer control panel from the computer. • If using Windows 98Se/ME, right click on the HDP800 Series Card Printer Icon and select **Properties**. • If using Windows NT 4.0, right click on the HDP800 Series Card Printer and select **Document Defaults**. • If using Windows 2000/XP, right click on the HDP800 Series Card Printer and select **Printing Preferences**. b. Click on the Image Color tab. c. Adjust the Dye-Sub Intensity to a more negative value. **OR** Correct the Image Darkness in the LCD. a. Select Menu from the LCD. b. Select Setup Printer and then select Image Darkness. c. Adjust the current value to a more negative number.
3	Adjust the Ribbon Tension**.** a. Select Menu from the LCD. b. Select Setup Printer and then select Ribbon Tension. c. Adjust the current value to a more positive number.

Continued on the next page

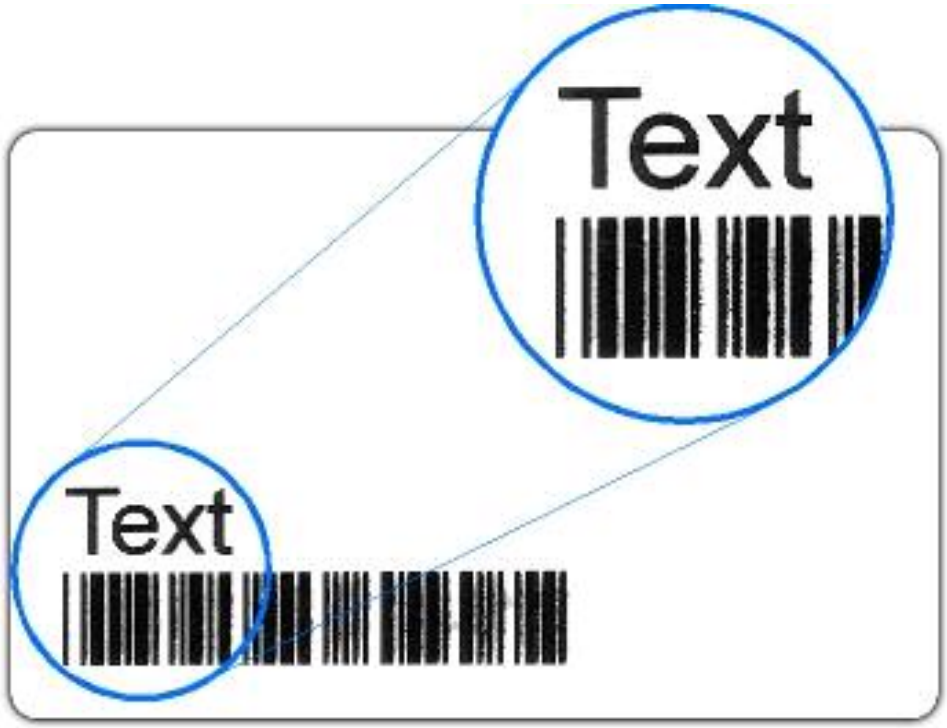
Resolving the Ribbon wrinkle problems (continued)

Step	Procedure
5	Check the Printhead and Printhead Mounting Bracket for debris and burrs.
6	Adjust Printhead Bracket Adjustment Screws. (**Note:** These can be found on the backside of the Printhead. See drawing D840854). a. Loosen and adjust the screws so there is equal Spring pressure on each side of the print head. b. Tighten the screws and reprint the card that is exhibiting the issue.

Resolving the excessive Resin Printing problems

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

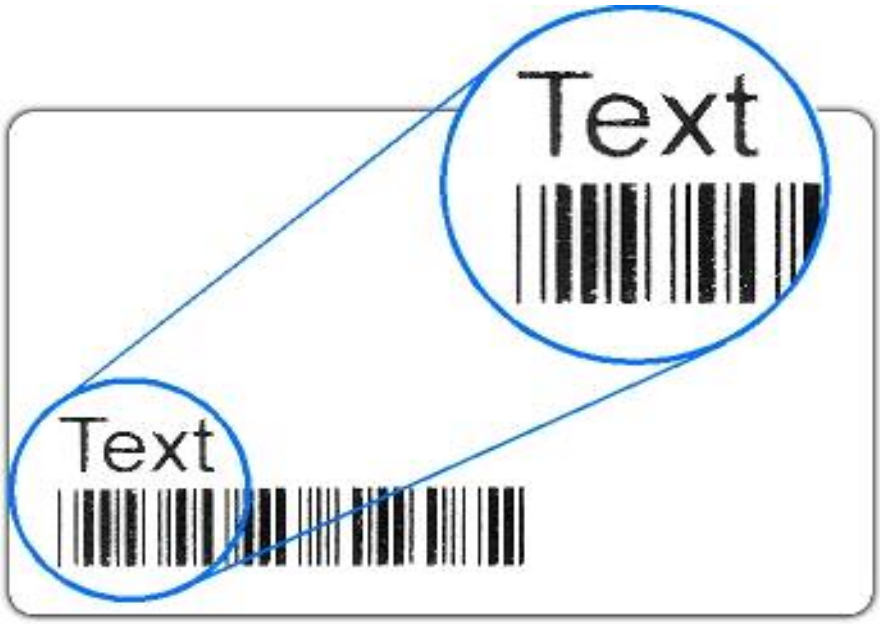
Step	Procedure
1	Reduce the Resin Heat setting within the Image Color tab of the Printer Driver a. Open the Printer control panel from the computer. • If using Windows 98Se/ME, right click on the HDP800 Series Card Printer Icon and select **Properties**. • If using Windows NT 4.0, right click on the HDP800 Series Card Printer and select **Document Defaults**. • If using Windows 2000/XP, right click on the HDP800 Series Card Printer and select **Printing Preferences**. b. Click on the Image Color tab. c. Adjust the Resin Heat to a more negative value. **OR** Correct the Image Darkness in the LCD. a. Select Menu from the LCD. b. Select Setup Printer and then select Image Darkness. c. Adjust the current value to a more negative number.



Resolving the incomplete Resin Printing problems

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

Step	Procedure
1	Reduce the Resin Heat setting within the **Image Color** tab of the Printer Driver a. Open the Printer control panel from the computer. • If using Windows 98Se/ME, right click on the HDP800 Series Card Printer Icon and select **Properties**. • If using Windows NT 4.0, right click on the HDP800 Series Card Printer and select **Document Defaults**. • If using Windows 2000/XP, right click on the HDP800 Series Card Printer and select **Printing Preferences**. b. Click on the Image Color tab. c. Adjust the Resin Heat to a more negative value. **OR** Correct the Image Darkness in the LCD. a. Select Menu from the LCD. b. Select Setup Printer and then select Image Darkness. c. Adjust the current value to a more negative number.



Resolving the HDP Film wrinkle problems

Symptom: HDP Film is creased or wrinkled on the printed card. (**Note:** HDP Film wrinkle will appear clear or look as though the entire image is wrinkled. Alternately, ribbon wrinkle will appear as assorted colors.)

Step	Procedure
1	a. Ensure that the HDP film is aligned with the red alignment arrows on the Transfer station. b. If it is not aligned properly, it may be necessary to replace the roll of Film or cut and reattach the Film to the Take-up Spool.
2	Decrease **Transfer Temperature** setting within the Image Transfer tab of the Printer Driver. a. Open the Printer control panel from the computer. • If using Windows 98Se/ME, right click on the HDP800 Series Card Printer Icon and select **Properties**. • If using Windows NT 4.0, right click on the HDP800 Series Card Printer and select **Document Defaults**. • If using Windows 2000/XP, right click on the HDP800 Series Card Printer and select **Printing Preferences**. b. Click on the Image Transfer tab. c. Adjust the Transfer Temperature to a more negative value. **OR** Decrease the **Transfer Temperature** through the LCD a. Select Menu from the LCD. b. Select Setup Printer and then select Transfer Temp. c. In increments of one, lower the Transfer Temp through the LCD Setup Menu and print a card.
3	Verify that the Centerplate Cover (D841069) in aligned properly. Open the Print and Transfer stations. Ensure that the Centerplate Cover is straight in the card path and is not skewed.

Continued on the next page

Resolving the HDP Film wrinkle problems (continued)

Step	Procedure
4	Adjust the Film Tension. a. Select Menu from the LCD. b. Select Setup Printer and then select Film Tension. c. In increments of one, lower the Film Tension through the LCD Setup Menu and print a card. • If (after several adjustments) the film wrinkle appears worse, return the Film Tension to its original setting and adjust the Film Tension up at increments of one. • If there is still no change after the fourth adjustment (after having made changes to the Film Tension by a total of 4 points), go back to the original Film Tension value. d. Lower the Film Drive by one (1) increment and repeat Steps a. to c. (above) until the film wrinkle is alleviated.

Resolving the incomplete Transfer problems

Symptom: Printed image has ragged edges; HDP Film seems to have peeled off.

Step	Procedure
1	Ensure that the Lamination Roller makes uniform contact with the card. a. Confirm that (1) the Lamination Roller moves up and down freely and (2) the Thermocouple wire does not restrict movement.
2	Increase the **Transfer Temperature** setting within the Image Transfer tab of the Printer Driver. a. Open the Printer control panel from the computer. • If using Windows 98Se/ME, right click on the HDP800 Series Card Printer Icon and select **Properties**. • If using Windows NT 4.0, right click on the HDP800 Series Card Printer and select **Document Defaults**. • If using Windows 2000/XP, right click on the HDP800 Series Card Printer and select **Printing Preferences**. b. Click on the Image Transfer tab. c. Adjust the Transfer Temperature to a more positive value. **OR** Increase the **Transfer Temperature** through the LCD a. Select Menu from the LCD. b. Select Setup Printer and then select Transfer Temp. c. In increments of three, increase the Transfer Temp through the LCD Setup Menu and print a card.
3	Ensure that the Modules are seated properly a. Open the front access door. b. Ensure that the release lever is completely in the upright and locked position. c. Verify that the latches are completely locked down.

Resolving an incomplete transfer on the leading edge problem

Symptom: If incomplete transfer is limited to the leading edge, the **Transfer Tension** is set too high.

Step	Procedure
1	Decrease the **Transfer Tension** through the LCD. a. Select the Menu from the LCD b. Select the Setup Printer and then select Transfer Tension. c. In increments of one, decrease the Transfer Tension through the LCD Setup Menu and print a card.

Resolving an incomplete transfer on the trailing edge problem

Symptom: If incomplete transfer is limited to the trailing edge, the **Transfer Tension** is set too low.

Step	Procedure
1	Increase the **Transfer Tension** through the LCD a. Select Menu from the LCD. b. Select Setup Printer and then select Transfer Tension. c. In increments of one, increase the Transfer Tension through the LCD Setup Menu and print a card.

Resolving the Image Placement problems

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

Step	Procedure
1	Verify that the HDP Film spools are wound evenly. a. If the spools are wound unevenly, replace the roll of HDP Film. b. Ensure that the film is not telescoping on the roll. If it is, cut the Film off of the take up spool and reattach it.
2	a. Ensure that the HDP film is aligned with the red alignment arrows on the Transfer station. b. If it is not aligned properly, it may be necessary to replace the roll of Film or cut and reattach the film to the Take-up Spool.
3	Verify that the Ribbon and Film are properly seated on both sides. (**Note:** The Hubs' axels should rotate as you rotate the spool.) a. Replace the Hubs if it is not properly seated on both sides. See the Replacing the HDP 800 Series Ribbon Hub procedure in Section 6, page 294.
4	Verify that the Dancer Rollers spin freely by opening the top and middle Modules and manually spinning the Dancer Rollers.
5	Confirm that the correct **Card Size** option is selected in the Printer Driver setup. a. Open the Printer control panel from the computer. • If using Windows 98Se/ME, right click on the HDP800 Series Card Printer Icon and select **Properties**. • If using Windows NT 4.0, right click on the HDP800 Series Card Printer and select **Document Defaults**. • If using Windows 2000/XP, right click on the HDP800 Series Card Printer and select **Printing Preferences**. b. Click on the Card tab. c. Ensure that the proper card size is selected. (**Note:** An incorrect card size selection can cause the image to be placed improperly on the card.)

Continued on the next page

Resolving the Image Placement problems (continued)

Step	Procedure
6	Confirm that the card is feeding straight into the Print section. a. Check to ensure that the Card Size Knob in the base Module is set to the proper card size if it is not feeding straight into the Print section.

Continued on the next page

Resolving the Image Placement problems (continued)

Step	Procedure
7	Confirm that the Flattener is not impeding the card. a. Manually feed a card into the Printer using the **Forward** and **Back** buttons on the display. (**Note:** The card should move freely under the Flattener.) b. If the card is hitting the Flattener, adjust the width of the Flattener Guides by loosening the two (2) screws that hold the Flattener. c. Re-tighten the two (2) screws after the Flattener Guides have been adjusted.
8	Verify that the upper and middle Modules are seated properly and are completely locked down.
9	Select the **Image Position** option within the Image Transfer tab of the Printer Driver. a. Open the Printer control panel from the computer. • If using Windows 98Se/ME, right click on the HDP800 Series Card Printer Icon and select **Properties**. • If using Windows NT 4.0, right click on the HDP800 Series Card Printer and select **Document Defaults**. • If using Windows 2000/XP, right click on the HDP800 Series Card Printer and select **Printing Preferences**. b. Click on the Image Transfer tab. c. Use the horizontal and vertical adjustment settings to center the image on the card.
10	Clean the Platen Roller. a. Leave the Printer power ON and open the Print and Transfer Stations. b. Remove the print ribbon and HDP Film. c. Locate the Print Platen Roller, as shown below. d. Use a Cleaning Pad from the Printer Cleaning Kit to wipe the roller clean. e. Locate the Transfer Platen Roller, as shown below. f. Use a Cleaning Pad from the Printer Cleaning Kit to wipe the roller clean. Press the **FORWARD** and **BACK** buttons to move the roller back and forth while cleaning. g. Replace the printing supplies and close the Print and Transfer Stations after the rollers are clean and completely dry.

Continued on the next page

Resolving the Image Placement problems (continued)

Step	Procedure
11	See Print Offset, Transfer Tension, Transfer TOF (Top of Form) and Transfer EOF (End of Form) Alignment procedure in Section 8, page 449, to adjust the Printer through the LCD.
12	Verify that the Peel-Off Bar and the Ribbon Peel Bar height is correct. (**Note:** From the front of the HDP Card Printer, the Peel-Off Bar on the input side. See drawing D841085) should be flush with the frame. The Ribbon Peel Bar on the output side should have a 3/16-inch (4.5mm) gap between the frame and the Ribbon Peel Bar.) a. Remedy the offset printing by raising the bar higher off of the card 0.005 inches (by loosening the screws for the Peel-Off Bar) and carefully raising both sides to the same degree. (**Note:** The Peel-Off Bar assembly should be equidistant at both ends from the frame.)

Resolving the poor Image Quality problems

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

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

Good

Bad

Resolving the Image washout on Film problems

Symptom: The Image appears to not be completely printed on Film.

Step	Procedure
1	Verify that the upper and middle Modules are seated properly and are completely locked down.
2	Verify if the Printhead pressure is too low. a. Remove the Printhead. See the Replacing the Printhead (D840854) procedure in Section 5, page 281 and bend the two metal Springs slightly toward the front of the upper Module. b. Reinstall the Printhead and print a test card. c. If registration does not get better, remove the Printhead and bend the two metal Springs away from the upper Module slightly. d. Reinstall the Printhead and print a self-test.
3	Increase **Image Darkness** in the LCD. a. Select Menu from the LCD. b. Select Setup Printer and then select Image Darkness. c. Increase (in increments of five) the Image Darkness through the LCD Setup Menu and print a card.
4	Reprint with Fargo cards if printing with non-Fargo cards.
5	Adjust Printhead Bracket Adjustment Screws. (**Note:** These can be found on the backside of the Printhead. See drawing D840854). c. Loosen and adjust the screws so there is equal Spring pressure on each side of the print head. d. Tighten the screws and reprint the card that is exhibiting the issue.
6	Remove the Printhead and reinstall. Replace the Printhead if the problem persists.

Resolving the Registration problems

Symptom: Colors are shifted slightly in the image creating colored edges or poor resolution.

Step	Procedure
1	Calibrate the Upper Film Sensor (to ensure proper calibration). a. Position the HDP Film so that a clear portion is between the slotted optical Sensor. b. Turn the potentiometer on the Sensor Board with a small slotted screwdriver until the LED on the Sensor Board turns ON. c. Back the potentiometer OFF slowly until the LED just turns OFF. (**Note:** Ensure that when performing this procedure that there is no direct light shining into the Printer. Excessive ambient light in the vicinity of the Printer may also affect the calibration of the Sensor.)
2	Adjust the Ribbon Tension by +1 and print a sample card. • If symptoms appear better, continue adjusting until registration problems are gone. • If symptoms appear worse, adjust the ribbon tension by –1 and print a self-test. • If symptoms appear better, continue adjusting until registration problems are gone.
3	Reposition the Film Drive Motor. a. Loosen the screws that hold the Film Drive Motor located in the middle Module and pull the motor back against the belt. b. Hold the motor there and tighten the screws that hold the motor in place in this new position.

Continued on the next page

Resolving the Registration problems (continued)

Symptom: Colors are shifted slightly in the image creating colored edges or poor resolution.

Step	Procedure
4	Determine if the Printhead pressure is too high or too low. a. Remove the Printhead. See the Replacing the Printhead (D840854) procedure in Section 5, page 281 and bend the two metal Springs slightly toward the back of the upper Module. b. Reinstall the Printhead and print a test card. c. If registration does not get better, remove the Printhead and bend the two metal Springs away from the upper Module slightly. d. Reinstall the Printhead and print a self-test.
5	Verify that the Upper and Middle Modules are seated properly and the Modules are completely locked down.

Resolving the Card Skewed Image problems

Symptom: The self-test image appears skewed on the card.

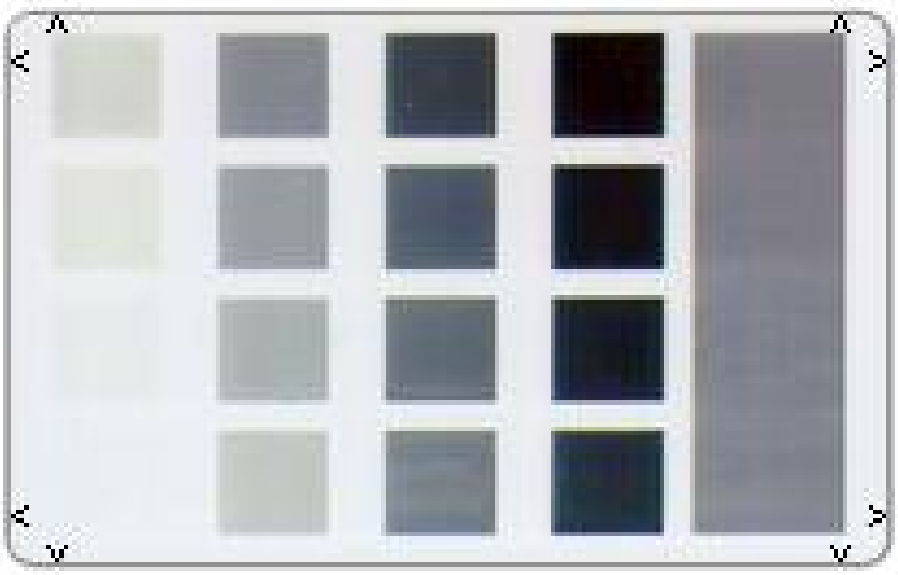
Step	Procedure
1	Determine if the film is tracking sideways. a. Open the Lamination station and reload the Transfer Film so that Film moves straight onto spool. b. Remove (as needed) the old Film from the take-up spool and reattach the Film in the proper location on the spool.
2	Determine if the Peel-Off Bar is not straight. (**Note:** The Peel-Off Bar should be equidistant from the Lamination Assembly frame at both ends.) a. Verify that the Peel-Off Bar and the Ribbon Peel Bar height is correct. (**Note:** From the front of the HDP Card Printer, the Peel-Off Bar on the input side, the drawing D841085, should be flush with the frame. The Ribbon Peel Bar on the output side should have a 3/16-inch (4.5mm) gap between the frame and the Ribbon Peel Bar.) b. Remedy the offset printing raising the bar higher off of the card 0.005 inches (by loosening the screws for the Peel-Off Bar) and carefully raising both sides to the same degree. (**Note:** The Peel-Off Bar assembly should be equidistant at both ends from the frame.)
3	Determine if the card is fed askew into the Transfer Station. a. Interrupt the transfer process to ensure that the card has fed properly into the Transfer Station. • If the card has been fed skewed, ensure that the card size knob is set to the correct card size. • If the card size has been confirmed, manually feed a card into the Printer using the **Forward** and **Back** soft key buttons on the display. • Position the card next to the Spring loaded Card Pusher and ensure that the Card Pusher is applying pressure to the card.

Printing a Test Image

Step	Procedure
1	Choose **Print Test Image** to select a preset test image. (**Note:** These images help to determine if the Printer is functioning properly.)
2	Scroll to the desired test image from the **Select Test Image** options and press the **Select** button.

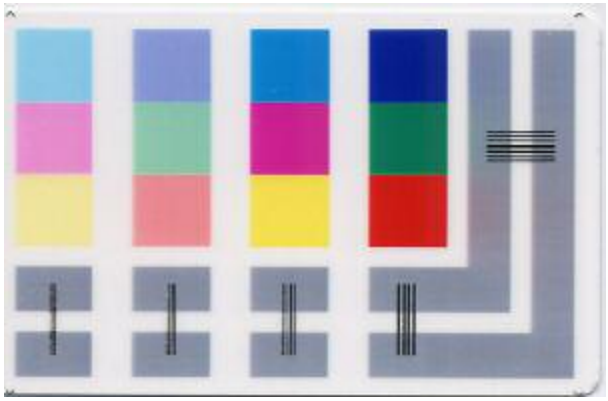
Reviewing the Gray/Align YMC/K Self-Test

Step	Procedure
1	Use this card to determine Image Placement and confirm that the Printer is working properly. See Printer Setup in Section 8, page 447. (**Note:** The image consists of sixteen (16) gray scale boxes and alignment arrows. The gray boxes are composed from a composite of YMC color panels.))



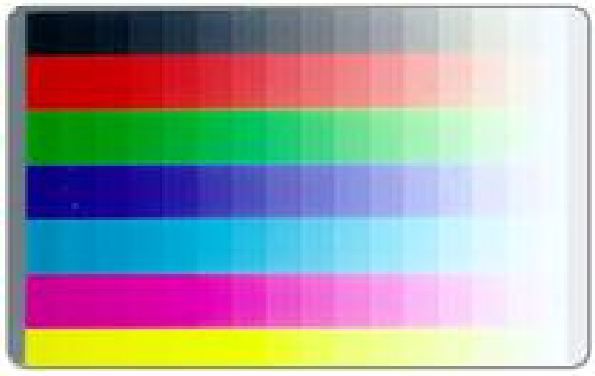
Reviewing the Color/Resin YMCK Self-Test

Step	Procedure
1	Use this card to determine Image Placement and confirm that (a) the image colors are properly reproduced and (b) the Resin Panel is printing properly. (**Note:** The Image consists of twelve spot colors, YMC and RGB, as well as gray density bars and thin resin lines.)



Reviewing the Color Bars YMC Self-Test

Step	Procedure
1	Use this card to confirm that image colors are properly reproduced. Image consists of sixteen graduated steps of RGB and YMCK. (**Note:** This print will provide maximum image size, giving complete card coverage on a CR-80 sized card.)



Reviewing the Card Count Self-Test

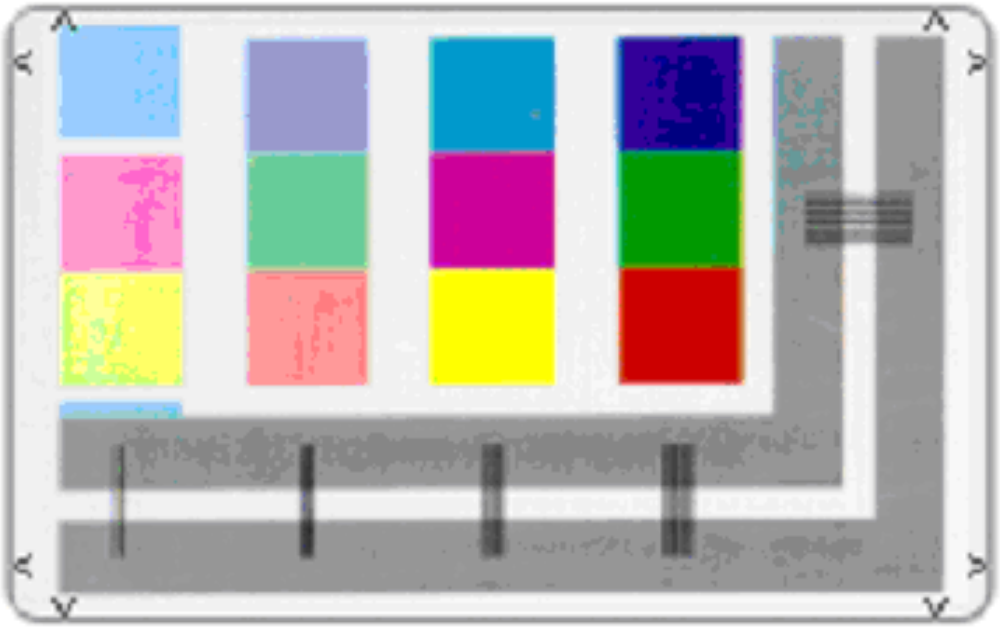
Step	Procedure
1	Use this card to view counts for Card Count (CC), Pass Count (PC), Transfer Count (TC) and Lamination Count (LC). • The **Card Count** is the total number of cards the Printer has produced. **Pass Count** is the total number of print passes made by the Printhead. (**Note:** A pass is measured each time a single ribbon panel is printed or passes beneath the Printhead.) • The **Transfer Count** is the total number of times the Printer transfers an image to a card.

Reviewing the Magnetic Test option

Step	Procedure
1	Use this option only applies if a Magnetic Encoding Module is installed in the Printer. (**Note:** The Printer will feed, encode and eject a card. Be sure to have high coercivity cards installed when running this test.)

Reviewing the Lamination Color/Resin YMCK+L Self-Test

Step	Procedure
1	Use this card to determine Lamination Placement and confirm that (a) the image colors are properly reproduced and (b) the Resin Panel is printing properly. (**Note:** The Image consists of twelve spot colors, YMC and RGB, as well as gray density bars and thin resin lines.)



Section 3: Card Lamination Module

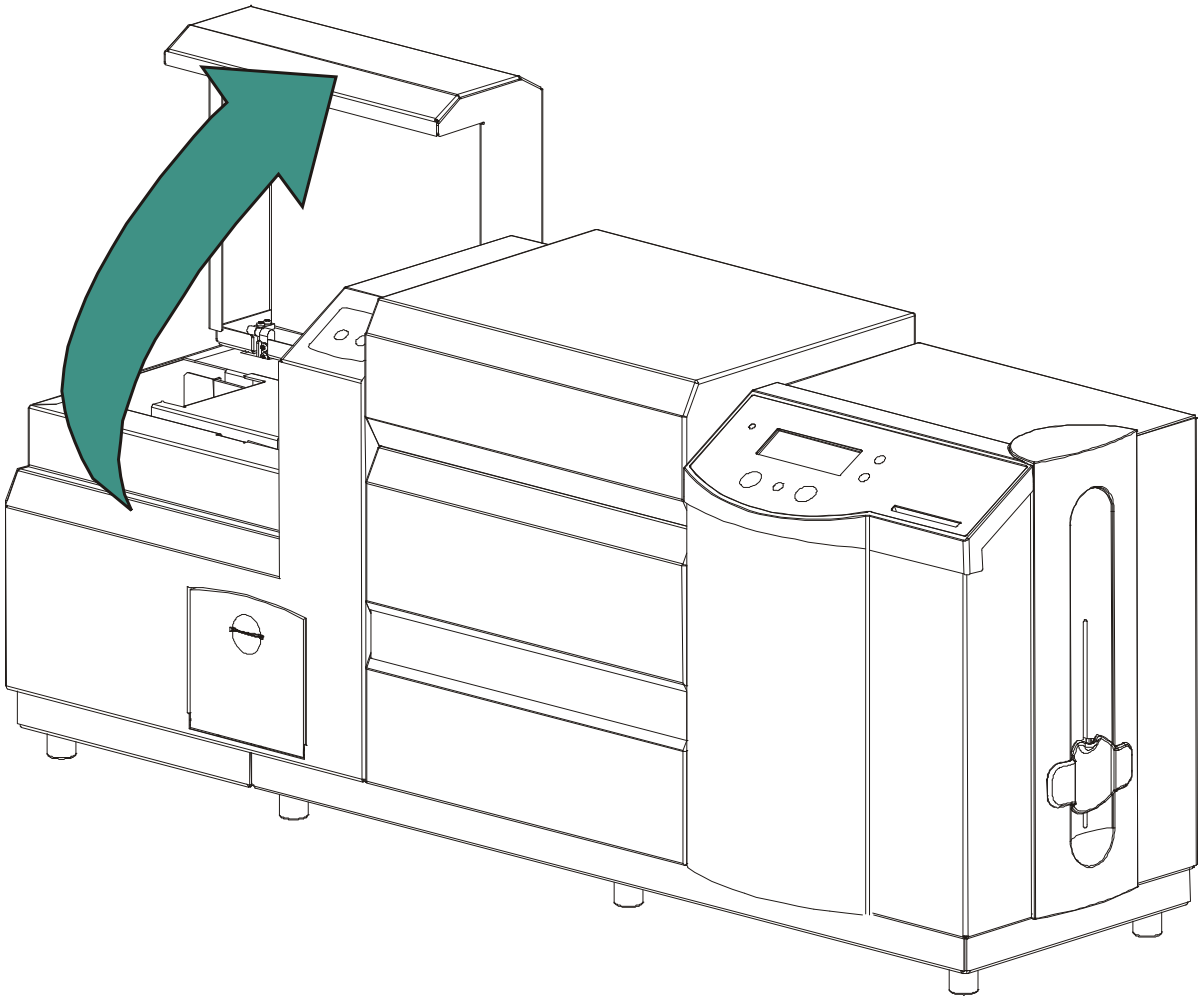
The purpose of this section is to provide the User with specific information on Printer adjustment procedures.

Safety Messages (review carefully)

Symbol	Critical Instructions for Safety purposes
Danger: 	**Failure to follow these installation guidelines can result in death or serious injury.** Information that raises potential safety issues is indicated by a warning symbol (as shown to the below). • **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.
Caution: 	**This device is electrostatically sensitive**. **It may be damaged if exposed to static electricity discharges.** Information that raises potential electrostatic safety issues is indicated by a warning symbol (as shown to the below). • **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.

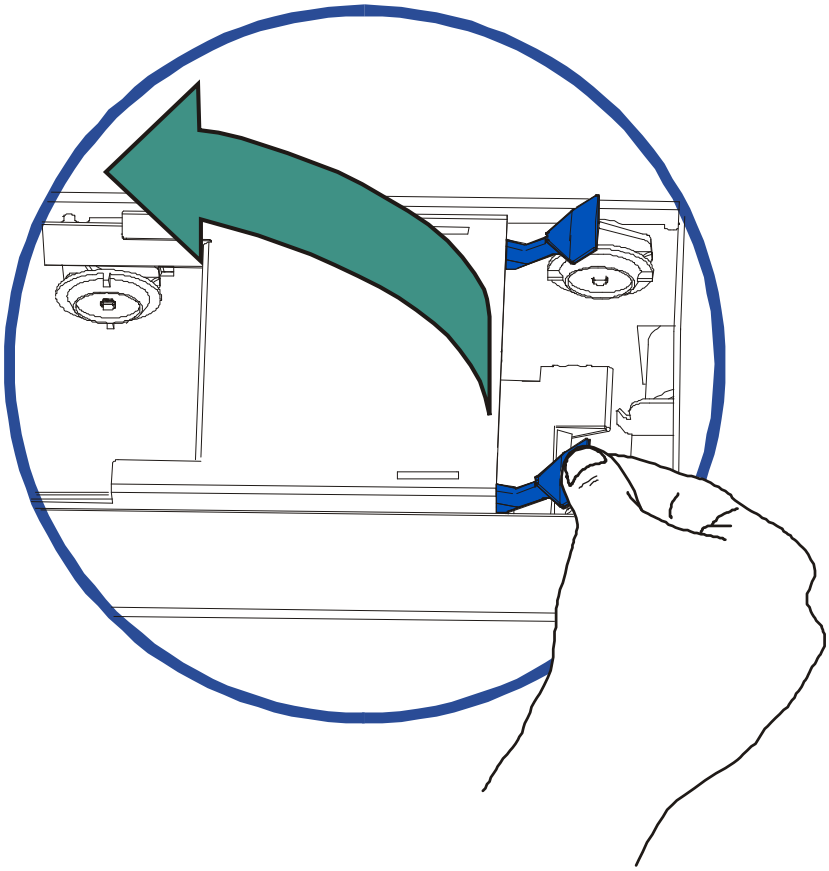
Opening the Card Lamination Module

Step	Procedure
1	Open the Top Cover of the Lamination Module by lifting up on its bottom edge and tilting it back into its fully open position. (**Note:** The Top Cover is designed to hold its last position to prevent it from falling shut.)



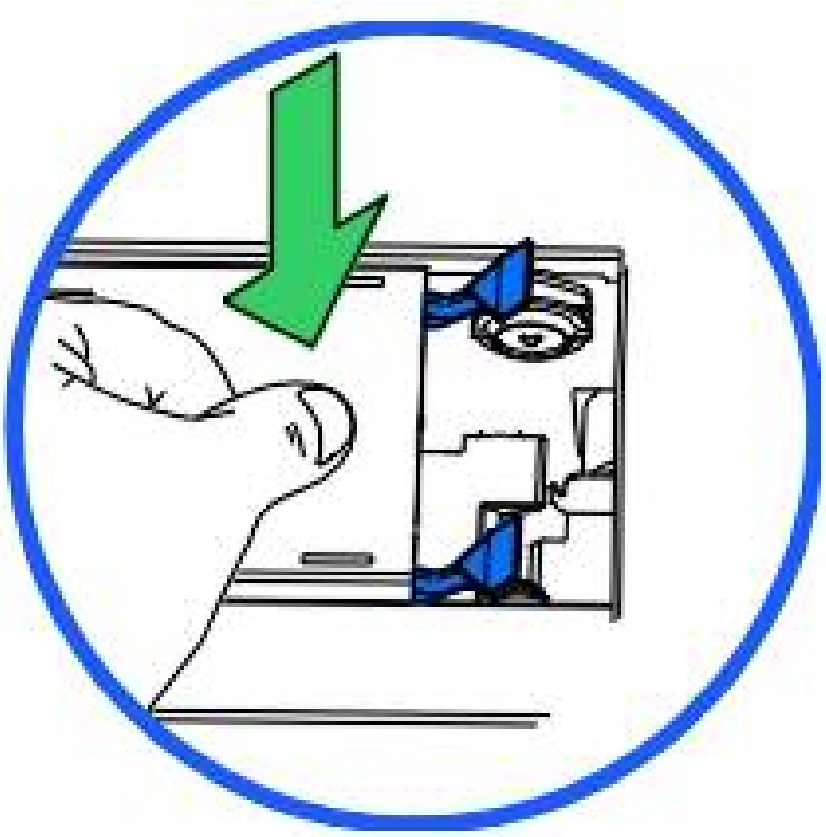
Opening the Card Lamination Module (continued)

Step	Procedure
2	Open the **Lamination Station** by lifting up on the blue Securing Latches. Pull the Lamination Station up and back into its fully upright position. Note the Lamination Station is also designed to hold its last position to prevent it from falling shut.



Opening the Card Lamination Module (continued)

Step	Procedure
3	To close the Lamination Station, push the Lamination Station down until its blue Securing Latches close securely. (**Note:** The Lamination Station must be closed securely in order for your Printer to operate. It is also recommended that the Top Cover be closed whenever laminating for reliability and safety reasons.)

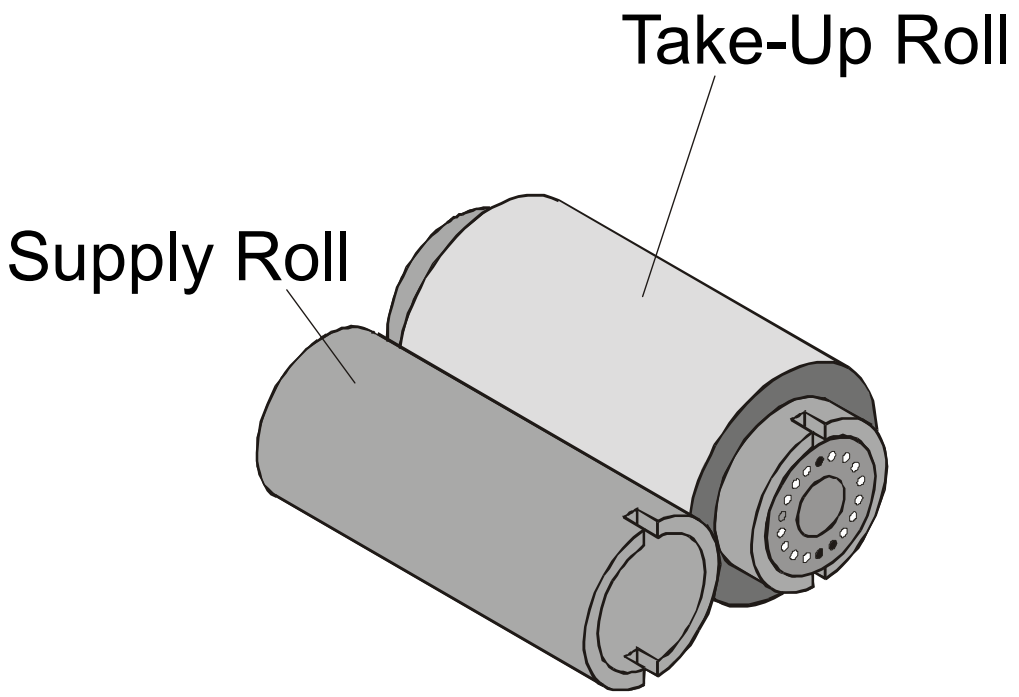


Loading the Overlaminate

The loading process for both the Thermal Transfer Film and the PolyGuard Overlaminate material is the same. Refer to the following steps to load either type of overlaminate into the Printer.

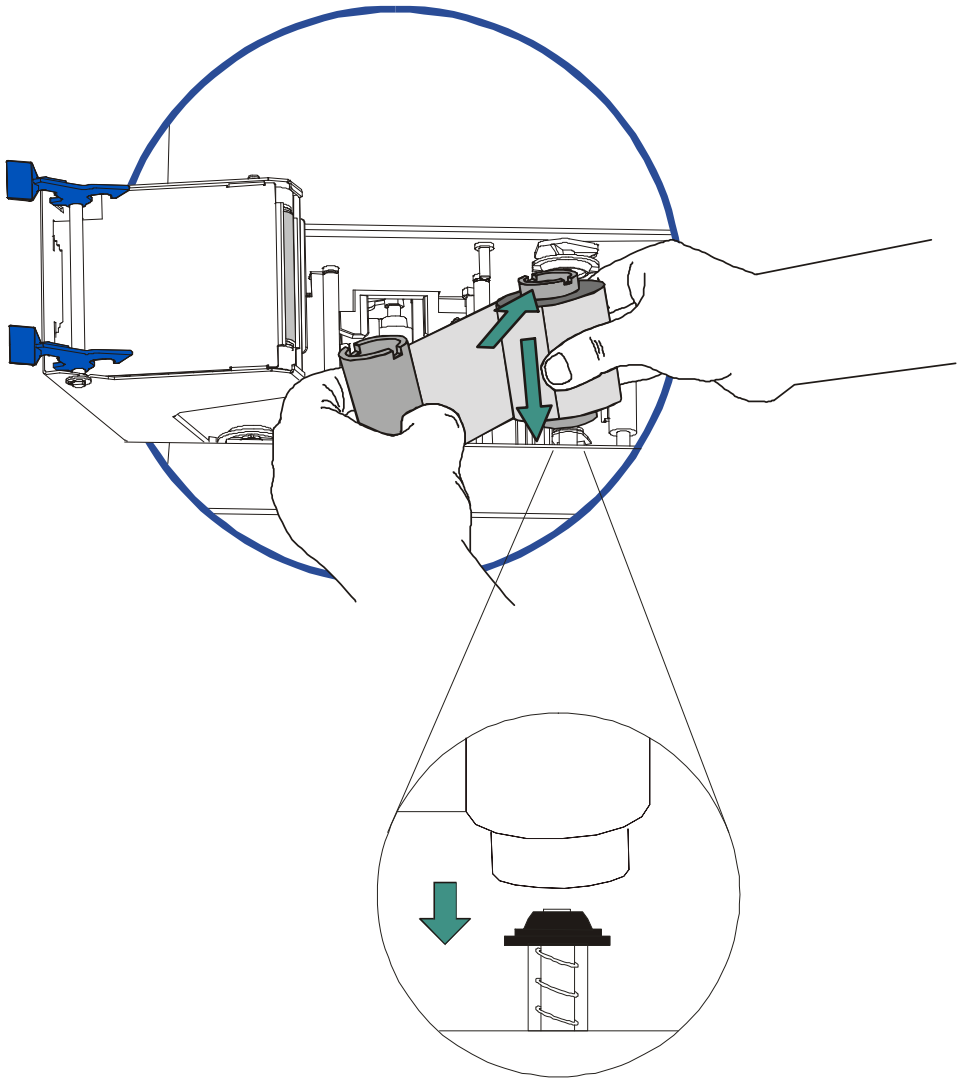
Danger: Do not touch the metal Lamination shield or the Lamination Roller when loading overlaminate. You will burn yourself.

Step	Procedure
1	Open the Lamination Module's Top Cover and Lamination Station.
2	Remove the overlaminate from its packaging.
3	The supply end of the overlaminate roll is the side containing the fresh, unused portion of the overlaminate. The take-up end is the other side.



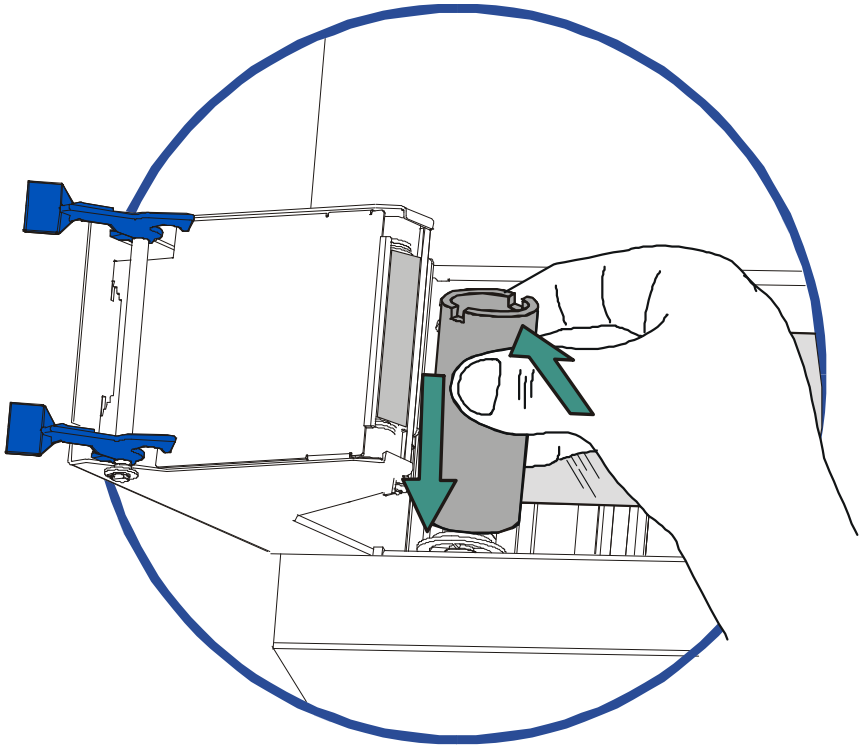
Loading the Overlaminate (continued)

Step	Procedure
4	a. Place the supply end of the overlaminate roll in between the two black Lamination Drive Hubs. (**Note:** The smaller Lamination Drive Hub closest to the front of the Lamination Module is Spring loaded.) b. Use the end of the supply roll with the black core plug to push this hub in when inserting the overlaminate roll. (**Note:** Make certain the overlaminate material is fed from beneath the roll as shown.)



Loading the Overlaminate (continued)

Step	Procedure
5	a. Place the take-up end of the roll in between the two black Lamination Drive Hubs located on the far left-hand side of the Lamination Module's interior. b. Load the take-up end of the roll just as you loaded the supply end in step 4. (**Note:** When loaded properly, the overlaminate material should feed underneath both ends of the overlaminate roll.)
6	Close the Lamination Module. (**Note:** When you start to print, the Lamination Drive Hubs will automatically engage the overlaminate core notches.)  **Caution:** Do not reverse the overlaminate roll. Damage may occur to the Lamination roller!



Adjusting the Card Lamination Module

The HDP800 Series Card Printer supports the attachment of an optional Card Lamination Module. This Module can be ordered pre-installed on the Printer from the factory or can be ordered separately as a field upgradeable Module. Once attached, the Card Lamination Module allows you to apply Fargo certified overlaminates for more secure, tamper-resistant cards. This section explains all aspects of the Card Lamination Module's operation and the overlaminate materials available.

IMPORTANT! Fargo Card Printers require highly specialized Print Ribbons to function properly. To maximize Printer life, reliability, printed card quality and durability, you must use only Fargo Certified Supplies. For this reason, your Fargo warranty is void, where not prohibited by law, if you use non-Fargo Certified Supplies. To order additional materials, please contact your authorized reseller.

Adjusting the Card Flattener

The Card Lamination Module provides an adjustable Card Flattener that allows you to fine-tune the flatness of laminated cards. This flattener works by reverse bending cards as they eject from the laminator while they are still warm.

In most cases, card warpage is only a concern when laminating on a single side of card stock which has a PVC-based core rather than a polyester-based core. Cards with a PVC-based core are not as heat resistant and are not recommended for use when laminating

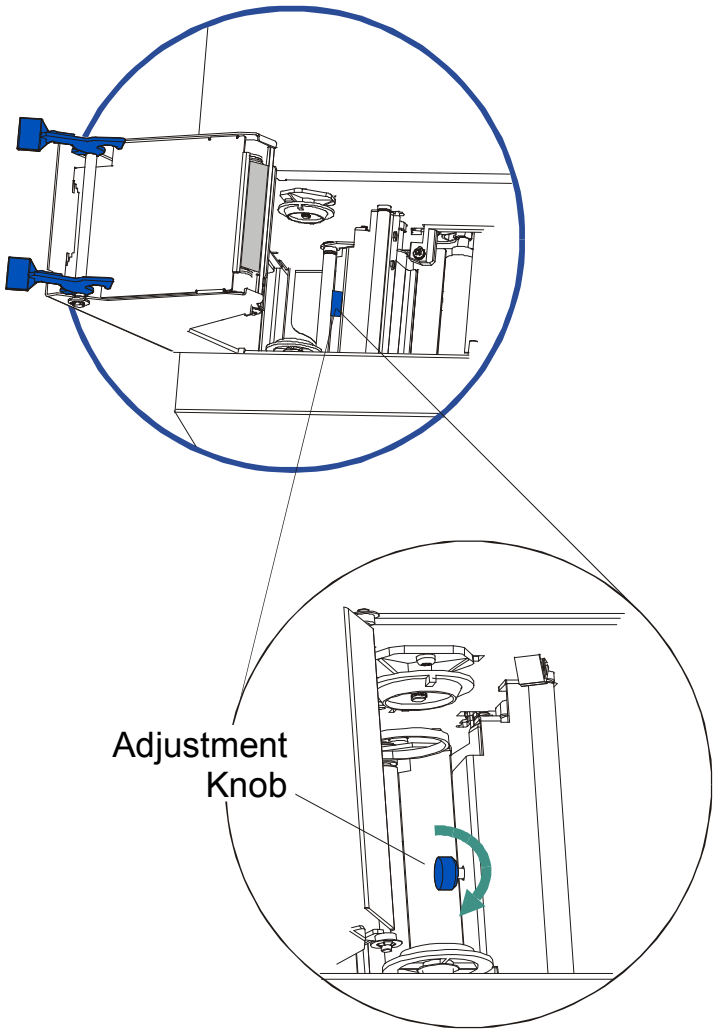
By default, the Card Flattener is configured at the factory to accommodate UltraCard III type card stock. (**Note:** If you are experiencing an unacceptable amount of card warpage, please refer to the following to adjust the Card Flattener.)

Step	Procedure
1	Open the Card Lamination Module.
2	Remove the overlaminate material if installed.

Continued on the next page

Adjusting the Card Flattener (continued)

Step	Procedure
3	If laminated cards are bowing upward, turn the Card Flattener Adjustment Knob clockwise. (**Note:** This pushes the flattener roller down to increase the reverse bending pressure. For best results, turn the knob one full rotation, then print and laminate a test card. Repeat this process as necessary.)
4	If the card is bowing downward, the reverse bending pressure may be too great. In this case, rotate the adjustment knob counter-clockwise. (**Note:** Some card types have very low heat resistance and may not be acceptable for laminating.)



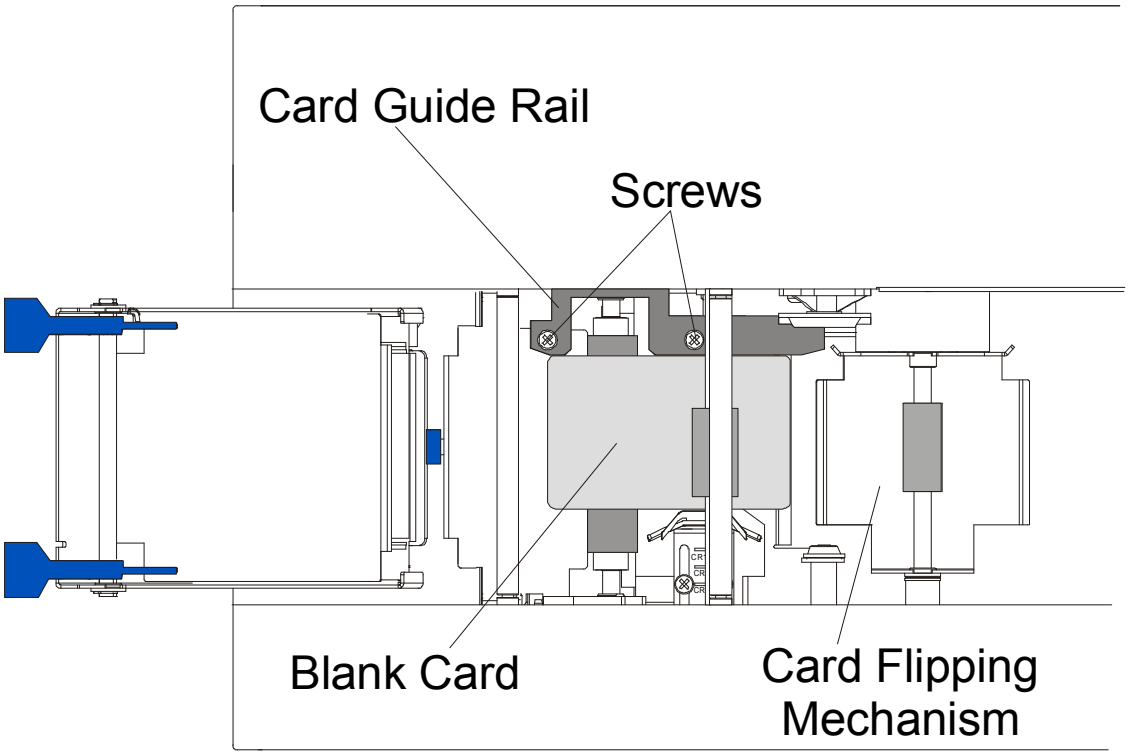
Adjusting the Card Guide Rail

If applying PolyGuard Overlaminate, you may find that the individual patch from the overlaminate roll may be off-center when applied to a card. (**Note:** Although the patch placement will vary slightly from card to card, they should never hang over the edge of the card.)

- To center the vertical placement of these patches across the card width, a mechanical adjustment can be made. (**Note:** This adjustment is described below.)

Step	Procedure
1	Open the Lamination Module's Top Cover and Lamination Station.
2	a. Feed a blank card into the Module by inserting it through the output hopper and reverse feeding it by pressing the Lamination Module's **Resume** button. b. Manually position the card so its edge is flush with the Card Guide Rail.

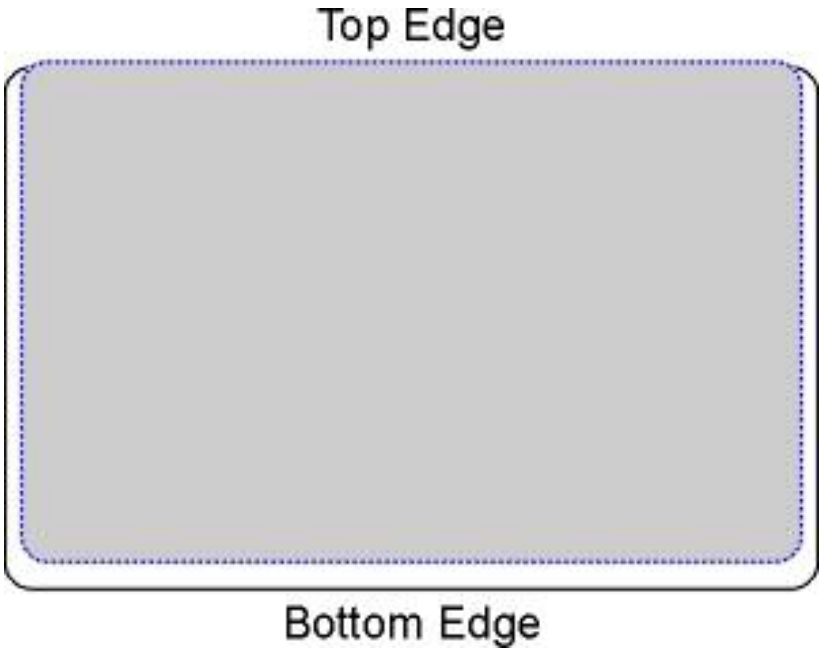
Continued on the next page



Adjusting the Card Guide Rail (continued)

Step	Procedure
3	Slightly loosen the two screws which fasten the Card Guide Rail to the Printer's main chassis.
4	If the PolyGuard patch is being placed more toward a card's top edge (as shown), move the Card Guide Rail slightly toward the rear of the Printer (opposite the direction you would like the patch to move).

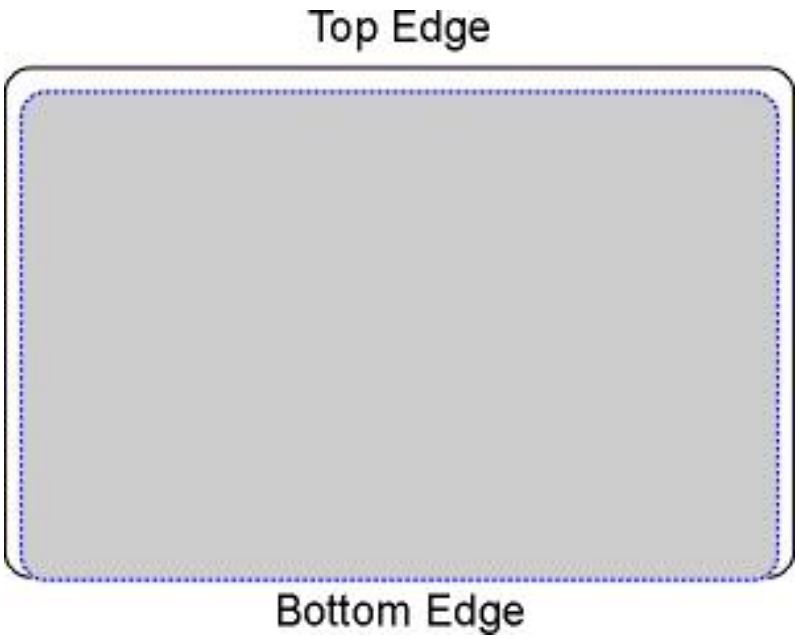
Continued on the next page



Adjusting the Card Guide Rail (continued)

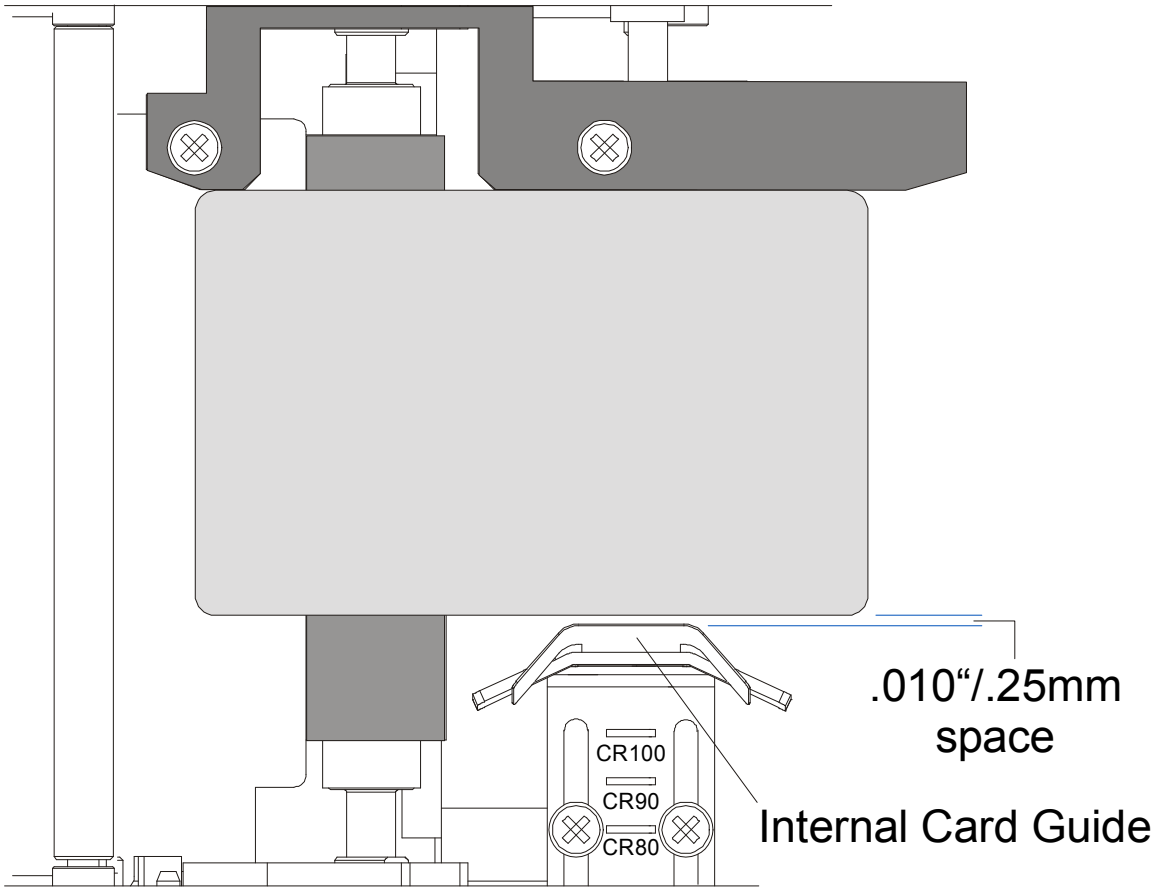
Step	Procedure
5	If the PolyGuard patch is being placed more toward a card's bottom edge (as shown), move the Card Guide Rail slightly toward the front of the Printer (opposite the direction you would like the patch to move).
6	Always make very slight adjustments to the Card Guide Rail and run a test print after each adjustment until the optimum patch position is found. (**Note:** Be sure the Card Guide Rail always remains parallel to the card path and that the screws loosened in step 1 are retightened after each adjustment.)

Continued on the next page



Adjusting the Card Guide Rail (continued)

Step	Procedure
7	Once the adjustment is complete, be sure that the card is not binding between the Card Guide Rail and the Internal Card Guide. (**Note:** Depending upon how much you adjusted the Card Guide Rail, you may also need to adjust the Internal Card Guide.) When both are adjusted properly, there should be a slight space of about .010"/.25mm between the card edge and the Internal Card Guide as indicated here:
8	If necessary, adjust the Internal Card Guide as described in the remainder of this section.

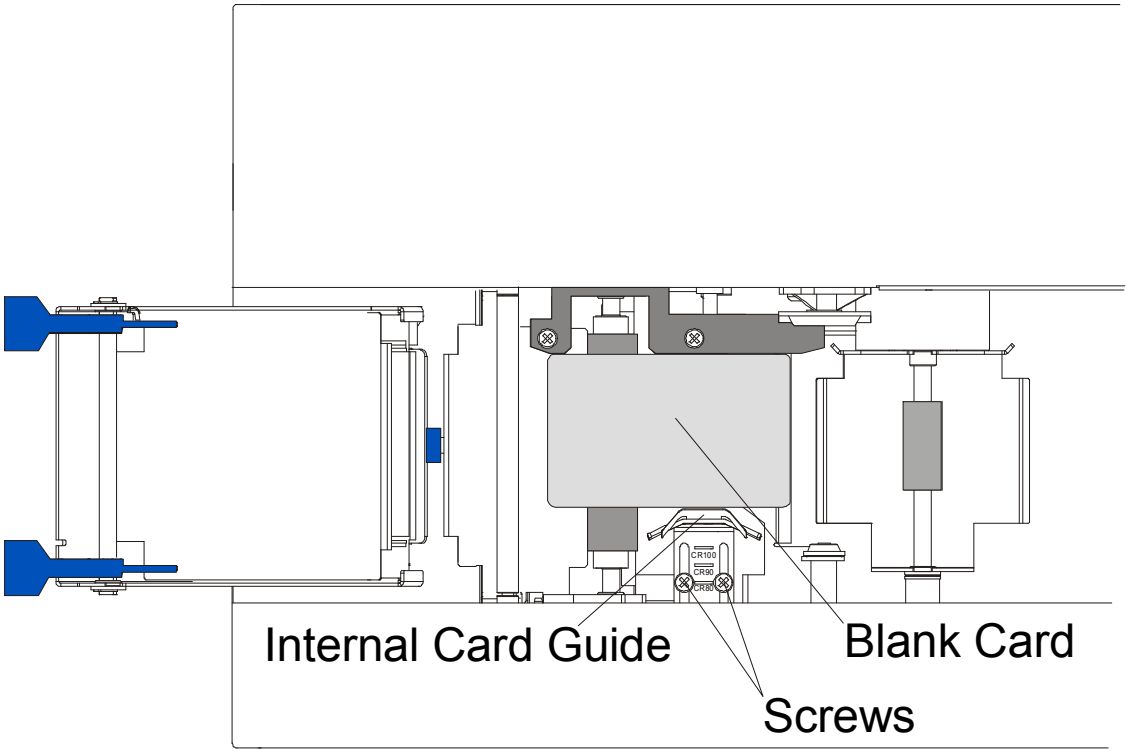


Adjusting the Internal Card Guide

The Internal Card Guide is what holds the card in position as it feeds through the Card Lamination Module. This guide is factory-set to handle standard CR-80 sized cards. To adjust this guide, please refer to the following steps. (**Note:** If adjusting for an oversized card, you must also adjust the Printer's Internal Card Guide.)

Step	Procedure
1	Slightly loosen the two (2) screws which fasten the Internal Card Guide to the Printer's main chassis.

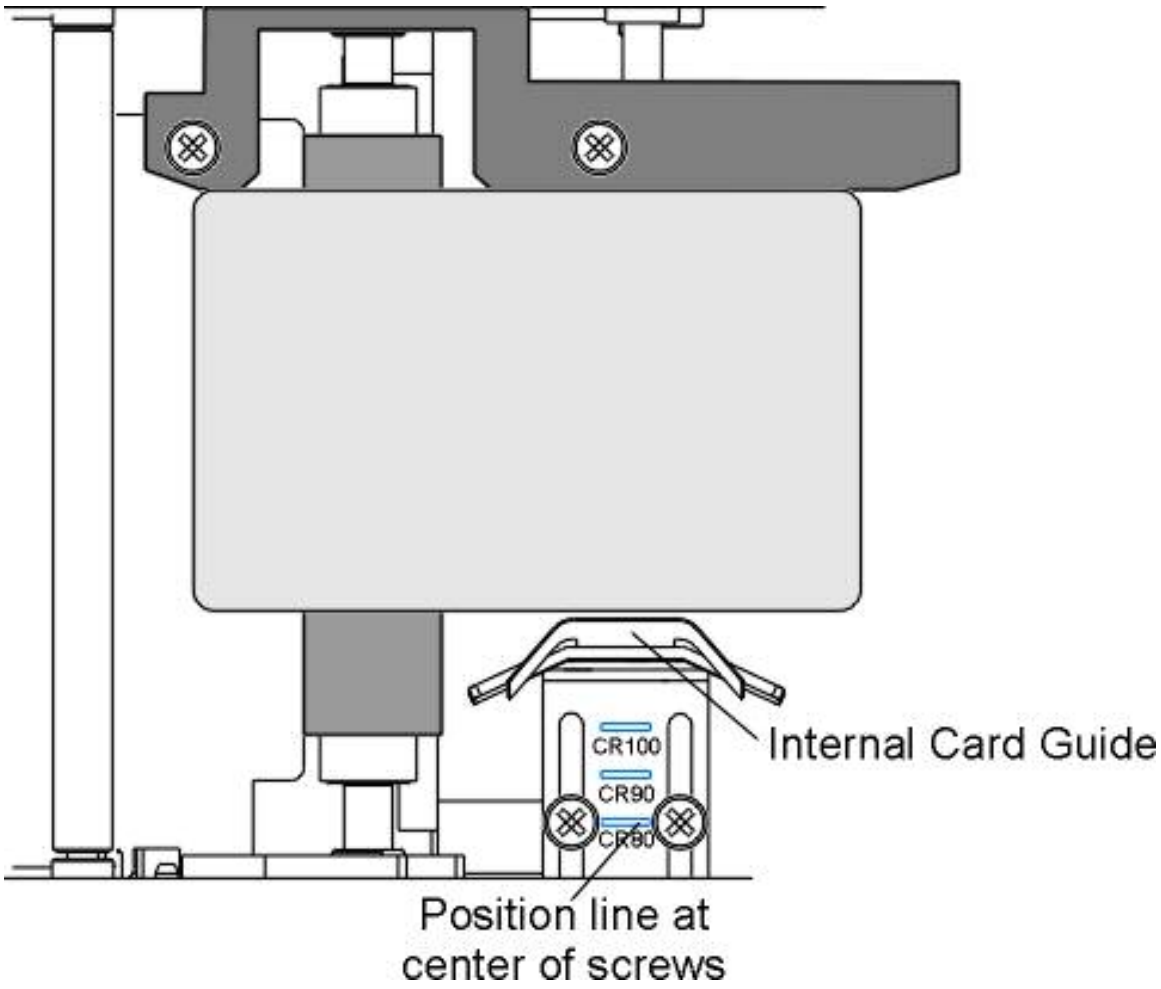
Continued on the next page



Adjusting the Internal Card Guide (continued)

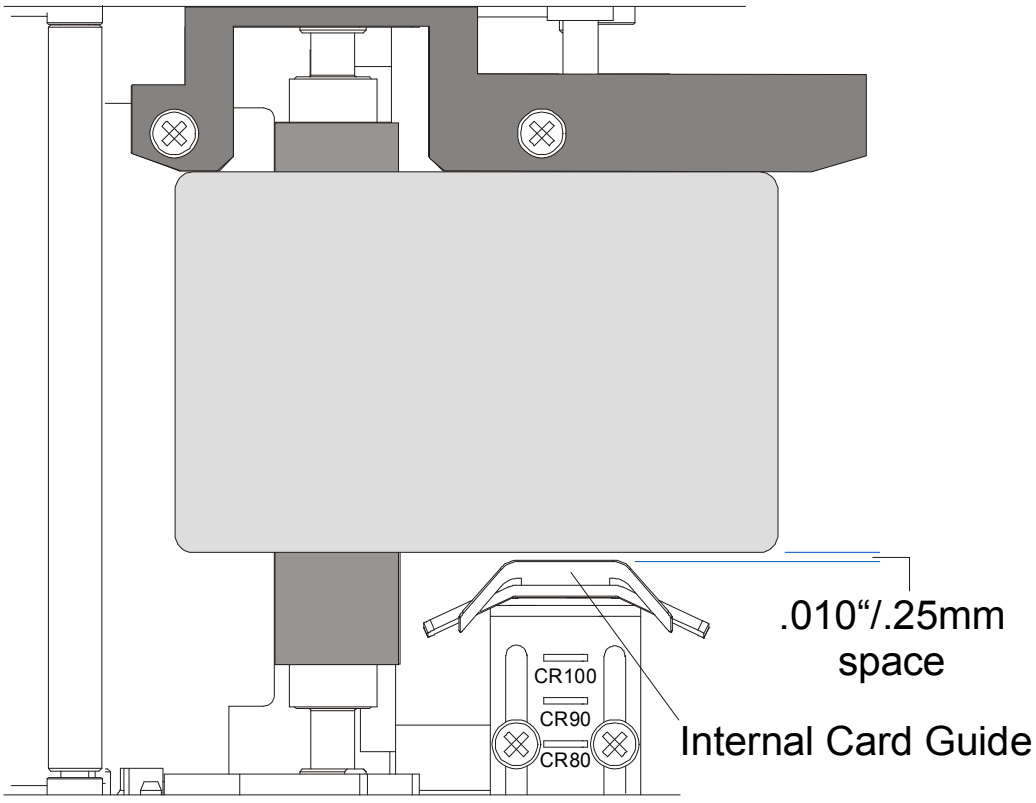
Step	Procedure
2	Adjust the Internal Card Guide according to the card size on which you intend to print and laminate (CR-80, CR-90 or CR-100). Use the card size markings on the Internal Card Guide as a general reference for the proper position. As shown here, position the card size line at the center of the two adjustment screws. Be sure the Internal Card Guide always remains parallel with the Card Guide Rail when adjusting. If necessary, adjust the Internal Card Guide as described in the remainder of this section.

Continued on the next page



Adjusting the Internal Card Guide (continued)

Step	Procedure
3	To verify proper adjustment, feed a blank card into the Module by inserting it through the output hopper and reverse feeding it by pressing the Lamination Module's **Resume** button. (**Note:** Manually position the card so its edge is flush with the Card Guide Rail.)
4	When adjusted properly, there should be a slight space of about .010"/.25mm between the card edge and the Internal Card Guide as indicated here. (**Note:** Adjust further to this indicated position if necessary.)
5	Always make very slight adjustments to the Internal Card Guide and run a test print after each adjustment until the optimum position is found. (**Note:** Be sure the Internal Card Guide always remains parallel to the card path and that the screws loosened in step 1 are retightened after each adjustment.)



Attaching the Card Lamination Module

The Card Lamination Module can be attached as a field upgradeable option. (**Note:** This can typically be done in 30 minutes or less and with no other tools than a Phillips screw Driver.)

This section applies only if you are installing the field upgradeable Card Lamination Module onto a Printer. (**Note:** The Printer model must be capable of accepting this Module as not all Printer models are compatible with this field upgradeable option. HDP800 Series Printers with a serial number greater than A2360028 are compatible with the Card Lamination Module.)

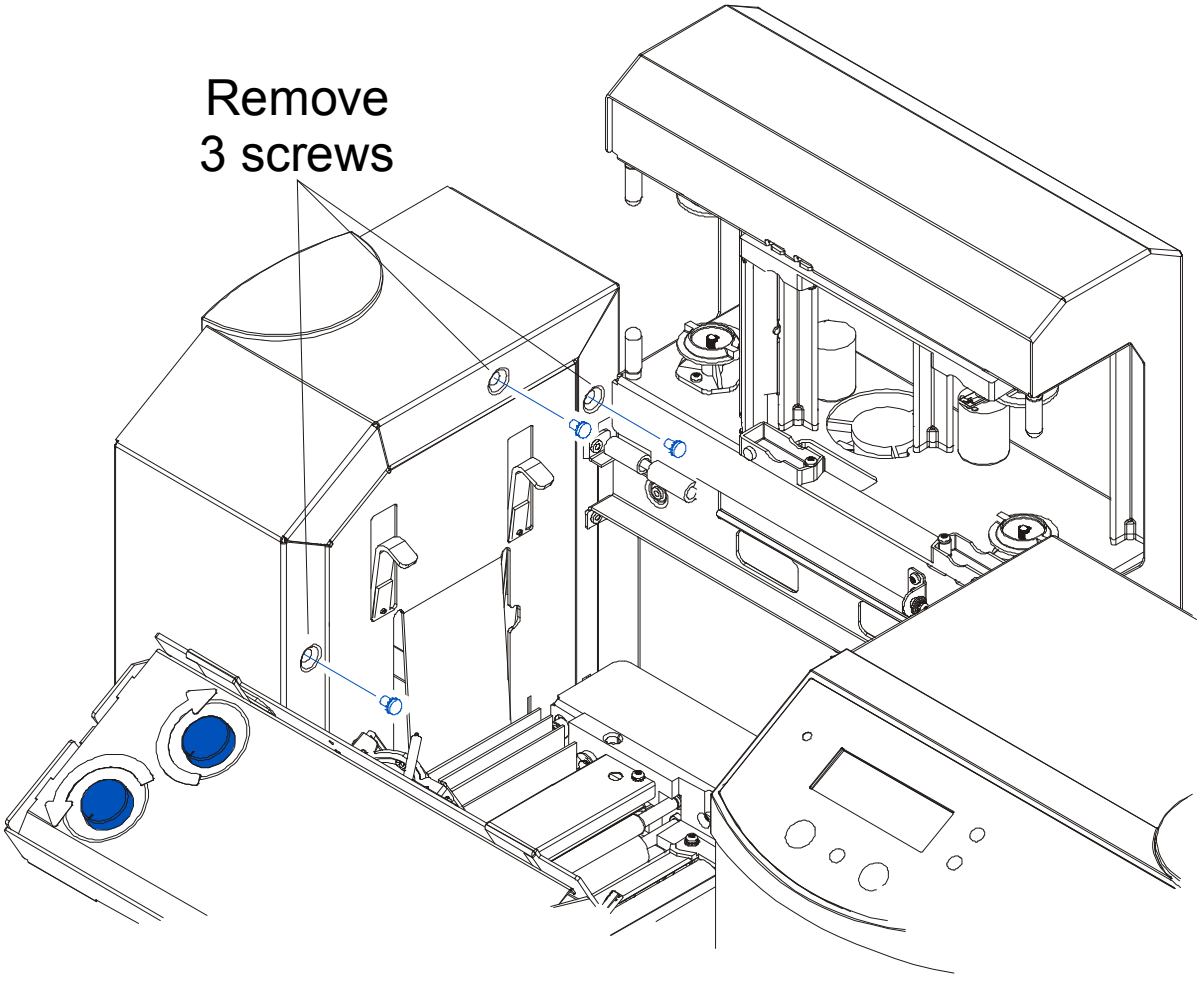
Step	Procedure
1	Remove the Card Lamination Module from its packaging.
2	Disconnect the power cable from the Printer.
3	Open the Printer's Print Station and Transfer Station. (**Note:** Leave these open for the entire procedure until you are instructed to close them.)

Continued on the next page

Attaching the Card Lamination Module (continued)

Step	Procedure
4	Remove the three (3) screws fastening the Card Output Hopper's main enclosure to the Printer.

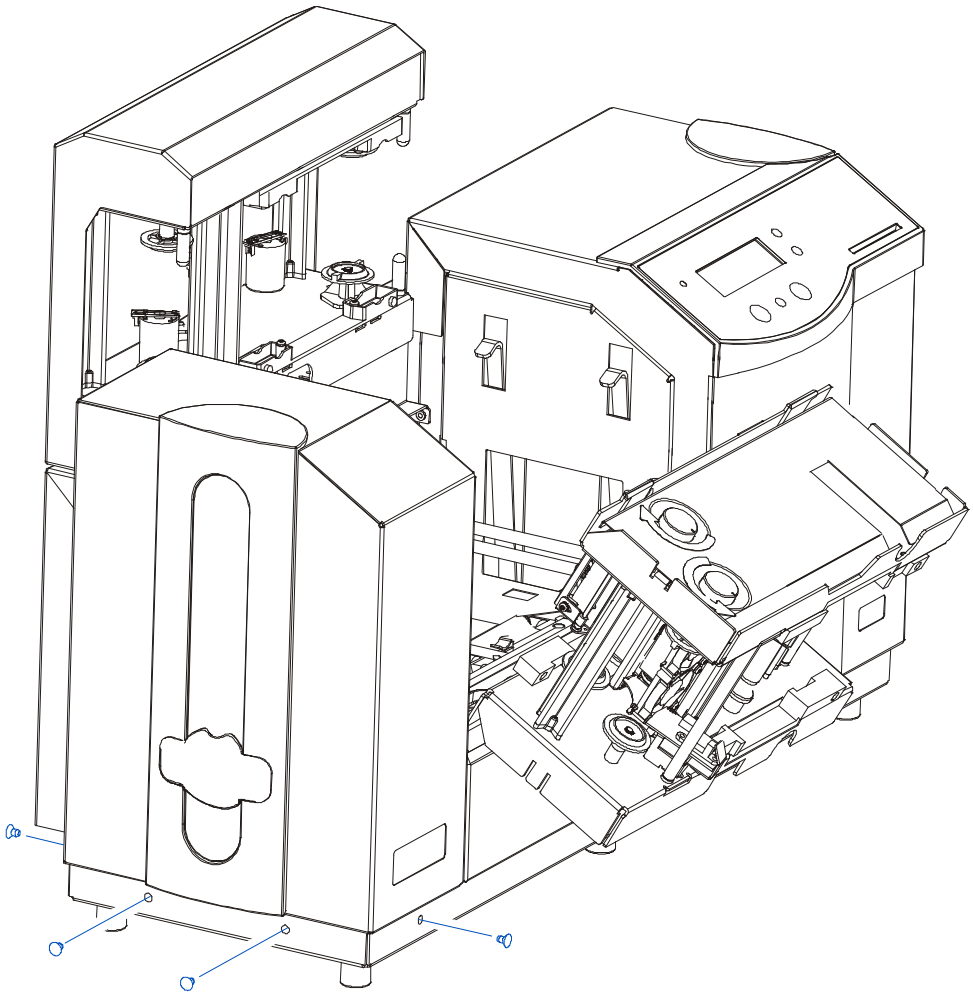
Continued on the next page



Attaching the Card Lamination Module (continued)

Step	Procedure
5	Remove the four (4) black screws fastening the Card Output Hopper's main enclosure to the black Baseplate.

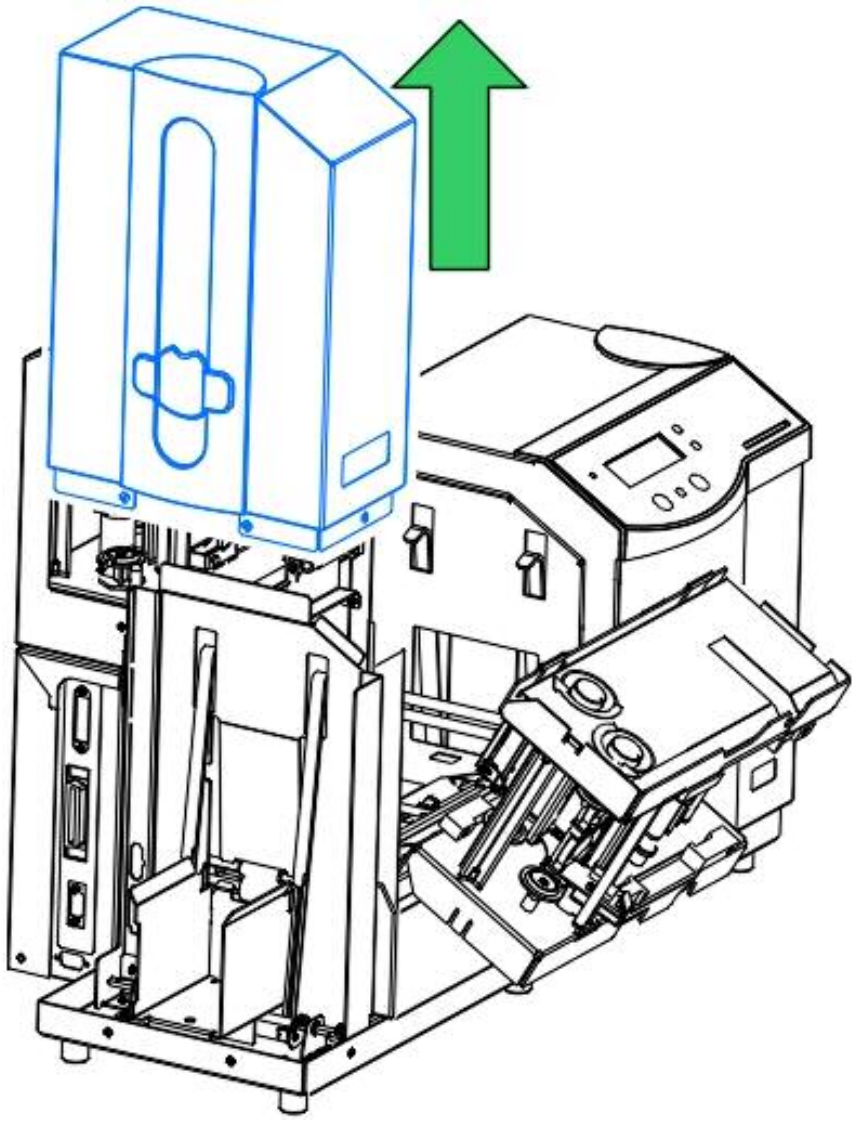
Continued on the next page



Attaching the Card Lamination Module (continued)

Step	Procedure
6	Remove the Card Output Hopper's main enclosure by lifting it up and off of the Printer.

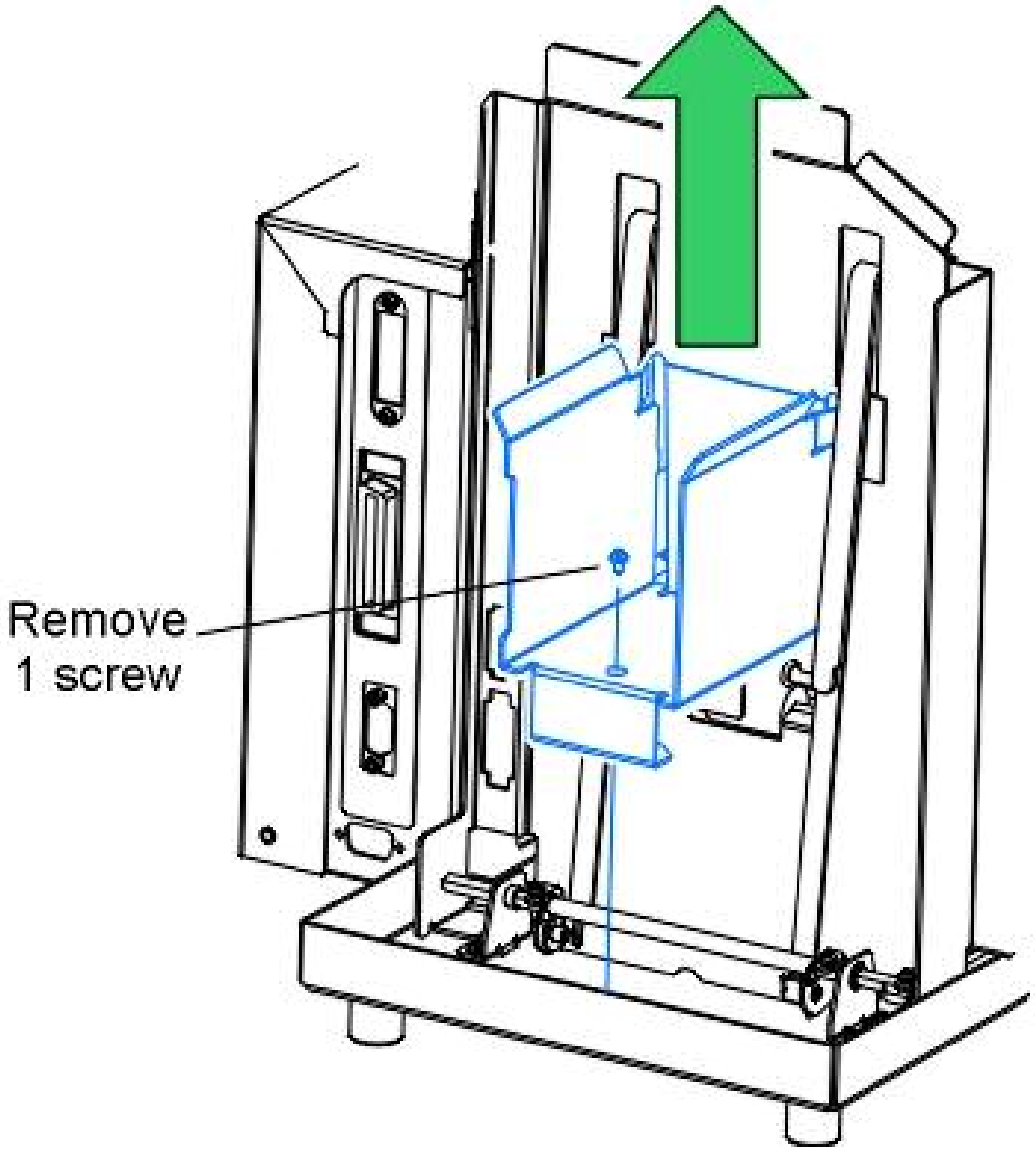
Continued on the next page



Attaching the Card Lamination Module (continued)

Step	Procedure
7	Remove the one (1) screw which fastens the Card Output Bin to the Baseplate and lift the bin up and off of the Printer.

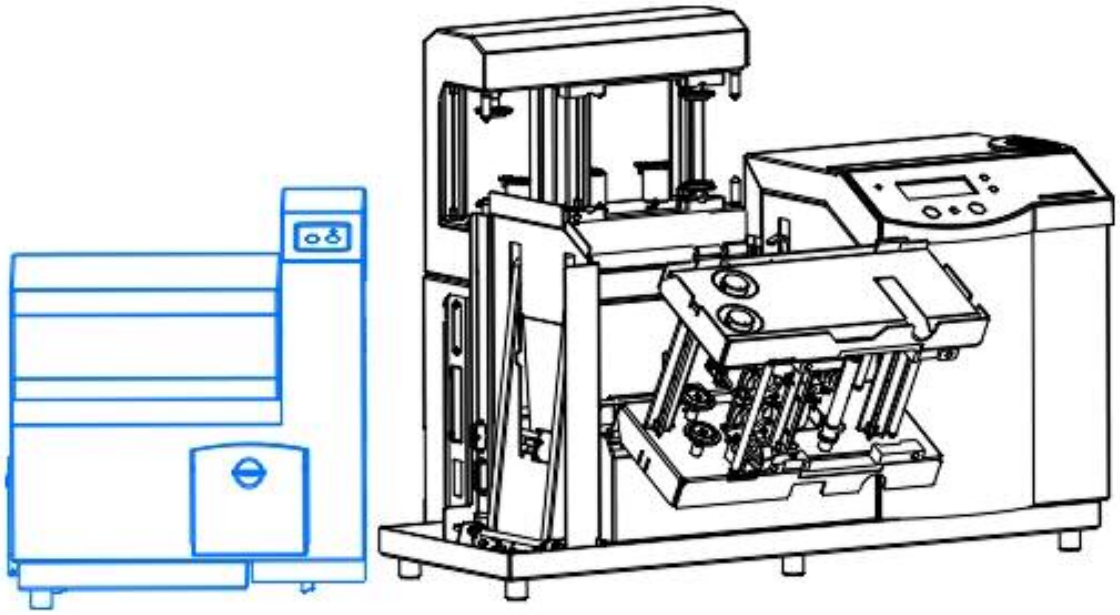
Continued on the next page



Attaching the Card Lamination Module (continued)

Step	Procedure
8	In all, eight (8) screws, the Card Output Hopper's main enclosure and the Card Output Bin should now be removed from the Printer. (**Note:** Set these items aside.)
9	Set the Card Lamination Module just to the left of the Printer and at a slight angle as shown.

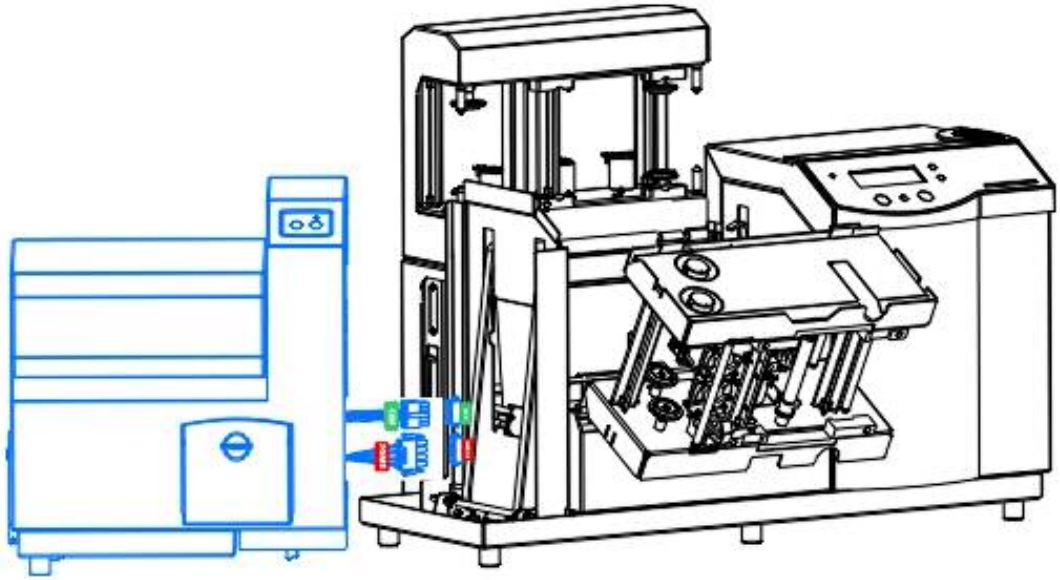
Continued on the next page

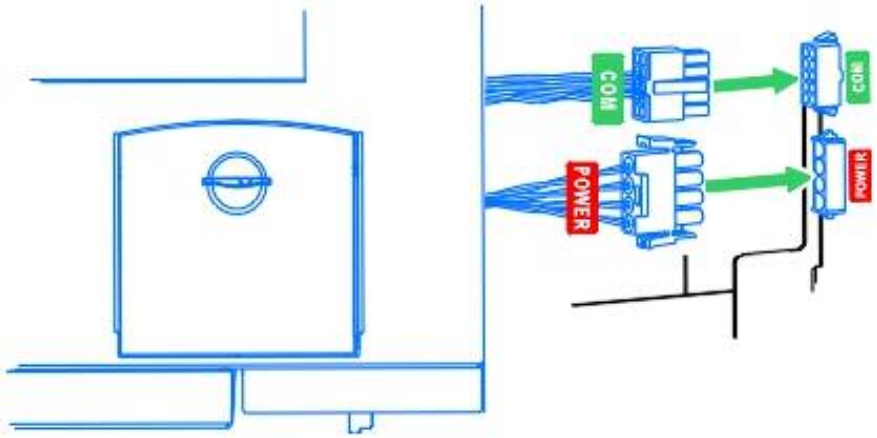


Attaching the Card Lamination Module (continued)

Step	Procedure
10	a. Connect the Lamination Module's Power Cable to the Printer's Power Port. (**Note:** Both are labeled with a red Power label.) b. Push firmly to ensure both are securely connected. (**Note:** The port and cable are keyed for one way installation.)

Continued on the next page

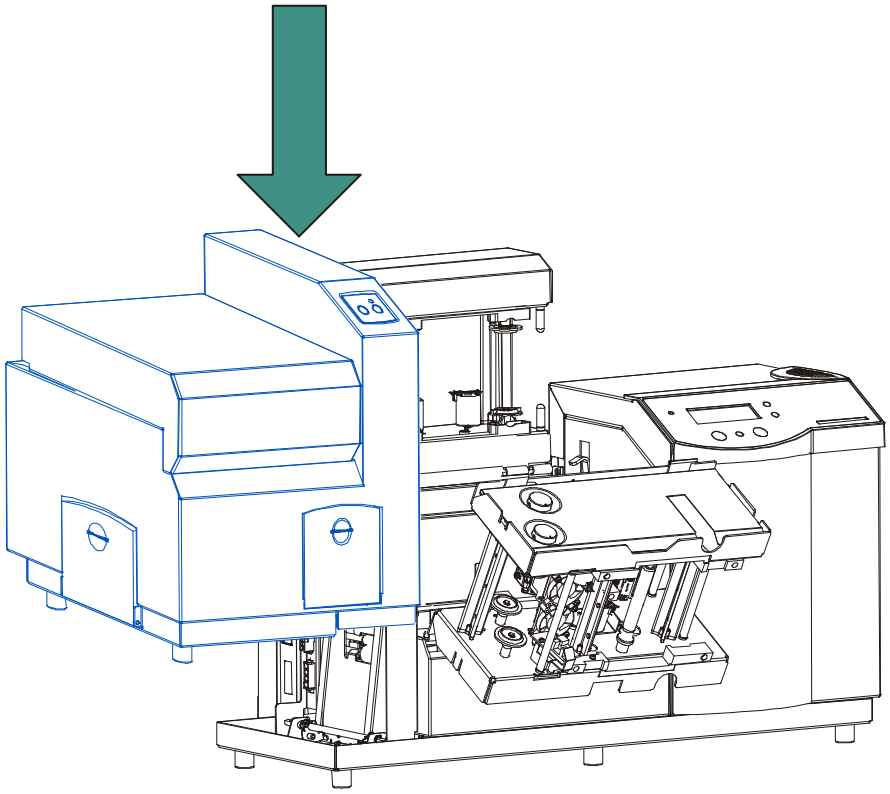




Attaching the Card Lamination Module (continued)

Step	Procedure
11	Connect the Lamination Module's Communication Cable to the Printer's Communication Port. (**Note:** Both are labeled with a green COM label.) Push firmly to ensure both are securely connected. (**Note:** The port and cable are keyed for one way installation.)
12	Leaving the Print Station and Transfer Station in the fully open position, move the Release Lever to the Locked position to close the Printer's Securing Latches. (**Note:** This will hold them out of the way for the next steps.)
13	Set the Card Lamination Module onto the Printer by lifting it up about 4-inch/10cm off the table top and sliding it down onto the Printer's Baseplate. (**Note:** Be sure no cables are pinched or damaged during this step.)

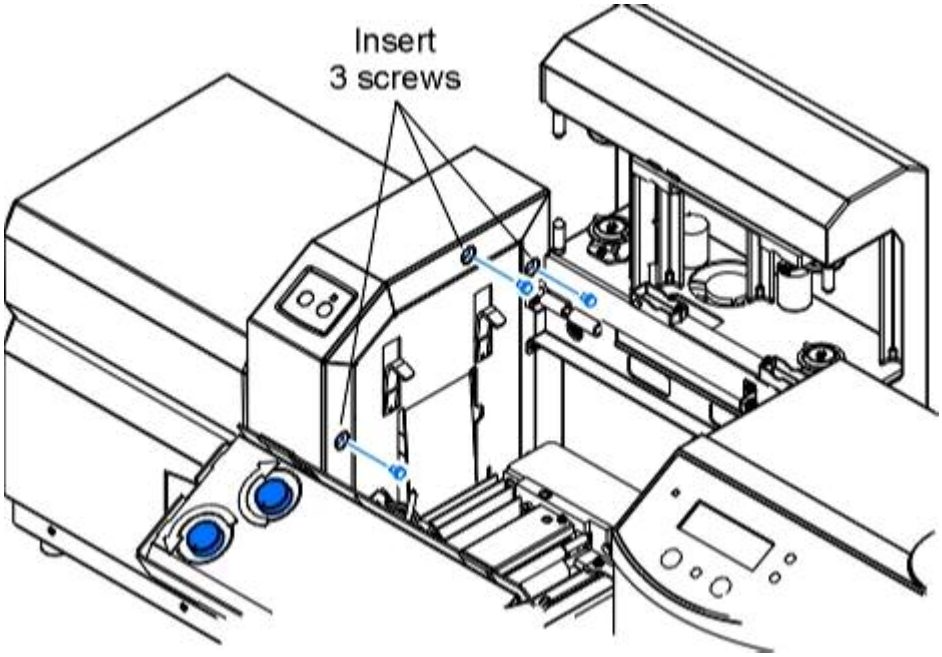
Continued on the next page



Attaching the Card Lamination Module (continued)

Step	Procedure
14	Insert three (3) screws into the top of the Card Lamination Module, shown below.

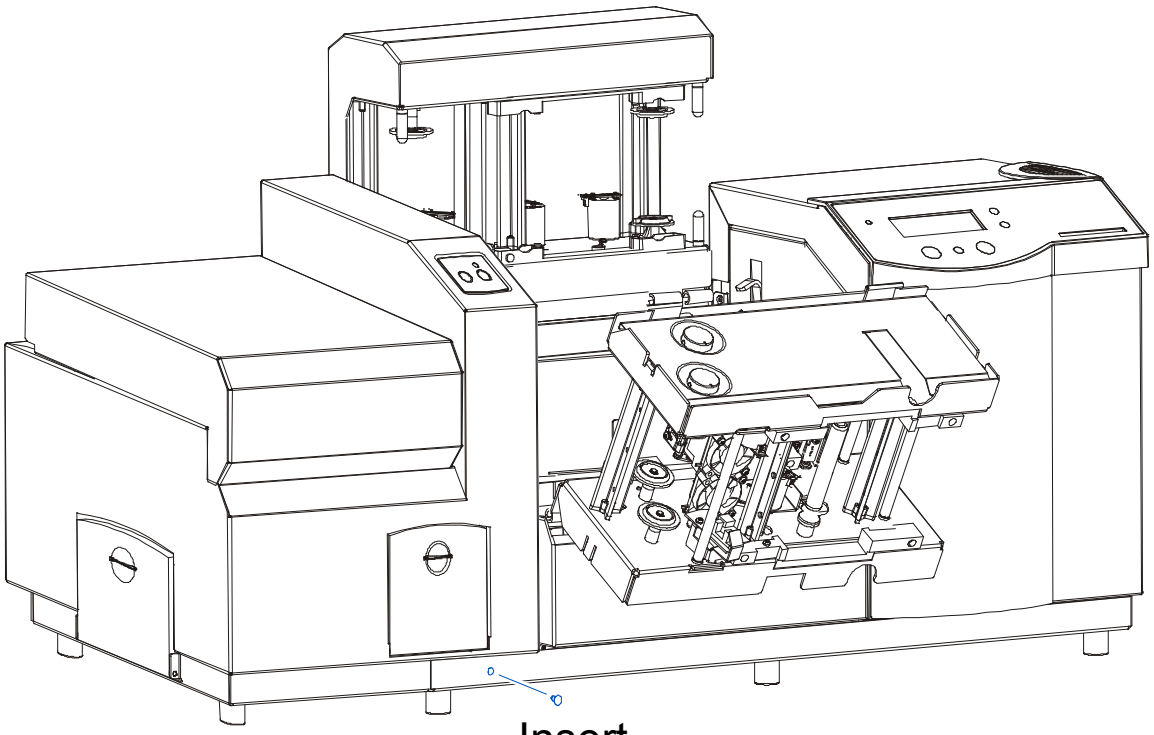
Continued on the next page



Attaching the Card Lamination Module (continued)

Step	Procedure
15	Insert one (1) black screw into the bottom, front of the Card Lamination Module, as shown below.

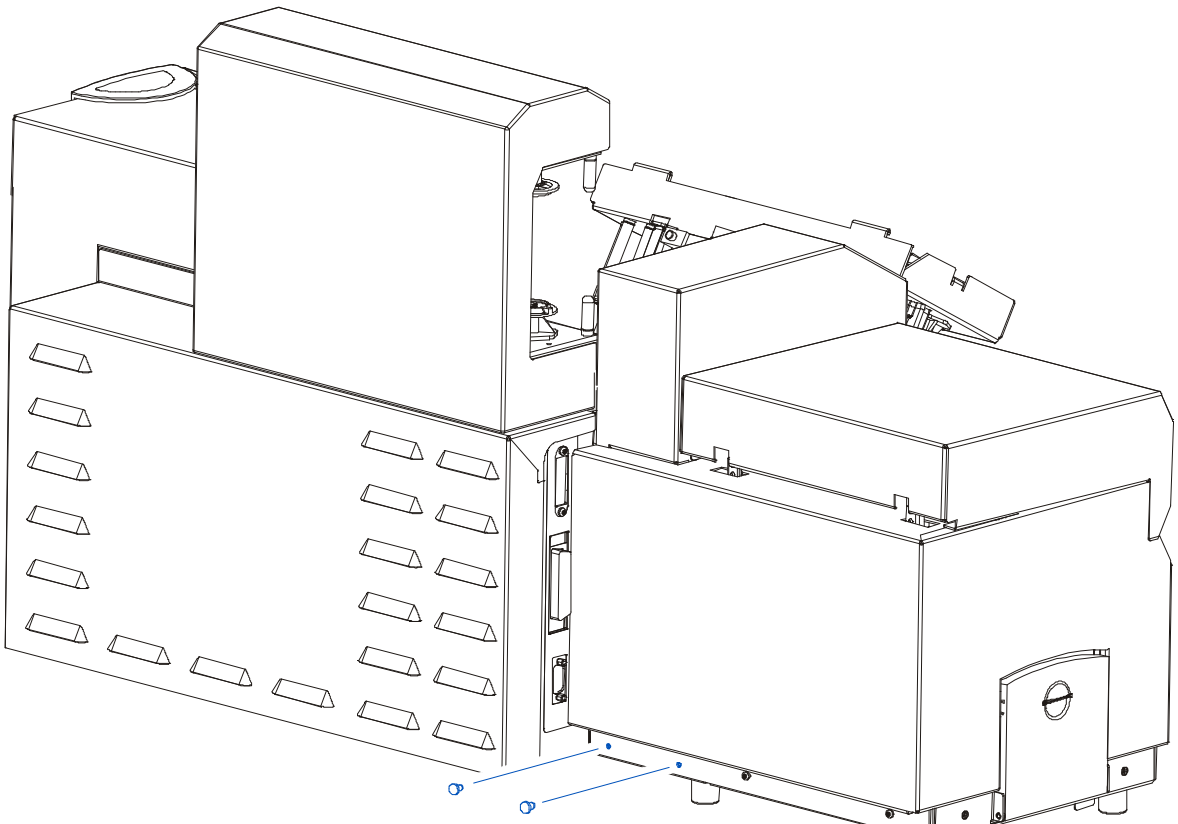
Continued on the next page



Attaching the Card Lamination Module (continued)

Step	Procedure
16	Insert two (2) screws into the bottom, rear of the Card Lamination Module, as shown below.

Continued on the next page



Attaching the Card Lamination Module (continued)

Step	Procedure
17	Move the Printer's Release Lever to the Unlocked position and close the Print Station and Transfer Station.
18	Installation of the field upgradeable Card Lamination Module is now complete. To ensure a successful installation, install cards, Print Ribbon, HDP Film and overlaminate and run the Lamination Self Test (color/Resin YMCK+L).
19	Install the LC version of the Printer model's Print Driver. Refer to the Lamination tab for Lamination-related Printer Driver options. See the Using the Lamination tab (only with Card Lamination Module) procedure in Section 4 on page 238. (**Note:** The packaging for the HDP Printer has been designed to accommodate shipping either the Printer-only or the fully assembled Printer with Lamination Module. After assembling the complete Printer/Lamination system, use the Printer packaging when transporting the unit.)

Section 4: Printer Adjustments

The purpose of this section is to provide the User with specific information on Printer adjustment procedures.

Safety Messages (review carefully)

Symbol	Critical Instructions for Safety purposes
Danger: 	**Failure to follow these installation guidelines can result in death or serious injury.** Information that raises potential safety issues is indicated by a warning symbol (as shown to the below). • **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.
Caution: 	**This device is electrostatically sensitive**. **It may be damaged if exposed to static electricity discharges.** Information that raises potential electrostatic safety issues is indicated by a warning symbol (as shown to the below). • **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.

IMPORTANT! Fargo Card Printers require highly specialized Print Ribbons to function properly. To maximize Printer life, reliability, printed card quality and durability, you must use only Fargo Certified Supplies. For this reason, your Fargo warranty is void, where not prohibited by law, if you use non-Fargo Certified Supplies. To order additional materials, please contact your authorized reseller.

Adjusting the Card Size

The Printer is initially configured to automatically feed and print standard CR-80 sized cards. (**Note:** When loading cards which vary from this standard size or the standard 30 mil thickness, it is necessary to make simple adjustments to the Printer.)

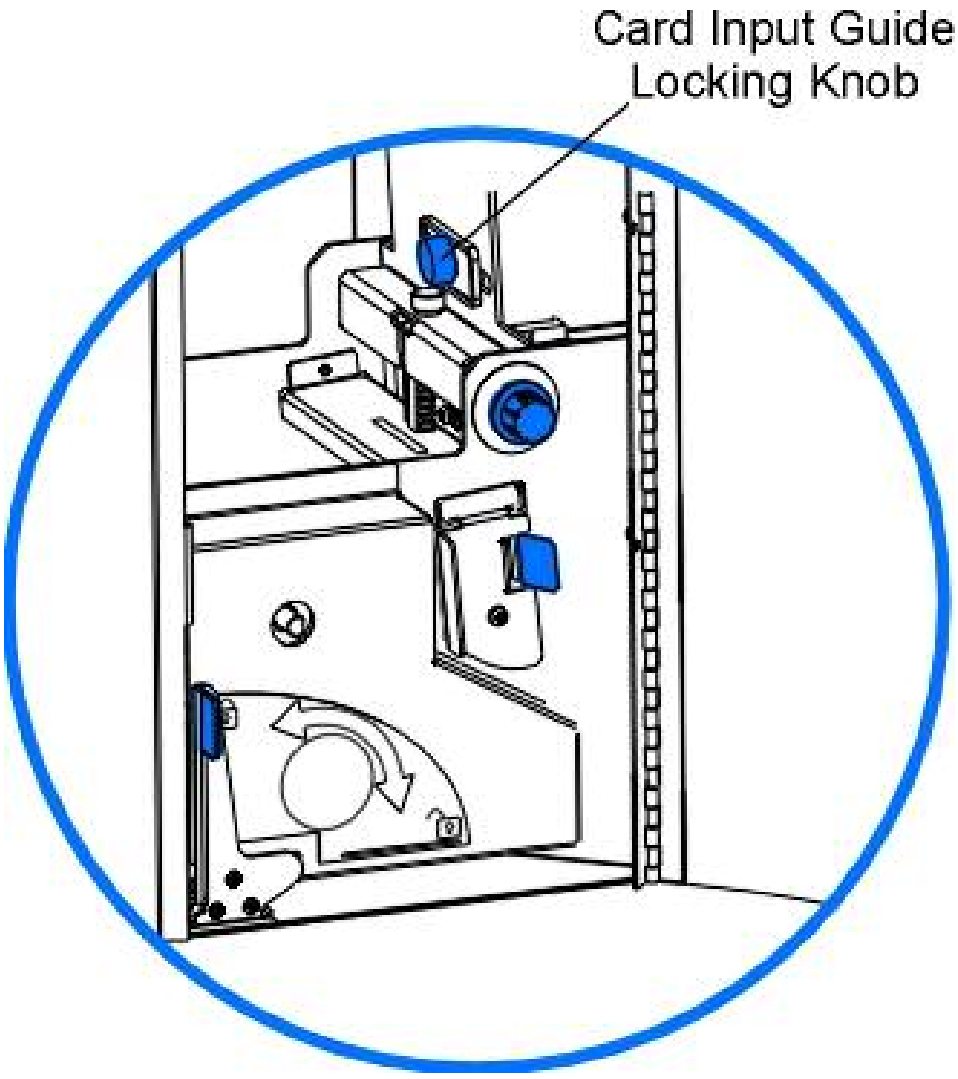
- **Wider Cards:** If loading wider cards into the Printer, adjust the Card Input Guide, Card Output Guide and Internal Card Guide.
- **Thicker or Thinner Cards:** If loading thicker or thinner cards into the Printer, adjust the Card Thickness Adjustment Knob.

Adjusting the Card Input Guide

When loading cards, it is important that the Card Input Guide rests securely against the stack of cards to ensure consistent feeding.

Step	Procedure
1	Before moving the Card Input Guide, loosen the guides Locking Knob. (**Note:** To do this, open the Front Access Door and loosen the Locking Knob by turning it counter-clockwise.)

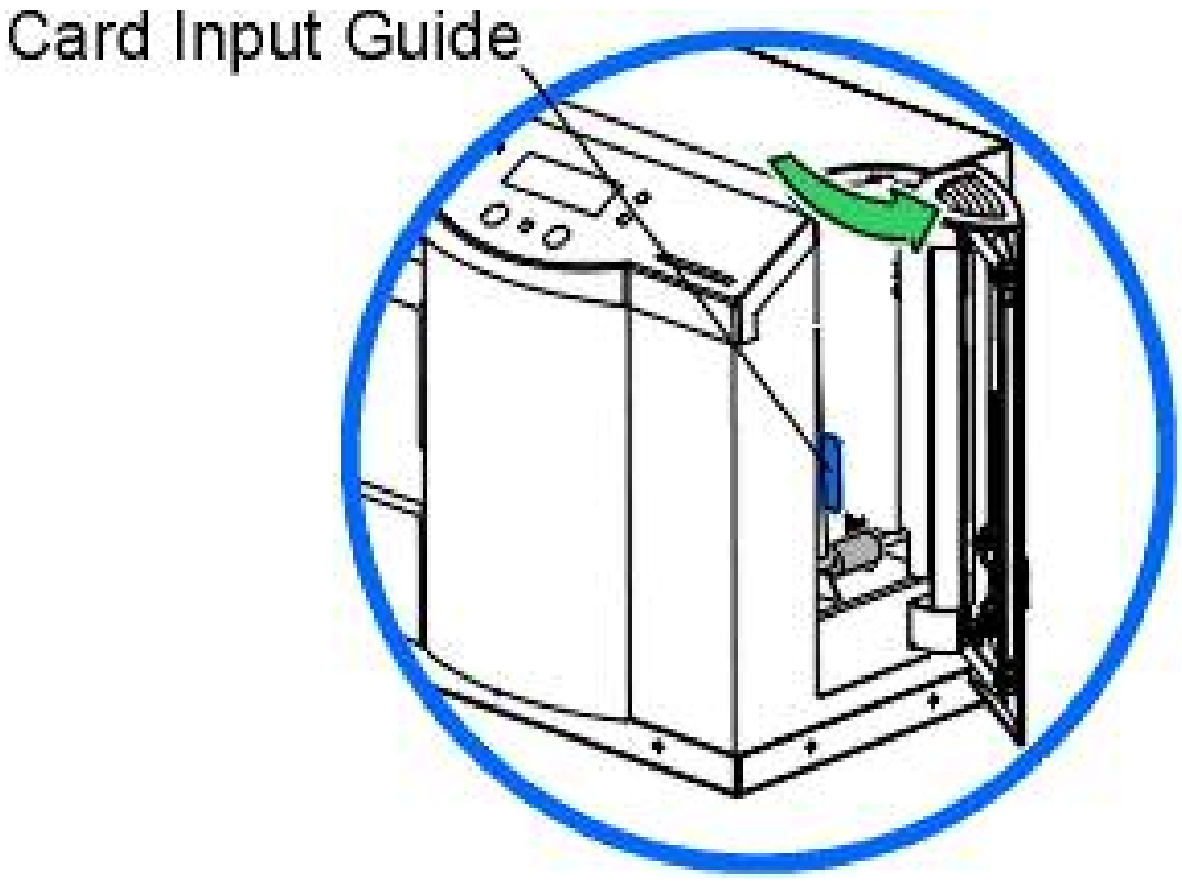
Continued on the next page



Adjusting the Card Input Guide (continued)

Step	Procedure
2	Open the Card Input Hopper Door and locate the Card Input Guide closest to the front of the Printer.

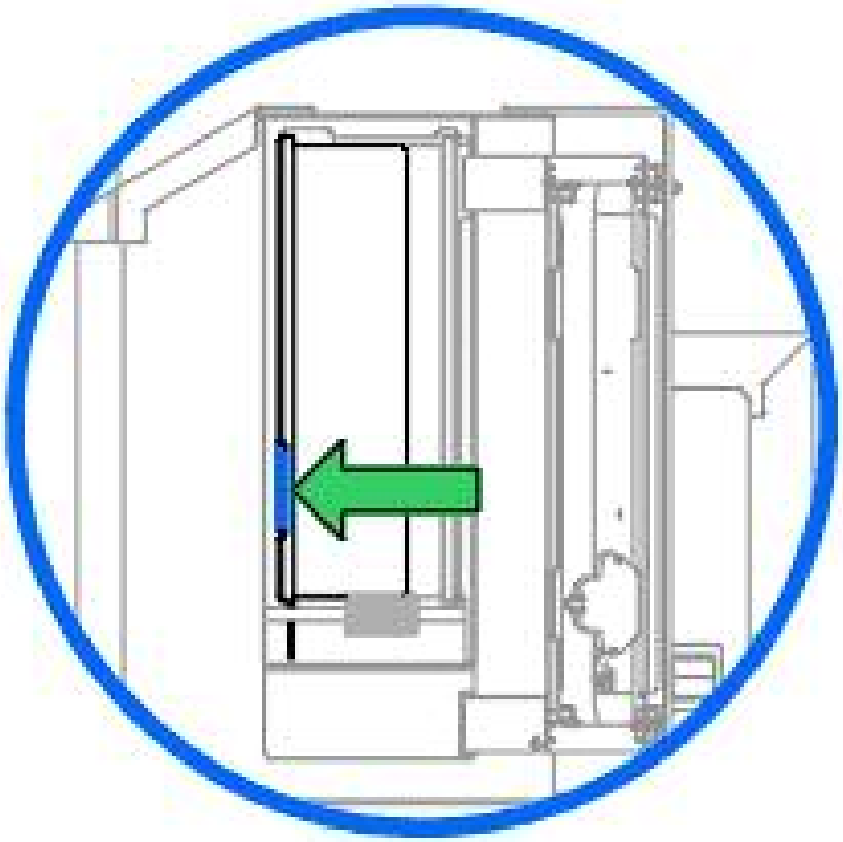
Continued on the next page



Adjusting the Card Input Guide (continued)

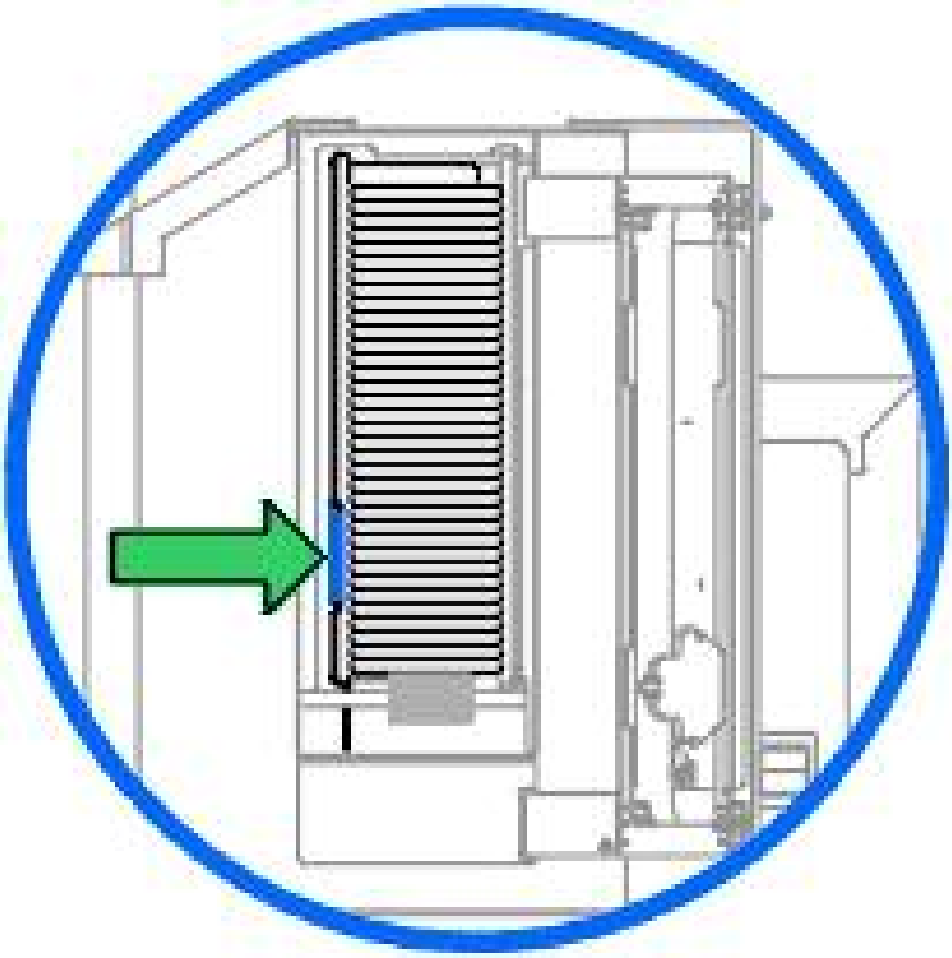
Step	Procedure
3	Adjust this guide is adjustable and move it slightly to the left or right. Push the Card Input Guide out of the way and insert a stack of at least 100 cards.

Continued on the next page



Adjusting the Card Input Guide (continued)

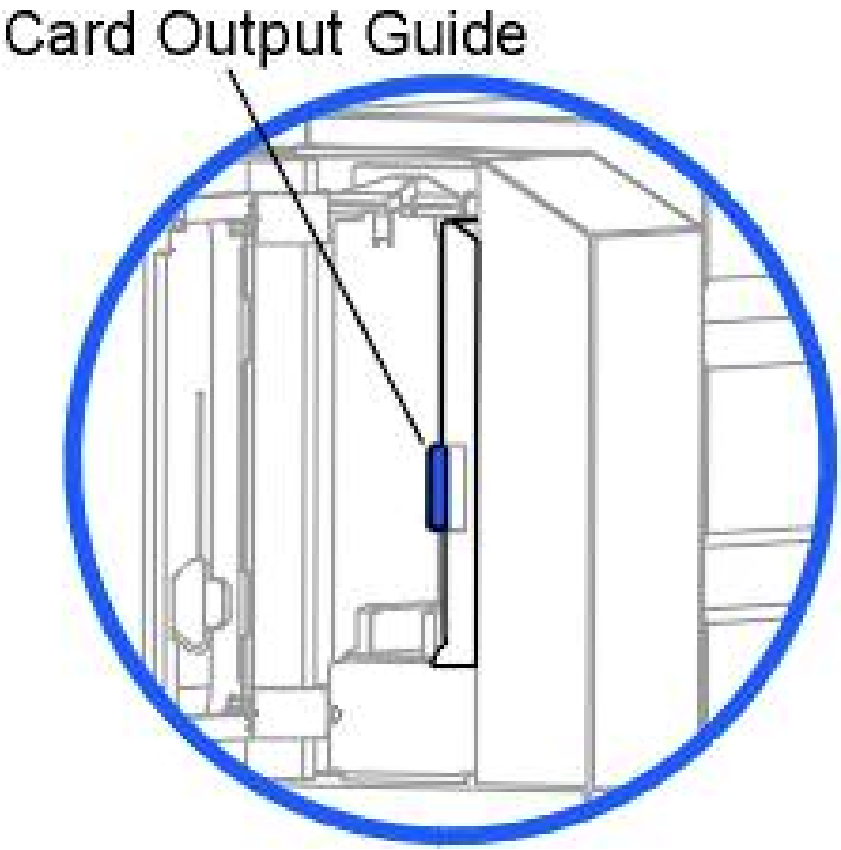
Step	Procedure
4	Push the Card Input Guide back into position so that it rests flush against the side of the card stack.
5	Once the Card Input Guide is adjusted properly, retighten the Locking Knob loosened in step 1.



Adjusting the Card Stacker Output Guide

Step	Procedure
1	Open the Card Output Hopper Door and locate the Card Stacker Output Guide closest to the front of the Printer. • Adjust the stacker's Card Output Guide to the proper card size prior to printing. (**Note:** This will ensure consistent card ejecting and stacking.) • If the Card Stacker Output Guide is not set prior to printing, it can cause jams.

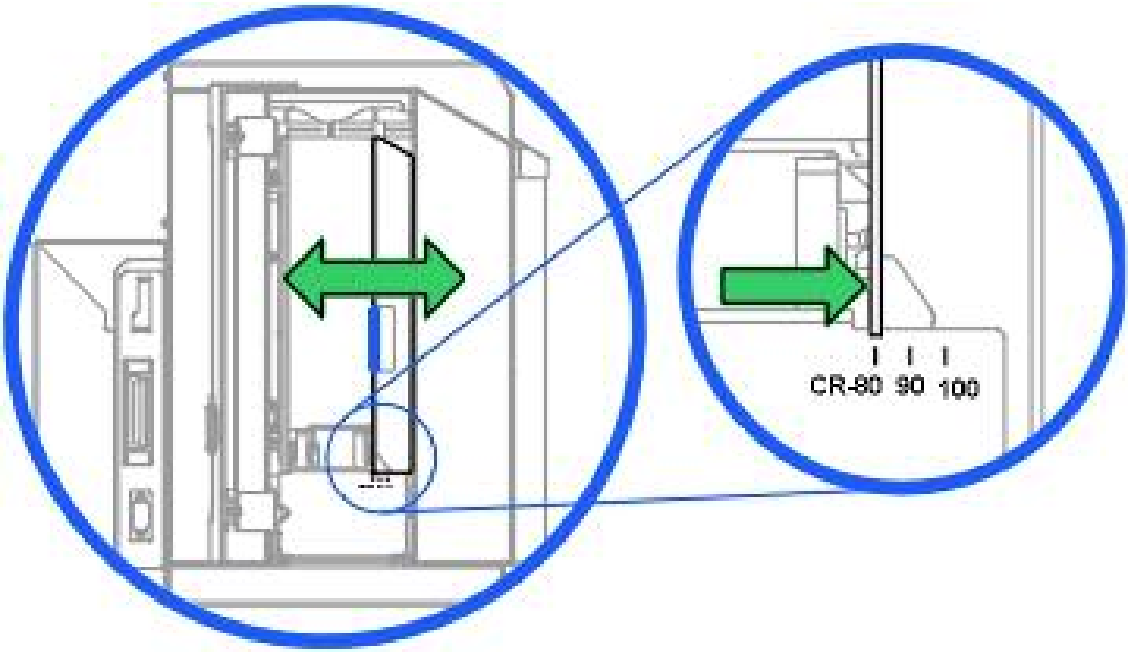
Continued on the next page



Adjusting the Card Stacker Output Guide (continued)

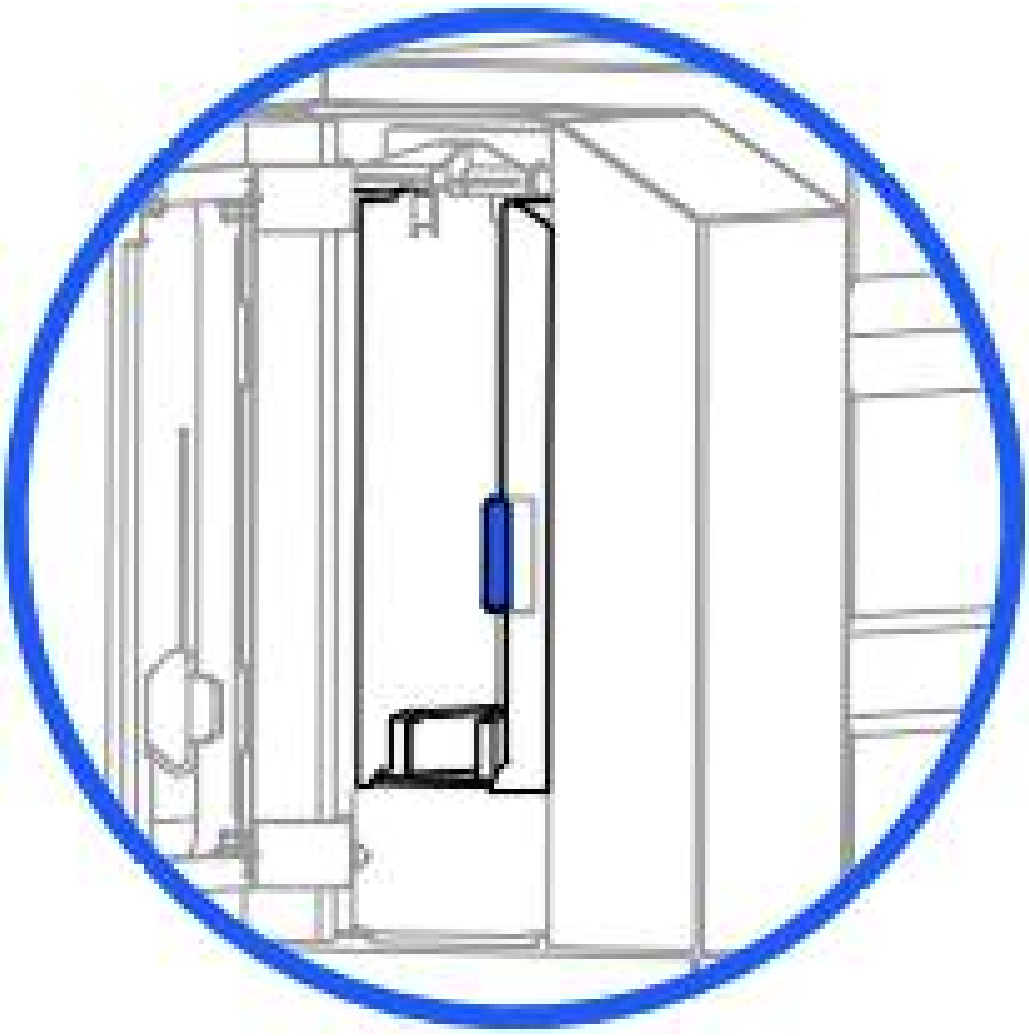
Step	Procedure
2	This guide is adjustable. Move the Card Output Guide to the CR-80, CR-90 or CR-100 setting according to the specific size of the cards.

Continued on the next page



Adjusting the Card Stacker Output Guide (continued)

Step	Procedure
3	Close the Card Output Hopper Door. (**Note:** To make sure the cards remain neatly stacked in the Card Output Hopper, always keep the hopper door closed during printing.)



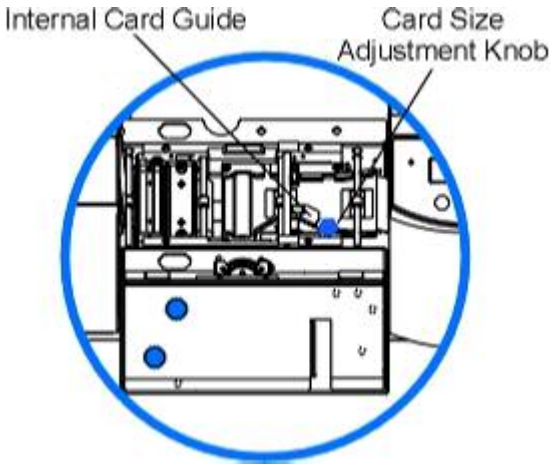
Adjusting the Internal Card Guide

Adjust the Printer's Internal Card Guide to the proper card size prior to printing to ensure consistent card feeding throughout the printing process.

If you do not set this guide prior to printing, you could experience card jams.

Step	Procedure
1	Open the Print and Transfer Stations.
2	Locate the Internal Card Guide and the Card Size Adjustment Knob.

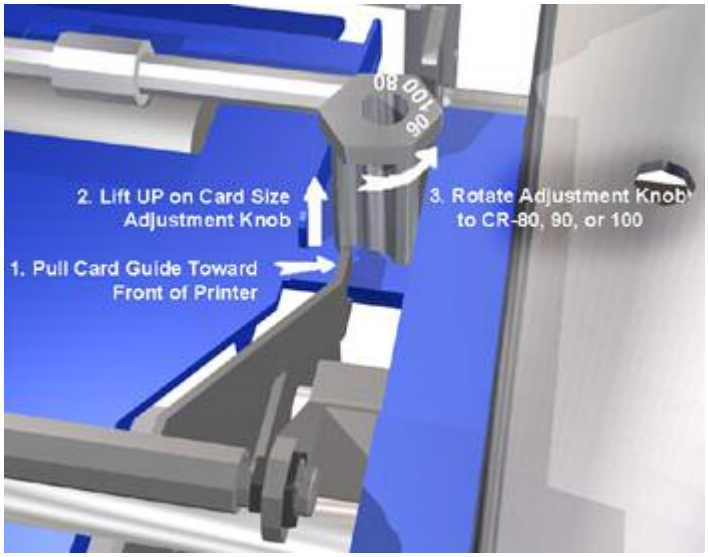
Continued on the next page



Adjusting the Internal Card Guide (continued)

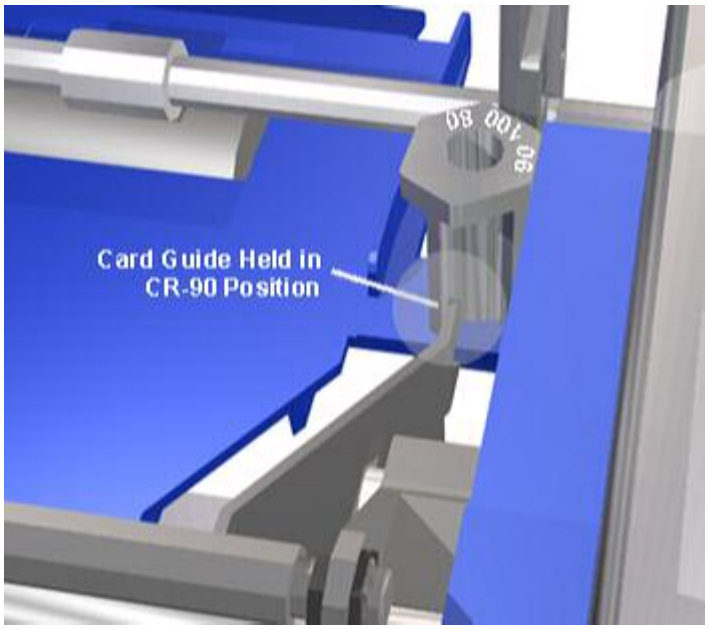
Step	Procedure
3	Pull the Internal Card Guide toward the front of the Printer until it stops.

Continued on the next page



Adjusting the Internal Card Guide (continued)

Step	Procedure
4	While holding the guide forward, lift the Card Size Adjustment Knob up and rotate it to the desired CR-80, CR-90 or CR-100 position.
5	Release the Internal Card Guide. (**Note:** If you adjusted to the CR-90 or CR-100 position, the Internal Card Guide will now rest against the Card Size Adjustment Knob as shown in the above illustration. This allows the Printer to consistently feed and print onto the wider card stock.)

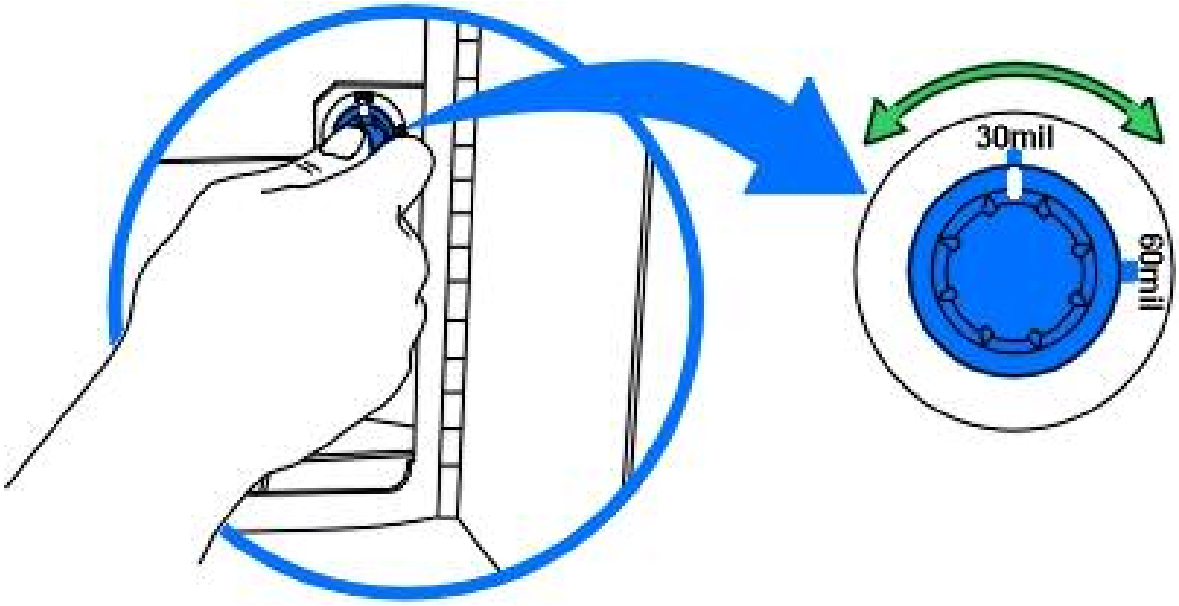


Adjusting the Card Thickness Knob

When loading thicker or thinner cards, it is important that the Card Thickness Adjustment Knob be set accordingly to ensure the Printer feeds only one card at a time. (**Note:** If the Printer is equipped with the Card Lamination Module, only cards with a thickness ranging from 30 mil to 40 mil can be laminated. Thicker cards will, however, be allowed to pass through the Lamination Module if you choose to print-only.

Step	Procedure
1	Open the Printer's Front Access Door and locate the Card Thickness Adjustment Knob.
2	Rotate this knob clockwise to the setting that matches the thickness of the cards. (**Note:** If you do not find a setting for the exact card thickness, set the adjustment knob to the setting closest to the thickness of the cards.) The adjustment knob controls the position of the Printer's internal Card Separator, which is designed to accommodate a range of card thicknesses surrounding the given card thickness settings.

Continued on the next page



Fine-Tuning the Card Separator Adjustment Assembly (D840995)

See Drawing D841087.

The height of the Card Input Guide may need to be fine-tuned to accommodate a specific card thickness. The example given below describes adjusting the Card Input Guide for a 30-mil card.

Tools Needed:

- .005 in. Feeler Gauge (Or a single sheet of paper)
- Card (of appropriate thickness)

Step	Procedure
1	Place the card in the Card Input Hopper with the trailing edge of the card over the center line of the outside Feed Roller.
2	Position the Feeler Gauge (or sheet of paper) on top of the card and just under the Card Separator.
3	Adjust the Card Thickness Adjustment Knob. a. Locate the Card Thickness Adjustment Knob. b. Adjust this knob to the setting that most closely matches the thickness of the card.
4	Adjust the Card Separator Adjustment Assembly (D840995). a. Move the Height Adjustment Thumb Screw up and down until the gauge or the paper on top of the card just touches the clear rubber. • If the gap above the card is too small, the card will not feed. • If the gap above the card is too large, multiple cards may feed. b. After completing this adjustment, be sure to test it for efficiency levels. c. Feed a card with a few other cards into the hopper. d. Place a full stack of cards in the Card Input Hopper and feed a few cards. e. Continue to adjust the Card Separator Adjustment Assembly (as needed).

Printing on Alternate Card stocks

Selecting the Right Cards and optimize the HDP Print Process

In order to optimize the HDP Card Printer's capabilities for cards with hard-to-print surfaces, we recommend evaluating the card stock selection before installation of the Printer.

The variability in cards based on:

- **Different surface textures and different sources of raw materials:** This may require different HDP Film transfer parameters.
- **Varied methods of assembling IC smart cards and proximity cards:** These particular adhesives used to glue a smart chip to a plastic card may react differently to a Lamination roller's pressure and temperature.
- **Cleanliness of card stock:** The HDP process does not eliminate the need to use clean card stock. The best-looking card always starts with the cleanest card surface. Dirt and debris on a card can show up as blemishes on the card surface and may reduce the life of the image itself.

Selecting the Appropriate HDP Printer Driver settings

Fargo offers two types of PVC cards: glossy UltraCard™ cards and matte-finished HDP-PVC Cards.

- **Defaults:** The HDP Printer Driver software has default Transfer Temperature, Dwell Time and Flattener Temperature settings that deliver the best transfer for these card types. These defaults automatically configure based on the card type, ribbon type and whether printing single- or dual-sided. (**Note:** The default Dwell Time of the HDP820 and HDP820-LC Printer Drivers has been changed or modified from two (2) seconds per inch to three (3) seconds per inch in order to improve adhesion and media handling capabilities, as well as to reduce printer errors.)
- **Card Type Selection:** Before printing, if using these standard Fargo card types, check to make sure that the appropriate card type option selected from the Card tab of the HDP Printer Driver:
- **Proper Settings:** It is very important to note that not all card types will be accommodated by these default settings. In some cases, experimentation may be needed to find the proper settings.

For the cases where custom settings are required, the Printer Driver's Card Type option also includes **Custom 1** and **Custom 2** options.

- **Settings:** These settings allow designating a unique Card Type name, which then saves custom Image Transfer settings.
- **Custom 1:** For example, Custom 1 could be changed to read as My Cards. Custom transfer settings would then be available whenever this Card Type option is selected and would be saved each time the Printer Driver setup window is closed.
- **Custom Card stock:** To determine the proper settings for custom card stock, Fargo recommends the Tape Adhesion Test in the next procedure on page 181.

Continued on the next page

Selecting the appropriate HDP Printer Driver settings (continued)

Card/Ribbon Type	Transfer Temp	Transfer Time	Flattener Temp [1]
UltraCards-Glossy PVC + non-H Panel ribbon	175º	2 seconds/inch	Dual Side: 75º Single Side: 90º
HDP Cards-Matte PVC + non-H Panel ribbon	195º	2 seconds/inch	Dual Side: 75º Single Side: 90º
UltraCards-Glossy PVC + H Panel ribbon [2]	175º	2 seconds/inch	Dual Side: 75º Single Side: 90º
HDP Cards-Matte PVC + H Panel ribbon [2]	175º	2 seconds/inch	Dual Side: 75º Single Side: 90º

[1] Based on 30-mil card thickness.

- For thinner cards, reduce the Flattener temperature.
- For thicker cards, increase the Flattener temperature.

[2] YMCKH Panel ribbon provides a " Heat Seal" Panel that aids in transferring to matte-finished cards and requires a lower transfer temperature. (**Note:** Only matte-finished cards with a surface roughness (Ra) of 60 micro inches or less are recommended.)

Conducting the Tape Adhesion Test

It is important to conduct Tape adhesion tests because Fargo cannot be certain which transfer temperature and Dwell Time will work best (when printing cards other than UltraCard or HDP-PVC). (**Note:** The optimal transfer settings may vary from card type to card type.)

 **Caution:** Inadequate time and temperature could produce cards that are more vulnerable to accelerated wear and dye migration. Use sufficient time and temperature to transfer HDP Film to the card to ensure a long lasting, durable card.

Step	Procedure
1	Test the adhesion quality of the HDP Film to the card by printing sample cards and completing an adhesive tape test. (**Note:** The Institute for Interconnecting and Packaging Electronic Circuits (IPC) outlines a pressure sensitive tape test that evaluates adhesion quality. Refer to their IPC-TM-650-3.7.1D test manual, Section 3.7, Number 1.)
2	Select the "UltraCards-Glossy PVC" if the card is glossy and print a test card. **OR** Select the HDP Cards-Matte PVC if the card has a buff, matte finish and print a test card.
3	a. Apply a strip of ½" (12mm) wide Scotch-type clear adhesive tape (such as 3M brand 600), at least 2" (50mm) long, firmly across the surface of the card, pressing out all air bubbles with a fingertip. b. Remove the tape by smoothly and rapidly (approximately 2 inches/second (50mm/sec)) pulling it up at a perpendicular (90 degree) angle to the card. (**Note:** The IPC recommends a minimum of three tests for each card type evaluation.)

Continued on the next page

Conducting the Tape adhesion Test (continued)

Continued on the next page

Conducting the Tape adhesion Test (continued)

Step	Procedure
4	Visually examine the card and the strip of tape pulled from the card, to see if any portion of the HDP Film was removed from the card. • If any residue (e.g., oil or grease from fingertips) is present on the card surface, the evaluation results may be affected. • If the printed, transferred HDP Film particles (a) pull away from the card and (b) adhere to the tape, this indicates that inadequate adhesion of the HDP Film to the card. Increased heat and Dwell Times are necessary to resolve this problem. Samples 1, 2 and 3 show a representation of the adhesion level you can expect. • **Result 1:** Sample 1 shows a significant transfer to the tape and is an absolute failure. • **Result 2:** Sample 2 shows that very slight transfer to the tape can be acceptable without sacrificing overall image durability on matte finish cards. • **Result 3:** Sample 3 shows no transfer to the Tape and is an Absolute Pass.
5	If the tape test indicates inadequate adhesion, increase the heat setting by 5 degrees, print another card and try the tape test again. • Once the temperature has been increased 4 times (20 degrees), reset temperature to default and increase the Dwell Time by .5 second. • Repeat this process until adequate adhesion is achieved. • Use the YMCKH ribbon if printing to a matte-surfaced card. (**Note:** This ribbon provides a Heat Seal Panel that allows for improved adhesion to non-glossy PVC surfaces.) • Ensure that the cards (in use) have a surface roughness (Ra) of 60 micro inches or less. This information should be available from the card manufacturer.

Printer Driver Options

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 the system. To do this, select Start, Programs and point to the Fargo folder. Then, select the **Uninstall Printer Driver** icon for the specific Printer model as shown here.

Step	Procedure
1	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 the Fargo website.
2	a. 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. Fargo's downloadable Printer Driver files have names ending in .exe and are self-extracting Zip archives. (**Note:** A Zip 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.) b. Click **OK**, then choose the folder in which you would like to save the Printer Driver file. (**Note:** You may want to save it in an empty folder to prevent mingling its files with others already on the computer.) c. Once the file has completely downloaded to the 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.)
3	To install, click the **Start** button, point to **Settings** and select **Printers**.
4	Double-click on the **Add Printer** icon.
5	Follow the on-screen instructions to begin installation. (**Note:** When prompted, click on the **Have Disk** button; the Install From Disk window will appear.)

Continued on the next page

Installing Printer Driver Updates (continued)

Step	Procedure
6	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 and then click on **NEXT**.
7	Follow the remainder of the on-screen instructions to complete installation. (**Note:** When prompted, do not have Windows print a test print, since you most likely performed a Printer self test while you were setting up the Printer. Once installed, the HDP Card Printer icon will appear in the Printers folder.)

Setting Up the Printer Driver

Once the appropriate Printer Driver for the computer has been installed, you will need to set the Driver up with the proper print options. To open the Printer Driver setup window, please refer to the following steps for the specific operating system:

Setting up Windows 98SE/Windows Millennium

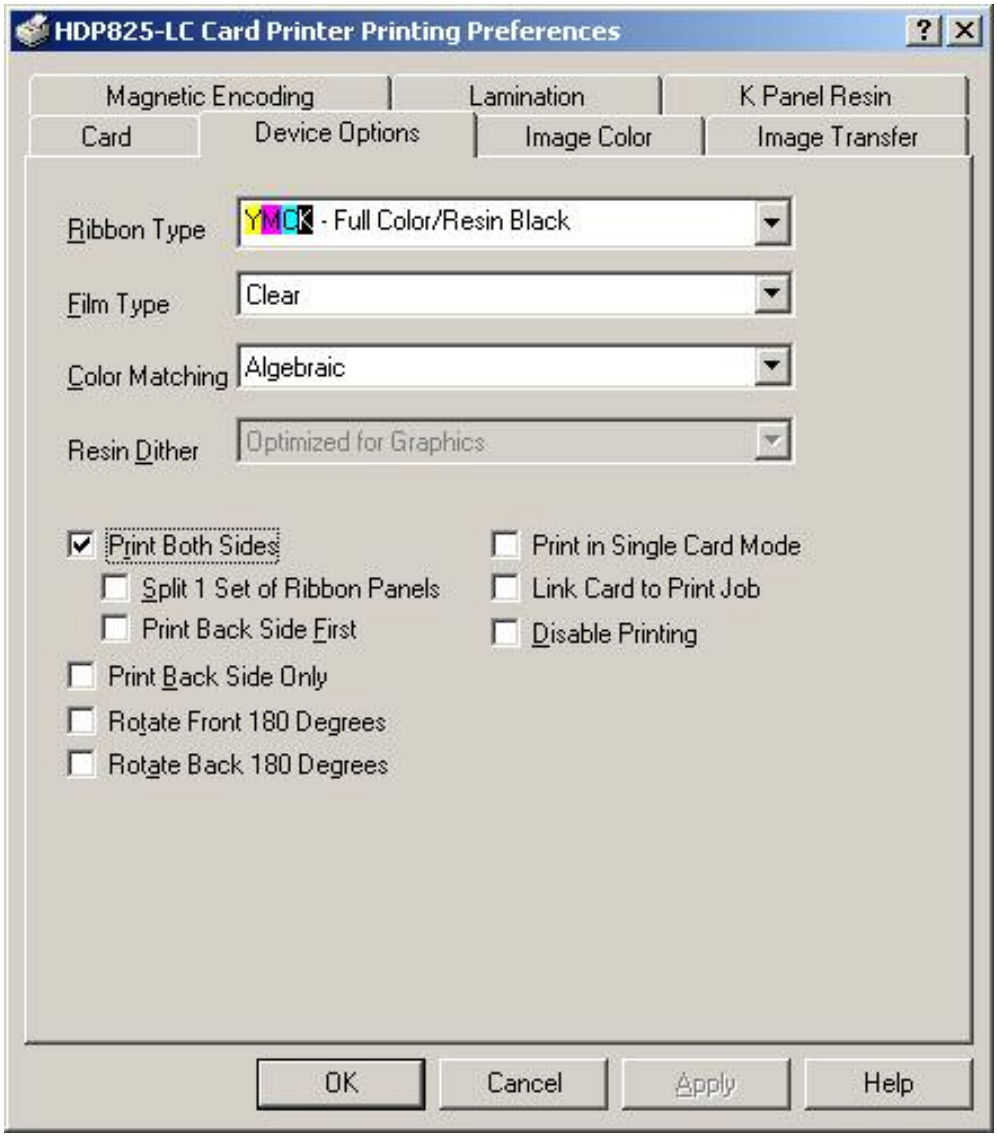
Step	Procedure
1	Click the **Start** button, point to **Settings** and select **Printers**.
2	Click on the **HDP800 Series-LC Card Printer** icon with the right mouse button and select **Properties**.

Setting up Windows NT/Windows 2000/Windows XP

Step	Procedure
1	Click the **Start** button, point to **Settings** and select **Printers**.
2	Click on the **HDP800 Series-LC Card Printer** icon with the right mouse button and select **Document Defaults...** if using Window NT or **Printing Preferences...** if using Windows 2000/XP. (**Note:** If you would like to permanently save the Printer Driver settings so you will not need to change them again, do so through the main Printer Driver setup window described above. Although most applications do allow you to change these same Printer Driver options from their own Print screens, the settings may not be permanently saved.)
3	To change or verify the appropriate Printer Driver options for the print job, please refer to the topics describing each of the Printer Driver's tabs.

Using the Device Options tab

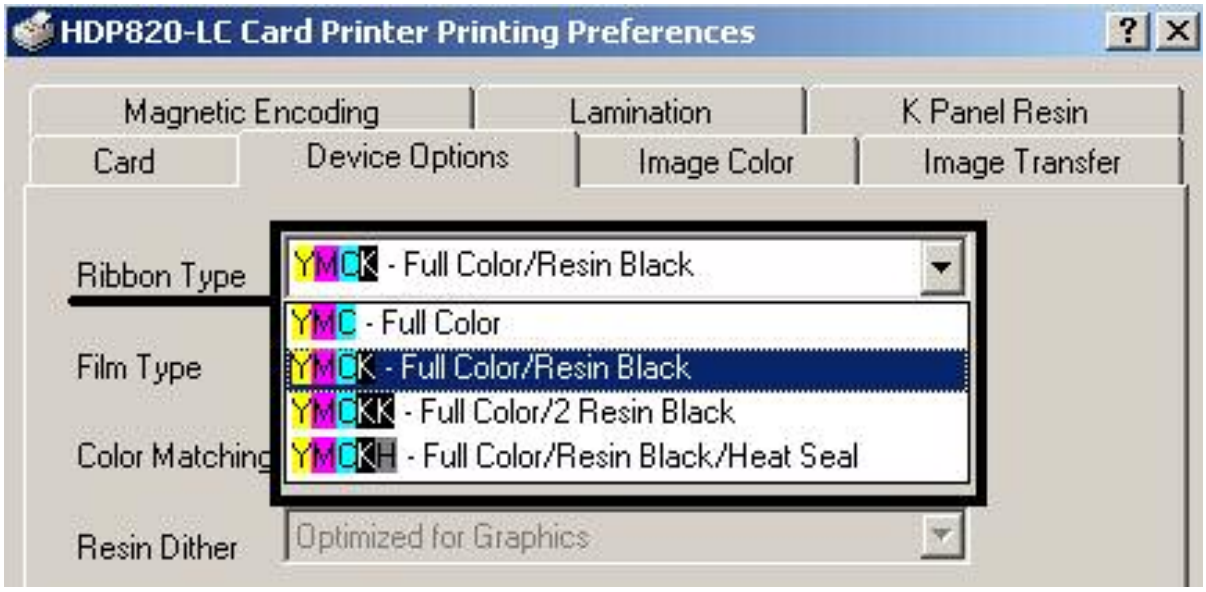
The HDP825-LC Card Printer Printing Preferences window is used throughout this section for consistency within this document for the entire HDP 800 Series. See the HDP820, HDP820-LC and HDP825 Card Printer Printing Preferences windows (as needed for your specific printer).



Adjusting the Ribbon Type

Use the Ribbon Type dropdown menu to match ribbon type.

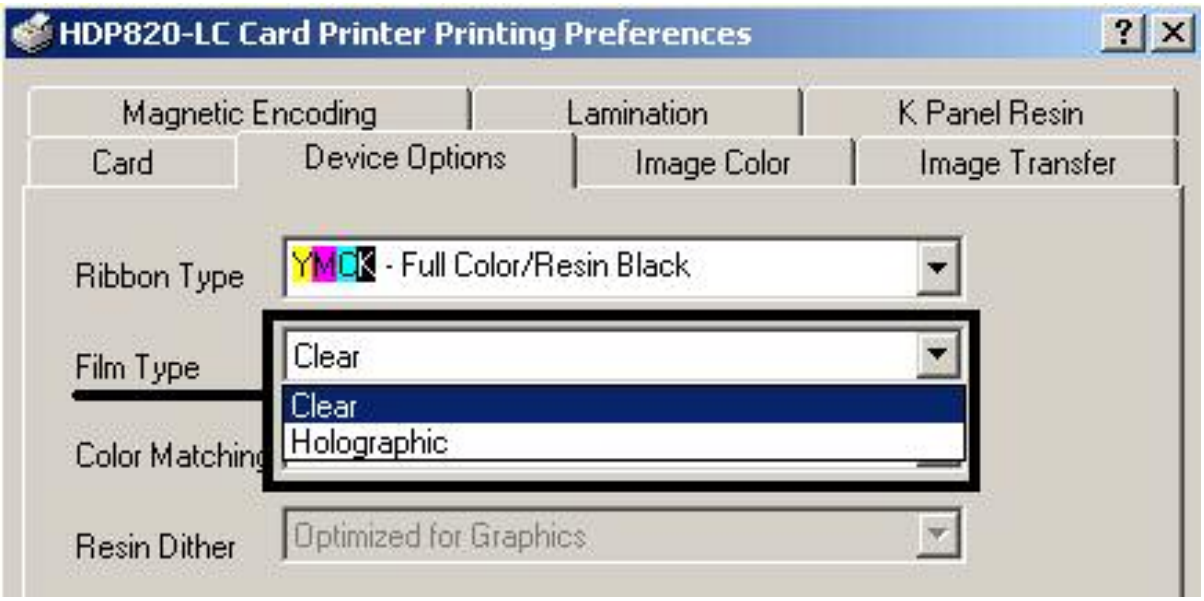
Step	Procedure
1	Adjust to match the Ribbon Type selection with the ribbon type that is loaded in the Printer. • **YMC:** Yellow, Magenta, Cyan **OR** **YMCK:** Yellow, Magenta, Cyan, Resin Black **OR** • **YMCKK:** Yellow, Magenta, Cyan, Resin Black, Resin Black **OR** • **YMCKH:** Yellow, Magenta, Cyan, Resin Black, Heat Seal



Adjusting the Film Type

Use the Ribbon Type dropdown menu to match ribbon type.

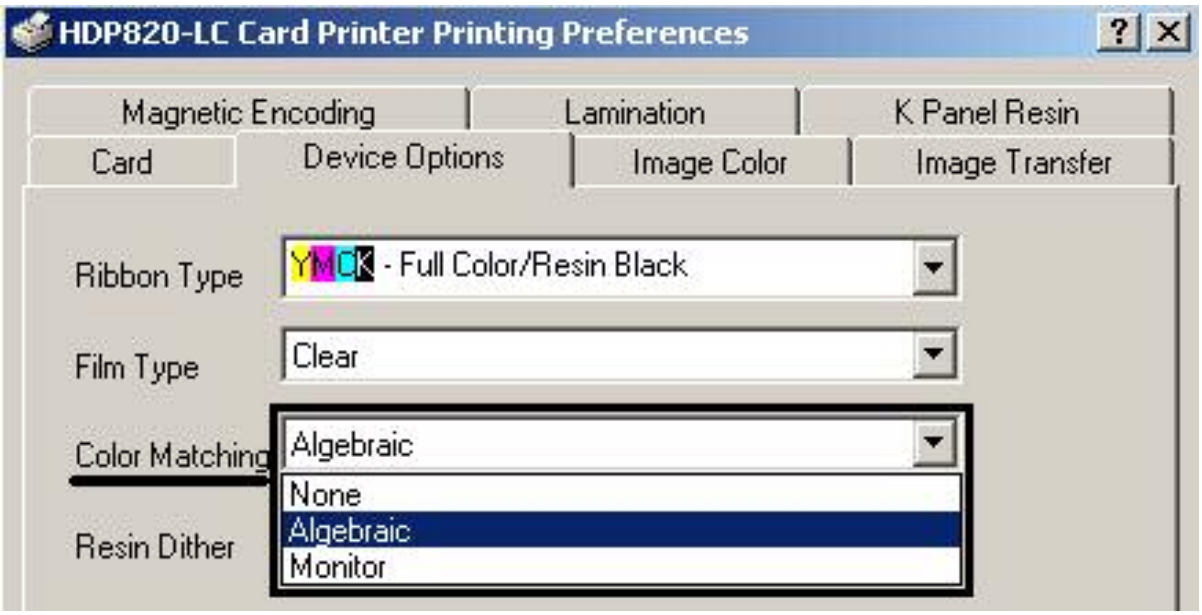
Step	Procedure
1	Adjust to match the Film Type selection with the film type that is loaded in the Printer. • Clear **OR** • Holographic



Adjusting for the color matching

Allows selection of the color matching option that best fits the requirements of the print job.

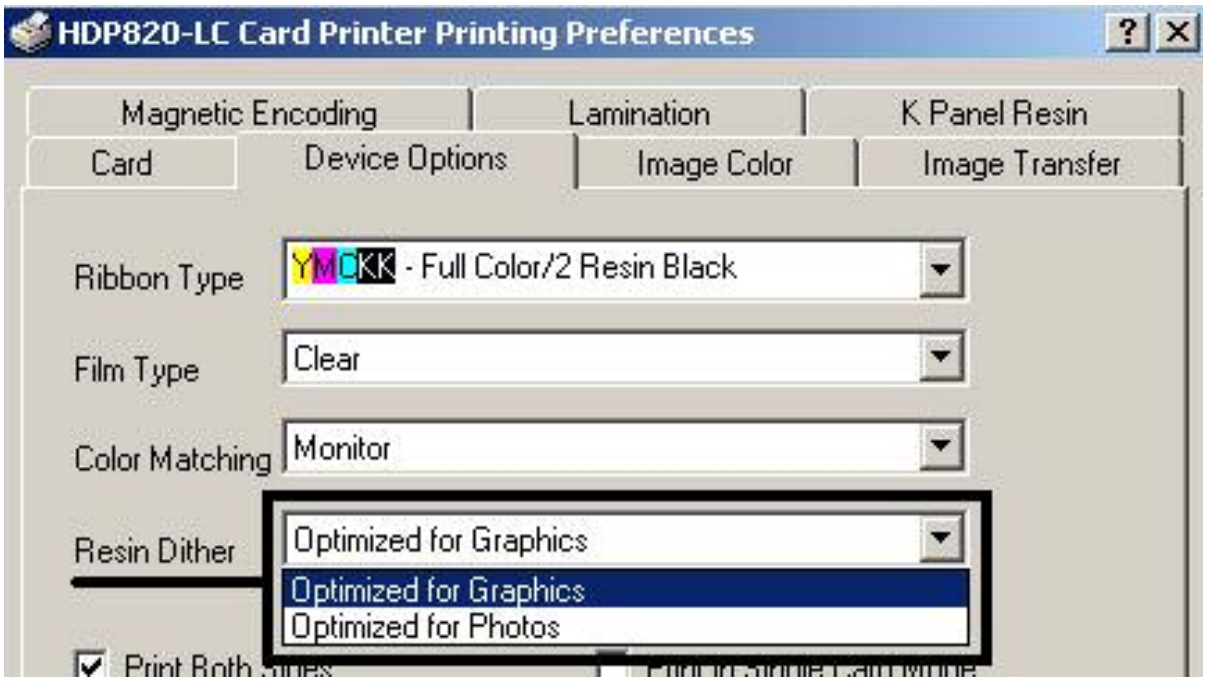
Step	Procedure
1	Select **None** (a) if interested in print speed rather than print color, (b) if color correcting the image for printing has already been done or (c) if using third party color matching software. **OR** Select **Algebraic** to allow the Printer Driver to make very simple, fast, color balance adjustments. (**Note:** This option gives a natural-looking image without slowing down the processing speed of the Printer Driver. It also allows further customization of the printed color of the cards through the Image color tab.) **OR** Select **Monitor** to allow 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 more radically so the colors in the image will more closely match how they appear on screen.)



Adjusting for the Resin Dither

Select the appropriate dither method according to the type of image to be printed. (**Note:** This option only affects those objects printed on the backside of a card with the resin black Panel of a YMCK or YMCKK Print Ribbon.)

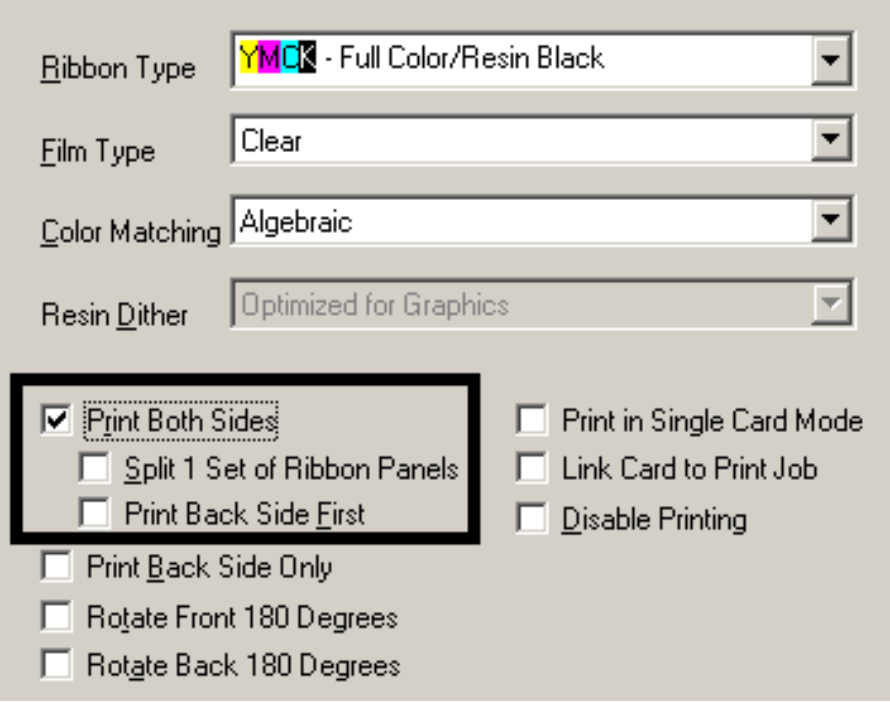
Step	Procedure
1	Select **Optimized for Photo** when printing photo quality images with resin. **OR** Select **Optimized for Graphics** when printing lower quality images (e.g., clipart, logos, etc.) with resin.



Using the Print Both Sides option

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

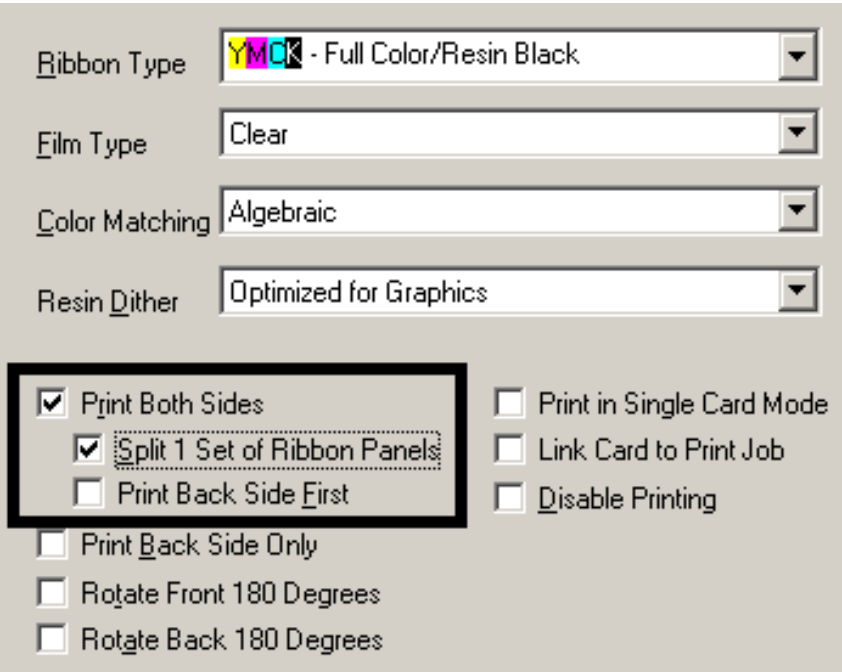
Step	Procedure
1	Select this option in conjunction with any application program that supports a multiple-page document, duplex printing. (**Note:** The program must be able to send down two or more separate pages to be printed within the same document.)
2	Print a full-color ID format on the front of the card and Monochrome text or bar codes on the back by creating: • the frontside of the card on page 1 of the document • the backside on page 2. (**Note:** The Printer Driver will always place all odd numbered pages on the front side of the card and all even numbered pages on the back side with this option selected.)



Using the Split 1 Set of Ribbon Panels option

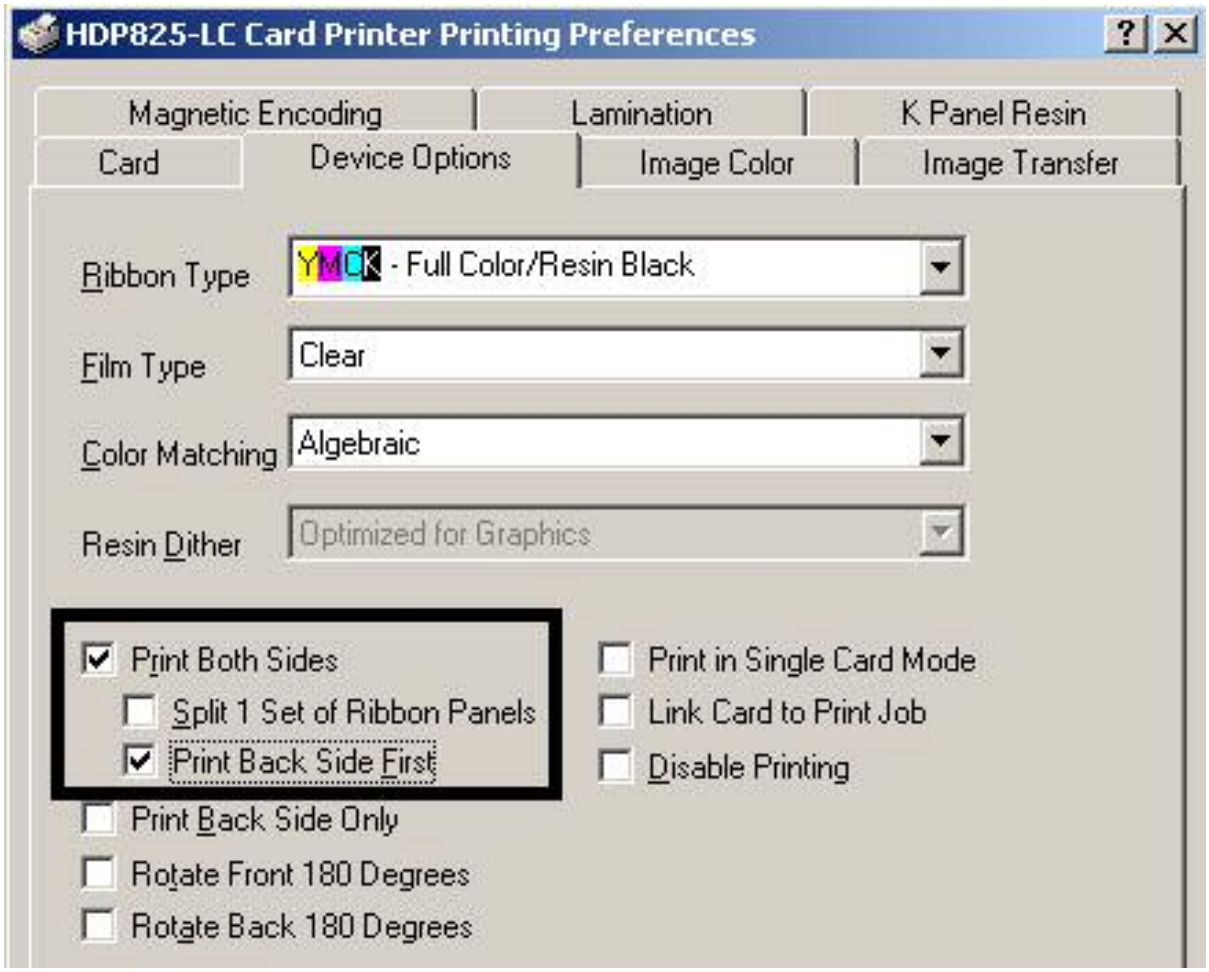
Use this option to provide the most economical means of printing a dual-sided card since a single set of ribbon Panels is essentially split to print both the front and backsides of a card.

Step	Procedure
1	Select this option to automatically print full-color on the front of a card and resin black on the back of a card (using either of the Full-color YMCK or YMCKK Print Ribbons). • If using a YMCK ribbon type, the front of the card is printed with the ribbon's YMC Panels and the back is printed with the 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. (**Note #1:** This option is automatically enabled when the YMCKK ribbon type is selected.) (**Note #2:** The **Print Both Sides** option is automatically enabled when this option is selected.) (**Note #3:** This option is not available if using a YMCKH or YMC Print Ribbon.)



Using the Print Back Side First option

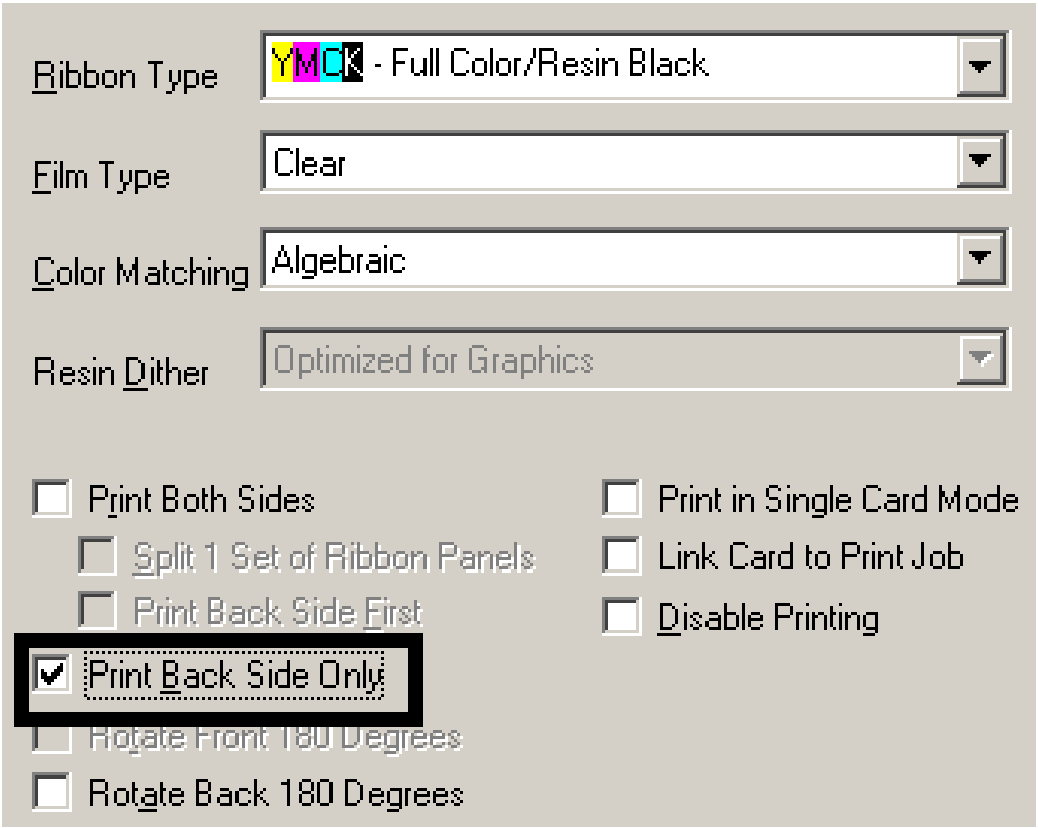
Step	Procedure
1	Select this option if you need to print the first page of a two-page document on the backside of the card. The second page of the document will be printed on the front side of the card.



Using the Print on Back Side Only option

Use this option to print only onto the backside of cards.

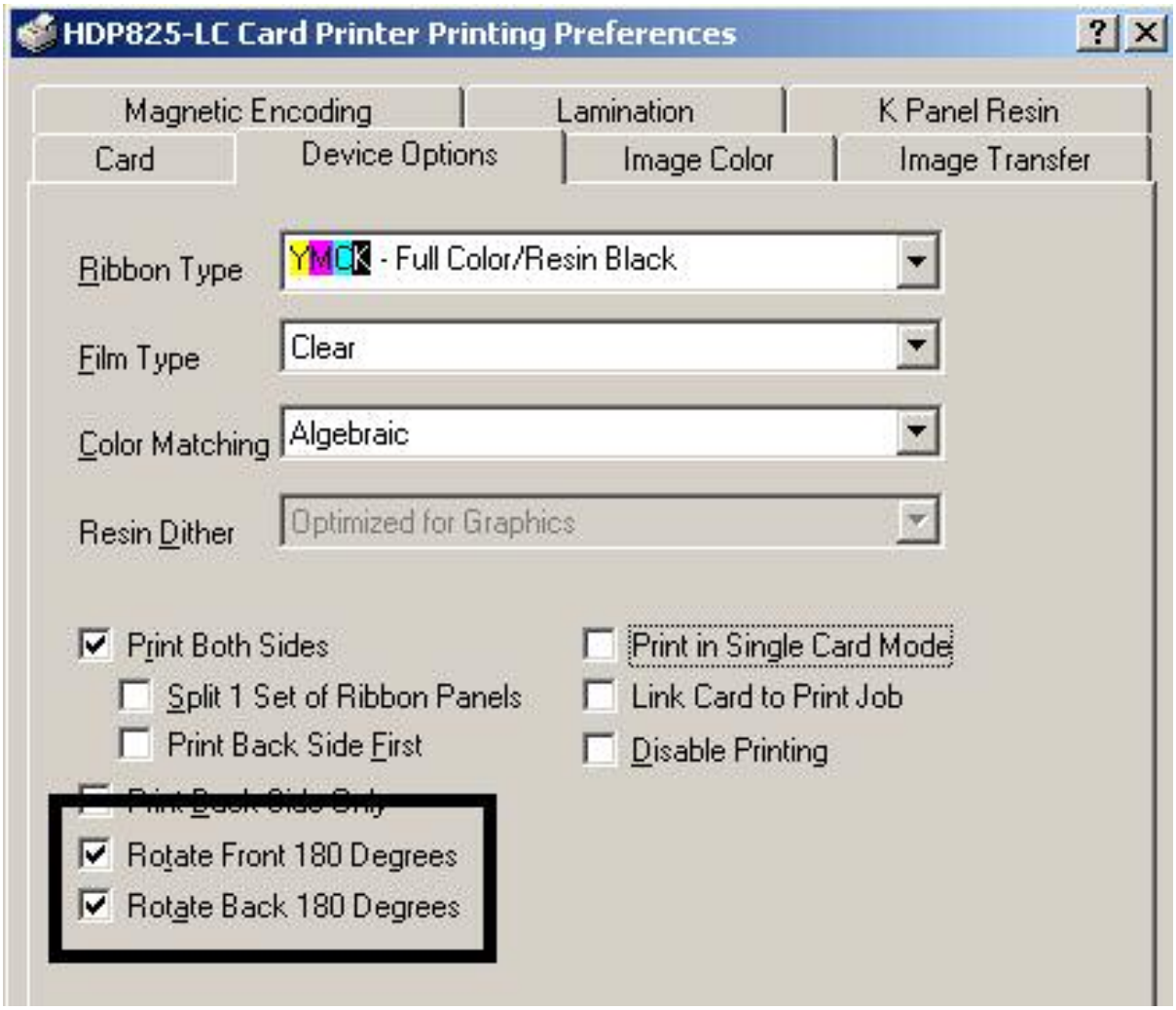
Step	Procedure
1	Select this option to print only onto the backside of preprinted cards that must have their Magnetic Stripe or smart card chip encoded. (**Note:** Load the cards in the usual fashion.) • When this option is selected, the **Print Both Sides** option is automatically disabled.) • When attempting to print a two-page document (if **Print Back Side Only** is selected), the first page of the document will print on the backside of the card. • The second page of the document will then be printed on the back of a second card.



Using the Rotate Front 180 Degrees or Rotate Back 180 Degrees options

Use 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.

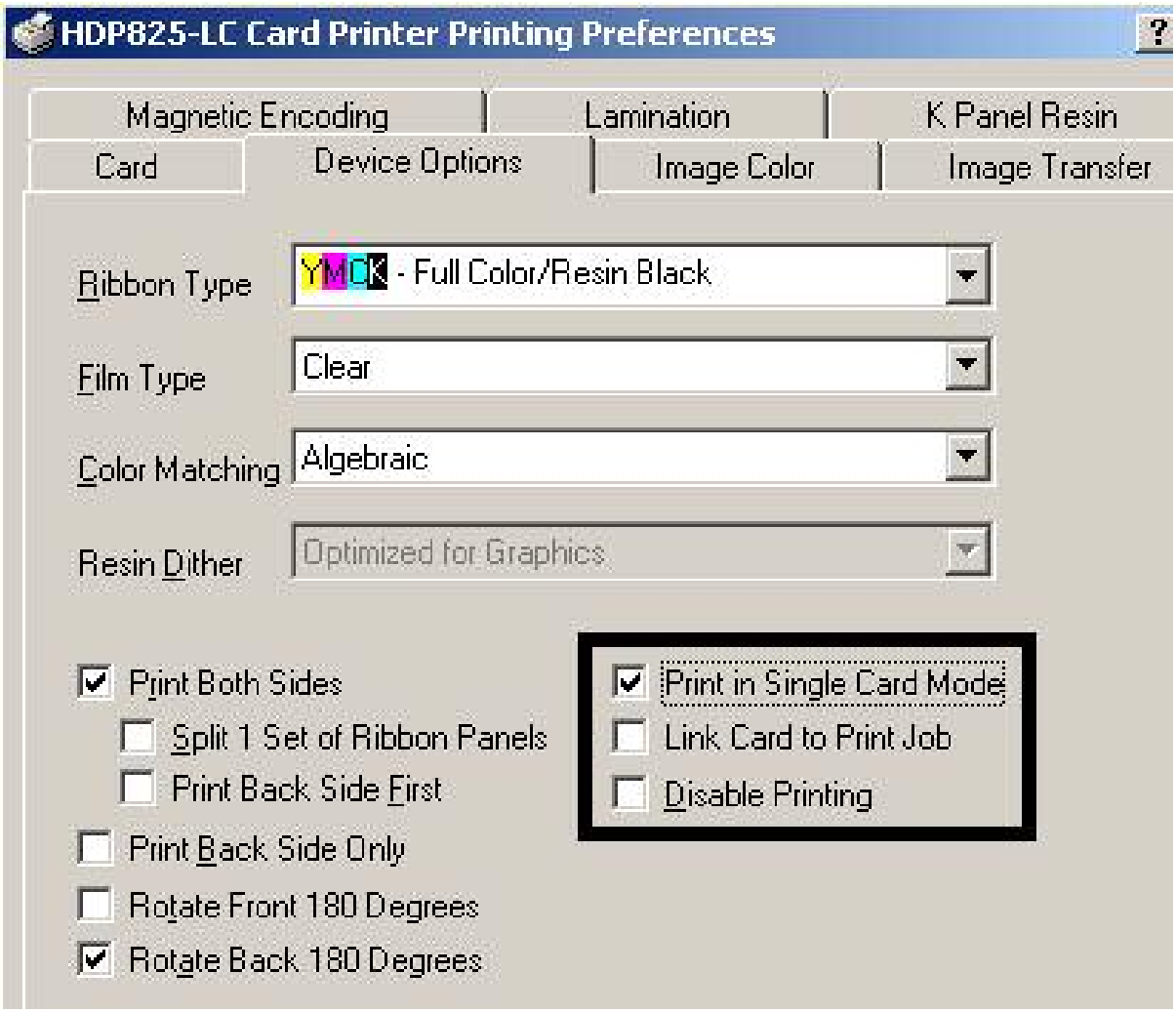
Step	Procedure
1	Select the **Rotate Front 180 Degrees** option to rotate the image on the front of the card by 180 degrees when printed. **OR** Select the **Rotate Back 180 Degrees** option to rotate the image on the back of the card by 180 degrees when printed.



Using the Print in Single Card Mode option

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

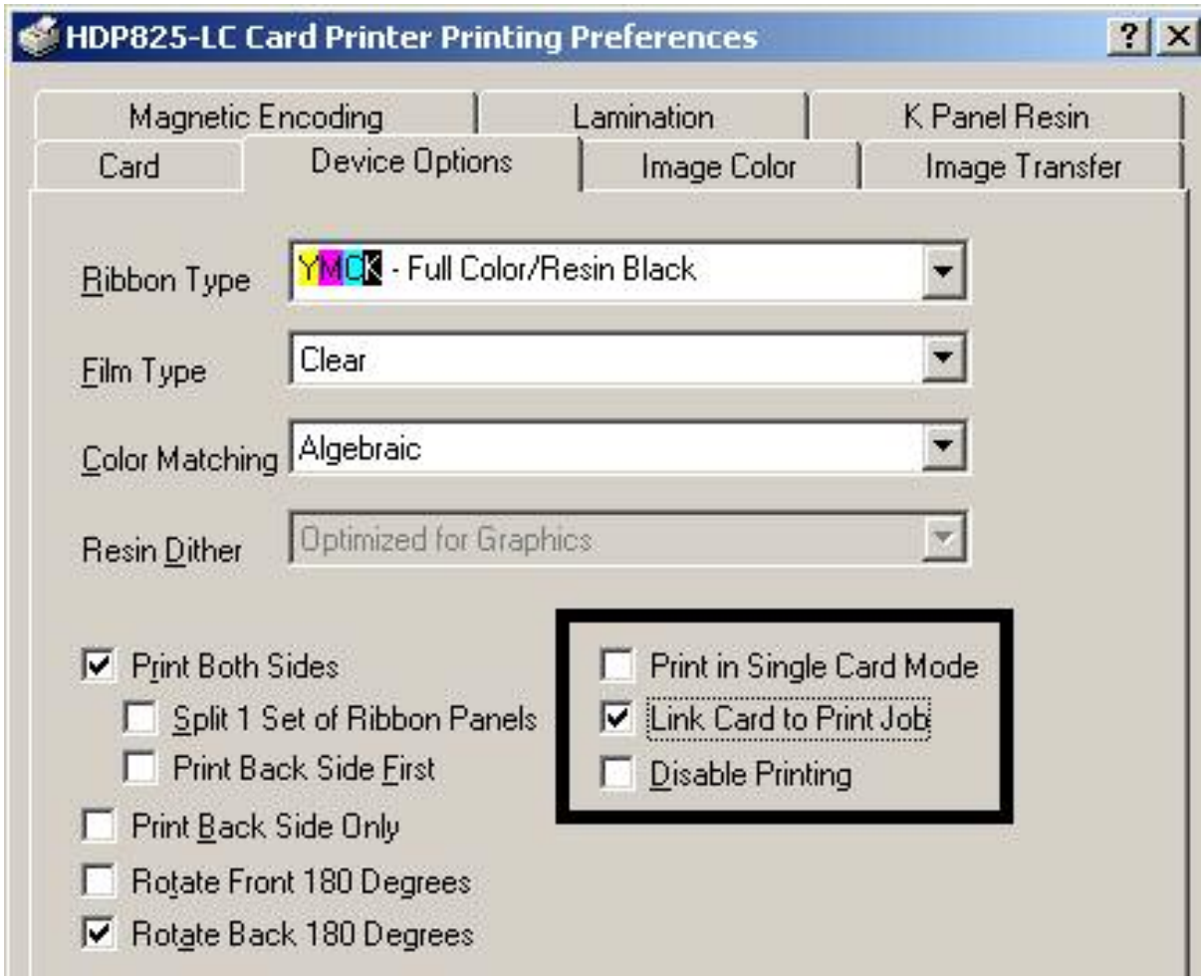
Step	Procedure
1	Select this option only when printing to multiple Printers sharing print jobs over a network. (**Note:** In this case, this option ensures that all Printers share evenly all print jobs.)



Using the Link Card to Print Job option

Use this option to link a specific card to a specific print job. Generally this option is used mostly when printing and encoding e-cards. (**Note:** In this case, it is often critical that an e-card with a pre-encoded serial number, for example, coincide with a particular printed image. If the two were to get out of sync, the card's security could be compromised.)

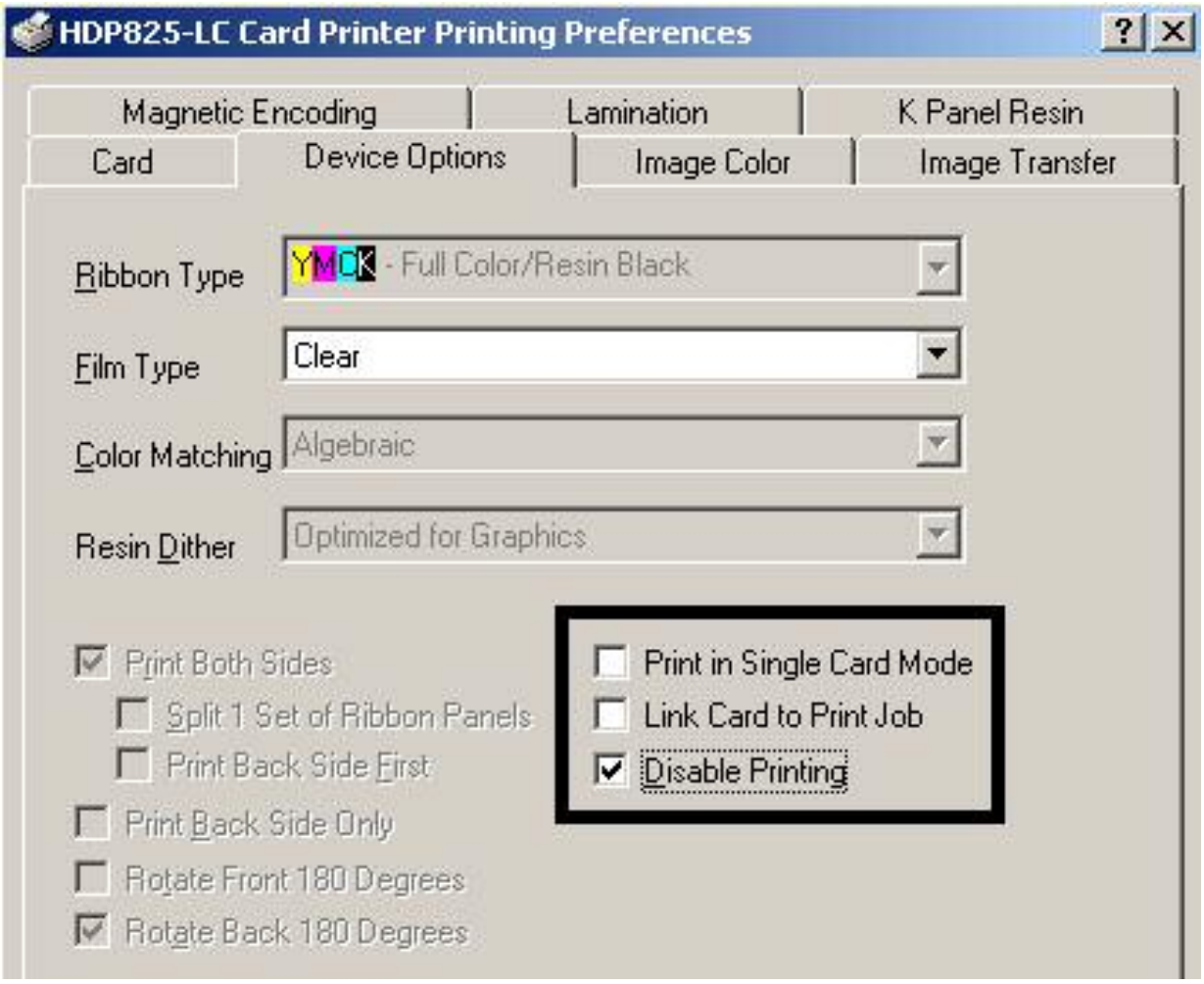
Step	Procedure
1	Select this option to cause the Printer to dispense with the print job if a blank card is removed or ejected. (**Note:** The next card is then fed into the Printer and the next coinciding print job then printed.)



Using the Disable Printing option

Use this option to disable the printing capabilities of the Printer, yet still allows the Printer to encode cards. (**Note:** This option is useful to encode or re-encode preprinted cards without wasting additional time or printing supplies.)

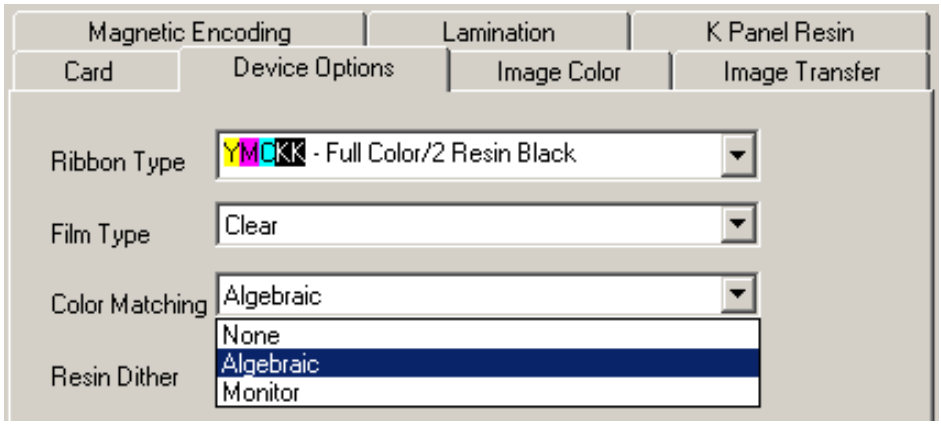
Step	Procedure
1	Select this option to ensure no print data will be sent to the Printer (while all encoding instructions will be sent according to how they are configured within the software).

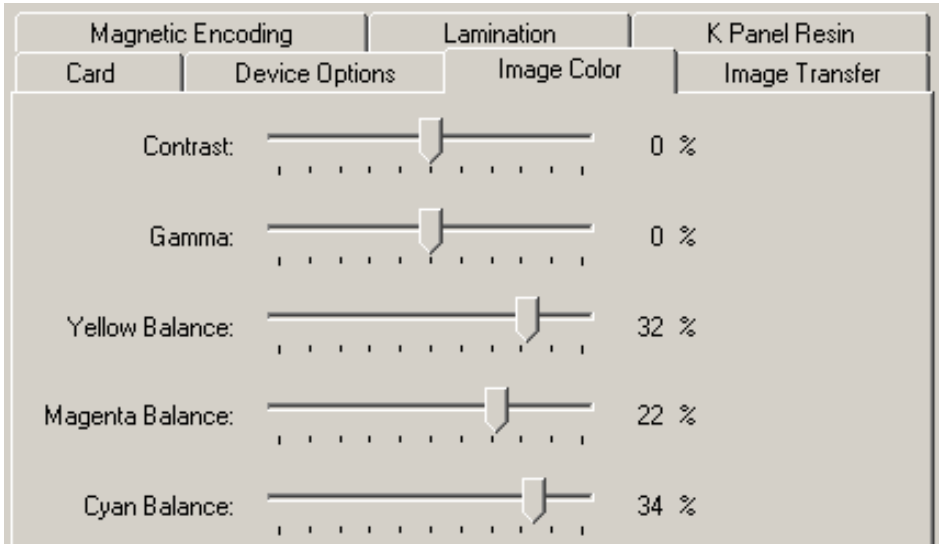


Using the Image color tab

Use this tab to adjust color properties.

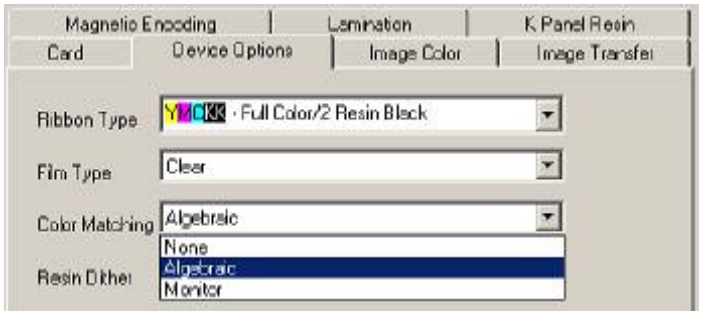
Step	Procedure
1	Select the **Algebraic color matching** option (see the Device Options tab, shown below) to control the **Contrast** and **Gamma** of the printed image, as well as the individual color balance of **Yellow**, **Magenta** and **Cyan** (see Image color tab, shown below).

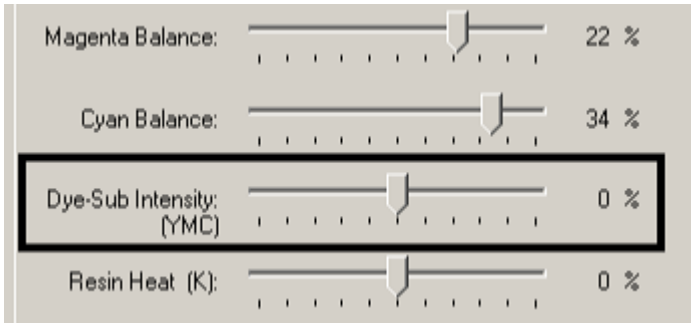




Using the Image color tab (continued)

Step	Procedure
2	Select the **None** or **Monitor** option (see the Device Options tab, shown below) to only display the Dye-Sub Intensity and Resin Heat sliders.
3	Control the overall darkness and lightness of the dye-sub printed image by adjusting the **Dye-Sub Intensity** slide by clicking and dragging the slide's box. • Move the slide to the left to cause less heat to be used in the printing process, thus generating a lighter print. **OR** • Move the slide to the right to cause more heat to be used, thus generating a darker print. (**Note:** This slide only affects those images printed with dye-sublimation ribbon Panels (YMC).)

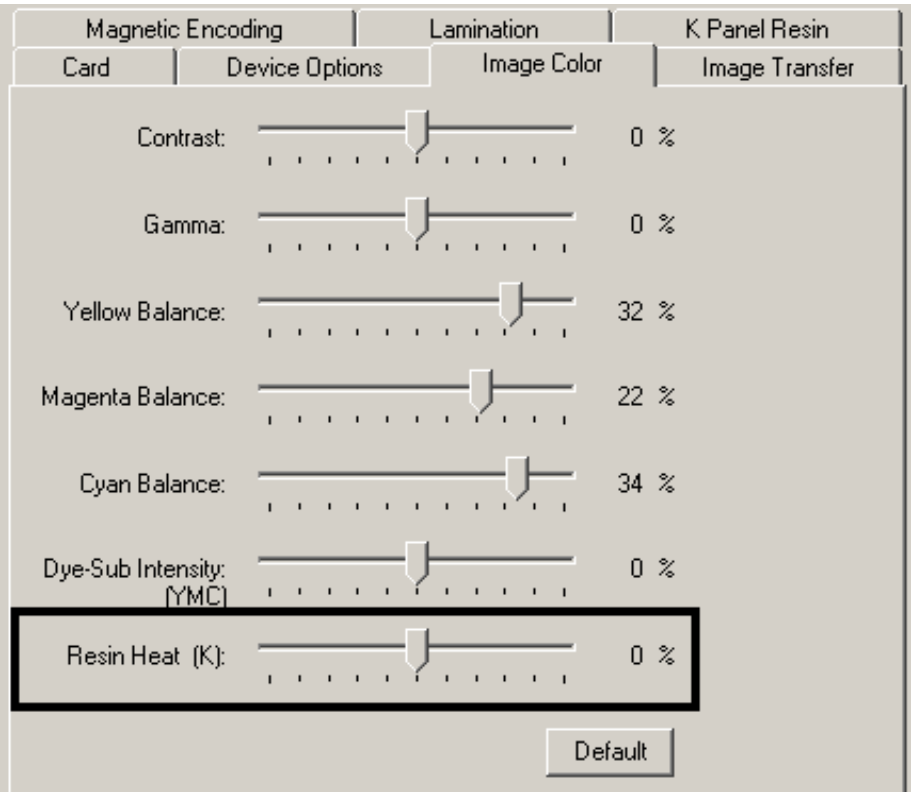




Using the Image color tab (continued)

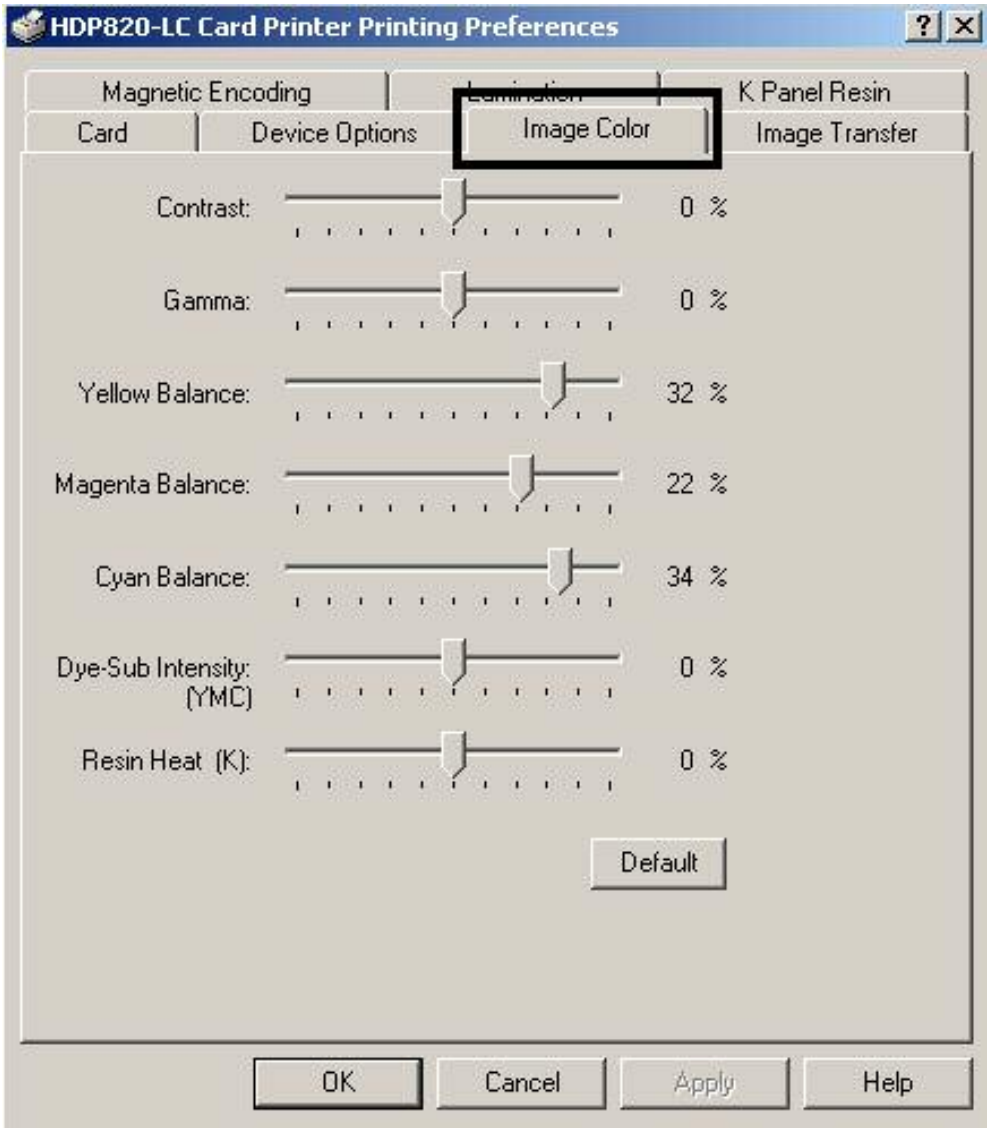
Step	Procedure
4	Control the amount of heat the Printer uses when printing with the resin black Panel by adjusting the **Resin Heat** slide. • Move the slide to the left to cause less heat to be used in the printing process, causing resin images to be lighter or less saturated. **OR** • Move the slide to the right to cause more heat to be used, causing resin images to be darker or more saturated. (**Note:** This control can be helpful for fine-tuning the sharpness of resin text and bar codes.)

Continued on the next page



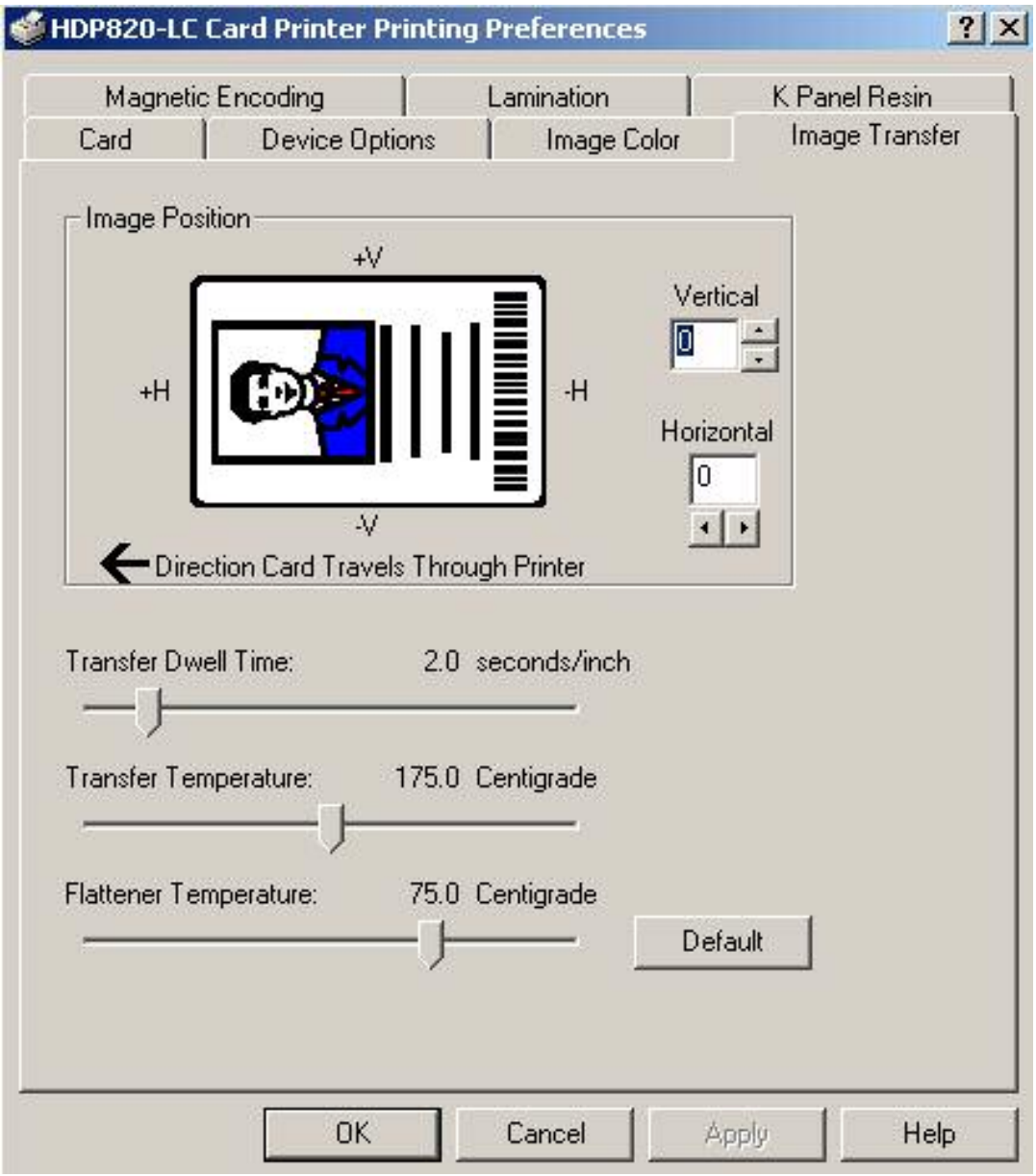
Using the Image color tab (continued)

Step	Procedure
5	Return all options to their factory settings by clicking on the **Default** button.



Using the Image Transfer tab

Use this tab to adjust the Image Position, Transfer Dwell Time, Transfer Temperature and Flattener Temperature.

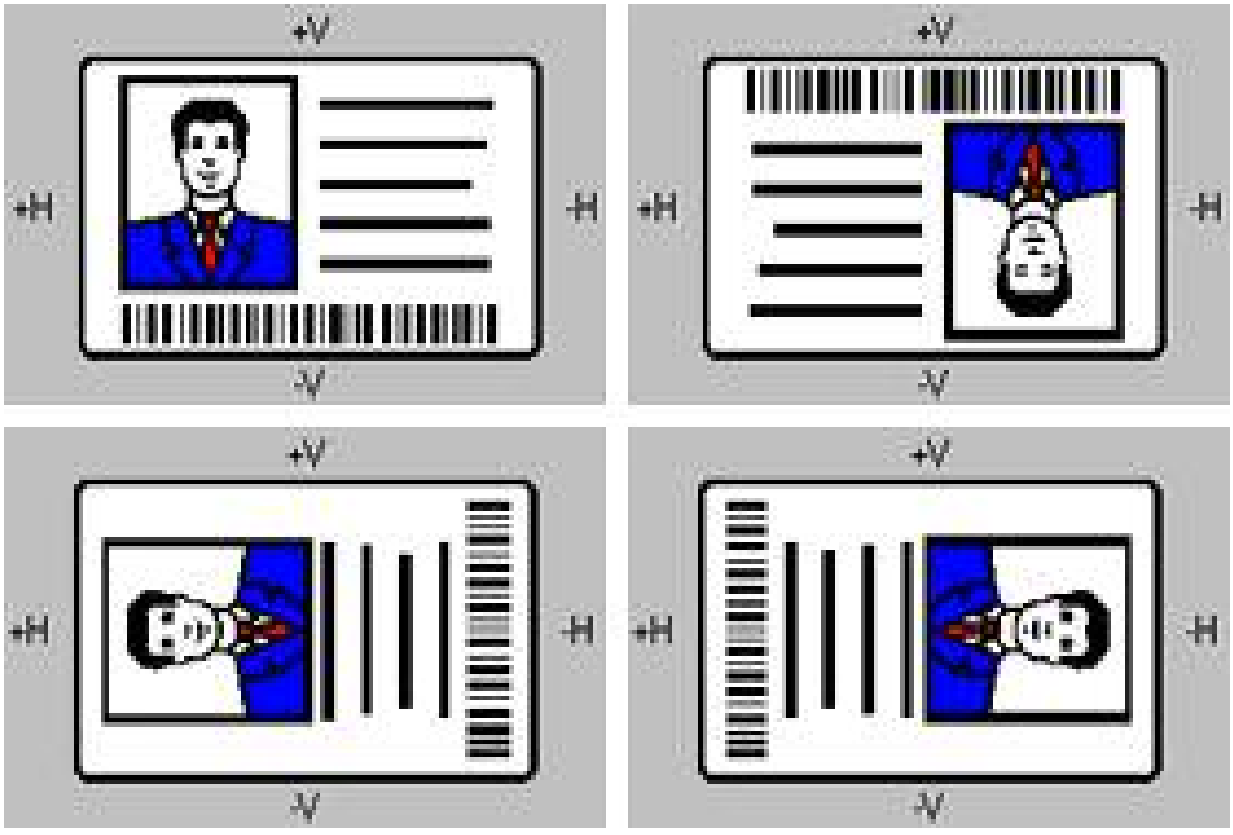


Adjusting the Image Position controls

Use the **Image Position** controls to position the image on a card (to be adjusted).

Step	Procedure
1	Adjust the Image Position values by clicking on the **Vertical** and **Horizontal** adjustment arrows. • These values ensure that the Cards always remain in the same position as they travel through the Printer (regardless of image orientation). • The Card Illustration (shown in the Image Position box) will flip and rotate according to the selection of Portrait, Landscape or Rotate 180 Degrees. • The outline around the illustration will always remain in the same Landscape orientation.

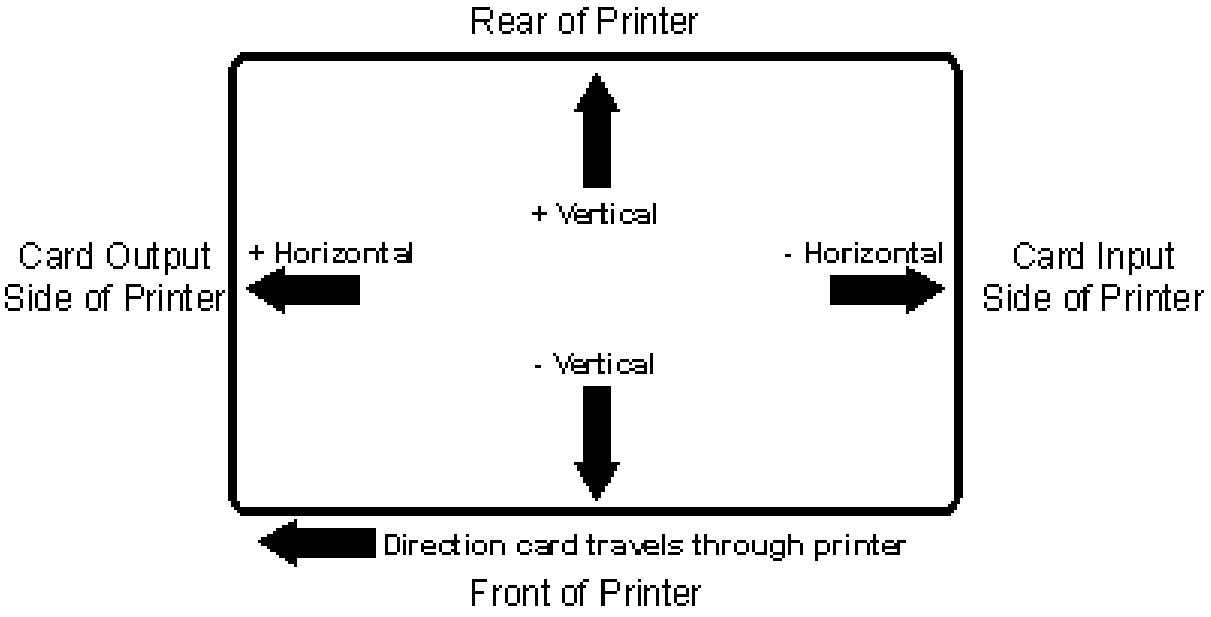
Continued on the next page



Adjusting the Image Position controls (continued)

The display (below) represents 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	Use the **Vertical** adjustment to move the image toward the rear of the Printer if a positive number is entered and toward the front of the Printer if a negative number is entered. **OR** Use the **Horizontal** adjustment to move the image toward the card output side of the Printer if a positive number is entered and toward the card input side of the Printer if a negative number is entered. (**Note:** The maximum value for the **Vertical** and **Horizontal** adjustments is ±100 Pixels (10 Pixels = 0.03" (.8mm).)

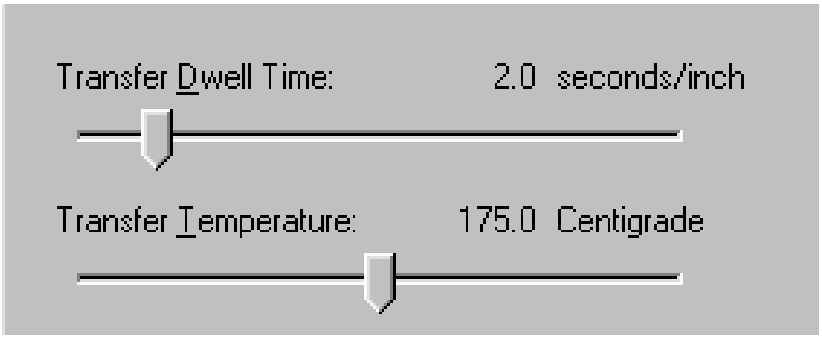


Adjusting the Transfer Dwell Time and Temperature

Use the Image Transfer option to control of the **Transfer Dwell Time** and **Transfer Temperature**.

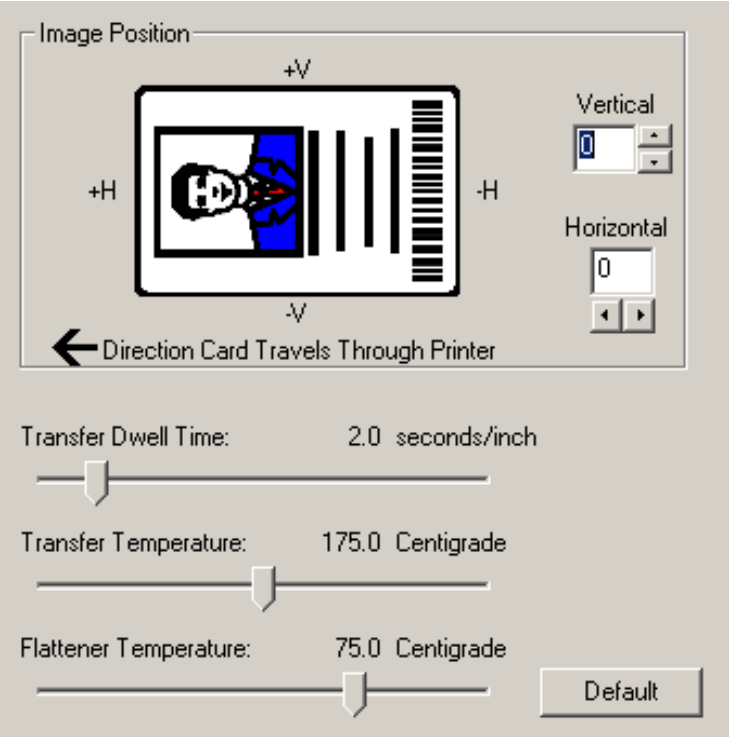
- These settings control the speed and temperature at which printed images are transferred from the HDP Film to the card. These settings may vary depending on the card type.
- The Printer Driver automatically optimizes these settings according to the selection made in the **Card Type** option.
- Changes made to the Dwell Time and temperature settings are saved for the selected **Card Type** option (upon exiting the Printer's Control Panel).

Step	Procedure
1	Return to the factory default settings for the selected **Card Type** by clicking on the **Default** button. If using cards (that differ from the **Card Type** Glossy-PVC or Matte-PVC options), select one of the **Card Type** Custom options.
2	Adjust the Dwell Time and temperature settings manually to ensure proper image transfer. Determine the appropriate settings for the card stock by setting the **Transfer Dwell Time** and **Transfer Temperature** to the default settings. Print a card. • If the HDP Film is not transferring properly, adjust these settings accordingly. **OR** • If the Film is transferring properly, perform a final durability test called the **Tape Test**. For instructions on how to do a tape test, see Conducting the Tape adhesion Test procedure, in Section 3, page 181.



Adjusting the Flattener Temperature

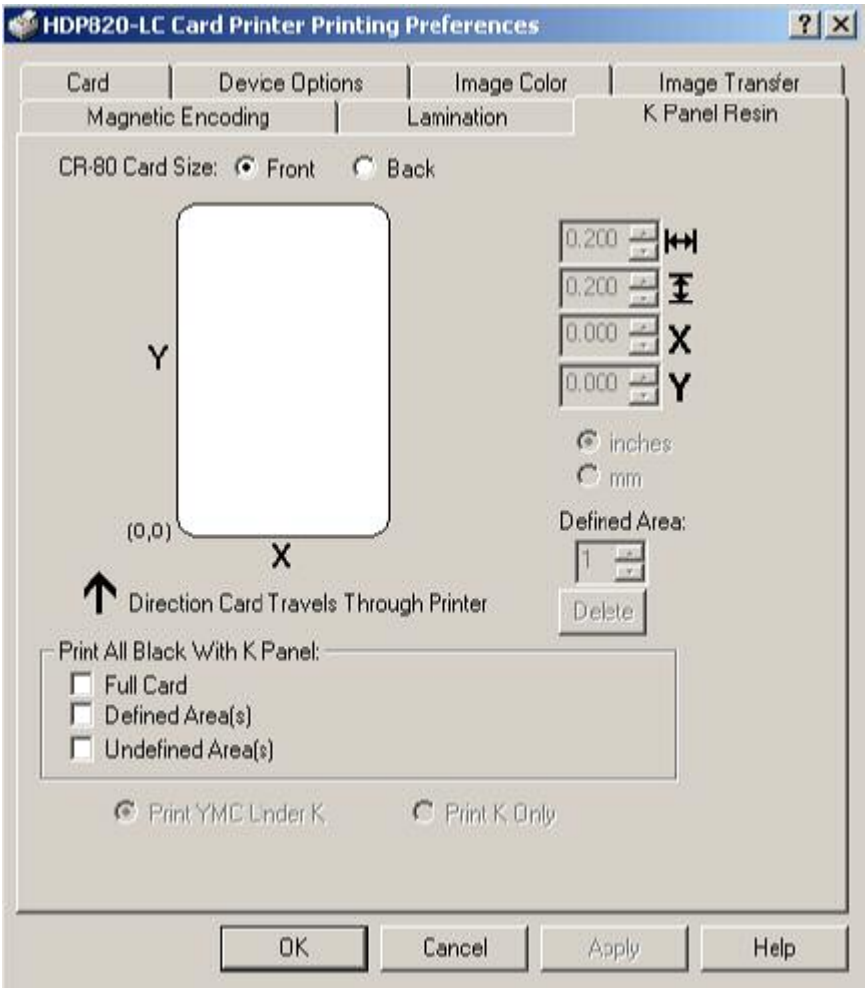
Step	Procedure
1	Use the **Flattener Temperature** control to set the temperature of the Printer's built-in Card Flattener. This setting may vary depending on the card type. • When using the standard UltraCard-Glossy or HDP Card-Matte PVC Card Type option, the Printer Driver automatically optimizes this setting according to whether printing single or dual-sided cards. In general, single-sided prints require a hotter Flattener temperature. **OR** • When using another type of card stock, it may be necessary to adjust this setting to optimize the flatness of the cards. Any changes made to the Flattener temperature will be saved upon exiting the Printer Driver setup. (**Note:** If the Printer is equipped with a Lamination Module and Lamination is being used, the Flattener will be disabled.)
2	Click on the **Default** button to return to the factory default setting.



Using the K Panel Resin tab

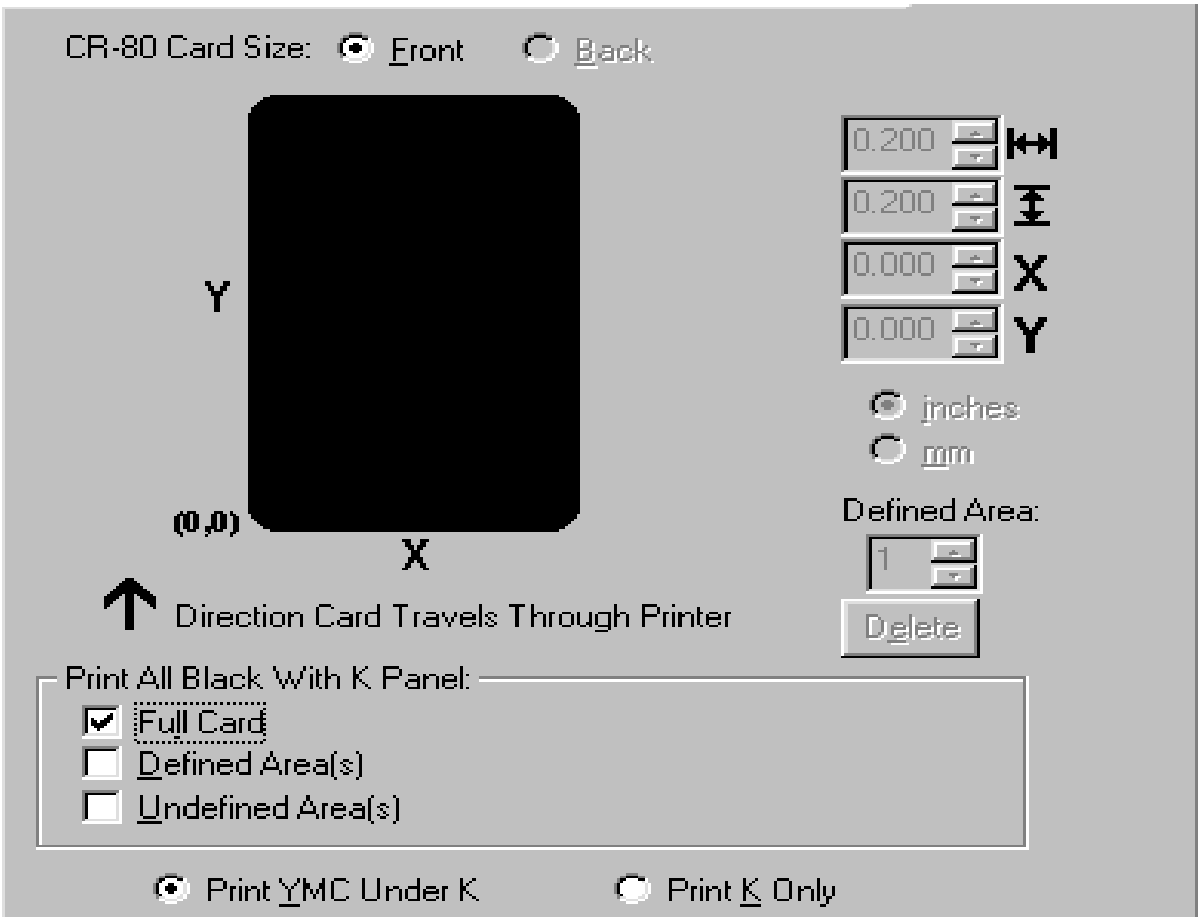
Use this tab to adjust the CR-80 Card Size, the Direction the Card Travels through the Printer, the Print All Black With K Panel (options) and the Defined Areas. Use this tab to control where the resin black (K) Panel of a full-color ribbon is printed.

- If printing with a ribbon type that does not have a K Panel, such as the YMC ribbon type, all K Panel Resin options will be grayed out. Resin black text is desirable due to its sharp, saturated color and resin black barcodes are required to ensure readability when scanned by an infrared barcode reader. (**Note:** The Printer Driver will automatically print all TrueType black text and TrueType barcodes only with the resin black (K) Panel of the Print Ribbon by default.)
- If printing black text or barcodes that are not TrueType fonts or black graphics, select one of the three options listed under **Print All Black With K Panel** (see the procedure on the next page). The Printer Driver will print areas of the image where it finds black coloring with the Print Ribbon's resin black (K) Panel as specified by each of the following options.



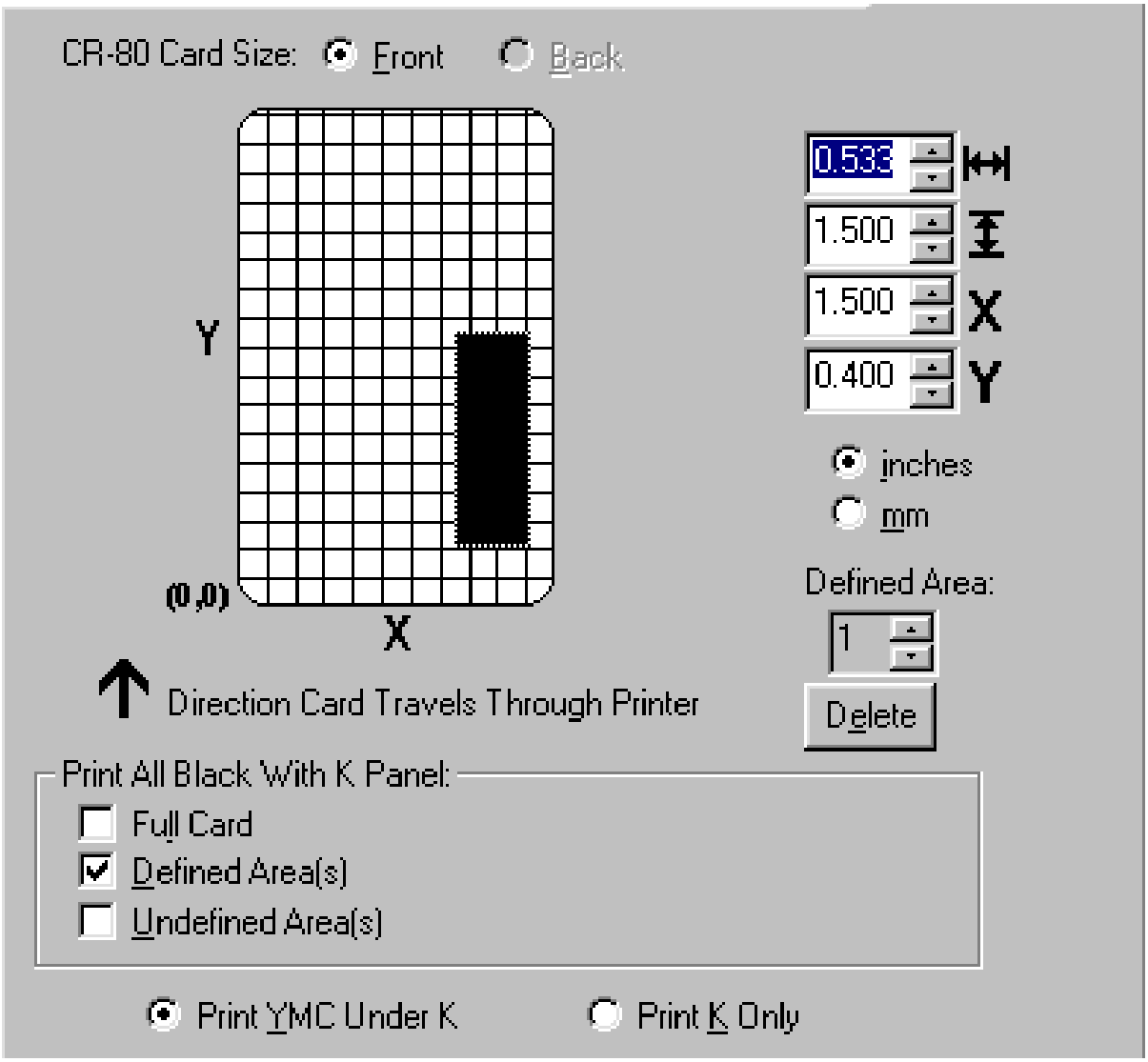
Selecting the Full Card with the K Panel Resin tab

Step	Procedure
1	Select the **Full Card** option to print the resin black (K) Panel for all black found within all areas of the image, as shown below.



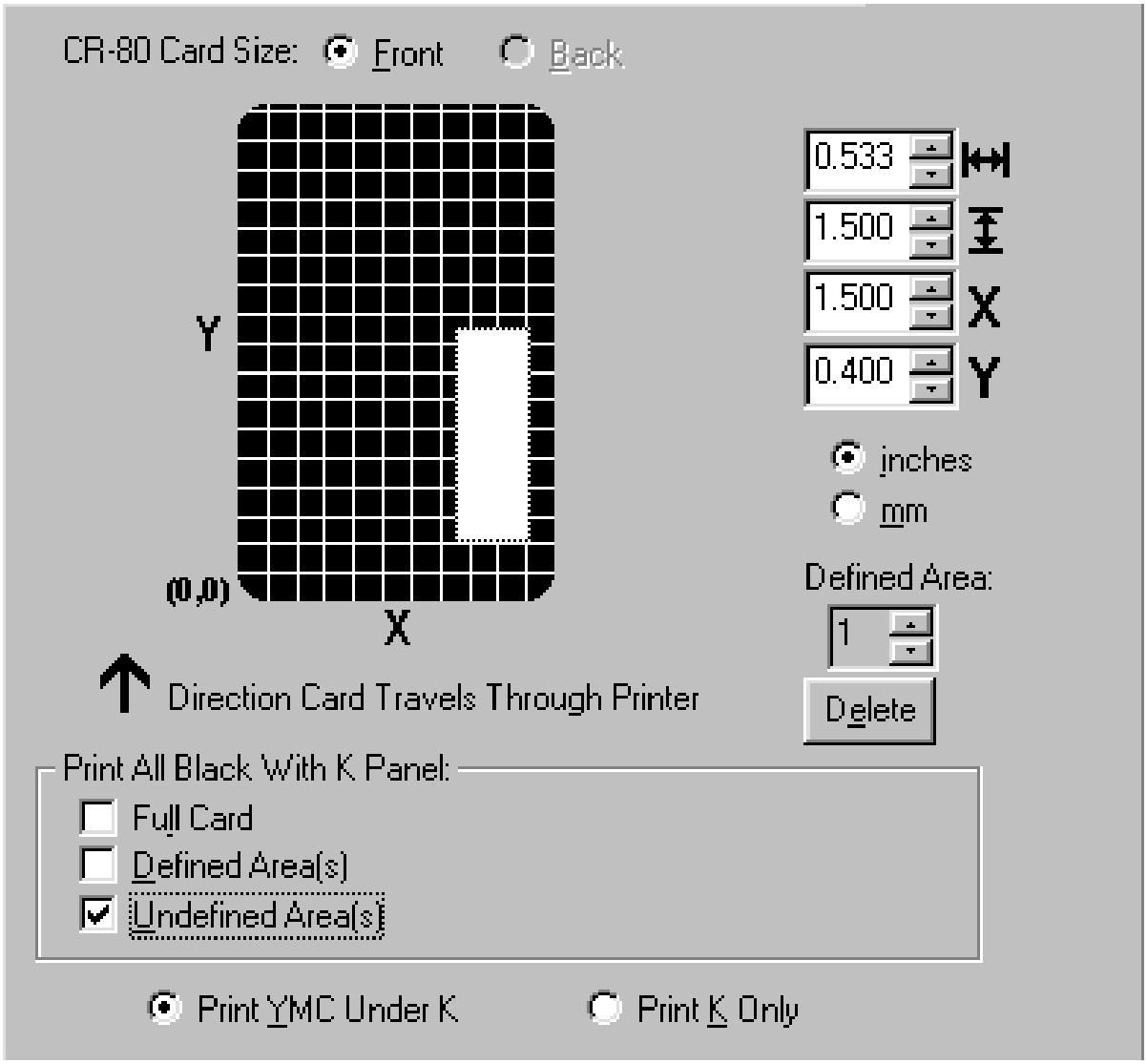
Selecting the Defined Area(s) with the K Panel Resin tab

Step	Procedure
1	Select the **Defined Area(s)** option to print the resin black (K) Panel for all black found only in an area or areas defined, as shown below.



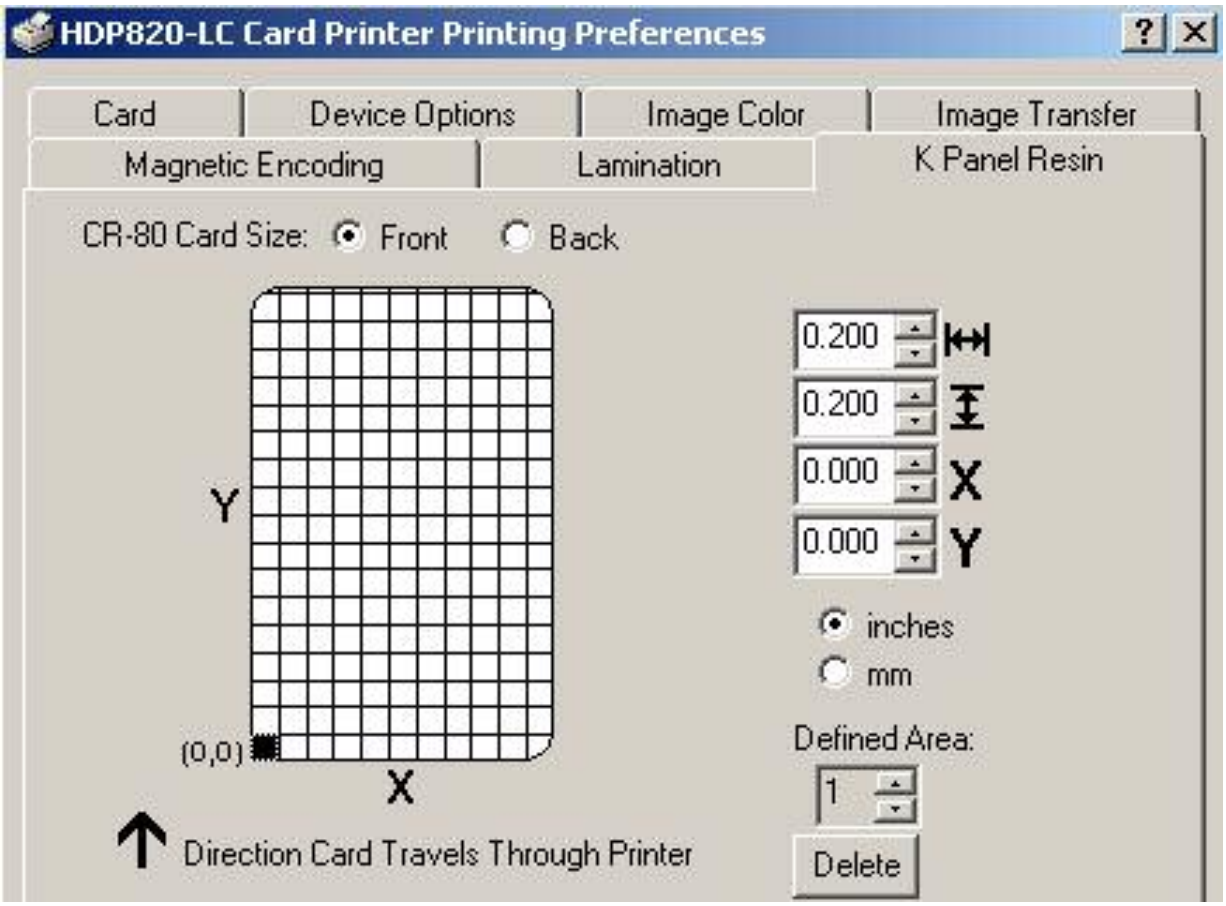
Selecting the Undefined Area(s) with the K Panel Resin tab

Step	Procedure
1	Select the **Undefined Area(s)** option to print the resin black (K) Panel for all black found only in the space outside the areas defined, as shown below.



Defining the Area to activate the Card Grid

Step	Procedure
1	Select on the appropriate **Defined Area** (see below) to activate the card grid in the upper half of the window. • It is through this card grid that up to five areas can be defined, as shown below. • When the card grid is first activated, then a small black square will appear at its default size of .2" x .2" (5mm x 5mm) and at its default location in the lower left-hand corner (0,0). (**Note:** This square represents the first defined area.)



Measuring the Total Card area

Step	Procedure
1	Determine the area of the card to define. (**Note:** This area is indicated by the dashed outline, as shown below. The easiest way to determine the size of this area is to actually print a card and look at it in the same orientation as when it exits the Printer.)
2	Measure the total area and enter those dimensions into the dimension boxes. (**Note:** The minimum size an area can be is .2" x .2" (5mm x 5mm).)

Measuring the Area to be positioned on the Card

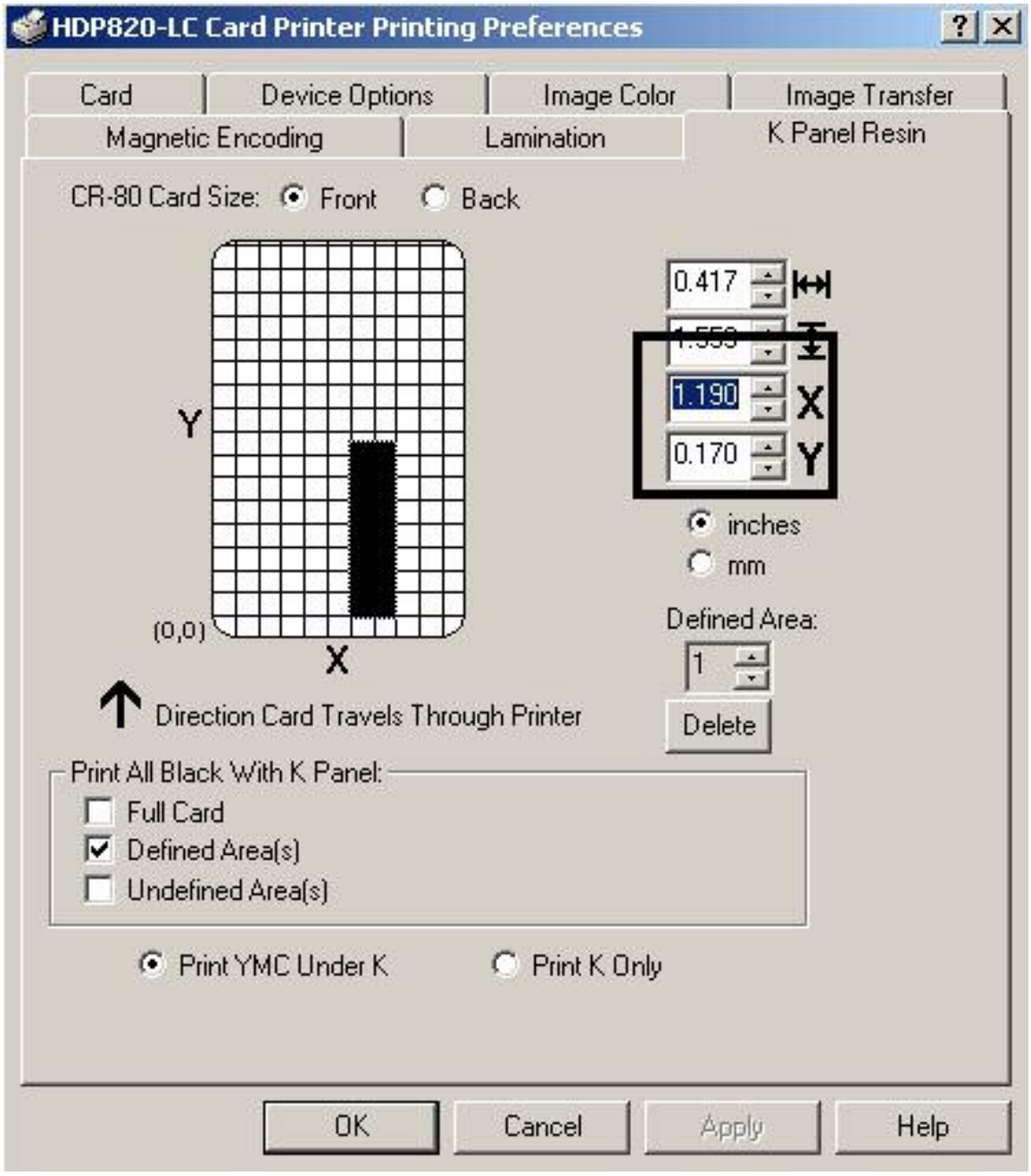
Step	Procedure
1	Once the area is sized properly, measure the location where this area is to be positioned on the card. a. Measure from the lower left corner of the card up and over to the lower left corner of where the defined area is to begin. b. Enter these values into the X and Y boxes, as shown below. c. Note that the card grid lines are spaced at .2” (5mm) intervals.

Selecting the Print YMC under the K and Print K Only options

Step	Procedure
1	Use the Defined Area function. a. Define an area by clicking on the **Defined Area UP** arrow. (**Note:** Another .2" x .2" (5mm x 5mm) area will appear in the lower left-hand corner. This is the location in which all newly defined areas will first appear. Up to 5 areas can be defined.) • Additional areas cannot be added until the most recently created area has been moved or sized. For this reason, size and position each area as it is created. • Use the **Defined Area** arrows to navigate back and forth from area to area. The active area will always be highlighted with a dotted outline. b. Delete an area by using the Defined Area arrows to select the area and click on the **Delete** button. (**Note:** If all areas are deleted, the K Panel Resin options will automatically be deselected.)
2	Select the **Print YMC Under K** option to print all black in the designated areas with the Yellow (Y), Magenta (M) and Cyan (C) ribbon Panels directly beneath the resin black (K) Panel. (**Note:** Select this option if printing resin black text or barcodes onto a colored background to provide a more gradual transition between the two.) **OR** Select the **Print K Only** option to print all black in the designated areas only with the resin black (K) Panel or to print resin black onto a white background to maximize the sharpness of printed text and barcodes.

Continued on the next page

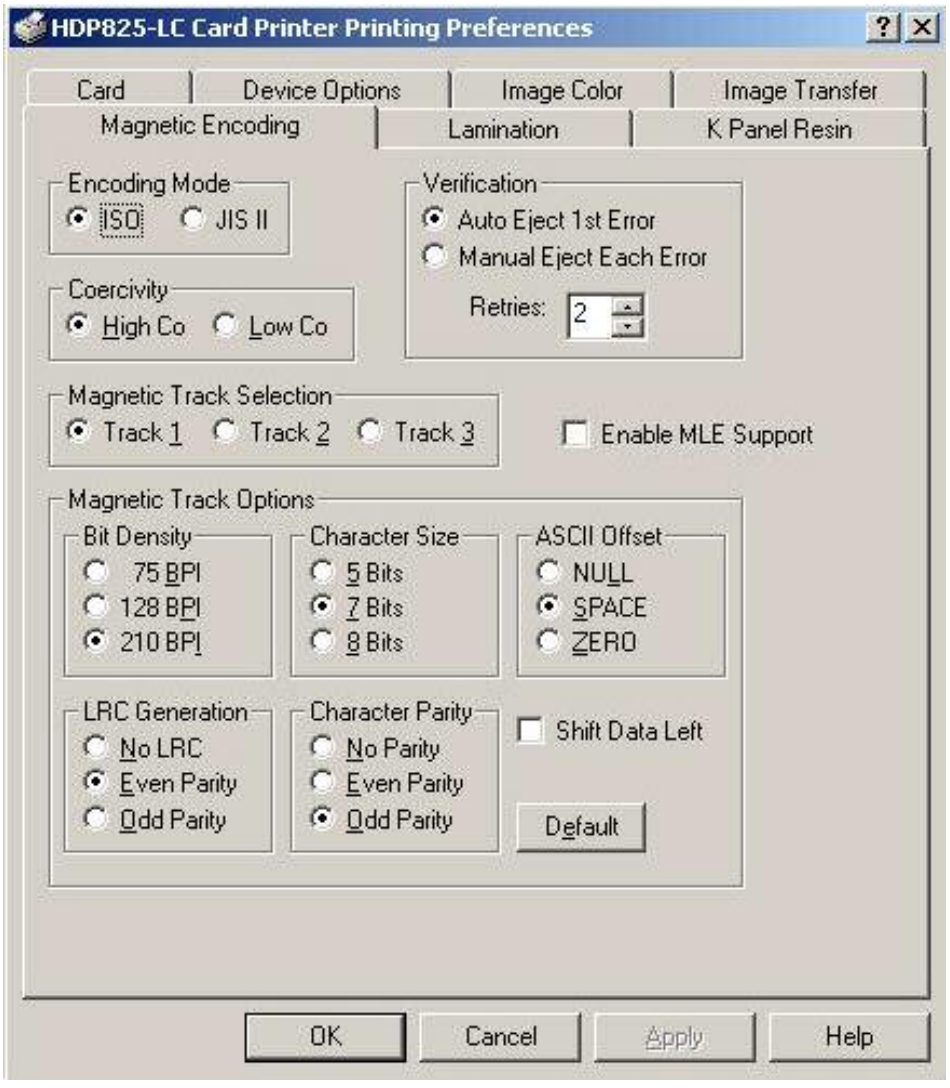
Selecting the Print YMC under the K and Print K Only options (continued)



Using the Magnetic Encoding tab

Use these options only if the Printer has an optional Magnetic Stripe Encoding Module installed.

Step	Procedure
1	Select the **Magnetic Encoding** tab to display options for controlling the Magnetic Stripe encoding process. (**Note:** The following describes these options and the Printer's magnetic encoding process.)



Continued on the next page

Using the Encoding Mode option

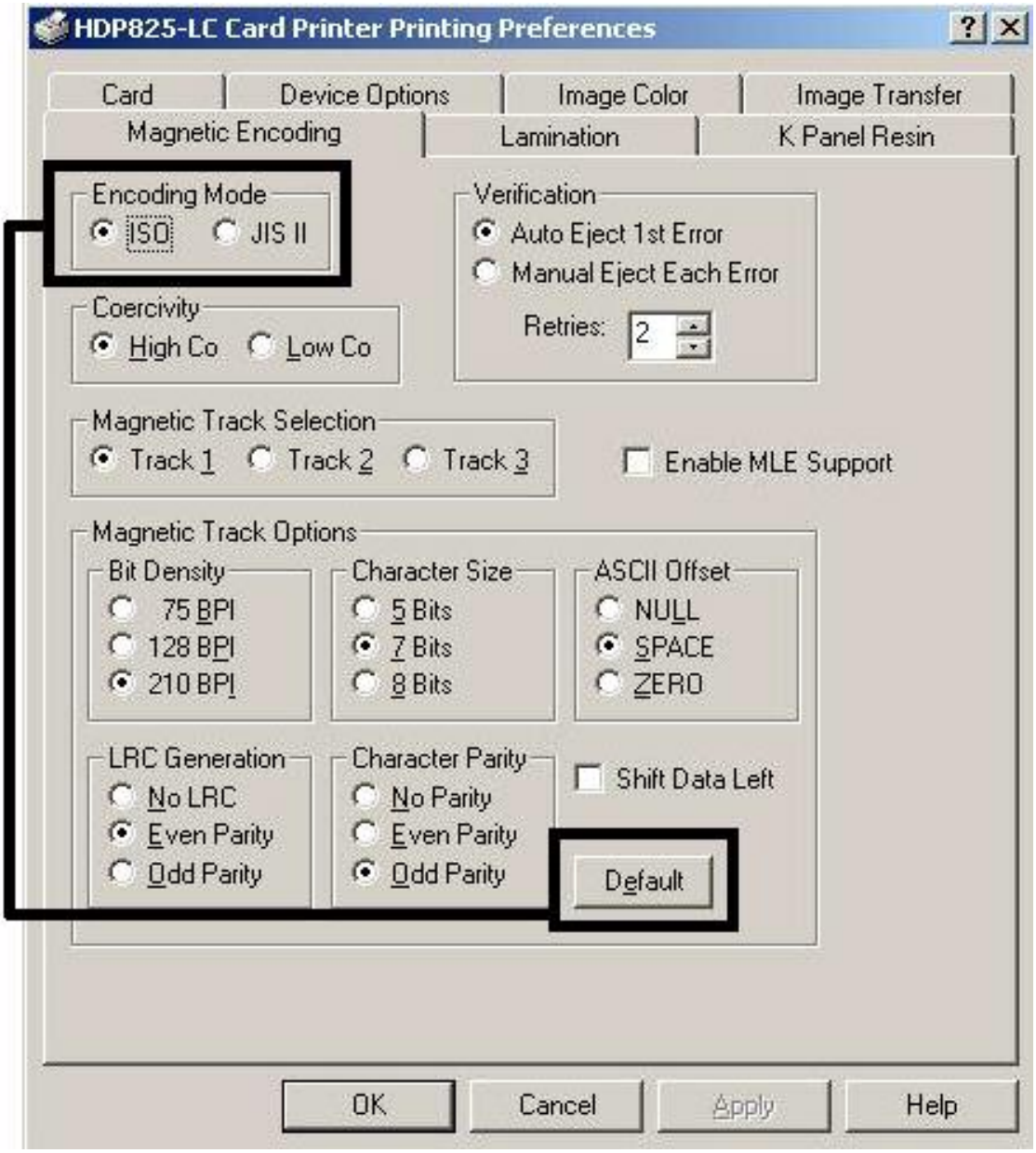
Use the **Encoding Mode** option to specify which magnetic encoding standard to use.

- The HDP Card Printer can be installed with one of two types of factory-installed Magnetic Stripe Encoding Modules.
- Change the encoding mode and coercivity setting or modify the ISO standards for tracks 1, 2 and 3, by correctly modifying these Magnetic Encoding options.

Step	Procedure
1	Select the ISO Standard Encoding Module with a dual-coercivity (high or low) encoding head. (**Note:** By default, the Printer Driver is set to encode according to ISO standards onto high-coercivity Magnetic Stripes.) **OR** Select the JIS II Standard Encoding Module commonly used in Japan. Select the **JIS II** mode to encode only Track 2. (**Note #1:** The **JIS II** option provides encoding compatibility with the JIS C 6220 Type II cards commonly used in Japan. No encoding customization options are available with the JIS II mode.) (**Note #2:** A JIS II Magnetic Head must be installed in the Printer to use any of the JIS II options in the Driver.)

Continued on the next page

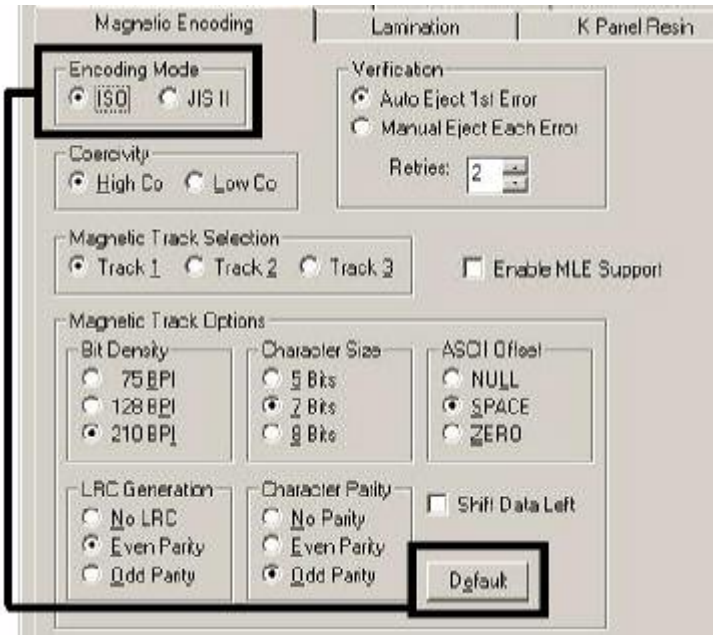
Using the Encoding Mode option (continued)



Encoding the Mode/Coercivity/Magnetic Track Selection

Use the **ISO** option for encoding capability for either high- or low-coercivity cards on tracks 1, 2 and 3 and is the industry's standard mode of magnetic encoding.

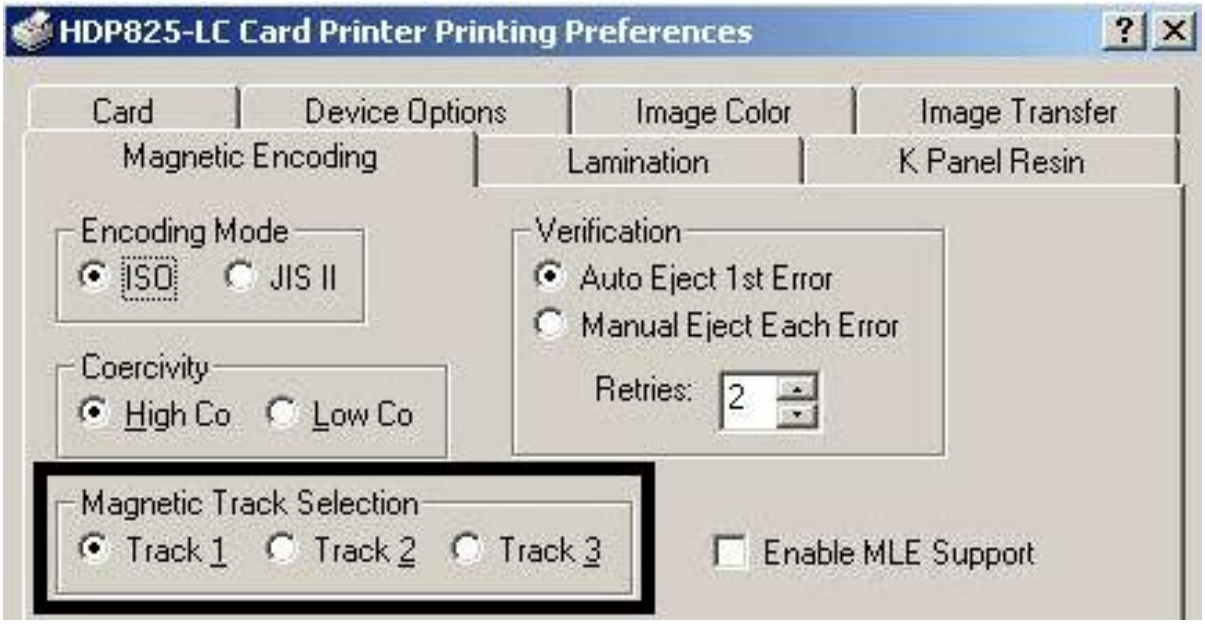
Step	Procedure
1	Select the **Coercivity** option to select the Magnetic Stripe type that matches the card type. • High Coercivity = 2750-4000 Oersted (Fargo's High Coercivity UltraCards are 2750Oe) • Low Coercivity = 300 Oersted
2	Select the **Magnetic Track Selection** option to specify which track is to be configured through the Magnetic Track Options (if the application being used requires customization of the standard ISO encoding process).
3	Customize these options if the application requires it; even though, the default ISO Magnetic Track Options should be correct for most applications. (**Note:** All options must be changed separately for each of the three individual tracks.) a. Set these options back to the ISO standard settings once they have been changed by selecting the **Default** button for each of the separate tracks.



Reviewing the Magnetic Track Options

Use these options to customize the ISO encoded data format for each of the Magnetic Stripe's three tracks.

Step	Procedure
1	Specify which of the three (3) tracks to customize by selecting one of the three track options. • After making the required selection, the Magnetic Track Options box displays the current set of customization options for the selected track. • Remember that each track must be customized independently of the other two.



Reviewing the Enable MLE Support checkbox

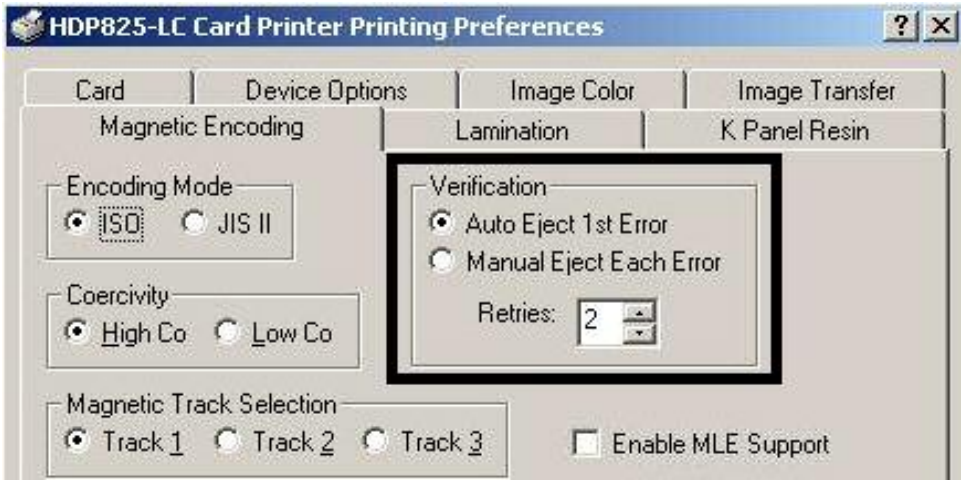
Multi-Language Extension (MLE) support in Windows XP can cause text strings to be broken up into fragments. This fragmentation of the text string prevents magnetic encoding.

Step	Procedure
1	Check this box to allow the Driver to process the fragmented text.

Reviewing the Verification options

Use this option, which instructs the Printer to verify that all magnetic data has been correctly encoded on each card. (**Note:** With either of these options, the number of verification retries may be specified. A range of 1-5 retries is available.)

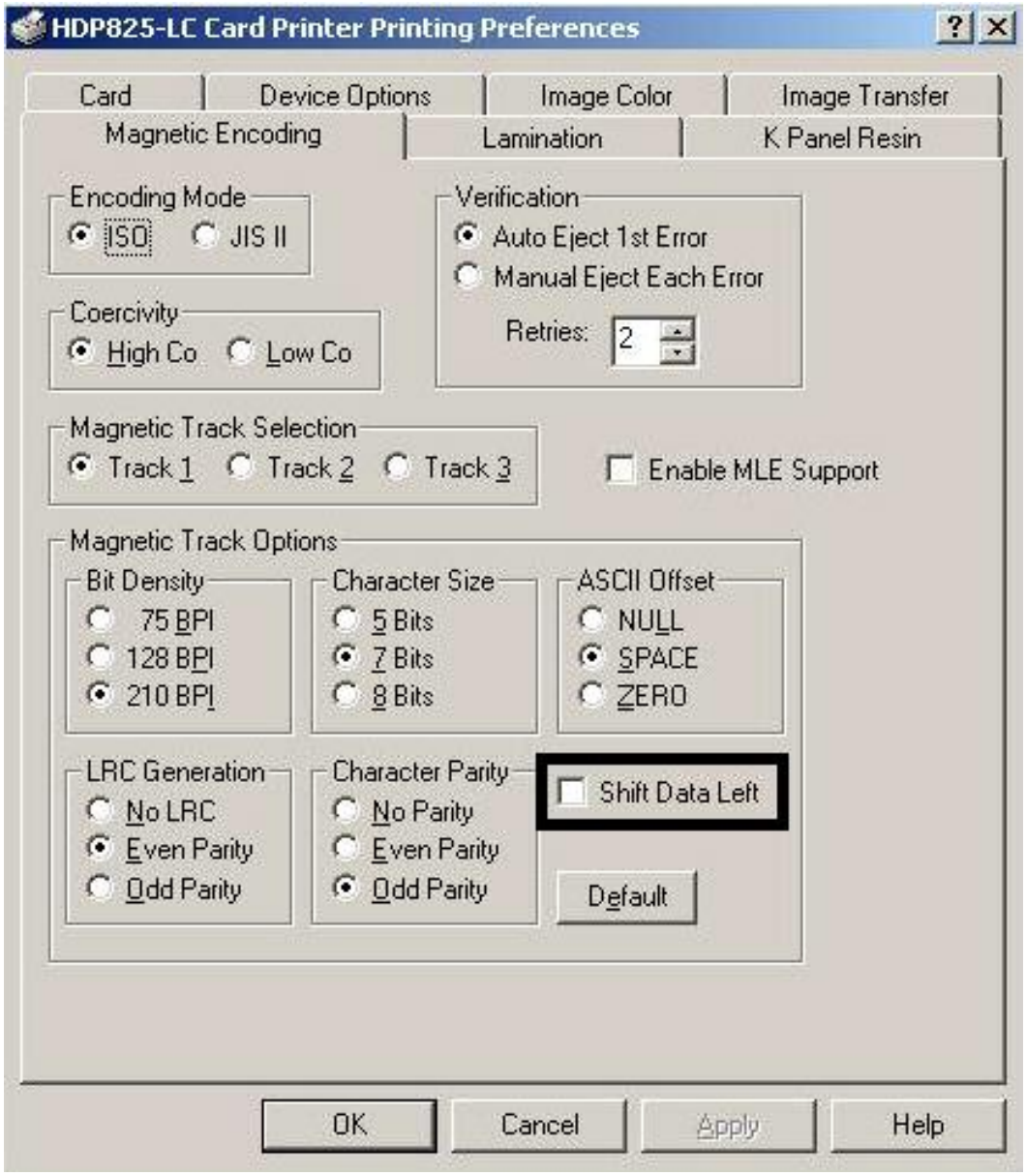
Step	Procedure
1	Select the **Auto Eject 1st Error** option, which instructs the Printer to automatically eject a card containing magnetic data (that cannot be verified). • Only the first mistakenly verified card will be automatically ejected. If a second consecutive card cannot be verified, the Printer will signal an error and go into manual eject mode. • The auto eject option is the most direct means of dealing with mistakenly-verified cards, but may be undesirable (if batch printing) since mistakenly-verified blank cards are ejected into the same stack as verified printed cards. **OR** Select the **Manual Eject Each Error** option so the Printer will signal an error on its LCD Display stating that the magnetic data could not be verified. (**Note:** When this occurs, press the **Cancel** soft key to manually eject the mistakenly verified card. This option is helpful since Magnetic Stripe verification can sometimes require more than a single pass.))



Reviewing the Shift Data Left

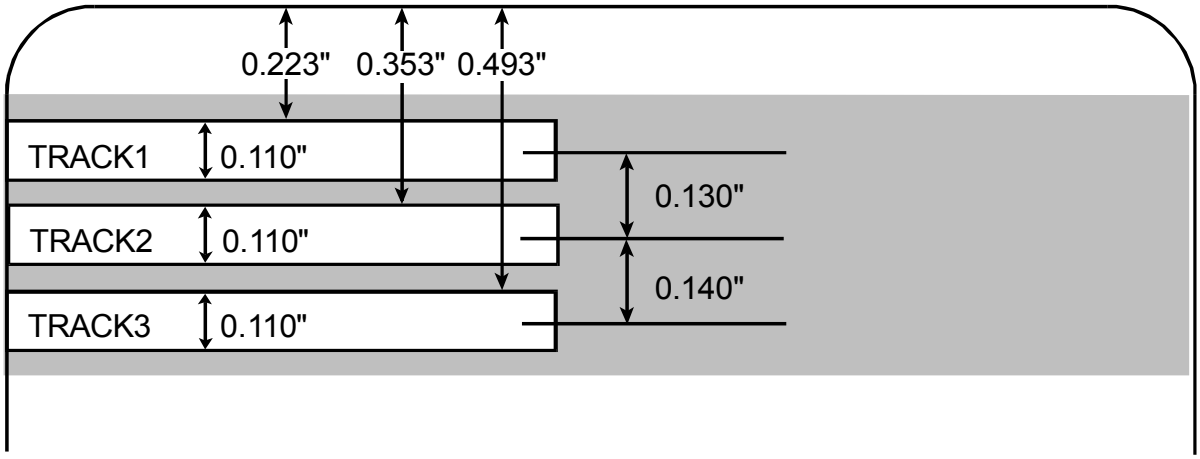
Use the **Shift Data Left** option, which applies to all tracks when selected.

Step	Procedure
1	Select 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.)



Reviewing the ISO Track Locations

The magnetic Encoding Module encodes onto tracks in accordance with an ISO 7811-2 Magnetic Stripe. For track locations, review the display below.



Sending the Track Information

Magnetic track data is sent in the form of text strings from the application software to the Printer Driver.

- In order for the Printer Driver to differentiate between Magnetic Track data and the rest of the printable objects, specific characters must be added to the magnetic data to be encoded.
- These specify the data that is to be encoded, the tracks to encode and mark the start and stop of the data string.
- In some cases, these specific characters are automatically added to the string of track data by ID software applications.
- In most cases, the user must manually add these characters to the string of Magnetic Track data. If these characters are not added to the track data, the text intended for the Magnetic Track will appear as printed text on the card.
- To avoid this, track information must be entered as described below.

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

Reviewing the Sample String

- Track 1: ~1%JULIEANDERSON^1234567890?
- Track 2: ~2;12345678909876543 21?
- Track 3: ~3;12345678909876543 21?

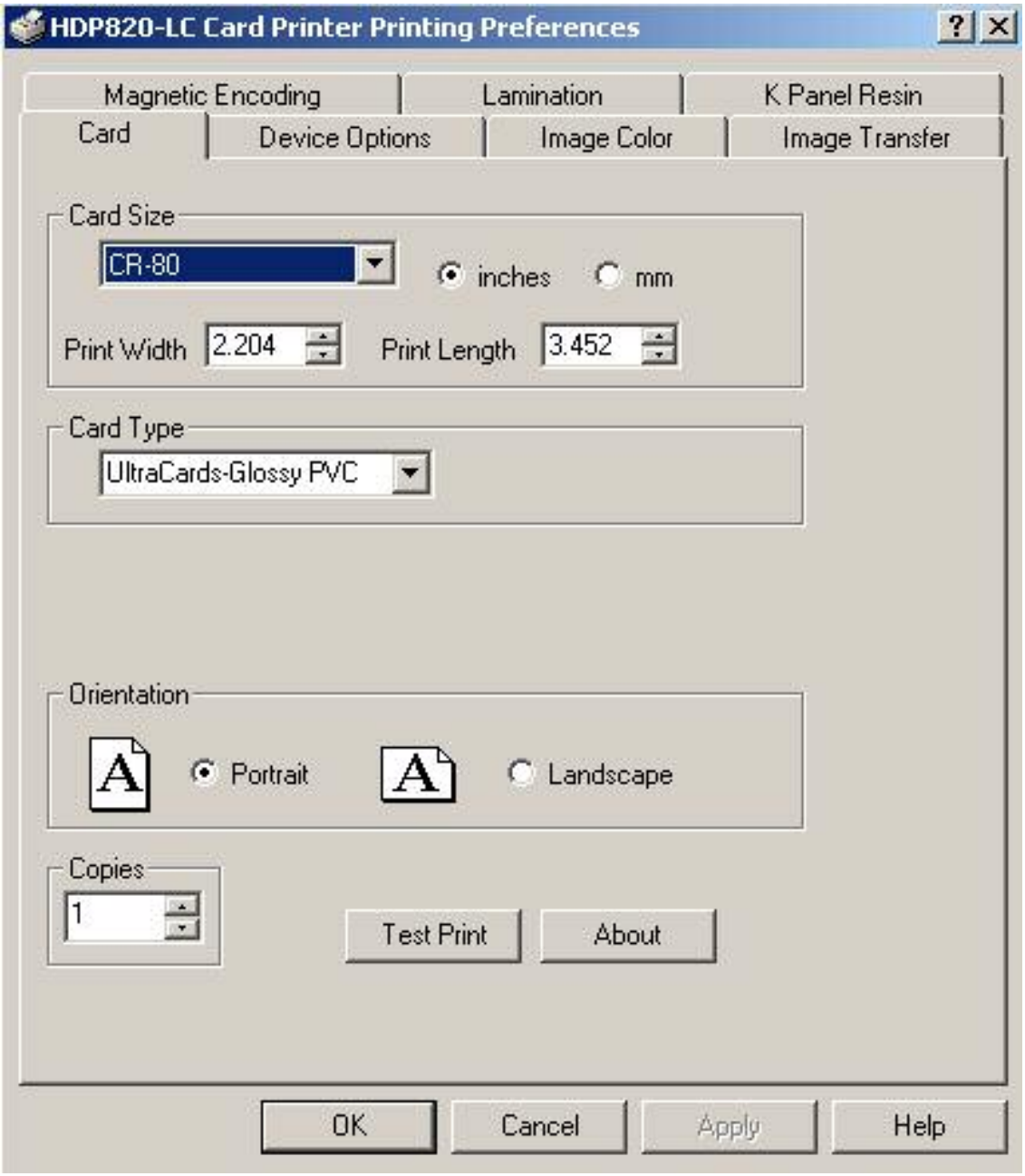
Track	Start Sentinel	End Sentinel	Field Separator	Valid Characters	Maximum Number of Characters
Track 1	%	?	^	ASCII 32-95 (See the table below.)	78
Track 2	;	?	=	ASCII 48-63 (See the table below.)	39
Track 3	;	?	=	ASCII 48-63 (See the table below.)	106

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		

Using the Card tab

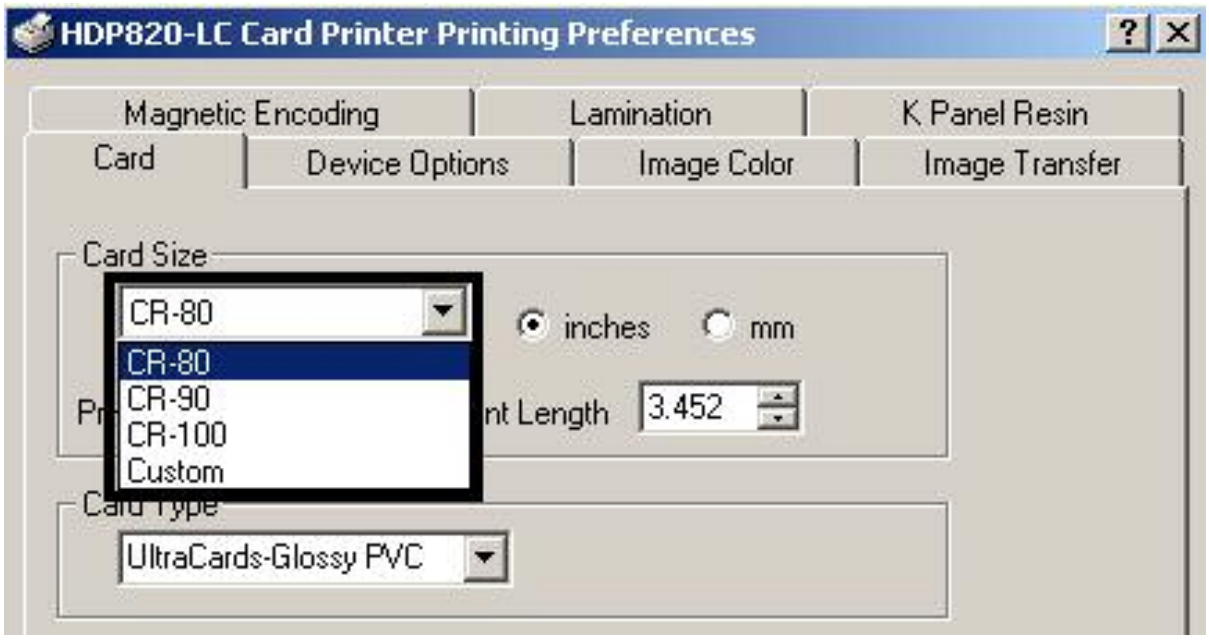
Use this option to control specific Printer functions.



Selecting the Card Size from CR-80**,** CR-90 or CR-100

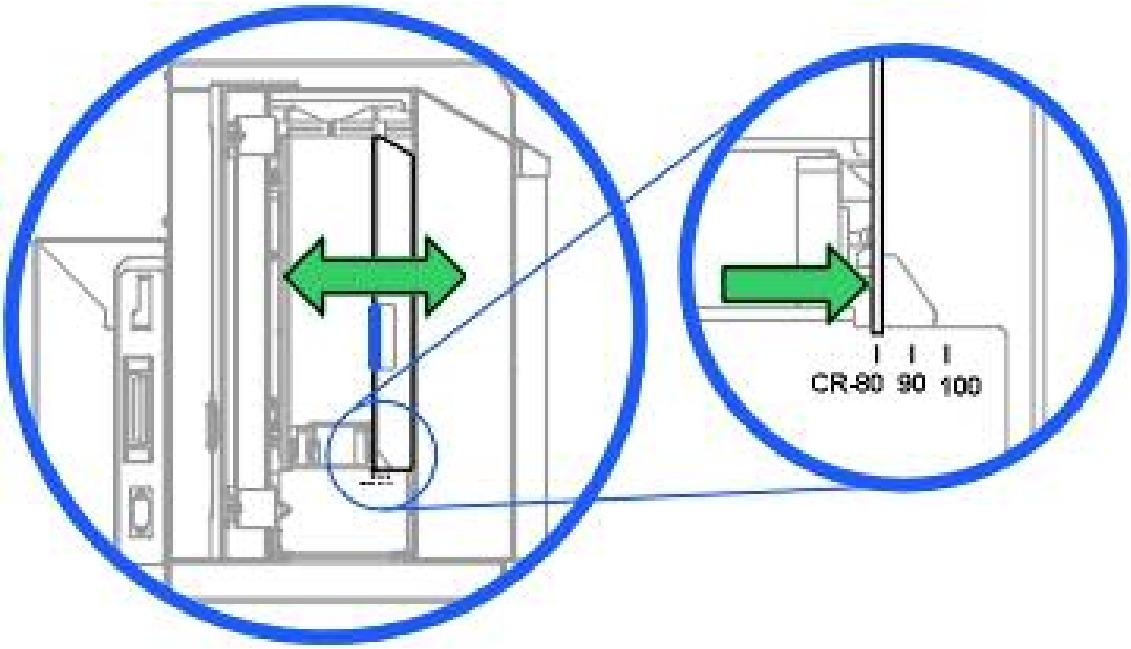
Step	Procedure
1	Select the appropriate card size option from three (3) standard card sizes. • CR-80 **OR** • CR-90 **OR** • CR-100 **OR** • One (1) custom size is available (see Step 2 on the next page). (**Note:** The dimensions of the total print area for each card size will appear in the Print Width and Print Length boxes. These print area dimensions are .04" (1mm) larger than the actual card size. This is so the Printer can overprint images to ensure they will appear Edge-to-Edge when transferred to the card. For this reason, when designing a card format, always set the card size or page size within the card design program to the exact Print Length and Width dimensions listed in the Printer Driver.)

Continued on the next page



Selecting the Card Size from CR-80**,** CR-90 or CR-100 **(continued)**

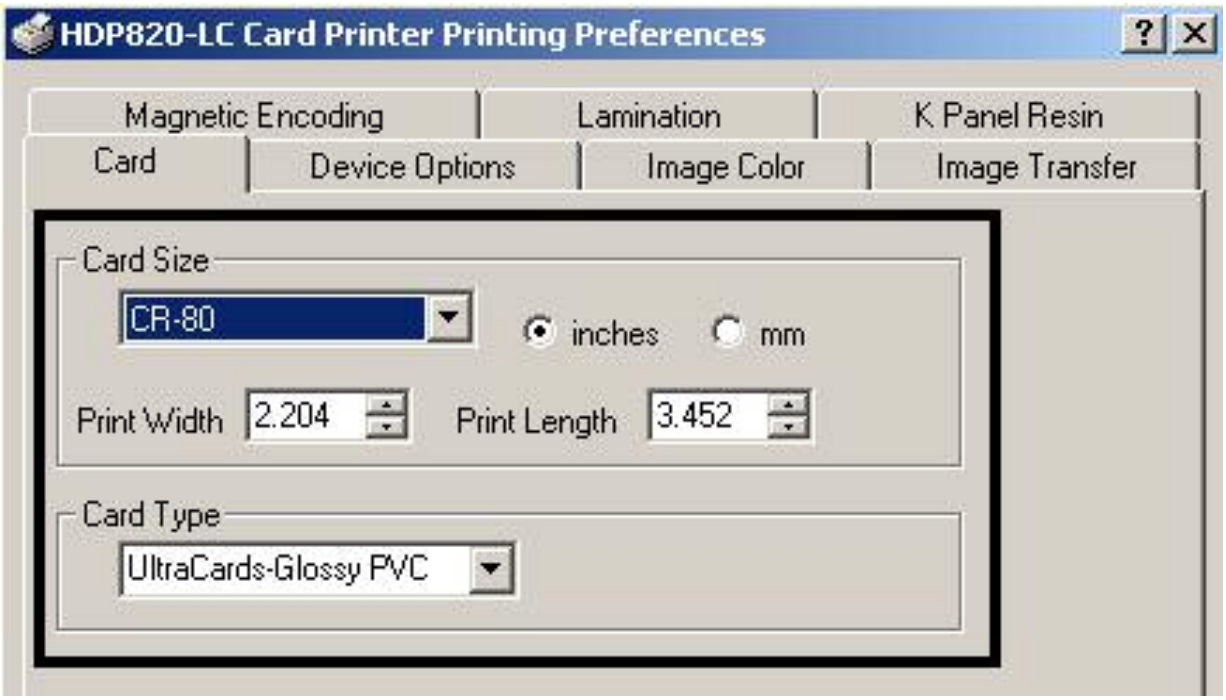
See three previous procedure.



Selecting the Custom Card Size

Select the appropriate custom card size according to the dimensions of the card stock.

Step	Procedure
1	a. Select the **Custom** option and enter the dimensions of the card into the Print Width and Print Length boxes if using a card size that varies from the CR-80, CR-90 or CR-100. b. Add .04" (1mm) to each dimension to ensure Edge-to-Edge printing.

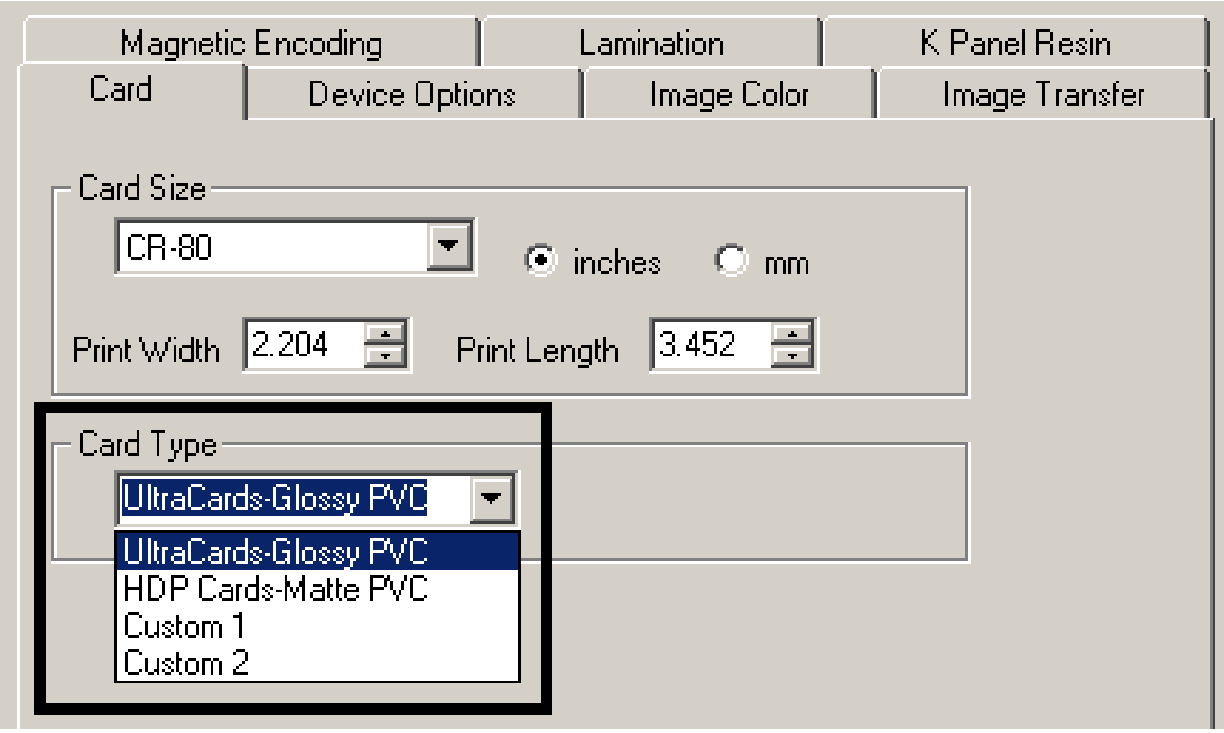


Selecting the Card Type

Select the appropriate card type according to the composition of the card stock.

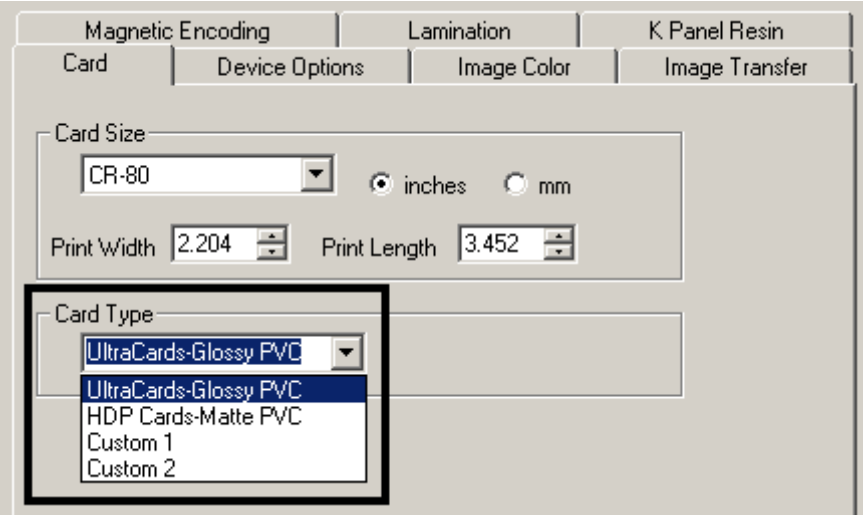
Step	Procedure
1	Select **UltraCards-Glossy PVC** if using Fargo UltraCard stock or any other similar card stock. **OR** Select **HDP Cards-Matte PVC** if using Fargo HDP Card stock or any other similar card stock. (**Note:** The Printer Driver uses this information to automatically determine the proper Dwell Time and temperature for the image transfer process.) **Caution:** If the appropriate option is not selected, the wrong Dwell Time and temperature may be used during the image transfer process, which may result in poor adhesion of the HDP Film or warping of the card.)

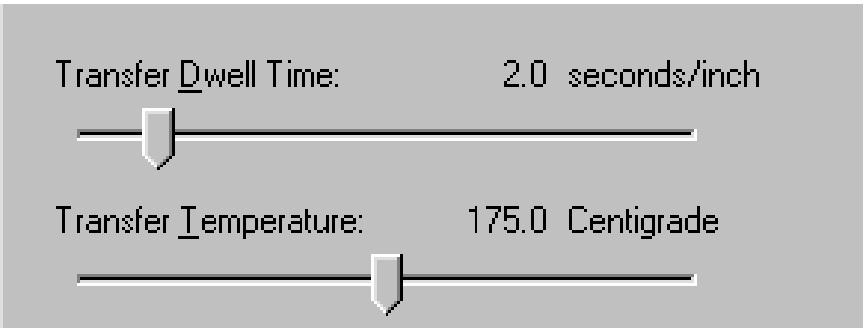
Continued on the next page



Selecting the Card Type (continued)

Step	Procedure
2	If using a card stock other than those listed, use the **Custom 1** and **Custom 2** options to save custom Dwell Time, dwell temperature and Flattener temperature controls on the Image Transfer tab. a. Click on the **Custom 1** or **Custom 2** options and enter a name for the card stock. b. Click on the **Image Transfer** tab to adjust the Dwell Time and temperature sliders to the appropriate settings. (**Note:** These settings will be saved for the custom card type when the Printer Driver setup window is closed.)





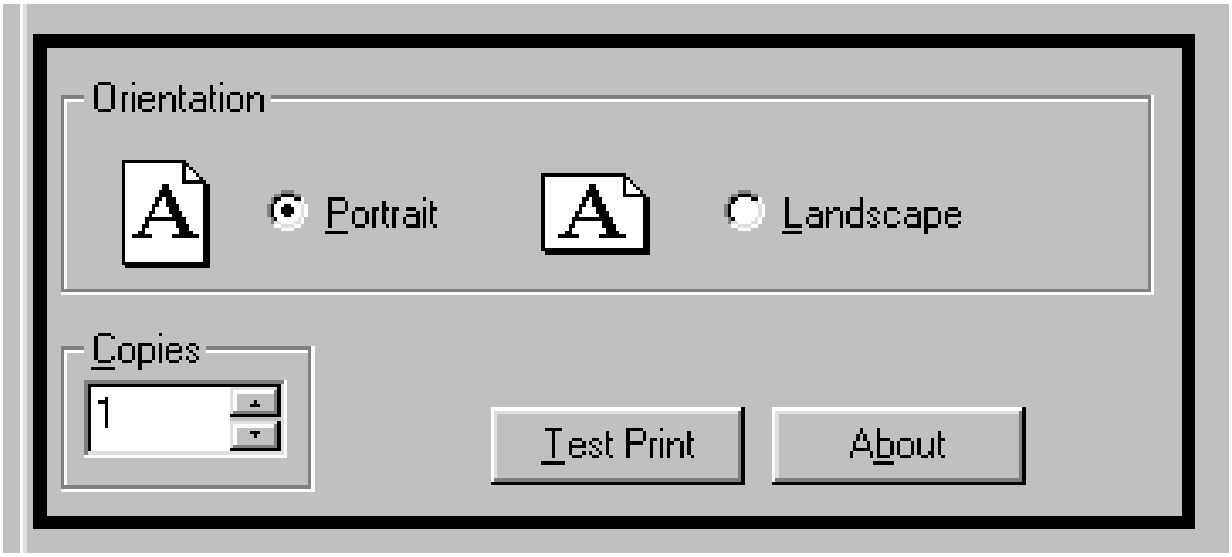
Reviewing the Orientation

Select either the **Portrait** or **Landscape** radio buttons for Orientation.

Step	Procedure
1	Select **Portrait** to cause the card to print in a vertical orientation. **OR** Select **Landscape** to cause the card to print in a horizontal orientation, as shown on the next page.

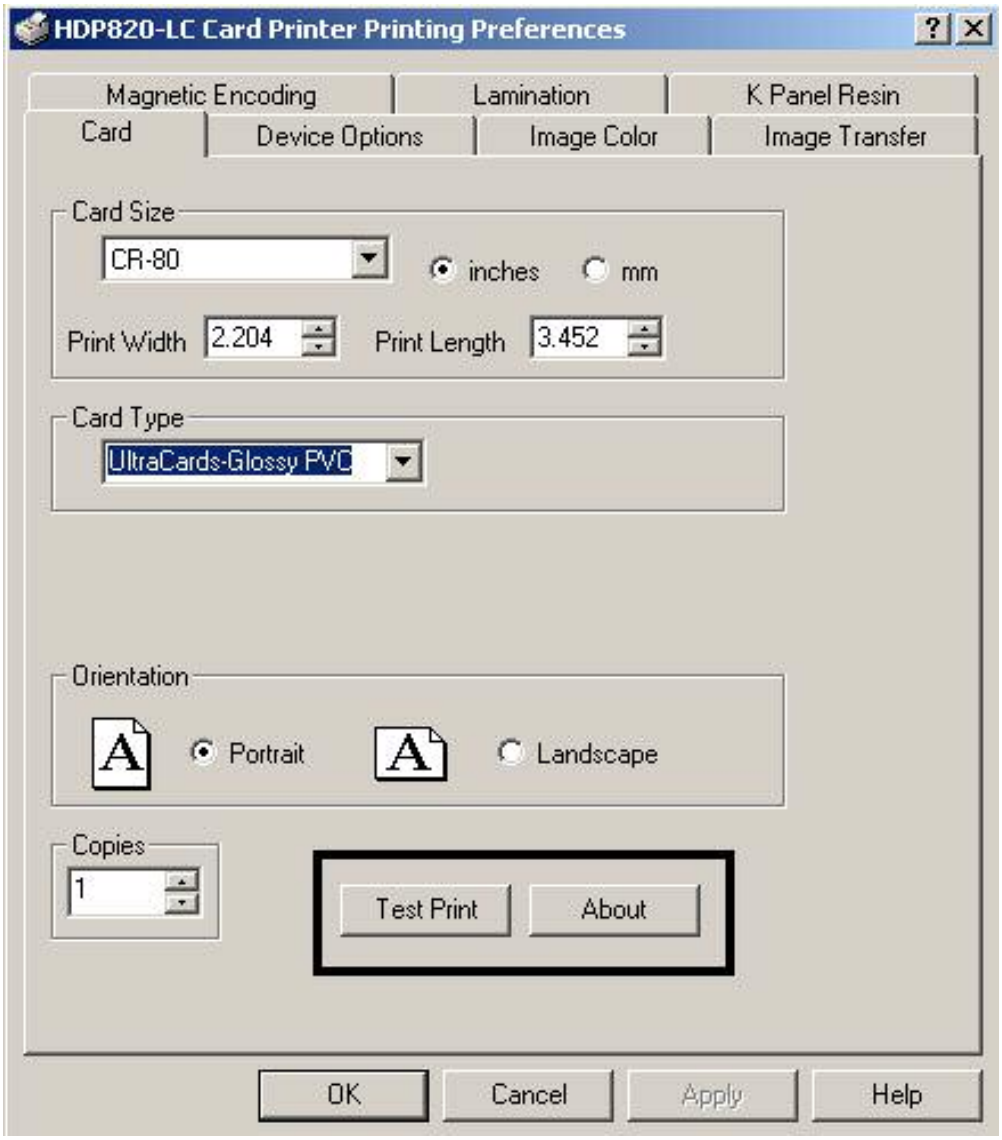
Specifying the Copies

Specifies the number of copies to be printed.



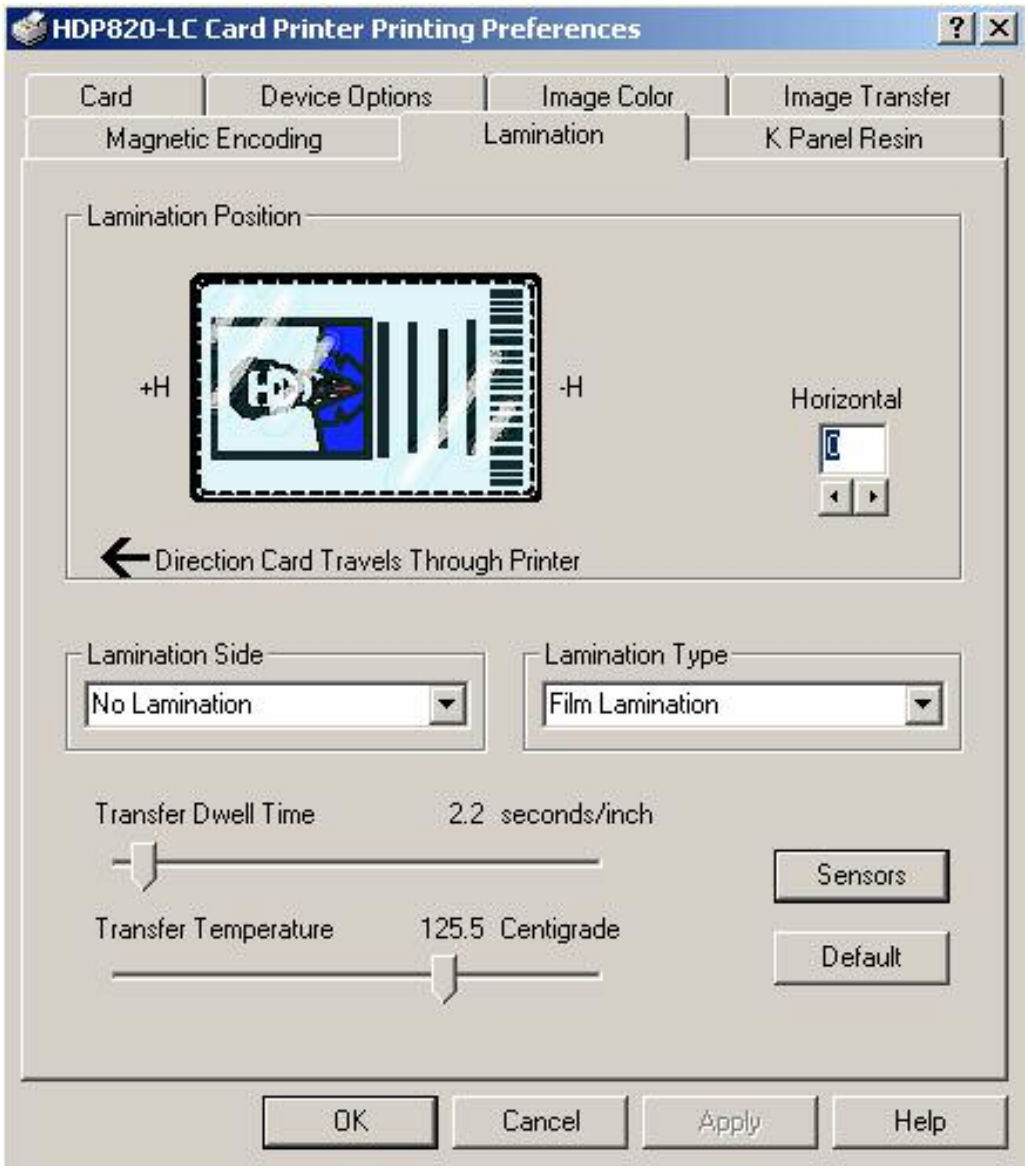
Clicking on the About button

Click this **About** button to open a dialog box containing the copyright and version information about this Printer Driver software.



Using the Lamination tab (only with Card Lamination Module)

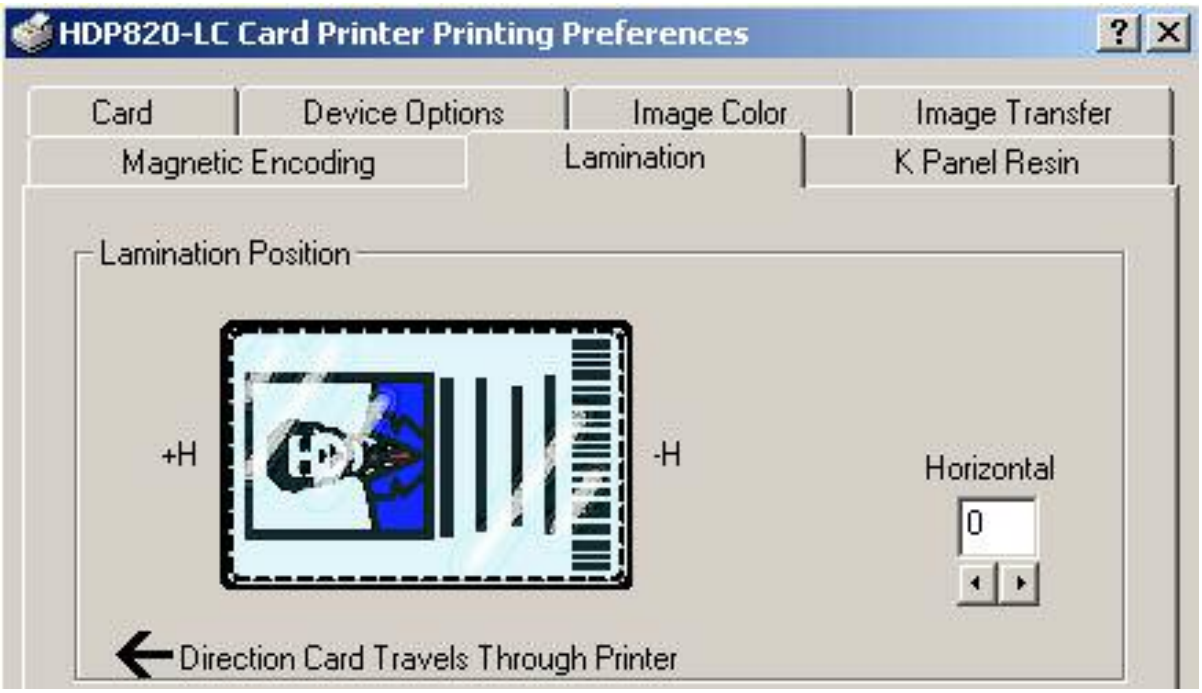
Use this option to control specific Printer functions. The Lamination Tab appears only if the Printer is equipped with the Card Lamination Module. These options allow you to control the Printer's Lamination process.



Selecting the Lamination Position

Step	Procedure
1	The Lamination Position control allows you to adjust the horizontal position of the PolyGuard Overlaminate. This control functions in the exact same fashion as the Image Position controls, except only the horizontal position of the overlaminate requires adjustment. • To adjust the Lamination position, click on the Horizontal adjustment arrows. • To move the overlaminate more toward the card output side of the Printer, enter a positive number. • To move the overlaminate more toward the card input side of the Printer, enter a negative number. (**Note:** The adjustment arrows point in the direction the patch will move on the card. The maximum value for the Horizontal adjustment is ±100 Pixels (10 Pixels = about .03"/.8mm).) • To adjust the Vertical placement of the PolyGuard Overlaminate, click

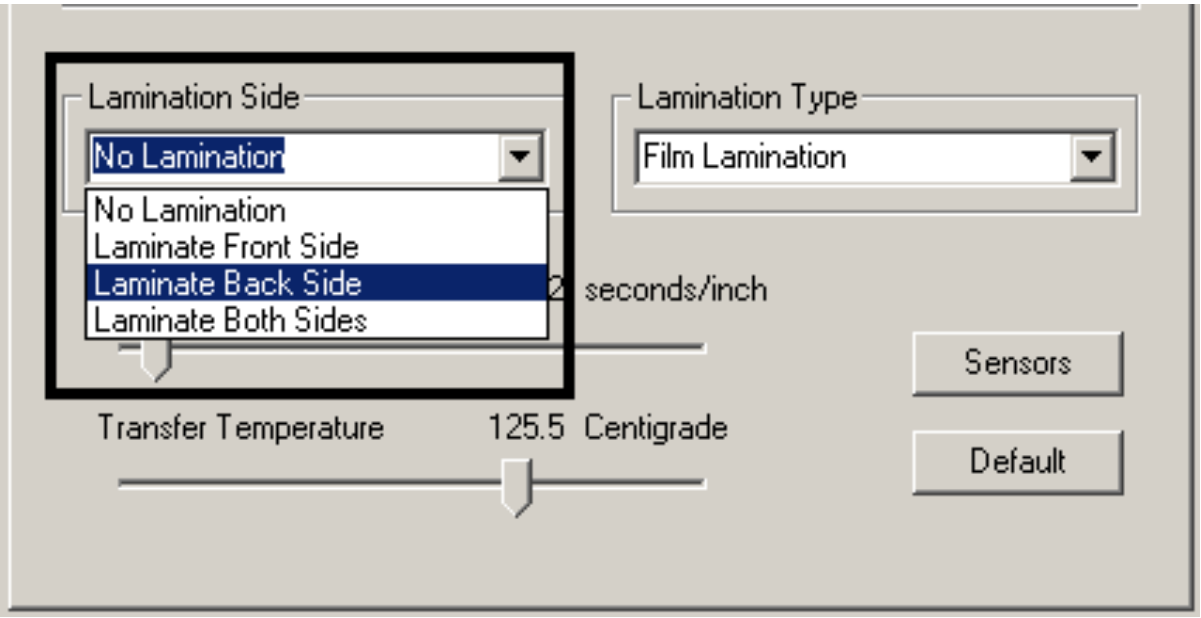
Continued on the next page



Selecting the Lamination Side

Step	Procedure
1	a. Select the **No Lamination** option if you do not want to use the Printer's built-in laminator. b. Select Laminate Front Side, Laminate Back Side or Laminate Both Sides to specify the side(s) of the card to laminate.

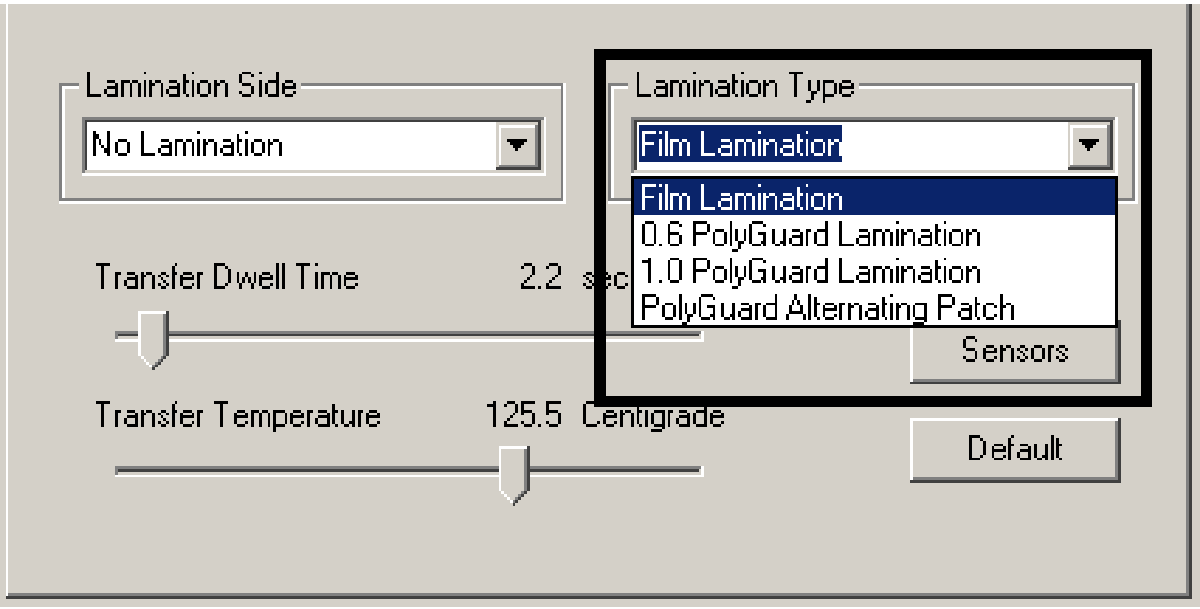
Continued on the next page



Selecting the Lamination Type

Step	Procedure
1	Select one of the **Lamination Type** options, according to which type of Lamination media is currently installed. Two types of overlaminates are supported by the Driver: Film Lamination and PolyGuard Lamination. Custom versions of each type are also available. • Select the **Film Lamination** option if the Thermal Transfer Film Overlaminate type is installed in the Lamination Module. • Select the **0.6 PolyGuard Lamination** option or **1.0 PolyGuard Lamination** option for either patch thickness. (**Note:** These require different heat settings and Lamination speeds. Select the appropriate option according to the thickness of the PolyGuard material you are using.) • Select the **PolyGuard Alternating Patch** option only if using PolyGuard material that has alternating patch configurations on the same roll (e.g., full patch on the front of the card and half patch on the back).

Continued on the next page

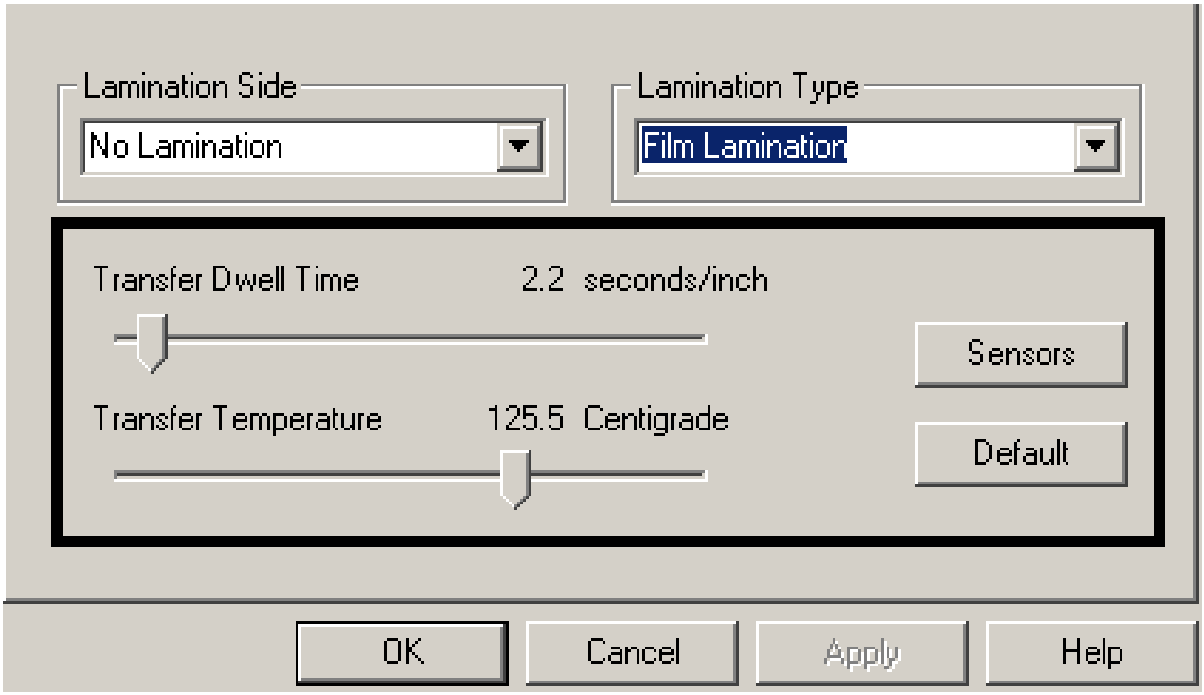


Adjusting the Transfer Dwell Time and Transfer Temperature

Step	Procedure
1	Adjust the Transfer Dwell Time and the Transfer Temperature to control the Lamination Dwell Time or through-put speed of a card in seconds/inch and the Lamination Temperature.

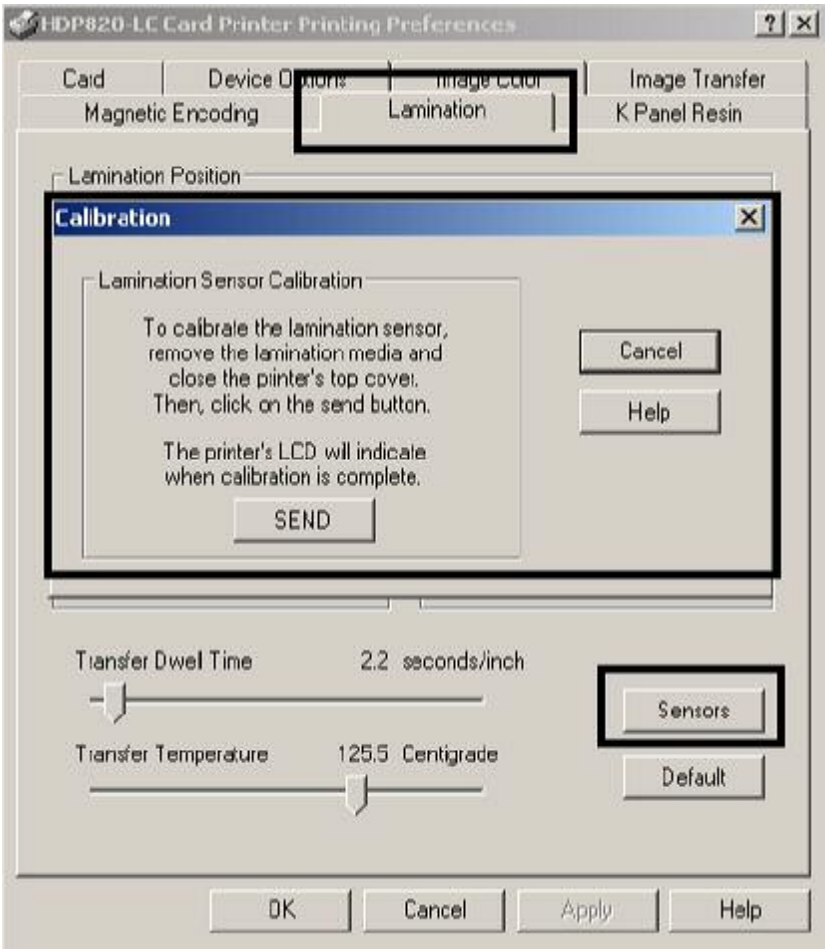
Selecting the Sensors button and Defaults button

Step	Procedure
1	Select the **Sensors** button to bring up a separate dialog box to calibrate the Lamination Sensor. See the next page.
2	Click on the **Default** button to return the Transfer Dwell Time and Transfer Temperature to the Default settings for the Lamination Type being used.



Selecting the Sensors button and Defaults button

Step	Procedure
1	Select the Lamination Tab's **Sensors** button to display options for calibrating the Card Lamination Module's Lamination Sensor. The Lamination Sensor is what detects the start of each PolyGuard patch throughout the roll. This Sensor may occasionally need to be recalibrated. • If the Lamination Module seems to skip PolyGuard patches or wind the PolyGuard roll until the Lamination Module's LED flashes, recalibrate the Lamination Sensor according to the instructions given the in the Calibration window. • Be sure the Printer is powered ON and that the Lamination Module's Top Cover and Lamination Station are closed when calibrating. (**Note:** This Sensor is not used if applying Thermal Transfer Film overlaminate.)



Section 5: Cleaning

This Section deals with the Printer's internal and external maintenance in regards to the unit's cleaning and general upkeep. (**Note:** 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.

IMPORTANT! Fargo Card Printers require highly specialized Print Ribbons to function properly. To maximize Printer life, reliability, printed card quality and durability, you must use only Fargo Certified Supplies. For this reason, your Fargo warranty is void, where not prohibited by law, if you use non-Fargo Certified Supplies. To order additional materials, please contact your authorized reseller.

Using the Required Supplies

For the maintenance procedures outlined for the Printer, you will need a Printer Cleaning Kit, available from the reseller. This optional kit includes the following:

- **Printhead Cleaning Pens** pre-moistened with 99.99% isopropyl alcohol for cleaning the Printer's Printhead.
- **Cleaning Cardss** with an adhesive backing for cleaning the Printer's Cleaning Rollers.
- **Cleaning Pads** pre-moistened with 99.99% isopropyl alcohol for cleaning the Printer's Platen Rollers, Card Feed Rollers and general inside and outside area.

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

Safety Messages (review carefully)

Symbol	Critical Instructions for Safety purposes
Danger: 	**Failure to follow these installation guidelines can result in death or serious injury.** Information that raises potential safety issues is indicated by a warning symbol (as shown to the below). • **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.
Caution: 	**This device is electrostatically sensitive**. **It may be damaged if exposed to static electricity discharges.** Information that raises potential electrostatic safety issues is indicated by a warning symbol (as shown to the below). • **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 inside the Printer

Step	Procedure
1	Open the Print Station and Transfer Station.
2	Remove the Print Ribbon and HDP Film from the Printer.
3	If you have a can of compressed air, blow out all visible areas of the Printer interior. (**Note:** Remove any debris that may be inside.) **OR** If you do not have a can of compressed air, use a cleaning pad from the Printer Cleaning Kit to wipe out all visible areas inside the Printer. (**Note:** Remove any debris that may be inside.)  **Caution:** Be extremely careful not to let any alcohol drip inside the Printer!
4	Re-install the printing supplies.
5	Close the Print and Transfer Stations.

Cleaning outside the Printer

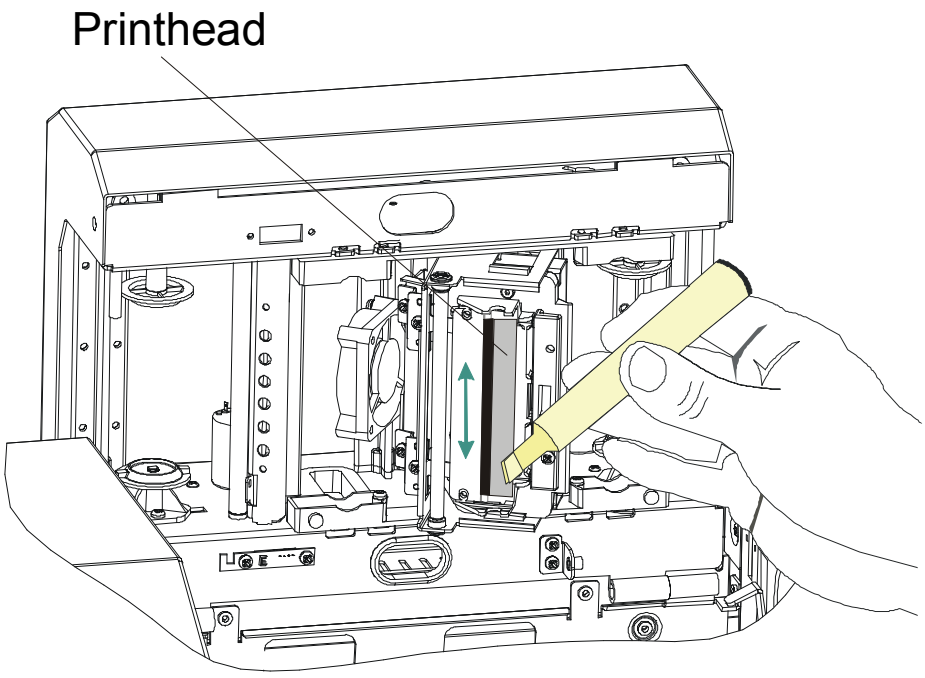
Step	Procedure
1	The Printer has a durable casing that should retain its luster and appearance for many years. Clean it only with a Cleaning Pad from the Printer Cleaning Kit.  **Caution:** Do not use cleaning solvents of any kind or spray the cabinet with a cleaner!

Cleaning the Printhead

Clean the printhead every time the Print Ribbon is changed to maintain consistent print quality, as instructed below. This procedure should also be performed approximately every 400 prints in order to maintain consistent print quality.

Caution: Never use a sharp tool or abrasive object of any kind to clean the Printhead. It will damage the Printhead. Watches, rings, bracelets and other jewelry can damage the Printhead if accidentally bumped against it. For best results, remove such items before touching any internal components of Printer.

Step	Procedure
1	Remove watches, rings, bracelets and other jewelry.
2	Open the Print Station.
3	Use a Printhead Cleaning Pen from the Printer Cleaning Kit to firmly wipe back and forth across the surface of the Printhead.
4	Close the Print Station once the Printhead is completely dry.

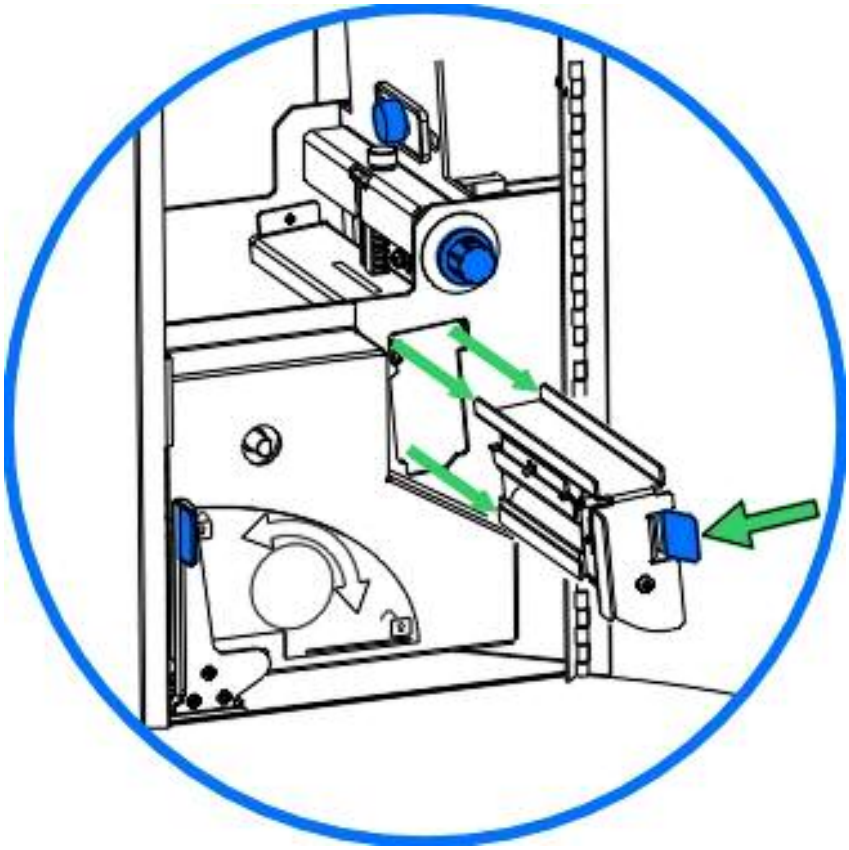


Cleaning the Cleaning Rollers

The Cleaning Rollers remove dust particles from the top and bottom of a blank card as it feeds into the Printer. Cleaning these rollers will help prevent card contamination, thus allowing for higher quality output. The Cleaning Rollers should be cleaned approximately every 250-prints or if the cards start showing bumps, speckles or debris on the printed surface.

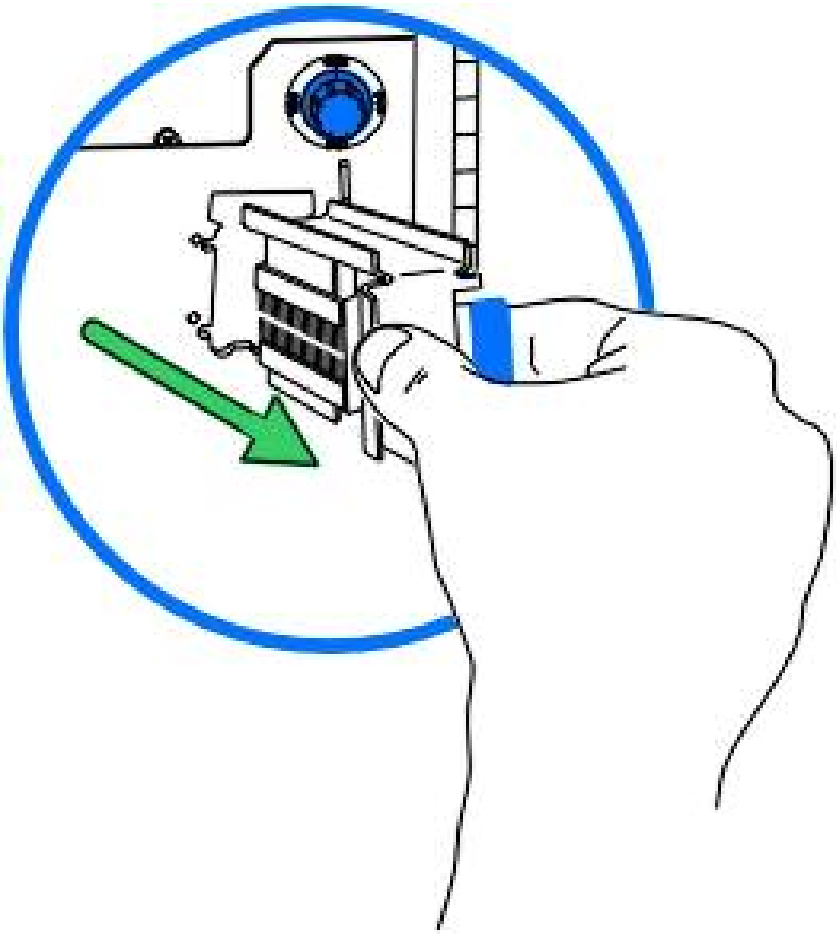
Step	Procedure
1	Open the Front Access Door of the Printer.
2	Depress the Cleaning Roller Lock.

Continued on the next page



Cleaning the Cleaning Rollers (continued)

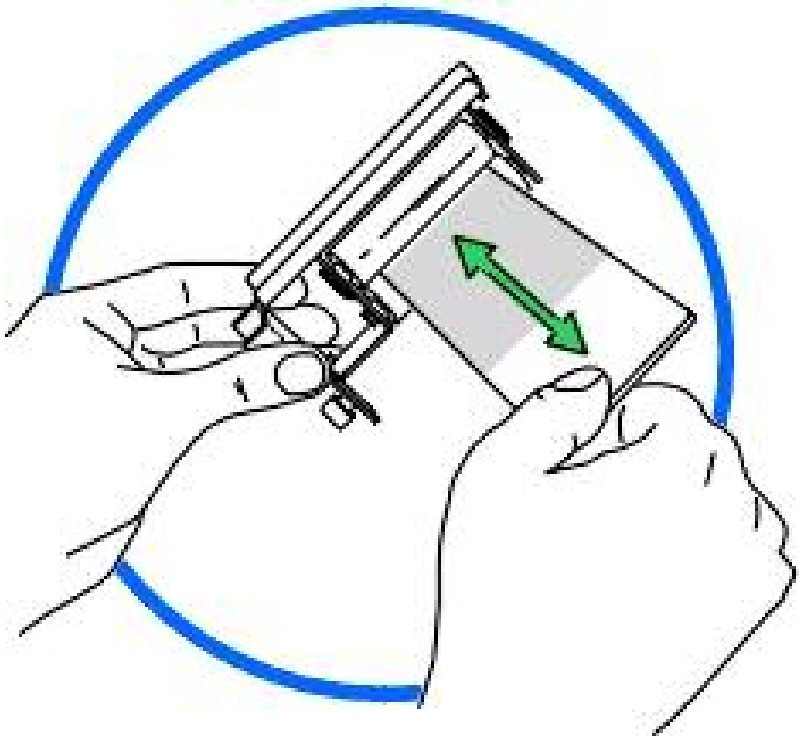
Step	Procedure
3	Pull the Cleaning Roller Assembly out of the Printer.



Cleaning the Cleaning Rollers (continued)

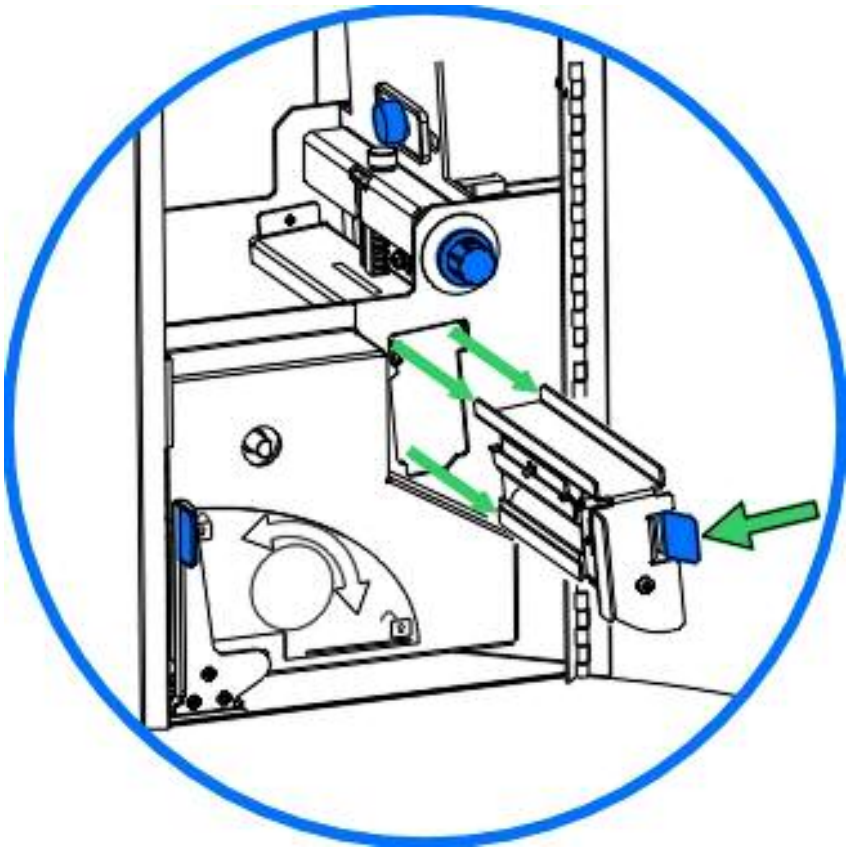
Step	Procedure
4	Clean the rollers with one of the adhesive-backed Cleaning Cardss from the Printer Cleaning Kit. a. Remove the card's adhesive backing paper and slide the card between the rollers until all dust particles are removed. b. Flip over the Cleaning Cards to clean both the top and bottom Cleaning Rollers. (**Note:** Alternatively, place the assembly under lukewarm water may clean the Cleaning Roller.) **Caution:** Ensure that the Cleaning Roller Assembly is completely dry before reinstalling into the Printer.

Continued on the next page



Cleaning the Cleaning Rollers (continued)

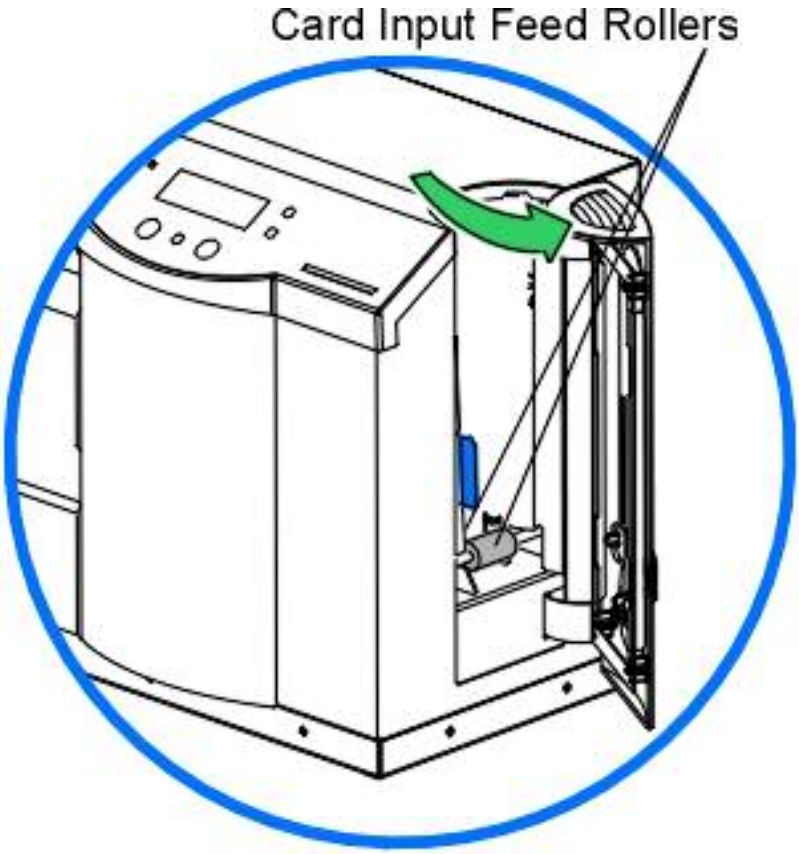
Step	Procedure
5	a. Once cleaned, replace the Cleaning Roller Assembly and close the Front Access Door. b. Push the assembly in until you hear the Spring-loaded tab click into place. (**Note:** This assembly must be inserted properly for the Printer to function.) c. Close the Printer's Front Access Door.



Cleaning the Card Feed Rollers

Steps	Procedure
1	To ensure consistent Printer operation, all of the Card Feed Rollers within the Printer should be cleaned approximately every 250-prints or if the rollers are noticeably dirty. This helps prevent jams and maintain the best print quality. With the Printer power ON, use the following steps to clean the rollers: Open the Card Input Hopper Door, remove the blank cards and locate the two Card Input Feed Rollers. **Caution:** Do not attempt to run a cleaning card through the Printer to clean the Card Feed Rollers. Cleaning cards can become jammed in the Card Flattener and damage the Printer.

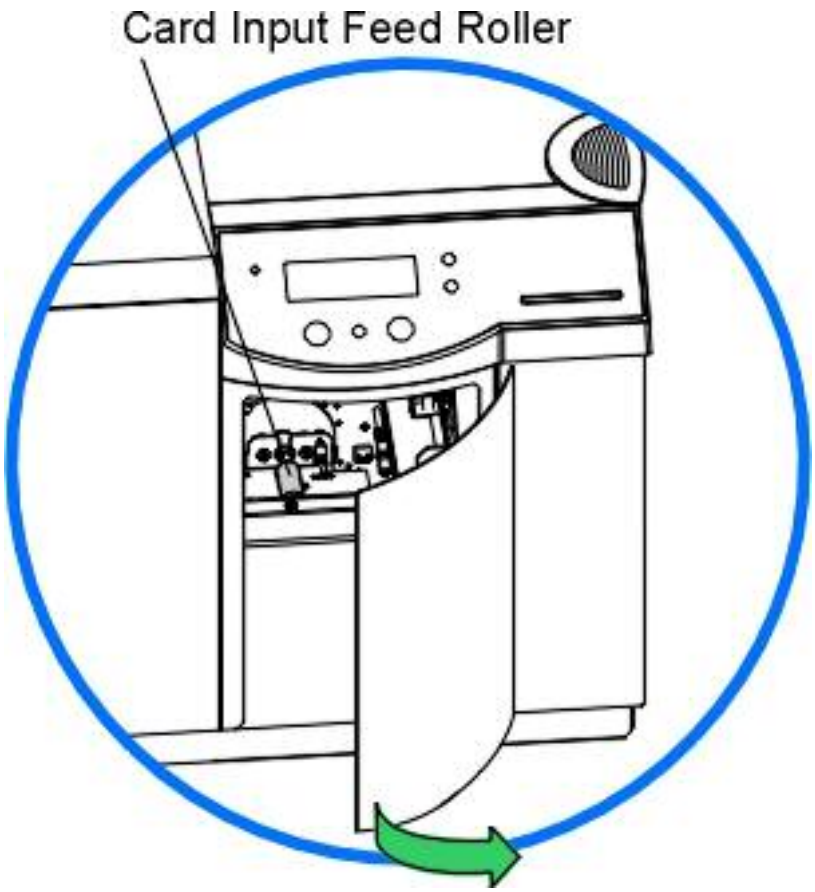
Continued on the next page



Cleaning the Card Feed Rollers (additional Feed Rollers) (continued)

Steps	Procedure
2	Use a Cleaning Pad from the Printer Cleaning Kit to wipe the rollers clean. (**Note:** Use fingertips to move the rollers back and forth while cleaning.)
3	Open the Front Access Door and then open the Print Station and Transfer Station of the Printer. If using a Printer with a Card Lamination Module attached, open the Lamination Module's Top Cover and Lamination Station.

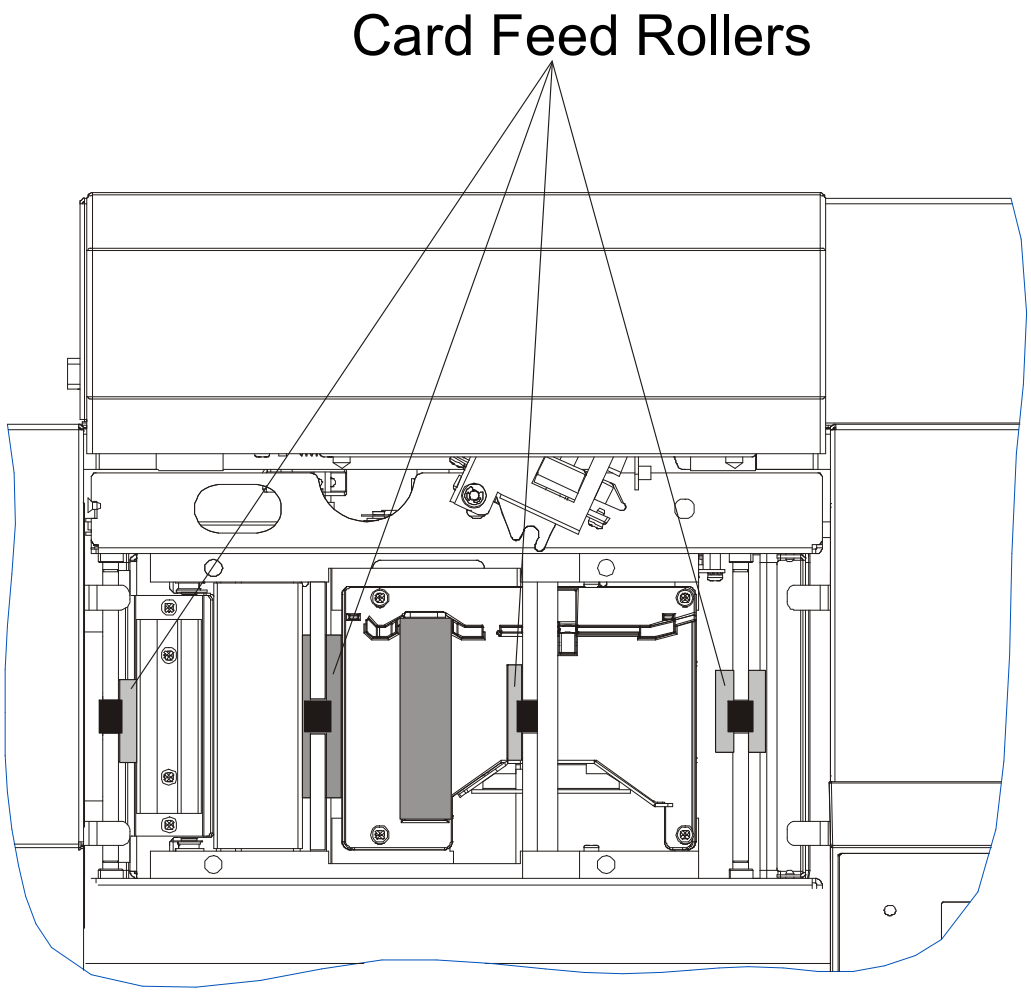
Continued on the next page



Cleaning the Card Feed Rollers (additional Feed Rollers) (continued)

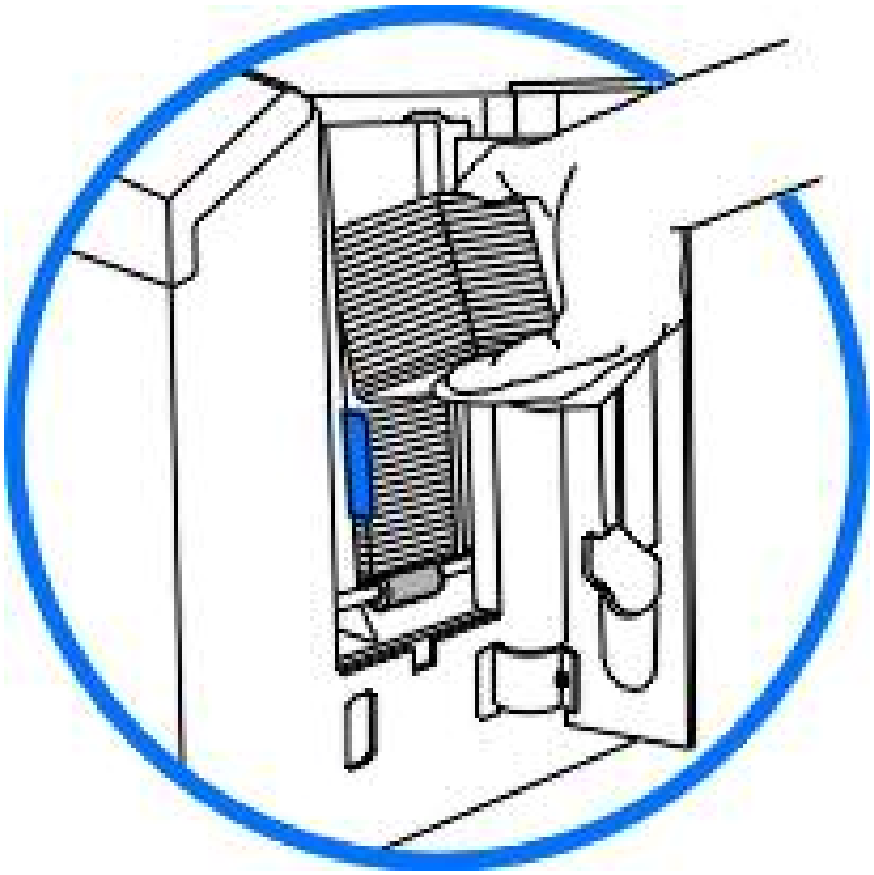
Steps	Procedure
4	a. Inside the Front Access Door, locate the single Card Input Feed Roller. b. Use the Cleaning Pad to wipe the roller clean. c. Press the **Forward** and **Back** buttons to move the roller back and forth while cleaning.
5	Locate the four Card Feed Rollers that reside just beneath the Print and Transfer Stations.

Continued on the next page



Cleaning the Card Feed Rollers (additional Feed Rollers) (continued)

Steps	Procedure
6	Use the Cleaning Pad to wipe each of the rollers clean. (**Note:** Press the **Forward** and **Back** buttons to move the rollers back and forth while cleaning.) If using a Printer with a Card Lamination Module attached, wipe all visible rollers within the Lamination Module as well.
7	After all rollers are clean and completely dry, reload the cards and close all areas of the Printer.

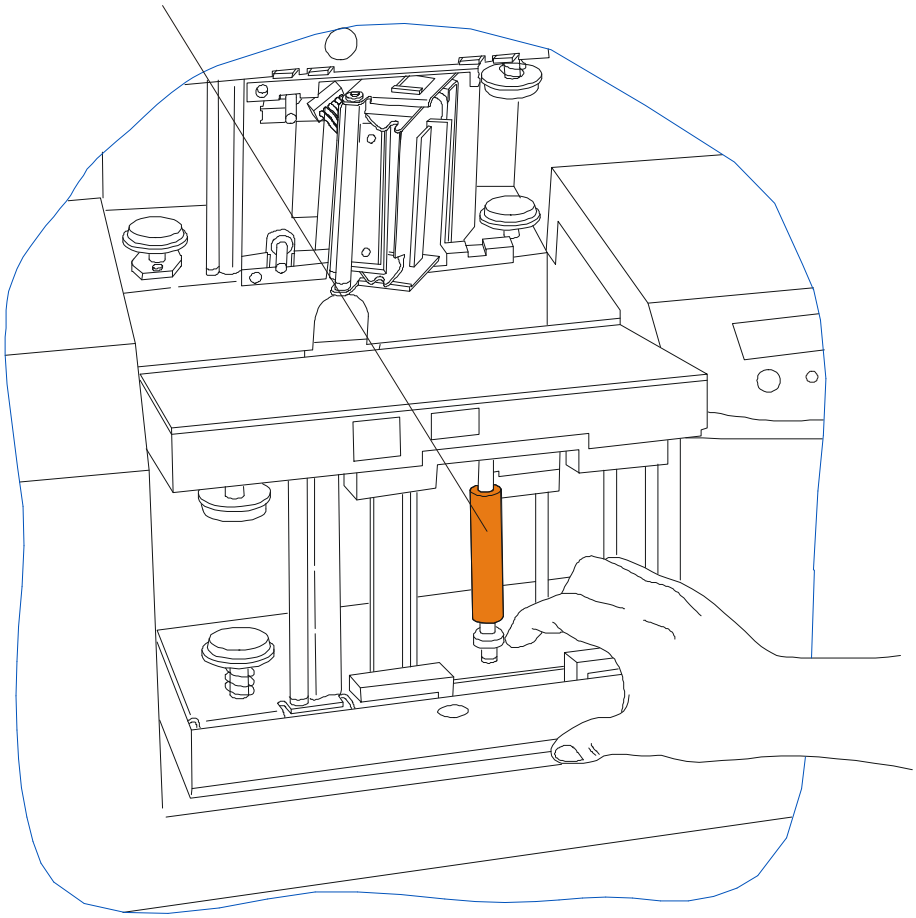


Cleaning the Platen Rollers

Step	Procedure
1	Leave the Printer power ON and open the Print and Transfer Stations. If using a Printer with a Card Lamination Module attached, also open the Lamination Module's Top Cover and Lamination Station.
2	Remove the Print Ribbon and HDP Film.
3	Locate the Print Platen Roller, as shown below.
4	Use a Cleaning Pad from the Printer Cleaning Kit to wipe the roller clean.

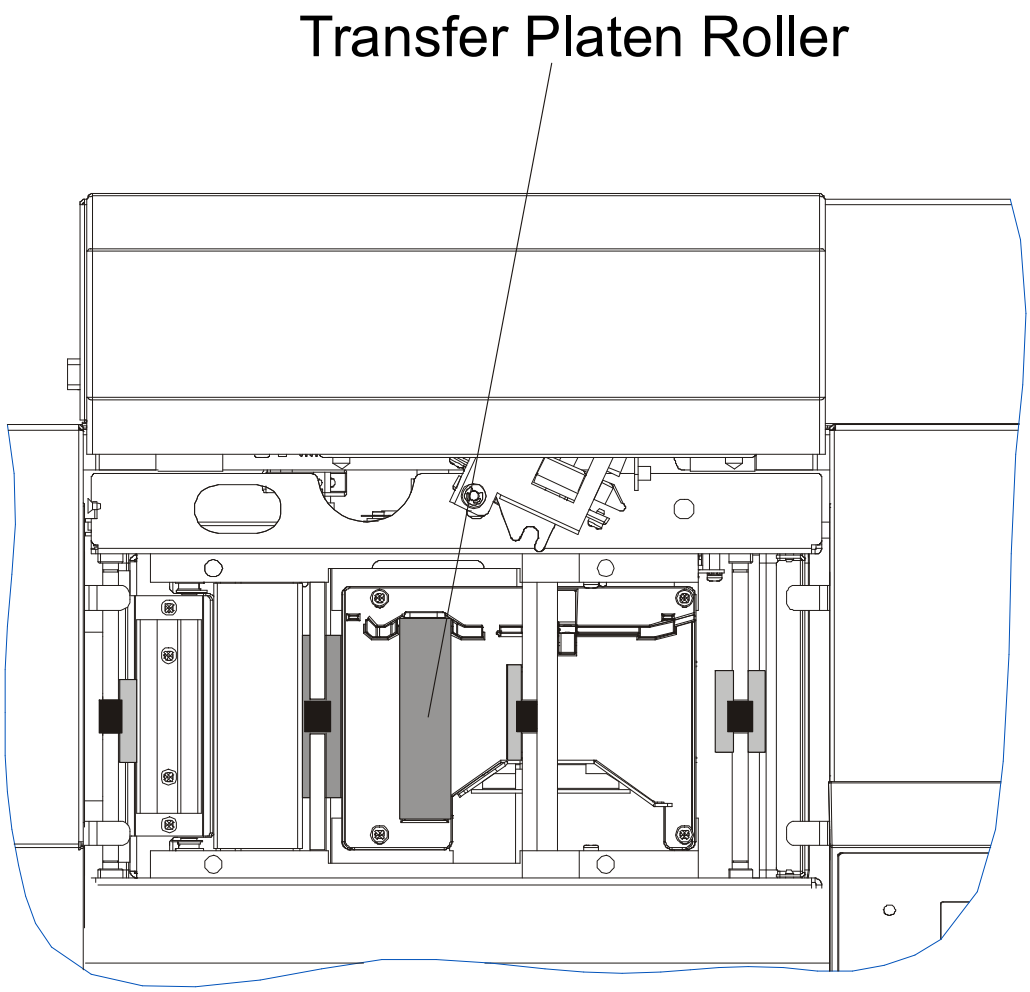
Continued on the next page

Print Platen Roller



Cleaning the Platen Rollers (continued)

Step	Procedure
5	Locate the Transfer Platen Roller, as shown below.
6	Use a Cleaning Pad from the Printer Cleaning Kit to wipe the roller clean. Press the **Forward** and **Back** buttons to move the roller back and forth while cleaning. If using a Printer with a Card Lamination Module, attached, wipe the Lamination Platen Roller clean as well.
7	Replace the printing supplies and close the Print and Transfer Stations after the rollers are clean and completely dry.



Section 7: Packing the HDP800 Series Card Printer

The purpose of this section to provide the User with a specific packing procedure for the HDP 800 Series 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	Insert the cardBoard dancer stiffener into the base Module.
4	Lock the Release Lever to secure the latch mechanism.
5	Pack the Printer in the original carton and packing materials.
6	Be sure to enclose any necessary paperwork, test cards, etc.

Section 8: Board Level Diagnostics

The purpose of this section to provide the User with specific Board Level Diagnostic procedures for Board Errors and Sensor Testing for the HDP 820 Card Printer.

Board Errors

Resolving the EE Memory Error

Symptom: An error has occurred in the permanent circuit memory.

Step	Procedure
1	Reboot the Printer.
2	If the problem persists, the Main Print Board will need to be replaced. See Replacing the Main Print Board (A000271) procedure in Section 5, page 367 for instructions.
3	As an alternative to replacing the Main Print Board, the chip U16 (080239) may be replaced. (**Note:** Fargo recommends that only a qualified electronics technician perform this procedure.)

Resolving the EE Checksum Error

Symptom: An error has occurred in the permanent circuit memory.

Step	Procedure
1	Reboot the Printer.
2	If the problem persists, the Main Print Board will need to be replaced. See Replacing the Main Print Board (A000271) procedure in Section 5, page 367.
3	As an alternative to replacing the Main Print Board, the chip U16 (080239) may be replaced. (**Note:** Fargo recommends that only a qualified electronics technician perform this procedure.)

Resolving the DRAM Memory Error

Symptom: An error has occurred in the removable memory Module (SIMM).

Step	Procedure
1	Reboot the Printer.
2	If the problem persists, remove the rear cover and ensure that the SIMM (080229) is seated properly.
3	If the memory Module is not seated properly, remove the Board and reinstall.
4	If the installation appears correct and the error persists, the SIMM (080229) on the Main Print Board will need to be replaced.

Resolving the RAM Memory Error

Symptom: An error has occurred in the permanent circuit memory.

Step	Procedure
1	Reboot the Printer.
2	If the problem persists, replace the Main Print Board. See Replacing the Main Print Board (A000271) procedure in Section 5, page 367.
3	As an alternative to replacing the Main Print Board, the chip U17 (080229) may be replaced. (**Note:** Fargo recommends that only a qualified electronics technician perform this procedure.)

Resolving the FPGA Error

Symptom: An unexpected hardware error has occurred.

Step	Procedure
1	Reboot the Printer.
2	If the problem persists, the Main Print Board will need to be replaced. See Replacing the Main Print Board (A000271) procedure in Section 5, page 367.
3	As an alternative to replacing the Main Print Board, the chip U2 (080066) may be replaced. (**Note:** Fargo recommends that only a qualified electronics technician perform this procedure.)

Sensor Testing

Step	Procedure
1	Check the voltage to determine if a Sensor is working.
2	a. Test the voltage of each Sensor using ground (GRD = Chassis) to the correct pin on each connector. See **Sensor Location and Voltages** table on the next page). b. Block a slot Sensor with a card. c. Cover a reflective Sensor with a card.
3	a. Troubleshoot the Ribbon Sensor by using the RibbonTraq markss on the ribbon and Film to cover the ribbon and Film Sensors. (**Note:** The numbers indicate the location on J65, as shown in the **Sensor Location and Voltages** table on the next page). b. Open the upper Module to find the Ribbon Sensor orientation. (**Note:** The numbers indicate the location on J65, as shown in the **Sensor Location and Voltages** table on the next page.)

Reviewing the Sensor Location and Voltages

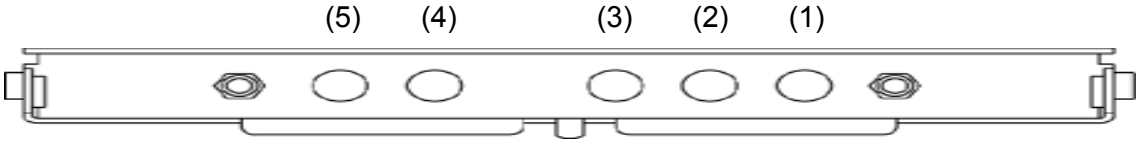
Sensor	Location	Pin	Board	Low Range VDC	High Range VDC
Upper Film Sensor	J66	8	Print	Blocked 0	Unblocked +5
Upper Film Encoder	J66	4	Print	Unblocked .17	Blocked 3.0 - 3.3
Lower Film Sensor	J65	8	Lam	Covered .9	Uncovered 3.5 - 5.0
Lower Film Encoder	J65	4	Lam	Unblocked .17	Blocked 3.0 - 3.3
Card Position Sensor	J62	4	Lam	Unblocked .17	Blocked 3.0 - 3.3
Ribbon Encoder	J64	4	Print	Unblocked .17	Blocked 3.0 - 3.3
Flipper Table Card Sensor	J58	4	Lam	Unblocked .17	Blocked 3.0 - 3.3
Flipper Table Sensor	J64	8	Lam	Covered .9	Uncovered 3.0 - 3.3
Card Hopper Sensor	J64	12	Lam	Covered .9	Uncovered 3.0 - 3.3
Card Input Sensor	J64	4	Lam	Unblocked .9	Blocked 3.0 - 3.3
Printhead lift Sensor	J64	8	Print	Unblocked .9	Blocked 3.0 - 3.3
Transfer Lift Sensor	J65-12	2	Lam	Unblocked .9	Blocked 3.0 - 3.3
Lower Dancer Sensor	J62	8	Lam	Covered .9	Uncovered 3.0 - 3.3
Upper Dancer Sensor	J62	12	Lam	Covered .9	Uncovered 3.0 - 3.3

Continued on the next page

Reviewing the Sensor Location and Voltages(continued)

Sensor	Location	Pin	Board	Low Range VDC	High Range VDC
Ribbon Sensor (5)	J65	3	Print	Covered .9	Uncovered 3.5 - 5.0
Ribbon Sensor (4)	J65	5	Print	Covered .9	Uncovered 3.5 - 5.0
Ribbon Sensor (3)	J65	11	Print	Covered .9	Uncovered 3.5 - 5.0
Ribbon Sensor (2)	J65	7	Print	Covered .9	Uncovered 3.5 - 5.0
Ribbon Sensor (1)	J65	9	Print	Covered .9	Uncovered 3.5 - 5.0
Latch Open Sensor	J69	4	Lam	Covered .9	Uncovered 3.0 - 3.3
Printer Open Sensor	J64	12	Print	Covered .9	Uncovered 3.0 - 3.3
Stacker Full Sensor	J63	12	Lam	Covered .9	Uncovered 3.0 - 3.3
Stacker Position	H83	8	Lam	Unblocked .9	Blocked 3.8-3.5

Reviewing the Sensor Layout on Ribbon Sensor array



Reviewing the Sensor Location and Voltages for the Lamination Module

Sensor	Location	Pin	Board	Low Range VDC	High Range VDC
Flipper Home Sensor	J42	4	Lam Mod	Covered ≤ .9	Uncovered 3.0 - 3.3
Card Position Sensor	J35	4	Lam Mod	Unblocked .17 - .9	Blocked 3.0 – 3.3
Hopper Full Sensor	J65	4	Lam Mod	Covered ≤ .9	Uncovered 3.0 - 3.3
Roller Lift Sensor	J36	4	Lam Mod	Unblocked .17 - .9	Blocked 3.0 – 3.3
Lamination Arm open Sensor	J40	4	Lam Mod	Unblocked .17 - .9	Blocked 3.0 – 3.3
Ribbon ID Sensor	J2	3	Lam Mod	Present .02	Not present .70
Ribbon Encoder Sensor	J38	4	Lam Mod	Unblocked .17 - .9	Blocked 3.0 – 3.3

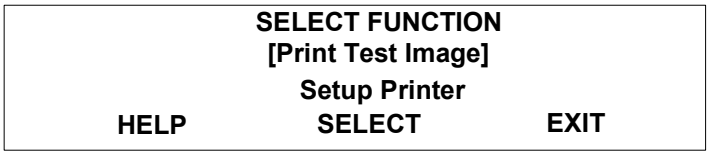
Section 9: LCD On-Line Menu Navigation

The purpose of this section to provide the User with specific procedures for LCD On-Line Menu Navigation, Test Image Printing and Printer Setup for the HDP 820 Card Printer.

Entering the LCD Menu and selecting an Option

The MENU option is above the center softkey button, as shown below. This allows you to access several test, setup and reporting functions. The Selecting from the Menu Option Tree Structure in Section 8, page 446, shows the available menu options. A description of each option and its function is included on the pages following the on-line menu.

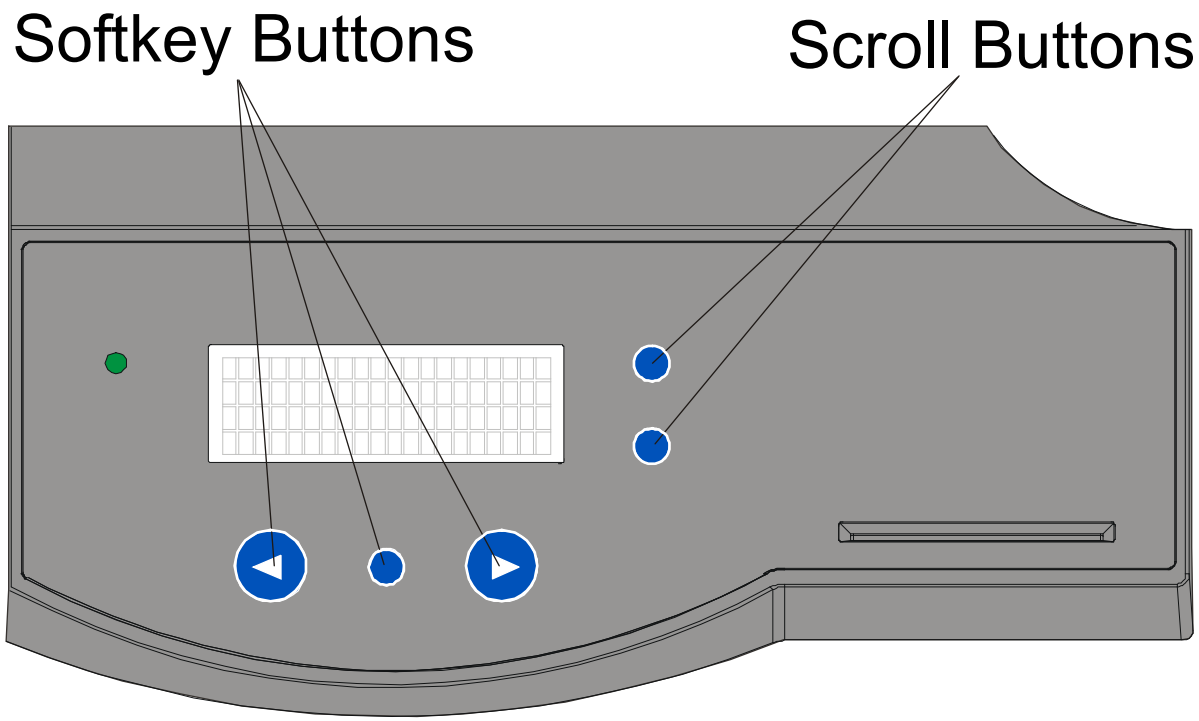
Step	Procedure
1	Press the **MENU** button to bring up the **SELECT FUNCTION** screen appears, as shown here.



Continued on the next page

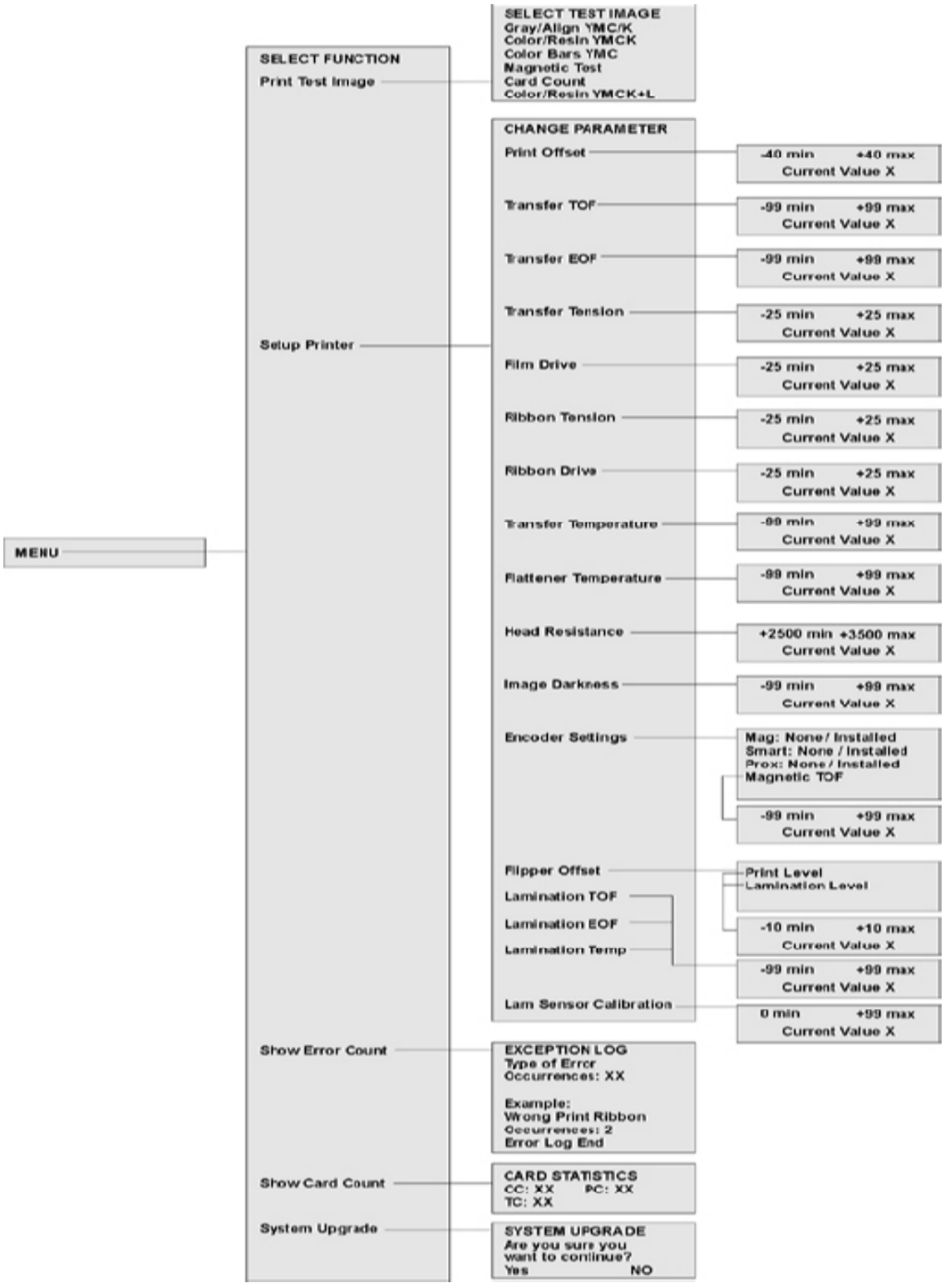
Entering the LCD Menu and Selecting an Option (continued)

Step	Procedure
1	Use the scroll buttons to move up or down through the menu options, as shown below. (**Note:** The brackets appear on either side of the active Menu option.)
2	Press the button below **Select** to choose an option. Choose from these five categories: **Print Test Image**, **Setup Printer**, **Show Error Count**, **Show Card Count** and **System Upgrade**.



Continued on the next page

Selecting from the HDP800 Series Menu Option Structure Tree



Reviewing the Printer Setup

The Printer parameters found in Setup Printer are preset at the factory and should not need to be changed unless an issue develops.

If a change to these settings is needed, be sure to record the changes on the Default settings sticker located on the back of the Printer.

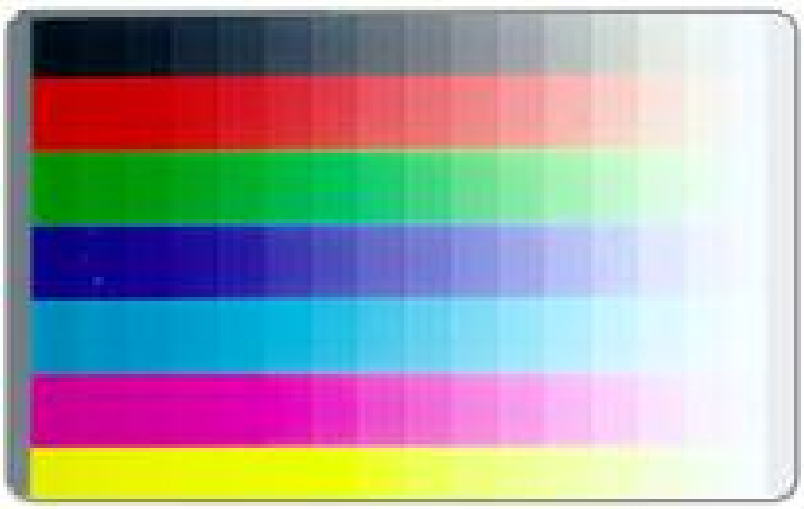
 **Caution:** These settings are optimized at the factory and will rarely need to be changed.

Step	Procedure
1	 **Caution:** Do not alter these settings unless directed to do so by Fargo Technical Support or instructions in this Service Manual Changing these settings may negatively affect Printer output. (**Note:** Located on the back of the Printer is a label that states the factory defaults for all settings, along with the Printer serial number.) a. Use these values to reset the Printer for Printer problems. b. To adjust **Print Offset**, **Transfer Temperature**, **Flattener Temperature** or **Image Darkness**, attempt to make these changes through the Printer Driver **Image Transfer** and **Image color** controls prior to changing the internal Printer settings.
2	Perform these four (4) procedures as a single alignment process: Transfer Tension, Print Offset, Transfer TOF and Transfer EOF. • The goal of these procedures is to align the printed image and the HDP Film precisely with the edges of the card. (**Note:** When aligned properly, the edge of the card will fall directly between all of the Outer and Inner Alignment Arrows.) • The numbers being entered for the settings are measured in Pixels. • The number of Pixels is equal to the measurement in inches multiplied by 300. (**Note:** For example, 0.100 in. multiplied by 300 equals 30 Pixels (0.1 x 300 = 30).) • The alignment test image is designed for setting these parameters.

Continued on the next page

Reviewing the Printer Setup (continued)

Step	Procedure
3	Be sure to run this test after each adjustment. Run the Alignment Test Image by selecting the following options: **MENU**, **PRINT TEST IMAGE** and **GRAY/ALIGN YMC**. All HDP images must have an extra 0.04 in. (1mm) over bleed on all sides of the card. The Outer Alignment Arrows should fall in this area when the image is properly centered; they will be left off of the card when transferred. See the Reviewing the Color Bars YMC Self-Test in Section 2, page 133. See the display below.
4	a. Choose **MENU**, **Setup Printer** and the setting to be changed. b. Change the value and press **SELECT** to save the value. c. If the settings are lost due to replacing the Main Print Board, set the starting values to the settings listed on the label on the back of the Printer.



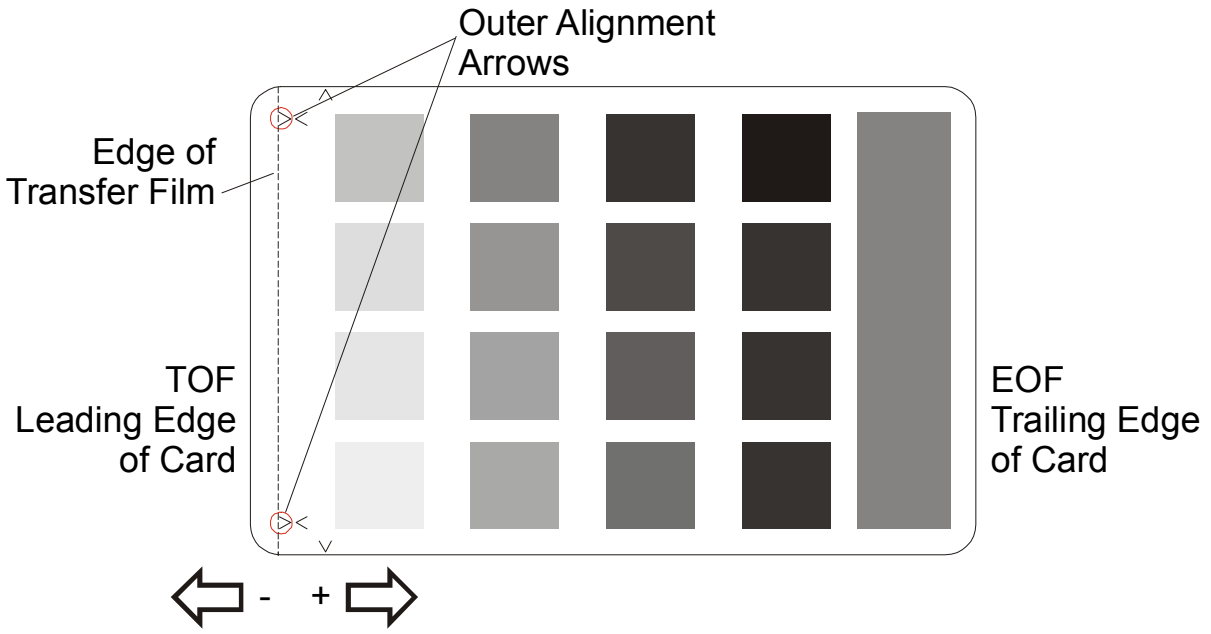
Preparing to Adjust the Print Offset, Transfer TOF and Transfer EOF

Step	Procedure
1	Before starting the alignment procedures, you must first establish a baseline from which to start the adjustments.
2	Select **MENU**, **Setup Printer**.
3	Select the **Print Offset button**.
4	Set to –32 and press the **Select** button.
5	Select **Transfer TOF**.
6	Set to +40 and press the **Select** button.
7	Select the **Transfer EOF** button.
8	Set to –24 and press the **Select** button.

Aligning the Print Offset

This procedure positions the image correctly on the HDP Film. Refer to the Preparing to adjust the Print Offset, Transfer TOF and Transfer EOF procedure in Section 8, page 449, for proper sequence.

Step	Procedure
1	Choose **MENU**, **Print Test Image** and **Gray/Align YMC** to print a test card.
2	a. Examine the test card. The open end of the Outer Alignment Arrows should appear at the edge of the Film (shown below as a dotted line). b. Go to step 5 on the next page to adjust the Print Offset if the test card does look like the display (shown below).
3	Select MENU, Setup Printer and Print Offset.
4	Record the **Print Offset** value on the test card last printed.



Continued on the next page

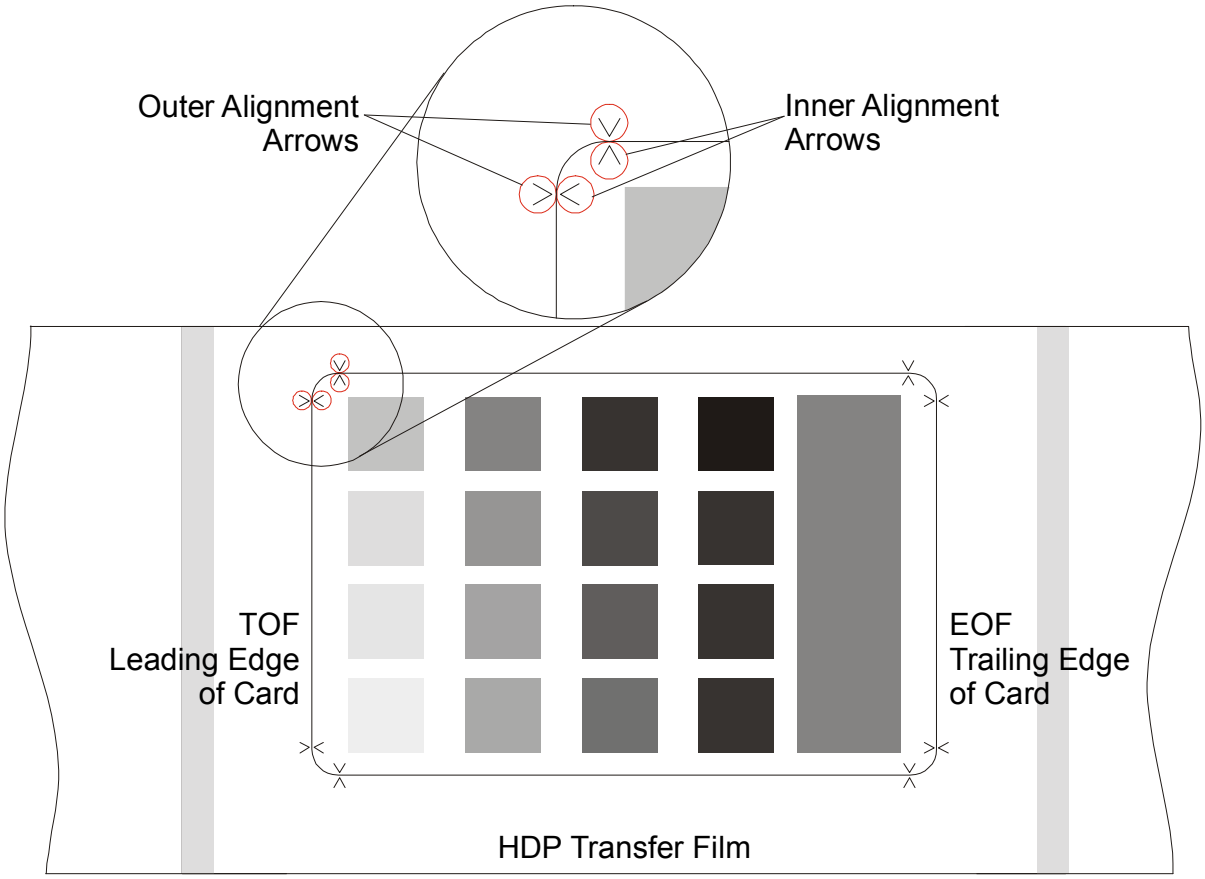
Aligning the Print Offset (continued)

Step	Procedure
5	Measure the distance from the top edge of the transferred area to the top edge of the inward pointing arrows.
6	Calculate the **Print Offset** value • Inches: -32 – (Distance x 300) • Millimeters: -32 – (Distance x 11.8) **Example:** Inches: -32 – (.020 x 300) = 34: **Note:** The result of this equation may be a negative value.
7	Adjust the **Print Offset** value.
8	Press **SELECT** to save the value.
9	Print a test card as described in step 1.
10	Repeat Steps 1 to 9 until the test image is correctly positioned, as shown below in the display.
11	Follow these procedures for further adjustments: a. Decrease the **Print Offset** value to move the printed image toward the leading edge of the card. b. Increase the **Print Offset** value to move the printed image toward the trailing edge of the card. c. Remember that ±30 Pixels will move the image 0.100 in. or 3.84mm.

Setting the Transfer TOF

This procedure positions the HDP Film correctly on the leading edge of the card. Refer to the Preparing to adjust the Print Offset, Transfer TOF and Transfer EOF procedure in Section 8, page 449, for proper sequence.

Step	Procedure
1	Choose **MENU**, **Print Test Image** and **Gray/Align YMC** to print a test card.
2	Examine the test card. • The Inner Alignment arrows should appear at the edge of the leading edge. • The Outer Alignment arrows should not appear on the card, but are shown here for clarity. If the test card does not look like the display (below), go to step 5 to adjust the Transfer TOF.



Continued on the next page

Setting the Transfer TOF (continued)

Step	Procedure
3	Record the **Transfer TOF** value on the test card last printed.
4	Select MENU, Setup Printer and Transfer TOF.
5	Measure the distance from the leading edge of the card to the leading edge of the transferred image.
6	Calculate the **Transfer TOF** value for inches or mm. • Inches: 40 – (Measurement x 300) • Millimeters: 40 – (Measurement x 11.8) **Example:** Inches: 40 – (.050 x 300) = 45:
7	Adjust the **Transfer TOF** value.
8	Press **SELECT** to save the value.
9	Print a test card as described in step 1.
10	Repeat Steps 1 to 9 until the test image is correctly positioned.

Setting the Transfer EOF

This procedure controls the point on the card at which the Transfer Roller lifts and ceases transfer. Refer to the Preparing to adjust the Print Offset, Transfer TOF and Transfer EOF procedure in Section 8, page 449, for proper sequence.

Step	Procedure
1	Choose **MENU**, **Print Test Image** and **Gray/Align YMC** to print a test card.
2	a. Examine the test card. (**Note:** The Inner Alignment Arrows should appear at the trailing edge and the Outer Alignment Arrows should not appear on the card.) b. If the test card does not look like the color bars YMC display. See the Reviewing the Color Bars YMC Self-Test in Section 2, page 133. Go to Step 7 (below) to adjust the Transfer EOF.
3	Record the **Transfer EOF** value on the test card last printed.
4	Select MENU, Setup Printer and Transfer EOF.
5	Measure the distance from the trailing edge of the card to the trailing edge of the image transfer.
6	Calculate the **Transfer EOF** value for inches or mm. • Inches: -24 + (Measurement x 300) • Millimeters: -24 + (Measurement x 11.8) **Example:** Inches: -24 + (.050 x 300) = -105
7	Adjust the **Transfer EOF** value. • Decrease the Transfer EOF value to move the end of the transferred image toward the leading edge of the card. • Increase the Transfer EOF value to move the end of the transferred image toward the trailing edge of the card. Remember, ±30 Pixels will move the transferred image 0.100 in. (3.84mm.)
8	Press **SELECT** to save the value.

Setting the Transfer EOF

Step	Procedure
9	Print a test card as described in step 1.
10	a. Repeat steps 1 to 9 until the test image is correctly positioned. b. If the inner alignment arrows are not printing on the card (but are just off the edge), decrease the Print Offset setting by two or three Pixels. (**Note:** The entire inner alignment arrow will not show up on the card. More important is that the card shows equal amounts of the arrows.)

Adjusting the Transfer Tension

This procedure positions the image correctly on the card. Refer to the Preparing to adjust the Print Offset, Transfer TOF and Transfer EOF procedure in Section 8, page 449, for proper sequence.

Step	Procedure
1	Choose **Menu**, **Print Test Image** and **Gray/Align YMC** to print a test card.
2	Record the **Transfer Tension** value on the test card last printed.
3	Examine the test card.
4	a. Select MENU, Setup Printer and Transfer Tension.  **Caution:** Reducing the Transfer Tension too much may cause slack in the Film take-up, which is evidenced by a wrinkling noise and extra Film take-up during the release phase. b. Increase the Transfer Tension if this occurs. (**Note:** There may be a snapping or clunking sound during Film take-up if it is too tight. Errors may occur in either case.)
5	Press the **Select** button to save the value.
6	Print a test card as described in Step 1.
7	Repeat Steps 1 to 6 until the Film is applied smoothly to the card without wrinkles or creases.

Adjusting the Film Drive

The Film Drive sets the baseline for the Film Tension and should not be adjusted by the reseller or the end user.

Adjusting the Ribbon Tension

This procedure controls the tension of the color ribbon during printing in order to adjust the image placement. Adjust the ribbon tension if the ribbon wrinkle is appearing on the card.

Step	Procedure
1	Be sure the Transfer Tension, Print Offset, Transfer TOF and Transfer EOF are set properly before adjusting the Ribbon Tension.
2	Choose **MENU**, **Print Test Image** and **Gray/Align YMC** to print a test card. Examine the test card.
3	a. Select MENU, Setup Printer and Ribbon Tension. b. Record the **Ribbon Tension** value on the test card.
4	Adjust the **Ribbon Tension** value if needed.
5	Press **SELECT** to save the value.
6	Print a test card as described in step 1.
7	a. Repeat Steps 1 to 6 (above) until the test image is correctly positioned or ribbon wrinkle is alleviated. b. Refer to the HDP Transfer Film display. See Setting the Transfer TOF procedure in Section 8, page 452.

Adjusting the Ribbon Drive

The Ribbon Drive sets the baseline for the Ribbon Tension and should not be adjusted by the reseller or end user.

Adjusting the Transfer Temperature

Step	Procedure
1	Choose **MENU**, **Print Test Image** and **Gray/Align YMC** to print a test card.
2	Examine the test card.
3	Select MENU, Setup Printer and Transfer Temperature.
4	Record the **Transfer Temperature** value on the test card last printed.
5	Adjust the **Transfer Temperature** value. • Decrease the **Transfer Temperature** setting if the HDP Film appears to be creasing or wrinkling on the printed card. **OR** • Increase the **Transfer Temperature** setting if the printed image has ragged edges where the HDP Film seems to have peeled off. To ensure adequate transfer, see Selecting the Appropriate HDP Printer Driver Settings procedure for the Tape adhesion Test in Section 3, page 179 and Conducting the Tape adhesion Test procedure, in Section 3, page 181.
6	Press **SELECT** to save the value.
7	Print a test card as described in Step 1.
8	Repeat Steps 1 to 7 until the Film transfers correctly to the card.

Setting the Flattener Temperature

The Flattener Temperature controls the heat of the Flattener. (**Note:** The Flattener will straighten a card after the image has been transferred to it. This may be adjusted from the LCD Menu or from the Image Transfer tab of the Driver.)

Setting the Printhead Resistance

Step	Procedure
1	Locate the Printhead Setting Number on the bottom of the Printhead. The number reads **R=XXXX**.
2	Select **MENU**, **Setup Printer** and **Printhead Resistance**.
3	a. Input the Printhead Setting Number. (**Note:** The Printhead Resistance setting in the LCD Setup changes in increments of 50.) b. To select the proper resistance value, choose the setting that is closest to the value on the Printhead.)
4	Press the **Select** button to save the value.

Adjusting the Image Darkness

Step	Procedure
1	Choose **MENU**, **Print Test Image** and **Gray/Align YMC** to print a test card.
2	Examine the test card.
3	Select **MENU**, **Setup Printer** and **Image Darkness**.
4	Record the **Image Darkness** value on the test card last printed.
5	Enter a negative value to lighten the printed image. **OR** Input a positive value to darken the printed image. (**Note:** Be sure to make adjustments in small increments of ± 4, to avoid over-adjusting this setting.)  **Caution:** The ribbon may jam or break if the setting is too high.
6	Press **SELECT** to save the value.
7	Print a test card as described in Step 1.
8	Repeat Steps 1 to 7 until the image darkness is correct.

Changing the Encoder Settings

Make this selection to modify the Encoder settings. These settings would need to be changed (a) if the Print Board is replaced or (b) if the Printer is upgraded to include an Encoder.

- **Mag:** None or Installed.
- **Smart:** None or Installed.
- **Prox:** None or Installed.

Step	Procedure
1	Select **MENU**, **Setup Printer** and **Encoder Settings**.
2	Change the desired option as needed. **Example:** Adding a Mag Encoder change **MAG** from **None** to **Installed**.
3	Press **SELECT** to save the value.

Setting the Magnetic TOF

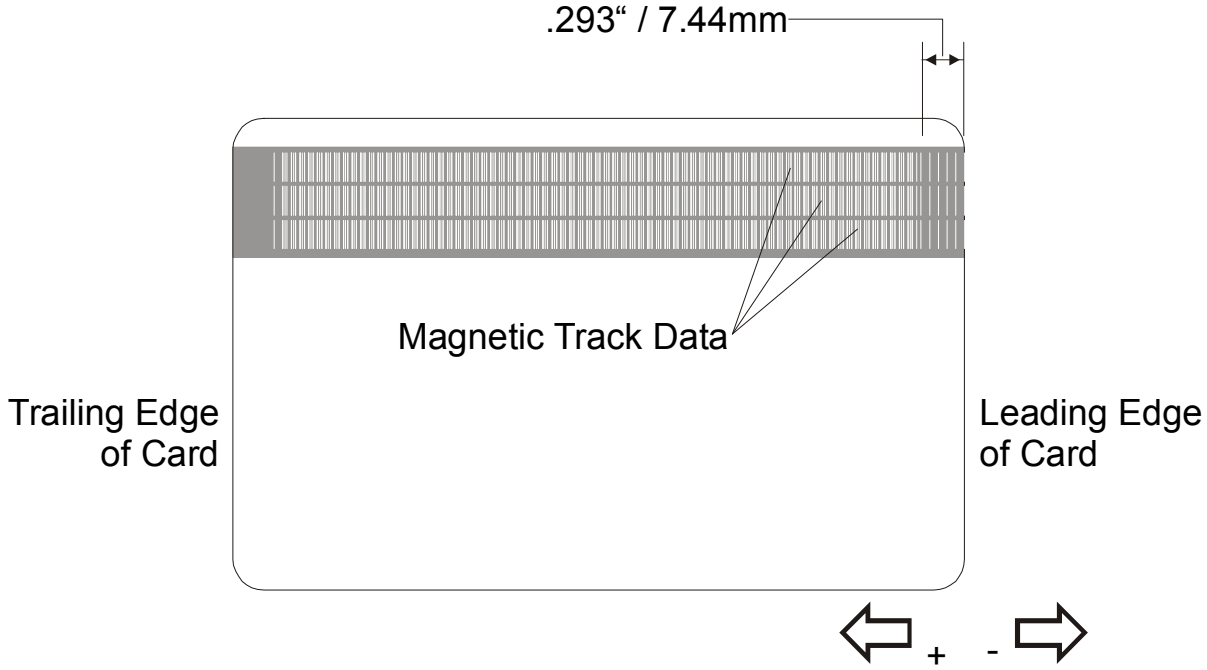
Use this setting to position the magnetic data at the correct distance from the leading edge of the card.

- The Magnetic TOF is the distance from the edge of the card to the Start Sentinel (SS).
- The Start Sentinel marks the beginning of the encoded data. (**Note:** According to the magnetic recording standard (ISO 7811), the correct Start Sentinel distance is 0.293 inches ± 0.020 inches (7.44 mm ± 0.51 mm) from the leading edge of the card.)

Step	Procedure
1	a. Measure this distance by making the data visible using a magnetic viewer or developer solution. b. Alternatively, use a magnetic card analyzer to measure the Start Sentinel distance.
2	a. Use a magnetic viewer or developer solution or spray to make the magnetic data visible (in order to identify the Start Sentinel as the first set of magnetic lines or first one-bit, which are visibly closer together than the large number of evenly spaced lines or leading zero-bits that fill the space to the edge of the card, as shown on the next page). b. Use a magnifying device with a built-in measuring scale to measure the distance from the edge of the card to the Start Sentinel in the data, as shown on the next page.
3	If the Start Sentinel is too far from the leading edge of the card, reduce (or make negative) the Magnetic TOF setting needs. **OR** If the Start Sentinel is too close to the leading edge of the card, increase (or make positive) the Magnetic TOF setting needs.
4	Select **MENU**, **Setup Printer** and **Magnetic TOF**.
5	Adjust the setting by the amount determined by the following formula: • 0.293 inches: Represents measured SS distance (inches) x 300 steps per in. **OR** • 7.4 mm: Represents measured SS distance (millimeter) x 11.8 steps per mm. **Example: (**0.293 – 0.284) x 300 = 2.7

Setting the Magnetic TOF

Step	Procedure
7	Press **SELECT** to save the value.
8	Test the position of the Start Sentinel by magnetically encoding a card and checking as described in Step 1 in this same procedure.
9	Repeat Steps 1 to 6 until the Magnetic TOF is correct.



Adjusting the Flipper Offset

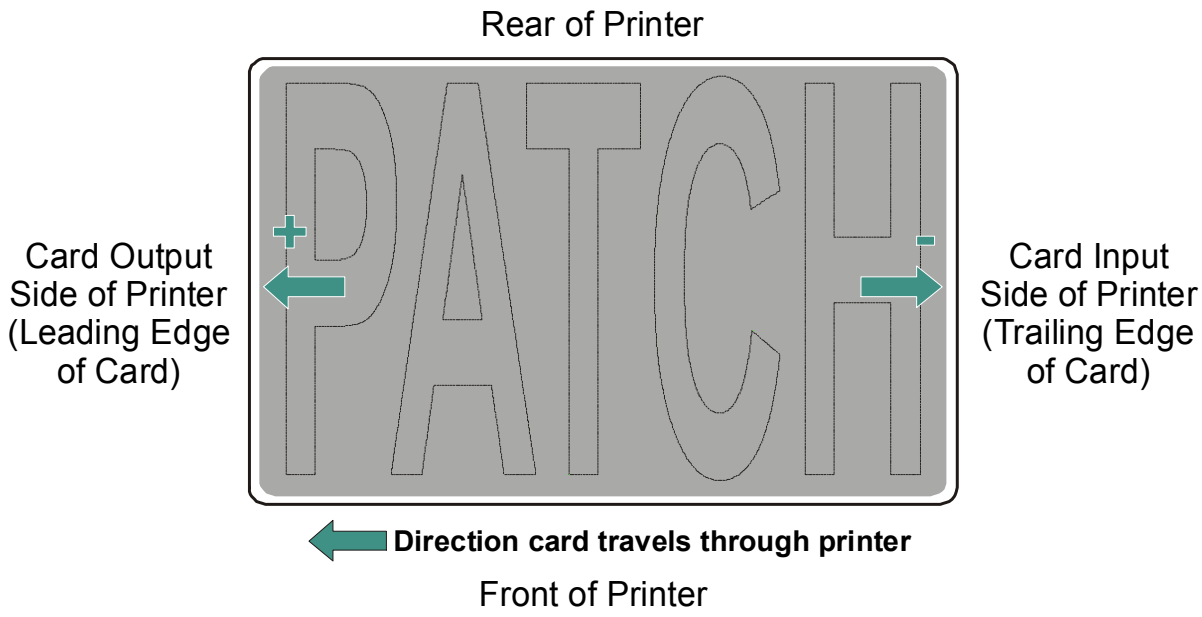
Step	Procedure
1	Select MENU, Setup Printer and Flipper Offset.
2	Change the setting in small increments if the card is not feeding correctly. (**Note:** A negative adjustment will lower the side of the Flipper Table closest to the Exit Hopper.)
3	Press the **Select** button to save the value.

Adjusting the Lamination Flipper Offset

Step	Procedure
1	Select MENU, Setup Printer and Flipper Offset.
2	Change the setting in small increments if the card is not feeding correctly. (Note: A negative adjustment will lower the side of the Flipper Table closest to the Exit Hopper.)
3	Press the Select button to save the value.

Adjusting the LAM TOF and EOF

Step	Procedure
1	Applies only if the Printer is equipped with the Card Lamination Module. • Use this control to align the PolyGuard Overlaminate patch on the card. Decrease the Lamination TOF value to move the overlaminate patch more toward the leading edge of the card. • Increase the Lamination TOF value to move the overlaminate patch more toward the trailing edge of the card. The numbers being entered for the settings are in Pixels. The number of Pixels is equal to the measurement in inches times 300 or the measurement in mm times 11.8. For example, 0.100 inches or 2.54mm equals 30 increments on the LCD. Once adjusted, this value will be stored in the Lamination Module. (**Note:** This adjustment can also be made more easily through the Printer Driver, but it will not be stored in the Lamination Module.)



Adjusting the Lamination Sensor Calibration

Step	Procedure
1	Applies only if the Printer is equipped with the Card Lamination Module. (**Note:** This setting reports the current Lamination Sensor calibration setting as dictated by the Printer Driver's Sensor calibration procedure. In most cases, this will not need to be changed.)

Adjusting the Lamination Temperature Setting

Step	Procedure
1	Applies only if the Printer is equipped with the Card Lamination Module. Use this setting to change the nominal setting of the Lamination roller. (**Note:** In most cases, this will not need to be changed, as more direct control of the Lamination roller can be achieved through the Printer Driver.)

Show the Error Count

Use the **Show the Error Count** tool to (a) troubleshoot the Printer, (b) maintain a log of up to 255 errors, (c) track how many times specific errors occur and (d) determine if certain errors are occurring more than others (in order to pinpoint an area in the Printer requiring attention).

Step	Procedure
1	a. Use the scroll buttons to move through the **Exception Log**. b. Press the **Reset** button to clear the existing error log and start a new log. (**Note:** The error log will stop logging errors once it has reached its error occurrence limit of 255.) c. See LCD/SmartGuard Messages in Section 2, page 50, for information about these messages. • ERROR LOG • START Type of Error Occurrences: X (Number of times) • ERROR LOG END

Using the Show Card Count option

Step	Procedure
1	Use this option to view the total **Card Count (CC), Pass Count (PC), Transfer Count (TC)** and **Lamination Count (LC)**. • The **Card Count** is the total number of cards the Printer has produced. • The **Pass Count** is the total number of print passes made by the Printhead. (**Note:** A pass is measured each time a single ribbon Panel is printed or passes beneath the Printhead.) • The **Transfer Count** is the total number of times the Printer transfers an image to a card. In most cases, this information is only necessary for certain warranty requirements, however, it can also be a helpful way to measure a Printer's overall work cycle.) • The **Lamination Count** is the total number laminated cards that the Printer has produced.

System Upgrade (Firmware Upgrade)

This option is used to upgrade the Printer Firmware.

Step	Procedure
1	Upgrade by selecting **SYSTEM UPGRADE**. The LCD will prompt: **Are you sure you want to continue?**
2	Select **YES** to begin the System Upgrade, select **NO** to return to the **READY** screen. (**Note:** See **Appendix A: Firmware Update** for detailed instructions for upgrading the system Firmware on the next page.)

Section 10: Firmware Updates

The purpose of this section is to provide the User with information on the internal software or Firmware, which controls all aspects of the Printer's operation. New Firmware versions may be released containing enhancements, such as improved reliability, added features or better print quality. New Firmware updates can be downloaded from the Internet and loaded into the Printer through its parallel interface port – no chip replacement is needed. Refer to the instructions in this Section to download and install Firmware updates.

Firmware Updater Application Program

The Firmware Updater application program is the software required to send Firmware updates from the computer to the Printer. To download and install the Firmware Updater from this site, refer to the following steps (using Step 1A or Step 1B as appropriate):

Step	Procedure
1A	**Option A:** Insert the Software Installation CD into your computer's CD drive. The CD browser is set to automatically open after a few seconds, however, you will not need the browser portion of the CD for this process. a. Once the CD browser has opened, close it by clicking on the exit icon shown below. b. Use My Computer or Windows Explorer to view the contents of the CD. Windows Explorer can be opened by selecting it from the Start, Programs menu. c. Open the Utilities folder, then open the Firmware Updater folder. 
1B	**Option B:** Go to the Fargo Electronics Technical Support Web site: http://www.fargo.com/tech_support/ Click on the Firmware Updater Program link.

Firmware Updater Application Program (continued)

Step	Procedure
2	Click on **OK** when prompted to **Save this Program to Disk** and then select a folder in which to save the Updater file.
3	a. Once the file has been downloaded, navigate to the location where the file was saved. The Firmware Updater program has been compressed for ease of downloading. b. Decompress the file by double-clicking on the UPDATER.EXE icon.
4	Double-click on the SETUP.EXE file to launch the Firmware Updater Setup Program
5	Follow the on-screen instructions to complete installation. Once installed, the Firmware Updater icon will appear in the Start/Programs/Fargo folder.
6	Select the Firmware Updater icon displayed below to open the Firmware Updater application program.

Downloading Firmware Updates

Step	Procedure
1	Refer to the following steps to download Firmware updates:
2	Select the **Download Firmware** button. If you have Internet access, this will automatically take you to the Firmware Updates section of the Fargo website. If it does not, manually open your browser and go to the Firmware Updates section in the Fargo Electronics Technical Support Web site: http://www.fargo.com/tech_support/
3	Select your specific printer model and click on the **Submit** button. Click on the Firmware file link labeled for the specific Printer model.
4	Click on **OK** when prompted to **Save this Program to Disk** and then select a folder in which to save the Update file.
5	a. Once the file has been downloaded, navigate to the location where the file was saved. (**Note:** The Firmware Update file has been compressed for ease of downloading.) b. Decompress the file by double-clicking on the designated icon.

Updating the Printer's Firmware

Now that you have installed and opened the Firmware Updater program and downloaded the firmware update file, you can begin updating your printer's firmware.

It is important to note that there are two types of Firmware for certain Fargo Printer models, the **Main Firmware** and the **LCD Firmware**, each of which has a slightly different update process.

Updating the Main Firmware

Step	Procedure
1	If you haven't already done so, select Start -> Programs -> Fargo and open the Firmware Updater program. From the Firmware Updater program, click the **Select Update File** button, as shown on the next page in the Firmware Updater (Version 3.0.6) window.
2	Go to the folder, in which you saved the update file, select it and click **Open**. (**Note:** The file name, location and version will appear in the **Firmware Updater** window, as shown on the next page.)
3	Click the **Select Printer** button and select the specific Fargo Printer model, click **OK**. Once your printer model has been selected, the **Send Update** button will become active.
4	At this time, the Printer must be prepared to receive the Firmware update file. To do this, make sure the Printer is powered ON and in its READY mode. Then, press the Printer's **MENU** button.
5	Use the scroll buttons to scroll down to the **System Upgrade** option and press **SELECT**. When the Printer asks if you would like to continue, press **YES**.
6	a. Wait while the Printer restarts into the System Upgrade mode. b. Verify that the interface cable is securely connected to both the Printer and the computer and press the **START** button. • The Printer will wait up to 60 seconds to receive the Firmware update before timing out. • The clock will be indicated on the LCD Display.
7	From the Firmware Updater software, click the **Send Update** button to bring up the **Firmware Updater** dialog box, as shown on the next page.

Continued on the next page

Updating the Main Firmware (continued)

Continued on the next page

Updating the Main Firmware (continued)

Step	Procedure
8	**Wait:** The Firmware update will now take a few minutes. Check the Printer's LCD for the status. (**Note:** When the update is complete, the LCD will indicate if the update was successful.)
9	If the Upgrade Successful is displayed, click on **Exit** on the **Sending Update to Printer** dialog screen.
10	Press the Printer's **Exit** button.
11	When prompted, turn the Printer power OFF for a few seconds and then back ON to complete the update process. (**Note:** As the Printer restarts, you will see the new Firmware version appear on the LCD.)
12	a. If the upgrade was not successful, the LCD will either display **Upgrade Failed or Upgrade Firmware Now** on boot up. b. If you receive this message, try updating the Firmware again.

Updating the LCD Firmware

Step	Procedure
1	Make sure the Printer is powered ON, connected to the PC and in its READY mode.
2	From the Firmware Updater program, click on the **Select Update File** button.
3	Go to the folder, in which you saved the update file, select it and click **Open**. The file name, location and version will appear in the **Firmware Updater** window, as shown on the next page.
4	Click on the **Select Printer** button and select the specific Fargo Printer model, click **OK**.
5	Click on the **Send Update** button to bring up the **Firmware Updater** dialog box, as shown on the next page.
6	Wait a few minutes while the Firmware updates itself. Check the Printer's LCD for the status. When the update is complete, the LCD will indicate if the update was successful. • If **Upgrade Successful** is displayed, click **Exit** on the **Sending Update to Printer** dialog screen. Press the Printer's **EXIT** button. When prompted, turn the Printer power OFF for a few seconds and then back ON to complete the update process. As the Printer restarts, you will see the new Firmware version appear on the LCD. • If the upgrade was not successful, the LCD will display **Upgrade Failed or Upgrade Firmware Now** on boot up. • If you receive this message, try updating the Firmware again.

Continued on the next page

Updating the LCD Firmware (continued)

Firmware Upgrades (as of 10/07/03)

Reference Technical Update No. 53 (dated 02/27/2003). These Firmware Upgrades are for the HDP720 (V2.2.x) and HDP820/820-LC (V2.0.2) Card Printer/Encoders.

- **Improvement No. 1 (unique error codes):** Upper and Lower Film errors are now displayed with unique error codes. In both Firmware versions, the message is: "Film (Upper)-xxx." A unique code is mapped to every possible Upper and Lower Film error. The "xxx" is a three digit code that is different for each Film error. (**Technician Note:** When off-site Technicians contact Fargo Technical Support with a "Film (Upper)-xxx" error, they can now provide our in-house Technicians with a unique error code for a more precise exchange of information.)

  The Printer/Encoder now decides when it can and cannot recover from Upper Film errors. For example, if an image has already been transferred to a card during a batch job (and the User encounters an Upper Film error), the Printer/Encoder displays the error without the **Resume** option. Canceling the print job is the best recovery method and the User must cancel the job from the PC and re-send the job when the Printer/Encoder is ready. (**Technician Note:** Additionally, the Printer/Encoder will not allow the User to resume from an Upper Film error if the job is no longer resident in the unit's memory.)

- **Improvement No. 2 (auto-recovery):** Another improvement to this type of error handling is auto-recovery. Since the Printer/Encoder can determine which Upper Film errors are recoverable and which are not, it can automatically decide to reprint an image. For example, if the Printer/Encoder encounters an unexpected Upper Film error while it is printing, it will attempt to reprint the image. (**Technician Note:** The reprinting process includes the abandonment of the current section of Film, queuing the next fresh Film Panel and starting the job over from the beginning. Should the Printer/Encoder encounter another Upper Film error on the same job, the Printer/Encoder then displays the Film Error message (with the error code) and provides the User with the **Cancel** and **Resume** options. Pressing **Resume** directs the Printer/Encoder to again attempt to reprint the image from scratch. The **Cancel** key will reboot the unit.)

- **Improvement No. 3 (prevention of circular Film errors):** Another improvement to this type of error handling is the prevention of "circular" Film errors. When the User presses the **Resume** key in previous versions of the Firmware, the Printer/Encoder often displayed another Film Error message shortly after **Resume** was pressed. Press **Resume** after an Upper Film error to direct the Printer/Encoder to realign the Film and reprint the job. (**Technician Note:** These Upper and Lower Film errors and their auto-recovery attempts, are logged in the LCD Error Count as "Unique Film" errors.)

- **Improvement No. 4 (auto-Film realignment):** Another improvement to the Film handling is the addition of an auto-Film realignment feature. Should the Printer/Encoder experience an error while aligning the Film (most likely following a boot-up or Cover close), it will automatically attempt to realign the Film. (**Technician Note:** As with Upper Film errors, if another error is encountered during the alignment phase, then the error is posted to the LCD screen. Pressing **Resume** attempts to align the Film again. Pressing **Cancel** reboots the Printer/Encoder.)

Firmware Upgrades (as of 10/07/03) (continued)

Here are tips for optimized operation:

You should allow your Printer/Encoder to warm up for a period of 15 minutes before operation. Always make sure that you have the latest Driver and Firmware. Remember, the recommended relative humidity range for HDP® Printer/Encoders is 20% to 80%. If you operate outside this range, you may experience some flashing, smudging or chipping. Follow the procedures provided below (as needed).

- **For flashing, follow this procedure:**

  (Note: Flashing is characterized by visible flaking of the Transfer Film overhanging the card edges. Flashing is typically caused by high Transfer Temperature or high Transfer Tension.)

  a. Verify that the Flash Fans (D840769) are functioning and are spinning in the correct orientation.

  b. Verify that the Flattener Guides are parallel with the Center Plate and adjust the Figure TL 1547.

  c. Lower the Transfer Tension according to the acceptable variation.

  d. Adjust the Driver settings to decrease the Transfer Dwell Time.

  e. Check for poor alignment of the Peel-off Bars, the Reference Blocks and the Lamination Module.

- **For smudging, follow this procedure:**

  (**Note:** Smudging is characterized by a wavy clouding or fading of the card image. This normally appears at one end of the card. Smudging is typically caused by low Transfer Temperature or low Transfer Tension.)

  a. If a smudge is on the leading edge of the card, increase the Transfer Tension.

  b. Verify that the Take-up Motor turns without delay when the Lamination begins.

  c. If the Motor delays, increase the Transfer Tension.

  d. Adjust the Transfer Temperature according to the acceptable variation.

  e. Adjust the Driver settings to increase the Transfer Dwell Time.

- **For chipping of the card image, follow this procedure:**

  (**Note:** Chipping is characterized by areas of incomplete transfer or voids in the card image.)

  a. Check the Printhead alignment.

  b. Lower the Transfer Tension if chipping is on the leading edge.

  c. Increase the Transfer Temperature according to the acceptable variation.

  d. Adjust the Driver settings to increase the Transfer Dwell Time.

If you have any questions, please feel free to contact Fargo Electronics Support Services at 952-941-9470.

Section 11: 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 HDP 820 Card Printer.

Contacting Fargo Technical Support

Step	Procedure
1	Read the suggested Sections of the Technical Service and Maintenance Manual in order to troubleshoot the 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. **OR** Contact Fargo Technical Support via the Web: http://www.fargo.com/tech_support/contact_tech_support.asp
2	Position a phone near the Printer and Computer so Fargo technicians can help to help troubleshoot the Printer(s).
3	Please have a self-test and a sample card ready when calling Fargo Technical Support.

Reading the Serial Numbers on a Fargo printer

The purpose of this section is to provide updated instructions for reading serial numbers on a Fargo printer.

Finding out when a Fargo Card Printer was manufactured

You can determine when your card printer was manufactured by reading directly from the serial number (affixed to your card printer).

1. **Year Built:** The first two digits in the serial number indicate the year that the printer was manufactured.
2. **Week Built:** The second two digits indicate the week.
3. **Numeric Order:** The last four digits indicate the sequence number for the numeric order in which the printers were built.

Reviewing Example No. 1: Serial Number 80453289

1. **80453289:** The first two digits in the serial number indicate the year the printer was built (e.g., the digits 80 indicate the year 1998).
2. **80453289:** The third and fourth digits in the serial number indicate the week the printer was built (e.g., the digits 45 indicate week 45 of that year).
3. **80453289:** The last four digits indicate the sequence number for the numeric order in which the printers were built.

Reviewing Example No. 2: Serial Number A1280224

1. **A1280224:** The first two digits in the serial number indicate the year the printer was built (e.g., the letter and digit A1 indicate the year 2001).
2. **A1280224:** The third and fourth digits in the serial number indicate the week the printer was built (e.g., the digits 28 indicate week 28 of that year).
3. **A1280224:** The last four digits indicate the sequence number for the numeric order in which the printers were built.

Section 12: Reviewing Spare Parts Lists

Reviewing Spare Parts List for HDP 800 Series Card Printer

HDP8xx Series ID Card Printer
Recommended Spare Parts List
Effective Date: January 2004
For current pricing see http://www.fargopartner.com/support_services/

Category	Part Number	Part Description	Alternate Part Description	MSRP List Price
Belts and Gears	140212	O-Ring 1-024 Compound 23811	Belt - O-Ring (Film Motors)	$1.00
	140212	O-Ring 1-024 Compound 23811	Belt - O-Ring (Ribbon Motor)	$1.00
	140212	O-Ring 1-024 Compound 23811	Belt - Ribbon / Lamination Drive O-Ring	$1.00
	140212	O-Ring 1-024 Compound 23811	Belt - O-Rings- Film Drive	$1.00
	220071	Belt 65 GRV .080P 1/8" Width	Belt - Card Drive	$9.62
	220082	Belt 105 GRV .080P 1/8" Width	Belt - Card Drive Belt2	$9.23
	760286	Pulley-Ribbon Motor	Pulley- Motor	$1.17
	760287	Pulley-Gear Combination	Pulley- Gear Combination	$0.78
	760288	Gear-Ribbon Idler	Gear- Idler	$3.71
	760289	Gear-Ribbon Drive	Gear-Ribbon Drive	$2.47
	760330	Gear-Headlift	Gear- Card Transport	$1.19
	760401	Gear-Idler	Gear- Cleaning Idler	$2.24

Continued on the next page

HDP8xx Series ID Card Printer
Recommended Spare Parts List
Effective Date: January 2004

Category	Part Number	Part Description	Alternate Part Description	MSRP List Price
Belts and Gears	810266	Gear-Card Transport Drive	Gear-Card Transport Drive	$0.72
	810271	Gear-Card Feed Shaft	Gear- Card Feed Flipper	$0.66
	D841032	Gear 72 X36 Tooth	Gear-Compound Gear	$3.50
	F000018	Belt 104 GRV .080P 1/8" Width	Belt - 104 MXL (back side)	$11.31
	F000063	O-Ring 1-022 COMPOUND 5747	Belt - O-Ring	$0.40
	F000092	Belt FHT-1 220 Tooth	Belt - Stepper Motor)	$7.09
	F000093	Belt 136T FHT 1 X 4MM	Belt - N2 (Stepper Motor)	$5.27
	F000094	Belt 163T FHT 1 X 4MM	Belt - Stepper Motor)	$5.40
	F000094	Belt 163T FHT 1 X 4MM	Belt - C2 (Stepper Motor)	$5.40
	F000111	Belt 106 GRV .08"P 60DEG 1/8"	Belt - Magnetic and Smart Card)	$7.15
	F000139	Belt 221 GRV 080P 1/8W	Belt - Hopper Travel HDP 825 ONLY	$5.39
	F000158	O-Ring .103 X 1.063 SH A 80	Belt - O-Ring (Printhead)	$1.17
	F000158	O-Ring .103 X 1.063 SH A 80	Belt - O-Ring (Lamination Motor)	$1.17

Continued on the next page

HDP8xx Series ID Card Printer
Recommended Spare Parts List
Effective Date: January 2004

Category	Part Number	Part Description	Alternate Part Description	MSRP List Price
Boards				
	140311	Assembly - Pro-L SMART LOCK Board	Board -Smart Guard Assembly	$124.58
	140403	Assembly Board User Interface	Board - LCD Display	$283.53
	140403	Assembly Board User Interface	Board - User interface	$283.53
	A000271	Assembly - PCB Main HDP-LC (5200 CPU)	Board - Main Print	$0.00
	A000294	Assembly HDP and SII Magnetics Board	Board - Assembly HDP and SII Magnetic	$113.69
	D841136	HDP820 PROG LAM Board	Board - Lam Board (140402)	$1,160.00
Cables				
	130069	Power Cord - European 6 Foot	Cord (Europe)	$7.48
	24000111	Assembly - Cable Ribbon SMART LOCK	Cable- Smart Guard	$10.02
	840176	Assembly - Cable FLEX CT HDR-HDR	Cable- Flipper (Brown)	$38.87

Continued on the next page

HDP8xx Series ID Card Printer
Recommended Spare Parts List
Effective Date: January 2004

Category	Part Number	Part Description	Alternate Part Description	MSRP List Price
Covers				
	840167	Assembly - Input Covers	Cover- Card Input hopper	$1,293.44
	840169	Assembly - Output Covers	Cover- Left -output	$460.07
	840260	Cover -LAM Roller	Cover- Lam (black plastic)	$4.42
	840361	Cover -Top Tower	Cover- Top	$159.06
	840362	Cover -Mid Tower	Cover- Mid Tower	$121.42
	840363	Cover -Base Tower	Cover- Base Tower	$133.70
	D840839	Input Cover Main	Cover- Right (no doors) - input	$512.00
	D841221	Cover Rear Access NO LOUVER	Cover- Rear HDP	$0.00

Continued on the next page

HDP8xx Series ID Card Printer
Recommended Spare Parts List
Effective Date: January 2004

Category	Part Number	Part Description	Alternate Part Description	MSRP List Price
Misc. Hardware				
	120011	Switch ON/OFF 2600-11E	Switch ON/OFF 2600-11E	$5.66
	130063	Power Cord - Black	Cord - Domestic	$8.58
	130067	Filter A.C. Line RT Angle	Power Cord Receptacle	$25.61
	130200	Magnetic Catch	Magnetic Door Catch (Used with 130201)	$2.56
	130201	Magnetic Latch Plate	Magnetic Latch Plate (Used with 130200)	$0.60
	150074	Spring-COMP .48ODx 1.0L x.036	Flipper table Spring	$0.92
	150074	Spring-COMP .48ODx 1.0L x.036	Hub Spring	$0.92
	150093	Spring-EXT .25 x .018 x 1.5	Dancer Springs	$1.72
	150240	Power Supply Switching 150W	Power Supply Switching 150W	$308.75
	150240	Power Supply Switching 150W	Board - Power Supply	$308.75
	510885	Software INSTL CD Professional 2	Software installation CD	$0.00
	510890	E-Card Software CD	E-card Developers CD	$0.00

Continued on the next page

HDP8xx Series ID Card Printer
Recommended Spare Parts List
Effective Date: January 2004

Category	Part Number	Part Description	Alternate Part Description	MSRP List Price
Misc. Hardware	810455	Spring-Thermocouple	Spring-Thermocouple	$2.22
	810480	Spring-Card Idler	U-Shaped Springs	$1.54
	810492	Encoder Wheel	Encoder Wheel-Ribbon Drive	$12.81
	810492	Encoder Wheel	Encoder Wheel-Film Drive	$12.81
	840104	Assembly - Magnetic Head 3 Channel HI CO	Magnetic Head	$222.37
	840255	Link-LAM Cover	Link- Lam Cover	$8.13
	840272	Spring-Head FORCE	Printhead Spring	$15.80
	840274	Mount-Printhead Lower	Printhead Bracket	$6.44
	840366	Gas-Spring	Gas Spring	$68.90
	D840507	Assembly - Magnetic Head JIS2	Assembly - Magnetic Head JIS2	$299.00
	D840638	Deflector-Ribbon PRN	Ribbon Deflector	$0.00
	D840698	Deflector Ribbon LAM	Transfer Peal-Off Bar Assembly	$0.00
	D840769	Assembly - Fan 150315 Fan ITM	Fan (Lamination Module)	$35.30

Continued on the next page

HDP8xx Series ID Card Printer
Recommended Spare Parts List
Effective Date: January 2004

Category	Part Number	Part Description	Alternate Part Description	MSRP List Price
Misc. Hardware	D840848	Support Magnetic Head Damper	Support Magnetic Head Damper	$7.74
	D840865	Spring Wing Stainless	Front Side Input Pinch Springs	$4.48
	D840865	Spring Wing Stainless	Back Side Output Pinch Springs	$4.48
	D840865	Spring Wing Stainless	Back Side Input Pinch Springs	$4.48
	D840865	Spring Wing Stainless	Front Side Output Pinch Springs	$4.48
	D840909	Card Weight	Card Weight	$23.34
	D840952	Assembly - Ribbon Hub	Hub (plain)	$8.77
	D840952	Assembly - Ribbon Hub	Hub Drive (plain)	$8.77
	D840985	Assembly Fan 150322 Fan Side	Side Fan	$60.20
	D840986	Assembly Fan 150313 Fan Top	Printhead Fan	$42.64
	D840995	Assembly - Input Separator Adjust	Card Separator Assembly	$122.00
	D841010	Assembly Fan 150322 Base Fan	Fan	$46.93
	D841079	Assembly - Stacker 820	Output Stacker	$0.00

Continued on the next page

HDP8xx Series ID Card Printer
Recommended Spare Parts List
Effective Date: January 2004

Category	Part Number	Part Description	Alternate Part Description	MSRP List Price
Misc. Hardware	D841082	Assembly - Base Print Frame 820	Base Module (Complete Module)	$2,197.59
	D841083	Assembly - Base Mid Frame 820	Mid Module (Complete Module)	$2,616.58
	D841084	Assembly - Base Top Frame 820	Top Module (Compete Module)	$1,682.72
	D841085	Assembly - Lamination 820	Lamination Module (complete unit)	$1,108.77
	D841087	Assembly - Input 820	Input Module (Complete Module)	$1,566.76
	D841100	Assembly - Supply HDP 820	Supply Pack	$34.84
	D841103	Sleeve Module Close	Gas Spring Sleeve	$12.80
	D841105	Assembly Card Feed	Motor- Card Feed Assembly	$0.00
	D841152	Hub Ribbon Driven	Hub Drive (ribbon Driven-notched)	$0.85
	D841158	Shaft Ribbon Driven	Shaft- Ribbon Drive	$15.40
	D850190	Pulley Main .080MXL Pitch 24T	Pulley- Main Base Print Frame	$1.50
	D850244	Flag Sensor-S2	Headlift Flag	$2.22
	D850253-01	Assembly - Input Tray #1	Assembly - Input Tray #1 HDP825 ONLY	$0.00

Continued on the next page

HDP8xx Series ID Card Printer
Recommended Spare Parts List
Effective Date: January 2004

Category	Part Number	Part Description	Alternate Part Description	MSRP List Price
Misc. Hardware	D850253-02	Assembly - Input Tray #2	Assembly - Input Tray #2 HDP 825 ONLY	$0.00
	D850254	Assembly - Cleaning Cartridge	Assembly - Cleaning Cartridge HDP 825 ONLY	$34.95
	D880153	Roller (DELRIN AF) Card Idler	Roller - Card Idler	$4.22
	D880153	Roller (DELRIN AF) Card Idler	Roller- Encoder Pinch Idler (Brown Roller)	$4.22
Motors				
	840123	Assembly Motor_E000062_Motor STP PRN	Motor- Stepper Motor	$114.53
	840124	Assembly - Motor Flipper Table	Motor- Flipper	$193.25
	840130	Assembly - Motor 150285 Motor-OHP-Lift	Motor-Stacker Lift	$0.00
	A000124	Assembly PCB S3 DC Motor	Motor- Hopper	$17.56
	D840980	Assembly Motor A000124 Motor Rib	Motor- Headlift Assembly	$18.72
	D840980	Assembly Motor A000124 Motor Rib	Motor- Ribbon Supply Assembly	$18.72

Continued on the next page

HDP8xx Series ID Card Printer
Recommended Spare Parts List
Effective Date: January 2004

Category	Part Number	Part Description	Alternate Part Description	MSRP List Price
Motors	D840980	Assembly Motor A000124 Motor Rib	Motor - Ribbon Take-Up Assembly	$18.72
	D841045	Assembly - Stepper Base MOD	Motor - Lamination Stepper	$132.02
	D841073	Assembly Motor A000124 LAM Lift	Motor - (Lamination Roller)	$16.38
	D841081	Assembly - Motor 150285 Motor Card Fed	Motor- Card Feed (Motor only)	$10.92
	D850425	Assembly - Stepper Motor	Motor- Stepper with pulley	$91.65
Printheads				
	81570	Kit Printhead Replacement HDP	Kit Printhead HDP	$699.00
	D840854	Assembly - Printhead	Assembly - Printhead	$0.00

Continued on the next page

HDP8xx Series ID Card Printer
Recommended Spare Parts List
Effective Date: January 2004

Category	Part Number	Part Description	Alternate Part Description	MSRP List Price
Rollers				
	840102	Assembly - Cleaning Roller	Roller- Cleaning Assembly	$194.42
	840220	Roller-Card Inverter	Roller- Flip Table Roller	$49.21
	84031411	Roller-Card Full Width	Roller- Full Card	$48.69
	840320	Roller-Platen LAM	Roller- Platen	$45.63
	D840811	Roller-Platen Print	Roller- Platen Transfer (orange)	$82.94
	D840926	Roller Card Support	Roller- Card Support	$112.06
	D840993	Roller-Input Feed High COF	Roller- Card Feed	$51.94
	D850308	Roller Cleaning Driven	Roller- Cleaning Driven	$38.16
	D850415	Roller Card Feed	Roller- Card Feed HDP 825 ONLY	$35.30
	D850466	Roller-Card Feed Black	Roller- Card	$29.32

Continued on the next page

HDP8xx Series ID Card Printer
Recommended Spare Parts List
Effective Date: January 2004

Category	Part Number	Part Description	Alternate Part Description	MSRP List Price
Sensors				
	140404	Assembly Board Ribbon Sensor	Sensor - Ribbon Assembly	$36.73
	140407	Assembly - Sensor Board	Sensor - Ribbon Board Assembly	$12.35
	140407	Assembly - Sensor Board	Sensor - Module close	$12.35
	140407	Assembly - Sensor Board	Sensor - Output Stacker	$12.35
	140407	Assembly - Sensor Board	Sensor - Flip home	$12.35
	140407	Assembly - Sensor Board	Sensor - Dancer high and low	$12.35
	140407	Assembly - Sensor Board	Sensor - Top Cover Sensor	$12.35
	140407	Assembly - Sensor Board	Sensor - Cards low	$12.35
	140407	Assembly - Sensor Board	Sensor - Magnetic / E-Card TOF	$12.35
	140500	Assembly Board Laminator Film Sensor	Sensor - Assembly Board Laminator Film	$18.00
	840108	Assembly - Ribbon Sensor Array	Sensor - Ribbon Sensor with bracket	$131.95
	840135	Assembly Sensor 070048 Sensor-ITM-Spy	Sensor - Film Supply	$24.31

Continued on the next page

HDP8xx Series ID Card Printer
Recommended Spare Parts List
Effective Date: January 2004

Category	Part Number	Part Description	Alternate Part Description	MSRP List Price
Sensors	840136	Assembly Sensor 070048 Sensor-ITM-TUP	Sensor - Film Take-up	$24.31
	840141	Assembly Sensor 070049 Sensor-Card-PSN	Sensor - Card Feed Card Path	$20.48
	840199	Assembly - Ribbon Sensor Array LAM	Sensor - Lower Film Sensor	$105.16
	840263	Thermocouple-Kapton	Sensor - Thermocouple (Lamination Roller)	$72.80
	A000126	Assembly PCB S3 Sensor 2	Sensor - Transfer Lift Sensor	$25.86
	D840526	Thermocouple-Kapton	Sensor - Thermocouple (flattener)	$69.94
	D840624	Assembly - Sensor E000002 Sensor Card Fed	Sensor - Card Feed	$21.78

Continued on the next page

HDP8xx Series ID Card Printer
Recommended Spare Parts List
Effective Date: January 2004

Category	Part Number	Part Description	Alternate Part Description	MSRP List Price
Sensor	D840625	Assembly - Sensor E000002 Sensor Card FTB	Sensor - Card Feed Flipper Table	$21.78
	D840982	Assembly Sensor 070048 Sensor Rib Spy	Sensor - Ribbon Encoder	$24.31
	D840983	Assembly Sensor 070048 Sensor PRN PSN	Sensor - Headlift position	$24.31
	D841023	Assembly - Slotted OPT PRN	Sensor - Upper Film Sensor	$116.42

FARGO®
ELECTRONICS, INCORPORATED

Address: 6533 Flying Cloud Drive, Eden Prairie, MN 55344 U.S.A.

Phone: (952) 941-9470

FAX: (952) 941-7836

L000468 Rev. 030224

Reviewing Spare Parts List for Card Lamination Module

HDP8xx LAM Series ID Card Printer
Recommended Spare Parts List
Effective Date: January 2004
For current pricing see http://www.fargopartner.com/support_services/

Category	Part Number	Part Description	Alternate Part Description	MSRP List Price
Belts and Gears				
	140212	O-Ring 1-024 Compound 23811	Belt - Drive 0-Ring	$1.00
	760286	Pulley-Ribbon Motor	Pulley-Ribbon Motor	$1.17
	760287	Pulley-Gear Combination	Pulley-Gear Combination	$0.78
	760288	Gear-Ribbon Idler	Gear- Idler	$3.71
	760289	Gear-Ribbon Drive	Gear-Ribbon Drive	$2.47
	810265	Gear-Platen Card Drive	Gear-Platen Card Drive	$0.91
	810266	Gear-Card Transport Drive	Gear-Card Transport Drive	$0.72
	840288	Pulley-Press 15 GRV MXL	Pulley- Flipper	$0.00
	D870142	Pulley 54 GRV MXL	Pulley- Stepper 54 GRV MXL	$0.00
	F000003	Belt 60GRV .080P 1/8" Width	Belt - 60 Groove .080P 1/8" width	$9.23
	F000018	Belt 104GRV .080P 1/8" Width	Belt- 104 GRV .080P 1/8" Width	$11.31

Continued on the next page

HDP8xx LAM Series ID Card Printer
Recommended Spare Parts List
Effective Date: January 2004

Category	Part Number	Part Description	Alternate Part Description	MSRP List Price
Belts and Gears	F000109	Belt 180 GRV .080P 1/8W	Belt- Flipper Drive	$12.68
	F000158	O-Ring .103 X 1.063 SH A 80	Belt - O-Ring .103 X 1.063	$1.17
Boards				
	820593	Assembly Board Ribbon ID Sensor	Sensor - Assembly - Board	$45.22
	A000242	Assembly PCB LED and Switch SELM	Sensor - Assembly - PCB LED and Switch SELM	$115.00
	A000250	Assembly - PCB Main SE/Laminator	Board - Main	$900.00
Cables				
	D870169	Cable LAM Control Board	Cable- LAM Control Board	$0.00
	D870170	Cable LAM Print Board	Cable- LAM Print Board	$30.16
	D870177	Assembly Power Cable S3 LC IN	Cable- Assembly Power Cable S3 LC IN	$0.00
	D870182	Assembly Cable LC Steppers	Cable- LC Steppers	$0.00
	D870192	Assembly Cable LC Clutch	Cable- LC Clutch	$0.00

Continued on the next page

HDP8xx LAM Series ID Card Printer
Recommended Spare Parts List
Effective Date: January 2004

Category	Part Number	Part Description	Alternate Part Description	MSRP List Price
Covers				
	D870088	Base Plate	Base Plate	$0.00
	D870124	Cover LAM Output	Cover LAM Output	$45.50
	D870143	Cover LAM Main	Cover- HDP 8XX Cover LAM Main	$390.00
	D870144	Cover Top LAM	Cover- HDP 8XX Cover Top LAM	$159.00
	D870149	Cover Access	Cover- Base Plate Cover -Access	$0.00
	D870151	Cover Plate Board	Cover- HDP LAM Board Cover	$97.50
	D870159	Assembly HDP LAM Covers	Cover-HDP Lam Main Cover	$0.00
	D870212	Assembly - Base Plate LAM	Cover- Base Plate LAM	$0.00

Continued on the next page

HDP8xx LAM Series ID Card Printer
Recommended Spare Parts List
Effective Date: January 2004

Category	Part Number	Part Description	Alternate Part Description	MSRP List Price
Misc. Hardware				
	140083	Foot Rubber Bumper	Rubber Foot bumper	$1.04
	150094	Spring-EXT .125 x .875 x .014	Tension Spring	$2.28
	150141	Spring-COMP .480Dx .750L x.036	Flipper Spring	$0.84
	760293	Hub Ribbon Right	Hub Ribbon Right	$0.65
	760294	Hub Ribbon Left	Hub Ribbon Left	$0.66
	810455	Spring-Thermocouple	Spring-Thermocouple	$2.22
	810480	Spring-Card Idler	Spring-Card Idler	$1.54
	810492	Encoder Wheel	Encoder Wheel	$12.81
	D000186	Spacer-Inverter Friction	Spacer for Clutch	$1.95
	D840777	Label Hot	Label-Hot	$0.00
	D850189	Latch-Hook	Latch-Hook	$2.48
	D850190	Pulley Main .080MXL Pitch 24T	Pulley-Main .080MXL Pitch	$1.50
	D850244	Flag Sensor-S2	Headlift Flag	$2.22
	D870091	Assembly - Card Flipper	Assembly - Card-Flipper	$321.62
	D870133	Plate Guard	Plate-Guard	$21.78

Continued on the next page

HDP8xx LAM Series ID Card Printer
Recommended Spare Parts List
Effective Date: January 2004

Category	Part Number	Part Description	Alternate Part Description	MSRP List Price
Misc. Hardware	D870135	Guard Heat Roller	Guard Heat Roller	$12.94
	D870136	Spring LAM PSR	Spring-LAM PSR	$0.00
	D870137	Shaft Spring Mount	Shaft-Spring Mount	$0.00
	D870150	Hopper LAM Reject	Hopper-LAM Reject	$0.00
	D870153	Assembly LAM Arm	Assembly LAM Arm	$1,109.55
	D870168	RTD_Kapton	Thermal coupler	$116.20
	D870194	Assembly LC Heater	Assembly - LC Heater	$0.00
	D870210	Assembly LC Film Take-up	Assembly LC Film Take-up	$36.15
	D870215	Hinge Zero Torque	Hinge - Zero Torque	$0.00
	D870224	Bracket Hinge Mount DTC	Bracket-Hinge Mount	$0.00
	D870245	Bracket Hinge Mount	HDP Upper Lid Bracket	$50.96
	D880153	Roller (DELRIN AF) Card Idler	Lamination Pinch Roller (Brown Roller)	$4.22
	E000267	Clutch Electric EC20CW1/4-24	Electric Clutch-use with spacer D000186	$53.10
	F000067	Hinge Constant Torque-2.5KG	Hinge Constant Torque-2.5KG	$13.84

Continued on the next page

HDP8xx LAM Series ID Card Printer
Recommended Spare Parts List
Effective Date: January 2004

Category	Part Number	Part Description	Alternate Part Description	MSRP List Price
Motors				
	D870183	Assembly Motor LC Headlift	Assembly - Motor LC Headlift	$0.00
	D870187	Assembly Motor LC Take-up	Assembly - Motor LC Take-up	$0.00
	D870217	Assembly - Motor LAM FLIP	Assembly - Motor LAM FLIP	$83.52
	D870218	Assembly - Motor LAM Platen	Assembly - Motor LAM Platen	$83.52
Rollers				
	810264	Roller - Ribbon Guide	Roller - Ribbon Guide	$10.08
	820516	Roller-Platen Pulley	Roller-Platen Pulley	$45.31
	84031411	Roller-Card Full Width	Roller-Card Full Width	$48.69
	D870090	Roller Card FLIP	Roller-Card FLIP	$0.00
	D870163	Roller CR-100 Lamination	Roller-CR100 Lamination	$0.00
	D870211	Assembly - LAM Roller	Assembly LAM Roller	$0.00
	D880039	Roller Pinch Output	Roller-Pinch Output	$30.88
	D880050	Roller Card Flattener	Roller-Card Flattener	$0.00
	D880117	Roller Card Feed C25/PRO	Roller-Card Feed	$19.44

Continued on the next page

HDP8xx LAM Series ID Card Printer
Recommended Spare Parts List
Effective Date: January 2004

Category	Part Number	Part Description	Alternate Part Description	MSRP List Price
Sensors				
	D870186	Assembly Sensor LC Card POSN	Sensor - Assembly - LC Card POSN	$35.56
	D870188	Assembly Board Flipper Sensor LC	Sensor - Assembly Board Flipper Sensor LC	$19.82
	D870189	Assembly Slotted Sensor Mount	Sensor - Assembly - Slotted Mount	$51.94
	D870193	Assembly Board LED LC	Sensor - Assembly Board LED LC	$18.40
	D870198	Assembly Optical Encoder Sensor LC	Sensor - Assembly - Optical Encoder LC	$0.00
	D870219	Assembly Sensor 070048 LAM Lift	Sensor - Assembly _070048_LAM_Lift	$0.00
	D870220	Assembly Sensor 070048 Arm Open	Sensor - Assembly - _070048__Arm_ Open	$0.00

Continued on the next page

HDP8xx LAM Series ID Card Printer
Recommended Spare Parts List
Effective Date: January 2004

Category	Part Number	Part Description	Alternate Part Description	MSRP List Price
Sensors	D870221	Assembly Film Sensor LC	Sensor - Assembly - Film Sensor LC	$0.00
	D870228	Assembly - Hopper Sensor	Sensor - Assembly - Hopper	$11.70
	D870241	Assembly - Lower LAM Sensor	Sensor - Assembly - Lower LAM	$0.00

FARGO®
ELECTRONICS, INCORPORATED

Address: 6533 Flying Cloud Drive, Eden Prairie, MN 55344 U.S.A.

Phone: (952) 941-9470

FAX: (952) 941-7836

L000467 Rev. 030224

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 cared 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 equivelent) 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. Manufactures 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.

Continued on the next page

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 main Board 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, which hold 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.

Continued on the next page

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 too 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.

Continued on the next page

Glossary of Terms (continued)

Term	Definition
CR79	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.

Continued on the next page

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.

Continued on the next page

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.

Continued on the next page

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 a Lamination 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 (Electronically Programmable Read Only Memory)	A microchip based non-volatile memory storage device that can not 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.

Continued on the next page

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 microinches 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.

Continued on the next page

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.

Continued on the next page

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 Lamination roller.
ISO	For the Greek, "iso", meaning the 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.

Continued on the next page

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.
Mag 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.

Continued on the next page

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.

Continued on the next page

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).
Overlaminate	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 Lamination 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 problems.

Continued on the next page

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 Overlaminate	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.

Continued on the next page

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.

Continued on the next page

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.
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).
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.

Continued on the next page

Glossary of Terms (continued)

Term	Definition
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.
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.

Continued on the next page

Glossary of Terms (continued)

Term	Definition
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.
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.

Continued on the next page

Glossary of Terms (continued)

Term	Definition
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 Overlaminate	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.
Update	The process of installing a new revision of software or Firmware to implement new changes to the Printer's command codes and procedures.

Continued on the next page

Glossary of Terms (continued)

Term	Definition
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.
YMC	The designation of colored ribbon by the Panels of color in the order in which they are printed: Yellow (Y), Magenta (M), 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), 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), Heat Seal (H).
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), 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), Black (K) (used for backside, black only printing).

Index

D

E

F

G

H

I

J

K

L

M

Q

R

S

T

U

V

W

X

Y

Appendix A: Engineering Drawings

These drawings are attached to this document in its PDF form for specified Users ONLY.

Appendix B: Technical Updates

These technical updates have already been incorporated into this service document.

Appendix C: Miscellaneous

There is no miscellaneous information added to this service document at this time.