

# FORMAX<sup>®</sup>

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AP2  
Address Printer

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## SAFETY PRECAUTIONS

THIS EQUIPMENT PRESENTS NO PROBLEM WHEN USED PROPERLY. OBSERVE SAFETY RULES WHEN OPERATING THE PRINTER. BEFORE USING PRINTER, READ THIS MANUAL CAREFULLY AND FOLLOW RECOMMENDED PROCEDURES, SAFETY WARNINGS, AND INSTRUCTIONS:

### WARNING:

**Hazardous Moving Parts. Keep Fingers and Other Body Parts Away.**

### ATTENTION:

**Pièces mobiles dangereuses. Veuillez que les doigts et les autres parties du corps sont à l'écart.**

### CAUTION

**Double pole/neutral fusing. For continued protection against risk of fire, replace only with same type and rating of fuse.**

### MISE EN GUARD

**Fusible bipolaire / neutre. Pour protéger contre le risque d'incendie, remplacez avec le même type et la même classe de fusible.**

- ✓ Avoid touching moving parts or materials while machine is in use. Before clearing a jam, be sure machine mechanisms come to a stop.
- ✓ Always turn machine off before making adjustments, cleaning machine, or performing any maintenance covered in this manual.
- ✓ Power cord is supplied with machine. Plug it into a properly grounded wall, easily accessible outlet located near machine. Failure to properly ground machine can result in severe personal injury and/or fire.
- ✓ Power cord and wall plug are primary means of disconnecting machine from power supply.
- ✓ **DO NOT** use an adapter plug on line cord or wall outlet or remove ground pin from line cord. Avoid using wall outlets that are controlled by wall switches, or shared with other equipment.
- ✓ **DO NOT** route power cord over sharp edges or trap it between furniture. Make sure there is no strain on power cord caused by jamming it between equipment, walls or furniture.
- ✓ **DO NOT** remove covers. Covers enclose hazardous parts that should only be accessed by a qualified service representative. Report any cover damage to your service representative.
- ✓ This machine requires periodic maintenance. Contact your authorized service representative for required service schedules.
- ✓ To prevent overheating, do not cover vent openings.
- ✓ Use this equipment only for its intended purpose.

In addition, follow any specific occupational safety and health standards for your workplace or area.

This manual is intended solely for the use and information of Formax, its designated agents, customers, and their employees. The information in this guide was obtained from several different sources that are deemed reliable by all industry standards. To the best of our knowledge, that information is accurate in all respects. However, neither Formax nor any of its agents or employees shall be responsible for any inaccuracies contained herein.

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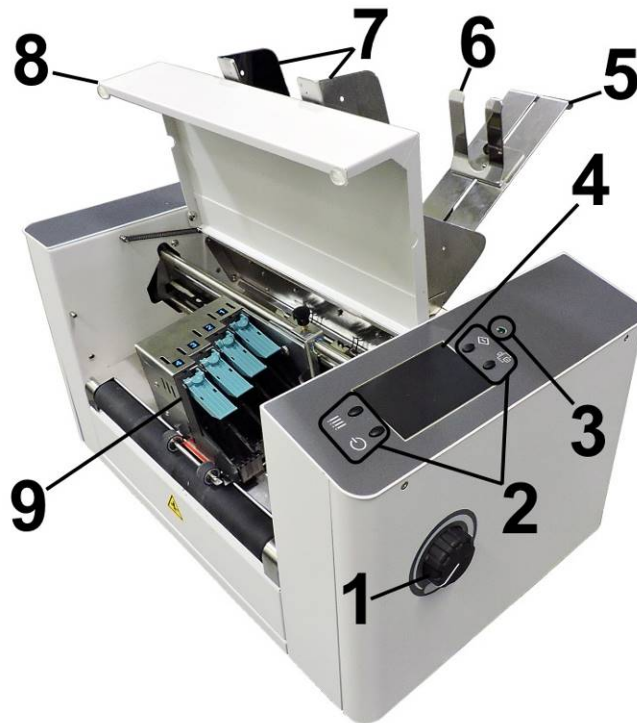
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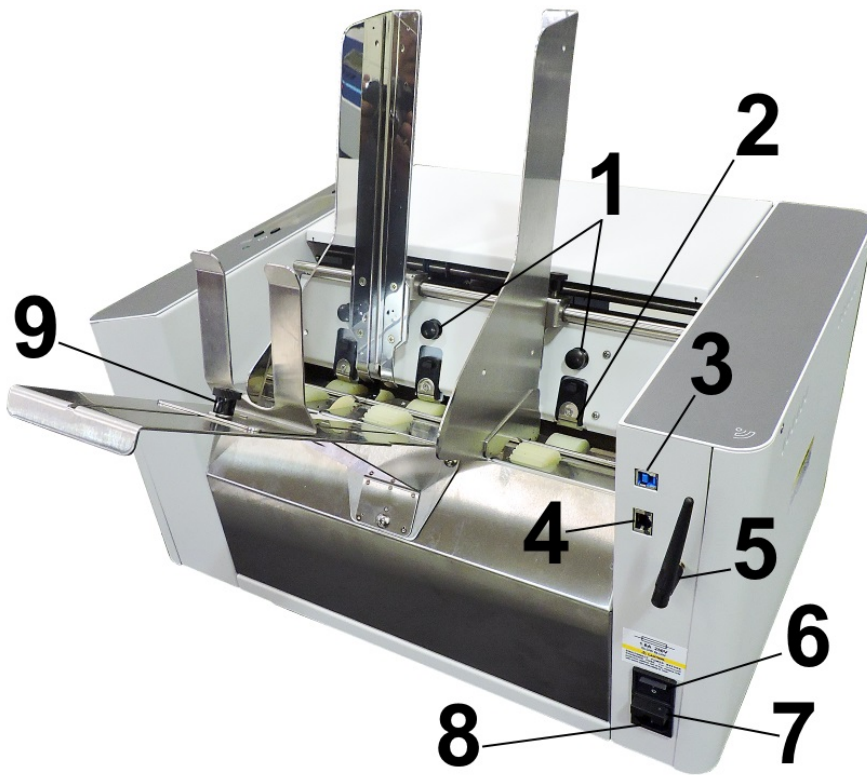
## SECTION 1 – *Getting Acquainted*

### *Front View*



1.	<b>MEDIA THICKNESS ADJUSTMENT KNOB</b> – Adjusts height of Printhead Carriage to compensate for different media thicknesses. <b>NOTE: Always raise Printhead Carriage to uppermost position when storing Printer.</b>
2.	<b>PRINTER CONTROL KEYS</b> – Used to access commonly used Printer features. <b>Quick Menu, Shutdown/Restart Menu, Transport Control Menu, Pause/Resume Job</b>
3.	<b>POWER INDICATOR LIGHT</b> – ON (illuminated) when Main Power Switch is ON.
4.	<b>CONTROL PANEL TOUCHSCREEN</b> – Displays <b>Menu</b> and information about Printer status. Controls Printer functions and setup.
5.	<b>REAR MEDIA SUPPORT</b> – Provides the proper angle to enhance paper feeding and separation.
6.	<b>MEDIA SUPPORT WEDGE</b> – Allows for adjustments in stack angle, based on media type and length. Helps to force the media against the separation area.
7.	<b>MEDIA SIDE GUIDES</b> – Used to position and guide media into the Printer.
8.	<b>TOP COVER</b> – Encloses the Print Area.
9.	<b>PRINT UNIT</b> – Holds 4 Printheads (inkjet cartridges). A continuous image of up to 2 inches high can be printed.

*Rear View*



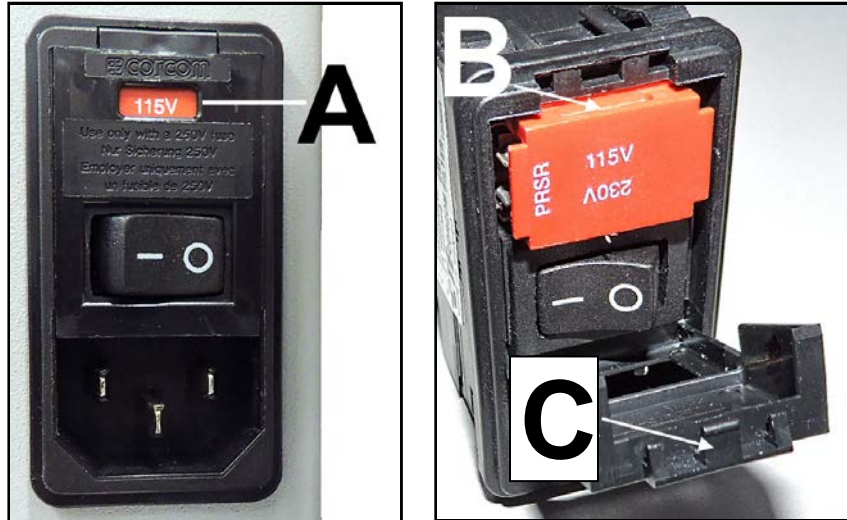
1.	<b>SEPARATOR LOCKING KNOB</b> – Use to Unlock/lock Sheet Separators, when adjusting Separators for different media thicknesses.
2.	<b>SHEET SEPARATORS</b> – Used to separate a single piece of media from the stack. There are four sheet separators on this printer.
3.	<b>USB 3.1 PORT</b> – Connects Printer to your computer. (Also supports USB 2.0)
4.	<b>ETHERNET PORT</b> – Connects Printer to a network.
5.	<b>WI-FI PORT</b> – Connect Wi-Fi antenna ( <i>included</i> ) to monitor or operate Printer wirelessly through your network.
6.	<b>MAIN POWER SWITCH</b> – Switch turns Main Power ON/OFF. <b>CAUTION:</b> Press the ON/OFF Button, located on the control panel, to properly shut-down the printers electronics before turning off the Main Power Switch.
7.	<b>MAIN POWER FUSE</b> – Fuse provides over-current protection. Fuse is located in the Fuse Pack/Voltage Selector, within the Power Receptacle. <b>CAUTION:</b> Double pole/neutral fusing. For continued protection against risk of fire, replace only with same type and rating of fuse.
8.	<b>POWER RECEPTACLE</b> – Power cord plugs in here. <b>CAUTION:</b> Verify that the receptacle shows the correct voltage <b>115V</b> or <b>230V</b> selection.
9.	<b>MEDIA WEDGE LOCKING KNOB</b> – Lock and unlock Media Support Wedge to fit different sizes of media.



*Power Receptacle & Voltage Selector*

**CAUTION**

**BEFORE CONNECTING THE POWER CORD, VERIFY THAT THE PRINTER IS SET FOR THE APPROPRIATE VOLTAGE SELECTION [A].**



<b>A.</b>	<b>VOLTAGE SELECTION INDICATOR</b> – Identifies present AC voltage selection. <b>CAUTION:</b> Verify that the Printer is set for the appropriate AC voltage selection [A] (115V or 230V) before connecting Power Cord to Power Receptacle. Change as needed.
<b>B.</b>	<b>FUSE PACK / VOLTAGE SELECTOR</b> – Remove to access Fuse. Remove, rotate and re-insert to change voltage selection. <b>Fuse Rating:</b> 1.6A, 250V, Slow-Blow
<b>C.</b>	<b>POWER RECEPTACLE FACEPLATE RELEASE</b> – Faceplate opens to provide access to Fuse Pack/Voltage Selector. <b>CAUTION:</b> After closing the Faceplate, verify that the correct voltage selection (115V or 220V) is shown in the window [A] before connecting Power Cord to Power Receptacle.

**How to Change Voltage Selection (115V-230V):**

**Unplug the Printer.**

1. Insert a small flat blade screwdriver into the slot at the top of the Faceplate, on the Power Receptacle, to release the tab [C] and gently pry the Faceplate open.
2. Insert the screwdriver blade into the slot [B], at the top of the Fuse Pack/Voltage Selector and gently pry it out of the Power Receptacle housing.
3. Invert and re-insert the Fuse Pack/Voltage Selector, so the desired voltage (115V or 230V) is at the top. Example image shows 115V at the top.
4. Snap the Power Receptacle Faceplate closed and verify that the desired voltage selection (115V or 230V) appears in the Power Receptacle window [A].

## Control Panel



1.	<p><b>QUICK MENU KEY</b> – Allows quick access to often-used Printer functions without having to scroll through a number of screens. <b>Test Feed/Reprint, Horizontal and Vertical Alignment, Printer Preferences, Purge Print, and Ink Status.</b></p> <p>Press <b>Quick Menu</b> key again to return to previous screen.</p>
2.	<p><b>SHUTDOWN/RESTART KEY</b> – The <b>Shutdown Printer</b> screen opens with 6 button options: <b>Restart, Shutdown, USB Disconnect, Port Reset and Cartridge Initialize.</b> <b>Shutdown</b> button safely powers-down printer electronics. It is very important that this is done before shutting off the Main Power Switch.</p>
3.	<p><b>PASS-THROUGH KEY</b> – Press to access <b>Transport Control</b> screen. Use to run the Transport to clear media from under the Printheads.</p> <p><b>NOTE:</b> This feature may not be active in some printer firmware versions</p>
4.	<p><b>PAUSE/RESUME KEY</b> – Provides a quick way to pause and resume a job at the Printer without using the Touchscreen or computer. Press to start printing. Press to pause a running job. Press key again to resume printing.</p>
5.	<p><b>CONTROL PANEL TOUCHSCREEN</b> – Provides access to Printer Menus and controls to setup and operate the Printer.</p>
6.	<p><b>POWER INDICATOR LIGHT</b> – ON (illuminated) when Main Power Switch is ON.</p>

**NOTE:** A complete description of the functions and operation of the Touchscreen can be found in the User Guide (Operator Manual). See Section 3 – Operating the Printer.

## SECTION 2 – *Troubleshooting*

This section is arranged first by the condition that might occur, and then by possible problems, causes and recommended solutions.

### *Power Problems*

CONDITION	PROBLEM	SOLUTION
Power is ON, nothing happens	No power to Printer.	Check that power cord is plugged in. Check that power outlet is live. Check fuse in Main Power Switch. Replace with a fuse of same rating. Bad Controller PC Board. Bad Power Supply.

### *Interface Communication Problems*

CONDITION	PROBLEM	SOLUTION
Printer does not respond to software	Connection problems.	Press <b>Port Reset</b> on the Shutdown/Restart menu. Check that port is communicating with Printer by using another USB cable. Replace cable. If port cannot communicate using another USB cable, check Printer.
	Poor connection between Printer and computer.	If port cannot communicate using another USB cable and Printer is OK, check the USB port. Check cable for breaks/damage. If damaged, replace cable. Press <b>Port Reset</b> on the Shutdown/Restart menu. Turn Printer OFF and ON again. Check connections.

*Touchscreen Display Problems*

CONDITION	PROBLEM	SOLUTION
<b>Touchscreen visible but too light or dark</b>	Touchscreen maladjusted.	Adjust Touchscreen using <b>Brightness</b> control in <b>Service Menu</b> .
<b>No Touchscreen display</b>	Power not ON.  Control Panel Cable loose, broken or disconnected.  Touchscreen broken.  Broken solder joint or connection on display PC Board.	Turn Power Switch ON. If still no display, see <b>Power Problems</b> .  Check Control Panel Cable for breaks. Check connections on Control Panel PC Board and Main PC Board.  Replace Touchscreen display.  Repair or replace display PC Board.
<b>Touchscreen shows solid line or garbled characters</b>	Power Supply.  Static electricity.	Check voltages and inspect Power Supply connections to processor PC Board.  Turn Printer OFF and then ON.
<b>Touchscreen freezes or goes blank or dark</b>	A Printer function is stuck or looping.  Bad Power Supply. No firmware (BIOS).  Bad processor PC Board.	Press <b>Restart</b> button on the Shutdown/Restart menu.  Check all voltages. Install firmware. Replace processor PC Board.

***Feeding Problems***

<b>CONDITION</b>	<b>PROBLEM</b>	<b>SOLUTION</b>
<b>Intermittent feeding</b>	<p>Feed Ramp not used.</p> <p>Side Guides set improperly.</p> <p>Dirty Feed Rollers.</p> <p>Media stuck together.</p> <p>Bad or dirty Sensor.</p> <p>Uneven mail piece.</p>	<p>Feed Ramp adds a slope to media stack and helps feeding.</p> <p>Loosen Side Guides slightly.</p> <p>Clean Feed Roller with distilled water and a cloth. <b>DO NOT</b> use any solvents or detergents as they may damage the Feed Rollers.</p> <p>Fan media before placing it in Printer.</p> <p>Clean Sensor with compressed air or replace it.</p> <p>Tap inserts to front of envelopes and retry.</p>
<b>Multiple feeds</b>	<p>Separator gap not set properly.</p> <p>Worn Separator Tip</p> <p>Sensor bad or dirty.</p> <p>Media stuck together.</p> <p>Side Guides too close to media.</p> <p>Brake misadjusted.</p>	<p>Adjust Sheet Separators to media thickness.</p> <p>Replace Separator Tip.</p> <p>Clean Sensor with compressed air or replace it.</p> <p>Fan media before feeding.</p> <p>Push Side Guides away from media.</p> <p>Adjust Brake (see <i>Section 4-Adjustments</i>)</p>
<b>Failure to feed</b>	<p>Side Guides too close to media.</p> <p>Material is out of specification.</p> <p>Clutch not engaging.</p>	<p>Readjust Side Guides.</p> <p>Instruct user on proper operation.</p> <p>Adjust Separators to media thickness.</p> <p>Adjust Printhead height to accommodate media thickness.</p> <p>Check for broken Drive Belt and replace, check for loose set screws on Drive Pulley or Belt Drive Roller Pulley.</p> <p>Replace Clutch.</p>
<b>Jams</b>	<p>Media path obstruction.</p> <p>Media not loaded properly.</p> <p>Feed Ramp not used properly.</p> <p>Separators improperly adjusted.</p> <p>Media curled or bent.</p> <p>Bad or dirty Sensor.</p> <p>Worn Separator Tip.</p> <p>Printhead adjusted too low.</p> <p>Conveyor Tape(s) (<i>Transport Belts</i>) under Printhead broken.</p>	<p>Clear jam and remove pieces remaining under Printhead.</p> <p>Instruct operator in proper loading of media.</p> <p>Set Feed Ramp.</p> <p>Adjust Separators to thickness of media.</p> <p>Uncurl media.</p> <p>Clean or replace Sensor.</p> <p>Replace Separator Tip.</p> <p>Raise Printhead.</p> <p>Replace Conveyor Tapes (<i>Transport Belts</i>).</p>

**SECTION 2  
TROUBLESHOOTING**

*Printing Problems*

<b>CONDITION</b>	<b>PROBLEM</b>	<b>SOLUTION</b>
<b>No printing:</b> Media is blank after going under Printheads	Sensor did not see piece or send signal to print to PC Board. Clogged Cartridges. Cartridge dried out. Tape on Printhead. Cartridge not properly inserted. Cartridge empty. Power Supply voltage out of specification. Printhead Holder. Printhead not positioned correctly to print on media.	Clean or replace Sensor as required.  Clean and purge Cartridges. Install new cartridge. Remove tape. Remove and reinsert Cartridge. Install new Ink Cartridge. Check voltages.  Check the Flex Circuit for tears. Adjust Printhead to print on media.
<b>Print slanted or skewed</b>	Skew within specifications. Side Guides not set properly. Printheads adjusted too high.	$\pm 2.5^\circ$ from bottom edge of material. Readjust. Reset or lower Printheads.
<b>Line spacing not uniform</b>	Printheads not aligned properly.	Realign Printheads.
<b>Gray print</b>	Ink Cartridge almost dry.	Replace Ink Cartridge.
<b>Blurry print</b>	Envelope thickness adjustment incorrect. Dirty Printheads. Media too porous or absorbent. Printheads scratched when cleaned.	Adjust Media Thickness Knob to lower Printhead. Clean Printheads. Use other media. Replace Printhead.
<b>Printing light</b>	Printhead clogged or dirty. Resolution of output set too low. Running low on ink.	Purge and clean Printheads. Reset to a higher resolution. Replace Cartridge.
<b>Print streaking</b>	Envelope thickness set too low. Exit Roller dirty. Printhead dirty.	Adjust media thickness. Clean Exit Roller with water. Clean Printhead.
<b>Non-uniform print quality</b>	Check voltage from Power Supply. Poor Printhead connections.	Adjust to 12 VDC.  Check that the Flex Circuit connections are in place.

***Printing Problems (continued)***

<b>CONDITION</b>	<b>PROBLEM</b>	<b>SOLUTION</b>
<b>Random white lines/ streaks in a line of print</b>	<p>Ink Cartridge Nozzle dirty. Cartridge not properly inserted. Cartridge was hit, shaken, or dropped.</p> <p>Tap water was used to clean Cartridge and mineral deposits have blocked the Ink Chamber. Wiping wrong way or too hard drove particles into Nozzles.</p> <p>Cartridge low on ink. Tape covering Print Nozzle or Vent Holes. Printhead connections not set.</p> <p>Bad Printhead Drive Card.</p>	<p>Clean Cartridge. Remove and reinsert Cartridge. Replace Cartridge.</p> <p>Replace Cartridge, instruct operator in proper cleaning method. (See “<b>Cleaning Printhead</b>”) Replace Cartridge. Remove tape.</p> <p>Check that the Flex Circuit connections are in place. Replace Printhead Drive Card.</p>
<b>Pattern of streaks in a line of print</b>	<p>Electrical issues at Printhead.</p>	<p>Check/replace Ink Cartridge, Cartridge Pin PC Board and/or Pen Driver Interface PC Board.</p>
<b>Smeared ink</b>	<p>Carriage too low. Coated media preventing ink absorption. High humidity slowing drying time.</p>	<p>Raise Carriage. Use fast-dry ink and/or allow more time to dry after printing. Use fast-dry ink and/or lower dpi resolution.</p>

**SECTION 2  
TROUBLESHOOTING**

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***Print Placement Problems***

<b>CONDITION</b>	<b>PROBLEM</b>	<b>SOLUTION</b>
<b>Print too close to leading or trailing edge of media</b>	Size of media not set correctly in <b>Layout</b> . Bad or dirty Sensor. Feed Ramp not used properly. Printheads set incorrectly.	Check layout in <b>Layout</b> for proper size.  Clean or replace Sensor. Set Feed Ramp. Adjust location and margins in layout software.
<b>Print too high or low on the media</b>	Physical location of Printhead does not match layout template.	Adjust Media Guides or Printheads. Use “0” reference point in center of scale to help align print on media.
<b>Address prints upside down on media</b>	Layout and/or media direction incorrect.	Change direction from <b>Normal to Inverted</b> or <b>Inverted to Normal</b> in <b>Driver Properties</b> .
<b>Address too close to center of media</b>	Chosen media size in layout is too small. Physical location of Printheads do not match layout. Feed Ramp not set properly.	Set correct media width size in <b>Layout</b> .  Check image on layout screen, adjust Media Guide or Printhead. Adjust Feed Ramp.
<b>Address printing partially off media</b>	Chosen media size in layout is too large. Physical location of Printheads do not match layout. Feed Ramp not set properly.	Set correct size from in <b>Layout</b> .  Check image on layout screen, Adjust Media Guide or Printhead. Adjust Feed Ramp.



***Print Content Incorrect***

<b>CONDITION</b>	<b>PROBLEM</b>	<b>SOLUTION</b>
<b>Information being printed is wrong, incomplete, or garbled</b>	Poor cable connections.  Interface problem. Corrupted database file.	<b>Check USB cable:</b> Securely fastened at both ends. Cable does not exceed 6 feet in length. Printer's internal USB cable is in good condition.  Check Printer setup at computer. Use another database file.
<b>Barcode does not print</b>	Wrong font selected.  No zip code in database.  Barcode not enabled.	If using a combined field barcode, choose USPS barcode font. Put zip code field in database or use another database. Enable barcode.
<b>Unwanted <b>BOLD</b>, <i>Italic</i>, or <u>Underlined</u> type</b>	Turned on in layout.	Open layout and change type style.
<b>Not all addresses in database print</b>	Only some addresses in the database were selected to print.	Start new job and select entire database.
<b>Data is being lost</b>	Database problem. USB cable connection loose.	Check database program. Reconnect.
<b>Graphics or text have a white line through them</b>	Graphic or text is set between junction of two Printheads.	Move copy or adjust Printheads.

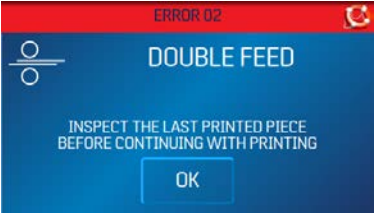

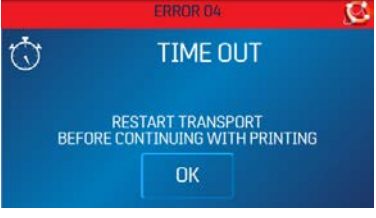

***Software Problems***

Refer to the manual for the application software being used.

**SECTION 2  
TROUBLESHOOTING**

***Touchscreen Messages***

The Touchscreen will display messages to alert you to problems or to indicate a process is finished.

SCREEN MESSAGE	PROBLEM	SOLUTION
	<p>No gap detected between pieces. Media size does not match the page size specified by the job.</p>	<p>Clear media from feeder and/or print transport area. Use <b>Reprint</b> (on <i>Quick Menu screen</i>) to retrieve/restore any missing or misprinted pages in the print job. Press <b>OK</b> to continue.</p>
	<p>No media in Feeder/Hopper.</p>	<p>Reload media. Press <b>OK</b> to continue.</p>
	<p>Printer operation has timed out or Printer was paused too long.</p>	<p>Check Printer. Press <b>OK</b> to continue.</p>
	<p>Printer Motor has stopped. Wire Harness connection is loose or broken. Encoder Belt worn or broken. Encoder Sensor not working.</p>	<p>Check Printer Motor. Check <b>J5</b> connector on I/O Board. Check Encoder Belt. Check Encoder Sensor.</p>

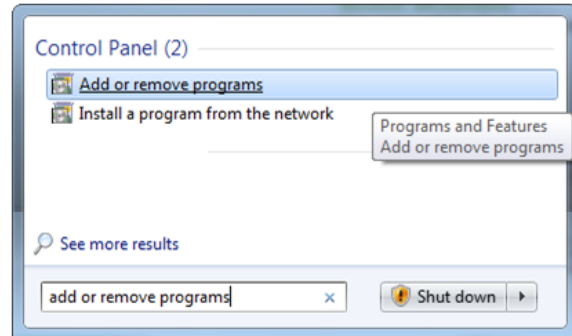
## SECTION 3 - *Service Features*

### *Firmware (BIOS) Update Process*

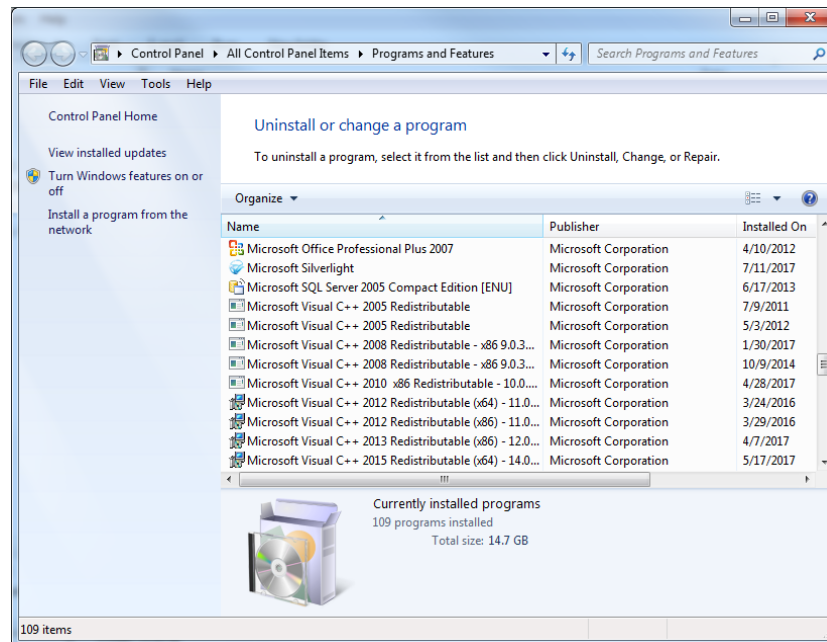
#### Verify that Microsoft Visual C++ is Installed

**Tip:** If you already have “Microsoft Visual C++” and the “Printer Update Utility” installed, skip to section titled “Send Firmware (BIOS) File to Printer”.

1. Click on the “Windows Start” button.
2. Type “add or remove programs” into the “Search” box.
3. Click on the selection “Add or remove programs”; as shown below.



4. When the “Uninstall or change a program” window opens; scroll the programs listed to see if you can find “Microsoft Visual C++ .....x86.....” or “Microsoft Visual C++ .....(x86).....”  
NOTE: The example below shows that this computer has had many versions of Microsoft Visual C++ installed. This may not be normal.



If your computer already has an “x86” version of “Microsoft Visual C++...” installed; then you can proceed to the section of this document titled “**Install Printer Update Utility**”.

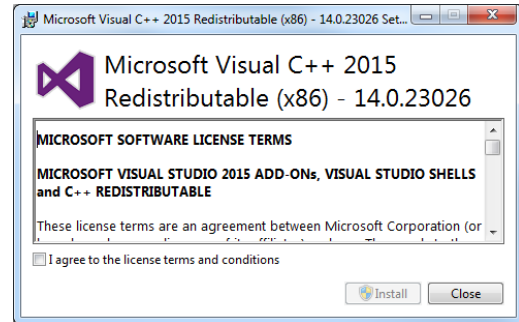
If your computer doesn’t show any versions of “Microsoft Visual C++...” installed or it only shows “x64” versions; you will need to proceed to the next section, titled “**Install Microsoft Visual C++**”.

## SECTION 3 SERVICE FEATURES

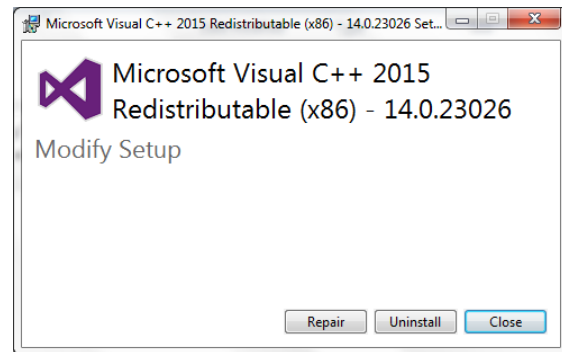
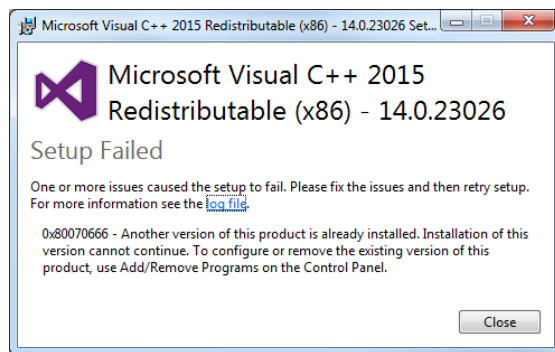
### Install Microsoft Visual C++

1. Locate and run the file “vc\_redist.x86.exe” (located in the “Microsoft C++ Installer (x86)” directory). The following message should appear.
2. Select “I agree...” and then Click on the “Install” button.

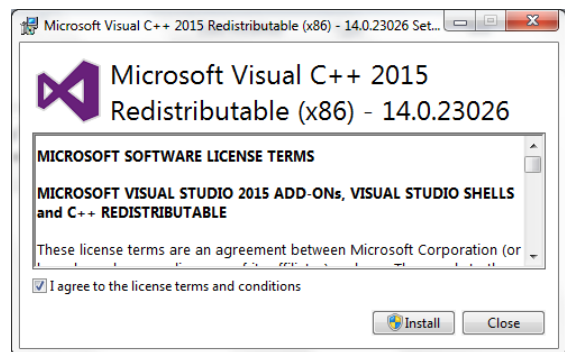
If you receive a User Account Control warning (“Do you want to allow the following program from an unknown publisher to make changes to this computer?”); please verify that the “Program name: VC\_redist.x86.exe” is shown and then Select Yes.



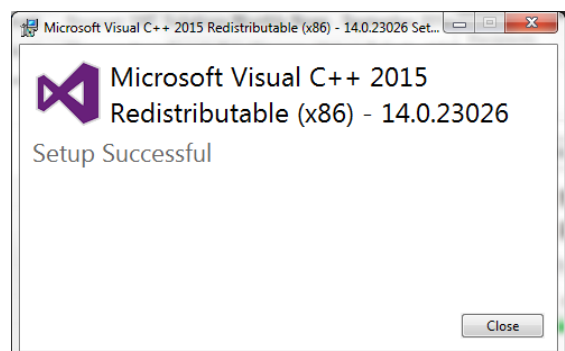
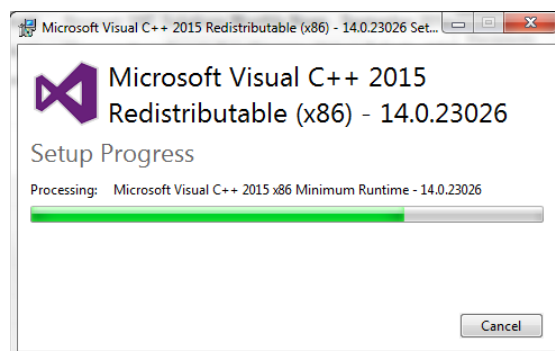
If you receive either of the following messages; then you can choose “Close”.  
In this case; your system should already have a compatible version of Microsoft Visual C++ installed.  
Please proceed to the next step “**Install the Printer Update Utility**” onto your computer.



3. The following window should be displayed. Select “I agree...” and then Click on “Install”, to install the software.



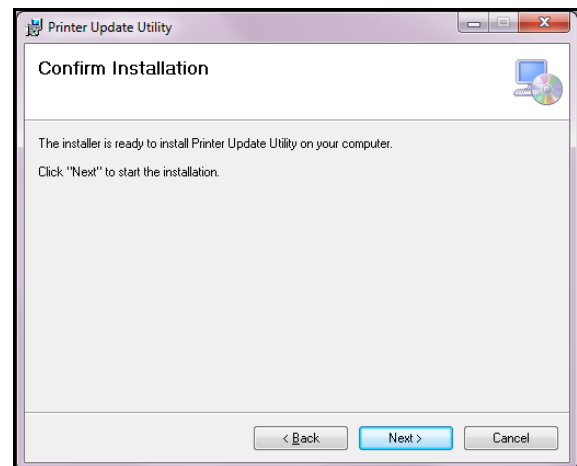
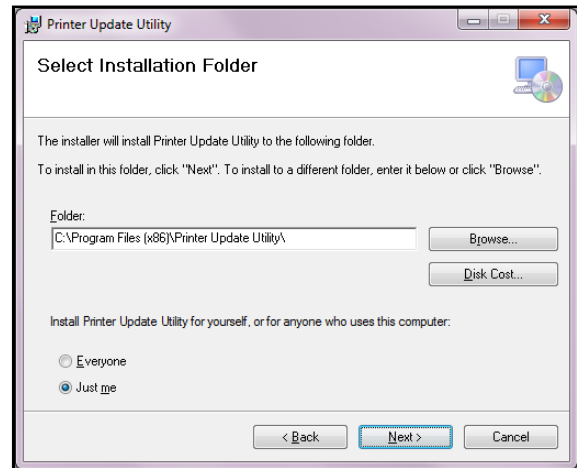
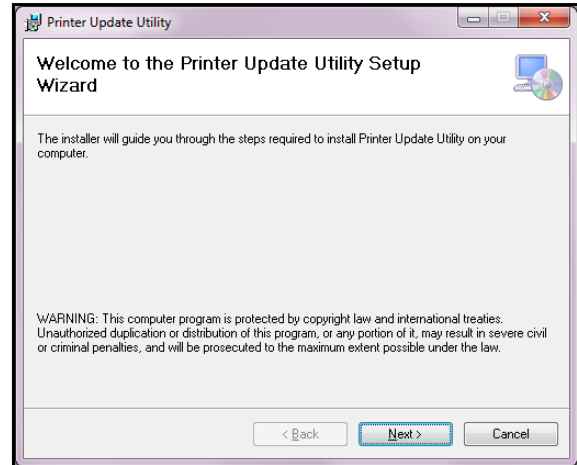
4. The Setup Progress window should be displayed. Once the software has been successfully installed, a “Setup Successful” message will be displayed.



## Install Printer Update Utility

To implement Printer Firmware updates, you will need to install the **Printer Update Utility** software included with your Printer. Make sure the USB or Network cables are connected to the Printer and your computer and that the Printer is turned on.

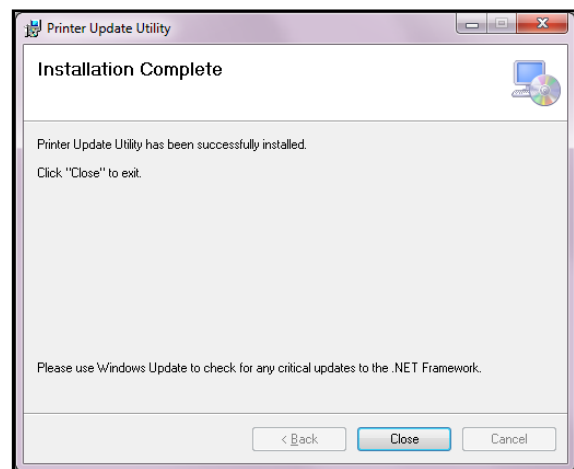
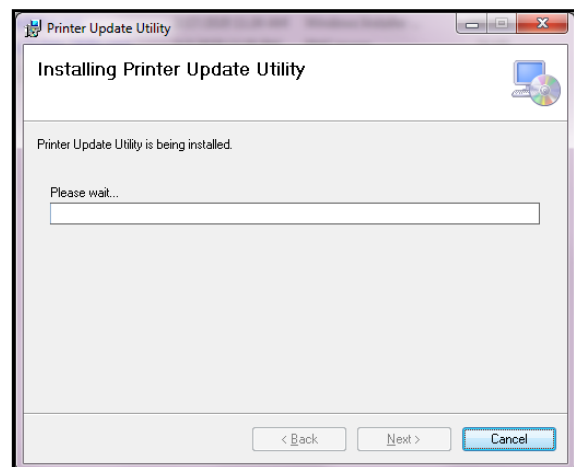
1. **Open Printer Driver Folder:** Open the **Printer Update Utility Folder**. Double-click **“Setup.exe”**.
2. The **“Printer Update Utility Setup”** window opens. Click **“Next”**.
3. The **“Select Installation Folder”** window opens. Select **“I agree... ”**. Install the software in the **“Program Files”** folder (*default*) or enter a new location or click **“Browse”** for a different folder. **NOTE:** You can install the **Update Utility** to be used by anyone who logs into the computer, **“Everyone,”** or only for use when you are logged into this computer, **“Just Me”**. When ready, click **“Next”**.
4. The **“Confirm Installation”** window opens. Click **“Next”**.
5. A **“Do You Want to Allow...”** window opens. Click **“Yes”**.



## SECTION 3 SERVICE FEATURES

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6. The **Printer Update Utility** is installed.
7. The **“Installation Complete”** window opens.  
Click **“Close”** to exit.



## **Send Firmware (BIOS) File to the Printer**

After you have installed the appropriate software (Microsoft Visual C++ and the Printer Update Utility), as described in the previous sections, you can use the “Printer Update Utility” to send Firmware (BIOS) Files to the printer, as described below.

**NOTE:** Firmware (BIOS) files may be obtained by contacting technical support.

- 1. Before you begin, record all current printer settings (take pictures of screens):**
  - a) Current Firmware (BIOS) version from “Information” screen. Main Menu, Information.  
**NOTE:** If the printer shows a BIOS Version that begins with “k” (example: k1000a004p02.56r), please contact technical support before proceeding. Firmware (BIOS) 19.xxx, and higher, is not compatible with the Processor Board in this printer.
  - b) Current “Pieces-Life Count” from “Information” screen. Main Menu, Information.
  - c) Current “Network” settings. Main Menu, Tools, Network.
  - d) Current “Printer Preferences” selections. Main Menu, Printer Setup, Printer Preferences.
  - e) Current “Service Menu” selections. Hold all four Keys down until Service Menu appears.

- 2. NOTE Updates can be loaded through a direct USB connection to the Printer or through a network (Ethernet) connection.**

**If loading updates through a USB connection:**

Disconnect all USB connected devices from the computer; except for keyboard, mouse and the AP2/AP3/AP4 printer model you want to update.

Make sure the AP2/AP3/AP4 printer is connected to a **USB 3.0** (SS) port using a **USB 3.0** cable.

**NOTE:** Update process may NOT work if you are connected using USB 2.0 port/cable.

- 3. Make sure printer is Powered ON and fully initialized.**

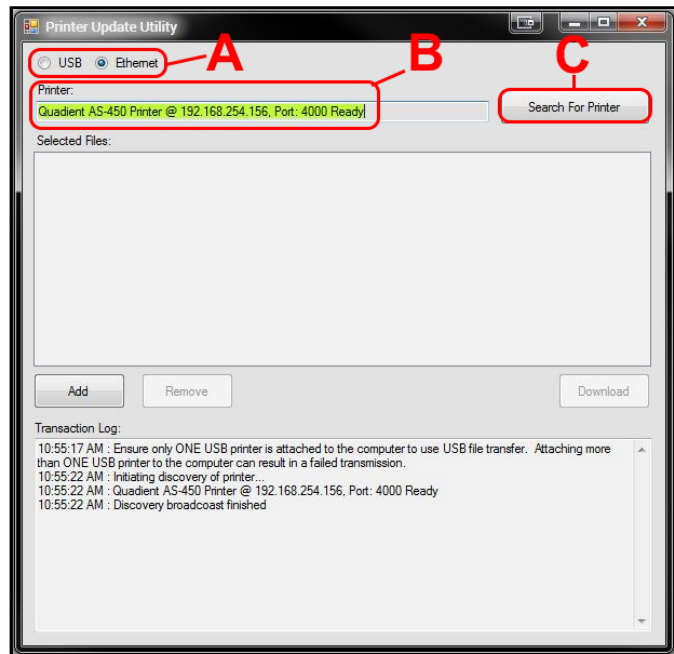
## SECTION 3 SERVICE FEATURES

### To download a firmware update:

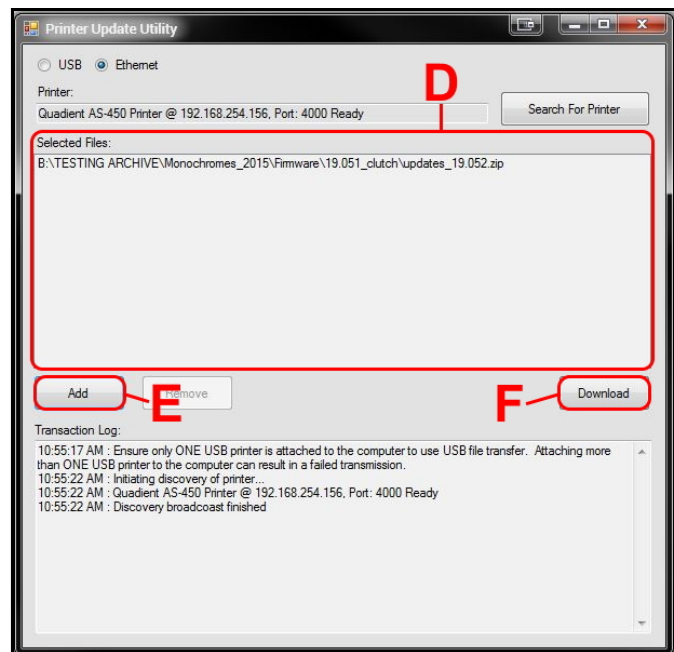
1. Download the update package, (*usually from the manufacturer's website*).
2. Click on the **Printer Update Utility** shortcut icon. The **Printer Update Utility** screen opens.

If not already installed, load the **Printer Update Utility** (*included in the software bundle that came with the Printer*). Notice that a **Printer Update Utility** shortcut icon appears on your computer screen.

**NOTE:** If the **Printer Update Utility** was already loaded on your computer and you don't see the shortcut icon, you can locate it by clicking on **Printer Update Utility** in **All Programs**.

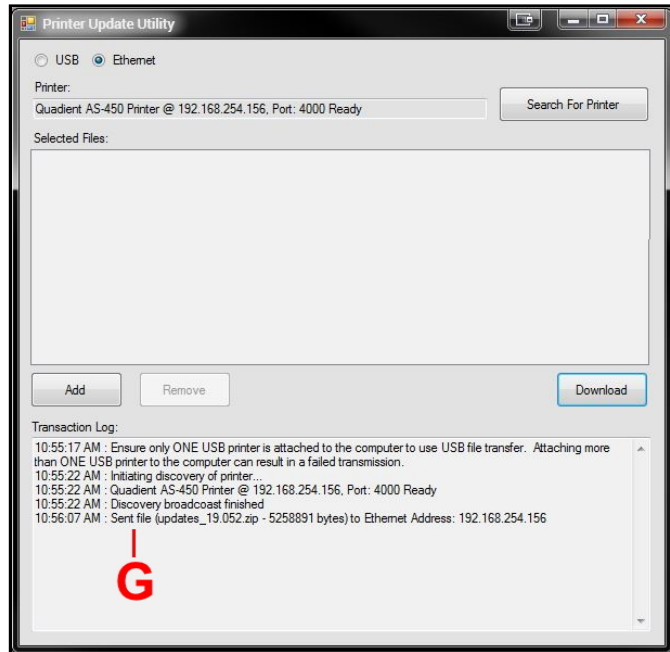


3. Locate a Printer by selecting **USB** or **Ethernet** (*network, shown*) [A]. Devices connected to your computer by **USB** or **Ethernet** (network) will appear under **Printer:** [B].  
**NOTE:** To use **USB** file transfer make sure **only one** USB Printer is connected to the Printer. To use **Ethernet** when one or more Printers are connected to the network, press the **Search for Printer** button [C] to find the first Printer. Press the button again to find the next Printer. **Only one Printer will appear at a time.**
4. **Selected Files:** [D] Click the **Add** button [E] to find the **update files** you downloaded earlier (**Step 1**). Select the file and the press the **Download** button [F] to send the update files to the Printer.  
**NOTE:** Only one Printer can be updated at a time.



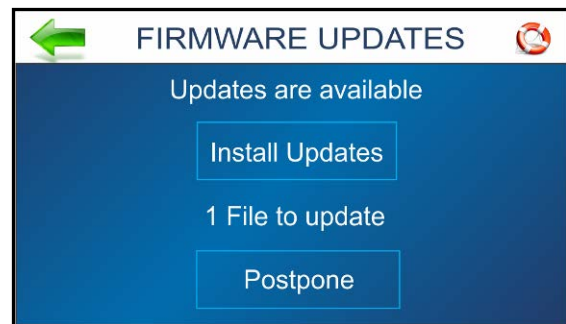


5. **Transaction Log:** Keeps a record of each action taken while the **Update Utility** window is open. After pressing **Download**, a **“Sent file”** message should appear showing that the update file was sent to the Printer (**USB**) or Printer's network address (**Ethernet**) [G]. **NOTE:** The Printer's touchscreen should display that **Firmware Updates** are available for installation. See below.



6. After a short period of time (5-30 seconds), the **“SOFTWARE UPDATES”** screen should automatically appear on the printer.
- Tip:** If the **“Software Updates”** screen doesn't automatically appear, you may be using a USB 1.x or USB 2.0 connection (use USB 3.0 connection), or you may be trying to load an incompatible Firmware (BIOS) file. BIOS 19.xxx, and higher, was developed for LAIRD Processor Boards.

Select **“Install Updates”**.



**Tip:** If you select **“Postpone”**, instead of **“Install Updates”**, you will be presented with the **“SHUTDOWN PRINTER”** screen. If desired, you can back-out of this menu and finish using the printer before performing the update. However, the next time you press the **“Shutdown/Restart”** Key, the **“SOFTWARE UPDATES”** screen will appear. You must select **“Install Updates”** before you will be able to properly shutdown (power-down) the printer.

## SECTION 3 SERVICE FEATURES

- After pressing “Install Updates”, you will be presented with the following screen. Select “Restart” to reboot the printer.

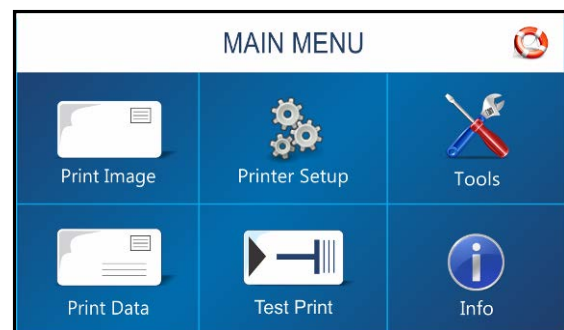


**NOTE:** After pressing “Restart”, the screen will fade-out to white and then the printer will reinitialize (reboot). This may take a few minutes.

**Tip:** If you press “Shutdown”, instead of “Restart”, the printer’s screen will go black, except for a flashing cursor in the upper left-hand corner. Wait for the cursor to stop blinking or for cursor to disappear. Then turn OFF the Main Power Switch. Wait at least 10 seconds before turning ON the Main Power Switch to power-up the printer.

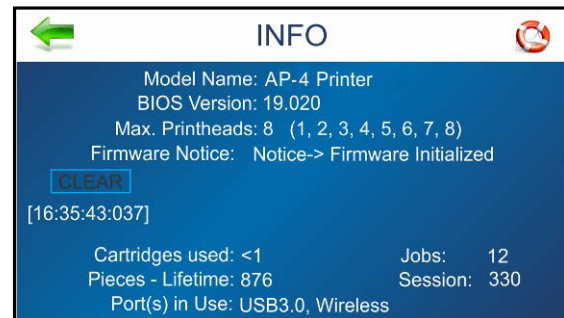
- Once the printer is ON and fully initialized, verify that the correct printer model (Model Name) and Firmware (BIOS) version is displayed on the “INFORMATION” menu.

- Press the “Information” (Info) button, which is located in the “MAIN MENU”.



- The “INFORMATION” screen will open. Verify that the correct Firmware (BIOS) version is displayed. This example shows “BIOS Version: 19.015”.

- Verify that the correct “Model Name” (printer model) is displayed. This example shows “Model Name: AP4 Printer”.

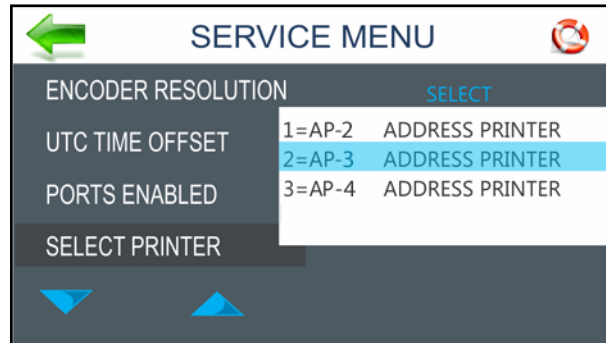


- If the correct “BIOS Version” (firmware version) is displayed, in the “Information” screen, then the update was successful. If not, repeat this process, making sure you are following the instructions carefully. If issue continues, please contact technical support.

10. If the correct “Model Name” is displayed, in the “Information” screen, you can skip to Step 18.

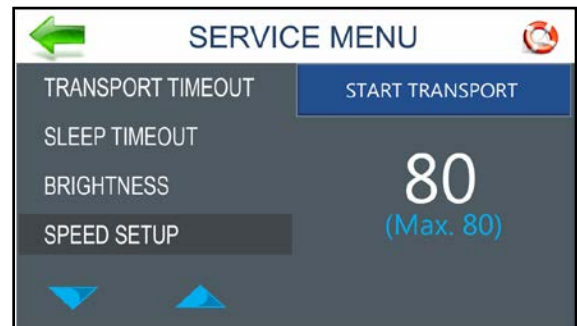
11. If the wrong “Model Name” is displayed, in the “Information” screen, use the following steps to select the correct Model Name.

- a) Press and hold all four mechanical Keys until the “SERVICE MENU” opens.
- b) Scroll to the “SELECT PRINTER” feature.
- c) Select the correct Printer Model from the list.
- d) Press the BACK button.
- e) Press the Shutdown/Restart Key and then select “Restart”.
- f) After the printer reinitializes, go to Step 14 to verify that the correct “Model Name is displayed in the “INFORMATION” screen.

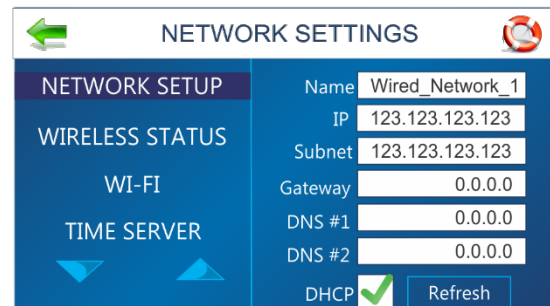


12. Recalibrate Transport Speed Settings.

- a) Remove all media from printer and raise all sheet separators.
- b) Press and hold all four mechanical Keys until the “SERVICE MENU” opens.
- c) Scroll to the “SPEED SETUP” feature.  
**NOTE:** The MAX value shown varies by printer model. AP-2 = 80. AP-3 and AP-4 = 95
- d) Press “START TRANSPORT”. Printer transport will run at MAX speed setting.
- e) Press “SETUP SPEED”. Printer will calibrate and set the four speeds.
- f) When the transport stops and the display shows “CALIBRATING DONE”, you can exit this menu.



13. Verify that the “Network” settings did not change. From “Main Menu” press “Tools” then “Network”. If needed; use the information you recorded, in Step 1, to adjust the Network settings.



14. Verify that the “Printing Preference” selections did not change. From the “Main Menu” press “Printer Setup” then “Printer Preferences”.

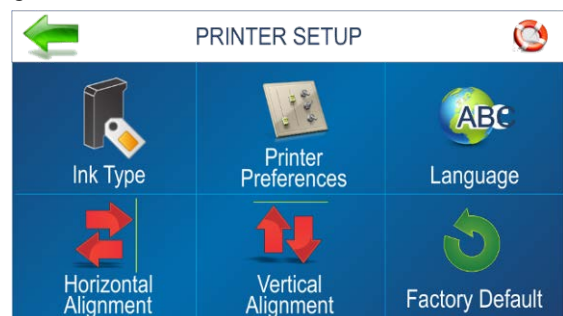
If needed; use the information you recorded, in Step 1, to adjust these settings.

15. Reboot printer to make sure any changes to settings are saved.

16. Close the “Printer Update Utility.”

17. Test Printer for proper operation.

18. DONE.



## *Tools Menu*

Press **Tools** icon on **Main Menu** to open the **Tools** screen.

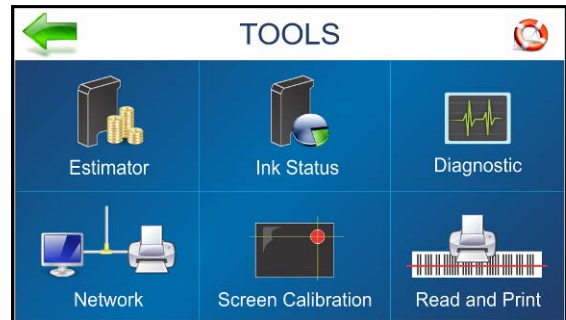
**Estimator:** Select to set up an **Ink Cost Estimate** for a particular print job. The Printer runs, but does not print a preset sample number of pages (*up to 50 pages*) of the job to be printed. (*Set the number of pages in the Print Driver.*) The **Estimator** then determines the estimated ink cost for the entire print job.

**Ink Status:** Select to view the percentage of ink left in the ink cartridges and the estimated number of prints remaining for each cartridge at a selected resolution, based on last page printed.

**Diagnostic:** Select to run diagnostic tests on key Printer systems and components.

**Network:** Set up access to a network. Also set up **Wi-Fi** capability for wireless access to a network. **Wireless Status** displays network information about the Wi-Fi connection. The **Time Server** displays information about the source used for date and time when the Printer is connected to an Internet-connected network.

**Screen Calibration:** Set the touch pressure (*sensitivity*) desired to activate the Touchscreen.



## INK ESTIMATOR

This tool estimates the cost of ink for a particular print job. The Printer runs and simulates printing a preset number of pages. Set the job to print 1-49 pages (*in the Print Driver*) for the printer to make the estimate. Generally, the higher the number of pages sent, the more accurate the estimate.

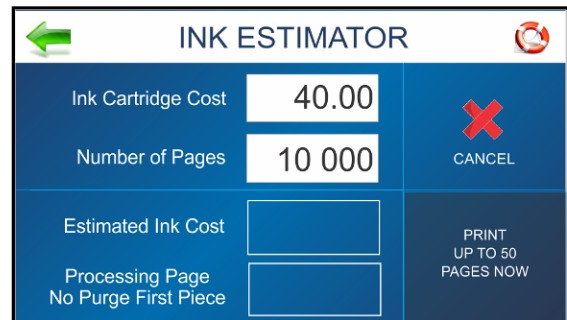
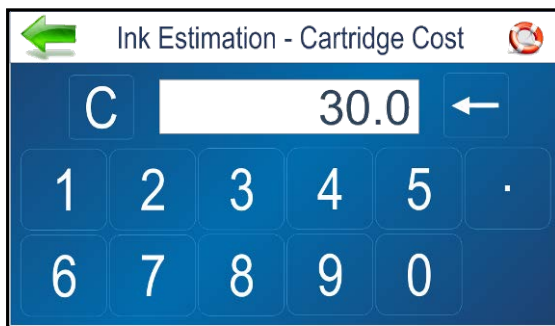
**NOTE:** It is recommended that **Purge First Piece** be turned off. This will use much less ink and increase the accuracy of the estimate.

**Ink Cartridge Cost:** Tap/press the entry box to enter the cost of the ink cartridges.

**Number of Pages:** Tap the entry box to enter the total number of pages for a given job.

**Start Estimation Mode:** Tap or press to start the Ink Estimator.

**Estimated Ink Cost:** Displays the estimated ink cost for the entire print job.



## INK STATUS

Shows the percentage (%) of ink remaining in each Ink Cartridge (HEAD#) and the estimated number of prints (LIFE) remaining at a selected print quality (resolution). Select a **Resolution** from the choices (150, 200, 300, 600) on the right-hand side of the screen.

**NOTE:** Estimation is based on the last page printed.

“-----” or “???????” = **Missing or Unauthorized Cartridge**

See section titled “Supplies – Compatible Inkjet Cartridge” for a list of authorized Inkjet Cartridges.

**Tip:** If an “authorized” Cartridge is installed, remove, clean and dry cartridge contacts. Then re-install Ink Cartridge. If issue continues, replace Ink Cartridge. If problem persists, contact your service representative.

**Ink Status** is also accessible by pressing the **Quick Menu** key on the Control Panel.

A screenshot of the 'INK STATUS' screen. It displays a table with four rows of cartridge information. Each row includes a HEAD#, a progress bar, the cartridge model, the percentage of ink remaining, the estimated number of prints (LIFE), and a resolution value.

HEAD#	%	LIFE	Resolution
[1] AMC-2580	100	10 000	150
[2] -----			200
[3] AMC-Standard	100	10 000	300
[4] ????????????			600

## SECTION 3 SERVICE FEATURES

### DIAGNOSTICS

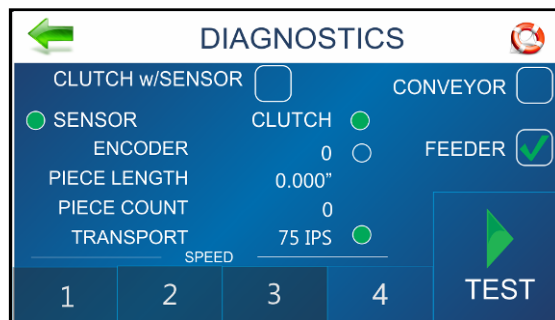
Use to help troubleshoot and identify Printer issues by running tests on Printer components and systems.

Use selections (1, 2, 3, 4) at bottom of screen to control speed (1 = slowest, 4 = fastest).

**CAUTION:** Printer transport will run and printer will feed when TEST is activated. If media is present, it will be fed. Before pressing “TEST”, please be sure that printer has been properly setup to feed the media you plan to use.

Press “TEST” to start the diagnostic cycle. Button will change to “STOP”.

Press “STOP” to stop the diagnostics cycle.



**Sensor (Media Sensor indicator):** Use to test Media Sensor. With at least one piece of media loaded, press TEST to activate diagnostics cycle. SENSOR indicator should turn ON (green, interrupted) as media passes through media sensor and OFF (not interrupted) when no media is present at media sensor. Press “STOP” to end test.

**Tip:** If Sensor condition does not change as media feeds through system; Stop Test. Shutdown and Power OFF the Printer and clean the Media Sensor.

**Encoder (count & indicator):** Use to test the transport systems Encoder signal. Remove media from system. Press TEST to activate diagnostics cycle. Indicator should turn from RED to GREEN if there is any Encoder activity detected. Encoder value (count) should also increment as transport turns. If Indicator stays RED, while transport system is turning, then there is a problem with the Encoder signal. Press STOP to end Test.

**Piece Length:** Use to check accuracy of media transport. First verify that “Clutch w/Sensor” is selected (checked). With one piece of media loaded, press TEST to activate diagnostics cycle. After feeding one piece of media, verify that the piece length was measured accurately (+ - 0.1”). Press STOP to end Test.

If the piece length measured longer than the actual piece length, the media is probably slipping or hesitating as it feeds. In this case, check/adjust the Sheet Separators and Media Thickness settings.

If the media feeds through, but no piece length is displayed, check the Media Sensor and the Encoder.

**Tip:** An accurate Piece Length value also indicates that the Media Sensor and Encoder are performing properly.

**Piece Count:** Counts the number of pieces of media that have been fed during the current diagnostics test session.

**Tip:** If there is a problem with the Media Sensor, the Piece Count will not increment as media is fed.

**Transport (speed):** Use to check system transport speed. Shown as inches per second (IPS), in above image.

**Tip:** If there is no Encoder signal, there will be no Transport speed measurement.

**Clutch (signal indicator):** Displays status of the Clutch activation signal.

OFF = Clutch not activated. ON (green) = Clutch activated. Feed rollers should be turning.

**Tip:** If Clutch signal is ON (green) and transport system is turning, but feed rollers are not turning, this may indicate a problem with the Clutch, Clutch signal/connection or other Feeder components.

**Clutch w/Sensor (check box):** Select how the Clutch (and External Feeder) is activated during Diagnostics Tests.

Unchecked – Remove media from system. Press TEST. The transport system will run and the feed roller Clutch and external Feeder relay will be activated (ON/OFF) using an automated routine. Do NOT feed media during this test.

Checked: Loaded media. Press TEST. The transport system will run and media will be fed with a short pause in-between each piece. As Media Sensor is interrupted, by the media, the Clutch will be deactivated, stopping additional pieces from feeding. Once media passes the media sensor (sensor not interrupted) the Clutch will be activated and another piece will be fed. This process will continue until you press STOP or run out of media.

**Conveyor (check box):** Valid for AP-4 only! Checking/unchecking the box turns the “conveyor speed-up” relay on and off. (*Listen for relay clicking.*)

**NOTE:** At the time of publication, an “interfaced” conveyor, with “speed-up” function, was not available.

**Feeder (external):** Valid for AP-4 only! Checking/unchecking the box turns the “external feeder” relay ON and OFF. (*Listen for relay clicking.*). If an external feeder is connected the feeder should start/stop with this change.

## NETWORK SET-UP

Press the **Network** icon on the **Tools** screen to open the **Network Settings** screen. Select **Network Setup** to enter the settings for connecting the Printer to your network. Enter the Printer Name, IP address, Subnet address, Gateway address, DNS #1 and DNS #2 and select or deselect DHCP as needed. **Refresh** refreshes/updates the network connection.

The screenshot shows the 'NETWORK SETTINGS' screen with a left sidebar containing 'NETWORK SETUP', 'WIRELESS STATUS', 'WI-FI', and 'TIME SERVER'. The 'NETWORK SETUP' option is selected. The main area displays the following configuration:

Name	Wired_Network_1
IP	123.123.123.123
Subnet	123.123.123.123
Gateway	0.0.0.0
DNS #1	0.0.0.0
DNS #2	0.0.0.0
DHCP	<input checked="" type="checkbox"/>

A 'Refresh' button is located at the bottom right of the configuration area.

## WIRELESS STATUS

Once the **Network** and **Wi-Fi** are set up, this screen displays information about the wireless network connection.

The screenshot shows the 'NETWORK SETTINGS' screen with the 'WIRELESS STATUS' option selected in the left sidebar. The main area displays the following configuration:

Name	Wireless_1
IP	123.123.123.123
Subnet	123.123.123.123
Gateway	0.0.0.0
DNS #1	0.0.0.0
DNS #2	0.0.0.0
DHCP	<input checked="" type="checkbox"/>

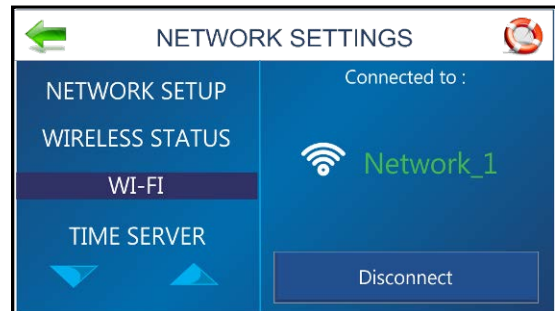
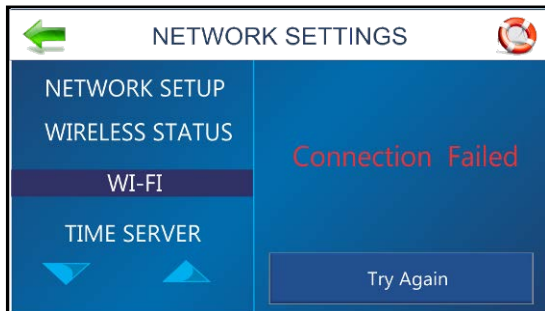
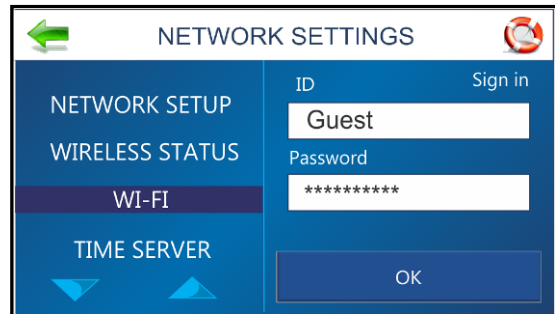
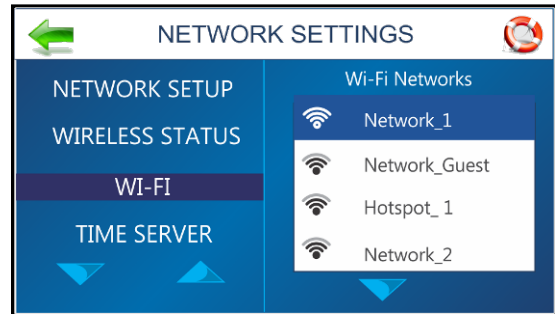
A 'Refresh' button is located at the bottom right of the configuration area.

## SECTION 3 SERVICE FEATURES

### WI-FI SET-UP

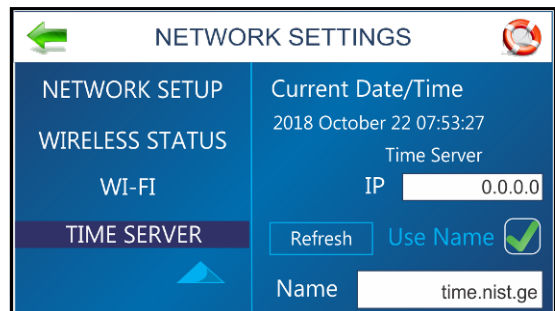
Press the **Network** icon on the **Tools** screen to open the **Network Settings** screen. Make sure the Wi-Fi antenna (*included*) is connected to the Printer's Wi-Fi port.

1. Select **WI-FI**.
2. Select the desired Network from the list of **Wi-Fi Networks**.
3. Enter **User ID** and **Password**. Click **OK**.
4. Screen will show if you are connected to the Network. If connection fails, try again. Check that you are connecting to the correct Network. Check User ID and Password.
5. Click **Disconnect** to end connection.



### TIME SERVER (DATE AND TIME)

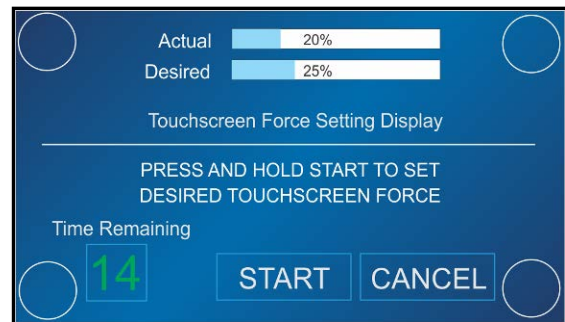
Displays the IP address of the Time Server being used and/or the Time Server's network name.





## TOUCHSCREEN CALIBRATION

Adjust the touch pressure (*sensitivity*) needed to activate functions on the Touchscreen. (*Lower percentage = less pressure, more sensitive. Higher percentage = more pressure, less sensitive.*) Follow instructions on the screen to perform the calibration. **Time Remaining** counts down the 15 seconds given to complete each step. A screen message informs you if the calibration succeeded or failed.



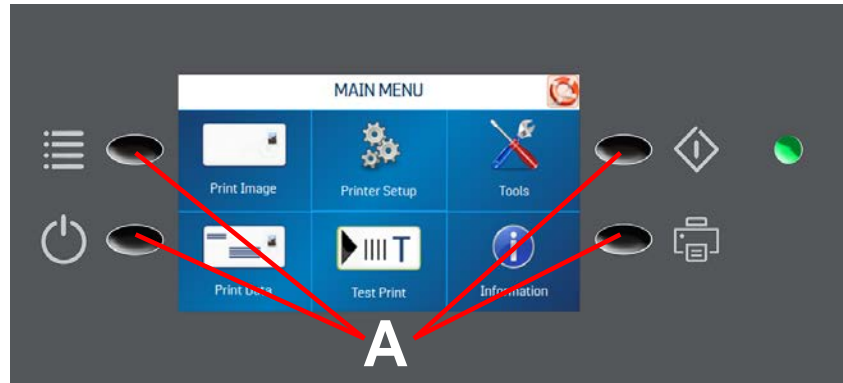
## SECTION 3 SERVICE FEATURES

### Service Menu

**Service Menu** allows you to adjust Printer operation by adjusting the settings, timing, percentage or speed of various Printer functions.

**Open Service Menu** by simultaneously holding down all four Control Panel Keys [A]. Use the **Up** or **Down** arrows to scroll through the menu.

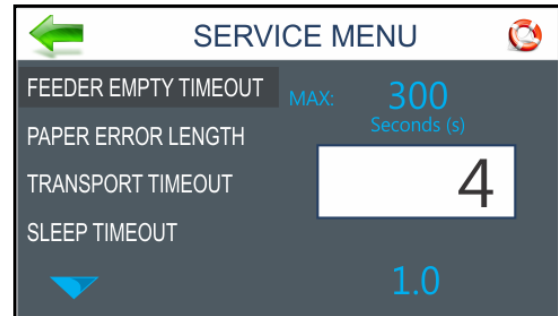
**Exit Service Menu** by pressing the green arrow to return to the regular touchscreens.



### FEEDER EMPTY TIMEOUT

Set the amount of time the Printer will wait after running out of media before it cancels the current job (1 to 300 seconds).

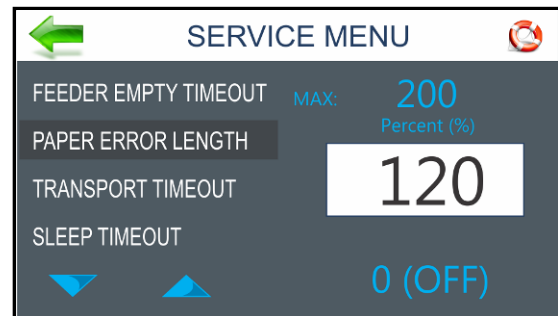
1. Select **Feeder Empty Time-Out**.
2. Press the white entry box to open the numerical keyboard. Enter desired number of seconds. Press the **Enter** key (lower right Arrow on numeric keyboard) to save the new setting.



### PAPER ERROR LENGTH

Set Media Sensor sensitivity to double-feeding media. Set the percentage of media overlap allowed (0 (OFF) to 200% maximum) before a double-feed error stops the Printer.

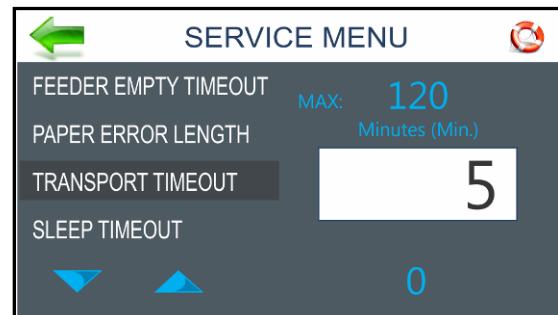
1. Select **Paper Error Length**.
2. Press the white entry box to open the numerical keyboard. Enter desired percentage. Press the **Enter** key (lower right Arrow on keyboard) to save the new setting.



### TRANSPORT TIMEOUT

Set the amount of time the Printer will wait before canceling the current print job after pressing **Pause** or due to a media jam, or performing maintenance or service. (1 to 120 minutes).

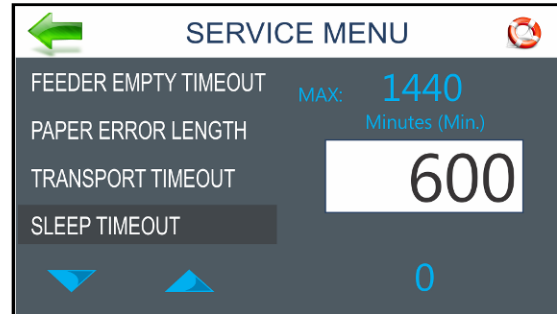
1. Select **Transport Time-Out**.
2. Press the white entry box to open the numerical keyboard. Enter desired number of minutes. Press the **Enter** key (lower right Arrow on keyboard) to save the new setting.



## SLEEP TIMEOUT

Set the amount of time the Printer remains idle before enters **Sleep Mode** to reduce power consumption and to prolong Printer component life. (0 to 1440 minutes.) Tap screen to wake the Printer.

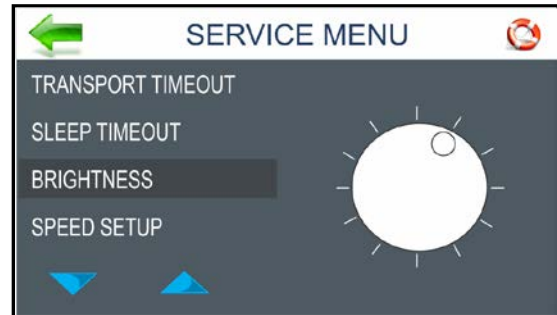
1. Select **Sleep Timeout**.
2. Press the white entry box to open the numerical keyboard. Enter desired number of minutes. Press the **Enter** key (*lower right Arrow on keyboard*) to save the new setting.



## BRIGHTNESS

Brighten or darken the **Touchscreen** display.

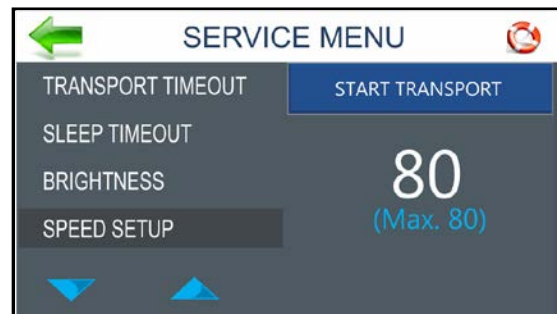
1. Select **Brightness**.
2. Move the small inner circle around the edge of the large outer circle to brighten or darken the **Touchscreen** display.



## SPEED SET-UP

Use **Speed Set-up** to calibrate or reset Printer speeds after replacing the Main PCB Board, SD Card and/or replacing the Speed Control board.

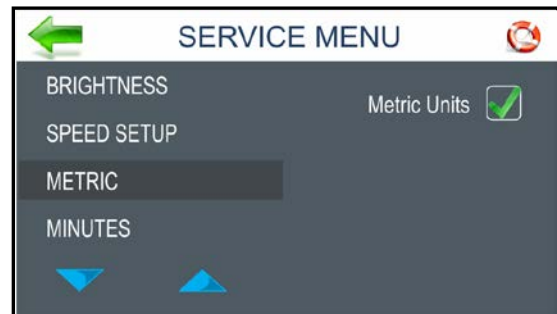
See Section 4, “Print Speed Adjustment” for details.



## METRIC

Switch the Touchscreen display to show either inches/feet or metric (meters) measurements.

1. Select **Metric**.
2. Check the box next to Metric Units to show measurements as meters. Uncheck the box to show measurements in inches/feet.

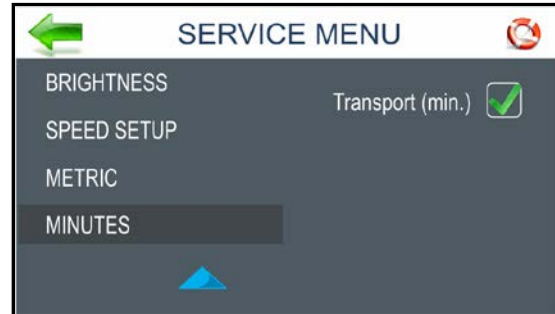


## SECTION 3 SERVICE FEATURES

### MINUTES

Switch the Touchscreen display to show Printer speed in inches/second (meters/second) or feet/minute (meters/minute).

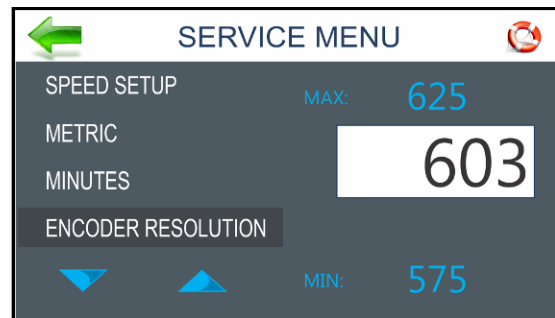
1. Select **Minutes**.
2. Check the **Transport (min.)** box to activate to show speed as per minute. Uncheck box to show speed as per second.



### ENCODER RESOLUTION

Allows you to fine tune the Encoder Resolution to maintain print alignment. **Example:** To adjust for minute thickness variations that might occur when replacing the Transport Roller belt.

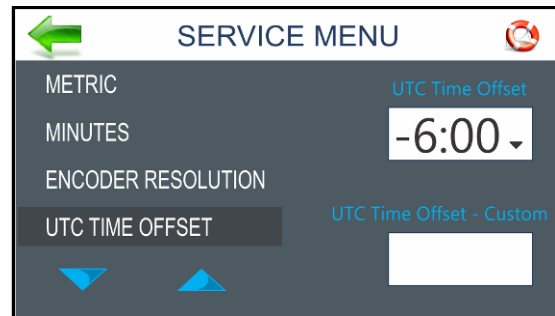
1. Select **Encoder Resolution**.
2. Make very small incremental changes in the setting (pulses/inch, 600 being the standard default). Check print alignment and adjust as needed.  
**NOTE: Generally, a change of more than 5 either way could indicate a larger issue.**



### UTC TIME OFFSET (DATE AND TIME)

Enables an internal date/time clock for the Printer when connected to a Network.

1. Press the **Network** icon on the **Tools** screen to open the **Network Settings** screen.
2. Select **Time Server** to connect to an online Time Server. Select the time difference for your location relative to Greenwich Mean Time.



### PORTS ENABLED

Displays active Printer ports on the Touchscreen display.

1. Select **Ports Enabled**.
2. Check or uncheck the boxes next to the Printer Ports to activate/deactivate the ports.

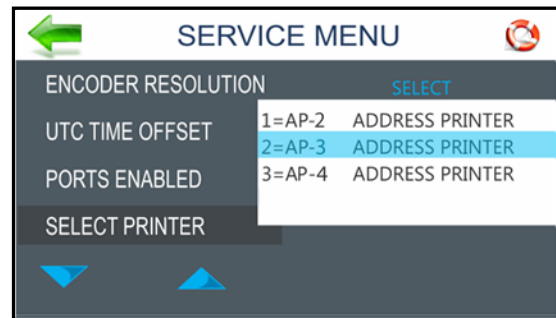


## SELECT PRINTER

After replacing the Main PC Board and /or the SD card, you must manually select which Printer Model the card is installed in for the Printer to function normally.

**NOTE:** You will also have to run the **Speed Calibration** procedure (See *Step 6 in Speed Set-up*).

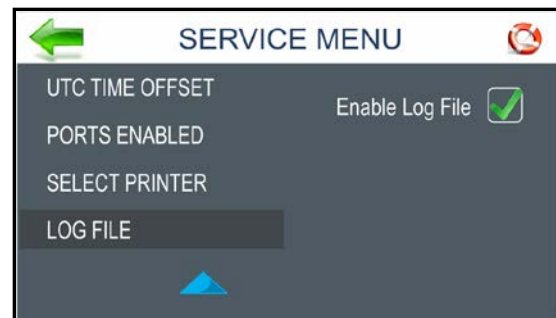
1. Select **Select Printer**.
2. Tap the **Select** box to display the Printer Model list. Select the appropriate Printer Model.
3. After selecting a Printer Model, click the **Power** button on the Control Panel and tap **Restart** to restart the Printer and enter the selection.



## LOG FILE

The **Log File** is useful for technicians when diagnosing a Printer or printing problem. When the **Enable Log File** box is checked, the Printer collects information about the Printer's current set up and status. Unchecking the box or turning the Printer off saves the file to the SD card located in the Main PC Board. **NOTE:** Unchecking the box leaves the last file saved in place. When the box is checked again or the Printer is turned back on while the box is checked, the old **Log File** is erased and a new **Log File** is created.

1. Select **Log File**.
2. Check the **Enable Log File** box. Run the Printer and/or print job.
3. Uncheck the **Enable Log File** box. The **Log File** is saved to the SD card. Retrieve the **Log File** by removing the SD card and placing it in a card reader. Leave box unchecked unless a **Log File** is needed to diagnose a problem.



## SECTION 4 – *Adjustments*

### WARNING!

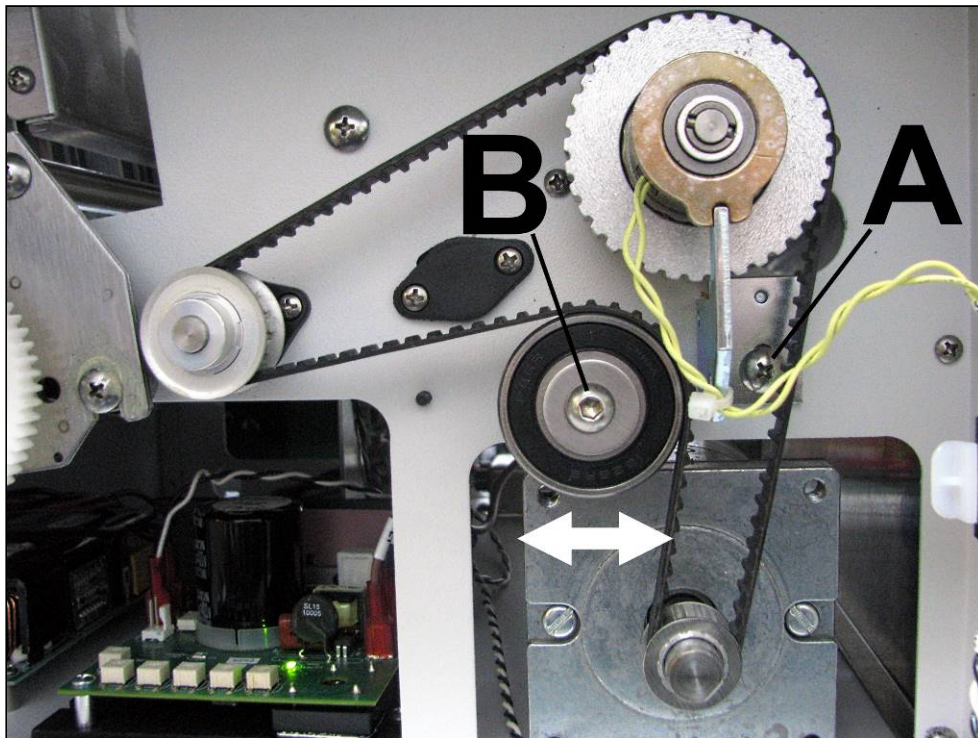
ELECTRICAL ADJUSTMENTS ARE MADE WITH  
PRINTER UNDER POWER. USE NONMETALLIC TOOLS  
WHEN ADJUSTING POTENTIOMETERS ON PC BOARDS.

### *Drive Belt Tension Adjustment*

**REQUIREMENT:** To ensure Drive Belt is properly tensioned.

**ADJUSTMENT:**

1. Unplug Printer and remove Operator Side Cover. (4 screws)
2. Loosen screw [A] that secures Clutch Bracket to Side Frame.
3. Loosen screw in Idler Pulley [B]. Slide Idler right or left to tension Belt. When properly tensioned, there should be about 1/8" of deflection in the Belt. Tighten Idler Pulley screw.
4. Reinstall Side Cover.

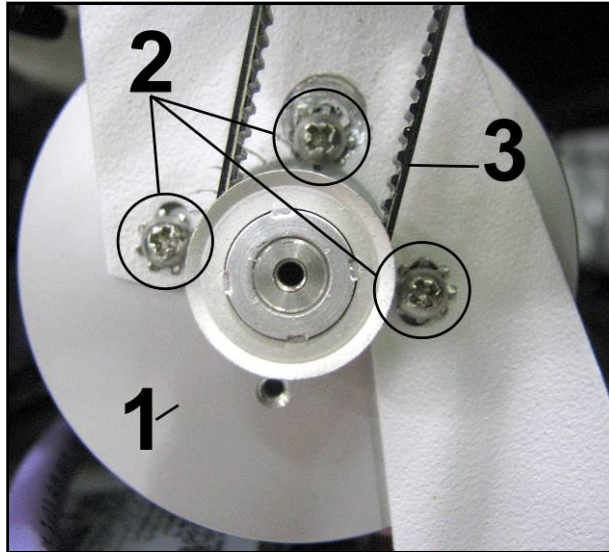


### *Encoder Belt Tension Adjustment*

**REQUIREMENT:** To ensure Encoder Belt is properly tensioned.

**ADJUSTMENT:**

1. Unplug Printer and remove Operator Side Cover. (5 screws)
2. Loosen three screws [2] that mount Encoder to Side Frame.
3. Move Encoder [1] up or down in slots until you obtain about 1/8" deflection in the Belt [3].
4. Tighten three screws [2].
5. Reinstall Side Cover.



## SECTION 4 ADJUSTMENTS

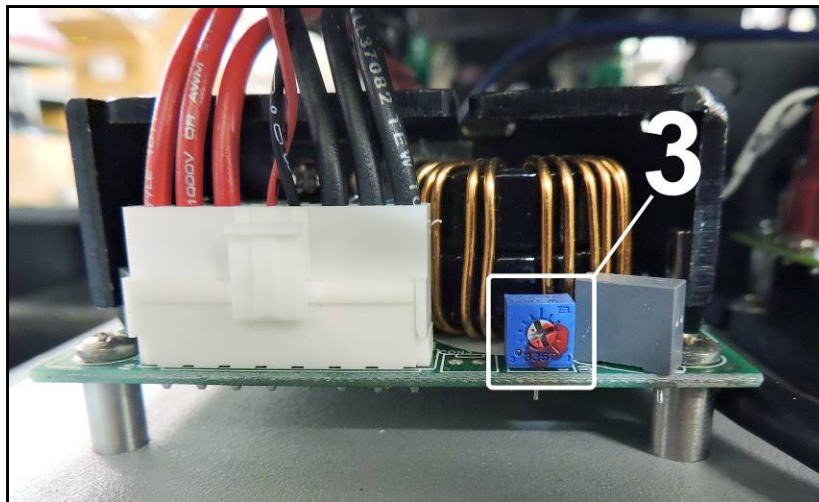
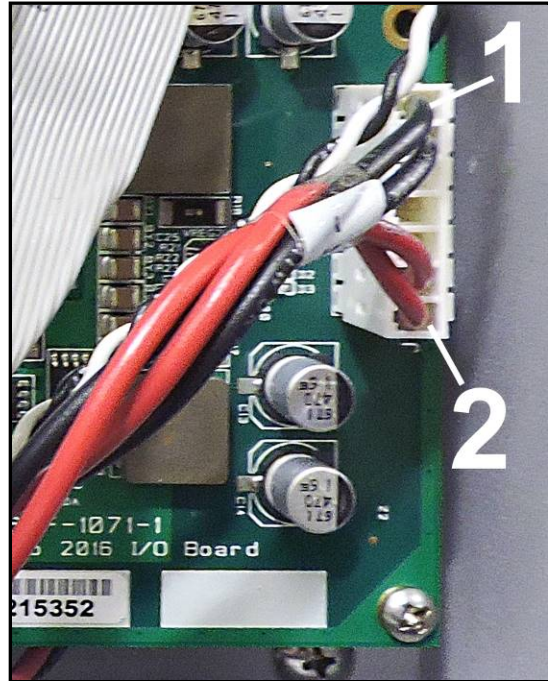
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### *Output Voltage Adjustment*

**REQUIREMENT:** To provide proper output from Power Supply to Printer.

**ADJUSTMENT:**

1. Remove the Non-Operator Side Cover and Operator Side Covers.
2. **Non-Operator Side:** Insert voltmeter probes into ground (Black) [1] and Positive (Red) [2] on the Power terminal plug on the I/O PC Board. Turn Printer **ON**.
3. **Operator Side:** Adjust Potentiometer [3] on Power Supply module to obtain 12 VDC  $\pm$  0.1 V.
4. Turn Printer **OFF**; apply lacquer (such as nail polish) to the Potentiometer.
5. Replace Covers.





## Print Speed Adjustment

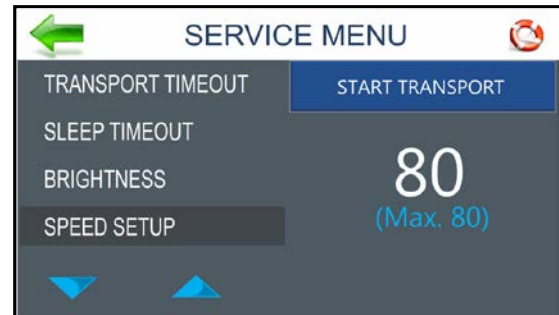
**REQUIREMENT:** To provide proper Printer Speed at each Print Quality Setting.

### ADJUSTMENT:

Use **Speed Set-up** to calibrate or reset Printer speeds after replacing the Main PCB Board, SD Card, and/or replacing the Speed Control. Speed Set-up also allows you to set the maximum speed for your Printer. (*Maximum is 80 inches per second*). Setup will then calibrate the four print speeds in relation to the set maximum speed. **For example:** If **Maximum Speed** is set at 80, the Printer will set the speeds as follows: **1** (20 ips), **2** (40 ips), **3** (60 ips), **4** (80 ips). **NOTE:** Speeds may vary slightly ( $\pm 1$  or 2 ips).

#### To check or set new Printer speeds:

1. **Printer power is ON.**
2. Remove the Operator Side Cover.
3. Open **Service Menus**. Select **Speed Setup**.
4. Select **Speed Set-up**.  
To set the Printer to other than the default Printer speeds, go to **Step 5**.  
To calibrate the Printer using the default speeds, skip to **Step 6**.



5. **To set a different Maximum Speed** (**NOTE: Use a plastic screwdriver to make adjustments**):

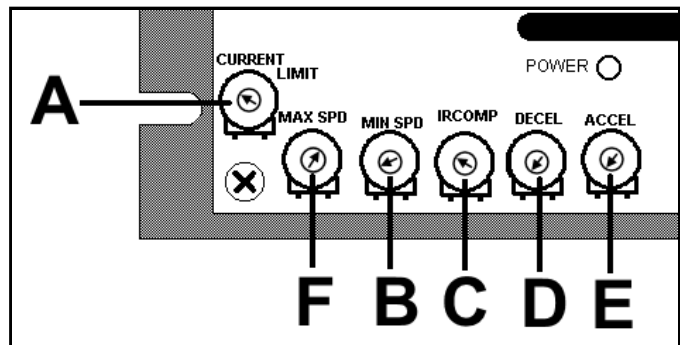
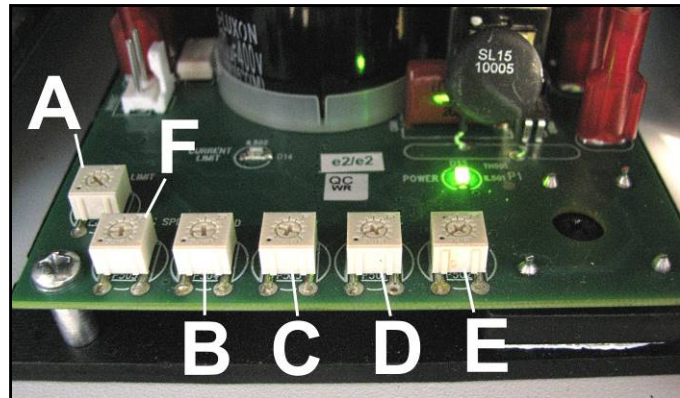
**[A] Check/Adjust Current Limit:** Check that the **Current Limit Potentiometer** points to the 10-o'clock position.

**[B] Check Minimum Speed:** With the potentiometer in the **Minimum** position (*full CCW*), start turning it CW until the Rollers start turning. Then gradually turn the potentiometer CCW until the Rollers stop. Turn CCW a few more degrees after that. Mark the position with nail polish.

**[C] IR Compensation:** Check that the **IR Compensation potentiometer** points to the 10-o'clock position.

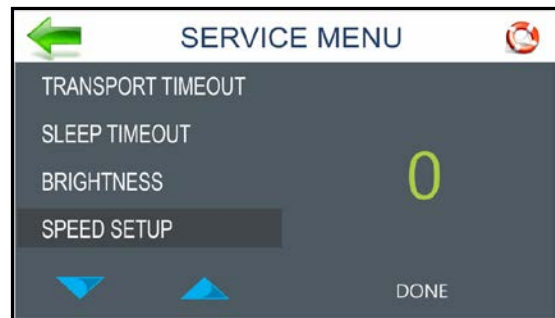
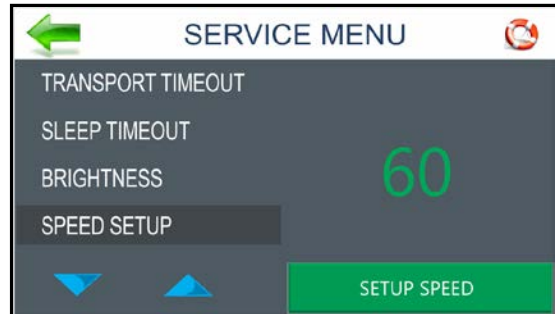
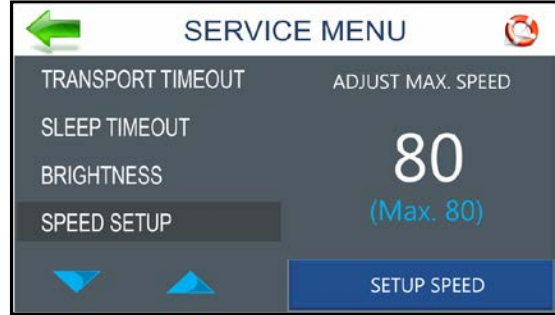
**[D], [E] Potentiometers:** Check that potentiometers are at the **Minimum** position (CCW).

**[F] Set desired Maximum Speed:** Use a small plastic screwdriver to set a desired **Maximum Speed** (*less than 80*) by adjusting the **Max Speed Potentiometer** on the Speed Control. Watch the Touchscreen display until you get the desired speed. **Go to Step 6.**

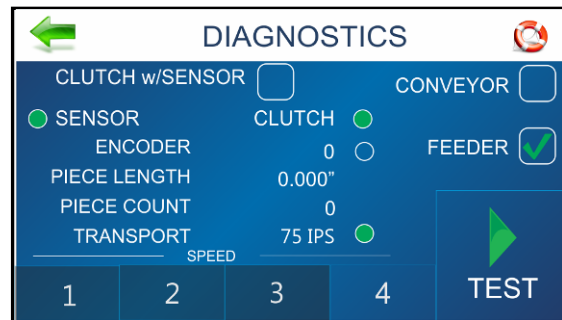


**SECTION 4  
ADJUSTMENTS**

6. **To Calibrate the Speeds:** Press **Set-up Speed**.  
 Printer will start calibrating the four Printer speeds in the following order:  
**4** (*maximum speed*), **3**, **2**, **1** (*minimum speed*).  
 When calibration is done, transport will stop and screen displays **“0 DONE”**.



7. Check the new speed settings by exiting the **Service Menu** screen and opening the **Diagnostic** screen in the **Tools Main Menu** screen. Press **Start Test**. Press Printer speeds **1-4** to see the Printer speeds displayed in the **Transport** line of the display. If the speeds are within  $\pm 1$  or 2 ips this is normal. If variation is higher, adjust speeds as necessary by returning to the **Service Menu**.

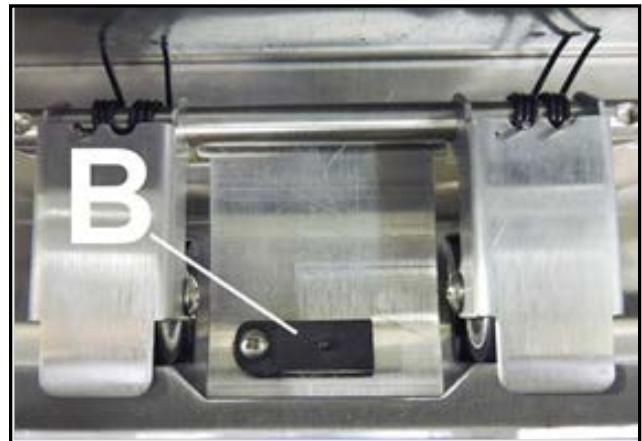


## Printer Media Sensor Test & Adjustment

**REQUIREMENT:** To ensure that the Media Sensor senses media or to adjust a new Sensor when it is installed.

### PREPARATION

1. Make sure that no media is covering the hole in the Center Plate, above the Media Sensor [A]
2. Make sure the Reflector [B] is installed.
3. Make sure Sensor and Reflector surfaces are clean.



### MEDIA SENSOR TEST:

1. Turn Printer ON.
2. Remove all media from printer.
3. From printer's Main Menu tap **Tools** and then tap **Diagnostics**.
4. Press **TEST**.  
The printer's transport system will turn ON.
5. Feed a single piece of media and observe the **SENSOR** indicator in the Diagnostics menu.  
The **SENSOR** indicator should turn Green while the sensor is interrupted by the media.  
The Piece Count should increment by 1.  
If this does NOT occur, sensor adjustment or replacement may be needed.  
See next page for Media Sensor Adjustment procedure.



## SECTION 4 ADJUSTMENTS

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### MEDIA SENSOR ADJUSTMENT:

1. Properly Shutdown the printer. Then turn OFF the Main Power Switch and unplug the Power Cord.
2. Remove Side Covers to access the Media Sensor.
3. Connect the Power Cord and Turn the Printer ON.
4. With no media present (sensor not interrupted) both lights (orange and green), located on the side of the Media Sensor [A], should be ON, as simulated in picture.  
If this is what you are observing, skip to Step 7.

5. If both lights (orange and green) are OFF, then there is no power to the sensor or sensor is bad.

**TIP:** The green light is the power light. If green light is OFF, check to make sure sensor cable and all other cables are properly connected to I/O Board before replacing sensor. If issue continues, replace sensor.

**CAUTION:** Do NOT connect/disconnect cables with printer powered-up. Damage to electronics may result.



6. If the Green light is ON and Yellow light is OFF, use a small plastic flat screwdriver to turn potentiometer, fully clockwise (MAX). Potentiometer is located on bottom of Media Sensor, as shown here.

If Yellow light does NOT Turn ON, with potentiometer set to MAX, check to be sure reflector is present and clean. If issue continues, replace sensor.



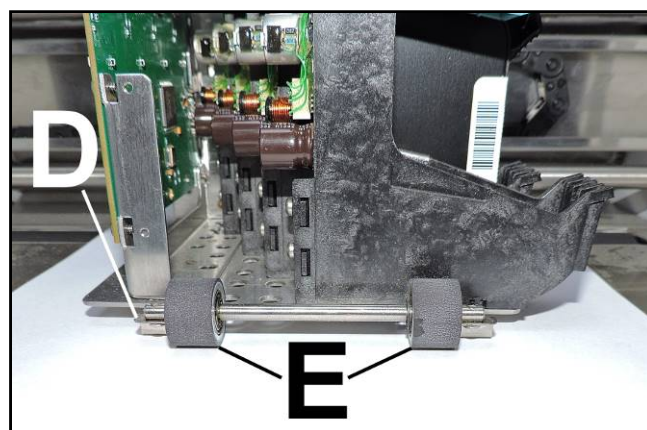
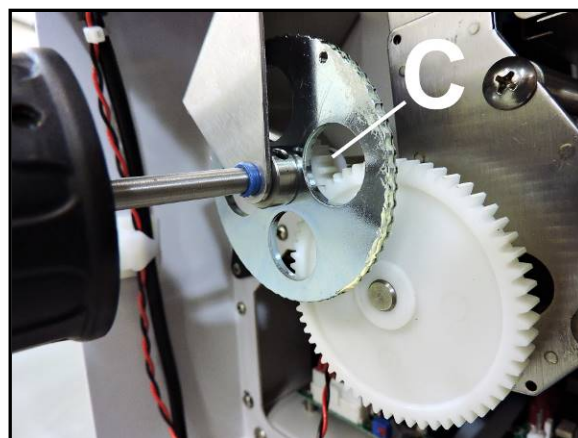
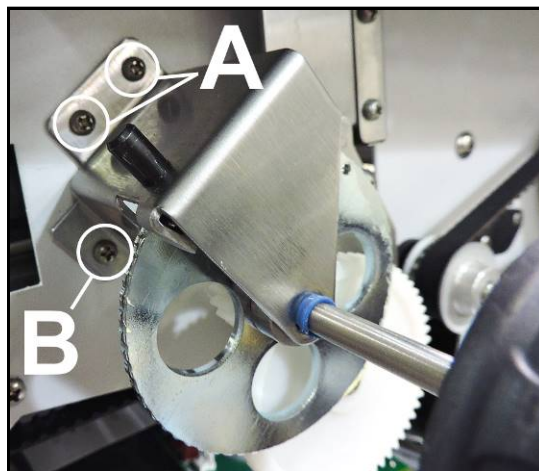
7. Position a piece of media so it is interrupting the Media Sensor (covering the hole in Center Plate). The Orange light should turn OFF and Green light should stay ON.
8. Remove the media so it is NOT interrupting the Media Sensor (NOT covering the hole in Center Plate). The Orange light should turn ON and the Green light should stay ON.
9. If you don't get the sensor responses indicated in Steps 7 & 8 above, properly Shutdown and unplug the printer. Then replace the Media Sensor and repeat from SENSOR ADJUSTMENT Step 3. If issue continues after replacing sensor, then this indicates a problem with Reflector and or I/O Board.

## Printhead Carriage Assembly Adjustment

**REQUIREMENT:** To ensure that the Printhead Carriage Assembly is properly positioned when the Media Thickness Knob is set to the “0” position.

### ADJUSTMENT:

1. Turn Media Thickness Knob to its “0” (*lowest*) position.
2. Unplug the Printer and remove the Operator Side Cover (4 screws).
3. Remove (2) Media Thickness Knob Bracket screws [A] and loosen the third screw [B], this will allow the Knob Assembly to pivot slightly. Pivot the Knob Assembly just enough to disengage the small white gear [C] on the Assembly from the large white gear.
4. Place a piece of media under the Printheads [D]. Turn the large white gear to lower the Printhead Carriage Assembly until the Carriage contacts the media. This is the “0” point.
5. Pivot the Knob Assembly so the small gear meshes with the large gear. Hold the Assembly in place while reinstalling and tightening the (3) mounting screws.  
**NOTE: Ideally, with media removed and Carriage Assembly in its lowest position, the Carriage will allow the Transport belts to turn freely.**
6. Check that the Printhead Carriage wheels [E] are aligned evenly on the Exit Roller. If not, carefully adjust the supports holding the wheels until the wheels are even.



## Brake Adjustment

**REQUIREMENT:** To provide proper tension on Feed Shaft Brake Assembly for proper operation of the Feed Shaft and feeding of media.

### ADJUSTMENT:

1. Disconnect Printer from power source.
2. Remove Non-Operator Side Cover.
3. Reconnect Printer to power source and turn it ON.
4. Open the **Diagnostics Touchscreen**. Starting with the slowest speed [1], press TEST and observe the Feed Rollers. The Rollers should stop at exactly the same time as the Clutch does.  
**If the Rollers continue to move after the Clutch stops, adjust as follows:**
5. Press TEST to start and stop the Printer to make adjustments. Starting with the slowest speed [1], turn the brake tension adjusting screw [1] clockwise until the Brake exerts just enough drag on the Rear Feed Roller so the Roller stops with the Clutch.
6. Repeat the procedure with each of the speeds until the Roller stops with the Clutch at all speeds.

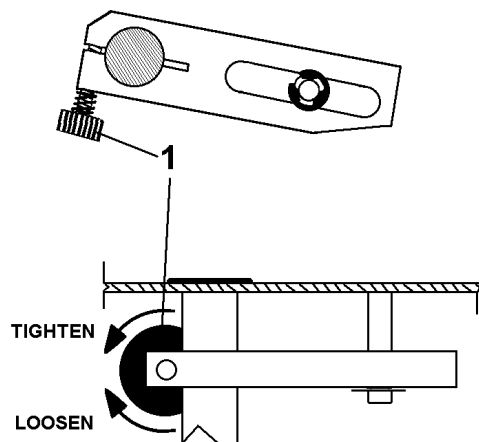
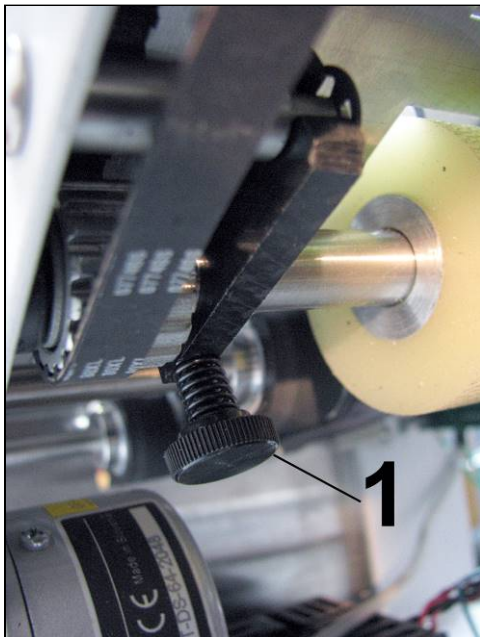
**NOTE: DO NOT OVER-TIGHTEN.**

7. Stop the TEST. Turn the Printer OFF, disconnect from power source. Reinstall Covers.

### WARNING!

DO NOT PLACE HANDS OR TOOLS INSIDE THE PRINTER WHILE IT IS RUNNING TO AVOID SEVERE SHOCK OR INJURY.

USE THE DIAGNOSTIC TEST BUTTON TO STOP THE PRINTER BEFORE MAKING ANY ADJUSTMENTS.



## SECTION 5 – *Disassembly/Assembly Procedures*

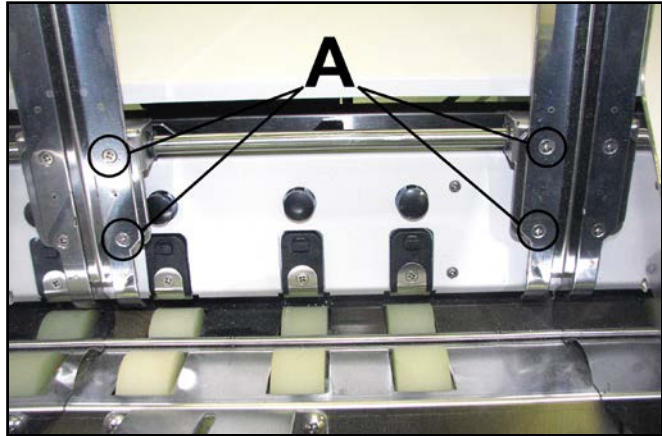
### *Basic Disassembly*

- Turn off power.
- Disconnect Power Cord.
- Disconnect USB [1] and Network [2] Cables.



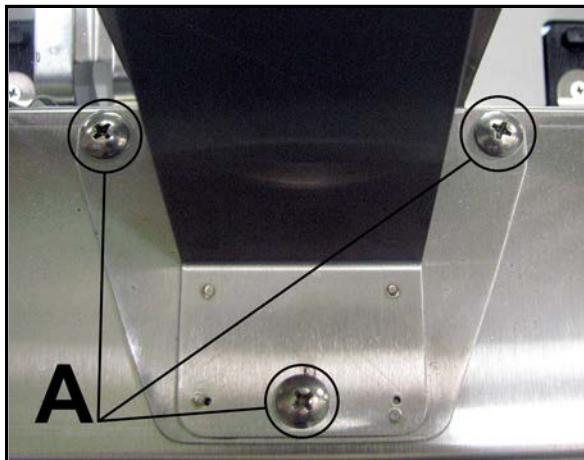
### **Remove Side Guides**

Remove four screws [A] (*two each side*).



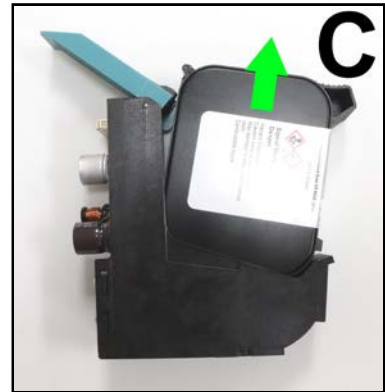
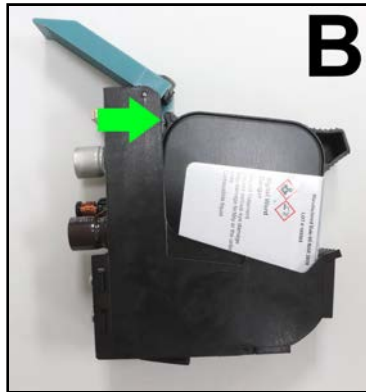
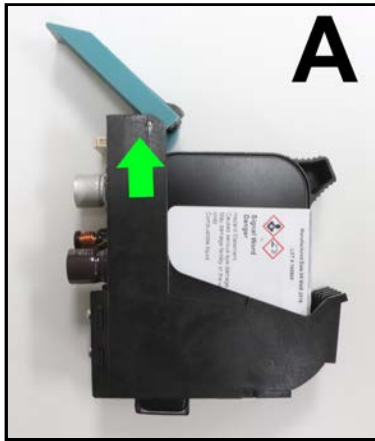
### **Remove Rear Media Support**

Remove three screws [A] (*as shown*).  
Lift assembly from machine.



**SECTION 5  
DISASSEMBLY – ASSEMBLY**

**Remove Print Cartridges**

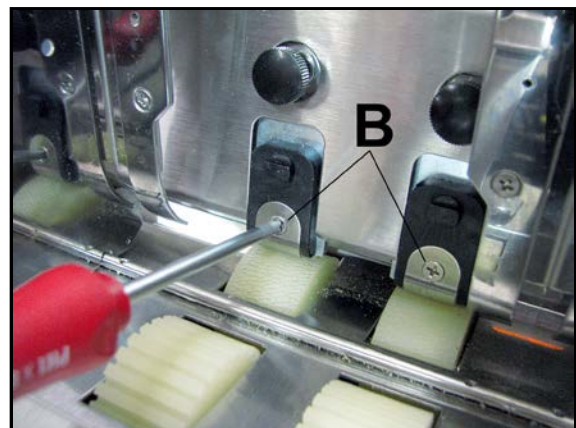
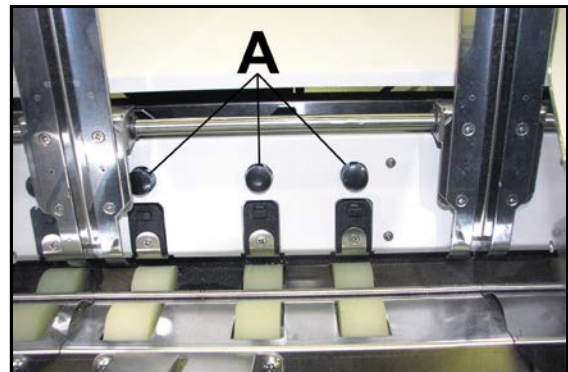


1. Open Latch Lever.
2. [A] Lift the Cartridge straight up until it stops (about 1/4").  
[B] Pivot the Cartridge just enough so the tab on the Cartridge clears, but still touches the edge of the Latch Lever.  
[C] Lift the Cartridge straight up and out of the Holder.  
**NOTE: Be careful not to bend the contact pins in the Holder or damage the surface of the Cartridge Printhead. (See cutaway image at right)**



**Remove Separator Tips**

1. Before replacing Separator Tips, unplug Printer.
2. Loosen Separator Locking Knob [A].
3. Use a Phillips screwdriver and remove screw holding metal cover over Separator [B]. Use screwdriver tip to pry Separator Tip out of its holder.
4. Replace Separator Tip, reinstall metal cover and crew. **DO NOT** overtighten.





### *Service Disassembly Procedures*

NOTE: The following disassembly should only be performed by a qualified, trained service representative.

#### **WARNING!**

THE FOLLOWING DISASSEMBLY SHOULD ONLY BE DONE BY A QUALIFIED, TRAINED SERVICE REPRESENTATIVE.

#### **WARNING!**

ALWAYS POWER DOWN PRINTER BEFORE CONNECTING OR DISCONNECTING ANY WIRING HARNESSSES OR CABLE CONNECTIONS TO AVOID SERIOUS SHOCK OR INJURY.

#### **CAUTION**

- ALWAYS USE APPROPRIATE PERSONAL PROTECTION EQUIPMENT (PPE).
- DISPOSE OF ALL MAINTENANCE WASTE IN ACCORDANCE WITH LOCAL REGULATIONS.

#### **CAUTION**

USE ELECTROSTATIC DISCHARGE (ESD) PROTECTION WHEN WORKING AROUND ELECTRONIC DEVICES:

- USE STATIC-FREE WORKSTATIONS WHEN UNIT COVERS ARE REMOVED.
- WEAR GROUNDED WRIST STRAPS WHEN WORKING ON UNIT.
- TRANSPORT ELECTRONIC SUBASSEMBLIES IN SEALED STATIC-SHIELDING PACKAGING.

#### **CAUTION**

Double pole/neutral fusing. For continued protection against risk of fire, replace only with same type and rating of fuse.

#### **MISE EN GUARD**

Fusible bipolaire / neutre. Pour protéger contre le risque d'incendie, remplacez avec le même type et la même classe de fusible.

## SECTION 5 DISASSEMBLY – ASSEMBLY

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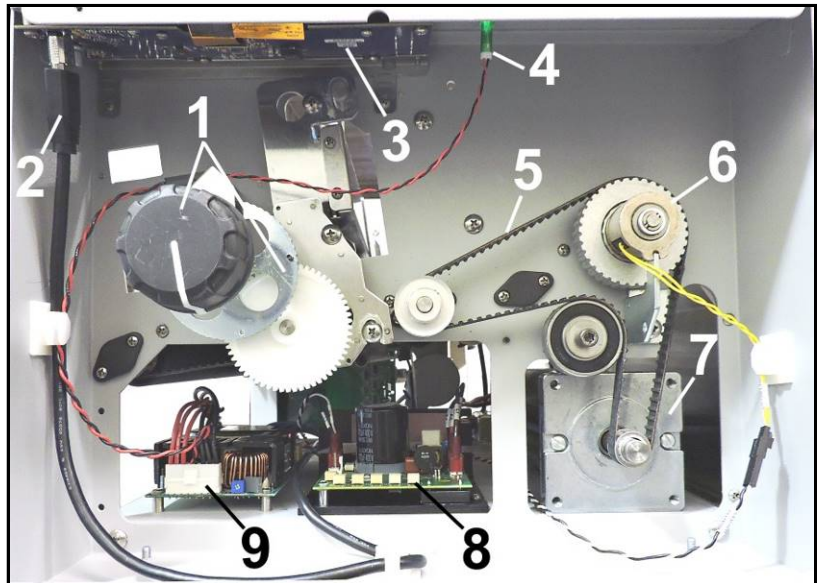
### Remove Operator Side Cover

1. Remove two screws from bottom of Operator Side Cover. Remove two screws from top of Operator Side Cover.
2. Reassemble in reverse order.



### Identifying Components behind Operator Side Cover:

1. Media Thickness/Printhead Lift Assembly
2. Control Panel Cable (to Interface PC Board)
3. Control Panel PC Board
4. Power Indicator Light
5. Drive Belt
6. Clutch Assembly
7. Drive Motor
8. Speed Control
9. Power Supply



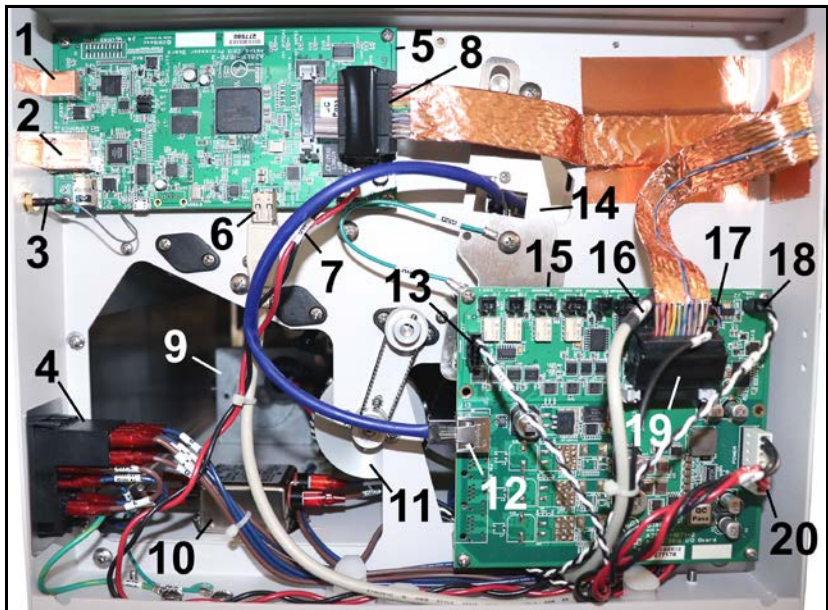
### Remove Non-Operator Side Cover

1. Remove two screws from bottom of Non-operator Side Cover. Remove two screws from top of Cover.
2. Remove Cover.



### Identifying Components behind Non-Operator Side Cover:

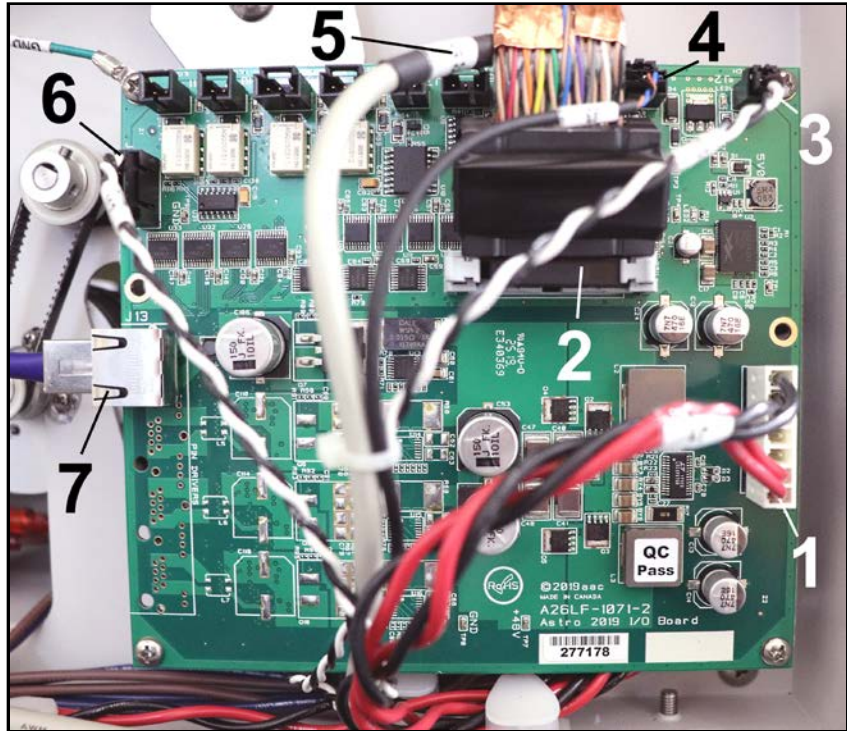
1. USB 3.1 Port
2. Ethernet Port
3. WiFi Port
4. Power Switch/Fuse/  
Power Receptacle
5. Main PC Board
6. Control Panel PC  
Board Terminal
7. Main PC Board Power  
Terminal
8. Main PC Board to I/O PC  
Board Terminal
9. Printer Motor
10. Power Supply In-Line Filter
11. Encoder Assembly
12. Printhead Carriage Terminal
13. Speed Control Terminal
14. Printhead Lift Assembly
15. I/O PC Board
16. Encoder Terminal
17. Media Sensor Terminal
18. Clutch Terminal
19. I/O PC Board to Main PC Board Terminal
20. I/O PC Board Power Terminal



## SECTION 5 DISASSEMBLY – ASSEMBLY

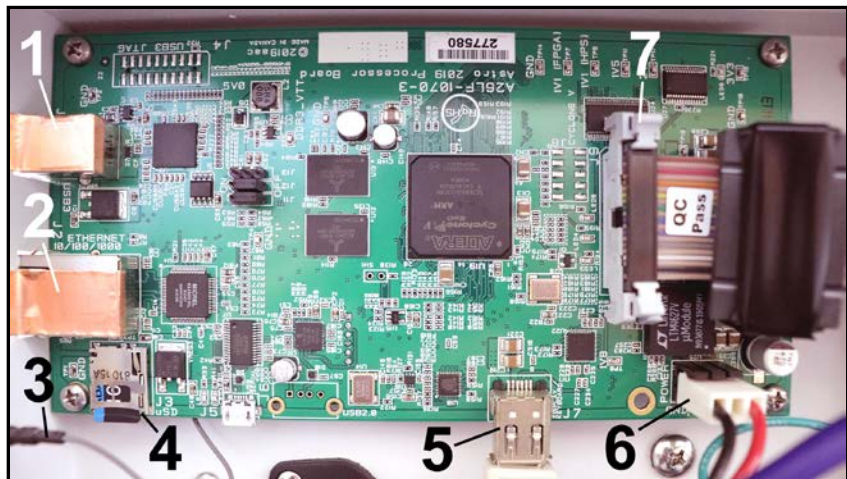
### I/O Board Connections

1. Power Supply (POWER, J1)
2. I/O PC Board to Main PC Board Terminal (J15)
3. Clutch (J2)
4. Media Sensor (J3)
5. Encoder (J5)
6. Speed Control (J12)
7. Printhead Carriage (J13)



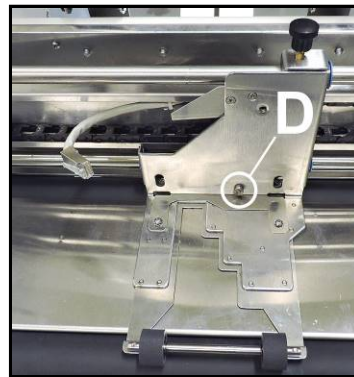
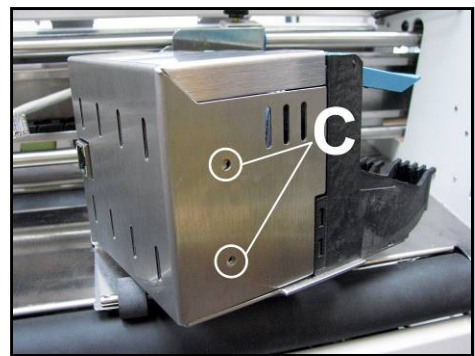
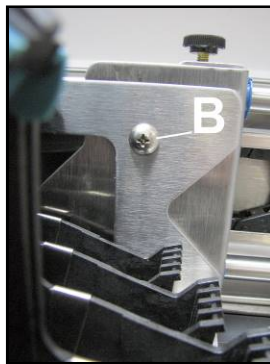
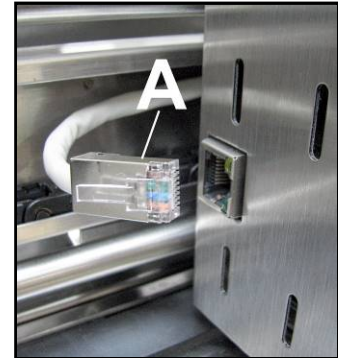
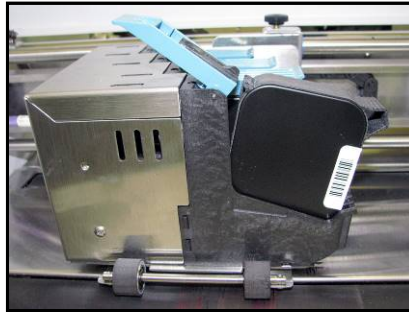
### Main PC Board Connections

1. USB 3.1 Port (J1)
2. Ethernet Port (J2)
3. Wi-Fi Connector (*snaps on backside of PC Board*)
4. SD Card Port
5. Control Panel PC Board Terminal (J7)
6. Power Cable (J10)
7. Main PC Board to I/O PC Board Terminal (J9)



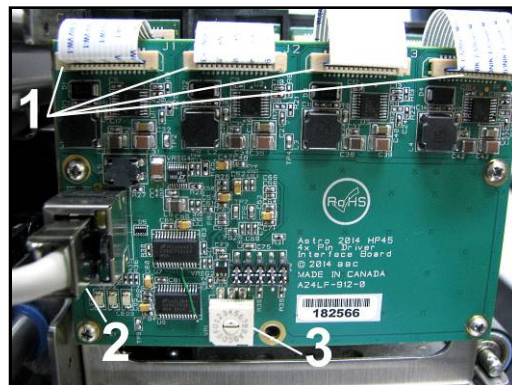
### Remove Printhead Assembly

1. Remove Inkjet Cartridges. Disconnect Printhead Carriage Cable from Port [A].
2. Remove (1) screw securing Printhead Assembly to Frame [B]. Lift the Printhead Assembly out of the Printer.
3. Remove the Printhead Carriage Assembly Cover [C]. (4 screws, 2 per side)
4. Reinstall in reverse order. **NOTE:** Assembly must be fitted over the alignment peg [D] on the Carriage Frame when reinstalling.



### Printhead Carriage PC Board Connections

1. Connectors to Printhead Carriage PC Boards (J1, J2, J3, J4)
2. Printhead Carriage Cable Port (to I/O PC Board)
3. Potentiometer (VR1)  
**NOTE:** Check that the potentiometer is set for the number of heads for that assembly. For example, 4-head Printhead Assembly set at 4; 3-head assembly set at 3; 2-head assembly set at 2.



## SECTION 5 DISASSEMBLY – ASSEMBLY

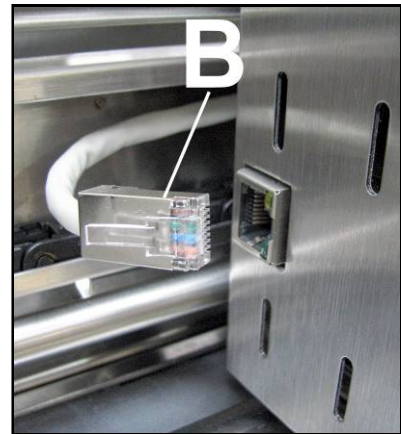
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### Remove Printhead Wire Harnesses and/or Wire Harness Conduit Chain

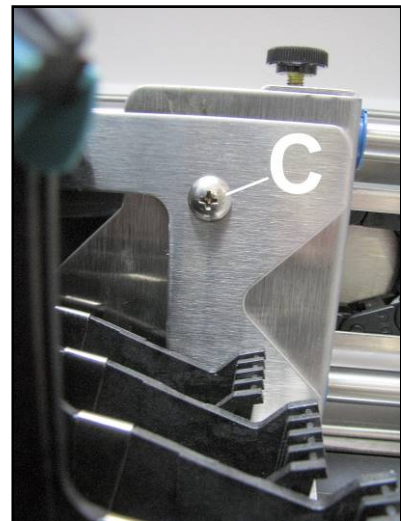
1. Remove Non-Operator Side Cover.
2. Disconnect Printhead Carriage wire harness [A] from I/O PC Board (J13).



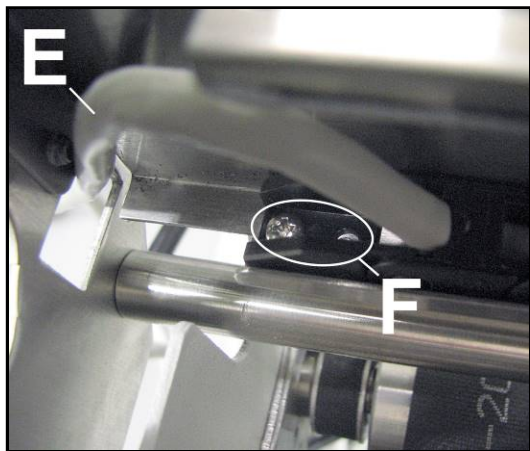
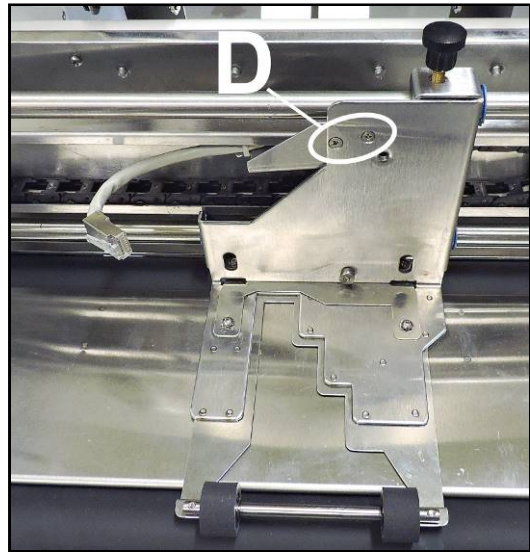
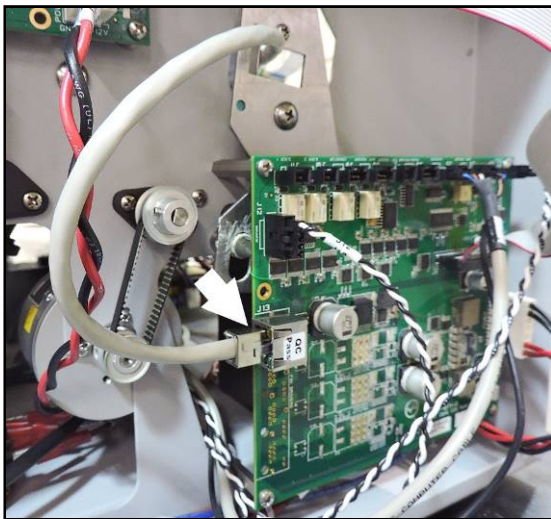
3. Disconnect Printhead wire harness [B] from the Printhead Carriage Assembly.
4. Remove the Printhead Cartridges.



5. Remove (1) screw securing Printhead Carriage Assembly to frame [C]. Lift Printhead Carriage Assembly off of the alignment peg and set Assembly aside.



6. Remove (2) screws securing the Wire Harness Conduit Chain Channel Assembly [D] to the Printhead Carriage Assembly.
7. [E] Carefully pull the other end of the Printhead Wire Harness through the Side Frame into the Transport area.  
[F] Carefully bend the Printhead Wire Harness up until it clears the screws securing the Conduit Chain to the Wire Harness Channel. Remove the 2 screws.
8. Remove the wire harness and Conduit Chain Assembly from the Wire Harness Channel. **NOTE: Slide the Printhead Carriage out of the way if necessary.**
9. Reinstall in reverse order.



### Remove Printhead Lift Assembly

1. Remove Operator and Non-Operator Side Covers.
2. Disconnect Printhead Assembly wire harness [A] from the I/O PC Board. Cut the cable tie securing the wire harness to the Lift Assembly Bracket. Carefully pull the Wire Harness end back through the Printer Side Frame into the Printer Transport area.
3. To prevent damage, remove the I/O Processor PC Board and carefully move out of the way (4 screws). **NOTE: DO NOT strain or damage wires.**



4. Remove Printhead Carriage and Lift Assemblies:

[A] Remove Printhead Carriage Support screws (2 per side).

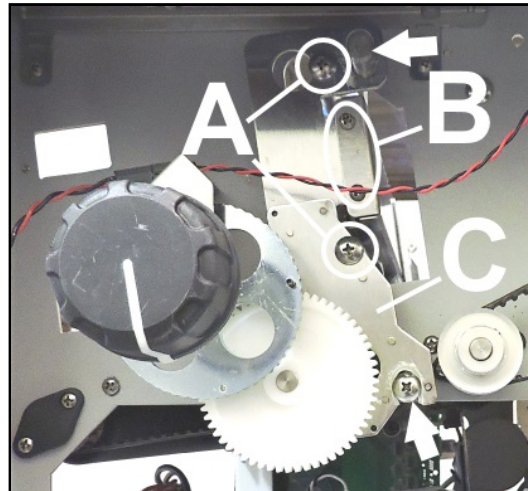
[B] Remove Printhead Wire Harness Conduit Chain Assembly screws (2 per side).

[C] Remove Lift Assembly Mounting Brackets (1 each side).

**IMPORTANT!**

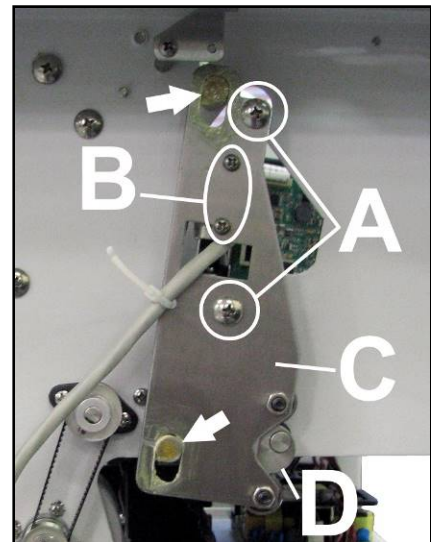
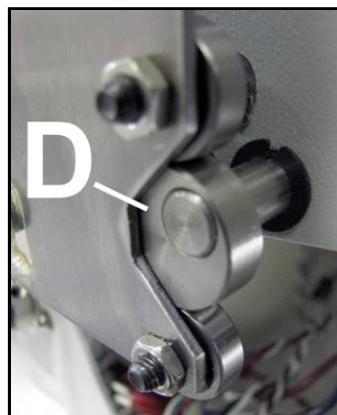
Note the position of the Camshaft cams [D] BEFORE removing the Mounting Brackets. Reinstall the Cams in the same position when reassembling. The Lift Assembly will not operate properly if the cams are installed in a different position.

[E] Open Top Cover. Maneuver Printhead Carriage Assembly toward Operator Side so it can be lifted out of the Printer.



5. Reinstall in reverse order. You may have to apply fresh white lithium grease to the top and bottom studs for the Lifting Brackets and cams on each side (arrows).

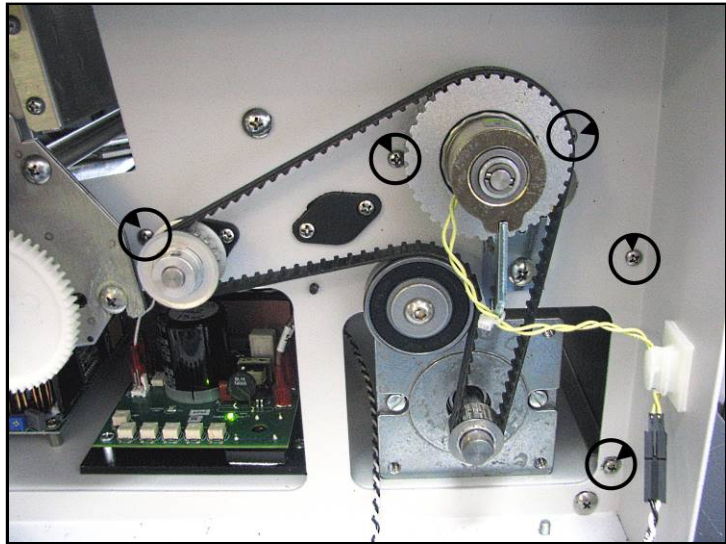
**NOTE:** See SECTION 4 – Printhead Carriage Assembly Adjustment.





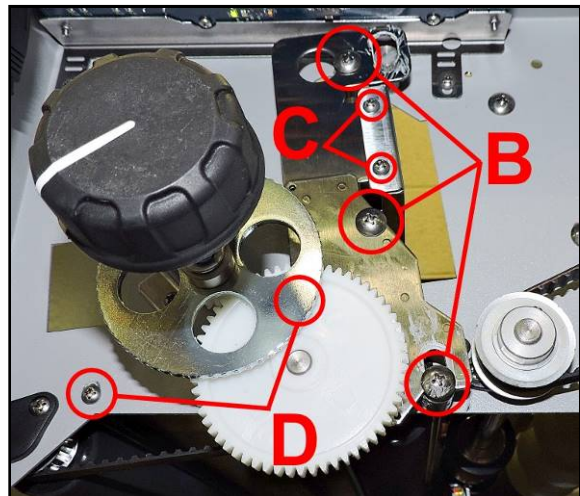
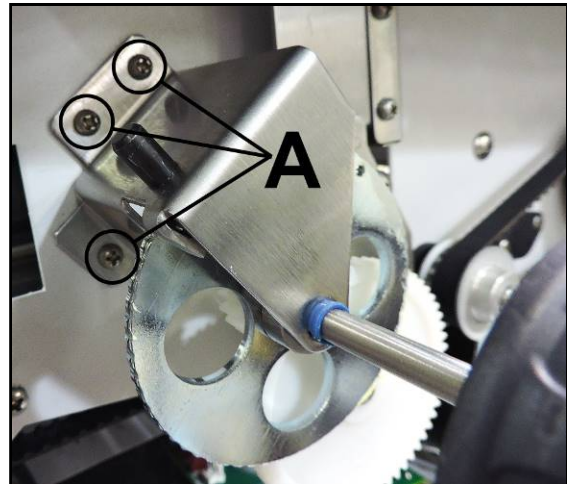
### Remove Center Plate Assembly

1. Remove Rear Media Support, and Operator and Non-Operator Side Covers.
2. Remove screws attaching Center Plate Assembly to Side Frames (5 screws per side).
3. Remove Center Plate Assembly.
4. **Reinstall in reverse order.**



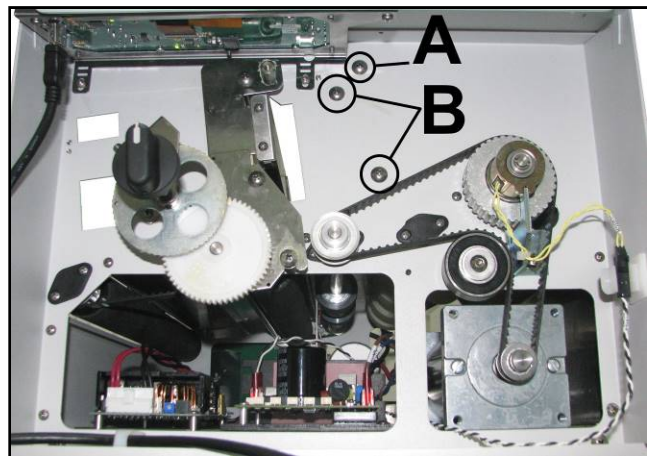
### Remove Exit Cover

1. Raise Printhead Carriage Assembly to its highest point with Media Thickness Knob.
2. Remove the Printhead Assembly, the Operator and Non-Operator Side Covers, and the I/O PC Board.
3. Remove the Media Knob Assembly [A] (3 screws).
4. Remove 3 screws securing the Media Lift Side Frame [B] and 2 screws securing the Printhead Carriage/Wire Harness Chain Bracket [C]. Remove the Media Lift Side Frame to access the Exit Cover mounting screws.
5. Remove screws attaching Exit Cover to Side Frames [D] (2 screws per side; 1 screw is located behind the large white gear on Operator Side).
6. Remove Cover.
7. **Reinstall in reverse order.**



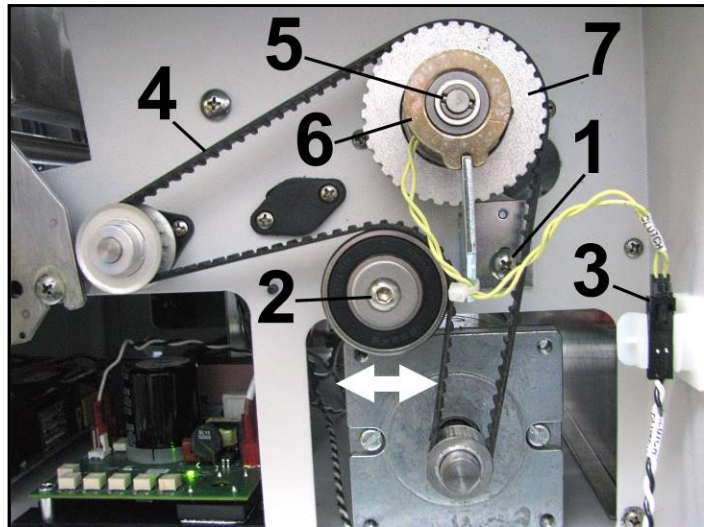
### Remove Sheet Separator Assembly

1. Remove Operator and Non-Operator Side Covers.
2. Disconnect USB and/or Ethernet Cables. Remove Main PC Board on Non-Operator side (4 screws). Carefully move Main PC Board out of the way.  
**NOTE: DO NOT strain or break wire harnesses. It may be necessary to carefully unsnap the Wi-Fi wire harness from the back of the PC Board.**
3. Remove Media Side Guide Support [A] (1 screw on each side.)
4. Remove Sheet Separator Assembly mounting screws [B] (2 screws on each side).
5. Lift Sheet Separator Assembly out of Printer.
6. **Reinstall in reverse order.**



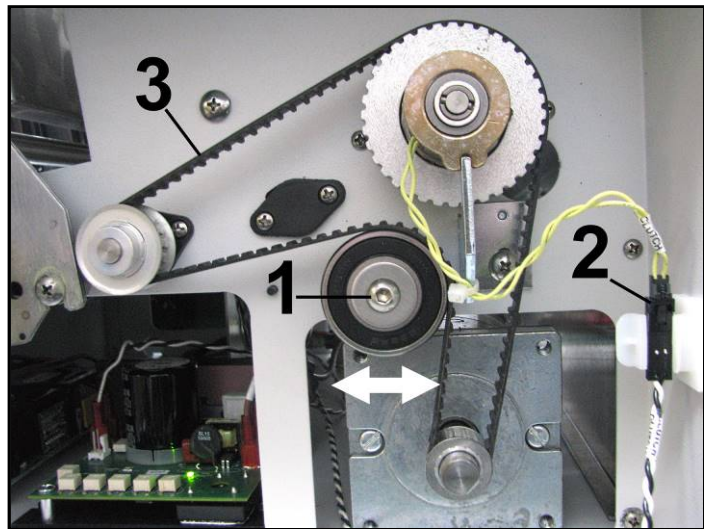
### Remove Clutch

1. Remove Operator Side Cover.
2. Remove Clutch Bracket [1]. Loosen Idler Pulley mounting screw [2].
3. Disconnect Clutch wiring harness [3] from Connector (CLUTCH).
4. Move Idler Pulley to loosen and remove Motor Drive Belt [4].
5. Push Clutch in toward Frame and remove locking pin [5]. Remove Clutch [6] and Drive Pulley [7].
6. **Install in reverse order.** (See SECTION 4 – Drive Belt Tension Adjustment.)



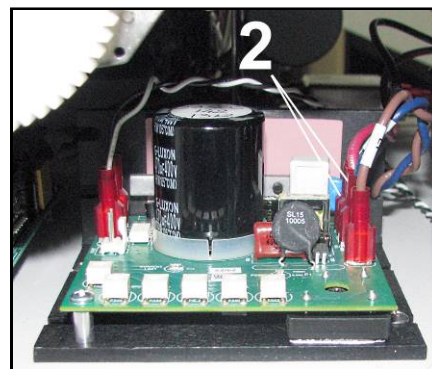
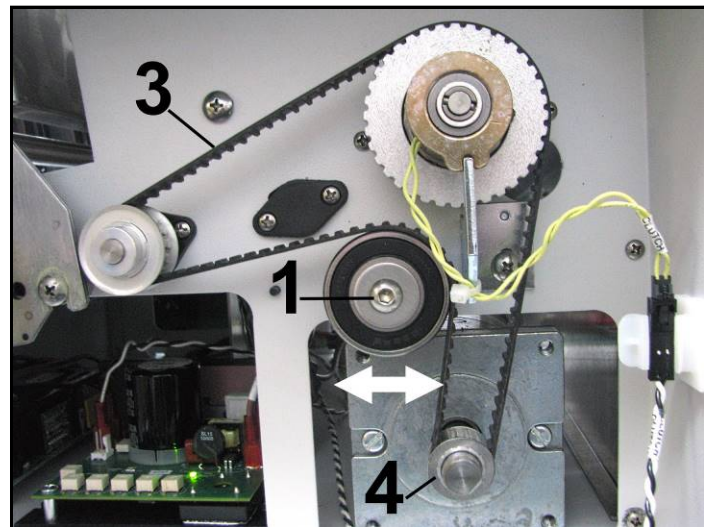
### Remove Motor Drive Belt

1. Remove Operator Side Cover.
2. Loosen Idler Pulley mounting screw [1].
3. Disconnect Clutch wiring harness [2] from Connector (CLUTCH).
4. Move Idler Pulley [1] to loosen Motor Drive Belt [3].
5. Remove Drive Belt.
6. **Install in reverse order.**  
(See SECTION 4 – Drive Belt Tension Adjustment.)



### Remove Drive Motor

1. Remove Operator Side Cover.
2. Disconnect Motor Wire Harness connectors (A1, A2) from the Speed Control [2].
3. Loosen Idler Pulley mounting screw [1].
4. Move Idler Pulley [1] to loosen Motor Drive Belt [3].
5. Remove Drive Belt from Motor Pulley [4].
6. Carefully lift Printer. Remove 4 screws and washers [5] securing Drive Motor to Base.
7. **Install in reverse order.**  
(See SECTION 4 – Drive Belt Tension Adjustment.)

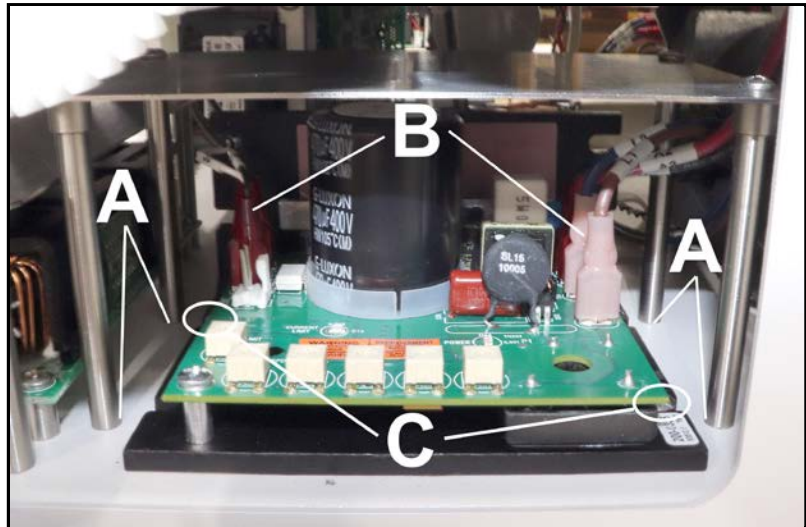


## SECTION 5 DISASSEMBLY – ASSEMBLY

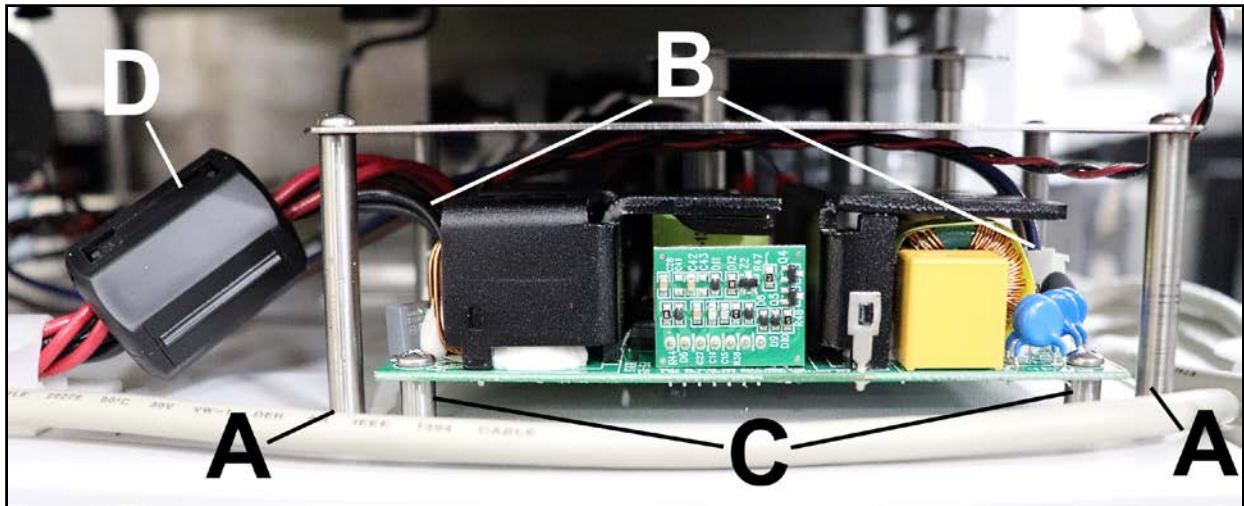
### Remove Speed Control

1. Remove Operator Side Cover.
2. From under the Printer Base; remove (4) screws [A] securing the Shield Assembly.
3. Disconnect 6 wiring harnesses [B] from Speed Control. (*Wires are labelled*).
4. Remove two screws [C] securing the Speed Control Base to the Printer Base.
5. **Reassemble in reverse order.**

**NOTE:** If replacing the **Speed Control**, you will have to verify and/or reset the Printer speeds. See “**Service Menu, Speed Setup**” in “**Section 3 – Functional Operation**”.

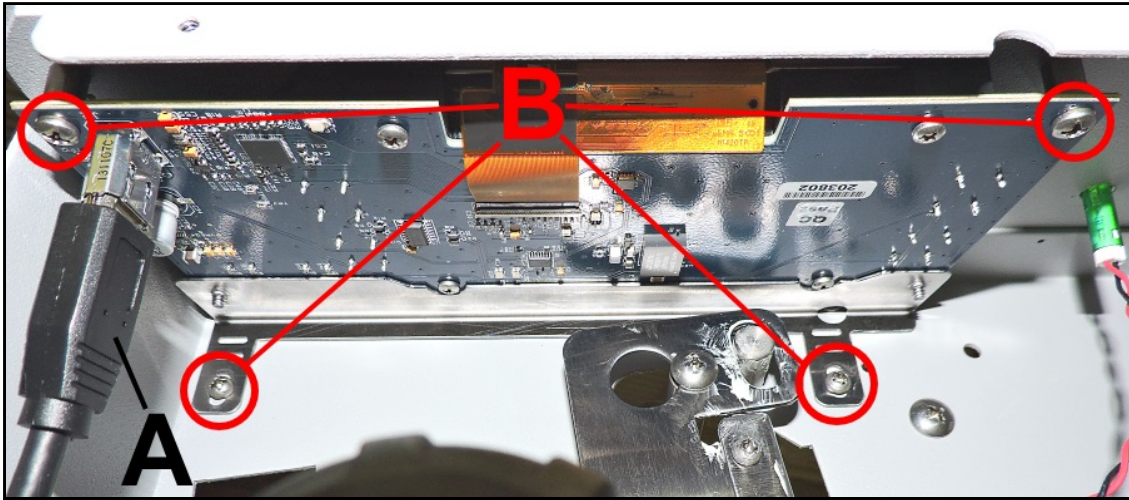


### Remove Power Supply



1. Remove Operator Side and Exit Covers.
2. From under the Printer Base; remove (4) screws [A] securing the Shield Assembly.
3. [B] Disconnect wire harnesses and ground wire from Power Supply.
4. [C] Remove (4) screws that attach Power Supply to the Printer Base (*1 at each corner*). Remove Power Supply.
5. **Reassemble in reverse order. NOTE: Reattach all wire harnesses, including ground wires. IMPORTANT: If installing the Ferrite Collar [D] around the wire harness, position it as close as possible to the Power Supply.**

## Remove Control Panel Assembly



1. Remove Operator Side Cover.
2. Disconnect Control Panel Cable [A].
3. Remove 4 screws [B] securing Control Panel Assembly to the Printer Frame.
4. **Reassemble in reverse order.**

## Remove Encoder or Encoder Belt

### To Remove Encoder:

Remove Non-Operator Side Cover.

Disconnect Encoder [1] wiring harness from I/O PC Board. (*J5 Encoder*)

Remove three screws [2] mounting Encoder to Operator Side Frame.

Remove Belt [3]; then remove Encoder.

### To Remove Belt:

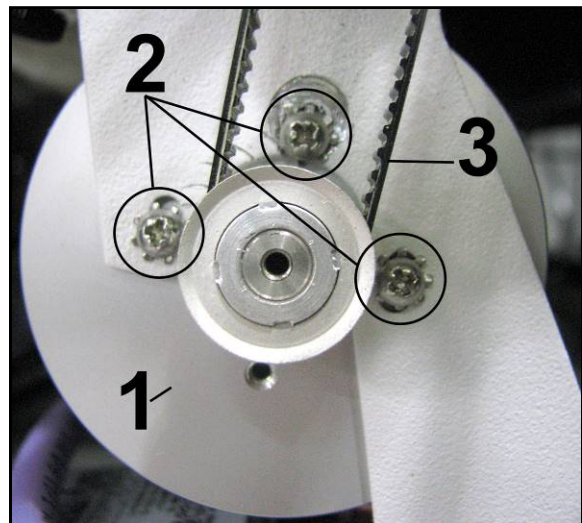
Remove Operator Side Cover.

Remove three screws [2] mounting Encoder to Operator Side Frame.

Disengage and remove Belt [3] as you remove Encoder.

**Reassemble in reverse order.**

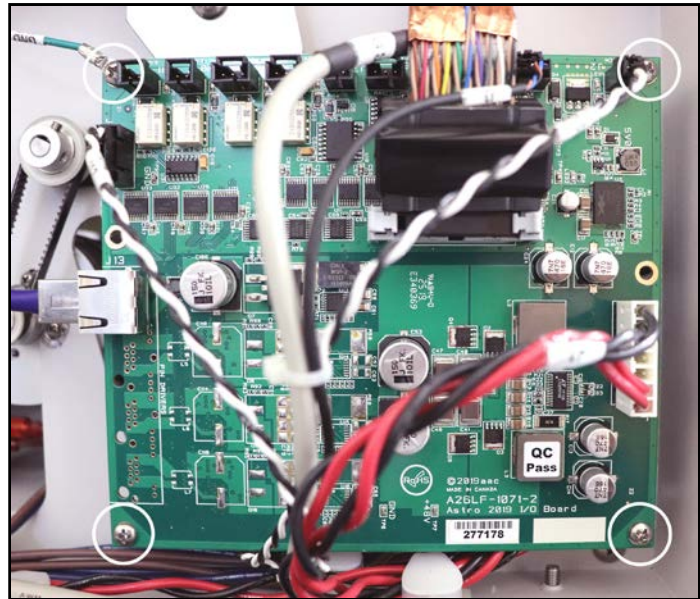
**NOTE: Adjust proper tension on Belt.**  
(See “Encoder Belt Tension Adjustment” when reinstalling Encoder Belt).



## SECTION 5 DISASSEMBLY – ASSEMBLY

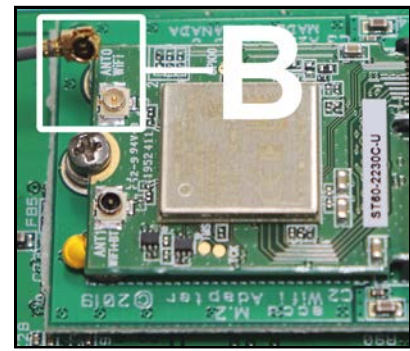
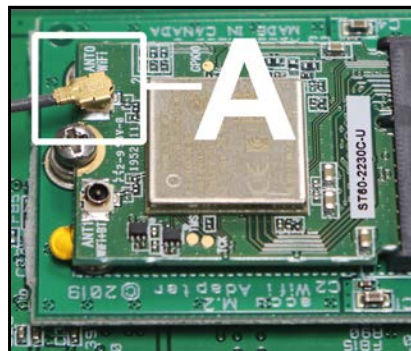
### Remove I/O PC Board

1. Remove Non-Operator Cover.
2. Carefully disconnect wire harnesses from the I/O PC Board. (*J1-Power, J2-Clutch, J3-Media Sensor, J5 Encoder, J12-Speed Control, J13-Printhead Carriage, J15-Interface PCB-Main PCB Terminal*)
3. Remove (4) mounting screws; then carefully remove PC Board.
4. **Reinstall in reverse order.**



### Remove Main PC Board

1. Remove Non-Operator Cover.
2. Carefully disconnect wire harnesses from the Main PC Board if removing PC Board completely. (*J1-USB-3.0, J2-Ethernet, J7-Control Panel PC Board Terminal, J9-Interface PCB-Main PCB Terminal, J10-Power Terminal*)
3. Remove (4) mounting screws; then carefully turn the Main PC Board over. **DO NOT strain or break Wi-Fi Connector.** Carefully unsnap the Wi-Fi wire [A-B] from the PC Board.
4. Remove the PC Board.
5. **Reinstall in reverse order.** **NOTE:** When reconnecting the **Wi-Fi Antenna Connector**, make sure it is connected to the **ANT0 WiFi** terminal on the Main PC Board.



**IMPORTANT:** After replacing the Main PC Board and/or the SD card,

you will have to use the "**Select Printer**" procedure from the **Service Menu** and calibrate and/or reset the Printer speeds for the Printer to function properly. See "**Service Menu, Select Printer**" in "**Section 3 – Functional Operation**" and "**Speed Setup**" in "**Section 4 – Adjustments**".

## Remove SD Card

**IMPORTANT:** Replacing the SD card returns the Printer to its factory defaults. Any customization and certain other information/history will be lost (*see list below*). If the SD card is not corrupted and can still be opened on the Touchscreen you may wish to enter or write down the information elsewhere before replacing the card. **NOTE:** Simply removing and re-installing the original uncorrupted SD card will not result in any data/customization loss.

PRINTER INFORMATION AFFECTED:	
1.	<b>Printer Model:</b> See “Service Menu, Select Printer”.
2.	<b>Speed Calibration:</b> See “Service Menu, Speed Setup, Step 6”
3.	<b>Ink Cartridge Status Information</b>
4.	<b>Job and Piece Counters</b> (NOTE: Will not affect lifetime job count on models that have a separate internal Digital Counter.)
5.	<b>Any customization of the Printer and Ink Tanks</b> (Examples: feeder delay, horizontal or vertical alignment adjustments, Ink voltage boost)
6.	<b>Any Print Images</b> saved to the Printer.

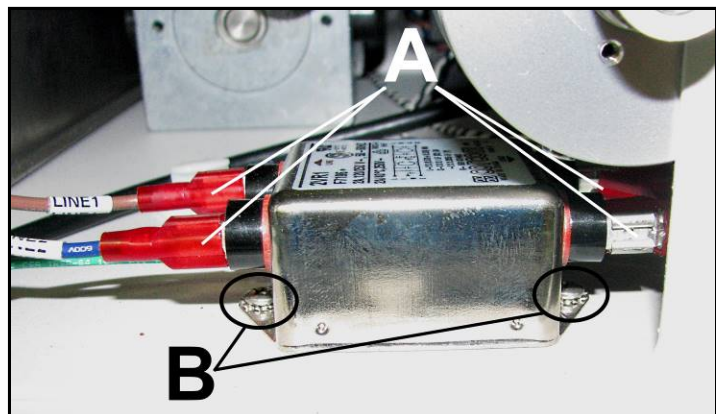
1. Remove Non-Operator Side Cover.
2. Carefully remove the SD Card from the SD Card Port [A].
3. **Reinstall in reverse order.**

**IMPORTANT:** After replacing the Main PC Board and/or the SD card, you will have to use the “Select Printer” procedure from the Service Menu and calibrate the Printer speeds for the Printer to function properly. See “Service Menu, Select Printer” in “Section 3 – Functional Operation” and “Speed Setup, Step 6” in “Section 4 – Adjustments”.



## Remove Power Supply In-Line Filter

1. Remove Non-Operator Side Cover (4 screws).
2. [A] Disconnect wire harnesses and ground wire from Power Supply Filter. [B] Remove two screws that attach Power Supply to Printer Base (1 at each end). [C] Remove Power Supply Filter.
3. **Reassemble in reverse order.**  
**NOTE:** Reattach all wire harnesses, including ground wires.

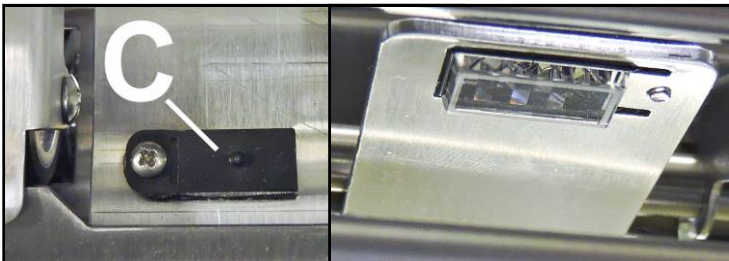
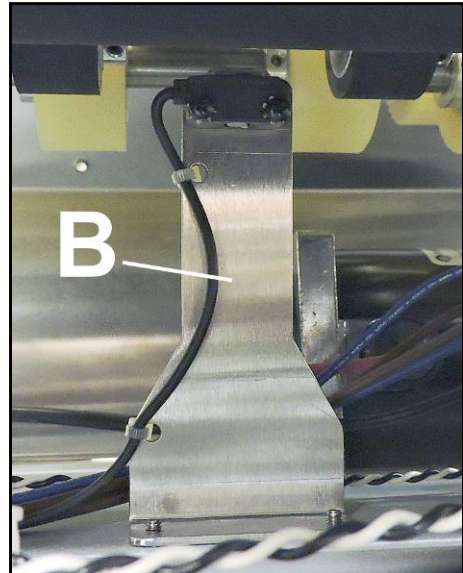
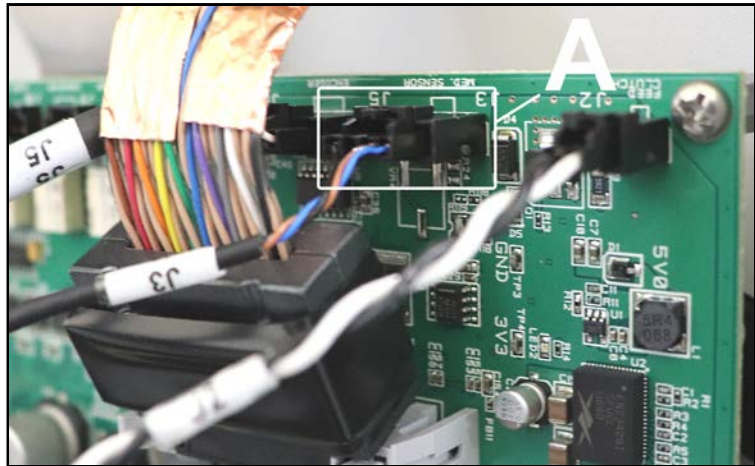


### Remove Media Sensor

1. Remove Operator and Non-Operator Side Covers. Remove the Exit End Cover (2 screws per side).
2. [A] Disconnect Media Sensor wire harness from I/O PC Board (J3) and remove from any clamps.
3. Raise Printer high enough to remove (2) screws securing the Media Sensor Bracket [B] to the Printer base.

**NOTE: DO NOT put full weight of Printer on Operator Side as this could damage the Printhead Lift mechanism.** Remove Media Sensor Bracket Assembly through the Exit End opening.

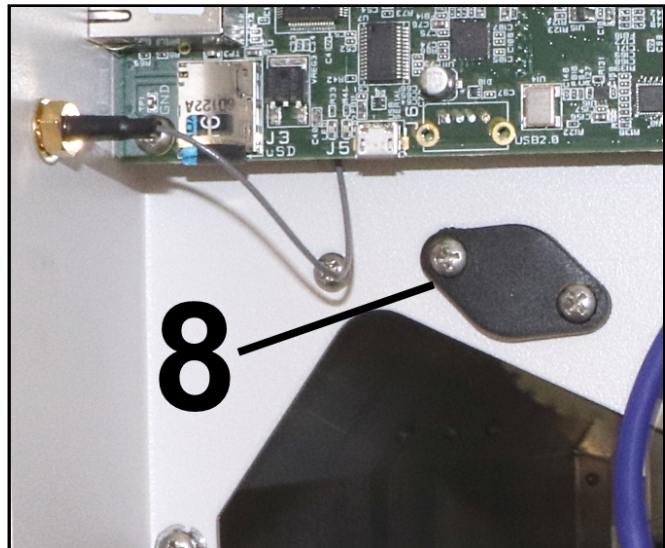
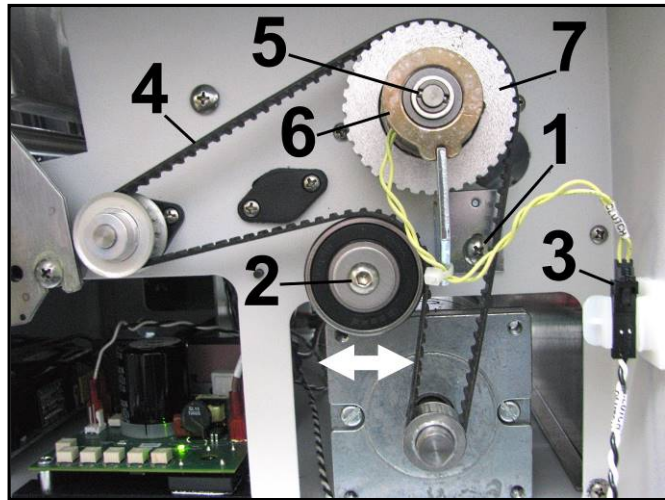
4. Cut cable ties. Remove (2) screws and washers attaching Media Sensor to the Media Sensor Bracket.
5. Reassemble in reverse order. **NOTE: Reattach wire harness cable ties and cable clamps.**
6. **NOTE: The new Media Sensor may have to be adjusted.** See “Media Sensor Adjustment” in “Section 4, Adjustments”. Clean or wipe off Media Sensor Reflector [C] attached to a plate above the Media Sensor. Blow off any dust or debris or remove Reflector (1 screw) and wipe Reflector surface with clean, lint-free cloth.





### Remove Rear Feed Roller

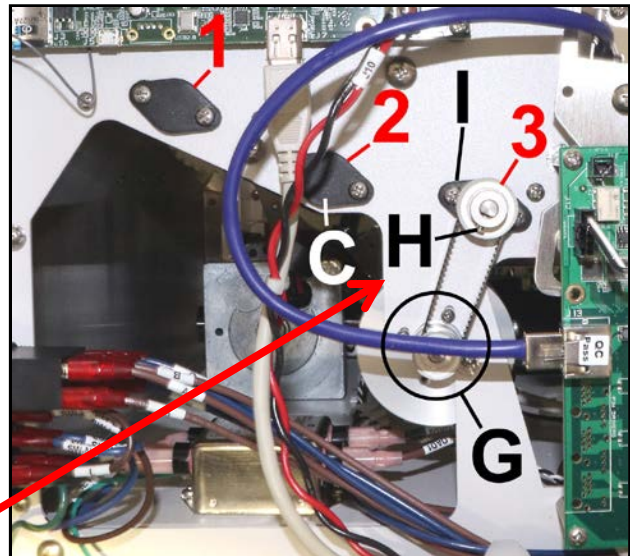
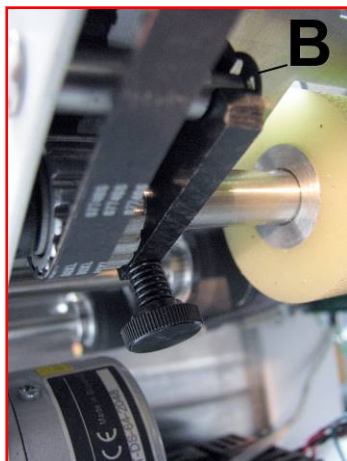
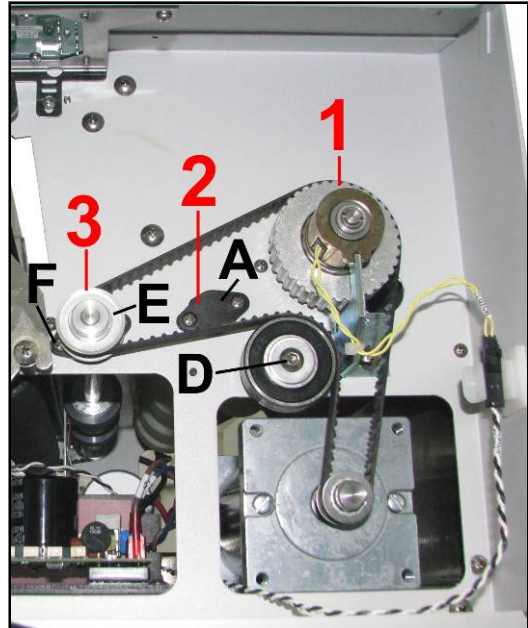
1. Remove **Non-Operator** and **Operator Side Covers**.
2. **Remove Rear Feed Roller.**  
**Operator Side:**  
Remove Clutch Bracket [1].  
Loosen Idler Pulley mounting screw [2].  
Disconnect Clutch wiring harness at connector [3].  
Move Idler Pulley [2] and remove Motor Drive Belt [4] from Clutch Pulley.  
Push Clutch in toward Frame and remove locking pin [5]. Remove Clutch [6] and Clutch Pulley [7].  
Remove two screws from Bearing Housing.  
Remove Bearing Housing and bearings.
3. **Non-Operator Side:**  
Remove two screws from Bearing Housing [8]. Remove Bearing Housing.
4. Slide Feed Roller Shaft toward Operator side then remove Main Feed Roller Shaft through large opening on Non-Operator side. **NOTE: Shaft must be pulled clear of small drive belt.**
5. **Install in reverse order. Remember to install all belts during reassembly. Readjust tension on Motor Drive Belt (See “Drive Belt Tension Adjustment” when reinstalling.)**



## Remove Front Feed, Pull-Out, Intermediate and Exit Rollers

Front Feed Roller [2], Pull-Out Roller [3], Intermediate Roller [4] and Exit Roller [5] may be removed as follows. (*Instructions for removing Rear Feed Roller [1] are listed above.*)

- 1. Remove Operator and Non-Operator Side Covers, Main PC Board and Rear Cover.**
- 2. Front Feed Roller [2]:**  
**Operator Side:** Remove Bearing Housings from ends of Roller [A].  
**Non Operator Side:** Remove E-clip [B] on Brake Mounting Stud. Remove Bearing Housing [C] from end of Roller. Slide Brake Assembly toward Roller. Remove Roller through large opening on Non-Operator side.
- 3. Pull-Out Roller [3]:**  
**Operator side:**  
Loosen Idler Pulley mounting screw [D] to loosen Motor Drive Belt. Remove Belt from Transport Roller Drive Pulley. Loosen set screw to remove Pulley [E] Remove Bearing Housing [F] from end of Roller.  
**Non-Operator side:**  
Loosen Encoder mounting screws [G] to loosen Belt. Remove Belt from Encoder Pulley. Remove set screw from Roller Pulley [H]. Remove Pulley. Remove Bearing Housing [I] from end of Roller. Remove Roller through large opening on Operator side.



**4. Intermediate Roller [4]:**

Remove Media Thickness Adjustment/Printhead Height Assembly to gain access to Roller Bearing Housings.

**Operator Side:** Turn Adjustment Knob to **0**-position. Mark position for reinstalling or readjust **0**-position after reinstalling (See “*Printer Carriage Assembly Adjustment*” in Section 4).

[J] Remove 3 screws attaching the Media Knob Assembly to the Side Frame. Remove the Media Knob Assembly.

[K] Remove setscrew securing Height Adjust Gear to shaft. Remove Gear.

**Operator and Non-Operator Sides:**

[L] Remove the Top and Bottom Printhead Assembly Support Shaft screws.

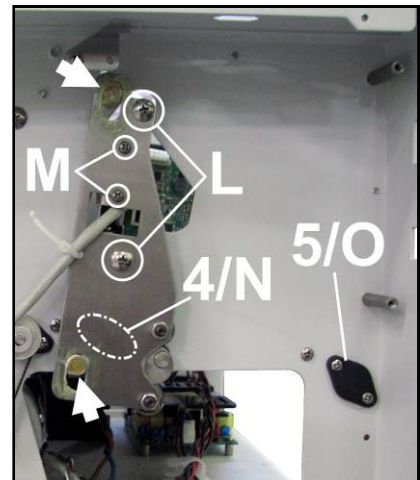
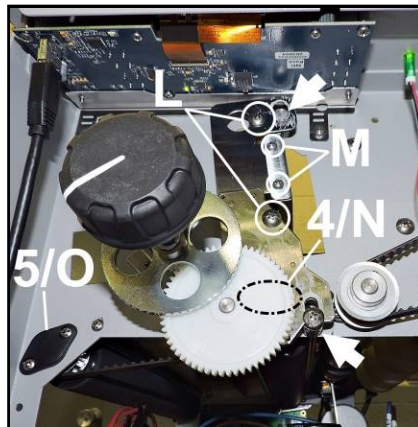
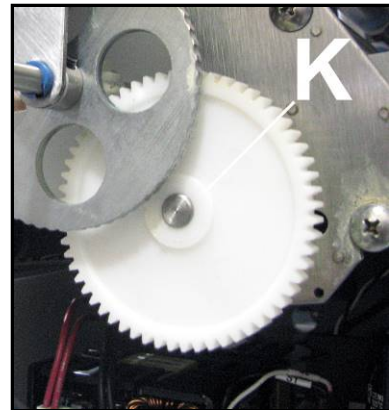
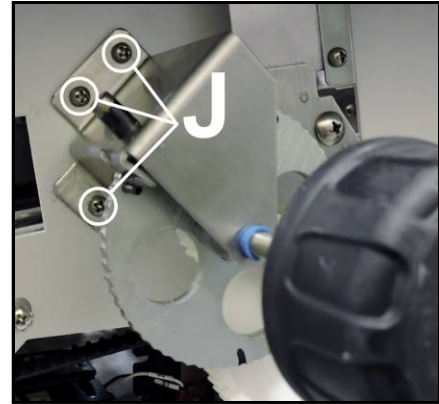
[M] Remove screws (2 on each side) securing the Front and Rear Height Adjust Brackets to the Printhead Carriage Bracket. Carefully remove the Height Adjust Brackets.

[N] Remove Bearing Housings from ends of Intermediate Roller on both sides. Slide Roller through Transport Belt and remove Roller through large opening on Operator side.

**NOTE: Before installing the Front and Rear Height Adjust Brackets, place a dab of white grease on studs (arrows - 2 on each side).**

**5. Exit Roller [5]:** Remove bearing housings from ends of Exit Roller on both sides [O]. Slide Roller through Transport Belt and remove Roller through large opening on Operator side.

**6. Install in reverse order. Remember to install all belts during reassembly. (See “*Drive Belt Tension Adjustment*”, “*Encoder Belt Tension Adjustment*” and “*Brake Adjustment*” in Section 4, Adjustments when reinstalling.)**

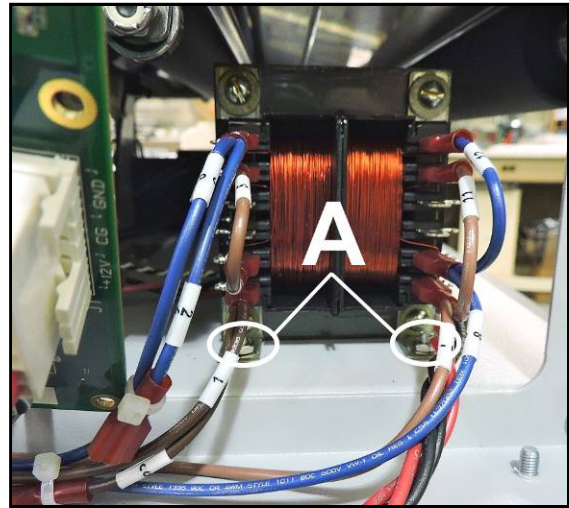


## SECTION 5 DISASSEMBLY – ASSEMBLY

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### Remove 220V Transformer

1. Remove Operator and Non-operator Side Covers. Remove the Exit Cover (*4 screws*). Remove I/O PC Board and carefully move out of the way.
2. Disconnect wire harnesses connected to the Transformer (*numbered to match terminals on the Transformer*).
3. Remove the 4 screws, nuts and washers [A] securing the Transformer to the Printer Base. Access screw heads from under the Printer Base. Remove the Transformer.
4. **Reinstall in reverse order. Be sure to connect wire harnesses to the correct numbered terminals.**



## SECTION 6 – *Maintenance*

This section covers how to care for Ink Cartridges, clear paper jams, replace Sheet Separators, and perform routine maintenance on Printer.

### *Inkjet Cartridge*

Inkjet Cartridges must be replaced when out of ink, when print quality is poor, or when purging and cleaning have not helped the image quality. Approximate life of Inkjet cartridges, based on three lines of 20 characters at 10-point size per address, is:

<b>600 x 600 DPI</b>	<b>50,000 addresses</b>
<b>300 x 600 DPI</b>	<b>100,000 addresses</b>
<b>200 x 600 DPI</b>	<b>150,000 addresses</b>
<b>150 x 600 DPI</b>	<b>200,000 addresses</b>

**NOTE:** These figures can vary greatly, depending on font selected and size of “addresses”.

#### **CAUTION**

**For continued protection against possible fire, use only authorized Ink Cartridges. 40mL max ink for each cartridge. Flashpoint shall be > 93.3C per Material Safety Data Sheet.**

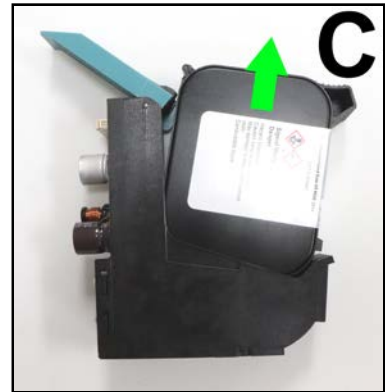
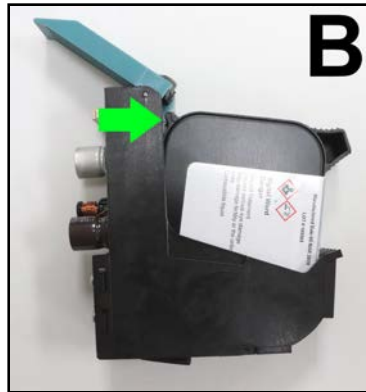
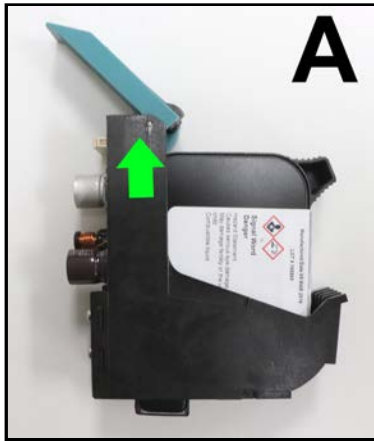
#### **CAUTION**

**Never shake, drop or hit the Cartridge against the palm of your hand or any other hard surface. Shaking the Print Cartridge does not “mix” ink and hitting the Cartridge against a hard surface does not clear Nozzles.**

**These actions hurt print quality because they allow bubbles to form near the ink firing chambers. These bubbles prevent the nozzles from firing, causing white streaks in the print image.**

## SECTION 6 MAINTENANCE

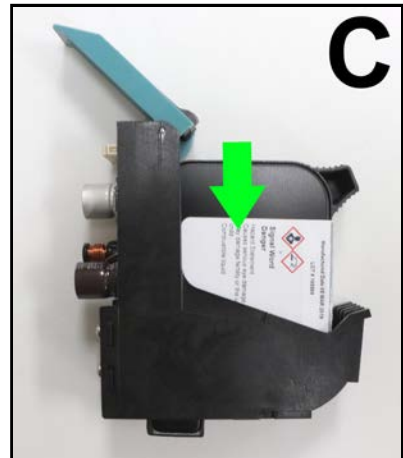
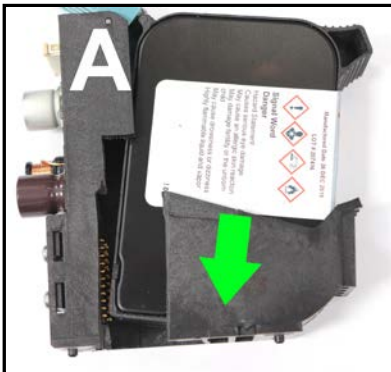
### Replace Inkjet Cartridge:



1. Open Latch Lever.
2. [A] Lift the Cartridge straight up until it stops (about 1/4").  
[B] Pivot the Cartridge just enough so the tab on the Cartridge clears, but still touches the edge of the Latch Lever.  
[C] Lift the Cartridge straight up and out of the Holder.  
**NOTE: Be careful not to bend the contact pins in the Holder or damage the surface of the Cartridge Printhead.**



### Install New Inkjet Cartridge:



1. Remove new Inkjet Cartridge from packaging. Take care not to touch copper contacts, metal plate, or gold printhead. Remove protective tape from the Printhead.
2. [A] With Cartridge's Printhead pointing down and while keeping the Cartridge lightly in contact with the edge of the Latch Lever: Slide the Cartridge into Holder at as vertical an angle as possible.  
[B] Push straight back toward contacts in the Printhead Holder.  
**NOTE: Be careful not to bend the contact pins in the Holder or to damage the surface of the Cartridge Printhead. (See cutaway images A and X above)**  
[C] Make sure Cartridge is seated in Holder.
3. Close Latch Lever to secure Cartridge. **DO NOT** force Latch Lever into place.
4. Repeat **Steps 1-4** for remaining Cartridges.

## Inkjet Cartridge Storage

**Short-term Cartridge Storage** (Less than 8 hours or less than 2 hours in hot/dry environments.)

- The cartridge can be left in the Printer, for short periods of time.
- The next time that the Printer is used, the cartridge nozzles may have to be cleaned and purged

**Long-term Cartridge Storage** (More than 8 hours or more than 2 hours in hot/dry environments.)

- Clean the cartridge and place the cartridges in a re-sealable container (i.e. Tupperware) with a damp sponge or towel to maintain humidity and prevent the cartridge from drying out.  
Note: Do not allow the nozzle plate to make contact with the sponge/towel, or the ink will be wicked from the cartridge.
- When the cartridges are ready to be used again, the cartridge body and contact area will need to be dried and the nozzles will need to be cleaned and purged.

**CAUTION!** Be sure the contact area of the cartridge is dry, before installing it into the printer or damage to printer's electronics will result.

**Note:** Decap Time (time it takes for unsealed cartridge nozzles to become clogged) will vary greatly. Ink type, environment, prior cartridge maintenance, and cartridge condition can affect decap time.

## Inkjet Cartridge Disposal

Cartridges may be disposed of in a safe manner in accordance with local/national regulations.

In case of an ink spill, use soap and water to clean up any problem areas.  
Abrasive soap usually removes ink from hands.



**Ink in cartridge may be harmful if swallowed.  
Keep new and used cartridges out of reach of children.  
Discard empty cartridges immediately.**

## Cleaning Printhead

Maintain good print quality by keeping Printheads clean. During printing process ink spray, paper fibers, and dust can build up on Printheads. This build-up eventually degrades print quality. If you notice problems with print quality, or to prevent a build-up from occurring, wipe Printhead with a damp, lint-free, cloth.

<b><i>Cloth should be:</i></b>	<b><i>Cloth should not be:</i></b>
<ul style="list-style-type: none"> <li>✓ Soft</li> <li>✓ Lint-Free (Fiberless)</li> <li>✓ Moistened with water (<i>Distilled is best but tap water will work</i>)</li> </ul>	<ul style="list-style-type: none"> <li>✗ Abrasive</li> <li>✗ Made of small fibers</li> <li>✗ Dry or contain chemical additives</li> </ul>

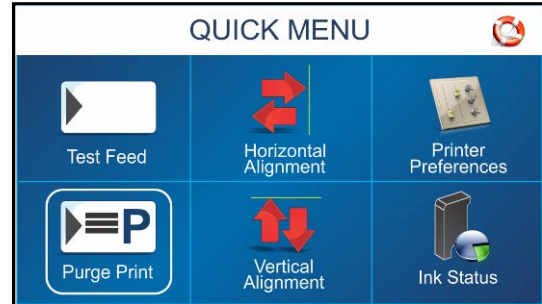
Wipe slowly across the long-axis with Printhead facing down (*as shown*). **DO NOT** apply excessive force, as this could scratch Nozzle area.



## **Purging Nozzles**

If the Printhead sits inactive for a time, ink may dry in the nozzles. Printing may not remove these “ink plugs” from the nozzles. White streaks will show up in the printed text or graphic. In order to obtain better print quality, these ink plugs need to be forced out or purged. A **Purge Print** routine is built into Printer. Access this feature by using the **Quick Menu** key on the Control Panel.

1. Wipe Printhead with a wet cloth as described in “*Cleaning Printhead*” on previous page.
2. With media loaded in the Feeder, press the **Quick Menu** key, then “**Purge Print**” icon. Press “**Print**” to activate the purge. Purge prints an ink pattern at 600 dpi to clear all of the nozzles in all of the ink cartridges. **Repeat if necessary.**
3. Wipe Printhead again with a moist cloth.



**NOTE: For more information, see Troubleshooting Printheads in Section 5 – Troubleshooting.**

## **Jams in Printer**

If a jam occurs, **STOP the Printer**. Recover missed addresses using the **Quick Menu** key on the Control Panel, then pressing “**Reprint**”.

**Some possible reasons for jamming are:**

- Feeding more than one piece of media.
- Damaged media, such as dog-eared (*turned down corners*).
- Media that is not stiff enough may not be usable. Media that meets Postal stiffness requirements for automated feeding is acceptable in the Printer.
- Envelopes caught under the flap of another envelope or stuck to one another may cause jamming.

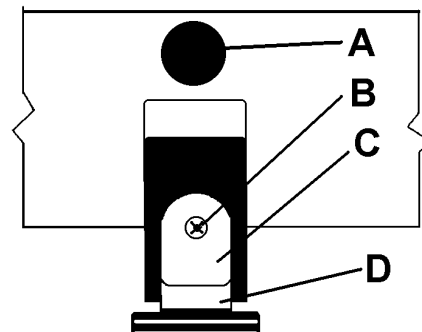
## **Removing Jammed Media**

1. If necessary, raise the Printhead Carriage using the “Media Thickness Knob”.
2. If necessary, move one or more Print Units to gain access to jammed media.
3. Take care when removing jammed media to avoid damaging machine. All pieces of jammed media must be removed from the feed path.
4. Return Media Thickness Adjustment and Print Unit(s) to desired positions.
5. Reprint lost record(s). Follow instructions, *Section 3 – Operating Printer, Quick Menu, “Reprint”*.

## **Remove Sheet Separators**

Sheet Separators ensure separation of pieces as they are fed. They wear and must be replaced periodically. If you experience double sheet feeding and cannot adjust Separators to prevent it, replace them.

1. Turn OFF and unplug Printer.
2. Release Separator-by loosening knob [A] and move Media Side Guides to maximum opened position.
3. Lower Separators so they touch Feed Roller.
4. Remove screw [B] and Separator Support [C]. Then pry Separator [D] out of Holder.
5. Install a new Separator and reinstall the Separator Support and screw.





## Cleaning Printer

### WARNING!

**PRINTER IS A PRECISION MACHINE THAT SHOULD BE CLEANED REGULARLY TO INSURE MANY YEARS OF SERVICE. BEFORE PERFORMING ANY MAINTENANCE, DISCONNECT PRINTER FROM ITS POWER SOURCE!**

Printer must be cleaned regularly of accumulated paper dust and ink. Depending on types of media that are run, paper dust may accumulate within Printer and on Transport. To properly clean Printer, unplug it from power receptacle and remove covers.

- **Internal Areas:** Best cleaned using a vacuum with a soft brush attachment to help loosen dust particles. Take care not to damage PC Boards or electrical wiring.
- **Exterior Areas:** May be cleaned with any standard non-abrasive household cleaner that does not contain plastic-harming solvents.

### CAUTION

**NEVER SPRAY OR POUR CLEANERS DIRECTLY ON OR INTO THE PRINTER. EXCESS LIQUID COULD HARM ELECTRONIC PARTS. ALWAYS DAMPEN A RAG WITH THE CLEANER AND APPLY IT TO THE PARTS TO BE CLEANED.**

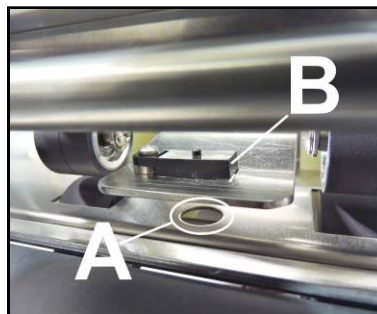
## Transport Belts/Rollers and Forwarding Rollers on Printer

Feed and Forwarding Rollers can become glazed with paper lint and ink from media. They should be routinely cleaned with a damp cloth. If build-up is hard to remove, use a mild household detergent on a damp cloth. Avoid using solvents on Rubber Rollers.

## Cleaning Media Sensor

Periodically check Media Sensor and Reflector for dust and debris, (located under Media Hold-down Wheel Assembly).

1. Use the Media Thickness Knob to raise the Printhead Carriage Assembly to its highest setting.
2. Use canned or compressed air into the Media Sensor port [A] under the Media Sensor Reflector [B] to remove dust and debris.



**NOTE:** If necessary, remove Reflector (1 screw), and wipe Reflector surface with a clean, lint-free cloth.

**CAUTION:** Compressed Air propellant can be flammable. Let printer sit to ventilate for a few minutes before reconnecting power cord and switching Main Power Switch ON.

## Cleaning Touchscreen

Carefully clean the Touchscreen by wiping with a lint-free cloth and a non-abrasive cleaner made for touchscreens on computers and cell phones.

**DO NOT spray cleaner directly on screen, spray on cloth, then clean screen.**



## APPENDIX A – *Supplies and Optional Hardware*

### *Supplies – Compatible Inkjet Cartridges*

The following proprietary inkjet cartridges were available at the time of publication. Please contact your Distributor for currently available ink types and colors. The following inkjet cartridges are constructed using Genuine HP Original Inkjet Cartridges (not refills or knock-offs). They are provided in a wide range of ink formulas.

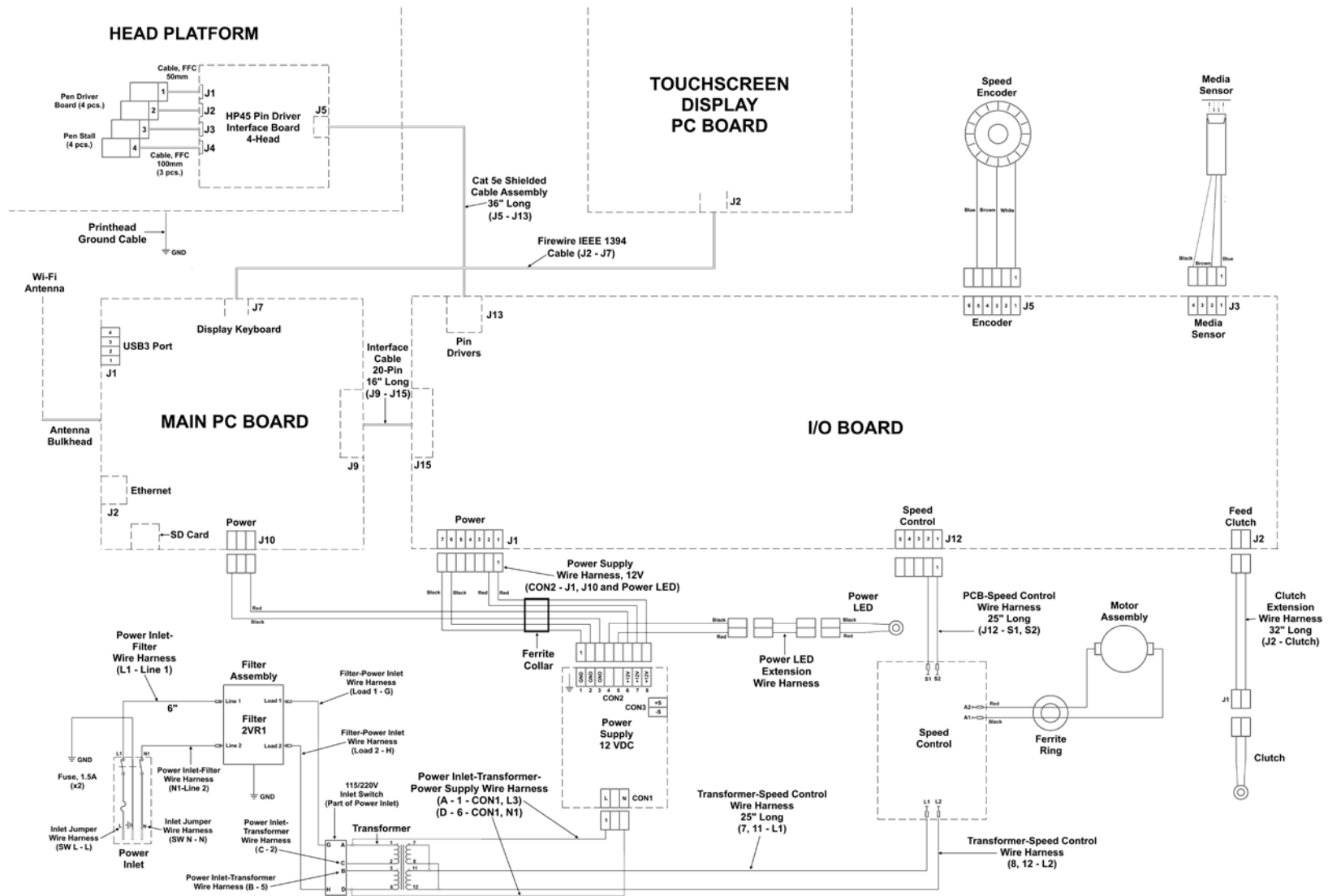
<b>Product Name (Ink Type)</b>	<b>Part Number</b>	<b>Description &amp; Application</b>
Versario All Purpose	AP22	Versario all-purpose performance pigmented ink for a wide range of media
Coated Plus	AP23	Coated Plus general purpose dye-based ink for coated stocks
Aqueous High Performance	AP24	Aqueous High Performance ink for aqueous varnished materials
Fast Black	AP25	Fast Black general purpose quick drying dye-based ink
UltraUV	AP20	UltraUV high performance solvent ink for UV coated & non-porous media
UltraSolv	AP21	UltraSolv high performance solvent ink for non-porous media
Blue	AP26	Blue spot color blue pigmented ink for coated & uncoated materials
Red	AP27	Red spot color red pigmented ink for coated & uncoated materials
Green	AP28	Green spot color green pigmented ink for coated & uncoated materials
Invisible	AP29	Invisible spot color UV-responsive security ink

### *Optional Hardware*

<b>Conveyor</b>	AP05
<b>Heavy Duty Friction Feeder for AP4</b>	AP12



# APPENDIX B – Printer Wiring Diagram



## APPENDIX C

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