Service Manual

Color Jetprinter™ 2070

4090-001

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LEXMARK™

4090-001

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Contents

Preface

This manual is divided into the following chapters:

1. **General Information** contains a general description of the printer and the maintenance approach used to repair it. Special tools and test equipment are listed in this chapter, as well as general environmental and safety instructions.
2. **Diagnostic Information** contains error indicator table, symptom table, and service checks used to isolate failing field replaceable units (FRUs).
3. **Diagnostic Aids** contains tests and checks used to locate or repeat symptoms of printer problems.
4. **Repair Information** provides instructions for making printer adjustments and removing and installing FRUs.
5. **Connector Locations** uses illustrations to identify the connector locations and test points on the printer.
6. **Preventive Maintenance** contains the lubrication specifications and recommendations to prevent problems.
7. **Parts Catalog** contains illustrations and part numbers for individual FRUs.

Safety Information

- The maintenance information for this product has been prepared for use by a professional service person and is not intended to be used by others.
- There may be an increased risk of electric shock and personal injury during disassembly and servicing of this product. Professional service personnel should understand this and take necessary precautions.
- The safety features of some parts may not always be obvious. Therefore, replacement parts must have the identical or equivalent characteristics as the original parts.

Sicherheitshinweise

- Die Wartungsinformationen für dieses Produkt wurden zur Verwendung durch einen Wartungsfachmann entwickelt und sollten nicht von anderen benützt werden.
- Zusätzliches Risiko eines elektrischen Schlags und körperlicher Verletzung existiert während des Auseinandernehmens und der Wartung des Geräts. Fachpersonal sollte im vollen Verständnis der Lage entsprechende Vorsichtsmaßnahmen ergreifen.
- Ersatzteile müssen gleiche oder gleichwertige Merkmale wie die Originalteile aufweisen, da Sicherheitsvorkehrungen nicht immer offensichtlich sind.

Consignes de Sécurité

- Les consignes d'entretien et de réparation de ce produit s'adressent uniquement à un personnel de maintenance qualifié.
- Le démontage et l'entretien de ce produit pouvant présenter certains risques électriques, le personnel d'entretien qualifié devra prendre toutes les précautions nécessaires.
- Les normes de sécurité de certaines pièces n'étant pas toujours explicites, les pièces de rechange doivent être identiques ou conformes aux caractéristiques des pièces d'origine.

Norme di sicurezza

- Le informazioni riguardanti la manutenzione di questo prodotto sono indirizzate soltanto al personale dell'assistenza autorizzato.
- Durante lo smontaggio e il manutenzionamento di questo prodotto, è possibile il rischio accresciuto di scosse elettriche e danni personali. Il personale di assistenza autorizzato, consapevole di ciò, deve adottare le precauzioni necessarie.
- È possibile che le funzioni di sicurezza di alcuni elementi non siano così ovvie, quindi, i pezzi di ricambio devono avere caratteristiche identiche o equivalenti a quelle dei pezzi originali.

Pautas de Seguridad

- La información sobre el mantenimiento de este producto fue escrita para el personal de mantenimiento cualificado y no para cualquier otro usuario.
- Existen mayores riesgos de descargas eléctricas y daños personales durante el desmontaje y la reparación de la máquina. El personal cualificado comprende esto y toma las precauciones necesarias.
- Los dispositivos de seguridad de algunas partes quizá no siempre puedan ser reconocidas a simple vista. Por lo tanto, las partes de reemplazo deben poseer características idénticas o equivalentes a las partes originales.

Sikkerhedsoplysninger

- Oplysningerne om vedligeholdelse af dette produkt er forberedt med henblik på professionelt servicepersonale, og bør derfor ikke benyttes af andre.
- Risikoen for elektrisk stød øges under demontering og service af dette produkt, hvorfor der bør tages de nødvendige forholdsregler.
- Sikkerhedsforanstaltningerne er ikke altid lige åpenbare for alle reservedele. Der bør derfor kun anvendes originale reservedele eller reservedele med samme egenskaber som de oprindelige.

Informações de Segurança

- As informações de segurança relativas a este produto destinam-se a profissionais destes serviços e não devem ser utilizadas por outras pessoas.
- Risco de choques eléctricos e ferimentos graves durante a desmontagem e manutenção deste produto. Os profissionais destes serviços devem estar avisados deste facto e tomar os cuidados necessários.
- Os dispositivos de segurança de algumas peças poderão não ser sempre suficientemente evidentes. Assim, as peças sobressalentes devem possuir características idênticas ou equivalentes às peças originais.

Chinese Safety Information

安全资讯

- 本产品的维护资讯仅供专业服务人员使用，而非供一般人使用。
- 本产品在拆卸、维修的时候，发生电击、人员受伤的危险性会增高。专业服务人员对这点应有事先的了解，并采取必要的安全措施。
- 有些零件的安全功能有时可能不明显。因此，替换零件的特性一定要与原有的零件一致。

Korean Safety Information

안전 사항

- 본 제품에 관한 유지 보수 설명서는 전문 서비스 기술자용으로 작성된 것이므로 비 전문가는 사용할 수 없습니다.
- 본제품을 해체하거나 정비할 경우 전기적인 충격을 받거나 상처를 입을 위험이 커집니다. 전문 서비스 기술자는 이사실을 숙지하고 필요한 예방 조치를 취하도록 하십시오.
- 일부 부품의 안전성은 항상 보장되지 않습니다. 따라서, 교체 부품은 원래 부품과 같거나 동등한 특성을 가진 제품을 사용하여야합니다.

1. General Information

The Color Jetprinter™ 2070 (4090-001) printer is a personal, near laser-quality inkjet printer. The print cartridge contains single-unit customer-replaceable supply items. Dual printheads provide color and true black printing without changing printheads. The black cartridge has a total of 104 nozzles and installs on the left. The color cartridge has a total of 96 nozzles and installs on the right. The printer is capable of printing in two directions from either cartridge.

Resolution and Print Speed

Color	Black
600 X 300 dpi 600 X 600 (using special paper)	600 X 300 dpi 600 X 600 (using special paper)
167 cps - Letter Quality 300 cps - Draft	230 cps - Letter Quality 300 cps - Draft

Power Consumption

- Less than 2 Watts - power off and power to the printer
- 7.5 Watts - Idle Mode (power on - not printing)
- 12 Watts - Printing (average)
- 25 Watts - Printing (peak)

Maintenance Approach

The diagnostic information in this manual leads you to the correct field replaceable unit (FRU) or part. Use the error indicator charts, symptom index, service checks, and diagnostic aids to determine the symptom and repair the failure. Begin with “Start” on page 2-1.

This printer can be serviced without being connected to a host computer. The user is directed, in the Printer Control program, to perform the head to head and bidirectional alignment adjustments after replacing a print cartridge.

After you complete the repair, perform tests as needed to verify the repair.

Abbreviations

CE	Customer Engineer
CSU	Customer Setup
ESD	Electrostatic Discharge
FRU	Field Replaceable Unit
HVPS	High Voltage Power Supply
LED	Light-Emitting Diode
LVPS	Low Voltage Power Supply
NVRAM	Nonvolatile Random Access Memory
OEM	Original Equipment Manufacturer
POST	Power-On Self Test
V ac	Volts alternating current
V dc	Volts direct current
ZIF	Zero Insertion Force

Unique Tools Required For Service

Parallel Wrap Plug P/N 1319128

2. Diagnostic Information

Use the error indicator table, symptom tables, service checks, and diagnostic aids to determine the failing part.

Start

Service error indications show as a series of flashes of the Power light. There is a pause between each series of flashes. If your printer has an error indication, locate the series of flashes in the 'Error Indicator Table' on page 2-2 and take the indicated action. Unplug the printer to clear the error indicator.

If an error indicator appears, go to the error indicator table and take the indicated action for that error.

The printer also logs the last occurring error. If you think it may have an intermittent error, or the error indicator lights have been cleared, you can retrieve the error:

1. Run the 'Print NVRAM Contents' on page 3-6. The last error appears at the bottom of the page.
2. Run 'Initialize Error Log' on page 3-3 to clear the error (the error may not be the result of a current error).
3. Run the 'Test Page' on page 3-7. If no error appears, go to 'Power-On Self Test (POST) Sequence' on page 2-2.

Error Indicator Table

Error Code	Number of Power Light Flashes	Action
64 65	**7**	Replace the Code Module and/or system board.
66 - 78	**6**	Replace the Code Module and/or system board.
79	**9**	Replace the Code Module and/or system board.
81	**1**	Go to the 'Transport Service Check' on page 2-14.
83	**8**	Replace the Code Module and/or system board.
89	**4**	Go to the 'Transport Service Check' on page 2-14.
127 and up	**10**	Replace the Code Module and/or system board.

Power-On Self Test (POST) Sequence

When you turn the printer on it performs a POST. Turn your printer on and check for a correct POST operation by observing the following:

1. The busy light comes on and goes off.
2. The power light comes on.
3. The carrier moves over the maintenance station and seals the printheads.
4. The paper feed gears turn.
5. All motors stop and the power light stays on.

If your printer completes POST with no errors, go to the 'Symptom Tables' on page 2-4, locate the symptom and take the indicated action.

If your printer does not complete POST, locate the symptom in the following table and take the indicated action.

POST Symptom Table

Symptom	Action
No Power light and no motors run	Go to the 'Power Service Check' on page 2-11.
Power light, but no busy light	Replace the system board.
Feeds paper	Go to the 'First Print Line Service Check' on page 2-6.
Paper feed gears do not turn	Go to the 'Paper Feed Service Check' on page 2-8.
Carrier doesn't move	Go to the 'Transport Service Check' on page 2-14.
Carrier slams side frame	Go to the 'Transport Service Check' on page 2-14.

Symptom Tables

Locate the symptom in the following tables and take the appropriate action.

Carrier Transport Problems

Symptom	Action
• No carrier movement • Slow carrier movement • Carrier stops • Carrier slams side frame	Go to the 'Transport Service Check' on page 2-14.

Communications Problems

Symptom	Action
Printer not communicating with host computer.	Go to the 'Parallel Port Service Check' on page 2-11.

Maintenance Station Problems

Symptom	Action
• Fails to cap the printhead • Fails to clean the printhead	Go to the 'Maintenance Station Service Check' on page 2-7.

Op Panel

Symptom	Action
Paper feed button does not operate	Replace the system board.
Busy light does not come on	Replace the system board.

Paper Feed Problems

Symptom	Action
Paper fails to stop at first print line	Go to the 'First Print Line Service Check' on page 2-6.
• Fails to pick paper • Picks more than one sheet of paper • Picks paper but fails to feed • Paper jams • Paper fails to exit • Noisy paper feed	Go to the 'Paper Feed Service Check' on page 2-8.
Envelopes fail to feed	Go to the 'Envelope Feed Service Check' on page 2-6.
Paper skews	Go to the 'Paper Path Service Check' on page 2-10.

Power Problems

Symptom	Action
No power in printer, no Power light, no motors	Go to the 'Power Service Check' on page 2-11.

Print Quality Problems

Symptom	Action
• Voids in characters • Light print • Prints off the page • Fuzzy print • Carrier moves but does not print • Printhead drying prematurely • Vertical alignment off	Go to the 'Print Quality Service Check' on page 2-12.
• Ink smearing • Vertical streaks on paper • Print lines crowded	Go to the 'Paper Feed Service Check' on page 2-8.

Service Checks

Envelope Feed Service Check

	FRU	Action
1	Envelope Guide	Be sure the envelope guides have been turned to the envelope load positions. Be sure the envelope guides are against the envelopes. Perform the 'Paper Feed Service Check' on page 2-8.

First Print Line Service Check

	FRU	Action
1	End-of-Forms Flag	Check the flag for binds or damage.
2	End-of-Forms Sensor	Check the sensor for dirt.
3	System Board	Perform the 'Paper Sensor Test' on page 3-4 to check the end-of-forms sensor on the system board.
4	Feed Arm Assembly	Check all parts of the feed arm assembly for binds, wear, or damage.

Maintenance Station Service Check

The maintenance station has two functions:

1. Cleans the printhead nozzles during the print operation.
2. Seals the printhead when it is not being used to prevent the nozzles from drying.

	FRU	Action
1	Maintenance Station Assembly	As the carrier moves to the right over the maintenance station, a slot on the bottom of the carrier engages a tab on the sled of the maintenance station causing the caps to rise and seal the printheads. Carrier movement to the left will uncap the printheads. The wipers clean the printhead nozzles as the carrier leaves the maintenance station. The wipers clean the printheads only when the carrier is moving to the left. There should be no wiping action of the printhead nozzles when the carrier is moving to the right. After the cleaning operation is complete, a tab on the maintenance station engages a tab on the carrier, causing the wipers to lower. Check the maintenance station for worn or broken parts.
2	Wiper	A worn wiper causes degraded print quality just after a maintenance cleaning. Check for loose or worn wiper.
3	Cap	A worn cap causes the printhead nozzles to dry and clog. Check for loose or worn cap.

Paper Feed Service Check

If your printer does not have paper jam problems, continue with the service check. If your printer does have a paper jam problem, examine it for the following before you begin the service check:

- Check the entire paper path for obstructions.
- Be sure there is not too much paper in the sheet feeder.
- Be sure the correct type of paper is being used.
- Check for static in the paper.

	FRU	Action
1	System Board	With J5 disconnected and power on, check for +30 V dc between J5-1 and ground, and between J5-2 and ground on the system board. If the voltage is not present, check for motor pins shorted to the motor housing. If you find a shorted pin, replace the motor. If you still have a failure after replacing the motor, replace the system board.

	FRU	Action
2	Paper Feed Motor	A noisy or chattering motor or a motor that fails to turn, can be caused by: • An open or short in the motor • An open or short in the motor driver on the system board • A bind in the paper feed mechanism With the paper feed motor cable disconnected from the system board, check for 5 to 10 ohms between pin 1 and 4 on the motor cable. If the reading is incorrect, replace the motor. Check for motor pins shorted to the motor housing. If you find a shorted pin, replace the motor. If the failure remains, replace the system board. Although the paper feeds in a forward direction only, the paper feed motor turns in two directions. If the paper feed motor turns in one direction only, replace the system board. Binds in the paper feed motor or gear train can cause intermittent false paper jam errors. Remove the paper feed motor and check the shaft for binds. Also check for loose or worn motor gear.
3	Gears	Check for binds in the gear train and paper feed mechanism by rotating the large feed roll by hand. If you notice a bind, isolate it by removing one of the small idler gears on the inside of the left side frame. Replace any worn or binding gears or rollers.
4	Feed Arm Assembly	At the beginning of the paper feed operation, the paper feed motor reverses momentarily to allow the feed arm pawl to drop off the home position notch in the left side frame. If the pawl fails to drop off the notch, check the feed arm assembly for binds, and worn or broken parts.
5	Paper Path	Perform the 'Paper Path Service Check' on page 2-10, starting at Step 1.

Paper Path Service Check

Examine the printer for the following before you begin this service check:

- Check the entire paper path for obstructions.
- Be sure the paper guides are not worn or broken and are positioned against the paper without binding or buckling the paper.
- Be sure the correct type of paper is being used.
- Be sure the printer is installed on a flat surface.

	FRU	Action
1	Large and Small Feed Rollers	Check for wear and binds.
2	Small Feed Roller Springs Paper Guide Paper Flap	Check for damage.
3	Exit Rollers Star Rollers Exit Drive Belt	Check for wear and binds.
4	Sheet Feeder	Check the following for wear or damage: • Pick Rollers • Envelope Bucklers • All parts inside the left and right edge guides.
5	End-of-Forms Flag & Spring	Check for binds or damage.

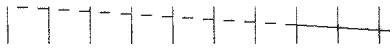
Parallel Port Service Check

	FRU	Action
1	Parallel Port	Run a test page to be sure the printer can print. Run the 'Parallel Port Test' on page 3-5. If the test fails, replace the system board.

Power Service Check

	FRU	Action
1	Power Supply	Disconnect J3 from the system board and check the following voltages on the power supply cable: • J3-1 to GND = +5 V dc • J3-3 to GND = +30 V dc • J3-5 to GND = +13.5 V dc • J3-6 to GND = +5 V dc • J3-8 to GND = +5 V dc If you do not have correct voltage, replace the power supply. Be sure to unplug the printer before you reconnect the power supply to the system board.
3	Printhead Cable Parallel Cable Encoder Card	Turn off the printer. Disconnect one of the printhead cables and turn on the printer. Look for a symptom change. Check the failing part for shorts and replace as necessary. Repeat this procedure for the parallel cable and the encoder card.
4	System Board	If the symptom has not changed, replace the system board.

Print Quality Service Check

	FRU	Action
1	Print Cartridge	Be sure the printer contains good print cartridges.
2	Printhead Carrier Assembly	Reseat the printhead cables in the system board and check the following parts for wear or damage: • Print Cartridge Latch • Latch Spring • Carrier
3	System Board Printhead Cable Rubber Backer	• Perform the 'Test Page' on page 3-7. Look for a break in the diagonal line of the test pattern. A broken line indicates one or more print nozzles are not working. Run the test again to verify the failure. If there are even breaks in the diagonal line similar to the pattern shown below, replace the system board.  If there is a single break or random breaks in the diagonal line check the following: • Check the gold-plated contacts, on the end of the cable that connect to the carrier, for dirt and wear. Use only a clean dry cloth to clean the contacts. Also check the cable for damage. You may need to remove the cable from the carrier to inspect it. • A worn rubber backer results in poor contact between the printhead cable and the print cartridge. Check the rubber backer for wear.
4	Maintenance Station	Intermittent nozzle failures can be caused by worn parts in the maintenance station. Perform the 'Maintenance Station Service Check' on page 2-7, then return to this check.

	FRU	Action
5	Paper Feed	Ink smudging and smearing can be caused by paper problems or problems in the paper feed area. Check the following: • Correct type of paper is being used. Also check the paper for curl or wrinkles. • Feed rollers for wear, dirt, or looseness. • Gears for wear or binds. • Paper path for obstructions.
6	Transport	Blurred print and voids can be caused by problems in the transport area. Check the following: • Transport belt for wear. • Carrier guide rod for wear or dirt. • Carrier to carrier frame engagement should be lubricated with grease P/N 1329301. **Do not lubricate the carrier guide rod or carrier bearing surfaces**. • Idler pulley parts for wear, damage, or looseness. • Encoder strip for wear or dirt.
7	Alignment	Uneven vertical lines can be adjusted by performing the bidirectional alignment. The user is directed, through the Printer Control program, to perform the head to head and bidirectional printing alignments, when replacing a print cartridge.

Transport Service Check

	FRU	Action
1	Transport Motor	Check the motor for binds, or loose motor pulley. Disconnect the transport motor (J4) from the system board. Check for 8 to 18 ohms between pins 1 and 2 on the motor cable. If the reading is incorrect, replace the motor. Check for motor pins shorted to the motor housing. If you find a pin shorted to the housing, replace the motor. If the failure remains, replace the system board.
2	System Board	Turn the printer off and disconnect J4 from the system board. Turn the printer on and check for a pulse of 6 to 8 V dc between J4-1 and ground as the printer goes through POST.
3	Carrier Guide Rod	Clean the carrier rod. **Note**: Do not lubricate the rod or the carrier rod bearing surface.
4	Transport Belt Idler Pulley Parts Carrier Frame	Check for worn, loose or broken parts. Check for obstructions blocking carrier movement. Carrier to carrier frame engagement should be lubricated with grease P/N 1329301.
5	Encoder Strip	Check for wear and dirt.
6	Printhead Cable Encoder Strip Encoder Card System Board	Be sure connector J2 is fully seated. Check the cable for damage. Perform the 'Encoder Sensor Test' on page 3-2. If you cannot enter the test, replace the system board.
7	Maintenance Station	A problem with the maintenance station can cause carrier movement problems at the right margin. Go to the 'Maintenance Station Service Check' on page 2-7.

3. Diagnostic Aids

Use these diagnostic test procedures to verify a repair. There are two ways to enter test procedures, each procedure will indicate the method to use:

Procedure 1:

- Press and hold the Paper Feed button while turning the printer on. Release the button when the printer completes POST.

Procedure 2:

- Turn the printer off.
- Use a two pin jumper on connector J6 as indicated, then turn the printer on. The test begins when the power button is pressed.

Note: You can use the two pin jumper on J7 to perform the tests. Remember to return the jumper to J7 when the test is finished.

A two pin jumper is also available in the parts packet: 1367169 and 69G4188.

Encoder Sensor Test

This test disables the printer motors to allow you to manually move the carrier to verify the encoder is working correctly.

To run the test:

1. Turn the printer off and place a two pin jumper on connector J6 as shown below. (Pins 1 & 2)

2. Press and hold the Paper Feed button while turning the printer on, to start the test. Release the button when the printer completes POST. Turn power off or unplug the printer to stop the test.

The power light flashes as the carrier is moved. The busy light remains on for right to left, and blinks for left to right movement. With no carrier movement, the busy light indicates the direction of the last move. If the test fails, power off the printer and remove the carrier assembly without unplugging the printhead cable.

Power on the printer and check for +5 V dc at pins 1, 2 and 3 of the encoder card connector.

1. If voltage is not present, check the printhead cable for opens to the encoder card. If the printhead cable is good, replace the system board.
2. If voltage is present, check the sensor on the encoder card by monitoring pin 3 of the encoder card connector as you pass a piece of paper through the sensor. The voltage should go from +5 V dc to 0 V dc. Turn the power off and back on to make this check again. If the voltage at pin 3 does not change, replace the encoder card. If the symptom remains, replace the printhead cable.

Initialize Error Log

This test allows you to track new errors.

Use this procedure to reset the error log to zero. The error log is especially helpful in diagnosing intermittent or difficult problems.

To run the test:

1. Turn the printer off and place a two pin jumper on connector J6 as shown below. (Pins 1 & 2)

2. Place a sheet of paper in the manual feed slot and press and hold the paper feed button. Errors stored in NVRAM are erased. Turn power off or unplug the printer to stop the test.

Paper Sensor Test

This test checks the paper sensor on the system board.

During the test, the power light remains on. The Busy light reflects the paper sensor status in the following manner:

- On - paper is in sensor
- Off - paper is not in sensor

To run the test:

1. Turn the printer off and place a two pin jumper on connector J6 as shown below. (Pins 3 & 4)

2. Press and hold the Paper Feed button while turning the printer on, to start the test. Release the button when the printer completes POST. Turn power off or unplug the printer to stop the test.

Parallel Port Test

This test performs a wrap around test between the printer parallel port and the parallel port test connector.

This test requires a parallel port wrap plug. Install the wrap plug in the parallel port before you start the test.

To run the test:

1. Turn the printer off and place a two pin jumper on connector J6 as shown (Pins 3 & 4).

2. Attach the wrap plug to the parallel port.

3. Turn the printer on.

The power light blinks while the test runs. The busy light turns on if the test is successful. The busy light blinks or turns off if the test fails.

Print NVRAM Contents

This test prints the contents of NVRAM in hexadecimal format.

To run the test:

1. Turn the printer off and place a piece of paper in the manual paper slot.

2. Press and hold the Paper Feed button while turning the printer on. Release the button when the printer completes POST.

The test prints English for easy recognition. The following appears on the right side of the printout:

- Device ID

The following appears below the printout:

- Code Level
- Last Error
- Page Count
- Code Level Date

Test Page

This test prints the test page.

To run a complete test page of black and color patterns, be sure the print cartridges are in good condition. Install a black print cartridge in the left side of the printhead cradle and a color print cartridge in the right side.

To enter the test:

1. Turn the printer off.
2. Ensure the manual paper slot is empty.
3. Press and hold the Paper Feed button while turning the printer on. Release the button when the printer completes POST.

The test page will contain the following:

- Code level and date
- Nozzle test pattern for both cartridges
- Bidirectional alignment pattern
- Vertical and horizontal test patterns
- Purge test for both cartridges

4. Repair Information

This chapter explains how to make adjustments to the printer and how to remove defective parts.

Note: Read the following before handling electronic parts. When working on the printer, always unplug the printer from the wall outlet. High voltage is present in the power supply as long as it is plugged into the wall outlet.

Handling ESD-Sensitive Parts

Many electronic products use parts that are known to be sensitive to electrostatic discharge (ESD). To prevent damage to ESD-sensitive parts, follow the instructions below in addition to all the usual precautions, such as turning off power before removing logic boards:

- Keep the ESD-sensitive part in its original shipping container (a special “ESD bag”) until you are ready to install the part into the printer.
- Make the least-possible movements with your body to prevent an increase of static electricity from clothing fibers, carpets, and furniture.
- Put the ESD wrist strap on your wrist. Connect the wrist band to the system ground point. This discharges any static electricity in your body to the printer.
- Hold the ESD-sensitive part by its edge connector shroud (cover); do not touch its pins. If you are removing a pluggable module, use the correct tool.
- Do not place the ESD-sensitive part on the printer cover or on a metal table; if you need to put down the ESD-sensitive part for any reason, first put it into its special bag.
- Printer covers and metal tables are electrical grounds. They increase the risk of damage because they make a discharge path from your body through the ESD-sensitive part. (Large metal objects can be discharge paths without being grounded.)
- Prevent ESD-sensitive parts from being accidentally touched by other personnel. Install printer covers when you are not working on the printer, and do not put unprotected ESD-sensitive parts on a table.
- If possible, keep all ESD-sensitive parts in a grounded metal cabinet (case).
- Be extra careful in working with ESD-sensitive parts when cold weather heating is used because low humidity increases static electricity.

Adjustments

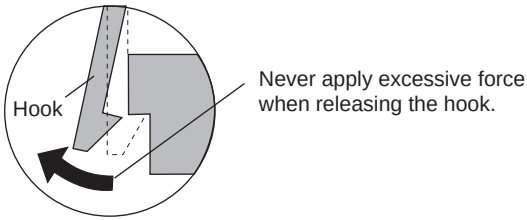
The user is directed, in the Printer Control program, to perform the head to head and bidirectional alignment adjustments after replacing a print cartridge.

Removal Procedures

The following procedures are arranged according to the name of the printer part discussed. Unplug the power cord before removing any parts.

Releasing Plastic Latches

Many of the parts are held in place with plastic latches. The latches break easily; release them carefully. To remove such parts, press the hook end of the latch away from the part to which it is latched.



Base Assembly Removal

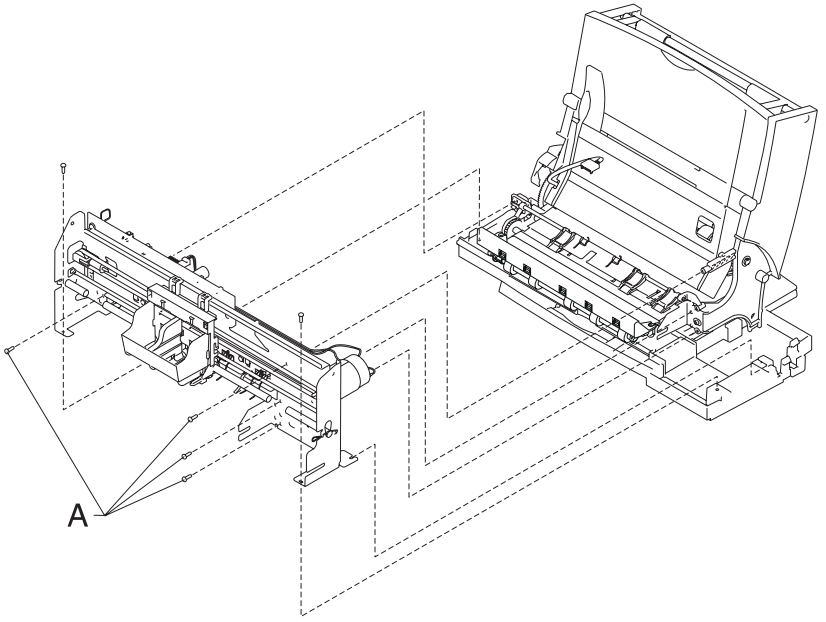
1. Remove the front cover.
2. Remove the rear cover.
3. Disconnect the power supply connector at the system board.
4. Remove the two screws from the maintenance station assembly. Pull up the right side of the mid frame assembly and pull forward and remove the maintenance station assembly.
5. Remove the two screws securing the carrier frame to the base cover.
6. Slide the printer off the base cover.

Carrier Belt Removal

1. Remove the front cover.
2. Remove the carrier assembly.
3. Push the idler pulley to the right to release the tension on the belt and remove the belt.

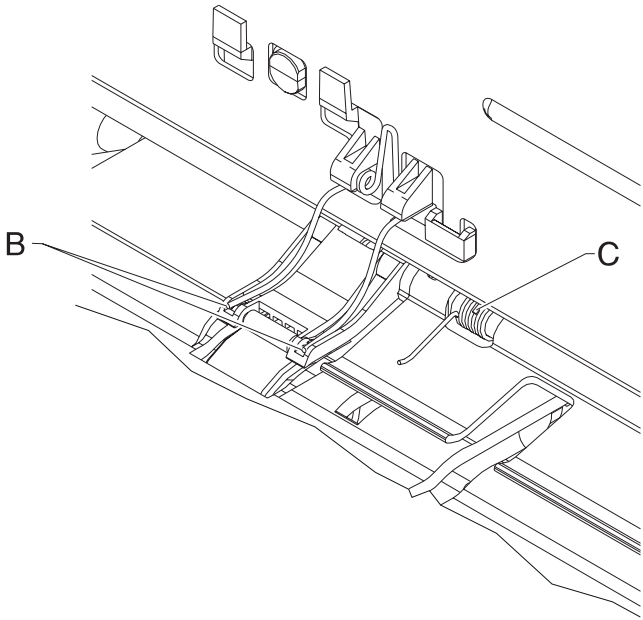
Carrier Frame Assembly Removal

1. Remove the front cover.
2. Remove the rear cover.
3. Remove the base assembly.
4. Disconnect the paper feed motor connector from the system board.
5. Remove the four screws [A] securing the carrier frame to the left and right side frames and remove the carrier frame assembly.



Note: During reassembly:

1. Be sure the small feed roll spring extensions [B] are in the groves of the small feed roll arms.
2. Be sure the short extensions of the two paper flap springs are trapped under the carrier frame [C].



Carrier Transport Motor Removal

1. Remove the front cover.
2. Disconnect the transport motor connector from the system board.
3. Remove the belt from the transport motor pulley.
4. Remove the two screws securing the transport motor to the carrier frame and remove the motor. Note the routing of the motor cable.

Code Module Removal

1. Remove the front cover.
2. Remove the rear cover.
3. Gently pry the Code Module from the system board noting the position of the notch in the module. The notch is down.

Edge Guide Asm and Paper Load Shaft Removal

1. Remove the front cover.
2. Remove the rear cover.
3. Remove the paper load door and manual insert tray.
4. Remove the pick roll hub, shaft and envelope bucklers.
5. Remove the two screws from the right side frame.
6. Work the paper load shaft out of the side frames.
7. Pull up the bottom of the edge guides to separate them from the top of the back plate and remove the assembly from the frames.

Note: When reinstalling, be sure the edge guide springs are turned to the inside to maintain spring tension on the guides.

Encoder Card Removal

1. Remove the front cover.
2. Remove the printhead carrier assembly.
3. Disconnect the printhead cable from the encoder card.
4. Remove the screw from the encoder card and remove the card.

Encoder Strip Removal

1. Remove the front cover.
2. Remove the carrier assembly.
3. Gently release the tension on the encoder strip by flexing the encoder strip tensioner and remove the encoder strip.

Note: When reinstalling the encoder strip, make sure the ends of the strip are centered in their mounting notches and the strip does not bind in the encoder card on the carrier.

Exit Drive Belt Removal

1. Remove the front cover.
2. Remove the rear cover.
3. Remove the carrier frame assembly.
4. Remove the paper load door and manual insert tray.
5. Remove the small feed roll shaft.
6. Unlatch the left side of the exit roller shaft and work the belt off the exit roller pulley.
7. Pull up the four clips securing the mid frame to the large feed roll and work the mid frame out of both side frames.
8. Spread the right side frame apart far enough to allow removal of the exit drive belt.

Exit Roller Removal

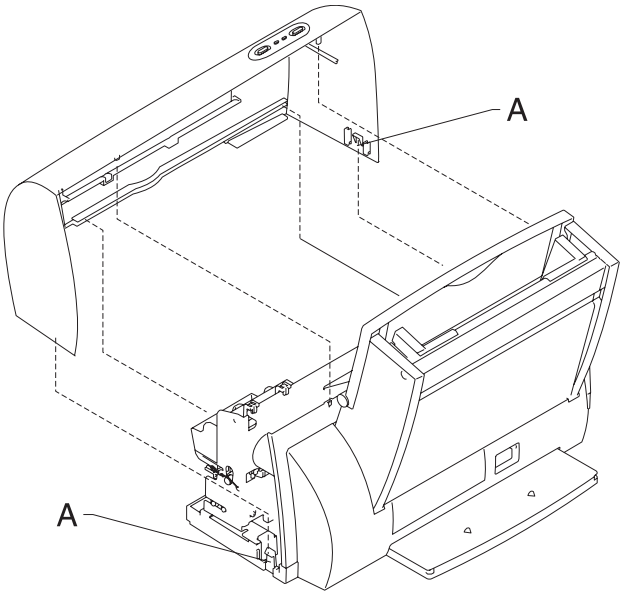
1. Remove the front cover.
2. Remove the two screws from the star roller assembly and remove the assembly.
3. Unlatch the left side of the exit roller and remove the exit drive belt from the exit roller pulley.
4. Remove the exit roller.

Feed Arm Assembly Removal

1. Remove the front cover.
2. Remove the rear cover.
3. Remove the C-clip from the feed arm and remove the assembly.

Front Cover Removal

1. Place a screwdriver in slot [A] and release the cover latches.
2. Slide the cover forward and off the printer.



To reassemble:

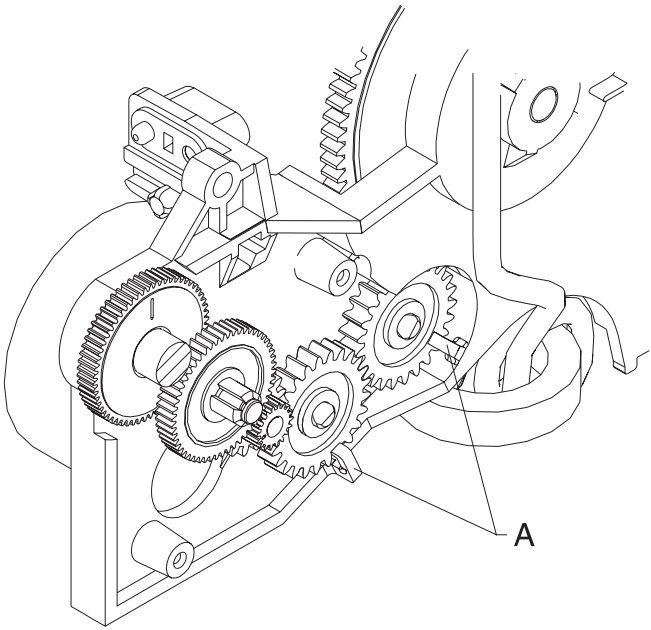
1. Slide the cover over the matching pieces on the bottom cover.
2. Press in both sides opposite the cover latches until they latch.

Gutter Pad Removal

1. Remove the front cover.
2. Remove the rear cover.
3. Remove the base assembly.
4. Scrape the old gutter pad off the base.

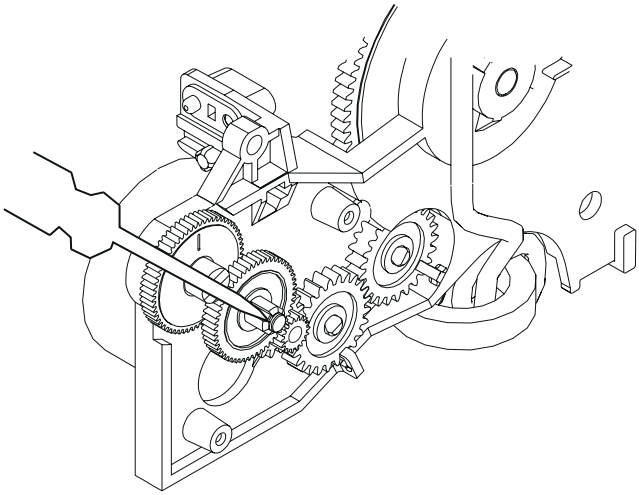
Inside Idler Gears Removal

1. Remove the front cover.
2. Remove the rear cover.
3. Remove the printer from the base assembly.
4. Remove the paper feed motor.
5. Gently pry the two idler gears from the left side frame. Be careful not to break the locking tabs [A].



Large Feed Roll Removal

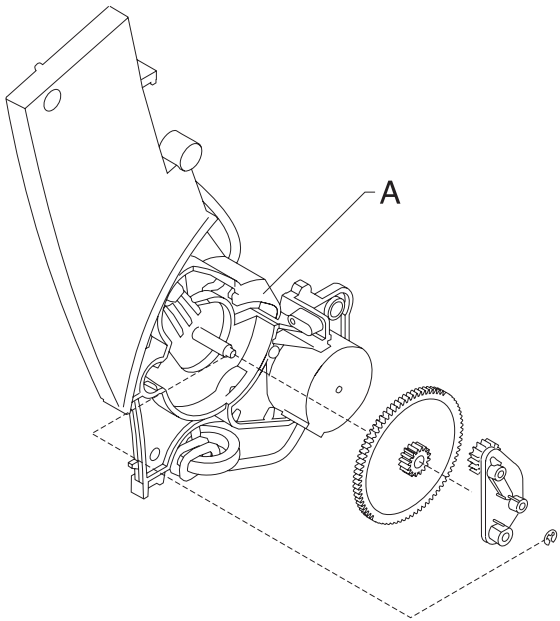
1. Remove the front cover.
2. Remove the rear cover.
3. Remove the carrier frame assembly.
4. Using a small screwdriver, break the four prongs off the compound idler gear and remove the idler gear.
5. Remove the large feed roll from the mid frame by pulling it out of the four mounting clips. Spread the right side frame and remove the large feed roll.



Note: Install the compound idler gear after the printer is installed in the base assembly.

Large Outside Gear Removal

1. Remove the front cover.
2. Remove the rear cover.
3. Remove the paper load door and manual insert tray.
4. Remove the C-clip from the feed arm assembly and remove the feed arm assembly.
5. Remove the C-clip from the left side of the pick roll shaft.
6. Pull the pick roll shaft out far enough to remove the large gear.

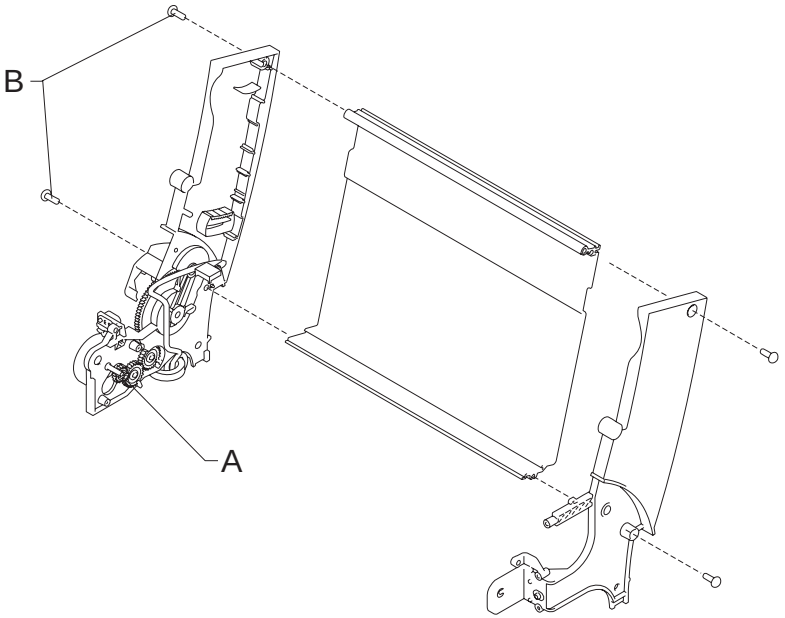


Note: Gently pull the feed arm guide [A] on the left side frame forward, then remove the large gear.

Left Side Frame Assembly Removal

1. Remove the front cover.
2. Remove the rear cover.
3. Remove the carrier frame assembly.
4. Remove the paper load door and manual insert tray.
5. Using a small screwdriver, break the four prongs off the compound idler gear [A] and remove the idler gear.
6. Remove the two screws [B] securing the left side frame to the back plate. Slide the left side frame off the back plate. Note the relationship of the parts.

Note: Install a new compound idler gear [A] after the printer is installed in the base assembly.



Maintenance Station Assembly Removal

1. Remove the front cover.
2. Remove the rear cover.
3. Remove the two screws from the maintenance station assembly, lift up the right side of the mid frame assembly and slide the maintenance station assembly forward, out of the printer.

Maintenance Wipers and Caps Removal

1. Remove the front cover.
2. Push the carrier to the left away from the maintenance station.
3. Gently pull the caps and wipers off their mountings.

Note: When reinstalling the caps, be sure the cap is positioned with the locking tabs to the left and right before pushing them down on their mounting posts. Be sure the wipers are completely seated.

Manual Insert Tray Removal

1. Remove the front cover.
2. Remove the rear cover.
3. Remove the paper load door.
4. Spread the right side frame away from the manual insert tray until the pins in the insert tray clear the frame.
5. Remove the manual insert tray from the left side frame.

Mid Frame Assembly Removal

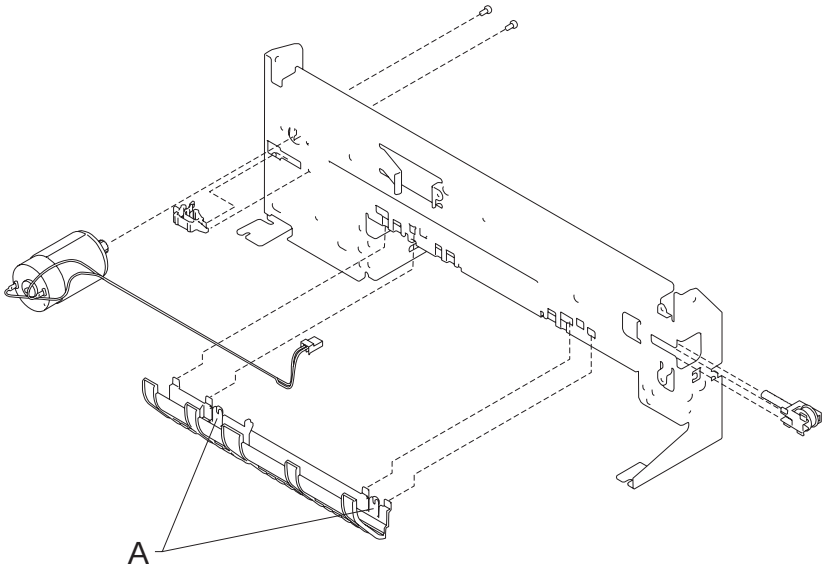
1. Remove the front cover.
2. Remove the rear cover.
3. Remove the carrier frame assembly.
4. Remove the paper load door and manual insert tray.
5. Remove the small feed roll shaft.
6. Unlatch the left side of the exit roller shaft and work the belt off the exit roller pulley.
7. Pull up the four clips securing the mid frame to the large feed roll and work the mid frame out of both side frames.

Paper Feed Motor Removal

1. Remove the front cover.
2. Remove the rear cover.
3. Remove the base assembly.
4. Remove the two screws securing the paper feed motor and remove the motor. Note the routing of the motor cable.

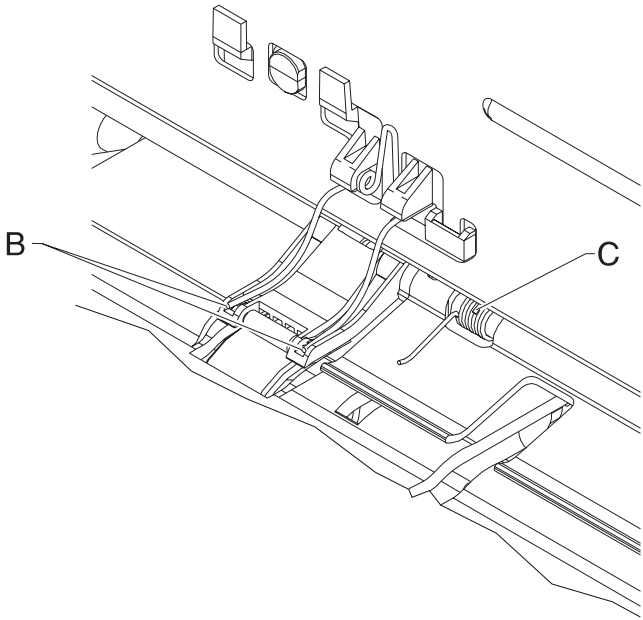
Paper Guide and EOF Flag Assembly Removal

1. Remove the front cover.
2. Remove the rear cover.
3. Remove the printhead carrier assembly.
4. Remove the carrier frame assembly.
5. Remove the encoder strip.
6. Remove the system board.
7. Remove the three small feed roll springs.
8. Push the locking tabs [A] to the rear and pull the paper guide down and out of the carrier frame.



Note: During reassembly:

1. Be sure the small feed roll spring extensions [B] are in the groves of the small feed roll arms.
2. Be sure the short extensions of the two paper flap springs are trapped under the carrier frame [C].



Paper Load Door Removal

Spread the left side frame where it joins the paper load door and remove the door.

Pick Roll Hub, Shaft and Envelope Bucklers Removal

1. Remove the front cover.
2. Remove the rear cover.
3. Remove the paper load door and manual insert tray.
4. Slide the left paper guide to the right.
5. Remove the C-clip from the left side of the pick roll shaft.
6. Pull the pick roll shaft out to the left and remove the pick roll shaft, hubs and envelope bucklers.

Note: During reassembly, be sure the pick roll hubs are in the slots at the bottom of the paper guides and the rolls are centered on the pick pads.

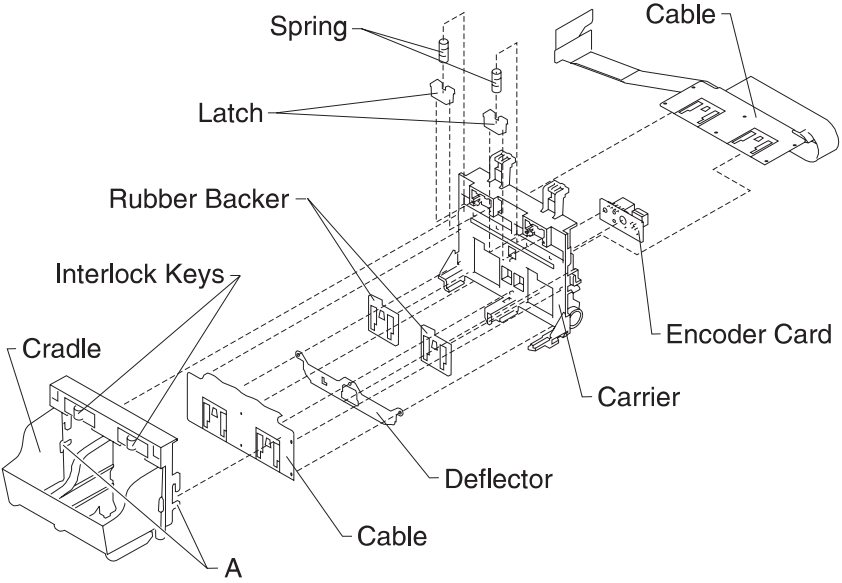
Power Supply Removal

Note: When working on the printer, always unplug the printer from the wall outlet. High voltage is present in the power supply as long as it is plugged into the wall outlet.

1. Remove the front cover.
2. Remove the rear cover.
3. Remove the base assembly.
4. Turn the base over, pull out on the latches, slide the power supply forward and off the base assembly.

Printhead Cable, Cradle & Paper Deflector Removal

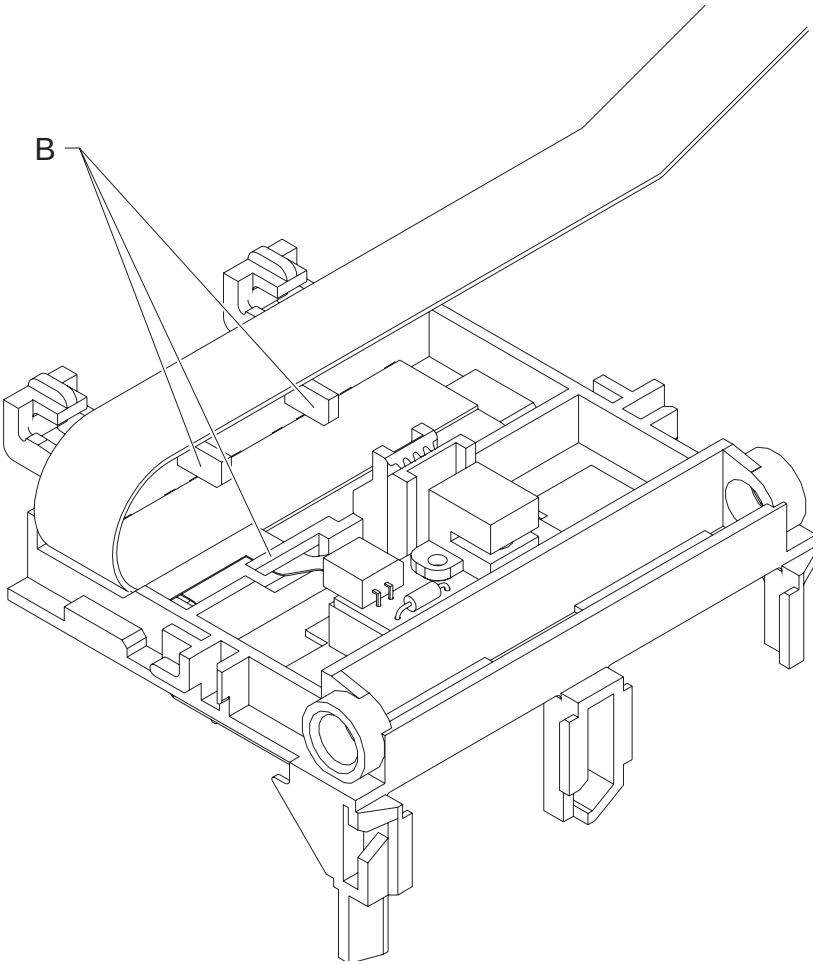
1. Remove the front cover.
2. Remove the printhead carrier assembly.
3. Disconnect the printhead cable from the encoder card. Note the routing of the cable under the retaining clip on the carrier.
4. Separate the cradle from the printhead carrier assembly by pushing out the cradle latches [A].



5. Feed the folded end of the printhead cable through the opening in the carrier assembly and remove the cable.

Note: Use the illustration to assemble the carrier parts in the correct sequence.

Note: Be sure the cable is secured under the three retaining clips [B] on the back of the carrier.

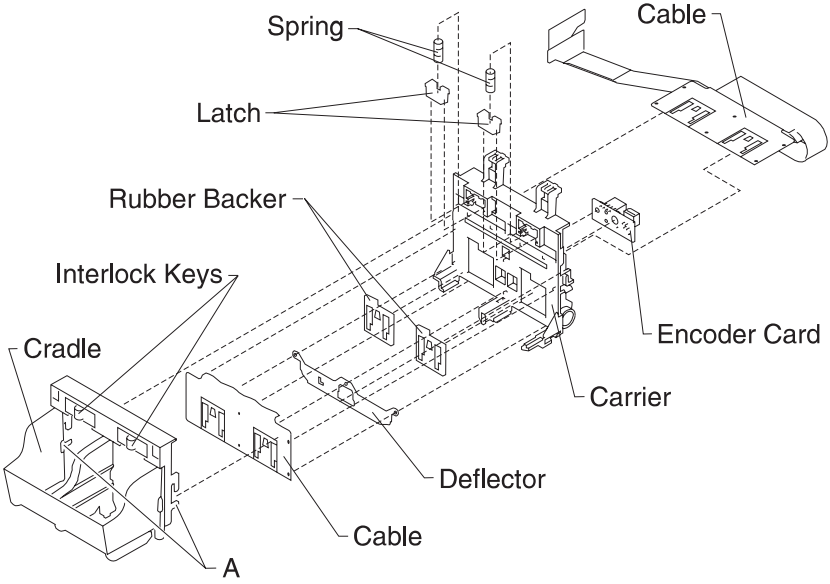


Printhead Carrier Assembly Removal

1. Remove the front cover.
2. Unlock the two printhead cable connectors and disconnect the printhead cable from the system board.
3. Remove the retainer from the right end of the carrier guide rod.
4. Slide the carrier guide rod to the left, out of the printer.
5. Lift the carrier out of the printer.

Printhead Rubber Backer Removal

1. Remove the front cover.
2. Remove the printhead carrier assembly.
3. Separate the cradle from the printhead carrier assembly by pushing out the cradle latches [A].

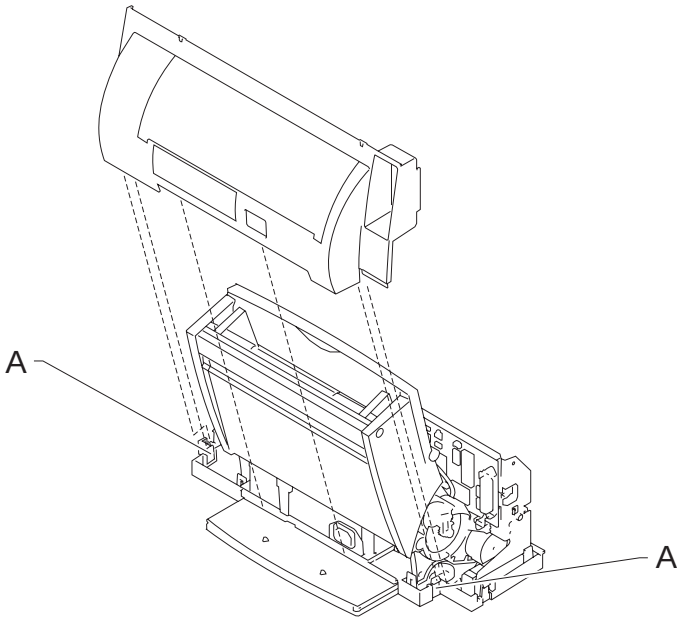


4. Remove the rubber backer and paper deflector from under the printhead carrier cable.

Note: Use the illustration to assemble the carrier parts in the correct sequence.

Rear Cover Removal

1. Remove the front cover.
2. Place a screwdriver in slot [A] and release the cover latches.



3. Slide the cover up and off the printer.
4. To reassemble, place the cover over the tabs in the bottom cover and press down until the cover latches. Be sure the parallel connector snaps do not get trapped behind the cover.

Right Side Frame Assembly Removal

1. Remove the front cover.
2. Remove the rear cover.
3. Remove the carrier frame assembly.
4. Remove the paper load door and manual insert tray.
5. Remove the two screws securing the right side frame to the back plate. Slide the right side frame off the back plate. Note the relationship of the parts.

Small Feed Roll Shaft, Rollers & Paper Flap Removal

1. Remove the front cover.
2. Remove the rear cover.
3. Remove the carrier frame assembly.
4. Spread the left and right side frames apart far enough to remove the small feed roll shaft assembly.

Boss Paper Guide Feature

Due to occasional paper buckling at the bottom edge of the page, a new feature has been added to the paper guide to stabilize the small feed roll shaft. Install the new style paper guide and match the small feed roll assembly. The new small feed roll FRU is cut out in the paper flap allowing the new feature to contact the small feed roll shaft.

Star Roller Removal

1. Remove the front cover.
2. Remove the two screws from the star roller assembly and remove the assembly.

System Board Removal

1. Remove the front cover.
2. Unlock the two printhead cable connectors and disconnect the printhead cables from the system board.
3. Disconnect the other cables from the system board.
4. Gently release the tension on the encoder strip by flexing the encoder strip tensioner and remove the encoder strip from the left side only.
5. Remove the three screws securing the system board to the carrier frame and remove the system board. Note the routing of the paper feed motor cable.

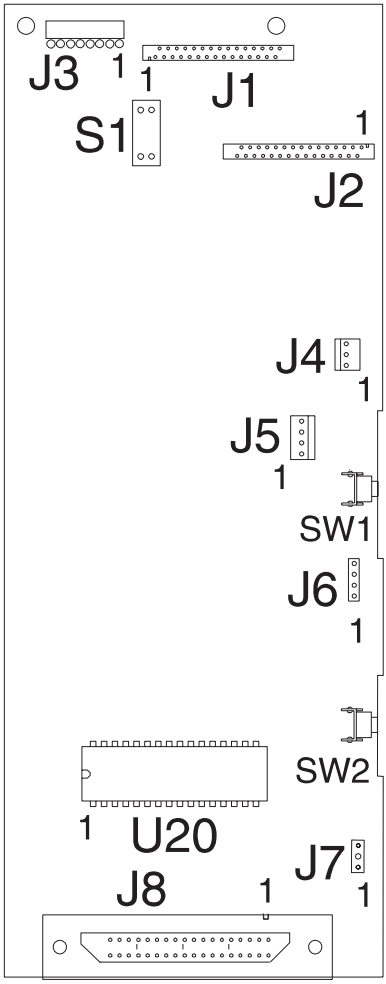
Note: The head to head and bidirectional printing alignments will be reset to factory defaults. The user, through the Printer Control program, is directed to perform these alignments. When reinstalling the system board, it is easier to insert the printhead cables in the two connectors prior to installing the board.

5. Connector Locations

The printer is shipped with the jumper pin setting in the following static position. Be sure the jumper is installed on the correct pins.

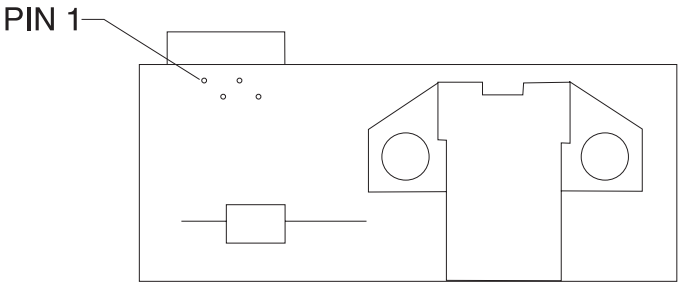
Communications Jumper **J7** pin 2 and 3.

System Board Connectors



Connector	Connector Names
J1	Printhead Cable 1
J2	Printhead Cable 2
J3	Power Supply
J4	Transport Motor
J5	Paper Feed Motor
J6	Test Jumper
J7	Communications Jumper
J8	Parallel Port
SW1	Paper Feed Switch
SW2	Power Switch
S1	EOF Sensor
U20	Code Module

Encoder Card Connector



6. Preventive Maintenance

This chapter contains the lubrication specifications. Follow these recommendations to prevent problems and maintain optimum performance.

Lubrication Specifications

Lubricate only when parts are replaced or as needed, not on a scheduled basis. Use grease P/N 1329301 to lubricate the following:

- All gear mounting studs.
- The left and right ends of the large feed roller at the side frames.
- Both ends of the sheet feeder pick roll shaft at the side frames.
- The carrier to carrier frame engagement.

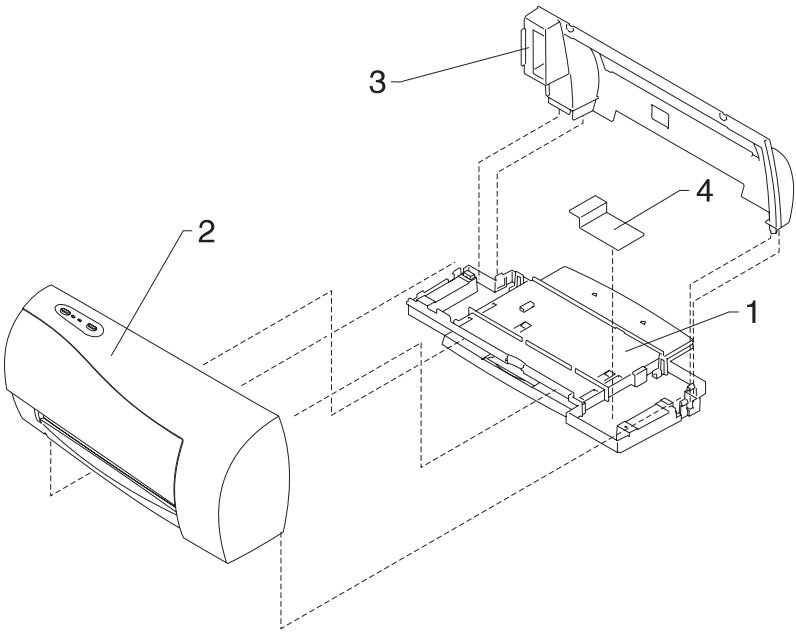
Do not lubricate the carrier guide rod, or carrier guide rod bearings.

7. Parts Catalog

How To Use This Parts Catalog

- SIMILAR ASSEMBLIES: If two assemblies contain a majority of identical parts, they are broken down on the same list. Common parts are shown by one index number. Parts peculiar to one or the other of the assemblies are listed separately and identified by description.
- NS: (Not Shown) in the Asm-Index column indicates that the part is procurable but is not pictured in the illustration.
- PP: in the parts descriptions column indicates the part is available in the listed parts packet.

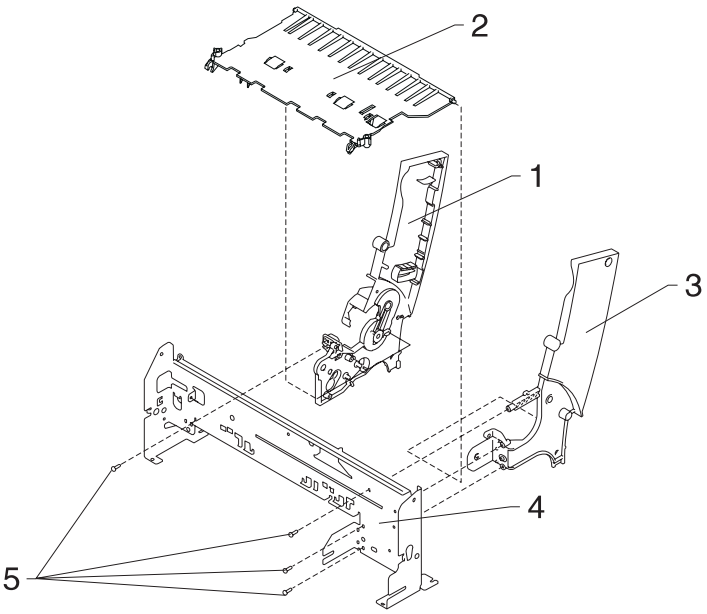
Assembly 1: Covers



Asm-Index	Part Number	Units	Description
1 -1	70G0594	1	Base Asm includes Exit Tray, Gutter Pad, Feet
-2	70G0595	1	Front Cover Asm, Access Cover, Button & LED Lens
-3	69G4118	1	Rear Cover
-4	69G4119	1	Gutter Pad, Base Asm

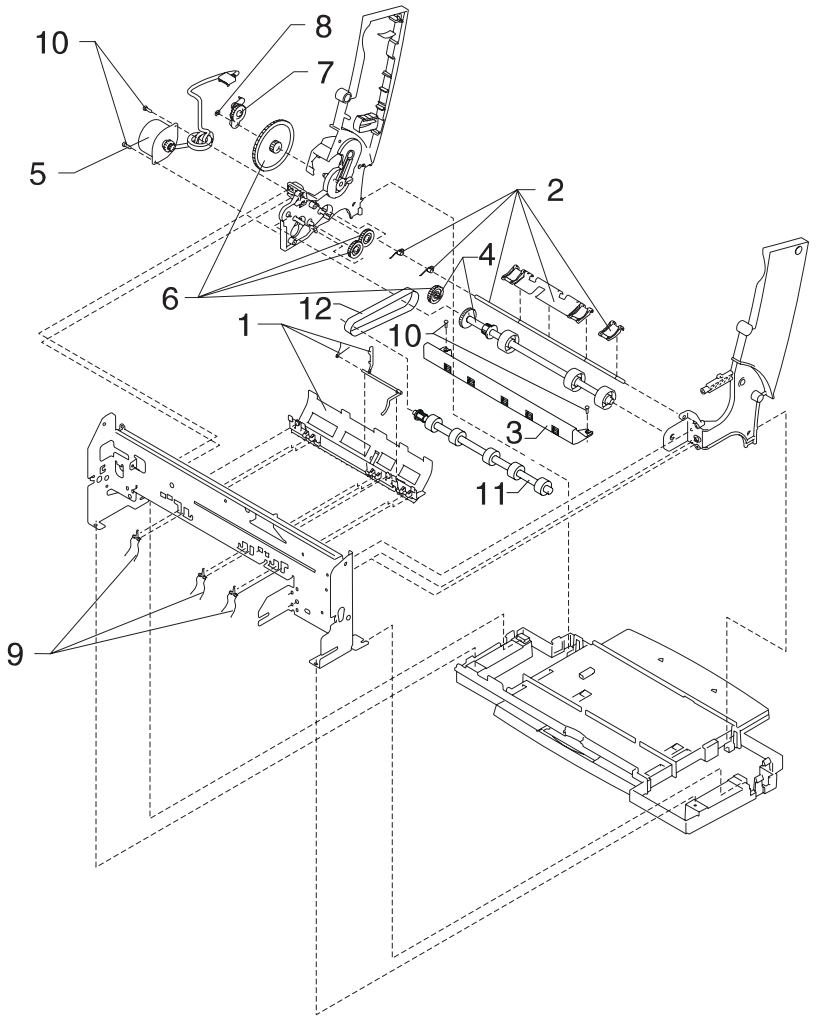
N/S	70G0591	1	Replaceable Package B/M (US) Includes: (Carton, Cushion Set, Sealing Tape)
N/S	70G0592	1	Replaceable Package B/M (Non - US) Includes: (Carton, Cushion Set, Sealing Tape)

Assembly 2: Frames



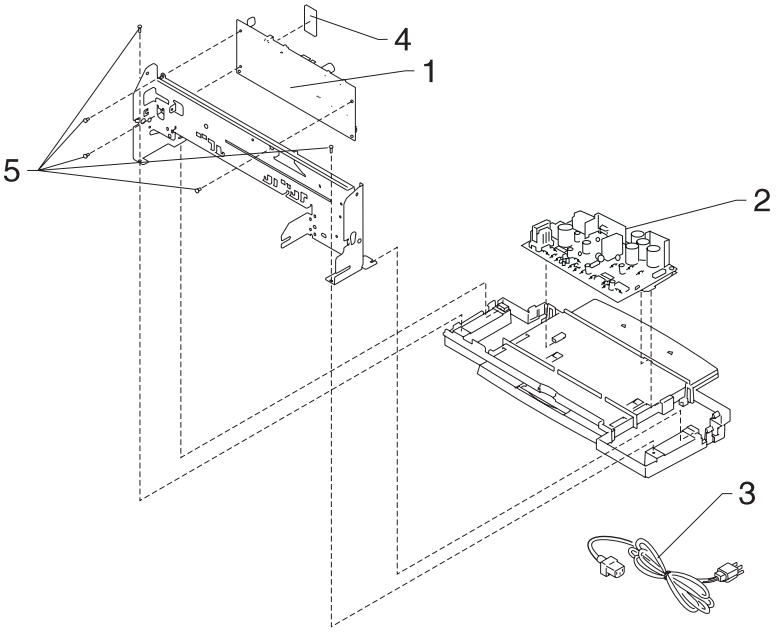
Asm-Index	Part Number	Units	Description
2 -1	69G4120	1	Left Side Frame Sub-Asm without Gears Also order gears B/M 69G4127
-2	70G0574	1	Mid Frame with Star Rollers
-3	69G4121	1	Right Side Frame
-4	69G4122	1	Carrier Frame
-5	69G4188	4	Screw, Frame Mounting (PP)

Assembly 3: Paper Feed



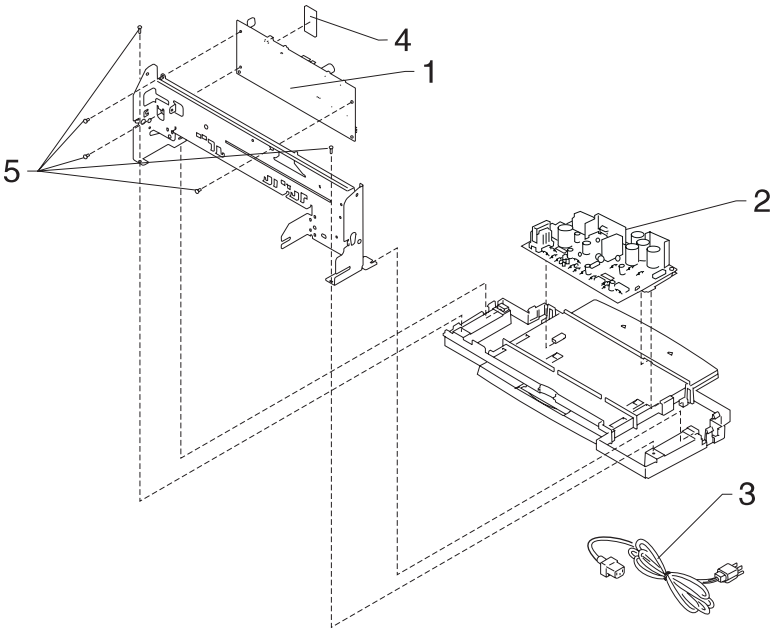
Asm-Index	Part Number	Units	Description
3 -1	69G4074	1	Paper Guide Asm includes EOF Flag, Spring (Old style - works with old or new small feed roll). See “Boss Paper Guide Feature” on page 4-21.
-1	70G3039	1	Paper Guide Asm includes EOF Flag, Spring (New style, works with new small feed roll only). See “Boss Paper Guide Feature” on page 4-21.
-2	13A1196	1	Small Feed Roll Shaft Roll B/M and Paper Flap
-3	70G0574	1	Star Roller Asm (part of Mid Frame)
-4	70G0575	1	Large Feed Roll Asm (includes Small Compound Idler Gear)
-5	70G0576	1	Paper Feed Motor, Motor Gear, Toroid
-6	69G4127	1	Gears B/M
-7	69G4398	1	Feed Arm Asm
-8	69G4188	2	C-Clip (PP)
-9	69G4188	3	Spring, Small Feed Roll (PP)
-10	69G4188	2	Screw, Paper Feed Motor Mounting (PP)
-11	70G0577	1	Exit Roller
-12	70G0579	1	Exit Drive Belt

Assembly 4: Electronics



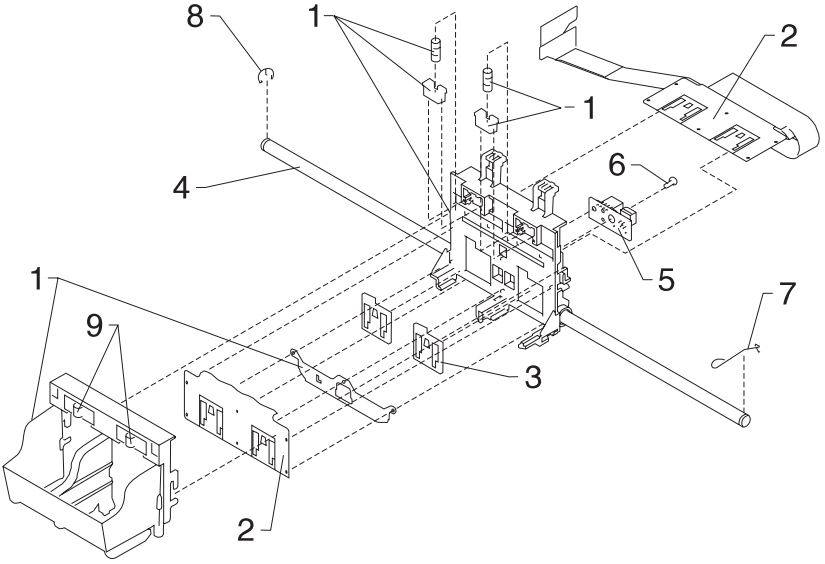
Asm-Index	Part Number	Units	Description
4 -1	70G2695	1	System Board, W/O Code Module If code module in old board is labeled: 70G0830 through 70G0835; 70G0841 through 70G0845, 70G2562, 70G2587, 70G2598, 70G2599, order new code module 70G3000.
-2	70G0581	1	Power Supply with Ground Plane, Insulator, Cover
-3	1339526	1	Power Cord, U.S.
	1342514		Power Cord, Argentina
	1339520		Power Cord, Austria
	1339520		Power Cord, Belgium
	1342514		Power Cord, Bolivia
	1342514		Power Cord, Brazil (LV)
	1342534		Power Cord, Brazil (HV)
	1339526		Power Cord, Canada
	1342534		Power Cord, Chile
	1342514		Power Cord, Columbia
	1342514		Power Cord, Costa Rica
	1339525		Power Cord, Denmark
	1342514		Power Cord, Ecuador
	1339519		Power Cord, Egypt
	1342514		Power Cord, El Salvador
	1339520		Power Cord, Finland
	1339520		Power Cord, France
	1339520		Power Cord, Germany
	1342514		Power Cord, Guatemala
	1342514		Power Cord, Honduras
	1339521		Power Cord, Israel
	1339524		Power Cord, Italy
	1342514		Power Cord, Mexico
	1339520		Power Cord, Netherlands
	1342514		Power Cord, Nicaragua
	1339520		Power Cord, Norway
	1342514		Power Cord, Panama
	1342536		Power Cord, Paraguay
	1342514		Power Cord, Peru
	1339517		Power Cord, Saudi Arabia
	1339523		Power Cord, South Africa
	1339520		Power Cord, Spain
	1339520		Power Cord, Sweden
	1339522		Power Cord, Switzerland
	1339519		Power Cord, United Kingdom
	1342536		Power Cord, Uruguay
	1342514		Power Cord, Venezuela

Assembly 4: Electronics (continued)



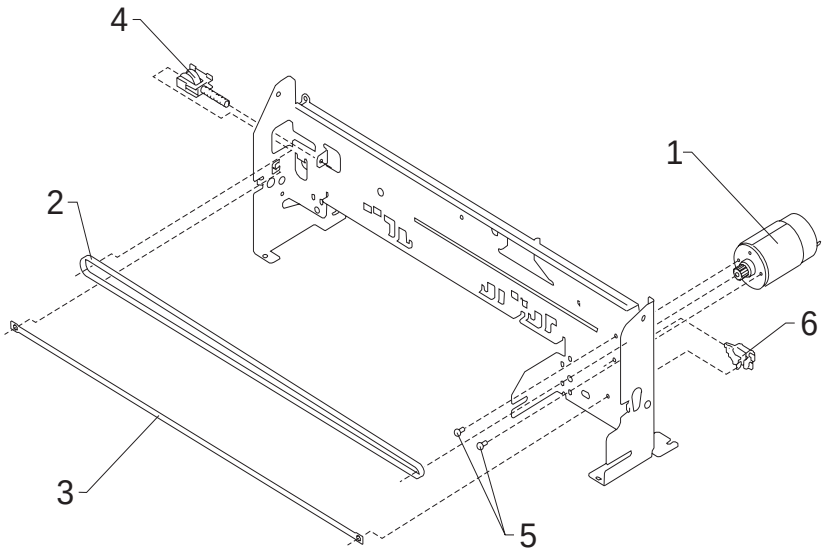
Asm-Index	Part Number	Units	Description
4 -4	70G3000	1	Code Module
-5	69G4188	5	Screw, System Board Mounting (PP)
NS	69G4188	1	Screw, Ground Jumper Mounting (PP)
NS	69G4188	2	Jumper, 2-Pin (PP)

Assembly 5: Carrier



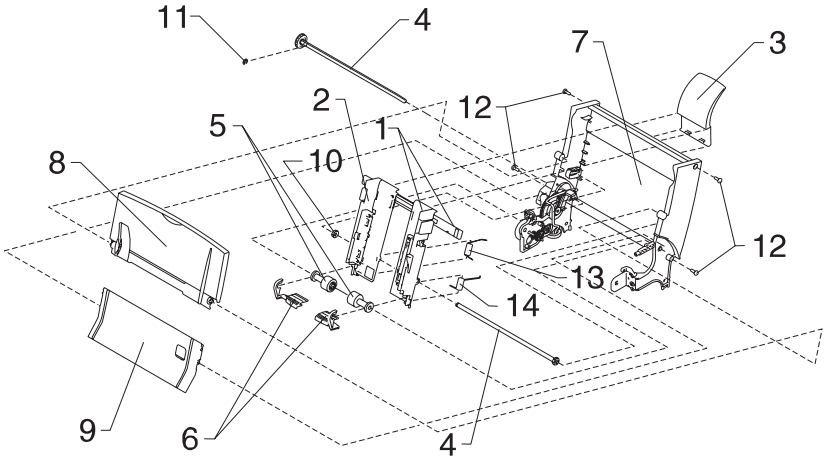
Asm-Index	Part Number	Units	Description
5 -1	70G0585	1	Printhead Carrier B/M
-2	70G0586	1	Printhead Cable (Folded)
-3	70G0587	1	Rubber Backer
-4	69G4157	1	Carrier Guide Rod
-5	69G4156	1	Encoder Card Asm
-6	69G4188	1	Screw, Encoder Card Mounting (PP)
-7	69G4188	1	Retainer Right, Carrier Guide Rod (PP)
-8	69G4188	1	E-Ring, Carrier Guide Rod (PP)
-9	70G0588	1	Printhead Cartridge Interlock Key B/M

Assembly 6: Carrier Transport



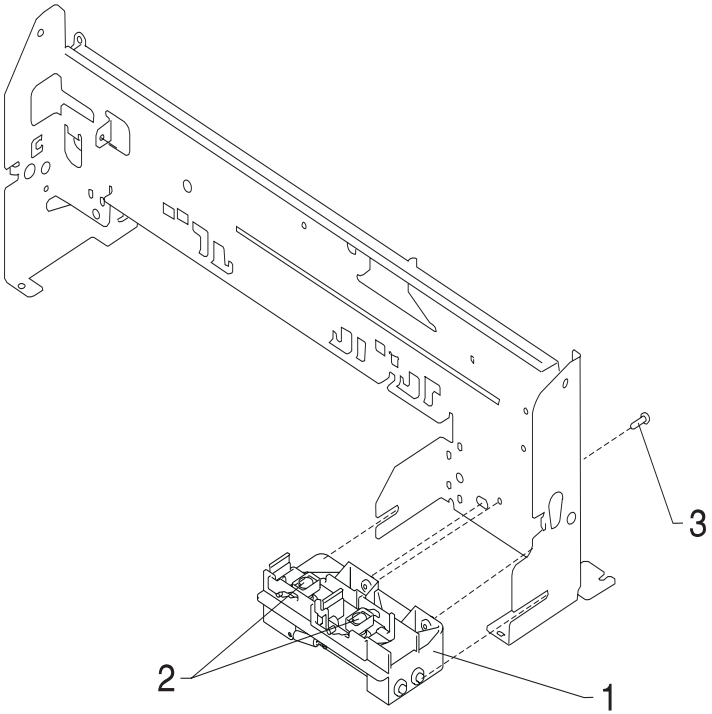
Asm-Index	Part Number	Units	Description
6 -1	69G4158	1	Carrier Transport Motor & Pulley
-2	69G4159	1	Carrier Belt
-3	69G4403	1	Encoder Strip
-4	69G4163	1	Idler Pulley Tension Asm
-5	69G4188	2	Screw, Carrier Transport Motor Mounting (PP)
-6	69G4188	1	Tensioner, Encoder Strip (PP)

Assembly 7: Sheet Feeder



Asm-Index	Part Number	Units	Description
7 -1	69G4166	1	Right Edge Guide & Width Adjust Strip
-2	69G4167	1	Left Edge Guide
-3	69G4131	1	Upper Paper Support
-4	1367469	1	Pick Roll & Paper Load Shaft B/M
-5	1367463	2	Pick Roll Hub Asm
-6	1367019	1	Envelope Buckler B/M, Left & Right
-7	69G4169	1	Back Plate
-8	69G4164	1	Paper Load Door Asm Includes Left Edge Guide
-9	69G4165	1	Manual Insert Tray
-10	69G4127	1	Gear, Paper Load (Gears B/M)
-11	69G4188	1	E-Ring (PP)
-12	69G4188	4	Screw, Side Frame (PP)
-13	69G4188	1	Spring, Left Paper Load (PP)
-14	69G4188	1	Spring, Right Paper Load (PP)

Assembly 8: Maintenance Station



Asm-Index	Part number	Units	Description
8 -1	70G0589	1	Maintenance Station Asm
-2	70G0590	1	Wiper and Cap B/M (one of each)
-3	69G4188	1	Screw, Maintenance Station Mounting (PP)

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