HP DeskWriter Printer Family Service Manual

Mercury and Thunder Platform Products
(HP DeskWriter 510, DeskWriter 520,
DeskWriter 550C, and DeskWriter 560C Printers)

HEWLETT
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Italic type is used for titles of publications and to emphasize information in a paragraph.

Warning	**The warning text is used where potential danger to an individual may occur.**
Caution	The caution text is used where potential danger to equipment may occur.
Note	The note text is used where attention to special instructions appear.

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Chapter 7 Adjustments

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Insert Here

HP DeskWriter 500 Series Printers
Technical Support Solutions Guide

Part Number 5962-6849E

Functional Description

Overview of Printers Supported in this Manual

This service/repair manual supports the Mercury and Thunder platforms of the HP DeskWriter family of printers.

"Mercury" is the code name used during development of the HP DeskWriter 510 and DeskWriter 550C (Mercury platform) printers.

"Thunder" is the code name used during development of the HP DeskWriter 520 and DeskWriter 560C (Thunder platform) printers.

The HP DeskWriter 550C printer, which were first introduced in November, 1992, underwent two major product changes during their manufacturing life:

- Upgrade from the Jake to the McJake mechanism
- Change from Pre-Storm electronics to Storm electronics

The Mercury platform printers are now discontinued.

The Thunder platform printers use Thunder electronics (Storm electronics with new firmware* ROMs). The Thunder printers use an upgraded mechanism, code named "Aurora."

The table below lists the Mercury and Thunder platform printers and summarizes their differences.

Table 2-1. Mercury and Thunder Printers

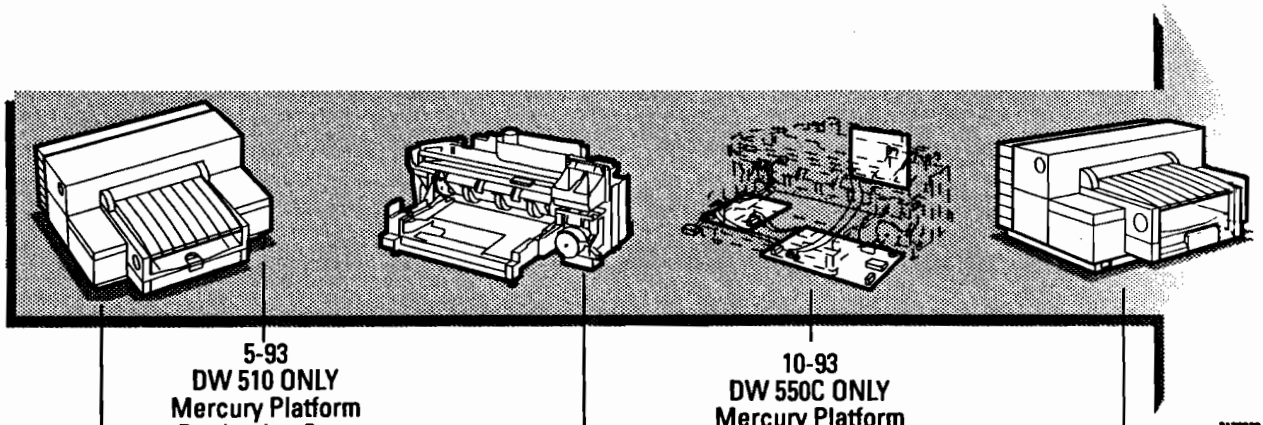
Platform	Product Name	Model Number	Printer Description	Mechanism (Production Start Date)	Electronics (Production Start Date)	Status
Mercury	HP DeskWriter 510[1]	C2127A	Monochrome	McJake (5/93)	Pre-Storm (11/92)	Discontinued
	HP DeskWriter 550C	C2121A	Black and color	Jake (11/92) or McJake (7/93)	Pre-Storm (11/92) or Storm (10/93)	Discontinued
Thunder	HP DeskWriter 520	C2170A	Monochrome	Aurora (3/94)	Thunder (3/94)	Available
	HP DeskWriter 560C	C2168A	Black and color	Aurora (3/94)	Thunder (3/94)	Available

1. Distributed only in Europe. The HP DeskWriter continued to provide the monochrome printing solution in other countries and regions of the world.

* Firmware is the programmed instructions for printer operation. It is stored in the firmware ROM on the logic PCA.

Evolution of the Mercury and Thunder Printers

The illustration below shows the relative production start dates of Mercury and Thunder products and modifications.



11-92
DW 550C ONLY
Mercury Platform
Production Start
(with Pre-Storm Electronics
and Jake Mechanism)

5-93
DW 510 ONLY
Mercury Platform
Production Start
(with Pre-Storm Electronics
and McJake Mechanism)

7-93
Mercury Platform
McJake Mechanism
Upgrade (DW 550C)

10-93
DW 550C ONLY
Mercury Platform
Storm Electronics
Change

3-94
Thunder Platform
Production Start
(with Thunder Electronics
And Aurora Mechanism)

Original Mercury Platform

The HP DeskWriter 550C printer with the Jake mechanism and Pre-Storm electronics provided the HP DeskWriter printer family with the following improvements over the previous HP DeskWriter C printer:

- Black and color printing without swapping print cartridges
- Faster print speed
- Expanded media handling capability
  - More media sizes
  - Greater media weight
  - Transparencies and HP Glossy Paper
  - Multiple envelope feeding from the IN tray

Mercury McJake Mechanism Upgrade

The purpose of the McJake mechanism upgrade to the Mercury printers was to increase the reliability of paper handling. The following changes were made:

- The IN tray design changed from an "IN tray drawer" to a stationary IN tray with a sliding "paper catch."
- Because of the change to the IN tray, the design of the output tray changed.
- The spring loading on the pressure plate that supports the media stack was modified so that the pressure plate no longer tries to force the media stack against the mechanism drive rollers.
- A means of accurately adjusting the print cartridge-to-pivot-spacing at repair centers was provided.
- A "paper kicker" was added to help keep the media stack properly aligned.
- Because of the change to the pressure plate, the design of the output tray paper sled changed.

Note	The HP DeskWriter 510 printer was not introduced with the Jake mechanism. All HP DeskWriter 510 printers have a McJake mechanism.

Mercury Storm Electronics Changes

The electronics in HP DeskWriter 550C printers were changed from Pre-Storm to Storm components. Storm electronic components include the following:

- Power-supply PCA
- Head-driver PCA
- Firmware on the logic PCA

The major objective of the Storm electronics changes was to improve black print quality by improving dot integrity. Storm did this by reducing the dot-firing pulse width (from 3.25 µseconds to 2.25 µseconds) and increasing the dot-firing voltage to the black print cartridge (from +17V to +24V).

To provide the narrower pulse width and increased voltage, the power-supply PCA was changed from a linear to a switching supply. Along with the +5V logic output and +17V motor-driver output, the Storm power supply provided a +24V output to drive the black print cartridge at the narrower pulse width.

The Storm electronics also included changes to the head-driver PCA and to the firmware on the logic PCA.

Thunder Platform Upgrade

The Thunder platform (HP DeskWriter 520 and DeskWriter 560C printers) improvements further enhanced the print quality of the HP DeskWriter family of printers.

The Storm electronics were rolled into the Thunder electronics. The Thunder firmware was changed for Thunder's Aurora mechanism.

The Thunder Aurora mechanism provides the following improvements over the McJake mechanism:

- Improved service station that allows adjustment for part variances. Adjustable at the repair centers.
- Carriage shaft adjustment for better control of print-cartridge-to-paper spacing. Adjustable at repair centers.
- Modified pivot platen with "cockle" ribs allows reduced print-cartridge-to-paper spacing and minimize the impact of paper cockle (smearing, etc.).
- Increased print-cartridge-to-paper spacing for envelopes.

Note	The Aurora mechanism is backwards compatible with all Mercury printers.

Identifying Mercury and Thunder Mechanisms and Electronics

Identifying Mechanisms

Printers with Jake mechanisms can be easily distinguished from printers with McJake and Aurora mechanisms by noting the designs of the printers' IN trays and output trays. Mechanism features provide additional means of distinguishing the three types of mechanisms.

By IN Tray and Output Tray Design

The easiest way to distinguish a printer with a Jake mechanism from a printer with a McJake or Aurora mechanisms is by noting the design of the IN tray and of the output tray. Jake mechanisms use an "IN tray drawer." McJake and Aurora mechanisms use a stationary IN tray with a "paper catch." Each type of IN tray uses a different type of output tray. In addition, the McJake output tray used two paper sled designs. Figure 2-2. illustrates the two types of IN trays, the two types of output trays, and the three types of paper sleds.

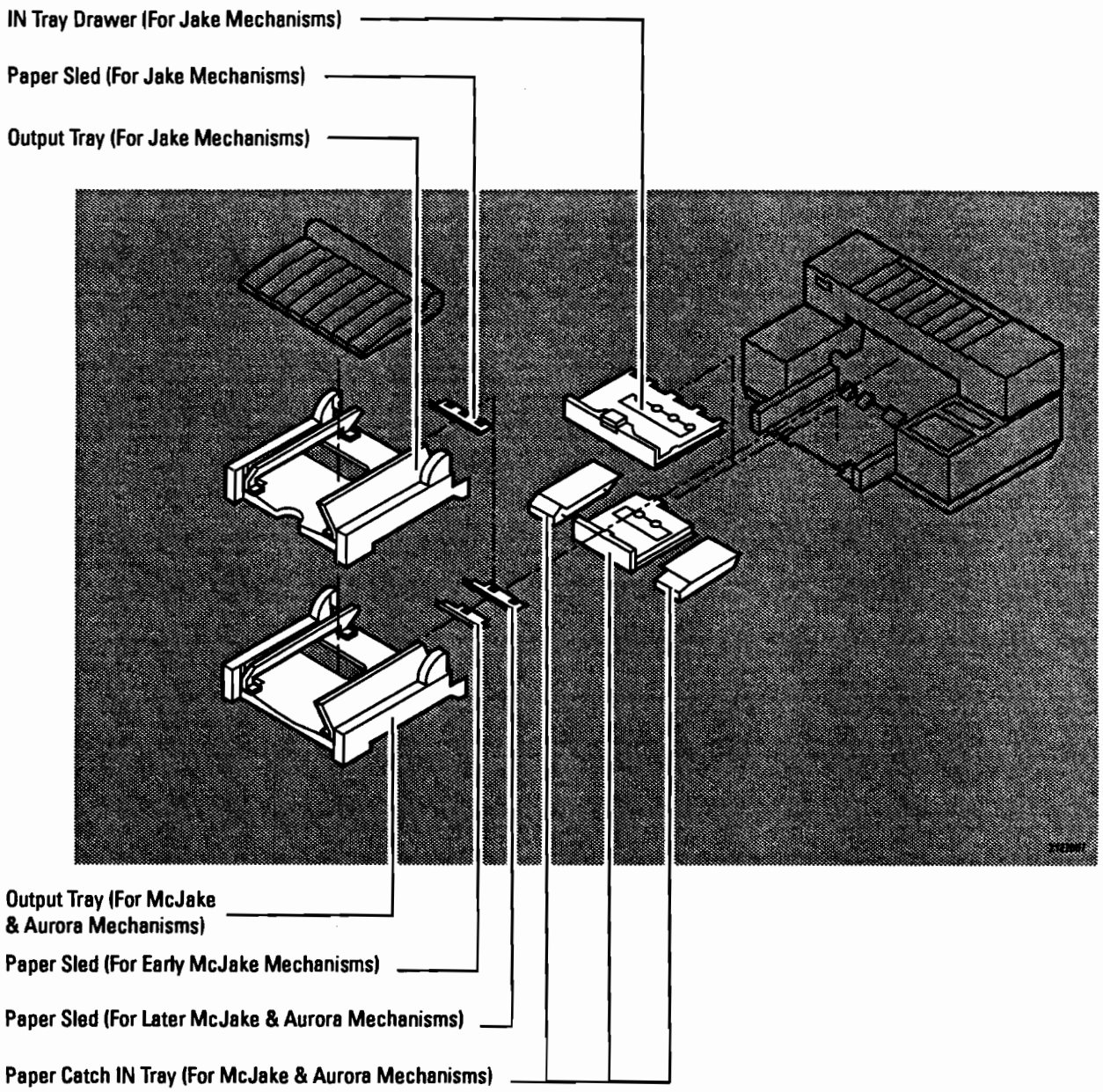


Figure 2-1. IN Tray & Output Tray Types

By Mechanism Features

Each mechanism has its own distinguishing features. Figure 2-3., Figure 2-4., and Figure 2-5. illustrate the features used to identify the Jake, McJake, and Aurora mechanisms.

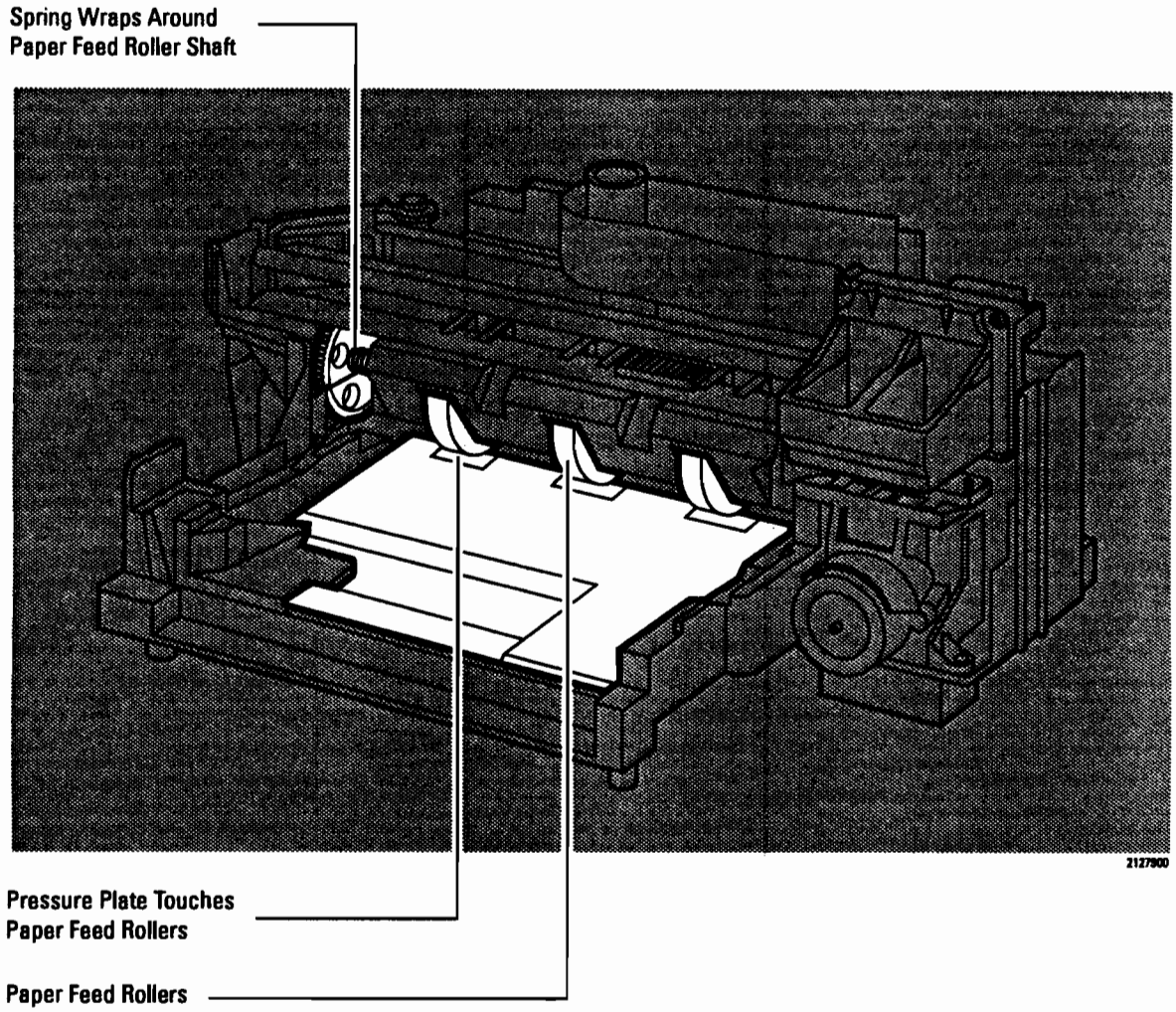


Figure 2-2. Jake Mechanism Identifiers

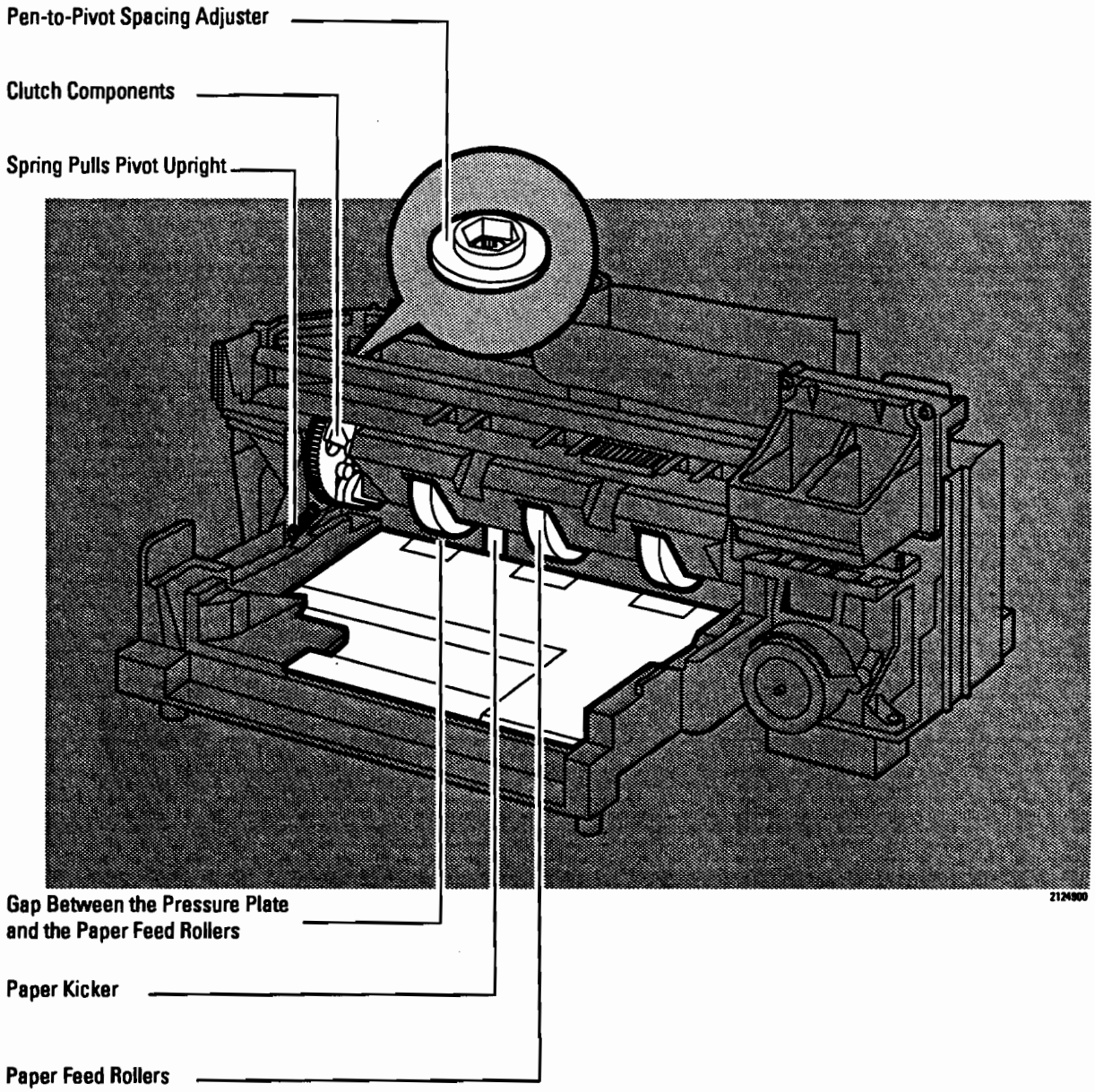


Figure 2-3. McJake Mechanism Identifiers

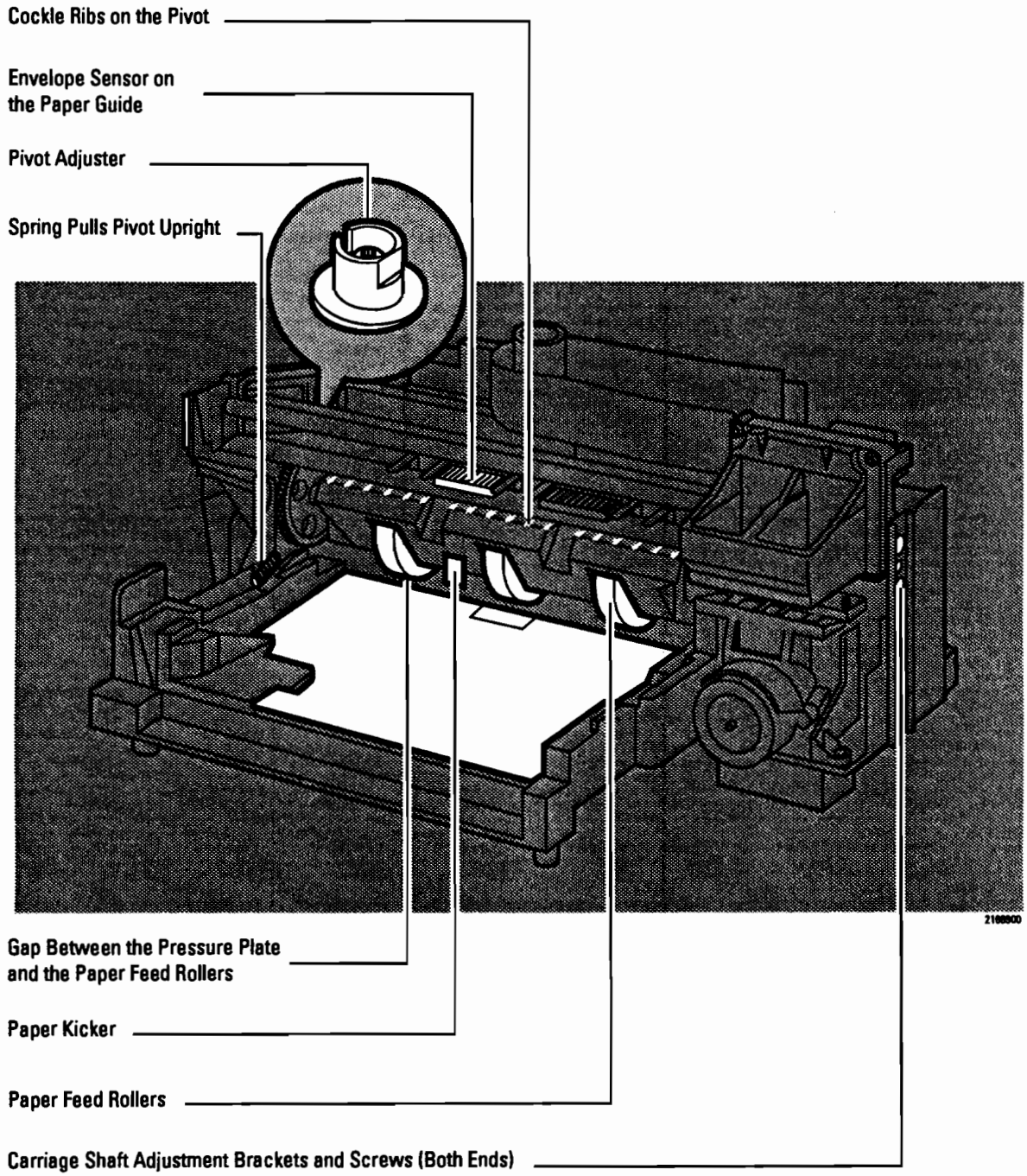


Figure 2-4. Aurora Mechanism Identifiers

Identifying the Printer Electronics

The figure below shows the electronic and electrical components in two print cartridge Mercury and Thunder printers (i.e., HP DeskWriter 550C and DeskWriter 560C printers). The monochrome printers (i.e., HP DeskWriter 510 and DeskWriter 520 printers) do not have a service station motor.

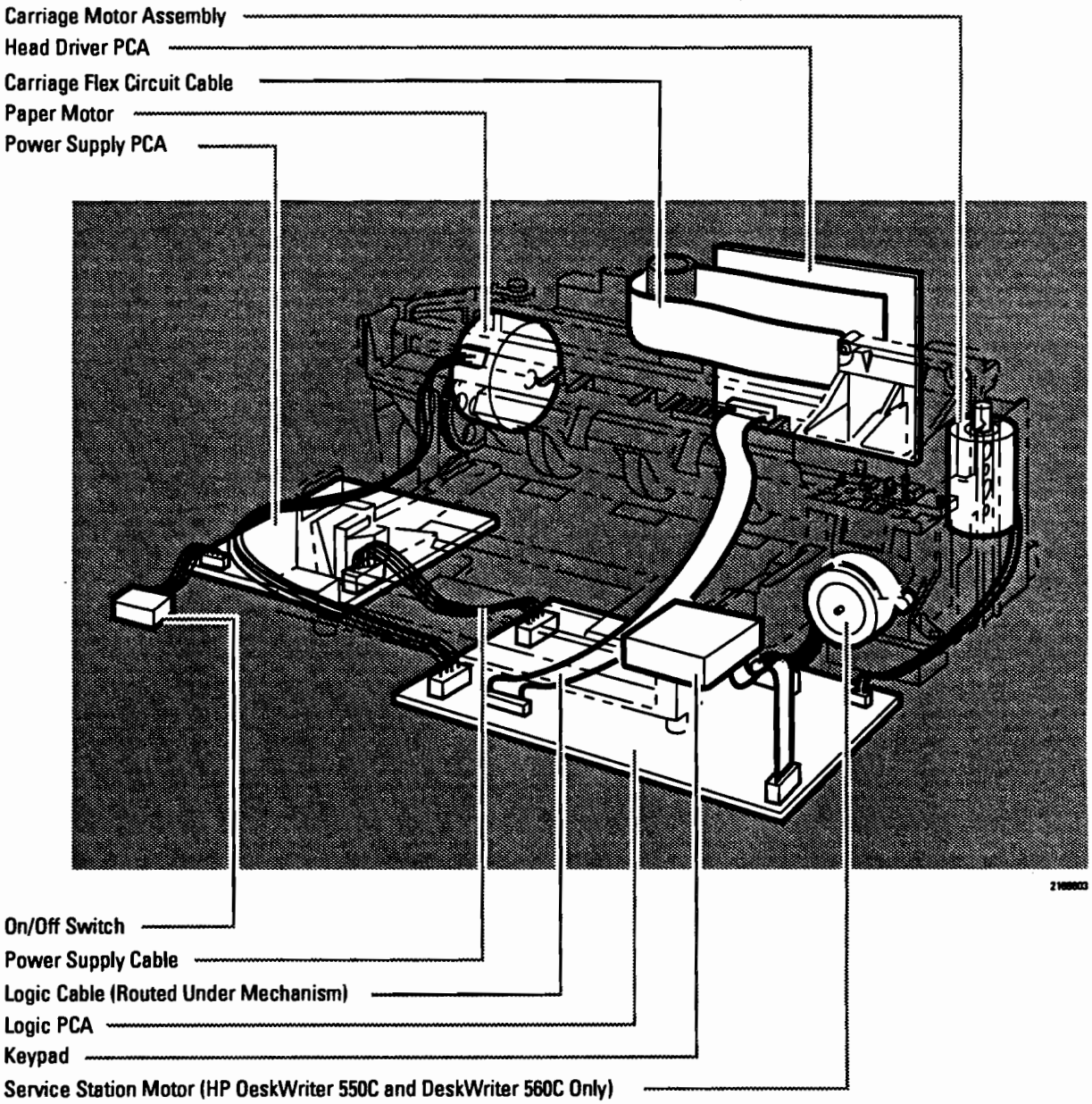


Figure 2-5. Electronics and Electrical Components in Mercury and Thunder Printers

Identifying Pre-Storm and Storm Electronics

Pre-Storm electronic components are not compatible with Storm electronic components. It is, therefore, important to replace faulty Pre-Storm components with Pre-Storm components and to replace faulty Storm components with Storm components. The figure below identifies what components must be maintained as a set (Pre-Storm or Storm).

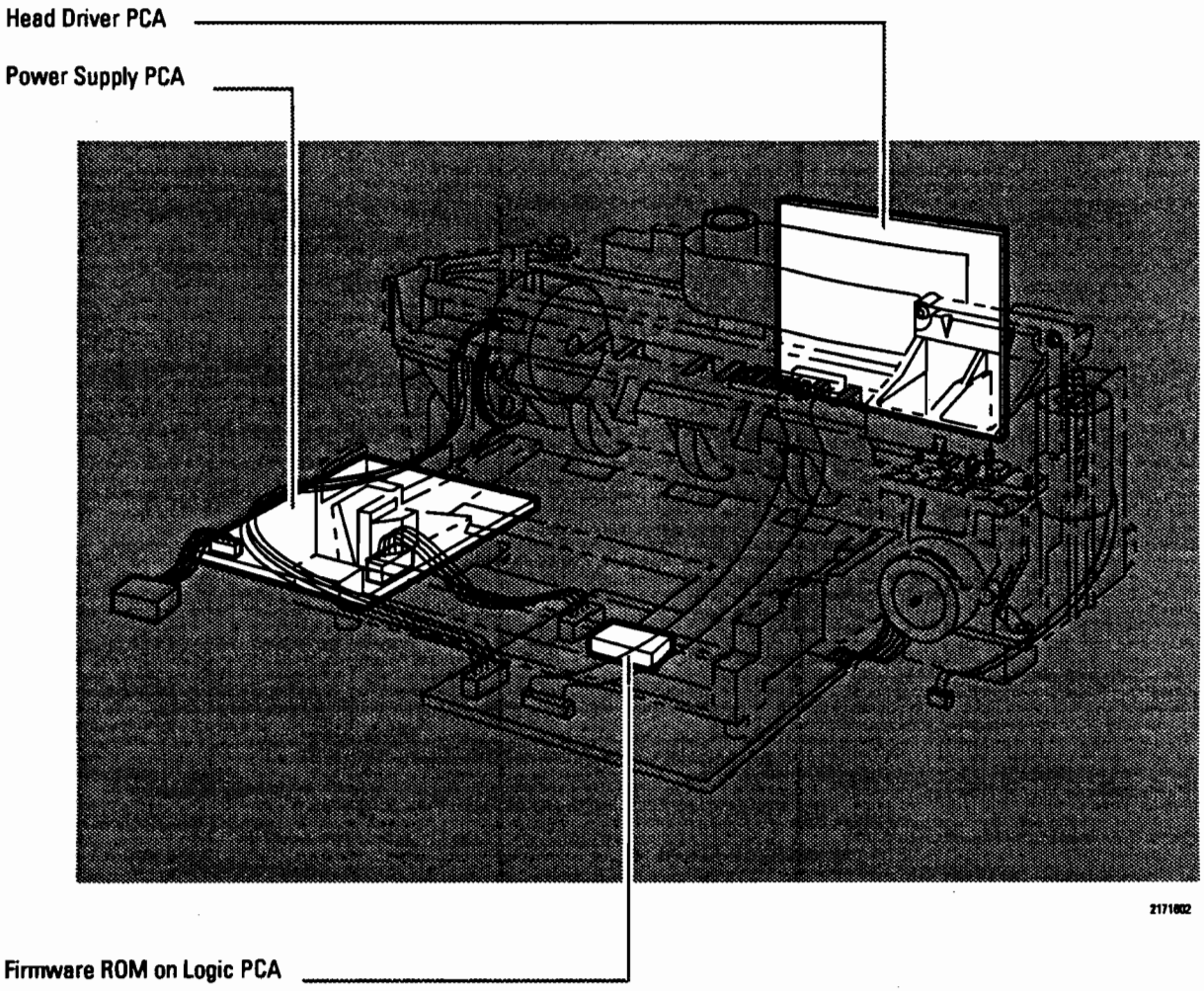


Figure 2-6. Electronics and Electrical Components in Mercury and Thunder Printers

With this in mind, it is critical to identify the type of electronic components (Pre-Storm or Storm) in a Mercury printer. By identifying one of the components as Pre-Storm or Storm, it is safe to assume that the other two components are of the same type, since there should be no printer with a mix of Pre-Storm and Storm electronics.

Identifying Pre-Storm and Storm electronic components can be accomplished by two methods:

- Noting the presence or absence of a heat sink on the power supply PCA
- Using part numbers on the power supply PCA or head driver PCA

Identification by Power Supply PCA Heat Sink

The Storm power supply PCA changed from a linear to a switching supply. The Pre-Storm linear power supply needed a heat sink to dissipate the large amount of heat it generates. A heat sink is not necessary on the Storm switching power supply. The presence or absence of the heat sink provides an easy means of identifying Pre-Storm and Storm power supply PCAs (see Figure 2-7.)

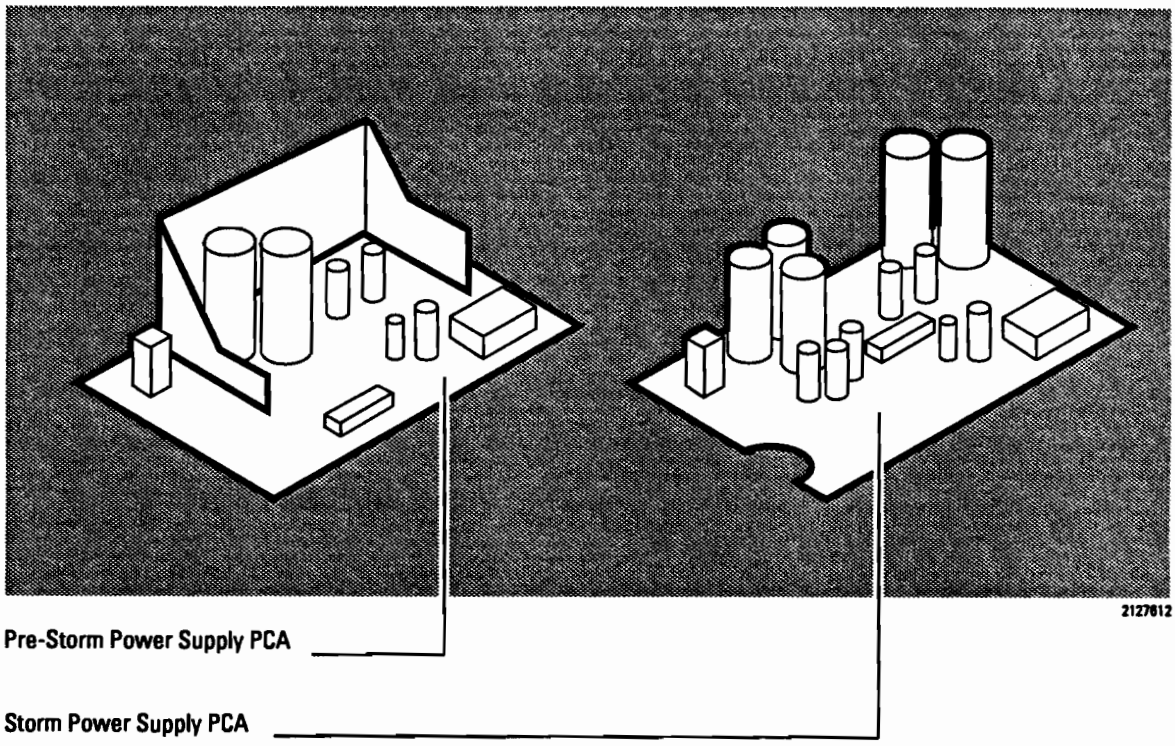


Figure 2-7. Pre-Storm and Storm Power Supply PCAs

Identification by Part Number

The power supply PCA and head driver PCA have part number labels. Note the part number on the PCA in question, and refer to the Parts Lists chapter to determine if the PCA is a Pre-Storm or Storm component.

Notes

- Pre-Storm PCAs are compatible with Jake and McJake mechanisms.
- Storm PCAs are compatible with McJake and Aurora mechanisms only.
- There are two versions of the Pre-Storm firmware: one for the Jake mechanism and one for the McJake mechanism. When replacing a Jake mechanism with a McJake mechanism, be sure to replace the firmware EPROM on the logic PCA with a McJake firmware EPROM.
- Storm PCAs are not backward compatible with Pre-Storm PCAs. If upgrading a Mercury printer with a McJake mechanism from Pre-Storm to Storm electronics, the Pre-Storm power supply and head driver PCAs and the firmware EPROM on the logic PCA must be replaced with Storm components.
- The Mercury monochrome product (HP DeskWriter 510) and the black-and-color product (HP DeskWriter 550C) have different Storm head driver PCAs and different logic PCAs. The Storm power supply PCA is the same for both monochrome and black-and-color Mercury printers.

Mercury and Thunder Compatibility Summary

Not all Mercury and Thunder platform printers are compatible with all mechanisms, electronics, and case components. The table below summarizes the compatibility of the various Mercury and Thunder components. Only components in the same row are compatible.

Table 2-2. Printer Configuration Compatibility

Printer Model	IN Tray and Output Tray	Mechanism	Electronics
HP DeskWriter 550C	IN Tray Drawer and Jake Output Tray	Jake	Pre-Storm
HP DeskWriter 510 and HP DeskWriter 550C	Paper Catch IN Tray and McJake/Aurora Output Tray	McJake or Aurora (as upgrade)	Pre-Storm
			Storm
HP DeskWriter 520 and HP DeskWriter 560C	Paper Catch IN Tray and McJake/Aurora Output Tray	Aurora	Thunder

Thermal Inkjet II Technology

The HP DeskWriter printer family uses Thermal InkJet II (TLJ II) technology. This technology centers on a disposable print cartridge that propels ink out of 50 nozzles (48 nozzles on the color print cartridge). The basic principle of TLJ II is to apply heat to a tiny measure of ink until it expands and is propelled through a nozzle.

This is achieved by first filling a small reservoir, known as the firing chamber, with ink. The next step is to heat the ink with a thin-film resistor layered above the firing chamber. As the ink heats up, it expands to form a bubble. As the bubble continues to expand and burst, it is forced through the nozzle located below the firing chamber.

This process is repeated up to 5,000 times per second and creates residual heat in the resistor which must be removed. A layer of silicon placed above the resistor transfers the residual heat from the resistor.

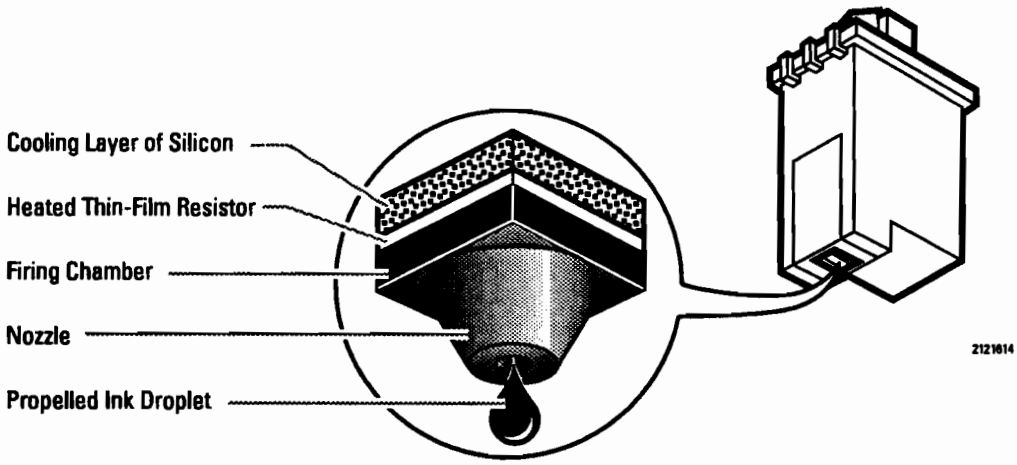


Figure 2-8. Thermal Inkjet II Technology

High-Capacity vs Standard Print Cartridges

The high-capacity black print cartridge, p/n 51626A, contains twice the ink of the original print cartridge, p/n 51608A, resulting in a lower operation cost per page. (The original print cartridge has been discontinued.)

In the original print cartridge, an ink-saturated foam sponge delivers ink to the inkjet nozzles for printing. At the same time, the capillary action in the sponge maintains "back pressure" to keep ink from leaking out of the nozzles.

The high-capacity print cartridge has internal components to replace the sponge's function and use much less volume in the print cartridge. A bubble generator lets air into the chamber as ink is used and two lung-like spring bags compensate for atmospheric pressure changes.

Caution	Hewlett-Packard does not support refilling the original or high-capacity print cartridges. The ink in the print cartridges has been carefully formulated by Hewlett-Packard to ensure superior print quality and compatibility with the printer. Damage to the printer resulting from modifying the print cartridge is not the responsibility of Hewlett-Packard and is not covered by the Hewlett-Packard warranty or any customer service agreements. *Attempting to refill the high-capacity print cartridge may cause a sudden loss of ink.*

Component Descriptions

The Mercury and Thunder printers have five major components and component assemblies as shown in Figure 2-9.

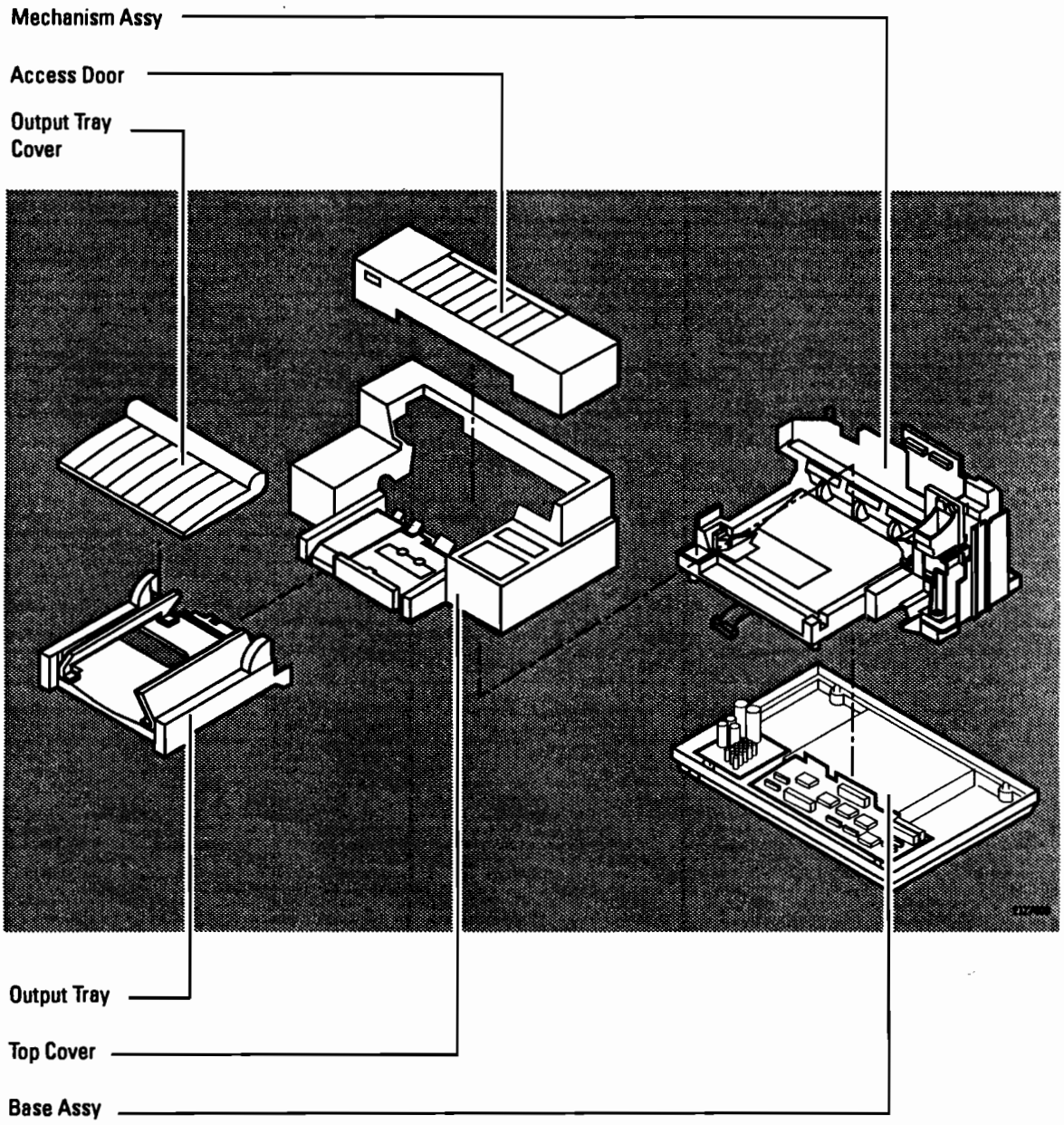


Figure 2-9. Major Component Assemblies of the Mercury/Thunder Printers

The following sections provide descriptions of these component and assemblies.

Access Door

The access door protects the inside of the printer from dust and foreign objects and provides sound deadening for the mechanism. It is mounted on the top cover by hinges and opens to provide users with limited access to the interior for accessing print cartridges and media jams.

Output Tray Assembly

The output tray receives and stacks the printed output from the printer. The output tray can be removed from the printer to allow users easier access to the interior.

The output tray is more than a passive receptacle for printed output. As described below, the mechanical wings provide drying time for the ink on printed sheets to prevent smearing, and the paper sled plays an important role in media feeding. The opening in the bottom of the tray provides access to the media-width adjuster mounted on the pressure plate of the mechanism assembly.

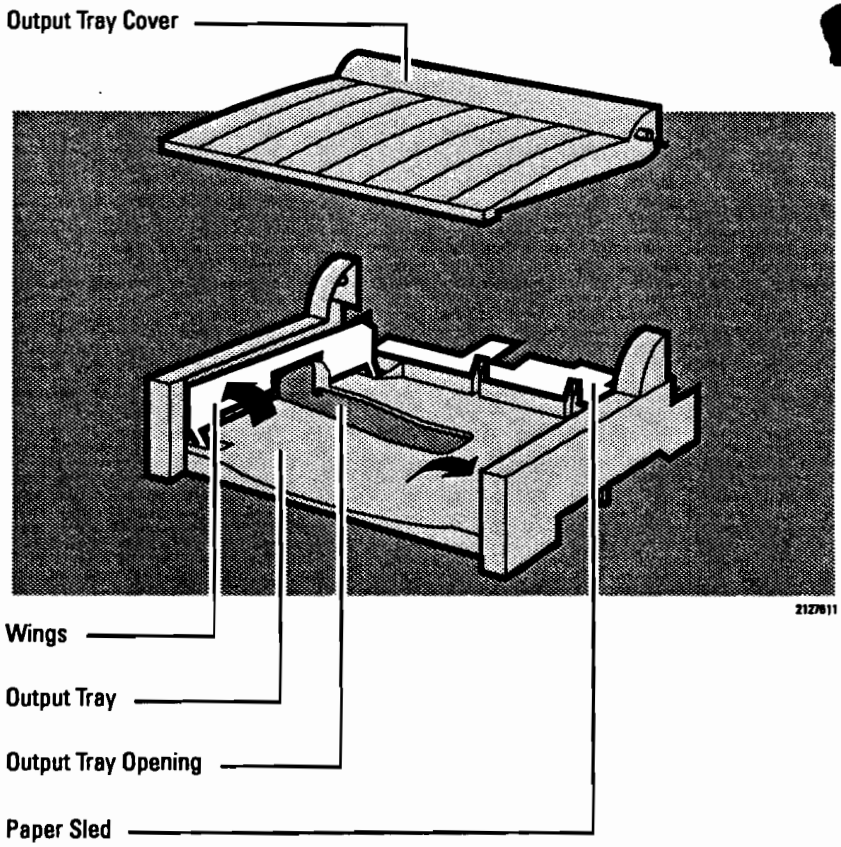


Figure 2-10. Output Tray

Wings

As a sheet of printed media emerges from the printer mechanism, the two side wings in the output tray, which "open" and "close" under control of the mechanism, are in their normal "closed" position. In this position, they hold the sheet up and off of the stack of already-printed media as the sheet emerges from the mechanism. When the mechanism ejects the sheet, the wings open (move apart) and allow the sheet to drop onto the stack. This allows the ink on the top sheet of the stack to dry before the next sheet is placed on top of it.

The wings are activated by the action of the paper-feed pivot. When the pivot rotates froward to eject (or pick up) a sheet of media, angled surfaces on the front of the pivot push against the tabs that protrude from the rear of the wings, forcing the wings apart against their spring loading. When the pivot returns to its "home" position, the wings are released and return to their closed position.

Paper Sled

The black structure protruding from the rear of the output tray is the paper sled.

In the original Mercury printers, the Jake mechanism pressure plate is strongly spring-loaded to push against the paper drive rollers. When the output tray is in place, the paper sled serves to hold the media stack in the IN tray away from the drive rollers to prevent the media from being fed into the mechanism (picked) at inappropriate times.

The output tray for early McJake mechanisms had a smaller paper sled than the one in the original Mercury. The pressure plate in the McJake mechanism does not normally keep the media stack pushed against the drive rollers. The sled is useful, however, in keeping the media stack, especially envelopes, compressed and flat so that the media feeds properly.

The sled on the output tray for McJake and Aurora mechanisms was extended to more adequately handle envelopes. When envelopes are stacked in the IN tray, the flaps have a tendency to buckle and "billow," which can cause envelopes to skew when pulled into the mechanism. The paper sled prevents skewing by holding envelopes and other media flat in the IN tray.

Top Cover Assembly

The top cover (Figure 2-11.) provides the main upper housing for the printer. It is firmly secured to the printer base by clips and, in turn, secures the mechanism assembly in place. It contains the IN tray and the printer keypad assembly. The top cover assembly also has a removable access door with a hidden catch that provides emergency access to the service station.

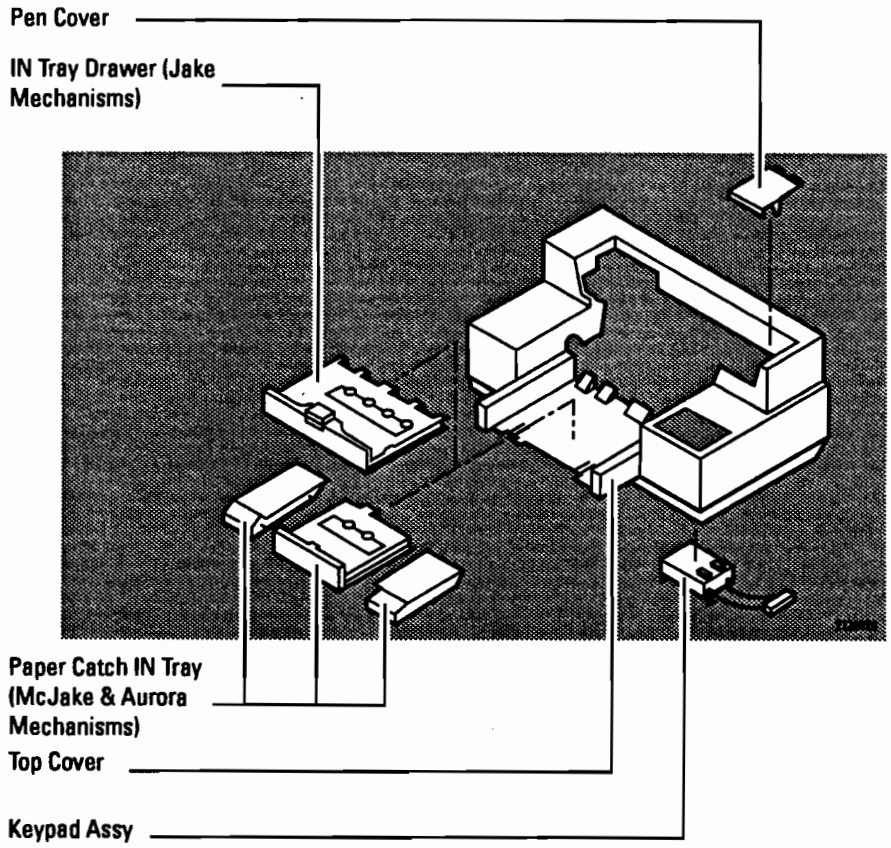


Figure 2-11. Top Cover Assembly

IN Tray

As described in "Mercury McJake Mechanism Upgrade," the Mercury printers use two IN tray designs—the IN tray drawer and the paper catch IN tray.

The IN tray drawer used in the original Mercury printers slides out to accommodate media of various sizes.

The paper catch IN tray used with McJake and Aurora mechanisms has an adjustable "paper catch" that also slides out to accommodate media of various sizes. The paper catch is narrower than the IN tray drawer. Two filler plates occupy the remainder of the space formerly occupied by the IN tray drawer.

Both types of IN tray have envelope stops that are raised to hold envelopes in position.

Keypad Assembly

The keypad provides control over and information about printer operation. The keypad has 2 buttons and 3 LED indicator lights. It has a PCA with ribbon cable and connector that connects the keypad to the logic PCA in the printer base.

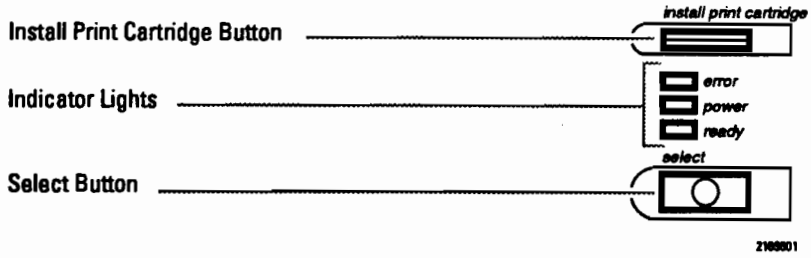


Figure 2-12. Keypad

Buttons: The keypad buttons have the following functions:

Table 2-3. Keypad Button Functions

Button	Function
install print cartridge Button	Moves the carriage to the left side of the printer to allow access to the print cartridges.
select Button	• Toggles between online (ready to receive data) and offline (unable to receive data). • Pauses printing or resumes printing. • When held down during power up, invokes print cartridge self test. • When held down and **install print cartridge** pressed, invokes print cartridge cleaning.

Indicator Lights: The keypad lights indicate the following conditions:

Table 2-4. Keypad Light Indications

Light	Meaning
error Light On	Printer is out of media.
power Light On	Printer is on and receiving power.
ready Light On	Printer is online and ready to print.
error Light Blinking	Media is jammed.
ready Light Blinking	Printer waiting for manual paper load.
All Lights Blinking Simultaneously	Carriage stall (carriage cannot move).
All Lights Blinking in a Series of Patterns	Printer failed the self test.

Mechanism Assembly

The mechanism assembly contains three major functional subassemblies:

- Media handling components including paper motor
- Carriage components including carriage motor
- Service station components. Black-and-color versions have a service station motor.

The head driver PCA is also mounted on the mechanism assembly.

Wire harnesses and ribbon cables connect the three motors and the head driver PCA to the logic PCA. Two grounding straps ground the mechanism to the electronics backplane on the printer base.

The mechanism functional subassemblies are described in the following sections. "Printing Operations" later in this chapter, contains a more detailed description of how the media handling components and the carriage components work together to print a page.

Media Handling Components

The media handling components (Figure 2-13.), with help from the carriage, pick media from the IN tray, feed it into the mechanism and over the pivot, where ink is laid down by the print cartridges as the carriage moves back and forth. When printing of the sheet is complete, the media handling subassembly, again with help from the carriage, ejects the sheet into the output tray.

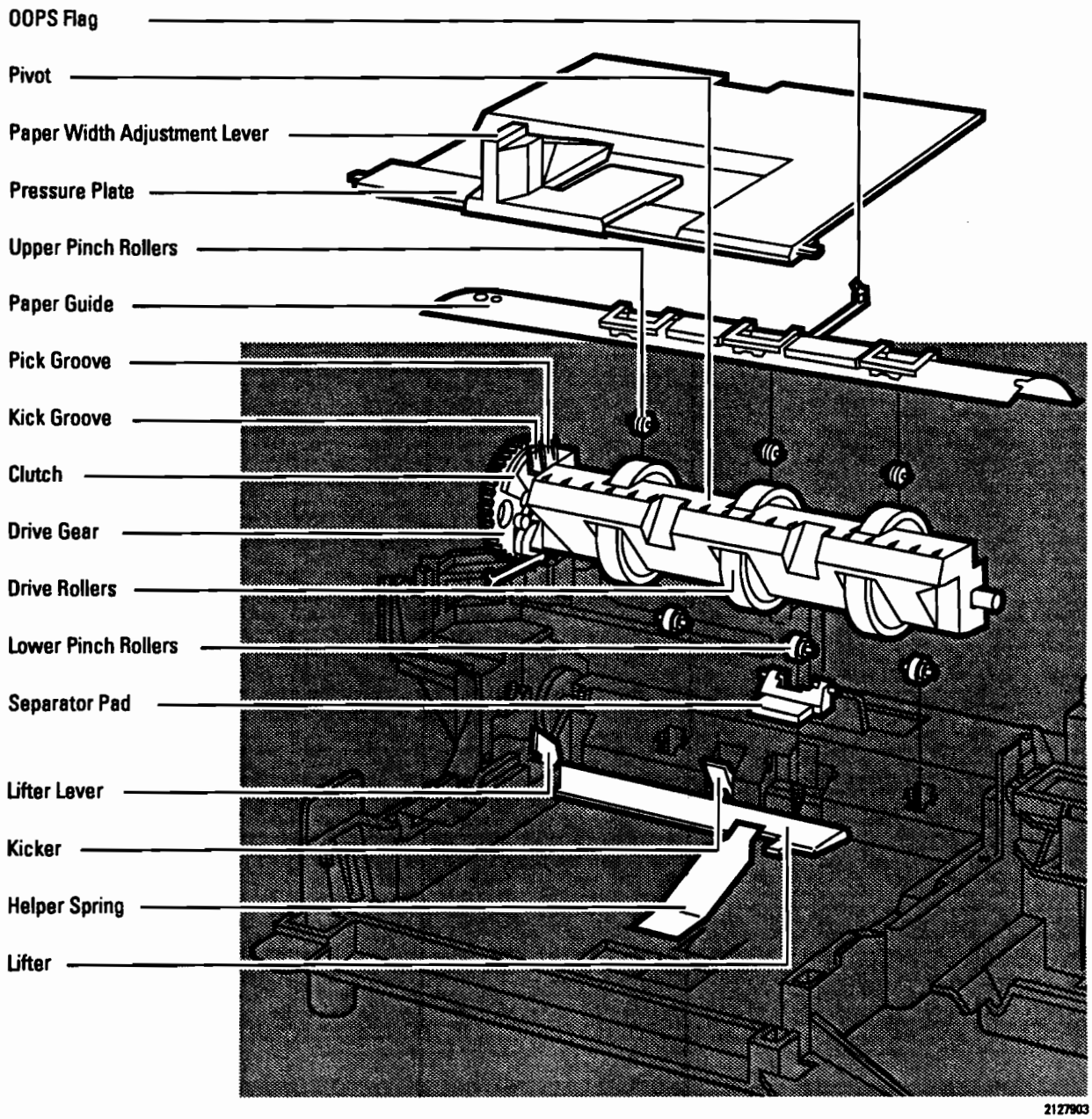


Figure 2-13. Media Handling Components

The horizontal surface on the top of the pivot (in its upper position) is called the "platen." The platen is the area that supports the media under the print cartridges during printing.

Note	McJake and Aurora mechanisms have a paper-guide-to-pivot adjuster for adjusting the paper-guide-to-pivot gap.

Carriage Components

During printing, the carriage subassembly (Figure 2-14.) moves the carriage, containing the print cartridge(s), back and forth across the media, firing the print cartridges as it goes.

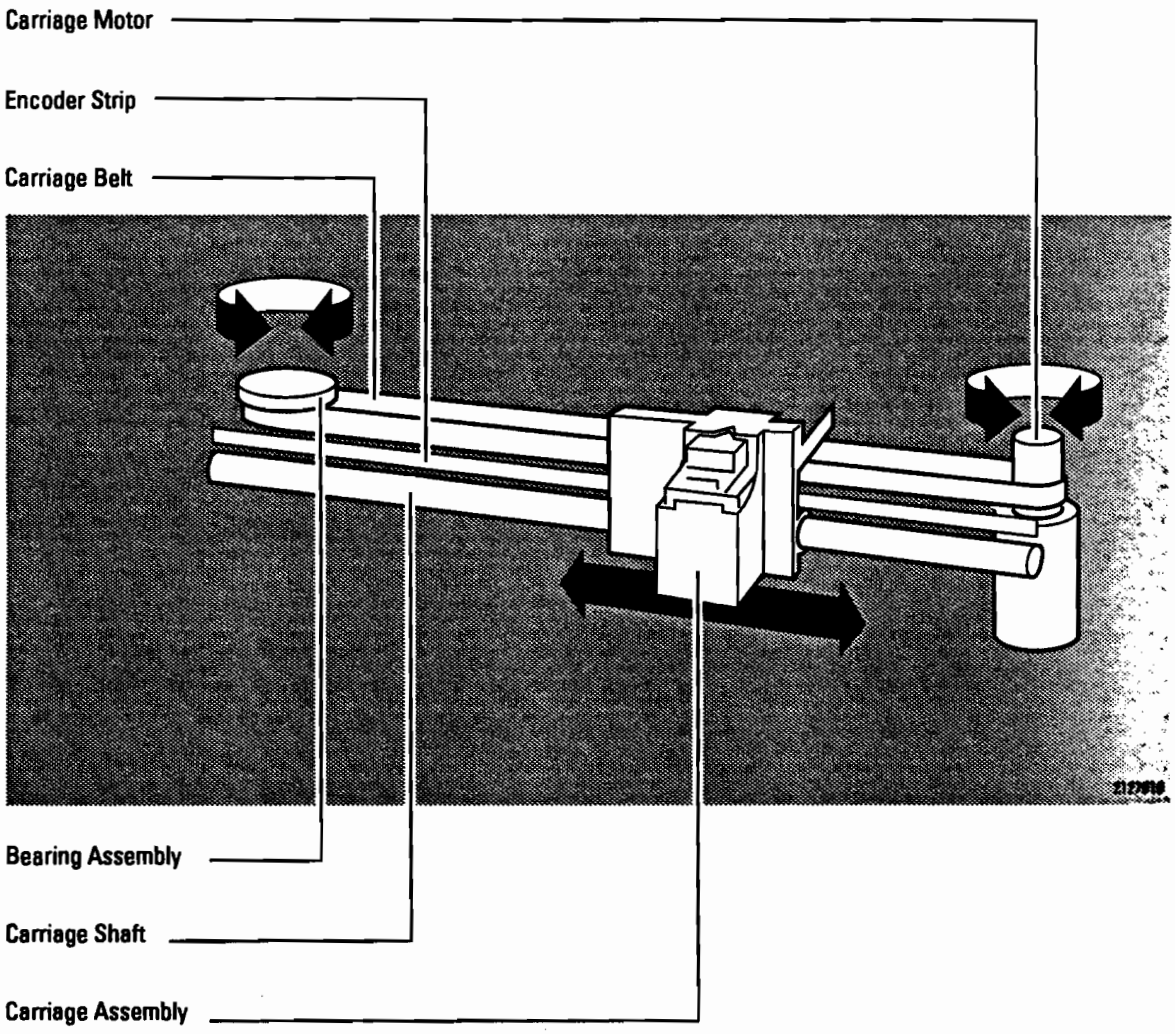


Figure 2-14. Carriage Subassembly

When required, the carriage returns to its home (extreme right) position in the service station so that the print cartridges can be serviced. When driven to its extreme left position and forced against the clutch actuator, the carriage causes the clutch on the media handling subassembly to engage, which initiates media picking and ejecting. There is a "lockout" in the black print cartridge stall that prevents the color print cartridge from being installed in the black cradle.

Electronic circuitry and connector pads in the print cartridge cradles connect to the pads and circuitry in the print cartridges. The circuitry in the cradles is connected to the head driver PCA, which controls firing of the print cartridges and senses the print cartridge ID (color print cartridge cradle only) or senses if no print cartridge is present.

Note	Aurora mechanisms have a pair of adjustment screws that, when loosened, allow the carriage shaft to be adjusted to change print-cartridge-to-paper spacing. These adjustment screws are located on the ends of the mechanism, just below the ends of the carriage shaft.

Service Stations

The service station for monochrome models is a passive station. There was not enough space in the printer for a passive service station that could accommodate two print cartridges. Therefore, the service station for black and color models is an active, motorized station.

Both service stations service print cartridges to maintain their print quality. Servicing consists of various combinations of wiping, spitting, and capping the print cartridges.

Wiping occurs when the print cartridge orifice plate is passed over and rubs against a rubber wiper in the service station. Wiping cleans debris and wet ink from the orifice plate of the print cartridge. Buildup of this material can cause serious print quality problems.

Spitting keeps the print cartridge nozzles clear and unclogged by making sure that the ink in them is liquid. Spitting consists of firing all of the nozzles in the print cartridge.

Spitting is done over the *spittoon*, which catches the ejected ink. Both monochrome and black-and-color versions use the same double spittoon, which has separate reservoirs for black and color ink. The color reservoir has a piece of ink-absorbent plastic foam in the bottom (called the "absorber") to soak up and speed evaporation of the ink deposited by spitting. The absorber also prevents large volumes of ink from spilling if present when the printer is tipped. The black spittoon reservoir has no absorber because the black ink has adverse reactions with the absorber's foam material. Because the black ink tends to form stalagmite-like structures in the spittoon, the black ink spittoon is deeper than the color ink spittoon to prevent interference with the print cartridges.

Capping protects the nozzle orifice plate from the environment and prevents the orifices from drying out during periods when the print cartridges are not in use. The caps have venting systems that prevent pressure buildups and reductions when the print cartridges are capped and uncapped or when environmental conditions change. Such pressure changes could cause the print cartridges to become deprimed (get air in the nozzles) and unusable or to leak.

The firmware code has a variety of print cartridge servicing routines for use under different conditions. For example, there is a service routine that is used when the printer powers up and another that is used at the end of a print job.

Both monochrome and black-and-color service station sleds were designed for user replacement. This allows users to install new sleds when an upgrade occurs or when components such as the wipers become worn.

In the unlikely event that a large volume of ink leaks from a print cartridge, both monochrome and black-and-color service stations have features that channel the ink to a large reservoir and absorber in the printer base.

Monochrome Service Station: The monochrome service station (Figure 2-15.) is a passive station, that is, it has no motor and is operated by the action of the carriage.

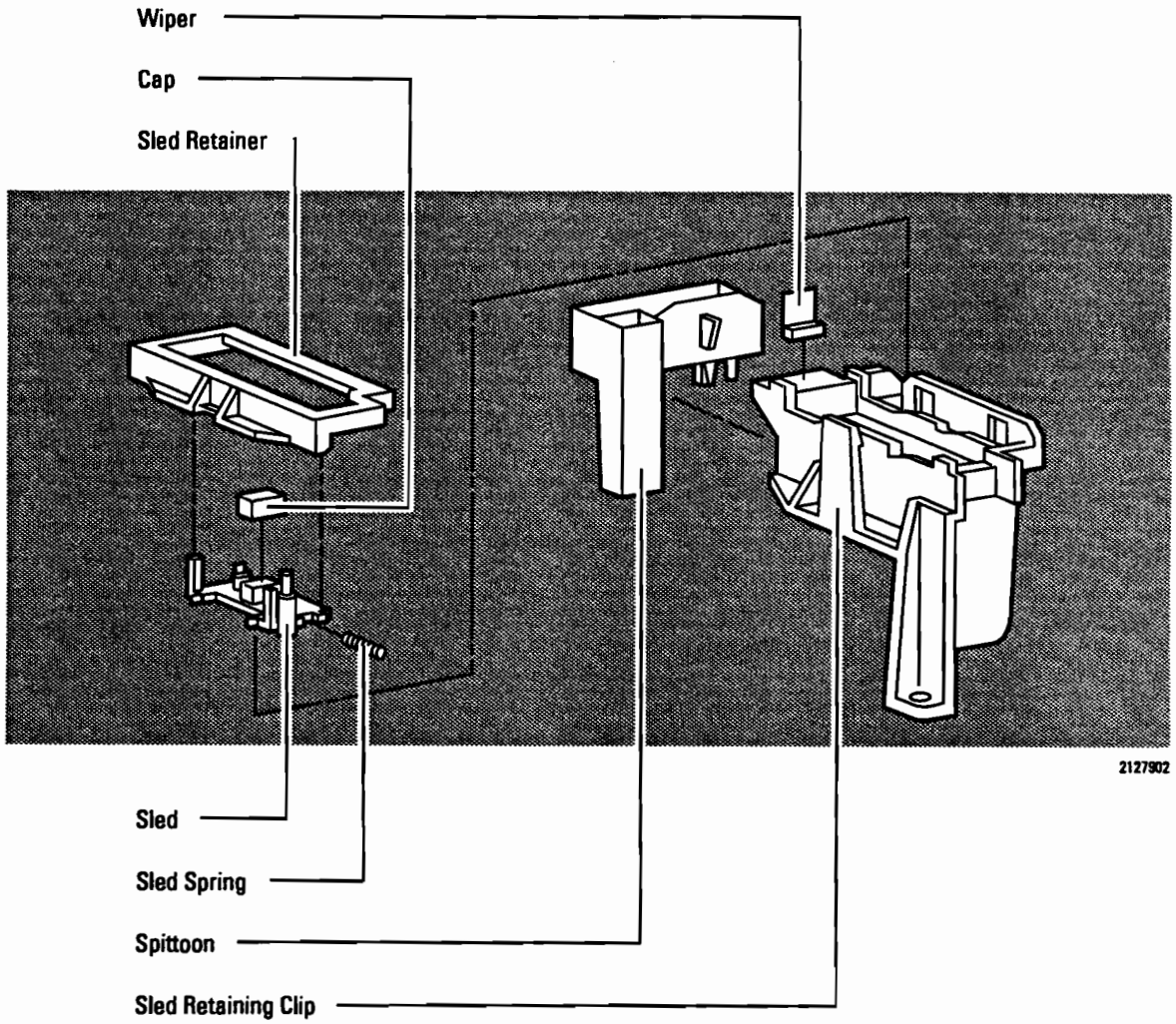


Figure 2-15. Monochrome Service Station

Wiping is accomplished by moving the carriage with the print cartridge back and forth over the rubber wiper that sticks up from the service station sled housing. A wipe for the monochrome printer's black print cartridge is always a back-and-forth wipe.

Capping is performed by combined action of the service station sled assembly and the carriage. Whenever the monochrome carriage is driven all the way to its home position, it engages the sled and moves it about one-half inch to the right, where the carriage stops against the right wall of the mechanism assembly. The sled housing has ramps that lift the sled as it moves to the right, which brings the rubber cap into contact with the orifice plate on the print cartridge. Indexing pins on the sled lock into receivers on the carriage to provide accurate alignment of the print cartridge orifice plate to the cap.

To prevent binding of the carriage as it moves along the carriage shaft, the carriage has limited freedom to rotate around the shaft. Normally, it is held in the forward position by its own weight and the weight of the print cartridge. When the carriage is in the service station and the cap is lifted against the orifice plate of the print cartridge to cap the cartridge, the carriage's freedom to rotate must be restricted to allow

adequate capping pressure and a good seal. The spring-loaded carriage rotation limiter provides this restriction.

Pulling out on the sled retaining clip and lifting the sled retainer allows the retainer and sled assembly to be removed from the service station housing. The entire service station can be removed by removing two screws.

Black-and-Color Service Station: Because of horizontal space limitations, the black-and-color service station could not be a passive station like the monochrome station, which translates horizontal movement into vertical movement. The black-and-color service station needed to provide vertical sled movement that was not dependent on horizontal sled movement. For this reason, a motor is used to move the sled up and down. Service station movement is coordinated with carriage movement to service the print cartridges. The motor for the black-and-color service station is a stepper motor. Along with the worm gear and drive gear, it moves the rack, sled clamp, and sled up and down. The sled can, thus, be lowered to allow the carriage and print cartridges to enter and exit the service station without colliding with any of the sled components. The sled is raised to cap or wipe the print cartridges.

Wiping is a coordinated activity between the carriage and the service station—the carriage moving the print cartridges back and forth across the wipers, while the service station moves the sled up and down to maintain proper wiper height.

To prevent binding of the carriage as it moves along the carriage shaft, the carriage has limited freedom to rotate around the shaft. Normally, it is held in the forward position by its own weight and the weight of the print cartridge. When the carriage is in the service station and the cap is lifted against the orifice plate of the print cartridge to cap the cartridge, the carriage's freedom to rotate must be restricted to allow adequate capping pressure for a good seal. The spring-loaded carriage rotation limiter provides this restriction.

When the sled is lowered to its lowest position, it rotates forward 90°. As the sled lowers and rotates, the color ink wiper is rubbed across the scraper. The scraper is slanted at an angle such that, as the sled rotates down, it cleans one side of the wiper. When the sled nears the bottom of its travel, the wiper flips to the other side of the scraper so that the other side of the wiper is cleaned when the sled returns to its upper position.

When the printer is powered up, as part of its start-up routine, the service station performs a "homing" sequence. First the service station sled is lowered to uncap the print cartridges and free the carriage. The carriage then moves to the left and out of the service station. Next, the sled is lowered a sufficient number of motor steps to move it from its topmost to its bottommost position. When the sled begins to move down, the homing lever, which is mounted on the rear of the service station housing, is pushed by its spring to the left to its "locking" position. When the homing lever is in its locking position, two tabs that protrude through the back of the service station housing limit the upward movement of the rack. When the sled has reached the bottom of its travel, the motor is reversed, and the sled is raised. The sled is raised a sufficient number of motor steps to bring it to the limit set by the homing lever and enough beyond to lock up the gears. This position is now defined as the home position of the service station motor. All other positions, e.g., cap, wipe, etc., are measured in motor steps from home. When the carriage is returned to its home position in the service station, it trips the homing lever, which unlocks the rack and frees the gears, allowing the sled to move.

Note Service stations for the Thunder black-and-color printer (HP DeskWriter 560C) have an adjustable homing lever.

Pinching the sled retaining clips releases the sled and allows the sled assembly to be removed from the sled clamp. The entire service station can be removed by removing two screws.

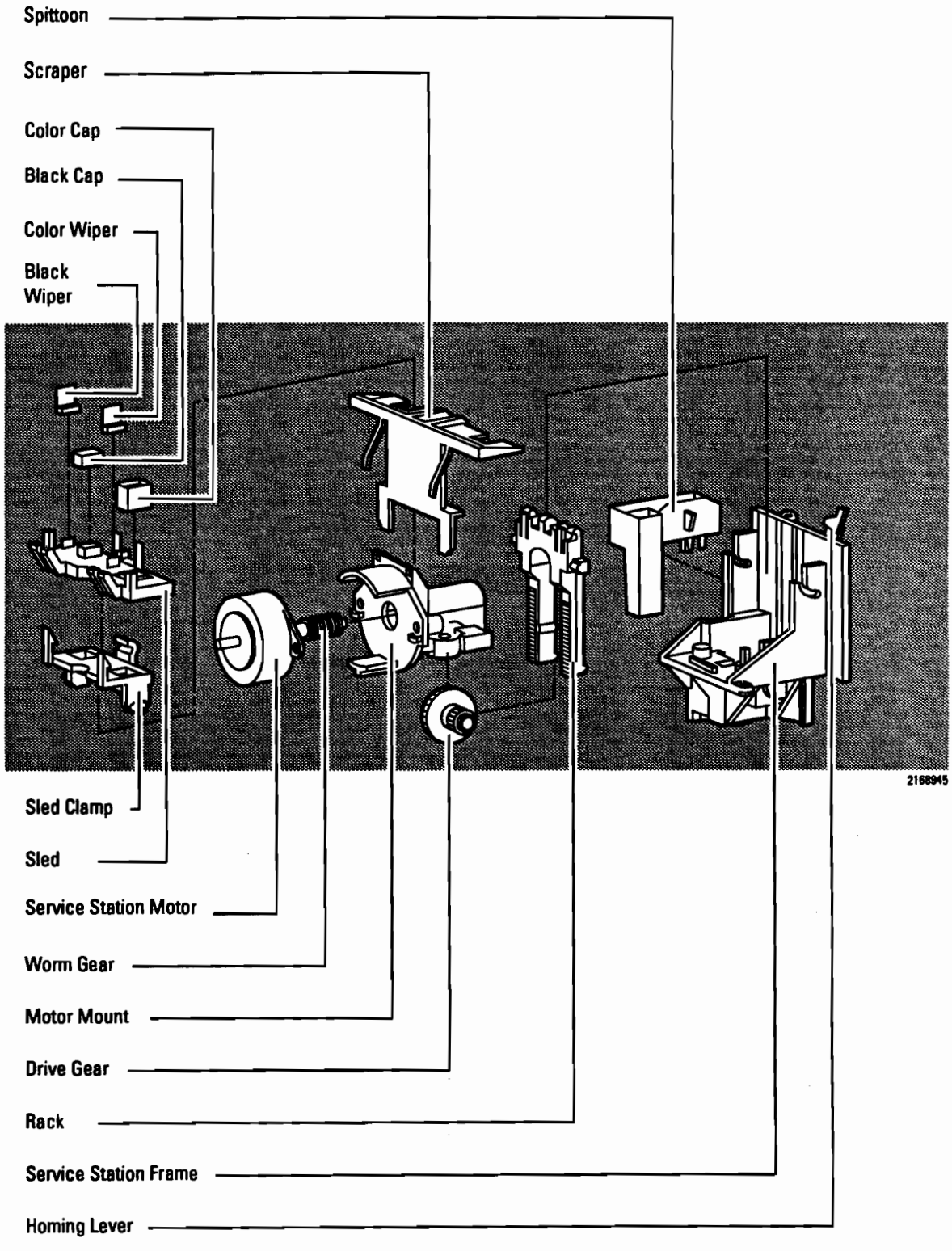


Figure 2-16. Service Station for Black-and-Color Printers

Printer Base

The printer base contains the electronic ground plane assembly with the logic PCA and the power supply PCA. The printer base also contains the printer ON/OFF switch, which controls power to the power supply PCA.

PCAs

The Mercury and Thunder platform printers have three major PCAs—the power supply PCA, the head driver PCA, and the logic PCA.

Power Supply PCA

The power supply PCA is mounted on the ground plane assembly in the printer base. As described previously, Mercury platform printers used two power supply PCAs—the Pre-Storm power supply PCA and the Storm power supply PCA. Thunder platform printers use the Storm power supply PCA.

The Pre-Storm power supply PCA is a linear power supply with a large heat sink (see Figure 2-7.). The Storm power supply PCA is a switching power supply and has no heat sink.

Power Input: Both power supply PCAs receive power input from a cable with a transformer that converts 120 or 240 volt AC current to 20 volt AC current.

Power Outputs: Table 2-5. summarizes power outputs for the Pre-Storm and Storm/Thunder power supply PCAs.

Table 2-5. Power Supply PCA Power Outputs

Power Supply PCA	Output Voltage (DC)	Output to:
Pre-Storm	+17	Print head drivers and decoders on head driver PCA.
	+17	Paper motor driver, carriage motor driver, and service station motor driver on logic PCA.
	+5	Logic portion of logic PCA.
Storm/Thunder	+24	Print head drivers and decoders on head driver PCA.
	+17	Paper motor driver, carriage motor driver, and service station motor driver on logic PCA.
	+5	Logic portion of logic PCA.

Head Driver PCA

The head driver PCA is mounted on the back of the mechanism assembly housing.

The major function of the head driver PCA is to decode print-cartridge firing data from the print cartridge control circuit on the logic PCA ASIC and send pulses to fire the print cartridge nozzles.

Input to the head driver PCA is +17 volts for Pre-Storm units and +24 volts for Storm units. These different input voltages require different ballast (matching) resistors on the Pre-Storm and Storm head driver PCAs. In addition, new head driver integrated circuit chips were required for the narrower pulse

width used by Storm. Otherwise the Pre-Storm and Storm head driver PCAs are the same. Thunder head driver PCAs are identical to Storm head driver PCAs.

The head driver PCA contains a pair of electrolytic capacitors, which provide a nearby source of peak current to minimize the voltage drop when the print cartridges are fired.

Because it is a convenient place for the device, the opto-sensor for the OOPS flag is mounted on the head driver PCA. This sensor detects movement of the OOPS flag caused by media entering and exiting the paper handling mechanism. The signal generated by the opto-sensor is passed to the logic PCA.

Logic PCA

The logic PCA is mounted on the ground plane assembly in the printer base. The logic PCAs for Pre-Storm, Storm, and Thunder electronics are identical except for the firmware on the ROM.

Power to the logic portions of the logic PCA is +5 volts from the power supply PCA. Power to the motor drivers is +17 volts from the power supply PCA.

The major components of the logic PCA are:

- A Z180 microprocessor, the central processor and the "brain" of the logic PCA. It provides central control of all printer functions and operations. It also contains a clock used for timing printer events.
- The Orbit ASIC (Application Specific Integrated Circuit) developed by Hewlett-Packard, which contains the system logic and control circuitry
- A 128 kilobyte ROM (Read Only Memory) chip that contains the firmware
- Two 128 kilobyte RAM (Random Access Memory) chips used for temporary storage (buffering) of input and other data
- An EEPROM (Electrically Erasable Programmable Read Only Memory) chip that provides non-volatile memory* for storing system constants for routines such as pen alignment and service station functions
- A motor driver for each motor (paper, carriage, service station) that translates motor control signals from the ASIC to motor control electrical output
- An 8-pin, mini-circular DIN Input/Output (I/O) port that supports RS-422 serial and AppleTalk network I/O

Orbit ASIC: The Orbit ASIC contains the logic circuits that control the firing of the print cartridges, internal routing of I/O signals coming from and going to the host computer or a network, routing of input from the keypad buttons and operation of the keypad indicator lights, operation of the printer motors, and data flow within the logic PCA.

* Memory that remains intact when the printer is powered off and on.

Functional Block Diagram

The block diagram below shows the interactions between the major functional assemblies of the Mercury and Thunder printers.

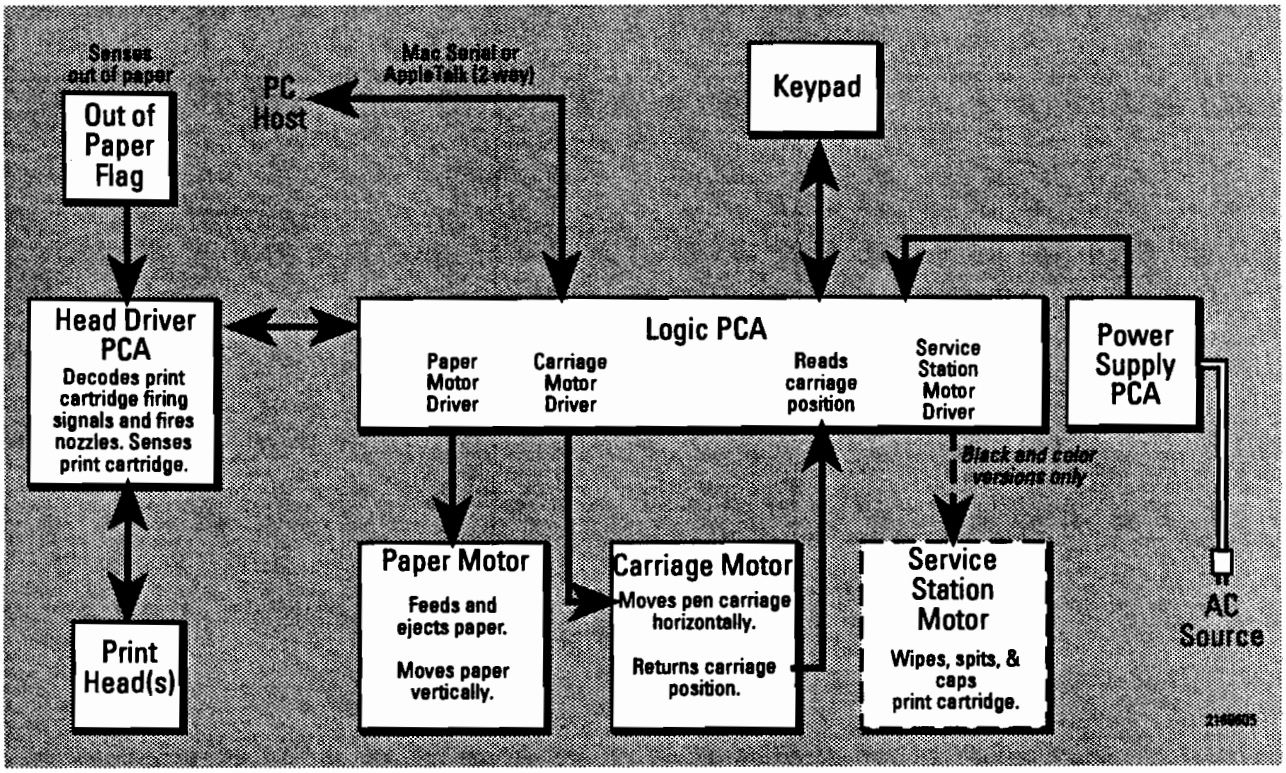


Figure 2-17. Mercury/Thunder Functional Block Diagram

Printing Operations

The media handling subassembly and the carriage subassembly work in unison to print a sheet of media. Three operations are involved:

- Loading a sheet of media
- Printing the page
- Ejecting the sheet of media

Loading a Sheet of Media

When the printer is ready to print and it receives print data from the host computer or receives a formfeed from the host computer or from the keypad, the carriage motor drives the carriage all the way to its leftmost position against the clutch actuator. It then applies force against the clutch actuator, which pulls the clutch against the drive gear where the clutch teeth engage detents on the side of the drive gear. The paper motor turns the drive shaft, drive gear, and drive rollers and, with the clutch engaged, also rotates the clutch/pivot assembly. The paper motor advances the number of steps required to rotate the pivot forward and down to the "pick" position. The pick position is the position that causes the mechanism to pick up the top sheet of media in the IN tray and feed it into the mechanism. It is the extreme lower position of the pivot.

As the clutch/pivot assembly rotates, it moves the lifter lever back and raises the lifter. This lifts the pressure plate and pushes the media stack against the rubber drive rollers. As the drive rollers turn, friction against the top sheet in the media stack moves the sheet into the mechanism. When the lifter is in its lowered position, it holds the separator pad spring down. When the lifter is raised, it operates a lever that releases the separator pad spring and allows the rubber separator pad to rise until it is in contact with the center drive roller. In this position, the separator pad prevents more than one media sheet from being picked at a time.

When the media sheet enters the mechanism, it moves between the drive rollers and the lower pinch rollers, then around the pivot, guided by the paper guide, and past the upper pinch rollers and OOPS. The OOPS senses that media is in the mechanism and sends a "media present" signal to the logic PCA.

Note	The pinch rollers allow the drive rollers to maintain friction against the sheet after the pressure plate has been lowered.

When the pivot/clutch assembly reaches the pick position, the clutch slips from behind the clutch actuator and disengages from the drive gear. The clutch actuator, however, continues to hold the clutch/pivot assembly in the pick position while the paper motor advances the media sheet the required number of steps beyond the OOPS to the top-of-form position. At this point, the paper motor stops.

Notes

- When a media sheet enters the mechanism, it pushes the kicker out of its path and back against the kicker's spring loading. When the trailing edge of the sheet passes the kicker, the kicker is released. The kicker snaps back to its forward position and realigns any media sheets in the IN tray that may have been misaligned by the pick.
- About 1/4" before the leading edge of the media sheet emerges from under the paper guide and onto the platen portion of the pivot, it pushes against the trigger of the OOPS. This pivots the OOPS and lowers the OOPS "flag," which is positioned between the LED and sensor of the opto-sensor, which is mounted on the head driver PCA. In the OOPS's normal position (no media present), an aperture in the flag allows the LED beam to reach the sensor. When media triggers the OOPS, the flag drops, and the opaque portion of the flag moves between the LED and sensor, blocking the beam and generating a "media present" signal.
- If the media-present signal from the opto-sensor unit is not sent within the required number of paper-motor steps after a pick, the printer assumes that the IN tray is out of paper and invokes the out-of-paper error state (operation stops and the Ready light blinks).
- The envelope sensor in an Aurora mechanism is actually a cut-sheet media sensor. It is a simple mechanical device that prevents the pivot from returning all the way to its home position after picking or ejecting a sheet of media. In this position, the print-cartridge-to-paper spacing is appropriate for envelopes, which are thicker than single-ply media. If the next sheet of media to go through the mechanism is of cut-sheet size, it trips the envelope sensor, allowing the pivot to drop back to its home position, where the print-cartridge-to-paper spacing is correct for single-ply, cut-sheet media. Envelopes are too narrow to trip the envelope sensor, which leaves the print-cartridge-to-paper spacing at the envelope setting.

Next the carriage begins to move back to its home position. The carriage moves the clutch actuator to the right where it engages the "pick groove" on the pivot. Tension on the pivot return spring applies force to return the pivot to its upright position, but because the clutch actuator's movement is slowed by the returning carriage, it slows the pivot's return as the clutch actuator moves down the pick groove. Slowing the return of the pivot prevents the wings in the output tray from bouncing noisily back to their closed position. As the pivot/clutch assembly returns to its home position, the pressure plate is released and the separator pad is lowered.

Printing the Page

When the media sheet has been loaded, the carriage returns to its home position in the service station and start-of-job print cartridge servicing is initiated.

Note If the printer is only loading a sheet and no print data is present, after servicing, the print cartridges are capped.

When start-of-job print cartridge servicing is complete, the printer begins to print the sheet, moving the carriage back and forth across the portion of the sheet that is now on the platen. As the carriage moves, the print cartridges are fired, laying down ink. On black-and-color models, ink from the color print cartridge is laid down only on left-to-right passes. Ink from the black print cartridge is normally laid down on right-to-left passes, but can be laid down in either print direction and is often laid down in both (bidirectional printing). After all of the data for the present location on the page has been printed, the paper motor advances the sheet the proper number of steps for the next print pass.

Note The cockle ribs on the platen of the Aurora pivot cause a "reverse bow" in the media (see Figure 2-18.). The ribs and reverse bow allow ink-saturated paper to cockle away from the print cartridge. This allows the Aurora mechanism to use a tighter print-cartridge-to-paper spacing without smearing ink.

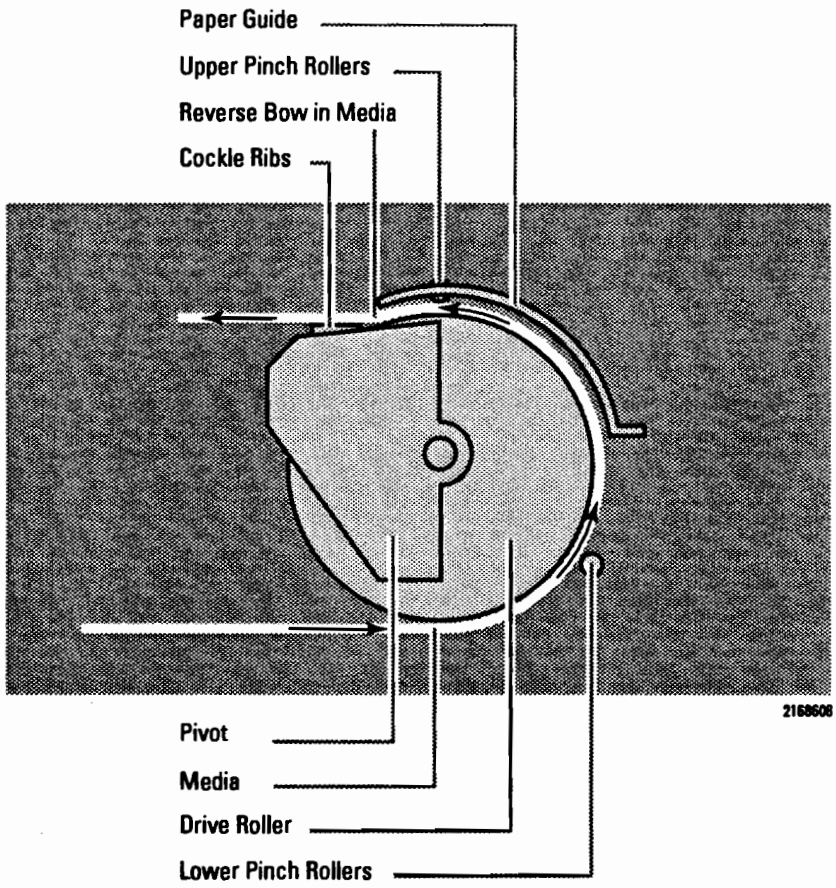


Figure 2-18. Aurora Mechanism Paper Path

To place the drops of ink from the print cartridge(s) in the correct position on each print pass, the printer must know the exact location of the print cartridge(s) at all times. The clear plastic encoder strip, which passes through the carriage as the carriage moves, contains fine vertical lines at 1/150-inch intervals along its length. An LED and sensor unit in the carriage body senses these lines and sends a signal to the logic PCA each time a line passes the sensor. Each time the carriage returns to its home position, the carriage-position counter is set to zero. When the carriage moves away from its home position, the counter is incremented once for every mark on the encoder strip that passes the sensor in the carriage. When the carriage is moving toward its home position, the counter is decremented. In this way, the printer always knows the position of the carriage relative to its home position.

Ejecting a Sheet of Media

After a software application running on the host computer has sent data for a page, it should send a formfeed command to the printer. If the software application does not send a formfeed command within 15 seconds and the printer has not printed a full page, the printer begins to blink the Ready indicator

light. This is a signal to the user to press the Load/Eject Paper button to supply a formfeed. When the printer receives a formfeed or when it has printed a full page, the sequence to eject the page is initiated.

The paper motor advances the number of steps required to move the sheet all the way through the media handling subassembly, from the point where the leading edge trips the OOPS to the point where the trailing edge releases the OOPS. When the trailing edge passes the trigger of the OOPS and releases it, it allows the OOPS to return to its normal position, which sends an end-of-page signal to the logic PCA. The paper motor then advances the sheet the required number of steps to allow the sheet to clear the upper pinch roller, at which point the sheet is no longer held by the mechanism.

Next, the printer once again forces the carriage all the way to its leftmost position and engages the clutch. The paper motor advances the number of step required to rotate the clutch/pivot assembly forward and down to the "kick" position. In the kick position, the pivot has only rotated about half of the distance it rotates when going to the pick position—not far enough to activate the lifter and lift the pressure plate. The forward movement of the pivot pushes (kicks) the sheet forward and out of the mechanism, at the same time, forcing open the wings of the output tray, allowing the sheet to drop into the tray.

Note If the OOPS still detects media after the paper motor has advanced the number of steps required to move the sheet all of the way through the media handling subassembly, the printer assumes there is a paper jam and invokes the paper jam error state (operation stops and the Busy and Ready lights blink).

Repair Checklist

Product Verification Procedure

Description

The following procedure describes how to check HP DeskWriter 510 and DeskWriter 560C printers for proper operation. This procedure assumes you have a known good print cartridge.

Procedure

❒ Visually inspect the printer for cosmetic defects.

- Scratches, dents, cracks, etc. in the plastic parts.
- Ink smudges.
- Paper dust, especially on the paper feed rollers. See "Cleaning the Printer" in the Troubleshooting chapter.
- Nameplate, labels, overlays, bumpers, feet, etc. are properly attached to the product. See the "Parts Lists" chapter for replacement parts.

❒ Turn on the printer. Verify the printer cycles through the power-on self-test routine.

Once the power-on self-test routine is complete, the error light should be off and the power and ready lights should be on. See "Control Panel Light Indications" in the "Troubleshooting" chapter.

❒ Load paper and install a print cartridge in the printer.

Verify printer user operations function correctly. Verify the mechanism is not making excessive noise.

❒ Check the control panel operation by pressing the control panel buttons.

Pressing the print cartridge button should move the print cartridge to the center of the mechanism and pressing the select button should turn off the ready light.

❒ Turn off the printer. Start the print cartridge self-test by turning on the printer while pressing the select button.

The printer should perform the printing self-test. Verify the printout with the self-test examples in the "Print Cartridge Self-Test" section of the "Troubleshooting" chapter.

❒ **Check the interface circuitry on the logic PCA by connecting the printer to an HP DeskWriter test box.**

Verify the test box lights are off and on at the appropriate time. Verify the serial interface self-test portion of the test produces the proper output. See "Interface Self-Tests" in the "Troubleshooting" chapter.

❒ **Observe the printouts from the print cartridge self-test and the interface self-test.**

- Verify the printing is not skewed on the interface self-test printout. See "Avoiding Print Skew" in the "Print Quality Troubleshooting" chapter.
- Verify there are no other print quality problems, such as dots missing, faint or fuzzy print, print smearing, etc. See the "Print Quality Troubleshooting" chapter for more information.

❒ **If testing an HP DeskWriter 560C printer, check the printing self-test for the following color failures.**

- Verify the color self-test is not missing dots, smearing, etc.
- Verify the diagonal test pattern is not missing dots in the cyan, magenta, and yellow sections.

❒ **Turn off the printer.**

Final Diagnostics Complete!

Troubleshooting

Chapter Contents

Troubleshooting Tools

Table 4-1. Recommended Troubleshooting Tools

Tool	Purpose
Digital Voltmeter	Measuring the output voltage from the power module.
Fuse module, Part Number 02227-60030	Protecting the power module when troubleshooting a printer.
HP DeskWriter Test Box, Part Number 02279-60004	Testing the printer electronics and interface circuitry.
Accurate Linear Scale	Measuring print skew.
Tissue and Clean Soft Cloth	Cleaning various printer parts.
Foam Rubber or Lint Free Swabs, such as Part Number 9300-0767	Cleaning the printer and print cartridge contacts. *(Do not use cotton swabs.)*

Using the Fuse Module

Description

The HP DeskWriter family printers use a power module to supply power to the printer. *These power modules contain non-replaceable fuses*. Therefore, Hewlett-Packard recommends connecting the fuse module, part number 02227-60030, between the power module and the printer before troubleshooting any HP DeskWriter family printer to protect the non-replaceable fuses in the power module.

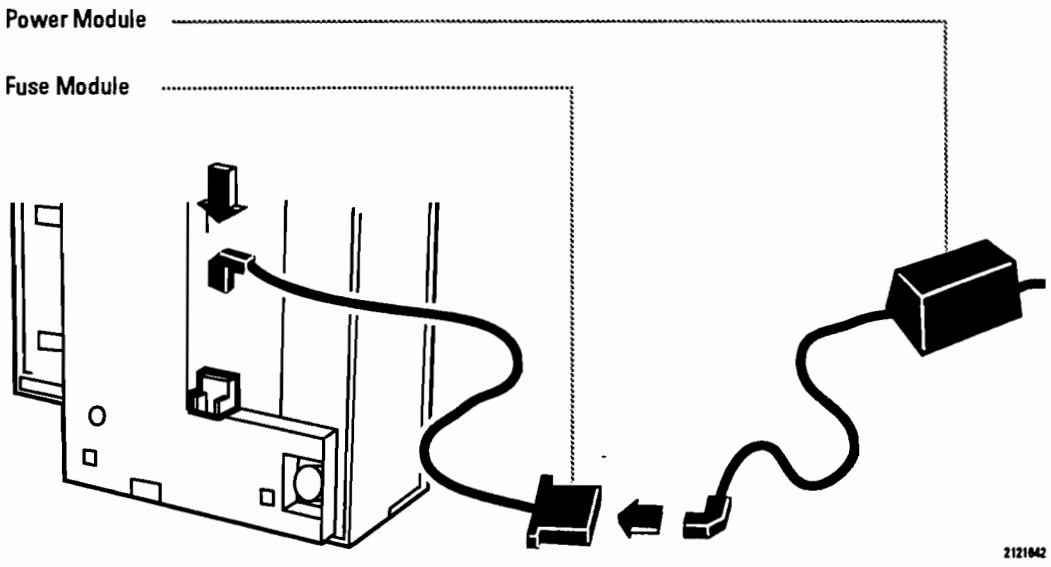


Figure 4-1. Connecting the Fuse Module Accessory

The fuse module serves the following purposes while troubleshooting printers:

- Replaceable fuses in the fuse module protects the non-replaceable fuses in the power module from inadvertent danger while troubleshooting the printer.
- LEDs on the fuse module indicate whether the voltage out of the power module is ok. The two LEDs on the fuse module are lit when the power module is plugged into a powered receptacle, the power module and its non-replaceable fuses are good, and the fuse module replaceable fuses are good. If the printer causes one of the fuses in the fuse module to blow, the corresponding LED will go out.

Keypad Light Indications

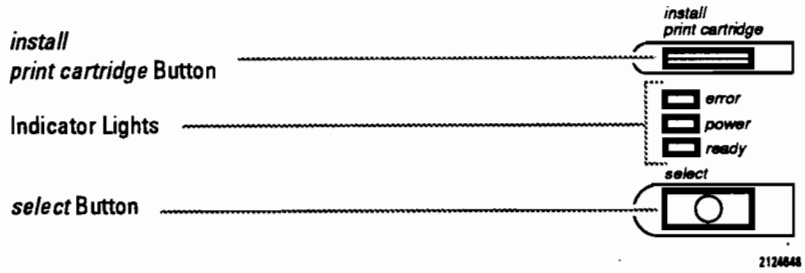


Figure 4-2. Keyapd View

Normal Operating Light Indication

- error Light Off
- power Light On
- ready Light On

Keypad Error Indications

Table 4-2. Keypad Light Error Indications

Keypad Light Indication	Cause	Solution
error Light ON	Out-Of-Paper Condition	An out-of-paper error occurs if the printer tries to load paper to the printing position, but the out-of-paper sensor (also called the OOPS flag) does not detect paper at the platen. 1. If the printer is out of paper, load paper in the IN tray and press the *select* button. 2. If the printer continues to detect an out-of-paper condition with paper in the IN tray, clean the paper feed rollers. 3. If paper pick problems continue, replace the mechanism.
error Light Flashing	Paper Jam Error	The printer identifies a paper jam error if the OOPS flag detects paper at the platen, after an attempt to eject paper to the output tray. 1. Clear the paper jam. 2. Look for obstructions blocking the paper path. 3. There may be a printer hardware problem. Possible hardware failures include the OOPS flag not properly positioned to the head driver PCA sensor or a faulty head driver PCA.
ready Light Flashing	Waiting for a Manual Paper Load	The *ready* light flashing indicates that the printer is ready for a manual paper or envelope load. 1. Manually load the paper or envelope. 2. Press the *select* button.
ready and power Lights Alternately Flashing	Waiting to Change the Print Cartridge	1. Install the desired print cartridge and press the *print cartridge* button to return the print cartridge to the home position. 2. If the print cartridge will not return to the home position, the printer probably cannot identify the type of print cartridge, due to an interconnect problem. See "Solving Printer to Print Cartridge Interconnect Problems" in this chapter.
All Lights Flashing in Unison	Carriage Stall	The printer detects a problem with carriage movement. See "Solving Carriage Stalls" in this chapter.
Lights Flashing in a Series of Patterns	Printer Self-Test Failure	The printer keypad lights identify logic PCA and data communication problems. See "Printer Self-Tests" in this chapter for more information on the printer self-test and keypad light patterns.

Printed Error Messages

Description

The HP DeskWriter printer family indicates certain error conditions with an error message on the printed output. These printed messages and possible solutions are listed below.

Printed Error Messages

Table 4-3. Printed Error Messages

Printed Error Message	Solution
Datacomm buffer overrun - no DTR handshaking	This printed error message indicates that the printer had a buffer overflow condition. Both keypad buttons operate as a reset button in this condition. 1. Verify that you have the correct interface cable and the interface cable is firmly seated in the computer and printer ports. 2. Verify that the interface cable is in good condition. Check the continuity of the interface cable connections. Replace the interface cable if the cable is faulty. 3. Run the interface self-test. See "Interface Self-Tests" in this chapter. 4. Verify that the problem is not caused by a hardware failure in the Macintosh computer.
SCC error	This printed error message indicates that a component inside the printer is faulty. Replace the logic PCA.
Datacomm error	This error message occurs if a Macintosh computer is not transmitting data at the correct baud rate, or if the computer is powered on after the printer. 1. Verify that you have the correct interface cable. 2. Check the host baud rate setting. This can occur if modem data (300 or 1200 baud) is sent to the printer. 3. If the problem continues, return the printer for repair.
Duplicate node, AppleTalk-compatible models	This error message indicates that two or more devices on the AppleTalk network have the same address. HP DeskWriter family printers connected to an AppleTalk network are given unique identification numbers at power on. 1. Turn off the printer, wait a few seconds, then turn on the printer. 2. If the problem continues, replace the logic PCA.

Available Self-Tests

The table below identifies the internal self-tests available for the HP DeskWriter and DeskWriter C printers.

Table 4-4. Available Self-Tests

Self-Test	HP DeskWriter 510 Printer	HP DeskWriter 520 Printer	HP DeskWriter 550C Printer	HP DeskWriter 560C Printer
Printer Self-Test	•	•	•	•
Print Cartridge Self-Test (Black)	•	•	•	•
Print Cartridge Self-Test (Color)			•	•
I/O Serial Interface Self-Test	•	•	•	•
I/O AppleTalk Interface Self-Test	•	•	•	•

Printer Self-Test

Description

The printer self-test checks printer operation automatically as the printer is turned on. There is no printout associated with the printer self-test (pass or fail).

If the Printer Passes Printer Self-Test

If the printer self-test passes, the printer powers-up to its default configuration.

- error Light Off, power Light On, and ready Light On

If the Printer Fails Printer Self-Test

If the printer self-test fails, the printer remains off-line and the keypad lights flash in a repetitive series of three light patterns to identify the error. All keypad error patterns begin with the three keypad lights off.

Note	The printer self-test can also identify problems during printer operation, such as the wrong baud rate, DTR handshake problem, or carriage stall.

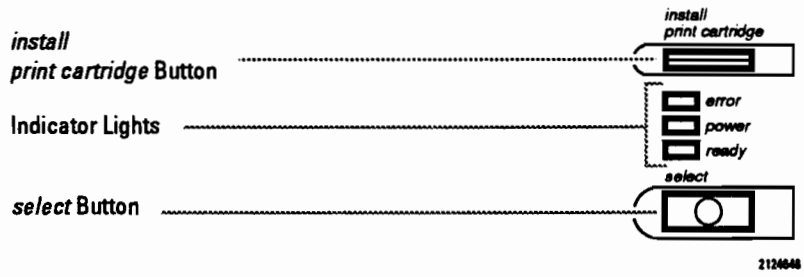


Figure 4-3. Keypad View

Printer Self-Test Keypad Light Error Patterns

Note All keypad light error patterns start with all keypad lights Off.

Table 4-5. Printer Self-Test Flashing Light Error Patterns

First Light Pattern	Second Light Pattern	Third Light Pattern	Probable Cause
All Keypad Lights Off	error Light On	ready Light, or power Light, or error Light On	Printer failure. Replace the logic PCA.
		power and ready Lights On	Firmware failure. Replace the logic PCA.
		error and ready Lights On	Baud rate transmission error.
		error, power, and ready Lights On	DTR handshake, interface cable, or computer problem.
	power Light On	Any Light Combination	Printer failure. Replace the logic PCA.
	All Lights On		Carriage stall. See "Keypad Light Indications" in this chapter.

Note If the printer keypad displays a repetitive light pattern not covered in the table above, turn off the printer then turn it on again. Attempt to duplicate the error pattern. If the error pattern recurs, replace the logic PCA.

Printer Self-Test Example

If all keypad lights are off, then the error light flashes on, then the power and ready lights flash on together, the printer failed the printer self-test and is identifying a firmware failure. Replace the logic PCA.

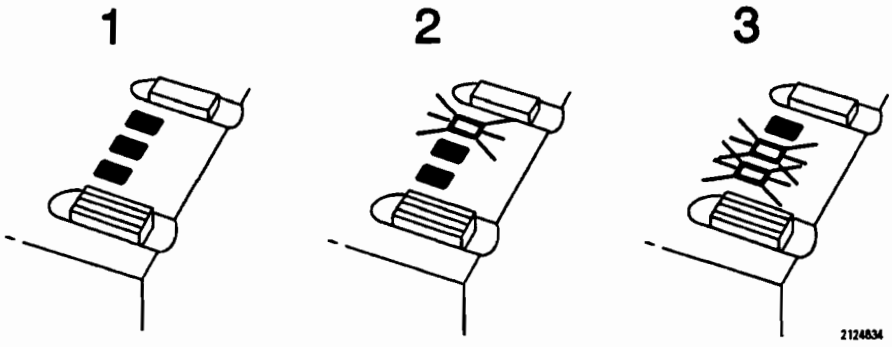


Figure 4-4. Printer Self-Test Light Pattern Example

Print Cartridge Self-Tests

Description

The print cartridge self-test checks the print cartridge, the printer electronics circuitry, the carriage assembly, and the printer mechanism operation. The print cartridge self-test should look *similar* to the self-test patterns in this section. Be sure to look at the appropriate self-test pattern for the printer model.

The print cartridge self-tests perform the following:

- Identifies the HP DeskWriter family printer model.
- Identifies the type of print cartridge installed.
- Lists the firmware revision and date.
- Prints a diagonal test pattern.

Diagonal Test Pattern

The diagonal test pattern identifies any nozzles not printing. If the diagonal line has a gap, one or more nozzles are not *firing* ink to the paper.

Starting the Print Cartridge Self-Test

1. Install the desired print cartridge for the self-test.
2. While pressing the select button, turn on the printer. Then release the select button.

   The print cartridge self-test occurs after the printer passes the printer self-test.

Print Cartridge Self-Test Patterns

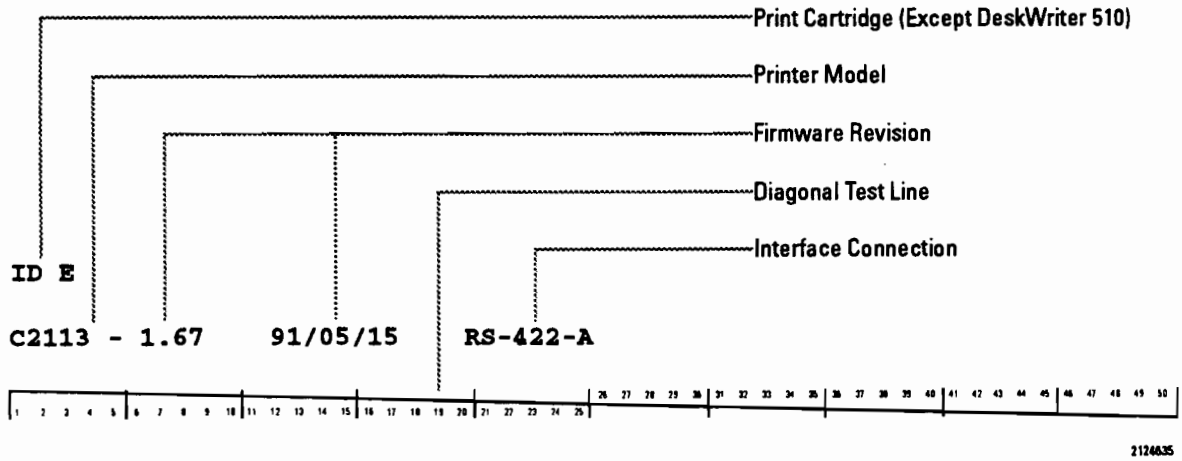


Figure 4-5. HP DeskWriter 510 and DeskWriter 520 Printers

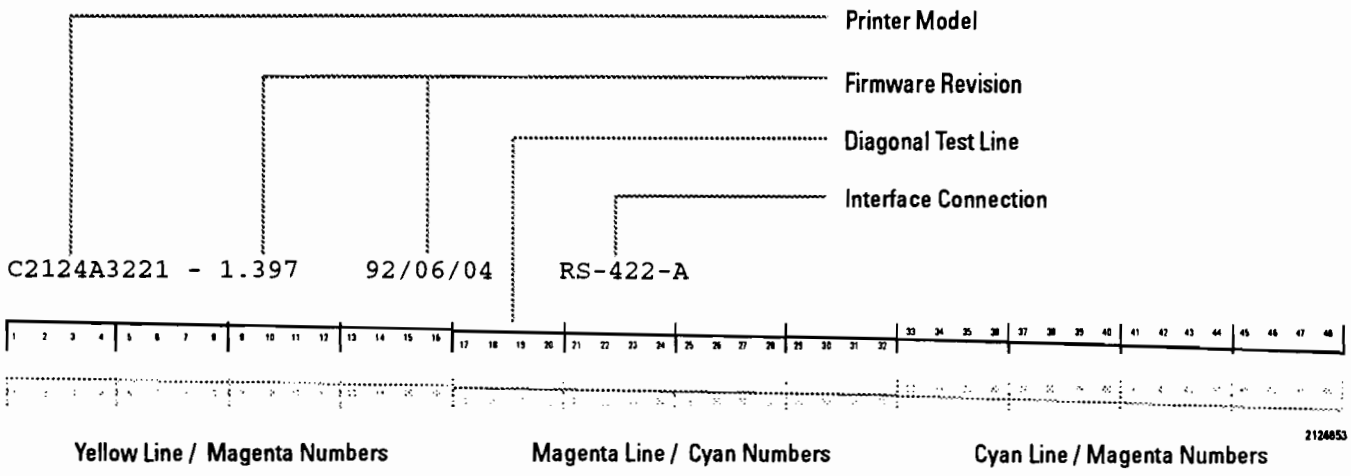


Figure 4-6. HP DeskWriter 550C and DeskWriter 560C Printers

Interface Self-Tests

Description

The HP DeskWriter 510, DeskWriter 520, DeskWriter 550C, and DeskWriter 560C printers have serial and AppleTalk interface capabilities. This section identifies how to test the circuitry in these interfaces.

The printer performs the printer self-test and print cartridge self-test prior to the I/O serial or I/O AppleTalk self-tests. If the printer does not pass the printer or print cartridge self-tests, the printer will not perform the interface self-test.

Note	If the printer passes the interface circuitry self-test but will not print when connected to a Macintosh computer, the printer hardware is probably not the cause. Check the interface cables, connector boxes (if applicable), and the printer driver configuration.

HP DeskWriter Test Box

Interface self-tests require an HP DeskWriter printer test box attached to the printer interface connector port. The HP DeskWriter test box, part number 02279-60004, has two LEDs and a switch:

- Set the switch toward the yellow LED to check the AppleTalk interface circuitry.
- Set the switch toward the green LED to check the serial interface circuitry.

The LED indication should correspond to the information in the "I/O AppleTalk Interface Self-Test" and "I/O Serial Interface Self-Test" sections.

I/O AppleTalk Self-Test

Use the following procedure to test AppleTalk circuitry:

1. Turn off the printer and disconnect the Apple LocalTalk locking connector box from the printer interface port.
2. Attach the HP DeskWriter test box to the printer interface port.
3. Set the test box switch toward the yellow LED.
4. While pressing the two keypad buttons, turn on the printer. Then release the buttons.

The yellow LED should go on and off during the self-test as the printer polls to detect an AppleTalk network using the AppleTalk interface circuitry. There is no printout associated with the AppleTalk interface self-test. (However, the print cartridge test pattern prints out prior to the interface self-test.)

Note	The I/O AppleTalk interface self-test does not test the data path in the interface circuitry. Use the I/O serial interface self-test to check the data path in the printer interface circuitry.

I/O Serial Interface Self-Test

All HP DeskWriter family printers can be configured serially to a Macintosh computer. Use the following procedure to test the serial interface circuitry in an HP DeskWriter family printer:

1. Turn off the printer and disconnect the interface cable from the printer.
2. Attach the HP DeskWriter test box to the printer interface port, located on the bottom of the printer.
3. Set the test box switch toward the green LED.
4. While pressing the two keypad buttons, turn on the printer. Then release the buttons.

Note The printer will not print the I/O self-test unless the printer first passes the printer self-test and prints out the print cartridge self-test.

Checking the DTR Line

The green LED on the test box verifies the DTR line. The LED should be off during the initial portion of the self-test. (All three keypad lights are on immediately after invoking the self-test.) The test box green LED should come on just before the *error* light goes off, after the initial portion of the self-test.

If the test box green LED is on immediately after invoking the interface self-test or goes off during the remainder of the self-test, the DTR line is faulty. Replace the logic PCA.

Checking the Transmit and Receive Lines

The transmit and receive lines are functioning properly if the printer prints "Loopback ok" and followed by the proper printout pattern for the type of printer. If the printer does not print the I/O serial self-test pattern, one of the following problems probably exists:

- The test box is faulty or not connected to the printer interface port.
- The test box switch is set for AppleTalk (toward the yellow LED).
- One or more of the transmit or receive lines are faulty.

Verify that the test box is connected to the printer interface connector port and the test box switch is set toward the green LED. If the test box is properly connected, replace the logic PCA.

```
Loopback ok.

@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz<|>~
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz<|>~
```

2124057

Figure 4-7. I/O Serial Self-Test Pattern

Clearing Paper Jams

Description

If the *error* light is flashing, the printer detects a paper jam. A paper jam occurs if the OOPS flag (Out Of Paper Sensor located on the paper guide) detects paper at the platen, after an attempt to eject paper to the output tray.

Procedure

1. Open the access door and remove the output tray.

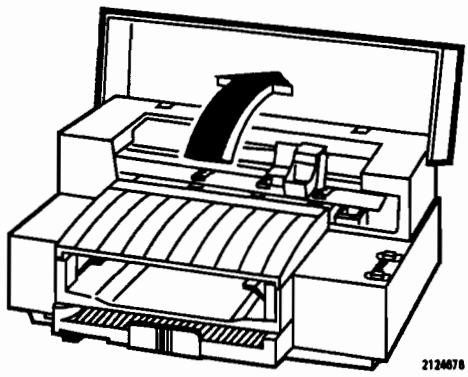


Figure 4-8. Accessing the Paper Jam

2. Press the select button to retract the remaining paper jammed around the paper feed rollers. *The select button will not turn the paper feed rollers unless the error light is flashing.*

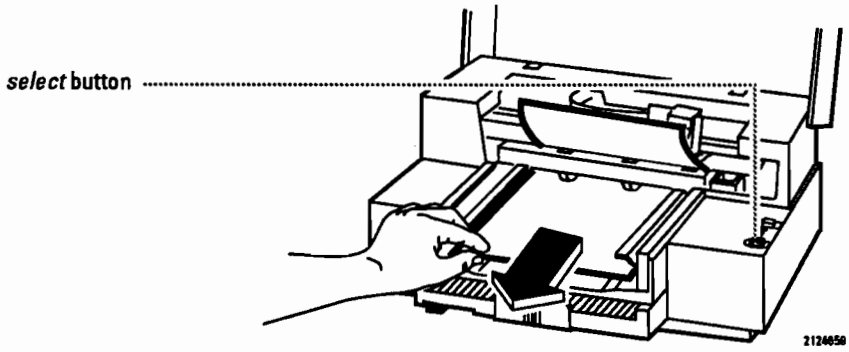


Figure 4-9. Removing the Paper Jam

3. Turn off the printer. (The printer must be turned off to clear a paper jam error state.)
4. Turn on the printer.
5. With the paper jam removed, try to determine the cause of the paper jam. (See the following table for possible causes for paper jams.)
6. With the paper jam removed, monitor printer operation for paper jam related problems. If paper jam problems recur and there are no visible causes for a paper jam, the printer mechanism may be faulty.

Possible Causes for Paper Jams

Table 4-6. Possible Causes of Paper Jams

Possible Cause	Solution
Output Tray Removed	The output tray must be installed for the printer to properly load and eject paper.
Paper Buckled in the IN Tray	Paper buckled in the IN tray may be caused by slamming the IN tray shut. Also, the paper may not be properly positioned between the paper width adjustment lever on the left side of the IN tray and the right wall on the right side.
Paper Improperly Installed	Reload the paper.
IN Tray Too Full	Verify that the IN tray contains no more than a 1/2 in. stack of paper.
Output Tray Too Full	Make sure the output tray contains no more than 50 sheets.
Paper Too Long	The printer cannot operate with paper longer than 14 inches.
Paper Out of Specification	Make sure the paper meets the product's paper specifications.
More Than One Type or Brand of Media in the IN Tray	Remove the media from the IN tray. Reload with only one type and brand of media in the IN tray.
Paper Added to the Stack of Paper in the IN Tray	Remove paper from the IN tray, add paper to the stack out of the printer, and load the paper in the IN tray as one stack.
Obstruction Blocking the Paper Path	Look for obstructions that block the paper path, and remove the obstruction(s).
Faulty Printer	Possible causes include the OOPS flag not positioned in the head driver PCA sensor, head driver PCA faulty, or faulty mechanism.

Solving Carriage Stalls

Description

A carriage stall indication occurs if the printer detects a problem with the carriage movement (movement of the print cartridge across the mechanism). *The printer must be turned off to exit from a carriage stall error condition.* Turn off the printer before solving carriage stalls.

Note	The printer must be turned off to manually slide the carriage across the mechanism.

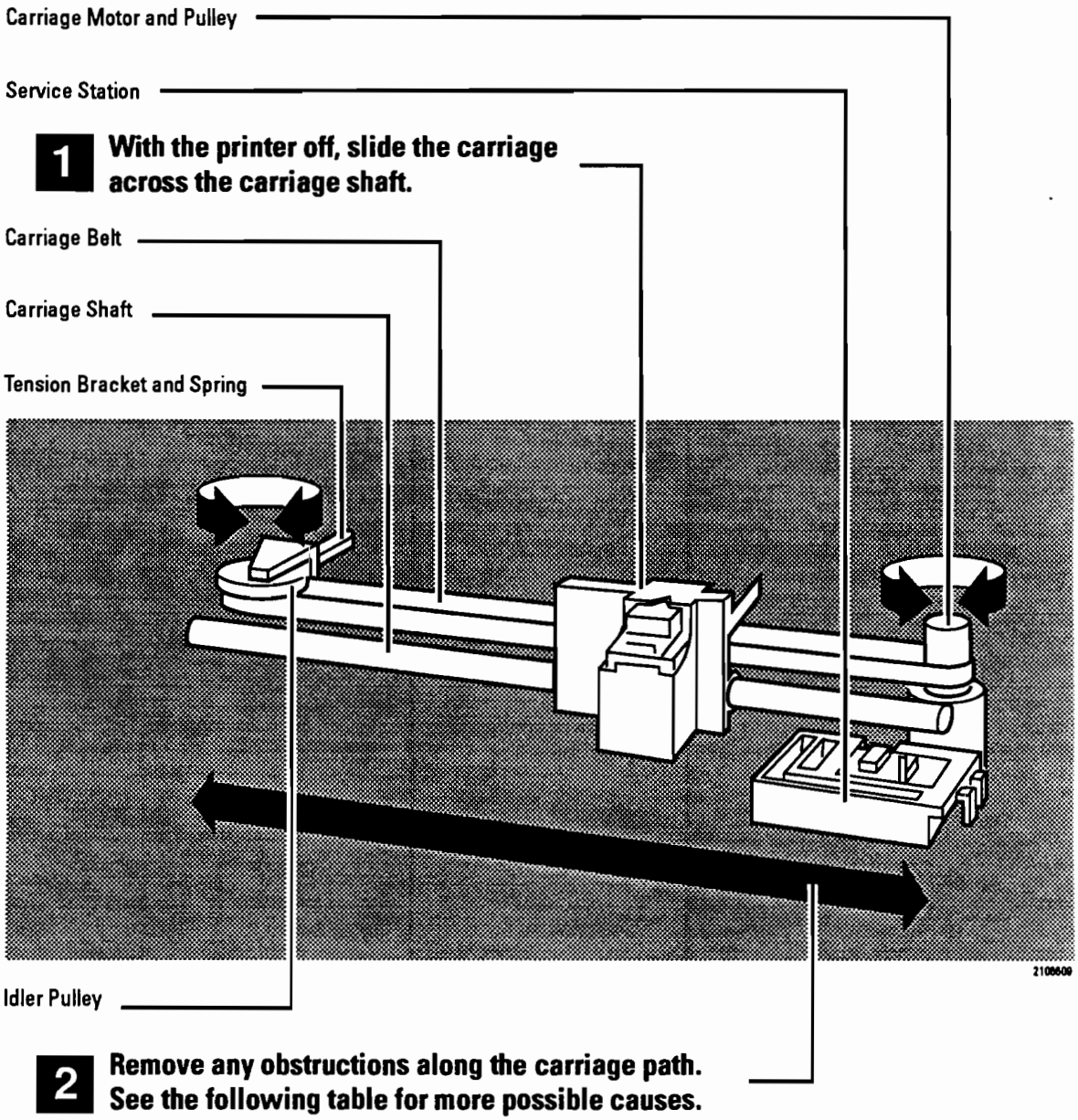


Figure 4-10. Solving Carriage Stalls

Table 4-7. Possible Causes for Carriage Stalls

Possible Cause	Solution
Poor Power Module Connection	Remove and attach the power module. Retest the printer.
Obstruction Blocking the Carriage Path	Inspect the carriage path for any obstructions that may interfere with the carriage movement. Slide the carriage assembly across the carriage shaft. Remove any obstructions along the carriage path.
Tension Bracket or Spring Missing or Improperly Installed	Verify the tension bracket spring are installed correctly. Verify the carriage belt is taut.
Carriage Belt Broken, Frayed, or Worn	Inspect the carriage belt. Replace the carriage belt if there are any signs of wear.
The Idler Pulley Does Not Turn Freely	Remove the tension bracket and spring and manually turn the idler pulley. The idler pulley should turn freely and not rub on any mechanism walls. • If faulty, replace the idler pulley and idler pulley shaft. • If ok, reinstall the tension bracket and spring.
Damaged Carriage Assembly	Inspect the carriage assembly for any signs of damage. Slide the carriage assembly across the carriage shaft. If necessary, replace the carriage assembly or carriage shaft.
Service Station Interfering with the Carriage Path	Inspect the service station. Verify the service station is properly installed. If faulty, replace the service station components.
Faulty Carriage Motor	Visually inspect the carriage motor for any signs of damage. • Slide the carriage assembly to the left and right. Verify the carriage motor pulley turns as the carriage assembly moves. • Verify the carriage motor is properly installed in the mechanism. • Verify the carriage motor cable is properly connected to the carriage motor and the logic PCA. • The carriage motor may be defective. Replace the carriage motor.
Damaged Carriage Shaft	Inspect the carriage shaft for any signs of damage or foreign debris. Slide the carriage assembly across the carriage shaft. If necessary, replace the carriage shaft.
Faulty Logic PCA	The logic PCA may not be driving the carriage motor. Replace the logic PCA.
Faulty Mechanism	Other parts of the mechanism may be interfering with the carriage movement. Replace the mechanism assembly.

Using the Print Cartridge Cleaning Routines

What is Cleaned

Table 4-8. Print Cartridges Cleaned with Cleaning Routine

Print Cartridge Cleaned	HP DeskWriter 510 Printer	HP DeskWriter 520 Printer	HP DeskWriter 550C	HP DeskWriter 560C
Cleans the Black Print Cartridge	•	•		
Cleans the Color Print Cartridge	N/A[1]	N/A[1]	•	•

1. The HP DeskWriter 510 and DeskWriter 520 printers are monochrome printer and are not compatible with the color print cartridge.

Note Do not clean the print cartridge(s) unnecessarily, as this shortens print cartridge life.

HP DeskWriter 510 and DeskWriter 520 Print Cartridge Cleaning Routine

Procedure

1. While pressing the select button, press and release the install print cartridge button. Then release the select button.

   The printer wipes the orifice plate on the print cartridge and refreshes ink in the print cartridge nozzles.

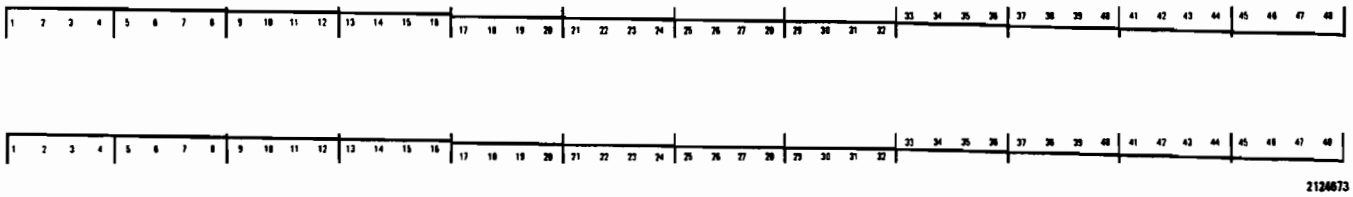


Figure 4-11. HP DeskWriter 510 and DeskWriter 520 Printer Print Cartridge Cleaning Routine

2. Print a full page.
3. If print quality does not improve, repeat the cleaning process one time, or replace the print cartridge.

HP DeskWriter 550C and DeskWriter 560C Print Cartridge Cleaning Routines

Procedure

1. Start the cleaning routine by pressing the *select* button, press and release the install print cartridge button, then release the select button.

   The printer performs the cleaning routine and prints the following cleaning routine pattern.

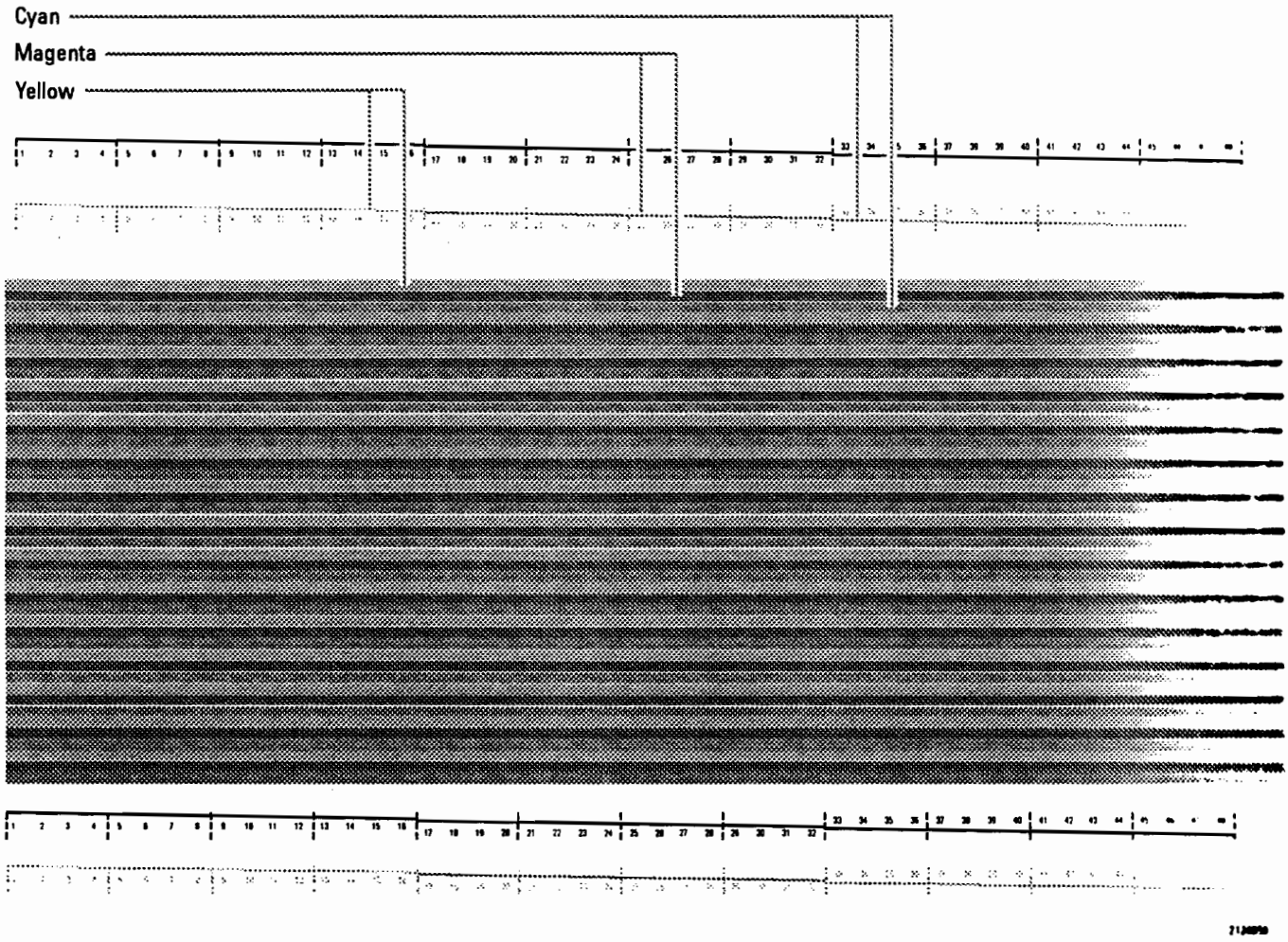


Figure 4-12. HP DeskWriter 550C and DeskWriter 560C Printer Print Cartridge Cleaning Routine

2. After cleaning, print a full page.
3. If print quality does not improve, repeat the cleaning process one time, or replace the print cartridge.

Solving Printer to Print Cartridge Interconnect Problems

Description

Horizontal rows of dots missing on printouts may be the result of a connection problem between the printer carriage contacts and the print cartridge contacts. This is known as an "interconnect problem."

Procedure

1. Remove and reinstall the print cartridge. Make sure the print cartridge snaps into place in the printer carriage cradle. Retest by printing the printing self-test.
   - If ok, no further troubleshooting is necessary.
   - If interconnect problems still occur, continue on to the next step.
2. Remove the print cartridge from the printer and clean the print cartridge and printer carriage contacts as shown in the figures in this section. If you are using a swab, use a soft, lint free cloth or rubber swab moistened with water. *Do not use a cotton swab.* Retest by installing the print cartridge and printing the printing self-test.
   - If ok, no further troubleshooting is necessary.
   - If interconnect problems still occur, continue on to the next step.
3. The print cartridge may be faulty. Replace the print cartridge and retest by printing the printing self-test.
   - If ok, no further troubleshooting is necessary.
   - If interconnect problems still occur, continue on to the next step.
4. Repeat the above steps of installing the print cartridge, cleaning the print cartridge contacts, and cleaning the printer carriage contacts several times.
5. If the problem consistently appears in the printing self-test with the same rows of dots missing on different print cartridges, replace the carriage assembly, mechanism, head driver PCA, logic PCA, or logic cable.

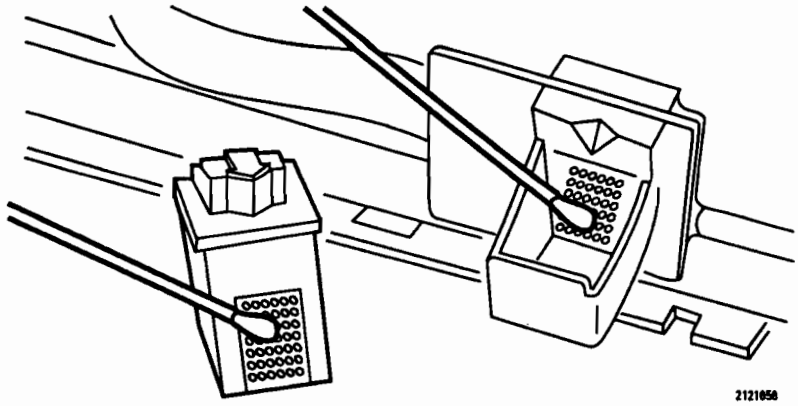


Figure 4-13. Cleaning the Print Cartridge and Printer Contacts (DeskWriter 510 and DeskWriter 520 Printers)

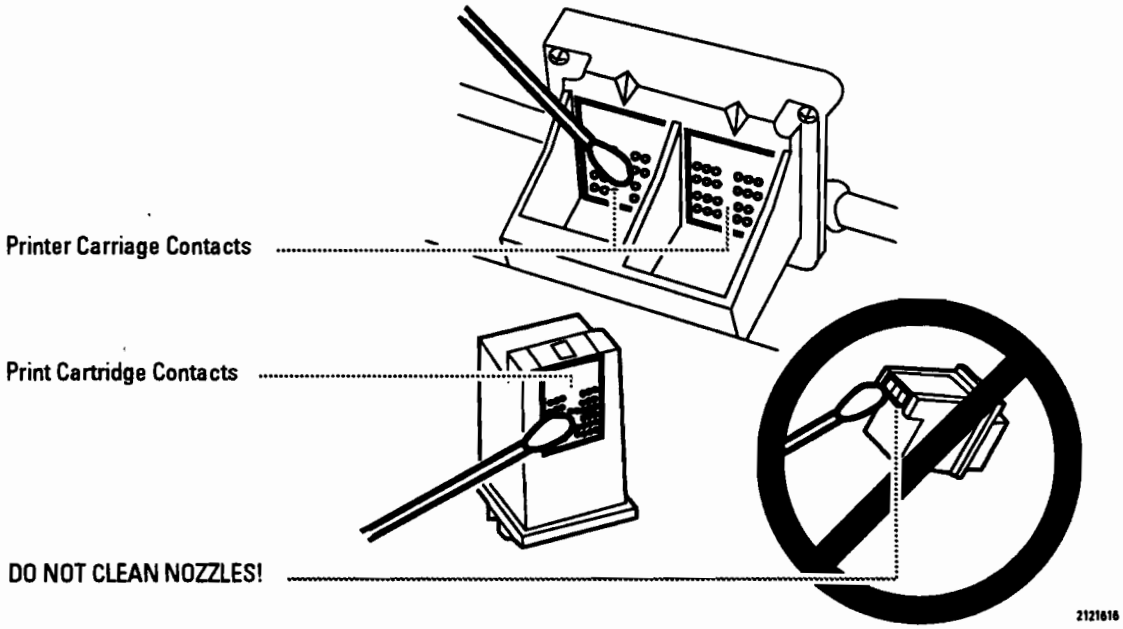


Figure 4-14. Cleaning the Print Cartridge Contacts (DeskJetWriter 550C and DeskWriter 560C Printers)

Cleaning the Printer

Cleaning the Interior and Exterior

The interior and exterior of the printer should be examined for smudges, dust, etc. Clean the exterior with a soft cloth moistened with mild detergent and water. Open the access door and examine the interior areas of the printer. Accumulations of paper or lint should be carefully removed by brushing the loose material onto a cloth, or by using a small computer vacuum cleaner. With the exception of the printer carriage contacts, use water only to clean HP DeskWriter family printers. Platen cleaners or alcohol may damage the printer.

Avoiding Scratched Transparencies

Contamination building up on the paper feed guide may scratch transparencies as the transparencies are fed through the printer. These scratches, which may or may not be visible when projected on a screen, run down the page (vertical when printing in portrait mode). If scratching occurs on transparencies, clean the paper feed guide attached to the output tray with tissue, as shown in the figure below.

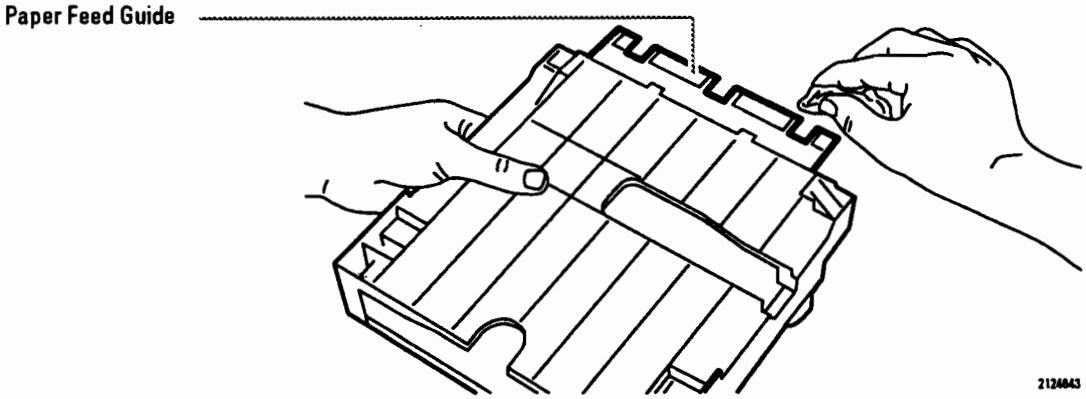


Figure 4-15. Cleaning the Paper Feed Guide

Cleaning the Paper Feed Rollers

When to Clean Paper Feed Rollers

If an HP DeskWriter family printer has problems picking paper, clean any paper dust from the paper feed rollers with a cloth moistened with only water.

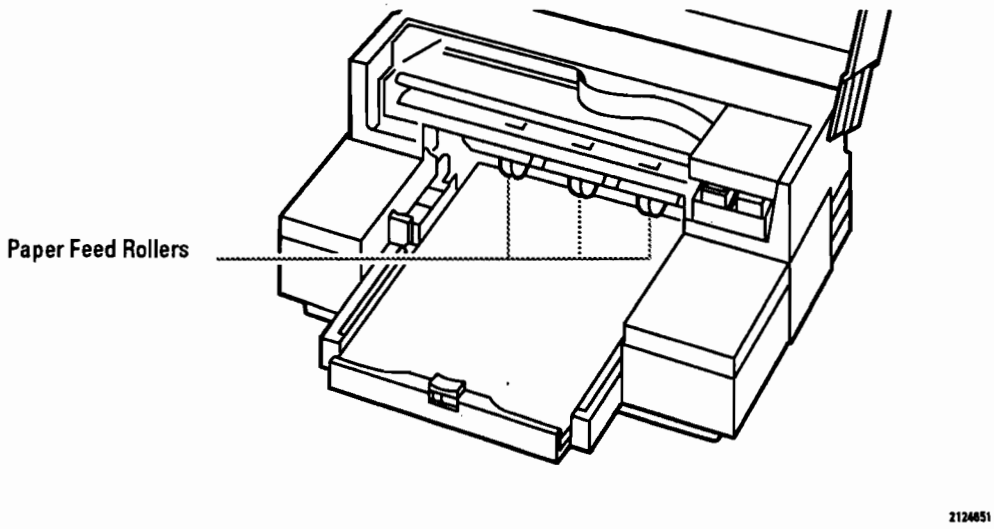


Figure 4-16. Cleaning the HP DeskWriter 510, DeskWriter 520, DeskWriter 550C, and DeskWriter 560C Printers

Procedure

1. Remove the output tray and the tray cover. Remove the paper from the IN tray.
2. Turn off the printer.
3. Clean the paper feed rollers by holding a cloth moistened with water against one of the three paper feed rollers while turning on the printer. (The paper feed rollers turn during the power-on sequence.)
4. Repeat steps two and three for the other two paper feed rollers.
5. Load paper in the IN tray and install the output tray.
6. Verify the printer will pick paper.
7. Repeat the cleaning procedure if the printer does not pick paper from the IN tray.
8. If paper picking problems continue, replace the mechanism assembly.

Mechanism Parts to Avoid Cleaning

Do not clean the shaft. Cleaning the carriage shaft may reduce the life of the part and the ink present on the part will not hinder the operation of the product.

Checking the Power Module Output

Procedure

1. Disconnect the power module from the printer.
2. With the power module plugged into a powered receptacle, measure the voltage with a voltmeter as shown below.

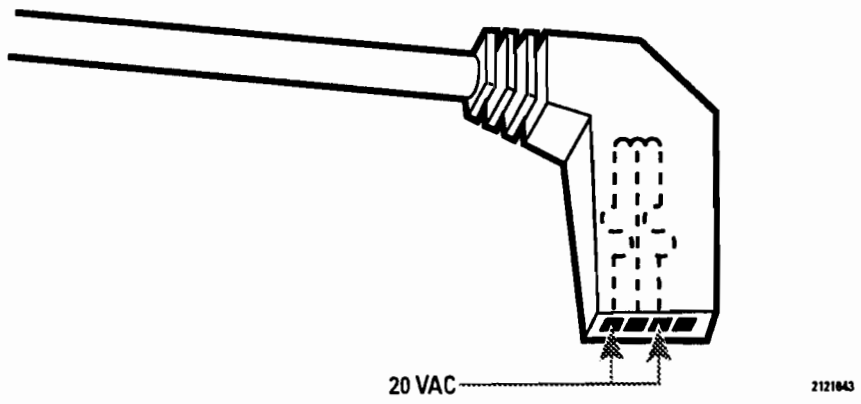


Figure 4-17. Power Module Connector

Note	The acceptable measured voltage range for the power module is 18 to 27 VAC.

5

Print Quality Troubleshooting

Chapter Contents

Avoiding Print Skew

Description

Print skew occurs when the movement of paper in the mechanism is not square to the carriage movement. The result is inconsistent print margins along the paper's edge (printing appears tilted on the page). The resulting print skew is a result of three factors:

- The printer
- The squareness of the paper
- The loading and handling of paper

Printer Skew Specification

The print skew specification for the printer mechanism is 0.006 inches per inch on 95% of all pages printed. How paper is loaded and the squareness of the paper can impact print skew. Pre-printed forms can increase the print skew appearance if the form is skewed in the opposite direction of the printer's skew. Any skew on the printed form must be taken into account when measuring print skew.

Measuring Paper Squareness

Print skew may be impacted by the squareness of the paper. The industry standard for paper squareness is 0.003 inches per inch. This measurement must be added to the print skew specification to obtain a true overall print skew specification. Test the paper squareness by printing on one side of the paper, flipping the paper over, then printing on the other side. If the print slopes down on one side and up on the other side, the squareness of the paper may be impacting the print skew. In this case, try a different paper to improve the printer's print skew.

Loading Paper to Avoid Skew

Loading paper can impact print skew. It is important to have the paper placed squarely in the IN tray and aligned against the right wall. Remove the output tray and try tapping the stack of paper against the right wall of the IN tray. Install the output tray and check for skew.

Factors To Consider When Solving Print Skew

- The measured print skew is a result of the printer and the paper skew. Know the printer's and paper's skew specifications.
- Use envelopes with rectangular flaps rather than triangular flaps.
- Proper loading and handling of the paper can minimize print skew. Make sure the paper is loaded evenly against the right wall of the IN tray.
- Maintain a stack of paper in the IN tray.
- Load only one type of media (paper or transparencies) in the IN tray.

Note Always load a stack of paper into an empty IN tray rather than placing paper on top of paper in the IN tray.

Measuring Print Skew

1. Load a full stack of paper in the printer, but no more than one-half inch thick.
2. Print a page of information that should display a consistent left margin down the page.

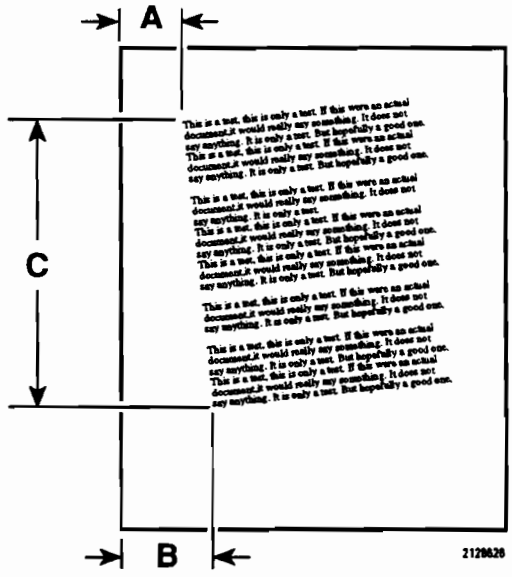


Figure 5-1. Measuring Print Skew

3. Take measurements to determine the print skew on the page.
   a. Measure the distance from the left edge of the paper to the upper left corner of the printout. This is distance "A" in the figure below.
   b. Measure the distance from the left edge of the paper to the lower left corner of the pattern. This is distance "B" in the figure in this section.
   c. Measure the vertical distance between "A" and "B." This is distance "C" in the figure in this section.
4. Use one of the following equations to determine the print skew on the page:
   - If A>B, use the equation (A-B)/C
   - If B>A, use the equation (B-A)/C
5. Repeat the process on at least 20 pages. The measurement should be within the print skew specification on 19 out of 20 pages.
6. Try the process again with a different type of paper.
7. If the print skew is consistently out of tolerance, there may be a hardware problem.
   a. Check the pen-to-paper spacing. See the adjustment procedures in the "Adjustments" chapter.
   b. The mechanism may be faulty. Replace the mechanism.

Printout Missing Dots

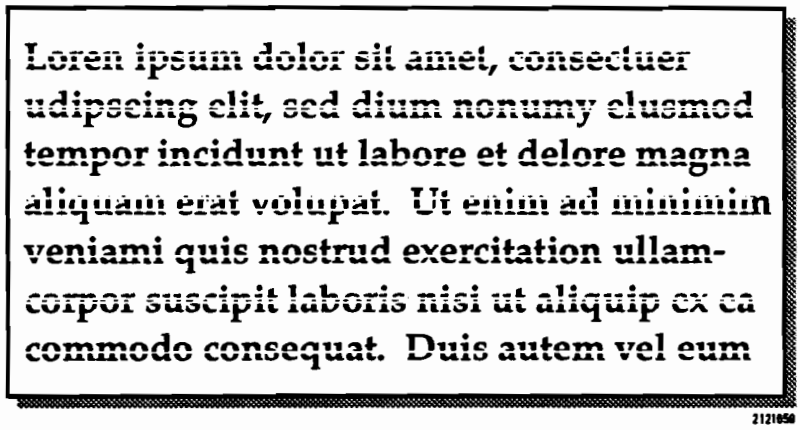


Figure 5-2. Printout Missing Dots Example

One or more rows of dots missing on printouts will appear as white lines through the text. Printouts missing dots may be caused by the following:

- A print cartridge related problem.
- A printer hardware related problem.
- The connection between the print cartridge and the printer carriage.

See "Solving Printer to Print Cartridge Interconnect Problems" in the "Troubleshooting" chapter.

Removing Crusted Ink from the Print Cartridge Nozzles

Description

Black print cartridges left out of the printer or storage container may experience a crusting of ink on the print cartridge nozzles. *Do not install a print cartridge with this crusting into the printer or in the storage container.* Dispose the crusted print cartridge and replace it with a new print cartridge.

Identifying the Print Cartridge Expiration Date

Description

Print quality problems, such as faint or fuzzy print, may be caused by print cartridges that have past their expiration date.

Note Ink can evaporate through the nozzles, reducing the print cartridge life. Therefore, keep print cartridges in their sealed container or capped by the service station at the right end of the mechanism.

Print Cartridge Life Specifications

Table 5-1. Print Cartridge Life Specifications

Print Cartridge Description	Print Cartridge Part Number	Sealed in its Container (Shelf Life)	Open in the Printer or Storage Container
Original Black Print Cartridge	51608A	18 Months	180 Days
High Capacity Black Print Cartridge	51626A	18 Months	180 Days
Color Print Cartridge	51625A	18 Months	180 Days

Note The Open in the Printer or Storage Container Specification is based on printing at least once a month at office ambient.

Determining the Expiration Date

There are two methods for determining if a print cartridge is past its expiration date:

- Read the date on the box
- Determine the expiration date based on the manufacturing code on the print cartridge.

Method 1 - Read the Date on the Box

If the print cartridge is in a box, read the "Use Before" date printed on the box as shown below.

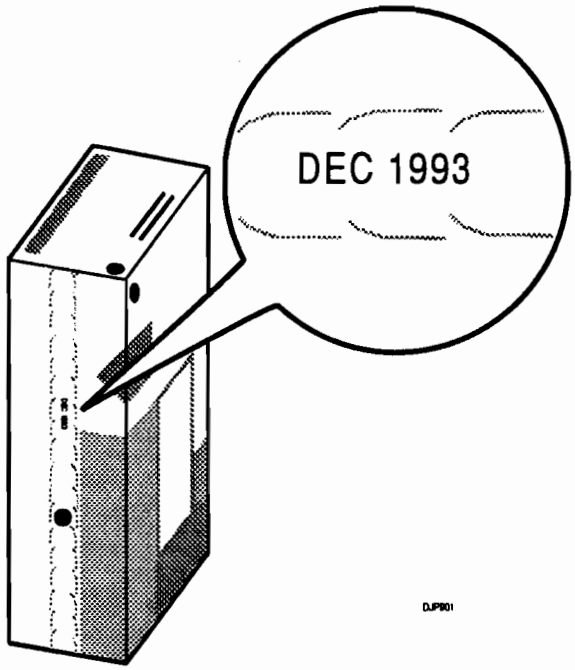


Figure 5-3. "Use Before" Date on the Print Cartridge Box

Method 2 - Read the Code on the Print Cartridge

Determine the earliest and latest possible expiration dates from the code printed on the print cartridge.

1. Determine the manufacturing date from the code printed on the print cartridge. In the examples below, the print cartridges were produced on March 28, 1993.

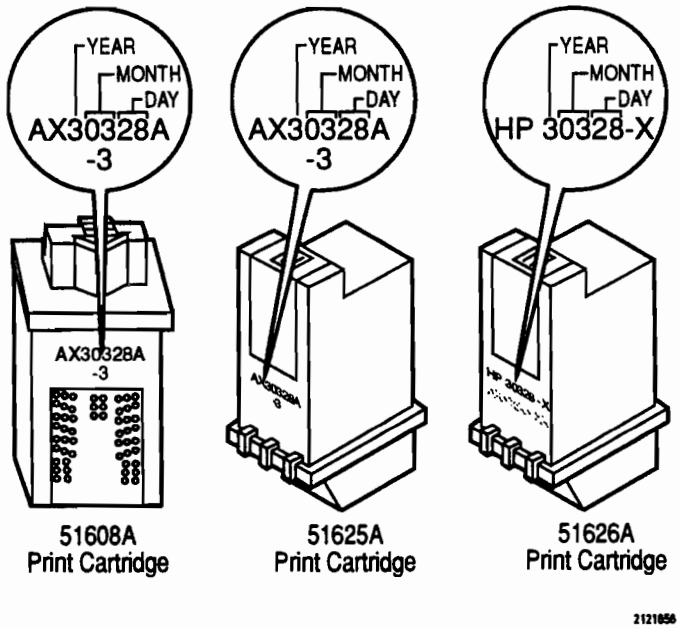


Figure 5-4. Determining the Manufacturing Date

2. Determine the earliest and latest possible expiration dates from the code printed on the print cartridge.
   - Earliest Possible Expiration Date = Manufacturing Date + 180 Days (Open Life Specification)
   - Latest Possible Expiration Date = Manufacturing Date + 18 Months (Shelf Life Specification)

   From this data, replace the print cartridge if you suspect the print cartridge may have exceeded its expiration date.

Has the Print Cartridge Expired?

Table 5-2. Determining if the Print Cartridge Expired

Period	Expired?	Reason
Up to 180 Days After the Manufacturing Date	No	The print cartridge has yet to exceed the open life specification.
180 Days to 18 Months After the Manufacturing Date	Maybe	Expired if the print cartridge has been out of its packaging longer than the open life specification.
Longer Than 18 Months After the Manufacturing Date	Yes	The print cartridge has exceeded its 18 month shelf life.

Note Use a FIFO (First In, First Out) inventory control process to avoid having print cartridges longer the print cartridge shelf life specification.

Short Print Cartridge Life

Print Cartridge Life Specifications

Table 5-3. Print Cartridge Life Specifications

Print Cartridge Description	Print Cartridge Part Number	1000 Characters Per Page Coverage	1500 Characters Per Page Coverage	Normal Print Mode 8% Area Fill
Original Print Cartridge	51608A	500 to 1000 Pages	333 to 666 Pages	
High Capacity Print Cartridge	51626A	1000 to 2000 Pages	666 to 1332 Pages	
Color Print Cartridge	51625A			250 Pages

Notes
- The 51608A and 51626A print cartridge life specifications are based on printing Courier 10. The lower numbers in the specifications are based on using Best print mode and the higher numbers in the specifications are based on using Draft print mode.
- The 51625A print cartridge life specification is based on using Normal print mode in with an average 8% area fill.

Possible Causes for Short Print Cartridge life

Table 5-4. Possible Causes for Short Print Cartridge Life

Possible Cause	Explanation
The pages have a higher rate of ink coverage than specified by the print cartridge life specifications.	The rate of coverage on the page has a very significant impact on the number of pages per print cartridge. Heavy concentrations of ink and higher print quality significantly reduce the number of pages per print cartridge.
Pages contain graphics.	Generally, graphics use ink at a much higher rate than the Courier 10 font at 1500 characters per page specification. If possible, print drafts of documents without the graphics.
The selected print mode uses ink at a higher rate.	Higher quality print modes use more ink than a draft print mode. To maximize print cartridge life, print drafts of documents in Draft mode, then print the final copies in a higher quality mode.
Tape covering the bubble generator was not removed from the bottom of a high-capacity print cartridge.	The high-capacity print cartridge has two pieces of tape: one tape covers the print cartridge nozzles and the other tape covers the bubble generator. Removing tape from the nozzles without removing tape from the bubble generator results in a short print cartridge life. 1. Remove the tape from the high-capacity print cartridge. 2. Use the cleaning routine. 3. If this does not restore the print cartridge, replace the print cartridge. Be sure to remove both pieces of tape on all high-capacity print cartridges before installing them in the printer.
The print cartridge is past its expiration date.	Replace the print cartridge. Use a FIFO (First In-First Out) inventory process to minimize having a stock of expired print cartridges.

Table 5-4. Possible Causes for Short Print Cartridge Life (Continued)

Possible Cause	Explanation
The printer was turned off with the print cartridge out of its home position.	A service station is located at the right end of the carriage path. This service station caps the print cartridge nozzles to minimize dried ink in the nozzles. Always allow the print cartridge to return to the home position, so that the service station can cap the print cartridge nozzles when the printer is not in use.
The print cartridge may need to be cleaned.	See "Using the Print Cartridge Cleaning Routines" in the "Troubleshooting" chapter. If print quality is not restored after a page of printing, replace the print cartridge.
Excessive print cartridge cleaning.	The process of restoring or cleaning print cartridges uses ink. Avoid excessive use of the cleaning routines.
The print cartridge is stored outside of the printer or print cartridge storage container.	Open print cartridges must be stored in the printer or in a print cartridge storage container to avoid rapid drying of ink in the cartridge.
The print cartridge was refilled rather than new.	Hewlett-Packard does not support refilling print cartridges and does not guarantee the print quality or life from refilled print cartridges. Replace the print cartridge with a new print cartridge.
The print cartridge packaging container was opened.	The print cartridge has a longer life sealed in its packaging, rather than in the printer or a print cartridge storage container. Keep print cartridges sealed in their packaging until needed. Then, promptly install the print cartridge into the printer.
Incorrect estimate of pages printed with the print cartridge.	It is very easy to under-estimate the number of pages printed. When counting pages per cartridge, be sure to count drafts that are thrown away.
The print cartridge is faulty.	Replace the print cartridge. If a pattern of faulty print cartridges develops, the printer may be causing the print cartridges to fail.
The printer is depriming the print cartridge, due to a faulty service station in the printer.	The service station may be in need of repair or modification. For example, the service station may be forcing air into the print cartridge nozzles, resulting in the print cartridge losing its prime.
A printer hardware problem occurred.	The service station may be faulty, or the printer may be damaging the print cartridges.
Short print cartridge life with color print cartridges.	• If printing to an HP DeskWriter 550C or DeskWriter 560C printer, the printer may be printing black with the color print cartridge (composite black), rather than the black print cartridge. Verify the printer driver is set to print all black information using the color print cartridge. • Most causes for short black print cartridge life also apply to color print cartridges. Review the other possible causes in this table.

Solving Black Print Quality Problems

Table 5-5. Solving Black Print Quality Problems

Black Print Quality Issue	Possible Cause
Faint or Fuzzy Print	1. Check the printer settings: • Verify that the printer settings are set for optimum quality, rather than draft quality. For text, verify that the Color Blending selection is set to *Pattern*. 2. Check the media: • Verify that the media meets the product's specifications. Some paper that meets specifications will not produce satisfactory results. Try a different brand of paper. • Turn the paper over and print on the other side. All papers have a recommended print side. See the paper packaging for identification of the print side of the paper. • Verify that the paper is not inkjet, ThinkJet, or special coated paper, unless recommended for the HP DeskWriter printer family. • If printing on CX JetSeries paper, verify that the black is composite black from a color print cartridge. • If printing on transparencies or glossy paper, verify that the transparencies or glossy paper are LX JetSeries media, and that the printer supports the media. 3. Check the print cartridge(s): • If the print cartridge was refilled (rather than new) when installed, replace the print cartridge with a new one. Hewlett-Packard does not support refilling print cartridges and cannot guarantee the quality from a refilled print cartridge. • The print cartridge may be running out of ink. Replace the print cartridge. • Verify that the print cartridge has not expired. See "Identifying the Print Cartridge Expiration Date" in this chapter. • Run the print cartridge cleaning routine. • The print cartridge may be faulty. Try another print cartridge. 4. Check the pen-to-paper spacing. See the "Adjustments" chapter for information on checking the pen-to-paper spacing.
Ink Smearing.	1. Check the media: • Verify that the media meets the product's specifications. Some paper that meets specifications will not produce satisfactory results. Try a different brand of paper. • Verify that the paper is not inkjet, ThinkJet, or special coated paper, unless recommended for the HP DeskWriter printer family. • If printing on CX JetSeries paper, verify that the black is composite black from a color print cartridge. • If printing on transparencies or glossy paper, verify that the transparencies or glossy paper are LX JetSeries media, and that the printer supports the media. • When printing on transparencies and glossy paper, use the *Stop Between Transparencies* (dry timer) option, if available, in the Options dialog box. • Allow the ink to dry before stacking media or placing pages in sleeves. 2. Check the print cartridge(s): • Verify that there is no crusted ink on the print cartridge nozzles. • Run the print cartridge cleaning routine. 3. Check the pen-to-paper spacing. See the "Adjustments" chapter for information on checking the pen-to-paper spacing.
Output Appears Jagged.	1. Verify that *Best* mode is selected, rather than *Draft* mode, in the Print dialog box. 2. In the software application, verify that the highest quality mode is used. 3. In the software application, verify that the selected printer font is available.

Table 5-5. Solving Black Print Quality Problems (Continued)

Black Print Quality Issue	Possible Cause
Rows of Dots Missing	Dots missing may be caused by the print cartridge(s), printer hardware problems, or connections between the printer and the print cartridge. See "Printout Missing Dots" in this chapter and "Solving Printer to Print Cartridge Interconnect Problems" in the "Troubleshooting" chapter.
Grayscale Images Not Satisfactory	The Color Blending method may be set to *Pattern*. In the Page setup/Colors dialog box, set Color Blending to *Scatter*. In the Print dialog box, select *Best* quality mode and *Black (Grayscale)* print cartridge.
Black Output Appears Grayish in Color, HP DeskWriter 550C and DeskWriter 560C Printers	The printer is using composite black (from the color print cartridge) for the black output. Try the following: 1. Select *Black and Color* print mode in the Print dialog box. Select *Optimize Black* in the Page Setup/Colors dialog box. This prints all black elements with the black print cartridge. 2. If unsatisfactory mixing occurs between the black and color inks, modify the document so that black does not touch color (1/10 in. of separation). 3. For documents without color, select *Black (Grayscale)* print cartridge in the Print dialog box. This mode prints with only the black print cartridge.
Black Ink Mixes with Color Ink, HP DeskWriter 550C and DeskWriter 560C Printers	Black ink may mix with color ink in areas where they touch. See "Color and black mixing" in the "Solving Color Print Quality Problems."
Large Areas of Composite Black, HP DeskWriter 550C and DeskWriter 560C Printers	1. Verify that the *Color* print mode is *not* selected in the Print dialog box. *Color* mode results in composite black for all black areas. 2. Select *Black and Color* print mode in the Print dialog box. Select *Optimize Black* in the Page Setup/Colors dialog box. This prints all black elements with the black print cartridge 3. If black and color mixing occurs, select *Minimize Black and Color Mixing* in the Page Setup/Colors dialog box. 4. If the output is unacceptable, modify the document so that black does not touch color (1/10 in. of separation).

Solving Color Print Quality Problems

Table 5-6. Solving Color Print Quality Problems

Color Print Quality Issue	Possible Cause
Ink Smearing	See "Ink Smearing" solutions in "Black Print Quality Problems" table.
Hue Changes Color on Printout	Print cartridge is running out of one color of ink. Replace the print cartridge.
Inconsistent Color Fill Patterns (Banding of Color)	The printer is experiencing waitbanding. See "Inconsistent Color Fill Patterns" in this chapter.
Printout Color Does Not Match Monitor Color	1. Check the printer settings: • Verify that *Complex Color Printing* is selected in the Page Setup/Colors dialog box. • Try a different color blending method. See the user documentation included with the printer for color blending recommendations. • Adjust the intensity slider in the Colors dialog box. 2. Check the print cartridge: • The print cartridge may be running out of one color of ink.
Color Fades on Transparencies	1. Wait several minutes before placing transparencies in sleeves or avoid placing transparencies in sleeves.
Color and Black Mixing	1. Check the media: • Verify that the paper meets the products specifications. Some paper that meets specifications will not produce satisfactory results. Try a different brand of paper. • If using transparencies or glossy paper, verify that it is LX JetSeries media. • If the media is CX JetSeries paper, which is intended for color printing only, use the *Color* print cartridge mode. Do not use black ink on this media. 2. Check the printer settings: • Select *Black and Color* print mode in the Print dialog box. Select *Minimize Black and Color Mixing* in the Page Setup/Colors dialog box. • If the output is unacceptable, choose the *Color* print mode, which uses composite black for all black on the page. • If composite black is unacceptable, modify the document so that black does not touch color ($^1/_{10}$ in. of separation) and use *Black and Color* print cartridge.
Color Misaligned with Black, or Text Baselines Misaligned	Align the print cartridges. See "Aligning Print Cartridges" in the "Troubleshooting" chapter. If text and graphics are aligned on the computer screen and misaligned when printed, turn on *Fractional Widths* (if available in the application) in the Page Setup dialog box.
Black Output When Expecting Color	1. Verify that the *Black (Grayscale)* print mode is *not* selected in the Print dialog box.

Inconsistent Color Fill Patterns

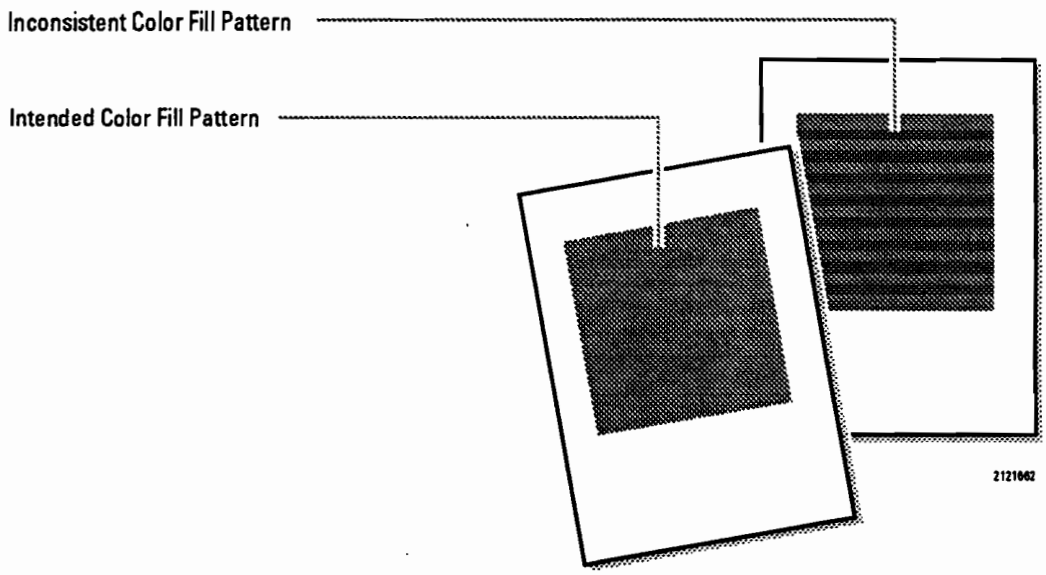


Figure 5-5. Inconsistent Fill Patterns

The print quality in color fill patterns is best if the printer prints at the same rate that the computer sends data. If the printer prints faster than the computer sends data, the printer stops and waits for more data, resulting in a color banding effect as shown above. This phenomenon is called *waitbanding*. If waitbanding occurs, speed up the computer or slow down the printer to equalize the speeds of the printer and computer.

Table 5-7. Avoiding Waitbanding

Solution	Implementation
Speed up the Macintosh computer for printing.	• Install more memory in the Macintosh computer. • Do not use Background Printing or any other spooler. • In the Page Setup/Colors dialog box, use the *Pattern* or *Fixed 8 Colors* color blending selections rather than the *Scatter* selection. • Make the document less complex. • Use a more powerful Macintosh computer.
Slow down the printer.	• Use *Best* mode in the Print dialog box. • Install special paper in the IN tray, select *Best* mode in the Print dialog box, and select *HP Special Paper* in the Page Setup dialog box. • If you do not have special paper and the computer is still too slow for the printer (>12 minutes per page), select *HP Special Paper* in the Page Setup dialog box and use plain paper in the printer. This solution may require adjusting the *Intensity* slider in the Colors dialog box to obtain satisfactory intensity levels on the printouts.

Removal and Replacement

Recommended Tools

Hewlett-Packard recommends the following tools when disassembling and assembling the printers:

- Pozidriv Screwdriver
- Flat Blade Screwdriver
- T-10 TORX Screwdriver (Magnetic Tip Recommended)
- Small Needlenose Pliers
- Top Cover Removal Tool (CrSC and SME Only)
- ESD Protection
- Plastic Bags for Storing Print Cartridges

Procedure Assumptions

The procedures in this chapter assume the following has been done to the printer prior to any disassembly procedure:

1. The paper is removed from the IN tray and output tray.
2. The print cartridges are removed.
3. The printer is turned off.
4. The output tray and cover are removed.
5. The power module is disconnected.
6. You have an ESD protected work station.

Notes

- You may place the print cartridge in a plastic bag while replacing parts and assemblies to reduce the possibility of ink clogs in the nozzles and ink loss due to evaporation.
- Unless specified, reverse the disassembly procedure to re-assemble the printer.

Removing Case Parts

Caution

The printer mechanism does not have any screws or retainers holding it on the base; the top cover holds the mechanism in place. Therefore, the printer must remain upright once the top cover is removed to avoid possible damage to the mechanism.

Removing the Access Door

1. Remove the access door by lifting it in the open position.

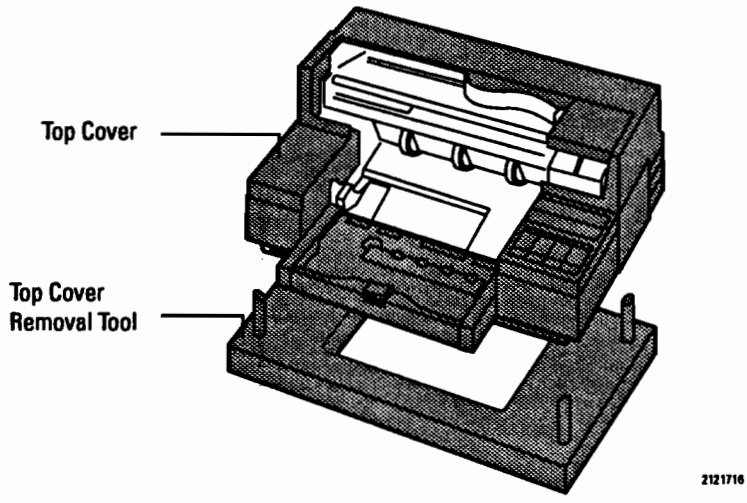
Note

Pull out on the hinge points to clear the access door from the top cover.

Removing the Top Cover

Using a Top Cover Removal Tool (CrSC and SME Only)

1. Seat the printer firmly on the removal tool.
2. Lift the top cover from the base and set it on its right side, to the right of the printer base.



3. Disconnect the keypad cable from the logic PCA. The keypad assembly is located inside the top cover and the logic PCA is mounted on the printer base.

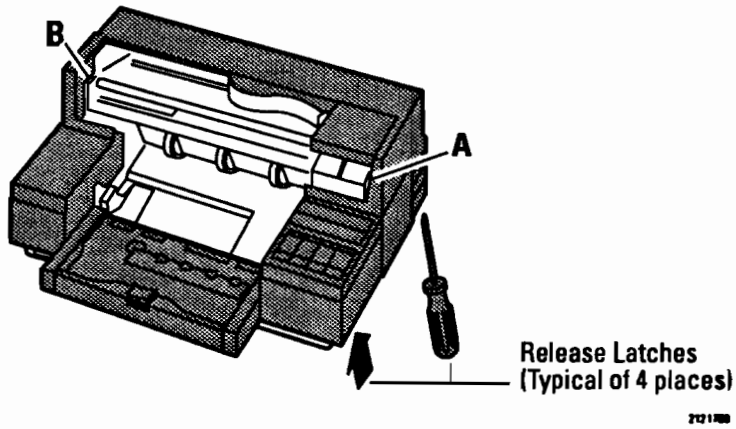
Using a Flat Blade Screwdriver

1. While lifting the top cover at point A, press the two top cover release latches under the right side of the printer. Lift the top cover far enough to free the right side of the top cover from the base.

Caution

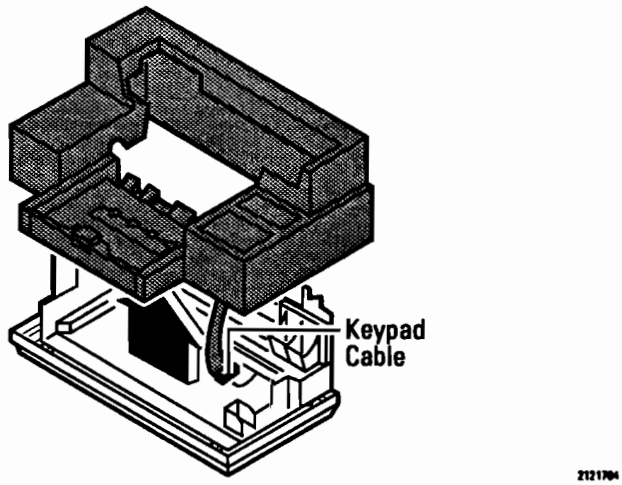
Do not try to lift the top cover off the base until the left side is released.

2. While lifting the top cover at point B, press the two top cover release latches under the left side of the printer. Lift the top cover far enough to free the left side of the top cover from the base.



3. Lift the top cover from the base and set it on its right side, to the right of the printer base.

4. Disconnect the keypad cable from the logic PCA. The keypad assembly is located inside the top cover and the logic PCA is mounted on the printer base.



Note

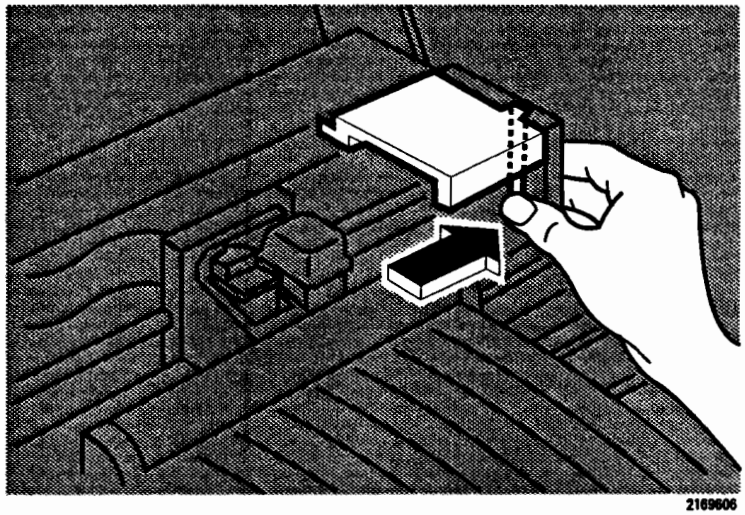
The keypad assembly may have a zero-insertion connector. If so, lift the cap on the connector to release tension on the keypad cable. Then, remove the keypad cable from the logic PCA.

Removing the Pen Cover

1. Turn off the printer with the printer carriage out of the "home" position (right end of the mechanism).

2. While lifting the pen cover, push on the pen cover latch to release the pen cover from the top cover.

3. Lift the pen cover from the top cover.



Removing the IN Tray Components

Note

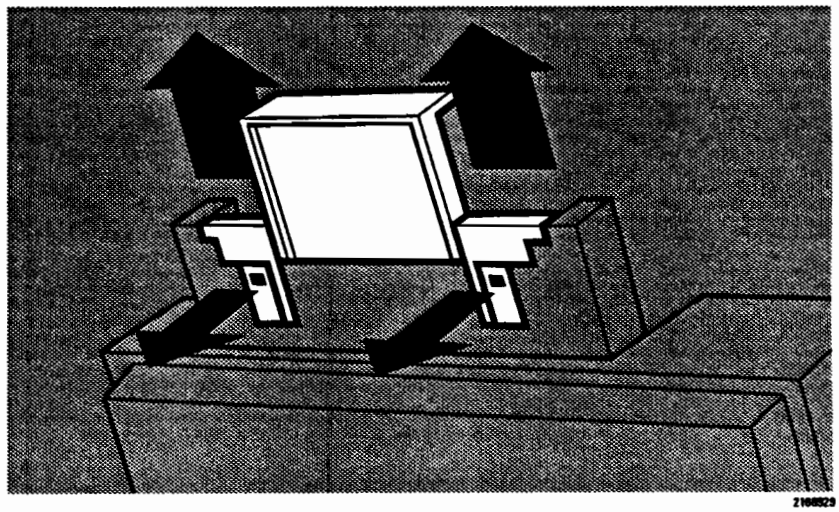
This procedure applies to printers with a McJake and Aurora mechanism. Top covers with the Jake mechanism have a single IN tray component (IN tray drawer).

1. Slide the paper catch out, as if adding paper to the IN tray.

2. Release the latch under the right filler plate and pull the right filler plate even with the IN tray drawer.

3. Release the latch under the left filler plate and pull the left filler plate even with the IN tray drawer.

4. Remove the IN tray drawer, left filler plate, and right filler plate from the top cover.

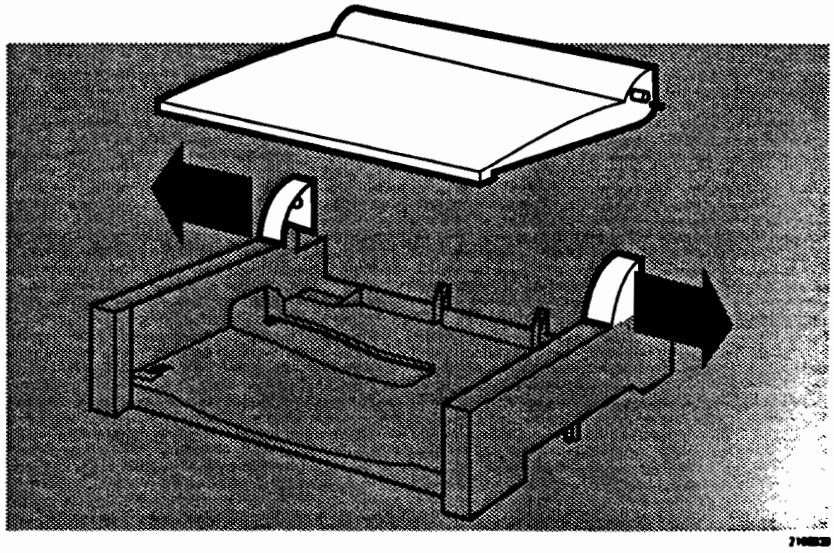


Note

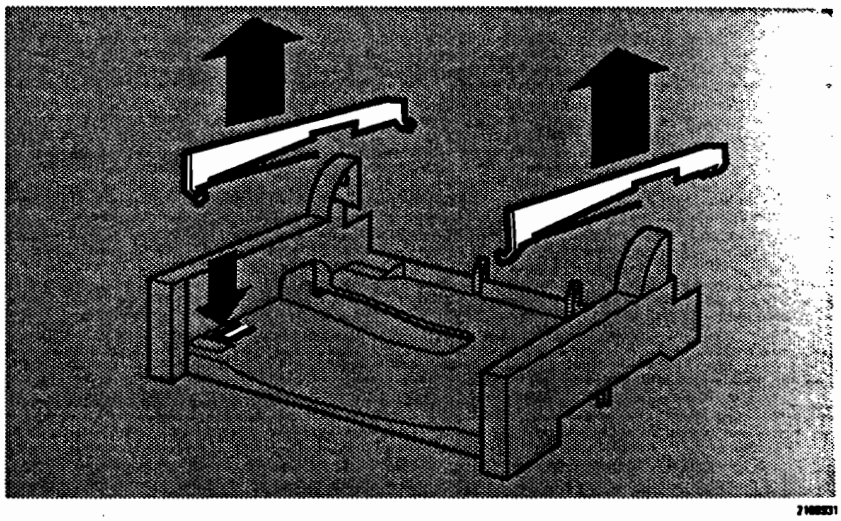
When installing, position the left filler plate to the left and the right filler plate to the right of the IN tray drawer. Then slide all three IN tray components simultaneously into position.

Disassembling the Output Tray

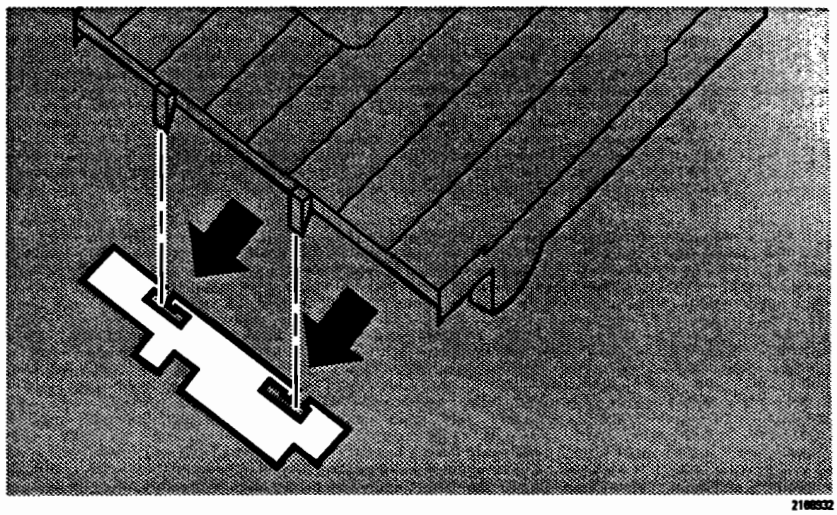
1. Remove the output tray cover by pulling the output tray apart.



2. Remove an output tray wing by bowing the wing while pressing the release tab near the front of the output tray wing. Then remove the back of the wing from the output tray.



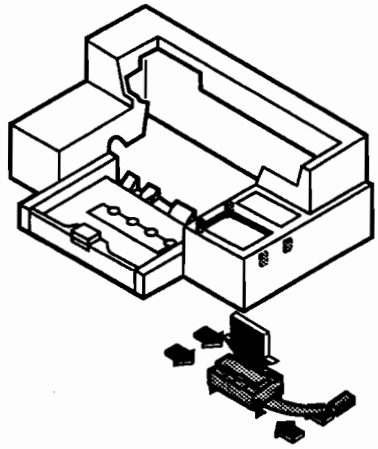
3. Remove the sled by releasing both sled latches and lifting the sled from the output tray.



Removing Internal Assemblies

Removing the Keypad

1. Remove the access door and top cover from the printer base.
2. While pressing the keypad buttons, release the four keypad latches inside the top cover.
3. Remove the keypad assembly from inside the top cover.



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Note

Press the keypad buttons, not the keypad overlay. The keypad overlay is attached to the top cover rather than the keypad.

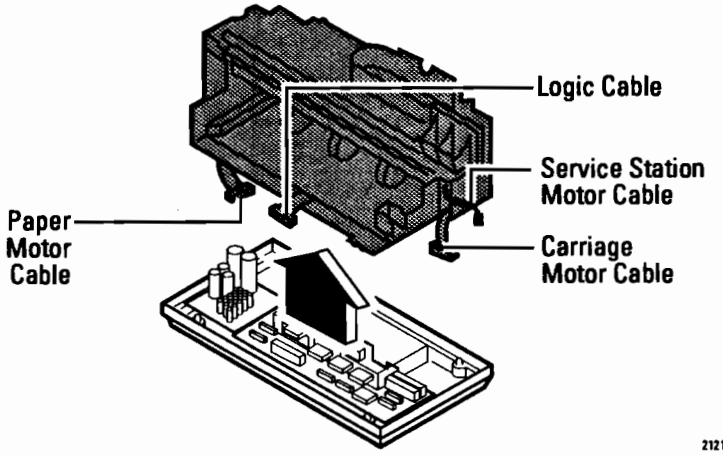
Removing the Mechanism Assembly

1. Remove the access door and top cover.
2. Disconnect the logic cable, carriage motor cable, service station motor cable (DeskWriter 550C and DeskWriter 560C), and paper motor cable from the logic PCA.

Note

The service station motor cable may have a zero-insertion connector. If so, lift the cap on the connector to release tension on the keypad cable. Then, remove the keypad cable from the logic PCA

3. Lift the mechanism from the base.



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Removing the Logic PCA or Power Supply PCA

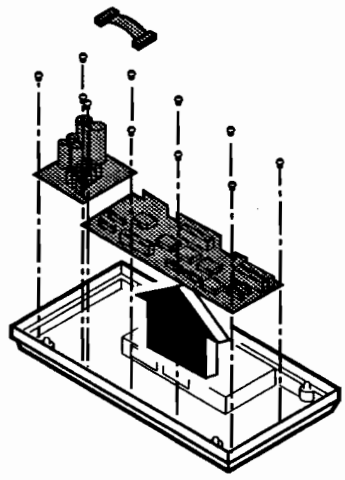
Note

This procedure explains how to remove the PCAs (printed circuit assemblies) while leaving the ground plane in the printer base. To remove both PCAs with the ground plane, see "Removing the Ground Plane" later in this section.

1. Remove the access door and top cover.
2. Remove the mechanism assembly from the printer base.
3. Disconnect the cable between the power supply PCA and the logic PCA.
4. Disconnect the power switch cable from the power supply PCA if you are removing the power supply PCA.
5. Remove the PCA screws and lift the PCA from the base.

Caution

To avoid potential ESD damage, handle the PCAs by the edges only.



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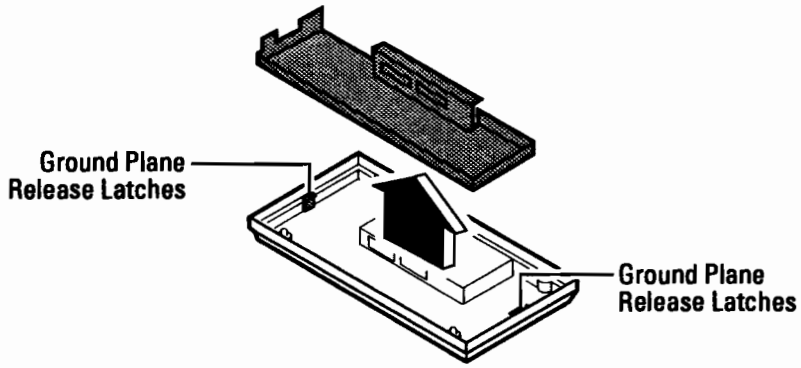
Removing the Ground Plane

Note

This procedure explains how to remove the PCAs with the ground plane.

1. Remove the access door and top cover.
2. Disconnect the cables between the mechanism and logic PCA and remove the mechanism assembly from the printer base.
3. Pry the ground plane release latches out and lift the ground plane from the base. The release latches are molded into the printer base. The logic PCA, power supply PCA, and power switch are removed with the ground plane.



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Note

Lift the front and left sides of the ground plane to clear the ground plane from the base

Removing the Head Driver PCA

1. Remove the access door and top cover.

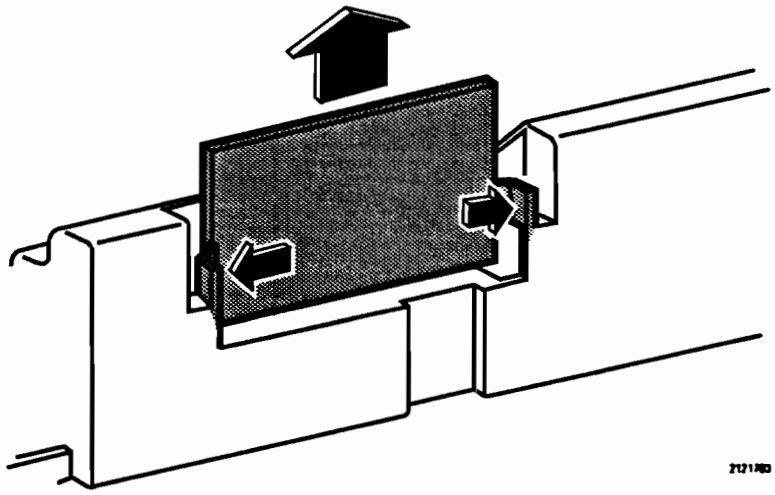
2. Disconnect the flex head cables from the head driver PCA connectors.

Note

There are two to four flex head cable connectors on the head driver PCA. Lift the top of the cable connectors to release tension and pull the flex head cables from the cable connectors.

3. Release the head driver PCA from the latches and tilt the head driver back.

4. Disconnect the logic cable from the head driver PCA and remove the head driver PCA from the mechanism.



Notes

When installing the head driver PCA, set the bottom edge of the PCA in place and connect the logic PCA cable. Then tilt the head driver PCA forward until it clicks in place.

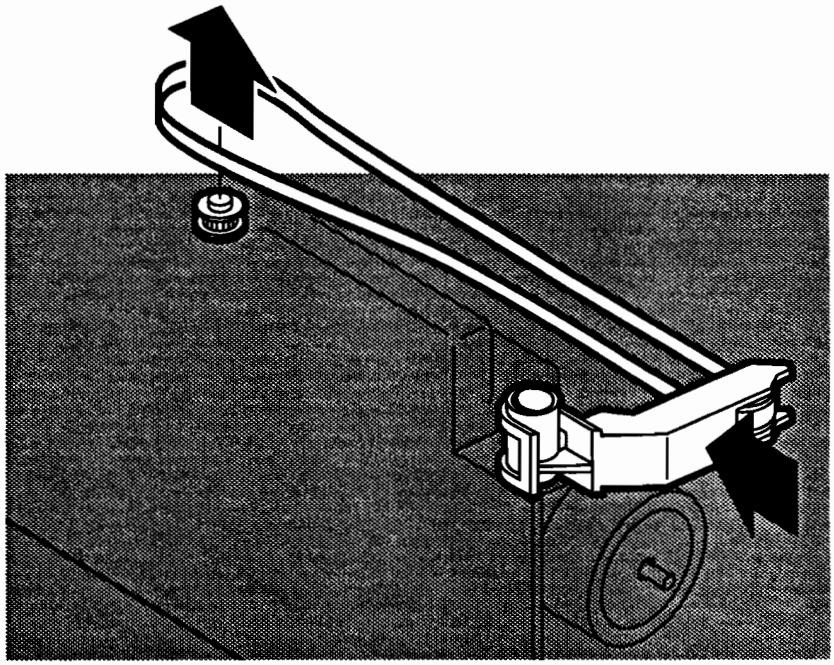
When installing and removing the head driver PCA, be sure the OOPS flag is positioned in the sensor slot on the head driver PCA, being careful not to damage the OOPS flag.

Removing Mechanism Carriage Path Components

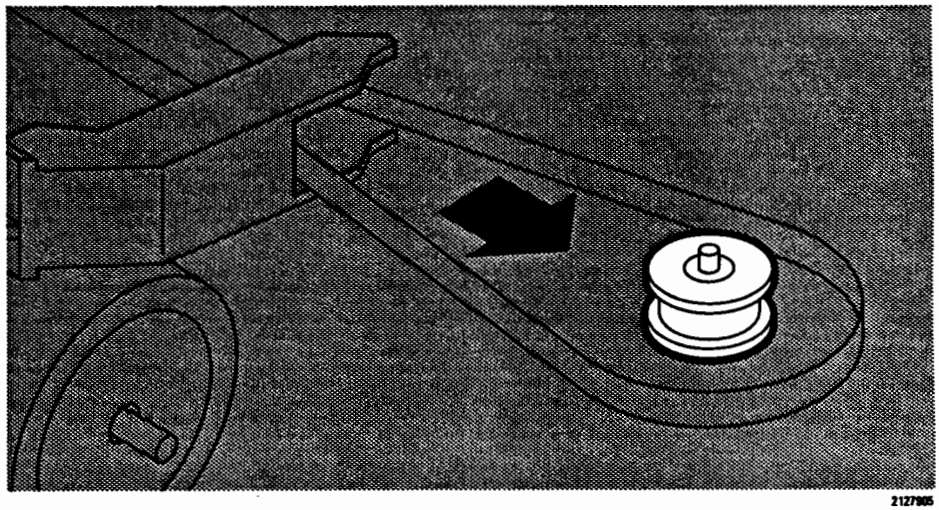
Removing the Tension Bracket, Spring, Idler Pulley, and Idler Shaft

1. Remove the access door and top cover.

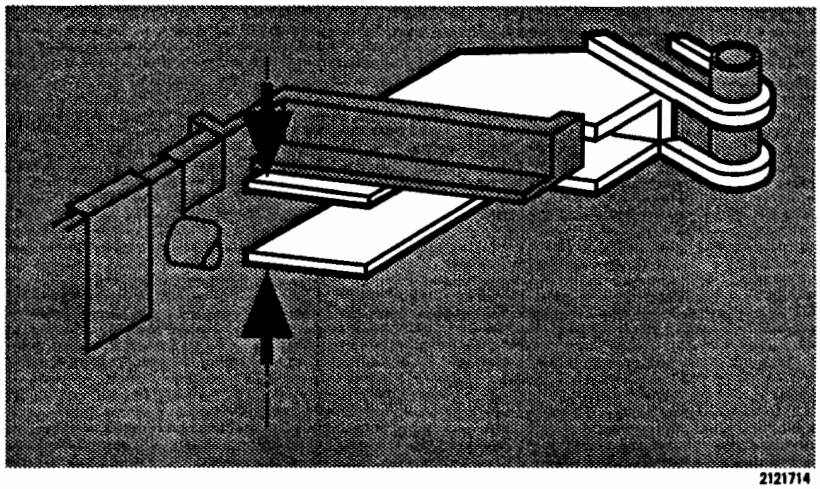
2. Release the carriage belt tension by pressing inward on the tension bracket and lifting the carriage belt off of the carriage motor pulley.



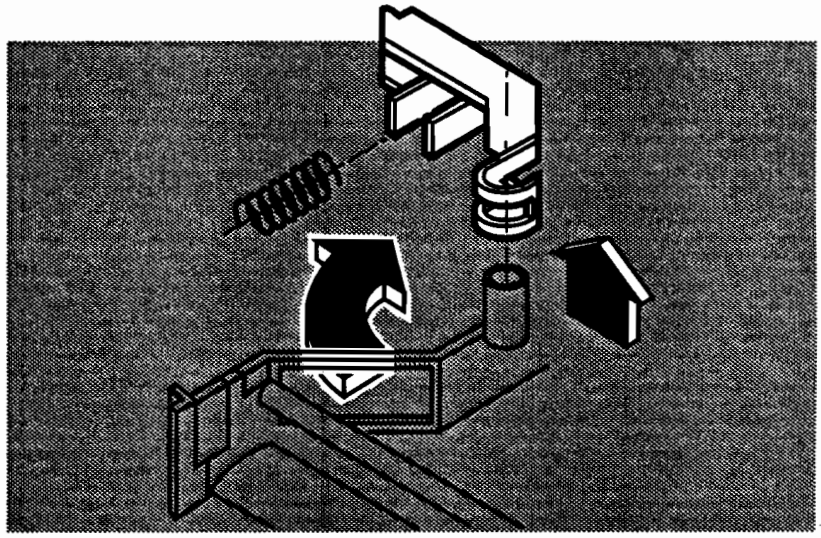
3. Slide the idler pulley and idler shaft out of the tension bracket.



4. Squeeze the belt tension bracket at the point where the idler was located to release the tension bracket from the mechanism.



5. Lift the tension bracket and spring from the mechanism.

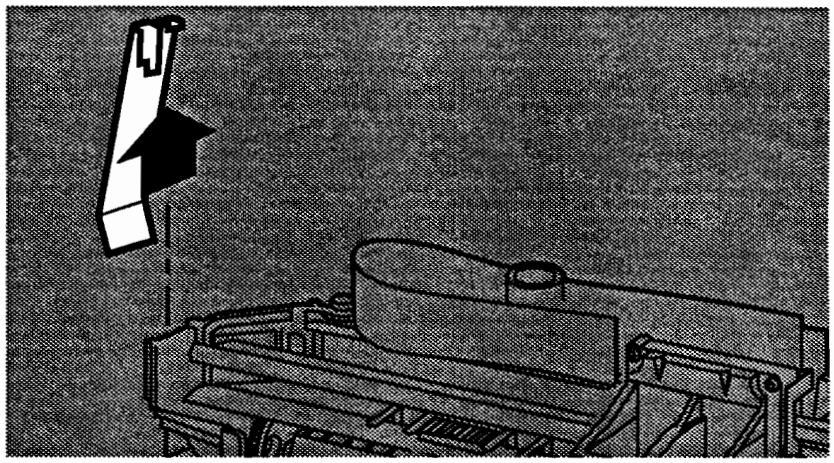


Removing the Carriage Rod and Retainer

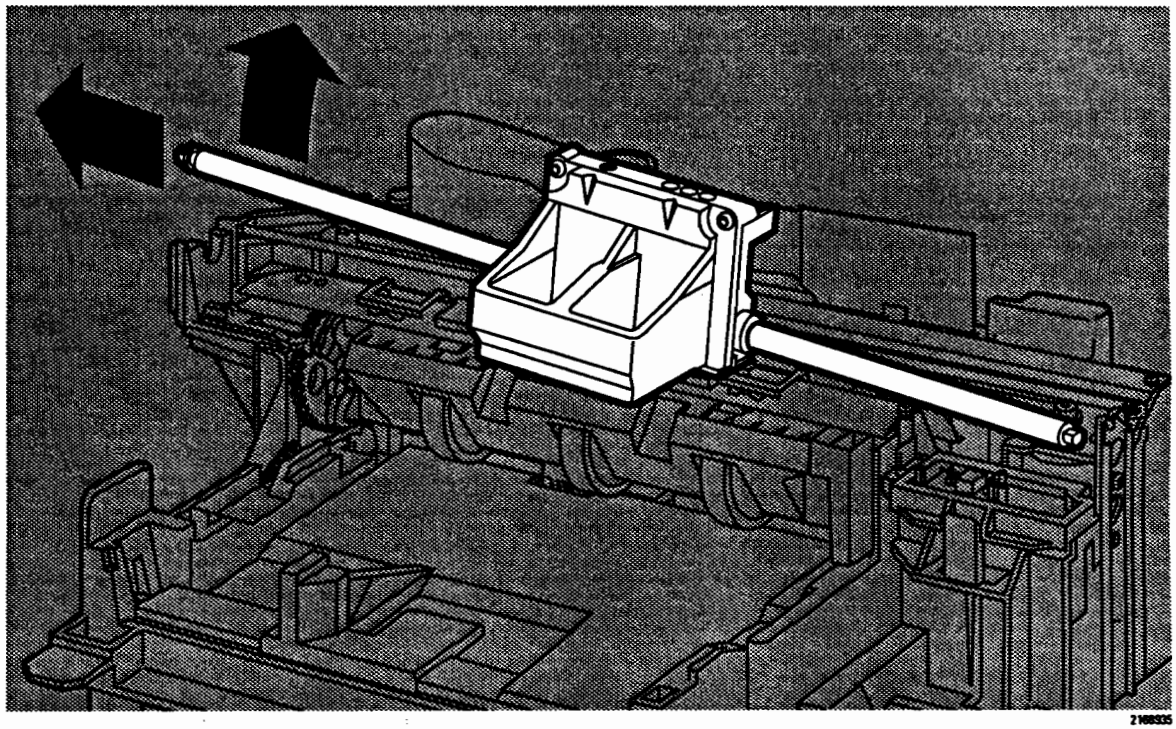
1. Remove the access door, top cover, and output tray.

2. Release the carriage belt tension by pressing inward on the tension bracket (located on the left side of the mechanism) and lifting the right end of the carriage belt from the carriage motor pulley.

3. Remove the retainer by releasing the metal "finger" from the left end of the mechanism with a flat blade screwdriver. Lift the retainer from the mechanism.



4. Lift the left end of the carriage rod from the metal hanger on the left side of the mechanism.



5. Pull the right end of the carriage rod out of the metal hanger on the right side of the mechanism.

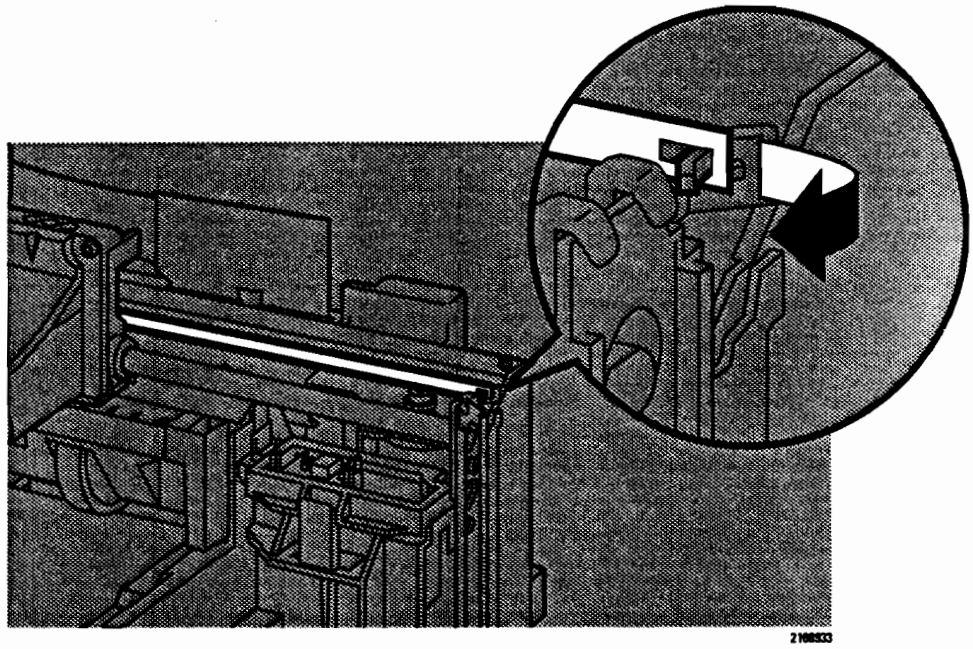
6. Pull the carriage rod out of the carriage assembly.

Note

Do not remove the metal hangers (clips) from the mechanism. The metal hangers are not field replaceable. Also, tampering with these hangers will severely impact the carriage gap adjustment.

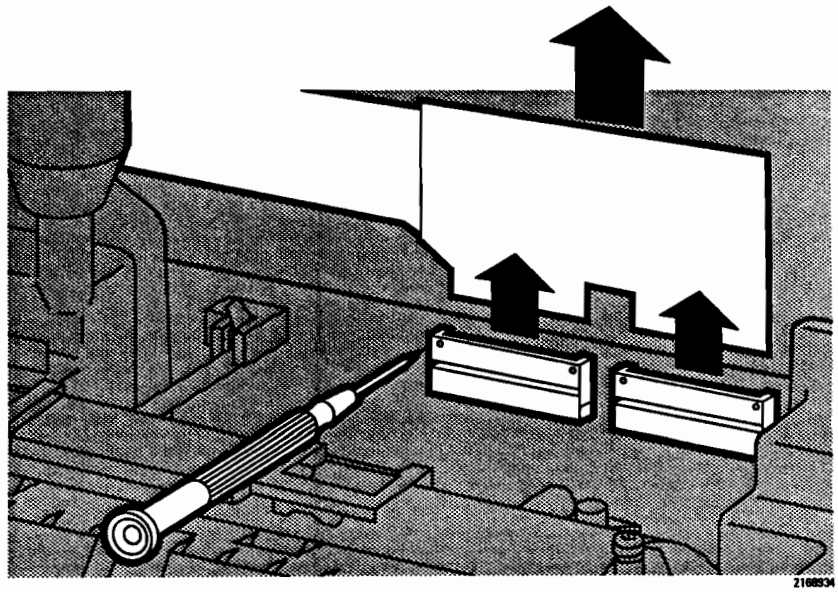
Removing the Encoder Strip, Carriage Assembly, and Carriage Belt

1. Remove the access door and top cover.
2. Remove the carriage rod from the mechanism.
3. Push inward on the encoder spring to release tension on the encoder strip.



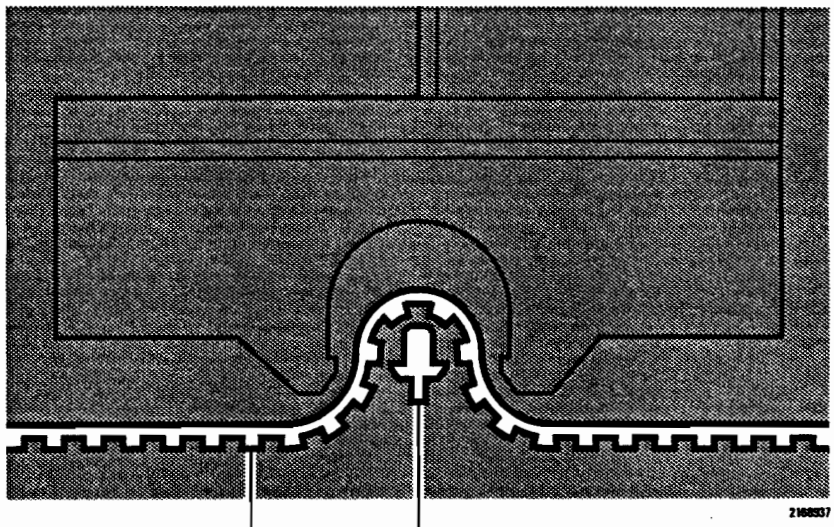
4. Disconnect the right end of the encoder from the right end of the mechanism.
5. Slide the encoder strip out of the carriage assembly.
6. Remove the encoder strip from the encoder spring.

7. Disconnect the two to four (model dependent) flex head cables from the head driver PCA.
   - **A.** Lift the top of the cable connectors to release tension.
   - **B.** Pull the flex cable out of the head driver PCA connector.



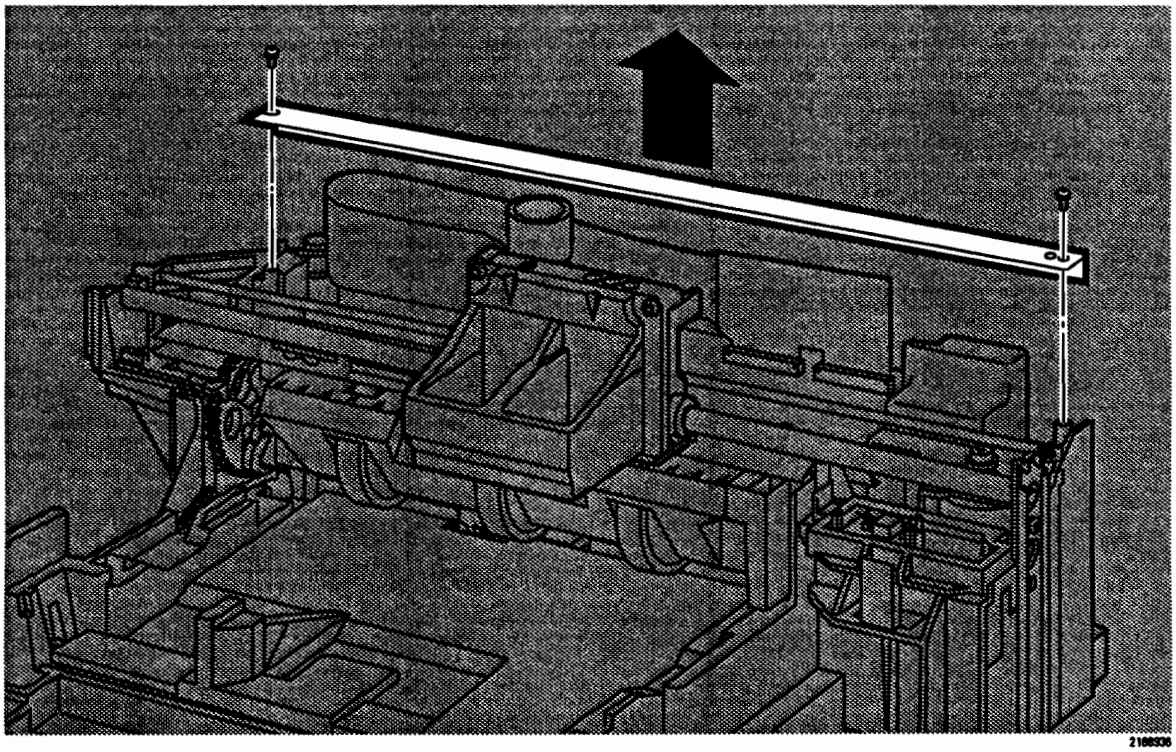
8. Lift the carriage assembly from the mechanism.

9. Disconnect the carriage belt from the carriage assembly.



Removing the Rear Rail

1. Remove the access door and top cover.
2. Remove the two rear rail screws.



3. Lift the rear rail from the mechanism.

Note

The mechanism may need adjustment once the rear rail is reinstalled, certainly it will have to be checked for proper pen to pivot spacing.

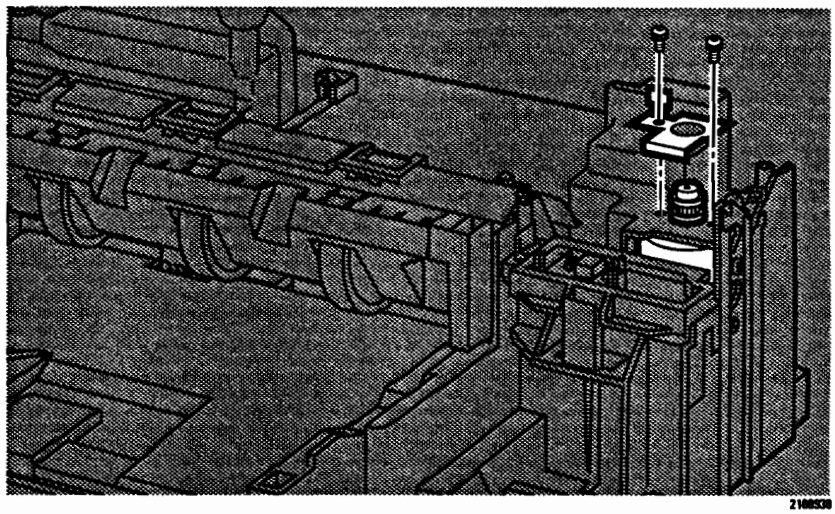
Removing the Carriage Motor and Belt Damper

1. Remove the access door and top cover.
2. Disconnect the mechanism cables from the logic PCA and remove the mechanism assembly from the printer base.
3. Release the carriage belt tension. This is accomplished by pressing inward on the tension bracket (located on the left side of the mechanism) and lifting the right end of the carriage belt from the carriage motor pulley.
4. Remove the two carriage motor screws. These screws are located on the top of the mechanism, to the right and left of the carriage motor pulley.

Note

Support the carriage motor with your fingers from underneath the mechanism. You may want to remove the service station first.

5. Lower the carriage motor from the mechanism assembly.



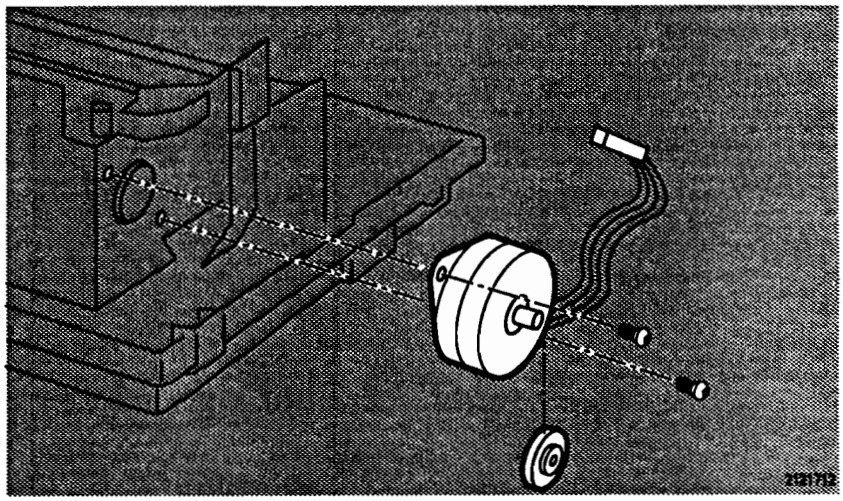
Removing Mechanism Paper Feed Components

Removing the Paper Motor and Cluster Gear

1. Remove the access door and top cover.
2. Disconnect the paper motor cable from the logic PCA.
3. Detach the paper motor cable from the left side of the mechanism.
4. Remove the two paper motor screws and remove the paper motor cable and cluster gear from the mechanism. Do not remove the shaft retainer.

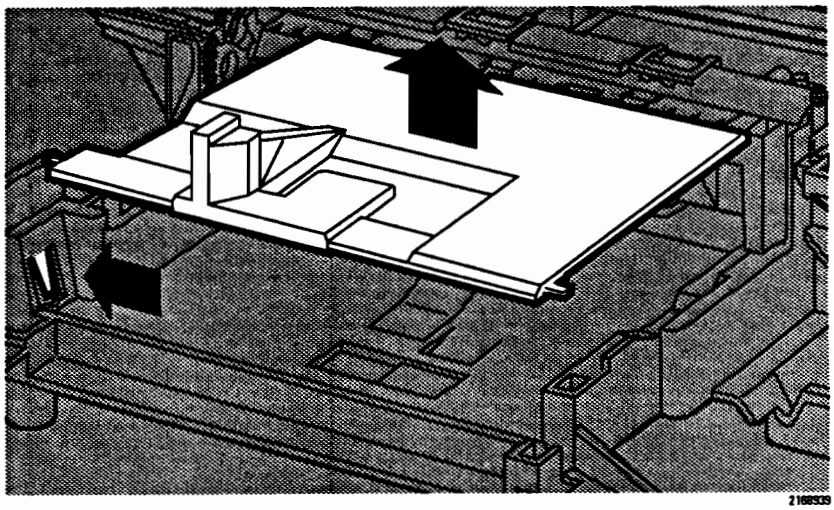
Note

On some newer models, the paper motor cable disconnects at the motor.



Removing the Pressure Plate

1. Remove the access door and top cover.
2. Push the pressure plate latch out to release the pressure plate. The pressure plate latch is located to the left of the paper width adjustment lever.
3. Lift the pressure plate from the mechanism.

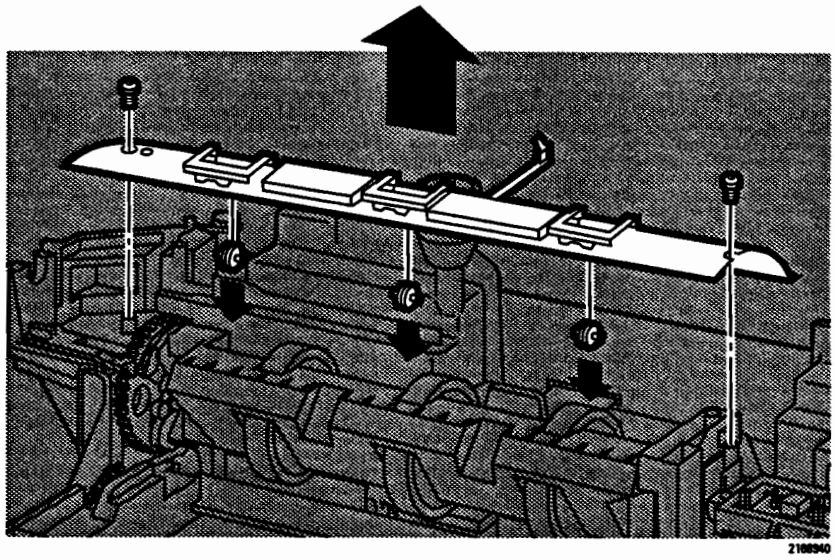


Removing the Paper Guide Assembly and Upper Pinch Rollers

1. Remove the access door and top cover.
2. Remove the carriage assembly and carriage rod.
3. Remove the two paper guide screws and lift the paper guide assembly from the mechanism.
4. Remove the upper pinch rollers by pushing them out of the paper guide.

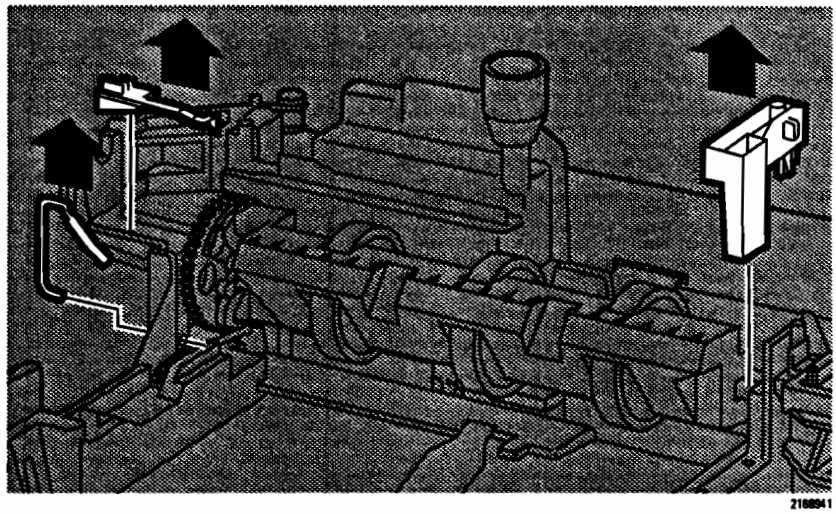
Note

With the removal of the paper guide, it is very likely that the mechanism will require adjustments.

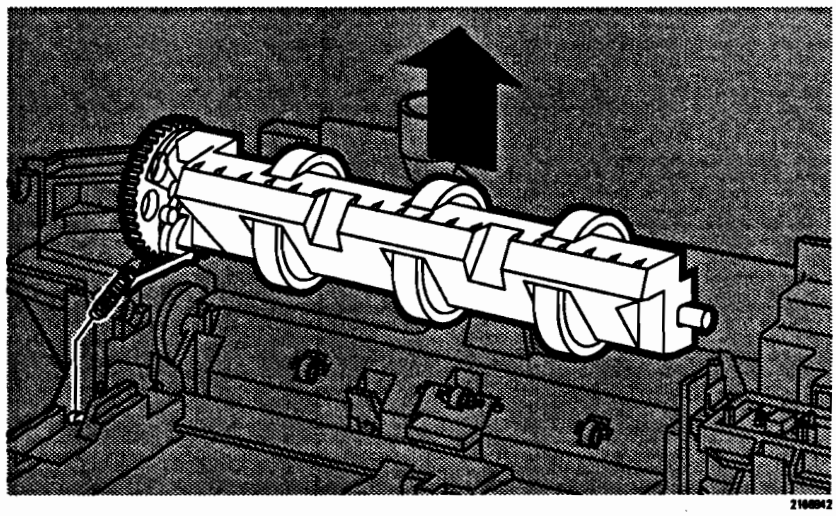


Removing the Spittoon, Pivot Assembly, Pivot Adjuster, and Paper Separator

1. Remove access door and top cover.
2. Remove the carriage assembly and carriage rod from the mechanism.
3. Remove the paper guide assembly from the mechanism.
4. Remove the spring on the left end of the drive roller shaft.
5. Lift the spittoon, paper guide spring, and absorber from the right end of the pivot assembly.
6. Remove the clutch actuator from the left end of the pivot assembly.



7. Lift the pivot assembly from the mechanism.

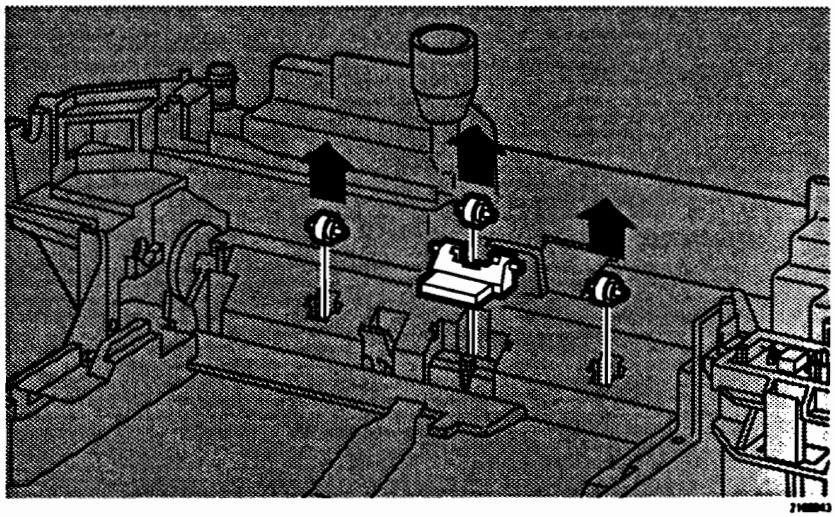


Note

A spring attaches the clutch assembly to the IN tray left wall. Disconnect the spring when lifting the pivot assembly from the mechanism.

8. Lift the three lower pinch rollers from the mechanism.

9. Lift the paper separator and paper separator spring from the mechanism.



Removing Mechanism Service Station Components

Removing the Sled, Cap, Wiper, and Bracket

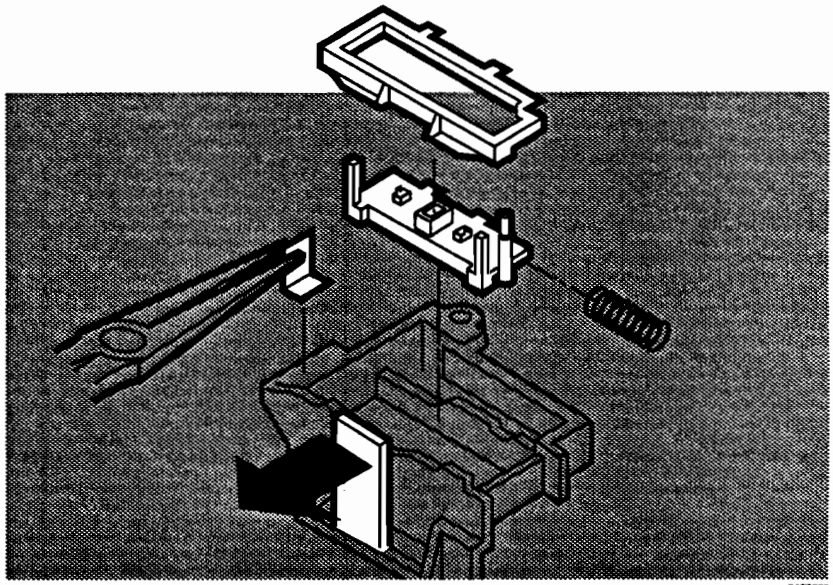
Note

To remove the entire service station assembly, see "Removing the Service Station Assembly" later in this chapter.

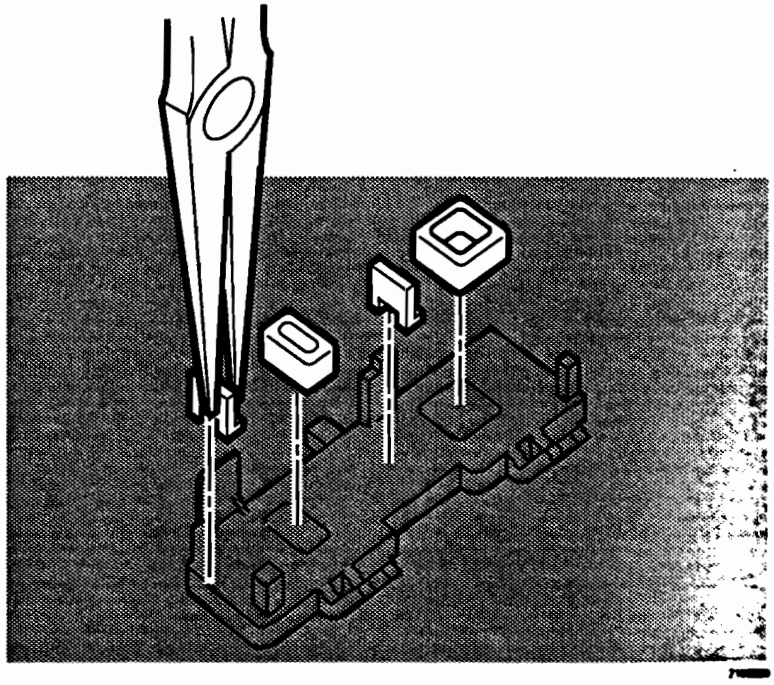
1. Turn off the printer with the carriage out of the "home" position.
2. Open the access door and remove the pen cover.

Service Stations for Monochrome Printers

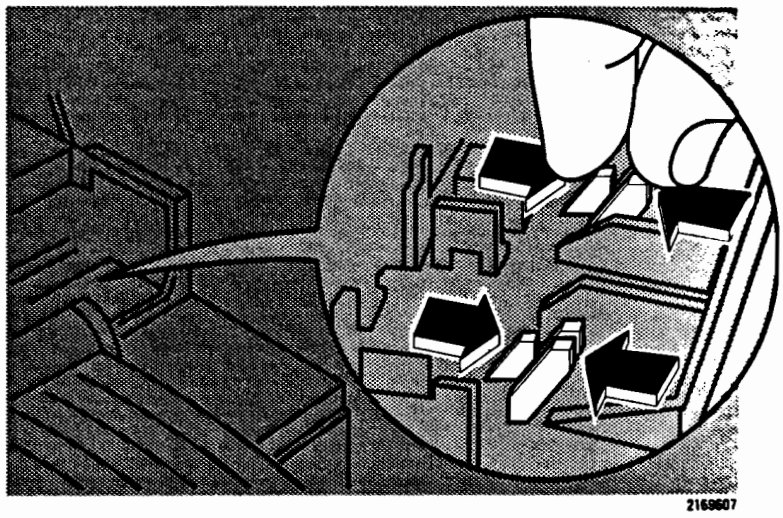
3. Pull the bracket latch and lift the bracket from the service station.
4. Remove the wiper from its post using needle nose pliers.
5. Remove the sled and spring from the service station.



3. Remove the wipers from the sled using needle nose pliers.
4. Remove the caps from the sled using needle nose pliers.



5. Release the service station latches to remove the sled from the printer.



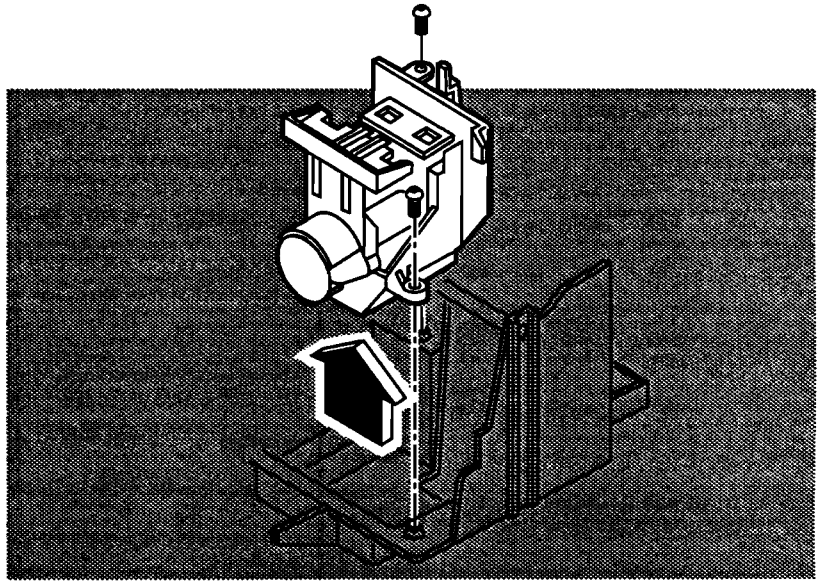
Removing the Service Station Assembly

Note

This procedure illustrates the service station for the HP DeskWriter 550C and DeskWriter 560C printers. The service stations on monochrome printers do not have a service station motor but the procedure is the same.

1. Turn off the printer and open the top cover.
2. If the carriage assembly is located over the service station, move the service station to the left side of the mechanism
3. This is accomplished by manually rotating the service station motor counter-clockwise by turning the shaft out of the motor with your thumb and finger. This lowers the sled and unlocks the carriage assembly from the right side of the mechanism.
4. With the carriage assembly free, slide the carriage assembly to the left side of the mechanism.

5. Disconnect the service station motor from the logic PCA. The connector is located below the service station motor on the logic PCA.
6. Remove the two service station assembly screws. One screw is located near the lower right area of the service station assembly. The second screw is located near the top left area of the service station assembly.
7. Lift the service station assembly from the mechanism.



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Removing the Service Station Motor

Note

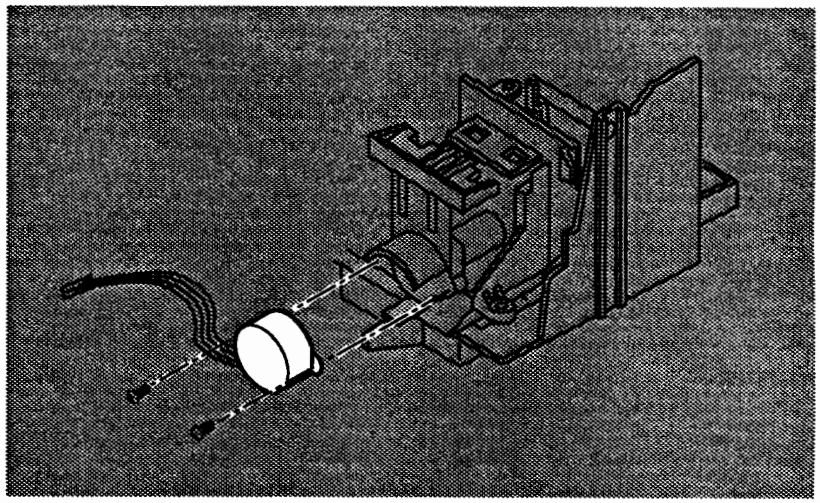
This procedure applies to the HP DeskWriter 550C and DeskWriter 560C printers.

1. Turn off the printer and remove the top cover.

2. Disconnect the service station motor from the logic PCA. The connector is located below the service station motor on the logic PCA.

3. Remove the two service station motor screws.

4. Pull the service station motor from the service station assembly.



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Adjustments

Jake/McJake Mechanism Checks and Adjustments

Description

Applicable Printers

Printers with Jake and McJake Mechanisms

Note	This section applies to Jake and McJake mechanisms only. The HP DeskWriter 520 and DeskWriter 560C printers have Aurora mechanisms only. For Aurora mechanism checks and measurements, see "Aurora Mechanism Checks and Adjustments later in this chapter.

Pen-to-Paper Description

The pen-to-pivot spacing (PPS) adjustment adjusts the printing position of the pivot. The position of the pivot in the normal printing operation is determined by an adjustable stop on the back side of the paper guide, near the left end. This adjustable stop, called the "adjuster," changes the distance between the pivot and the pen (print cartridge nozzles). Therefore, adjusting the pen-to-pivot spacing adjusts the distance between the print cartridge nozzles and the paper for optimum print quality.

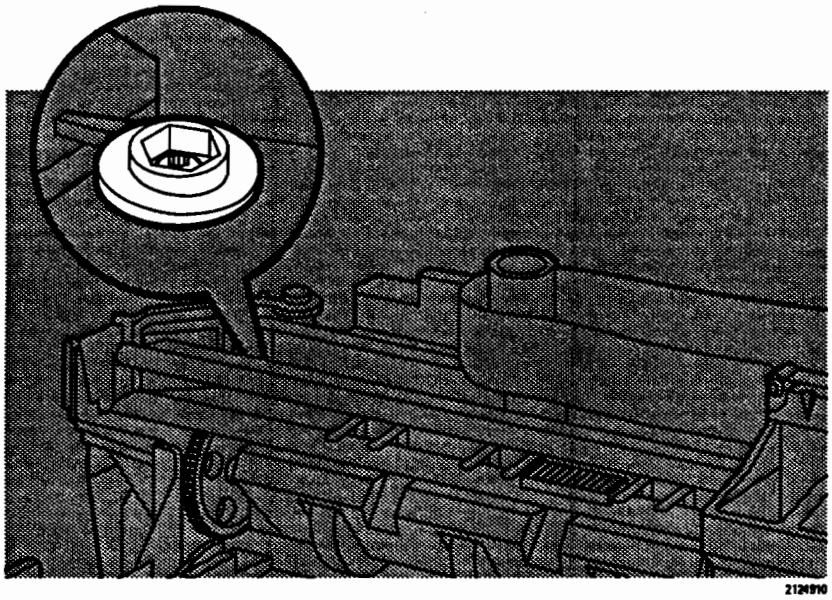


Figure 7-1. Identifying the Pen-to-Pivot Adjuster

When to Check the Pen-to-Pivot Spacing

- Whenever one or more of the following parts are replaced:
  - Carriage shaft
  - Rear rail
  - Pivot assembly
  - Paper guide
- When print quality is unsatisfactory.

When to Adjust the Pen-to-Pivot Spacing

- Whenever the pen-to-pivot spacing is out of specification on a McJake mechanism.

Notes

- The pen-to-pivot spacing is not field adjustable on the Jake mechanism. If the pen-to-pivot spacing is out of tolerance on a Jake mechanism, replace the mechanism.
- The adjustment procedures are different for Aurora mechanism. See "Aurora Mechanism Checks and Adjustments" later in this chapter.

Adjustment Description

The McJake mechanism has an adjuster located behind the paper guide, near the left end of the pivot. This adjuster acts as a stop for the pivot in the normal printing position. The edge of the adjuster varies in thickness. Therefore, rotating the adjuster changes the thickness of the adjuster edge under the pivot, and the distance between the pivot and pen (print cartridge nozzles).

- Rotating the adjuster such that a thicker edge is positioned under the pivot assembly increases the pen-to-pivot gap.
- Rotating the adjuster such that a thinner edge is positioned under the pivot assembly decreases the pen-to-pivot gap.

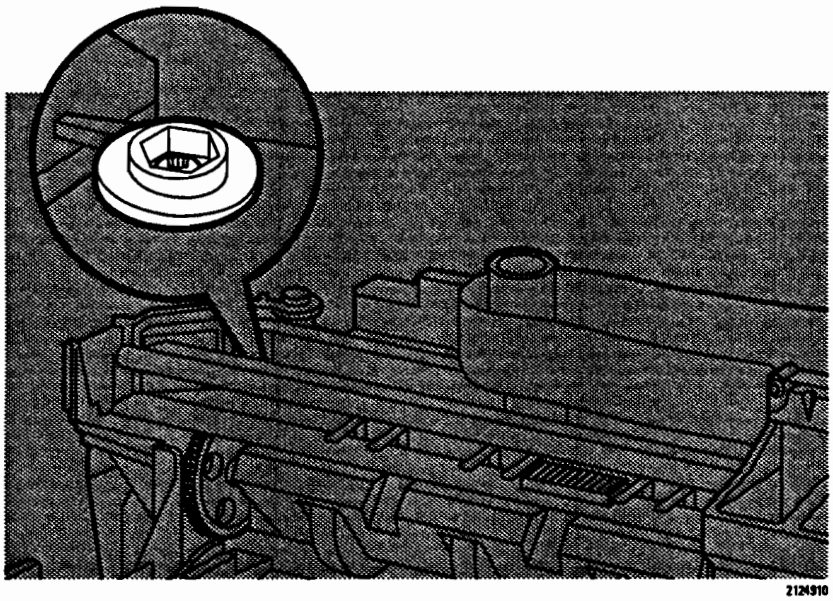


Figure 7-2. Locating the Adjuster for the PPS Adjustment

Printer Assumptions

- The printer is turned off with the carriage out of the "home" position.
- The black and color print cartridges are removed.
- The output tray and any paper is removed.

Required Tools

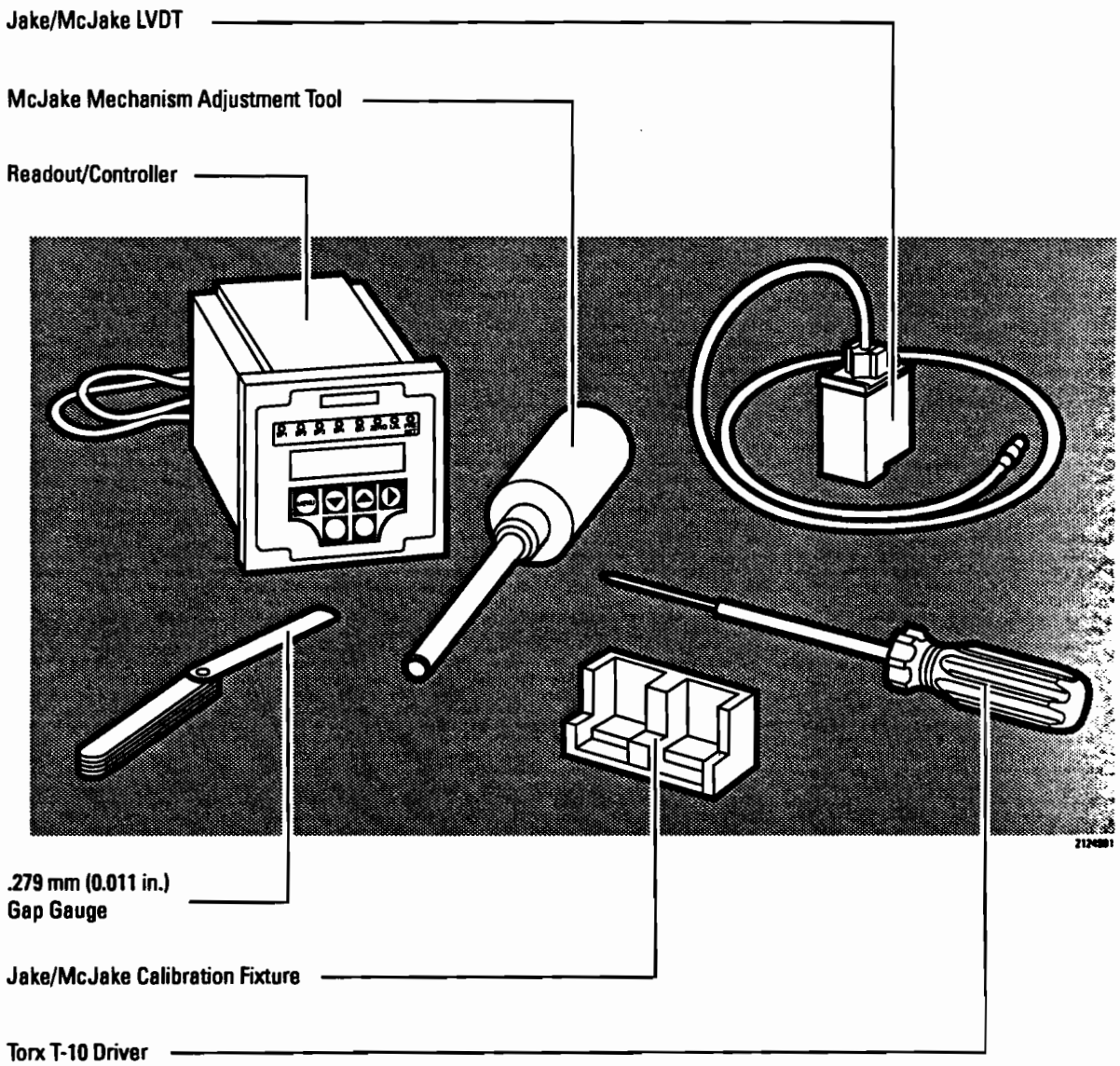


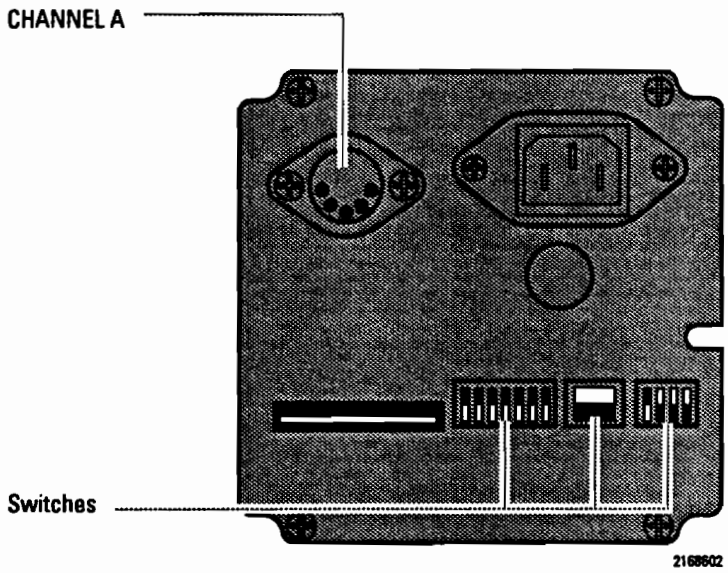
Figure 7-3. Required Tools to Check and Adjust Jake and McJake Mechanisms

Caution	The Jake/McJake LVDT has a delicate tip. Be careful when handling and storing the LVDT. *Also to avoid damaging the LVDT tip, do not slide the carriage across the mechanism with the LVDT in the carriage cradle.* Remove the LVDT from the printer, slide the carriage without the LVDT installed, then reinstall the LVDT in the printer carriage.

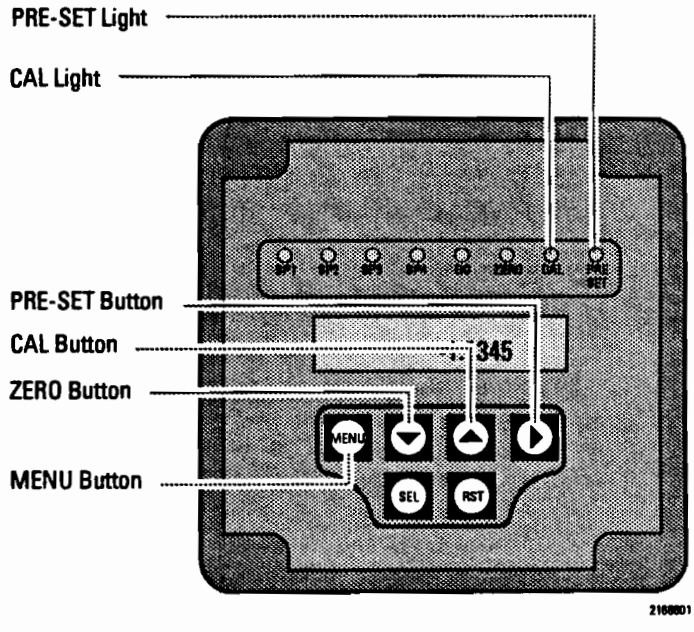
Calibrating the Readout/Controller for Jake/McJake Mechanisms

Note
The following Readout/Controller calibration procedure is applicable if checking the PPS on a Jake or McJake mechanism. See the "Calibrating the Readout/Controller" later in this chapter for calibrating the Readout/Controller for Aurora mechanism checks.

1. Set the dip switches on the back of the Readout/Controller as shown to the right.
2. Plug the Jake/McJake LVDT into **CHANNEL A** on the back of the Readout/Controller.
3. Plug in the AC power cord. Allow the instrument to warm up for at least 10 minutes.

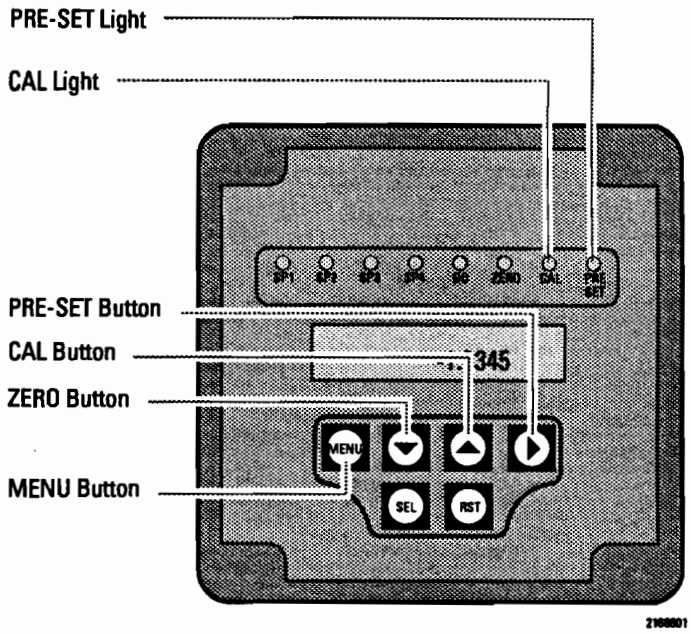


4. On the Readout/Controller, press the **MENU** button. The Readout/Controller will display the message **PASSWORD PLEASE**.
5. Enter the password (press the ⇧, ⇩, and ⇧ buttons). The Readout/Controller should display **CAL SW DISABLED**.
6. Press the **CAL** button. The Readout/Controller should display **CAL SW ENABLED**.



7. Using the **MENU** button, step through and verify all of the Readout/Controller settings. Table 7-1 identifies the Readout/Controller settings. Use the following procedure to change a Readout/Controller settings:

   - Press the **PRESET** button (⇨) to position the cursor over the digit.
   - Press the ⇧ and ⇩ buttons on the Readout/Controller to increase and decrease the setting value.
   - Once the desired setting is obtained, press the **MENU** button to retain the new setting and sequence to the next setting in the table.



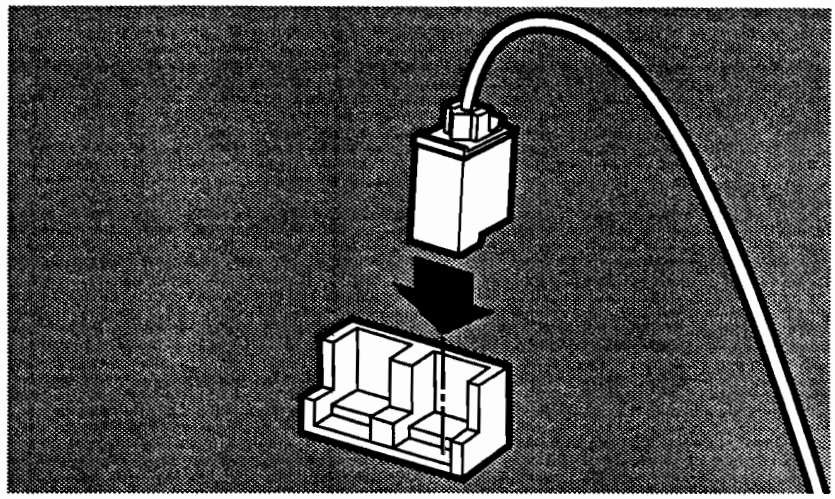
8. Continue to press the **MENU** button, sequencing through all of the Readout/Controller settings until the display reads **DEPRESS MENU SWITCH TO RUN**.

Table 7-1. Readout/Controller Settings

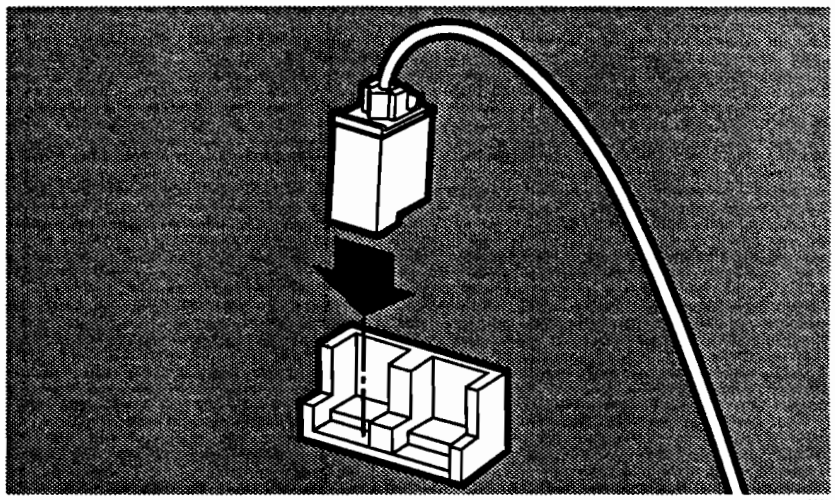
Selection	Setting
DECIMAL PT CH(A)	000.03
PRESET # CH(A)	030.00
CAL # CH(A)	030.00
FS # CH(A)	050.00
SP1 TO MONITOR	CH(A)
SP1 TO BE	LOW SETPOINT
SET SP1	-020.00
SP2 TO MONITOR	CH(A)
SP2 TO BE	LOW SETPOINT
SET SP2	-010.00
SP3 TO MONITOR	CH(A)
SP3 TO BE	HIGH SETPOINT
SET SP3	080.00
SP4 TO MONITOR	CH(A)
SP4 TO BE	HIGH SETPOINT
SET SP4	090.00
SET LOW HYS	000.00
SET HIGH HYS	000.00
DEPRESS MENU SWITCH TO RUN	

Checking the Jake/McJake LVDT

1. Place the Jake/McJake LVDT into the 30 mil slot on the calibration fixture.
2. Press the **PRESET** button until the **PRESET** light is off.
3. Press the **CAL** button until the **CAL** light goes off.
4. Press the **ZERO** button again until the **ZERO** light goes on.



5. Move the LVDT to the 60 mil slot on the calibration fixture.
6. While pressing down firmly to seat the LVDT in the calibration fixture, press the **CAL** button, making sure the **CAL** light is on.
7. Press the **PRESET** button until the **PRESET** light is on.



8. The Readout/Controller should display **030.00** ± **1.00** mil when the LVDT is in the 30 mil calibration fixture slot and **060.00** ± **1.00** mil when the LVDT is in the 60 mil calibration fixture slot.
   - If within tolerance, the calibration is complete. Remove the Jake/McJake LVDT from the calibration fixture and proceed to the procedure to check the pen-to-pivot spacing.
   - If out-of-tolerance, the Jake/McJake LVDT, Readout/Controller, or calibration fixture is faulty. Replace and calibrate the Jake/McJake LVDT before checking any pen-to-pivot spacing.

Preparing for the Pen-to-Pivot Spacing Adjustment

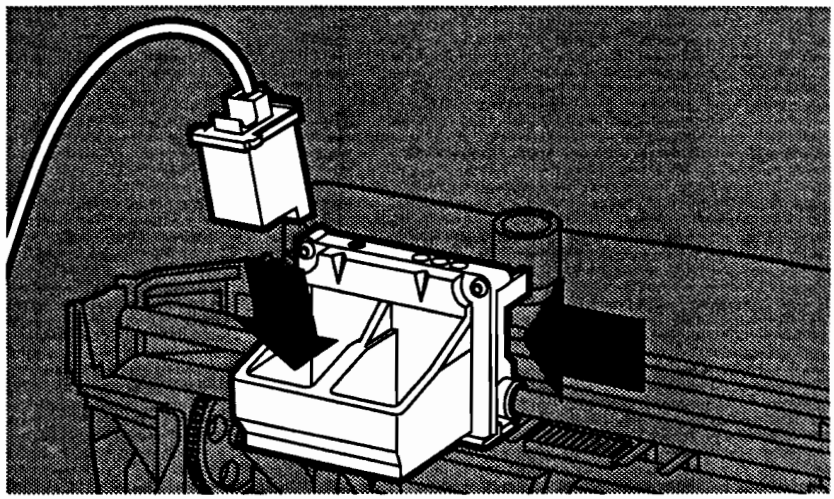
Notes

- This procedure applies to all printers with a Jake or McJake mechanism.
- The printer carriage must be out of the "home" position in order to position the carriage assembly during this adjustment procedure.

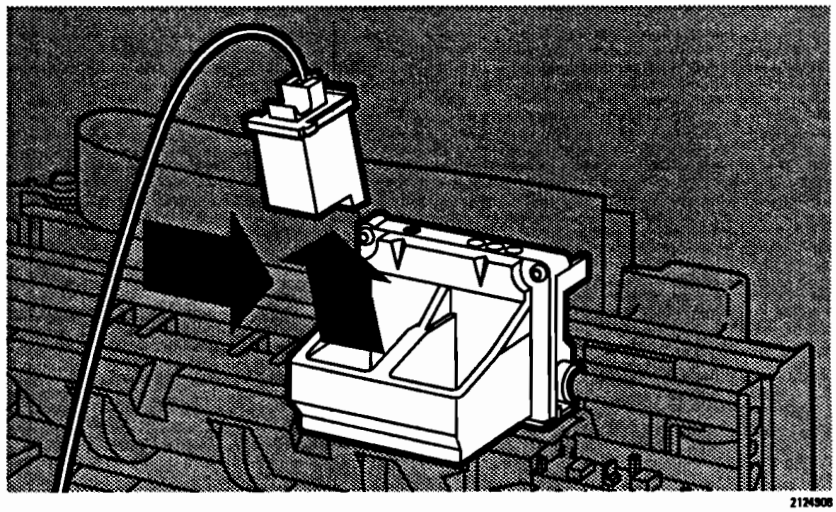
1. Remove any paper from the IN tray.
2. Remove the output tray and access door. (Although shown removed in this procedure, the top cover does not have to be removed to check the pen-to-pivot spacing.)
3. With the printer on, press the Install Print Cartridge button. The print cartridges will move to the left.
4. Remove the black print cartridge.
5. With the printer carriage to the left, out of the home position, turn off the printer.

Checking the Pen-to-Pivot Spacing

1. For a Jake mechanism, press down on the pivot and allow the pivot to return to its normal operating position. This step minimizes the impact of any play in the pivot on the pen-to-pivot measurement.
2. Manually slide the carriage assembly such that the black print cartridge cradle is centered over the left paper feed roller.
3. Install the Jake/McJake LVDT into the black print cartridge cradle (just as installing a black print cartridge).



4. With the **ZERO**, **CAL**, and **PRESET** lights on, read the PPS measurement from the Readout/Controller. The specification range is **47 - 69** mils.
   - If ok, continue on to the next step.
   - If out of specification on a Jake mechanism, replace the mechanism.
   - If out of specification on a McJake mechanism, Adjust the pen-to-pivot spacing. See "Adjusting the Pen-to-Pivot Spacing."
5. Remove the Jake/McJake LVDT from the carriage and slide the carriage so that the black print cartridge cradle on the carriage is centered over the right paper feed roller.
6. Insert the Jake/McJake LVDT into the black print cartridge cradle.



7. Read the PPS measurement from the Readout/Controller. The specification range is **47 - 69** mils. Also, **the left and right PPS values must be within 10 mils of each other.**

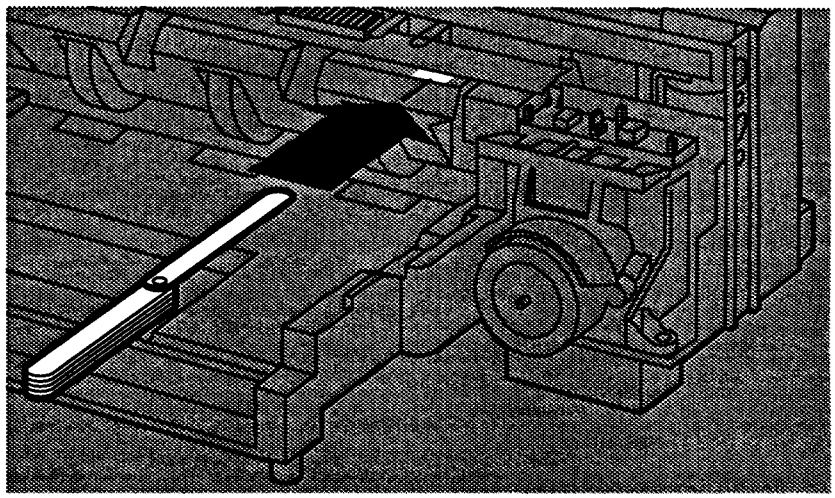
   - If the PPS measurement is within the above specification, continue on to the next step.
   - If the PPS measurement is out of specification on a Jake mechanism, replace the mechanism.

8. If the PPS measurement is out of specification on a McJake mechanism, the mechanism requires the PPS adjustment procedure. Go to "Adjusting the Pen-to-Pivot Spacing."

9. Remove the Jake/McJake LVDT from the carriage.

10. Measure the paper guide to pivot spacing by placing the gap gauge on the pivot 6 mm (1/4 inch) from the right end of the pivot, and verifying that the gauge fits freely between the paper guide and pivot. This is important for preventing print skew.

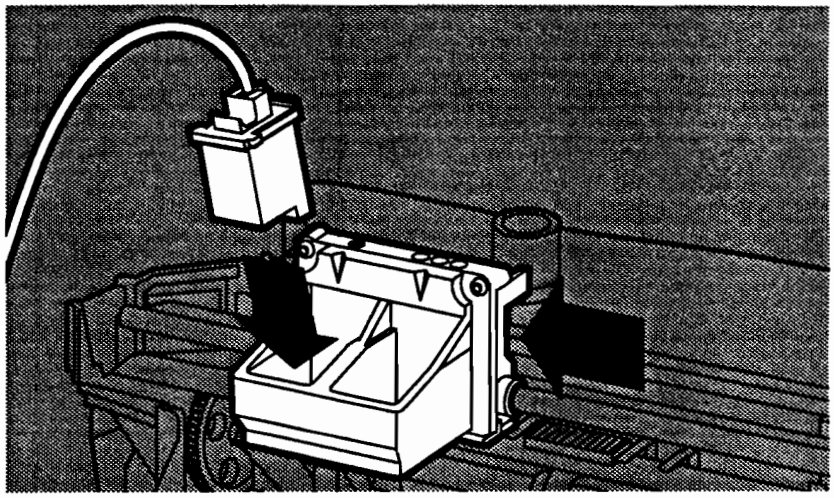
    - If the paper guide to pivot spacing is at least 0.27 mm (0.011 in.), continue on to the next step.
    - If the paper guide to pivot spacing is less than 0.27 mm (0.011 in.) on a Jake mechanism, replace the mechanism.
    - If the paper guide to pivot spacing is less than 0.27 mm (0.011 in.) on a McJake mechanism, the mechanism requires the PPS adjustment procedure. Go to "Adjusting the Pen-to-Pivot Spacing."



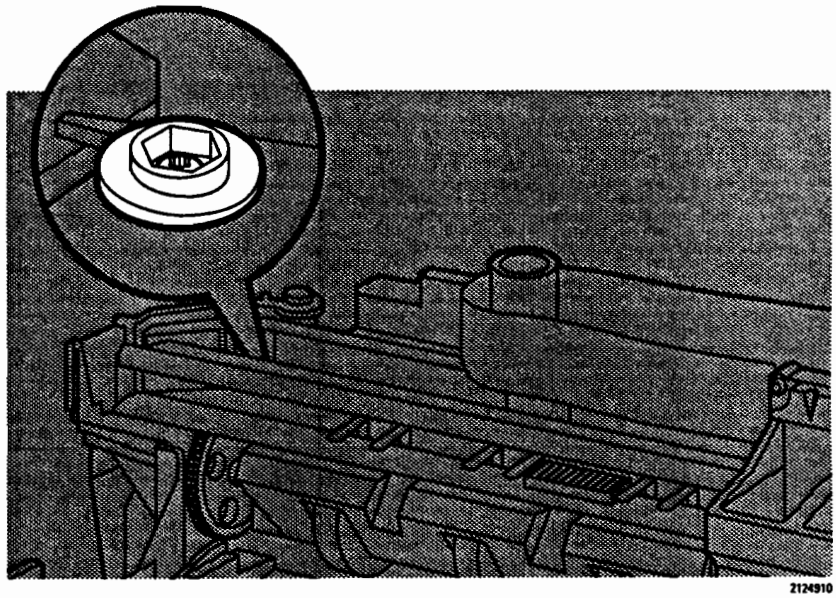
11. Reinstall the print cartridge, paper, and OUT tray.

Adjusting the Pen-to-Pivot Spacing

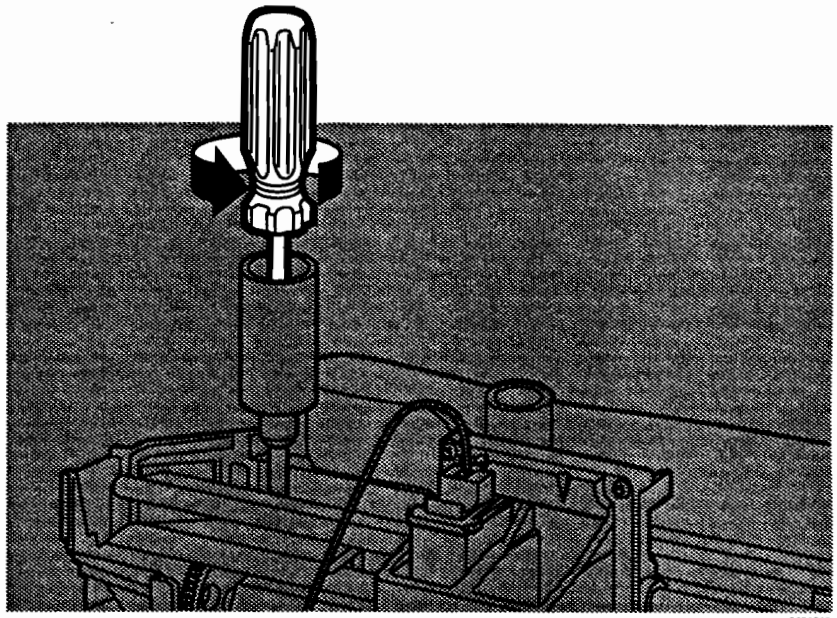
1. With the printer off, slide the printer carriage such that the black print cartridge cradle is centered over the left paper feed roller. Install the Jake/ McJake LVDT into the black print cartridge cradle.



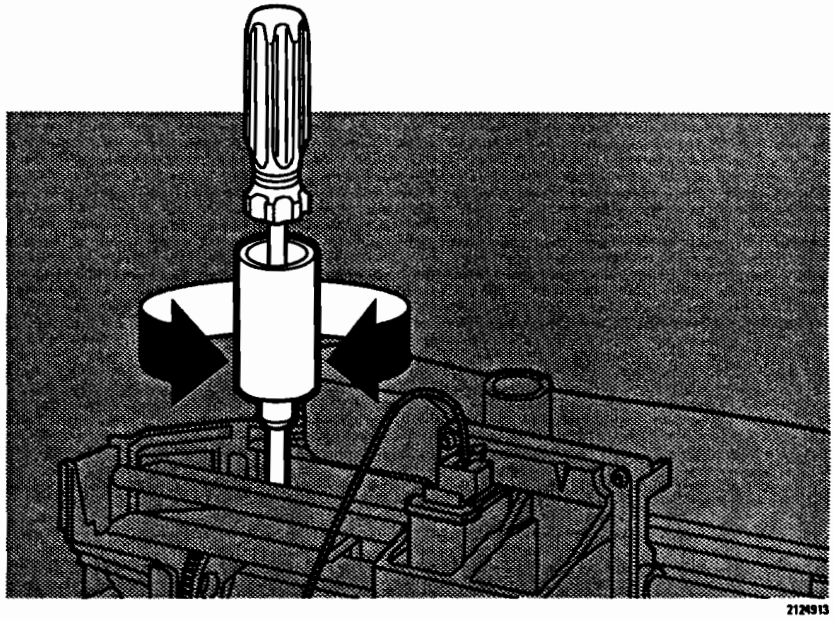
2. Locate the PPS adjuster on the mechanism. The Torx T-10 tip fits into the screw head and the PPS adjustment tool fits into the hex shaped portion of the adjuster.



3. Using a Torx T-10 tip and the McJake PPS adjustment tool, loosen the Torx adjuster screw on the PPS adjuster.

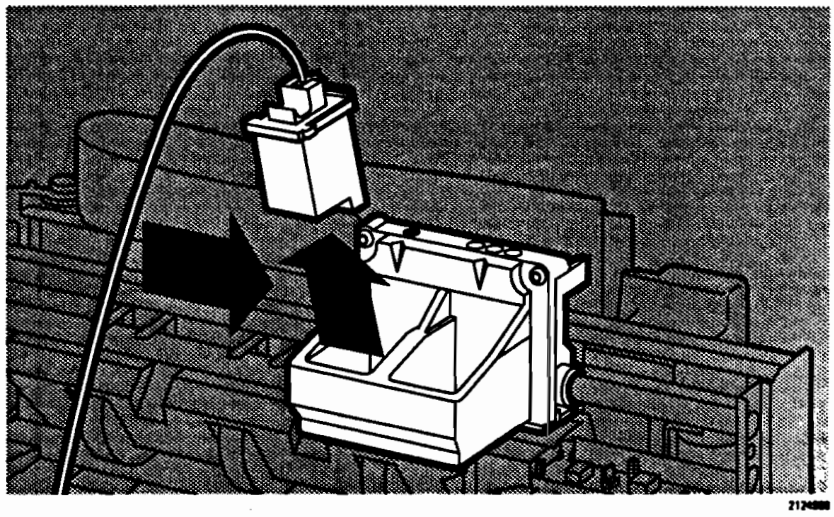


4. Lower the adjustment tip of the tool into the hex shaped portion of the PPS adjuster and turn the adjuster until the Readout/Controller reads **47 - 69 mils**.
   - Rotating a thicker edge under the pivot assembly increases the pen-to-pivot spacing.
   - Rotating a thinner edge under the pivot assembly decreases the pen-to-pivot spacing.



5. While holding the adjuster in position with the adjustment tip, tighten the PPS adjuster screw. Verify the Readout/ Controller still reads **47 - 69 mils**.

6. Remove the LVDT from the print cartridge cradle. Slide the carriage such that the black print cartridge cradle is positioned over the right paper feed roller.



7. Install the Jake/McJake LVDT into the black print cartridge cradle.

8. Check the PPS with the carriage over the right paper feed roller. The measurement must be **within 10 mils** of the measurement over the left paper feed roller.

   - If the measurement is within 10 mils of the measurement at the left paper feed roller, the PPS adjustment is complete.
   - If the measurement is not within 10 mils of the measurement at the left paper feed roller, replace the mechanism.

Aurora Mechanism Checks and Adjustments

Applicable Printers

Printers with Aurora Mechanisms

Note	This section applies to Aurora mechanisms only. For information on checking and adjusting Jake and McJake mechanisms, see "Jake/McJake Mechanism Checks and Adjustments" earlier in this chapter.

Description

The paper guide-to-pivot gap determines the distance between the paper guide and the pivot when the pivot is in the normal printing position (printing on paper and transparencies). The position of the pivot in the normal printing operation is determined by an adjustable stop on the back side of the paper guide, near the left end. This adjustable stop, called the "pivot adjuster," limits the pivot's travel (rotation) to allow the final height of the platen (top of cockle ribs) to be altered to meet specification.

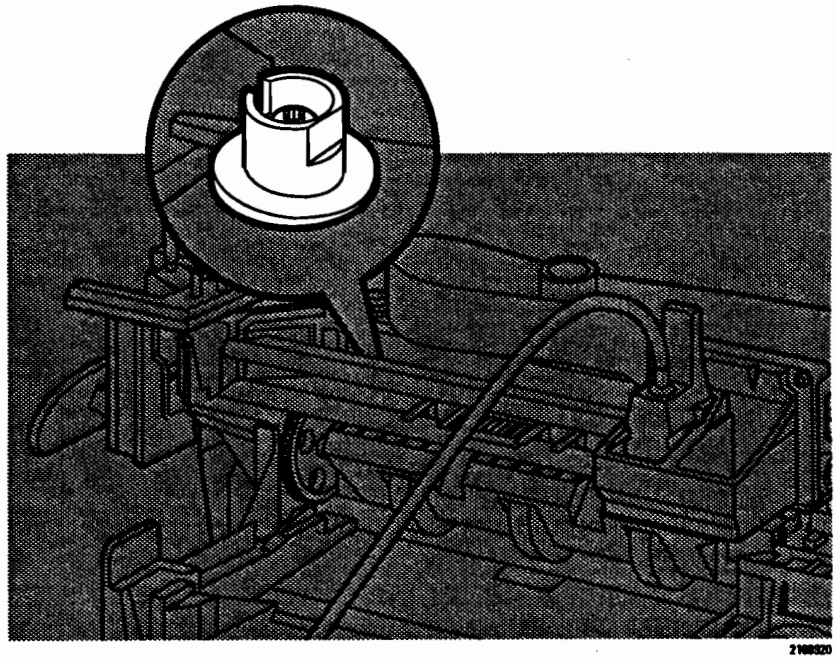


Figure 7-4. Pivot Adjuster for the Paper Guide-to Pivot Adjustment

Once the paper guide-to-pivot gap is properly set, the carriage shaft adjustment adjusts the distance of the carriage shaft to the pivot spacing (i.e., pen-to-pivot spacing) across the entire length of the carriage shaft.

The final adjustment is the wiper height adjustment. With the paper guide-to-pivot gap and carriage shaft set, the wiper must height must be adjusted to provide optimal wiping action on the black and color print cartridges on the two print cartridge Aurora mechanisms.

Order of Aurora Mechanism Checks and Adjustments

It is critical that the Aurora mechanism checks and adjustments be completed in the following order:

Table 7-2. Summary of Aurora Mechanism Checks and Adjustments

Check This	If Out of Specification, Do This:
1. Set up and Calibrate the LVDT and Readout/Controller – Set up Readout/Controller (See table 7-3). – Verify the Readout/Controller Reads 070.00 ± 1.00 in the 070" Side of the Calibration Fixture. – Verify the Readout/Controller Reads 0.00 ± 1.00 in the 000" Side of the Calibration Fixture.	Obtain a new LVDT. Calibrate the new LVDT.
2. Verify the Carriage Shaft is Adjusted Within the LVDT Reading Capability – (028.00 to 058.00 mils)	Adjust the Carriage Shaft between 028.00 and 058.00 mils.
3. Check the Paper Guide-to-Pivot Gap – The Readings With and Without the Shim are Between 015.00 and 035.00 Mils	Adjust the Paper Guide-to-Pivot Gap
4. Check the Carriage Shaft Measurement – Between 028.00 to 058.00 Mils at both ends of the Pivot	Adjust the Carriage Shaft
5. Check the Wiper Height (Two Print Cartridge Mechanisms Only) – Green Tip Misses the Wipers and Red Tip Touches the Wipers	Adjust the Wiper Height

The repair centers should perform all of the checks listed above on all printers with Aurora mechanisms.

Printer Assumptions

- The printer is turned off with the carriage out of the "home" position.
- The black and color print cartridges are removed.
- The output tray and any paper is removed.

Notes

The illustrations in this chapter have the top cover removed for ease of understanding the steps:

- The paper guide-to-pivot gap check and adjustment procedures can be done with the top cover installed on the printer.
- The carriage shaft check procedure can be done with the top cover installed on the printer.
- The carriage shaft adjustment procedure requires the top cover to be removed from the printer.

Required Tools

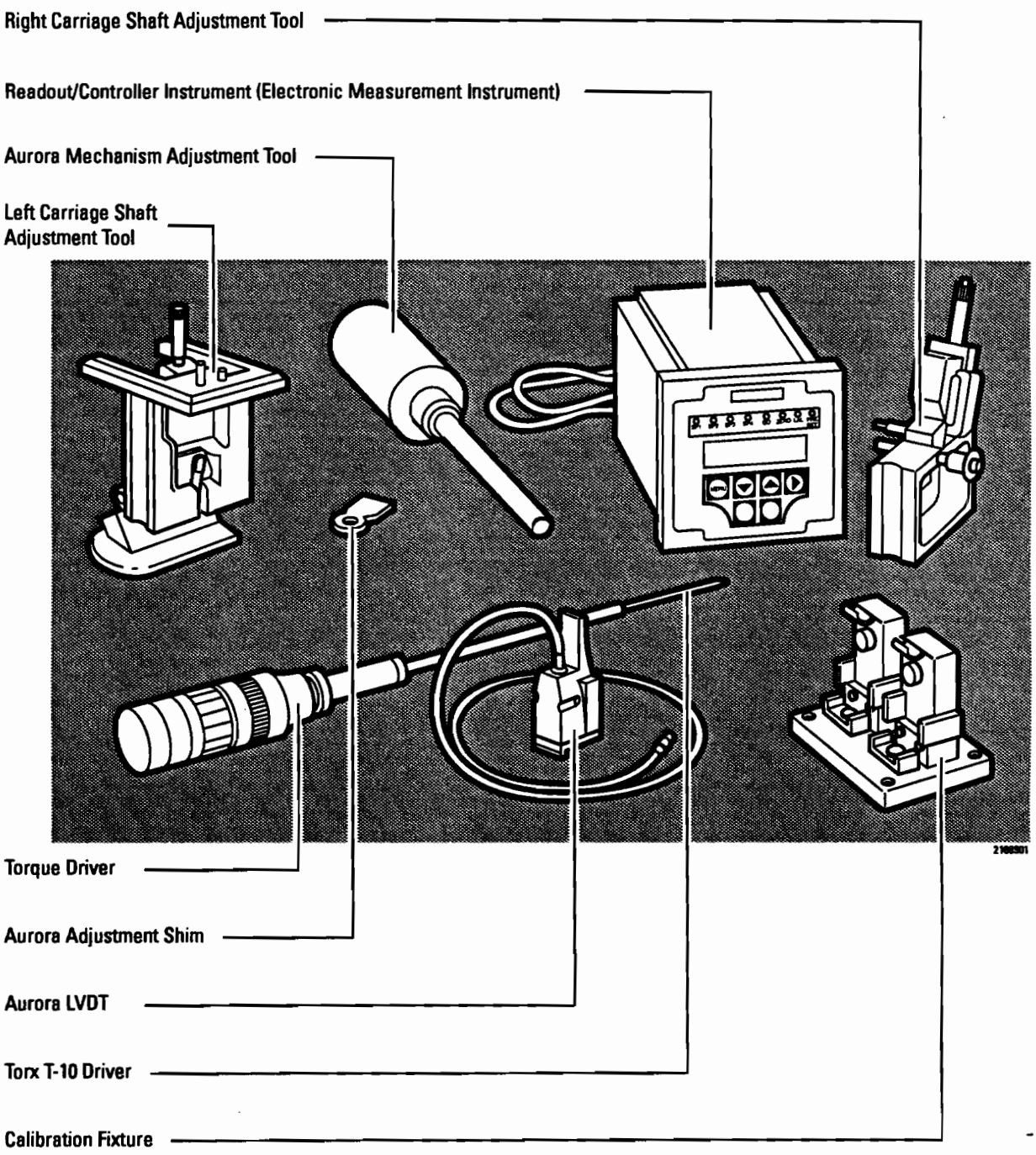


Figure 7-5. Required Tools for Adjusting Aurora Mechanisms

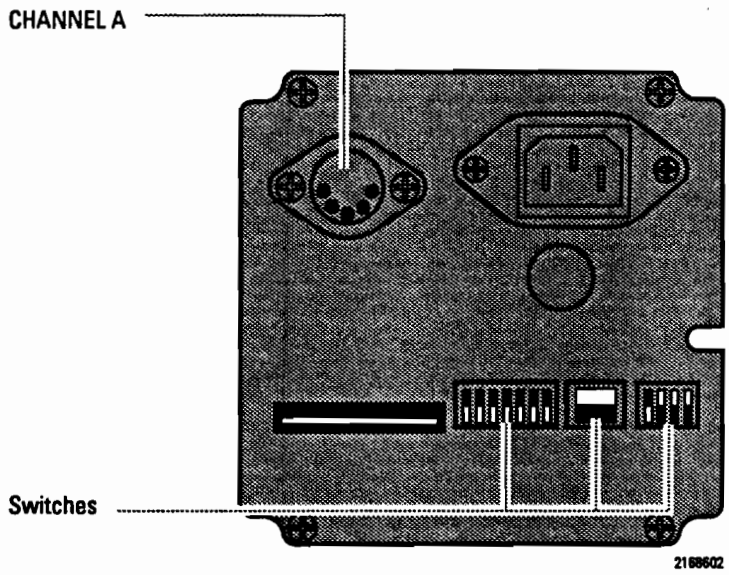
Caution	The Aurora LVDT is a delicate device. Be careful when handling and storing the LVDT.

Calibrating the Readout/Controller for the Aurora Mechanism

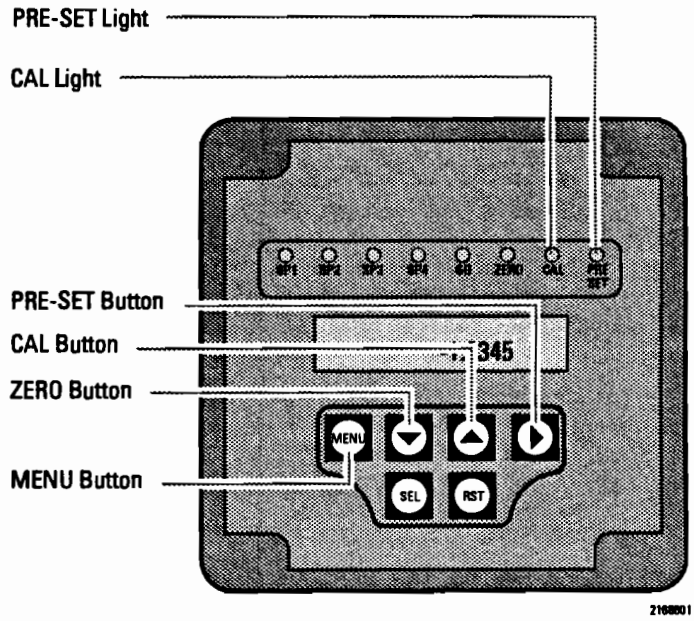
Notes

The following calibration procedure verifies the LVDT and Readout/Controller are operating properly.
For calibrating the LVDT and Readout/Controller for checking Jake and McJake mechanisms, see "Calibrating the LVDT and Readout/Controller for Jake and McJake Mechanism Checks" earlier in this chapter.

1. Set the dip switches on the back of the Readout/Controller as shown to the right.
2. Plug the Aurora LVDT into **CHANNEL A** on the back of the Readout/Controller.
3. Plug in the AC power cord. Allow the instrument to warm up for at least 10 minutes.

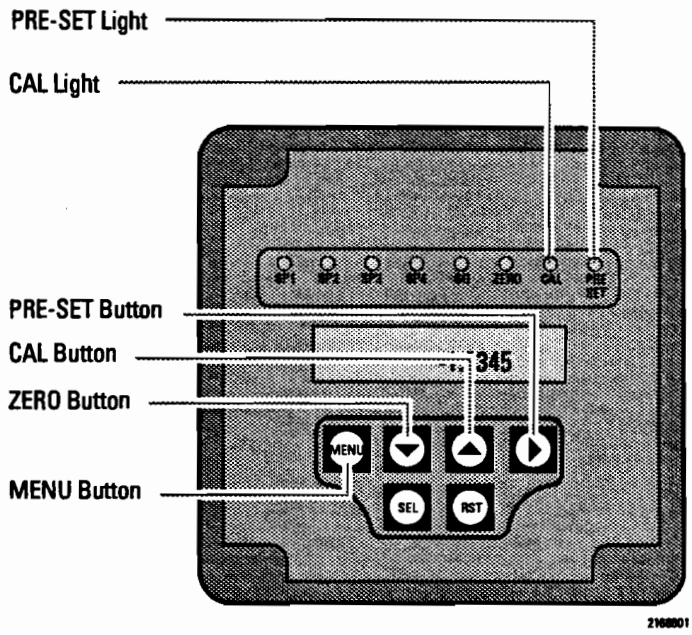


4. On the Readout/Controller, press the **MENU** button. The Readout/Controller will display the message **PASSWORD PLEASE**.
5. Enter the password (press the ⇧, ⇩, and ⇧ buttons). The Readout/Controller should display **CAL SW DISABLED**.
6. Press the **CAL** button. The Readout/ Controller should display **CAL SW ENABLED**.



7. Using the **MENU** button, step through and verify all of the Readout/Controller settings. The table below identifies the Readout/Controller settings. Use the following procedure to change a Readout/Controller settings:

   - Press the **PRESET** button (⇨) to position the cursor over the digit.
   - Press the ⇧ and ⇩ buttons on the Readout/Controller to increase and decrease the setting value.
   - Once the desired setting is obtained, press the **MENU** button to retain the new setting and sequence to the next setting in the table.



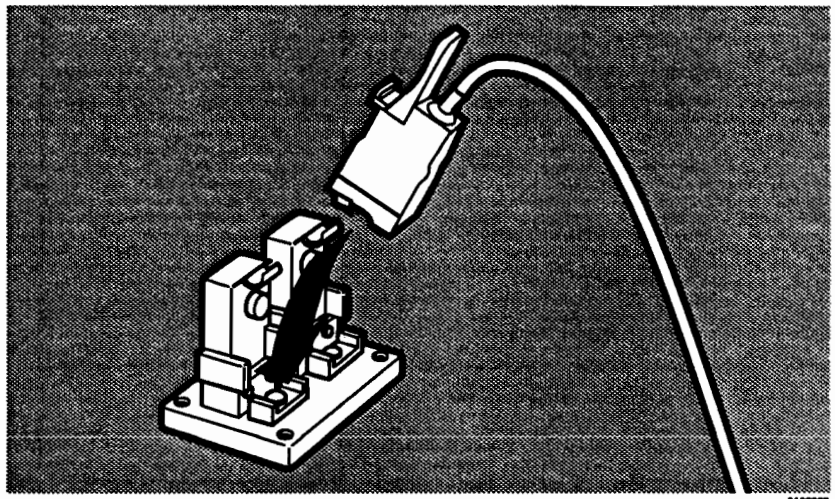
8. Continue to press the **MENU** button, sequencing through all of the Readout/Controller settings until the display reads **DEPRESS MENU SWITCH TO RUN.**

Table 7-3. Readout/Controller Settings

Selection	Setting
DECIMAL PT CH(A)	000.03
PRESET # CH(A)	000.00
CAL # CH(A)	070.00
FS # CH(A)	050.00
SP1 TO MONITOR	CH(A)
SP1 TO BE	LOW SETPOINT
SET SP1	-001.00
SP2 TO MONITOR	CH(A)
SP2 TO BE	LOW SETPOINT
SET SP2	028.00
SP3 TO MONITOR	CH(A)
SP3 TO BE	HIGH SETPOINT
SET SP3	058.00
SP4 TO MONITOR	CH(A)
SP4 TO BE	HIGH SETPOINT
SET SP4	071.00
SET LOW HYS	000.00
SET HIGH HYS	000.00
DEPRESS MENU SWITCH TO RUN	

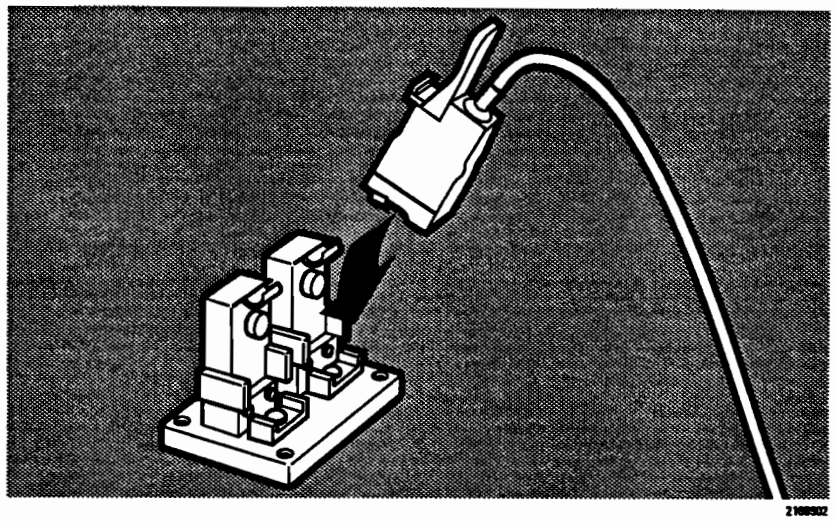
Checking the Aurora LVDT

1. Verify the Readout/Controller **ZERO**, **CAL**, and **PRESET** lights are off. If any of these lights are on, press the corresponding button on the front panel until all three of these lights are off.
   - Disregard the SP1 - SP4 lights on the Readout/Controller display.
   - The setup parameter CAL ENABLE may need to be enabled to turn the CAL light off.
2. Verify the plunger on the Aurora LVDT is free moving and is always in contact with the sled.
3. Place the Aurora LVDT into the left location of the Aurora calibration fixture. Make sure the body of the LVDT is firmly seated in the calibration fixture.



4. Press the **ZERO** button until the green **ZERO** light comes on.

5. Place the Aurora LVDT in the right side of the calibration fixture. Make sure the LVDT is firmly seated in the fixture.



6. Press the **CAL** button on the Readout/Controller front panel until the **CAL** light turns on. The Readout/Controller display should read approximately **070.00 ± 1.00 mil**.

7. Remove the Aurora LVDT from the calibration fixture. Check that the LVDT has a range of less than **0.00 mils** and greater than **070.00 mils** (for example -010.00 to + 074.00 mils) by manually pressing on the LVDT plunger. Do not operate the Readout/Controller with the **PRESET** light on.

8. Place the Aurora LVDT in the right and left sides of the calibration fixture. Each time make sure the LVDT is firmly seated on the fixture.

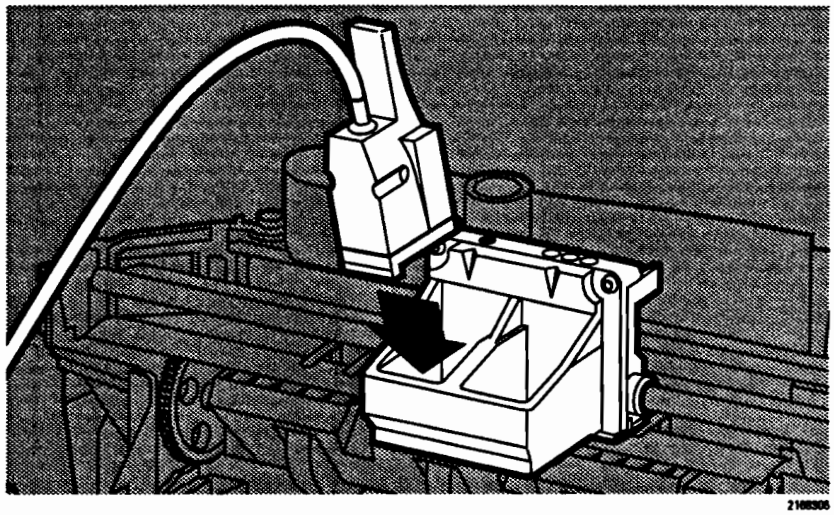
   - The Readout/Controller should read **070.00 ± 1.00 mil** in the right side of the calibration fixture.
   - The Readout/Controller should read **0.00 ± 1.00 mil** in the left side of the calibration fixture.
   - The >FS should not be displayed in the **020.00 - 070.00** range.

9. The Readout/Controller calibration procedure is complete if the Readout/Controller display readings are within the above tolerances for both the sides of the calibration fixture.

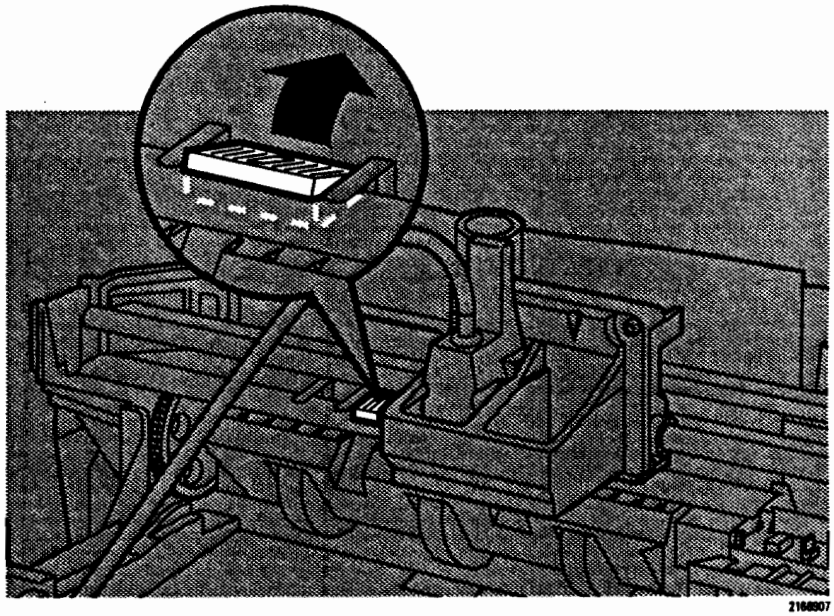
10. Replace the Aurora LVDT if the Readout/Controller display is not within the above tolerances for both sides of the calibration fixture.

Verifying the Carriage Shaft is Within Specification

1. Install the Aurora LVDT into the black print cartridge cradle. Snap the LVDT into the cradle, just like installing a black print cartridge.



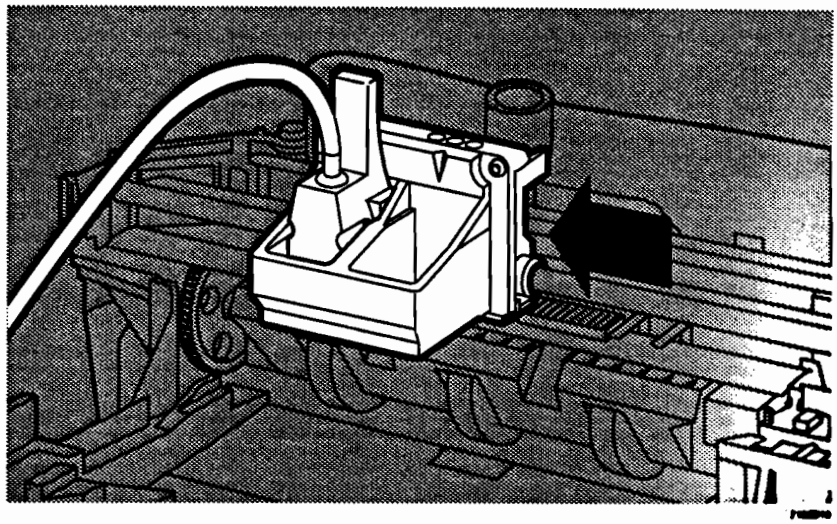
2. Lift the envelope sensor on the Aurora mechanism to raise the pivot to its maximum height.



Note

Make sure the envelope sensor remains raised during this entire procedure.

3. Slide the black print cartridge cradle over the left paper feed roller.

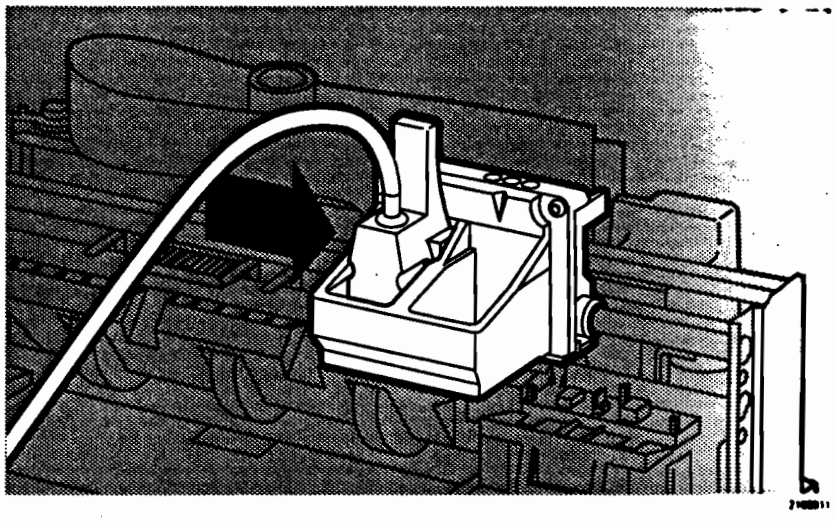


4. Observe the Readout/Controller display reading. The reading should be **028.00 to 058.00 mils.**

   – If the measurement is within tolerance, continue on to the next step.

   – If the measurement is out-of-tolerance, the carriage shaft needs adjustment *before* the paper guide-to-pivot adjustment is performed. See "Adjusting the Carriage Shaft on Aurora Mechanisms" later in this section. Then check the paper-guide-to-pivot adjustment.

5. Slide the black print cartridge cradle over the right paper feed roller.



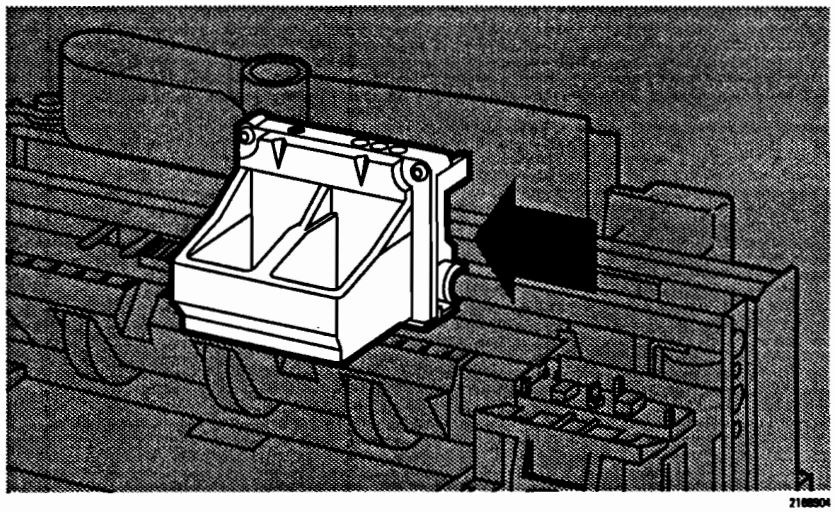
6. Observe the Readout/Controller display reading. The reading should be **028.00 to 058.00 mils.**

   – If the measurement is within tolerance, continue on to the next procedure of checking the paper guide-to-pivot gap.

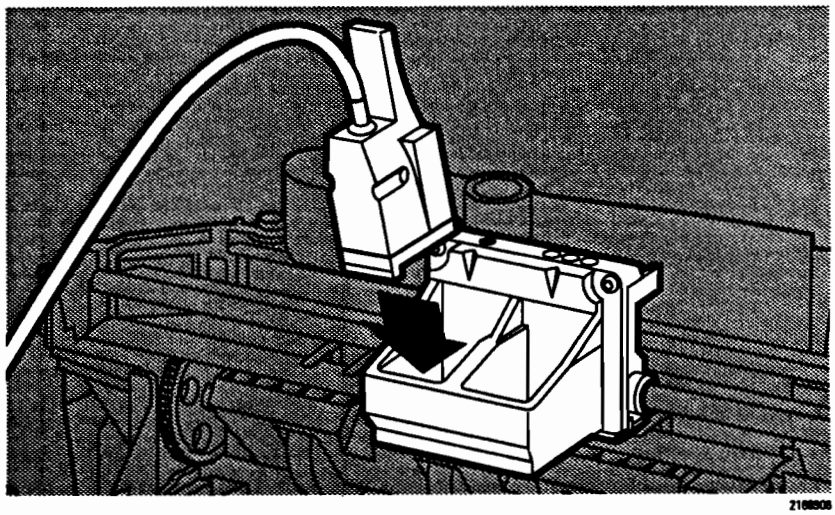
   – If the measurement is out-of-tolerance, the carriage shaft needs adjustment *before* the paper guide-to-pivot adjustment is performed. See "Adjusting the Carriage Shaft on Aurora Mechanisms" later in this section. Then check the paper-guide-to-pivot adjustment.

Checking the Paper Guide-to-Pivot Gap

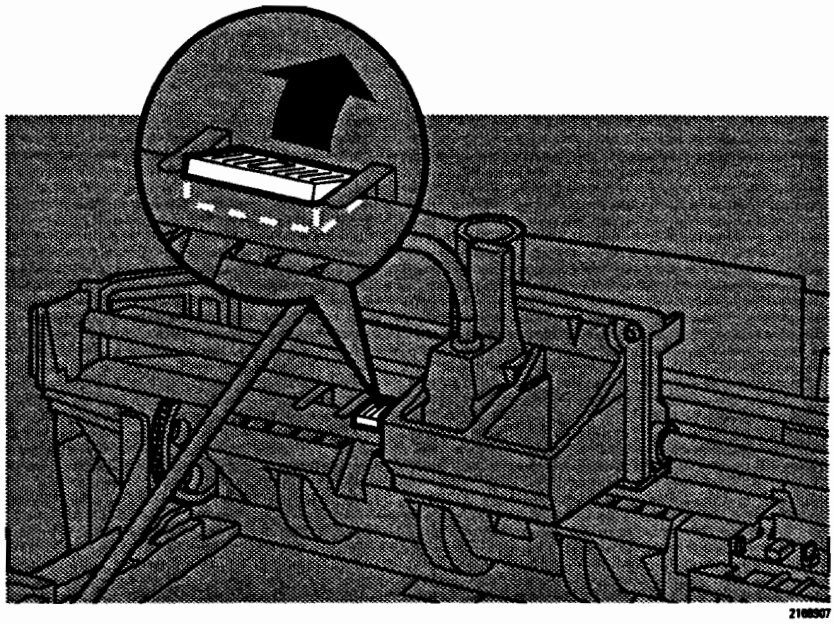
1. Center the carriage between the right and center drive rollers.



2. Install the Aurora LVDT into the black print cartridge cradle. Snap the LVDT into the cradle, just like installing a black print cartridge.



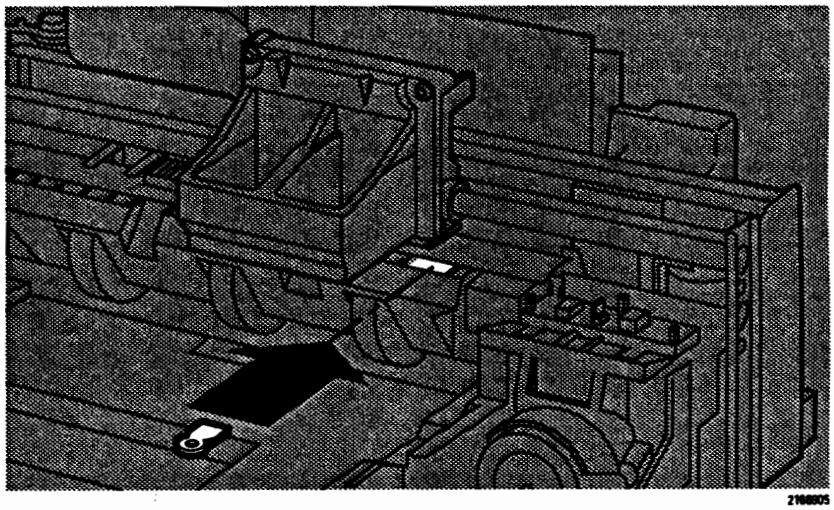
3. Lift the envelope sensor on the Aurora mechanism to raise the pivot to its maximum height.



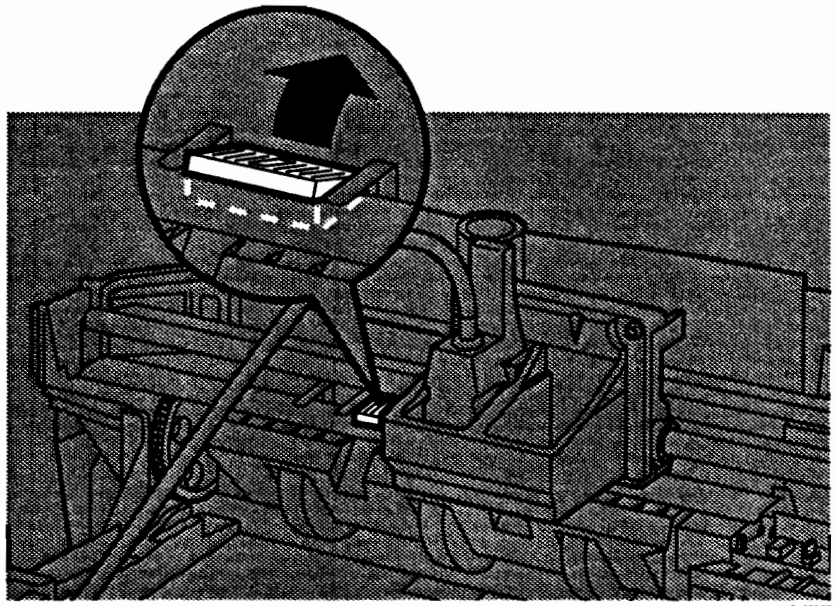
4. Observe the Readout/Controller reading with no shim on the paper guide.

5. Push down on the pivot, dropping the envelope sensor down onto the paper guide.

6. Place the Aurora adjustment shim on the pivot pad, located at the far right end of the pivot.



7. Lift the envelope sensor on the Aurora mechanism to raise the pivot to its maximum height. This will allow the pivot to release and stop on the shim and paper guide.



8. Observe the Readout/Controller reading with the shim in place.

9. Determine the difference between the reading with the Aurora adjustment shim installed and removed from the mechanism. The difference between the readings should be between **015.00 and 035.00 mils**.

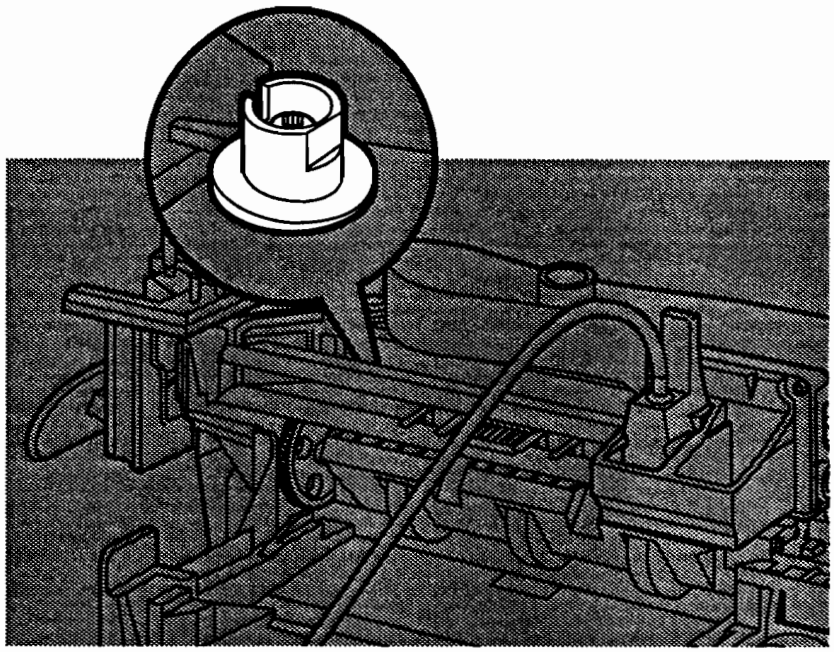
   - If the Readout/Controller readings are within the above tolerances, no paper guide-to-pivot gap adjustment is necessary. The paper guide-to-pivot gap adjustment is complete. Go to "Checking the Carriage Shaft Measurement" later in this chapter.

   - If a Readout/Controller reading is out of tolerance, the mechanism requires the paper guide -to-pivot gap adjustment. Continue on to the next procedure, "Adjusting the Paper Guide-to-Pivot Gap on the Aurora Mechanism."

10. Remove the Aurora adjustment shim from the mechanism.

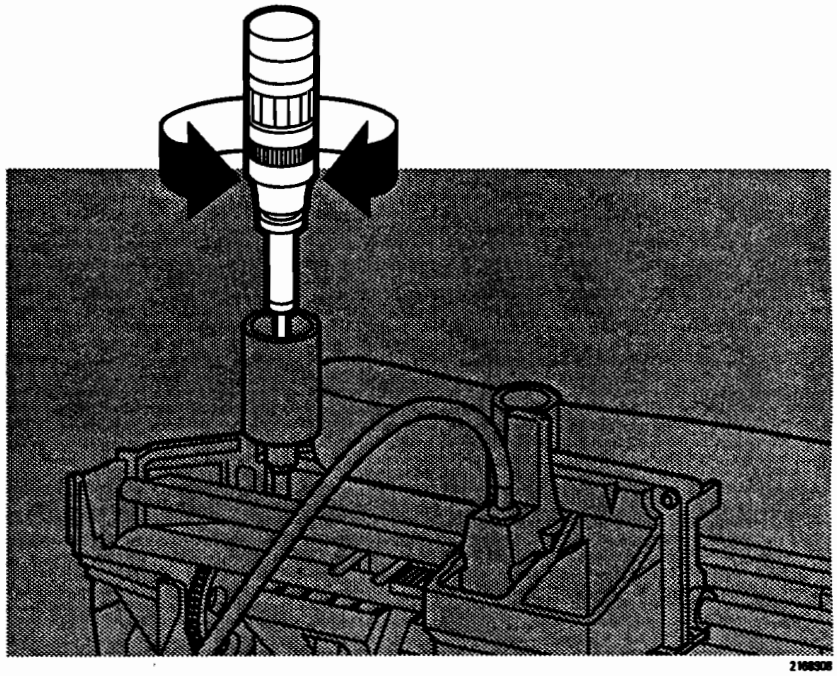
Adjusting the Paper Guide-to-Pivot Gap

1. Locate the paper guide-to-pivot adjuster on the mechanism.



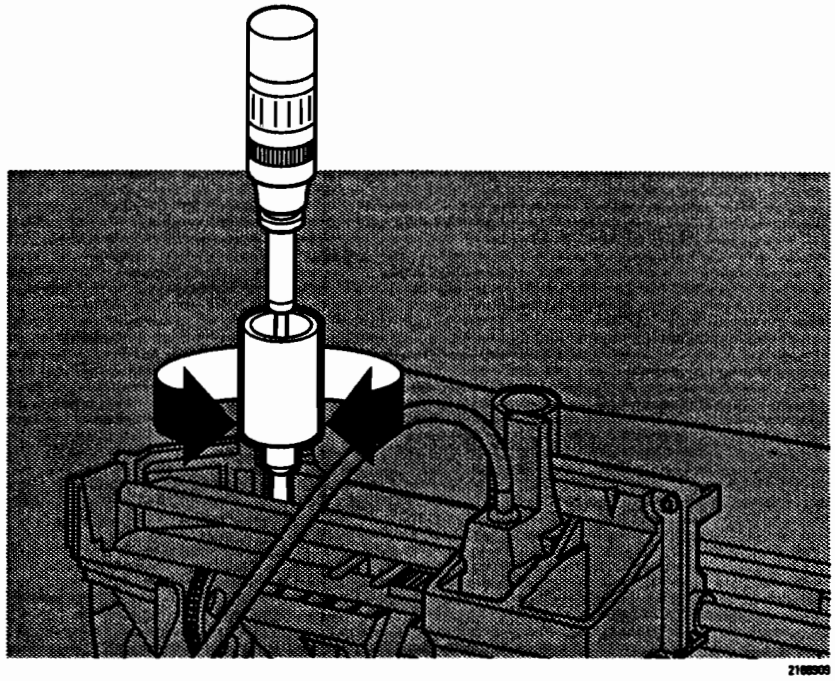
2. Using a Torx T-10 driver and a torque driver, adjust the Torx adjuster screw on the paper guide-to-pivot adjuster to **9.0 in-lb.**

3. Insert the tip of the Aurora adjustment tool into the pivot adjuster. The rib on the adjustment tool tip fits into the slot on the pivot adjuster.



4. Rotate the pivot adjuster until the Readout/Controller displays a paper guide-to-pivot gap between **015.00 and 075.00 mils.**

   - A thicker edge under the pivot assembly increases the paper guide-to-pivot gap spacing.
   - A thinner edge under the pivot assembly decreases the paper guide-to-pivot gap spacing.



Note

If the paper guide-to-pivot cannot be adjusted within tolerance, replace the mechanism.

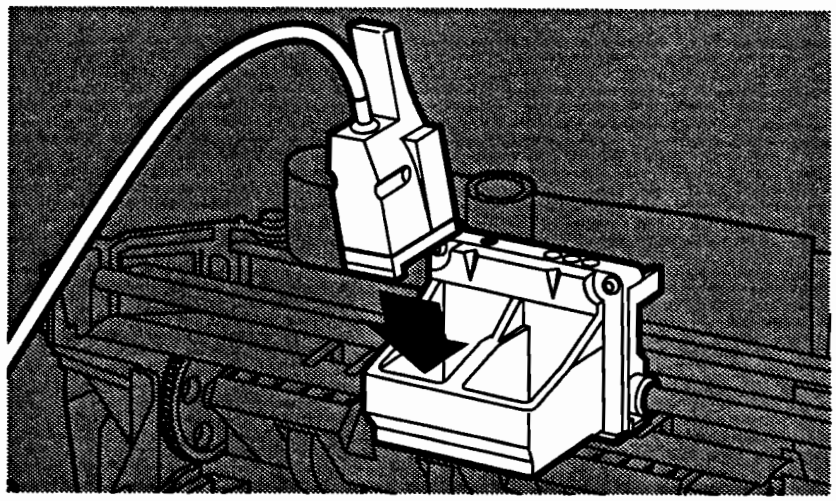
The paper guide-to-pivot adjustment is complete once the Readout/Controller displays a reading within the above tolerance.

Checking the Carriage Shaft Measurement

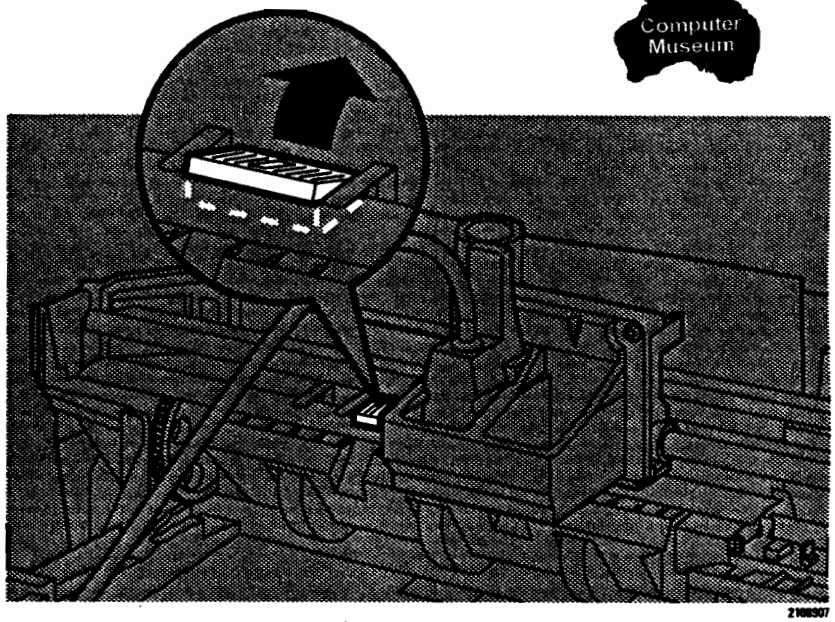
Note

If the paper guide-to-pivot cannot be adjusted within tolerance, replace the mechanism.

1. Install the Aurora LVDT into the black print cartridge cradle. Snap the LVDT into the cradle, just like installing a black print cartridge.



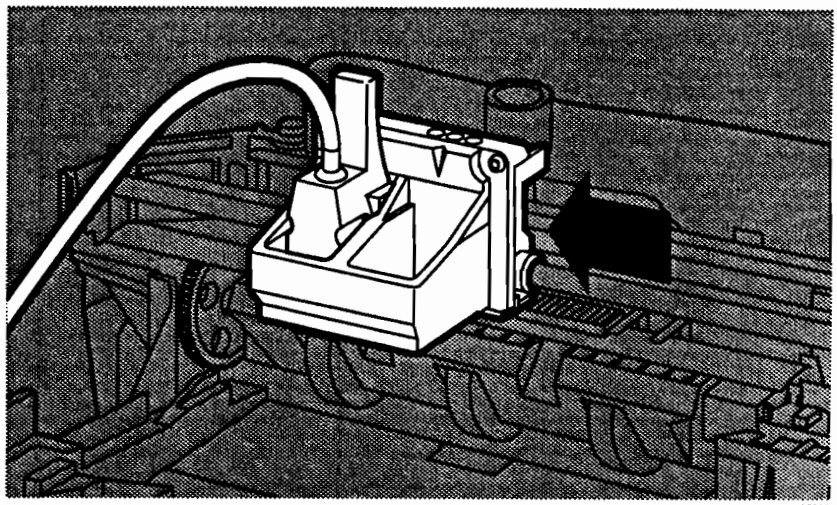
2. Lift the envelope sensor on the Aurora mechanism to raise the pivot to its maximum height.



Note

Make sure the envelope sensor remains raised during this entire procedure.

3. Slide the black print cartridge cradle over the left paper feed roller.

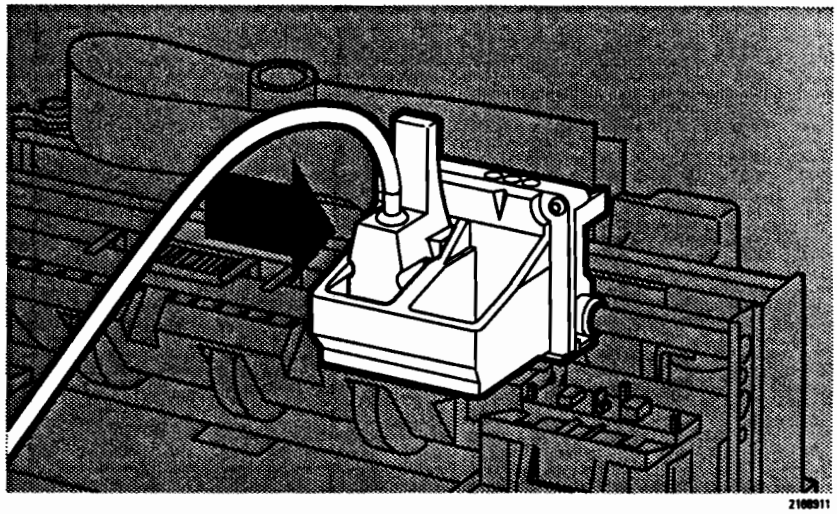


4. Observe the Readout/Controller display reading. The reading should be between **028.00 and 058.00 mils.**

   – If the measurement is within tolerance, continue on to the next step.

   – If the measurement is out-of-tolerance, the carriage shaft needs adjustment. See "Adjusting the Carriage Shaft on Aurora Mechanisms" later in this section.

5. Slide the black print cartridge cradle over the right paper feed roller.



6. Observe the Readout/Controller display reading. The reading should be between **028.00 and 058.00 mils,** and roughly the same as step 4.

   – If the measurement is within tolerance, the carriage shaft does not require any adjustment. *The carriage shaft adjustment procedure is complete.*

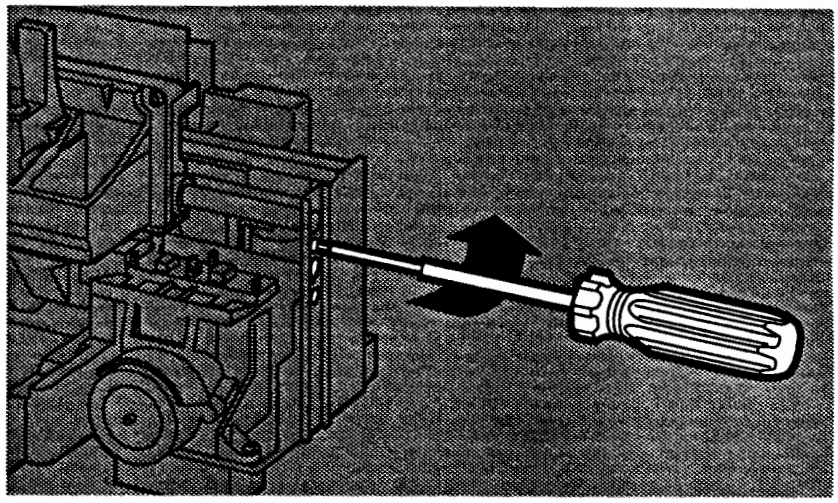
   – If the measurement is out-of-tolerance, the carriage shaft needs adjustment. Continue on with "Adjusting the Carriage Shaft on Aurora Mechanisms."

Adjusting the Carriage Shaft

Note

The top cover must be removed in order to adjust the carriage shaft. See "Removing the Top Cover" in the "Removal and Replacement" chapter for instructions on removing the top cover.

1. Loosen the screw on the right bracket. (The right end of the carriage shaft rests in the right bracket.)
2. Loosen the screw on the left bracket.



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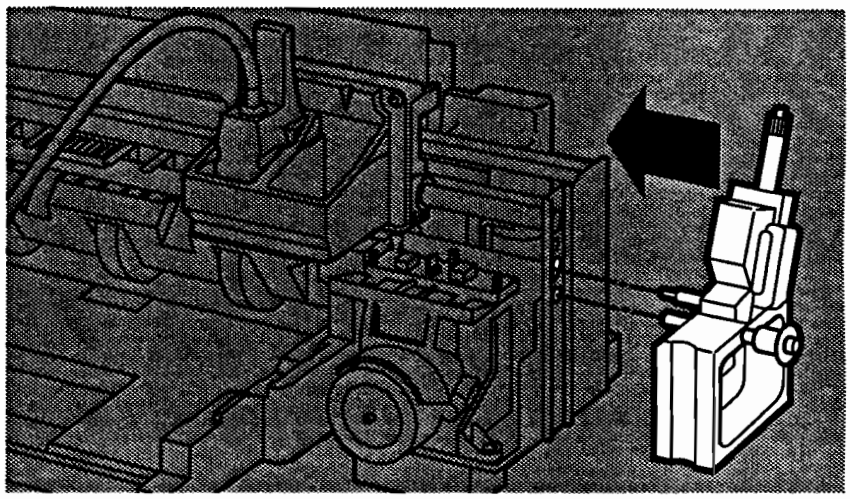
3. Attach the right adjustment tool to the right end of the mechanism as follows:
   - **A.** Align the fixed and spring loaded posts on the right adjustment tool with the two holes on the right side of the mechanism, just below the carriage shaft tip.
   - **B.** While pushing the spring loaded post, mount the right adjustment tool on the right side of the mechanism. Then release the spring loaded post.



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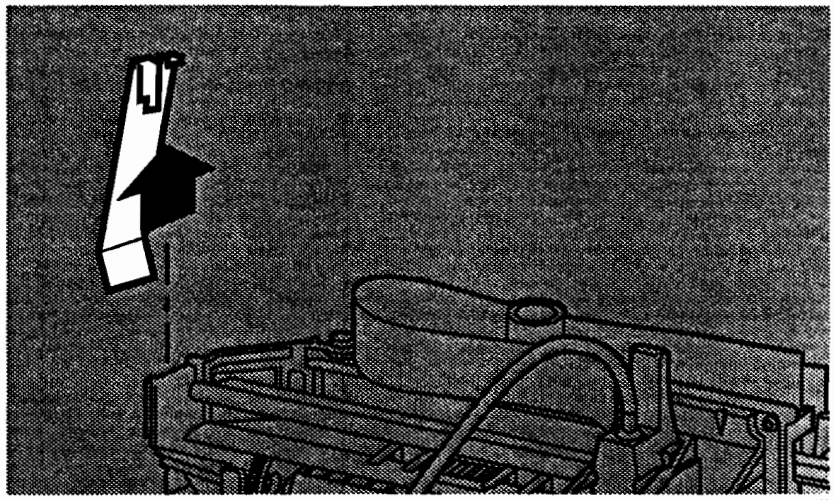
Notes

You may need to turn the micrometer knob in order to have both posts (fixed and spring loaded) to align with both holes on the side of the mechanism.

If the tool is properly mounted on the mechanism, the spring loaded post will remain in once you release the post.

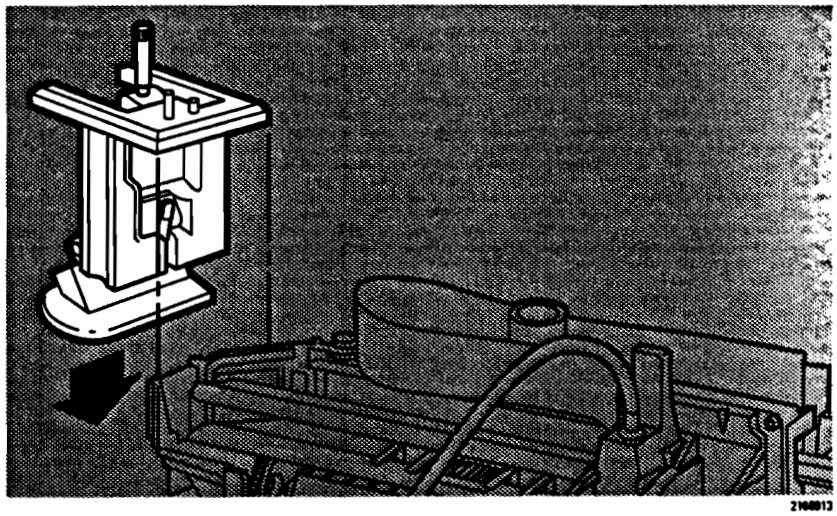
4. Remove the shaft retainer from the left end of the mechanism.



5. Attach the left adjustment tool to the left end of the mechanism as follows:

   A. Align the left adjustment tool over the left edge of the mechanism.

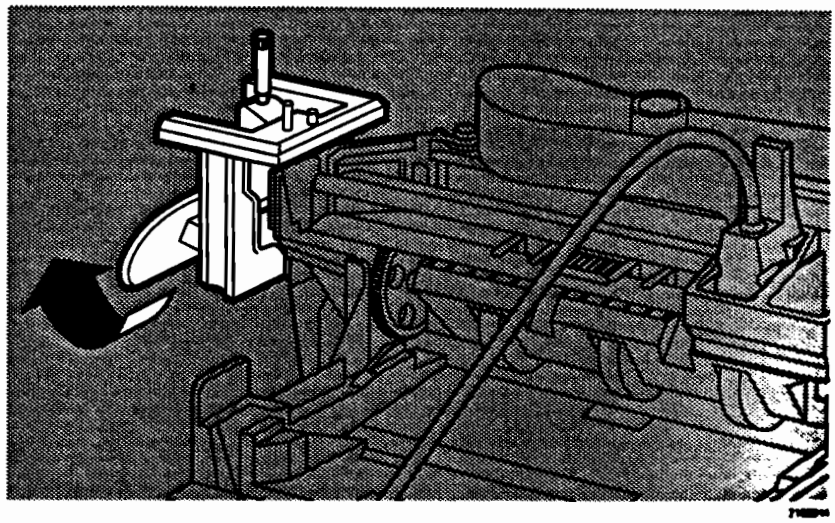
   B. Lower the left adjustment tool such that it straddles the left edge of the mechanism.



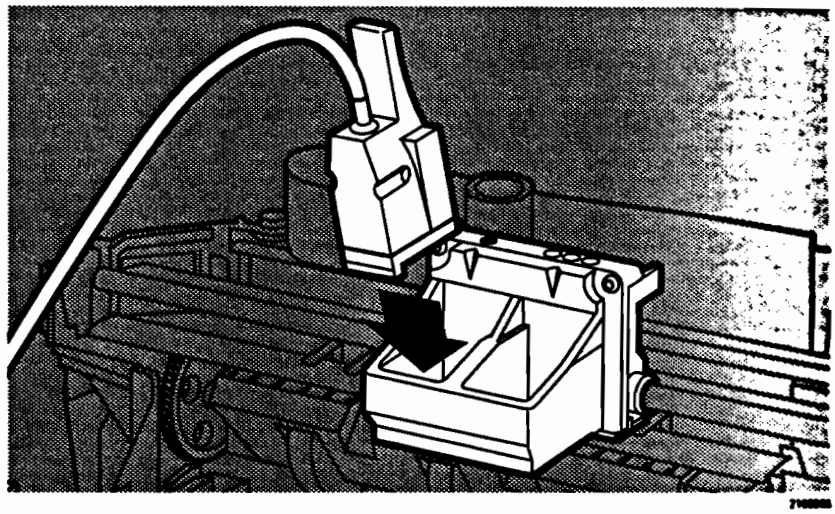
Note

You may need to turn the micrometer knob in order to have the left adjustment tool fully seat on the left side of the mechanism.

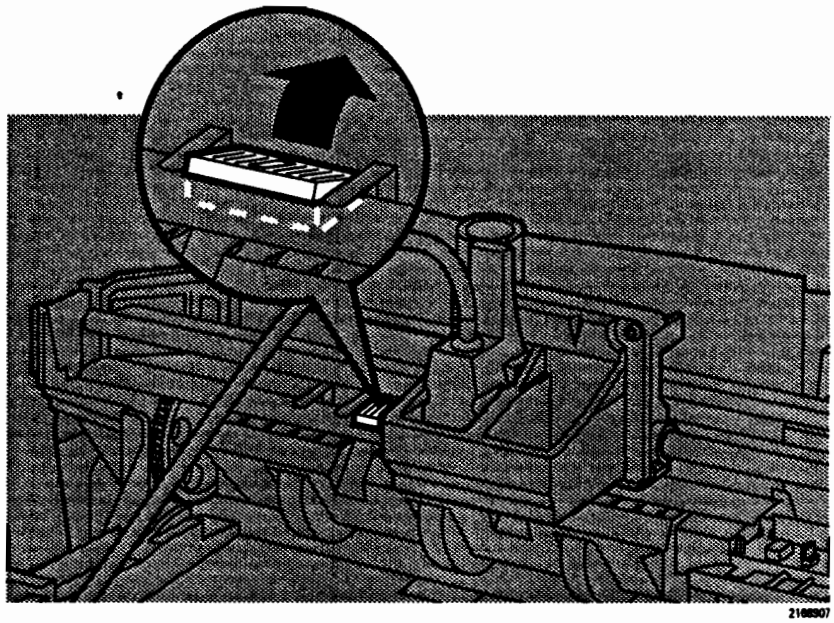
6. Lock the left adjustment tool to the left side of the mechanism.



7. Install the Aurora LVDT into the black print cartridge cradle.



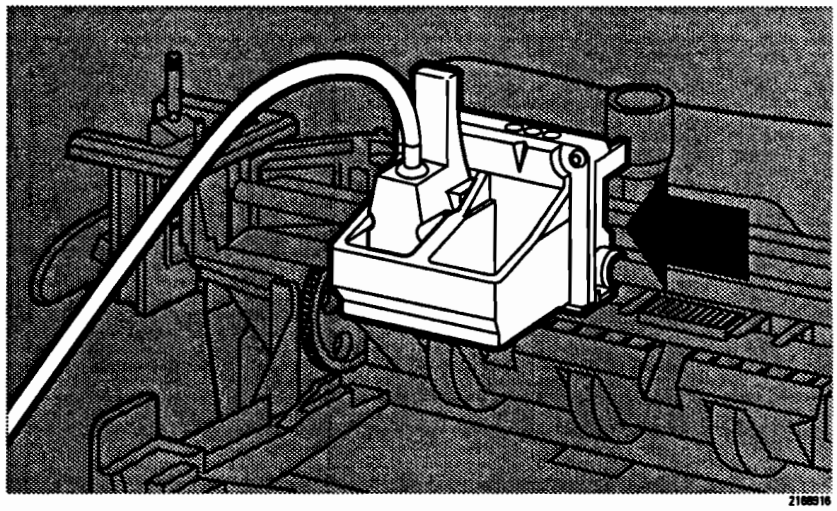
8. Lift the envelope sensor on the Aurora mechanism to raise the pivot to its maximum height.



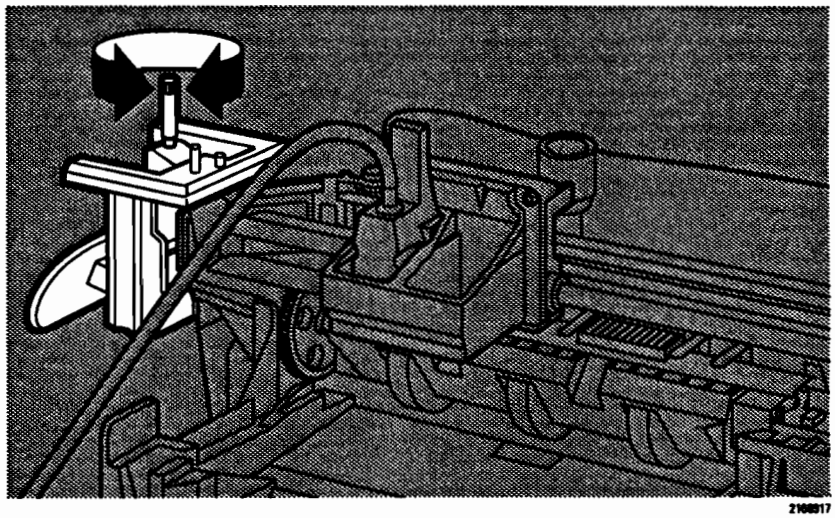
Note

Make sure the envelope sensor remains raised during this entire procedure.

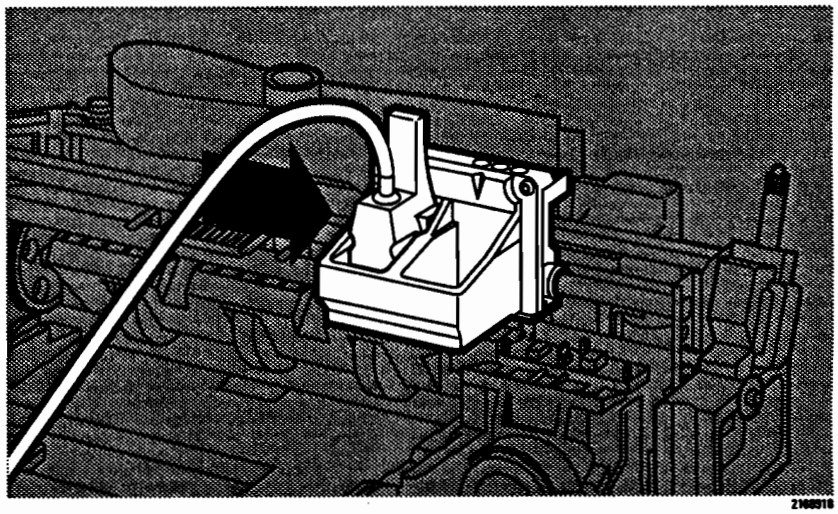
9. Slide the black print cartridge cradle over the left paper feed roller.



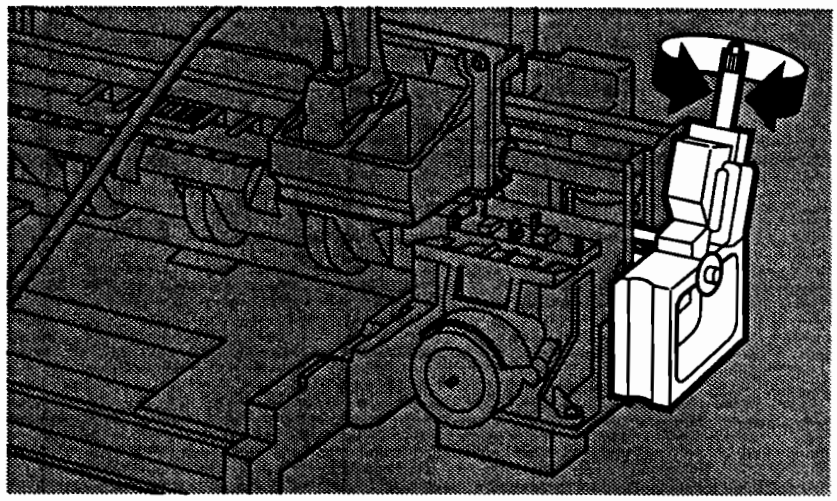
10. Adjust the left end of the carriage shaft by turning the micrometer knob on the left adjustment tool. The Readout/ Controller should display between **028.00 and 058.00 mils (nominally 040.00 mils)**.



11. Slide the black print cartridge cradle over the right paper feed roller.



12. Adjust the right end of the carriage shaft by turning the micrometer knob on the right adjustment tool. The Readout/Controller display should read between **028.00 and 058.00 mils** (roughly the same as step 10).



13. Move the carriage back over the left paper feed roller and readjust to the right paper feed roller setting (**±2 mils**).

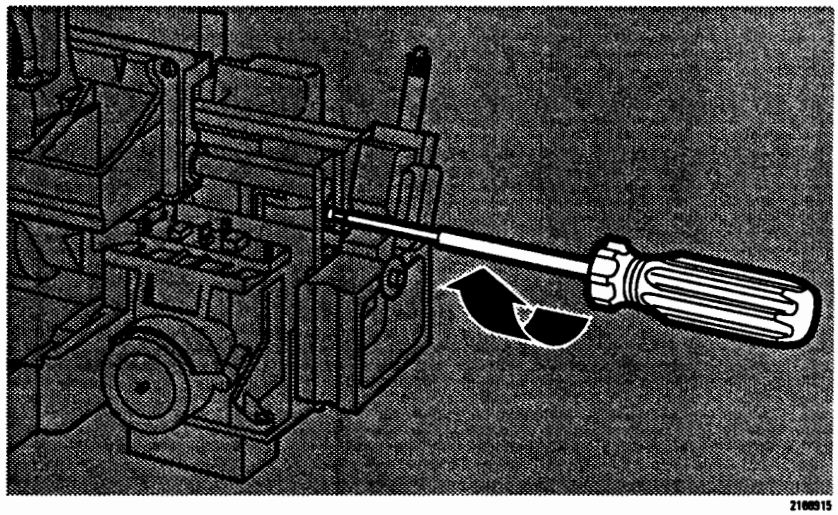
14. Move the carriage back over the right paper feed roller and readjust to the left paper feed roller setting (**± 2 mils**).

Note

Adjusting one end of the carriage shaft affects the other end of the carriage shaft. Continue to slide the Aurora LVDT to both ends of the pivot and readjust until both adjustments are within 2 mils.

15. Tighten the screws on the left and right brackets to **11.0 in-lb**.

16. Double-check that the settings are within tolerance by observing the Readout/Controller display.



17. Release the lever on the left adjustment tool and remove the left adjustment tool from the mechanism.

18. Press in on the spring loaded post on the right adjustment tool and pull the tool from the right side of the mechanism.

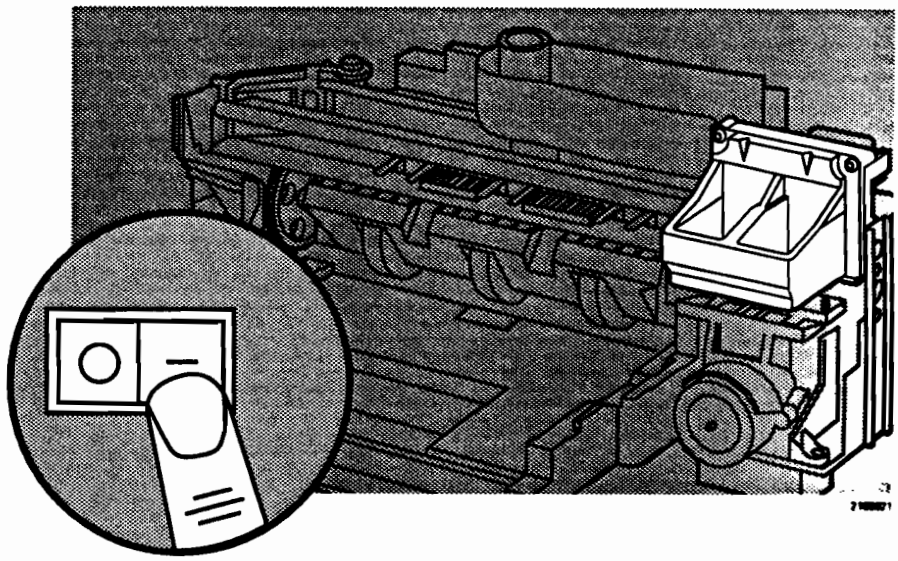
The carriage shaft adjustment is complete.

Checking the Wiper Height

Notes

This procedure applies to all printers with a two print cartridge Aurora mechanism.
The black and color wipers are identical and should be the same height.
Although the following procedure is illustrated with the top cover removed, checking the wiper height can be performed with the top cover installed on the printer. Adjusting the wiper height requires the removal of the top cover from the printer.

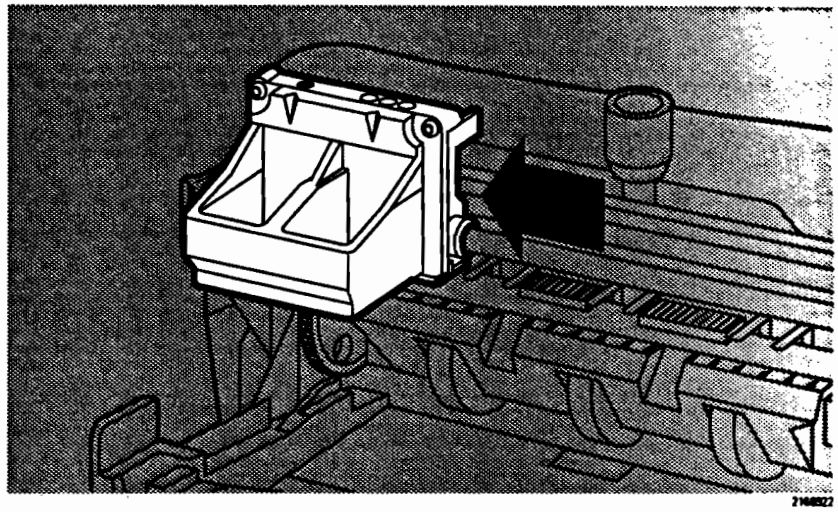
1. With the print cartridges removed, turn on the printer.



2. Turn off the printer when the printer carriage stops at the left end of the mechanism during the power-on sequence.

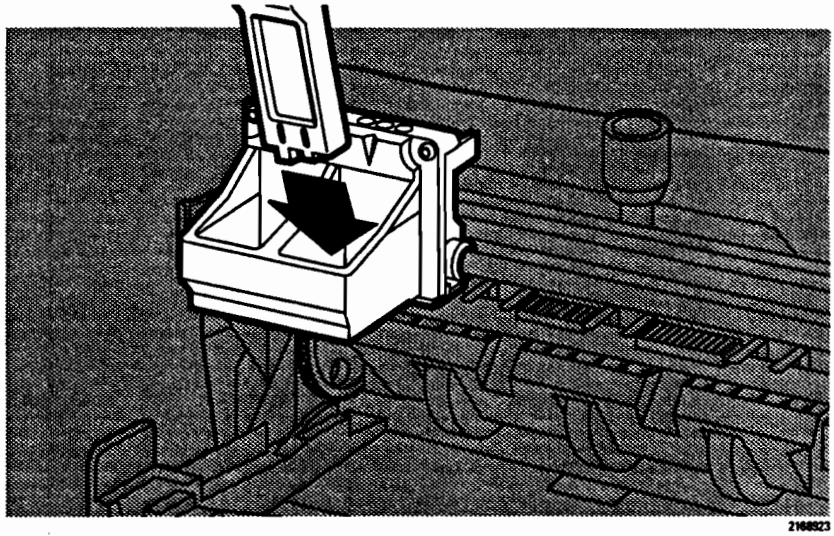
Note

When the carriage stops at the left end of the mechanism during the power-on sequence, the service station is in the "wiper clear" position. The service station must be in the wiper clear position in order to check the height of the wipers.

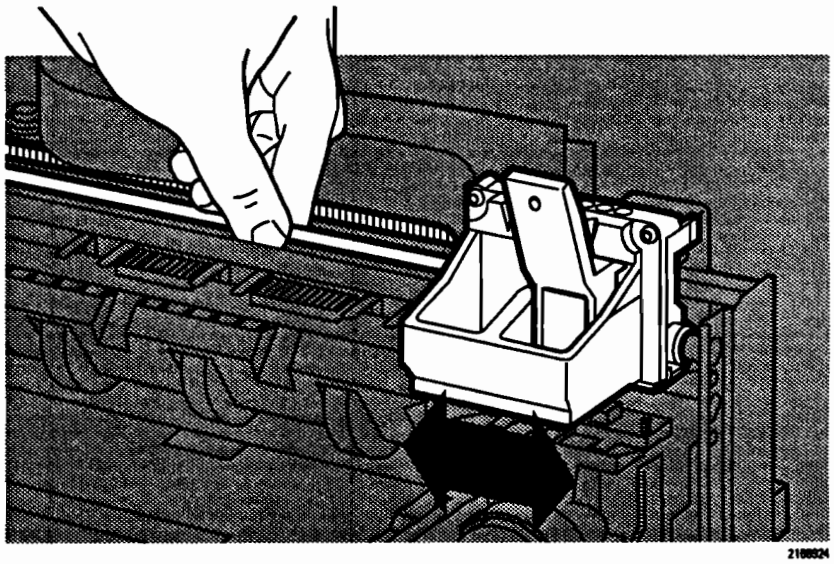


3. Verify the black and color wipers are fully seated on the service station. The wiper should wrap completely around its mounting post on the service station. *Improperly seated wipers can affect the wiper adjustment results.*

4. Install the wiper adjustment tool into the color print cartridge cradle. Snap the tool in place, just like installing a color print cartridge.



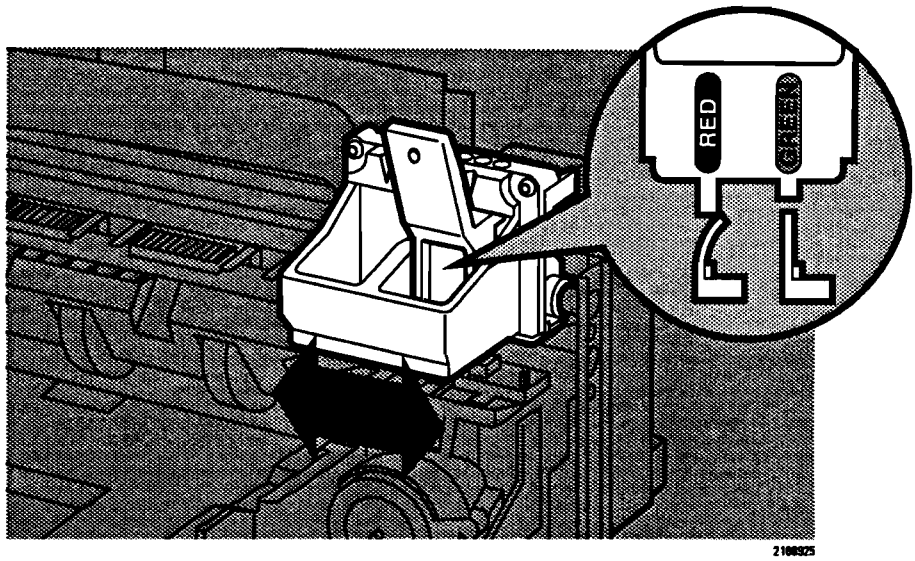
5. Grasp the carriage belt, as shown in the figure to the right.



6. Manually slide the wiper tool across the black and color wipers by moving the carriage belt. Observe the green and red tips on the wiper adjustment tool as they pass the black and color wipers

Note

To obtain accurate results, it is important to slide the printer carriage by moving the carriage belt. Handling the printer carriage can impact print cartridge to wiper distance.



7. Determine the appropriate action based on the table below.

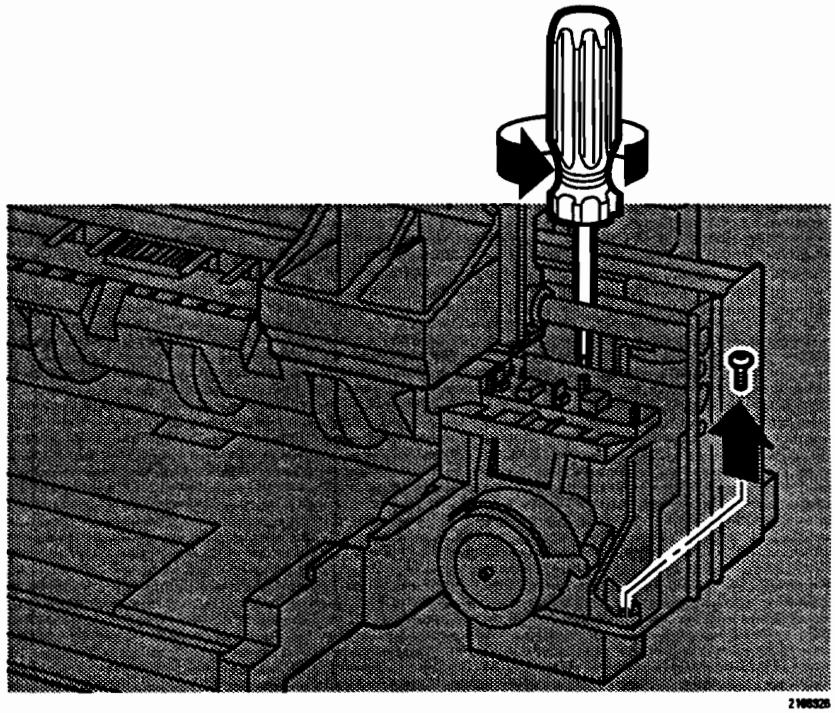
Table 7-4. Wiper Height

Red Tip on Tool	Green Tip on Tool	Wipers Properly Adjusted?	Action
Touches Both Wipers	Misses Both Wipers	Yes	Wiper check complete.
Misses Both Wipers	Misses Both Wipers	No	Wiper set too low. Raise the wiper height. See "Adjusting the Wiper Height" in this chapter.
Touches Both Wipers	Touches Both Wipers	No	Wiper set too high. Lower the wiper height. See "Adjusting the Wiper Height" in this chapter.

Note If the red tip on the tool touches one of the wipers but not the other (e.g., touches the black wiper but not the color wiper), one of the wipers may be worn or improperly seated on the service station sled. If the wipers are fully seated, replace the wipers.

Adjusting the Wiper Height

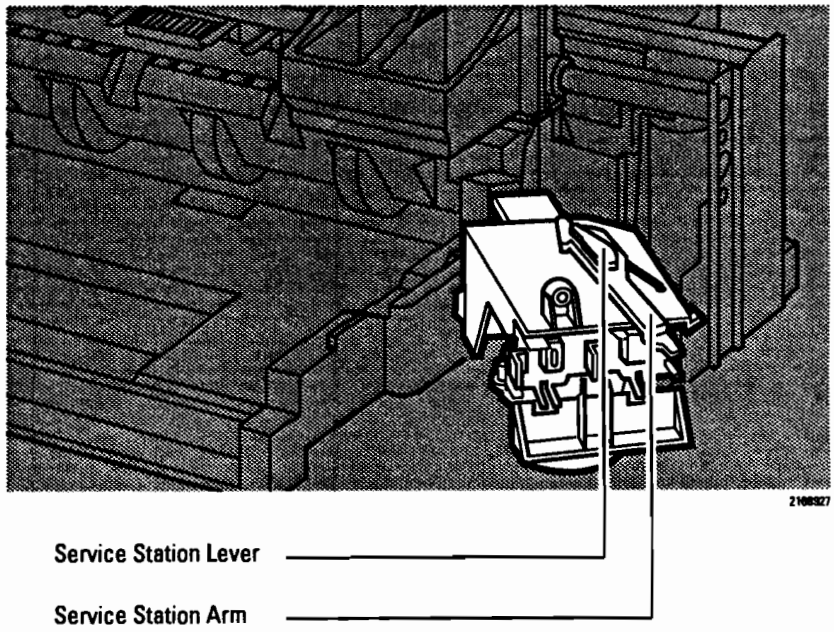
1. Slide the printer carriage away from the service station to gain access to the service station.
2. Remove the two service station screws.



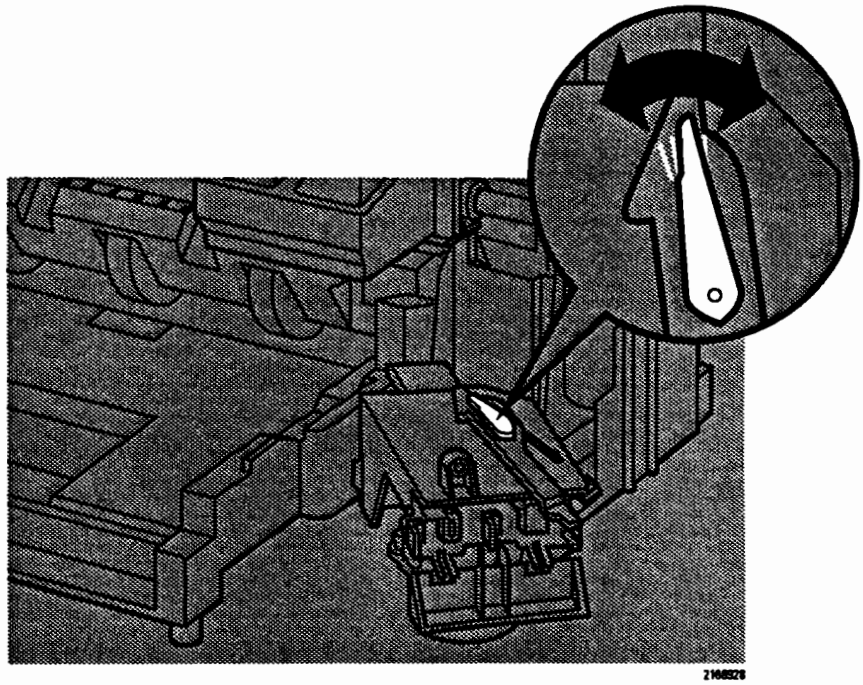
Note

You do not need to disconnect the service station motor from the logic PCA.

3. Tip the service station forward to gain access to the service station lever.



4. Adjust the service station lever to raise or lower the service station wipers.
   - Adjusting the lever clockwise raises the service station wiper.
   - Adjusting the lever counter-clockwise lowers the service station wiper.



Caution

Rotate the lever adjuster, not the lever arm. Moving the large lever arm may cause it to come apart.

Note

The service station lever default position is in the center detent position.

5. Install the service station assembly onto the mechanism assembly.
6. Check the wiper height. See "Checking the Wiper Height" earlier in this section.

Parts Lists

Supplies and Accessories

Print Cartridges

Table 8-1. Print Cartridge Part Numbers

Part Number	Description	Qty
51626A	High-Capacity Print Cartridge (Black)	1
51625A	Color Print Cartridge (Cyan, Magenta, Yellow Inks)	1

Note The Original print cartridge, part number 51608A, is discontinued. Order the High-Capacity print cartridge.

Special Paper and Transparencies

Table 8-2. Special Paper and Transparency Part Numbers

Part Number	Description	Qty
51636F	LX JetSeries Transparency Film (U.S. Letter Size)[1]	50 Sheets
51636G	LX JetSeries Transparency Film (European A4 Size)[1]	50 Sheets
51636H	LX JetSeries Glossy Paper (U.S. Letter Size)[1]	50 Sheets
51636J	LX JetSeries Glossy Paper (European A4 Size)[1]	50 Sheets
51630Y	CX JetSeries Paper (U.S. Letter Size)[2]	200 Sheets
51630Z	CX JetSeries Paper (European A4 Size)[2]	200 Sheets

1. LX JetSeries Transparency Film and HP Glossy Paper are intended for printing on the HP DeskWriter C and DeskWriter 550C printers. LX JetSeries Transparency Film produces brilliant and intense color for presentations. LX JetSeries Glossy Paper produces photographic glossy appearances.
2. CX JetSeries Paper is intended for high-quality color printing with the HP DeskWriter C and DeskWriter 550C printers. When printing black on the CX JetSeries paper, use composite black (black from the color print cartridge) rather than true black from a black print cartridge.

Miscellaneous Items

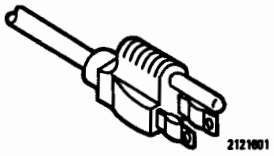
Table 8-3. Miscellaneous Item

Part Number	Description	Qty
92250R	Dust Cover	1
92177Z	Printer Organizer	1
C2114-60003	Print Cartridge Storage Container[1]	1
02227-60030	Fuse Module Troubleshooting Tool	1

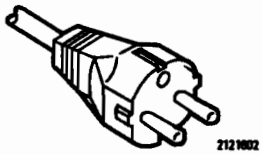
1. The print cartridge storage container includes a brush for cleaning the print cartridge and printer carriage contacts. The print cartridge storage container, which holds one black and one color print cartridge, is included with the HP DeskWriter C printer.

Power Module Information

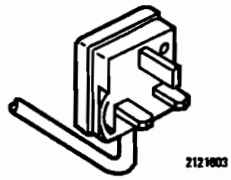
Plug Types



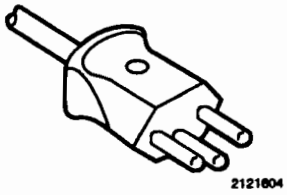
17122B
17322B



17222B



17422B



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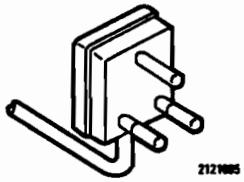

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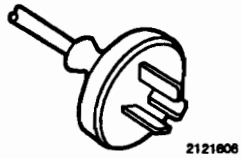
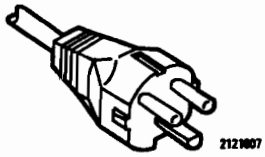


17722B
17922B



17822B

Figure 8-1. Power Module Plug Types

Part Numbers for Countries and Regions

Country or Region	Region's AC Voltage	Order Power Module	
		HP Product Number	HP Part Number
Argentina	220VAC	17922B	9100-4519
Australia	240VAC	17722B	9100-4522
Canada	120VAC	17122B	9100-4503
Cyprus	240VAC	17422B	9100-4509
Denmark	220VAC	17822B	9100-4528
Egypt	220VAC	17222B	9100-4505
Europe, East and West	220VAC	17222B	9100-4505
India	220VAC	17622B	9100-4526
Japan	100VAC	17322B	9100-4507
Korea	100VAC	17322B	9100-4507
Libya	220VAC	17622B	9100-4526
Mexico	120VAC	17122B	9100-4503
New Zealand	240VAC	17722B	9100-4522
Papua New Guinea	220VAC	17922B	9100-4519
People's Republic of China	220VAC	17922B	9100-4519
Philippines	120VAC	17122B	9100-4503
Saudi Arabia	220VAC	17222B	9100-4505
Singapore	240VAC	17422B	9100-4509
South Africa	220VAC	17622B	9100-4526
Spain	220VAC	17222B	9100-4505
Sudan	240VAC	17422B	9100-4509
Switzerland	220VAC	17522B	9100-4524
Taiwan	120VAC	17122B	9100-4503
United Kingdom	240VAC	17422B	9100-4509
Uruguay	220VAC	17922B	9100-4519
USA	120VAC	17122B	9100-4503

HP DeskWriter 510 Printer Parts List

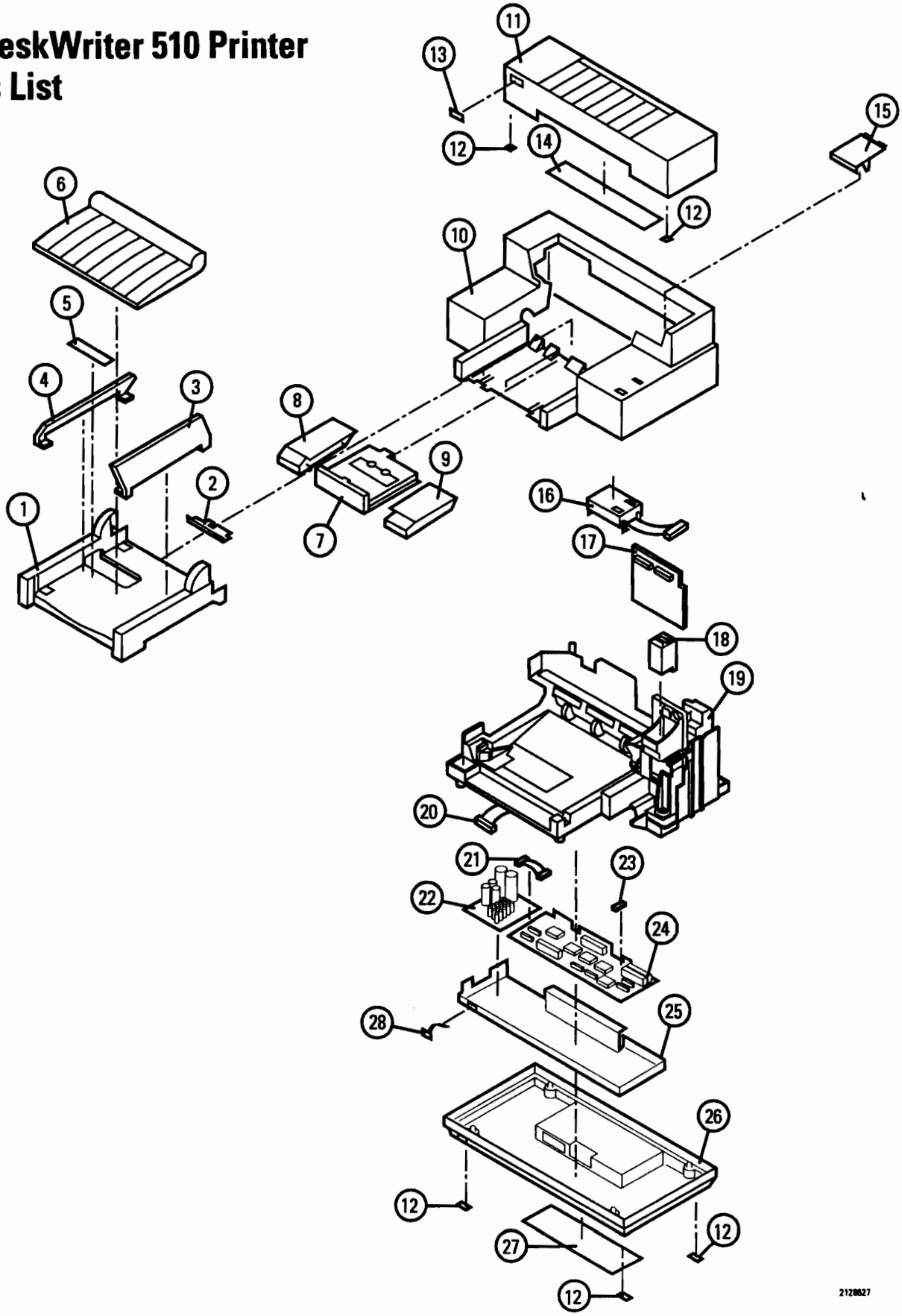


Figure 8-2. HP DeskWriter 510 Printer Overall View

Table 8-4. HP DeskWriter 510 Printer Overall Parts List

Fig Ref	Part Description	Part Numbers (McJake Mechanism and Pre-Storm Electronics[1])	Qty
1	Output Tray	C2127-40001	1
2	Sled, Paper	C2128-40012	1
3	Wing, Right	C2121-40007	1
4	Wing, Left	C2121-40008	1
5	Label, Slider Instruction	C2124-80012	1
6	Cover, Output	C2124-40030	1
7	Paper Catch	C2127-40003	1
8	Left Filler Plate	C2127-40004	1
9	Right Filler Plate	C2127-40005	1
10	Top Cover Assembly	C2128-40057	1
11	Access Door Assembly (with Cover Bumpers)	C2124-60037	1
12	Bumper, Cover	02276-40071	6
13	Nameplate	C2128-80001	1
14	Label, Instructions	C2128-80013	1
15	Cover, Pen	C2124-40021	1
16	Keypad Assembly	C2128-60155	1
17	Head Driver PCA	C2128-60012	1
18	Black Print Cartridge	51626A	1
19	Mechanism Assembly	C2171-60007	1
20	Cable, Logic	C2124-80014	1
21	Power Supply Cable	C2124-80015	1
22	Power Supply Assembly	C2124-60117	1
23	Firmware	Replace Logic PCA	1
24	Logic PCA	C2128-60011	1
25	Ground Plane Assembly	C2124-00067	1
26	Base Assembly (with Bumper Covers)	C2124-60180	1
27	Label Serial Number	02276-80117	1
28	Power Switch Assy	C2124-60005	1

1. All HP DeskWriter 510 printers have McJake mechanisms and Pre-Storm electronics only.

HP DeskWriter 510 (McJake) Mechanism Parts List

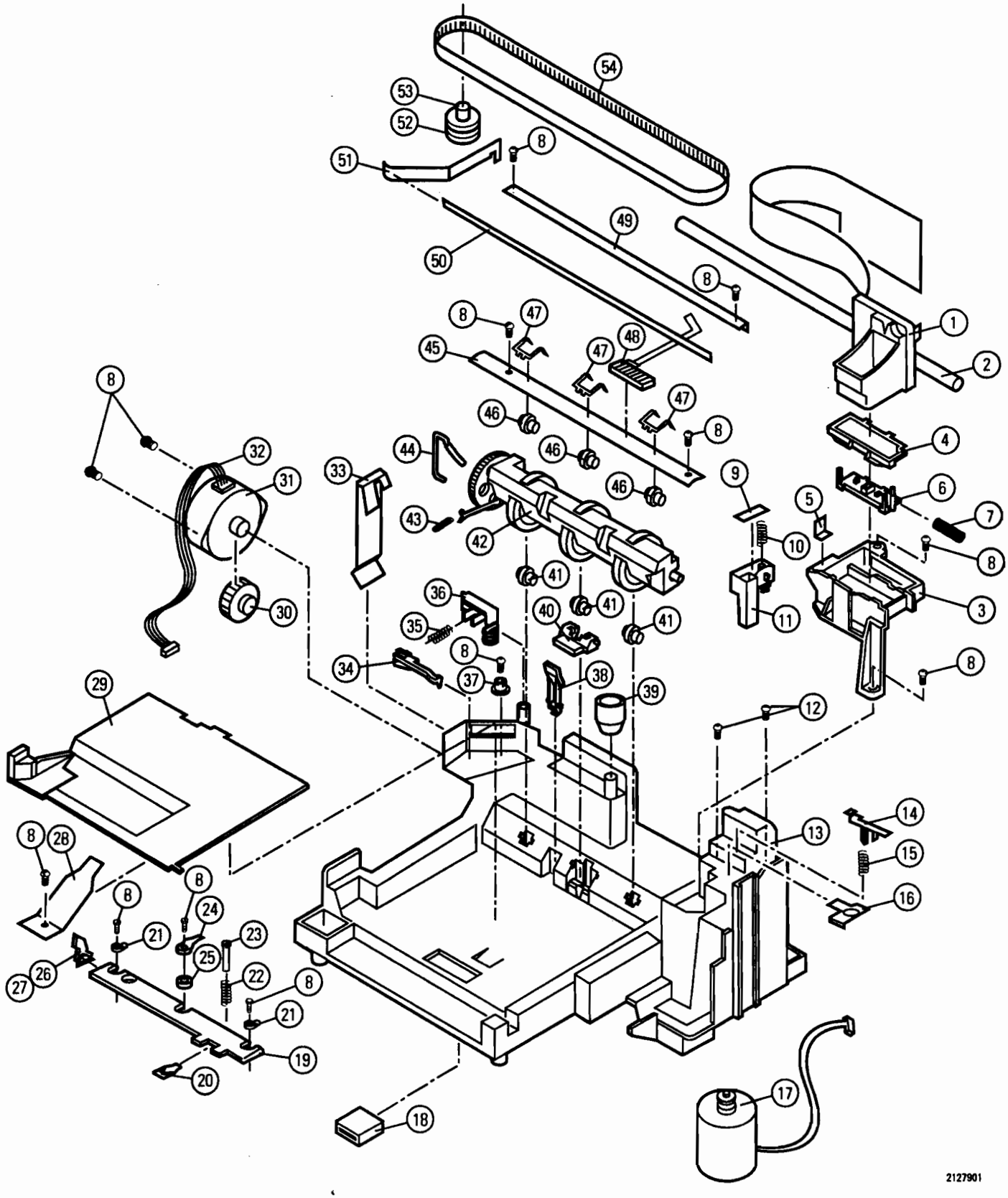


Figure 8-3. HP DeskWriter 510 Mechanism Overall View)

Table 8-5. HP DeskWriter 510 (McJake) Mechanism Parts List

Fig Ref	Part Number	Description	Qty
	C2171-60007	Mechanism Complete	1
1	C2128-60006	Carriage Assembly	1
2	C2124-20002	Carriage Shaft	1
3,4	C2128-60154	Service Station Assy (Frame, Bracket)	1
5-7	C2128-60153	Sled Assy (Sled, Cap, Wiper, Spring)	1
5	C2113-40006	Wiper	1
8	0515-2072	Screw	9
9	C2124-60004	Absorber	1
10	C2124-00009	Spring, Spittoon	1
11	C2128-40054	Spittoon	1
12	0515-2431	Screw, Carriage Motor	2
13	N/A	Mechanism Chassis	1
14	C2126-40004	Limiter, Rotation	1
15	C2124-20006	Spring, Limiter	1
16	C2128-00051	Damper, Belt	1
17	C2124-60115	Carriage Motor Assy	1
18	9170-1565	Ferrite, Chassis	1
19	C2128-40016	Lifter Shaft	1
20	C2128-40018	Separator, Lifter	1
21	C2128-40015	Lifter, Cap	2
22	C2128-00006	Spring, Separator	1
23	C2128-40019	Peg, Separator	1
24	C2128-00002	Spring, Kicker	1
25	C2128-40032	Cap, Lifter Center	1
26	C2128-20004	Spring, Lever	1
27	C2128-40017	Lever, Arm	
28	C2128-00003	Spring, Helper	1

Fig Ref	Part Number	Description	Qty
29	C2128-60022	Pressure Plate Assy	1
30	C2162-40002	Gear Cluster	1
31	C2162-60011	Paper Motor Assembly	1
32	C2121-60130	Cable Assy, Paper Motor	1
33	C2124-00053	Retainer, Shaft	1
34	C2128-40023	Clutch, Actuator	1
35	C2124-20004	Belt Spring	1
36	C2124-40016	Bracket-Belt Tension	1
37	C2128-40055	Adjuster	1
38	C2128-40020	Kicker	1
39	C2171-40001	Flex Circuit Holder	1
40	C2128-60018	Separator Assy	1
41	C2124-60160	Lower Pinch Roller	3
42	C2128-67801	Pivot Assy	1
43	C2162-20004	Pivot Return Spring	
44	C2162-60077	Hurky Preloader and Sleeve	1
45	N/A	Paper Guide	1
46,47	C2124-60162	Upper Pinch Roller and Spring	3
48	C2128-60176	OOPS Flag	1
49	C2124-20001	Rear Rail	1
50	C2124-80008	Encoder Strip	1
51	C2124-00001	Encoder Spring	1
52	C2124-40063	Idler, Ribbed	1
53	C2124-20015	Idler Shaft	1
54	C2128-40031	Belt, Carriage	1

N/A = Not Available

HP DeskWriter 520 Printer Parts List

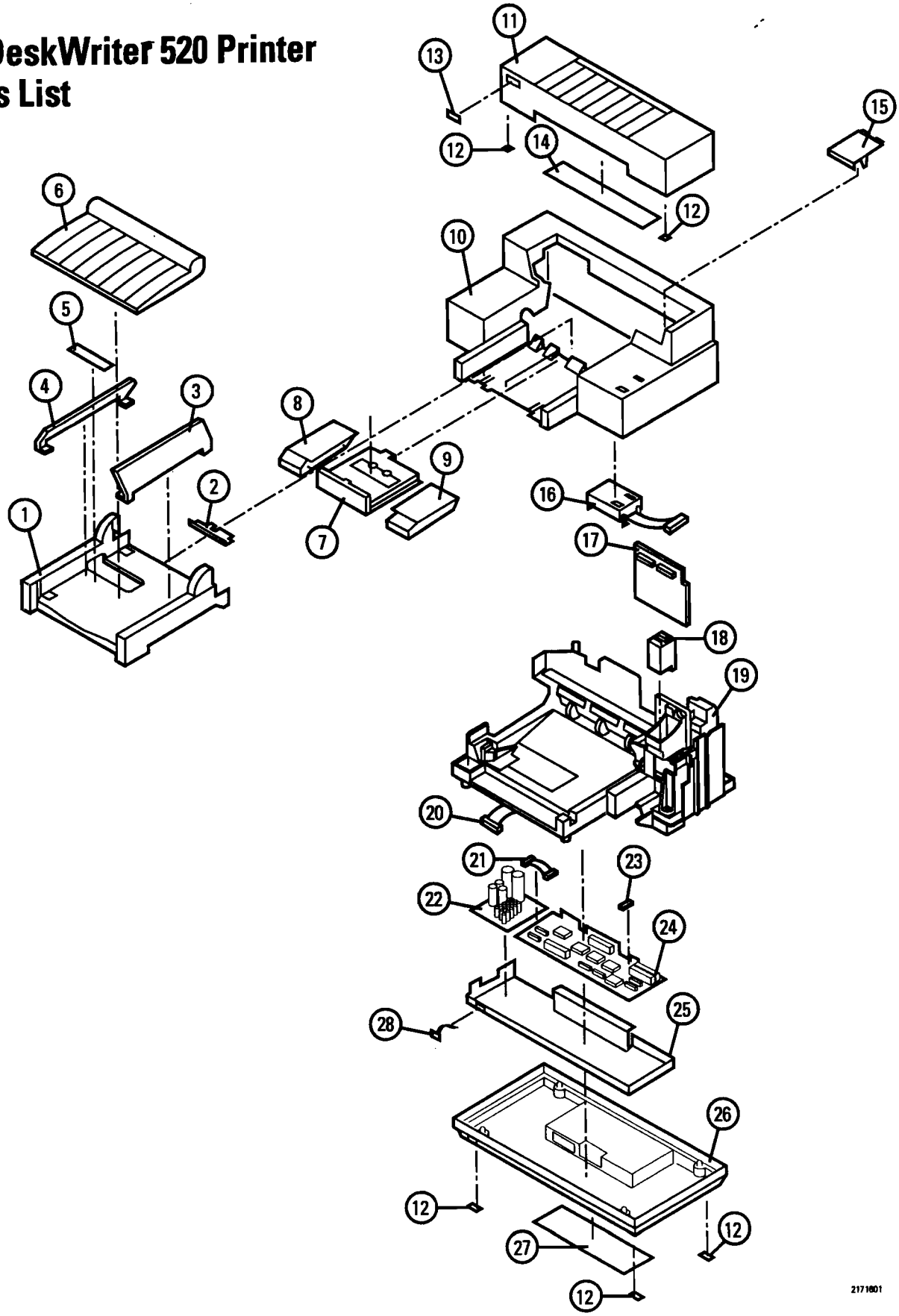


Figure 8-4. HP DeskWriter Printer Overall View

Table 8-6. HP DeskWriter 520 Printer Overall Parts List

Fig Ref	Part Number	Description	Qty	Comments
1	C2127-40001	Output Tray	1	
2	C2128-40012	Sled, Paper	1	
5	C2124-80012	Label, Slider Instruction	1	
4	C2121-40007	Wing, Right	1	
5	C2121-40008	Wing, Left	1	
6	C2124-40030	Cover, Output	1	
11	C2124-60037	Access Door (with Cover Bumpers)	1	
13	C2171-80001	Nameplate	1	
12	02276-40071	Bumper, Cover	6	
14	C2128-80013	Label, Instructions	1	
10	C2128-40057	Top Cover Assy	1	
15	C2124-40021	Pen Cover	1	
7	C2127-40003	Paper Catch	1	
9	C2127-40005	Right Filler Plate	1	
8	C2127-40004	Left Filler Plate	1	
16	C2128-60155	Keypad Assembly	1	
17	C2128-60179	Head Driver PCA	1	
18	51626A	Black Print Cartridge	1	
19	C2171-60007	Mechanism Assembly	1	See figure 8-5 and table 8-7.
20	C2124-80014	Flex Cable, Logic	1	
21	C2124-80015	Power Supply Cable	1	
22	C2128-60169	Power Supply Assembly	1	
23	Order Logic PCA	Firmware	1	
24	C2171-60003	Logic PCA	1	
25	C2124-00067	Ground Plane Assembly	1	
28	C2124-60005	Power Switch Assy	1	
26	C2124-60180	Base Assembly	1	
27	02276-80117	Label Serial Number	1	

HP DeskWriter 520 (Aurora) Mechanism Parts List

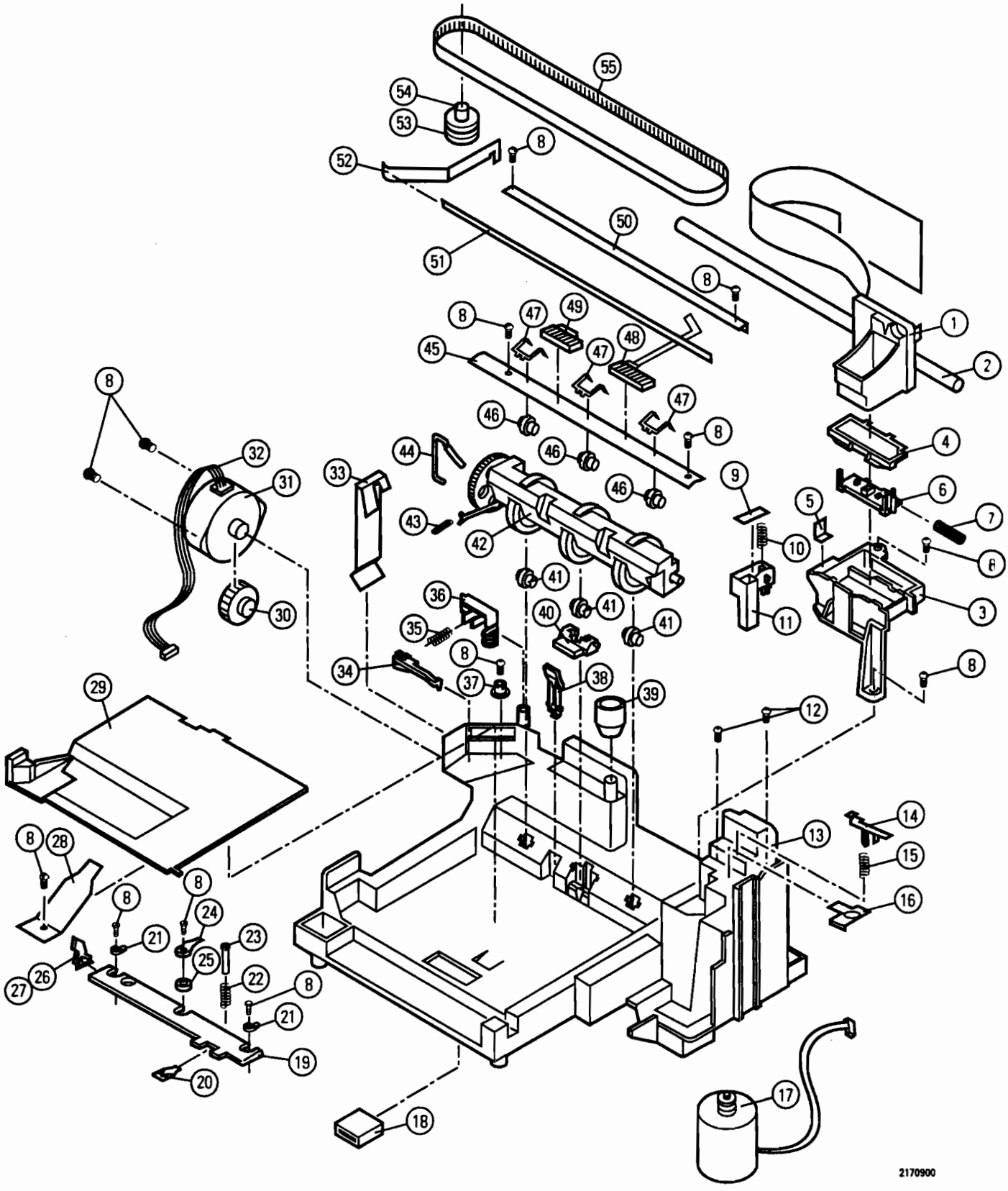


Figure 8-5. HP DeskWriter 520 Printer Mechanism Overall View

Table 8-7. HP DeskWriter 520 (Aurora) Mechanism Parts List

Fig Ref	Part Number	Description	Qty
	C2171-67817	Mechanism Complete	1
1	C2128-60006	Carriage Assembly	1
2	C2170-20001	Carriage Shaft	1
3,4	C2128-67818	Service Station Assy (Frame, Bracket)	1
5-7	C2171-67819	Sled Assy (Sled, Cap, Wiper, Spring)	1
5	C2113-40006	Wiper	1
8	0515-2072	Screw	9
9	C2171-67801	Absorber	1
10	C2124-00009	Spring, Spittoon	1
11	C2128-40054	Spittoon	1
12	0515-2431	Screw, Carriage Motor	2
13	N/A	Mechanism Chassis	1
14	C2126-40004	Limiter, Rotation	1
15	C2124-20008	Spring, Limiter	1
16	C2128-00051	Damper, Belt	1
17	C2124-60115	Carriage Motor Assy	1
18	9170-1609	Ferrite, Chassis	1
19	C2128-40016	Lifter Shaft	1
20	C2128-40018	Separator, Lifter	1
21	C2128-40015	Lifter, Cap	2
22	C2128-00006	Spring, Separator	1
23	C2128-40019	Peg, Separator	1
24	C2128-00002	Spring, Kicker	1
25	C2128-40032	Cap, Lifter Center	1
26	C2128-20004	Spring, Lever	1
27	C2128-40017	Lever, Arm	
28	C2128-00003	Spring, Helper	1
29	C2128-60022	Pressure Plate Assy	1
30	C2162-40002	Gear Cluster	1
31	C2162-60011	Paper Motor Assembly	1
32	C2121-60130	Cable Assy, Paper Motor	1
33	C2170-00002	Retainer, Shaft	1
34	C2128-40023	Clutch, Actuator	1
35	C2124-20004	Belt Spring	1
36	C2124-40016	Bracket-Belt Tension	1
37	C2128-40055	Adjuster	1
38	C2128-40020	Kicker	1
39	C2171-40001	Flex Circuit Holder	1
40	C2128-60018	Separator Assy	1
41	C2124-60160	Lower Pinch Roller	3
42	C2171-67823	Pivot Assy	1
43	C2162-20004	Pivot Return Spring	1
44	C2162-60077	Hurky Preloader and Sleeve	1
45-49	C2162-60017	Paper Guide Assy	1
50	C2124-20001	Rear Rail	1
51	C2124-80008	Encoder Strip	1
52	C2124-00001	Encoder Spring	1
53	C2171-67806	Idler Ribbed Assy	1
54	C2124-20015	Idler Shaft	1
55	C2162-40056	Belt, Carriage	1
	C2170-00007	Left Bracket	1
	C2170-00008	Right Bracket	1
	0515-2476	Screw, Bracket	2

N/A = Not Available

HP DeskWriter 550C Printer Parts List

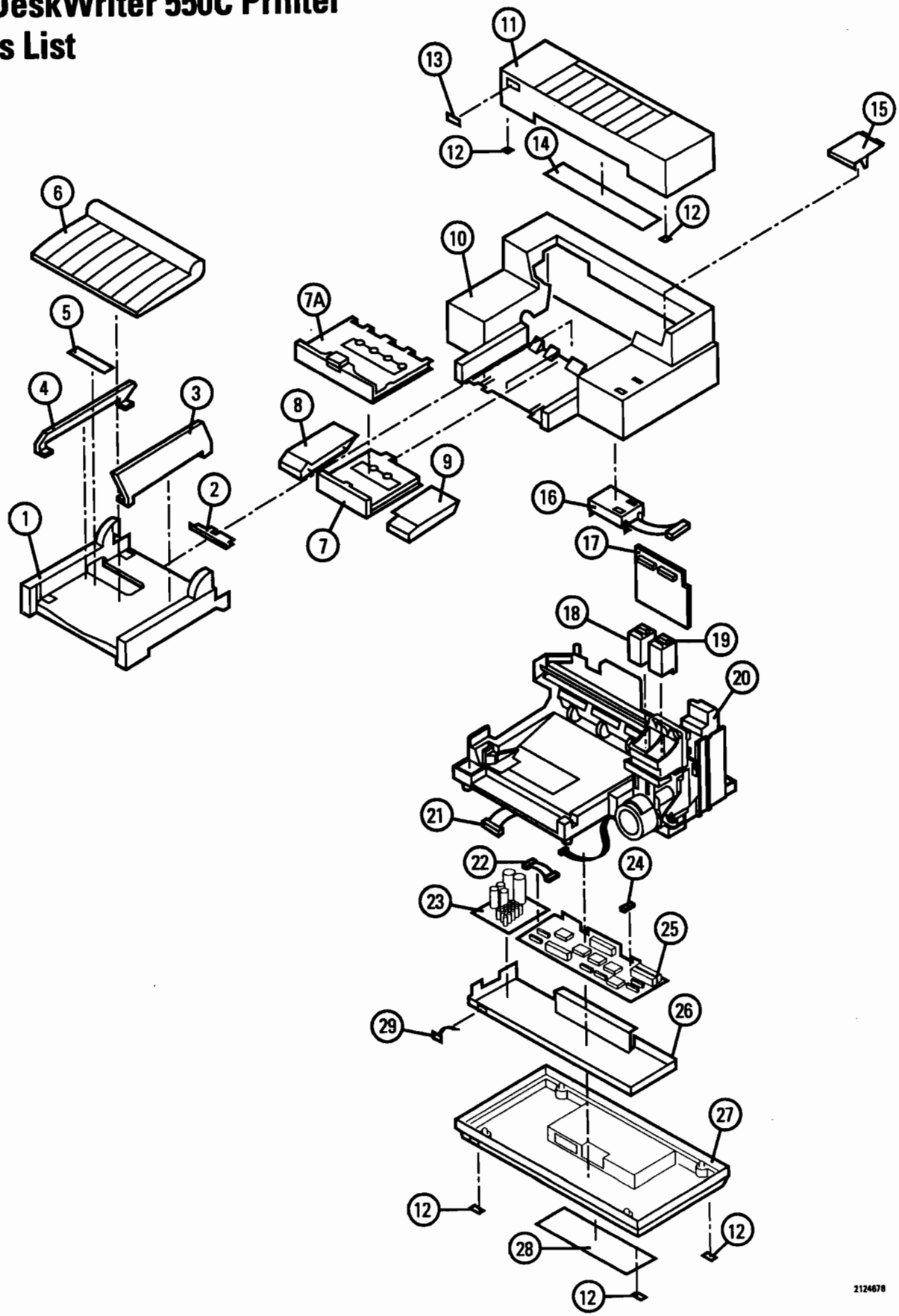


Figure 8-6. HP DeskWriter 550C Printer Overall View

Table 8-8. HP DeskWriter 550C Printer Overall Parts List

Fig Ref	Part Description	Part Numbers for the Following Printer Configurations			Qty	Change These Parts When Upgrading from a Jake Mechanism	Change These Parts When Upgrading from Pre-Storm to Storm Electronics[1]
		Jake Mechanism and Pre-Storm Electronics	McJake Mechanism and Pre-Storm Electronics	McJake Mechanism and Storm Electronics[1]			
1	Output Tray	Upgrade Mechanism	C2127-40001	C2127-40001	1	C2127-40001	
2	Sled, Paper	Upgrade Mechanism	C2128-40012	C212-40012	1	C2128-40012	
3	Wing, Right	C2121-40007	C2121-40007	C2121-40007	1		
4	Wing, Left	C2121-40008	C2121-40008	C2121-40008	1		
5	Label, Slider Instruction	C2124-80012	C2124-80012	C2124-80012	1	C2124-80012	
6	Cover, Output	C2124-40030	C2124-40030	C2124-40030	1		
7A	IN Tray Drawer	Upgrade Mechanism			1		
7	Paper Catch		C2127-40003	C2127-40003	1	C2127-40003	
8	Left Filler Plate		C2127-40004	C2127-40004	1	C2127-40004	
9	Right Filler Plate		C2127-40005	C2127-40005	1	C2127-40005	
10	Top Cover Assembly	C2124-40020	C2128-40057	C2128-40057	1		
11	Access Door Assembly (with Cover Bumpers)	C2124-60037	C2124-60037	C2124-60037	1		
12	Bumper, Cover	02276-40071	02276-40071	02276-40071	6		
13	Nameplate	C2124-80017	C2124-80017	C2124-80017	1		
14	Label, Instructions	C2124-80036	C2124-80036	C2124-80036	1		
15	Cover, Pen	C2124-40021	C2124-40021	C2124-40021	1		
16	Barrier, ESD	C2124-80029			1		
17	Keypad Assembly	C2128-60155	C2128-60155	C2128-60155	1		
18	Head Driver PCA	C2124-60178	C2124-60178	C2124-60192	1		✓
19	Black Print Cartridge	51626A	51626A	51626A	1		
20	Color Print Cartridge	51625A	51625A	51625A	1		
21	Mechanism Assembly	C2169-60008	C2169-60008	C2169-60008	1	C2169-60008	
23	Cable, Logic	C2124-80014	C2124-80014	C2124-80014	1		
24	Power Supply Cable	C2124-80015	C2124-80015	C2124-80015	1		
25	Power Supply Assembly	C2124-60117	C2124-60117	C2128-60169	1		✓
26	Firmware	Order Logic PCA	Order Logic PCA	Order Logic PCA	1	1818-5652	✓
27	Logic PCA	C2124-60178	C2124-60178	C2124-60192	1		
28	Ground Plane Assembly	C2124-00067	C2124-00067	C2124-00067	1		
29	Base Assembly (with Bumper Covers)	C2124-60180	C2124-60180	C2124-60180	1		
30	Label Serial Number	02276-80117	02276-80117	02276-80117	1		
31	Power Switch Assy	C2124-60005	C2124-60005	C2124-60005	1		

1. The Storm electronics components require a McJake mechanism. Upgrade to a McJake mechanism if upgrading the printer to the Storm electronic assemblies.

HP DeskWriter 550C (McJake) Mechanism Parts List

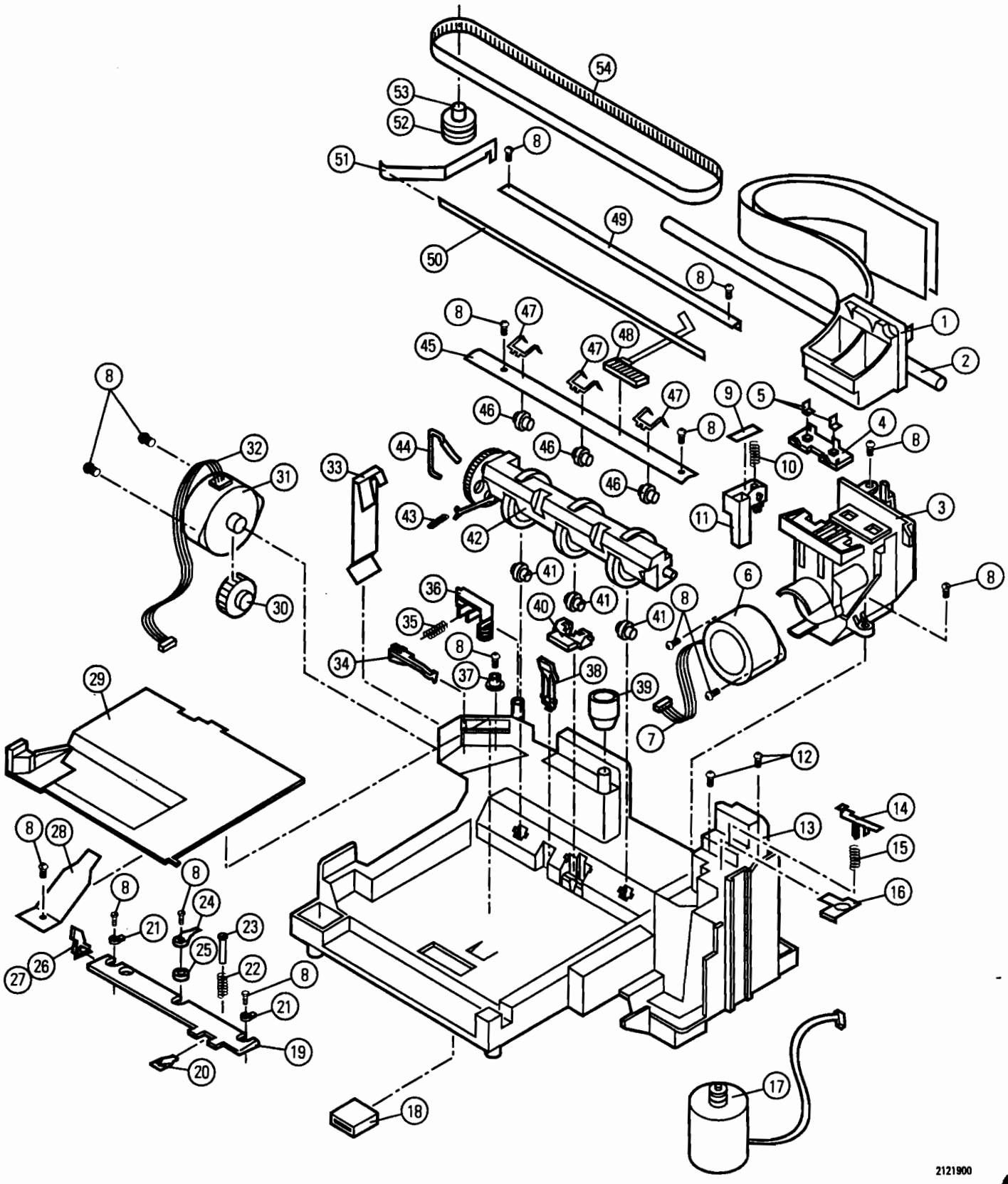


Figure 8-7. HP DeskWriter 550C Printer Mechanism Overall View

Table 8-9. HP DeskWriter 550C (McJake) Mechanism Parts List

Fig Ref	Part Number	Description	Qty
	C2169-60008	Mechanism Complete	1
1	C2124-60184	Carriage Assembly	1
2	C2124-20002	Carriage Shaft	1
3-7	C2169-60056	Service Station Assy	1
4,5	C2124-60185	Service Station Sled Assy	1
5	C2113-40006	Black and Color Wiper	2
6	C2124-60190	Service Station Motor	1
7	C2124-60193	Cable Assy, Service Station	1
8	0515-2072	Screw	9
9	C2124-80004	Absorber	1
10	C2124-00009	Spring, Spittoon	1
11	C2128-40054	Spittoon	1
12	0515-2431	Screw, Carriage Motor	2
13	N/A	Mechanism Chassis	1
14	C2124-40042	Limiter, Rotation	1
15	C2124-20008	Spring, Limiter	1
16	C2128-00051	Damper, Belt	1
17	C2124-60115	Carriage Motor Assy	1
18	9170-1565	Ferrite, Chassis	1
19	C2128-40015	Lifter Shaft	1
20	C2128-40018	Separator, Lifter	1
21	C2128-40015	Lifter, Cap	2
22	C2128-00006	Spring, Separator	1
23	C2128-40019	Peg, Separator	1
24	C2128-00002	Spring, Kicker	1
25	C2128-40032	Cap, Lifter Center	1
26	C2128-20004	Spring, Lever	1
27	C2128-40017	Lever, Arm	1
28	C2128-00003	Spring, Helper	1
29	C2128-60022	Pressure Plate Assy	1
30	C2162-40002	Gear Cluster	1
31	C2162-60011	Paper Motor Assembly	1
32	C2121-60130	Cable Assy, Paper Motor	1
33	C2124-00053	Retainer, Shaft	1
34	C2128-40023	Clutch, Actuator	1
35	C2124-20004	Belt Spring	1
36	C2124-40016	Bracket-Belt Tension	1
37	C2128-40055	Adjuster	1
38	C2128-40020	Kicker	1
39	C2171-40001	Flex Circuit Holder	1
40	C2128-60018	Separator Assy	1
41	C2124-60160	Lower Pinch Roller	3
42	C2128-67801	Pivot Assy	1
43	C2162-20004	Pivot Return Spring	1
44	C2162-60077	Hurky Preloader and Sleeve	1
45	N/A	Paper Guide	1
46,47	C2124-60162	Upper Pinch Roller & Spring	3
48	C2128-60176	OOPS Flag	1
49	C2124-20001	Rear Rail	1
50	C2124-80008	Encoder Strip	1
51	C2124-00001	Encoder Spring	1
52	C2124-40063	Idler, Ribbed	1
53	C2124-20015	Idler Shaft	1
54	C2128-40031	Belt, Carriage	1

N/A = Not Available

HP DeskWriter 560C Printer Parts List

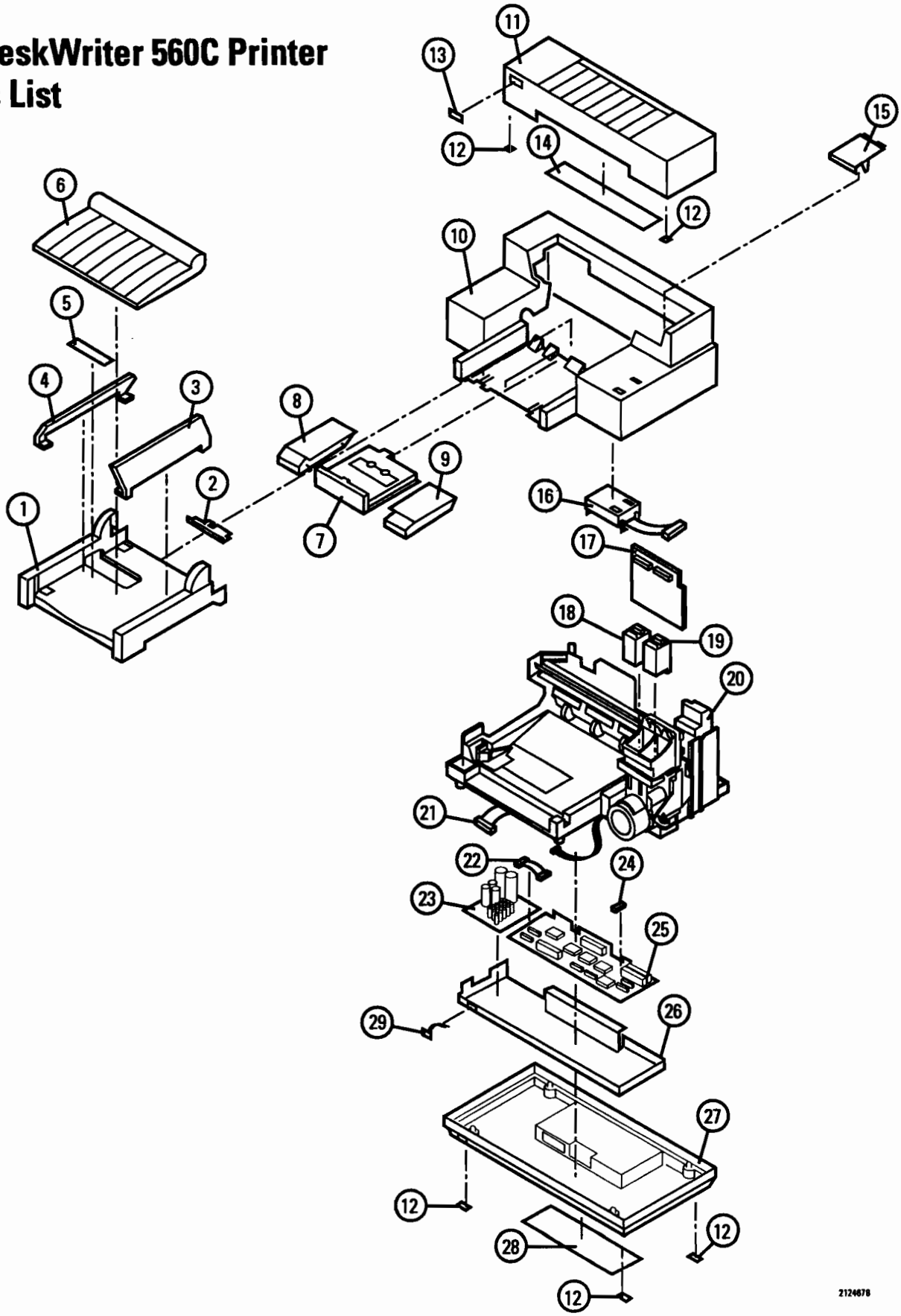


Figure 8-8. HP DeskWriter 560C Printer Overall View

Table 8-10. HP DeskWriter 560C Printer Overall Parts List

Fig Ref	Part Number	Description	Qty	Comments
1	C2127-40001	Output Tray	1	
2	C2128-40012	Sled, Paper	1	
3	C2121-40007	Wing, Right	1	
4	C2121-40008	Wing, Left	1	
5	C2124-80012	Label, Slider Instruction	1	
6	C2124-40030	Cover, Output	1	
7	C2127-40003	Paper Catch	1	
8	C2127-40004	Left Filler Plate	1	
9	C2127-40005	Right Filler Plate	1	
10	C2128-40057	Top Cover	1	
11	C2124-60037	Access Door (with Cover Bumpers)	1	
12	02276-40071	Bumper, Cover	6	
13	C2169-80001	Nameplate	1	
14	C2124-80036	Label, Instructions	1	
15	C2124-40021	Pen Cover	1	
16	C2128-60155	Keypad Assembly	1	
17	C2124-60197	Head Driver PCA	1	
18	51626A	Black Print Cartridge	1	
19	51625A	Color Print Cartridge	1	
20	C2169-60008	Mechanism Assembly	1	See figure 8-9 and table 8-11.
21	C2124-80014	Flex Cable, Logic	1	
22	C2124-80015	Power Supply Cable	1	
23	C2128-60169	Power Supply Assembly	1	
24	Order Logic PCA	Firmware	1	
25	C2169-60007	Logic PCA	1	
26	C2124-00067	Ground Plane Assembly	1	
27	C2124-60180	Base Assembly	1	
28	02276-80117	Label Serial Number	1	
29	C2124-60005	Power Switch Assy	1	

HP DeskWriter 560C (Aurora) Mechanism Parts List

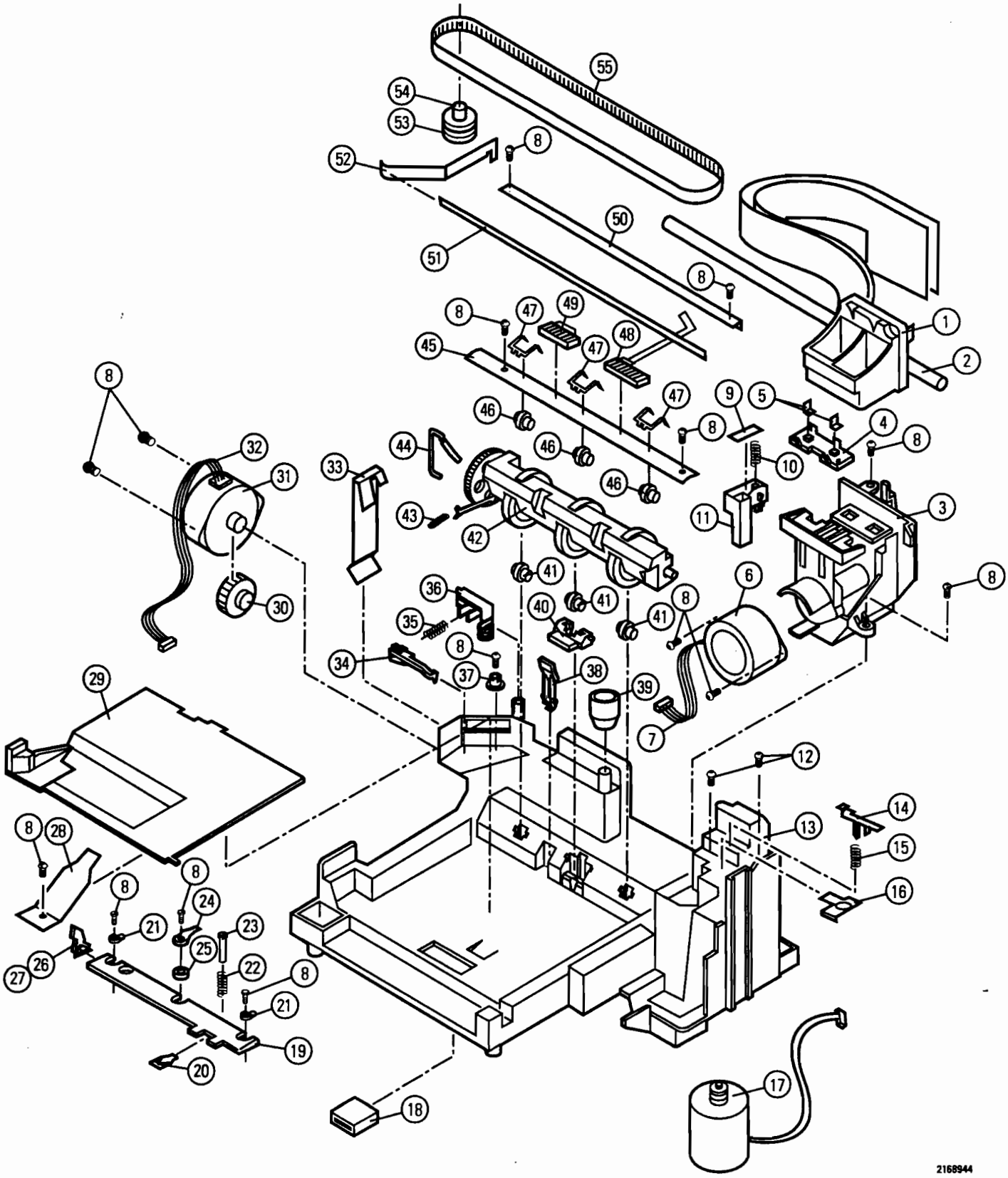


Figure 8-9. HP DeskWriter 560C Mechanism Overall View

Table 8-11. HP DeskWriter 560C (Aurora) Mechanism Parts List

Fig Ref	Part Number	Description	Qty
	C2169-60008	Mechanism Complete	1
1	C2124-60184	Carriage Assembly	1
2	C2170-20001	Carriage Shaft	1
3-7	C2169-60056	Service Station Assy	1
4,5	C2124-60185	Service Station Sled Assy	1
5	C2113-40006	Black and Color Wiper	2
6	C2124-60190	Service Station Motor	1
7	C2124-60193	Cable Assy, Service Station	1
8	0515-2072	Screw	9
9	C2171-67801	Absorber	1
10	C2124-00009	Spring, Spittoon	1
11	C2128-40054	Spittoon	1
12	0515-2431	Screw, Carriage Motor	2
13	N/A	Mechanism Chassis	1
14	C2124-40042	Limiter, Rotation	1
15	C2124-20006	Spring, Limiter	1
16	C2128-00051	Damper, Belt	1
17	C2124-60115	Carriage Motor Assy	1
18	9170-1609	Ferrite, Chassis	1
19	C2128-40016	Lifter Shaft	1
20	C2128-40018	Separator, Lifter	1
21	C2128-40015	Lifter, Cap	2
22	C2128-00006	Spring, Separator	1
23	C2128-40019	Peg, Separator	1
24	C2128-00002	Spring, Kicker	1
25	C2128-40032	Cap, Lifter Center	1
26	C2128-20004	Spring, Lever	1
27	C2128-40017	Lever, Arm	

Fig Ref	Part Number	Description	Qty
28	C2128-00003	Spring, Helper	1
29	C2128-60022	Pressure Plate Assy	1
30	C2162-40002	Gear Cluster	1
31	C2162-60011	Paper Motor Assembly	1
32	C2121-60130	Cable Assy, Paper Motor	1
33	C2170-00002	Retainer, Shaft	1
34	C2128-40023	Clutch, Actuator	1
35	C2124-20004	Belt Spring	1
36	C2124-40016	Bracket-Belt Tension	1
37	C2128-40055	Adjuster	1
38	C2128-40020	Kicker	1
39	C2171-40001	Flex Circuit Holder	1
40	C2128-60018	Separator Assy	1
41	C2124-60160	Lower Pinch Roller	3
42	C2171-67823	Pivot Assy	1
43	C2162-20004	Pivot Return Spring	1
44	C2162-60077	Hurky Preloader and Sleeve	1
45-49	C2162-60017	Paper Guide Assy	1
50	C2124-20001	Rear Rail	1
51	C2124-80008	Encoder Strip	1
52	C2124-00001	Encoder Spring	1
53	C2171-67806	Idler Ribbed Assy	1
54	C2124-20015	Idler Shaft	1
55	C2162-40056	Belt, Carriage	1
	C2170-00007	Left Bracket	1
	C2170-00008	Right Bracket	1
	0515-2476	Screw, Bracket	2

N/A = Not Available

FOLDER
Subject: Wiper Replacement for Mercury Products
Creator: WARREN EHLKE / HP5400, LA

Dated: 01/19/94 at 18:29
Contents: 3

Part 1

TO: SOPHIE GAUDILLAT / HP-FRANCE, G22
CRSC SPECS / HP-CORVALLIS, G22

CC: ELLEN BARON / HP-CORVALLIS, G22
YVES CORJON / HP-FRANCE, G22
TAI DANG / HP5400, LA
CHUCK DAVEY / HP5400, LA
WARREN EHLKE / HP5400, LA
MICHEL MAUPOUX / HP5400, LA

Part 2

The attached service note documents and authorizes the systematic replacement of all wipers on the Mercury family printers (C2121A, C2124A, C2127A and C2128A).

Since the part cost is about $05 each and the time to install is just a few seconds, the financial impact is virtually nil.

Please contact me if you have any questions or concerns.

Best Regards,

Ken McCoy

Part 3

V C D S E R V I C E N O T I F I C A T I O N
For Centralized Repair Centers

HP C2121A DeskJet 550C	C2121A-05
HP C2124A DeskWriter 550C	C2124A-04
HP C2127A DeskJet 510	C2127A-01
HP C2128A DeskWriter 510	C2128A-01

SERIAL NUMBER: All

PROBLEM: Wiper wear

PARTS REQUIRED: C2113-40006 wiper

SITUATION: All DeskJet and DeskWriter printers experience wiper wear during use. This applies to both black and color wipers.

ACTION: Install new wipers on all repaired units. Note that the C2113-40006 wiper is used on all Mercury products.

DATE: 1-19-94