```
**********************
*                    *
*  NEC P6 PINWRITER  *
*  PRELIMINARY INFO  *
*                    *
**********************
```

SWITCH SETTINGS
The following describes switch settings and functions for the printer.

Printer Switch Settings

The Pinwriter P6/P7 and CP6/CP7 printers have three banks of switches. SW1 and SW2 are located underneath the carriage on the left side of the printer (see Figure 1-21). A clear plastic cover protects the switches. To access them, open the acrylic cover and lift the clear plastic cover.

SW3 is located at the rear of the mother board (see Figure 1-22). To access this switch, remove the top cover (refer to Section 3 for removal procedure). SW3 is for maintenance purposes, and settings should be changed by authorized service personnel only.

Factory settings and a description of switch functions are shown in Figures 1-23 through 1-25. These settings are the default settings for use with Hallmark Cards Birthday Time program.

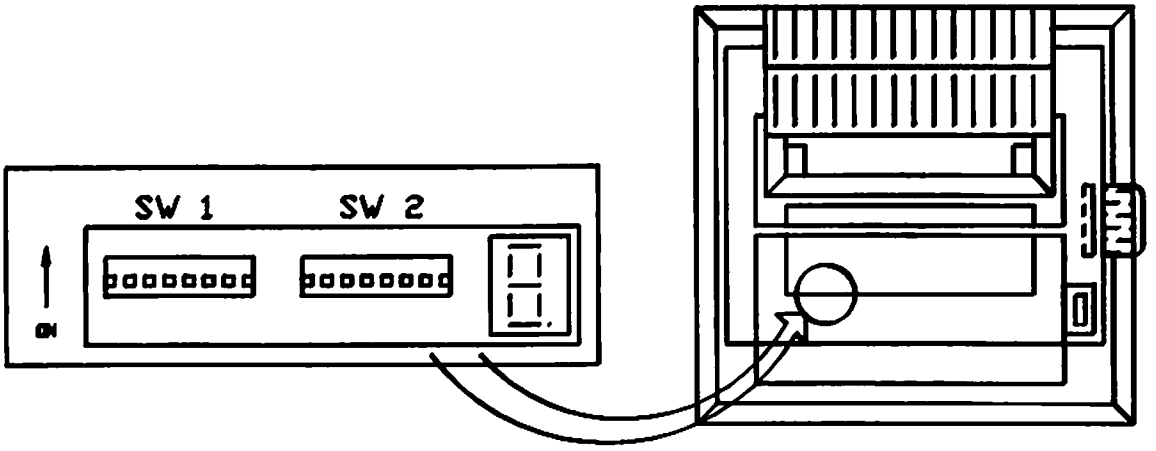



Figure 1-21 Switch Locations

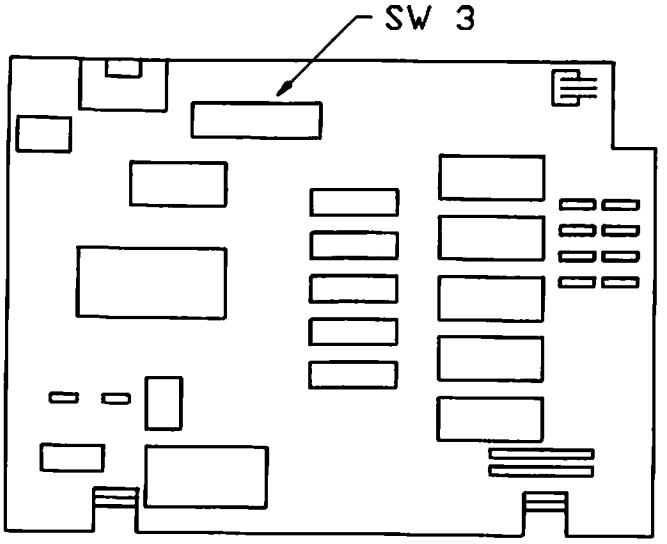



Figure 1-22 SW3 Location

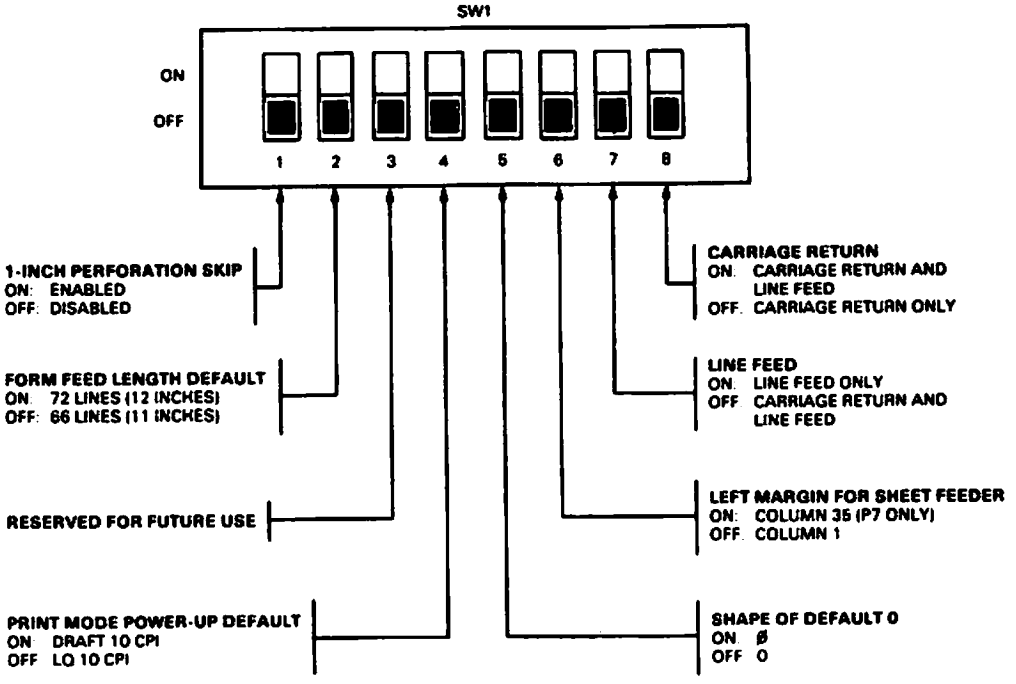
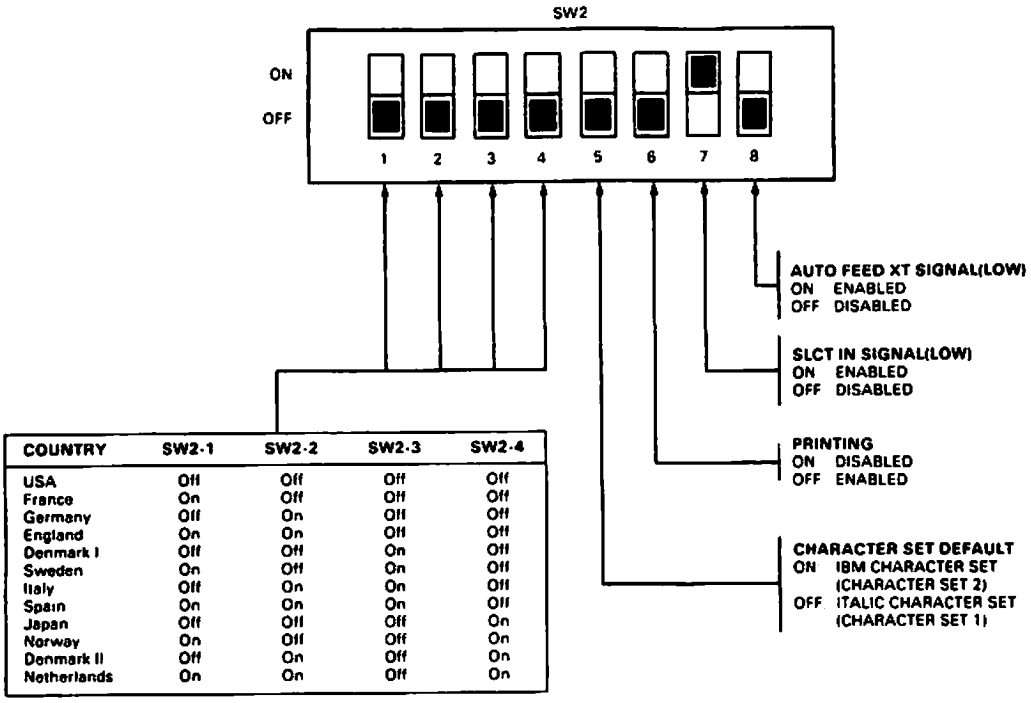



Figure 1-23 SW1 Settings




| COUNTRY | SW2-1 | SW2-2 | SW2-3 | SW2-4 |
|---|---|---|---|---|
| USA | Off | Off | Off | Off |
| France | On | Off | Off | Off |
| Germany | Off | On | Off | Off |
| England | On | On | Off | Off |
| Denmark I | Off | Off | On | Off |
| Sweden | On | Off | On | Off |
| Italy | Off | On | On | Off |
| Spain | On | On | On | Off |
| Japan | Off | Off | Off | On |
| Norway | On | Off | Off | On |
| Denmark II | Off | On | Off | On |
| Netherlands | On | On | Off | On |

Figure 1-24 SW2 Settings

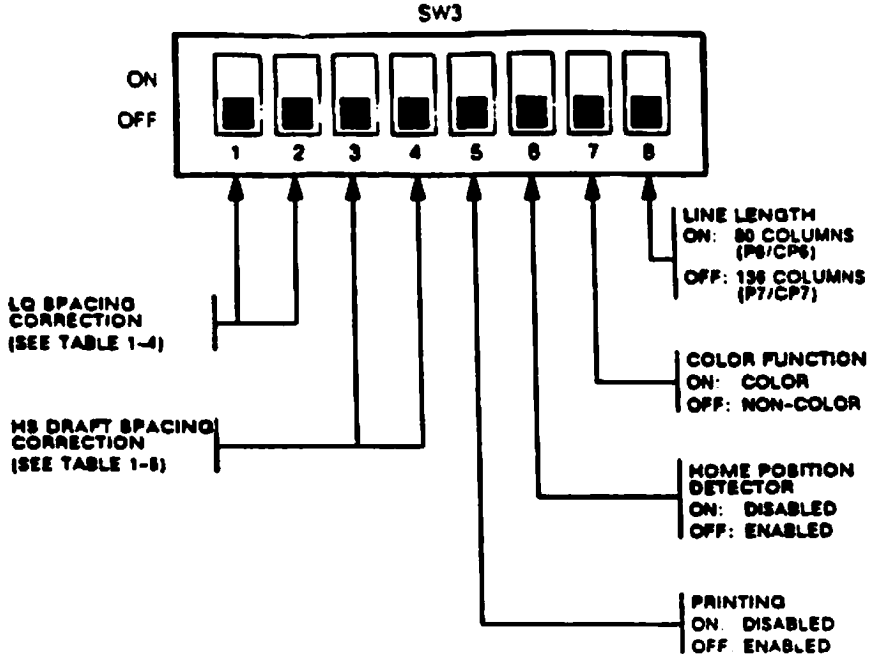



Figure 1-25 SW3 Settings

Table 1-3 provides the switch settings used to select the various language character sets.

Table 1-3 Language Character Sets

| COUNTRY | SW 2-1 | SW2-2 | SW2-3 | SW2-4 |
|---|---|---|---|---|
| USA | Off | Off | Off | Off |
| France | On | Off | Off | Off |
| Germany | Off | On | Off | Off |
| England | On | On | Off | Off |
| Denmark I | Off | Off | On | Off |
| Sweden | On | Off | On | Off |
| Italy | Off | On | On | Off |
| Spain | On | On | On | Off |
| Japan | Off | Off | Off | On |
| Norway | Off | Off | Off | On |
| Denmark II | Off | On | Off | On |
| Netherlands | On | On | Off | On |

Table 1-4 gives the letter-quality (LQ) spacing corrections as set by switches 3-1 and 3-2.

Table 1-4 LQ Spacing Corrections

| LQ SPACING CORRECTION | SW3-1 | SW3-2 |
|---|---|---|
| Standard | Off | Off |
| Delays by 1/240 in. (to the right) | Off | On |
| Advances by 1/240 in. (to the left) | On | Off |
| Advances by 2/240 in. (to the left) | On | On |

Table 1-5 shows how switches 3-3 and 3-4 are used to correct spacing in the high-speed (BS) draft mode.

Table 1-5 BS Draft Spacing Corrections

| BS DRAFT SPACING CORRECTION | SW3-3 | SW3-4 |
|---|---|---|
| Standard | Off | Off |
| Delays by 1/240 in. (to the right) | Off | On |
| Advances by 1/240 in. (to the left) | On | Off |
| Advances by 2/240 in. (to the left) | On | On |

Section 2

## GENERAL TROUBLESHOOTING PROCEDURES

The following describes the Pinwriter's error codes, self-tests, and test points. Flowcharts offer solutions to specific Pinwriter problems. Try each solution in the order listed, until the problem is solved.

### Error and Status Codes

The FONT indicator on the mother board displays error codes to help diagnose a printer malfunction. Table 2-1 gives the error codes displayed at power-on, and Table 2-2 gives the error codes displayed during printer operation. The SLCT/ALERT and QUIET lights on the control panel flash alternately when an error code is displayed.

The FONT indicator also displays status codes which help to identify and correct minor printer problems. The SLCT/ALERT light on the control panel flashes when a status code is displayed. Table 2-3 lists each status code and its corrective action.

Table 2-1 Error Codes Displayed at Power-On

| ERROR CODE | DEFINITION |
|---|---|
| 0 | Check error in parallel interface controller or print data latch. |
| 1 | Check sum error in master firmware ROM. |
| 2 | RAM check error in master MPU. |
| 3 | Switch check error. |
| 4 | Check sum error in CG ROM. |

Table 2-1 Error Codes Displayed at Power-On (cont'd)

| ERROR CODE | DEFINITION |
|---|---|
| c | Check sum error in firmware ROM or RAM check error in serial interface. |
| J | Check sum error in slave firmware ROM or RAM check error in slave MPU. |
| d | Check sum error in firmware ROM or RAM check error in Centronics buffer board. |

Table 2-2 Error Codes Displayed During Printer Operation

| ERROR CODE | DEFINITION |
|---|---|
| 9 | Master MPU stall |
| H | Home position switch sensing error |
| P | +34 V voltage check error (voltage drop). |
| S | Communication error between master and slave MPU. |
| A | Color ribbon initialization error/ribbon change error. |
| o | Control panel cable is not connected. |

Table 2-3 Status Codes

| STATUS CODE | MEANING | CORRECTIVE ACTION |
|---|---|---|
| P. | Paper empty | Load paper and press SLCT. |
| C. | Cover open. | Close the acrylic cover and press SLCT. |
| J. | Paper jam or insertion error when sheet feeder is installed. | Remove jammed paper and reload new paper. |
| b. | Serial interface buffer overflow. | Press SLCT. |
| H. | Print head is over-heated. | Printing resumes automatically when print head cools. |

Self-Tests and Loopback Test

The Pinwriter performs several self-tests to aid in identifying printer malfunctions. Table 2-4 lists the self-tests and gives a brief description of the function of each. To perform the tests, hold down the control panel button indicated in Table 2-4 and turn on the printer.

Table 2-4 Pinwriter Self-Tests

| TEST NUMBER | CONTROL PANEL BUTTON (BOLD DOWN) | FUNCTION |
|---|---|---|
| 1 | FEED | Prints a stored line to demonstrate print quality and accuracy. Also allows you to check printer line feed, spacing, and ribbon feed operations (user self-test). |
| 2 | FONT | Gives the revision level of firmware and a listing of switch settings, and prints a stored line of print styles. Also allows you to check printer line feed, spacing, and ribbon feed operations. |
| 3 | QUIET | Gives the revision level of firmware and a listing of switch settings, and enters the hex dump mode. |

Section 4

Adjustments

The adjustment procedures in this section are designed for field-level maintenance of the Pinwriter P6/P7 and CP6/CP7 printers.

REQUIRED TOOLS

- o #2 Phillips screwdriver
- o Metric feeler gauges
- o Adjustable wrench
- o Metric ruler
- o 5.5 mm nut driver
- o 2 mm Allen wrench
- o Tension gauge

CARD HOLDER ADJUSTMENT

If the print is smudged or the auto-load feature is not operating properly, the card holder may need to be adjusted. The standard gap between the card holder and the platen should be less than Ø.ØØ4 in. (Ø.1 mm) at copy control lever position 2.

1. Remove the acrylic cover, ribbon cartridge, and print head.
2. Set the copy control lever to position 2.
3. Loosen the two screws that fasten the card holder to the carriage.
4. Set the clearance between the card holder and the platen to less than Ø.ØØ4 in. (Ø.1 mm) as shown in Figure 4-1.
5. Tighten the two screws that fasten the card holder to the carriage.

6. Replace the print head, ribbon cartridge, and acrylic cover.

Perform a self-test and check the print quality. If the print is smudged or the paper does not load properly, perform the card holder adjustment again.

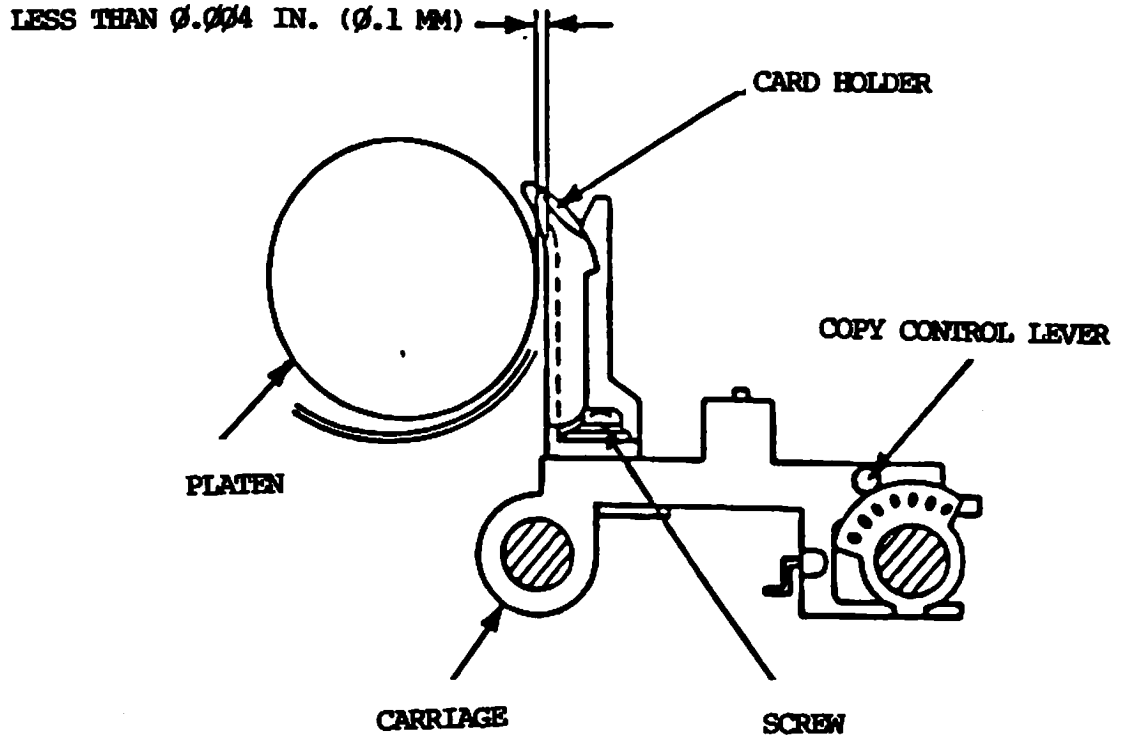



Figure 4-1 Card Holder Adjustment

PRINT HEAD GAP ADJUSTMENT

An improperly adjusted print head can result in smudging on one side of the page and not the other, especially with multipart forms. When the print head is adjusted properly, it operates at the optimum wire stroke to obtain a crisp and legible printout. Before performing the print head gap adjustment, check for a worn ribbon or print wires. If the print quality is still not clear, follow these steps to adjust the gap between the print head and platen.

1. Remove the top cover and card holder.

2. Set the copy control lever to position 3.

3. Use feeler gauges to measure the distance between the print head and platen (see Figure 4-2). The gap should measure between Ø.Ø13 and Ø.Ø15 in. (Ø.35 and Ø.4 mm) and should be the same on both ends of the platen.

4. If the gap needs to be adjusted, loosen the platen holder's three screws on either side of the frame (see Figure 4-3). Turn the eccentric bushing on the front screw. When the correct gap has been obtained, hold the bushing in position while tightening the screw. Then tighten the other two screws.

5. Replace and adjust the card holder.

6. Replace the top cover and ribbon cartridge.

Perform a self-test and check the printout for even print quality. If smudging still occurs, perform the print head gap adjustment again.

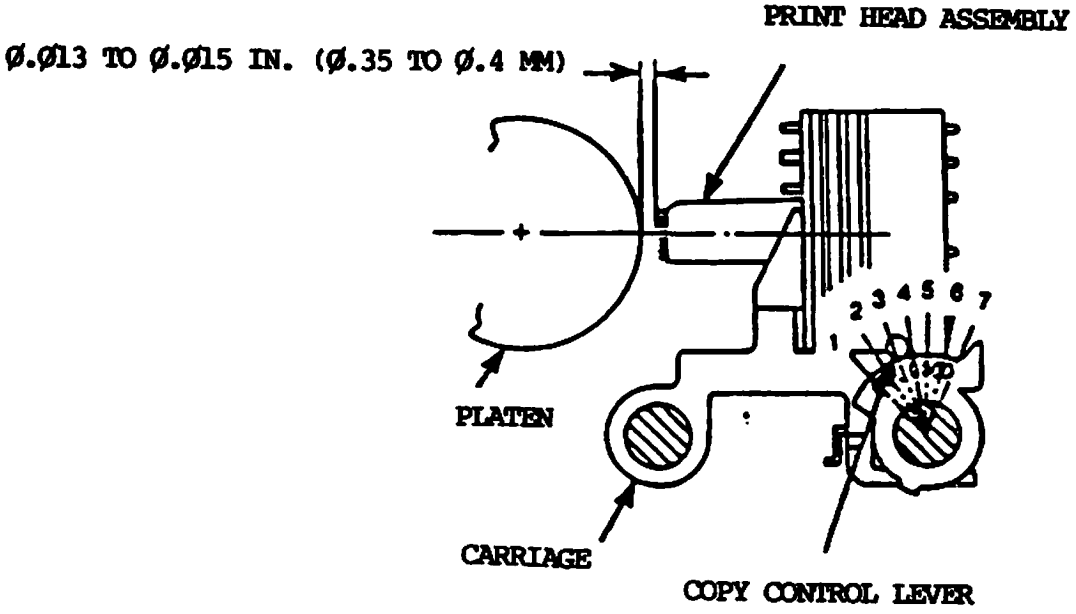



Figure 4-2 Print Head Gap

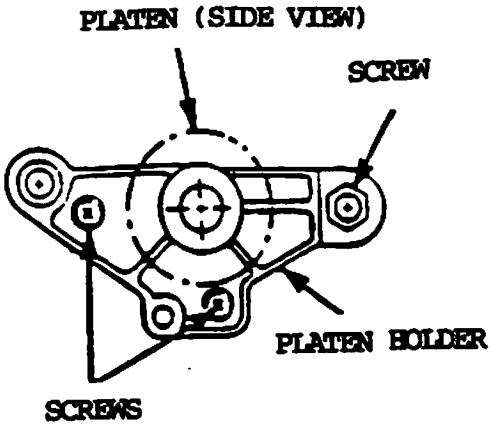



Figure 4-3 Platen Holder Screws

FIRST PRINT POSITION ADJUSTMENT

Perform this adjustment if the carriage motion interferes with the left or right printer side frame, or if the status code H appears on the FONT indicator.

1. Turn on the printer and let the print head move to its initialized position.

2. Turn off the printer and remove the top cover and print head.

3. Using a metric ruler, measure the distance from inside the left printer frame to the left flange of the carriage assembly. The distance should measure Ø.66 in. (16.8 + Ø.4 mm) for the P6 and CP6 printers, and Ø.93 in. (24 + Ø.5 mm) for the P7 and CP7 printers.

4. If you need to adjust the first print position, loosen the sensor assembly mounting screw (see Figure 4-4).

5. Move the sensor plate slightly toward the left frame to move the first print position to the right. Move the sensor plate slightly toward the right frame to move the first print position to the left.

6. Tighten the sensor assembly mounting screw.

7. Replace the print head and top cover.

Turn on the printer and let the print head move to its initialized position. If the first print position is not correct, perform the adjustment as many times as necessary.

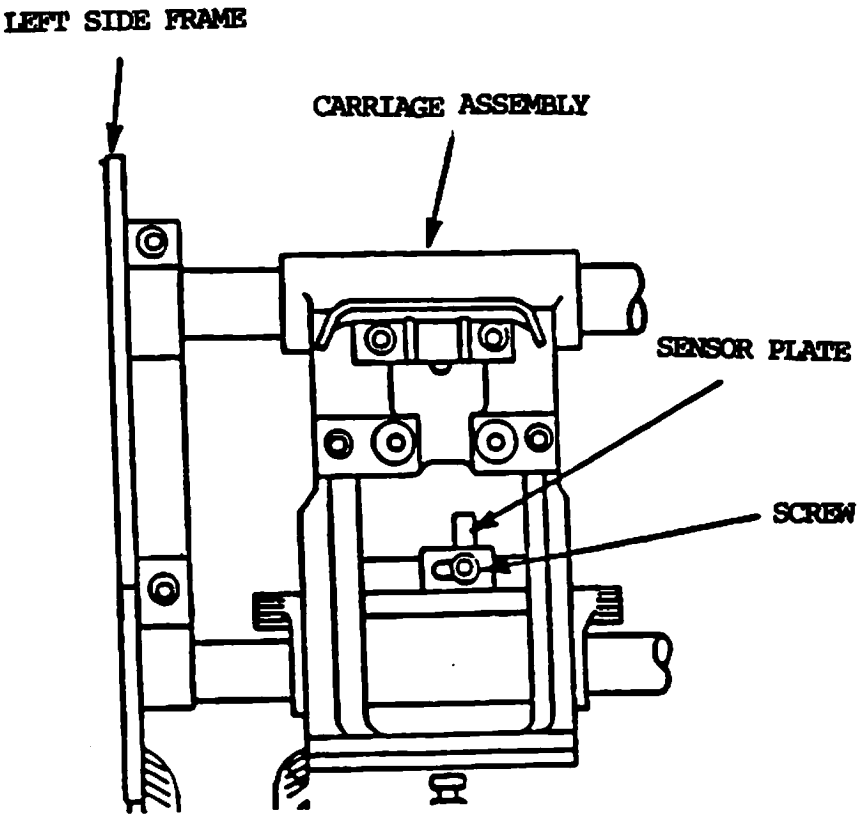



Figure 4-4 Sensor assembly Mounting Screw

LINE FEED (LP) MOTOR GEAR ADJUSTMENT

When the line feed motor gear is not adjusted properly, the following conditions can occur:

- poor line registration
- misprinting on continuous forms
- poor alignment on preprinted forms
- too much slack when positioning paper using the platen knob.

The following procedure adjusts the gear backlash to ensure that the line feed motor rotation is properly transmitted to the platen.

1. Remove the top cover.

2. Remove the screw securing the LF gear to the left printer side frame, and remove the LF gear (see Figure 4-5). Loosen the two LF motor nuts and move the LF motor to adjust the gear backlash between the LF gear and the LF motor gear. Backlash tolerance should measure between Ø.ØØ2 and Ø.ØØ4 in. (Ø.Ø5 and Ø.1 mm).

3. Replace the LF gear. To adjust this gear, loosen the LF gear screw and adjust the eccèntric bushing (see Figure 4-5). This allows for gear backlash between the idler gear and the LF gear.

4. Turn the LF gear manually to check for free movement.

5. Replace the top cover.

Load paper and check for proper paper movement between the platen knob and platen. Perform a self-test and check the line and form registration.

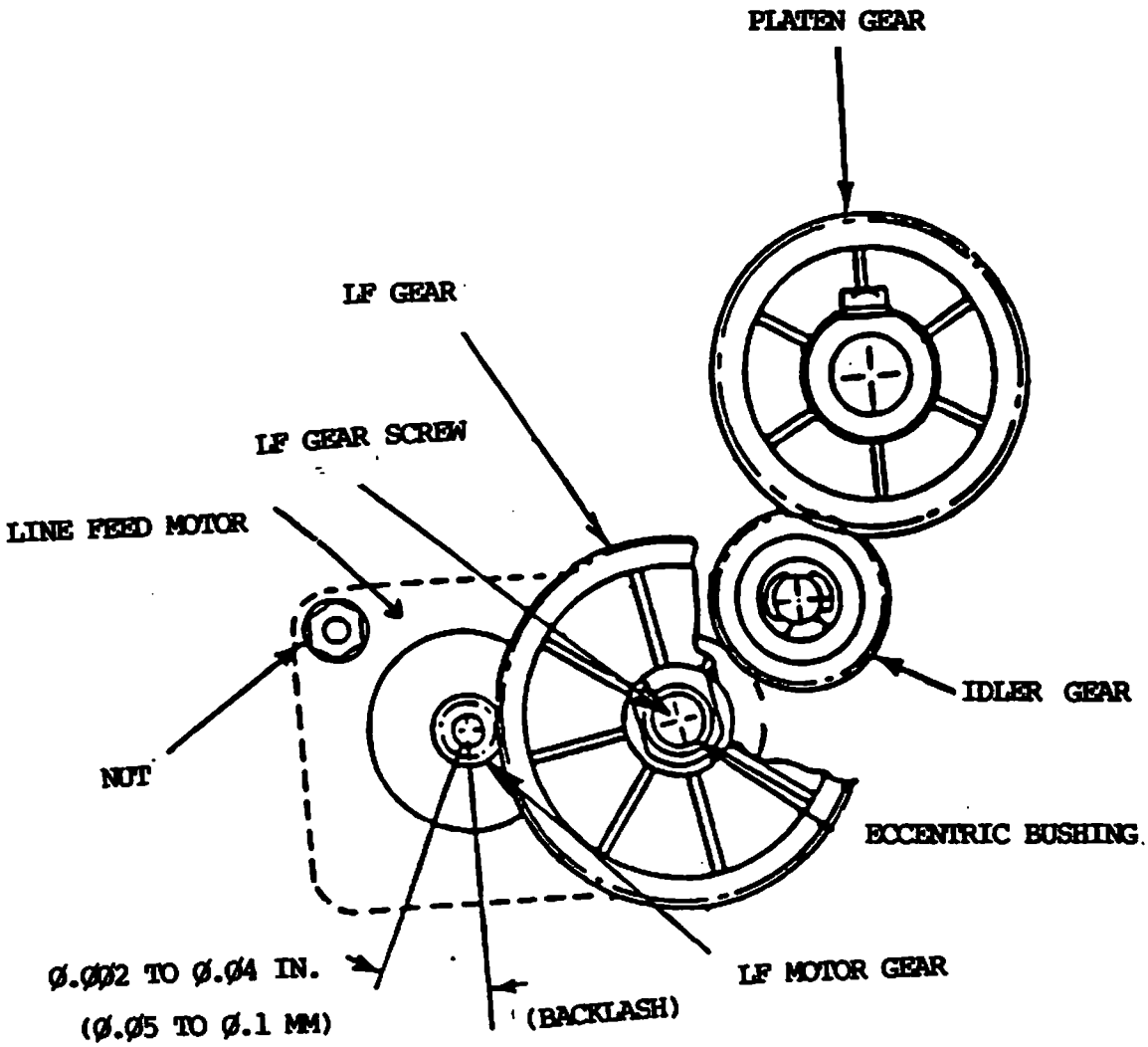



Figure 4-5 Line Feed Motor Gear Adjustment

RELEASE ARM ADJUSTMENT

The release arm is located on the right side of the printer and is used to lock the pressure rollers away from the platen. The release arm should have a standard gap of Ø.ØØ4 to Ø.Ø16 in. (Ø.1 to Ø.4 mm) between the release cam and the release arm tip.

If the gap is greater than the standard, the pressure rollers may not come in contact with the platen when the paper release lever is in the center position. This results in too little friction for paper feed. If the gap is less than the standard, the pressure rollers may be too close to the platen, causing a paper jam.

Follow this procedure to adjust the release arm gap to its correct measurement.

1. Remove the top cover.

2. Set the bail arm to the open position as shown in Figure 4-6.

3. Using a feeler gauge, measure the gap between the release cam and the release arm tip (Ø.ØØ4 to Ø.Ø16 in. - Ø.1 to Ø.4 mm).

4. Using a 2 mm Allen wrench, loosen the Allen screw on the release arm to adjust the gap.

5. Replace the top cover.

To check that the release arm is adjusted properly, insert a single sheet of paper around the platen so that the top of the sheet touches the bottom of the sheet. Move the paper release lever to the front position. When the platen knob is turned, the paper; should not move.

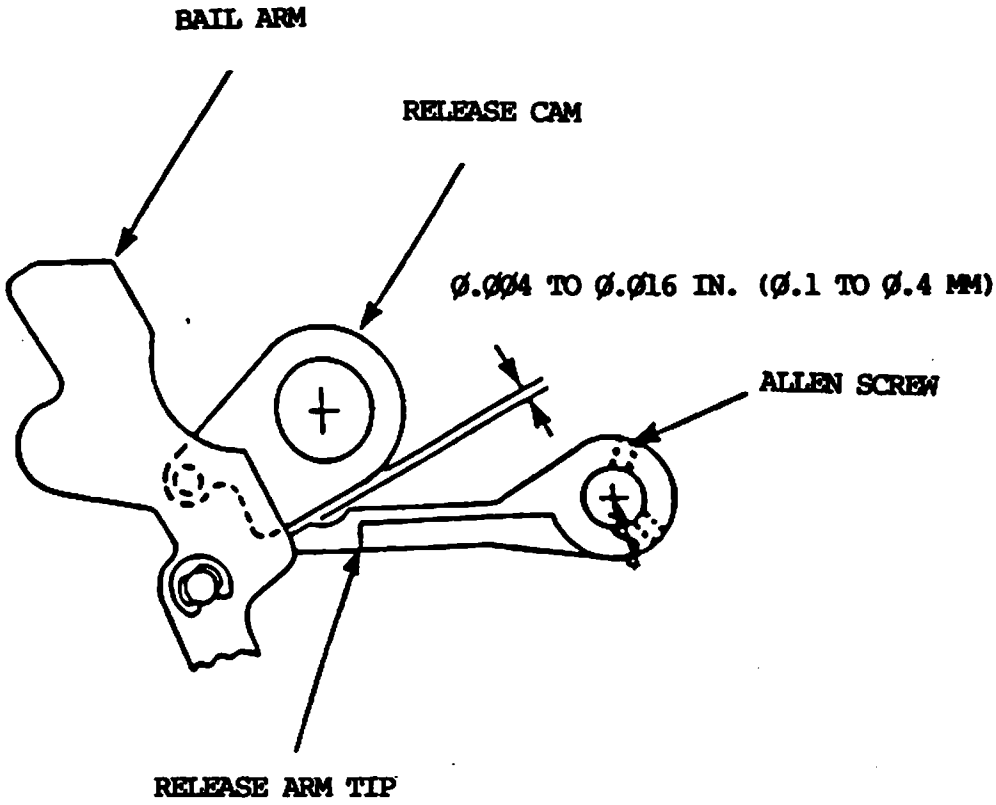



Figure 4-6 Release Arm Adjustment

SPACING BELT TENSION ADJUSTMENT

Perform the spacing belt tension adjustment to correct improper horizontal spacing.

1. Slide the print head to the left side of the carriage.

2. Using a tension gauge, pull up the center of the belt so that the lower part of the belt meets the upper part (see Figure 4-8). The standard value is 24 to 27 oz. (68Ø to 76Ø g) for the P6/CP6 and 14 to 19 oz. (4ØØ to 55Ø g) for the P7/CP7.

3. Adjust the belt tension by turning the tension bracket screw.

Perform a self-test to verify that the horizontal spacing is correct.

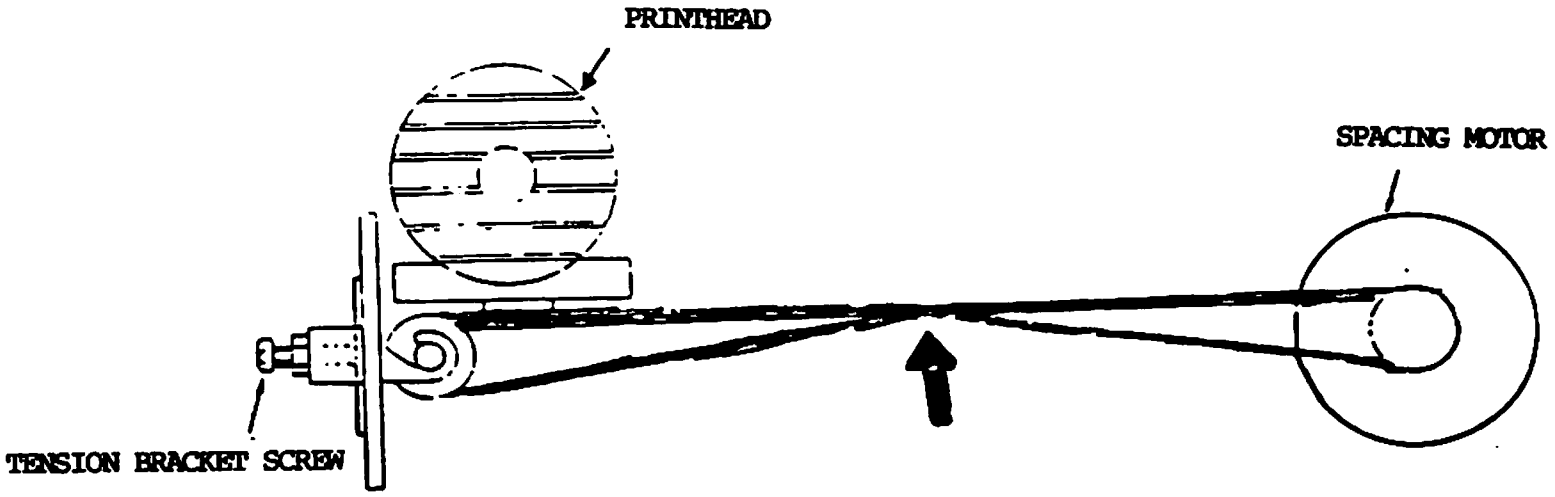



Figure 4-8 Spacing Belt Tension Adjustment

Section 6

Preventive Maintenance

Clean and check the Pinwriter P6/P7 or CP6/CP7 at least once a year. No other scheduled maintenance is required.

CLEANING

Inspect the entire printer for any pieces of foreign material, such as bits of paper, dust, or paper clips before performing the following cleaning procedure.

1. Using a soft, lint-free cloth, remove any dust from the guide shafts.

2. Clean the base frame under the carriage assembly.

3. Use a mild detergent to clean the cover. Use a hand cleaner to remove any stains.

4. Use a standard platen cleaner, if availiable, to clean the platen and bail rollers.

CAUTION

Do not use platen cleaner to clean any plastic items or surfaces. Do not use alcohol to clean the cover, the platen, or any plastic surfaces.

5. Remove any pieces of paper attached to the tract or assembly and pressure bail.

## CHECKING

Run the self-test (see section 2) to ensure that the printer is printing correctly. Then check the following items.

- Verify that the ribbon is in good condition. Replace any ribbon that is dried out or malfunctioning.
- Be sure that the paper is of high quality and is inserted properly.
- Check the copy control lever. Adjust it if necessary.
- Inspect the printer for any accumulation of foreign materials, such as bits of paper or paper clips.

## LUBRICATION

Lubricate parts only if they have been replaced or if lubricant has been removed during a repair, cleaning, or adjustment procedure. Table 6-1 lists the types of lubricants to be used. Table 6-2 gives the lubrication requirements for each point. The designation letters in Table 6-2 correspond to the letters in Figures 6-1 to 6-6. The figures show the lubrication points.

Table 6-1 Types of Lubricants

| LUBRICANT | AMOUNT | LUB CODE |
|---|---|---|
| Daphne Colonex x Grease #2 | Light brush coat | G |
| Daphne Mechanic Oil #35 | 1 to 2 drops | O |

Table 6-2 Lubrication Points

| DESIGNATION | LOCATION | LUB CODE |
|---|---|---|
| A | Contact surfaces of platen shaft and platen holders. Periphery of left and right platen holders. | G |
| B | Surfaces of detent spring that come in contact 6 with carriage frame and copy control lever. | G |
| C | Contact surface of drive shaft and pulley. | G |
| D | Guide shafts. | O |
| E | Contact surfaces of right bail arm and paper release lever. Sliding surfaces between release arm and release cam. | G |
| F | Contact surfaces of guide pulley and ribbon feed bracket. | G |
| G | Teeth of ribbon feed gear. | G |
| H | Contact surfaces of ribbon feed shaft and ribbon feed bracket. | G |

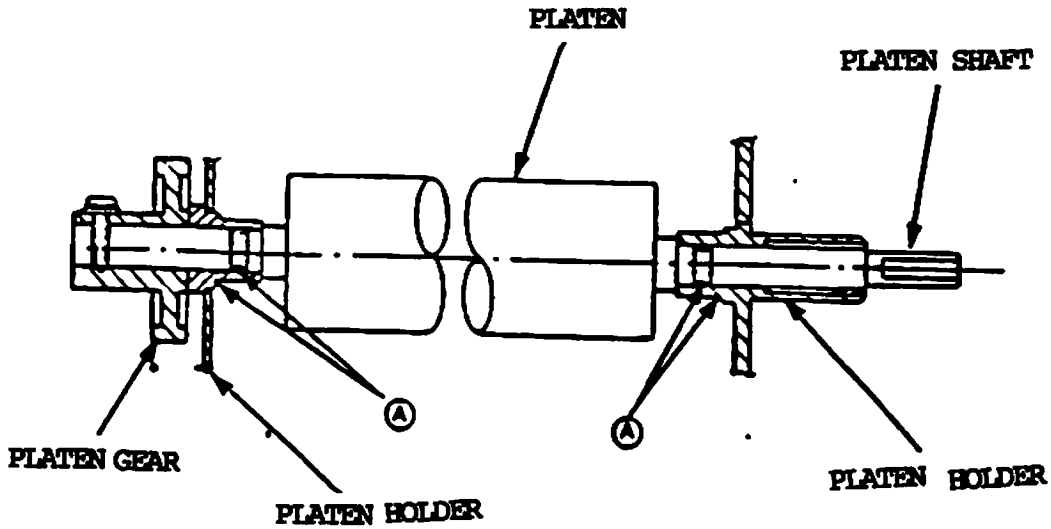



Figure 6-1 Platen Assembly Lubrication Points

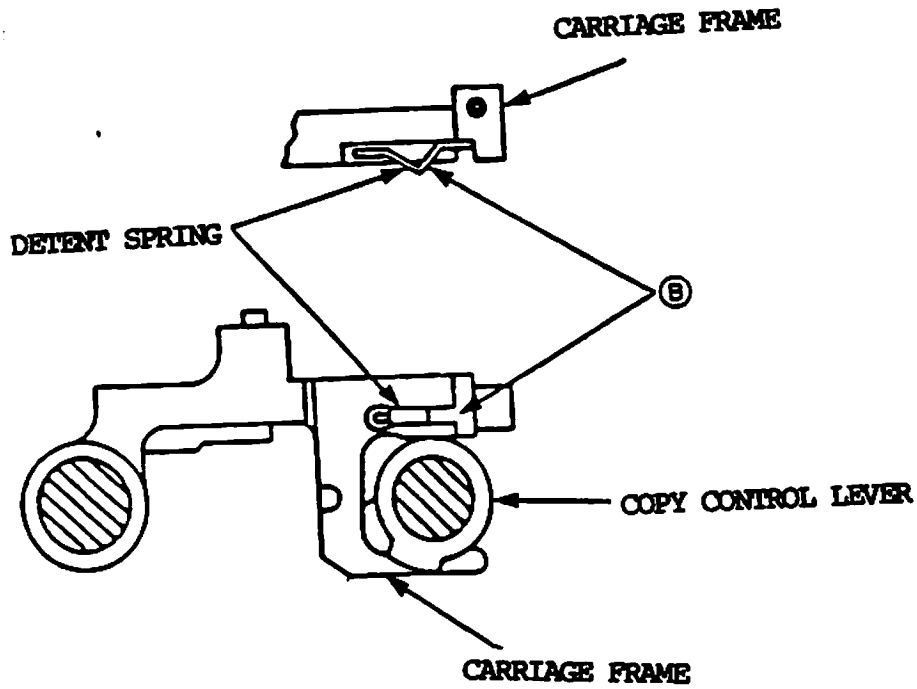



Figure 6-2 Carriage Assembly Lubrication Points

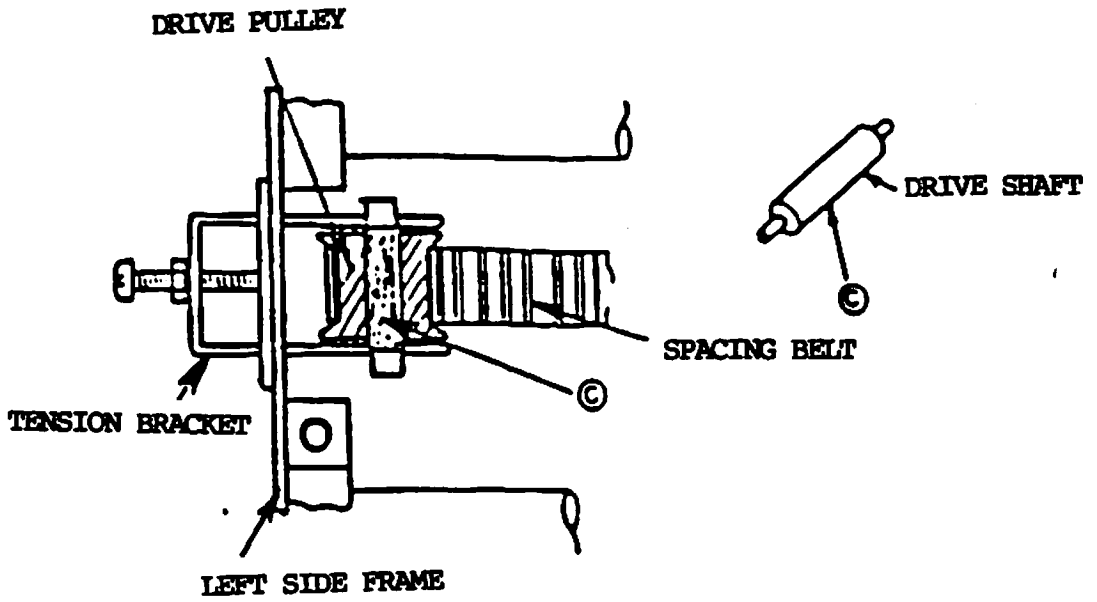



Figure 6-3 Drive Pulley Lubrication Points

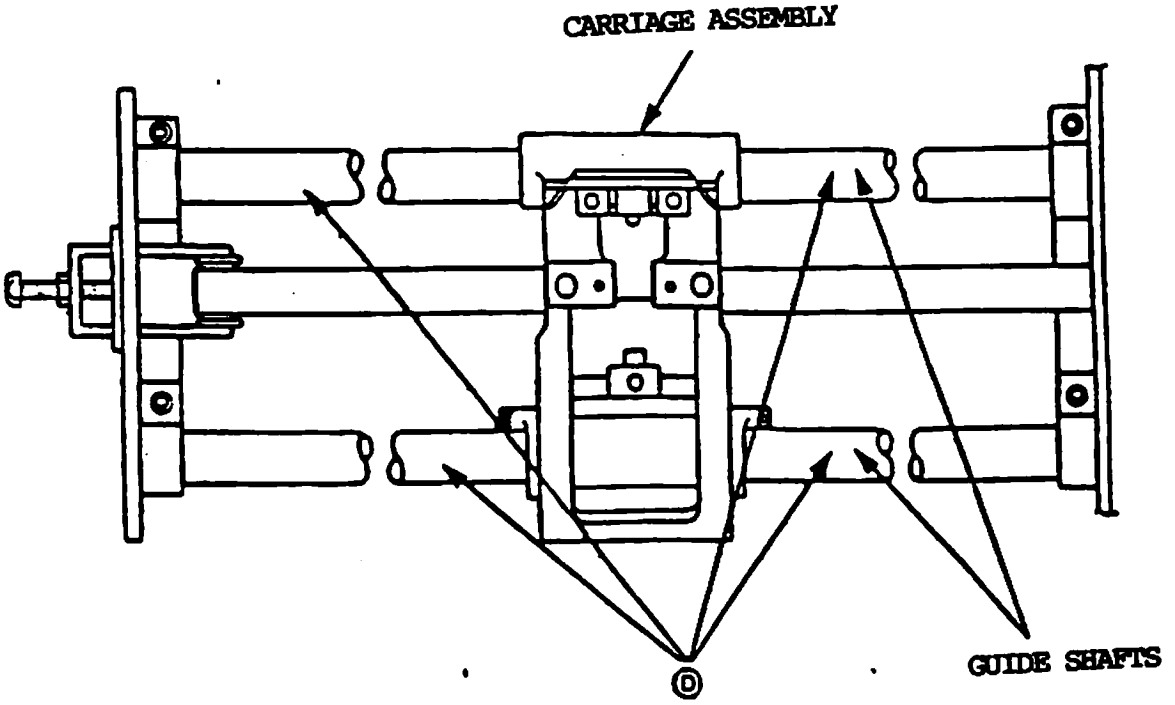



Figure 6-4 Guide Shaft Lubrication Points

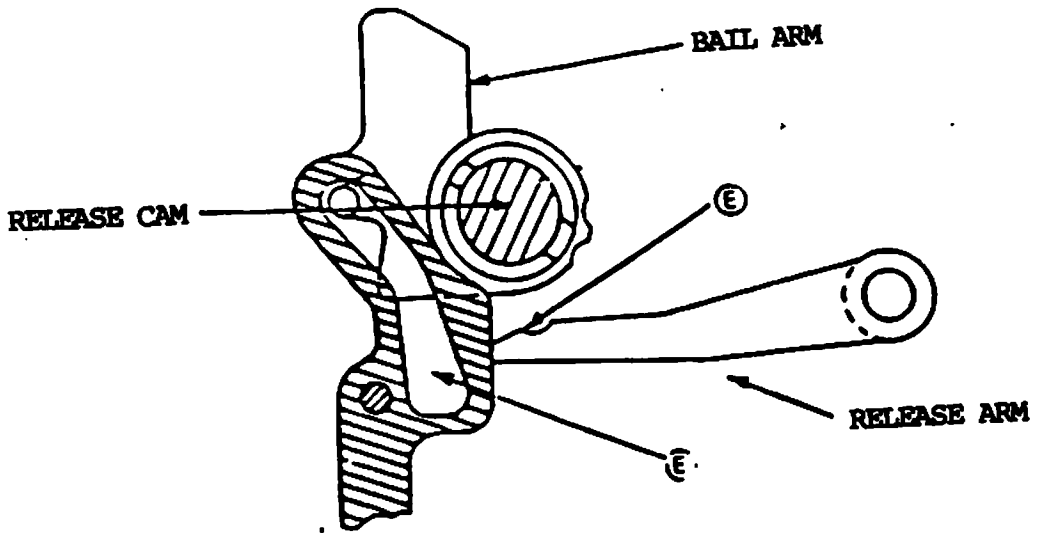



Figure 6-5 Right Arm Lubrication Points

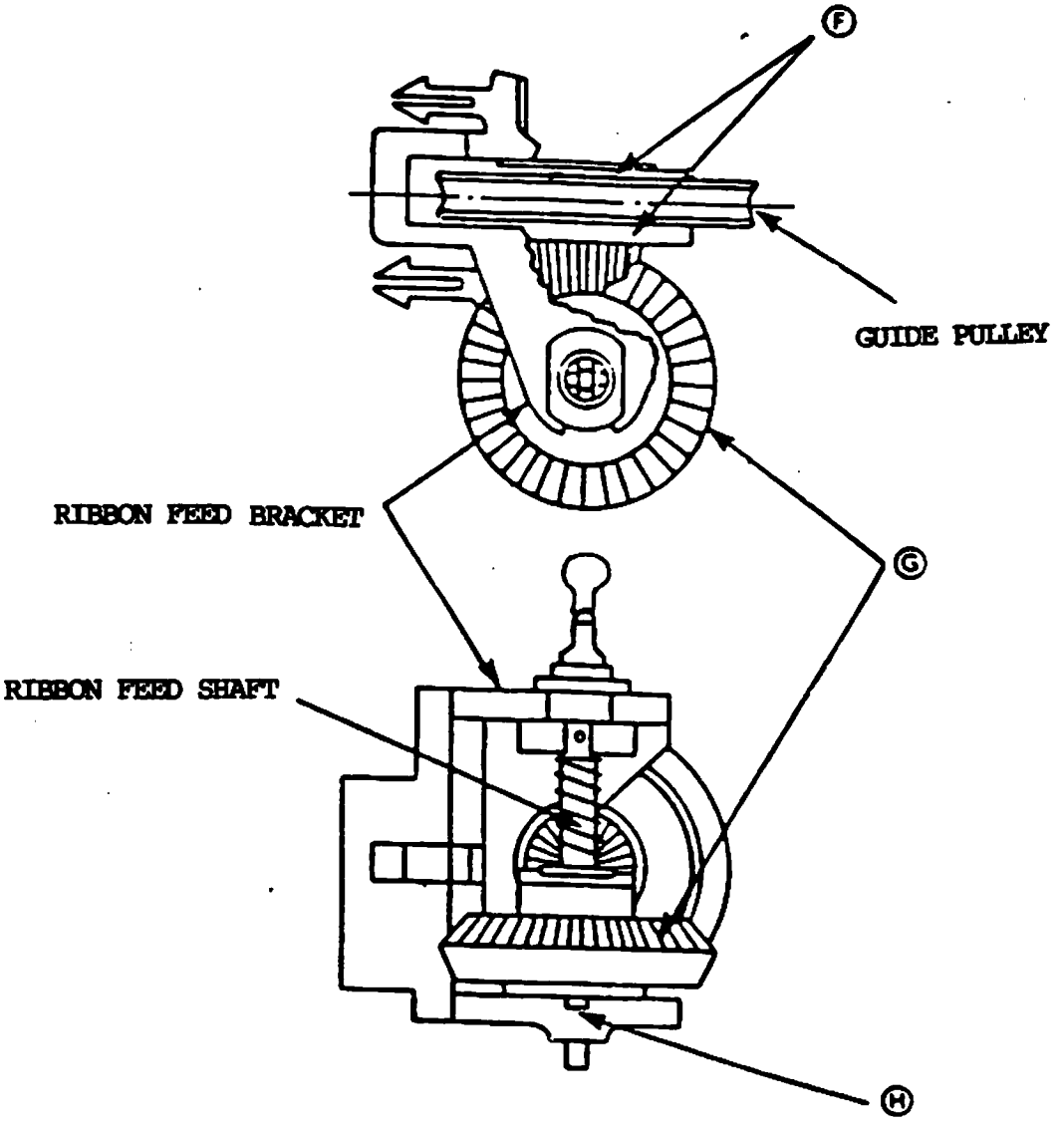



Figure 6-6 Ribbon Feed Assembly Lubrication Points