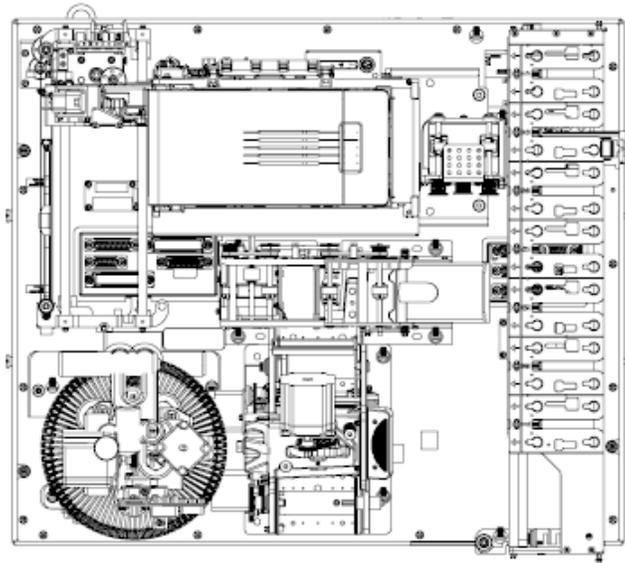


ExpressCard 3000

Instant Issuance Card Personalization System Preventive Maintenance Procedure



June 2019

Document Number:
D998200294-10

REGISTERED TO ISO 9001:2015

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Table 0-1 - Revisions

Rev Number	Date	Notes
10	06/13/2019	Initial Release based on <i>D998200294-90 DRAFT</i> and <i>D99875651-25</i> .

SAFETY

This product has been evaluated by multiple safety certification agencies, including Underwriters Laboratories (UL) and the United States Federal Communications Commission (FCC Class A and Class B), and is designed to protect both the user and the device. This document is written specifically to work in conjunction with these safety and integrity features to protect the user and the device. It is very important to follow all steps in the product documentation carefully, in the order in which they are described, and at the recommended times. Failure to do so could result in personal injury, and / or cause damage to the device, and / or void the product warranty.

The information within this manual has been prepared for use by trained professional service personnel and is not intended for general use. To maintain the safety and integrity of the machine, follow the procedures described in this manual carefully.

For your personal safety and to prevent damage to the device, disconnect power from the device before you connect or disconnect any cable, electronic board, or assembly.

SAFETY REQUIREMENTS

WARNING

Never do any of the following:

- DO NOT use a ground adapter plug to connect equipment to a power socket-outlet that lacks a ground connection terminal.
- DO NOT attempt any maintenance function that is not specifically described in this manual or in other ExpressCard 3000 instructional documents published by MagTek.
- DO NOT remove any of the covers or guards that are fastened with screws. There are no user-serviceable areas within these covers.
- DO NOT override or “cheat” electrical or mechanical interlock devices.
- DO NOT use EC3000 supplies or cleaning materials for other than their intended purposes.
- DO NOT operate the equipment if you or anyone else have noticed unusual noises or odors.

Consider the following before operating the ExpressCard 3000:

- Connect the EC3000 to a properly grounded AC power socket-outlet. If in doubt, have the socket-outlet checked by a qualified electrician. Improper connection of the device’s grounding conductor creates a risk of electric shock.
- Place the EC3000 on a solid surface that can safely support the device’s weight plus the weight of a person leaning against it (such as a service technician).
- Be careful when moving or relocating the device. Use proper lifting techniques.

Use materials and supplies specifically designed for MagTek devices. Using unsuitable materials may result in poor performance, and in some cases may be hazardous.

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1 Required Tools, Materials, and Documents

1.1 Required Tools

Part Number	Qty	Description
33011008 or equiv.	1 ea.	ASSEMBLY, FIELD SERVICE TOOL KIT, EC2000, EC3000
67800019 or equiv.	1 ea.	Small USB keyboard with touchpad mouse
N/A	1 ea.	Small diagonal side cutters
N/A	1 ea.	USB thumb drive with required software and documentation

1.2 Suggested Tools

Part Number	Qty	Description
N/A	1 ea.	Laptop with available Ethernet port
22350302 or equiv.	1 ea.	CABLE, ETHERNET CAT5E BLACK 10'
N/A	1 ea.	Flashlight

1.3 Required Materials

Part Number	Qty	Description
1000005420	1 ea.	ASSEMBLY, FIELD SERVICE PREVENTIVE MAINTENANCE KIT, EC3000

1.4 Suggested Materials

Part Number	Qty	Description
33011009	1 ea.	ASSEMBLY, FIELD SERVICE SPARE PARTS STARTER KIT, EC2000, EC3000
1000002072	1 ea.	PRINTER ACCESSORY, RIBBON, COLOR OVERLAY BLACK YMCKOK, 200 PRINTS, EC500P, EC3000
33070896	1 ea.	PRINTER ACCESSORY, TIPPER FOIL ROLL, SILVER, EC2000, EC3000
33070621	1 ea.	ASSEMBLY, REAR INDENT CARTRIDGE, BLACK, EC2000, EC3000

1.5 Required Software and Documents

MagTek recommends loading the following required software and documents on the USB thumb drive or service laptop before visiting the customer site.

1 - Required Tools, Materials, and Documents

Part Number	Qty	Description
D998200281	1 ea.	EXPRESSCARD 3000 (EC3000) INSTALLATION AND OPERATION MANUAL
D99875607	1 ea.	HARDWARE SERVICE MANUAL, EC2000, EC3000
D998200294	1 ea.	PROCEDURE, PREVENTIVE MAINTENANCE, EC3000
D998200295	1 ea.	CHECKLIST, PREVENTIVE MAINTENANCE, EC3000
N/A	1 ea.	Passwords and factory defaults for the device being serviced
Various	0 or more	EC3000 software patch .CAB files provided by MagTek Support Services, loaded onto USB thumb drive or service laptop

2 Introduction

This document contains the preventive maintenance procedure for the ExpressCard 3000 (EC3000), extracted from *D99875607 ExpressCard 2000 / ExpressCard 3000 Hardware Service Manual*. It assumes the reader is familiar with basic operation of the ExpressCard 3000's user and maintenance functions, so many of the cross-references to deeper "how-to" procedures from that manual have been removed for brevity. For details about performing any procedure described in this document, see that manual and *D998200281 ExpressCard 3000 Installation and Operation Manual*.

CAUTION

The information in this document is intended for use by trained professional service personnel only. It is not intended for general use. To maintain the safety and integrity of the device, it is important to follow the procedures laid out in this document as-written and in the order provided.

WARNING

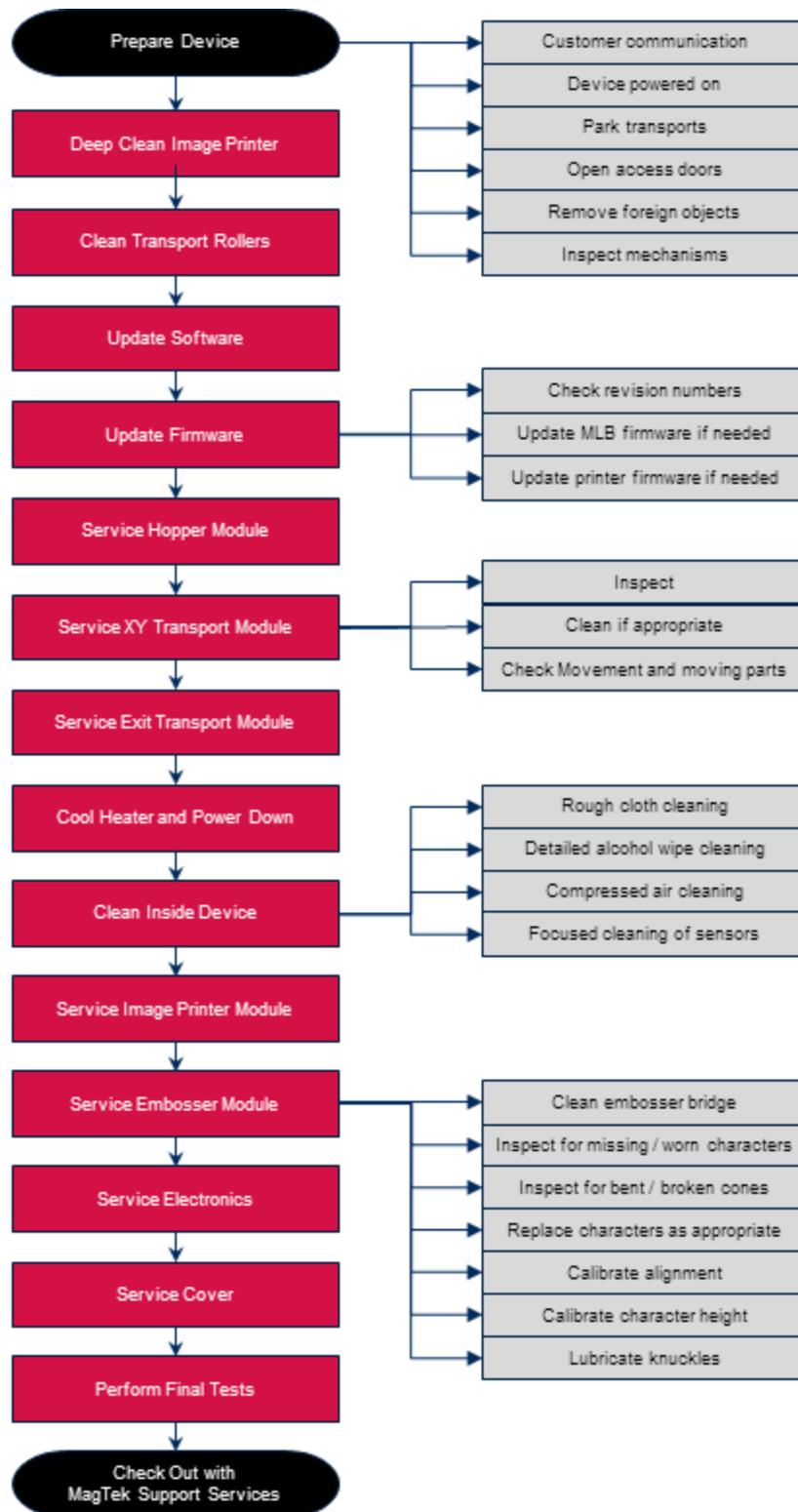
For your personal safety, and to prevent damage to the device, disconnect power from the ExpressCard 3000 before you connect or disconnect any cable, electronic board, or assembly.

3 Preventive Maintenance Procedure (EC3000)

EC3000 requires regular preventive maintenance to maintain image quality and reliability. Follow the steps in each section below to perform preventive maintenance.

The following page shows a flowchart that gives a brief overview of the preventive maintenance procedure. It should only be used as a guide, not as a substitute for following the detailed steps provided.

3 - Preventive Maintenance Procedure (EC3000)



3.1 Prepare the Device for Preventive Maintenance

To prepare the device for service, follow these steps in accordance with standard safety practices:

- 1) Ask the customer operators or other customer representative if they have had any specific problems with the device. If you need to troubleshoot a specific problem, address that before performing preventive maintenance. See section *D99875607 ExpressCard 2000 / ExpressCard 3000 Hardware Service Manual* for assistance troubleshooting reported issues.
- 2) Offer the customer the opportunity to remove any proprietary or security-sensitive consumables from the device, including card stock, image printer ribbons, indent cartridges, and tipper foils. Some consumables contain negative imprints of cardholder data and must be handled securely.
- 3) Make sure the device is powered on and connected to the network.
- 4) Park the hopper shuttle at the front of the device by following these steps:
 - a) On the touchscreen, press the **Menu** button.
 - b) Press the **Maintenance** button to open the **Maintenance Menu** page.
 - c) Press the **Remove Hopper** button and wait for the hopper shuttle to finish moving.
- 5) Open the top access door (see *D998200281 EC3000 Installation and Operation Manual*).
- 6) Open the two side access doors (see *D99875607 ExpressCard 2000 / ExpressCard 3000 Hardware Service Manual*).
- 7) Inspect the device for any items that do not belong inside the cover, and remove them (examples include loose mechanical parts, cards, insect or animal leavings, or jewelry).
- 8) Inspect the mechanical parts inside the device and inside the image printer, paying special attention to belts, cables, and plastic gears to see if there are signs of wear or damage.

3.2 Deep Clean the Image Printer

Deep clean the image printer per the steps in *D998200281 ExpressCard 3000 Installation and Operation Manual*.

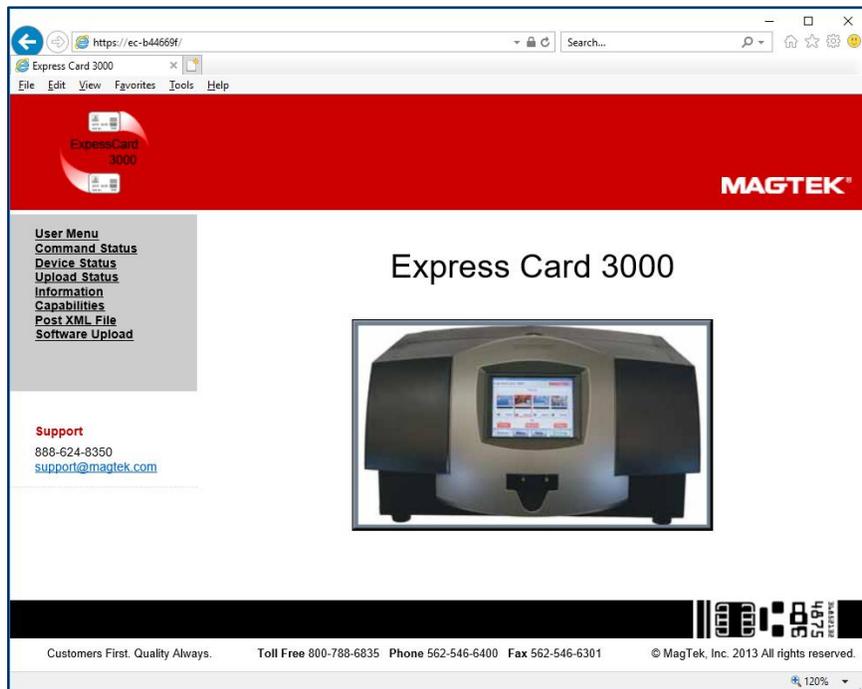
3.3 Clean Transport Rollers

Clean all the transport rollers per the steps in *D998200281 ExpressCard 3000 Installation and Operation Manual*.

3.4 Update the Software

If MagTek Support Services has supplied .CAB files to apply ExpressCard software patches, follow these steps to install them:

- 1) Use the Ethernet cable to connect the service laptop to the ExpressCard. If necessary, you may instead use the customer's instant issuance workstation, provided it has Microsoft Internet Explorer and a USB port with security settings that allow you to read from a USB thumb drive.
- 2) Launch the Internet Explorer web browser and navigate to **https://ec-xxxxxxx**, where xxxxxxxx is the device's serial number. The browser should show an **ExpressCard 3000** web interface page.



- 3) Open the **Software Upload** link on the left side of the page to display a **File to Upload** page.
- 4) Press the **Browse...** button to launch the **Choose File to Upload** dialog box.
- 5) Navigate to the folder that contains the .CAB files you want to apply (such as the field service laptop's hard drive or the USB thumb drive).
- 6) Select the .CAB file you want to apply, and press the **Open** button to return to the **File to Upload** page.
- 7) Press the **Send** button to upload the .CAB file to the device. The browser will display a status message telling you when the patch will be applied (for example, **File Copied Successfully. Update will be performed during next reboot.**). The device's touchscreen may also go blank.
- 8) Restart the device by powering it off, then powering it on. Wait until the touchscreen once again displays the ExpressCard 3000 **Status** page.
- 9) In the web browser, open the **Upload Status** link on the left side of the page. If the browser reports **SUCCESS**, repeat these steps for any additional patch .CAB files you need to apply, or continue to the next section.

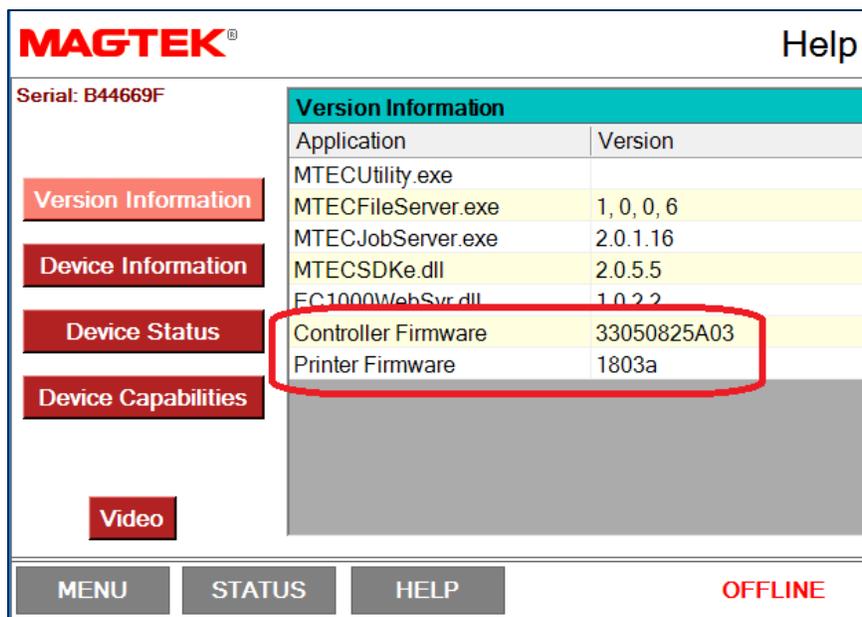
3.5 Update the Firmware

If MagTek Support Services has supplied .CAB files to apply firmware patches, follow the steps in this section to determine whether the firmware needs to be updated, and to update it if necessary.

3.5.1 Check Firmware Revision Numbers

Check whether the device has the correct main logic board (MLB) and image printer firmware installed by following these steps:

- 1) Install any software updates MagTek Support Services has provided, using the instructions in section **3.4 Update the Software**. This is a very important first step, because new revisions of firmware files are distributed to the device via software updates.
- 2) From the touchscreen, press the **Help** button to open the **Help** page.
- 3) In the **Version Information** list, note the **Controller Firmware** and **Printer Firmware** entries.

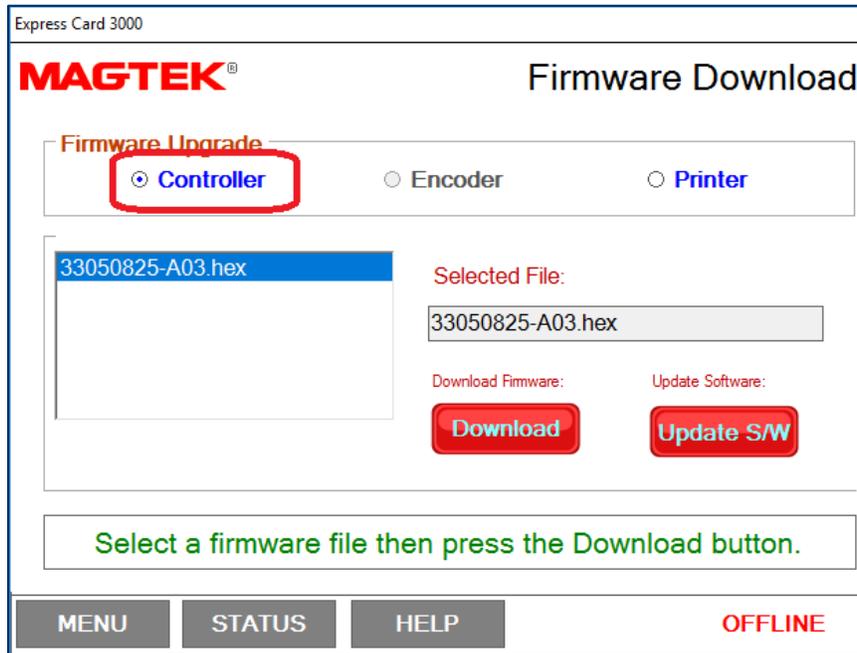


- 4) If the **Version Information** for any component does not match the versions MagTek Support Services has recommended installing on the device for that component, make sure the prescribed version of the firmware is available on the device as follows:
 - a) Press the **Menu** button to launch the **Main Menu** page.
 - b) Press the **Settings** button to launch the **Settings Menu** page.
 - c) Press the **Load F/W** button to launch the **Firmware Download** password page.
 - d) Use the on-screen keyboard to enter the password **1234567** (or the customer's changed first password), then press the **E** key to launch the second **Firmware Download** password page.
 - e) Use the on-screen keyboard to enter the password **7654321** (or the customer's changed second password), then press the **E** key to launch the **Firmware Download** page.
 - f) Make sure the list contains a revision number that matches the firmware MagTek Support Services has recommended installing on the device, and update the firmware for the mismatching component by following the steps in the following sections.

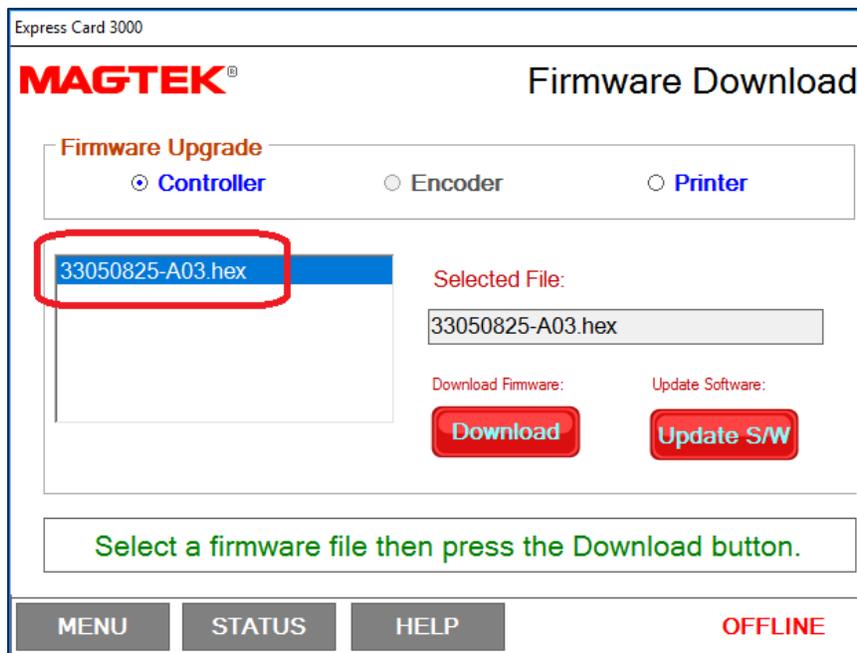
3.5.2 Update the Main Logic Board (Controller) Firmware

To update the controller (main logic board / MLB) firmware, follow these steps:

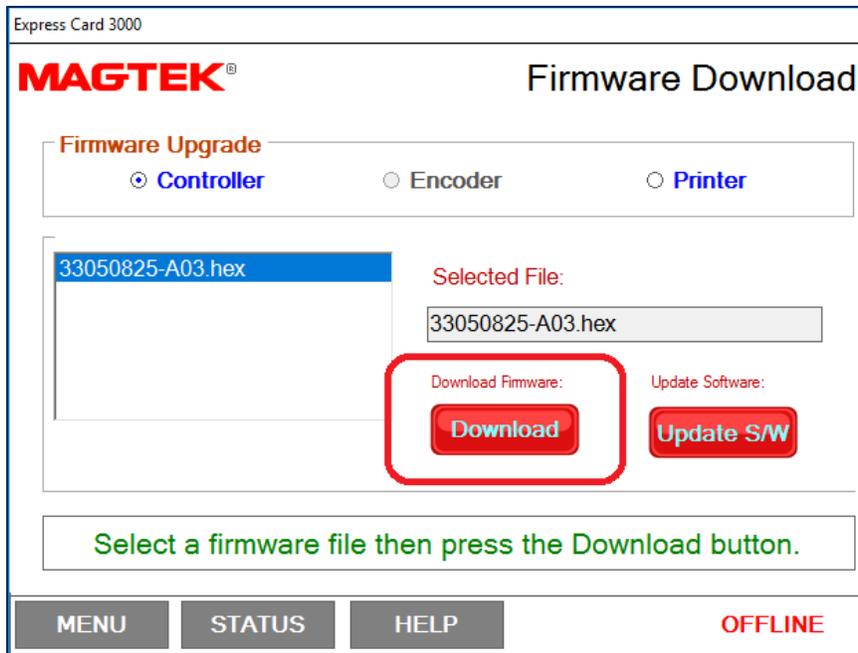
- 1) From the **Firmware Download** page, select the **Controller** radio button.



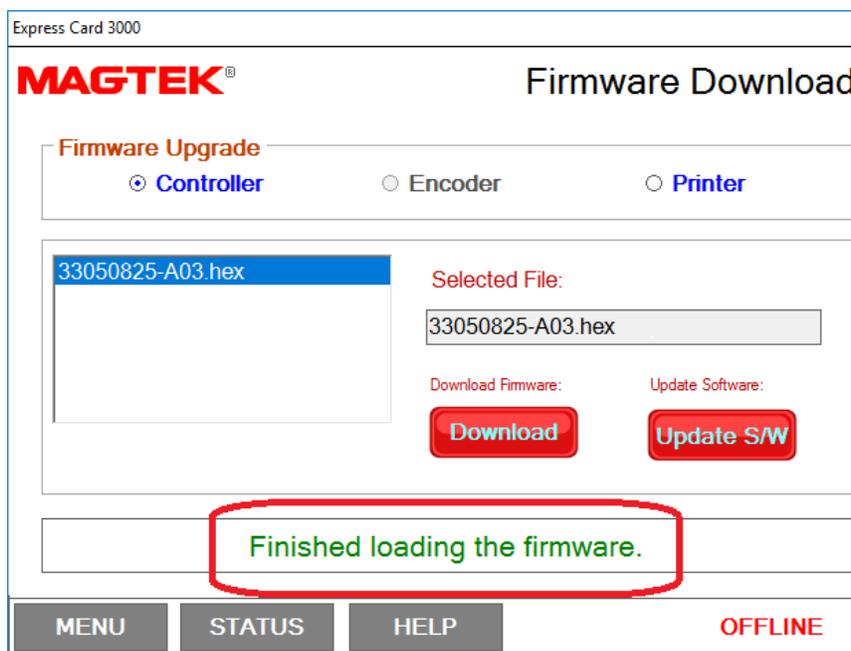
- 2) In the list of .hex files, select the file that corresponds to the revision you want to install.



- 3) Press the **Download** button to download the .hex file to the controller. The system will report **Loading the firmware. Please wait...**



- 4) Wait about 5 minutes for the firmware to finish downloading. **Do not power off the device.**
- 5) After the firmware update is complete, the device will make sounds while the MLB resets. Wait until the sounds stop and the touchscreen reports **Finished loading the firmware.**



3.5.3 Update the Image Printer Firmware

To update the image printer firmware, follow the steps from section 3.5.2, but select the **Printer** radio button and select the .hex file appropriate to the revision of the image printer firmware you want to install, before pressing the **Download** button.

3.6 Service the Hopper Module

Follow these steps to service the hopper transport:

- 1) Use the **MCP Commands** page (see *D99875607 ExpressCard 2000 / ExpressCard 3000 Hardware Service Manual*) to move the hopper shuttle from the front to the rear of the device to verify the movement is smooth and there is no belt slippage.
- 2) Only if the hopper transport rods are dirty, wipe off the dirt with a soft, lint-free cloth.
- 3) Check the hopper transport drive belt for signs of damage. If it is damaged, contact MagTek Support Services for a replacement.

3.7 Service the XY Transport Module

CAUTION

Do not lubricate the EC3000's gears, shafts, or bearings. They are made of self-lubricating material, and lubricants can damage their surfaces.

- 1) If there is dirt, dust, or debris on the XY transport rods, wipe it off using a soft, lint-free cloth.
- 2) Use the **MCP Commands** page (see *D99875607 ExpressCard 2000 / ExpressCard 3000 Hardware Service Manual*) to move the XY transport from the front to the rear of the device to verify the movement is smooth and there is no belt slippage. Leave the transport at the rear of the device.
- 3) Check the XY transport drive belt for any signs of damage. If it is damaged, contact MagTek Support Services for a replacement.

3.8 Service the Exit Transport Module

No additional service is necessary for the Exit Transport, other than the roller cleaning described in section 3.3 **Clean Transport Rollers**.

3.9 Cool the Tipper Heater / Power Down the Device

CAUTION

The tipper heater operates at temperatures that are not safe to touch. Be sure to cool down the tipper heater to a safe working temperature before working on or near it.

- 1) On the touchscreen, navigate to **Menu** > **Settings** > **Tipper** to open the **Tipper** page.
- 2) Press the **Set Heater OFF** button to turn off the tipper heater.
- 3) Note the value under **Current Tipper Temp**. **If the tipper temperature is 50°C or hotter, the tipper heater is not safe to touch.**
- 4) Take note of the current time, and plan your work to allow enough time for the tipper heater to cool, which can take up to 15 minutes. You may be able to use compressed air to cool it more quickly.
- 5) Power down the device.

3.10 Clean Inside the Device



Do not use alcohol wipes, liquids, or chemicals on the touchscreen.

Clean the device in phases to avoid blowing dirt, dust, or debris into sensitive components:

- 1) Remove all remaining consumables from the device (stock cards, image printer ribbon, indent cartridge[s], tipper foil, etc.) and set them aside in a secure location or give them to the customer for temporary storage or secure disposal.
- 2) If there is a large, visible amount of dirt, dust, or debris in the device, wipe the worst of it out with a clean, dry cloth.
- 3) Wipe remaining dirt, dust, and debris off the base plate and main components with alcohol wipes.
- 4) Use compressed air to blow out any remaining dirt, dust, or debris from between components and re-wipe as necessary.
- 5) Use compressed air to clean each of the sensors (*D99875607 ExpressCard 2000 / ExpressCard 3000 Hardware Service Manual* for an inventory of all sensors in the device).
- 6) Use compressed air to clean out the electronics in the bottom between the side access doors, with special attention paid to the power supply in the rear left corner.

3.11 Service the Image Printer Module

Follow these steps to service the image printer:

- 1) Make sure the interior of the ExpressCard is clean (see section **3.10 Clean Inside the Device**). Performing image printer maintenance with dirt or debris inside the cover may damage the printer.
- 2) Open the image printer and clean its interior if necessary. Dust and other particles are attracted to the image printer ribbon or card stock by static produced during image printing, and can contaminate image-printed cards, causing spots or speckles.
- 3) Clean the image printer dust filter per *D998200281 ExpressCard 3000 Installation and Operation Manual*.
- 4) Check handoff from image printer to XY transport. Adjust if needed (see *D99875607 ExpressCard 2000 / ExpressCard 3000 Hardware Service Manual*).

3.12 Service the Embosser Module

3.12.1 About Servicing the Embosser Module

The embosser module presses characters into card stock by squeezing the card between a raised metal letter, called a **punch**, and an indented letter of the same shape, called a **die**, installed on the embosser's top and bottom embosser wheels. For indented characters, the die is replaced with a flat metal plate so the card stock is only altered on the character side. Worn out punches or dies can produce characters of poor quality, or characters that are raised/indented less than the required depth.

The top and bottom embosser motors each drive a **hammer** that applies force to the punches and dies on the embosser wheel. Both hammers have a small round plate with a hole that lines up with a cone on each character. The cone on each character should be sharp and unbent, and must line up properly with the hole in the hammer. **Figure 3-1** shows a magnified view of a properly aligned hammer (above) and die (below), viewed from the front of the embosser. Because it can be difficult to see the front of the embosser module with the EC3000's cover and other modules installed, it is best to inspect the cones with an inspection mirror. Section **3.12.2** provides further detail.

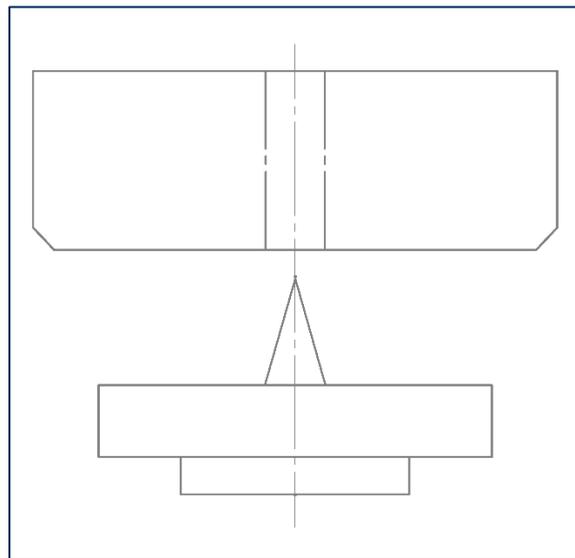


Figure 3-1 - Embosser Hammer and Character (FRONT VIEW)

3.12.2 How to Service the Embosser Module

Service the embosser by following these steps. If you discover any issues you can not resolve, contact MagTek Support Services to procure a replacement embosser module.

- 1) Use compressed air to clean the embosser bridge (the metal block between the embosser wheels that supports the indent cartridge ribbon).
- 2) Inspect the top and bottom embosser wheels for missing or worn characters and replace them if possible (see *D99875607 ExpressCard 2000 / ExpressCard 3000 Hardware Service Manual*). After installing, make sure the tine is still intact and holds the character tightly.
- 3) Inspect the top and bottom embosser wheels for missing, bent, or broken **tines**. Install any missing characters on other tines and re-map them after preventive maintenance is complete and the device is powered on (see *D99875607 ExpressCard 2000 / ExpressCard 3000 Hardware Service Manual*).
- 4) Inspect the characters on the **top** embosser wheel to identify any broken or bent **cones**. Top-side replacement font sets include:
 - a) 33070077 FUN TYPE,FARRINGTON F7B,EMBOSS DIE
 - b) 33070079 FUN TYPE,GOTHIC,ALPHA,EMBOSS DIE,ZERO/OH
 - c) 33070181 FUN TYPE,GOTHIC,NUMBER,EMBOSS DIE
 - d) 33070183 FUN TYPE,GOTHIC,SPECIAL CHARACTERS,EMBOSS DIE
 - e) 33070516 FUN TYPE, FRONT INDENT SANS SERIF, 12PT
 - f) 33070524 FUN TYPE, INDENT, HELVETICA 8PT
 - g) 33070546 FUN TYPE, FRONT INDENT SANS SERIF, 14PT
 - h) 33070581 FUN TYPE, TURKISH EMBOSS DIE
 - i) 33070075 FUN ANVIL, REAR INDENT.
- 5) Use the inspection mirror and a flashlight to inspect the characters on the **bottom** embosser wheel to identify any broken or bent **cones** (see **Figure 3-2** and **Figure 3-3**). Bottom-side replacement font sets include:
 - a) 33070078 FUN TYPE,FARRINGTON F7B,EMBOSS PUNCH
 - b) 33070080 FUN TYPE,GOTHIC,ALPHA,EMBOSS PUNCH, ZERO/OH
 - c) 33070081 FUN TYPE,REAR,INDENT,MC,ZERO
 - d) 33070182 FUN TYPE,GOTHIC,NUMBER,EMBOSS PUNCH
 - e) 33070184 FUN TYPE,GOTHIC,SPECIAL CHARACTERS,EMBOSS PUNCH
 - f) 33070582 FUN TYPE, TURKISH EMBOSS PUNCH
 - g) 33070608 FUN TYPE FRONT INDENT BANK ID NUMBER
 - h) 33070074 FUN ANVIL,FRONT INDENT



Figure 3-2 - Using Inspection Mirror to Check Tine / Hammer Alignment (TOP VIEW FROM FRONT)

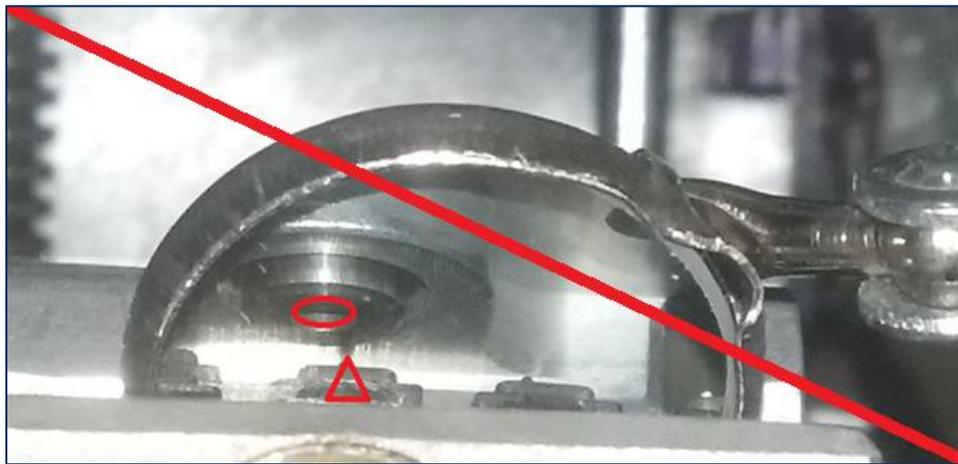


Figure 3-3 - Bad Embosser Wheel Alignment (Figure 3-2 MAGNIFIED)

- 6) If any cones are broken or bent, replace the characters in the same location if possible. If replacement is not feasible, cut off the top and bottom tines using diagonal side cutters, remove the top and bottom characters from the tines, install them to another pair of tines, and re-map the character to the new position after preventive maintenance is complete and the device is powered on (see *D99875607 ExpressCard 2000 / ExpressCard 3000 Hardware Service Manual*).
- 7) Check the embosser wheel alignment by standing in front of the device and looking straight down at the embosser. Use an inspection mirror as shown in **Figure 3-3** so you can see the cone on the bottom of the current character and the hole in the embosser hammer. **Figure 3-3** shows a cone and hole that are not properly aligned.
- 8) Check embossed character heights using the steps in *D99875607 ExpressCard 2000 / ExpressCard 3000 Hardware Service Manual*, and adjust them if necessary to account for normal wear. Pay special attention to any characters you have replaced or re-mapped.
- 9) Note the position of the top and bottom knuckles in case they move during the following steps.
- 10) Add 2 drops of Teflon lubricant to the left and right sides of the shaft that holds the top embosser knuckle, between the sides of the knuckle and the rocker arm.

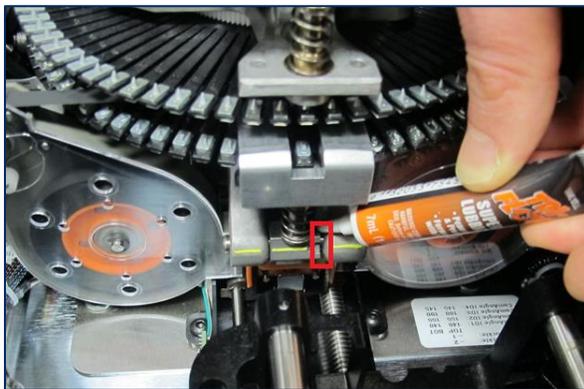
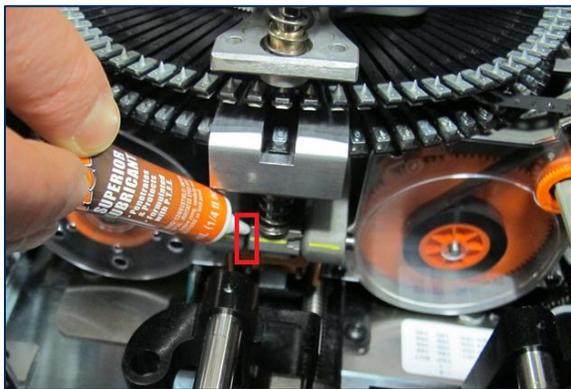
3 - Preventive Maintenance Procedure (EC3000)



- 11) Move the hammer follower out of the way and add 2 drops of lubricant to the top and to the front of the top punch hammer.



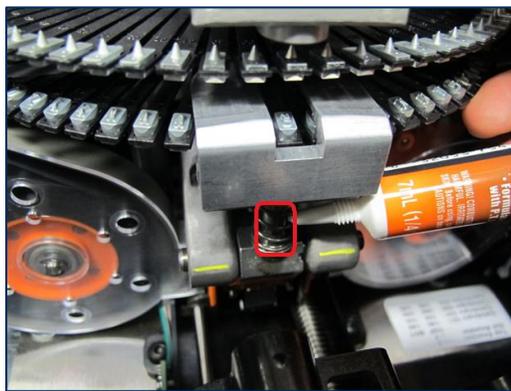
- 12) Add 2 drops of lubricant to the left and right sides of the shaft that holds the bottom embosser knuckle, between the sides of the knuckle and the rocker arm.



- 13) Add 2 drops of lubricant between bottom punch hammer and bottom hammer follower.

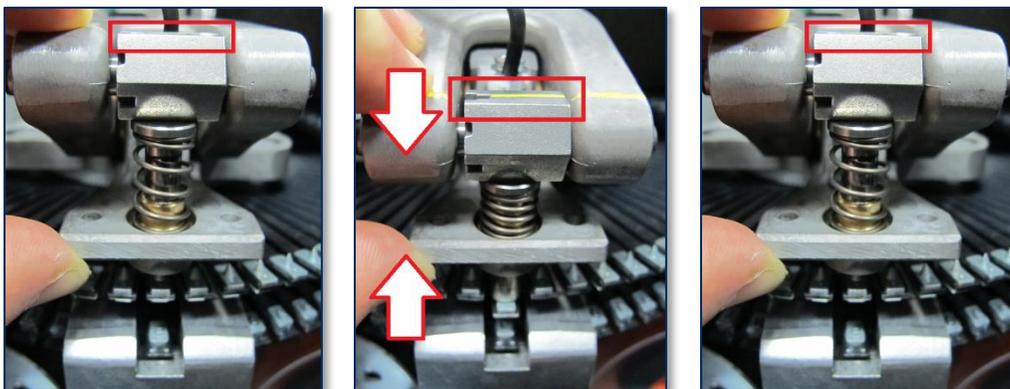


14) Add 2 drops of lubricant to the front of the bottom punch hammer.

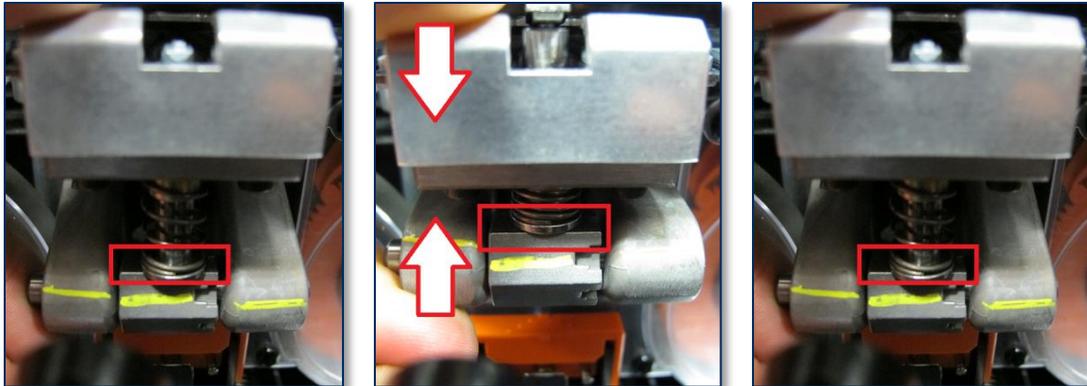


15) Return the knuckles to the position they were in before lubricating.

16) Test to make sure the top knuckle slides smoothly across the punch hammer: Press the top rocker arm all the way down and make sure the top of the knuckle remains level and parallel to the floor at all points in the movement cycle. The knuckle should not rotate from its initial orientation.



17) Test to make sure the bottom knuckle slides smoothly across the punch hammer: Press the bottom rocker arm all the way up and make sure the top of the knuckle remains level and parallel to the floor at all points in the movement cycle. The knuckle should not rotate from its initial orientation.



3.13 Service the Electronics

Visually inspect all wires and cables, checking for insulation breakage or wear on moving cables.

3.14 Service the Cover

After completing all other service, service the cover as follows:

- 1) Inspect the cover for damage.
- 2) Clean the black and gray portions of the outside of the cover with alcohol wipes.
- 3) Clean fingerprints off the touchscreen with a soft, clean, dry cloth.

3.15 Perform Final Tests

After completing preventive maintenance, follow these steps to test the device and restore it to its original state:

- 1) Re-connect the power and network cables.
- 2) Re-attach any security hardware.
- 3) Re-install consumables.
- 4) Close all open doors.
- 5) Power up the device.
- 6) Re-synchronize the image printer ribbon, if necessary (some printer models do not require this step).
- 7) Create a sample card using customer card stock.
- 8) Check image print quality and embosser alignment, and adjust components as necessary using the information in *D99875607 ExpressCard 2000 / ExpressCard 3000 Hardware Service Manual*.
- 9) Fill out the checklist included with the preventive maintenance kit, including the customer signature, and return it to MagTek.

NOTICE

Ensure any unused materials from the kit are personally handed off to a branch representative – most importantly, any used or unused print ribbons or embossing foils.