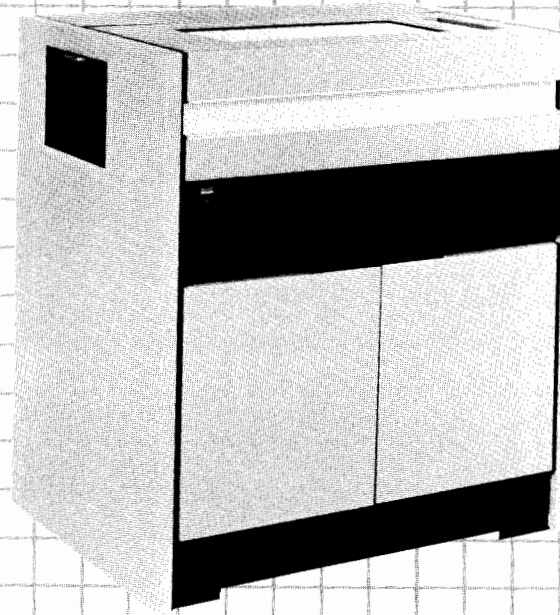
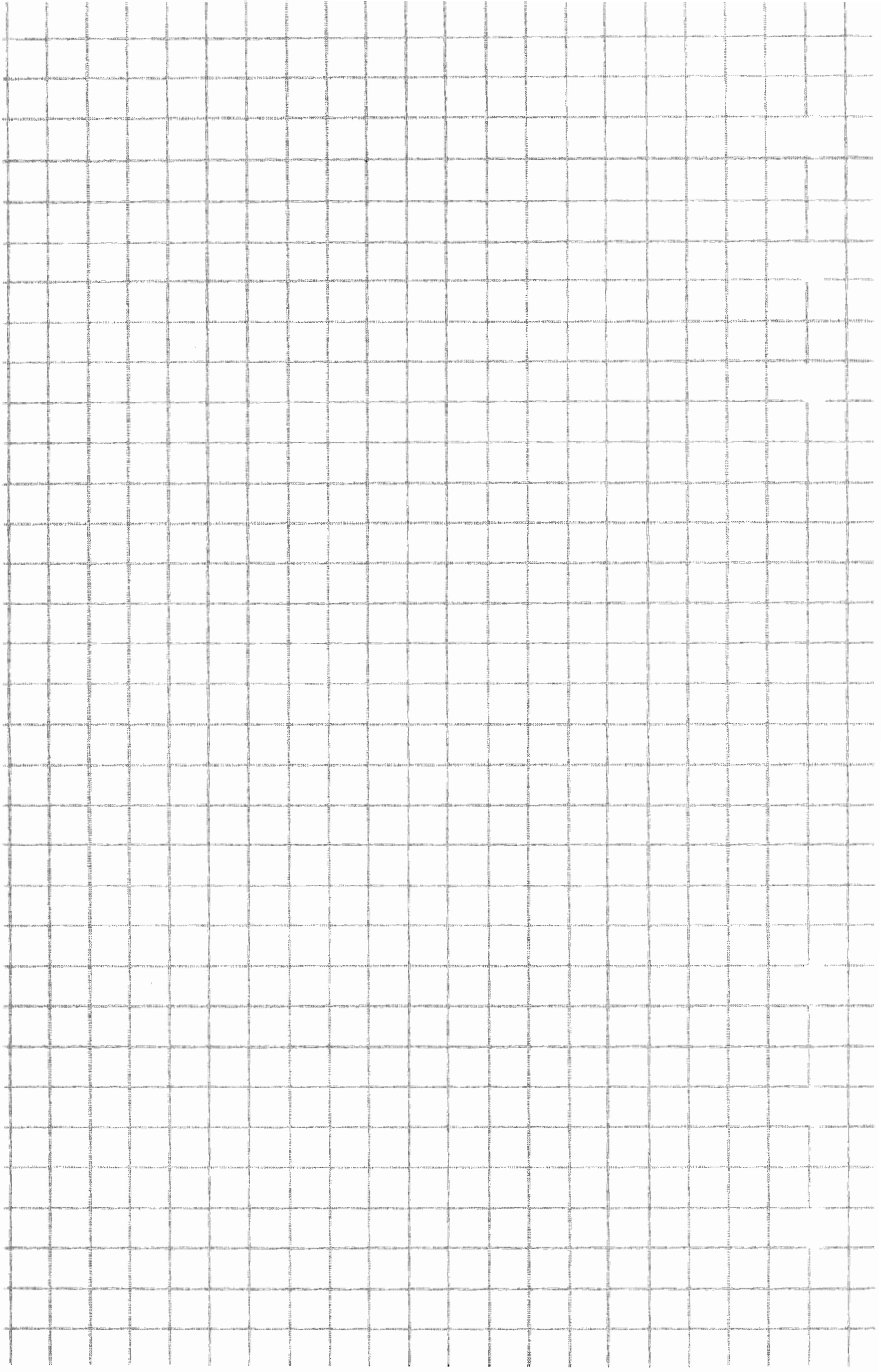


HP 2611A HP 2619A



P/N 02619-90916

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PRODUCT INFORMATION

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1.1 Features

Forms Handling

- Dual forms advance tractors
- Paper puller
- Single to six-part forms
- 12 Channel VFU

Forms Alignment

- Infinite vertical adjustment
- Power driven tractor adjustment
- Forms thickness adjustment
- Print one line capability

Long Line Interface

- Up to 500 ft. from host computer

Printer Description

The HP 2611A and HP 2619A provide an excellent combination of performance, print reliability and forms handling capability for commercial computer output applications. Utilizing a 132 column, horizontal font (chain-type) print technology for high quality print, the HP 2611A prints 600 LPM using the 64 character ASCII set or 430 LPM using the 96 character ASCII set. The HP 2619A prints 1000 LPM using the 64 character ASCII set or 750 LPM using the 96 character ASCII set. Throughput is further enhanced by the 40 inch per second paper slew speed.

The printers can handle single or multi-part forms (up to 6 parts) of widths from 3.5 inches to 19.5 inches and lengths from 0.5 inches to 18 inches. Two sets of 8-pin tractors engage the paper above and below the print area to control tension and ensure proper feeding. Both pairs of tractors may be simultaneously moved right or left with a single operator switch for proper horizontal registration. A built in column indicator aids in the adjustment. Infinite vertical positioning can be accomplished via a paper engage clutch.

A print one line switch allows one line at a time to be printed, to precisely align forms easily and quickly. Forms thickness adjustment enables the operator to achieve high print quality on a wide variety of forms. Special forms control may be programmed easily using the paper tape 12-channel VFU and operator selectable 6 or 8 lines per inch control. A special heavy duty character set comes standard to prolong the chain life and preserve the high print quality.

Built-in sensors detect an impending paper-out condition and allow the present page to complete printing prior to indicating paper-out. Paper jam detection will stop paper motion within two line advances. A paper puller prevents paper from jamming above the second tractor and aids in proper stacking on the paper receptacle shelf. The printers also have an active ribbon tracking and de-skewing mechanism to prolong ribbon life.

For maintenance, the printers have a built-in self-test capability with fault indicator lights. The special long-line interface to HP computers allows the printers to be located up to 500 feet from the computer.

1.2 Specifications

Regulatory Compliance

The printers are listed by Underwriters Laboratories, Inc. in the following category with respective guide designation: Electronic Data Processing Equipment (EMRT). In addition, the printers are certified by CSA for EDP equipment and comply with IEC 380 and IEC 435. The printers comply with the limits for a class A computing device pursuant to subpart J of part 15 of FCC Rules.

Print Capacity

Print Speed: (2611A)	600 LPM (64 character set) 430 LPM (96 character set)
Print Speed: (2619A)	1000 LPM (64 character set) 750 LPM (96 character set)
Line Length:	132 columns
Line Feed Rate:	15 milliseconds
Form Feed Rate:	40 inches per second
Type Style:	Gothic

Vertical Format Control

12 channel, paper tape: channel 1-12, forms control; channel 9, 12, position read back.

Paper Specifications

Standard fan fold edge punched 15 lb. bond minimum (per single part).

NOTE

This printer uses gravity stacking and may not stack paper under all conditions. Mis-stacking may occur more often with lighter weight paper.

Paper Width: 3.5" to 19.5" (88.9 to 495mm)

Paper Length: 0.5" to 18" (12.7 to 457.2mm)

For forms less than 2" in length the printer will indicate paper out prior to printing the last form.

1 to 6 part forms (.020" maximum thickness .508 mm).

Multi-part forms and stock should be tested for satisfactory feeding, registration and print quality.

Electrical Specifications (HP 2611A)

Input voltages: 100V, 115V, 230V (+/-10%); 50/60 HZ (+/-1HZ)

Power consumption at 115 VAC:

-Non Printing 24 VA (stand-by), 423 VA (ready)

-Printing 800 VA (average), 989 VA (maximum)

Surge Power Requirements:

-Power On 1.6K VA for .355 sec.

-Chain Turn On 1.96K VA for 2 sec.

Recommended Service: 1.73K VA (15 amp)

Electrical Specifications (HP 2619A)

Power Consumption at 115 VAC:

-Non Printing 24 VA (standby), 580 VA (ready)

-Printing 1.15K VA (average), 1.50K VA (maximum)

Surge Power Requirements:

-Power On 3.45K VA for 0.2 sec.

-Vacuum/Chain Turn On 1.96K VA for 2 sec.

Recommended Service: 2.3K VA (20 amp)

-Breaker References: Square-D Part # QO120HM

Heineman Part # C01-G3-020-120/240/1

GE Part # THQL1120HM

Physical Specifications

Width: 36.5" (927.1 mm)

Depth: 26.0" (660.4 mm)

Height: 42.75" (1085.9 mm)

Weight: HP 2611A = 528 lb. (239.5 kg). HP 2619A = 570 lb. (258.5 kg)

Environmental Specifications

Temperature:

Operating 40 to 95 degrees F (4.4 to 35 degrees C)

Non-Operating 5% to 95% RH (Non-condensing)

Noise (printing):

HP 2611A = 72 dbA front; 75 dbA rear.

HP 2619A = 75 dbA front; 78 dbA rear.

1.3 Ordering Information

Standard Printers


HP 2611A:

600 LPM, 132 col. horizontal font printer with 12 channel VFU, paper puller, ribbon de-skew, paper out/jam detection, dual sets of power adjustable forms advance tractors, and self-test.

HP 2619A:

1000 LPM, 132 col. horizontal font printer with 12 channel VFU, paper puller, ribbon de-skew, paper out/jam detection, dual sets of power adjustable forms advance tractors, and self-test.

Options

001	96 character Gothic	
002	64 character OCR-B (ECMA - 11 Stds)	
003	96 character OCR-B (ECMA - 11 Stds)	
015	230 VAC / 50 Hz	
016	100 VAC / 50 Hz	
017	230 VAC / 60 Hz	
100	HP 1000 subsystem includes interface and cable(25'/7.62m).	
300	HP 3000 III subsystem includes cable(50'/15.24m).	
301	HP 3000/30 subsystem includes I/F and cable set(49.2'/15m).	
302	HP 3000/33 subsystem includes I/F and cable set(49.2'/15m).	
340	HP 3000/40 subsystem includes I/F and cable set(49.2'/15m).	
344	HP 3000/44 subsystem includes I/F and cable set(49.2'/15m).	
344	HP 3000/48 subsystem includes I/F and cable set(49.2'/15m).	
344	HP 3000/58 subsystem includes I/F and cable set(49.2'/15m).	
364	HP 3000/64 subsystem includes I/F and cable set(49.2'/15m).	
364	HP 3000/68 subsystem includes I/F and cable set(49.2'/15m).	
364	HP 3000/70 subsystem includes I/F and cable set(49.2'/15m).	

Accessories Supplied

02619-90905	Operator's and Service Manual
02619-80001	VFU Tape (6 lpi)
02619-80003	VFU Tape (8 lpi)
92230A	Ribbon (18 yards; 4 mil.) 2 each 250 sheets of paper

Accessories Available

92230A	Nylon Ribbon (18 yards; 4 mil.)
1535-3914	Nylon Ribbon (15 yards; 5 mil.; 13.716m; .127 mm)
9320-1515	Paper stock, single part 14.87"x11"(337.7mmx279.4mm)
1535-3958	Oil (chain)
9164-0023	VFU punch
4114-0371	VFU tapes unpunched (25 each)
0470-0391	VFU adhesive
9300-0750	Vacuum Bags (3 each) (for HP 2619A only)

1.4 Product Support

Listed on CPL as obsolete: 1/31/86
Projected end of support life: 1/31/91

1.5 VFU Tapes

Equipment Needed

- Box of 25 unpunched 12-channel VFU format tapes (P/N 4114-0371)
- Manual VFU tape punch for 12-channel tapes (P/N 9164-0023)
- Glue, 3 fl. oz. (P/N 0470-0391)

VFU Format Tape Requirements

- Each sprocket hole on the tape corresponds to a line on the form, whether or not that line will be printed (i.e., a form that is 11 inches long and printed at 6 lines per inch must have exactly 66 sprocket holes).
- The maximum number of lines for a single form (and tape sprocket holes) is 144. This limits the page or form size to 24 inches at 6 lines per inch and 18 inches at 8 lines per inch.
- The minimum number of tape sprocket holes is 66. A tape loop smaller than this will not fit the tape reader. For forms of less than 66, 2 or more **identical** forms must be specified on the tape so that the tape length is between 66 and 144 sprocket holes.
- Channel 1 on the tape must be used to specify top of form. This channel is used to signal the tape reader when a complete form has been read.
- Channel 2 is reserved for bottom of form. Channel 2 must be punched for the printer to run out of paper properly.
- The remainder of the channels can be punched as required for control of forms. It is recommended that all channels be punched to avoid getting a VFU error in the case when the wrong channel is selected programmatically.

VFU Format Tape Preparation

Twelve channel VFU format tape is preprinted with guidelines to assist layout, manual punching, and splicing. The tape has 12 columns, called channels, indicated by numbered vertical lines.

NOTE

ALL TAPES SHOULD BE PUNCHED AT 6 HOLES PER INCH TO AVOID VFU READING ERRORS.

The solid horizontal line through the fourth feed hole from the top of the tape represents the top end of the form (not top of form). The consecutively numbered horizontal lines and feed holes are spaced six to the inch.

1. Start at the horizontal solid line, measure off the form length on the tape and draw another solid line through the feed hole at that point. The second solid line represents the bottom edge of the form (not bottom of form).
2. Mark the tape in pencil at each point where a hole is to be punched. Channel 1 is reserved for top of form and channel 2 is reserved for bottom of form.
3. Punch the tape as indicated by pencil mark.
4. Any holes punched in the last four horizontal positions on the tape should be duplicated in the overlap splice area.
5. After the tape is punched, cut, loop, and glue the ends. Be sure that the end of the tape is aligned with the horizontal solid line indicating the top edge of the form.
6. Load the tape into the VFU Reader so that channel 1 is inboard to the printer and the switch is set for 6 LPI.

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PREVENTIVE MAINTENANCE

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2.1 Procedure 1: Operator Duties

Printer Usage	Perform Maintenance
One 8 hour shift	Once per 8 hour shift
Two 8 hour shifts	Once per 8 hour shift
Three 8 hour shifts	Once per 8 hour shift

Materials Needed:

- 1 inch paint brush (stiff bristle nylon)
- Typewriter brush or 2" x 3" x 1" rectangle of spongy foam packaging material

Vacuum paper dust

1. Use a 1 inch paint brush to loosen paper dust and remove it with the built in vacuum cleaner.
2. Remove any dust from all visible surfaces including the hammer bank platen.
3. Remove paper dust from the face and sides of the four tractor assemblies.

Clean the chaintrain

During printing, small particles of paper and ink accumulate in the open spaces of the typefaces and along the chaintrain guides which could cause it to bind up if not removed.

1. Flip the main circuit breaker, located at the left rear of the printer, to OFF (down).
2. Fully open the yoke and remove the ribbon.
3. *Open the paper bay panel doors, disconnect the hose from the vacuum canister at the left side and attach the clean-up hose provided in the compartment below the canister. Instructions are printed on the vacuum cleaner.
4. *Flip the fan toggle switch at the right side of the paper bay to ON, and flip the main circuit breaker ON (up).
5. *Press the top panel "ON" button and vacuum the entire printer chaintrain mechanism area.

* HP 2619A, internal vacuum system only

NOTE

Cleaning of the typefaces will be at the discretion of the operator. Clear, legible print requires that typefaces be cleaned at periodic intervals.

6. Construct a trough of forms paper and place it between the open yoke and the paper feed mechanism to catch falling debris.
7. Using the nylon brush or foam material and with the vacuum gently brush the typefaces to clean, using the vacuum hose to remove dirt. Rotate the chaintrain by hand until all typefaces have been cleaned.

CAUTION

DO NOT USE SOLVENT. IT WILL DESTROY THE BELTS.

8. Rotate the chaintrain one full revolution to ensure the cleaning process didn't cause binding.
9. Remove the paper trough.
10. Reverse the procedure in step 4 and step 3.
11. Install the paper and ribbon and close and latch the yoke.

General

- Check the chaintrain oil bottle. If the bottle is less than 1/3 full, call the Customer Engineer for service.
- When loading VFU tapes, ensure that the switch is set to 6 LPI. After loading VFU tape, select 6 LPI or 8 LPI.
- *Each 80 hour interval per the installed time clock, replace the vacuum cleaning bag. Although the bag does not appear dirty, the oil vapor from the chaintrain oil will plug up the pores and cause a loss of vacuum to the chaintrain.
- *Ensure the plenum hose is attached before running the printer.

* HP 2619A, internal vacuum system only

2.2 Procedure 2: Customer Engineer Duties

Monthly Printer Usage	Perform Maintenance
00 - 66 Hours	12 Weeks/3 Months
66 - 99 Hours	8 Weeks/2 Months
100 - 132 Hours	6 Weeks/1.5 Months
133 - 165 Hours	4 Weeks/1 Month
over 165 Hours	Time and Materials

NOTE

Use a diagnostic or operating system to verify the printer is operational before performing the Preventive Maintenance.

Before proceeding, perform Preventive Maintenance Procedure 1.

Chaintrain Preventive Maintenance

1. Remove the covers and sheet metal around the chaintrain area.
2. Verify that all the typefaces are clean and inspect them for wear.
3. Remove the plenum housing on the left side of the chaintrain.
Hint: Remove the two screws attaching the plenum "L" left gate frame plate. It will be easier to adjust the plenum when reinstalling it.
4. Using a stiff nylon brush and vacuum cleaner, remove impacted debris on ends and guide faces of the slugs.

NOTE

If guide cleaner 46219-DPM is used, skip steps 5 and 7.

5. Remove the chaintrain slug guides and clean the inside faces with a clean lint free wipe.

CAUTION

KEEP EACH OF THE GUIDES IN THE SAME POSITION FOR REPLACEMENT. EACH GUIDE WEARS IN FOR THE POSITION IT OCCUPIES ON THE RAIL ASSEMBLY.

6. Visually inspect the belts for rips and tears. Inspect closely the area behind the slug. If either belt is damaged, replace both belts.
7. Replace each chaintrain guide in its original location. Rotate the chain by hand and check for binding as each guide is replaced.
8. Replace the plenum housing. Ensure the housing does not rub on the belts as the impression control is rotated from limit to limit.
9. Remove one slug from the belts and visually check the condition of the oil wick. The wick must lightly touch the rail contact face of the slug. Perform the adjustment as needed. Replace the slug.
10. Fill the bottle. Ensure the wick is fully immersed to the bottom of the oil bottle. A lack of oil will cause a chain crash.
11. Inspect the chaintrain drive belt for wear and tension. Replace or adjust to the specification of 1/4 inch deflection at 3 lbs. +/- 1/4 lb.
12. Check the ribbon drive slip clutch for a reading of 17 +/- 1 oz/in. Adjust it if it is out of specification.
13. Verify the signal amplitudes of index strobe and the character strobe (refer to the adjustment procedures in Section 6).
14. Wipe up any excess oil with a lint free wipe.
15. Replace all covers and sheet metal.

Hammer Bank Area

1. Remove the hammer bank platen, paper motion roller assembly, upper and lower dust covers, and hammer bank. Place the hammer bank assembly on a clean, smooth surface with the hammers facing UP.
2. Vacuum any accumulated debris from the exposed area.
3. Check the hammer actuator arms for centering in the slots of the aligner comb. Misaligned actuators will usually have rust stains on the aligner comb. When aligning the arms, do not damage the pivot pin bushing in the arm.
4. Inspect the 8-Up hammer modules for damage. Replace them if they are damaged.
5. Verify that the hammer bank locator pin is secure and reinstall the hammer bank assembly.
6. Remove the paper motion disc cover and vacuum out any debris. Replace the drive belt "O" ring. If the disc is bent or damaged, replace it. Verify the sensor signal amplitude at the backplane.
7. Install the paper motion disc dust cover, upper and lower dust covers and hammer bank platen.
8. Inspect the paper motion roller assembly for defects. Replace it if it is damaged. Reinstall the paper motion roller assembly.

Paper Guide Verification

1. Verify a clearance of 0.008"-0.012" between the typeface "E" and the straight edge laid across upper and lower paper guides.
2. Verify a 0.010" minimum clearance for the ribbon between the paper guide and the slug guides.

Paper Tractors (4)

1. If necessary, remove any excess slack from the belt(s).
2. Verify the vertical and horizontal alignment of the tractor pins.

CAUTION

DO NOT ATTEMPT TO CLOSE THE TRACTOR GATES ON THE ALIGNMENT GAUGE. THE THICKNESS OF THE GAUGE EXCEEDS THE DIMENSION OF THE GATE.

3. Place two drops of light oil on the upper (spline shaft) bearing. Place the oil between Item 9 and Item 10 of Figure 36 or 37 in the HP 2619A Parts List to relubricate.
4. Verify the tractor hold-down gap is 0.030" at its tightest point. Adjust it if necessary.

Paper Low Switch and Throat Gap

1. Check the spacing between the inner and outer paper guides, including the sensing finger positions. Adjust to .030"-.045" depending on the customer's forms.
2. Extend the I/O PCA and connect an ohmmeter between 5-B22 (Paper Low) and 5-A51 (RTN). Press and release the pivot bar several times to ensure proper operation. Adjust it if necessary.

Left Side, Paper Drive and Forms Clutch Area

1. Vacuum out all debris.
2. Inspect all strobe discs for damage. Replace them if bent or damaged.
3. Remove any impacted debris from cog drive belts and cog pulleys.



CAUTION

DO NOT ATTEMPT TO CLOSE THE TRACTOR GATES ON THE ALIGNMENT GAUGE. THE THICKNESS OF THE GAUGE EXCEEDS THE DIMENSION OF THE GATE.

4. Remove the forms clutch assembly and lubricate the two clutch cone faces with a light coating of grease (See Parts Lists, Fig. 34, Item 3). Inspect the locking lever for wear and lubricate (Item 2).
5. Reassemble the forms clutch and verify it takes 5-9 lbs of pull to open the clutch. Add or remove shims (Fig 34, Item 14) to adjust the clutch.
6. With Forms lock lever open, verify that the paperfeed drive belt tension is a 1/8-inch deflection when 6 to 6-1/2 lbs are applied.

Paper Puller Assembly

1. Loosen the top cover.
2. Remove the covers and sheet metal to expose the paper puller drive assembly.
3. Vacuum out any debris.
4. Check the shaft bearings for wear.
5. Reinstall the covers and sheet metal.
6. Inspect the paper puller drive belt for wear or checking. Replace it if necessary.
7. Verify the paper puller drive belt grooves are parallel.
8. Reinstall the top cover.

Vacuum Pump Belt (HP 2619A only)

1. Loosen and swing out the power supply to expose the vacuum pump area.
2. Remove the cover over the vacuum pump pulleys.
3. Inspect the vacuum pump drive belt for wear. Replace it if necessary.
4. Verify that the belt grooves are parallel.
5. Ensure the belt tension is adequate to prevent slipping.
6. Reinstall the cover over the vacuum pump alleys.

Electrical/Mechanical Verification and Adjustment

1. Verify crowbar that the crowbar circuit operates (refer to Crowbar Adjustment, Section 6.2).
2. Check the Fire Pulse Amplitudes and Duration, (refer to the Fire Pulse Amplitude and Duration Adjustment, Section 6.3).
3. Verify that the paper feed stepper drive has:
 - a. Duty cycle 50%
 - b. A sawtooth 0.7V amplitude
 - c. A 40 inch/sec slew rate

(Refer to the adjustment procedure for paper Feed Stepper Drive in Section 6.)

General

- Verify that all fans are operational.
- Remove and clean all filters. Ensure the hammer bank air filter in the right cover is clean. A plugged filter will cause premature hammer actuator failures due to overheating.
- Vacuum all areas.
- Visually inspect for loose fasteners, frayed wire insulation, worn sleeving and excessively worn parts.
- Verify and adjust the hammer flight times.

NOTE

The impression control should be fully clockwise. Verify that the hammer bank plenum cover is installed at the conclusion of flight timing.

- Use the diagnostic or the operating system to verify that the printer is operational.
- Make a logbook entry for this PM.
- Make a Repair Order for this printer with the correct serial number.

2.3 Procedure 3: Customer Engineer Duties

Monthly Printer Usage	Perform Maintenance
00 - 66 Hours	26 Weeks/6 Months
36 - 99 Hours	17 Weeks/4 Months
100 - 132 Hours	12 Weeks/3 Months
133 - 165 Hours	8 Weeks/2 Months
over 165 Hours	Time and Materials

- Perform Preventive Maintenance Procedure 1.
- Perform Preventive Maintenance Procedure 2.
- Lightly oil the Impression Control slide and linkage.
- Grease the yoke latch linkage and pins (2).
- Lightly oil the yoke, latch, compression spring and lever pivot.
- Lightly oil the VFU hold-down pivot pin.
- Lightly grease the form scale pivot pins and spring anchor pins (2).
- Lightly oil the ribbon cover hinges. Wipe off any excess oil.
- Use Auto-Moly grease on canopy stop link and nylon washers.
- Lightly oil the canopy hinges. Wipe off any excess oil.
- Inspect the canopy stop linkage for proper safe operation.
- Lightly oil the front door hinges and the front yoke skirt hinges. Wipe off any excess oil.
- Make a logbook entry for this PM.
- Make a Repair Order for this printer with its correct Serial Number.

CONFIGURATION

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3.1 Cables

CPU	OPT	Trans-GIC	Trans-Panel	Panel-Printer	Length
3000/30	301	30090-60051	N/A	26069-60005	15 m
	304				
3000/40	301	30090-60051	N/A	26069-60003	15 m
	304				
3000/33	302	30090-60051	26069-60002	26069-60003	15 m
3000/44	344	30090-60051	26069-60002	26069-60003	15 m
3000/48	344	30090-60051	26069-60002	26069-60003	15 m
3000/58	344	30090-60051	26069-60002	26069-60003	15 m
3000/64	364	30090-60051	26069-60002	26069-60003	15 m
3000/68	364	30090-60051	26069-60002	26069-60003	15 m
3000/70	364	30090-60051	26069-60002	26069-60003	15 m

Other HP 1000 and HP 3000 cabling is as follows:

- HP 1000, OPT 100 CPU I/F P/N 12845B - Cable 12845-60006 (25')
- HP 3000/II, III OPT. 300 CPU I/F DIFF. I/O - Cable 30209-60004 (50')

3.2 CPU Configurations

CPU	PROD	MPE	TYPE	SUB	REC	OUT	DRIVER
3000/30	261X	ALL	32	2	66	0	HIOLPRT0
3000/40	261X	ALL	32	2	66	0	HIOLPRT0
3000/44	261X	ALL	32	2	66	0	HIOLPRT0
3000/48	261X	ALL	32	2	66	0	HIOLPRT0
3000/58	261X	ALL	32	2	66	0	HIOLPRT0
3000/64	261X	ALL	32	2	66	0	HIOLPRT0
3000/68	261X	ALL	32	2	66	0	HIOLPRT0
3000/70	261X	ALL	32	2	66	0	HIOLPRT0
3000/II	261X	ALL	32	2	66	0	IOLPRT0
3000/III	261X	ALL	32	2	66	0	IOLPRT0
1000	S	Y	S	G	E	N	DVA12

NOTE

One printer per 26069A translator PCA. Up to four 26069A translators to any one GIC. An additional GIC may be necessary depending on system configuration and/or performance requirements.

TROUBLESHOOTING

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4.1 Interpreting Diagnostic LEDs

The HP 2611A and 2619A printers have built-in power-on self tests and real time diagnostics. The power-on tests are initiated after the power-on sequence has completed and control has been given to the processor. These check out the RAM, ROM and timers and then initialize the paperfeed system. The real time diagnostics monitor the paperfeed system, the chaintrain system and the VFU system. Errors are recorded by lighting either the "CALL SERV" or the "VF ERROR" LEDs on the front panel. More specific error information can be obtained by noting which of the five LEDs on the CPU PCA are lit and decoding the error using one of the following lists:

Meaning of Diag LED'S with "CALL SERV" Lit

For ALL HP2611As, and all HP2619As with the newer style CPU PCA
- (42048, 42080 or 02619-69005)

NOTE

LED 1 is the top LED and is the least significant bit. "0" = off, "1" = on.

In the following tables, "CD" refers to Circuit Diagrams located in the Data Printer manual.

Decimal Value	LEDs					Meaning and Possible Cause
	5	4	3	2	1	
0	0	0	0	0	0	NOT USED
1	0	0	0	0	1	NOT USED
2	0	0	0	1	0	NOT USED
3	0	0	0	1	1	CPU PCA RAM ERROR Refer to CD 2.5.0, ICs 13 and 19. Replace RAM ICs or CPU PCA as necessary.
4	0	0	1	0	0	NOT USED
5	0	0	1	0	1	NOT USED

(continued)

Decimal Value	LEDs					Meaning and Possible Cause
	5	4	3	2	1	
6	0	0	1	1	0	I/O RAM ERROR Refer to CD 1.2.2. Replace RAM ICs or I/O PCA as necessary.
7	0	0	1	1	1	EPROM 1 ERROR Applies to all four error codes.
8	0	1	0	0	0	Refer to CD 2.5.0, IC 29.
9	0	1	0	0	1	Replace PROM with the equivalent P/N and REV level
10	0	1	0	1	0	or replace the CPU PCA as necessary.
11	0	1	0	1	1	NOT USED
12	0	1	1	0	0	NOT USED
13	0	1	1	0	1	NOT USED
14	0	1	1	1	0	NOT USED
15	0	1	1	1	1	NOT USED
16	1	0	0	0	0	PAPER FEED INITIALIZATION ERROR See Tshoot Procedures Section 4.3, pg 4-14.
17	1	0	0	0	1	HARDWARE TIMER ERROR Replace the Traffic Control, then the CPU PCA.
18	1	0	0	1	0	I/O STATUS ERROR The I/O memory was not cleared. Replace the I/O, then the CPU PCA.
19	1	0	0	1	1	NO CHARACTER STROBE ERROR See Tshoot Procedures Section 4.2, pg 4-14.
20	1	0	1	0	0	NO INDEX STROBE ERROR See Tshoot Procedures Section 4.2, pg 4-10.
21	1	0	1	0	1	FONT COUNT ERROR See Tshoot Procedures Section 4.2, pg 4-10.
22	1	0	1	1	0	CHARACTER STROBE TOO SOON ERROR See Tshoot Procedures Section 4.2, pg 4-10.
23	1	0	1	1	1	CHARACTER STROBE TOO LATE ERROR See Tshoot Procedures Section 4.2, pg 4-10.



(continued)

Decimal Value	LEDs					Meaning and Possible Cause
	5	4	3	2	1	
24	1	1	0	0	0	PAPERFEED OPERATION INCOMPLETE See Tshoot Procedures Section 4.3, pg 4-14.
25	1	1	0	0	1	PF INDEX ERROR See Tshoot Procedures Section 4.3, pg 4-14.
26	1	1	0	1	0	FONT CONFIGURATION ERROR See Tshoot Procedures Section 4.2, pg 4-10.
27	1	1	0	1	1	INCOMPLETE PRINT OPERATION This can occur whenever the printer "hangs" in a print cycle for more than 256 character strobe. Check cable connections between the host CPU and the printer. Then replace the CPU PCA, the I/O PCA and I/O adapter.
28	1	1	1	0	0	NOT USED
29	1	1	1	0	1	NOT USED
30	1	1	1	1	0	NOT USED
31	1	1	1	1	1	DIAGNOSTIC DECODE ERROR Refer to CD 2.5.0, IC 29. Replace PROM with the equivalent P/N and REV level or replace the CPU PCA as necessary.

NOTE

LED 1 is the top LED and is the least significant bit. "0"=off, "1"=on.

Decimal Value	LEDs					Meaning and Possible Cause
	5	4	3	2	1	
0	0	0	0	0	0	NOT USED
1	0	0	0	0	1	EXTENDED MATRIX RAM ERROR Refer to CD 2.5.1. Verify CPU and I/O switch settings (Refer to s/n 2611A-1 or 2619A-5A). Replace RAM ICs or CPU PCA as necessary.
2	0	0	0	1	0	STANDARD MATRIX RAM ERROR Refer to CD 2.5.0. Replace RAM ICs or CPU PCA as necessary.
3	0	0	0	1	1	SCRATCH PAD AND MATRIX EXTEND RAM ERROR Refer to CD 2.5.2. Replace RAM ICs or CPU PCA as necessary.
4	0	0	1	0	0	STACK RAM ERROR Refer to CD 2.5.2. Replace RAM ICs or CPU PCA as necessary.
5	0	0	1	0	1	12 CHANNEL VFU RAM ERROR Refer to CD 2.5.2. Replace RAM ICs or CPU PCA as necessary.
6	0	0	1	1	0	I/O RAM ERROR Refer to CD 1.2.2. Replace RAM ICs or CPU PCA as necessary.
7	0	0	1	1	1	ROM 1 ERROR Refer to CD 2.2.0, IC 27 and IPB Figure 67. Replace ROM 1 or CPU PCA as necessary.
8	0	1	0	0	0	ROM 2 ERROR Refer to CD 2.2.0, IC 22A and IPB Figure 67. Replace ROM 2 or CPU PCA as necessary.

(continued)

Decimal Value	LEDs					Meaning and Possible Cause
	5	4	3	2	1	
9	0	1	0	0	1	ROM 3 ERROR Refer to CD 2.2.0, IC 17 and IPB Figure 67. Replace ROM 2 or CPU PCA as necessary.
10	0	1	0	1	0	ROM 4 ERROR Refer to CD 2.2.0, IC 11 and IPB Figure 67. Replace ROM 4 or CPU PCA as necessary.
11	0	1	0	1	1	ROM 5 ERROR Refer to CD 2.2.0, IC 9 and IPB Figure 67. Replace ROM 5 or CPU PCA as necessary.
12	0	1	1	0	0	ROM 6 ERROR Refer to CD 2.2.0, IC 6 and IPB Figure 67. Replace ROM 6 or CPU PCA as necessary.
13	0	1	1	0	1	ROM 7 ERROR Refer to CD 2.2.0, IC 22B and IPB Figure 67. Replace ROM 7 or CPU PCA as necessary.
14	0	1	1	1	0	NOT USED
15	0	1	1	1	1	NOT USED
16	1	0	0	0	0	PAPERFEED INITIALIZATION ERROR See Tshoot Procedures Section 4.3, pg 4-14.
17	1	0	0	0	1	HARDWARE TIMER ERROR Replace the Traffic Control, then the CPU PCA.
18	1	0	0	1	0	I/O STATUS ERROR The I/O memory was not cleared. Replace the I/O, then the CPU PCA.
19	1	0	0	1	1	NO CHARACTER STROBE ERROR See Tshoot Procedures Section 4.2, pg 4-10.
20	1	0	1	0	0	NO INDEX STROBE ERROR See Tshoot Procedures Section 4.2, pg 4-10.

(continued)

Decimal Value	LEDs					Meaning and Possible Cause
	5	4	3	2	1	
21	1	0	1	0	1	FONT COUNT ERROR See Tshoot Procedures Section 4.2, pg 4-10.
22	1	0	1	1	0	CHARACTER STROBE TOO SOON ERROR See Tshoot Procedures Section 4.2, pg 4-10.
23	1	0	1	1	1	CHARACTER STROBE TOO LATE ERROR See Tshoot Procedures Section 4.2, pg 4-10.
24	1	1	0	0	0	PAPERFEED STROBE ERROR See Tshoot Procedures Section 4.3, pg 4-14.
25	1	1	0	0	1	PF INDEX ERROR See Tshoot Procedures Section 4.3, pg 4-14.
26	1	1	0	1	0	FONT CONFIGURATION SWITCH ERROR Refer to CD 1.3.0 and IPB Figure 72. Verify CPU and I/O PCA switch settings (Refer s/n 2611A-1 or 2619A-5A).
27	1	1	0	1	1	NOT USED
28	1	1	1	0	0	PAPERFEED CYCLE INCOMPLETE Verify the paperfeed strobe adjustments. See Tshoot Procedures Section 4.3, pg 4-14.
29	1	1	1	0	1	NOT USED
30	1	1	1	1	0	NOT USED
31	1	1	1	1	1	DIAGNOSTIC DECODE ERROR Refer to CD 2.2.0, IC27 and IPB Figure 67. Replace ROM 1 or CPU PCA as necessary.

Meaning of Diag LED'S With "VF ERROR" Lit

For ALL 2611As and 2619As regardless of CPU style.

NOTE

LED 1 is the top LED and is the least significant bit. "0"= off, "1"= on.

Decimal Value	LEDs					Meaning and Possible Cause
	5	4	3	2	1	
1	0	0	0	0	1	CHANNEL 1 NOT LOADED The printer did not "see" channel 1 during the load cycle. Possible incorrectly installed or worn VFU tape, reader cleaning/adjustment or bad read head assembly. Try to "dummy" load without a tape installed to see if it will function otherwise. If PF Errors occur, fix them first.
2	0	0	0	1	0	FORMAT NOT LOADED Generally a catch all when a more specific error can't be isolated. Verify loading at 6 lpi. Attempt to "dummy" load as in Error 1.
3	0	0	0	1	1	HALF LINE ERROR Only the first byte of a two byte format line was loaded. Possible read head or CPU problem. Attempt to "dummy" load as in Error 1.

(continued)

Decimal Value	LEDs					Meaning and Possible Cause
	5	4	3	2	1	
4	0	0	1	0	0	<p>CHANNEL NOT LOADED</p> <p>The VF channel called was not read. This is the only VF error that occurs during print; others occur during loading.</p> <p>Check for worn or improperly loaded tape, programmer error, a dead channel in the read head or, if on a 26069A Translator PCA a possible bug (make sure that CH 4 is punched where CH 1 is).</p>
5	0	0	1	0	1	<p>FORMAT TOO LONG</p> <p>The format tape is over 143 lines. Check for worn or improperly loaded/punched VFU tape.</p>
6	0	0	1	1	0	<p>CHECK LOAD TAPE READ ERROR</p> <p>The first and second reads did not compare. Check for improperly punched or worn tape. Clean the read head and check adjustments. Change the read head, then the CPU PCA.</p>



4.2 Tshoot Procedures: CHAINTRAIN PROBLEMS

Chaintrain will not spin up.

First, answer these questions by observation:

Does the **Chaintrain** try to move?

If not, can you hear the motor turning or trying to turn (humming)?

By answering these questions, you now know if there is a physical bind and/or if the electronics are working and trying to turn on the chain motor.

If there is a physical bind (turning slowly or humming):

1. **Verify if the bind is in the Chaintrain** by removing the right hand sheetmetal and turning the Chaintrain by hand. If you can't turn it easily, the motor can't either! Ensure you turn the Chaintrain slowly and at least one full rotation. It may be easier to use the flywheel to rotate the Chaintrain rather than applying force to the slug faces. You may want to remove the Chaintrain Drive Belt to eliminate the possibility of a frozen motor.
2. **Check the Chaintrain oil** - ensure the slugs are getting oiled. To do this, remove the Ribbon Platen and pull out on the Chaintrain so you can inspect the inside groove which the monorail contacts. There should be a light film of oil on this surface; if not, perform the oil wick adjustment.
3. **Check the Chaintrain cleanliness** - Use a brush or foam on the left hand side (after removing the vacuum plenum). Do **NOT** use any alcohol or solvents to clean the slugs while the slugs are installed, **you can damage the belts**. Clean the slug guides using the sponge cleaner (P/N 46219-DPM [Qty. of 10]). We suggest oiling the cleaner first, otherwise the cleaner can tear. If necessary, remove or adjust the slug guides to eliminate the bind.

4. **Inspect the Chaintrain belts** - if worn, cracked or broken, replace as a matched set (P/N 1535-4029 [two belts per package]).
5. If you still have not found the cause of the bind and it is in the **Chaintrain**, you have no choice but to tear it down. This takes 2-5 hours depending on your experience and how far you take it apart.

HINT: Cut both belts and remove belts and slugs as a complete set. This way, you never mix up the slugs.

During a complete tear down, the Drive and Idler Pulley Assemblies must be checked for correct height. The monorails should be inspected for damage or abnormal wear and replaced in their exact original position or adjusted with some special tools. Do **NOT** attempt this if you are untrained. Contact a local CE who has done this procedure or your SSE!

NOTE

When a bearing fails, often a rusty residue is present under the washer on the idler assembly or under the phasing bracket on the drive assembly. If seen, a tear down is the only way to check for a defective bearing.

If there is not a bind (the Chaintrain spins by hand but doesn't try to move under printer control):

1. Check the **Drive Belt** for slippage.
2. Follow the set-up for the **Character and Index Strobe adjustments**. This will force the Chaintrain to spin without CPU control or diagnostics. If the Chaintrain does not spin up immediately (while jumpered), power down and recheck set-up. If it does spin up, listen for smooth operation and verify the two strobe adjustments.

If the Chaintrain spins up, runs smoothly, and the adjustments are OK, you can now have a lot of confidence in the following areas of the printer and have narrowed down your problem:

- a. The **Chaintrain** - It is most likely OK - It is apparently clean enough, is lubricated, has no major breaks in the belts or slugs.
 - b. The **Drive Belt** - It is probably OK. See step c.
 - c. The **Motor and Starting Capacitor** - Since the motor started under Chaintrain load, the capacitor is being energized and the run windings are keeping it rotating. Since the strobe amplitudes were OK, we verify the speed by monitoring the interval of each signal. The **INDEX** strobe should occur approximately every 40msec for a 64 character 2619A and approximately every 60msec for a 96 character 2619A. The **CHARACTER** strobe should occur approximately every 625usec on all 2619A printers. Since the 2611A chaintrain spins at one-half the speed of the 2619A (110in/sec vs 220in/sec), **double these figures for the 2611A**.
 - d. The **Power Control PCA** - Even with the CPU out of the picture in this set-up, the Power Control PCA still performs identically, so, if it works now, it would work under normal conditions.
 - e. The **Motherboard** - The Motor is started normally from the Traffic Control PCA under the direction of the CPU, all we did was remove the CPU and tell the Motor to run all of the time; thus we have now verified the path from the Traffic Control PCA to the Power Control PCA. The only area not checked is the path from the CPU PCA to the Traffic Control PCA. This can be ohmed out or checked actively by using the pins on the backplane or an extender card.
 - f. The **Traffic Control PCA** - We can feel it is basically working, but we have not eliminated it.
3. With the above in mind, try changing the CPU PCA, the I/O PCA or start signal chasing in these areas.
 4. If the Chaintrain did not spin up during this set-up, check out items a-f above.

Character/Index Strobes Missing, Too Soon or Late Errors (# 19, 20, 21, 22, 23)

1. **Binding Chaintrain** - See "Chaintrain Will not Spin-up" above.
2. **Misadjusted or defective Character or Index Transducer(s)** - Be sure of the timing relation between the two signals (S.N. 2619-8). The positive peak of the INDEX strobe signal must coincide with the negative peak of the CHARACTER strobe signal. This can be altered by stopping the Chaintrain and loosening the three screws that hold the ratchet wheel to the top of the Drive Pulley. Move the ratchet wheel position with respect to the pulley and retighten the three screws before spinning the Chaintrain. This adjustment is a major cause of Character Strobe Too Soon **Error #22**. You also might want to check your chain speed...see number 2, item c, on the previous page for the proper signal intervals. If the intervals are slow, locate the cause (binding chaintrain or motor).
3. **Burred or Bent Ratchet Pulley** - Note that this pulley has 72 teeth on all printers (64 and 96 character) and indicates when the chain has traveled one character space. When you do your adjustments, you are looking at an average of all the teeth. If one or more of the teeth are burred or bent, the CPU can detect this as an error. Checking this is simple - While you have your scope set up to do the adjustments, after checking the phase relationship, continue to trigger on the INDEX strobe and adjust your sweep to display 2 full pulses. While viewing in the alternate or chop mode, there will now be at least 72 CHARACTER strobes displayed. Up the scope intensity and look for any inconsistency in the CHARACTER strobe signals. Any dips in amplitude indicate an imperfect ratchet pulley. Most of these can be cleaned up with a small file.
HINT: If it is difficult to locate the bad tooth or teeth, you can adjust your character transducer in towards the teeth so they just clear. Any burr or bent tooth will now hit the transducer when the chain is manually rotated.
4. **Defective Traffic Control PCA** - Be sure to check all the associated adjustments if you leave this PCA installed.
5. **Defective CPU PCA or 8080** - Check switches.
6. **Defective I/O PCA** - Remember to swap the Character ROM!
7. **Chaintrain Drive Belt** - Too loose causes Errors 19, 20, 21, or 23; Too Tight causes Errors 19 or 20.



4.3 Tshoot Procedures: PAPERFEED PROBLEMS

Initialization Error (#16)

Step Strobe Error (#24)

1/2" Strobe Error (#25)

These errors are all interrelated and are the most common of the paper feed diagnostic errors. All of the errors are equivalent to a **“Format”** Fault Error - The Stepper Motor didn't move as was expected! These Errors may be true indications of a paper feed problem or caused by faulty detection circuitry. Initialization usually occurs at Power-Up or after **“ALARM”** has been depressed. The Step and 1/2" errors indicate an error was detected in the paper positioning during a print or paper feed operation.

Observation and questioning can quickly lead you in the right direction. Find out if the problem only occurs on certain forms (single or multipart forms may act differently), ask if it occurs only after form feeds or multiple line feeds, check the forms tension and impression control settings. If you can readily duplicate the problem you are half way home! Try doing paper feeds with the yoke and/or clutch open. With the above in mind, probable causes are:

1. **Misadjusted/Bad Yoke/Latch Switch(es)** The symptom to this problem is usually accompanied by 1-6 form feeds BEFORE giving error #24 or #25. The 2611/19 firmware is fairly simple minded; if it receives an interrupt (bouncing switch) during a paper feed cycle and can't figure out what the interrupt was (the switch is now closed) it will indicate a paper feed error!!
2. **Misadjusted/Defective Paper Low Switch** -Although it sounds unlikely, this is a killer and has been seen at multiple sites! A dead giveaway is to carefully watch the “paper low” LED...if it blinks...adjust! Refer to S/N 2619A-11 for “noise” fix.
3. **Binding in the Paper Feed Path**
 - a. **Tractors** - Dirty, worn or improperly lubricated. Power off the printer, disengage the Infinite Forms Position Clutch and ensure that the Tractor Drive Shaft turns freely. If not, clean and and lube the tractors, check the Tractor Pin-Feed Belt tension.

- b. **Thick Forms** - The official specification is that the total pack thickness, including binding, should not exceed 0.020". Many of our customers use forms exceeding this! Some help can be gained by opening the Tractor hold down gaps and the Throat gaps to 0.030" - 0.045" depending on the customer's form thickness. These adjustments are in the **Data Printer Manual Maintenance Section**. If the throat gap is widened, **ALWAYS** check the paper low switch operation with all of the customer's forms.
 - c. **Paper Feed Drive Belt** - **WARNING!** This belt should be tensioned only enough to keep the belt from jumping a tooth....do not force the motor down to create excessive pressure. Too tight causes **Error #24 and #25**. Threads from frayed belts can block disc slot.
4. **Misadjusted or defective Dual Strobe Sensor Assembly** - Perform adjustment as per the Boise Division Handbook. If they are flaky, replace the sensor and/or check number 6, below. Also inspect the disc.
 5. **Poor or Loose Connections on PF Current Limit Resistor** - The current resistor is the large one to the left of the capacitor pack. To check properly, cut back the heat shrink on each of the connections (three small white wires). There should be about +36VDC on either end of the resistor and about +40VDC at the center tap. You can also check this at the Motherboard end of these wires. Broken wires usually cause Initialization Errors (**#16**).
 6. **Pulsewidth and Frequency Adjustments**. Check these. If intermittent, ensure that the **PF Drive Pulley is not Loose**. The pulley is mounted to the Paper Feed Motor shaft with two (2) Allen set screws (Access from the belt area or remove belt to make it easier). The three (3) screws that go through the Strobe Disc have nothing to do with mounting the pulley to the shaft. This problem is very difficult to detect, so put an Allen driver to them to be sure! Wandering strobe adjustments are another clue to this problem. Some PF motors have been swapped needlessly when the whole problem was a loose pulley (the pulley gets removed and put on the new motor). Defective PF Motors will often be oscillating, ie. quivering. Look along the side of the Dual Channel Sensor at the slots in the Line Count Disc. Half of a slot or more equals a suspect motor.

7. **Bad PF Diodes** - These are mounted on the Motherboard behind the Vacuum Bag Chamber (Remove with two screws for easier access). Ohm these out - if they are bad, they can blow Stepper Drive Transistors on the PF Control PCA. These can be purchased locally (1N5059) or through HP (P/N 1535-4056). (Diodes are used to suppress Inductive kick from the motor windings.)
8. **Defective PF PCA** - Check adjustments and diodes before swapping!
9. **Defective Traffic Control PCA** - This PCA processes the strobe signal and could be giving a false indication.
10. **Defective PF Motor** - Check number 6 (on previous page) first!
11. **Miswired Fuse Holder F6** - This applies only to 2619A printers with ITT NORTH AND TTI SUPPLIES. First, check and see if F6 is blown, if so, replace (even if it doesn't blow again and works, you may have a miswired holder). A few older 2619s had the tip and side connectors reversed...Since fuse F1 was meant to be fed off the side connector, it is now fed off the tip. All works fine until F6 blows (normally this also removes power from F1) and you now have a ripple on the +40V going to the paper feed motor. This usually results in **Error #16** and an oscillation of the motor. The driver diodes (CR9 - CR12) on the Paper Feed PCA can also smoke!!

Creeping Top of Form

If the printer is not maintaining TOF correctly, first verify the proper VFU Tape is loaded and 6/8 LPI switch is in it's proper position. Always load a VFU Tape at SIX (6) LPI! Try other forms, tapes and HP standard output (PD466A, LISTF, EDITLIST, etc.). If the problem persists, check for a pattern and try to duplicate locally using the **One Line** and **Home** switches and/or the test switches.

1. If lines are lost, check for:

- a. **Slipping IFPC (clutch)** - This may be very subtle! A quick easy check is to load paper and your VFU Tape, Align Top of Form and close the clutch. Use Liquid Paper to mark the edge of the Tractor Drive Pulley and the front cone of the clutch (the pulley moves with the Belt, the Cone moves with the Tractor Shaft). When the clutch is closed, it forces the cones to mate with the inside surface of the pulley; thus, when the belt turns, the shaft must also turn (unless it is slipping). Press **RUN** and let it print for a while. If the clutch is not slipping, the marks will turn in unison; if it is slipping, the marks will separate. Add or reposition shims to allow better cone engagement to prevent this slippage. Do **NOT** wipe off grease - the clutch must be able to turn independently to allow paper adjustment. Check the Cam Lever for wear, it also causes slippage.
- b. Anything listed under **Binding** (item 3 on page 4-14).
- c. Double Check **VFU Tapes** versus Forms.
- d. **Defective CPU PCA**
- e. **Defective Traffic Control PCA**

2. If lines are added:

- a. Double check **VFU Tapes** versus Forms.
- b. **Defective CPU PCA**
- c. **Defective I/O PCA**

False Paper Jams

A JAM is indicated but paper is OK. **FIRST CHECK TO SEE WHICH CPU PCA IS INSTALLED. If it is a 42048 PCA (New style) check if ERROR CODES #24 or #25 are LIT** ("Call Service," in this case may NOT be lit!)...If so, follow Paperfeed Problems "Initialization Error" page 4-14. If the above codes are not lit **OR** you have an old style CPU PCA, then read on!

***** READ ABOVE PARAGRAPH !!! *****

1. **Check Pressure Foot for wear** - Try Multipart Forms, if they run fine, but single part does not, the foot is the most likely candidate. If you don't have a new pressure foot, you can rig it by shimming behind the foot with a Kimwipe or a tissue.
2. **Check Motion Roller Assembly** - If it appears glossy, either replace, clean, or reverse the roller. Since the end bearing assemblies differ, both must be removed and swapped.

HINT: Use a spring hook to remove the right hand end (it is short and removes easily). Once the right end is removed, place a small nut driver into the roller, put your thumb over the open end and shake. The nut driver will serve as a slide hammer and knock the other end out.

HINT: For a temporary fix, apply a typewriter platen cleaner (such as Dr. Skat or Fedron) to the rubber roller. Purchase at local Office Supply Stores.
3. **Check the Motion Belt** - There should be back pressure on the roller, so it should not spin freely. The belts can slip, so, if in doubt....change it.
4. **Defective Motion Sensor/Disc** - very unlikely. If you have some old single strobe paper feed sensors (from upgrade), they will work in it's place. Check the disc for burrs and warpage. Check the bearings for flat spots.
5. **Jumper Pin 6 to Pin 7** on IC chip U40 on the Traffic Control PCA. This eliminates the Pressure Foot, Roller, Belt, Sensor, Disc, Cabling to the Motherboard and most of the Motherboard. If the **JAM** light still comes on, you either have some bad PCAs (TC,CPU,I/O) or you have the previously mentioned Errors (**#24 or 25**). Remember that when this is jumpered, you will not sense real jams!
6. **Check the Paper Low Switch** - A misadjusted or defective switch has more than once led us astray!! Monitor the "paper low" LED...if it blinks...adjust it!! Refer to S/N 2619A-11 for "noise" fix.
7. **Slightly Slipping IFPC (clutch)** - If the clutch slips the roller doesn't turn...thus the error. See previous page, item 1-a.

4.4 Tshoot Procedures: POWER PROBLEMS

Printer Drops Power

(Printer goes to "OFF" state [breaker NOT thrown])

When troubleshooting this area, keep in mind the power on sequence of the printer: Power is applied to the Power Sequencer portion of the **TRAFFIC CONTROL PCA** whenever the rear breaker is **on**. This circuit waits for the ON button to be pressed, then will power up the rest of the machine by telling the **POWER CONTROL PCA** to gate **TRIAC Q1**. After the voltages stabilize, control of the printer is turned over to the **CPU PCA**, however, if a voltage goes out of spec, the printer will return to the **OFF** state. Possible reasons for this follow:

1. Power Failure

The 2611A/19A Line Printers have no Powerfail Recovery, therefore when a powerfail is sensed, the printer must be powered back up (Press **ON**), the VFU reloaded, the Forms aligned and the spooler restarted. Power failure is constantly monitored by the Power Sequencer circuitry located on the Traffic Control PCA. If a voltage is lost, it will shut down the Microprocessor Controller by turning off T-2 and illuminate the **OFF** light. This condition is identical to a power supply crowbar condition (See Item 2) and it is impossible for the printer to help determine which is a fault (by lighting Error Code LEDS) since the CPU is powered off!!

Probable Causes:

- a. **Poor Input Power** - Check power for proper level (+5,-10%) with a DVM. If it is at the proper level and the site is not known for power related problems, assume it is OK (for now) and look elsewhere. If the site is suspect, perform routine power checks for noise, grounding conditions, sags and surges. Be careful before making too many claims against the site without thoroughly checking the printer out; the 2611/19A is not that particular to the quality of its input power.
- b. **Improperly Strapped Power Supply** - Check input voltage strapping. There are positions for 100, 115, 200 and 230VAC. (Rebuilt Blue Stripe Power Supplies will have a dual circuit breaker installed for use on 200 or 230 VAC.)



- c. **Defective Line Filter** - Check voltages on input side (marked **LINE**) and compare to voltages on the output side (marked **LOAD**). Some of the filters are mounted to the printer base below the input cord access cover and some are mounted in the bottom of the power supply. Check for loose connections.
- d. **Noisy/Weak Triac Q1** - Not very common (usually they will either short or open) but possible.

WARNING: There are 2 different 40 amp Triacs available...Isolated stud P/N 1884-0264 and Non- Isolated stud P/N 1884-0284. Replace with the proper part! If in doubt, order the **ISOLATED** (if you guess wrong, it will work with a little rewiring and presents no safety hazard).

2. Power Supply Crowbar

The 2611A/19A monitors the +40VDC line for overcurrent conditions. This is done by using a sense torroid that is tie-wrapped around the large white wire (+40V) that goes from the capacitor bank to the Hammer Driver PCAs. This can be accessed by removing the Motherboard Cover from the front of the printer in the paper compartment. Again, this problem exhibits the same symptoms as an input line voltage power failure (See Item 1, "Power Failure" page 4-19).

Probable Causes:

- a. **Improperly Adjusted Crowbar Circuit** - Adjust according to the BOISE Division Handbook. Remember that the new Traffic Control PCAs use different size resistors....refer to Service Note 2619A-20.
- b. **Defective Hammer Driver PCA** - Rotate through the four Hammer Driver PCAs to help locate the culprit. Don't mix up the Hammer Driver PCAs or you will have to adjust flight time on all 132 hammers!
- c. **Bad Hammer Actuator** - Any one of the 132 Hammer Actuators can cause the fault. In many cases, it is multiple actuators and can take forever to find. Ohm out the actuators (5.7 to 6.1 ohms is normal) to identify suspects.

HINT: To locate a bad Hammer Actuator or Hammer Driver PCA, you can remove the yellow and white wires that come from the current sense coil to the Motherboard (disconnect at the Motherboard). This should be used in extreme cases only (Smoke Test) and only at sites where the printer is closely monitored, ie. has a full-time operator on all three shifts and weekends. If not, inform the customer to power the printer off when the printer is to be left unattended for any long periods. There is no Hammer overcurrent protection with the current sense disabled, so the part causing the situation is expected to **BLOW UP!!!** There is still protection to the supply because of fuses and circuit breakers.

- d. **Improperly Adjusted Fire Pulse Amplitude** - There are three versions of the Hammer Driver PCAs now. Each requires amplitude and width adjustment. Adjust if you change a Traffic Control PCA.
- e. **Bad Current Sense Coil** - Very few have failed, but still possible (P/N 40510G1-DPM).
- f. **Defective Traffic Control PCA** - This is where the crowbar circuitry is located.

3. Miscellaneous

- a. **Bad Fuses** - Check with an Ohm Meter; a lot of the fuses are ceramic and can splatter, creating an intermittent, high resistance connection.
- b. **Bad Fuse Holder** - Check for cracks and/or corrosion. Pay particular attention to **F5** fuse holder. In many cases, the side lug portion has a bad solder joint. Unscrew the fuse holder cap and closely examine the solder joint where the side lug is mounted. Pulling on the wire from behind helps to identify this problem. Another quick check for this condition is to use a **DVM** and measure the voltage across the two wires that are used for strapping the supply for the proper input voltage. The strapped voltage should be measured between ground and each strap wire. 0VAC should be measured between the two strap wires. If you measure the strapped voltage when measuring between the two wires, it is a certain indicator that the **F5** fuse holder is at fault!
- c. **Defective Power Control PCA** - This was the highest failing PCA in the machine and should be suspect for any power related symptoms! This PCA controls turning on the power supply, and the chain and ribbon motors.
- d. **Defective Power Supply Assembly** - Be sure to move the ground jumpers from the old supply to the new one. If you do not, the **OFF** light will not even light when the rear breaker is **ON**. These jumpers should be connecting TB1-2, TB1-5 and TB1-7 together.
- e. **Defective CPU PCA**
- f. **Defective Capacitor Pack**
- g. **Shorted Paperfeed PCA or Diodes** (on Motherboard)
- h. **Shorted Paperfeed Motor**
- i. **Cold solder joint** on the Motherboard - Pay particular attention to the large white and black wires (+40vdc). This has shown up on printers that worked fine for years.
- j. **Loose P/S connections** - tighten ALL for intermittents.

4.5 Troubleshooting Tools

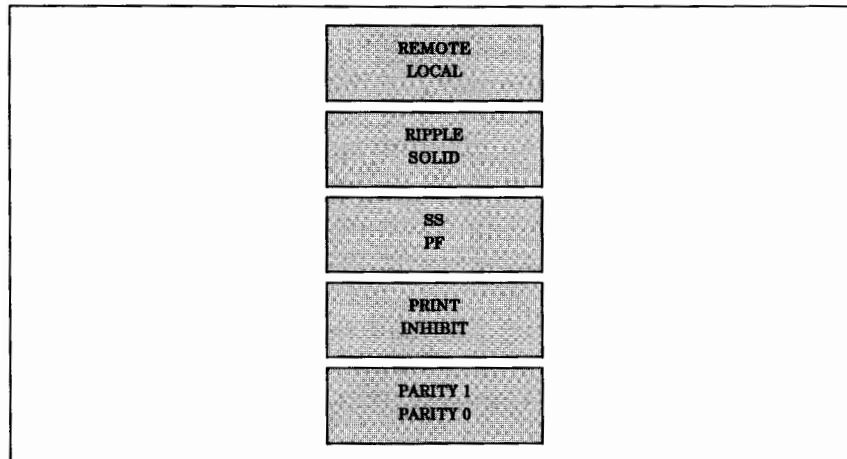


Figure 4-1. I/O PCA Switches (from top to bottom)

REMOTE	Looks for external input to printer. Pressing test will cause printer to look at the ripple/solid switch and print the appropriate pattern. Note: Printer should always be left in remote mode.
LOCAL	Printer looks at internal switches only for data. In run mode data will be continuous from switches.
RIPPLE	Printer will print a sliding pattern of all characters.
SOLID	Printer will print hexadecimal ASCII code of a single character (see code chart)
SS	“Single Step” printer will step to next line.
PF	“Paper Feed” the hexadecimal codes are read from the thumb-wheels and does appropriate skip to channel (uses codes FX, see code chart). Will not work in solid mode.
PRINT	Allows printer to fire hammers when in local or remote mode.
INHIBIT	Inhibits firing of hammers when in local mode. Has no effect when in remote mode.
PARITY1	Ignored
PARITY0	Ignored

Table 4-1. Vertical Format Codes for Skip-to-Channel Commands

Hex	Octal	Operation Performed
F0	360	Skip to Channel 1 (TOF 1st text)
F1	361	Skip to Channel 9 (BOF last text)
F2	362	Skip to Channel 3 (Single space)
F3	363	Skip to Channel 4 (Double spacing)
F4	364	Skip to Channel 5 (Triple spacing)
F5	365	Skip to Channel 6 (Half Form)
F6	366	Skip to Channel 7 (Quarter Form)
F7	367	Skip to Channel 8 (Tenth Form)
F8	370	Skip to Channel 2 (BOF)
F9	371	Skip to Channel 10 (BOF -1)
FA	372	Skip to Channel 11 (TOF -1)
FF	373	Skip to Channel 12 (TOF)

Table 4-2. Vertical Format Codes for 0-15 Linefeed

Hex	Octal	Number of Line Feeds
B0	260	0
B1	261	1
B2	262	2
B3	263	3
B4	264	4
B5	265	5
B6	266	6
B7	267	7
B8	270	8
B9	271	9
BA	272	10
BB	273	11
BC	274	12
BD	275	13
BE	276	14
BF	277	15

Table 4-3. ASCII Symbol Set

ASCII Char.	Dec	Binary	Octal	Hex
NUL	0	00000000	000	00
SOH	1	00000001	001	01
STX	2	00000010	002	02
ETX	3	00000011	003	03
EOT	4	00000100	004	04
ENQ	5	00000101	005	05
ACK	6	00000110	006	06
BEL	7	00000111	007	07
BS	8	00001000	010	08
HT	9	00001001	011	09
LF	10	00001010	012	0A
VT	11	00001011	013	0B
FF	12	00001100	014	0C
CR	13	00001101	015	0D
SO	14	00001110	016	0E
SI	15	00001111	017	0F
DLE	16	00010000	020	10
DC1	17	00010001	021	11
DC2	18	00010010	022	12
DC3	19	00010011	023	13
DC4	20	00010100	024	14
NAK	21	00010101	025	15
SYNC	22	00010110	026	16
ETB	23	00010111	027	17
CAN	24	00011000	030	18
EM	25	00011001	031	19
SUB	26	00011010	032	1A
ESC	27	00011011	033	1B
FS	28	00011100	034	1C
GS	29	00011101	035	1D
RS	30	00011110	036	1E
US	31	00011111	037	1F
space	32	00100000	040	20



ASCII Char.	Dec	Binary	Octal	Hex
!	33	00100001	041	21
"	34	00100010	042	22
#	35	00100011	043	23
\$	36	00100100	044	24
%	37	00100101	045	25
&	38	00100110	046	26
'	39	00100111	047	27
(40	00101000	050	28
)	41	00101001	051	29
*	42	00101010	052	2A
+	43	00101011	053	2B
,	44	00101100	054	2C
-	45	00101101	055	2D
.	46	00101110	056	2E
/	47	00101111	057	2F
0	48	00110000	060	30
1	49	00110001	061	31
2	50	00110010	062	32
3	51	00110011	063	33
4	52	00110100	064	34
5	53	00110101	065	35
6	54	00110110	066	36
7	55	00110111	067	37
8	56	00111000	070	38
9	57	00111001	071	39
:	58	00111010	072	3A
;	59	00111011	073	3B
<	60	00111100	074	3C
=	61	00111101	075	3D
>	62	00111110	076	3E
?	63	00111111	077	3F
@	64	01000000	100	40

ASCII Char.	Dec	Binary	Octal	Hex
A	65	01000001	101	41
B	66	01000010	102	42
C	67	01000011	103	43
D	68	01000100	104	44
E	69	01000101	105	45
F	70	01000110	106	46
G	71	01000111	107	47
H	72	01001000	110	48
I	73	01001001	111	49
J	74	01001010	112	4A
K	75	01001011	113	4B
L	76	01001100	114	4C
M	77	01001101	115	4D
N	78	01001110	116	4E
O	79	01001111	117	4F
P	80	01010000	120	50
Q	81	01010001	121	51
R	82	01010010	122	52
S	83	01010011	123	53
T	84	01010100	124	54
U	85	01010101	125	55
V	86	01010110	126	56
W	87	01010111	127	57
X	88	01011000	130	58
Y	89	01011001	131	59
Z	90	01011010	132	5A
[91	01011011	133	5B
\	92	01011100	134	5C
]	93	01011101	135	5D
^	94	01011110	136	5E
_	95	01011111	137	5F
`	96	01100000	140	60

ASCII Char.	Dec	Binary	Hex	Hex
a	97	01100001	141	61
b	98	01100010	142	62
c	99	01100011	143	63
d	100	01100100	144	64
e	101	01100101	145	65
f	102	01100110	146	66
g	103	01100111	147	67
h	104	01101000	150	68
i	105	01101001	151	69
j	106	01101010	152	6A
k	107	01101011	153	6B
l	108	01101100	154	6C
m	109	01101101	155	6D
n	110	01101110	156	6E
o	111	01101111	157	6F
p	112	01110000	160	70
q	113	01110001	161	71
r	114	01110010	162	72
s	115	01110011	163	73
t	116	01110100	164	74
u	117	01110101	165	75
v	118	01110110	166	76
w	119	01110111	167	77
x	120	01111000	170	78
y	121	01111001	171	79
z	122	01111010	172	7A
{	123	01111011	173	7B
	124	01111100	174	7C
}	125	01111101	175	7D
~	126	01111110	176	7E
DEL	127	01111111	177	7F

Universal Exerciser Usage

The use of each switch is as follows:

Set Bank/Normal

Set bank is used for setting flight times on the HP2613A only. Leave in normal for all other tests.

Odd/Both/Even

In the odd position, only the odd numbered hammers will fire. In the even position, only the even numbered hammers will be enabled. The both position enables all hammers.

Sliding/Fixed/Single

This switch selects which type of data pattern is to be printed.

When sliding pattern is selected, a sliding ripple print will be printed. The data switches (2^0 through 2^7) will select the paper instruction to be executed. Switch 2^7 indicates "Paper Instruction" and must be on when in the sliding pattern mode. Switch 2^6 selects a line count or a slew to a VFU channel method of moving paper. When switch 2^6 is off, the line count method is selected and switches 2^0 through 2^3 select the number of lines paper is to be moved. When switch 2^6 is on, the VFU method is selected and switches 2^0 through 2^3 select the VFU channel.

EXAMPLES: Switches 2^7 and 2^0 on would print and move paper one line. Switches 2^7 , 2^6 , and 2^1 would print and move paper looking for a punch in VFU channel 3. (Hint - remember to start counting from channel 0.)

When fixed is selected, a fixed data pattern will be printed and the data switches (2^7 through 2^0) will select the line length (number of columns) to be printed.

When single is selected, the same character will be printed across the page. The data switches (2^6 through 2^0) contain ASCII Code of the character to be printed. Switch 2^7 is not used in this mode and should be turned off.

The Universal Exerciser was designed to work with the 2613A, 2617A and the 2618A. It can also be used with the 2607A, 2610A, 2614A and the 2619A if +5VDC is applied to pin HH of the interface connector.

Table 4-4. 2611/19A Hammer to Phase and Type Conversion Chart

Phase 1	Phase 2	Phase 3	Phase 4
Upper Straight	Lower Straight	Upper Offset	Lower Offset
1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	100
101	102	103	104
105	106	107	108
109	110	111	112
113	114	115	116
117	118	119	120
121	122	123	124
125	126	127	128
129	130	131	132

NOTE

A quick way to locate the phase # is to divide the column # by 4. The remainder is the phase #; if there is a remainder of 0, then it is phase 4.

**Table 4-5. Data Printer Manual Maintenance Section Outline
(page# ref. Nov. 1981)**

Description	Figure	Page
Actuator and Print Hammer	3-15,16	3-33
Chainbelt Installation	3-12	3-28
Chaindrive	3-9	3-20
Character and Index Strobe Pickup	3-10	3-22
Character Phasing	3-18	3-37
Dual Channel Sensors	3-37/40	3-64/74
Fire Pulse	3-17	3-35
Hammer Bank and Module	3-13,14,20,21	3-29,30,39,41
Infinite Forms Position Control	3-29	3-52/55
I/O PCA Switches	3-46	3-87
Interface Connector Pin Assignments	3-1(Table)	3-8
Oil, Chaintrain	3-22A	3-44
Panel Fasteners	2-5	2-8
Paper Catcher	2-4	2-7
Paper Feed Drive System	3-28	3-51
Paper Feed Motor	3-30/32	3-55
Paper Guide Settings	3-27	3-49
Paper Low Switch	3-47	3-88,89
Paper Motion Sensor	*Fig. 42	3-89
Paper Puller	*Fig. 25, 59/61	2-158
Power Supply Fuses	3-6	3-10
Ribbon Slug Guide	3-8	3-19
Tractors	3-23/26	3-45/48
VFU Read Station	3-41/46	3-74/88
Yoke Interlock	3-17A	3-34
Yoke Latch	3-7	3-18

*Refers to figure in parts list.



Table 4-6. Hewlett-Packard I/O Addendum - Revised June 1982

Description	Page #	Figure
Character Set and ASCII Codes	7	Table 1
Control Panel, R.H.	17/18	5
DPC I/O Board Assembly	9/12	2
DPC / HP Interconnecting I/O Cable	19/20	0.0.0
HP / DPC I/O Cable Assembly	13/14	3
HP I/O Logic Diagram	27/44	1.0.0/1.4.1
HP Mother Board Assembly	15/16	4
I/O Signals to/from Printer	2,3	Tables
Mother Board Connectors	21/24	0.1.0/0.1.1
Mother Board Power Distribution	25/26	0.3.0
Ribbon Dimensions	5	N/A
Timing Diagram at Interface	6	1
VFC Channel Commands	8	Table 2
VFC Codes for 0-15 Linefeed	8	Table 3

DIAGNOSTICS

***** **SEE SECTION 4 FOR DIAGNOSTICS** *****

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ADJUSTMENTS

Section Contents

- 6.1 Character and Index Strobe Adjustments 6-2
- 6.2 Crowbar Adjustment 6-6
- 6.3 Fire Pulse Amplitude and Duration Adjustments..... 6-7
- 6.4 Flight Time Adjustment 6-8
- 6.5 Paper Feed PCA Adjustments 6-10
- 6.6 Paper Feed Strobe Set-Up and Adjustments 6-11
 - Procedure "A" 6-14
 - 8th Step Index Adjustment 6-15
 - Step Strobe Adjustment 6-16
 - Vertical Format Unit Adjustment 6-16
 - Procedure "B" - for old CPU's 6-20
 - 8th Step Index Adjustment 6-20
 - Step Strobe Adjustment 6-21
 - Vertical Format Unit Adjustment..... 6-21
 - Paper Feed Strobe Scope Adjustments 6-24
 - Radial Alignment (Substitute for the 8th Step Index Adj.) 6-24
 - Paper Feed Speed Check (Substitute for the Step Strobe Adj.) 6-25
- 6.7 Mechanical Adjustment Specifications 6-26

6.1 Character and Index Strobe Adjustments

Adjustment Procedure

1. Turn off main circuit breaker at the rear of the printer.

CAUTION

BE PARTICULARLY ATTENTIVE OF THE POWER-ON AND POWER-OFF SEQUENCE OR EQUIPMENT DAMAGE MAY RESULT.

2. Remove the lower rear panel to gain access to the printed circuit card bay.
3. Back out the four hammer driver PCAs.

NOTE

The actuator cables need not be removed, but be sure that the cards are extended sufficiently to prevent accidental contact with the mother board connectors.

4. Back out the CPU, I/O and Paper Feed PCAs.
5. Place the Traffic Control PCA on an extender board and re-insert in equipment.
6. On the Traffic Control PCA, ground pin four (4) of pack four (4) (See Figure 6-1 for orientation).

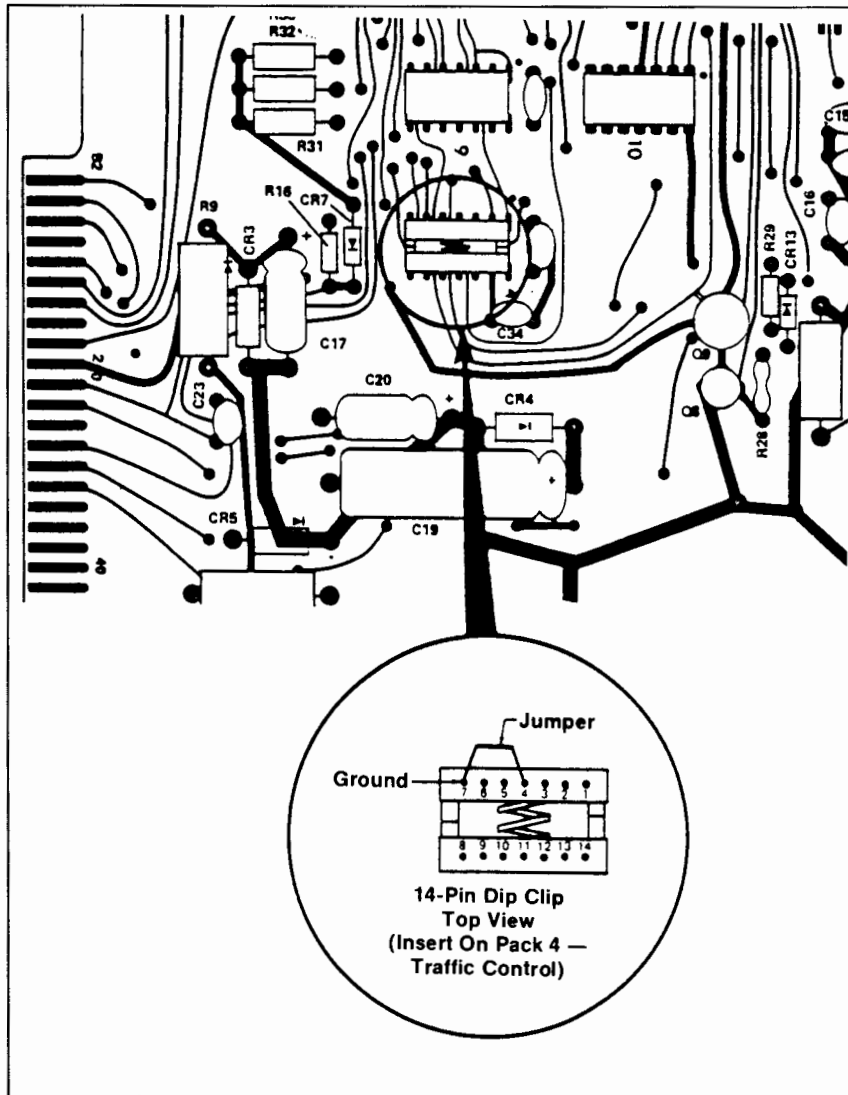


Figure 6-1. Traffic Control PCA

7. Turn on main circuit breaker.
8. Turn printer power on by pushing the "ON" button on the operator's control panel.

WARNING

IF MOTOR DOES NOT RUN AT THIS POINT, IMMEDIATELY TURN POWER OFF (DEPRESS "OFF" BUTTON) AND THROW MAIN CIRCUIT BREAKER OFF. THEN CHECK PREVIOUS STEPS OF THIS PROCEDURE.

9. With chain motor running, attach scope to pin B15 of the Traffic Control PCA for adjustment of index pick-up (See Figure 6-2 for specifications). TRIGGER NEGATIVE. Use B55 and/or B56 for GND.
10. Adjust pickup so that minimum POSITIVE peak is 250 mV.
11. If after above adjustment, maximum positive output is over 400 mV then the index strobe is out of tolerance.

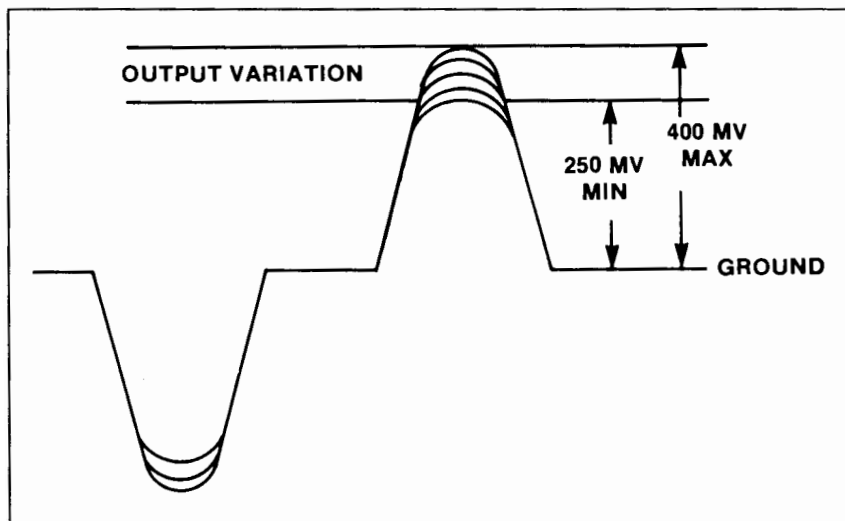


Figure 6-2. Index Pick-up Adjustment

12. Attach scope to pin B19 for adjustment of character strobe pick-up (See Figure 6-3 for specifications). TRIGGER POSITIVE. Use B55 and/or B56 for GND.
13. Adjust pick-up so that minimum NEGATIVE peak is 500 mV.
14. If after adjustment, maximum negative peak is over 600 mV, the character strobe gear is out of tolerance.

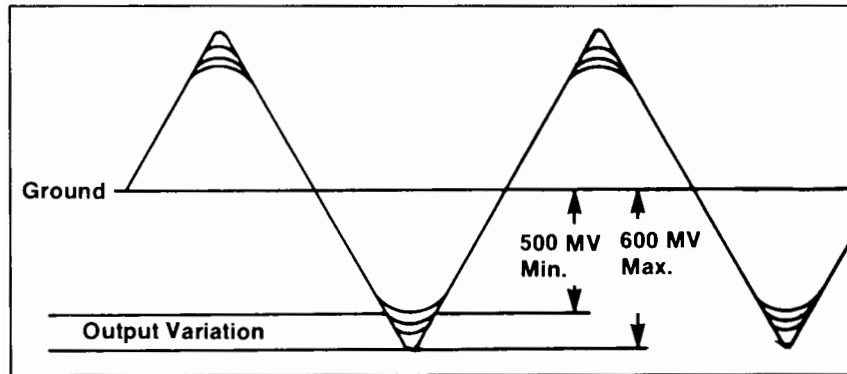


Figure 6-3. Character Strobe Pick-up Adjustment (PIN B19)

15. Read Service Note 2619A-8 for phasing adjustment.
16. After completing adjustments, turn power off (depress "OFF" button).
17. Turn off main circuit breaker.
18. Remove jumper from Traffic Control board.
19. Re-insert all printed circuit boards and replace lower rear panel.
20. Equipment is now ready for operation.



6.3 Fire Pulse Amplitude and Duration Adjustments

NOTE

Always be sure the line cord of your oscilloscope is ungrounded, then connect a ground probe to the bottom test point (GND) on the PF Control PCA (position 9 in electronic bay).

1. Load paper in the printer. Use the self test switches on the I/O PCA. Print all "M"s (Hex 'M', LOCAL and SOLID; top two switches down).
2. If necessary, adjust trim potentiometer R26 (top blue pot on the rear edge of the Traffic Control board, in position 7) for an amplitude of 1.4 volts, as shown in Figure 6-4. Pulse duration should be 1.4 to 1.6 milliseconds, and is adjustable at trim pot R14 at the top rear edge of the CPU board (position 6).
3. Check the output pulses at the test point (TP) on each of the remaining hammer drive PCAs in positions 2,3, and 4. If the maximum amplitude varies more than 0.5 volts between any two, refer to Service Note 2619A-21 and take corrective action.

CAUTION

FIRE PULSE AMPLITUDES EXCEEDING 1.6 V AND WIDTHS EXCEEDING 1.6 MS WILL CAUSE PREMATURE HAMMER ACTUATOR AND/OR PCA FAILURE.

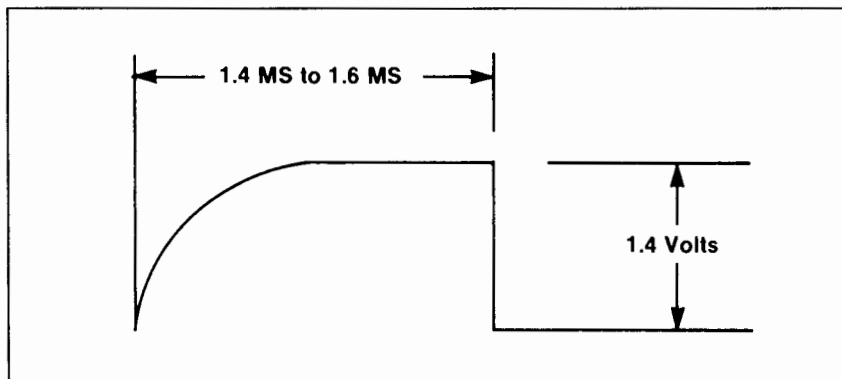


Figure 6-4. Fire Pulse Amplitude and Duration

6.4 Flight Time Adjustment

Flight timing is the adjusting of the distance between the hammer at rest and the type chain. Since each actuator and its respective hammer have a minute force differential, each must be set separately. Print quality is dependent on a good flight timing adjustment and it must be carefully and patiently performed. By properly setting this adjustment, we insure that the hammer strikes the paper at the precise instant the moving slug character is exactly behind the hammer. If flight timing is incorrect, a partially formed character results (this is called "clipping").

Behind each actuator is an adjusting screw which moves the actuator arm and consequently the face of the hammer closer to or further from the face of the type slug. This sets the proper distance which is required for that hammer's given travel time to impact. As parts wear and change speed, flight timing must be adjusted. Adjusting screws are accessible from the rear of the machine only. They are located on the actuator casting and numbered by column number.

The basic result desired is to adjust flight time so that all columns print full characters evenly spaced apart. Due to tolerances in judgment and the flexibility of the phase knob and impression control knob, flight timing has become a "matter of opinion" adjustment and consequently done in many ways.

To establish a consistent and effective procedure, let us first consider the adjusting screw. There is a tolerance in rotation that allows you to get an acceptable character that may be on the borderline of "clipping" left or right. A change in the impression control knob by the customer could result in unacceptable print quality. Customers will adjust the impression control knob to extend ribbon life or provide for multipart paper. Remember, turning this knob changes the distance between the chain and the hammer, which in turn changes flight timing. The phase knob which is provided to compensate for this distance change gets turned and all of the judgment tolerances now show up.

The most effective method to combat all these variables is to adjust flight time in the following manner:

1. Set printer self test mode to print the letter "H" in all columns (Hex 'H', LOCAL and SOLID).
2. Set the Phase Control Knob at mid-range. If necessary, adjust the phase bracket left or right, with limit pin in the center of the slot, to get best starting results; that is, the most acceptable characters possible.
3. Set the Impression Control Knob at the third indicator mark from DARK. This should put the Impression Control Knob slightly right of center.
4. Install a new or good ribbon. It must be good!
5. Print several pages of self test, enough to insure the chain is at optimum speed and other printing factors are normalized. The hammers and actuators need a little warm-up to settle into normal operation.

6. Select a group of H's that look good and turn the Phase Knob until they look slightly clipped on the left as shown below:

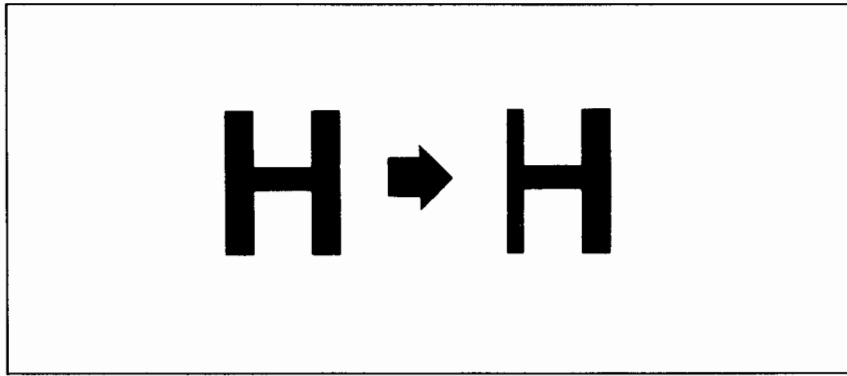


Figure 6-5. Flight Time Adjustment

7. Remember, you want to see a full H, light on the left and heavy on the right. Adjust all columns to look alike. Basically, you have adjusted all columns to the **same** side of their tolerance.
8. Turn the Phase Knob back to center, all characters should appear full density again.

Now, when the customer turns the Phase Knob to compensate for Impression Control adjustments, all characters will phase together in the same direction. This will also extend the period between flight timing adjustments because you do not have some characters on the borderline of clipping on one side and some clipping on the other.

6.5 Paper Feed PCA Adjustments

1. Isolate scope and connect scope ground to GND test point on the PF control PCA (position 9).
2. Connect scope probe to test point TP-5 on PF control PCA.
3. Adjust pulsewidth trim-pot (R28) for a 50% duty cycle. (See Figure 6-6).

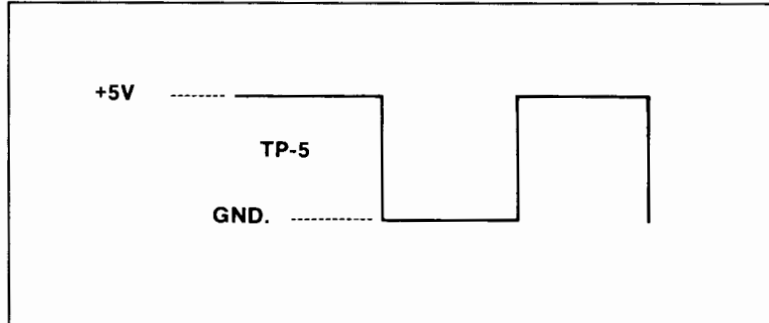


Figure 6-6. Pulsewidth (TP-5)

- d. Connect scope probe to test point TP-4. Adjust frequency trim pot (R23) for a 0.7 volt peak output (See Figure 6-7).

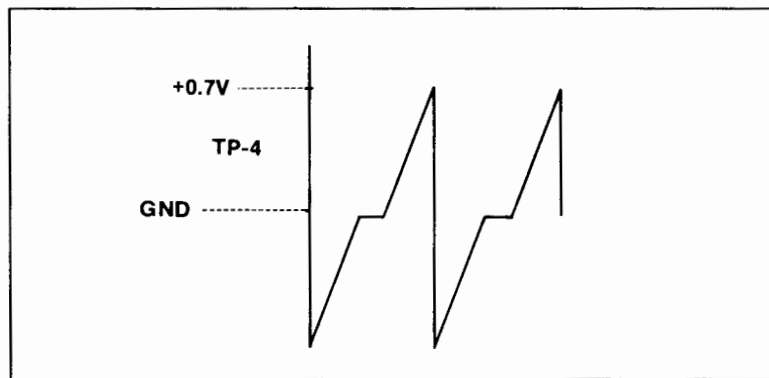


Figure 6-7. Frequency (TP-4)

6.6 Paper Feed Strobe Set-Up and Adjustments

The paper feed strobe consists of a photo-interrupt sensor and slotted disc assembly. There are two adjustments to the PF Strobe (Dual Strobe) Assembly:

The 8th step index adjustment sets the RADIAL alignment of the dual strobe sensor with respect to the disc slots. In other words, when the sensor “sees” a PF step slot (the short, outside slots), it should also “see” an 8th step slot (the longer, inside slots). This adjustment aligns the two sensors along a radius of the disc by verifying the two signals occur within a set timing window. Minor timing differences are expected.

The Step Strobe adjustment sets the slew speed of the paper system. If the sensor signals occur at the PF motor’s physical step, ringing and current changes are minimized allowing faster positioning information feedback and therefore faster slews. This adjustment alters the sensor position with respect to the physical steps by pivoting the mounting plate around the stepper shaft while maintaining the radial alignment.

This section is subdivided into three (3) subsections. Procedure A and B are adjustments that use internal routines. The part number of the CPU PCA determines which adjustment to use (see Table 6-1 next page). The Scope section applies to **all** CPU PCA types and is used as an alternative to the internal routines. Figures 6-8 and 6-9 show the PF sensor component location/names.



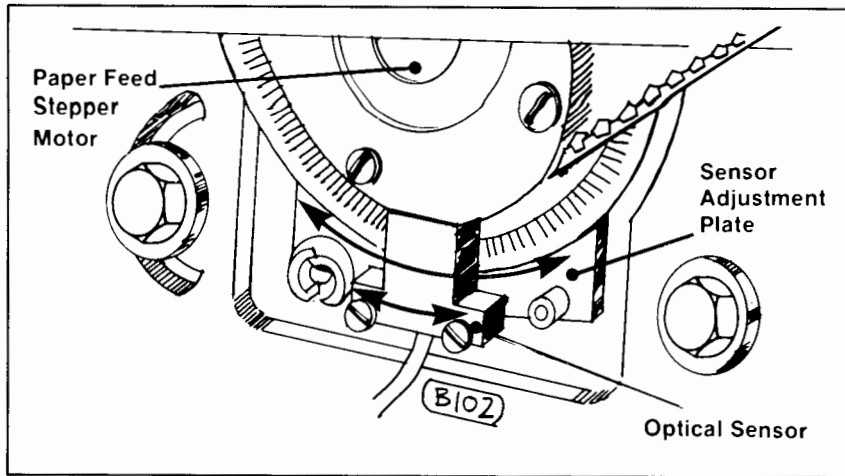


Figure 6-8. Dual Strobe Sensor Assembly

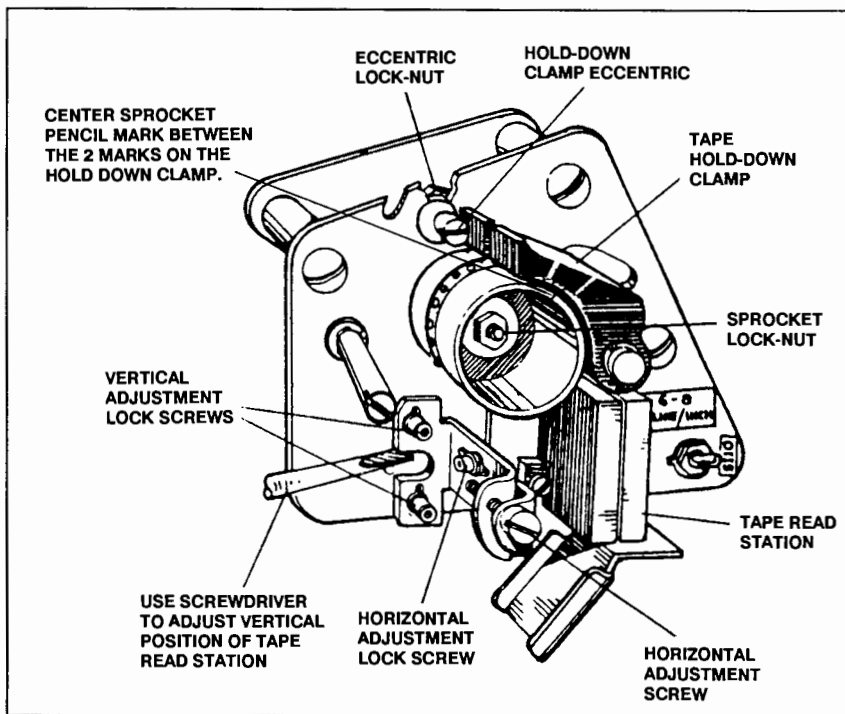


Figure 6-9. Vertical Format Unit Assembly

NOTE

Determine which CPU PCA is installed in the printer and select the appropriate alignment procedure.

Table 6-1. Adjustment Procedures

FOR:	USE PROCEDURE:
All HP2611A's	A
HP2619A: CPU P/N 42048-DPM	A
CPU P/N 02619-69005	A
CPU P/N 42002-DPM	B
CPU P/N 1150-1422	B

Procedure "A"

NOTE

The printer system being adjusted must include a dual channel optical sensor adjacent to the shaft of the paperfeed stepper motor. This procedure utilizes program routines embedded in the firmware and uses existing switches and pushbuttons for test execution. Adjustments are made while viewing the LEDs at the bottom of the CPU PCA. Unless otherwise stated, the following adjustments are made with printer in local (see Table 6-2), no paper, and with the IFP (Infinite Forms Position) clutch closed.

The LEDs shall be referred to as LED-1, LED-2, LED-3, LED-4, and LED-5. LED-1 is the TOP LED and LED-5 is the BOTTOM one.

Defeat the paper out switch by placing a piece of paper in the switch assembly.

Table 6-2. I/O PCA Test Switches

SWITCH	UP	DOWN
S-1 (top)	Local	Remote
S-2	Ripple	Solid
S-3	Single Step (SS)	Paper Feed (PF)
S-4	Print	Print Inhibit
S-5	Parity = 1	Parity = 0

8th Step Index Adjustment

In this procedure, LED-1 and LED-5 are always lit and proper adjustment is indicated by LED-3 ON SOLID.

1. Place the REMOTE/LOCAL top switch (I/O PCA) to LOCAL (down).
2. Place the RIPPLE/SOLID second switch to SOLID (down).
3. Simultaneously depress the ALARM, HOME and ONE LINE buttons on the right hand operator's control panel. Release ALARM and you will note that the paper feed system goes into a slew mode, You may now release the other buttons. The PF system should continue to slew.
4. If necessary, gently rotate the sensor adjustment plate (Figure 6-8) to obtain smooth operation.
5. Note that LED-1 and LED-5 should be lit. If LED-3 is also lit, and remains lit (no flickering), no adjustment to the 8th index step is required.
6. If LED-3 is not lit, loosen the screws holding the optical sensor to its mounting plate (See Figure 6-8), and gently rotate the sensor body until LED-3 lights and stays lit.
7. Tighten the sensor mounting screws and observe the LEDs for a moment to see that LED-3 does not flicker.

Step Strobe Adjustment

NOTE

In this adjustment the LEDs indicate the slew speed of the paper feed system. LED-5 indicates low speed and LED-1 indicates high speed.

1. Place the RIPPLE/SOLID switch to RIPPLE (second switch up).
2. Loosen the sensor mounting plate screws (See Figure 6-8), and move the assembly until the speed of the system causes the LEDs to change.
3. Adjust the speed so that it centers around the middle LED (LED-3), but the top LED (LED-1) never lights. (The variation in the LEDs is caused by normal speed variations in the system)
4. Tighten screws, and re-check the settings to make sure they have not changed.
5. Press ALARM to stop slew. The system should now initialize properly.

Vertical Format Unit Adjustment

1. Remove paper, if loaded, and latch (push in) the IFP clutch lever.
2. Loosen the large socket-head retaining screw in the barrel of the VFU sprocket just enough to permit axial adjustment of the sprocket WITHOUT disturbing the holding position established by the stepper motor.
3. Table 6-3 defines the relationship between the RIPPLE/SOLID and SS/PF switch position and the channels that are read. The channels are read on LEDs 1 through 4 (LED-5 is not used) settings A through C are referred to in this procedure.

Table 6-3. Switch Settings

Setting	Switch	Position	Channels Read
A	S2=RIPPLE/ SOLID	Up/RIPPLE	1,9,3,4
	S3=SS/PF	Down/PF	
B	S2=RIPPLE/ SOLID	Down/SOLID	5-8
	S3=SS/PF	Up/SS	
C	S2=RIPPLE/ SOLID	Up/RIPPLE	2,10,11,12
	S3=SS/PF	Up/SS	

NOTE

HP configuration has channels 2 and 9 swapped so that the LED corresponding to channel 9 lights 2 and vice versa. The Traffic Control PCA schematics do not reflect this change.

4. To verify proper functioning of the CPU LEDs, perform the following test procedure (with the VFU tape removed). Place the RIPPLE/SOLID (S-2) and SS/PF (S-3) switches in setting A. Simultaneously depress and hold ALARM and LOAD VF; then release ALARM only. After the printer initializes ("STOP" light once again illuminates and the VFU stops rotating), release LOAD VF. LEDs 1 thru 4 should light. They have no diagnostic code significance in this test procedure.



5. To verify proper operation of the Vf4 reader channel sensors, cycle through the settings A, B and C without a VFU tape. All 4 LED's should light at each setting.
6. Before placing the VFU Tape in the reader, Locate the punch for CH 1. Note if any other punches occur in channels 9,3 or 4 on that punch line. These punches will create our alignment pattern by illuminating LEDs 1,2,3 and/or 4 to correspond to the punches in channels 1,9,3 and/or 4 respectively. Place the VFU Tape in the Reader, CH 1 to the inside, so that the above punch line is just above the Read Head Assembly. Make sure the Tape Hold Down Flap is closed.

NOTE

It is normal for some or all of the LEDs to extinguish at this time because you have yet to align the tape read head.

7. With the RIPPLE/SOLID and SS/PF switches in setting A, rotate the VFU sprocket clockwise until the LEDs just illuminate in the alignment pattern determined in Step 5. Make a pencil mark from the edge of the VFU sprocket to the edge of the Tape Hold Down Flap (see Figure 6-9). Continue rotating the sprocket slowly CW (clockwise) until any one of the alignment pattern LEDs extinguish. Rotate the sprocket back CCW (counter clockwise) until the entire pattern just re-illuminates. Make another pencil mark on the edge of the tape hold down flap opposite the mark on the sprocket. Center the sprocket mark between the two marks on the Tape Hold Down Flap and securely tighten the large socket-head screw. DO NOT allow the sprocket to move or the PF Motor to step while tightening. If so, redo procedure starting at step 4.

NOTE

This adjustment will not be possible if the horizontal alignment is so far off that the channel punches fall between channel sensors in the tape read head. Horizontal alignment will very rarely change and is only necessary when the VFU sprocket shims are lost or someone has loosened the glyptoled adjustment screws. Only perform this adjustment when absolutely necessary. Replacing the VFU read head assembly usually doesn't necessitate adjustment.

8. Horizontal Alignment is done by either shimming the VFU sprocket in or out with respect to the Read Head, or if equipped with an adjustable mounting bracket the Read Head is moved in/out with respect to the sprocket. Adjust by trial and error shimming or counting and halving mounting screw rotations while monitoring the LEDs. A more accurate adjustment can be obtained using an oscilloscope and the adjustment procedures in the maintenance section of the Data Printer Service Manual.
9. Exit program by depressing ALARM.
10. Load a VFU Tape a few times with the IFP clutch closed and a few times with it open to check adjustment. If load is not successful (Load VF lit), re-check adjustments.

NOTE

The printer system being adjusted must include a dual channel optical sensor adjacent to the shaft of the paperfeed stepper motor. This procedure utilizes program routines embedded in the firmware and uses existing switches and pushbuttons for text execution. Adjustments are made while viewing the LEDs at the bottom of the CPU PCA. Unless otherwise stated, the following adjustments are made with printer in local (see Table 6-2), no paper, and with the IFP (Infinite Forms Position) clutch closed.

The LEDs shall be referred to as LED-1, LED-2, LED-3, LED-4 and LED-5. LED-1 is the TOP LED and LED-5 is the BOTTOM one.

Defeat the paper out switch by placing a piece of paper in the switch assembly.

8th Step Index Adjustment

In this procedure, LED-1 and LED-5 are always lit and proper adjustment is indicated by LEDs 2,3 and 4 flickering.

1. Place the REMOTE/LOCAL switch (S1) (I/O PCA) to LOCAL (down).
2. Place the RIPPLE/SOLID switch (S2) to RIPPLE= (UP).
3. Simultaneously depress the ALARM, HOME and ONE LINE buttons on the right hand operator's control panel. Release ALARM and you will note that the paper feed system goes into a slew mode, You may now release the other buttons. The PF system should continue to slew.
4. If necessary, move the sensor adjustment plate (Figure 6-8) to obtain a smooth and constant speed operation.
5. Change the RIPPLE/SOLID switch (S2) to the SOLID position = (DOWN). The PF system should now be in a step mode and LED-1 and LED-5 are lit. If LEDs 2,3 or 4 are flickering, no adjustment to the 8th index step is required. If only LED-3 is flickering then the adjustment is exactly centered (not necessary).
6. If LEDs 2,3 or 4 are not flickering, loosen the screws holding the optical sensor to its mounting plate (See Figure 6-8), and gently rotate the sensor body until any one or combination flicker.
7. Tighten the sensor mounting screws and observe the LEDs for a moment to see that the LED(s) remain(s) flickering. Once these screws are tightened and the adjustment verified, do not loosen them for the Step Strobe Adjustment!

Step Strobe Adjustment

NOTE

In this adjustment, the LEDs indicate the slew speed of the paper feed system. LED-5 indicates low speed and LED-1 indicates high speed.

1. Place the RIPPLE/SOLID switch to RIPPLE (S2=UP).
2. Loosen the sensor mounting plate screws (See Figure 6-8) and move the assembly until the speed of the system causes the LEDs to change.
3. Adjust the speed so that it centers around the middle LED (LED-3), but the top LED (LED-1) never lights. (The variation in the LEDs is caused by normal speed variations in the system)
4. Tighten screws and re-check settings to make sure they have not changed. The Step Strobe Adjustment can change the 8th Step Adjustment so **DO NOT ATTEMPT TO READJUST**. Step 2 **MUST** always be performed **AFTER** Step 1!
5. Press ALARM to stop slew. The system will now initialize properly.

Vertical Format Unit Adjustment

1. Remove paper, if loaded, and latch (push in) the IFP clutch lever.
2. Loosen the large socket-head retaining screw in the barrel of the VFU sprocket just enough to permit axial adjustment of the sprocket **WITHOUT** disturbing the holding position established by the stepper motor.
3. To verify proper functioning of the LEDs, perform the following test procedure with the VFU tape removed. Simultaneously depress and hold ALARM and LOAD VF; then release ALARM only. After the printer initializes, release LOAD VF. All five (5) LEDs should light. They have no diagnostic code significance in this test procedure.

NOTE

The self test switches on the I/O PCA will not be used during any portion of the VF4 adjustments using Procedure B. The procedure will only verify proper reading of Channel 1,9,3,4 and 5.

4. Before placing the VFU Tape in the reader, Locate the punch for CH 1. Note if any other punches occur in channels 9,3,4 or 5 on that punch line. These punches will create our alignment pattern by illuminating LEDs 1,2,3,4 and/or 5 to correspond to the punches in channels 1,9,3,4 and/or 5 respectively. Place the VFU Tape in the Reader, CH 1 to the inside, so that the above punch line is just above the Read Head Assembly. Make sure the Tape Hold Down Flap is closed.

NOTE

It is normal for some or all of the LEDs to extinguish at this time because you have yet to align the tape read head.

5. Rotate the VFU sprocket CW (clockwise) until the LEDs just illuminate in the alignment pattern determined in Step d. Make a pencil mark from the edge of the VFU sprocket to the edge of the Tape Hold Down Flap (see Figure 6-9). Continue rotating the sprocket slowly CW (clockwise) until any one of the alignment pattern LEDs extinguish. Rotate the sprocket back CCW (counter clockwise) until the entire pattern just re-illuminates. Make another pencil mark on the edge of the tape hold down flap opposite the mark on the sprocket. Center the sprocket mark between the two marks on the Tape Hold Down Flap and securely tighten the large socket-head screw. DO NOT allow the sprocket to move or the PF Motor to step while tightening. If so, redo procedure starting at step 3.

NOTE

This adjustment will not be possible if the horizontal alignment is so far off that channel punches fall between channel sensors in the tape read head. Horizontal alignment very rarely changes and is only necessary when the VFU sprocket shims are lost or someone has loosened the glyptoled adjustment screws. Only perform this adjustment when absolutely necessary. Replacing the VFU read head assembly usually doesn't necessitate adjustment.

6. Horizontal Alignment is done by either shimming the VFU sprocket in or out with respect to the Read Head, or if equipped with an adjustable mounting bracket, the Read Head is moved in/out with respect to the sprocket. Adjust by trial and error shimming or counting and halving mounting screw rotations while monitoring the LEDs. A more accurate adjustment can be obtained using an oscilloscope and the adjustment procedures in the maintenance section of the Data Printer Service Manual.
7. Exit program by depressing ALARM.
8. Load a VFU Tape a few times with the IFP clutch closed and a few times with it open to check adjustment. If load is not successful (Load VF lit), re-check adjustments.



Paper Feed Strobe Scope Adjustments

NOTE

The following adjustments are a more accurate adjustment method than using the internal routine that uses the LEDs. The internal routine is quicker and easier to use and is the preferred procedure in most cases. The scope adjustments are to be used for critical, on-going problems or hot sites. They are not intended to replace the internal adjustments and are dependent on the engineer's scope usage skills.

Radial Alignment (Substitute for the 8th Step Index Adj.)

1. Connect channel "A" of the oscilloscope to the 8th Step Strobe signal (Traffic Control PCA, pin A-29).
2. Connect channel "B" to the PF Step Strobe signal (Traffic Control PCA, pin B-11).
3. Sync Negative on channel "A". Place the printer into the slew mode as follows:

Place the RIPPLE/SOLID switch on the I/O PCA to the RIPPLE (S2=UP) position. Simultaneously press the ALARM, HOME and ONE LINE buttons on the right hand operator's control panel. Release ALARM and the paper feed system will slew.
4. Loosen the screws holding the optical sensor to its mounting plate and move the sensor body to obtain the waveform shown in Figure 6-10. If the proper timing can not be obtained, the dual strobe sensor is defective.

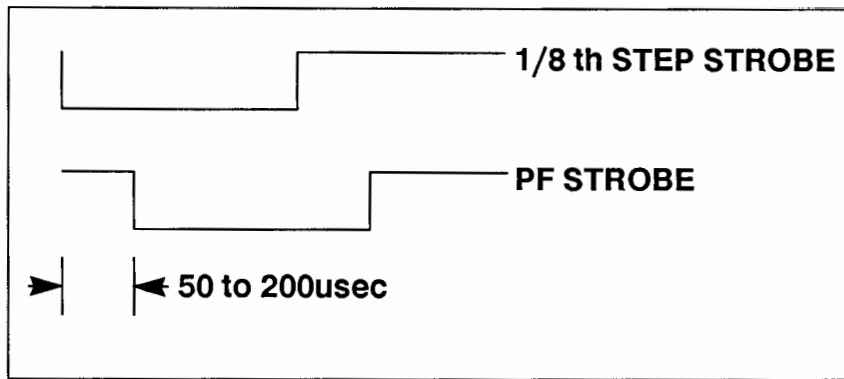


Figure 6-10. Radial Alignment

Paper Feed Speed Check (Substitute for the Step Strobe Adj.)

1. Connect channel "A" to TP1 on the PF PCA. Channel "B" is not used.
2. Sync Internal/Negative. Place the printer into the slew mode using the procedures in step 3 of the Axial Alignment procedures.
3. Loosen the sensor mounting plate screws (See Figure 6-8), and move the assembly to obtain the waveform shown in Figure 6-11. Double check the speed using the internal LED adjustments discussed in the "Paper Feed Strobe Set-Up and Adjustments" section.

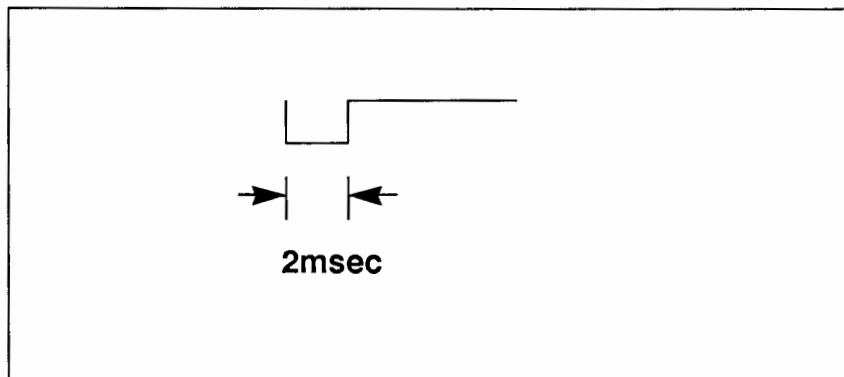


Figure 6-11. Paper Feed Speed Check

6.7 Mechanical Adjustment Specifications

- Chaintrain drive belt = 1/4" deflection at 3 lbs. +/- 1/4 lb.
- Paper feed drive belt = 1/8" deflection at 6-6 1/2 lbs.
- Infinite Forms Position Clutch (IFPC) release tension = 5-9 lbs.
- Ribbon Drive Slip Clutch = 17 lbs. +/- 1 oz./in.
- Paper Tractors Holddown Gap = 0.030-0.045 in.
- Penetration Adjustment (see Yoke Assembly Removal and Replacement - Section 4.1)

PARTS

Beginning on the next page are the field replaceable parts lists for the HP 2611/19A printers.

NOTE

Parts are sorted alphabetically by nomenclature (name).

HP2611A/2619A

7-3

SORTED ON NOMENCLATURE NAME		REVISED 31 MAR 1983	
HP PART #	HPBLUE #	DP PART #	DP OBSOLETE NOMENCLATURE
1830363-DPM		1830363	DOOR, L.H. PAPER BAY, SUBASSEMBLY
1830364-DPM		1830364	DOOR, R.H. PAPER BAY, SUBASSEMBLY
4415161-DPM		4415161	DRIVE ROLLER ASSY (SEE 44152 OR 18715)
18715-DPM		18715	DRIVE ROLLER SUBASSEMBLY (PAPER PULLER)
4222462-DPM		4222462	DUAL SENSOR ASSEMBLY
44537-DPM		44537	E-CLIP, REPLACES 0510-0055
E0001-DPM		E0001	PROM, CPU EPROM
1535-4019		42018	EXTENDER CARD
3160-0341		40540	FAN, ELECTRONICS BAY
2110-0043		AGC 1-1/2	FUSE, 1.5A, 250V (BOX OF 5)
2110-0249		ABC 12	FUSE, 12A, 250V (BOX OF 5)
2110-0327		MDA-15	FUSE, 15A, 250V (BOX OF 5)
2110-0007		MDL 1	FUSE, 1A, 250V (BOX OF 5)
2110-0478		MDA-20A	FUSE, 20A, 250V (BOX OF 5)
2110-0002		AGC-2	FUSE, 2A, 250V (BOX OF 5)
2110-0609		KTK-30	FUSE, 30A, 600V (BOX OF 5)
2110-0294		AGC-4	FUSE, 4A, 32V (BOX OF 5)
2110-0326		MDA-7	FUSE, 7A, 250V (BOX OF 5)
20710-001-DPM			FUSE, 30A, 60V (BOX OF 5)
1535-4018		09925-T1	GAUGE, TRACTOR PIN ALIGNMENT
16240-T2-DPM		16240-T2	GAUGES, PENETRATION
1535-4020		1534-T1	GAUGES, RAIL SETTING (ORDER T-6120 TOOL KIT)
4202061-DPM	02619-69003	4202061	HAMMER, DRIVER PCA
48128-3-DPM	02619-69101	48128-3	HOSE, FLEXIBLE 60 IN (CLEAN-UP)
42022631-DPM		42022631	I/O PCA
40915-DPM		18699-1	L.H. FORM ALIGNMENT DECAL (40915 = PAIR)
1535-3966		20618	LAMP, RH CTL PNL (BOX OF 10)
1535-3967		20619	LAMP, LH CTL PNL (BOX OF 10)



HP PART #	HPBLUE #	DP PART #	DP OBSOLETE	REVISED 31 MAR 1983	NOMENCLATURE	2611A/2619A
1535-3944		20622-003			LENS, "ALARM" (RED)	2611A/2619A
1535-3947		20671-001			LENS, "HOME" (YELLOW)	2611A/2619A
1535-3949		20660-002			LENS, "LOAD VFLU" (WHITE)	2611A/2619A
1535-3943		20622-002			LENS, "OFF" (RED)	2611A/2619A
1535-3942		20671-001			LENS, "ON" (GREEN)	2611A/2619A
1535-3948		20672-002			LENS, "ONE-LINE" (WHITE)	2611A/2619A
1535-3980		20673			LENS, "PRINT ONE-LINE" (WHITE)	2611A/2619A
1535-3945		20671-002			LENS, "RUN" (GREEN)	2611A/2619A
1535-3946		20622-004			LENS, "STOP" (RED)	2611A/2619A
1535-3950		20660-001			LENS, "TEST PRINT" (WHITE)	2611A/2619A
1535-3984		14033			LINE COUNT DISC	2611A/2619A
1811-DPM		1811			MAGNET, DOOR	2611A/2619A
20690-DPM		20690			METER, TIME (METER ONLY)	2611A/2619A
48185G1-DPM		42185G1			METER, TIME (INCL. BRACKET & CABLE)	2611A/2619A
42054G1-DPM		42054G1			MOTHERBOARD PCA	2619A
42054G2-DPM		42054G2			MOTHERBOARD PCA	2611A
1150-1404		44035G1			MOTOR & CABLE SUBASSEMBLY, STEPPER	2611A/2619A
1150-1402		42258G1			MOTOR ASSEMBLY, VACUUM	2619A
1150-1403		42238G1			MOTOR ASSEMBLY, PAPER PULLER	2611A/2619A
1535-3927		46585G1			MOTOR, CHAIN DRIVE	2611A/2619A
1535-3926		46590G1			MOTOR, RIBBON	2611A/2619A
1535-3925		42296G1			MOTORS, TRACTOR DRIVE (1 PAIR)	2611A/2619A
46584G1-DPM		46584G1			MOUNT, PICK-UP, INDEX & CHAR (2619A < 01516)	2619A
46635-DPM		46635			MOUNT, PICK-UP, INDEX & CHAR (2611;19>=01516)	2611A/2619A
46597-DPM		46597			MYLAR RIBBON SHIELD	2611A/2619A
1537-DPM		1537			OIL TUBE SUB ASSY	2611A/2619A
1535-3958		15030G1			OIL, CHAIN TRAIN, BOTTLE 1 OZ. (SEE 15022)	2611A/2619A
15022-DPM		15022	15020		OIL, CHAIN TRAIN, QUART CAN	2611A/2619A
1150-1384		42220G1			OPTICAL SWITCH & CABLE ASSEMBLY, MOTION SENSOR	2611A/2619A
1150-1386		14534G1			ORDER 14521G2-DPM	2611A/2619A
1150-1388		42224G1			ORDER 42224G2-DPM	2611A/2619A
42012G1-DPM		42012G1			PAPER FEED STEPPER DRIVE PCA	2611A/2619A
1535-3952		44115G1			PAPER MOTION DISC	2611A/2619A

SORTED ON NOMENCLATURE NAME				REVISED 31 MAR 1983			
HP PART #	HPBLUE #	DP PART #	DP OBSOLETE	NOMENCLATURE			
1535-3951		42240G1		PICK-UP, RELUCTANCE (INDEX)		2611A/2619A	
1535-3933		42244G1		PICK-UP, RELUCTANCE (CHARACTER)		2611A/2619A	
42084G1-DPM	02619-69106	42084G1	42010G1	POWER CONTROL PCA		2611A/2619A	
42084G1-DPM	02619-69106	42084G1	42084	POWER CONTROL PCA		2611A/2619A	
1150-1401	02619-69007	40502G1		POWER SUPPLY SUBASSEMBLY, 60 HZ, 115V		2619A	
40502G3-DPM		40502G2/G3		POWER SUPPLY SUBASSEMBLY, 50 HZ, 220V		2619A	
40526G3-DPM		40526G1		POWER SUPPLY SUBASSEMBLY (2611A 50/60 HZ)		2611A	
1535-3953		46046G1	46619	PRESSURE FOOT		2611A/2619A	
44147G1-DPM		44147G1		PRESSURE ROLLER ASSEMBLY		2611A/2619A	
12300-DPM		12300		PROM, FONT CONFIGURATION		2611A/2619A	
1535-3941		10-031-10-04		PROM, I/O (64 CHAR)		2611A/2619A	
1535-3982		10-032-10-04		PROM, I/O (96 CHAR)		2611A/2619A	
101-03-DPM		101-03	101-00-G	PROM, PROGRAM CPU		2619A	
1535-3932		202-01-0		PROM, PROGRAM CPU		2619A	
301-01-DPM		301-01	301-01-0	PROM, PROGRAM CPU (42002 CONTROL)		2619A	
1535-3935		403-00-0		PROM, PROGRAM CPU		2619A	
1535-3936		506-02-0		PROM, PROGRAM CPU		2619A	
601-03-DPM		601-03	601-00-F	PROM, PROGRAM CPU		2619A	
701-03-DPM		701-03	701-00-0	PROM, PROGRAM CPU		2619A	
46556-1-DPM		46556-1		PULLEY, CHAIN MOTOR, 60 HZ		2619A	
46556-2-DPM		46556-2		PULLEY, CHAIN MOTOR, 50 HZ		2619A	
46556-3-DPM		46556-3		PULLEY, CHAIN MOTOR, 60 HZ		2619A	
46556-4-DPM		46556-4		PULLEY, CHAIN MOTOR, 50 HZ		2611A	
46632-DPM		46632		PULLEY, IDLER (ALL 2611A; 2619A > 2230A01516)		2611A/2619A	
15528G1-DPM		15528G1		PULLEY, IDLER DRIVE (2619A < 2230A01516)		2611A/2619A	
15529G1-DPM		15529G1		PULLEY, SLUG DRIVE (2619A < 2230A01516)		2611A/2619A	
46633-DPM		46633		PULLEY, SLUG DRIVE (2611A; 2619A > 2230A01516)		2611A/2619A	
14521G2-DPM		14521G2	14534G1	PULLEY, VFU		2611A/2619A	
40915-DPM		18699-2		R.H. FORM ALIGNMENT DECAL (40915 = PAIR)		2611A/2619A	
1818-0381				RAM, CPU		2611A/2619A	
20023-001-DPM		20023-001		RESISTOR, 10 OHM, 22 WATT		2611A/2619A	
46055-DPM		46055		RETAINER, RIBBON PLATEN (2611A; 2619 > 01341)		2611A/2619A	

HP2611A/2619A

SORTED ON NOMENCLATURE NAME			REVISED 31 MAR 1983		DP OBSOLETE NOMENCLATURE	
HP PART #	HPBLUE #	DP PART #	DP PART #	DP OBSOLETE	NOMENCLATURE	
47000G5-DPM		47000G5	47000G1		RIBBON DRIVE ASSEMBLY, RT SIDE	2611A/2619A
47025-DPM		47025			RIBBON REVERSING DOGS (EARS FOR RIB MECH G5)	2611A/2619A
150-1398		47100G1			RIBBON SENSING ASSEMBLY, LT SIDE	2611A/2619A
1535-3914		047500-4			RIBBON, NYLON 5 MIL.	2611A/2619A
0510-0055					RING, RETAINER, TRACTOR, REPLCD BY 44537-DPM	2611A/2619A
44126G1-DPM		44126G1			ROLLER ASSEMBLY, PAPER MOTION	2611A/2619A
43039-DPM		43039			SCREW, CAP CALL 2611A; 2619A > 2117A01219)	2611A/2619A
1535-3924		03318			SCREW, FLT TIME ADJUSTMENT =<S/N 2117A01218	2619A
43040-DPM		43040			SCREW, FLT TIME ADJ (2611A; 2619A>=2117A01219)	2611A/2619A
15509-DPM		15509			SHAFT, IDLER STUB (2619A < 2230A01516	2619A
46638-DPM		46638			SHAFT, IDLER STUB (2611A; 2619A >= 2230A01516	2611A/2619A
44152-DPM		44152			SHAFT, PAPER PULLER	2611A/2619A
02619-60002					SHIM KIT	2611A/2619A
1535-4025		04511-001			SHIM, .003" THK, .380" ID (12 VFU, STUB SHFT)	2611A/2619A
1535-4027		14022-3			SHIM, .005" THICK, .725" ID	2611A/2619A
1535-4028		14080			SHIM, .005" THICK, .600" ID	2611A/2619A
1535-4026		31011-001			SHIM, .005" THICK, .505" ID (FORMS CLUTCH)	2611A/2619A
		31012-001			SHIM, .005" THICK, .188" ID	2611A/2619A
04511-002-DPM		04511-002			SHIM, .005" THK, .0380" ID (12 VFU, STUB SHFT)	2619A
1535-0422		06140			SHIM, .010" THICK, .390" ID	2611A/2619A
1535-4021		14022-2			SHIM, .010" THICK, .715" ID	2611A/2619A
1535-4023		31011-002			SHIM, .030" THICK, .505" ID (FORMS CLUTCH)	2611A/2619A
46637-001-DPM		46637-001			SHIM, STUB SHFT, .002 THK (2611; 19 >= 01516)	2611A/2619A
46637-002-DPM		46637-002			SHIM, STUB SHFT, .005 THK (2611; 19 >= 01516)	2611A/2619A
46637-003-DPM		46637-003			SHIM, STUB SHFT, .0015 THK (2611; 19 >= 01516)	2611A/2619A

SORTED ON NOMENCLATURE NAME		REVISED 31 MAR 1983		DP OBSOLETE		NOMENCLATURE	
HP PART #	HPBLUE #	DP PART #	DP	DP	DP	DP	DP
K-081-DPM							2611A/2619A
47136-DPM		47136					2611A/2619A
1150-1397		42230G1					2611A/2619A
1150-1396		42234G1					2611A/2619A
1150-1385		42250G1					2611A/2619A
1535-3939		20600					2611A/2619A
1535-3938		20601					2611A/2619A
20611-001-DPM		20611-001					2611A/2619A
1535-3961		20612-002					2611A/2619A
1535-3960		20613					2611A/2619A
1535-3965		20610-002					2611A/2619A
1535-3956		20610-001					2611A/2619A
1535-3962		20612-001					2611A/2619A
1535-3981		20612-005		20623-001			2611A/2619A
1535-3963		20611-003					2611A/2619A
1535-3957		20611-002					2611A/2619A
1535-3959		06247					2619A
44100G1-DPM		44100G1					2611A/2619A
1535-3954		16096					2611A
1150-1414		46015G1					2611A/2619A
1535-4057		46016					2611A/2619A
T-1200-DPM		T-1200					2611A/2619A
T-6120-DPM		T-6120					2611A/2619A
47000-12-DPM		47000-T2					2611A/2619A
91010-014-DPM		983					2611A/2619A
42006G3-DPM	02619-69104	42006G3 LL08 42006G1 LL07					2611A/2619A
1884-0284							2611A/2619A
1884-0284							2611A/2619A

9300-0750	VACUUM BAGS (PACKAGE OF 3)	2611A/2619A
1150-1389	VFU CABLE ASSEMBLY (READ HEAD)	2611A/2619A
02613-80001	VFU TAPE, 6 LPI	2611A/2619A
02613-80002	VFU TAPE, 6 LPI DIAG.	2611A/2619A
02618-80003	VFU TAPE, 8 LPI	2611A/2619A
02618-80004	VFU TAPE, 8 LPI DIAG.	2611A/2619A
30133-004-DPM	WASHER, WAVY SPRING (2611A; 19A >= 2230A01516	2611A/2619A
15553G1-DPM	WICK & BLOCK ASSY (SEE 15537)	2611A/2619A
48123 (HOOPER TYPE G)		
42212G1		
30133-004		
15553G1		

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DIAGRAMS

All 2611/19A line printers are shipped with a full-sized Data Printer Service Manual (HP P/N 02619-90905). The chart below summarizes diagrams available in that manual:

Table 8-1. Data Printer Logic Diagrams Outline
(page# ref. Nov. 1981)

Logic Diagram Description	No. of Pages	Figure Numbers
Control Panel & Switch Wiring	1 Rev. D	7.0.0
CPU (Old)	9 Rev. H	2.0.0/2.5.2
CPU, H.S. (New)	10 Rev. D	2.0.0/2.7.0
Hammer Driver, LSI	1 Rev. H	5.0.0
Hammer Driver Inter Wiring	1 Rev. A	0.2.0
Mother Board Connectors	3 Rev. B/C	0.0.0/0.1.1
Mother Board Power Distribution	1 Rev. C	0.3.0
Paper Feed/Stepper Drive	2 Rev. L	4.0.0/4.0.1
Power Control	1 Rev. B	6.0.0
Power Distribution	1 Rev. D	12.0.1
Standard I/O	10 Rev. N	1.0.0/1.4.1
Traffic Controller	6 Rev. T	0.0/3.3.1
Universal Power Supply (North)	1 Rev. D	11.0.1
Universal Power Supply (TTI)	1 Rev. A	11.0.1
Universal Power Supply (TTI-1260)	1 Rev. A	11.0.0 (2611A)

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SERVICE NOTES

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Seq. No.	Pub Date	Title	Page
2611A - 1A	10/82	Controller PCBA Switch Configurations	9-2
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2611A - 3	1/83	PCBA: Traffic Control	9-8
2611A - 4	3/83	Operator PM Duties Label	9-9
2619A - 1	9/79	Configuration of Spare PCBAs	9-11
2619A - 2	12/80	Drive Motor Capacitor Upgrade	9-15
2619A - 3	1/81	Half-Inch Step Strobe Upgrade	9-17
2619A - 4	7/81	Paper Motion Sensor Enhancement	9-25
2619A - 5A	10/82	Controller PCBA Upgrade	9-26
2619A - 6	12/81	New Power Control PCBA	9-42
2619A - 7	4/82	Installing Chaintrain Slug Guides	9-48
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2619A - 9	4/82	Paper Motion Sensor Replace/Cleaning	9-52
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2619A - 15A	2/83	Enhancements to Yoke Assembly	9-67
2619A - 16	1/83	PCBA: Power Control	9-89
2619A - 17	1/83	PCBA: Traffic Control	9-90
2619A - 18	3/83	Operator PM Duties Label	9-91
2619A - 19	9/83	Service Manual Parts List Update	9-93
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2619A - 21	6/84	Hammer Driver PCA Compatibility	9-101

S E R V I C E N O T E

Supersedes: 2611A - 1

HP 2611A Line Printer
All Serial Numbers

Controller PCBA Switch
Configurations

APPLIES TO:	All Units <input checked="" type="checkbox"/>	Only Units on Agreement <input type="checkbox"/>
PERFORM:	Immediately <input type="checkbox"/>	At PM/Normal Call <input type="checkbox"/>
	On Failure <input type="checkbox"/>	Information Only <input checked="" type="checkbox"/>
WARRANTY:	EXTENDED	NORMAL
LABOR:		NONE
PARTS:		X
TRAVEL:		X
SERVICE	N/A	Return for update <input type="checkbox"/>
INVENTORY		Use as is <input type="checkbox"/>
		Return for salvage <input type="checkbox"/>
		See text <input type="checkbox"/>
WARRANTY EXTENDED UNTIL:		N/A

The 2611A Line Printer uses the new 2619A controller PCBA (P/N 42080G3-DPM or 02619-69005*). However, in order to compensate for the different print speed, the switch settings on the controller must be set different. The alignment procedure for both units is the same.

*NOTE: The 2611A cannot use the old controller PCBA (P/N 1150-1422, 1150-1423, or 42002G3/G4). This old controller has seven unique PROMs which are programmed for 1000 LPM print speed.

SWITCH SETTINGS

Controller
Switch SN53 (Same for 2611A and 2619A)

Position	Condition	Function
1	Open (off)	Auto skip (N/A for HP)
2	Open (off)	Auto skip (N/A for HP)
3	Open (off)	Auto skip (N/A for HP)
4	Closed (on)	No. VFU auto load (N/A for HP)
5	Closed (on)	12 channel VFU
6	Open (off)	Std VFU connection
7	Closed (on)	Continue to bottom of form
8	Closed (on)	Not used

BG/was

10/82 - 46



Switch SN55

Position	Condition		Function
	2611A	2619A	
1	Closed (on)	Open (off)	Printer type
2	Closed (on)	Closed (on)	Printer type
3	Closed (on)	Closed (on)	Printer type
4	Closed (on)	Closed (on)	Ribbon motion (N/A for HP)
5	Closed (on)	Closed (on)	Not used
6	Closed (on)	Closed (on)	Auto skip (N/A for HP)
7	Closed (on)	Closed (on)	Halt 1/2 second after VFU load
8	Closed (on)	Closed (on)	No alarm if VFU not loaded

I/O PCBA

Switch SN28

Position	Condition		Function
	2611A	2619A	
1	Open (off)	Open (off)	Auto skip ((N/A for HP)
2	Closed (on)	Open (off)	Printer paper out switch position
3	Open (off)	Open (off)	Print inhibit not allowed while on-line
4	Open (off)	Open (off)	132 column
5	Open (off)	Open (off)	Odd parity
6	Open (off)	Open (off)	Even parity
7	Closed (on)	Closed (on)	Direct access VFU (N/A for HP)
8	Closed (on)	Closed (on)	Not used

For 64 character printer (2619A standard and option 002) insure PROM is 10-031-10-04. For 96 character printer (2619A option 001 and 003) ensure PROM is 10-032-10-04.

ALIGNMENT PROCEDURE

The procedure utilizes program routines embedded in the PROM listed above, and uses existing switches and pushbuttons for program routine initialization. Adjustments are made while viewing the diagnostic LEDs (Light Emitting Diodes) at the bottom of the CPU printed circuit board.

In this procedure, the LEDs shall be referred to as LED-1, LED-2, LED-3, LED-4, and LED-5. LED-1 is the top light and LED-5 is the bottom one.

Follow the procedure exactly, step by step, to ensure an accurately calibrated paperfeed system.

A. 8th Step Index Adjustment

In this procedure LED-1 and LED-5 are always lit, and adjustment is indicated by LED-3.

1. Place the "SOLID/RIPPLE" switch (I/O cont PCB) in the "SOLID" position.
2. Simultaneously depress the "ALARM," "HOME" AND "ONE LINE" buttons on the righthand operators control panel. Release "ALARM" and you will note that the paperfeed system goes into a slew mode. You may now release the other buttons, and the system will continue to slew.
3. If necessary, move the sensor adjustment plate (see Figure A) to obtain smooth operation.
4. You will note that LED-1 and LED-5 are lit. If LED-3 is also lit, and remains lit, no adjustment to the 8th step index is required.
5. If LED-3 is not lit, loosen the screws holding the optical sensor to its mounting place, and rotate the sensor body until LED-3 lights and stays lit (see Figure A).

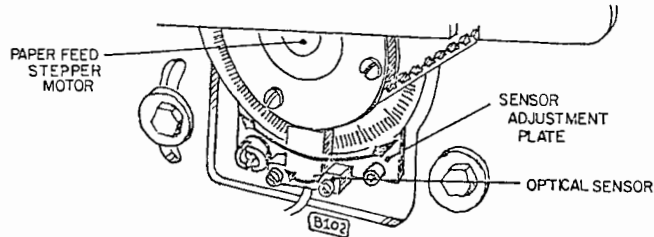


FIGURE A

6. Tighten the sensor mounting screws and observe the LEDs for a moment to see that LED-3 does not flicker.

B. Step Strobe Adjustment

In this procedure, the LEDs indicate the slew speed of the paperfeed system. LED-5 indicates low speed and LED-1 indicates high speed.

1. Place the "SOLID/RIPPLE" (I/O cont PCB) in the "RIPPLE" position.

2. Loosen the sensor mounting plate screws, and move the assembly until the speed of the system causes the LEDs to change (see Figure A).
3. Adjust the speed so that it centers around the middle LED (LED-3), but the top LED (LED-1) never lights. (The variation in the LEDs is caused by normal speed variations in the system.)
4. Tighten screws, and recheck settings to make sure they have not changed.
5. Press "ALARM" to stop slew. The system will now initialize properly.

C. Vertical Format Unit Adjustment

1. Remove paper, if loaded, and latch (push in) the IFPC lever.
2. Loosen the large socket head retaining screw in the barrel of the VFU sprocket just enough to permit axial adjustment of the sprocket without disturbing the holding position established by the stepper motor.
3. The following table defines the relationship between the SOLID/RIPPLE and SS/PF switch position and the channels that are read. The channels are read on LEDs 1 through 4 (LED-5 is not used) settings A through C are referred to in this procedure.

Setting	Switch	Position	Channels Read
A	RIPPLE/SOLID SS/PF	UP/RIPPLE DOWN/PF	1-4
B	RIPPLE/SOLID SS/PF	DOWN/SOLID UP/SS	5-8
C	RIPPLE/SOLID SS/PF	UP/RIPPLE UP/SS	9-12

HP Configuration: Printer has channels 2 and 9 swapped then LED-2 is actually reading channel 9 and LED-9 is reading channel 2.

4. To verify proper functioning of the LEDs, perform the following test procedure (with the VFU tape removed). Place the RIPPLE/SOLID and SS/PF switches in setting A. Simultaneously depress and hold ALARM and LOAD VF; then release ALARM only. When the printer initializes ("STOP" once again illuminates and the VFU stops rotating), release LOAD VF. LEDs 1 through 4 should illuminate. They have no diagnostic code significance in this test procedure.

5. Install your VFU alignment test tape following the usual installation guidelines for your type of VFU. Make sure the tape hold-down clamp is closed.

NOTE: It is normal for some or all of the LEDs to extinguish at this time because you have yet to align the tape read station channel sensors with the holes punched in the test tape.

6. With the RIPPLE/SOLID and SS/PF switches in setting A, adjust the vertical tape alignment by rotating the VFU sprocket counterclockwise until you find all four LEDs illuminated. At that point (that is, when the LEDs illuminate), adjust the axial position of the sprocket to a mid-point of illumination and securely tighten the sprocket's socket-head retaining screw to lock in the adjustment.

NOTE: This adjustment will not be possible if the horizontal alignment is so far off that channel punches fall between the channel sensor in the tape read station.

7. Exit program by depressing "ALARM."
8. Load a VFU tape a few times with the IFP clutch closed, and a few times with it open to check adjustment. If load is not successful ("LOAD FV" lit), recheck adjustment.

S E R V I C E N O T E

Supersedes: 2611A-2

2611A Line Printer
All Serial Numbers

PCBA: Power Control

HP P/N 4204G1-DPM, New
HP P/N 02619-69006, Exchange (Old)
HP P/N 02619-69106, Exchange (New)

APPLIES TO:	All Units <input checked="" type="checkbox"/>	Only Units on Agreement <input type="checkbox"/>
PERFORM:	Immediately <input type="checkbox"/>	At PM/Normal Call <input type="checkbox"/>
	On Failure <input type="checkbox"/>	Information Only <input checked="" type="checkbox"/>
WARRANTY:	EXTENDED	NORMAL
LABOR:		X
PARTS:		X
TRAVEL:		X
SERVICE	Return for update <input type="checkbox"/>	Use as is <input type="checkbox"/>
INVENTORY	Return for salvage <input type="checkbox"/>	See text <input checked="" type="checkbox"/>
WARRANTY EXTENDED UNTIL:	N/A	

Capacitor C1 has been removed from the power control board to ensure the 2611A meets FCC regulations regarding RF1.

A new exchange part number has been assigned to document this change. The change has no effect on the 2619A Line Printer, only the 2611A. Field service inventory can be used as is to repair a 2619A; however, when repairing a 2611A, either use the new exchange PCA or remove capacitor C1 from the old exchange PCA.

BG/was

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9320-4766 (1/83)



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SERVICE NOTE

Supersedes: None

2611A Line Printer
All Serial Numbers

PCBA: Traffic Control

HP P/N 42006G3-DPM, New
HP P/N 02619-69004, Exchange (Old)
HP P/N 02619-69104, Exchange (New)

APPLIES TO:	All Units <input checked="" type="checkbox"/>	Only Units on Agreement <input type="checkbox"/>	
PERFORM:	Immediately <input type="checkbox"/>	At PM/Normal Call <input type="checkbox"/>	
	On Failure <input type="checkbox"/>	Information Only <input checked="" type="checkbox"/>	
WARRANTY:	EXTENDED	NORMAL	NONE
LABOR:			X
PARTS:			X
TRAVEL:			X
SERVICE	Return for update <input type="checkbox"/>	Use as is <input checked="" type="checkbox"/>	
INVENTORY	Return for salvage <input type="checkbox"/>	See text <input type="checkbox"/>	
WARRANTY EXTENDED UNTIL:	N/A		

This service note documents a change to the crowbar circuit on the traffic control board. The change makes the crowbar less sensitive and easier to adjust.

A new exchange part number has been assigned to reflect this change.

SR/was

1/83 - 46

9320-4766
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S E R V I C E N O T E

Supersedes: None

2611A Line Printer
 All Serial Numbers
 Operator PM Duties Label
 P/N 5951-8917

APPLIES TO:	All Units <input checked="" type="checkbox"/>	Only Units on Agreement <input type="checkbox"/>
PERFORM:	Immediately <input type="checkbox"/>	At PM/Normal Call <input type="checkbox"/>
	On Failure <input type="checkbox"/>	Information Only <input checked="" type="checkbox"/>
WARRANTY:	EXTENDED	NORMAL
LABOR:		<input checked="" type="checkbox"/>
PARTS:		<input checked="" type="checkbox"/>
TRAVEL:		<input checked="" type="checkbox"/>
SERVICE	Return for update <input type="checkbox"/>	Use as is <input type="checkbox"/>
INVENTORY	Return for salvage <input type="checkbox"/>	See text <input type="checkbox"/>
WARRANTY EXTENDED UNTIL:		

A new label is available for the 2611A to remind the operator to perform the daily preventive maintenance duties. This label can be ordered through CPC or PCE (P/N 5951-8917) and applied as shown in the attached example.



MM/was

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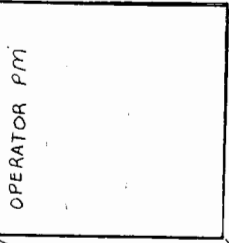
9320-4766
 MADE IN U.S.A



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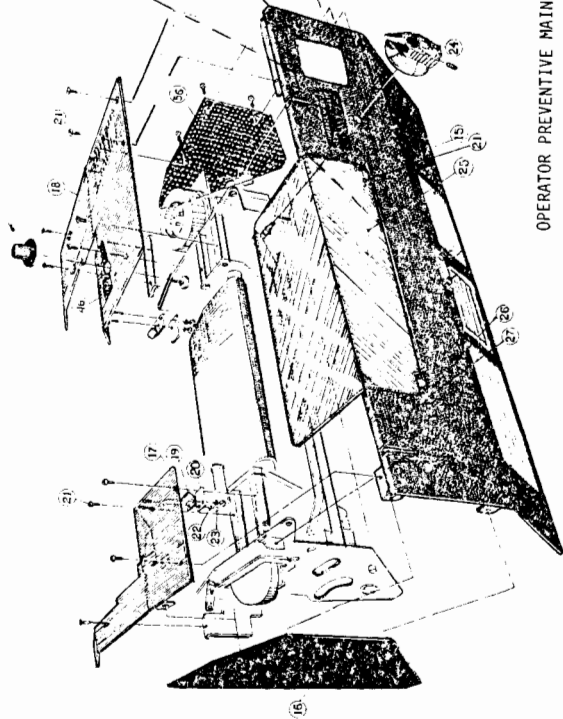
Printed in U.S.A.

LABEL P/N 5951-8917



APPLY AS SHOWN

SAMPLE



OPERATOR PREVENTIVE MAINTENANCE LABEL APPLICATION

S E R V I C E N O T E

Supersedes:

NONE

HP 2619A LINE PRINTER
ALL SERIAL NUMBERS
CONFIGURATION OF SPARE PCBA'S
FOR PRINTER OPTIONS

SERVICE	STD WTY			PARTS ONLY WTY		
	WA	WO	WN	WA	WO	WN
Lebor (Hrs)			X			
Parts			X			
Travel			X			

CHANGE TYPE	PERFORM		
	IMMEDIATELY	AT PM	ON FAIL
Design			
Enhancement			
Workmanship			
Information	X		

The 2619A is available in both 64 character (STD and option 002) and 96 character (options 001 and 003) fonts. The controller and I/O PCBA's carried in FSI are not configured for either 64 or 96 character machines.

NOTE: The microprocessor chip, PROMs and RAMs are contained on the PCBA which is being removed from printer. In addition, the service kit also contains a complete set of chips to back up the PCBA's.

Before replacing either the Controller PCBA or the I/O PCBA, ensure that board is configured as follows:

- I. Controller (HP P/N 1150-1395 new, 1150-1408 exchange, or vendor P/N 42002-G3/G4).
 - A. Both 64 and 96 character printers.
 - a. Install microprocessor chip (HP P/N 1535-3940 or vendor P/N 20338-001) in 40 pin socket. See figure 1 for location and orientation.
 - b. Install the 7 PROM chips in 24 pin sockets. See figure 1 for location and orientation.

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9/79-46

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- b. The IC socket, vendor PROM part number and associated HP part number follows:

<u>Socket Number</u>	<u>Vendor PROM</u>	<u>HP P/N</u>
IC 27	101-00-G	1535-3931
IC 22A	202-02-0	1535-3932
IC 17	301-01-0	1535-3934
IC 11	403-00-C	1535-3935
IC 9	506-02-0	1535-3936
IC 6	601-00-F	1535-3937
IC 22B	701-00-0	1535-3983

- B. 96 character only

Install 8 RAM chips (HP P/N 1818-0381) in 18 pin sockets. See figure 1 for location and orientation.

- II. I/O PCBA (HP P/N 1150-1394 new, 1150-1409 exchange, or vendor P/N 42022-G1)

- A. 2619A STD and option 002 (64 character).

- a. Install 64 character ROM (HP P/N 1535-3941 or vendor P/N 10-031-10-04) in 24 pin socket. See figure 2 for location and orientation.
- b. Configure dip switch as follows. See figure 2 for location.

<u>Pos</u>	<u>Condition</u>	<u>Function</u>
1	Open	Auto skip
2	Closed	64 character
3	Open	High speed
4	Open	136 column
5	Open	Odd parity
6	Open	Even parity
7	Closed	Direct access VFU
8	Spare	

- B. 2619A option 001 and 003 (96 character)

- a. Install 96 character ROM (HP P/N 1535-3982 or vendor P/N 10-032-10-04) in 24 pin socket. See figure 2 for location and orientation.
- b. Configure dip switch as follows. See figure 2 for location.

<u>Pos</u>	<u>Condition</u>	<u>Function</u>
1	Open	Auto skip
2	Open	96 character
3	Open	High speed
4	Open	136 column
5	Open	Odd parity
6	Open	Even parity
7	Closed	Direct access VFU
8	Spare	

- 2 -

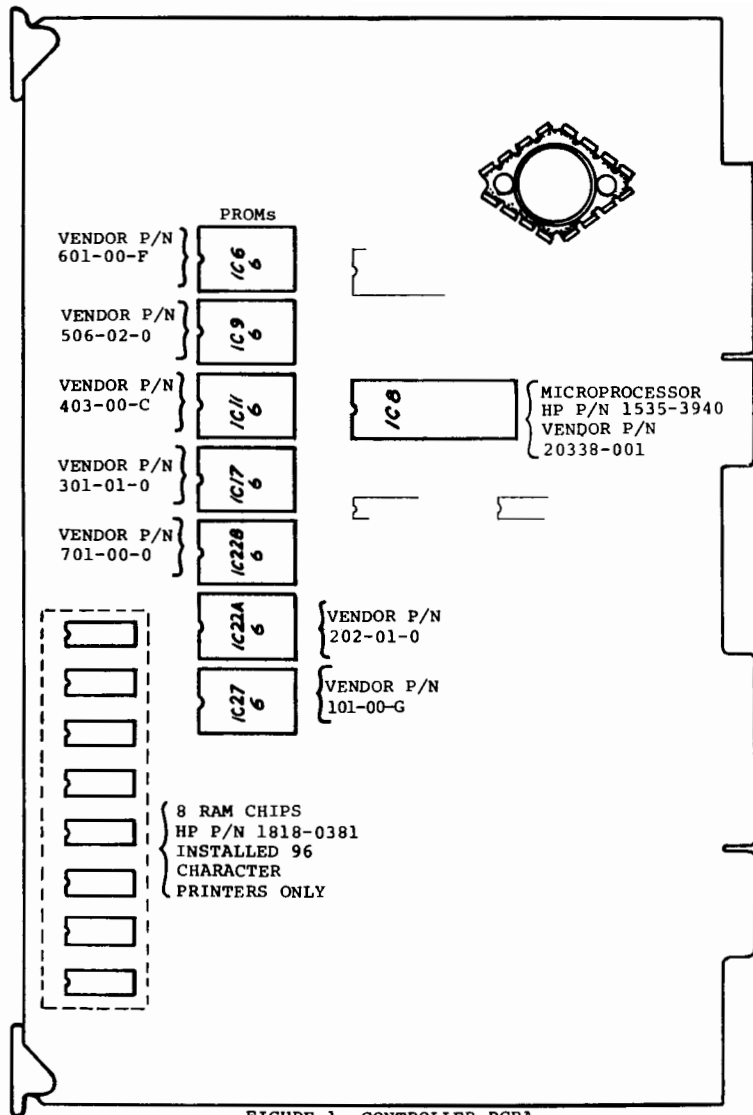


FIGURE 1 CONTROLLER PCBA

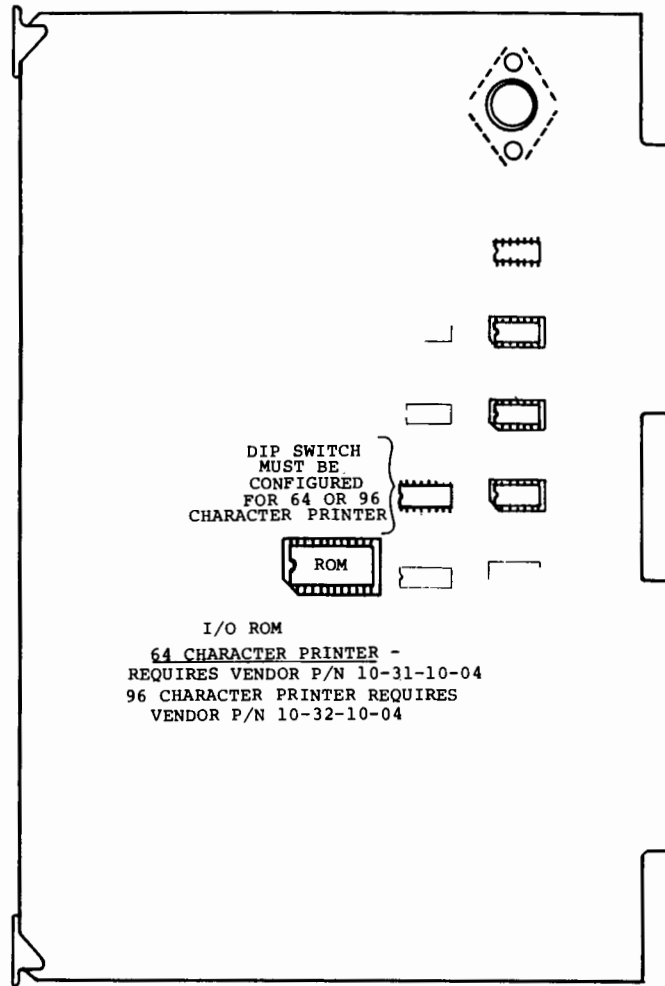


FIGURE 2 I/O PCBA

PRODUCT SAFETY SERVICE NOTE

Supersedes: NONE

2619A CHAIN PRINTER
BELOW 1944A00725

EXCLUDING:

1944A00681	1944A00701
1944A00702	1944A00712
1944A00717	1944A00718
1944A00719	1944A00723
1944A00725	

APPLIES TO:	All Units <input checked="" type="checkbox"/>	Only Units on Agreement <input type="checkbox"/>
PERFORM:	Immediately <input type="checkbox"/>	At PM Normal Call <input checked="" type="checkbox"/>
	On Failure <input type="checkbox"/>	Information Only <input type="checkbox"/>
WARRANTY:	EXTENDED	NORMAL
LABOR:	1.0	
PARTS:	X	
TRAVEL:	0.0	
SERVICE	Return for update <input type="checkbox"/>	Use as is <input type="checkbox"/>
INVENTORY	Return for salvage <input type="checkbox"/>	See text <input type="checkbox"/>
WARRANTY EXTENDED UNTIL:	January, 1982	

DRIVE MOTOR CAPACITOR

NOTE

This applies to all 2619A Chain Printers with serial numbers below 1944A00725, excluding:

1944A00681	1944A00701	1944A00702
1944A00712	1944A00717	1944A00718
1944A00719	1944A00723	1944A00725

This is to correct a potential hazard. It is a minor hazard since multiple faults are required to expose personnel to a hazard.

Problem:

The drive motor capacitor (HP P/N 1535-3928) occasionally ruptures or explodes if the vent on the capacitor fails to open and relieve pressure built up when the capacitor overheats.

Correction:

A kit, HP part number K-081-DPM, is available for updating your unit to conform to the new safety specifications. This kit positions the drive motor capacitor in an upright position and encases it in a cage assembly in order to maintain the structural integrity of the capacitor in the event of a vent failure.

DS:jmg

(Continued)

12-80/46



Installation Instructions:

1. Power down and unplug printer.
2. Remove right-hand side panel and right-hand yoke end cover.
3. Open yoke and unclip capacitor.
4. Remove cap clip from bracket.
5. Position cap wires in slot and secure clip to housing.
6. Snap the cap into the clip in an upright position. Snap the bottom in place first.
7. Secure perforated cage to capacitor housing with self threading screws in three places.

S E R V I C E N O T E

HP 2619A Line Printer
Half-Inch Step Strobe Upgrade

Supersedes: NONE		
APPLIES TO:	All Units <input checked="" type="checkbox"/>	Only Units on Agreement <input type="checkbox"/>
PERFORM:	Immediately <input type="checkbox"/>	At PM Normal Call <input checked="" type="checkbox"/>
	On Failure <input type="checkbox"/>	Information Only <input type="checkbox"/>
WARRANTY:	EXTENDED <input type="checkbox"/>	NORMAL <input type="checkbox"/>
	NONE <input checked="" type="checkbox"/>	
LABOR:		
PARTS:		
TRAVEL:		
SERVICE	Return for update <input type="checkbox"/>	Use as is <input type="checkbox"/>
INVENTORY	Return for salvage <input type="checkbox"/>	See text <input checked="" type="checkbox"/>
WARRANTY EXTENDED UNTIL:		

An upgrade kit is available for the 2619A. This upgrade kit is designed to improve the reliability of the paper feed system by combining the individual half-inch strobe and the paper feed strobe sensors into a dual sensor. This dual sensor replaces the single paper feed sensor. Furthermore, to accommodate the dual sensor, the firmware in the unit has been changed. The modified firmware is contained in PROMs 1 and 6.

In addition to the above, a further service enhancement has been incorporated in the firmware. This enhancement enables the CE to perform the alignment of the paper feed using the 5 LEDs on the control PCA instead of an oscilloscope. This procedure is resident in PROM 7.

The complete upgrade kit can be obtained by ordering part number K-080C-DPM from CPC or PCE.

This kit contains the following parts:

PART NUMBER	DESCRIPTION	QUANTITY
101-03A	PROM 1	1
601-03A	PROM 6	1
701-03A	PROM 7	1
42224G2	Dual Channel Sensor	1
	Installation Instructions (copy attached)	1

BG:jmg

46-1/81



IMPLEMENTATION

A. FSI

- Order kit (HP P/N K-080C-DPM) from CPC or PCE.
- Upon receipt of the above kit, remove and replace the following parts:

DESCRIPTION	OLD PART NUMBER	NEW PART NUMBER
PROM 1	1535-3931 (101-00-G-DPM)	101-03A-DPM
PROM 6	1535-3937 (601-00-F-DPM)	601-03A-DPM
PROM 7	1535-3983 (701-00-0-DPM)	701-03A-DPM
Step Strobe Sensor	1150-1388 (42224G1-DPM)	42224G2-DPM
¼" Step Strobe	1150-1387 (42208G1-DPM)	Combined with 42224G2-DPM

NOTE

Return the PROMs to Data
Printer via the mailer.
Scrap old step and half
inch sensors.

- Bill Boise Division warranty the price of the kit.
NO LABOR.

B. Installed 2619As

- Order kit (HP P/N K-080C-DPM) from CPC or PCE.
- Install kit in 2619A per attached instructions.
- Bill Boise Division warranty for one-half hour labor.
No parts. Return the old PROMs to Data Printer via the
enclosed mailer.
- Retain the alignment procedure for future reference.

IT-080C

1210 - 40 IPS PAPERFEED

SEPTEMBER, 1980

BILL OF MATERIALS

DESCRIPTION	PART NUMBER	QUANTITY
ROM	101-03A	1
ROM	601-03A	1
ROM	701-03A	1
Dual Channel Sensor		1
Installation Instructions		1
Mailer Envelope		1

INSTRUCTIONS K - 080C

1. Remove the upper and lower rear panels.
2. Remove the left side panel and VFU cover.
3. Remove the (2) truss head screws holding the 1/2-inch sensor in place. See figure 1.
4. Remove the 1/2-inch sensor from the machine.
5. Replace the VFU plate and sprocket and shims to their original position using the old hardware.
6. Remove the line strobe sensor 42224G1 from the line count bracket and replace with the new dual channel sensor 42224G2 supplied in the kit. See figure 2. NOTE: the 5 wire connector goes to 108 and the single wire goes to 107 Pin 1.
7. Remove the CPU PCB from position 6 in the electronic bay area and remove the ROMs from position 27, 6 and 22B. Place in position 27 the ROM 101-03A, in position 6 place the 601-03A, and in position 22B place the 701-03A ROM. On some boards a socket will have to be installed in positions 22B. See figure 3.
8. Perform the adjustment procedure on the following page.
9. Replace the VFU cover and all outer skins.

SCOPE

The adjustment procedure is to be used only on Series 1210 printer systems equipped with a CPU printed circuit board containing the following program PROMs:

1. 10103A
2. 60103A (40 IPS paperfeed)
3. 70103A

The last letter of the PROM numbers is the revision level. This procedure is applicable to Revision A or later

The printer system being adjusted must include a dual-channel sensor at the shaft of the paperfeed stepper motor (the half-inch strobe sensor is eliminated).

The procedure utilizes program routines embedded in the PROMs listed above, and uses existing switches and pushbuttons for programs routine initialization. Adjustments are made while viewing the diagnostic LEDs (light emitting diodes) at the bottom of the CPU printed circuit board.

In this procedure the LEDs shall be referred to as LED-1, LED-2, LED-3, LED-4 and LED-5. LED-1 is the top light and LED-5 is the bottom one.

Follow the procedure exactly, step by step, to ensure an accurately calibrated paperfeed system.

Unless otherwise stated, the following adjustments are made with no paper in the printer, and with the infinite forms position (IFP) clutch in the closed (latched) position.

8TH STEP INDEX ADJUSTMENT

In this procedure, LED-1 and LED-5 are always lit when in solid/ripple switch is in solid position, and proper adjustment is indicated by LED's 2, 3, and 4.

1. Place the "solid/ripple" switch (I/O cont PCB) in the "ripple" position.
2. Simultaneously depress the "alarm", "home", and "one line" switches on the right hand operator's control panel. Release "alarm" and you will note that the paperfeed system goes into a slew mode. You may now release the other buttons, and the system will continue to slew.
3. If necessary, move the sensor adjustment plate (figure 1) to obtain smooth operation. (NOTE: the motor is not speeding up or slowing down; ie, slew is at constant rate.)
4. Change the "solid/ripple" switch to the "solid" position, and you will note that the system goes into a stepping mode, and that LED-1 and LED-5 are lit. If LED's 2, 3 or 4 are flickering, no further adjustment to the 8th step index is required. If only LED-3 is flickering, the adjustment is centered.
5. Loosen the screws holding the dual channel sensor to the mounting plate (figure 1) and rotate the sensor body until LED's 2 and/or 3 and/or 4 flicker. NOTE: this is a sensitive adjustment, move small amount and observe results.
6. Secure the sensor body mounting screws.

STEP STROBE ADJUSTMENT

In this procedure, the LED's indicate the slew speed of the paperfeed system. LED-5 indicates low speed and LED-1 indicates high speed.

1. Place the "solid/ripple" switch in the "ripple" position and note that the system goes into the slew mode.
2. Loosen the sensor mounting plate screws (figure 1), and move the assembly until the speed of the system causes the LED's to change.
3. Adjust the speed so that it centers around the middle LED (LED-3), but the top LED (LED-1) seldom or never lights. (The variations in the LED's is caused by normal speed variations in the system.) NOTE: if these results cannot be obtained, move the sensor mounting plate completely to the right and repeat steps 2 and 3.
4. Tighten screws, and recheck step strobe settings (not 1/8th step index setting) to make sure slew speed has not changed. NOTE: step strobe adjustment will change 1/8th step index adjustment. Original results may or may not be obtained. DO NOT ATTEMPT TO READJUST.
5. Press "alarm" to stop slew. The system will now initialize properly.

VERTICAL FORMAT UNIT ADJUSTMENT

In this adjustment the LEDs display Channels 1 through 5 of the VFU.

1. Loosen the VFU sprocket retaining screw.
2. Press "alarm" and "load VF" (left hand control panel). Release "alarm" but hold "load VF" until the system initializes.
3. With no tape in the VFU, note that all LEDs are lit.
4. Install tape with holes punched in Channels 1 through 5, and without moving the stepper position, rotate the sprocket wheel until the holes are in reading position.
5. Observe the LEDs and find the mid-position of the sprocket when the LEDs are lit. Then tighten sprocket retaining screw.
6. Exit program by depressing "alarm".
7. Load a VFU tape (see note 1) a few times with the IFP clutch closed, and a few times with it open to check adjustment. If load is not successful ("load VF" does not extinguish), recheck adjustments.

NOTE: in this system (8th step index) only tapes punched at 6 lines per inch are acceptable and the "6/8 LPI" switch must be in the "6 LPI" position during tape load.

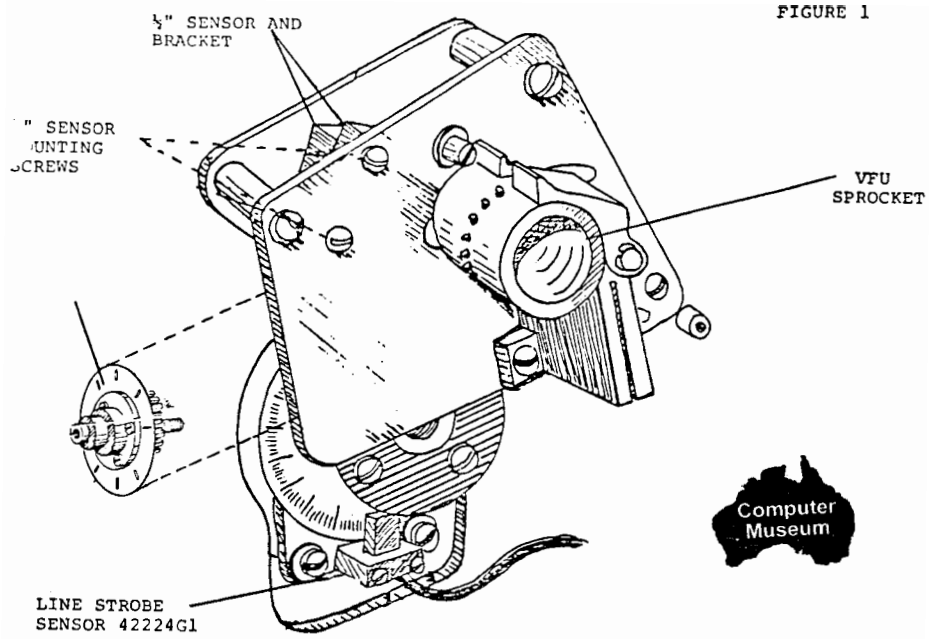


FIGURE 1

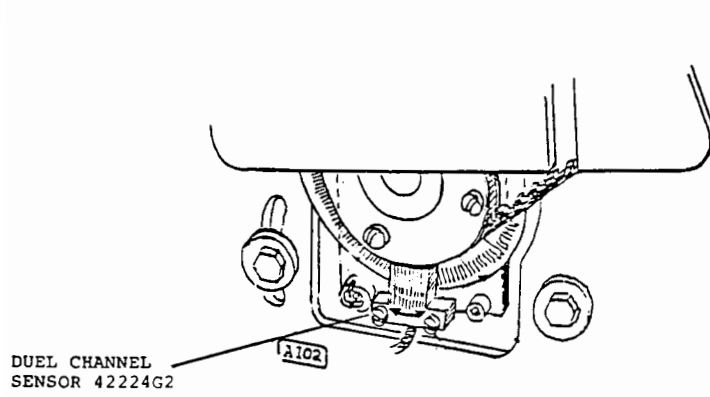
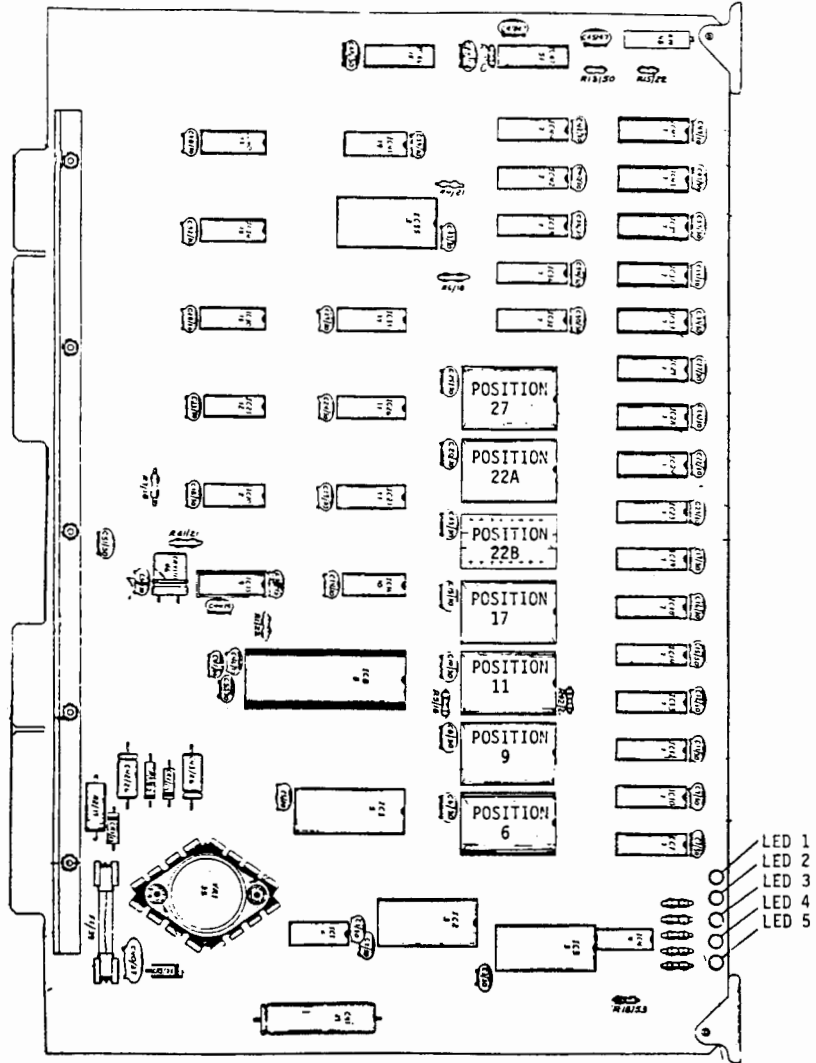


FIGURE 2

FIGURE 3



SERVICE NOTE

Supersedes:

HP 2619A LINE PRINTER
ALL SERIAL NUMBERS

APPLIES TO:	All Units <input checked="" type="checkbox"/>	Only Units on Agreement <input type="checkbox"/>
PERFORM:	Immediately <input type="checkbox"/>	At PM Normal Call <input type="checkbox"/>
	On Failure <input type="checkbox"/>	Information Only <input checked="" type="checkbox"/>
WARRANTY:	EXTENDED	NORMAL
LABOR:		X
PARTS:		X
TRAVEL:		X
SERVICE	Return for update <input type="checkbox"/>	Use as is <input checked="" type="checkbox"/>
INVENTORY	Return for salvage <input type="checkbox"/>	See text <input type="checkbox"/>
WARRANTY EXTENDED UNTIL:	DNA	

Traffic Control PCA
HP P/N 1150-1393 new
HP P/N 1150-1410 exchange
Vendor number 42006GI-DPM

Reliability Enhancement to Paper Motion Sensor

Modification has been made to the 2619A traffic control PCA to enhance the reliability of the motion sensor. This modification increases the number of missed motion sensor pulses required before a paper jam is indicated.

Field service kits will not be upgraded. The boards will be modified by the repair center on a failure basis, per service note 2619A-3.

NOTE:

Old and new traffic control PCAs are interchangeable only in 2619As with the firmware upgrade installed.

In the future, when ordering a replacement traffic control PCA, order exchange part number 02619-69004. This number replaces the old exchange number 1150-1410.

The PCA can be modified in the field on an as needed basis. To modify the PCA, proceed as follows:

1. Remove traffic control PCA from the 2619A.
2. Locate U40 pin 1 and isolate it from the rest of the circuitry.
3. Run a jumper wire from U40 pin 1 to U34 pin 23.
4. Label the PCA with HP part number 02619-69004.

BG/was

7/81-46



S E R V I C E N O T E

Supersedes: 2619A - 5

HP 2619 Line Printer
 All Serial Numbers
 Controller PCBA Upgrade
 HP P/N 42080G3-DPM and
 02619-69005

APPLIES TO:	All Units <input checked="" type="checkbox"/>	Only Units on Agreement <input type="checkbox"/>
PERFORM:	Immediately <input type="checkbox"/>	At PM/Normal Call <input type="checkbox"/>
	On Failure <input checked="" type="checkbox"/>	Information Only <input type="checkbox"/>
WARRANTY:	EXTENDED	NORMAL
LABOR:	See Text, Page 5, Step K	
PARTS:	See Text, Page 5, Step K	
TRAVEL:		
SERVICE	Return for update <input type="checkbox"/>	Use as is <input type="checkbox"/>
INVENTORY	Return for salvage <input type="checkbox"/>	See text <input checked="" type="checkbox"/>
WARRANTY EXTENDED UNTIL:		

The controller PCBA used in the HP 2619A Line Printer has been redesigned to decrease manufacturing cost, improve reliability, and provide provision to incorporate special character sets. On the new controller PCBA, the firmware is contained on one (1) 4K E-PROM. In addition to the E-PROM, the new PCBA has an additional PROM used for font configuration. This PROM "customizes" the controller PCBA to the chain configuration. Also the new controller PCBA, will have the two (2) PROMs included as part of the exchange assembly. Thus the C.E. needs to remove the 8080 from the old controller PCBA and install it on the new PCBA.

BG/was

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FOR MORE INFORMATION, CALL YOUR LOCAL HP SALES OR SERVICE OFFICE or East (201) 265-5000 • Midwest (312) 255-9800 • South (404) 955-1500 • West (213) 970-7500 or (415) 968-9200; **OR WRITE**, Hewlett-Packard, 3000 Hanover Street, Palo Alto, California 94304. **IN EUROPE, CALL YOUR LOCAL HP SALES or SERVICE OFFICE OR WRITE**, Hewlett-Packard S.A., 7, rue du Bois-du-Lan, P.O. Box, CH-1217 MEYRIN 2-Geneva, Switzerland. **IN JAPAN**, Yokogawa-Hewlett-Packard Ltd., 29-21 Takaido-Higashi 3-Chrome, Sugunami-Ku, Tokyo 168.

Printed in U.S.A.

(1 of 16)

Part Numbers:

The part numbers of the assemblies have been changed as follows:

Part Numbers

New		Replaces
42080G3-DPM	(New)	1150-1395 and 1150-1422 (New)
02619-69005	(Exch)	1150-1408 and 1150-1423 (Exch)

Compatibility:

The new and old controller PCBA's are interchangeable provided:

- A. The dual channel sensor (P/N 42224G2) is installed.
- B. A backplane jumper (pluggable) is installed.
- C. Dip switches on the I/O PCBA are reconfigured.
- D. The paperfeed system is readjusted.

Note: The appropriate adjustment procedures and I/O switch settings are listed under implementation

Installed Base:

See attached flow chart.

The old controller PCBA artwork is not supported. If the old PCBA fails for any reason other than for a PROM or processor, the assembly should be replaced by a new controller (P/N 42080G3-DPM or 02619-69005). However, the individual PROMs and the processor chip will continue to be supported. These parts can be obtained from CPC or PCE using the appropriate part number.

For convenience those numbers are:

Part Number	Description	Location on old controller PCBA
101-03-DPM	PROM 1	IC 27
1535-3932	PROM 2	IC 22A
301-01-DPM	PROM 3	IC 17
1535-3935	PROM 4	IC-11
1535-3936	PROM 5	IC-9
601-03-DPM	PROM 6	IC-6
701-03-DPM	PROM 7	IC-22B
1535-3940	8080 Processor chip	IC-8

Implementation:

I. Service Kit

The old controller PCBA in Field Service Inventory will be rolled over. The old PCBA in service kit will be replaced by a new board. (CSD will provide roll over instructions). To insure that the field has the jumper and instructions, a kit (K-095-DPM) will be used to up grade the FSI. In addition to the new PCBA, the field should order the following parts from CPC or PCE as an FSI increase.

Part Number	Description
12300-DPM	PROM, font configuration
E 0001-DPM	E PROM Controller

II. New Controller (P/N 42080G3-DPM, 02619-69005, or kit K-095-DPM)

- A. Gain access to motherboard backplane by removing the access panel in paper compartment.
- B. Install jumper (P/N 44191-DPM) from controller connection 6-A16 to traffic control connecton 7-A29.
- C. Replace access panel removed in step "A".
- D. On controller PCBA (P/N 42080G3-DPM on 02619-69005) insure that the following parts are installed. See figure 3 for location and orientation.

Part Number	Location on Controller PCBA	Description
12300-DPM	U6	PROM, Font Configuration
E0001-DPM	U29	E-PROM Controller
20357-001-DPM	U28	8080 Processor chip

- E. On New Controller (P/N 42080G3-DPM or 02619-69005) locate dip switches SN53 and 55. Configure as follows: (See figure 3 for Location)

Switch SN53 (Same for 2611A and 2619A)

Position	Condition	Function
1	open (off)	Auto Skip ((N/A for HP))
2	open (off)	Auto Skip ((N/A for HP))
3	open (off)	Auto Skip ((N/A for HP))
4	closed (on)	No. VFU Auto load ((N/A for HP))
5	closed (on)	12 Channel VFU
6	open (off)	Std VFU Connection
7	closed (on)	Continue to Bottom of form
8	closed (on)	Not used

Switch SN55

Position	2611A	2619A	Function
1	closed (on)	open (off)	Printer type
2	closed (on)	closed (on)	Printer type
3	closed (on)	closed (on)	Printer type
4	closed (on)	closed (on)	Ribbon motion ((N/A for HP))
5	closed (on)	closed (on)	Not used
6	closed (on)	closed (on)	Auto skip ((N/A for HP))
7	closed (on)	closed (on)	Halt 1/2 second after VFU load
8	closed (on)	closed (on)	No alarm if VFU not loaded

F. Install new controller PCBA (P/N 42080G3-DPM or 02619-69005) in place of old controller PCBA.

G. Remove I/O PCBA from printer.

H. On I/O PCBA, locate switch SN28 and configure as follows: See Figure 2 for location of dip switch.

Position	2611A	2619A	Function
1	open (off)	open (off)	Auto skip ((N/A for HP))
2	closed (on)	open (off)	Paper out switch position
3	open (off)	open (off)	Print inhibit not allowed while on-line
4	open (off)	open (off)	132 column
5	open (off)	open (off)	Odd Parity
6	open (off)	open (off)	Even Parity
7	closed (on)	closed (on)	Direct access VFU ((N/A for HP))
8	closed (on)	closed (on)	Not used

For 64 character printer (2619A STD & option 002) insure PROM is 10-031-10-04. For 96 character printer (2619A option 001 and 003) insure PROM is 10-032-10-04. See figure 2 for location.



- I. Reinstall I/O PCBA in printer.
- J. Realign paperfeed system per procedure "A" attached.
- K. Warranty: Bill Boise Division one hour in installation for backplane jumper and realignment of paperfeed system when installing new controller PCBA.

III. Old Control PCBA (P/N 1150-1422, 1150-1423, and 42002 G3/G4) (NOT APPLICABLE FOR 2611A)

- A. Insure the following parts are installed.
See figure 1 for location.

Part Number	Description	Location
101-03-DPM	PROM 1	IC27
202-01-0-DPM	PROM 2	IC22A
303-01-0-DPM or 301-01-DPM	PROM 3	IC17
403-00-C-DPM	PROM 4	IC11
506-02-0-DPM	PROM 5	IC9
601-03-DPM	PROM 6	IC6
701-03-DPM	PROM 7	IC22B
1535-3940	8080 Processor Chip	IC8
1818-0381	optional RAM (96 ch)	IC 24,28,29,33,37,39,43,45

If the printer is 96 character insure that the 8 RAM chips (P/N 1818-0381) are installed in the locations indicated on figure 1.

- B. Install controller PCBA in printer.
- C. Remove I/O PCBA from printer.
- D. On I/O PCBA, locate switch SN28 and configure as follows:
See figure 2 for location of dip switch.

1. 64 character printers (2619A Std & option 002)

Position	Condition	Function
1	open (off)	Auto skip ((N/A for HP))
2	closed (on)	64 Character
3	open (off)	High Speed (40 ips) slew
4	open (off)	132 Column
5	open (off)	Odd Parity
6	open (off)	Even Parity
7	closed (on)	Direct Access VFU (N/A for HP)
8	closed (on)	Not used

Insure I/O PROM is 10-031-10-04 for a 64 character printer.
See figure 2 for location.

2. 96 character printer (2619A options 001 and 003).

Position	Condition	Function
1	open (off)	Auto skip N/A for Hp
2	open (off)	96 Character
3	open (off)	High Speed (40IPS) slew
4	open (off)	132 column
5	open (off)	Odd Parity
6	open (off)	Even Parity
7	closed (on)	Direct Access VFU N/A to HP
8	closed (on)	Not used

Insure I/O PROM is 10-032-10-04 for a 96 character printer.
See Figure 2 for location.

E. Reinstall I/O PCBA

F. Align paperfeed system per procedure "B" attached.

ALIGNMENT PROCEDURES

I. Procedure "A" (New version of controller PCBA)

To be used with CPU PCBA (P/N 42080G3-DPM and 02619-69005)

The printer system being adjusted must include a dual channel optical sensor at the shaft of the paperfeed stepper motor.

The procedure utilizes program routines embedded in the PROM listed above, and uses existing switches and pushbuttons for program routine initialization. Adjustments are made while viewing the diagnostic LED's (Light Emitting Diodes) at the bottom of the CPU printed circuit board.

In this procedure the LED's shall be referred to as LED-1, LED-2, LED-3, LED-4 and LED-5. LED-1 is the top light, and LED-5 is the bottom one.

Follow the procedure exactly, step by step, to ensure an accurately calibrated paperfeed system.

Unless otherwise stated, the following adjustments are made with printer in local, no paper in the printer, and with the infinite forms position (IFP) clutch in the closed (latched) position.

A. 8th Step Index Adjustment

In this procedure LED-1 and LED-5 are always lit, and adjustment is indicated by LED-3.

1. Place the "SOLID/RIPPLE" switch (I/O cont PCB) in the "SOLID" position.
2. Simultaneously depress the "ALARM," "HOME" and "ONE LINE" buttons on the righthand operator's control panel. Release "ALARM" and you will note that the paperfeed system goes into a slew mode. You may now release the other buttons, and the system will continue to slew.
3. If necessary, move the sensor adjustment plate (See Figure A) to obtain smooth operation.
4. You will note that LED-1 and LED-5 are lit. IF LED-3 is also lit, and remains lit, no adjustment to the 8th step index is required.
5. If LED-3 is not lit, loosen the screws holding the optical sensor to its mounting plate, and rotate the sensor body until LED-3 lights and stays lit. (See Fig A)

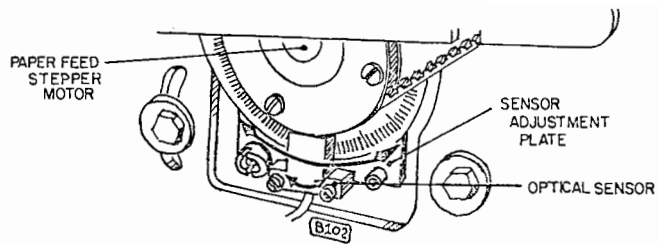


FIGURE A

6. Tighten the sensor mounting screws and observe the LED's for a moment to see that LED-3 does not flicker.

B. Step Strobe Adjustment

In this procedure, the LED's indicate the slew speed of the paperfeed system. LED-5 indicates low speed and LED-1 indicates high speed.

1. Place the "SOLID/RIPPLE" (I/O cont PCB) in the "RIPPLE" position.
2. Loosen the sensor mounting plate screws, and move the assembly until the speed of the system causes the LED's to change (See Figure A).
3. Adjust the speed so that it centers around the middle LED (LED-3), but the top LED (LED-1) never lights. (The variation in the LEDs is caused by normal speed variations in the system).
4. Tighten screws, and recheck settings to make sure they have not changed.
5. Press "ALARM" to stop slew. The system will now initialize properly.



C. Vertical Format Unit Adjustment

1. Remove paper, if loaded, and latch (push in) the IFPC lever.
2. Loosen the large socket-head retaining screw in the barrel of the VFU sprocket just enough to permit axial adjustment of the sprocket without disturbing the holding position established by the stepper motor.
3. The following table defines the relationship between the SOLID/RIPPLE and SS/PF switch position and the channels that are read. The channels are read on LED's 1 through 4 (LED-5 is not used) settings A through C are referred to in this procedure.

SETTING	SWITCH	POSITION	CHANNELS READ
A	RIPPLE/SOLID SS/PF	UP/RIPPLE DOWN/PF	1-4
B	RIPPLE/SOLID SS/PF	DOWN/SOLID UP/SS	5-8
C	RIPPLE/SOLID SS/PF	UP/RIPPLE UP/SS	9-12

HP Configuration: Printer has channels 2 and 9 swapped then LED 2 is actually reading channel 9 and LED 9 is reading channel 2.

4. To verify proper functioning of the LED's, perform the following test procedure (with the VFU tape removed). Place the RIPPLE/SOLID and SS/PF switches in setting A. Simultaneously depress and hold ALARM and LOAD VF; then release ALARM only. When the printer initializes ("STOP" once again illuminates and the VFU stops rotating), release LOAD VF. LED's 1 through 4 should illuminate. They have no diagnostic code significance in this test procedure.
5. Install your VFU alignment test tape following the usual installation guidelines for your type of VFU. Make sure the tape hold-down clamp is closed.

NOTE: It is normal for some or all of the LEDs to extinguish at this time because you have yet to align the tape read station channel sensors with the holes punched in the test tape.

6. With the RIPPLE/SOLID and SS/PF switches in setting A, adjust the vertical tape alignment by rotating the VFU sprocket counterclockwise until you find all four LED's illuminate. At that point (that is, when the LED's illuminate), adjust the axial position of the sprocket to a mid-point of illumination, and securely tighten the sprocket's socket-head retaining screw to lock in the adjustment.

NOTE: This adjustment will not be possible if the horizontal alignment is so far off that channel punches fall between the channel sensor in the tape read station.

7. Exit program by depressing "ALARM."
8. Load a VFU tape a few times with the IFP clutch closed, and a few times with it open to check adjustment. If load is not successful ("LOAD VF" Lit), recheck adjustment.

II. Procedure "B" (Old version of controller PCBA)

To be used with CPU PCBA (P/N 42002-DPM, 1150-1422, and 1150-1423)

The printer system being adjusted must include a dual-channel sensor at the shaft of the paperfeed stepper motor (the half-inch strobe sensor is eliminated).

The procedure utilizes program routines embedded in the PROMs 1 thru 7, and uses existing switches and pushbuttons for programs routine initialization. Adjustments are made while viewing the diagnostic LEDs (light emitting diodes) at the bottom of the CPU printed circuit board.

In this procedure the LEDs shall be referred to as LED-1, LED-2, LED-3, LED-4 and LED-5. LED-1 is the top light and LED-5 is the bottom one.

Follow the procedure exactly, step by step, to ensure an accurately calibrated paperfeed system.

Unless otherwise stated, the following adjustments are made with printer in local, no paper in the printer, and with the infinite forms position (IFP) clutch in the closed (latched) position.

A. 8th Step Index Adjustment

In this procedure, LED-1 and LED-5 are always lit when in SOLID/RIPPLE switch is in SOLID position, and proper adjustment is indicated by LED's 2, 3, and 4.

1. Place the "SOLID/RIPPLE" switch (I/O cont PCB) in the "RIPPLE" position.
2. Simultaneously depress the "ALARM", "HOME", and "ONE LINE" switches on the righthand operator's control panel. Release "ALARM" and you will note that the paperfeed system goes into a slew mode. You may now release the other buttons, and the system will continue to slew.
3. If necessary, move the sensor adjustment plate (Figure A) to obtain smooth operation.

NOTE: The motor is not speeding up or slowing down; i.e., slew is at constant rate.

4. Change the "SOLID/RIPPLE" switch to the "SOLID" position, and you will note that the system goes into a stepping mode, and that LED-1 and LED-5 are lit. If LED's 2, 3 or 4 are flickering, no further adjustment to the 8th step index is required. If only LED-3 is flickering, the adjustment is centered.
5. Loosen the screws holding the dual channel sensor to the mounting plate (see figure A). Rotate the sensor body until LED-3 flickers (2 and 4 may also flicker).

NOTE: This is a sensitive adjustment, move small amount and observe results.

6. Secure the sensor body mounting screws.

B. Step Strobe Adjustment

In this procedure, the LED's indicate the slew speed of the paperfeed system. LED-5 indicates low speed and LED-1 indicates high speed.

1. Place the "SOLID/RIPPLE" switch in the "RIPPLE" position and note that the system goes into the slew mode.
2. Loosen the sensor mounting plate screws (figure A), and move the assembly until the speed of the system causes the LEDs to change.

3. Adjust the speed so that it centers around the middle LED (LED-3), but the top LED (LED-1) seldom or never light. (The variations in the LED's is caused by normal speed variations in the system.)

NOTE: If these results cannot be obtained, move the sensor mounting plate completely to the right and repeat steps 2 and 3.

4. Tighten screws, and recheck step strobe settings (not 1/8th step index setting) to make sure slew speed has not changed.

NOTE: Step strobe adjustment will change 1/8th step index adjustment. Original results may or may not be obtained. DO NOT ATTEMPT TO READJUST.

5. Press "ALARM" to stop slew. The system will now initialize properly.

C. Vertical Format Unit Adjustment

In this adjustment the LEDs display channels 1, 3, 4, 5 and 9 of the VFU.

1. Loosen the VFU sprocket retaining screw.
2. Press "ALARM" and "LOAD VF" (lefthand control panel). Release "ALARM" but hold "LOAD VF" until the system initializes.
3. With no tape in the VFU, note that all LEDs are lit.
4. Install tape with holes punched in channels 1 through 5, and without moving the stepper position, rotate the sprocket wheel until the holes are in reading position.
5. Observe the LEDs and find the mid-position of the sprocket when the LEDs are lit. Then tighten sprocket retaining screw.
6. Exit program by depressing "ALARM".
7. Load a VFU tape (see note) a few times with the IFP clutch closed, and a few times with it open to check adjustment. If load is not successful ("LOAD VF" does not extinguish), recheck adjustments.

NOTE: In this system (8th step index) only tapes punched at 6 lines per inch are acceptable and the "6/8 LPI" switch must be in the "6 LPI" position during tape load.

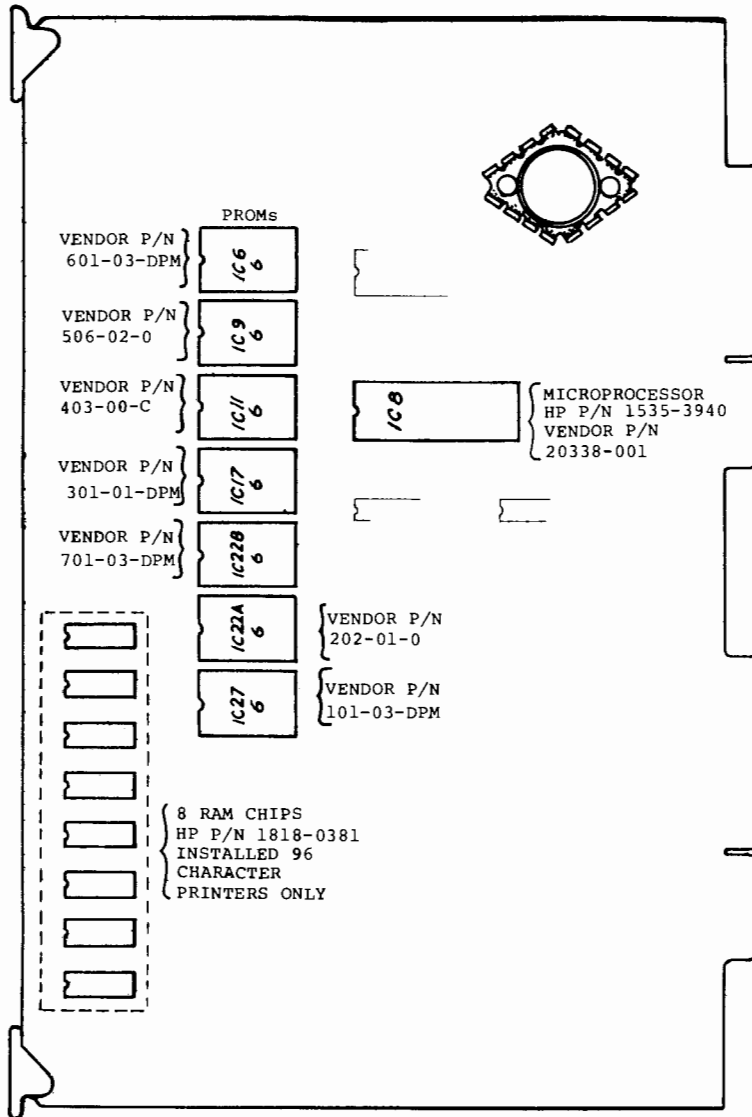


FIGURE 1 OLD CONTROLLER PCBA
VENDOR PART NUMBER 42002

(13 of 16)

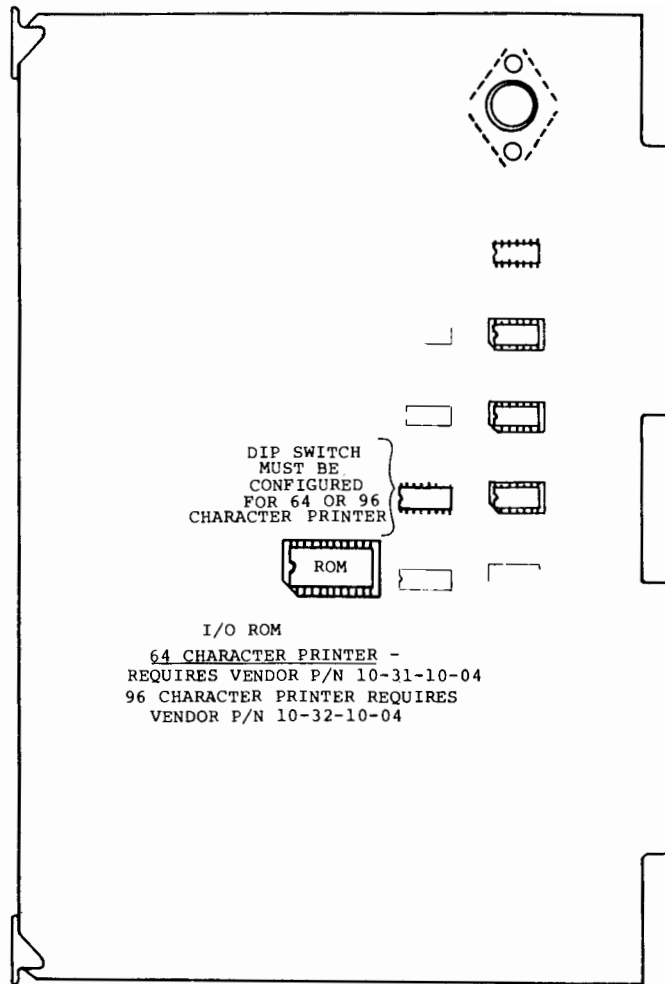


FIGURE 2 I/O PCBA



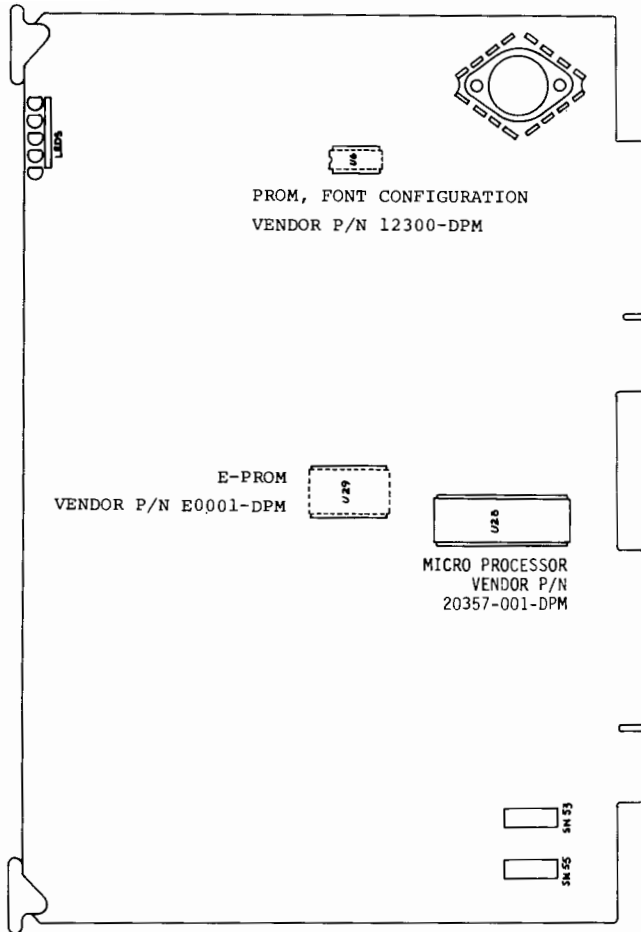
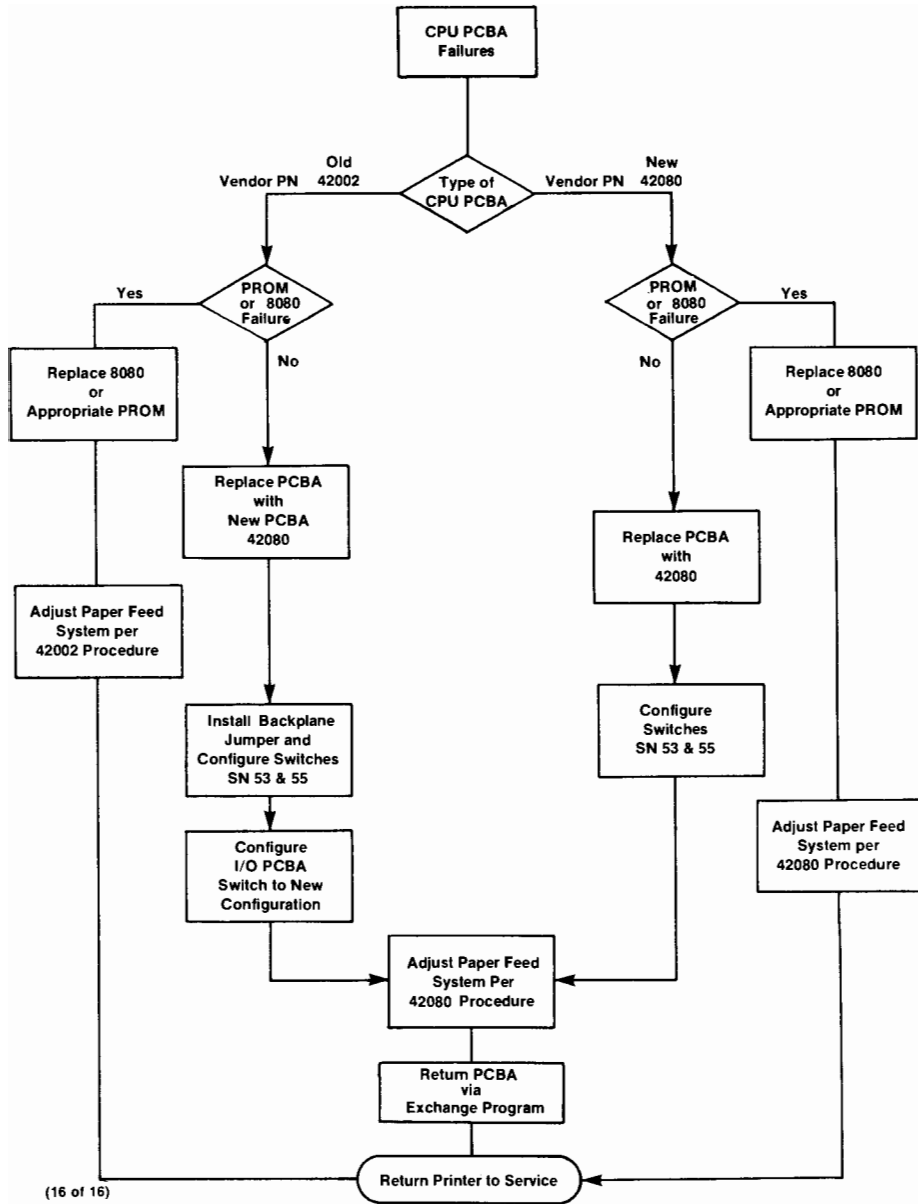


FIGURE 3 NEW CONTROLLER
 VENDOR PART NUMBER 42080

(15 of 16)



(16 of 16)

S E R V I C E N O T E

Supersedes:

HP 2619A Line Printer
 All Serial Numbers
 New Power Control PCBA
 42084-DPM (new)
 02619-69006 (exchange)

APPLIES TO:	All Units <input checked="" type="checkbox"/>	Only Units on Agreement <input type="checkbox"/>	
PERFORM:	Immediately <input type="checkbox"/>	At PM/Normal Call <input type="checkbox"/>	
	On Failure <input type="checkbox"/>	Information Only <input checked="" type="checkbox"/>	
WARRANTY:	<u>EXTENDED</u>	<u>NORMAL</u>	<u>NONE</u>
LABOR:			
PARTS:			
TRAVEL:			
SERVICE	Return for update <input type="checkbox"/>	Use as is <input checked="" type="checkbox"/>	
INVENTORY	Return for salvage <input type="checkbox"/>	See text <input type="checkbox"/>	
WARRANTY EXTENDED UNTIL:	N/A		

The power control PCBA used in the HP 2619A power supply has been redesigned to ease manufacturing and improve reliability. This new PCBA improves the turn on of the triacs which control the chain motor and ribbon motor. The new and old PCBAs are completely interchangeable; however, the small connector (P401) which connects to the logic of the PCBA on the righthand side (as viewed with the PCBA installed and power supply swung open) must be installed upside down. Note: the connector is keyed correctly to accommodate either the old or new PCBA.

In order to distinguish the old PCBAs from the new PCBAs, the numbers have been changed as follows:

New PCBA	Replaces
42084-DPM (new)	1150-1390 (new)
02619-69006 (exchange)	1150-1411 (exchange)

Attached is a copy of the IPB, material list, and schematic.

BG/jrw

12/81 - 46

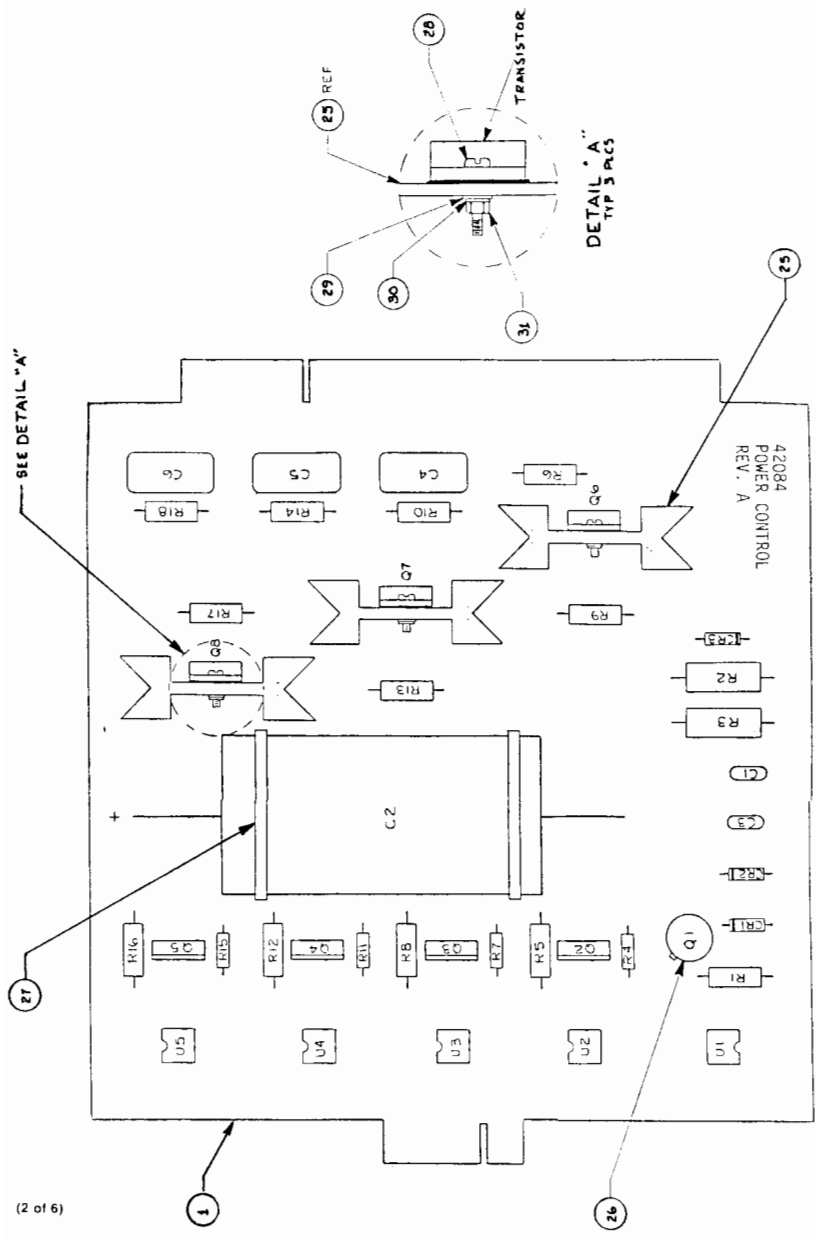
9320-4766
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(1 of 6)



ITEM	PART NUMBER		VENDOR NAME	DESCRIPTION	/QUANTITY
	DPC	VENDOR			
001	20855			P.C. Board Mach Rev A	1
002	20295-001			I.C. 4N28	5
003				U1,U2,U3,U4,U5	
004	20272-001			Triac Mac-223-8	3
005	20259-001			Q6,Q7,Q8 Transistor 2N3734	1
006	20273-001			Q1 Transistor TIP-121	4
007				Q2,Q3,Q4,Q5	
008	20100-010			Capacitor, 10,000 MF, 16 V	1
009	20104-005			C2 Capacitor, .22 MF, 250V	3
010	20161-002			C4,C5,C6 Capacitor, .1 MF	2
011				C1,C3	

DATA PRINTER CORP
 99 Middlesex Street
 Malden, MA 02148

BILL OF MATERIAL FOR

Prepared 3/20 9/15/83
 Checked _____
 Eng. Appv'l. P. 9-22-83
 Used On 40501/40525
 B/M Sheet 1 of 3

Dwg. Title: P.C. BOARD ASSEMBLY POWER CONTROL BOARD
 Size: D Dwg. No.: P/L-42084
 Rev. A

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REVISIONS

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ITEM	PART NUMBER		VENDOR NAME	DESCRIPTION	QUANTITY
	DPC	VENDOR			
012	20202-001			Diode 1N4002 CR3	1
013	20200-010			Diode 1N4728A CR2	1
014	20203-002			Diode 1N4751A CR1	1
015					
016	20004-020			Resistor, 2.7 K, 1/4 W, 5% R4, R7, R11, R15	4
017	20006-027			Resistor, 18 OHM, 1/2 W, 5% R5, R8, R12, R16	4
018	20006-010			Resistor, 100 OHM, 1/2 W, 5% R1, R10, R14, R18	4
019	20006-006			Resistor, 1 K, 1/2 W, 5% R6, R9, R13, R17	4
020	20007-032			Resistor, 56 OHM, 1 W, 5% R3	1
021	20007-012			Resistor, 20 K, 1 W, 5% R2	1
022					
023					
024					

(4 of 6)

DATA PRINTER CORP
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 Malden, MA 02148
 Size D Dwg. No. P/L-42084 Rev. A B/M Sheet 2 of 3

ITEM	PART NUMBER		VENDOR NAME	DESCRIPTION	QUANTITY	
	DPC	VENDOR			(C)	
025	20820-001			Heatsink	3	
026	20815			Transipad	1	
027	20814			Tie Wrap	2	
028	30220-018			Screw, Pan Hd. #4-40X3/8	3	
029	30027-003			Washer, Flat #4	3	
030	30029-002			Washer, Lock #4	3	
031	30222-002			Nut, Hex #4	3	
032						
033						
034						
035						
036						
037	410084			Schematic	INF	

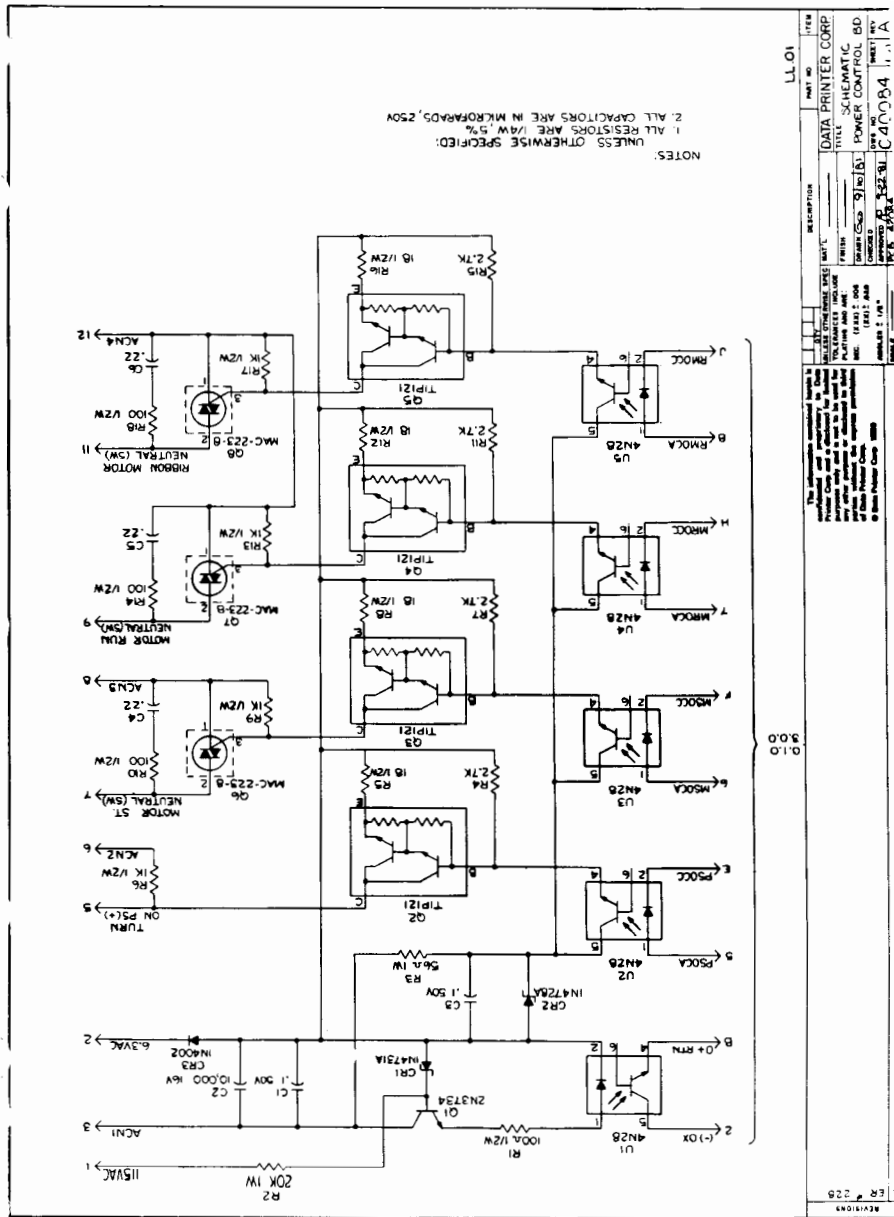
(5 of 6)

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HP2611A/2619A

DATA PRINTER CORP
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 Malden, MA 02148

Size D
 Dwg. No. P/L-42084
 Rev. A
 B/M Sheet 3 of 3



NOTES:
 1. ALL RESISTORS ARE 1/4W 5%
 2. ALL CAPACITORS ARE IN MICROFARADS, 250V

REV	DATE	DESCRIPTION
1	11/11/74	3.0.0
2	11/11/74	3.0.0
3	11/11/74	3.0.0
4	11/11/74	3.0.0
5	11/11/74	3.0.0
6	11/11/74	3.0.0
7	11/11/74	3.0.0
8	11/11/74	3.0.0
9	11/11/74	3.0.0
10	11/11/74	3.0.0
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99	11/11/74	3.0.0
100	11/11/74	3.0.0

SERVICE NOTE

Supersedes:

HP 2619A Line Printer
 All Serial Numbers
 Installing ChainTrain Slug
 Guides

APPLIES TO:		All Units <input type="checkbox"/>	Only Units on Agreement <input type="checkbox"/>
PERFORM:		Immediately <input type="checkbox"/>	At PM/Normal Call <input type="checkbox"/>
		On Failure <input type="checkbox"/>	Information Only <input checked="" type="checkbox"/>
WARRANTY:	EXTENDED	NORMAL	NONE
LABOR:			X
PARTS:			X
TRAVEL:			X
SERVICE	Return for update <input type="checkbox"/>	Use as is <input type="checkbox"/>	
INVENTORY	Return for salvage <input type="checkbox"/>	See text <input type="checkbox"/>	
WARRANTY EXTENDED UNTIL:			

REQUIRED TOOLS

9/64 Allen wrench or Xcelite driver
 Square hard Arkansas stone P/N 8660-0189

PROCEDURE

- 1) Prior to reinstalling the guides, feel beneath the guide support for any burrs caused by the drill through operation. Remove any burrs with the Arkansas stone.
- 2) Position the top center, right center and left center slug guides and finger tighten the socket head screws.
- 3) Move the right center guide fully to the right and the left center guide to the left. Position the center guide equidistant between the outer guides.
- 4) Apply light finger pressure against the face (ribbon face) and snug up the socket head screws.
- 5) Move the outer guides against the center guide, apply light finger pressure against the faces and snug up the socket head screws.

BG/was

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- 6) Rotate the chaintrain and check for binding of the chaintrain. Correct any binding problem you have found.
- 7) Install the right and left end guides using the same procedure.
- 8) Install the bottom guides using the same procedure.
- 9) Rotate the chaintrain and check for binding of the chaintrain. Correct any binding problem you have found.
- 10) Loosen the four hammer driver PCAs from the motherboard connectors. Remove the controller, I/O and paperfeed PCAs. Place the traffic control PCA on an extender card. Using a 14 pin dip chip, short together pins 4 and 7 of IC 4 on the traffic control PCA. Power up the printer, the chaintrain should run in approximately one second.

WARNING: If the chaintrain does not start in approximately one second, power off immediately and verify pins 4 and 7 of IC 4 are properly shorted together or verify binding in the chaintrain.
- 11) With the chaintrain in motion, use the allen wrench and touch it to each guide where the guides butt together. If there is misalignment, you will feel a clicking/tapping sensation in your fingers. Stop the chaintrain and adjust the opposite end of the slug guide. Continue until all of the guides have been adjusted.
- 12) Install the ribbon and ripple print a test pattern, usually two pages give the best visual results. If a guide is too loose, you will notice a smudged character area due to double hammer impact (slug bounce due to loose guide). Observe the top and bottom of the ripple pattern for weak printing to insure the chaintrain is "square," i.e., you have not cocked the chaintrain by setting the upper or lower guide or guides too tight.



S E R V I C E N O T E

Supersedes:

HP 2619A Line Printer
 All Serial Numbers
 Index and Character Strobe
 Phasing

APPLIES TO:		All Units <input type="checkbox"/>	Only Units on Agreement <input type="checkbox"/>
PERFORM:		Immediately <input type="checkbox"/>	At PM/Normal Call <input type="checkbox"/>
		On Failure <input type="checkbox"/>	Information Only <input checked="" type="checkbox"/>
WARRANTY:	EXTENDED	NORMAL	NONE
LABOR:			X
PARTS:			X
TRAVEL:			X
SERVICE	Return for update <input type="checkbox"/>		Use as is <input type="checkbox"/>
INVENTORY	Return for salvage <input type="checkbox"/>		See text <input type="checkbox"/>
WARRANTY EXTENDED UNTIL:			

The index strobe and character strobe must be in phase, or "strobe late" or "strobe early" errors will occur. When a chain-train slug drive pulley subassembly is rebuilt or replaced, the peak of the positive (+) index strobe and the peak of the negative (-) character strobe must coincide. Waveforms can be viewed in the "Maintenance" section of the Service Manual page 3.5-7 (old manual) or page 3-22 (new manual), figure 3-10. The phasing can be accomplished without removing any hardware in the chaintrain area.

***** N O T E *****

A rough setup can be done by placing the index magnet of the slug font directly beneath the index reluctance pickup, the character reluctance pickup should be centered in the valley between the ratchet pulley teeth.

Refer to the parts list in the 2619A Service Manual, Figure 51, Slug Drive Pulley Subassembly for the following procedures of this adjustment.

- 1) Attach a dual channel scope to index strobe (7B-15) and character strobe (7B-19) and invert the character strobe signal. Sync negative on the index signal.

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- 2) Power up the printer, perform a two line VFU load, depress "Test Print" to rotate the chaintrain. Observe the phasing of the now two positive (+) signals for lead or lag.
- 3) Stop the chaintrain and power off the printer.
- 4) Manually rotate the chaintrain to provide access to each of three screws (figure 41, item 7) and loosen. Reposition ratchet pulley (figure 51, item 2) and retighten the screws.
- 5) Power up printer, place the printer in "PRINT INHIBIT", press "LOAD VF", press "TEST PRINT" and observe the results.
- 6) Repeat procedure steps 3, 4, and 5 for best results as needed.
- 7) Ensure the three screws holding the ratchet pulley are tight as the final step.

S E R V I C E N O T E

Supersedes:

HP 2619A Line Printer

All Serial Numbers

Improved Paper Motion Sensor
Replacement or Cleaning

APPLIES TO:	All Units <input type="checkbox"/>	Only Units on Agreement <input type="checkbox"/>	
PERFORM:	Immediately <input type="checkbox"/>	At PM/Normal Call <input type="checkbox"/>	
	On Failure <input type="checkbox"/>	Information Only <input checked="" type="checkbox"/>	
WARRANTY:	EXTENDED	NORMAL	NONE
LABOR:			X
PARTS:			X
TRAVEL:			X
SERVICE	Return for update <input type="checkbox"/>	Use as is <input type="checkbox"/>	
INVENTORY	Return for salvage <input type="checkbox"/>	See text <input type="checkbox"/>	
WARRANTY EXTENDED UNTIL:			

Paper motion sensor replacement, cleaning or inspection can be accomplished without removing sheetmetal as we have been doing previously. Reference the parts list contained in the 02619-90905 manual for the following steps.

- 1) Remove the platen subassembly (figure 38, item 3).
- 2) Remove the 8-up hammer module (figure 42, item 2) and carefully invert to prevent damage to the hammer flextures.
- 3) Unplug the paper motion sensor.
- 4) Enter the hammer bank plenum from the rear and remove the two (2) socket head shoulder screws (figure 38, items 6 and 7) holding the lefthand platen support (figure 42, item 12) to the casting.
- 5) Remove the platen support and replace the paper motion assembly as needed or clean the assembly.
- 6) Before reinstalling the platen support, insure the mating surfaces are clean to prevent misalignment.
- 7) Reverse the procedure to reinstall.

***** NOTE *****

The tolerances are such that the horizontal and vertical positions are not affected by this procedure as long as the same two screws are used.

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SERVICE NOTE

Supersedes: None

HP 2619A Line Printer
All Serial Numbers

Test Routines Imbedded In
New Controller PCBA,
42080G3-DPM

42080G3-DPM (new)
02619-69005 (exchange)

APPLIES TO:	All Units <input checked="" type="checkbox"/>	Only Units on Agreement <input type="checkbox"/>
PERFORM:	Immediately <input type="checkbox"/>	At PM/Normal Call <input type="checkbox"/>
	On Failure <input type="checkbox"/>	Information Only <input checked="" type="checkbox"/>
WARRANTY:	EXTENDED	NORMAL
LABOR:		X
PARTS:		X
TRAVEL:		X
SERVICE	N/A	Return for update <input type="checkbox"/>
INVENTORY		Return for salvage <input type="checkbox"/>
		Use as is <input type="checkbox"/>
		See text <input type="checkbox"/>
WARRANTY EXTENDED UNTIL: N/A		

The new controller PCBA (42080G3-DPM or 02619-69005*) has firmware which contains routines which enable the check out of the 1/8th step strobe, paperfeed strobe, and the motion sensor by use of the LEDs on the controller. With these routines, the proper function of the strobes/sensors can be ascertained.

* The artwork of the PCBA has the number 42048 etched in the board.

The LEDs have the following significance:

1. LED-1 = STEP STROBE OPTICAL SENSOR (located at the shaft of the paperfeed stepper motor).
2. LED-2 = 8th STEP INDEX OPTICAL SENSOR (located at the shaft of the paperfeed stepper motor)
or
24th STEP (half-inch strobe) INDEX OPTICAL SENSOR (located near the vertical format unit sprocket wheel).
3. LED-3 = PAPER MOTION OPTICAL SENSOR (located behind the lefthand side of the paper motion roller).
4. LED-4 = RIBBON MOTION OPTICAL SENSOR (located in the ribbon sensor assembly). Data Printer Model 1200 only; this is not standard on HP printers.
5. LED-5 = NOT USED.

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HP2611A/2619A

9-53

CHECK OUT PROCEDURE

1. Turn printer on.

NOTE: For this procedure, proper initialization of the unit is not required.

2. Place the printer in the "LOCAL" mode (top switch on the I/O printed circuit board), and in the "PRINT INHIBIT" mode (bottom switch on the I/O printed circuit board, logic bay position 5).
3. Install ribbon and paper in the printer, then close and latch the yoke.

NOTE: Optional version of the 1200 (Data Printer Model) included a ribbon motion sensor; however, the HP version does not. Therefore, the hardware simulates the operation to satisfy the firmware requirements. Thus, LED-4 will flash indicating proper operation.

CAUTION: If no paper is installed in the printer, the paper motion sensor will be overridden by the paper low switch, and proper operation will be indicated by LED-3, even though the paper motion sensor may be defective.

4. Simultaneously depress the "ALARM RESET" switch (righthand control panel) and the "TEST PRINT" switch, release the "ALARM RESET" switch. When operation starts, release the "TEST PRINT" switch. (Operation is indicated by intermittent motion of paperfeed tractors, and rotation of the ribbon.)
5. View the LEDs at the bottom of the CPU board. LEDs 1 through 4 will flash on and off at approximately three-second intervals, indicating functioning of the various optical sensors as described above.
6. To exit the optical sensor check out routine, depress "ALARM RESET" and return "PRINT INHIBIT" switch to desired setting.

SERVICE NOTE

Supersedes: None

HP 2619A Line Printer
Serial Number 2205A-01423
and Below

Erroneous Paper Jams

APPLIES TO:	All Units <input checked="" type="checkbox"/>	Only Units on Agreement <input type="checkbox"/>
PERFORM:	Immediately <input type="checkbox"/>	At PM/Normal Call <input type="checkbox"/>
	On Failure <input type="checkbox"/>	Information Only <input checked="" type="checkbox"/>
WARRANTY:	EXTENDED	NORMAL
LABOR:		X
PARTS:		X
TRAVEL:		X
SERVICE	N/A	Return for update <input type="checkbox"/>
INVENTORY		Use as is <input type="checkbox"/>
		Return for salvage <input type="checkbox"/>
		See text <input type="checkbox"/>
WARRANTY EXTENDED UNTIL:	N/A	

Approximately one (1) in twenty-five (25) 2619A Line Printers can experience erroneous paper jams due to noise on the "Paper Low SW (+)" line setting the paper jam flip-flop (U40A) on the Traffic Control PCBA. The solution to this situation is to add a .33MFD, 100 volt capacitor on the "Paper Low SW (+)" line coming into the motherboard.

If you are experiencing this problem, install the capacitor as indicated below.

PART REQUIRED:

Qty 1 Capacitor .33MFD/100V HP P/N 0160-5338

IMPLEMENTATION:

1. Gain access to the back of the motherboard through the paper compartment.
2. On the motherboard locate pins 5B22 (Paper Low SW +) and 5B56 (ground).
3. Solder a .33MFD/100V capacitor (HP P/N 0160-5338) between the two pins located above.
4. Replace the motherboard cover removed in step 1 and return the printer to service.

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HP2611A/2619A

9-55

S E R V I C E N O T E

Supersedes: None

HP 2619A Line Printer

Serial Number Prefix
2117A and Below

Common Logic and Chassis
Ground

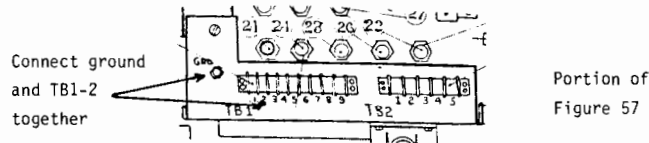
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PERFORM:	Immediately <input type="checkbox"/>	At PM/Normal Call <input type="checkbox"/>
	On Failure <input type="checkbox"/>	Information Only <input checked="" type="checkbox"/>
WARRANTY:	EXTENDED	NORMAL
LABOR:		X
PARTS:		X
TRAVEL:		X
SERVICE	Return for update <input type="checkbox"/>	Use as is <input type="checkbox"/>
INVENTORY	Return for salvage <input type="checkbox"/>	See text <input type="checkbox"/>
WARRANTY EXTENDED UNTIL:		

HP 2619A Line Printers serial number prefix 2117A and below did not have logic and chassis (power) ground tied together. Operating in this environment did not constitute a safety hazard. However, a failure in the power supply or a hot and neutral reversal in either the printer or CPU, could place a DC potential on the logic ground, and destroy the differential transmitters and receivers on the I/O PCBA or the interface in the CPU.

In order to alleviate this situation the logic and chassis ground should be tied together. This is accomplished by installing a wire from TB1-2 of the power supply to a ground stud on the power supply chassis.

IMPLEMENTATION

1. Gain access to the power supply by removing the lower back panel.
2. Remove the two (2) holding bolts and swing out the supply.
3. Remove the meshed screen to gain access to TB1-2 and the ground.
4. Attach a 4.5" piece of 16 awg from TB1-2 and ground stud located to the left of the terminal strip. See figure below.
5. Reassemble the printer and return to service.



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2619A - 13

SERVICE NOTE

Supersedes: None

HP 2619A Line Printer
Serial Number 2117A-01219
and Above
Plastic Actuator Comb

APPLIES TO:		All Units <input type="checkbox"/>	Only Units on Agreement <input type="checkbox"/>
PERFORM:		Immediately <input type="checkbox"/>	At PM/Normal Call <input type="checkbox"/>
		On Failure <input type="checkbox"/>	Information Only <input checked="" type="checkbox"/>
WARRANTY:	EXTENDED	NORMAL	NONE
LABOR:			X
PARTS:			X
TRAVEL:			X
SERVICE	Return for update <input type="checkbox"/>		Use as is <input type="checkbox"/>
INVENTORY	Return for salvage <input type="checkbox"/>		See text <input type="checkbox"/>
WARRANTY EXTENDED UNTIL:		N/A	

A change has been made to the Actuator Comb used to hold the actuator arms in the 2619A hammer bank. It has been changed to plastic. The reason this was changed was to reduce potential actuator arm drag and improve print quality.

Along with the change to the comb, the flight time screws were changed to minimize the initial drift in the flight time. These screws are NOT interchangeable with the flight time screws used on previous machines. In addition, the new screw has a screw cap to improve flight timing.

PART NUMBER DIFFERENCES AND SERIAL NUMBERS WHERE USED:

Where Used:		
2611A Serial Number	N/A	All Units
2619A Serial Number	2117A-01218 and Below	2117A-01219 and Above
Description	Old Number	New Number
Flight time screw	03318-DPM (HP No. 1535-3924)	43040-DPM
Screw Cap	N/A	43039-DPM

Attached are the parts and diagrams with the notation of the beginning serial number.

The service kits should be upgraded to include both the 43039-DPM and 43040-DPM along with the 03318-DPM (HP No. 1535-3924)

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HP2611A/2619A

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Figure and Index No.	DPC/MFR Part Number	Description	Qty	Use
39 -	43041G1	Screw Plate Assembly (See Fig. 38 for NHA)		
- 1	43038	Screw Plate	1	
- 2	43040	Set Screw, Flat Point	34	
- 3	43039	Screw Cap	34	

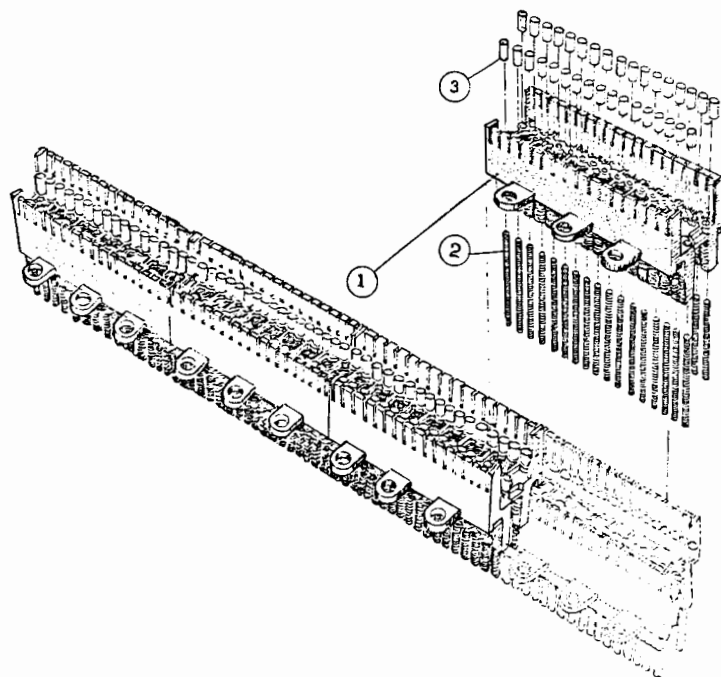
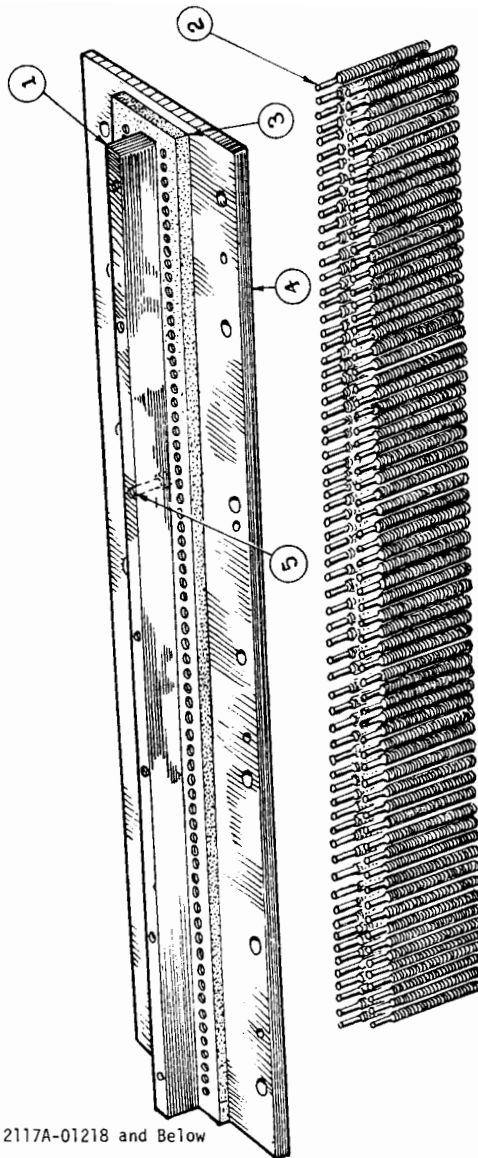


Figure 39. Screw Plate Assembly

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For Printer S/N 2117A-01218 and Below

Figure 41. Upper Plate Assembly
2-110

Figure and Index No.	DPC/MFR Part Number	Description	Qty	Use
41 -	C3322G1	Upper Plate Assembly (See Fig. 40 for NHA)		
- 1	B3320	Stop Bar	1	
- 2	A3318	Flight Time Adjusting Screw	136	
- 3	B3321	Screw Torque Strap	1	
- 4	B3310	Adjusting Screw Guide Plate	1	
- 5		Soc. Hd. Cap Screw 4-40 x 1/2	7	

For Printer S/N 2117A-01218 and Below

2-111

S E R V I C E N O T E

Supersedes: None

HP 2619A Line Printer
Serial Number 2205A-01341
and Above

Ribbon Platen Change

APPLIES TO:	All Units <input type="checkbox"/>	Only Units on Agreement <input type="checkbox"/>
PERFORM:	Immediately <input type="checkbox"/>	At PM/Normal Call <input type="checkbox"/>
	On Failure <input type="checkbox"/>	Information Only <input checked="" type="checkbox"/>
WARRANTY:	EXTENDED	NORMAL
LABOR:		X
PARTS:		X
TRAVEL:		X
SERVICE	N/A	Return for update <input type="checkbox"/>
INVENTORY		Return for salvage <input type="checkbox"/>
		Use as is <input type="checkbox"/>
		See text <input type="checkbox"/>
WARRANTY EXTENDED UNTIL:	N/A	

A change has been made to the HP 2619A ribbon platen assembly to aid in servicing the ChainTrain area. This modification eliminates the four (4) screws holding the top of the platen and replaces them with two (2) clips. In addition, the bottom three (3) screws with their associated stand-offs have been reduced to two (2). Thus, the CE need only loosen the two (2) screws associated with the stand-offs and lift the platen out.

Attached is the parts breakdown associated with the new ribbon platen assembly. Please retain for future reference.

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Figure and Index No.	DPC/MFR Part Number	Description	Qty	Use
43 -	46500G1	Yoke Assembly (60 Hz, 132 Column) (See Fig. 25 for NHA)		A-C
-	46500G2	Yoke Assembly (50 Hz, 132 Column) (See Fig. 25 for NHA)		A-C
-	46500G3	Yoke Assembly (60 Hz, 136 Column) (See Fig. 25 for NHA)		A-C
-	46500G4	Yoke Assembly (50 Hz, 136 Column) (See Fig. 25 for NHA)		A-C
- 1	46559G1	Slug Drive/Penetration Assembly (See Fig. 49 for Bkdwn)	1	G1,G2
-	46559G2	Slug Drive/Penetration Assembly (See Fig. 49 for Bkdwn)	1	G3,G4
- 2	46561G1	L.H. Yoke Frame Subassembly (See Fig. 44 for Bkdwn)	1	
- 3	46562G1	R.H. Yoke Frame Subassembly (See Fig. 45 for Bkdwn)	1	
- 4	46565G1	Drive Motor Subassembly (See Fig. 46 for Bkdwn)	1	G1,G3
-	46565G2	Drive Motor Subassembly (See Fig. 46 for Bkdwn)	1	G2,G4
- 5	46564G1	Paper Guide Subassembly (See Fig. 48 for Bkdwn)	1	
- 6	46570G1	Phasing Bracket Subassembly (See Fig. 47 for Bkdwn)	1	G1,G2
-	46570G2	Phasing Bracket Subassembly (See Fig. 47 for Bkdwn)	1	G3,G4
- 7	46640	Front Slug Guide	1	
- 8	46641	Rear Slug Guide	1	
- 9	15505	Upper Central Ribbon/Slug Guide	3	
- 10	15506	Lower Central Ribbon/Slug Guide	3	
- 11	15521-1	Upper End Ribbon/Slug Guide R.H.	1	
- 12	15521-2	Upper End Ribbon/Slug Guide L.H.	1	
- 13	15522-1	Lower End Ribbon/Slug Guide R.H.	1	
- 14	15522-2	Lower End Ribbon/Slug Guide L.H.	1	
- 16		Molded Type Slug (Per Customer Request)	48	
- 17	46573	Vacuum Plenum	1	
- 18	46574	Vacuum Plenum Bracket	1	
- 22	45507	Slug Guide & Sensor Stop	1	
- 29	46522	Sense Plate	1	
- 30	46523	Sense Plate Spacer	1	
- 31	46505 2	Tie Bar, Lower	1	

For Printer S/N 2205A-01341 and
Above
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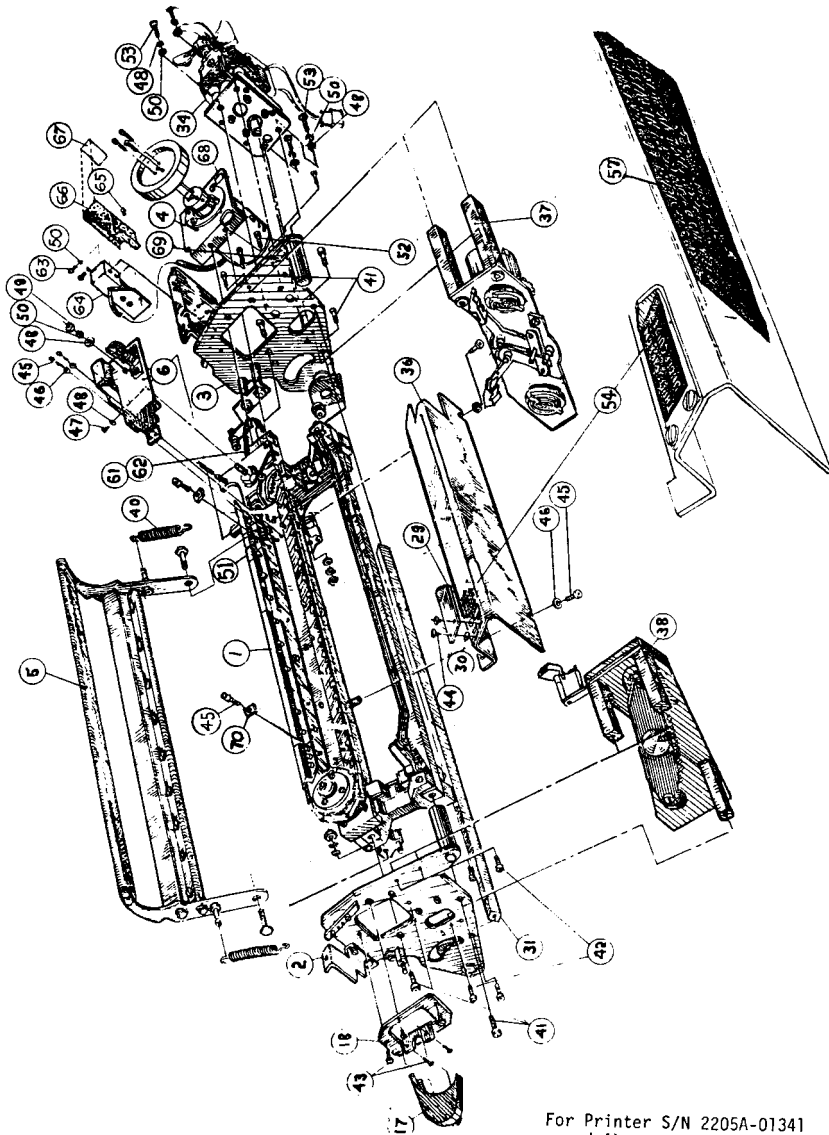


Figure and Index No.	DPC/MFR Part Number	Description	Qty	Use
43 -				
- 34	46590	Ribbon Drive Motor/Mtg. Plate S/A	1	
- 36	46053	Ribbon Platen (132 Co1.)	1	G1,G2
-	46054	Ribbon Platen	1	G3,G4
- 37	47000G5	Ribbon Drive Assembly	1	G1,G2
-	47000G6	Ribbon Drive Assembly	1	G3,G4
- 38	47100G1	Ribbon Sensing Assembly	1	
- 40	16136	Spring	2	
- 41	30038-018	Soc Hd. Shoulder Screw 3/8 x 1/2	6	
- 42	30303-081	Soc Hd. Screw 10-32 x 5/8	3	
- 43	30303-079	Pan Hd. Screw 10-32 x 7/16	2	
- 44	30310-075	Truss Hd. Screw 10-32 x 1/4	2	
- 45	30403-056	Soc. Hd. Cap Screw 8-32 x 1/2 BLK	24	
- 46	30001-034	Plain Washer, No. 8	46	
- 47	30210-077	Truss Hd. Screw, Slotted 10-32 x 3/8 SST	1	
- 48	30001-024	Plain Washer, No. 10	12	
- 49	30322-005	Hex Nut 10-32	6	
- 50	30029-005	Split Lockwasher, No. 10	13	
- 51	46597	Mylar Ribbon Shield (132 Co1.)	1	G1,G2
-	46599	Mylar Ribbon Shield	1	G3,G4
- 52	30320-077	Pan Hd. Screw 10-32 x 3/8	2	
- 53	30320-079	Pan Hd. Screw 10-32 x 1/2	4	
- 54	47051	Decal	1	
- 57	47086	Decal, CT Ribbon Reorder 1200-132	1	G1,G2
-	47085	Decal, CT Ribbon Reorder 1200-136	1	G3,G4
- 58	30029-004	Split Lockwasher No. 8	31	
- 60	30403-058	Soc. Hd. Cap Screw 8-32 x 5/8 BLK	22	
- 61	14096-014	Drive Belt, 60 Hz (1210 & 1290)	1	
-	14096-009	Drive Belt, 60 Hz (1260)	1	
-	14096-015	Drive Belt, 60 Hz (1200)	1	
- 62	14096-015	Drive Belt, 50 Hz (1210 & 1290)	1	
-	14096-018	Drive Belt, 50 Hz (1260)	1	
-	14096-020	Drive Belt, 50 Hz (1200)	1	
- 63	30120-079	Pan Hd. Screw, Slotted	2	

For Printer S/N 2205A-01341 and Above

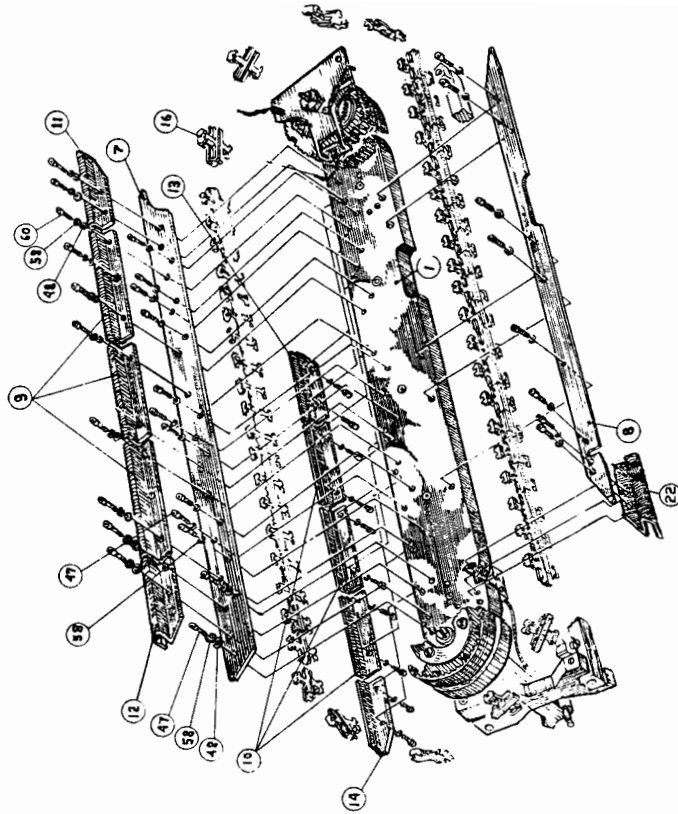
2-116

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For Printer S/N 2205A-01341
and Above
Figure 43. Yoke Assembly (1 of 2)
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For Printer S/N 2205A-01341 and Above

Figure 43. Yoke Assembly (2 of 2)
2-118

Figure and Index No.	DPC/MFR Part Number	Description	Qty	Use
43 -				
- 64	46629	Capacitor Mounting Case, Drive Motor	1	
- 65	30058-017	Hex Hd. Screw, Thread Forming	3	
- 66	46630	Capacitor Shield	1	
- 67	46643G1	Decal, Shield	1	
- 68	40915-12	Decal, Self Stick "B106"	1	
- 69	40915-11	Decal, Self Stick "B105"	1	
- 70	46055	Retainer, Ribbon Platen	2	

For Printer S/N 2205A-01341 and Above

Revised 6/82

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SERVICE NOTE

Supersedes: 2619A - 15

HP 2619A Line Printer
Serial Number 2230A-01516
and Above

Reliability and Service
Enhancements to the Yoke
Assembly

APPLIES TO:	All Units <input type="checkbox"/>	Only Units on Agreement <input type="checkbox"/>	
PERFORM:	Immediately <input type="checkbox"/>	At PM/Normal Call <input type="checkbox"/>	
	On Failure <input type="checkbox"/>	Information Only <input checked="" type="checkbox"/>	
WARRANTY:	EXTENDED	NORMAL	NONE
LABOR:			X
PARTS:			X
TRAVEL:			X
SERVICE	Return for update <input type="checkbox"/>	Use as is <input type="checkbox"/>	
INVENTORY	Return for salvage <input type="checkbox"/>	See text <input type="checkbox"/>	
WARRANTY EXTENDED UNTIL:			

Engineering changes have been made to the 2619A yoke assembly to enhance reliability and serviceability.

The reliability enhancement to the yoke provides a method to improve the signal characteristics on the Head of Font (Index) pick-up by controlling the gap between the pick-up and the slug. The technique used to control the gap between the pick-up and the slug is to add a center rail to the pulleys. This prevents the slugs from moving up and down when going around the pulley; thus, the signal amplitude is stabilized. In order to accommodate the center rail in the pulleys, the front and rear slug rails have been shortened.

Serviceability has been improved through a change in the pulley stub shafts. When replacing the pulleys, the CE had to check and adjust the height of the pulleys. On the old yoke assembly, to change the height of the pulleys, the stub shaft had to be removed and shims added under the shaft. On the new yoke assembly, the pulley height is adjusted from the top. The way this is accomplished is by adding four spring washers below the pulleys. Thus by adding or subtracting shims from the top of the pulleys, the height can be adjusted.

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HP2611A/2619A

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PARTS CHANGE IN THE YOKE TO IMPROVE RELIABILITY

Part Description	Change Description
1. Pulleys (Drive and Idler)	A center rail added between belt pulleys on both idler and drive pulley assemblies.
2. Slug Guide Rails	The rails are shortened to allow clearance center rail in pulleys.
3. Stub Shafts	Tolerances decreased to provide for tighter height tolerances.
4. Pick-up Mounting Bracket	Tolerances decreased to improve adjustment of the Index pick-up.

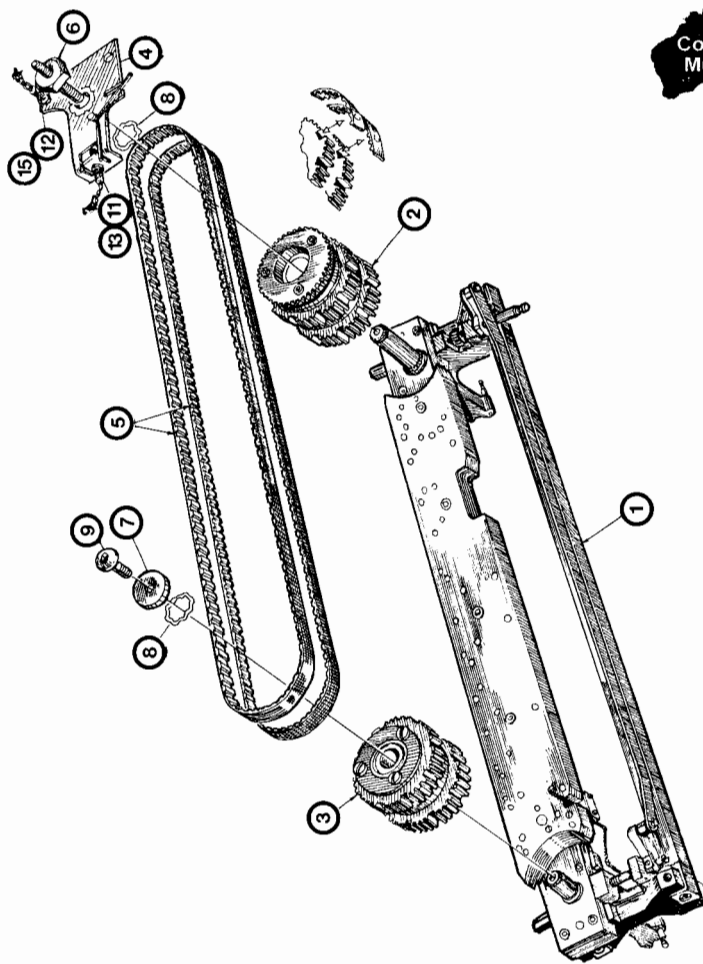
PART NUMBER DIFFERENCES AND SERIAL NUMBERS WHERE USED:

Where Used:

2611A	N/A	All Units
2619A Serial Number	2205A-01515 & Below	2230A-01516 & Above
Part Description:	Old Number	New Number
Slug Drive Pulley	15529G1-DPM	46633-DPM
Idler Pulley	15528G1-DPM	46632-DPM
Pick-up Mount	46584G1-DPM	46634G1-DPM
Idler Stub Shaft	15509-DPM	46638-DPM
Drive Stub Shaft	15510-DPM	46639-DPM
Front Slug Guide (Rail)	45504-DPM	46640-DPM
Rear Slug Guide (Rail)	45508-DPM	46641-DPM
Stub Shaft Shim .003"	04511-001-DPM	
Stub Shaft Shim .005"	04511-002-DPM	
Stub Shaft Shim .002"		46637-001-DPM
Stub Shaft Shim .005"		46637-002-DPM
Stub Shaft Shim .0015"		46637-003-DPM
Wavy Washer #24		30133-004-DPM (Qty 8)

PARTS AND DIAGRAMS

Attached are the parts and diagrams with notations as to which serial numbers the particular drawing or part is associated with. Please retain these for future reference.

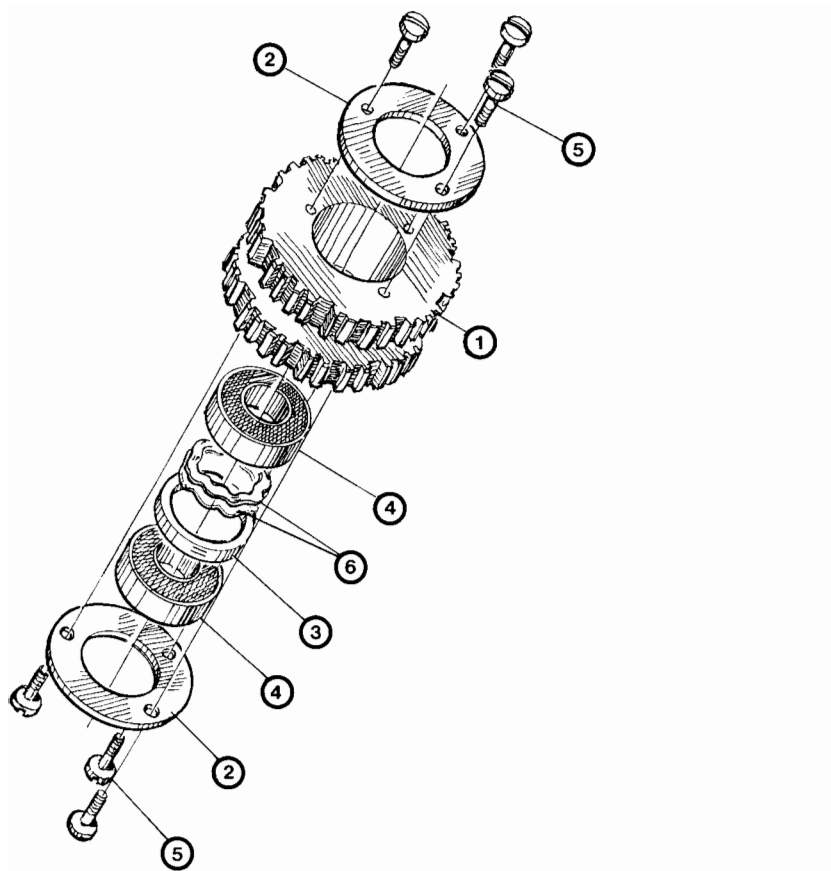


For Printer S/N 2205A-01515 and Below
Figure 49. Slug Drive/Penetration Assembly

Figure and Index No.	DPC/MFR Part Number	Description	Qty	Use
49	D46559G1	Slug Drive/Penetration Assembly (See Fig. 43 for NHA)		
- 1	D46560G1	Mounting Bar/Penetration Frame Assembly (See Fig. 53 for Bkdw)	1	
- 2	B15529G1	Slug Drive Pulley Subassembly (See Fig. 51 for Bkdw)	1	
- 3	B15528G1	Idler Drive Pulley Subassembly (See Fig. 50 for Bkdw)	1	
- 4	B46584G1	Pick-Up Mount/Spring Subassembly	1	
- 5	C15501	Type Chain Belt	2	
- 6	A16060	Post Nut	1	
- 7	A16061	Washer	1	
- 8	30133-004	Washer, Wavy Spring, No. 24	4	
- 9		Button Hd. Soc Screw 5/16 - 18 x 1/2	1	
- 11	B42244G1	Cable Assembly, Character Strobe Pick-Up	1	
- 12	B42240G1	Cable Assembly, Index Pick-Up	1	
- 13		Hex Nut, 1/4 - 28 x 3/8 A.F. x 3/32 THK	2	

For Printer S/N 2205A-01515 and Below

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For Printer S/N 2205A-01515 and Below

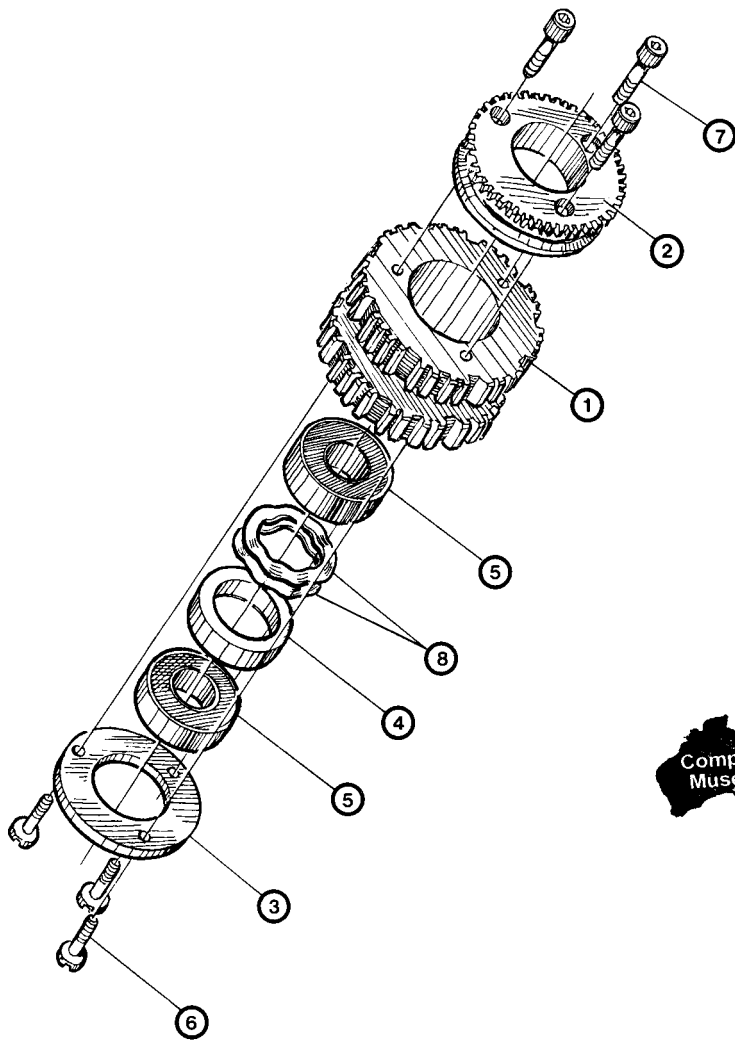
Figure 50. Idler Drive Pulley Subassembly

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Figure and Index No.	DPC/MFR Part Number	Description	Qty	Use
50 -	B15528G1	Idler Drive Pulley Subassembly (See Fig. 49 for NHA)		
- 1	B15507-2	Idler Drive Pulley	1	
- 2	A1550B	Clamp Ring	2	
- 3	A15512-1	Outer Spacer	1	
- 4	A33001-3	Ball Bearing	2	
- 5		Binder Hd. Screw B-32 x 3/8	6	
- 6	30133-006	Wavy Washer, No. 35	2	

For Printer S/N 2205A-01515 and Below

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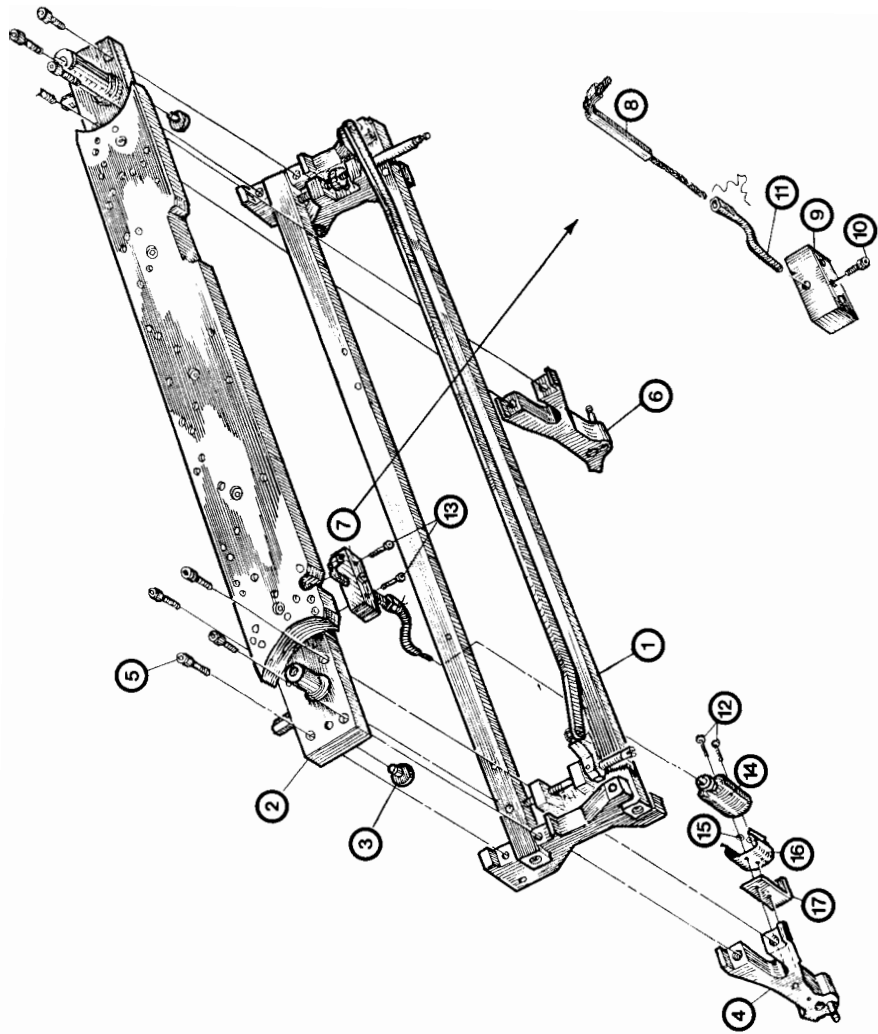


For Printer S/N 2205A-01515 and Below
Figure 51. Slug Drive Pulley Subassembly

Figure and Index No.	DPC/MFR Part Number	Description	Qty	Use
51 -	B15529G1	Slug Drive Pulley Subassembly (See Fig. 49 for NHA)		
- 1	B15507-1	Slug Drive Pulley	1	
- 2	B15502	Ratchet Pulley	1	
- 3	A15508	Clamp Ring	1	
- 4	A15512-2	Outer Spacer	1	
- 5	A33001-3	Ball Bearing	2	
- 6		Binder Hd. Screw 8-32 x 3/8	3	
- 7		Soc Hd. Screw 8-32 x 1/2	3	
- 8	30133-006	Wavy Washer, No. 35	2	

For Printer S/N 2205A-01515 and Below

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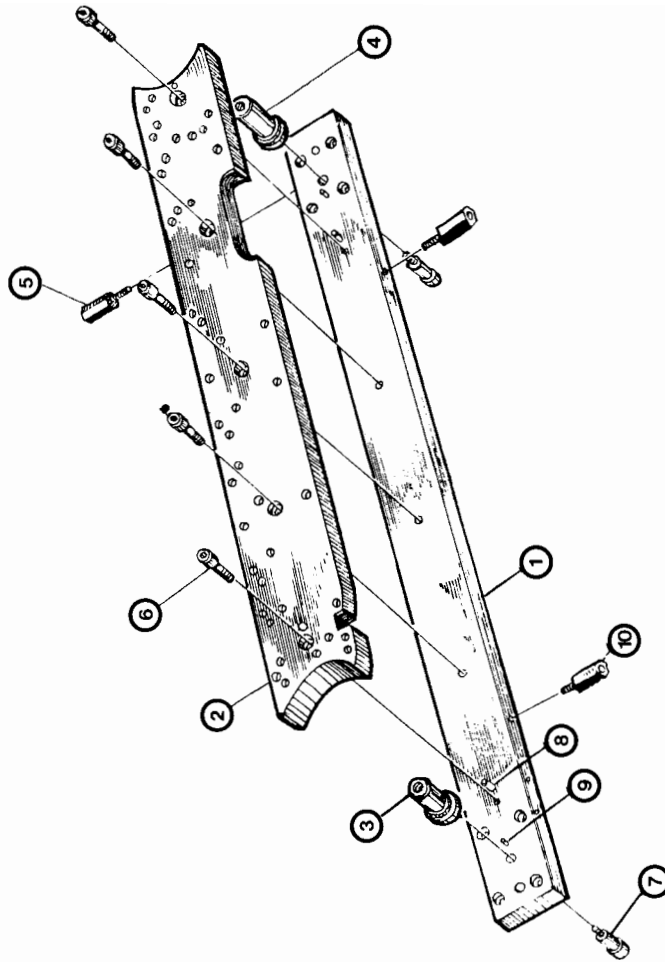


For Printer S/N 2205A-01515 and Below
Figure 52. Mounting Bar/Penetration Frame Assembly

Figure and Index No.	DPC/MFR Part Number	Description	Qty	Use
52 -	D46560G1	Mounting Bar/Penetration Frame Assembly (See Fig. 49 for NHA)		
- 1	C46566G1	Penetration Frame Subassembly (See Fig. 54 for Breakdown)	1	
- 2	D46558G1	Pulley Mounting Bar Subassembly (See Fig. 53 for Breakdown)	1	
- 3	A15520	Bearing Plug	2	
- 4	A46517G1	Guide Bracket Subassembly, L.H.	1	
- 5		Soc Hd. Cap Screw 1/4 - 20 x 5/8	8	
- 6	A46517G2	Guide Bracket Subassembly, R.H.	1	
- 7	B15553G1	Wick and Block Assembly	1	
- 8	815537G1	Oil Tube Subassembly	1	
- 9	A15540	Mounting Block	1	
- 10		Soc Hd. Set Screw DOG Pt. 10-32 x 1/4	1	
- 11	FR-1	Insulation Sleeving Sz 9, 3-3/4 in.	1	
- 12		Truss Hd. Screw, Slotted 10-32 x 3/8	2	
- 13		Soc Hd. Cap Screw 10-32 x 3/4 SST	2	
- 14	15030G1	Bottled Lubricant (1 oz.)	1	
- 15		Flat Washer, No. 10	2	
- 16	A15021	Bottle Holder	1	
- 17	A46519	Oil Bottle Rest	1	

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For Printer S/N 2230A-01516 and Above

Figure 53. Pulley Mounting Bar Subassembly

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Figure and Index No.	DPC/MFR Part Number	Description	Qty	Use
53 .	D46558G1	Pulley Mounting Bar Subassembly (See Fig. 52 for NHA)		
- 1	D46506	Mounting Bar	1	
- 2	D45509	Guide Support	1	
- 3	A15509	Stub Shaft	1	
- 4	A15510	Stub Shaft	1	
- 5	A15524	Standoff	1	
- 6		Soc Hd. Cap Screw 1/4 - 20 x 3/4	5	
- 7		Soc Hd. Shoulder Screw 3/8 D x 1/2	2	
- 8		Hardened Steel Dowel 1/4 D x 1	2	
- 9		Hardened Steel Dowel 1/8 D x 3/8	2	
- 10	A46525	Front Standoff	3	

For Printer S/N 2205A-01515 and Below

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Figure and Index No.	DPC/MFR Part Number	Description	Qty	Use
49 -	46559G1	Slug Drive/Penetration Assembly (132 Column) (See Fig. 43 for NHA)		
-	46559G2	Slug Drive/Penetration Assembly (136 Column) (See Fig. 43 for NHA)		
- 1	46560G1	Mounting Bar/Penetration Frame Assembly (See Fig. 52 for Bkdwn)	1	G1
- 2	46633G1	Slug Drive Pulley S/A (See Fig. 51 for Bkdwn)	1	
- 3	46632G1	Idler Drive Pulley S/A (See Fig. 50 for Bkdwn)	1	
- 4	46634G1	Pick-Up Mount/Spring S/A	1	
- 5	15501	Type Chain Belt	2	
- 6	16060	Post Nut	1	
- 7	16061	Washer	1	
- 8	30133-004	Washer, Wavy Spring #24	8	
- 9	30006-033	Button Hd. Soc Screw 5/16 - 18 x 1/2	1	
- 10	46560G2	Mounting Bar/Penetration Frame Assy.	1	G2
- 11	42244G1	Cable Assembly, Character Strobe Pick-Up	1	
- 12	42240	Cable Assembly, Index Pick-Up	1	
- 13	30422-001	Hex Nut, 1/4 - 28 x 3/8 A.F. x 3/32 THK	2	
- 15	46637-3	Stub Shaft Shim (.0015)	A/R	
- 16	46637-2	Stub Shaft Shim (.005)	A/R	
- 17	46637-1	Stub Shaft Shim (.002)	A/R	



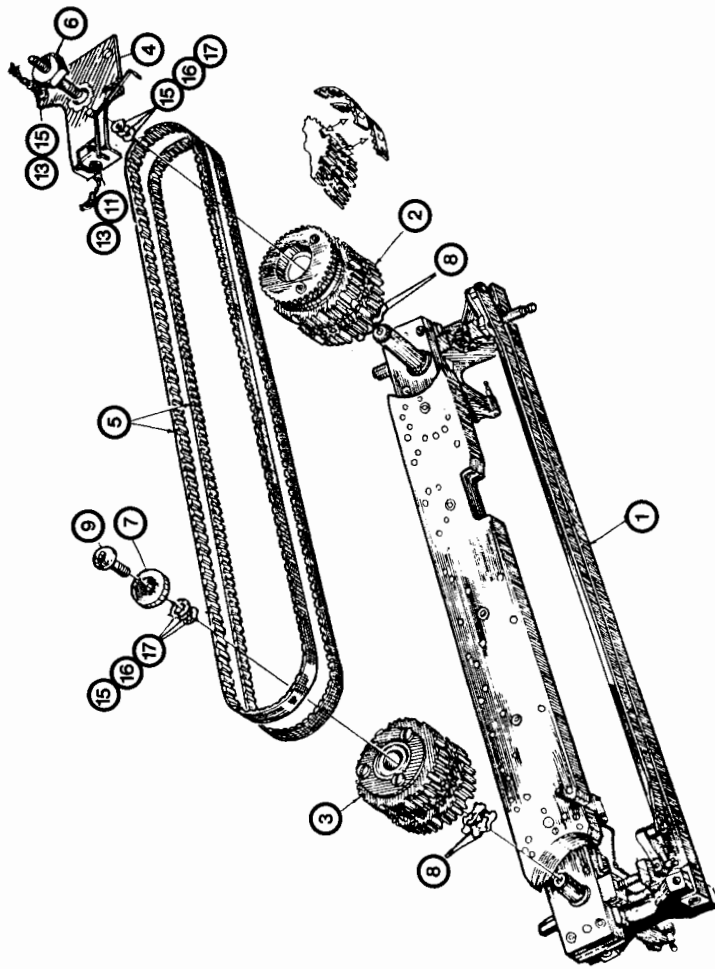
For Printer S/N 2230A-01516 and Above

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For Printer S/N 2230A-01516 and above

Figure 49. Slug Drive/Penetration Assembly

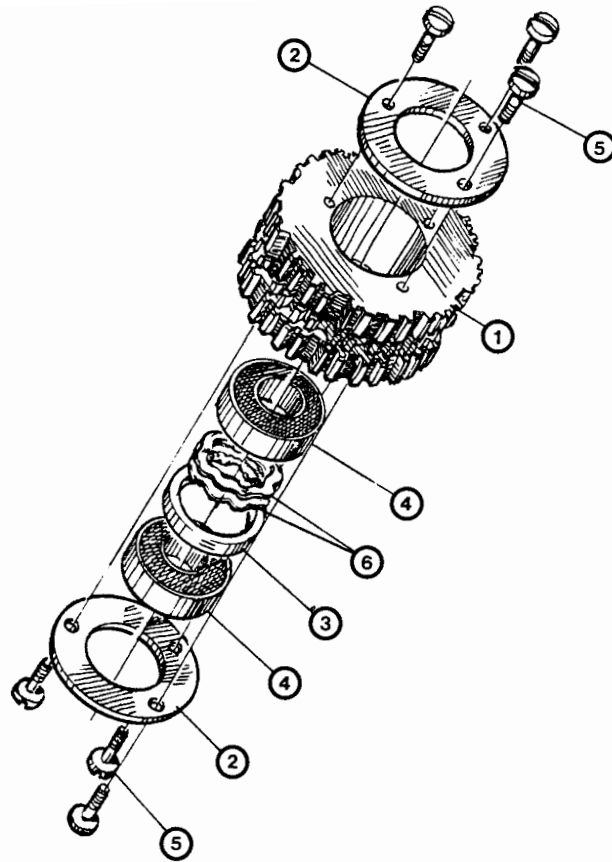
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Figure and Index No.	DPC/MFR Part Number	Description	Qty	Use
50 -	46632G1	Idler Drive Pulley Subassembly (See Fig. 49 for NHA)		
- 1	46631-2	Idler Drive Pulley	1	
- 2	15508	Clamp Ring	2	
- 3	15512-1	Outer Spacer	1	
- 4	33001-3	Ball Bearing	2	
- 5	30111-054	Binder Hd. Screw 8-32 x 3/8	6	
- 6	30133-006	Wavy Washer, No. 35	2	

For Printer S/N 2230A-01516 and Above
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For Printer S/N 2230A-01516 and Above

Figure 50. Idler Drive Pulley Subassem.

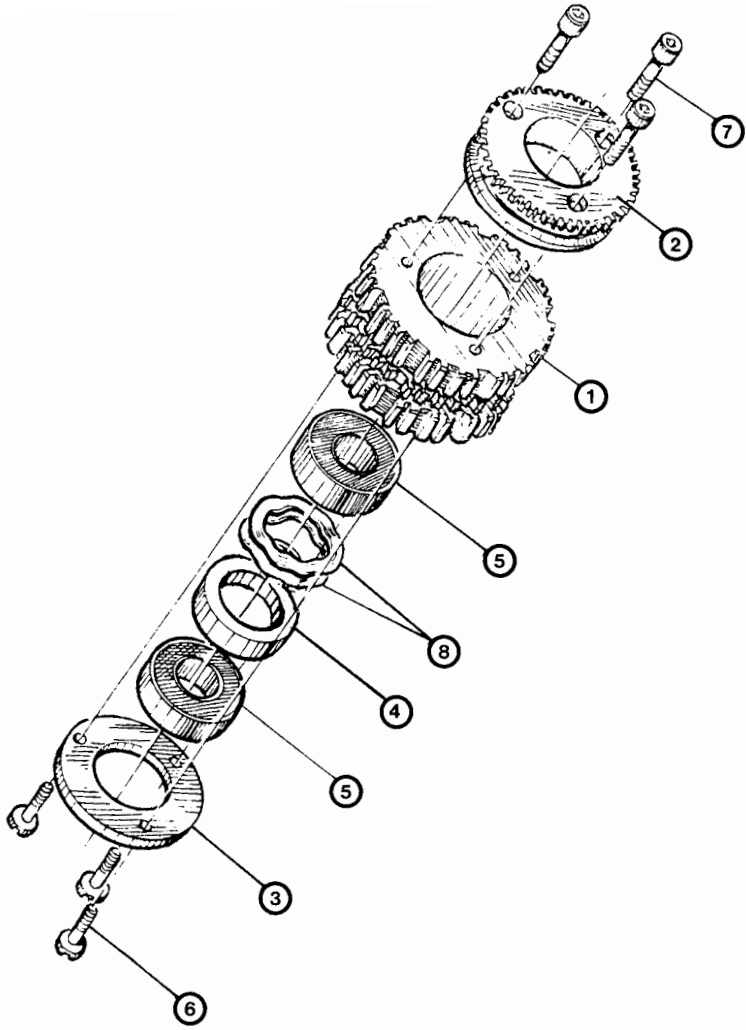
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Figure and Index No.	DPC/MFR Part Number	Description	Qty	Use
51 -	46633G1	Slug Drive Pulley Subassembly (See Fig. 49 for NHA)		
- 1	46631-1	Slug Drive Pulley	1	
- 2	15502	Ratchet Pulley	1	
- 3	15508	Clamp Ring	1	
- 4	15512-2	Outer Spacer	1	
- 5	33001-3	Ball Bearing	2	
- 6	30111-054	Binder Hd. Screw 8-32 x 3/8	3	
- 7	30403-056	Soc Hd. Screw 8-32 x 1/2	3	
- 8	30133-006	Wavy Washer, No. 35	2	

For Printer S/N 2230A-01516 and Above
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For Printer S/N 2230A-01516 and
Figure 51. Slug Drive Pulley Subassembly
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Figure and Index No.	DPC/MFR Part Number	Description	Qty	Use
52 -	46560G1	Mounting Bar/Penetration Frame Assembly (132 Column) (See Fig. 49 for NHA)		
-	46560G2	Mounting Bar/Penetration Frame Assembly (136 Column) (See Fig. 49 for NHA)		
- 1	46566G1	Penetration Frame Subassembly (See Fig. 54 for Breakdown)	1	G1
- 2	46558G 2	Pulley Mounting Bar Subassembly (See Fig. 53 for Breakdown)	1	
- 3	15520	Bearing Plug	2	
- 4	46517G1	Guide Bracket Subassembly, L.H.	1	
- 5		Soc Hd. Cap Screw 1/4 - 20 x 5/8	8	
- 6	46517G2	Guide Bracket Subassembly, R.H.	1	
- 7	46566G2	Penetration Frame S/A	1	G2
- 8	15553G1	Wick and Block Assembly	1	
- 9	15537	Oil Tube Subassembly	1	
- 10	15540	Mounting Block	1	
- 11		Soc Hd. Set Screw DOG Pt. 10-32 x 1/4	1	
- 12	22002-003	Heat Shrink Sleeving, Blk, 3/16 Dia. x 3-3/34 Lg.	1	
- 13		Truss Hd. Screw, Slotted 10-32 x 3/8	2	
- 14		Soc Hd. Cap Screw 10-32 x 3/4 SST	2	
- 15	15030G1	Bottled Lubricant (1 oz.)	1	
- 16		Flat Washer, No. 10	2	
- 17	15021	Bottle Holder	1	
- 18	46519	Oil Bottle Rest	1	

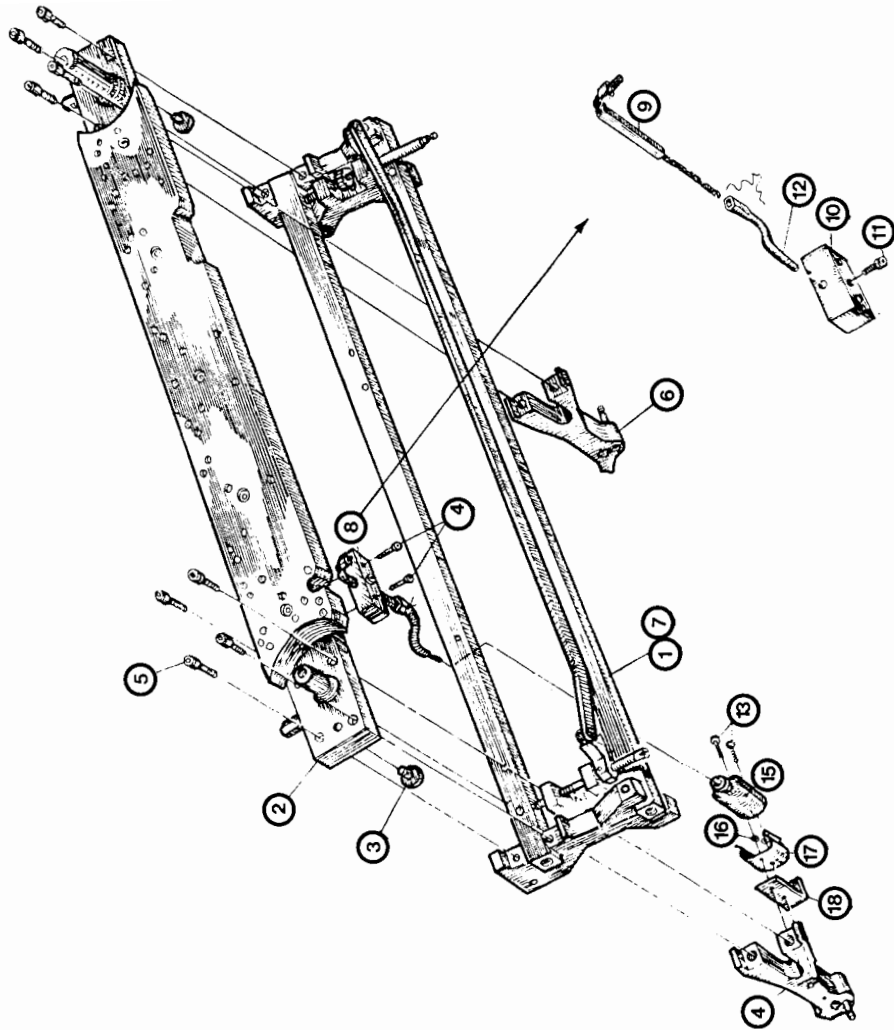


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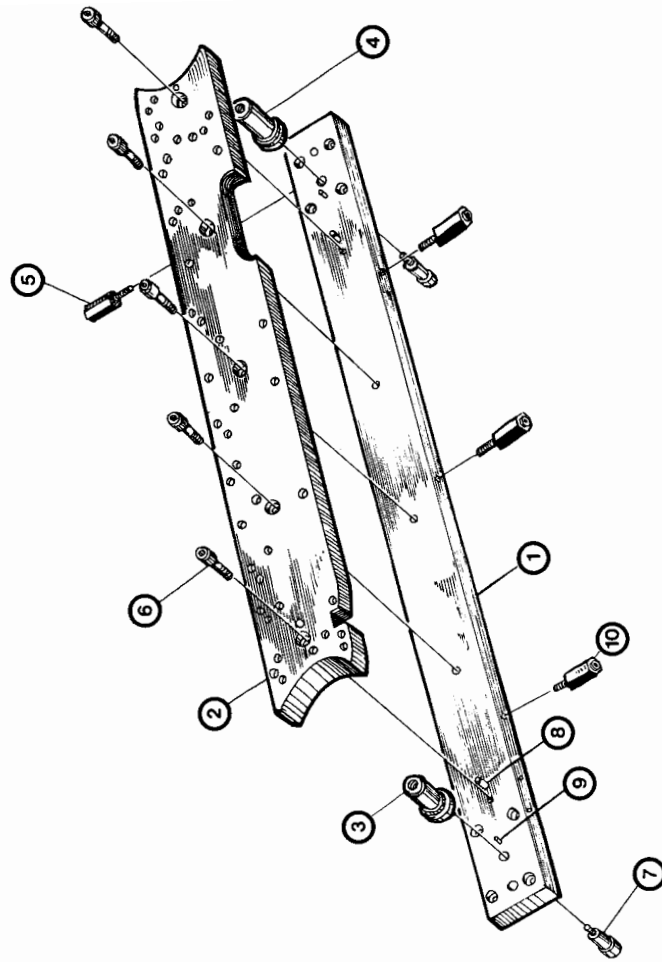
For Printer S/N 2230A-01516 and Above
 Figure 52. Mounting Bar/Penetration Frame As: y
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Figure and Index No.	DPC/MFR Part Number	Description	Qty	Use
53	46558G 2	Pulley Mounting Bar Subassembly (See Fig. 52 for NHA)		
- 1	46506	Mounting Bar	1	
- 2	45509	Guide Support	1	
- 3	46638	Stub Shaft (for Idler Pulley)	1	
- 4	46639	Stub Shaft (for Drive Pulley)	1	
- 5	15524	Standoff	1	
- 6	30403-103	Soc Hd. Cap Screw 1/4 - 20 x 3/4 Black Oxide	5	
- 7	30038-018	Soc Hd. Shoulder Screw 3/8 D x 1/2	2	
- 8	30036-023	Hardened Steel Dowel 1/4 D x 1	2	
- 9	30036-001	Hardened Steel Dowel 1/8 D x 3/8	2	
- 10	46645	Front Standoff	2	

For Printer S/N 2230A-01516 and Above
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For Printer S/N 2205A-01515 and Below
Figure 53. Pulley Mounting Bar Subassembly

S E R V I C E N O T E

Supersedes: None

2619A Line Printer
 All Serial Numbers

PCBA: Power Control

HP P/N 42084G1-DPM, New
 HP P/N 02619-69006, Exchange (Old)
 HP P/N 02619-69106, Exchange (New)

APPLIES TO:	All Units <input checked="" type="checkbox"/>	Only Units on Agreement <input type="checkbox"/>
PERFORM:	Immediately <input type="checkbox"/>	At PM/Normal Call <input type="checkbox"/>
	On Failure <input type="checkbox"/>	Information Only <input checked="" type="checkbox"/>
WARRANTY:	EXTENDED	NORMAL
LABOR:		<input checked="" type="checkbox"/>
PARTS:		<input checked="" type="checkbox"/>
TRAVEL:		<input checked="" type="checkbox"/>
SERVICE	Return for update <input type="checkbox"/>	Use as is <input type="checkbox"/>
INVENTORY	Return for salvage <input type="checkbox"/>	See text <input checked="" type="checkbox"/>
WARRANTY EXTENDED UNTIL:	N/A	

Capacitor C1 has been removed from the power control board to ensure the 2619A meets FCC regulations regarding RFI.

A new exchange part number has been assigned to document this change. The change has no effect on the 2619A Line Printer, only the 2611A. Field service inventory can be used as is to repair a 2619A; however, when repairing a 2611A, either use the new exchange PCA or remove capacitor C1 from the old exchange PCA.



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S E R V I C E N O T E

Supersedes: None

2619A Line Printer
All Serial Numbers

PCBA: Traffic Control

HP P/N 42006G3-DPM, New
HP P/N 02619-69004, Exchange (Old)
HP P/N 02619-69104, Exchange (New)

APPLIES TO:	All Units <input checked="" type="checkbox"/>	Only Units on Agreement <input type="checkbox"/>	
PERFORM:	Immediately <input type="checkbox"/>	At PM/Normal Call <input type="checkbox"/>	
	On Failure <input type="checkbox"/>	Information Only <input checked="" type="checkbox"/>	
WARRANTY:	EXTENDED	NORMAL	NONE
LABOR:			X
PARTS:			X
TRAVEL:			X
SERVICE	Return for update <input type="checkbox"/>		Use as is <input checked="" type="checkbox"/>
INVENTORY	Return for salvage <input type="checkbox"/>		See text <input type="checkbox"/>
WARRANTY EXTENDED UNTIL:	N/A		

This service note documents a change to the crowbar circuit on the traffic control board. The change makes the crowbar less sensitive and easier to adjust.

A new exchange part number has been assigned to reflect this change.

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S E R V I C E N O T E

Supersedes: None

2619A Line Printer
 All Serial Numbers
 Operator PM Duties Label
 P/N 5951-8917

APPLIES TO:	All Units <input checked="" type="checkbox"/>	Only Units on Agreement <input type="checkbox"/>	
PERFORM:	Immediately <input type="checkbox"/>	At PM/Normal Call <input type="checkbox"/>	
	On Failure <input type="checkbox"/>	Information Only <input checked="" type="checkbox"/>	
WARRANTY:	EXTENDED	NORMAL	NONE
LABOR:			X
PARTS:			X
TRAVEL:			X
SERVICE	Return for update <input type="checkbox"/>	Use as is <input type="checkbox"/>	
INVENTORY	Return for salvage <input type="checkbox"/>	See text <input type="checkbox"/>	
WARRANTY EXTENDED UNTIL:			

A new label is available for the 2619A to remind the operator to perform the daily preventive maintenance duties. This label can be ordered through CPC or PCE (P/N 5951-8917) and applied as shown in the attached example.

MM/was

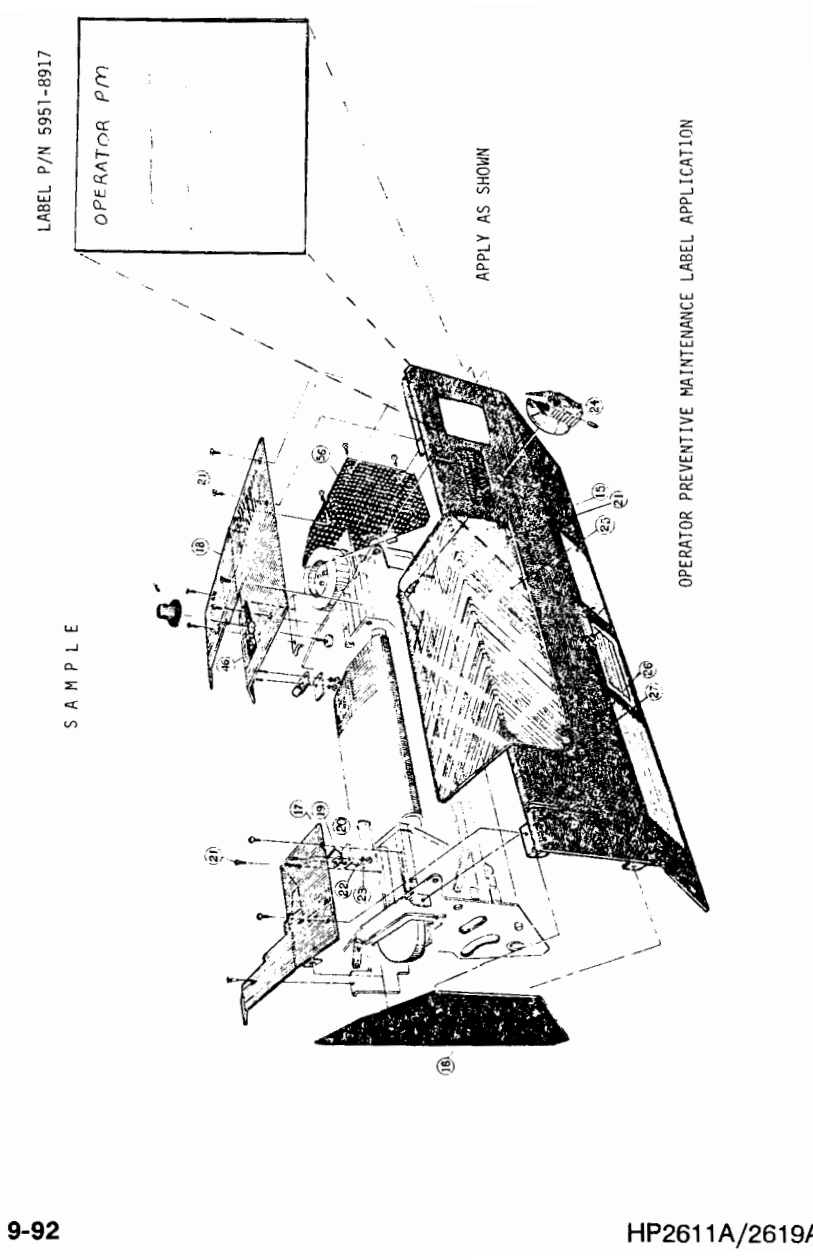
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S E R V I C E N O T E

Supersedes: None

2619A Line Printer
 Service Manual Update
 P/N 02619-90905

APPLIES TO:	All Units <input type="checkbox"/>	Only Units on Agreement <input type="checkbox"/>
PERFORM:	Immediately <input type="checkbox"/>	At PM/Normal Call <input type="checkbox"/>
	On Failure <input type="checkbox"/>	Information Only <input checked="" type="checkbox"/>
WARRANTY:	EXTENDED	NORMAL
LABOR:		X
PARTS:		X
TRAVEL:		X
SERVICE	Return for update <input type="checkbox"/>	Use as is <input type="checkbox"/>
INVENTORY	Return for salvage <input type="checkbox"/>	See text <input type="checkbox"/>
WARRANTY EXTENDED UNTIL:		

There is a mistake in the parts list portion of the 2619A Service Manual (Print date, March 1981). Replace pages 2-103 through 2-108 in the parts list section of the Service Manual with the attached sheets.



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Figure and Index No.	DPC/MFR Part Number	Description	Qty	Use
38 -	43042G1	Actuator and Hammer Bank Assembly (See Fig. 28 for NHA)		
- 1	13084	Actuator Plate Mach.	1	
- 2	43037	Locating Comb	4	
- 3	30036-002	Dowel Pin, .125 x 1/2 Lg	16	
- 4	30058-007	Screw, Thread Forming Slotted Hex Head No. 6-32 x 1/2	32	
- 5	43041G1	Screw Plate Assembly (See Fig. 39 for Bkdwn)	4	
- 6	63176-001	Decal	1	
- 7	63176-002	Decal	1	
- 8	3335G1	Offset Actuator Assembly	66	
- 9	3337G1	Straight Actuator Assembly	66	
- 10	3145	Screw, Soc Head Cap No. 5-40 x 3/4	132	
- 11	43036	Spiral Wrap Tubing	A/R	
- 12	20506	Keying Plug, Amp	4	
- 13	20505	Locking Key, Amp	8	
- 14	43014-001	Stamped Connector	1	
- 15	43014-002	Stamped Connector	1	
- 16	43014-003	Stamped Connector	1	
- 17	43014-004	Stamped Connector	1	
- 18	43006G1	Hammer Bank and Paper Motion Assembly (See Figure 42 for Bkdwn)	1	
- 19	46010G1	Platen S/A	1	
- 20	46521	Paper Guide	1	
- 21	30069-079	Screw, 100° Flat Head, No. 10-32 x 1/2	4	
- 22	30038-013	Screw, Hex Soc Head Shoulder, 5/16 Dia x 1 1/4 Lg	4	
- 23	30027-012	Washer, Plain 5/16	4	
- 24	30210-051	Screw, Truss Head No. 8-32 x 3/16 Lg	4	

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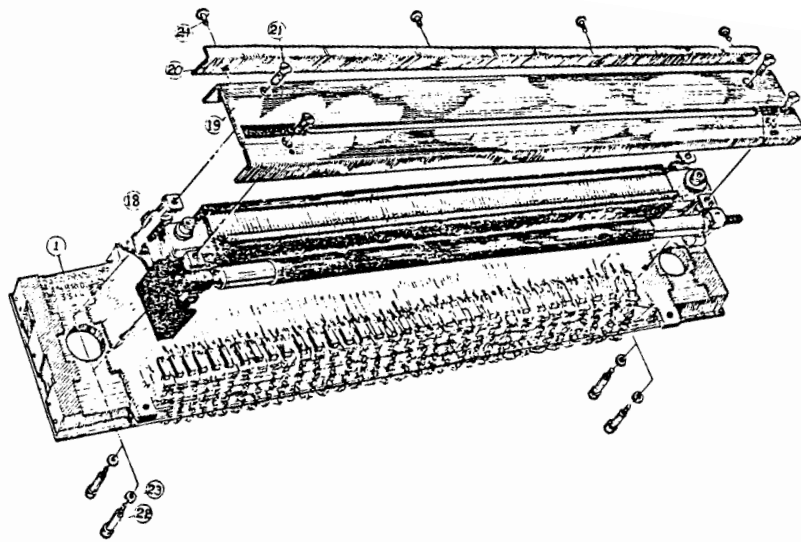


Figure 38. Actuator and Hammer Bank Assembly
(Sheet 1 of 3)

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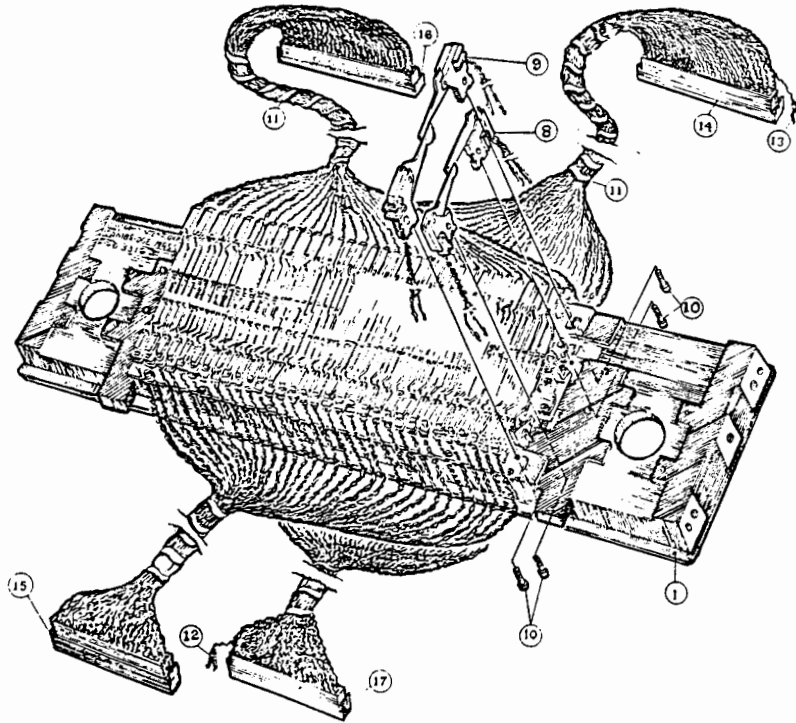


Figure 38. Actuator and Hammer Bank Assembly
(Sheet 2 of 3)

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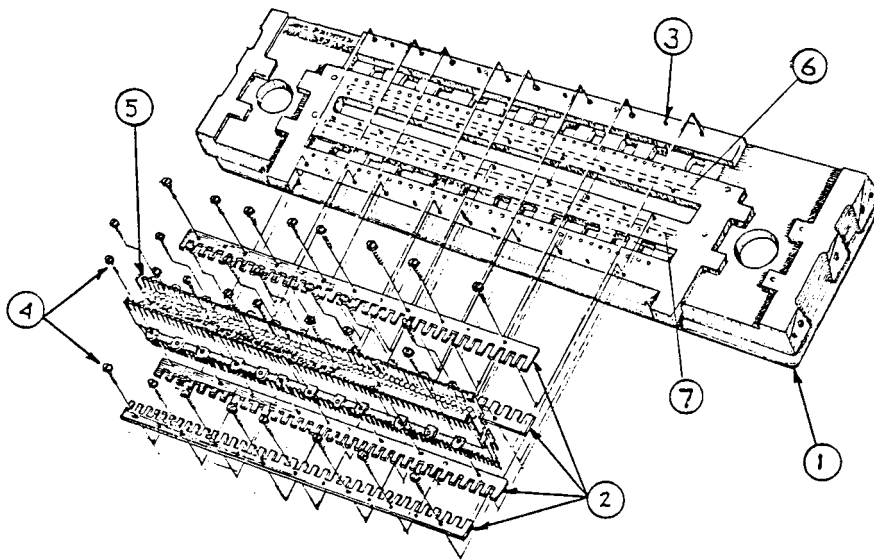


Figure 38. Actuator and Hammer Bank Assembly
(Sheet 3 of 3)

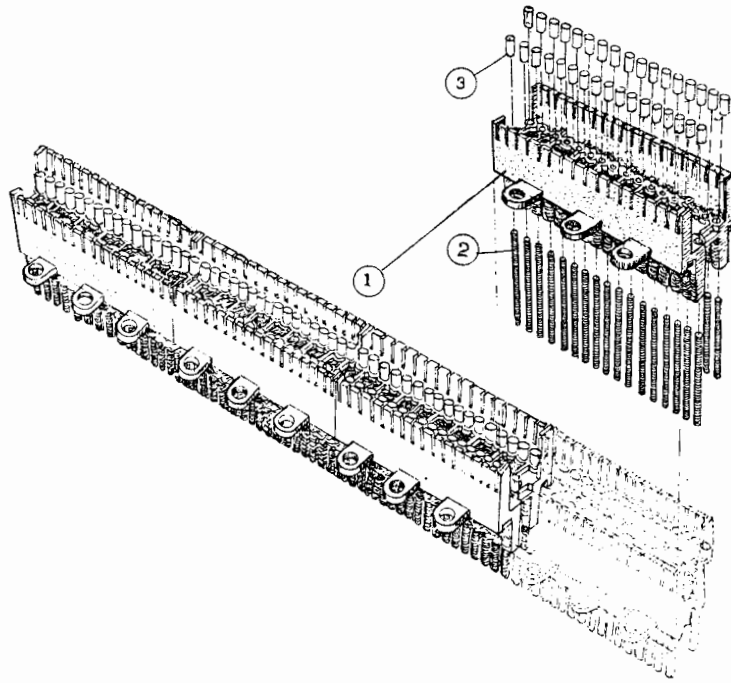
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Figure and Index No.	DPC/MFR Part Number	Description	Qty	Use
39 -	43041G1	Screw Plate Assembly (See Fig. 38 for NHA)		
- 1	43038	Screw Plate	1	
- 2	43040	Set Screw, Flat Point	34	
- 3	43039	Screw Cap	34	



For Printer S/N 2117A-01219 and Above

Figure 39. Screw Plate Assembly

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SERVICE NOTE

Supersedes: None

2619A Line Printer

All Serial Numbers

Crowbar Adjustment Procedure
For New Traffic Control PCBANew P/N 02619-60104
Exchange P/N 02619-69104

Equipment required:

- 1) 75 ohm 50 watt resistor +/- 5%
- 2) 250 ohm 25 watt resistor +/- 5%

APPLIES TO:	All Units <input checked="" type="checkbox"/>	Only Units on Agreement <input type="checkbox"/>	
PERFORM:	Immediately <input type="checkbox"/>	At PM/Normal Call <input type="checkbox"/>	
	On Failure <input type="checkbox"/>	Information Only <input checked="" type="checkbox"/>	
WARRANTY:	EXTENDED	NORMAL	NONE
LABOR:			X
PARTS:			X
TRAVEL:			X
SERVICE	Return for update <input type="checkbox"/>		Use as is <input type="checkbox"/>
INVENTORY	Return for salvage <input type="checkbox"/>		See text <input type="checkbox"/>
WARRANTY EXTENDED UNTIL:			

The adjustment procedure for the new traffic control PCBA (02619-60104) is similar to the one used for the old traffic control PCBA (02619-60004) except for the value of the check resistor. The resistor used for the adjustment of the crowbar circuit is 75 ohm 50 watt for both the new and old traffic control PCBAs. A 150 ohm 25 watt resistor is used to check the adjustment for the old traffic control PCBA while a 250 ohm 25 watt is used for the new when verifying the crowbar circuit is operational.

Crowbar Adjustment Procedure

1. Press circuit breaker to OFF.
2. Disconnect, but do not remove, the four hammer driver, the control, the I/O and the paper feed PCAs.
3. Adjust pot R17 on the traffic control PCA fully counterclockwise.
4. Connect the 75 ohm across the +40 volt bus and return on the motherboard.

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5. Press the circuit breaker to ON. Press power on to ON. Printer should power up and stay on.
6. Adjust R17 clockwise until the crowbar circuit trips. Readjust R17 one (1) turn counterclockwise. Press power on to ON. It may be necessary to cycle the circuit breaker to OFF and then ON to release the crowbar circuit.
7. Press power on to ON. Time test the crowbar circuit to trip in less than 15 seconds. Readjust R17 clockwise to decrease time if necessary.
8. Repeat the time test four (4) times to make certain the crowbar trips in less than 15 seconds.
9. Replace the 75 ohm resistor with a 250 ohm resistor.
10. Press power on to ON. Printer should power up and stay on for two (2) minutes and then press power off to OFF.
11. Remove the 250 ohm resistor and insert the PCBAs disconnected in step 2. Press power on to ON. Printer should stay powered up. If the crowbar circuit trips, replace hammer driver PCBAs until it does not trip.

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S E R V I C E N O T E

Supersedes: None

SUPERSEDES:

HP 2619 Line Printer
Hammer Driver PCA Compatibility

P/N 1150-1392 New
P/N 1150-1413 Exchange Old

P/N 02619-69003 Exchange Old
P/N 02619-69103 Exchange New

APPLIES TO:	All Units <input checked="" type="checkbox"/>	Only Units on Agreement <input type="checkbox"/>	
PERFORM:	Immediately <input type="checkbox"/>	At PM/Normal Call <input type="checkbox"/>	
	On Failure <input checked="" type="checkbox"/>	Information Only <input type="checkbox"/>	
WARRANTY:	EXTENDED	NORMAL	NONE
LABOR:	X		
PARTS:	SEE TEXT		
TRAVEL:	X		
SERVICE	Return for update <input type="checkbox"/>	Use as is <input type="checkbox"/>	
INVENTORY	Return for salvage <input type="checkbox"/>	See text <input checked="" type="checkbox"/>	
WARRANTY EXTENDED UNTIL:	ALWAYS		

There is a compatibility problem with the hammer driver boards on the 2619A. At the present time there exists several different versions of the 2619A hammer driver, the part numbers of these versions are, 1150-1392, 1150-1413, and 02619-69003. There are also several different revision levels associated with these part numbers, Revision A, Revision B, and Revision C.

A compatibility problem occurs when a Revision A type of hammer driver board is used with any other revision of hammer driver board. When a Revision A hammer driver board is used with any other revision board the printer will print alternating light and dark columns. If a defective hammer driver board is replaced on a 2619A and the printer has any Revision A hammer driver boards in it all Rev A boards must be replaced addition to the defective hammer driver board.

In order to help solve this compatibility problem some Revision B and Revision C boards that are installed in the field have been modified with a jumper from the base to the emitter of Q103, (See Figure 1). This jumper must be removed before any hammer driver boards are replaced.

A new exchange assembly now exists for the 2619A Hammer Driver board. The part number for this new exchange assembly is 02619-69103. Revision A 02619-69103 hammer driver boards are compatible with with all Revision B and Revision C hammer driver boards. This is the recommended P.C.A. to use when replacing hammer driver boards in the printer.

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FOR MORE INFORMATION, CALL YOUR LOCAL HP SALES OR SERVICE OFFICE or East (201) 265-5000 • Midwest (312) 255-9800 • South (404) 955-1500 • West (213) 970-7500 or (415) 866-9200 OR WRITE, Hewlett-Packard, 1820 Embarcadero, Palo Alto, California 94303. IN EUROPE, CALL YOUR LOCAL HP SALES OR SERVICE OFFICE OR WRITE, Hewlett-Packard S.A., 7, rue du Bois-du-Lan, P.O. Box, CH-1217 Meyrin 2 - Geneva, Switzerland. IN JAPAN, Yokogawa-Hewlett-Packard Ltd., 1-27-15, Yabe Sagami-hara City, Kanagawa Prefecture, Japan 229.

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HP2611A/2619A

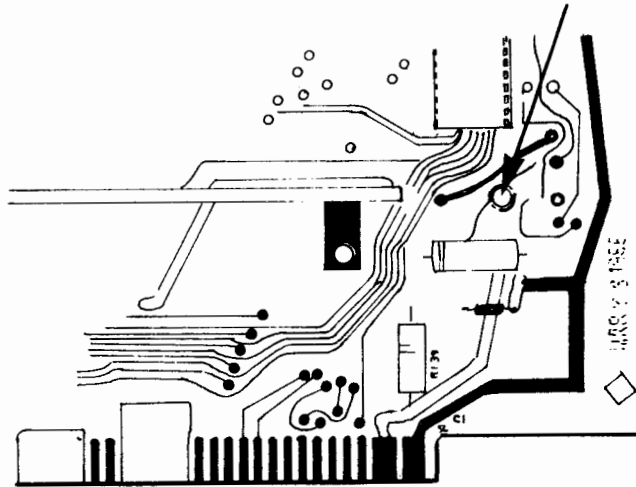
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Whenever a hammer driver board is replaced ensure that following items are checked.

1. All hammer driver boards that are in the printer are compatible. (i.e. No Revision A Hammer Driver Boards except for 02619-69103 Revision A Hammer Driver boards)
2. All Q103 emitter to base jumpers have been removed (See Figure 1).
3. Perform fire pulse adjustments as prescribed in the service manual 3.5.1.4.1 .
4. If necessary adjust the flight times as prescribed in the service manual 3.5.1.4.3 .

Boise Division will pay extended warranty for any hammer driver boards that must be replaced to correct this compatibility problem when a hammer driver board fails in a printer. This includes up to 2 hours of labor, and hammer driver boards (Up to a maximum of three PCAs.) necessary to correct the compatibility problem.

Check for jumpers between base and emitter of Q103



YOKE REBUILDS

Factory Refurbish or On-Site Rebuild Yokes?

Printronix (owners of Data Printer) offers a refurbishing program for the 2611/19A Yoke Assemblies. This program is an alternative to on-site rebuilding the yoke. If the program is used only when it makes sense, it CAN save HP money and CE time. If the printer needs all 48 character slugs replaced, the refurb program is normally cost effective; however, if only certain slugs or just the belts and/or pulleys need to be replaced, the refurb route will cost HP substantially.

The following information may help determine whether an on-site rebuild or a refurbished yoke should be used:

Refurbished Yokes:

If your area has yokes set-up in major offices or the Parts Depot, then availability is not an issue; if not, then keep in mind that the average refurb turn-around time is 3 weeks. The cost of the refurb route is easy to figure by adding the yoke price and the shipping charge together. It will take 1 to 2 hours to install the refurbished yoke and either the customer or another CE will be needed to help with the lifting and aligning. Labor should not be considered a "real" cost to HP, but time saved and customer down time should be a factor. A list of known "gotchas" follows the yoke installation instructions.

Rebuilding On-Site:

The cost of rebuilding on-site will vary depending on which parts need to be replaced. As a general rule, whenever you take the time to disassemble the chain train, it is recommended to replace both pulley assemblies and the belts. Slugs are not normally replaced during the rebuild. Certain slugs (the numbers and "E") wear out much faster due to heavier use and may be replaced either at a rebuild or a normal PM (in this case the belts and pulleys would not be replaced). A few older printers may still need the K-120A-DPM Upgrade Kit. This kit includes both pulleys, rails, type face belts, shims and the xducer mounting plate. Keep in mind that the CEO receives a 40% discount on these parts, so the "real" cost to the district is substantially less than list.

To order a Factory Refurbished Yoke:

1. Call Printronix 714-863-1900 EX. 2654 OR 2640
2. Order Part Number 4600G1
3. Give them a PO Number for \$1700.00 if the trade-in yoke has been upgraded per service note 2619A 15A, or \$2100.00 if the trade-in has not been upgraded.
4. They will give you a return authorization number. Put this number on the packing slip and on the box.
5. Verify the shipping address. Currently, ship the yoke to:

Printronix
99 Middlesex St.
Malden, Ma. 02148

Procedures for Replacing the Yoke

1. Remove the side panels.
2. Unlatch the yoke and open it 6 inches.
3. Remove the spring from the right side of the yoke.
4. Open the yoke completely.
5. Right side:
Remove the ground strap bolt (7/16"). Disconnect the four (4) cables (motor, xducers, etc.). Remove the top limit screw (9/16" & big flat blade).
6. Left side:
Remove the gas spring (1/2" & hex driver). Remove the vacuum hose (on 2619As only). Remove the top limit screw (9/16" & big flat blade).
7. Right Side:
Open the yoke. Remove the nut from the bottom pivot screw (9/16" & flat blade). It may be necessary to remove the paper tensioner or paper out sensor track in order to get to the nut.
8. Left side:
Repeat the Right Side procedures.
9. Tap the left and right screws out with a screw driver and lift the yoke assembly out of the printer (26 lbs.).
10. Install the rebuilt yoke assembly.
11. Open the yoke door and keep it held down.
12. Lower the yoke into the assembly.

13. Make sure the rollers on either side slide into their respective slots.
14. Close the yoke.
15. Left side:
Align the pivot screw hole and install the pivot screw. Do not put the nut on yet.
16. Right side:
Repeat step 15 for the right side.
17. Open the yoke and replace the right and left limit screws.
18. Replace the gas spring and the left and right ground cables.
19. Replace the four (4) cables on the right.
20. Replace the vacuum hose (2619As only).
21. Close the yoke and replace the spring on the right side of the yoke.
22. Install the oil bottle and ribbon.
23. Using the TEST PRINT, verify the printer is functioning and the print quality is acceptable. Be sure to use a new ribbon and verify consistent impression intensity along the entire line. Different tolerances between yokes may require the penetration adjustment be performed (see following section).



Penetration Adjustment

If the printer exhibits different impression intensities from right to left, then the penetration adjustment **MUST** be performed. To perform the adjustment accurately, two penetration adjustment blocks and a .0015" feeler gauge are required.

1. Turn the IMPRESSION CONTROL KNOB to its full counter clockwise position.
2. Remove the left and right yoke assembly top covers.
3. Loosen one of the hex head set screws on the right and left penetration cranks.
4. Turn the IMPRESSION CONTROL KNOB fully clockwise.
5. Loosen the other hex head set screws on the right and left penetration cranks.
6. Remove the IMPRESSION CONTROL KNOB.
7. The left and right penetration adjustment screws are now free to move the chain assembly closer to or further from the hammers. If the penetration blocks are not available, skip to step 12.
8. Remove the hammer bank mask and the hammer bank assembly. Install the penetration blocks in place of the hammer bank. Note that there are

right and left blocks. Make sure that the blocks are properly seated before tightening.

9. Remove the ribbon/slug guides (upper and lower) that are opposite the penetration blocks. Remove the left and right paper guide springs and then the paper guide pivot nuts (7/16").
10. Close the yoke slowly; ensure that the slug faces do not contact the penetration block faces. If they do, turn the penetration crank shafts counter clockwise until there is clearance. Latch the yoke closed. Place a .0015" feeler gauge between the face of the slugs and the penetration blocks. Turn the penetration shafts to obtain proper adjustment.
11. Open the yoke and replace the ribbon/slug guides, the paper guide screws and springs. Remove the penetration blocks and replace the hammer bank and mask. Go to step 14.

NOTE

The following two steps are to be used when the penetration blocks are not available!

12. Close the yoke assembly and use test print to print all "H"s (LOCAL [S1=down], hex "48," SOLID [S2=down]). Adjust the right and left shafts to obtain even intensity. This should be done with a new ribbon and the final check using multipart paper and verifying the print on the 2nd copy.
13. When print is uniform in darkness across the page, move the penetration cranks fully clockwise and tighten the left and right set screws. Recheck the adjustment.
14. Move the penetration cranks fully counter clockwise and tighten the other two set screws.
15. Replace the IMPRESSION CONTROL KNOB and the covers.
16. As always, check the printer out with the system and the customer.

Known “Gotchas” with Refurbished Yokes

There are a few known “gotchas” involved with using the Refurbished Yokes. Most are HP caused and involve trying to install an incorrect yoke. Be certain that the yoke to be installed is for the same model (2611A or 2619A) printer and has the same slug configuration (64 or 96 character)!

The problem usually arises when a yoke from area stock is used. The scenario goes like this: An area picks up a discarded 2611 or 2619, removes the yoke and gets it refurbished by Printronix. Printronix returns the EXACT yoke rebuilt in the EXACT configuration. If this yoke was from a rare 96 character machine then it is virtually unusable! Maybe the yoke came from one of the few 2611As and the rest of the installed base is 2619As; again unusable but modifiable. In this case, swap the chain motor drive pulley and move the paper low guide assembly over to the new yoke. Know what you have and what you are installing it in and the yoke swap normally goes smooth.

Other “gotchas” include assumptions made by the CE. Always verify the penetration adjustment, drive belt tension, both transducer adjustments, hammer flight times and check for missing or extra parts! Not taking the few minutes to do these causes an extra trip or two and defeats the cost benefits!

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PAPER LOW SWITCH UPGRADE KIT

Following are instructions for installing the 2611A Paper Low Upgrade Kit P/N 46651G1-DPM.

Many customers that constantly change forms have experienced less than desirable performance of the tractor mounted paper low switches. To solve these customers problems, an upgrade kit was made to convert the 2611A tractor mounted switch to the throat mounted 2619A style. We have experienced many QA problems with these kits. Many arrive missing parts and without instructions. The following list contains the "normal" missing parts. Installation instructions follow.

Typical Missing Parts:

44094-DPM	Sideplate stand-off	Qty=2
30132-084-DPM	Hex head cap screw	Qty=2
30222-004-DPM	Hex Nut	Qty=4
30138-079-DPM	Set Screw	Qty=2
44109-DPM	Bronze bushing	Qty=2



Installation Instructions

1. Remove the original LH mounting bracket, RH mounting bracket and inner paper guide. Set mounting screws aside for later use. Refer to Figure 28 (1 of 2).
2. Assemble the pivot bar subassembly using the following parts. Refer to Figure 28 (1 of 2).
 - Paper out switch actuator, P/N 44196-DPM.
 - Paper out switch contact arm, P/N 44095-DPM.
 - Pivot bar, P/N 44103G1-DPM.
 - Sensing fingers, P/N 44102-DPM.
 - Six no. 8 lock washers, P/N 30028-004-DPM.
 - Six 8-32 X 3/8 pan head screws, P/N 30220-054-DPM.
 - Set screw, P/N 30177-029-DPM.
 - 8-32 Hex nut, P/N 30222-004-DPM.
3. Install the LH mounting bracket using the original screws.
4. Place the pivot bar subassembly in the LH mounting bracket, hold in place and mount the RH mounting bracket using the original screws.
5. Install the inner paper guide, P/N 44105-DPM, using the original screws.
6. Install the left and right cam roller bracket assembly using the following parts. Refer to Figures 44 and 45.
 - LH cam roller bracket, P/N 46528-1-DPM.
 - RH cam roller bracket, P/N 46528-2-DPM.
 - Two hex head cap screws, P/N 30132-081-DPM.
 - Two bearings, P/N 33001-9-DPM.
 - Two no. 10 lock washer, P/N 30029-005-DPM.
 - Four hex nuts, P/N 30322-005-DPM.
 - Four spacers, P/N 46527-DPM.
 - Two 10-32 X 1 1/8 screw, P/N 30318-085-DPM.
 - Two 10-32 X 1 1/4 screw, P/N 30318-086-DPM.
 - Use existing ground wires.

7. Assemble the left and right lever arm assemblies using the following parts. Refer to Figure 28 (2 of 2).

- LH lever arm, P/N 44097-1-DPM.
- RH lever arm, P/N 44097-2-DPM.
- Two bronze bushings, P/N 44109-DPM.
- LH torsion spring, P/N 44104-1-DPM.
- RH torsion spring, P/N 44104-2-DPM.
- Two sideplate standoffs, P/N 44094-DPM.
- Two clamp washers, P/N 6128-DPM.
- Two 10-32 X 1 cap screws, P/N 30132-084-DPM.

WARNING: Be careful of your fingers, the springs are tight!

8. Install the outer paper guide using the following parts. Refer to Figure 28 (2 of 2).

- Outer paper guide, P/N 44096-DPM.
- Four #8 lock washer, P/N 30028-004-DPM.
- Four #8 flat washers
- Four 8-32 hex nuts, P/N 30222-004-DPM.
- Two 10-32 X 1/2 set screws, P/N 30138-079-DPM.

9. Adjust the paper guide set screws for a throat gap of .030" - .045" depending on customer form thickness.

10. Adjust the pivot bar set screw for proper paper low switch actuation.

11. Loctite the above three (3) set screws. Test with all customer forms for proper feeding and paper low condition.

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