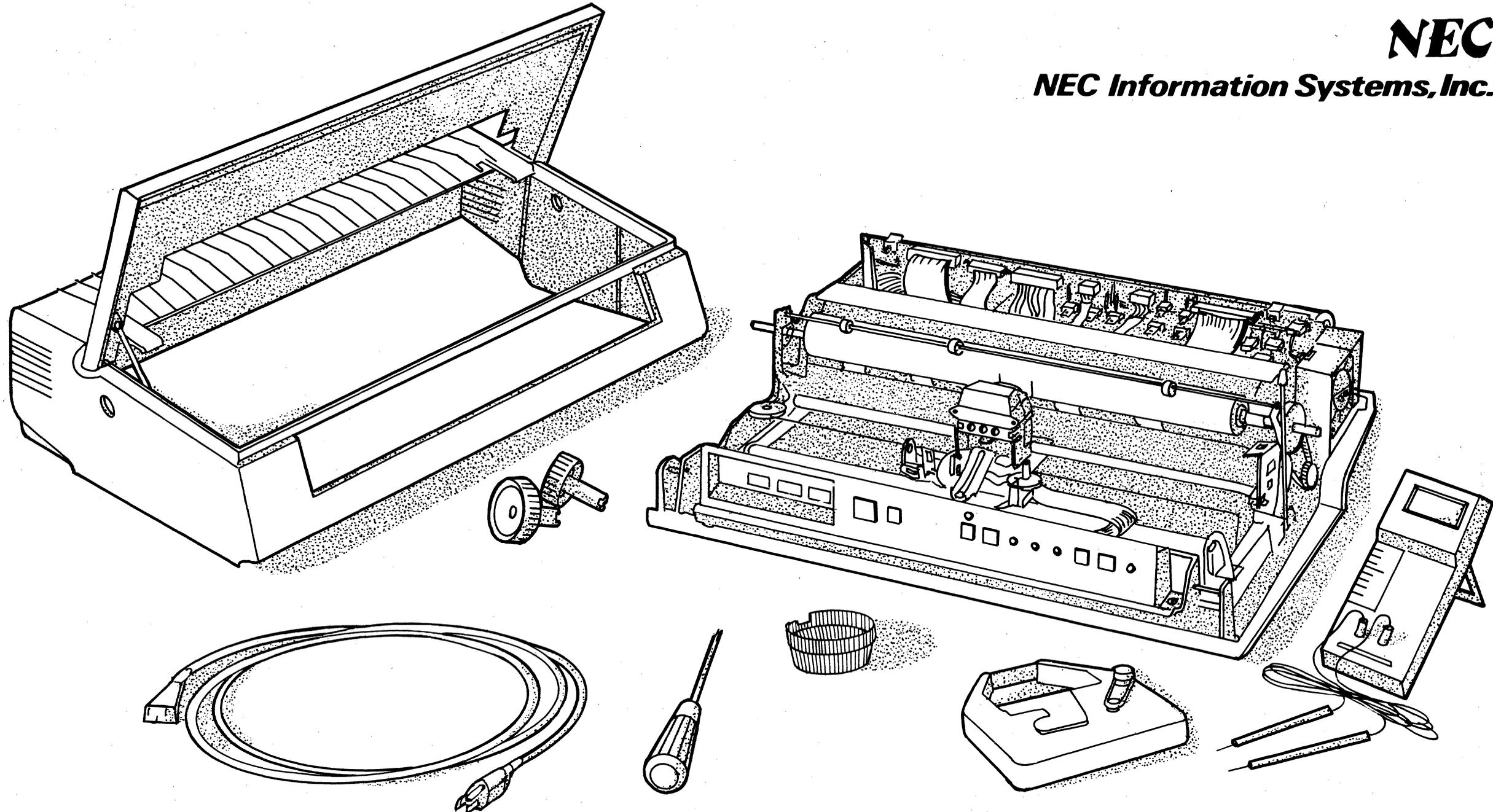


NEC
NEC Information Systems, Inc.



spinwriter[®]

3500 Series Maintenance Manual

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Lexington, MA 02173

Printed in U.S.A.

FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY
INTERFERENCE STATEMENT

This unit has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications for Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation.

Manufacturer's Instructions and User's Responsibilities
to Prevent Radio Frequency Interference

Manufacturer's Instructions

The user must observe the following precautions in installing and operating this device:

1. Operate the equipment in strict accordance with the manufacturer's instructions for the model.
2. Ensure that the unit is plugged into a properly grounded wall outlet and that the power cord supplied with the unit is used and not modified.
3. Ensure that the unit is always operated with the factory installed cover set on the unit.
4. Make no modification to the equipment which would affect its meeting the specified limits of the Rules.
5. Properly maintain the equipment in a satisfactory state of repair.

User's Responsibility

The user has the ultimate responsibility to correct problems arising from harmful radio-frequency emissions from equipment under his control. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures. All of these responsibilities and any others not mentioned are exclusively at the expense of the user.

1. Change in orientation of the receiving device antenna.
2. Change in orientation of the equipment.
3. Change in location of equipment.
4. Change in equipment power source.

If these attempts are unsuccessful, install one or all of the following devices:

1. Line isolation transformers
2. Line filters
3. Electro-magnetic shielding

If necessary, the user should consult the dealer, NEC or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission to be helpful; "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402, Stock No. 004-000-00345-4.

"Note: The operator of a computing device may be required to stop operating his device upon finding that the device is causing harmful interference and it is in the public interest to stop operation until the interference problem has been corrected."

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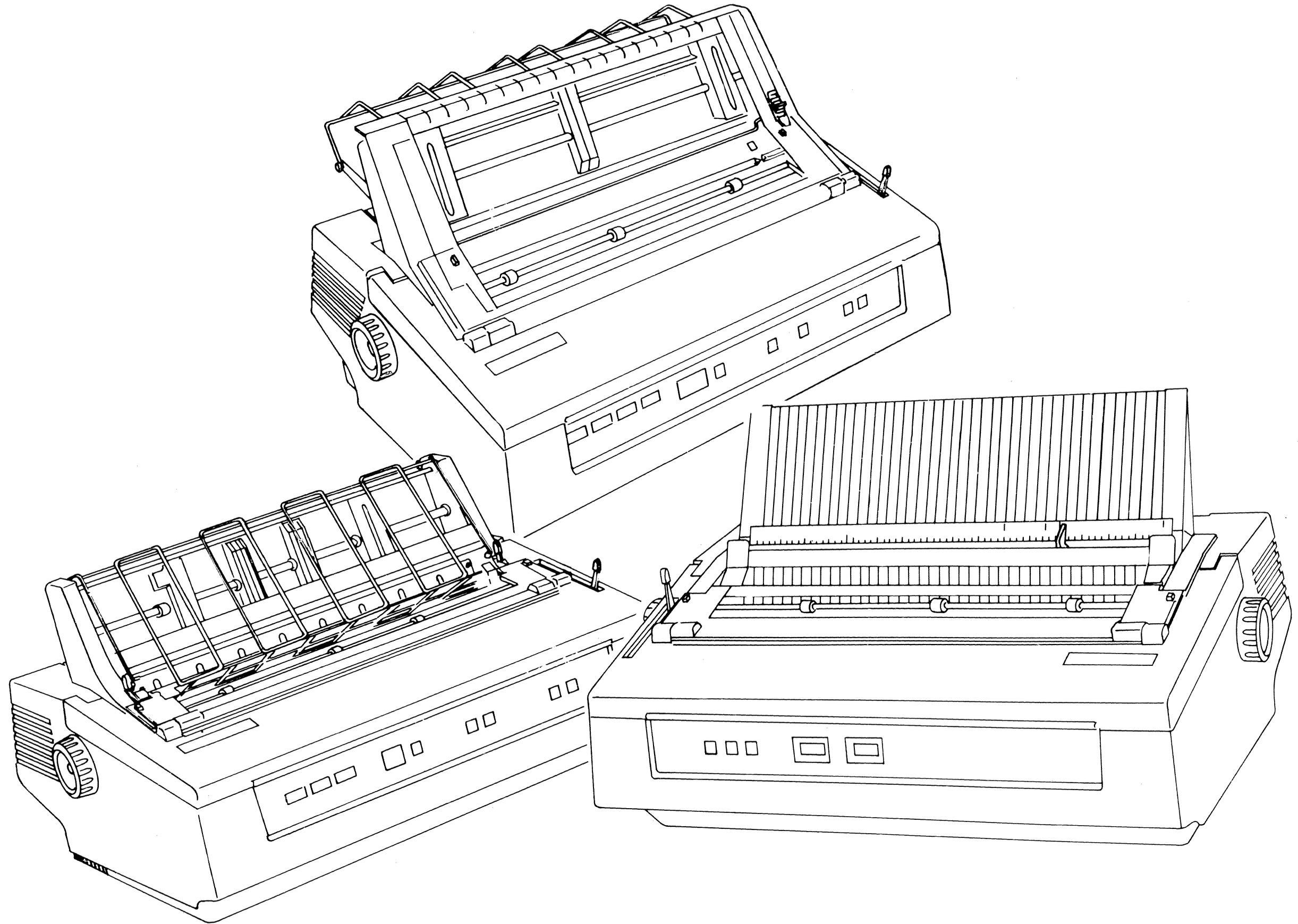
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CHAPTER 1 GENERAL INFORMATION

The 3500 Series Spinwriters are lightweight serial impact printers that use highly-integrated, microprocessor-controlled electronics, stepping motors, and print hammer to produce camera-ready print quality. This chapter includes a description of the mechanical operation of the printer, diagrams of system operation, a philosophy of maintenance, and administrative certifications.

1.1 PRINTER MECHANICAL OPERATION

The 3500 Series Spinwriter can be functionally divided into three mechanisms: printing, spacing, and paper feeding.

1.1.1 Printing Mechanism

The various parts that make up the printing mechanism are shown in Figure 1-1. The printing mechanism is constructed with the character selection (print thimble rotation and lift), ribbon lift, and ribbon feed functions as part of the carriage assembly (see Figure 1-2).

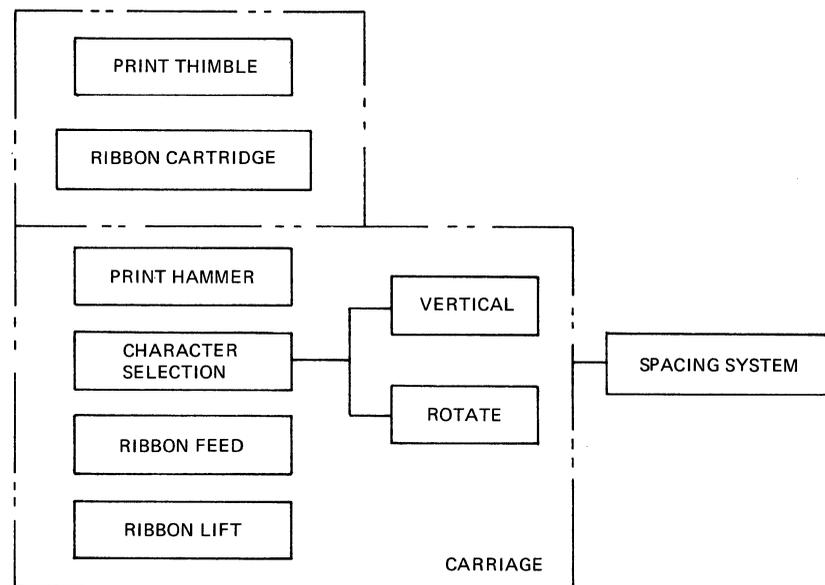


Figure 1-1 Print Mechanism Elements

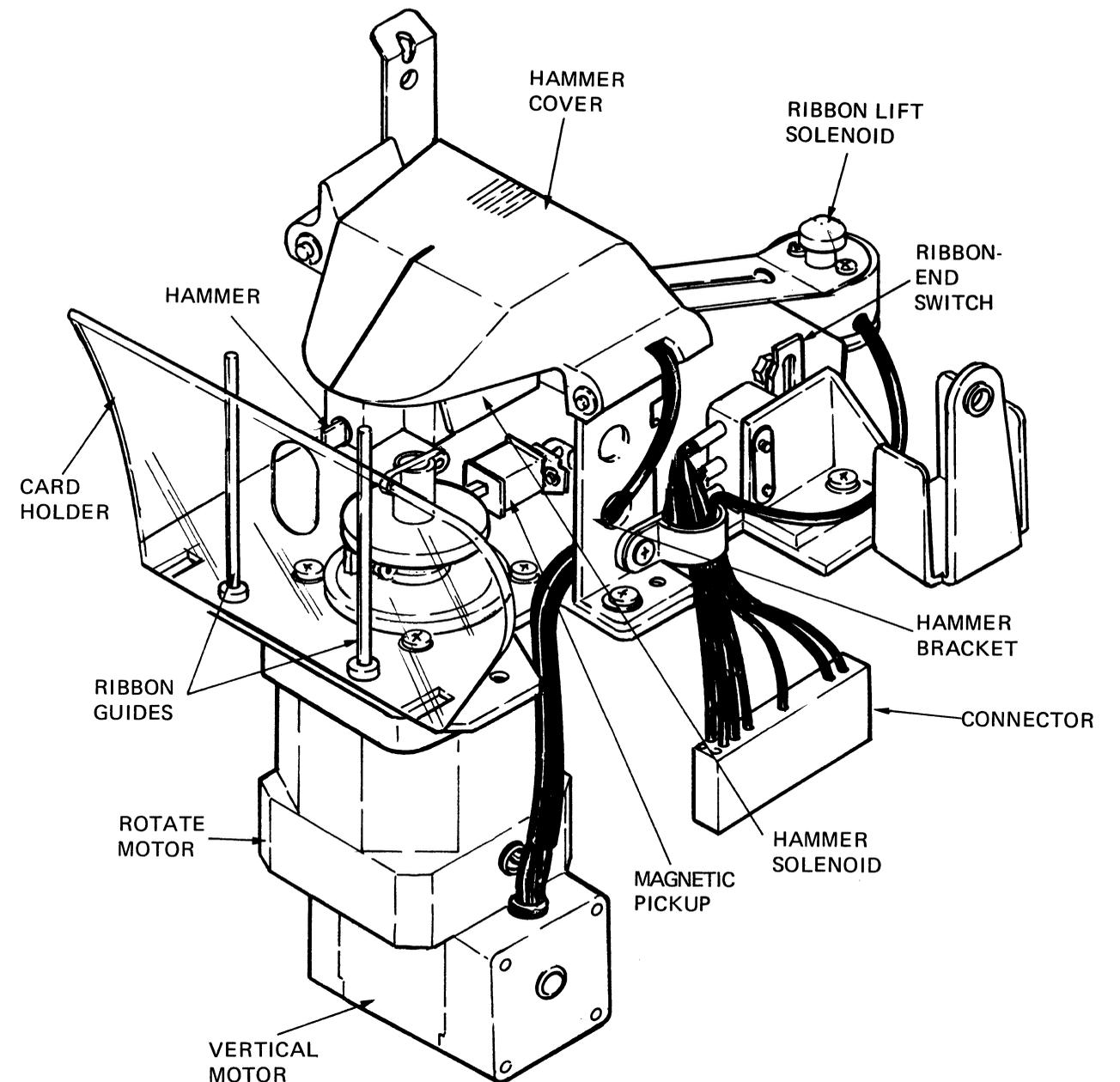


Figure 1-2 Carriage Assembly

1.1.1.1 Print Thimble

To print characters, the Spinwriter uses a print thimble (see Figure 1-3) that has 64 reinforced plastic fingers. Two characters are arranged vertically on each finger, providing for a maximum of 128 characters per thimble. On thimbles with fewer than 126 characters, three of the fingers are shorter, enabling you to see the last characters that are printed. To select a character, the print thimble rotates bidirectionally and moves vertically. The rotate motor drives the thimble mount that, in turn, spins the print thimble.

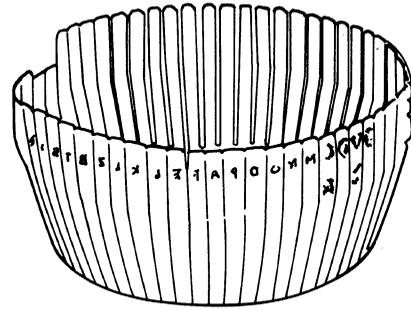


Figure 1-3 Print Thimble

1.1.1.2 Print Hammer

When the print hammer solenoid is energized, the print hammer strikes a thimble finger, pressing the finger against the ribbon, the paper, and the platen. Then, the hammer returns to its original position because of the rebound of the hammer plus the magnetic attraction of the hammer solenoid.

The hammer is attached to the hammer cover which is installed on top of the hammer bracket. The cover pivots on the hammer support shaft and locks into position with the hammer lock spring. The position of the hammer is adjustable by loosening the screws that hold the hammer assembly to the hammer cover.

1.1.1.3 Card Holder and Ribbon Guides

The card holder (see Figure 1-4) keeps the paper in position during printing. The unit guides paper over the platen and serves as a mark for print position and paper insertion (top of form). Two ribbon guides hold the card holder in position and keep the ribbon away from the print thimble.

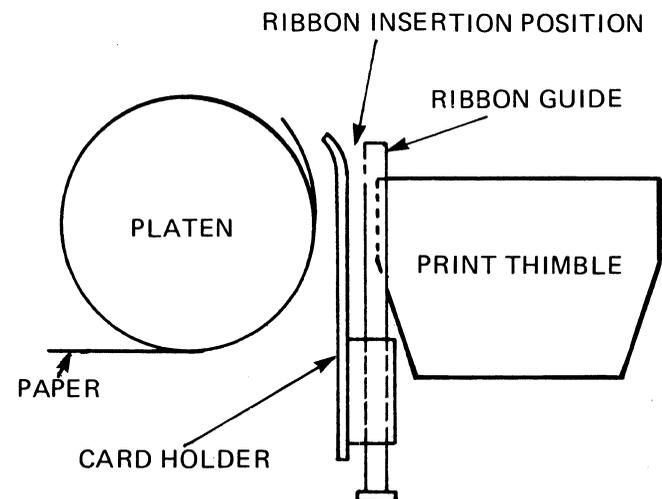


Figure 1-4 Card Holder and Ribbon Guide

1.1.1.4 Selection Mechanism

The selection mechanism consists of the selection motor unit, the thimble mount and magnetic pickup, and the thimble (see Figure 1-5). The selection motor unit, composed of two stepping motors, selects characters by rotating the print thimble and moving it vertically. An exploded view of the selection mechanism is shown in Figure 1-6.

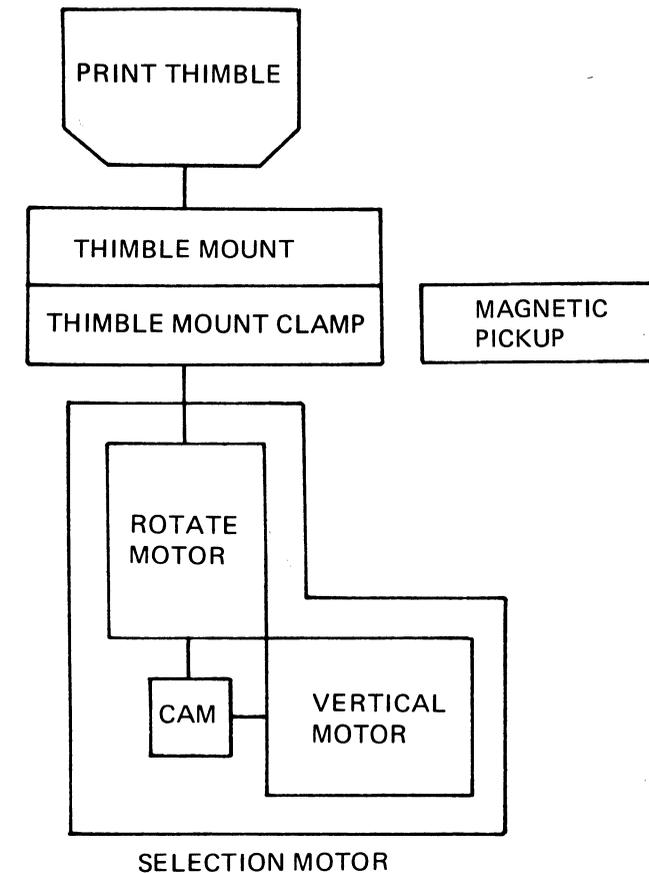


Figure 1-5 Selection Mechanism Components

ROTATE SELECTION

The rotate motor moves the print thimble to one of 64 equally divided positions. The thimble mount clamp fastens the thimble mount to the shaft of the rotate motor. The thimble height is adjustable by loosening the thimble mount clamp and moving the thimble mount (see Figure 1-6). The magnetic pickup (see Figure 1-2) senses the magnet on the thimble mount clamp (see Figure 1-6) to determine the home position of the print thimble.

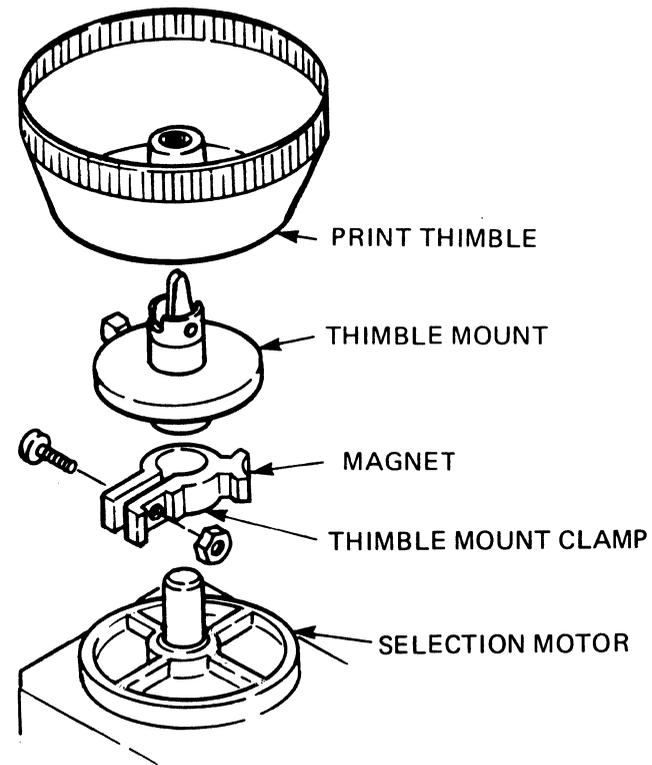


Figure 1-6 Exploded View of Top of Selection Mechanism

VERTICAL SELECTION

The print thimble moves up and down to select one of the two rows of characters. A cam on the shaft of the vertical stepping motor causes vertical motion of the rotate motor shaft to move the print thimble vertically. After the vertical stepping motor has raised the thimble, the thimble is held up by a mechanical latch. When the thimble is lowered, it is held down by a spring.

1.1.1.5 Ribbon Cartridge and Ribbon Feed

The 3500 Series Spinwriters use two kinds of ribbons, fabric and multistrike. The fabric ribbon is an endless loop. The multistrike ribbon is not endless; it is reversible. A diagram of the cartridge and the ribbon feed system is shown in Figure 1-7.

The ribbon end switch (see Figure 1-8) attached to the carriage frame is a four-position switch that will be on or off depending on the situation (see Table 1-1).

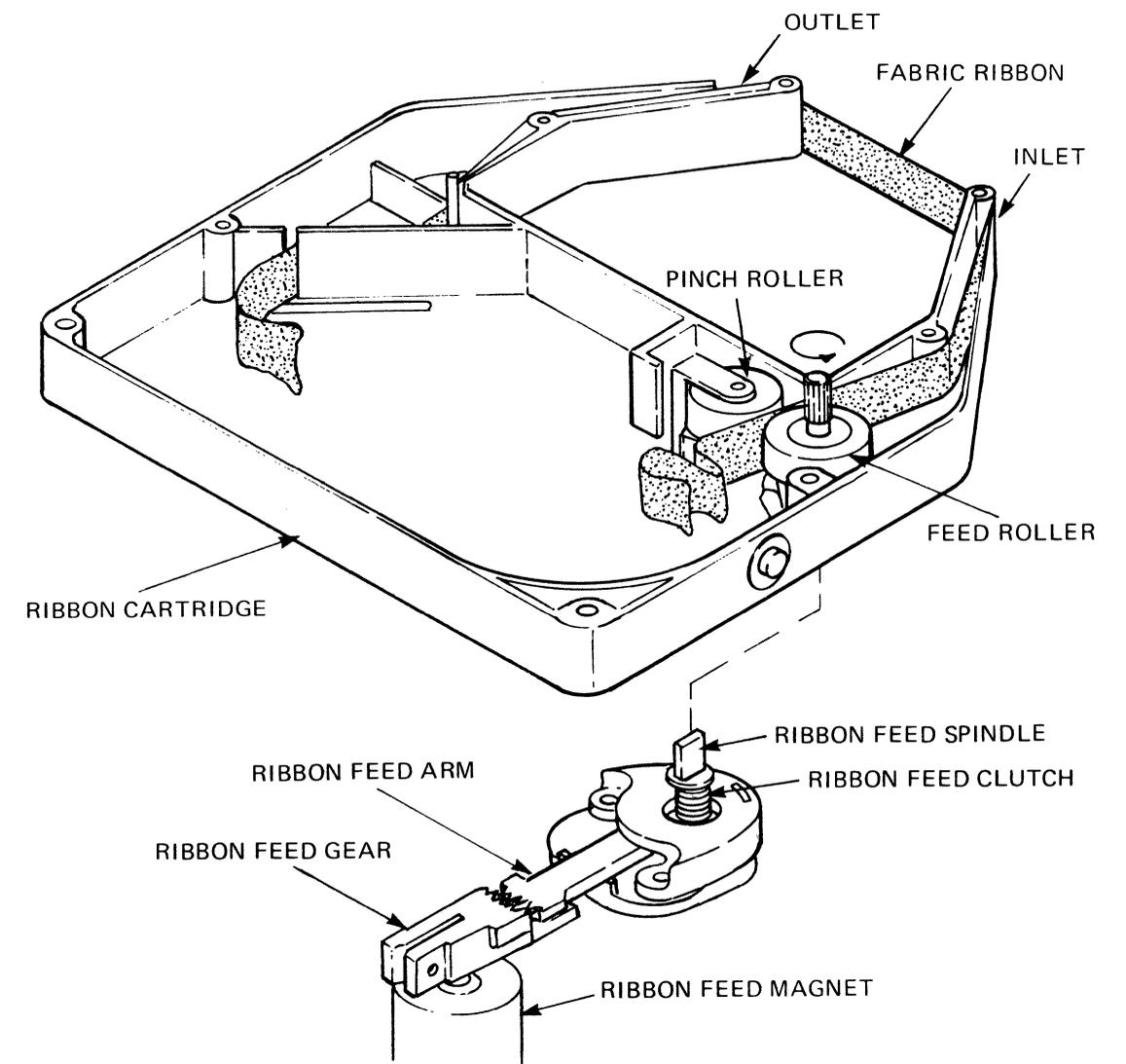
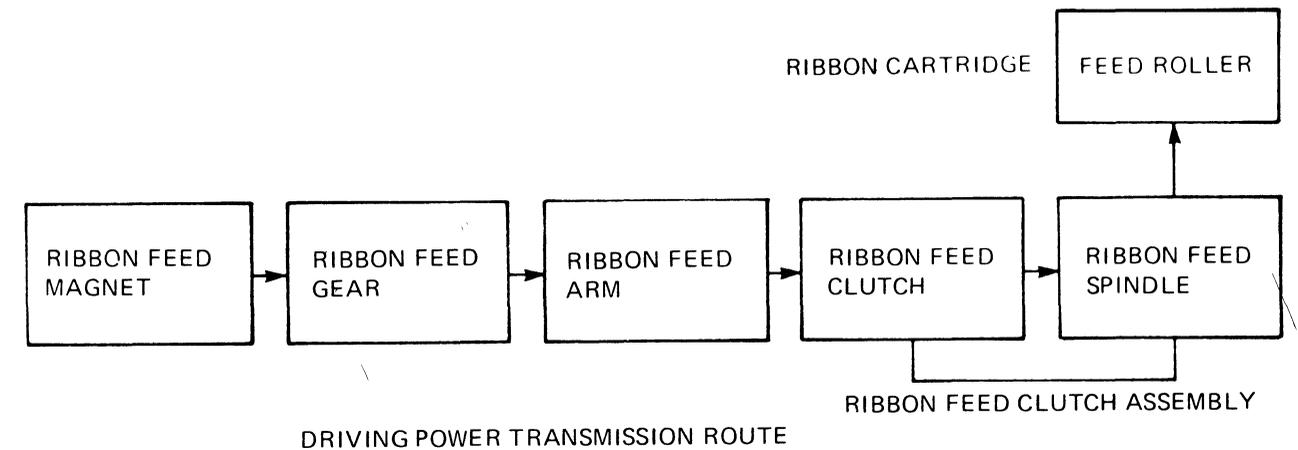


Figure 1-7 Ribbon Feed System

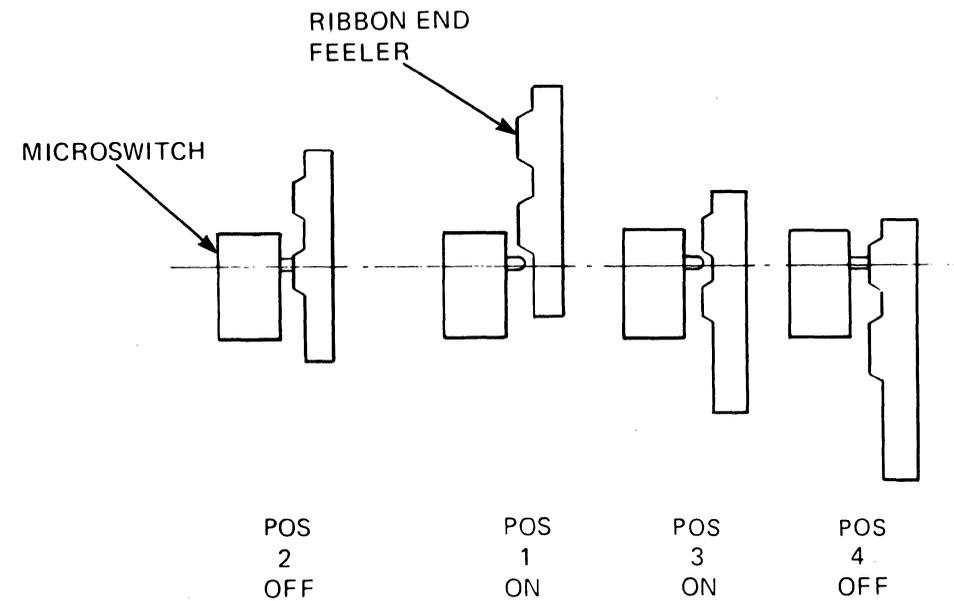


Figure 1-8 Ribbon End Switch Operation

Table 1-1 Ribbon End Switch Operation

SPINWRITER CONDITION	RIBBON END SWITCH CONDITION	RIBBON END SWITCH POSITION	RIBBON LED INDICATION
The ribbon cartridge is removed.	OFF	2	ON
The ribbon cartridge is removed, but operation of the ribbon feed is needed.	ON	1	OFF
The multistrike ribbon is used up.	OFF	2	ON
The multistrike or fabric ribbon is present.	ON	3	OFF
The multistrike ribbon has the rubber belt on the wrong side.	OFF	4	ON

The reciprocal motion of the ribbon feed magnet assembly is converted into a one-directional rotation. A clutch transmits that motion to the feed roller, in the ribbon cartridge, to advance the ribbon.

1.1.1.6 Ribbon Position Mechanism

The ribbon position mechanism consists of a ribbon position spring and a solenoid (see Figure 1-9). The ribbon position spring tilts the ribbon cartridge up, so that the fingers of the thimble strike the ribbon. The solenoid tilts the ribbon cartridge down, against the action of the ribbon position spring. During printing, the solenoid is not energized and the ribbon cartridge is held in the up position. With the ribbon cartridge in this position, the printed characters are not visible to the operator of the printer. When there is no printing action, the solenoid is energized, thereby tilting the ribbon cartridge down. With the ribbon cartridge in this position, the printed characters are visible to the operator.

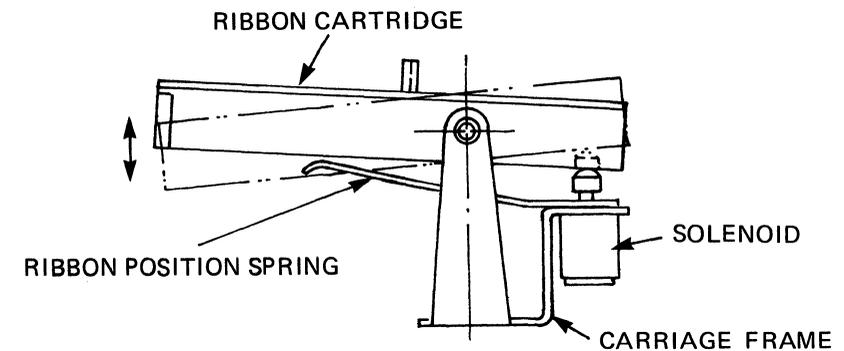


Figure 1-9 Ribbon Position Mechanism

1.1.2 Spacing Mechanism

The spacing mechanism controls the horizontal movement of the carriage. The spacing system (see Figure 1-10) consists of the spacing motor (stepping motor), wire rope system, and guide pulleys. A Hall Effect switch sets the initial carriage position (home position). The spacing motor controls carriage movement through the wire rope. The wire rope is routed as follows. One end of the rope hooks into a groove in the spacing motor drive pulley. The wire wraps around the pulley and passes through the first left guide pulley to the right guide pulley. The wire then passes through the second left guide pulley and hooks into a groove on the drive pulley. To adjust the wire rope tension, see Section 5.4.

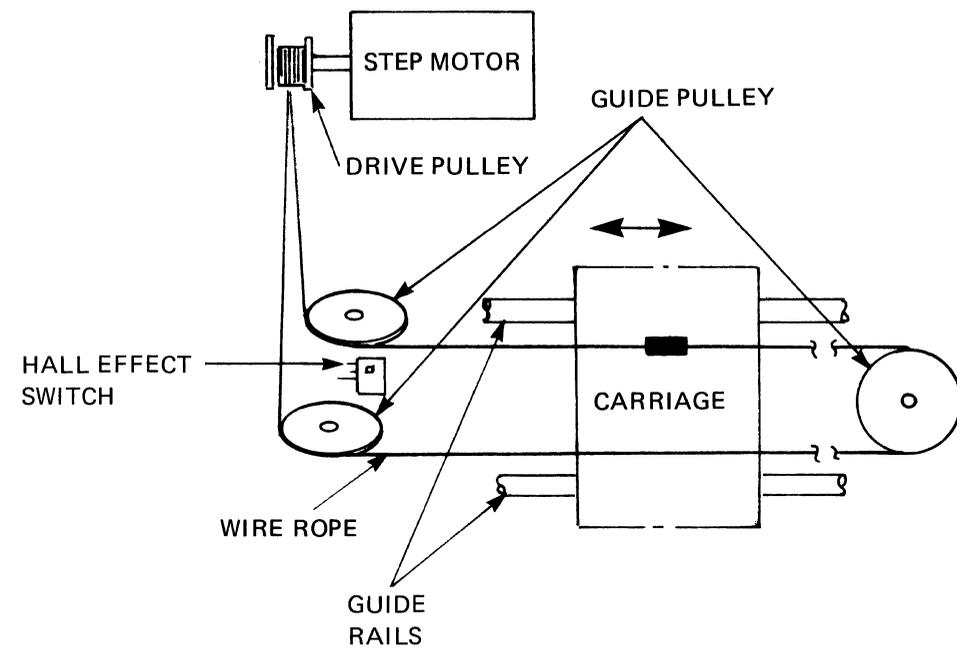


Figure 1-10 Spacing System Diagram

1.1.3 Paper Feed Mechanism

The paper feed mechanism feeds paper to a specific position for printing. The entire system for friction feed is shown in Figure 1-11. The line feed motor (stepping motor) drives the platen with the drive belt.

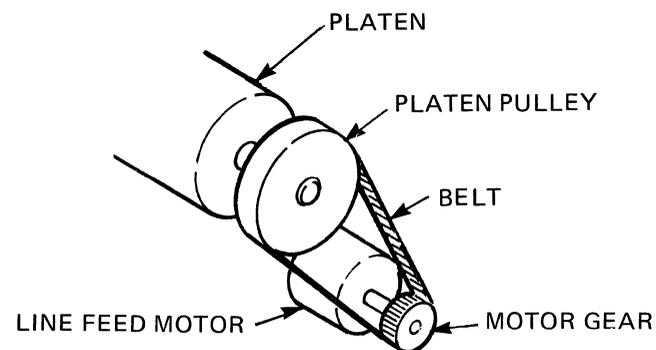


Figure 1-11 Platen Driving System

The friction feed mechanism, for paper movement, is shown in Figure 1-12. With the paper release lever at position 1, the pressure rollers and paper bail rollers are away from the platen. With the release lever at position 2, the pressure rollers, but not the paper bail rollers, are against the platen. At position 3, the pressure rollers and the paper bail rollers are against the platen.

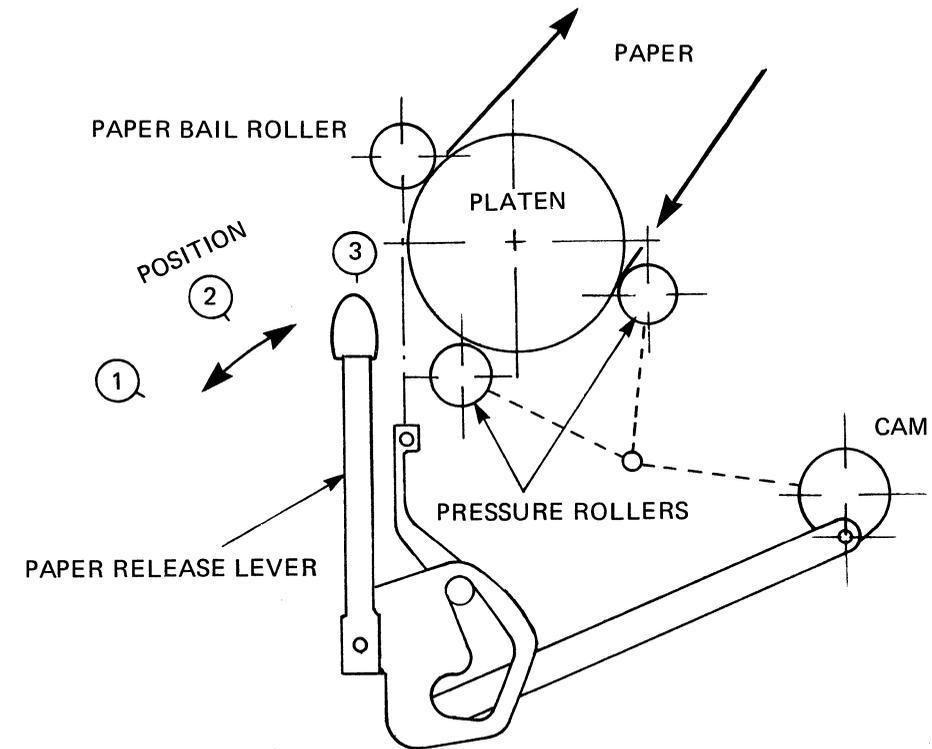


Figure 1-12 Friction Feed System

1.2 SYSTEM DIAGRAMS

The basic electronic systems that make up the 3500 Series Spin-writers are the control printed circuit board (PCB) and the power supply.

1.2.1 Control PCB

All of the control electronics for operating a 3500 Series Spin-writer are located on the Control PCB. Block diagrams of the two types of Control PCBs are shown in Figures 1-13 and 1-14.

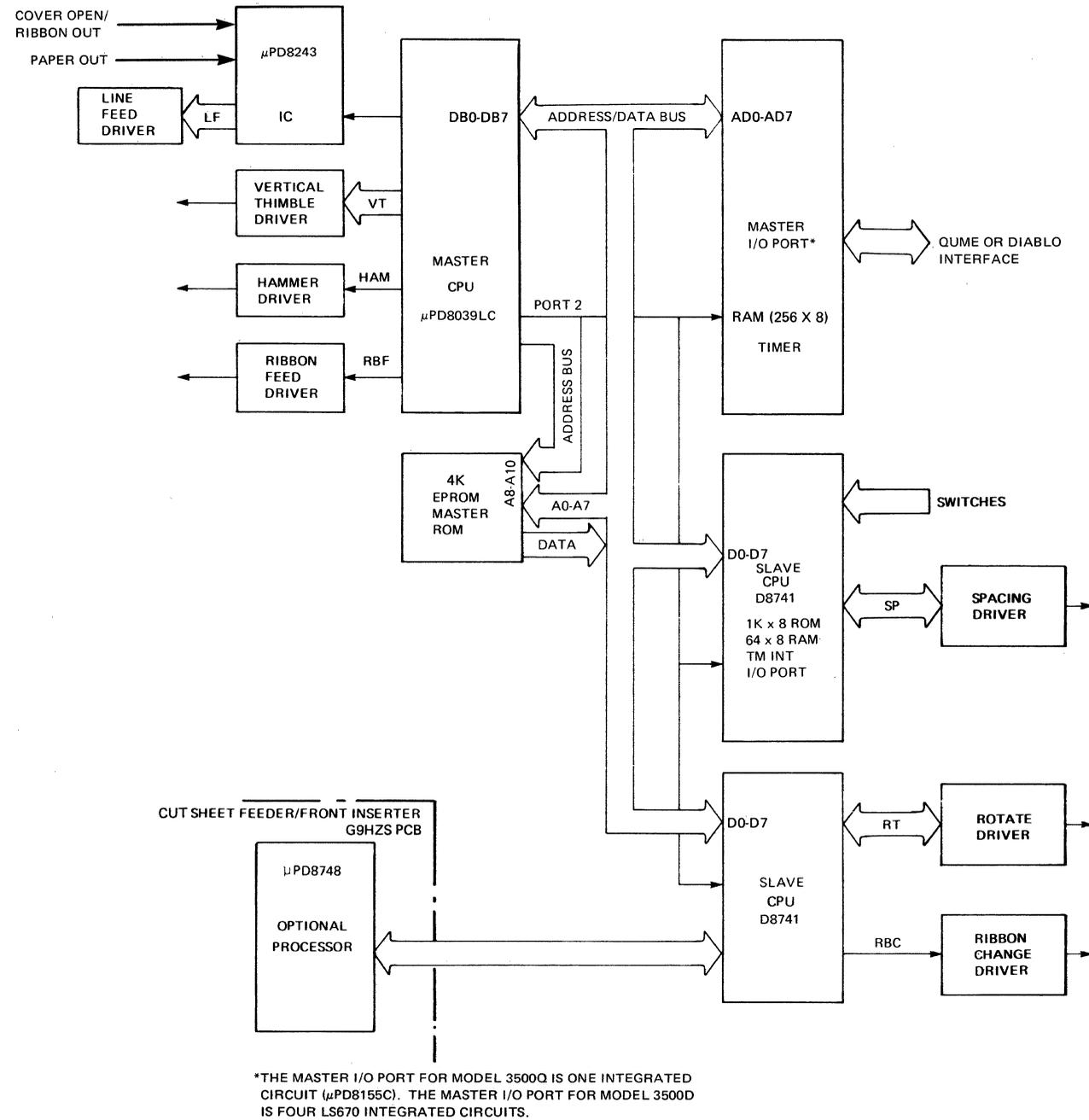


Figure 1-13 System Block Diagram - Models 3500Q and 3500D

The master central processing unit (CPU) has overall control of printer operation. Models 3500Q and 3500D have a μPD8039LC master CPU. Models 3500R, 3510/3520, 3515/3525, 3530, and 3550 have a μPD8085AC master CPU.

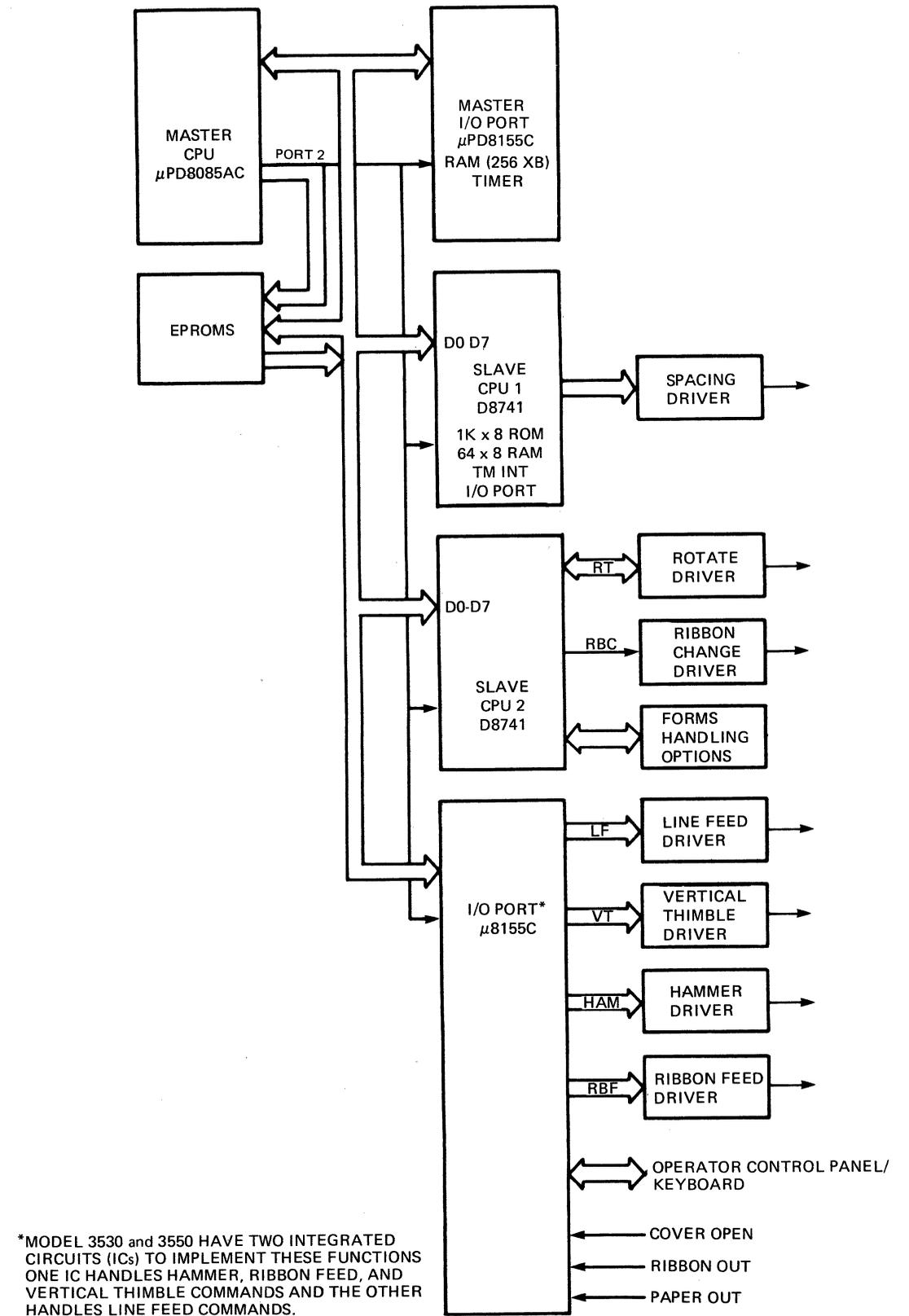


Figure 1-14 System Block Diagram - Models 3500R, 3510, 3515, 3520, 3525, 3530, and 3550

The system block diagram of Models 3500Q and 3500D is shown in Figure 1-13. For these models, the master CPU directly transmits vertical thimble lift, hammer, and ribbon feed commands. Indirectly it operates through an integrated circuit (μ PD8243C) to transmit line feed commands and through two slave CPUs (8741) to transmit spacing, rotate, and ribbon change commands.

A system block diagram Models 3500R, 3510/3520, 3515/3525, 3530 and 3550, is shown in Figure 1-14. In these models, the master CPU operates indirectly through two slave CPUs (D8741A) and input/output (I/O) ports (μ PD8155C) to transmit commands and monitor status. Both kinds of master CPUs operate through a master I/O port to connect to other equipment.

1.2.2 Power Supply Circuits

The power supply of the 3500 Series Spinwriters operates with an input voltage of 100, 115, or 230 Vac. The input voltage is selectable by changing the jumper or a switch on the G9NAB PCB, the fuse (5 A for 115 V and 100 V, and 3 A for 230 V), and the label on the back panel of the printer below the power switch. All the various labels are attached to the rear of the fan housing (under the cover). A block diagram of the power supply is shown in Figure 1-15 and a brief description follows.

The power supply is functionally divided into three circuits, a +17 V control circuit, a +5 V and -12 V control circuit, and a power on reset (POWRST) signal circuit. In addition, under-voltage detection and oscillation stop circuits provide overload protection.

1.2.2.1 +17 V Circuit

The primary ac input voltage is filtered, then applied to rectifier RC1 to convert the input voltage to dc. Switch SW1 (115/230 V) controls what type of rectification circuit is selected. For 115 Vac, the single-phase voltage doubler is selected. For 230 Vac, the single-phase full-wave rectification circuit is selected. In both cases, the output is 330 Vdc. The rectified voltage is applied to switching transformer T2 and switched by transistor Q1. Transistor Q1 uses a pulse with the following characteristics.

- Period = 30 μ s (F = 33.3 kHz)
- Duty Cycle = 40% maximum
- Pulse Width = 12 μ s maximum

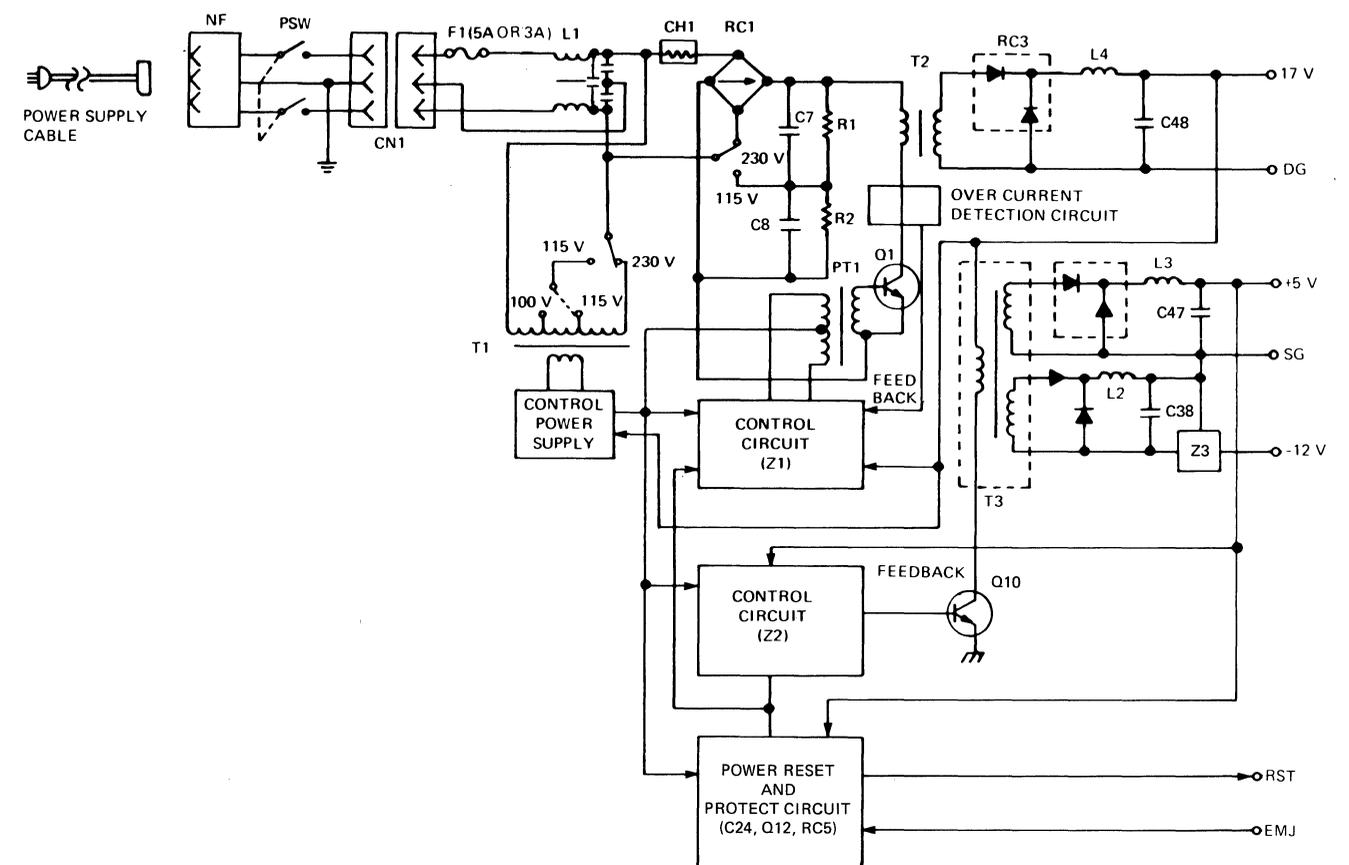


Figure 1-15 Power Supply Block Diagram

Controlling the pulse width at transistor Q1 stabilizes the +17 V output. This control is the function of the control circuit Z1 (μ PC1042C).

1.2.2.2 +5 V and -12 V Circuits

Stepping down the +17 V with a switching regulator provides the +5 Vdc. The control circuit Z2 (μ PC1042C) regulates the +5 Vdc. The -12 Vdc is derived from a secondary winding of the transformer and regulated.

1.2.2.3 Power-On Reset/Power Interruption

At initial power-on, the power reset signal (POWRST) is 0 V. After 250 ms, when the dc voltages reach 97% of their rated value, POWRST goes high and the microprocessor clock starts. The timing relationship for the RST signal is shown in Figure 1-16. If the ac input voltage is interrupted, +17 V is supplied to the ac power supply control circuit to maintain the output. If the ac input voltage is not restored in 20 ms, POWRST goes low and terminates the dc output.

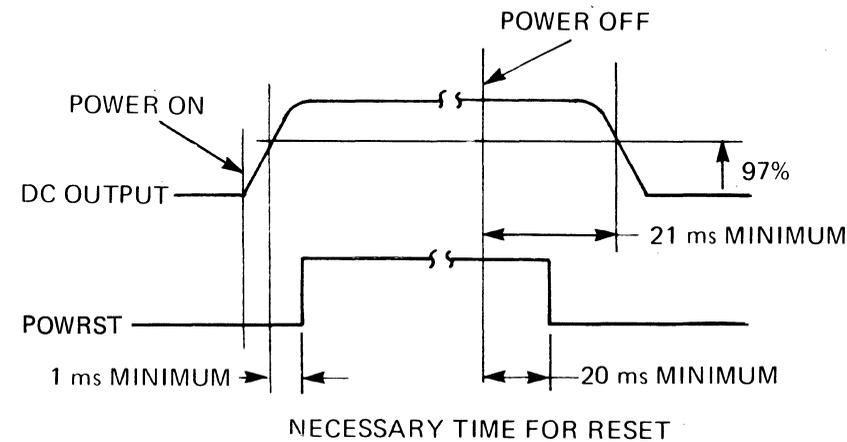


Figure 1-16 Power On Reset Timing

1.2.2.4 Undervoltage Detecting Circuit and Oscillation Stop Circuits

The undervoltage detecting and oscillation stop circuits provide power supply protection by stopping oscillation when the +5 Vdc or the +17 Vdc supplies decrease in value because of short circuits or other problems. A disconnected fan or an abnormal hammer drive operation produces an EMJ signal that also shuts down the power supply.

In Figure 1-17, because the +5 Vdc and the EMJ signal are applied to this circuit as feedback, the output of Comparator Z4 opens when either input decreases in value. This output turns on Thyristor RC5 and Transistors Q6 and Q11, and the voltages at Pins 7 of Regulators Z1 and Z2 become approximately +5 V. This +5 V stops oscillation and turns off the dc output.

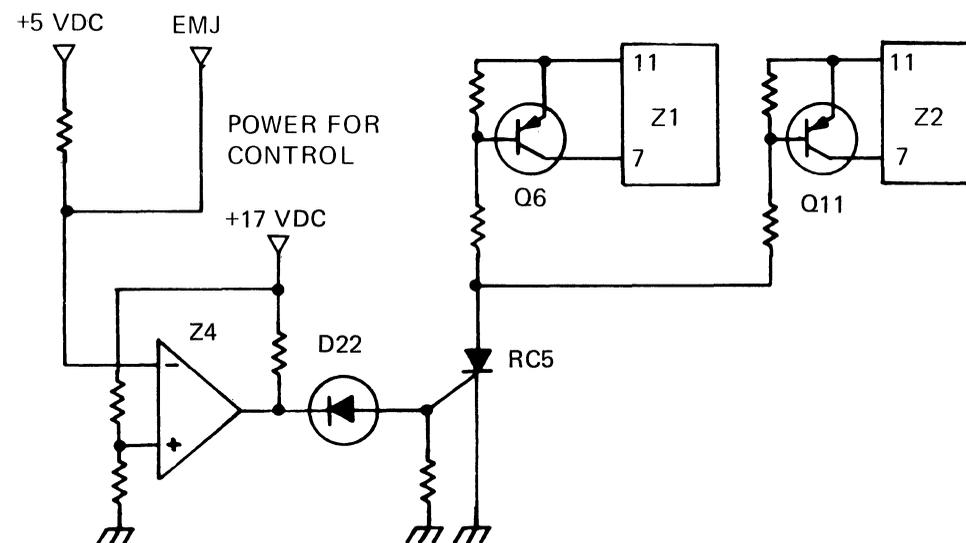


Figure 1-17 Undervoltage Detecting and Oscillation Stop Circuits

When the +17 Vdc supply decreases in value, the +5 Vdc supply drops because the +5 Vdc supply is generated from the +17 Vdc supply and the protection circuit operates as already described.

1.3 MAINTENANCE PHILOSOPHY

The 3500 Series Spinwriters are designed for trouble-free operation. However, should you encounter a problem, the troubleshooting procedures described in Chapter 3 will assist you in tracing faults to a particular unit or assembly.

Major repairs of the Spinwriter should be performed at a depot repair facility. If you choose to repair the Spinwriter, you should repair it at the modular level. For this reason, this manual lists only assemblies and easily replaceable parts as field maintenance items. Most component-level repairs should be performed at a Spinwriter depot or an equivalent service facility.

1.3.1 General Rules

Follow these general rules when performing replacement, assembly, adjustment, and preventive maintenance.

- Never remove or install any PCB or disconnect any connector while the power is on.
- Disconnect the power cord before replacing any part.
- When disassembling or assembling units, use great care to avoid dropping any parts inside the housings. If you do, remove them immediately.
- Hold a connector by its sides to remove it. Never pull on wires that are attached to a connector.
- The wire rope is easily damaged. Use caution when handling it. Be particularly careful when you remove or install the carriage assembly.
- Do not remove any parts that are not specified in the replacement procedures.
- Package PCBs that are marked MOSIC USE or MOSIC in a special static-free envelope whenever you transport them.
- After you complete an assembly procedure, be sure to lubricate any items that require lubrication (see Section 2.3).

1.3.2 Required Maintenance Tools

The tools required for performing the maintenance procedures in this manual are listed in Table 1-2.

Table 1-2 Maintenance Tools

TOOL	SOURCE
Screwdriver, Phillips No. 1 Screwdriver, Phillips No. 2 Spring Hook Tension Gauge (680 grams/2 lb) Ruler Wrench 7 mm Hex Key 1.5 mm Hex Key 2 mm Needle-nose pliers	Obtainable through local vendors
Hammer and Thimble Alignment Jig (911-319813)	Available from NEC

1.4 LIST OF RELATED DOCUMENTS

The documentation that is available for 3500 Series Spinwriters is listed in Table 1-3.

Table 1-3 Related Documents

DOCUMENT	DOCUMENT NUMBER
3500Q/3500D Operator's Guide	819-000062-300X
3500Q/3500D Product Description	819-000062-000X
3500 Terminals Operator's Guide	819-000062-900X
3500 Terminals Product Description	819-000063-000X
3550 Installation/User's Guide	819-000063-900X
3500 Series Forms Handling Options Installation/User's Guide	819-000062-9D0X
3500 Series Cut Sheet Feeder Operation/Maintenance Manual	819-000063-800X

Table 1-3 Related Documents (cont'd)

DOCUMENT	DOCUMENT NUMBER
3500 Series Front Inserter Operation/Maintenance Manual	819-000063-100X
3500 Theory of Operation	819-000063-600X
3500 Series Spinwriter Program Card	819-000063-0D0X
3500 Unpacking/Repacking Instructions	819-000062-4D0X

1.5 ADMINISTRATIVE CERTIFICATIONS

The 3500 Series Spinwriters meet the following electrical and safety standards.

- UL478 EDP listed
- CSA 22.2-154-1975 Safety Standard listed
- FCC Part 15, Subpart J, Class B (as labeled)

1.6 SWITCH SETTING FUNCTIONS

The functions of the PCB switch settings and operator control panel switch settings of the 3500 Series Spinwriters are illustrated in Figures 1-18 to 1-40.

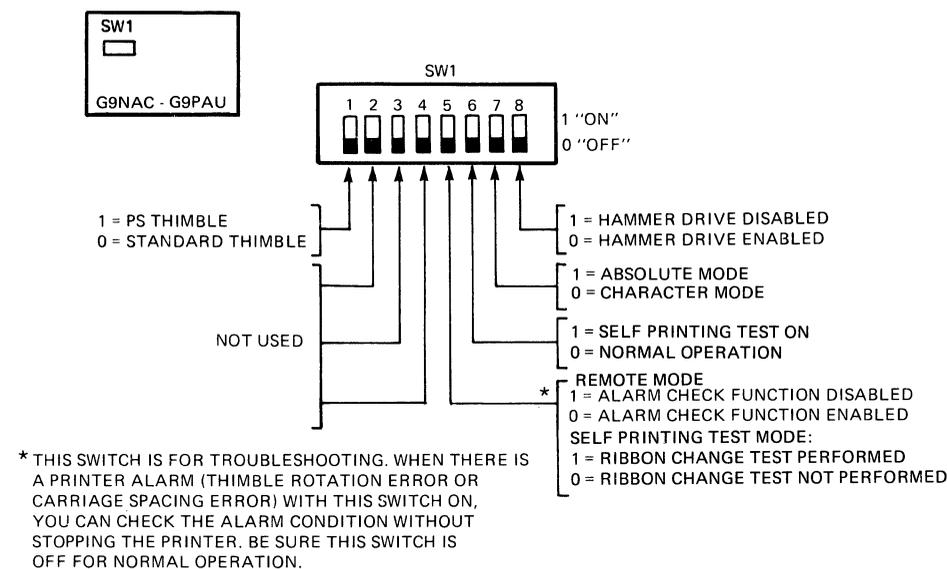


Figure 1-18 G9NAC PCB (3500Q) and G9PAU PCB (3500D), SW1, Switch Functions

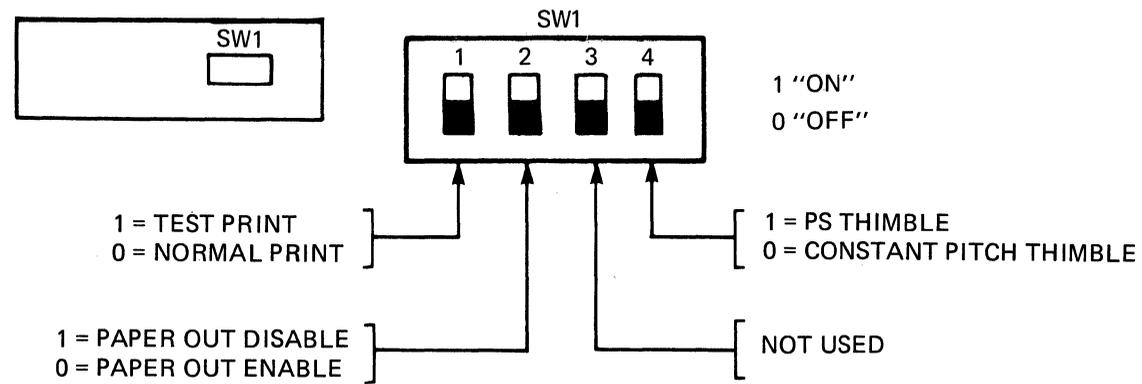
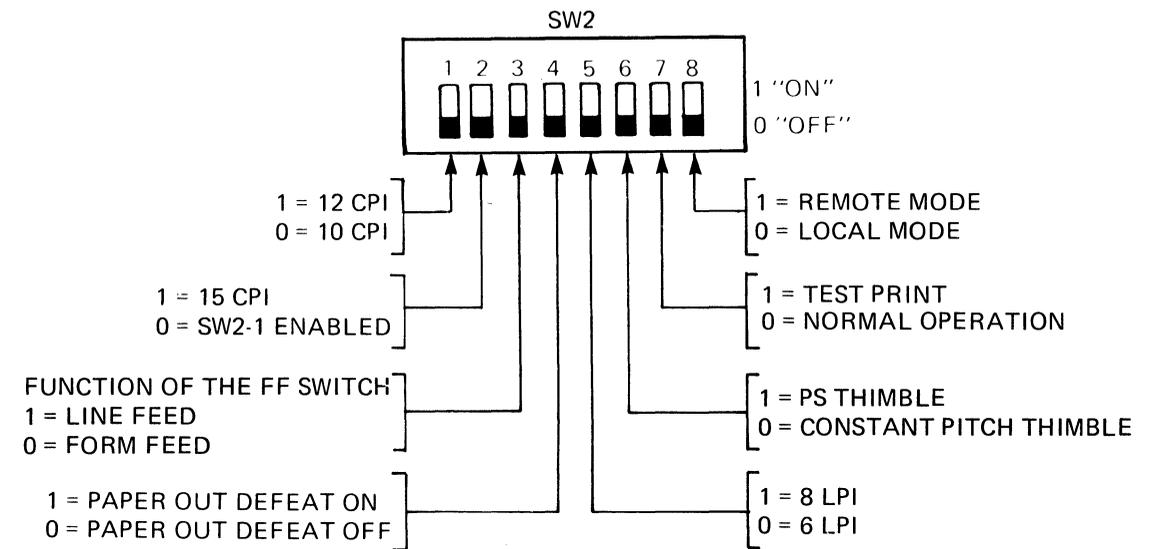


Figure 1-19 3500Q and 3500D Operator Control Panel, SW1, Switch Functions



NOTE
WHEN THE MODEL 3500R HAS AN OPERATOR CONTROL PANEL OPTION,
ALL OF THESE SWITCHES MUST BE OFF.

Figure 1-21 G9PAS-001 PCB (3500R), SW2, Switch Functions

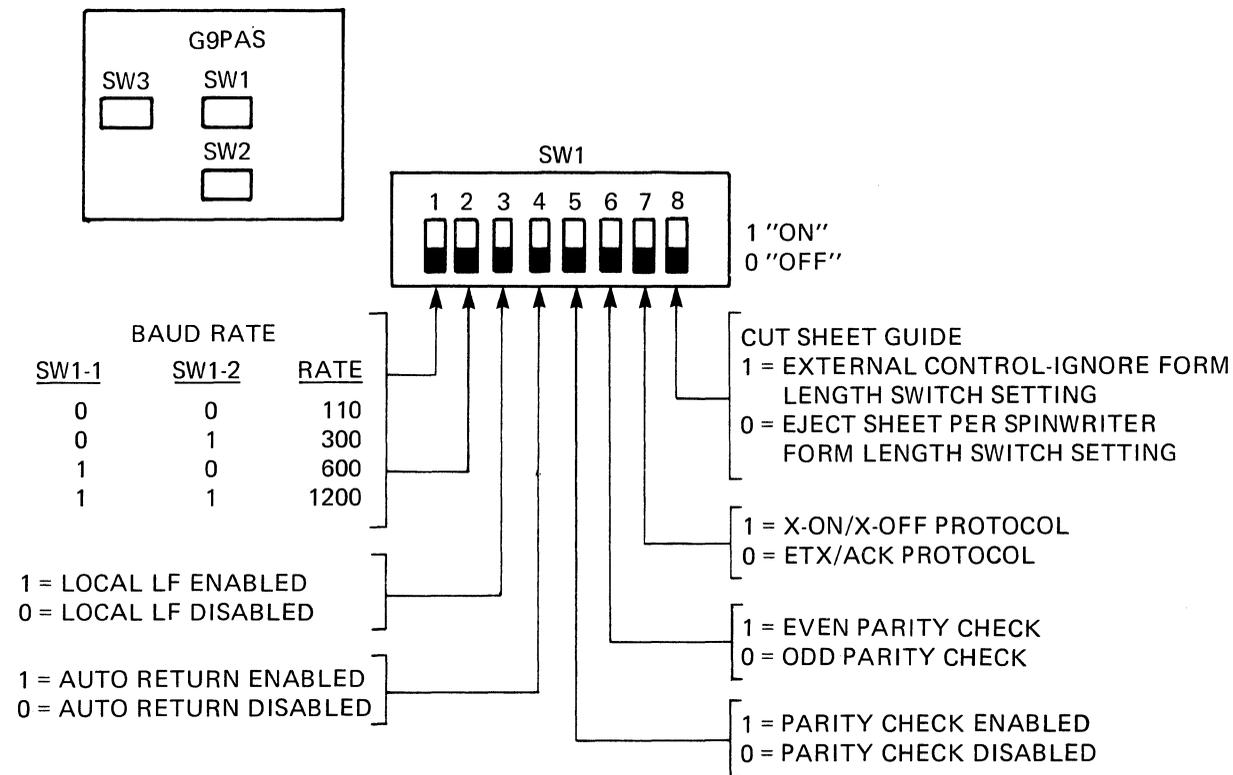


Figure 1-20 G9PAS-001 PCB (3500R), SW1, Switch Functions

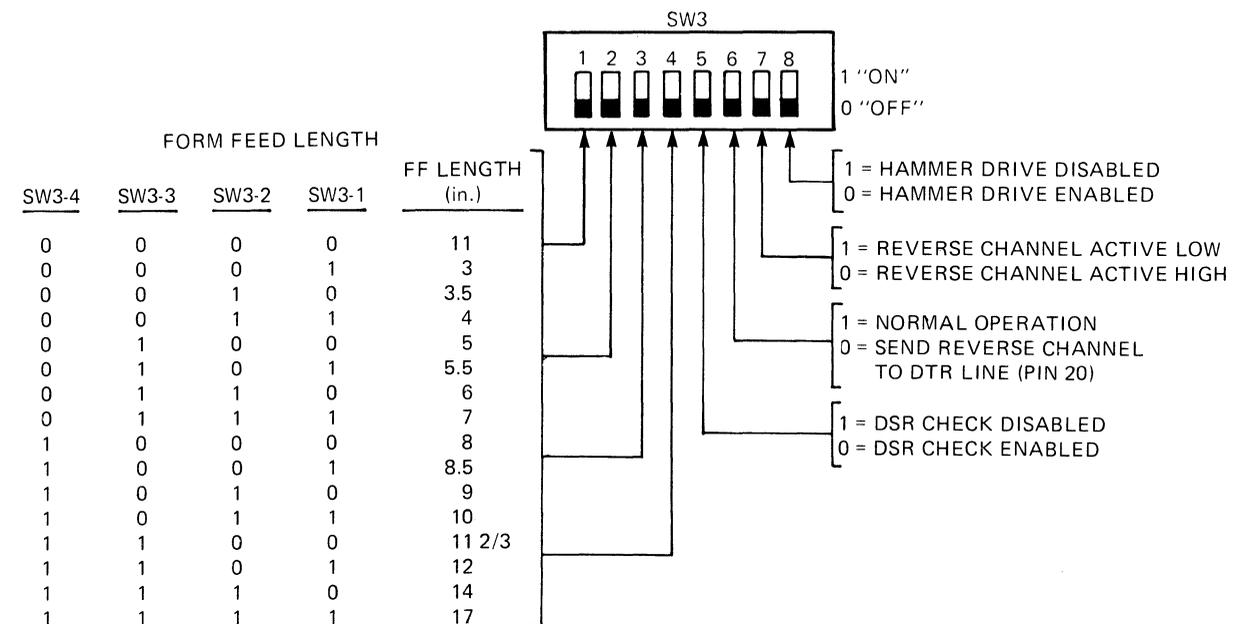


Figure 1-22 G9PAS-001 PCB (3500R), SW3, Switch Functions

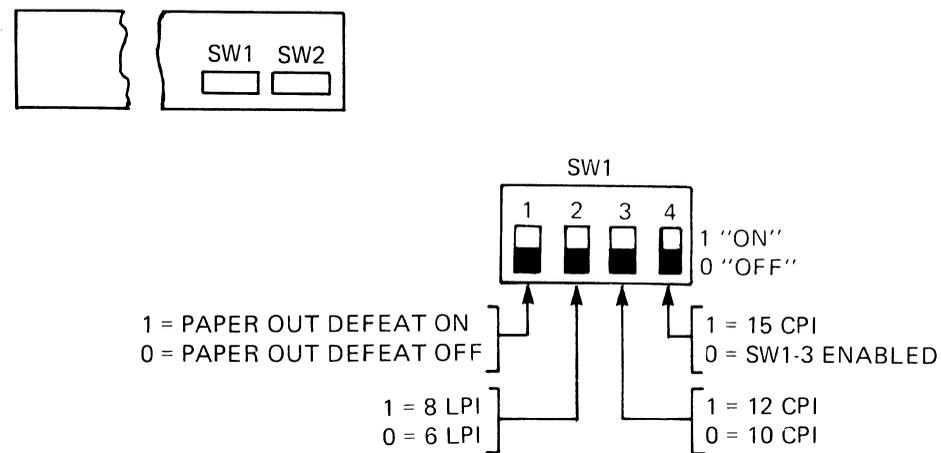


Figure 1-23 3500R Operator Control Panel, SW1, Switch Functions

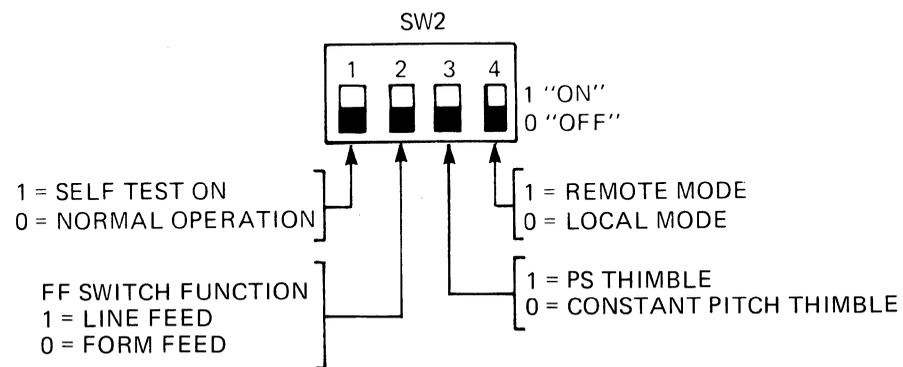


Figure 1-24 3500R Operator Control Panel, SW2, Switch Functions

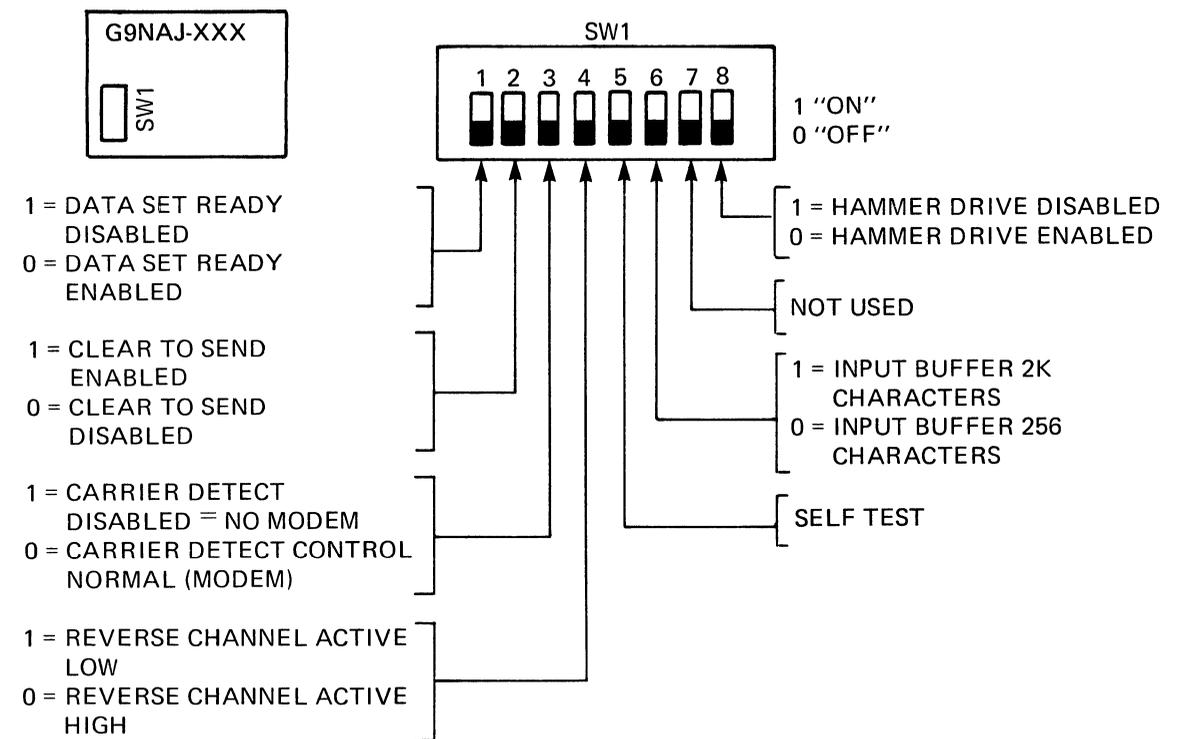


Figure 1-25 G9NAJ-xxx PCB (3510/3520 and 3515/3525) SW1, Switch Functions

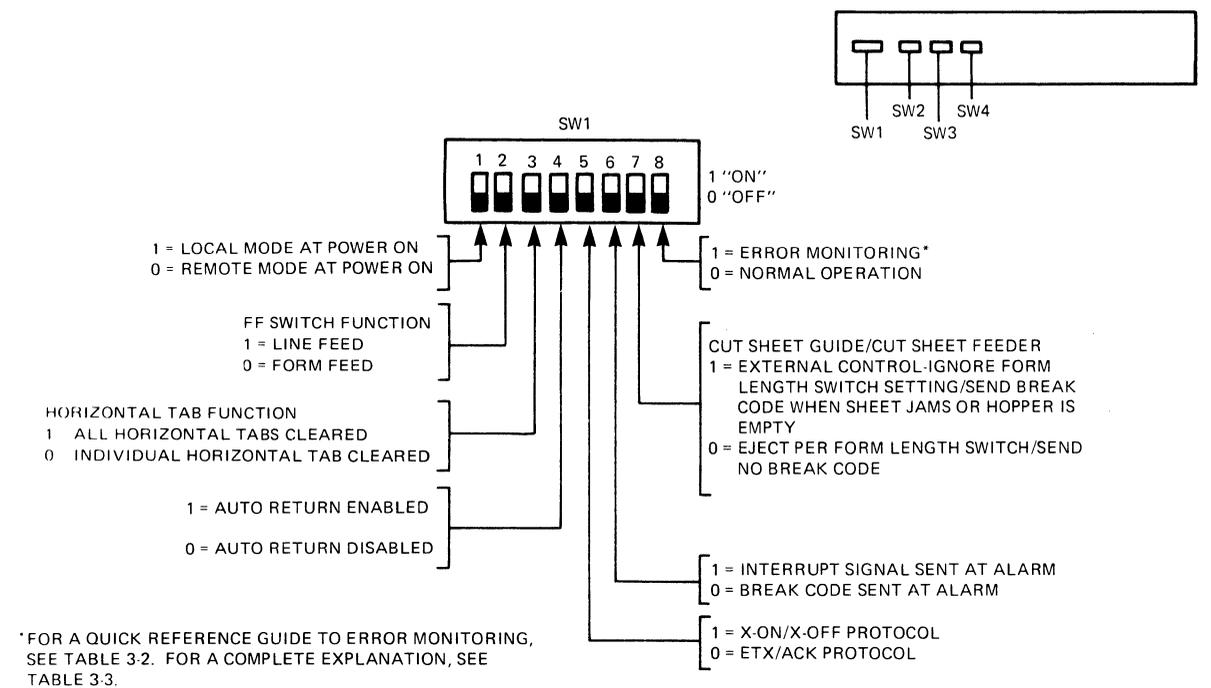


Figure 1-26 3510/3520 and 3515/3525 Operator Control Panel, SW1, Switch Functions

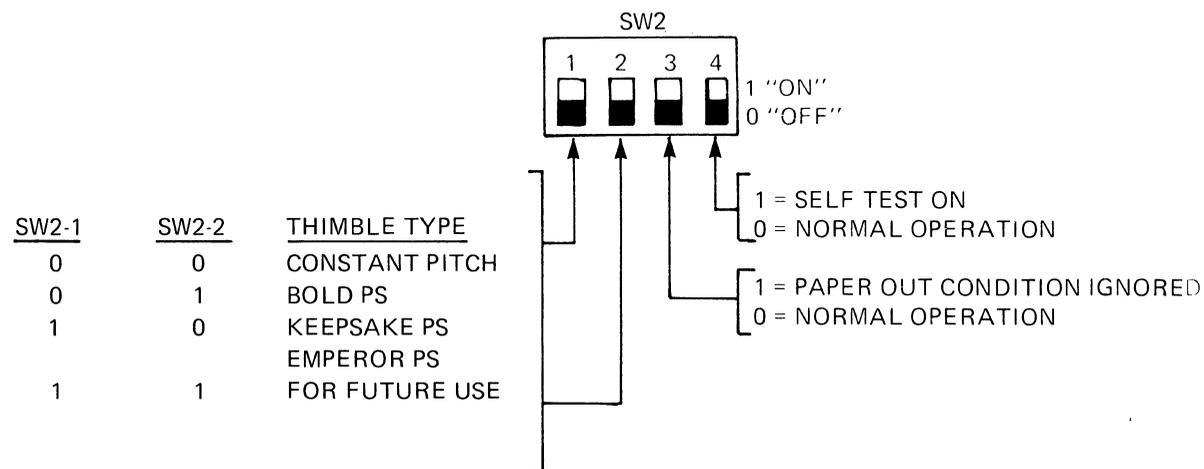


Figure 1-27 3510/3520 and 3515/3525 Operator Control Panel, SW2, Switch Functions

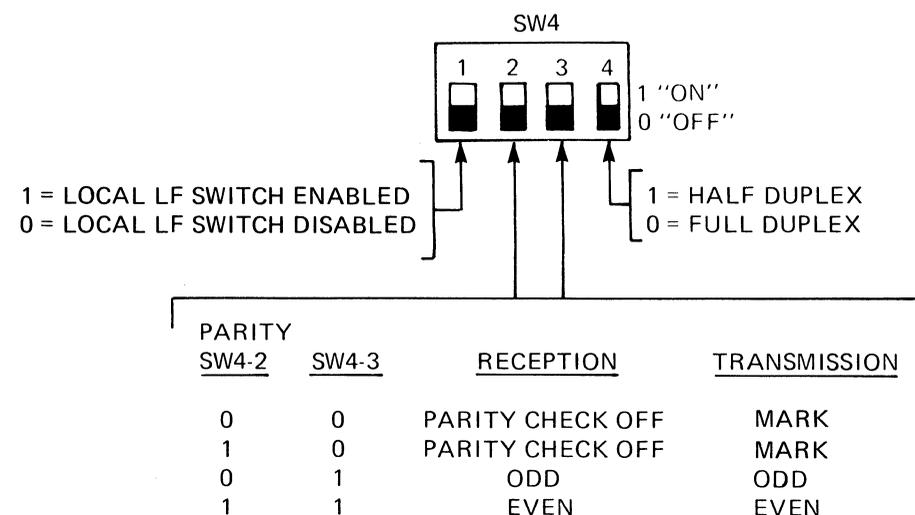


Figure 1-29 3510/3520 and 3515/3525 Operator Control Panel, SW4, Switch Functions

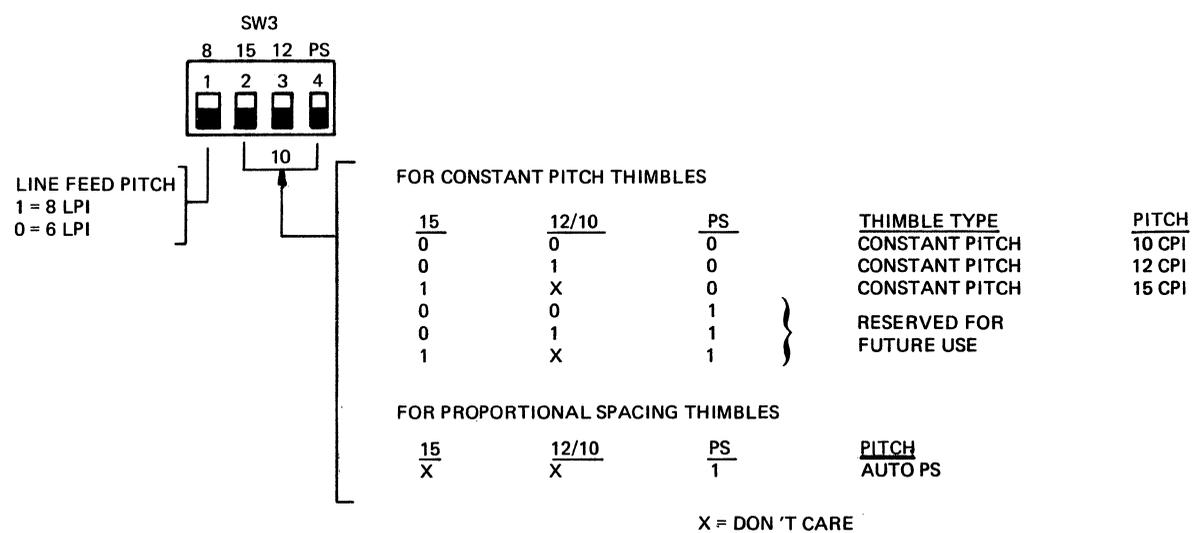


Figure 1-28 3510/3520 and 3515/3525 Operator Control Panel, SW3, Switch Functions

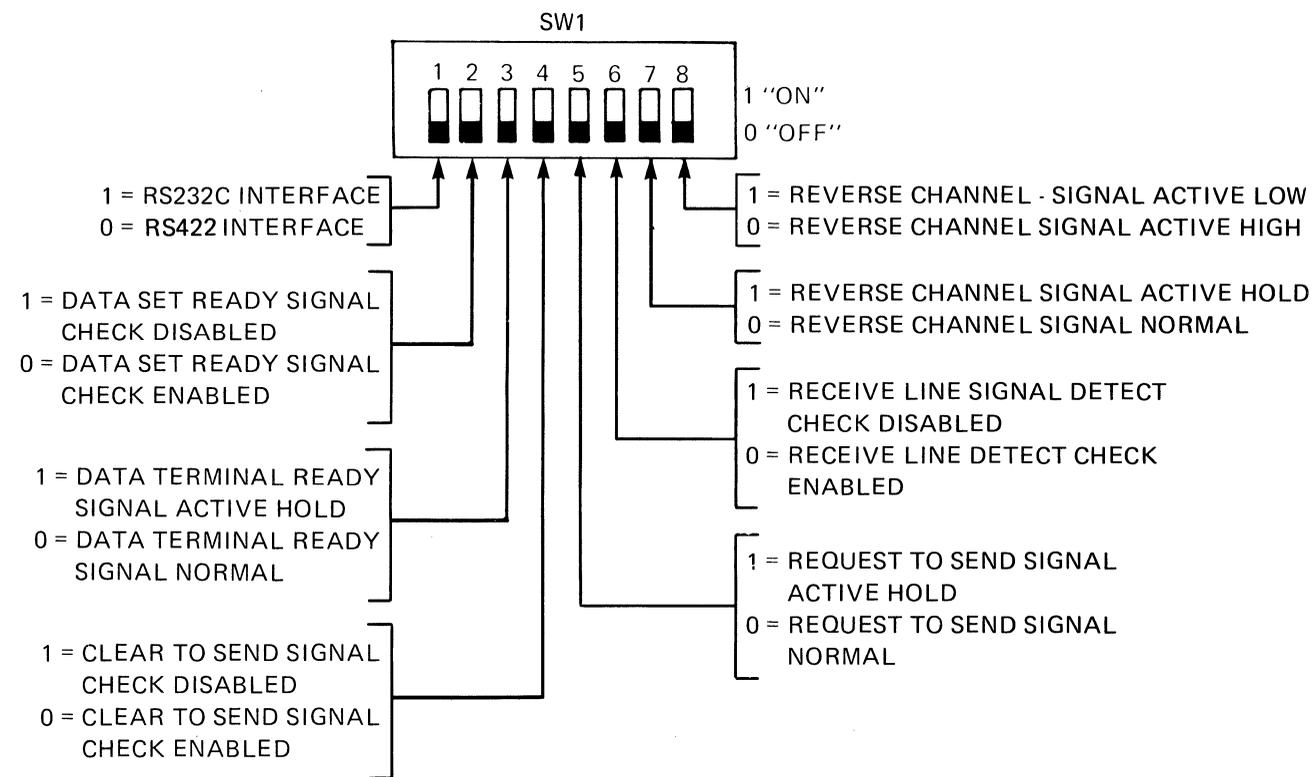


Figure 1-30 G9RKY (RS-422 Option) PCB, SW1, Switch Functions

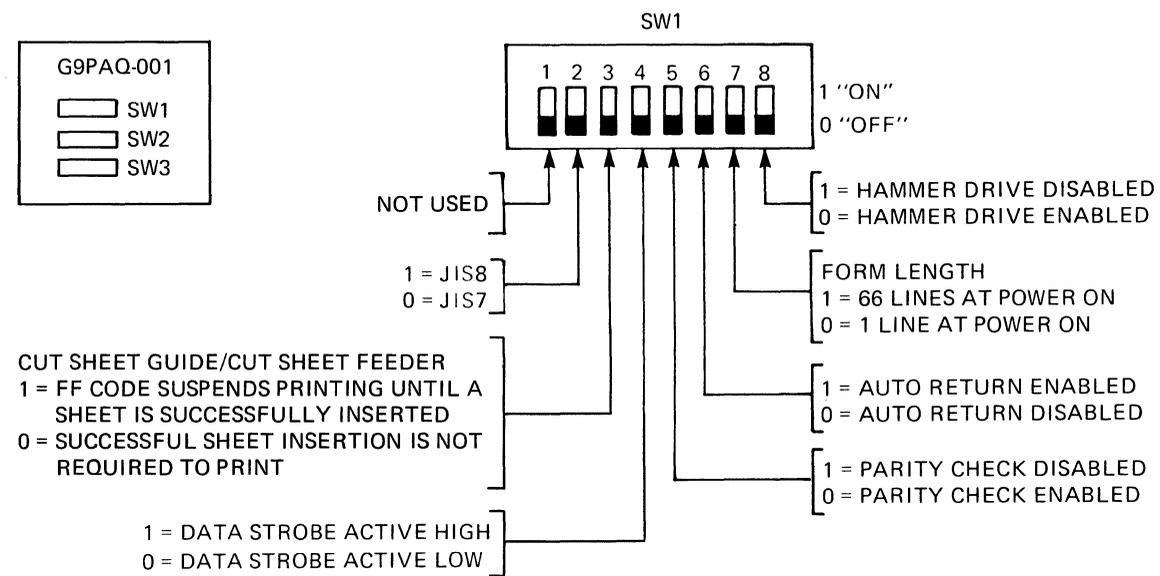


Figure 1-31 G9PAQ-001 PCB (3530), SW1, Switch Functions

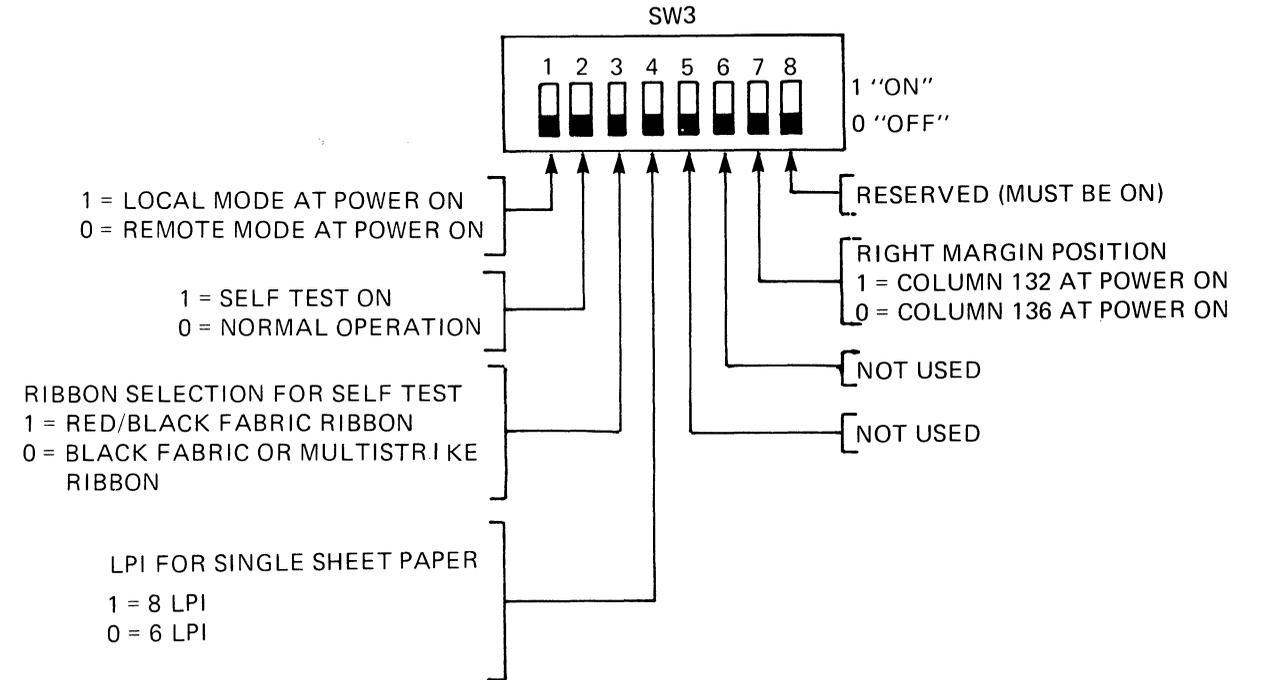


Figure 1-33 G9PAQ-001 PCB (3530), SW3, Switch Functions

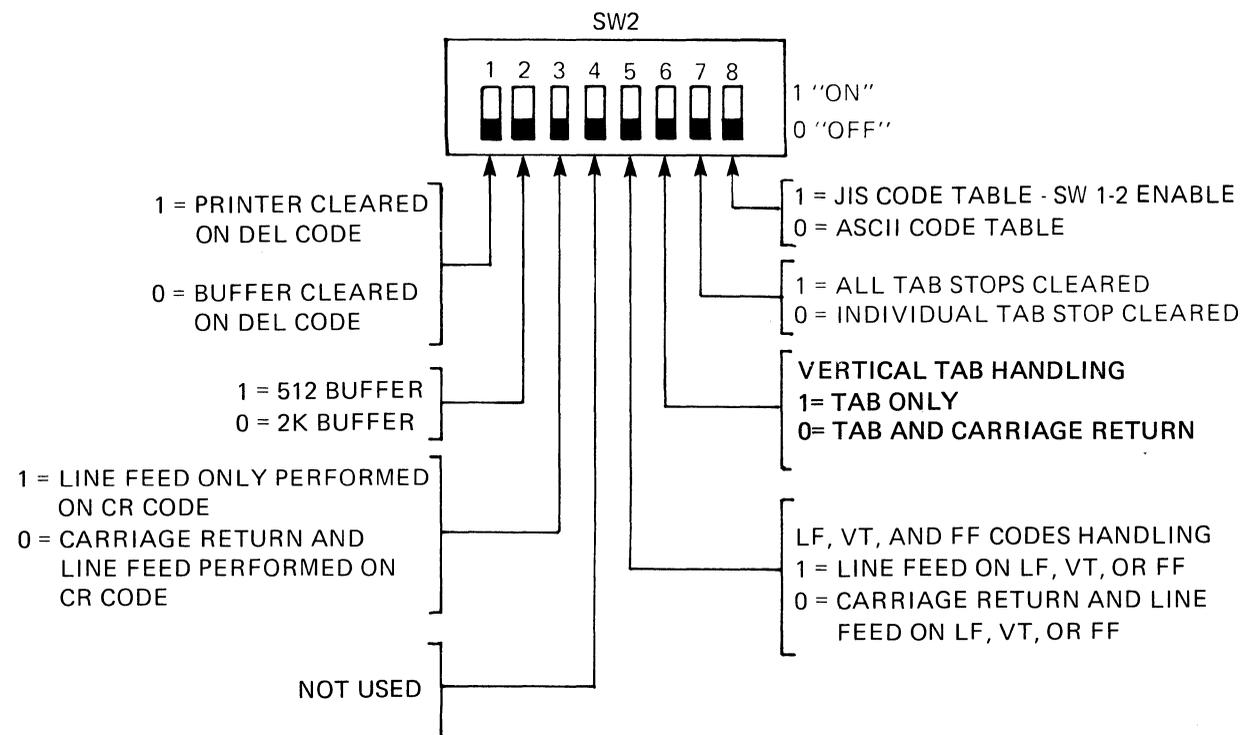


Figure 1-32 G9PAQ-001 PCB (3530), SW2, Switch Functions

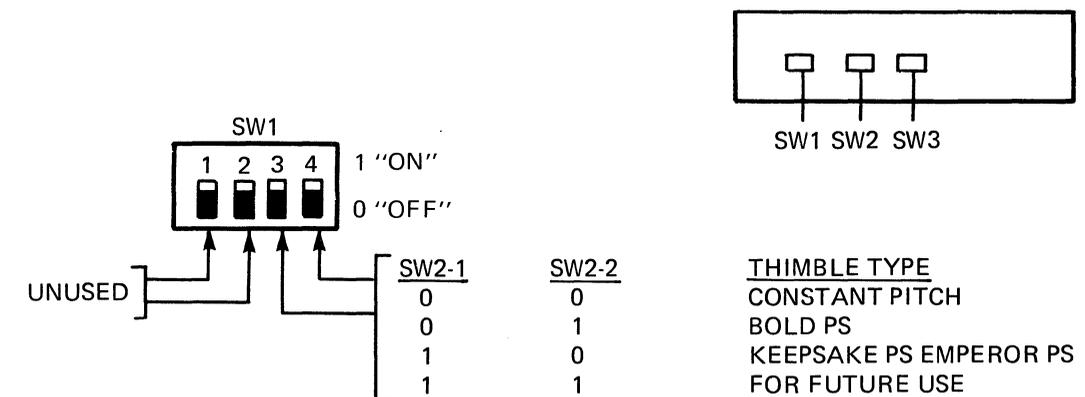


Figure 1-34 3530 Operator Control Panel, SW1, Switch Functions

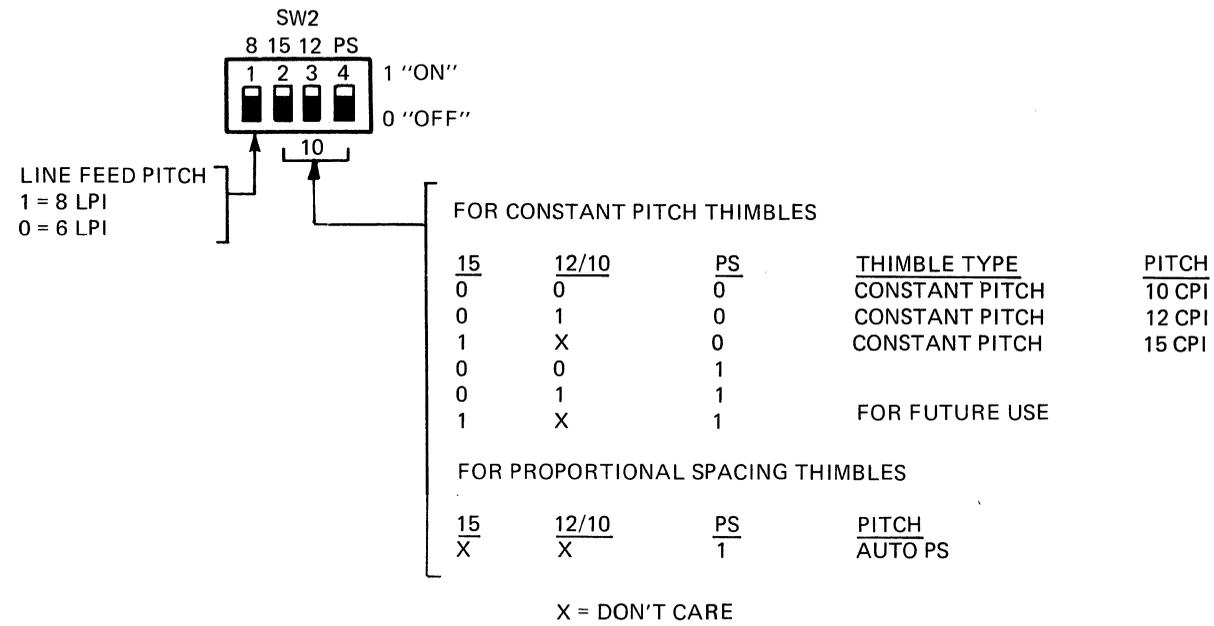


Figure 1-35 3530 Operator Control Panel, SW2, Switch Functions

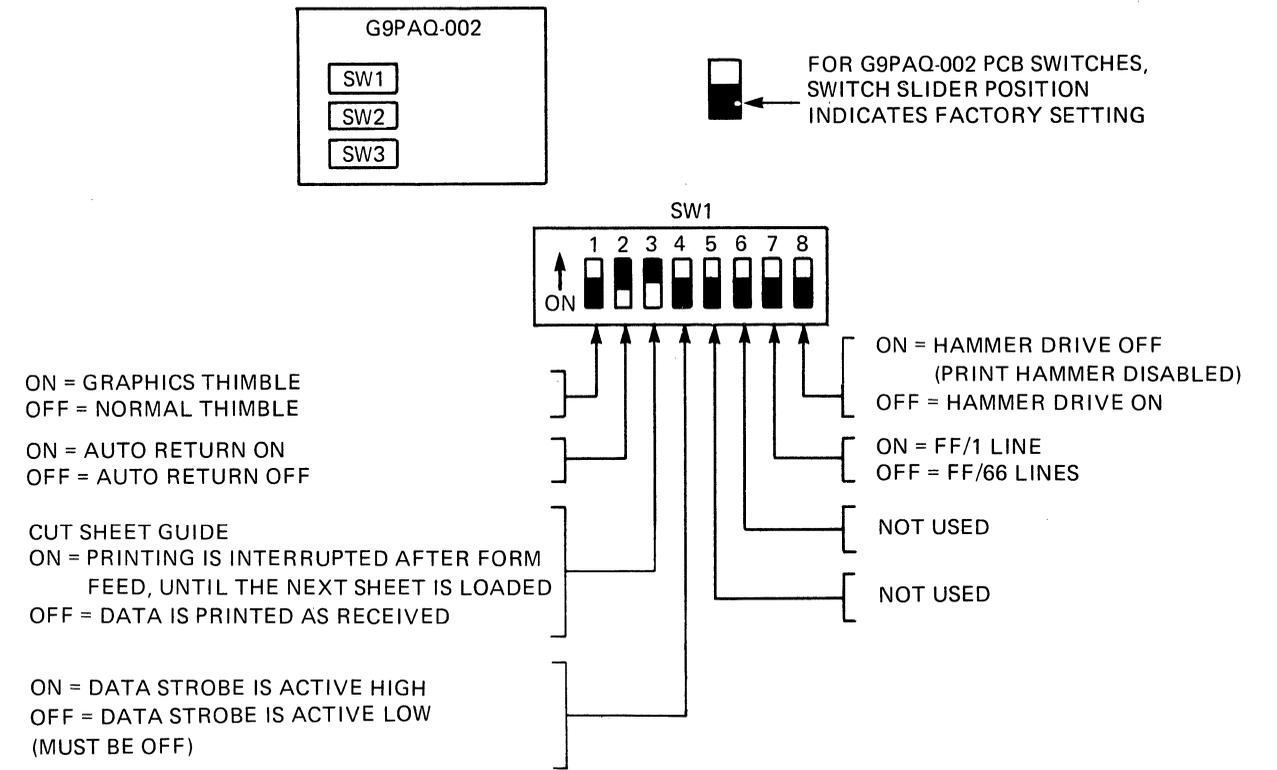


Figure 1-37 G9PAQ-002 PCB (3550), SW1, Switch Functions

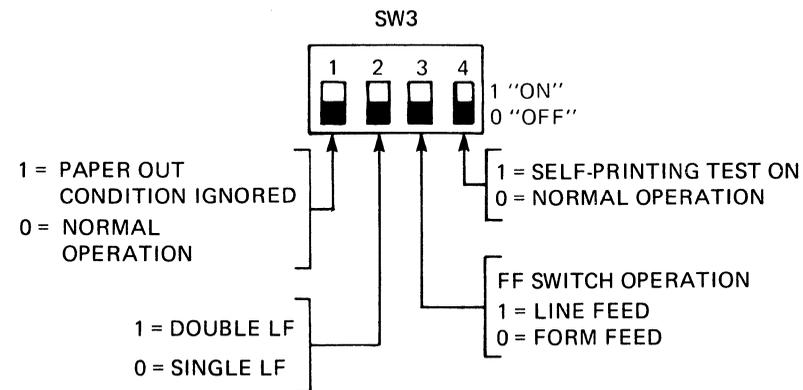


Figure 1-36 3530 Operator Control Panel, SW3, Switch Functions

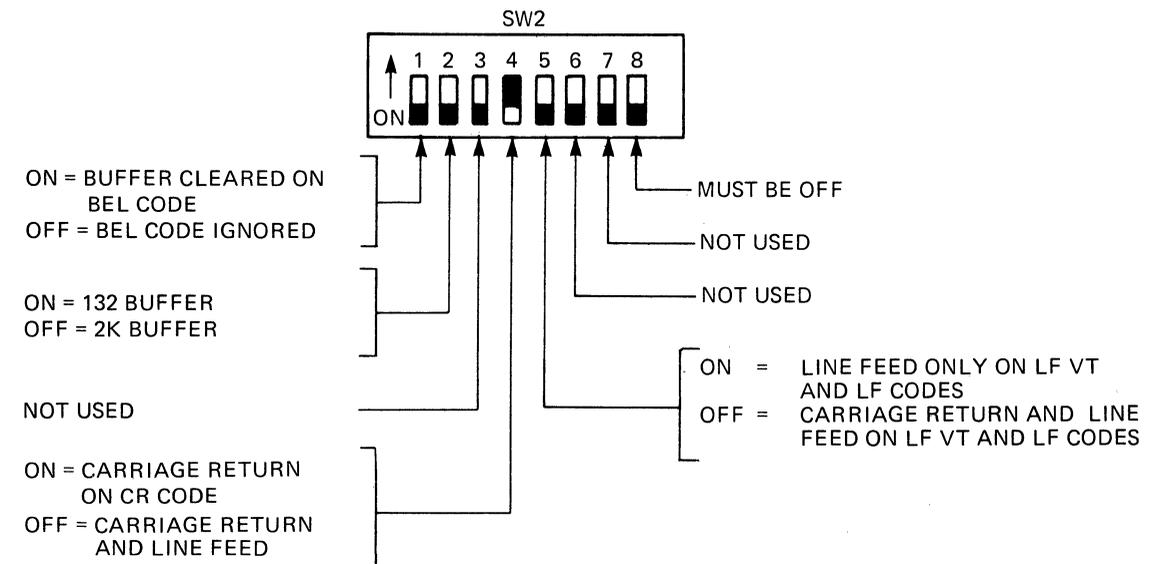


Figure 1-38 G9PAQ-002 PCB (3550, SW2, Switch Functions)

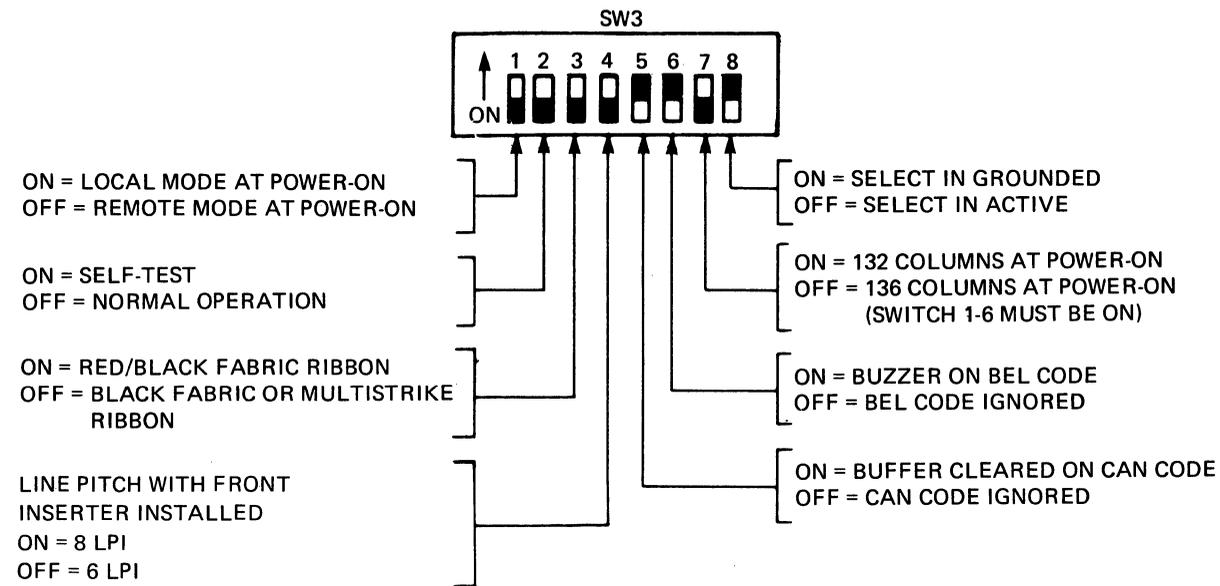


Figure 1-39 G9PAQ-002 PCB (3550), SW3, Switch Functions

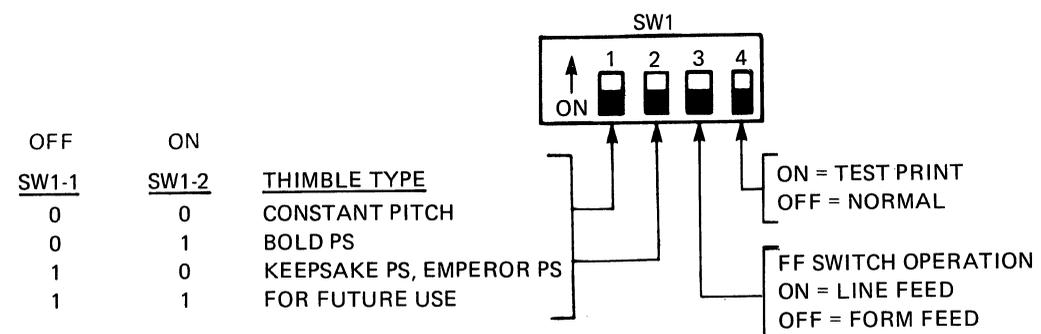


Figure 1-40 3550 Operator Control Panel, SW1, Switch Functions

CHAPTER 2

PREVENTIVE MAINTENANCE

No major preventive maintenance of the 3500 Series Spinwriters is required. However, you should clean and check the Spinwriter at least once a year.

2.1 CLEANING

Inspect the entire Spinwriter for pieces of foreign material (bits of paper, dust, paper clips), then perform the following cleaning procedure.

- a. Using a soft, lint-free cloth, clean the carriage rails.
- b. Clean the base frame under the carriage.
- c. Use a hand cleaner to remove stains on the cover. Use only a mild detergent to clean the cover.
- d. Using a soft, lint-free cloth, clean the platen with Fedron.

CAUTION

Do not use Fedron to clean any plastic items or surfaces. Do not use alcohol to clean plastic items or the cover.

- e. Remove any pieces of paper attached to the tractor assembly and pressure bail.

2.2 CHECKING

Make a short print sample in self-test mode to ensure that the Spinwriter is functioning. For Models 3510/3520 and 3515/3525 run the self-function test (see Section 3.2.2). Check the following items for proper adjustment. If adjustment is required, see the appropriate adjustment section (noted in parentheses).

- a. Check that the hammer cover is firmly fixed by the hammer lock spring (see Section 5.1.1 for adjustment).
- b. Make sure that the last short finger on the right of the cutout of the print thimble (see Figure 2-1) is centered on the hammer when power is on (not on thimbles with more than 125 characters). If not, see Section 5.1.3 for adjustment.
- c. Remove the print thimble and use the alignment jig to check the hammer position and thimble height (see Section 5.1.3).
- d. Check the ribbon feed gear for backlash.
- e. Check the ribbon end feeler for smooth operation.
- f. Check the line feed belt for proper tension and smooth operation (see Section 5.2).
- g. Make sure that the character density along the print line is even.
- h. Check for distortion of the platen or print thimble.
- i. Check the tractors (forms handling option) for wear and proper adjustment.

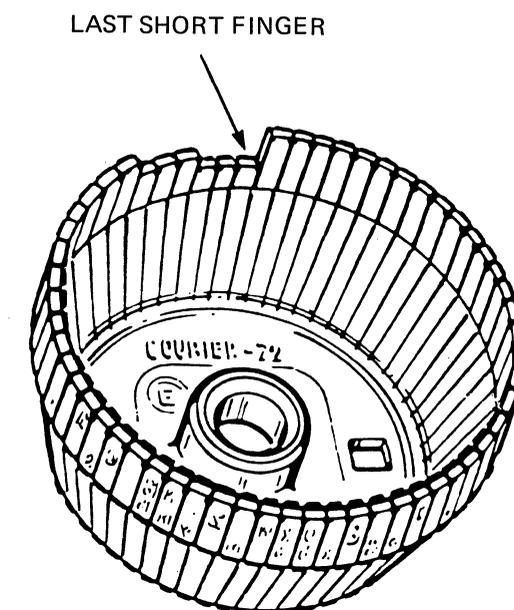


Figure 2-1 Last Short Finger on Print Thimble

- j. Check the cover open switch for proper operation (see Section 5.5).
- k. Check the wire rope and associated pulleys for damage or wear.
- l. Check the wire rope tension (see Section 5.4).
- m. Check for loose connectors and terminals.

2.3 LUBRICATION

The lubrication points listed in Tables 2-1, 2-2, and 2-3 and shown in Figures 2-2, 2-3, and 2-4 are lubricated before factory shipment. You should lubricate these points if you have removed the lubricant during disassembly or cleaning. Lubricate all points with a light brushing of Daphnye Colonex #2 grease (or equivalent).

The lubrication points for the right side of the frame unit are listed in Table 2-1 and shown in Figure 2-2. The numbers in the table correspond to the numbers in the figure.

Table 2-1 Lubrication Points on the Right Side of the Frame Unit

DESIGNATION	LOCATION
1	The surfaces of the fitting between the reset arm and the right side of the frame unit.
2	The fitting between the reset arm and link.
3	The fitting between the base arm spring and the bail arm.
4	The fitting between the bail arm and the bail stud of the right side of the frame unit.
5	The fitting between the release cam (lever) and the cam stud.
6	The fitting between the link and the release cam stud.
7	The bail arm roller surfaces.
8	The inside of the opening of the cam.

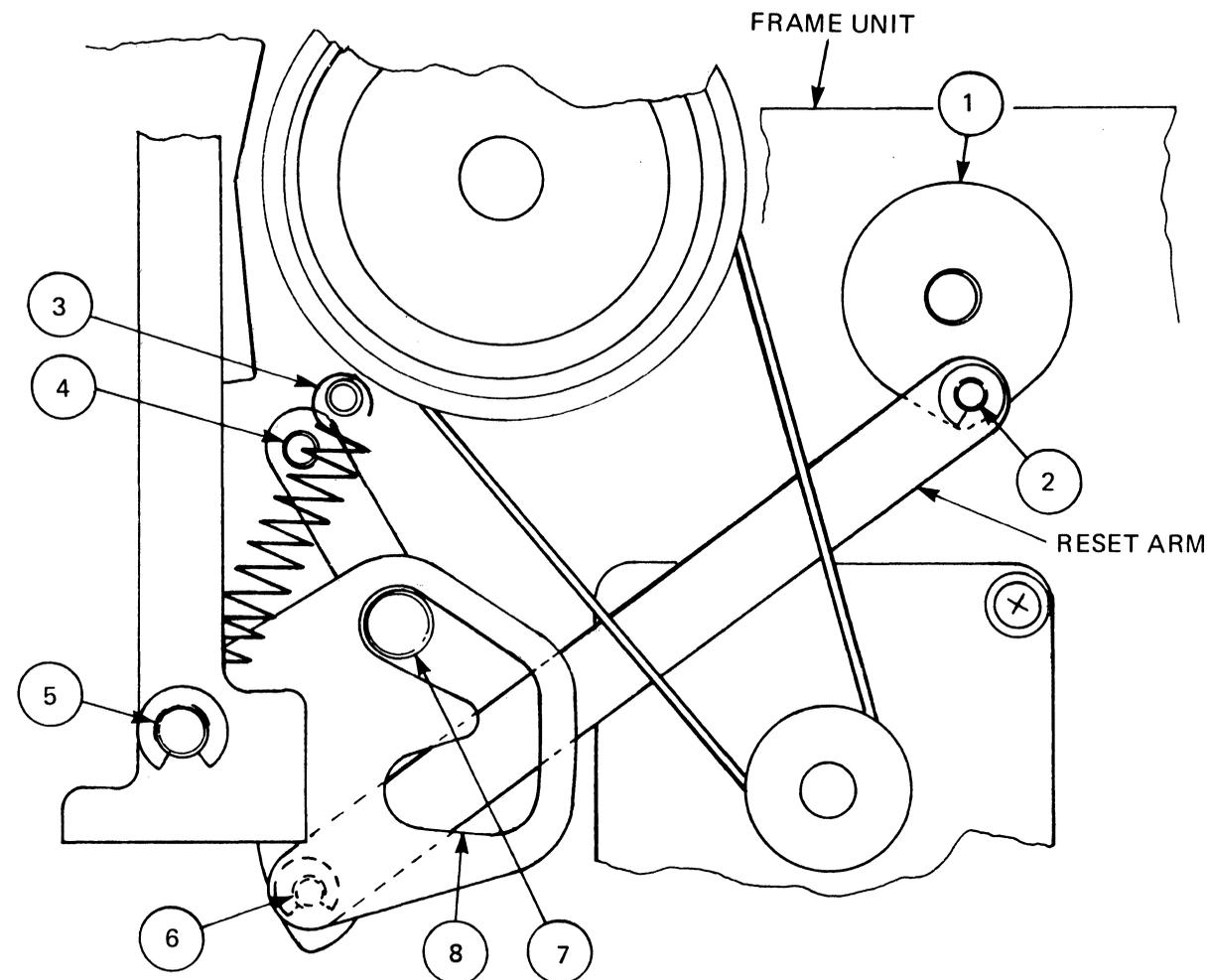


Figure 2-2 Right Side Lubrication Points

The lubrication points for the left side of the frame unit are listed in Table 2-2 and shown in Figure 2-3. The numbers in the table correspond to the numbers in the figure.

Table 2-2 Lubrication Points on the Left Side of the Frame Unit

DESIGNATION	LOCATION
1	The fitting between the bail arm and bail arm spring.
2	The fitting between the bail arm and bail arm stud.

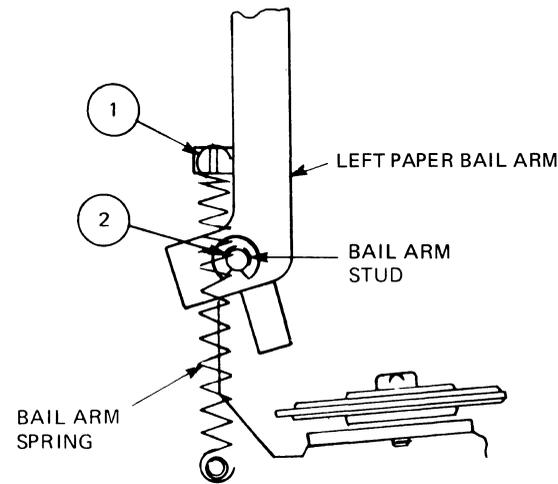


Figure 2-3 Left Side Lubrication Points

The lubrication points for the pressure roller assembly are listed in Table 2-3 and shown in Figure 2-4. The numbers in the table correspond to the numbers in the figure.

Table 2-3 Lubrication Points on the Pressure Roller Assembly

DESIGNATION	LOCATION
1	Front pressure roller bearings
2	Pressure lever and shaft
3	Rear pressure roller bearings

NOTE: Do not put grease on the rubber part of the rollers.

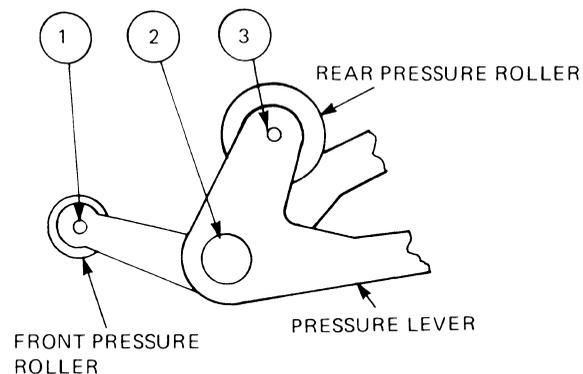


Figure 2-4 Pressure Roller Assembly Lubrication Points

2.4 SPARE PARTS

The recommended spare parts for the 3500 Series Spinwriters are listed in Table 2-4.

Table 2-4 Recommended Spare Parts

ITEM	PART NUMBER	QUANTITY*
Carriage Unit	136-034856-A	1
Platen Assembly	136-035194-A	1
Print Hammer Assembly	136-034857-A	1
Wire Rope Assembly	136-741350-001-A	1
Guide Pulley	803-020001-A	1
G9NAB Power Supply PCB	136-431618-A	1
G9PAU (3500D) Control PCB*	136-431822-A	1
G9NAC (3500Q) Control PCB*	136-431619-A	1
G9PAS-001 (3500R) Control PCB*	136-431820-001-A	1
G9NAJ-xxx (3510/3520 3515/3525) Control PCB*	136-431625-GRP-A	1
	GRP 101: 3510	
	GRP 151: 3515	
	GRP 201: 3520	
	GRP 251: 3525	
G9PAQ-001 (3530) Control PCB*	136-431818-001-A	1
G9PAQ-002 (3550) Control PCB*	136-431818-002-A	1
G9NAG (3500Q/3500D) Operator Control Panel PCB*	136-431623-A	1
G9PAT (3500R) Operator Control Panel PCB*	136-431821-A	1
G9NAK (3510/3515) Operator Control Panel PCB*	136-431626-001-A	1
G9NAH-001 (3520/3525) Operator Control Panel PCB*	136-431624-001-A	1
G9NAF-003 (3530) Operator Control Panel PCB*	136-431622-003-A	1
G9NAL (3550) Operator Control Panel PCB*	136-431627-A	1
G9PAW Nonvolatile RAM PCB* (3510/3520 and 3515/3525)	136-431824-A	1
G9RKY RS422 PCB* (3500R, 3510/3520 and 3515/3525)	136-432106-A	

* The types and quantities of Control PCBs and Operator Control Panel PCBs that you choose to stock should be based on the types of 3500 Spinwriters that you support.

CHAPTER 3 TROUBLESHOOTING

The 3500 Series Spinwriters are highly reliable, virtually trouble-free printers. However, should you encounter a problem, use this chapter to identify the malfunction. After taking corrective action, if the printer is still not functioning properly, call your service representative.

3.1 GENERAL TROUBLESHOOTING

A general troubleshooting guide for localizing common problems to the suspected faulty subassembly is given in Table 3-1.

Table 3-1 Troubleshooting Guide

TROUBLE	CONDITION	PROBABLE CAUSES	CORRECTIVE ACTIONS
No initial operation	No dc output	No ac power Bad fuse (power supply)	Verify ac power is present. Replace fuse (5 A for 100/115 V and 3 A for 230 V).
Entire failure of operation (no fan)	No dc output	Inverter dc output	Replace power supply (G9NAB PCB) (see Sections 4.5 and 4.6).
	No fan	Fan not properly connected	Check fan connections.
Fan operates only	Abnormal output	Power supply (G9NAB PCB)	Check switch SW1 (115/230 V) on power supply. Replace the power supply (see Sections 4.5 and 4.6).
	Ribbon indicator on (operator control panel)	Ribbon end detected	Replace the ribbon cartridge. Adjust the ribbon end sensor.

Table 3-1 Troubleshooting Guide (cont'd)

TROUBLE	CONDITION	PROBABLE CAUSES	CORRECTIVE ACTIONS
Fan operates only (cont'd)	Paper indicator on (operator control panel)	No paper, or the paper out switch incorrectly installed (unbidirectional forms tractor, cut sheet guide, front inserter, bottom feed guide, cut sheet feeder, and demand document tractor)	Replace paper. Install the paper out switch correctly.
	READY indicator off or CHECK indicator on (operator control panel)	Printer check condition Acrylic cover open Top cover open.	Power off and on. Close acrylic cover. Close top cover.
	Miscellaneous	Control PCB	Replace PCB (see Sections 4.3 and 4.4).
Carriage or thimble does not return to the home position	No spacing return	Home sensor defective	Replace home sensor or sensor cable assembly.
	No vertical return	Selection motor defective	Replace carriage (see Sections 4.7 and 4.8).
	No rotate return	Home position out of phase	Replace carriage (see Sections 4.7 and 4.8).
	Miscellaneous	Control PCB	Replace PCB (see Sections 4.3 and 4.4).
Print thimble does not stop rotation		Rotate home sensor	Replace carriage (see Sections 4.7 and 4.8).
		Control PCB	Replace PCB (see Sections 4.3 and 4.4).
Impossible to start the printing operation, or the printing operation is stopped	The operation started only	Interface circuit trouble (Control PCB)	Replace PCB (see Sections 4.3 and 4.4).
	Impossible to test printing	Control PCB	Replace PCB (see Sections 4.3 and 4.4).
	RIBBON indicator problem	No ribbon cartridge Ribbon end sensor incorrect	Insert the ribbon cartridge. Replace ribbon end switch or the carriage.

Table 3-1 Troubleshooting Guide (cont'd)

TROUBLE	CONDITION	PROBABLE CAUSES	CORRECTIVE ACTIONS
	PAPER indicator	No paper, or paper out sensor incorrect	Adjust the ribbon end sensor. Replace paper.
	READY indicator or CHECK indicator problem	Printer check condition	Adjust or replace the paper out sensor. Power off and on.
Misprinting	Misprinting during the initial operation with normal execution of the vertical and rotate home positions	Control PCB Print thimble select switches on Control PCB or on the operator control panel are incorrect	Replace PCB (see Sections 4.3 and 4.4). Set the switches correctly.
	Misprinting during the initial operation with an unstable rotate position	Improper print thimble (different allocation) Print thimble position misadjusted Selection motor defective	Select the proper thimble. Adjust the print thimble position (see Section 5.1.3). Replace carriage (see Sections 4.7 and 4.8).
	Vertical thimble position misselected	Selection motor defective	Replace carriage (see Sections 4.7 and 4.8).
Uneven print density on sides of character		Incorrect print thimble position Incorrect hammer position Print thimble defective Selection motor defective	Adjust the print thimble position (see Section 5.1.3). Adjust hammer position (see Section 5.1.2). Replace print thimble (see Section 4.21). Replace carriage (see Sections 4.7 and 4.8).
Improper printing of character array	Improper vertical array	Improper print thimble installation Control PCB	Install properly. Replace PCB (see Sections 4.3 and 4.4).

Table 3-1 Troubleshooting Guide (cont'd)

TROUBLE	CONDITION	PROBABLE CAUSES	CORRECTIVE ACTIONS
	Improper horizontal array	Selection motor defective Spacing wire rope tension out of adjustment Control PCB	Replace carriage (see Sections 4.7 and 4.8). Adjust wire rope tension (see Section 5.4). Replace PCB (see Sections 4.3 and 4.4).
	Improper paper feed	Spacing motor defective Selection motor defective Improper line feed belt tension	Replace spacing motor. Replace carriage (see Sections 4.7 and 4.8). Adjust line feed belt tension (see Section 5.2).
Unacceptable print quality other than listed above		Dirty or worn-out print thimble characters Worn out ribbon Improper ribbon feed Platen flawed Control PCB Print hammer defective	Replace print thimble (see Section 4.21). Replace ribbon cartridge. Replace carriage (see Sections 4.7 and 4.8). Replace platen (see Sections 4.13 and 4.14). Replace PCB (see Sections 4.3 and 4.4). Replace print hammer (see Sections 4.9 and 4.10).
	Printing uneven	Print thimble inserted incorrectly	Insert print thimble correctly (see Section 4.21).
Truncation of printed letters (incomplete)	Black truncation or red truncation	Ribbon change solenoid not adjusted Ribbon change solenoid defective Print thimble damaged	Replace carriage (see Sections 4.7 and 4.8). Replace carriage (see Sections 4.7 and 4.8). Replace print thimble (see Section 4.21).

Table 3-1 Troubleshooting Guide (cont'd)

TROUBLE	CONDITION	PROBABLE CAUSES	CORRECTIVE ACTIONS
Mingled colors	Black and red intermingled	Platen flawed	Replace platen (see Sections 4.13 and 4.14).
		Ribbon change solenoid not adjusted	Replace carriage (see Sections 4.7 and 4.8).
Improper visibility	Insufficient ribbon retraction	Ribbon cartridge damaged	Replace ribbon cartridge.
		Ribbon change solenoid not adjusted	Replace carriage (see Sections 4.7 and 4.8).
Wrong color	Red is turned black, or black is turned red	Control PCB	Replace PCB (see Sections 4.3 and 4.4).
		Ribbon change solenoid defective	Replace carriage (see Sections 4.7 and 4.8).
Hammer impression control not functioning		Control PCB	Replace PCB (see Sections 4.3 and 4.4).
		Hammer impression control switch defective	Replace switch.
		Print hammer defective	Replace print hammer (see Sections 4.9 and 4.10).
Character missing		Print thimble damaged	Replace print thimble (see Section 4.21).
		Control PCB	Replace PCB (see Sections 4.3 and 4.4).
		Ribbon feed magnet defective	Replace carriage (see Sections 4.7 and 4.8).
		Selection motor defective	Replace carriage (see Sections 4.7 and 4.8).
		Ribbon change solenoid defective	Replace carriage (see Sections 4.7 and 4.8).
		Print hammer defective	Replace print hammer (see Sections 4.9 and 4.10).

Table 3-1 Troubleshooting Guide (cont'd)

TROUBLE	CONDITION	PROBABLE CAUSES	CORRECTIVE ACTIONS
No paper feed	Friction feed	Line feed belt defective	Replace line feed belt.
		Control PCB	Replace PCB (see Sections 4.3 and 4.4).
	Using tractor feed (option)	Line feed motor defective	Replace line feed motor.
		Drive gear backlash	Adjust drive gear backlash (see Section 5.7).
Paper skew	Using tractor feed (option)	Drive belt defective	Replace drive belt.
		Tractor assembly defective	Replace tractor assembly.
	Using friction feed	Tractor shaft bent	Replace tractor assembly.
Ribbon end not detected	Ribbon indicator	Incorrect phasing of right and left tractor pins	Adjust or replace tractor (see Section 5.7.1).
	Miscellaneous	Incorrect positioning of print paper	Set print paper container in parallel with and just behind platen.
Cover open not detected	Miscellaneous	Ribbon end sensor defective	Replace carriage (see Sections 4.7 and 4.8).
		Control PCB	Replace PCB (see Sections 4.3 and 4.4).
Cover open not detected	Miscellaneous	Cover open switch defective	Replace switch and adjust.
		Control PCB	Adjust cover open switch (see Section 5.5).
		Control PCB	Replace PCB (see Sections 4.3 and 4.4).

3.2 SPECIFIC TROUBLESHOOTING PROCEDURES

All models have a self-printing test that should help you to identify malfunctions. Models 3510, 3515, 3510, and 3525 also have a self-function test, and Models 3510, 3515, 3520, 3525, and 3530 have error monitoring procedures to assist in troubleshooting.

3.2.1 Self Test (All Models)

Use this procedure to run the self-printing test.

- a. Turn off the printer. Insert 16-inch wide, continuous form paper.
- b. Dial 13 into the FORM LENGTH switches (if your Spinwriter has them).
- c. Make sure the SP and LF switches (if any) are set correctly.
- d. Set the operator control panel TEST switch to the up position (Models 3500Q and 3500D may not have an operator control panel).
- e. Turn on the printer, making sure it is in local mode. Run the test pattern for several minutes.
- f. Turn off the printer and remove the printout.
- g. Check the printout for:
 - fully-formed characters,
 - proper line feed and ribbon feed operations, and
 - excellent print quality.

3.2.2 Self-Function Test (Models 3510/3520 and 3515/3525)

Use this procedure to run the self-function test.

- a. Turn off the printer. Insert paper.
- b. Dial 00 into the FORM LENGTH switches.
- c. Set the operator control panel TEST switch to the up position.
- d. Turn on the printer, making sure that it is in LOCAL mode (LOCAL light on). The printer initializes and repetitively executes the following functions in sequence.

- Tabs every 32 columns, sounds buzzer, and does a carriage return.
- Rotates the thimble each 16 characters and returns.
- Moves the thimble up and down (twice).
- Moves the ribbon up and down (twice).
- Does three line feeds.
- Does three reverse line feeds.
- Prints "PRINTER READY" and does a carriage return.

- e. Run the test for several minutes to check these functions.

3.2.3 Error Monitoring (Models 3510/3520 and 3515/3525)

When a failure occurs, a buzzer sounds. Do not turn off the printer but note whether the buzzer sounds intermittently or if it sounds only once. Set the error monitoring switch (SW1-8, see Figure 1-26) and the operator control panel TEST switch to the on position. Dial in values 0 to 7 on the right FORM LENGTH switch. As you dial the switch, note when the operator control panel DATA lamp lights. The lamp and buzzer indicate the problem. For a quick reference guide to failure indications, see Table 3-2. For a detailed explanation of each failure indication, see Table 3-3. For normal operation be sure to return the error monitoring switch and the TEST switch to the off position.

Table 3-2 Error Monitoring Quick Reference Guide for Models 3510/3520 and 3515/3525

FORM LENGTH SWITCH SETTING	SYMPTOM	
	DATA Lamp Lights. Buzzer Sounds Intermittently.	DATA Lamp Lights. Buzzer Sounds for About 1/2 Second
0 (8)	-	-
1 (9)	-	Line Error
2	Rotate Home Alarm	Buffer Overflow
3	-	Break Code Received
4	-	Parity/Framing Error
5	Space Initialize Alarm	Cover Open
6	Space Home Switch Alarm	Ribbon End
7	Memory Error	Paper Out

NOTE: Switch SW1-8 on the operator control panel must be ON (see Figure 1-26).

Table 3-3 Error Monitoring Explanation
for Models 3510/3520 and 3515/3525

FORM LENGTH SWITCH SETTING	SYMPTOM	
	DATA Lamp Lights. Buzzer Sounds Intermittently.	DATA Lamp Lights. Buzzer Sounds for About 1/2 Second
0 (also 8)	Unused	Unused
1 (also 9)	Unused	<u>Line error</u> - indicates a communication link problem between the printer and the system/processor. Set the error monitor switch to the down position and contact your Systems Manager for specific recovery information.
2	<u>Rotate home alarm*</u> - Set the error monitor switch to the down position and turn off the printer. Remove ribbon cartridge and thimble. Check thimble for damaged or missing fingers. Check ribbon for tears or breakage. If necessary, replace the cartridge and/or thimble. If the ribbons or thimbles break frequently, or if the alarm indicates misadjustment or failure, contact your dealer for service.	<u>Buffer overflow error</u> - indicates incorrect printer/system communication configuration. Check system configuration for the proper use of ETX/ACK, X-ON/X-OFF, or Reverse Channel, and check printer DIP switch settings to ensure they are set correctly to match the system. If this problem continues, contact your dealer or systems/software manufacturer to determine the proper configuration of the system/printer interface. The user is responsible for proper connection and configuration of the printer unless it is installed by an authorized NEC service engineer.

Table 3-3 Error Monitoring Explanation
for Models 3510/3520 and 3515/3525 (cont'd)

FORM LENGTH SWITCH SETTING	SYMPTOM	
	DATA Lamp Lights. Buzzer Sounds Intermittently.	DATA Lamp Lights. Buzzer Sounds for About 1/2 Second
3	Unused	<u>Break code reception</u> - indicates a "break" code has been received by the printer. Contact your System Manager for specific interpretation of this status.
4	Unused	<u>Parity/framing error</u> - indicates one of the following conditions: <ul style="list-style-type: none"> ● Transient communications error between the system and printer. Set the error monitor switch to the down position, press the RESET switch, and continue use. ● Frequent occurrences can indicate a faulty communications connection. Contact your System Manager to correct this problem.
5	<u>Spacing Initialize alarm*</u> - Set the error monitor switch to the down position and turn off the printer. Lift the cover and check that the red rubber stopper, shipped with the printer, has been removed from the carriage rail. Also examine the carriage path for	<u>Cover open</u> - make sure the acrylic cover is closed tightly. Set the error monitor switch to the down position.

Table 3-3 Error Monitoring Explanation
for Models 3510/3520 and 3515/3525 (cont'd)

FORM LENGTH SWITCH SETTING	SYMPTOM	
	DATA Lamp Lights. Buzzer Sounds Intermittently.	DATA Lamp Lights. Buzzer Sounds for About 1/2 Second
6	foreign objects or obstructions and remove them. Grasp the carriage assembly and move from the extreme left to the extreme right, checking for evenness of movement. If the alarm occurs repeatedly, call for service.	
	<u>Spacing home switch alarm*</u> - Refer to spacing initialize alarm for corrective action.	<u>Ribbon end</u> - replace or "flip over" the multi-strike ribbon cartridge. Make sure the cartridge is installed properly. Press the RESET switch and set the error monitor switch to the down position.
7	<u>Memory error*</u> - Set the error monitor switch to the down position and turn off the printer. Turn on the printer and continue to use. If this error occurs repeatedly, call for service.	<u>Paper out</u> - load paper. Press the RESET switch and set the error monitor switch to the down position.

NOTE: Switch SW1-8 on the operator control panel must be ON for error monitoring (see Figure 1-26).

*If service is necessary, to prevent further damage, do not use the printer. Call for service at once and make a note of the failure details as indicated by this diagnostic routine.

3.2.4 Error Monitoring (Model 3530)

If a failure occurs, push and hold the Set Top of Form (SET TOF) switch on the operator control panel. The lights on the panel will indicate the problem (see Table 3-4).

Table 3-4 Model 3530 Failure Analysis

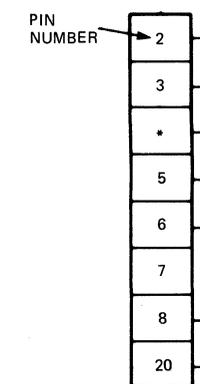
LIGHT	PROBLEM
Alarm	Rotate error
Paper	Spacing error
Ready	Data parity error

NOTE

During error monitoring, the lights on the operator control panel are used only to indicate errors. Therefore, the LOCAL light will go off even if the printer is in LOCAL mode.

3.2.5 Loop Back Test (3500R, 3510/3520 and 3515/3525)

The loop back test is a simple full-function test to test the interface, printer electronics and printer mechanism. To run the loop back test, construct a jumper using a 25-pin male connector. The jumper is wired as shown in Figure 3-1. Connect this connector to the connector at the rear of the Spinwriter. Set the Spinwriter for full-duplex, remote operation and self test. The self test data is transmitted on Pin 2, received on Pin 3 and printed on the Spinwriter. This test does not test escape code sequences. On keyboard models, the escape codes sequences can be tested by entering them from the keyboard using the loop back test (with the self test off).



*PIN 4 FOR LOW SPEED TEST TO 300 BAUD
PIN 19 FOR HIGH SPEED TEST TO 9600 BAUD

Figure 3-1 Jumper for Loop Back Test

CHAPTER 4

DISASSEMBLY/ASSEMBLY AND REPAIR

The following procedures are presented in proper sequence for performing the required maintenance. Procedures are provided for the following items:

- those that have difficult locations for attaching hardware,
- those that must be removed or assembled in a prescribed order, or
- those that require specific techniques for removal or assembly.

Omitted are procedures for items that can be disassembled or assembled using standard practices. To identify and locate items not listed here, see Chapter 6.

All major repairs should be done at a depot repair facility. If you choose to perform major repairs in the field, follow these procedures.

4.1 MIDDLE COVER REMOVAL

Use this procedure to remove the middle cover.

- Pull off the left and right platen knobs.
- Remove any paper handling option that is installed (bi-directional forms tractor, cut sheet feeder, cut sheet guide, and so on).
- Open the top cover.
- Pull both the left and right levers inside the middle cover forward (see Figure 4-1).
- Push both the left and right levers on the base cover down using a screwdriver or similar tool (see Figure 4-2).
- Lift off the cover. Be careful not to hit any parts inside.

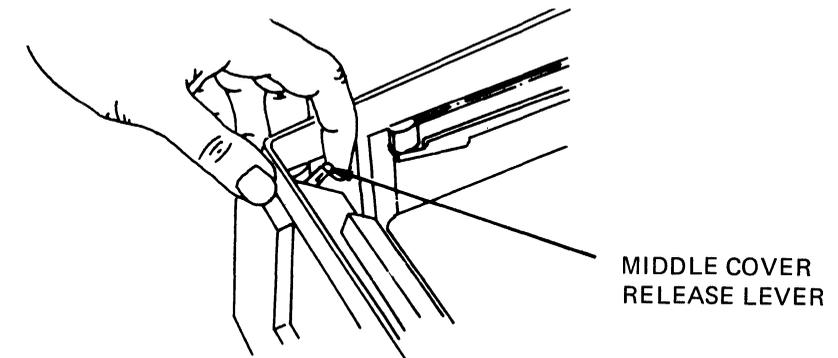


Figure 4-1 Middle Cover Lever (Left Side)

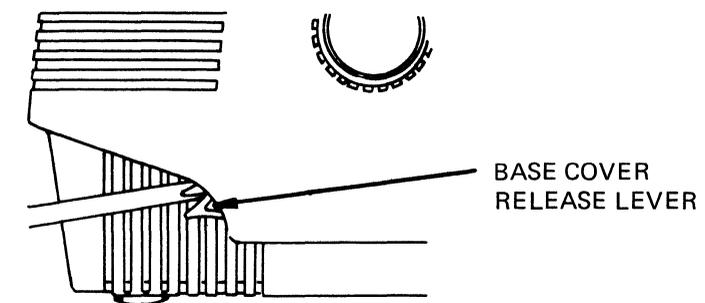


Figure 4-2 Base Cover Lever (Left Side)

4.2 MIDDLE COVER INSTALLATION

Use this procedure to install the middle cover.

- Make sure that the base cover levers and middle cover levers are unlatched.
- Lower the middle cover vertically, lining up the paper release lever opening in the middle cover with the paper release lever.
- Push the base cover levers up to clamp the middle cover.
- Push the middle cover levers back to clamp the middle cover.
- Make sure that the paper release lever does not touch the top cover.
- Insert both platen knobs.

- g. Install the paper handling options.
- h. Make sure that the cover open switch is adjusted properly (see Section 5.5).

4.3 CONTROL PCB REMOVAL

Use this procedure to remove the Control PCB.

- a. Turn off the POWER switch and unplug the power cord from the outlet.
- b. Remove the middle cover (see Section 4.1).
- c. Disconnect the cable connectors attached to the Control PCB. Tuck the cables under the paper bail.
- d. Unhook the tabs on both sides of the Control PCB and pull the PCB up and out of the Spinwriter (see Figure 4-3).

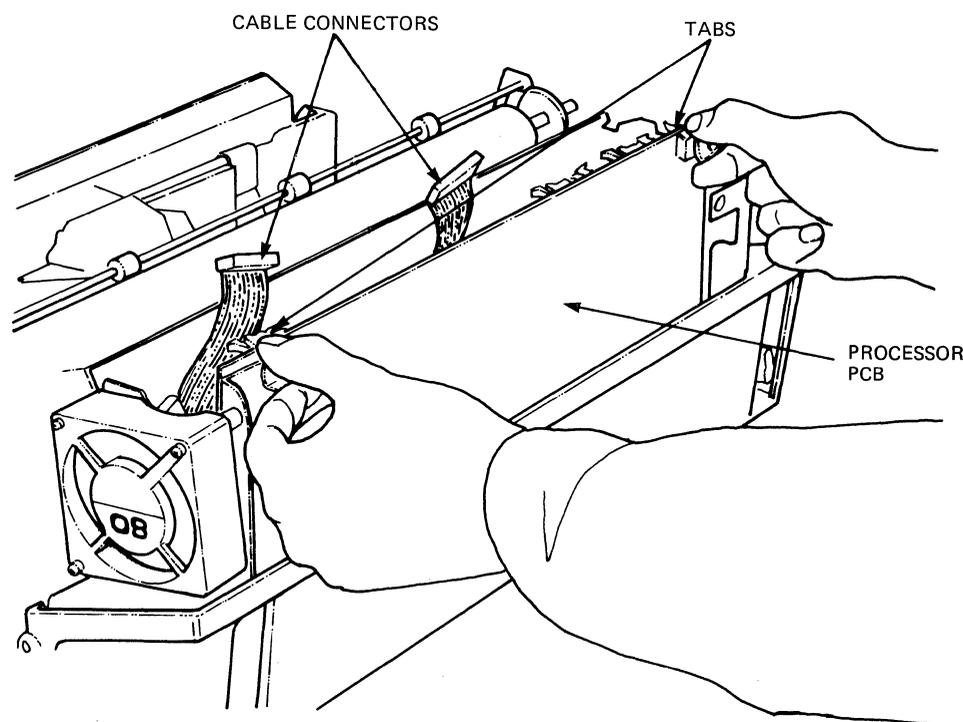


Figure 4-3 Control PCB Removal

4.4 CONTROL PCB INSTALLATION

Reverse the removal procedure described in Section 4.3.

4.5 POWER SUPPLY REMOVAL

Use this procedure to remove the power supply (G9NAB PCB).

WARNING

Ac power is present inside the printer when the POWER switch is at the OFF position. Unplug the power cord before removing the power supply.

- a. Turn off the POWER switch and unplug the power cord from the outlet.
- b. Remove the middle cover (see Section 4.1).
- c. Remove the Control PCB (see Section 4.3).
- d. Unplug the connector from the power switch bracket assembly.
- e. Pull the three tabs at the back of the power supply to disconnect it.
- f. Lift the back of the power supply and pull it out.

4.6 POWER SUPPLY INSTALLATION

Reverse the removal procedure described in Section 4.5.

CAUTIONS

1. Use special care when handling the connector cord and the fan cord to avoid any damage to these parts when performing the installation.
2. Make sure the 100/115 V jumper is set correctly (see Section 4.23).
3. Make sure the 115/230 Vac switch is set correctly (see Section 4.23).

4.7 CARRIAGE UNIT REMOVAL

Use this procedure to remove the carriage unit.

- a. Turn off the POWER switch and unplug the power cord from the outlet.
- b. Open the top cover.
- c. Remove print thimble and ribbon cartridge.
- d. Center the carriage unit and unlock the connector.
- e. Grasp the connector and unplug it.
- f. Remove the four screws securing the carriage to the lower guide assembly (see Figure 4-4).
- g. Pull the carriage unit slowly up and out of the Spin-writer.

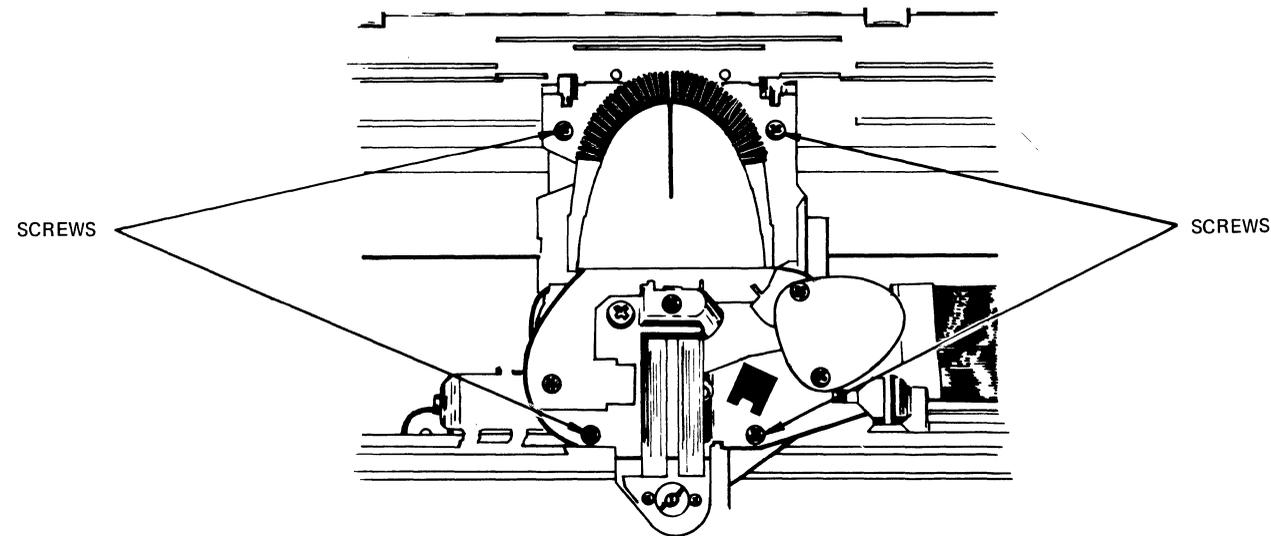


Figure 4-4 Carriage Assembly Removal

4.8 CARRIAGE UNIT INSTALLATION

Use this procedure to install the carriage unit.

- a. Center the lower guide assembly.
- b. Slowly set the carriage unit onto the lower guide assembly and adjust it into position.
- c. Tighten the four screws.

- d. Grasp the connector to connect and lock it.
- e. Insert the print thimble and ribbon cartridge.

4.9 PRINT HAMMER REMOVAL

Use this procedure to remove the print hammer.

- a. Turn off the POWER switch and unplug the power cord from the outlet.
- b. Open the top cover.
- c. Disconnect the carriage unit connector (see Section 4.7).
- d. Pull out Pins 3 and 5 from the carriage unit connector.

NOTE

It is best to use a 1 mm diameter round bar (or a paper clip) to remove the two pins. If you insert the bar into the side openings of the connector, you can easily remove the pins.

- e. Remove the nylon clip.
- f. Raise the hammer cover.
- g. Remove the two screws securing the hammer to the hammer cover (see Figure 4-5).
- h. Remove the hammer and lead wires.

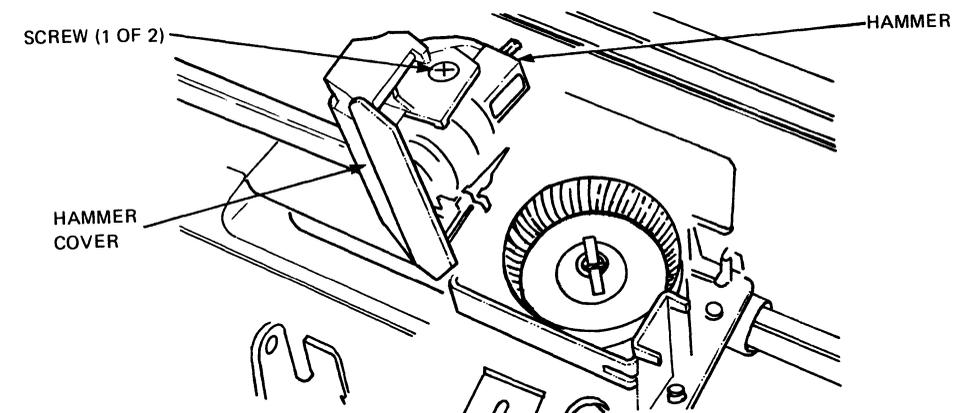


Figure 4-5 Hammer Removal

4.10 PRINT HAMMER INSTALLATION

Use this procedure to install the print hammer.

- a. Insert the hammer lead wires into the notched left side of the hammer cover.
- b. Attach the hammer to the hammer cover with two screws.
- c. Align the lock springs of the pins of the hammer lead wires with the side openings of the carriage unit connector and insert the pins into the connector: the red lead wire into Pin 5 and the gray lead wire into Pin 3.
- d. Adjust the lead wires and attach the nylon clip.
- e. Close the hammer cover.
- f. Perform the hammer assembly adjustments (see Section 5.1).

4.11 WIRE ROPE REMOVAL

Use this procedure to remove the wire rope.

- a. Turn off the POWER switch and unplug the power cord from the outlet.
- b. Remove the middle cover (see Section 4.1).
- c. Remove the ribbon cartridge.
- d. Remove the guard that covers the nut that locks the adjusting screw stud on the right guide pulley. Loosen the nut (7 mm).
- e. Turn the adjusting screw left to loosen the wire rope (see Figure 4-6).
- f. Disengage the knot of the wire rope on the outside of the drive pulley. Leave the wire on the drive pulley.
- g. Remove the screw on the wire clamp on the carriage base.
- h. Pull down the the wire clamp at the center of the carriage base to remove the wire rope.

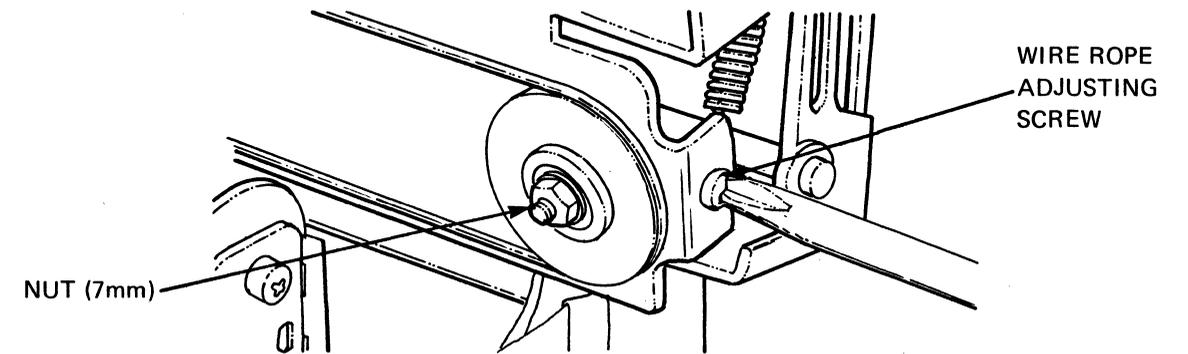


Figure 4-6 Wire Rope Adjusting Screw

4.12 WIRE ROPE INSTALLATION

Use this procedure to install the wire rope.

- a. Center the carriage base. Install the wire rope assembly under the carriage base as shown in Figure 4-7. Be sure that the left portion of the wire is shorter than the right.

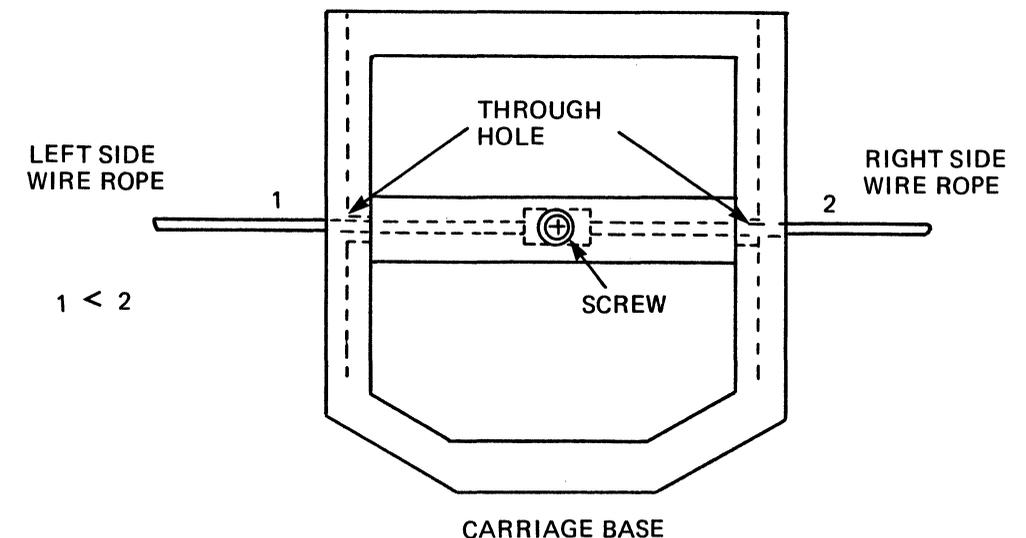


Figure 4-7 Initial Installation of Wire Rope

- b. Loosen the right side guide pulley and move it to the extreme left.
- c. Wind the right part of the wire rope around the right guide pulley (from top to bottom). Then wind the right part of the wire rope around the lower left guide pulley and insert the hook into the rear slot of the spacing motor drive pulley (see Figure 4-8).

- d. Turn the drive pulley to the right to wind the wire rope onto the drive pulley until the carriage base reaches the right end.
- e. Wind the wire rope on the left side of the carriage base around the upper left guide pulley (see Figure 4-9). Then insert the wire rope hook into the front slot of the drive pulley.

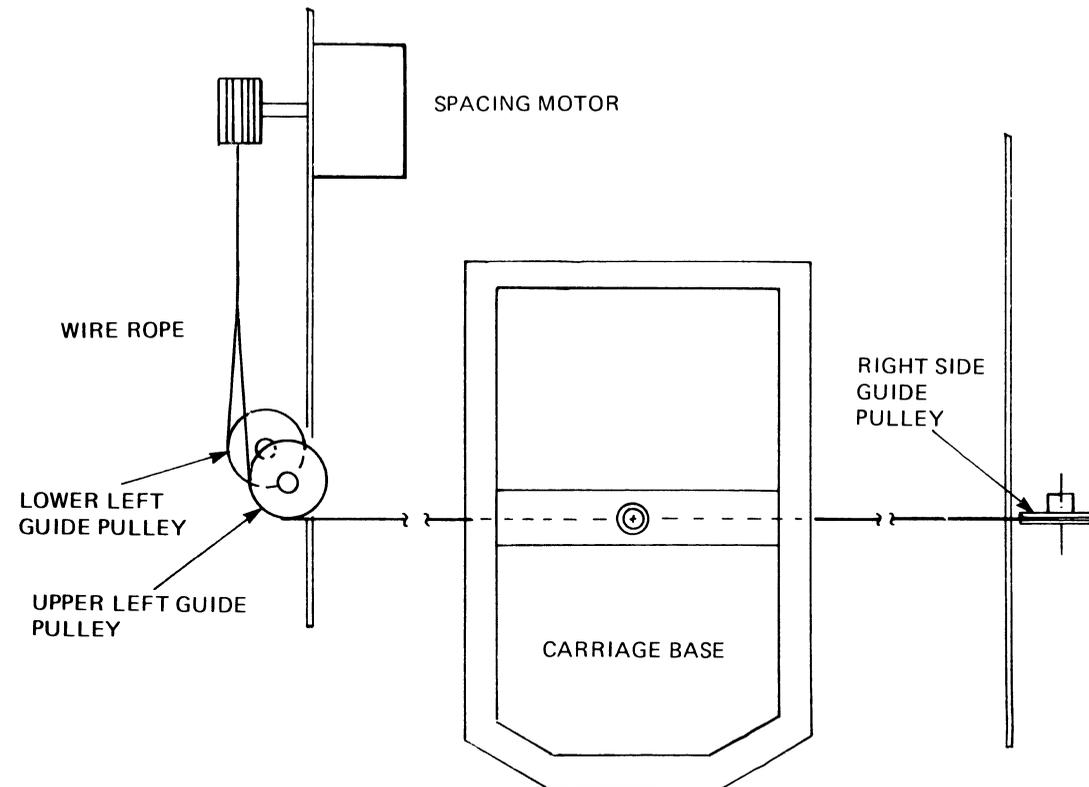


Figure 4-8 Wire Rope Installation

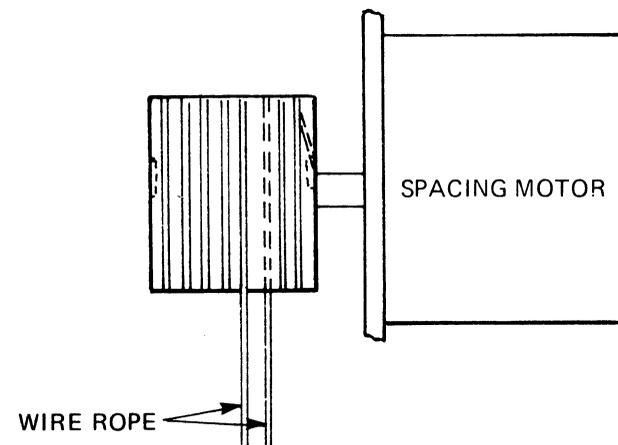


Figure 4-9 Wire Rope Placement

NOTE

If you cannot insert the hook into the slot, place the wire rope under the upper left guide pulley, insert the hook, and then move the carriage to the left, lifting the cable onto the groove of the upper left guide pulley. Replace the cover.

- f. Adjust the wire rope tension (see Section 5.4).
- g. Tighten the nut on the right guide pulley. Replace the cover over the nut.
- h. Replace the middle cover (see Section 4.2).

4.13 PLATEN ASSEMBLY REMOVAL

Use this procedure to remove the platen assembly.

- a. Turn off the POWER switch and unplug the power cord from the outlet.
- b. Remove the middle cover (see Section 4.1).
- c. Pull the paper release lever forward.
- d. Loosen the two screws securing the line feed motor.
- e. Move the line feed motor to loosen the line feed belt and remove the belt.
- f. Loosen the screws on the right and left platen clamps and remove the platen.

4.14 PLATEN ASSEMBLY INSTALLATION

Use this procedure to install the platen assembly.

- a. Place the platen onto the notched portion of the frame. Turn the platen until the cutout in the left platen bushing is facing the platen clamp. Secure the platen to the frame with the platen clamps.
- b. Make sure that the screws securing the line feed motor are loosened.
- c. Install the line feed belt.

- d. Adjust the line feed motor position to put the proper tension on the line feed belt (see Section 5.2). Tighten the screws.
- e. Replace the middle cover (see Section 4.2).
- f. Replace the platen knobs.

4.15 OPERATOR CONTROL PANEL REPLACEMENT

Use this procedure to replace the operator control panel.

- a. Turn off the POWER switch.
- b. Remove the middle cover (see Section 4.1).
- c. Remove the two screws that hold the operator control panel to the base cover.
- d. Lift up the operator control panel, press the two locking tabs that hold the control panel connector, and remove the connector.
- e. Plug the connector into the new operator control panel.
- f. Attach the operator control panel to the base cover with two screws.
- g. Replace the middle cover (see Section 4.2).

4.16 KEYBOARD REPLACEMENT

Use this procedure to replace the keyboard (Models 3520 and 3525 only).

- a. Turn off the POWER switch
- b. Remove the middle cover (see Section 4.1).
- c. Lift up the keyboard and unplug the keyboard connector.
- d. Plug in the new keyboard and set it on the four posts that hold the keyboard.
- e. Install the middle cover (see Section 4.2).

4.17 CARD HOLDER REMOVAL

Use this procedure to remove the card holder.

- a. Turn off the POWER switch.
- b. Open the top cover.
- c. Remove the ribbon cartridge.
- d. Remove the print thimble.
- e. Push the plastic tabs at the bottom of the card holder (see Figure 4-10) together and remove the card holder.

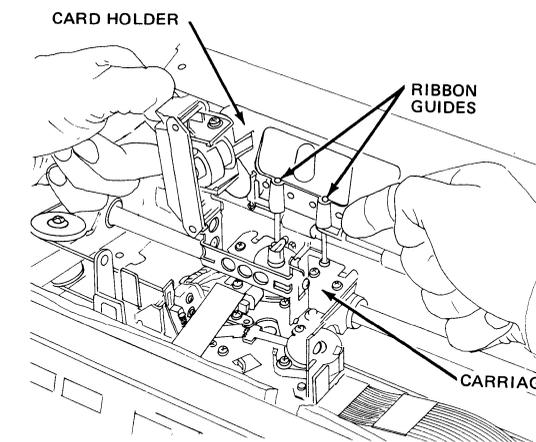


Figure 4-10 Card Holder Removal

4.18 CARD HOLDER INSTALLATION

Insert the card holder onto the two ribbon guides and push the card holder down until it locks into place. Install the print thimble.

4.19 ACRYLIC COVER REMOVAL

Use this procedure to remove the acrylic cover.

- a. Turn off the POWER switch.
- b. Open the acrylic cover.
- c. Slide the right hinge pin to the left (see Figure 4-11).
- d. Remove the acrylic cover.

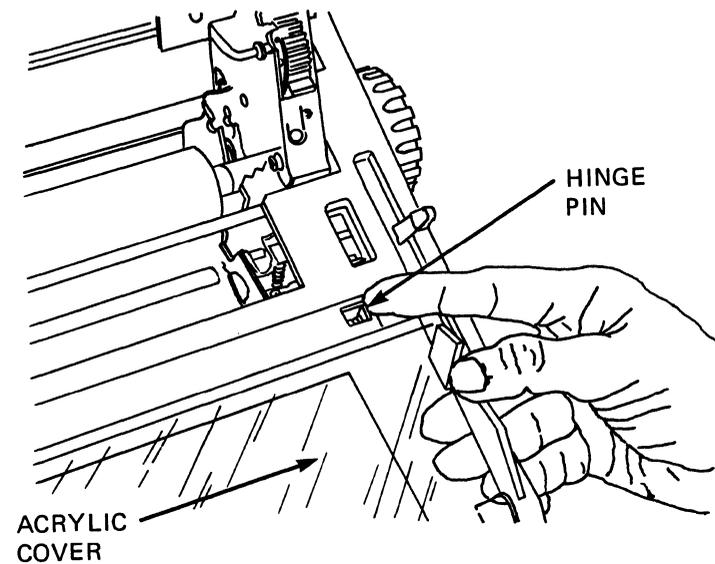


Figure 4-11 Acrylic Cover Removal

4.20 ACRYLIC COVER INSTALLATION

Reverse the removal procedure described in Section 4.19.

4.21 PRINT THIMBLE REMOVAL OR REPLACEMENT

Use this procedure to remove or replace the print thimble (see Figure 4-12).

- a. Raise the hammer cover by gently lifting the right side of the cover.
- b. Slide the lock piece horizontally and then pivot it up to a vertical position (see Figure 4-12A).
- c. Lift off the old print thimble and insert the new one, making sure that the thimble mount seat fits into the square hole in the base of the thimble.

NOTES

1. Do not hold the print thimble by the thimble fingers.
2. Be sure the new thimble is correctly seated on the thimble mount.
- d. Pivot the lock piece to a horizontal position, then slide it to lock the thimble in position.
- e. Close the hammer cover.

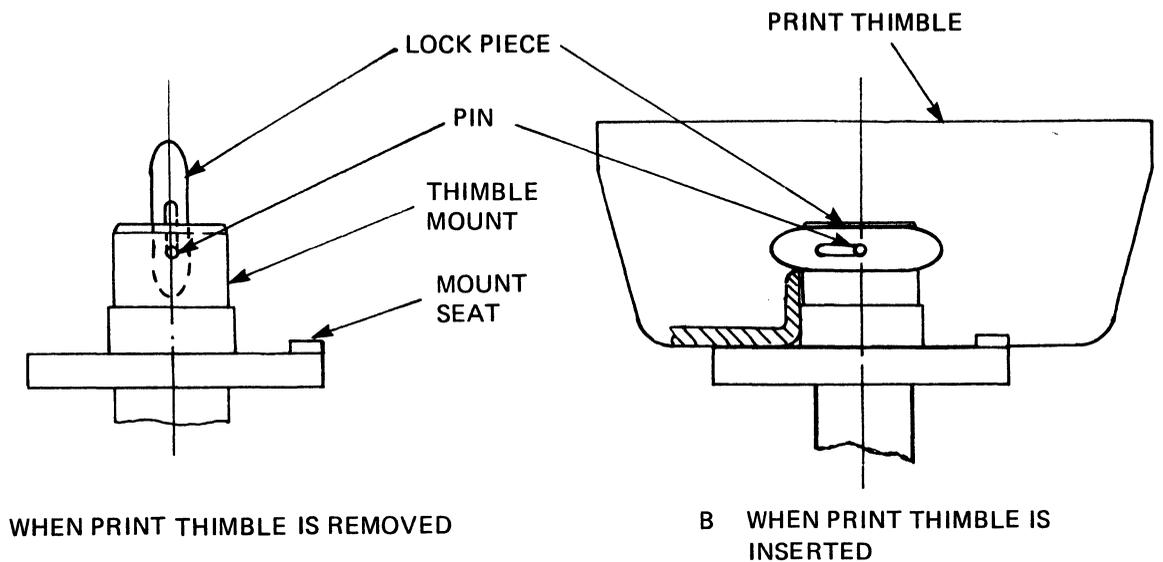


Figure 4-12 Print Thimble Replacement

4.22 RUBBER FOOT INSTALLATION

The Spinwriter contains four rubber feet. Install a rubber foot as shown in Figure 4-13.

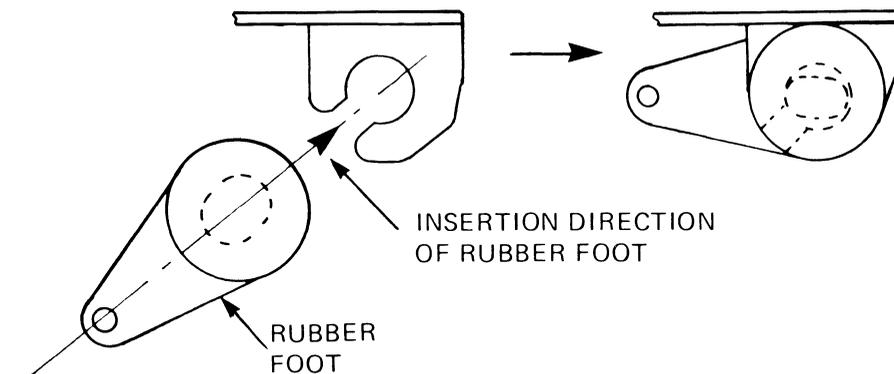


Figure 4-13 Rubber Foot Installation

4.23 POWER SUPPLY VOLTAGE SELECTION

Use this procedure to change the power supply from 115 V to 230 V operation or from 230 V to 115 V operation.

- a. Turn off the POWER switch and unplug the power cord from the outlet.

- b. Remove the middle cover (see Section 4.1).
- c. Remove the Control PCB (see Section 4.3).
- d. Set the switch on the power supply (G9NAB PCB) for 115 V or 230 V operation.
- e. Change the fuse on the power supply (G9NAB PCB). It should be 5 A for 115 V and 3 A for 230 V.
- f. Peel off the label on the back of the fan housing and attach the new label under the power switch.
- g. Replace the Control PCB (see Section 4.4).
- h. Replace the middle cover (see Section 4.2).

Use this procedure to change the power supply from 100 V to 115/230 V operation or from 115/230 V to 100 V operation.

- a. Turn off the POWER switch and unplug the power cord from the outlet.
- b. Remove the middle cover (see Section 4.1).
- c. Remove the Control PCB (see Section 4.3).
- d. Loosen the screws that hold the jumper on the power supply (G9NAB PCB).
- e. Move the jumper towards the rear of the printer for 115/230 V operation or towards the front of the printer for 100 V operation. Tighten the screws.
- f. Check the fuse on the power supply. It should be 5 A for 115 V, 3 A for 230 V, or 5 A for 100 V.
- g. Peel off the label on the back of the fan housing and attach the new label.
- h. Replace the Control PCB (see Section 4.4).
- i. Replace the middle cover (see Section 4.2).

4.24 BOTTOM FEED GUIDE INSTALLATION

A unidirectional forms tractor or a bidirectional forms tractor (option) and a bottom feed guide kit are required for bottom feed. The contents of the bottom feed guide kit, Part Number 136-034864-001-A, are listed in Table 4-1. Use the following procedure to install the bottom feed guide kit.

Table 4-1 Bottom Feed Guide Kit, 136-034864-001-A

DESCRIPTION	PART NUMBER	QTY
Bottom Guide	136-747793-B	1
Bottom Guide Subassembly	136-741657-A	1
Paper Out Sensor Cable Assembly	136-752601-A	1
Left Support Block	136-751377-001-A	
Right Support Block	136-751377-002-A	
Roof Guide	136-741662-A	1
Machine Screws (SL-CPIMSx3x6x15BF)	805-300003-006-0	4

- a. Turn off the POWER switch and unplug the power cord from the outlet.
- b. Remove the middle cover (see Section 4.1).
- c. Remove the carriage unit (see Section 4.7).
- d. From underneath the carriage rail, insert the sensor cable into the hole in the frame assembly of the Spinwriter.
- e. Feed the sensor cable through the hole (see Figure 4-14). Push the paper out sensor into the hole until a distinct snap is heard.
- f. Run the sensor cable through the printer, through the hole in the base assembly of the Spinwriter, and plug it into the connector at the rear of the printer (see Figure 4-15).

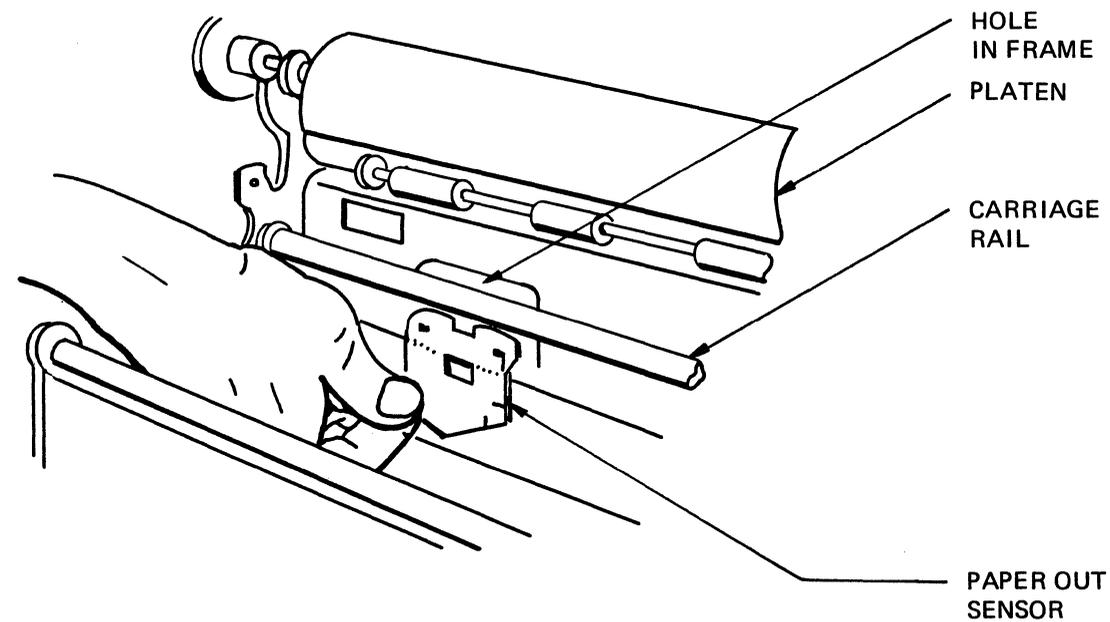


Figure 4-14 Paper Out Sensor Installation for the Bottom Feed Guide

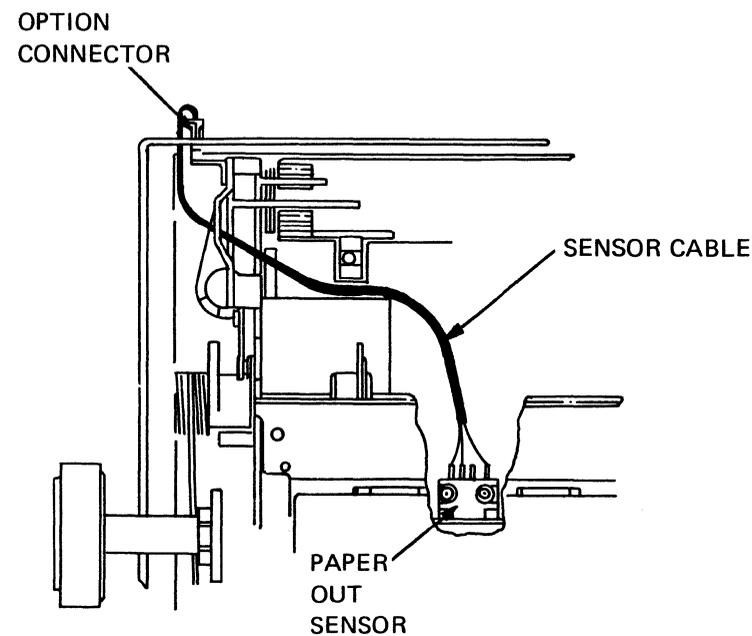


Figure 4-15 Paper Out Sensor Connection for the Bottom Feed Guide (Top View)

- g. Install each support block to the frame of the Spinwriter with a screw (see Figure 4-16). Be careful not to damage the wire rope.

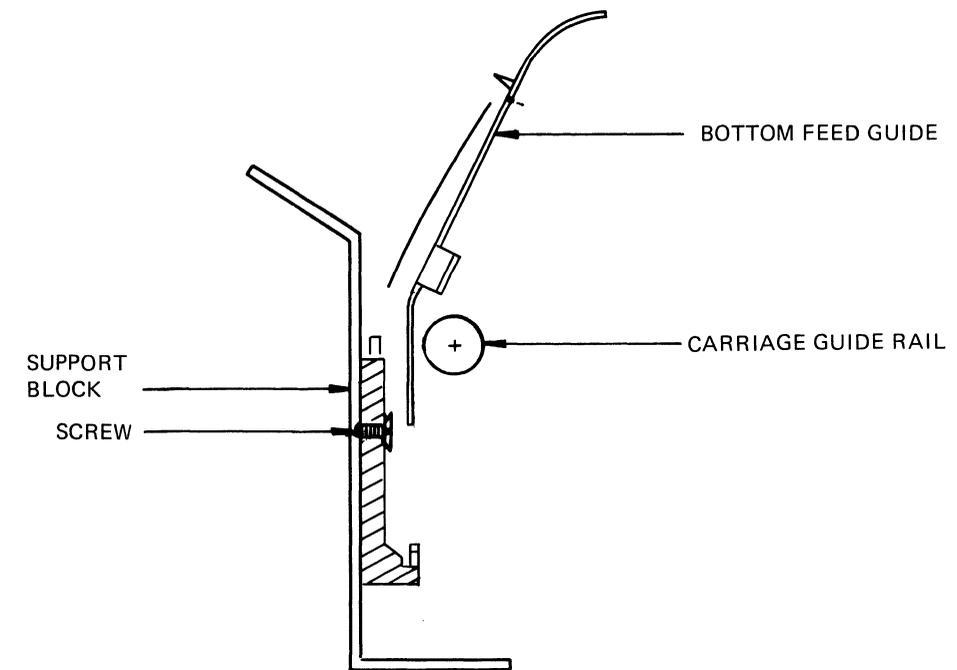


Figure 4-16 Support Block Installation for the Bottom Feed Guide (Side View)

- h. Insert the bottom guide between the platen and the carriage rail and into the support blocks. Make sure that the support block latch locks the bottom guide into place (see Figure 4-17).
- i. Install the roof guide onto the frame of the Spinwriter with one screw on each end (see Figure 4-18).
- j. Replace the carriage unit (see Section 4.8).
- k. Replace the middle cover (see Section 4.2).

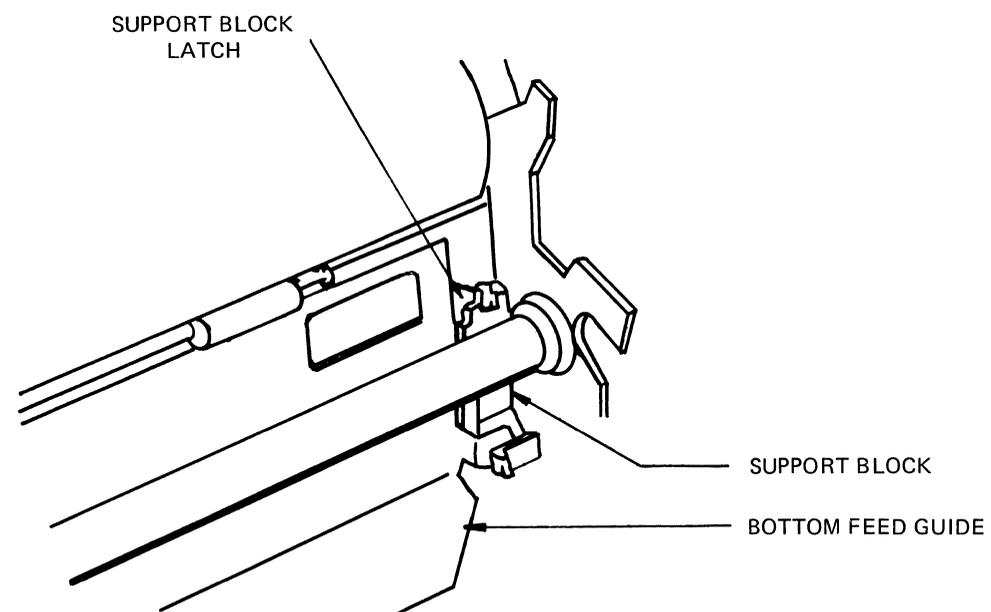


Figure 4-17 Bottom Feed Guide Installation

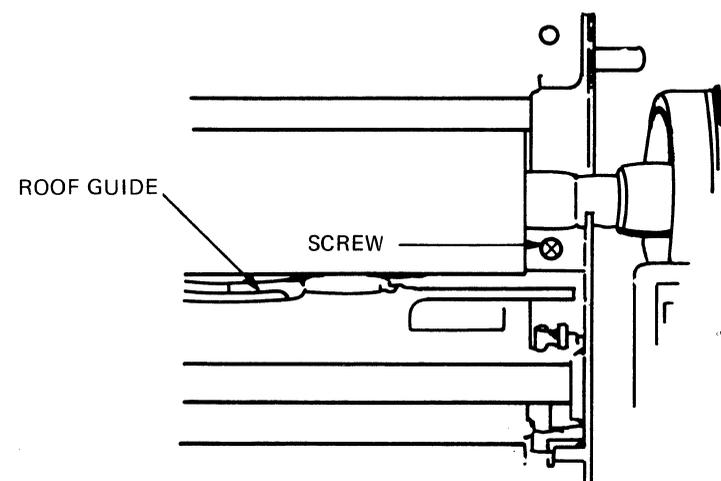


Figure 4-18 Roof Guide Installation

CHAPTER 5 ADJUSTMENTS

The adjustment procedures described in this chapter are all recommended for depot maintenance of the Spinwriter. If you choose to adjust the Spinwriter in the field, you must conform to the adjustment standards at all times.

5.1 HAMMER ASSEMBLY ADJUSTMENTS

Use the following procedures to adjust the hammer assembly.

5.1.1 Hammer Assembly Lock Spring Adjustment

Use this procedure to adjust the lock spring.

- a. Loosen the lock spring screw.
- b. Lower the hammer cover until it reaches the hammer bracket.
- c. Adjust the lock spring so that the hammer cover smoothly and firmly engages the hammer bracket. Tighten the screw.

5.1.2 Print Hammer Assembly Position Adjustment

Do not attempt this procedure without an alignment jig. With an alignment jig, use this procedure to adjust the print hammer assembly position.

- a. Turn off the POWER switch.
- b. Remove the print thimble and card holder (see Sections 4.17 and 4.21).
- c. Install the alignment jig in place of the print thimble and over the ribbon guides. Lock the alignment jig in place with the thimble lock piece.

- d. Loosen the holding screws on both sides of the hammer assembly (see Figure 5-1) and adjust the hammer assembly so that the end of the hammer is aligned with the edges of the jig (see Figure 5-2A). Different age hammer assemblies are adjusted differently. Early model hammer assemblies are identified by a black-anodized finish (see Figure 5-2B). Later model hammer assemblies have a gold finish. Adjust both hammers to be level with the top edge of the alignment jig (see Figure 5-2C).

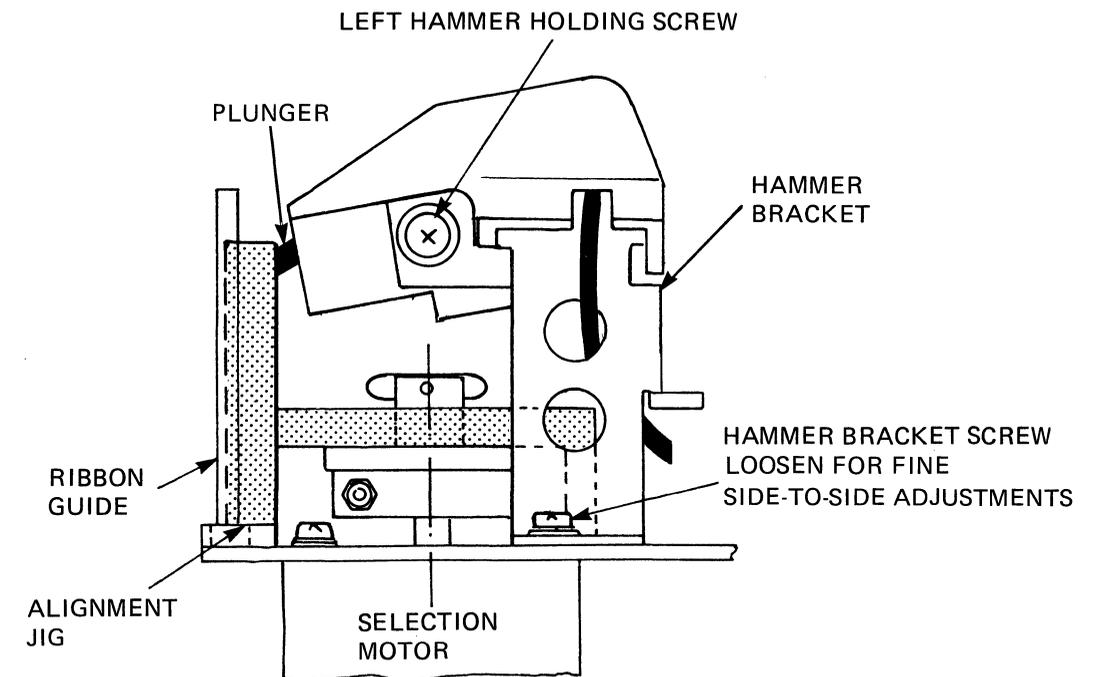


Figure 5-1 Hammer Adjustments

- e. Tighten the holding screws.
- f. Loosen the hammer bracket screws and adjust the hammer assembly so that the side of the hammer is aligned with the jig (see Figure 5-2B).
- g. Tighten the screws.
- h. Open and close the hammer cover several times and verify that the alignment is correct.
- i. Remove the alignment jig and replace the card holder and print thimble.

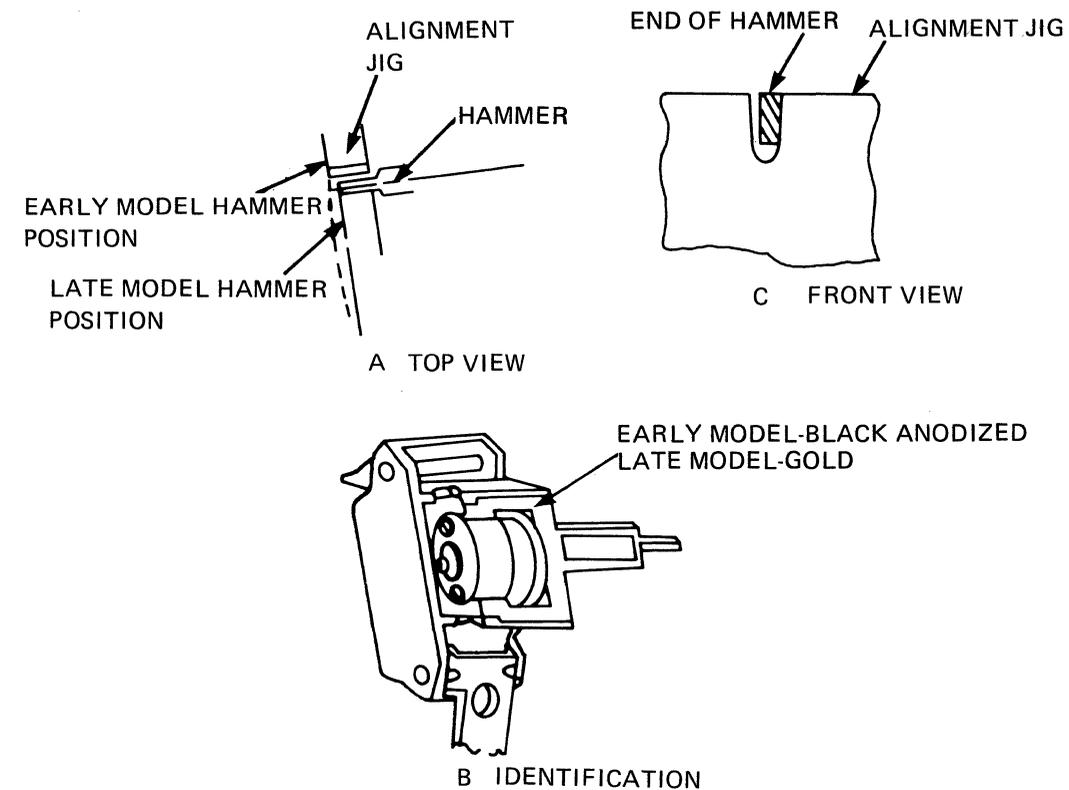


Figure 5-2 Hammer Position

5.1.3 Thimble Position Adjustment

Do not attempt this adjustment without an alignment jig. With an alignment jig, use this procedure to adjust the thimble position.

- a. Remove the print thimble and card holder (see Sections 4.17 and 4.21).
- b. Loosen the screw on the thimble mount clamp (see Figure 5-3), then tighten the screw just enough to lock it in place on the motor shaft.

WARNING

Do not use a magnetic screwdriver on the thimble mount clamp screw. If this screw becomes magnetic, adjustment is impossible.

Use special care to avoid damaging the motor shaft.

- c. Turn on the POWER switch to initialize the printer.

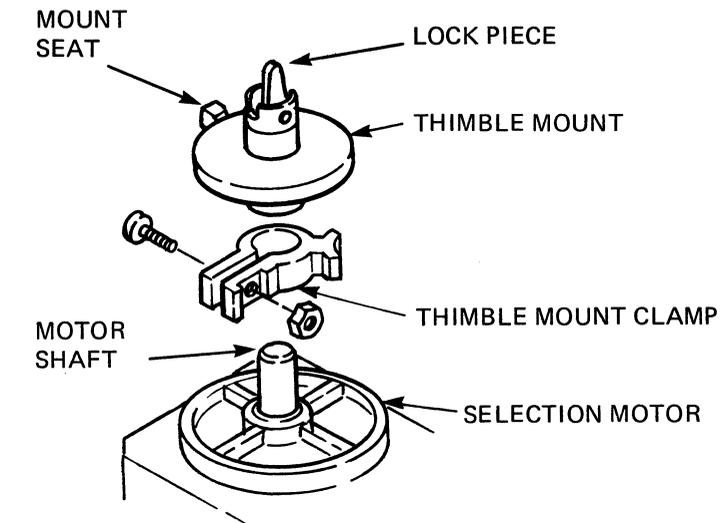


Figure 5-3 Thimble Height Adjustment Components

- d. Loosen the thimble mount clamp screw.
- e. With the power on, gently set the alignment jig on the carriage assembly.
- f. Carefully turn the thimble mount until the mount seat fits into the slot in the jig.
- g. Lift up the thimble lock piece until the base of the thimble mount is against the bottom of the jig, then secure the lock piece.
- h. Tighten the thimble mount clamp.
- i. Check the hammer position adjustment (see Section 5.1.2).
- j. Remove the alignment jig and replace the card holder and print thimble.

5.2 LINE FEED BELT TENSION ADJUSTMENT

Use this procedure to adjust the line feed belt tension.

- a. Loosen the two screws securing the line feed motor.
- b. Adjust the line feed motor until there is no play in the belt. Turn the platen to ensure that the belt does not slip.
- c. Tighten the screws.

5.3 FIRST PRINT POSITION ADJUSTMENT

Use this procedure to adjust the first print position.

- a. Measure the first print position distance from the left side frame to the center of the thimble mount with the power on. It should be 1.835 ± 0.019 inches (46.6 ± 0.5 mm) from the left side frame (see Figure 5-4).

NOTE

It may be easier to print a self-test first and then measure with a ruler or a piece of paper from the left side frame to the middle of the first character of the test printout.

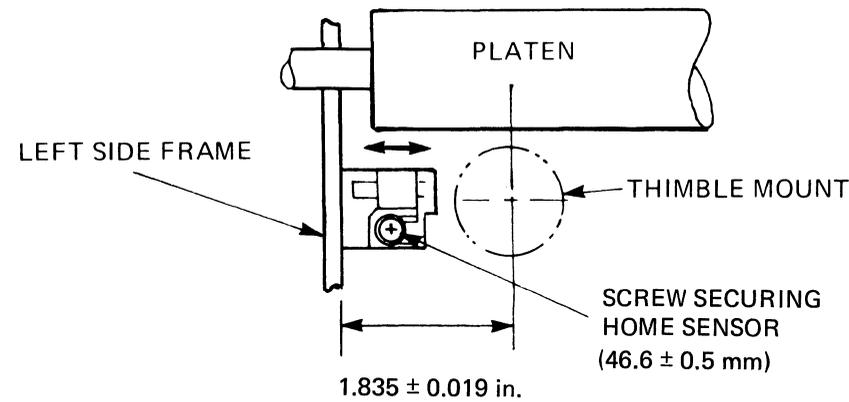


Figure 5-4 First Print Position

- b. If the distance is not correct, loosen the screw holding the home sensor, adjust it, and retighten the screw.
- c. Turn on the power and remeasure the first print position. Readjust if necessary.

5.4 WIRE ROPE TENSION ADJUSTMENT

Use this procedure to adjust the wire rope tension.

- a. Move the carriage to the far right margin.
- b. Remove the cover over the nut near the right guide pulley. Loosen the nut (see Figure 5-5).

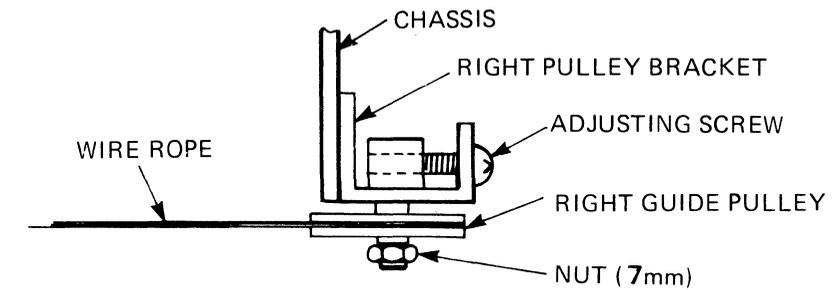


Figure 5-5 Wire Rope Tension Adjustment

- c. Pull up on the upper portion of the wire rope at a point 7.83 inches (199 mm) from the left side frame with a force of 12.25 ounces (350 grams).

NOTE

Use a spring tension gauge with a maximum range of 1 to 2 pounds (about 450 to 900 grams).

- d. Adjust the screw for a wire deflection of 0.24 to 0.28 inches (6 to 7 mm) (see Figure 5-6).

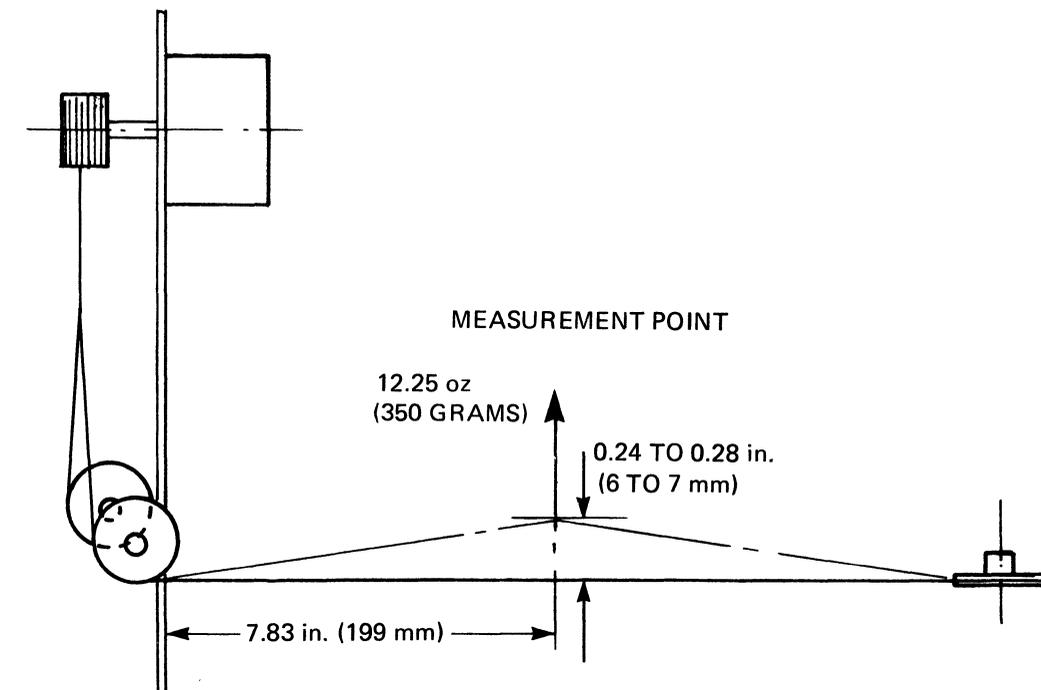


Figure 5-6 Wire Rope Tension Measurement

- e. Manually move the carriage to the far left and far right ten times, then place it again at the far right end.
- f. Remeasure the wire rope tension and adjust the screw if necessary. Tighten the nut on the right guide pulley. Replace the cover.

5.5 COVER OPEN SWITCH ADJUSTMENT

Use this procedure to adjust the cover open switch.

- a. Raise the top cover. Loosen the two screws that hold the microswitch.
- b. Adjust the switch so that the top cover and the maintenance position (cover open switch pulled up) actuate the switch.

CAUTION

Do not adjust the switch so that it bottoms out when the top cover is closed; the switch could be damaged.

5.6 CARRIAGE CABLE ADJUSTMENT

Use this procedure to adjust the carriage cable.

- a. Move the carriage near the right side of the frame and adjust the carriage cable by repositioning it under the cable clamp until the gaps (see Figure 5-7) between the flat cable guide and one side of the cable and the pulley cover and the other side of the cable are more than 0.02 inches (0.5 mm).

5.7 FORMS HANDLING OPTIONS ADJUSTMENTS

This section covers the adjustment procedures for the demand document tractor and the bidirectional forms tractor. The front inserter and single/dual bin cut sheet feeder have separate documentation (see Section 5.7.3).

5.7.1 Demand Document Tractor Adjustments

Use the following procedures to adjust the tractor alignment, belt tension and tractor gear backlash, and paper out switch of the demand document tractor.

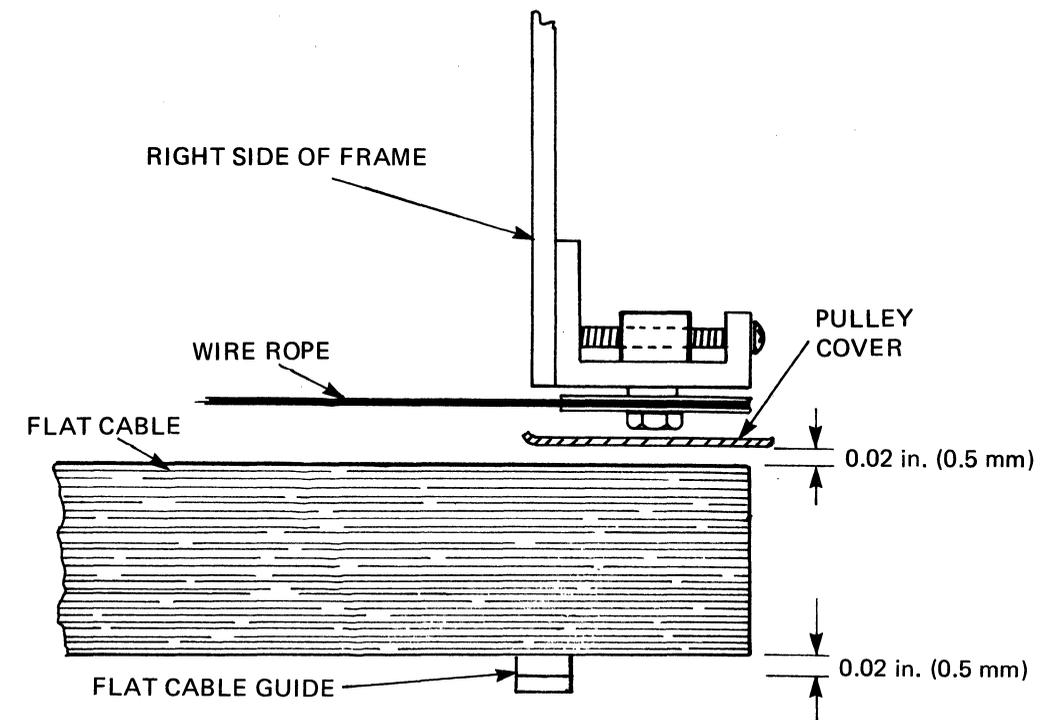


Figure 5-7 Carriage Cable Position

5.7.1.1 Tractor Alignment

When you install or service the demand document tractor, make sure the alignment marks on the tractors are in the same relative position (see Figure 5-8). If they are out of alignment, the demand document tractor must be disassembled and the alignment corrected (see Figure 6-22).

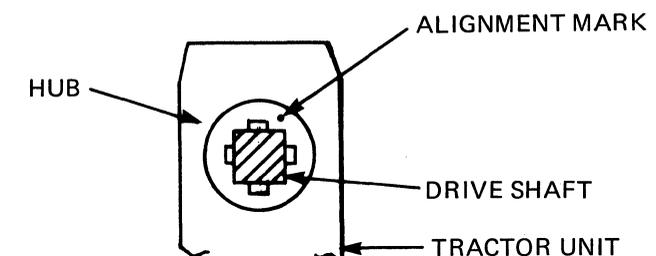


Figure 5-8 Tractor Alignment

5.7.1.2 Belt Tension and Tractor Gear Backlash Adjustment

Use this procedure to adjust the belt tension and tractor gear backlash.

- a. Push at the center of the belt with a force of 1 to 1.3 oz. (30 to 40 grams). The deflection of the belt should be 0.04-inch (1 mm) (see Figure 5-9).
- b. Install the demand document tractor and check that the tractor gear and TR gear turn freely with negligible backlash.

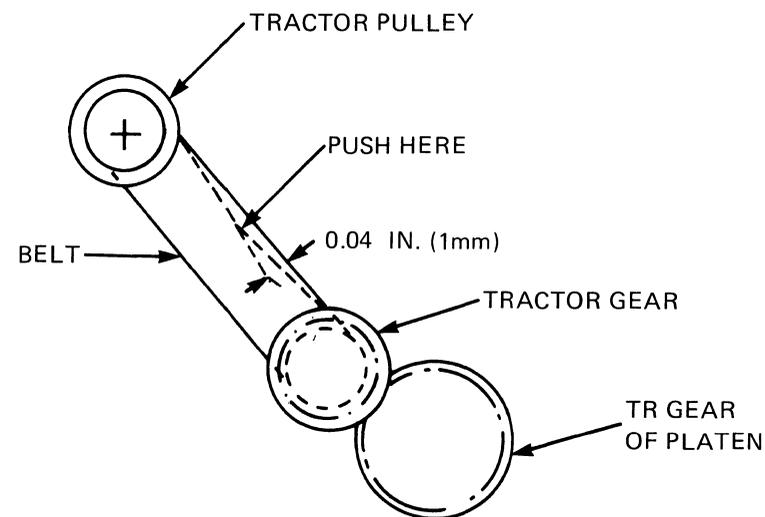


Figure 5-9 Belt Tension and Backlash Adjustment

5.7.1.3 Paper Out Switch Adjustment

The paper out switch should activate when you load paper weighing 99 lbs (45 kg) per ream. If this switch operates incorrectly, carefully bend the switch lever a small amount (see Figure 5-10).

CAUTION

Do not bend this lever too much or too often or the lever may break.

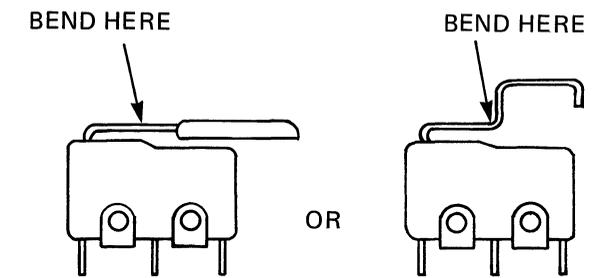


Figure 5-10 Paper Out Switch Adjustment

5.7.2 Bidirectional Forms Tractor Adjustments

This section describes the adjustments for the bidirectional forms tractor forms handling option.

5.7.2.1 Tractor Alignment

The tractor alignment procedure for the bidirectional forms tractor is similar the tractor alignment for the demand document tractor (see section 5.7.1). For disassembly, see Figure 6-21.

5.7.2.2 Belt Tension and Idler Gear Backlash Adjustments

Use this procedure to adjust the belt tension and tractor gear backlash.

- a. Remove the left side cover of the bidirectional forms tractor.
- b. Push at the center of the belt with a force of 0.6 to 1 oz. (20 to 30 grams). The belt should deflect approximately 0.04-inch (1 mm) (see Figure 5-11).
- c. Install the bidirectional forms tractor on the printer and adjust the backlash of the idler gear.

The backlash should be minimal but the gears should move freely.
- d. Replace the left side cover.

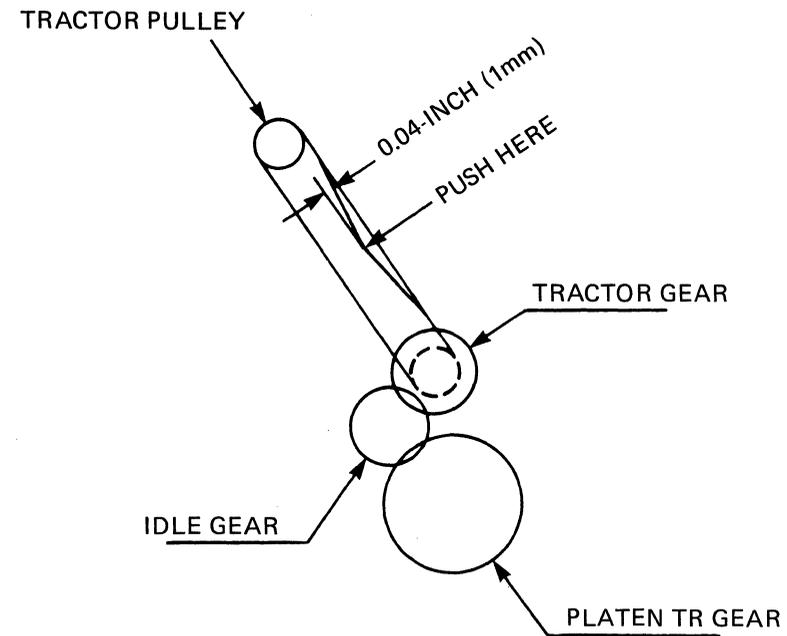


Figure 5-11 Bidirectional Forms Tractor Belt Tension and Idler Gear Backlash Adjustments

5.7.2.3 Paper Out Switch Adjustments

The paper out switch adjustment for the bidirectional forms tractor is similar to that for the demand document tractor (see Section 5.7.4).

5.7.3 Front Inserter and Cut Sheet Feeder Adjustments

For the front inserter and single/dual bin cut sheet feeder adjustment procedures, refer to the following documentation.

3500 Series Front Inserter Operation/Maintenance Manual, Document 819-000064-100x.

3500 Series Single/Dual Bin Cut Sheet Feeder Operation/Maintenance Manual, Document 819-000063-800x.

CHAPTER 6

ILLUSTRATED PARTS BREAKDOWN

This chapter contains the family trees, mechanical illustrated parts breakdown (IPB), and the printed circuit board (PCB) IPB for the 3500 Series Spinwriters. All figure item numbers are ballooned on the applicable exploded view. The item numbers represent the bills of material on the engineering drawings. Because not all items are called out on the drawings, certain item numbers are not used.

6.1 FAMILY TREE

The family tree is formatted as an organizational flowchart and represents the disassembly order of each major assembly, with the higher order assemblies at the left of the illustration and their subordinate subassemblies indented from left to right. Each block within the flowchart contains the part description, part number, and applicable IPB figure number.

6.2 MECHANICAL IPB PARTS LIST

The mechanical IPB is arranged into four columns.

- Item - contains the item numbers referred to in the call-outs.
- Part Number - contains the NEC part number for ordering spare or replacement parts.
- Description - contains a brief description of the part. Attaching hardware, such as screws, nuts, and washers, are described in coded form as shown in the example.

EXAMPLE

CPIMS	x 3	x 6	x 15BF	
				Galvanized pan-head metric screw, where nominal diameter is 3 mm and length is 6 mm with cross groove.
a.	b.	c.	d.	

- Figure Number - contains the figure number for the applicable IPB.

A description of the code follows.

- a. This item is the head code. Examples follow.

CP○MS : Pan-head metric screw with cross groove
 CF○MS : Flat-head metric screw with cross groove
 AHEX○N : A-type hexagon nut
 BHEX○N : B-type hexagon nut
 S○WA : Small washer
 P○WA : Polished washer
 #2○LWA : Spring washer

L-CP○MS }
 S-CP○MS } SEMUSU screw
 P-CP○MS }
 SL-CP○MS }
 PL-CP○MS }

NOTE

The column indicated with ○ has a code that shows the material.

I - Iron
 B - Brass
 ST - Spring Steel

- b. This item shows the nominal diameter in millimeters.
 c. This item shows the length of a screw in millimeters. It is not used for nuts and washers.
 d. This item shows the finish applied to the parts. For example:

15BF - Galvanized, lustrous coloration, chromate finish.

3GF - Lustrous nickel-plated finish.

The SEMUSU screw is always provided with a washer, as shown in the following examples.

- (Head Code) L-CP○MS: Pan-head metric screw with cross groove and spring washer
- P-CP○MS: Pan-head metric screw with cross groove and polished washer
- S-CP○MS: Pan-head metric screw with cross groove and small washer
- PL-CP○MS: Pan-head metric screw with cross groove, spring washer, and polished washer
- SL-CP○MS: Pan-head metric screw with cross groove, spring washer, and small washer

6.3 ELECTRICAL IPB PARTS LIST

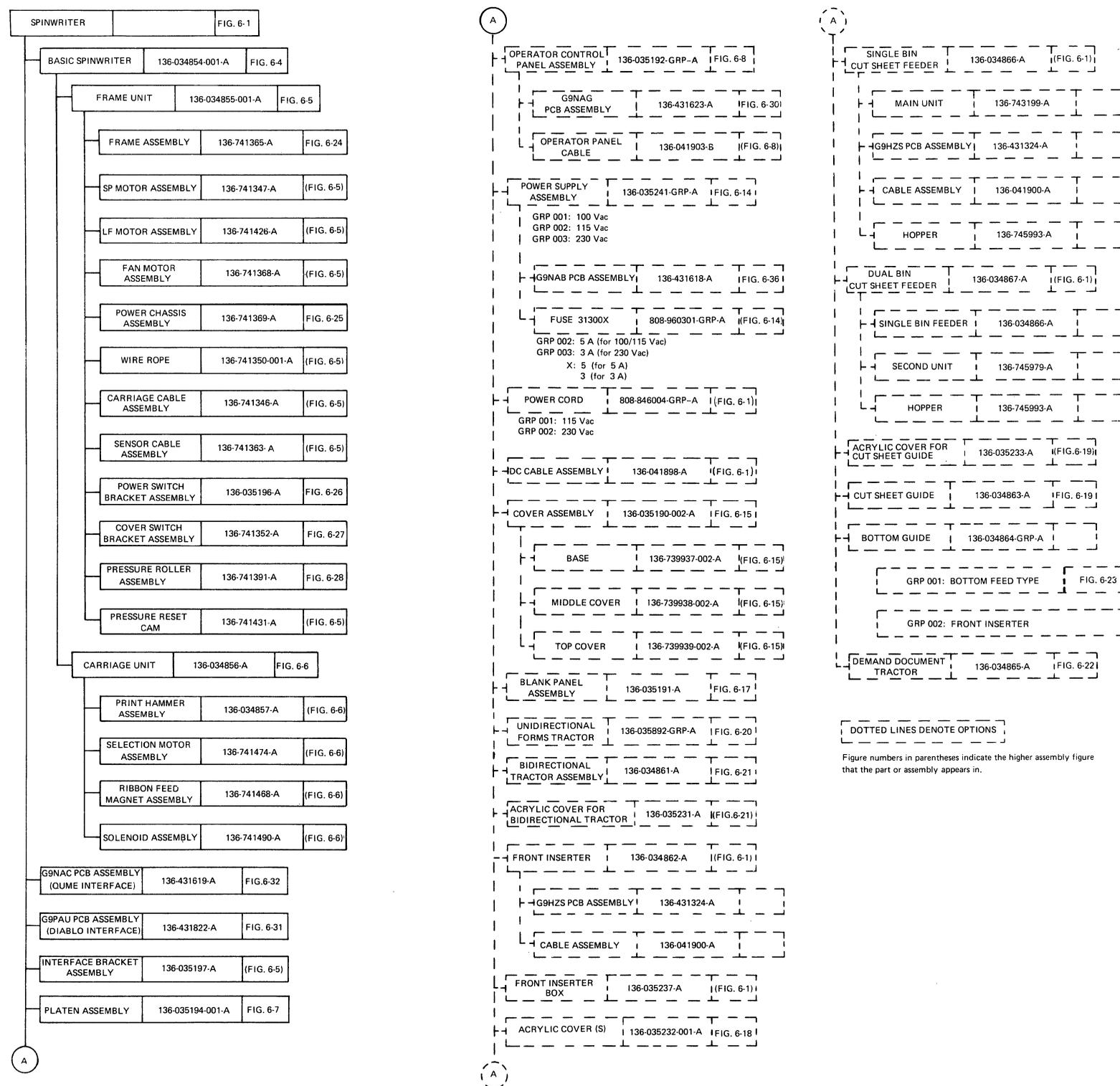
Component designations are an alphanumeric code formed by using the first letter of the component name (for example, C for capacitor) or a letter that is commonly used (for example, Z for integrated circuit) and an assigned number.

FIGURE NUMBER	TITLE	PART NUMBER
6-21	Bidirectional Forms Tractor	136-034861-A
6-22	Demand Document Tractor	136-034865-A
6-23	Bottom Feed Guide	136-034864-001-A
6-24	Frame Assembly	136-741365-A
6-25	Power Chassis Assembly	136-741369-A
6-26	Power Switch Bracket Assembly	136-035196-A
6-27	Cover Switch Bracket Assembly	136-741352-A
6-28	Pressure Roller Assembly	136-741391-A
6-29	Nonvolatile RAM Assembly (option)	
6-30	RS-422 Interface Kit (option)	136-036945-A
6-31	G9PAU PCB Assembly (R4) (3500D)	136-431822-A
6-32	G9NAC PCB Assembly (R1) (3500Q)	136-431619-A
6-33	G9PAS-001 PCB Assembly (R8) (3500R)	136-431820-001-A
6-34	G9NAJ-xxx PCB Assembly (3510/15 (R12/R13) and 3520/25 (R11))	136-431625-GRP-A
6-35	G9PAQ-xxx PCB Assembly (3530 (R13) and 3550 (R14))	136-431818-GRP-A
6-36	G9NAB PCB Assembly (R7) (All Models)	136-431618-A
6-37	G9NAK PCB Assembly (3510 and 3515)	136-431626-A
6-38	G9NAH-001 PCB Assembly (R1) (3520 and 3525)	136-431624-001-A
6-39	G9NAF-003 PCB Assembly (R5) (3530)	136-431622-003-A
6-40	G9NAL PCB Assembly (R1) (3550)	136-431627-A
6-41	G9PAT PCB Assembly (R3) (3500R)	136-431821-A
6-42	G9NAG PCB Assembly (R4) (3500D and 3500Q)	136-431623-GRP-A
6-43	G9PAW PCB Assembly (R2) (NVRAM Option 3510/20 and 3515/25)	136-431824-A
6-44	G9RKY PCB Assembly (R1) (RS-422 Option 3500R, 3510/20, and 3520/25)	136-432106-A

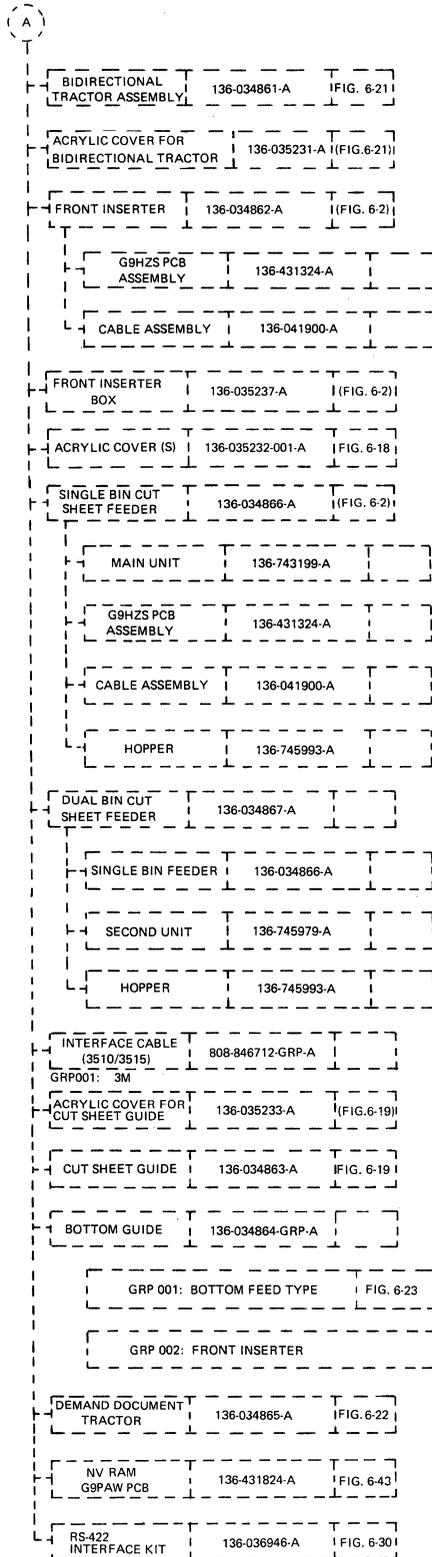
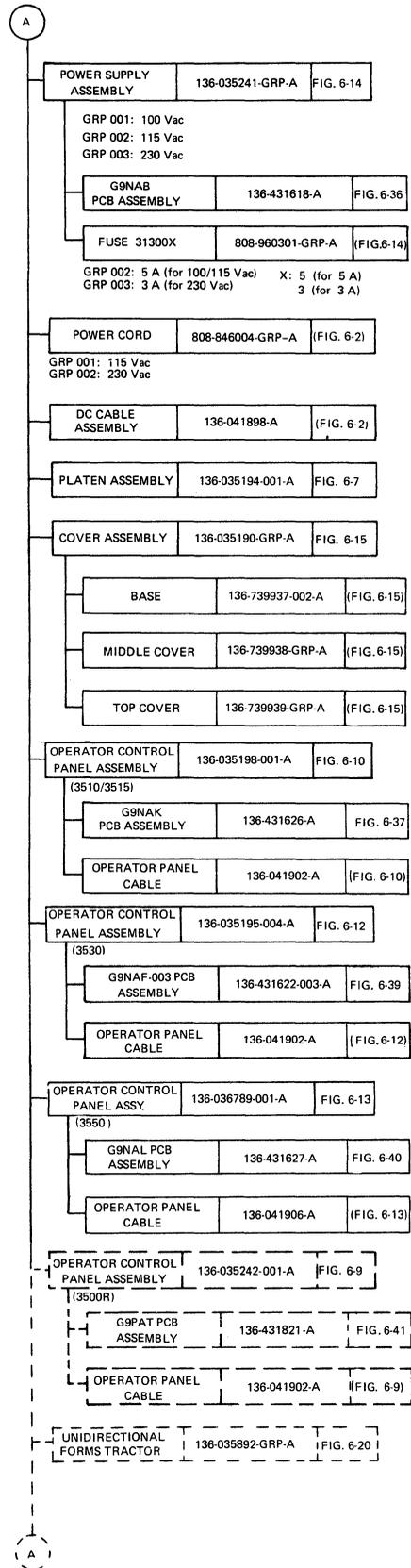
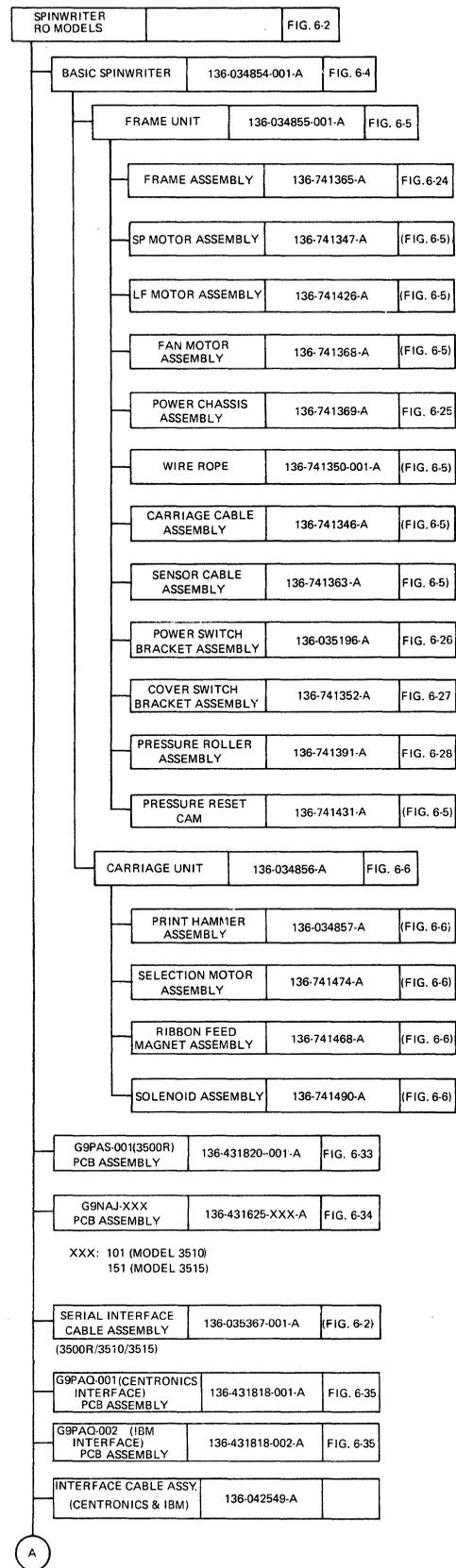
Table 6-1 IPB List of Illustrations

FIGURE NUMBER	TITLE	PART NUMBER
6-1	Spinwriter - Basic Models	
6-2	Spinwriter - RO Models	
6-3	Spinwriter - KSR Models	
6-4	Basic Spinwriter	136-034854-001-A
6-5	Frame Unit	136-034855-001-A
6-6	Carriage Unit	136-034856-A
6-7	Platen Assembly	136-035194-001-A
6-8	Operator Control Panel Assembly 3500D and 3500Q	136-035192-GRP-A
6-9	Operator Control Panel Assembly 3500R	136-035242-001-A
6-10	Operator Control Panel Assembly 3510 and 3515	136-035198-001-A
6-11	Operator Control Panel Assembly 3520 and 3525	136-035198-002-A
6-12	Operator Control Panel Assembly 3530	136-035195-004-A
6-13	Operator Control Panel Assembly 3550	136-036782-001-A
6-14	Power Supply Assembly	136-035241-GRP-A
6-15	Cover Assembly RO	136-035190-002-A
6-16	Cover Assembly KSR	136-035583-001-A
6-17	Blank Panel Assembly	136-035191-A
6-18	Acrylic Cover (S) Assembly	136-035232-001-A
6-19	Cut Sheet Guide	136-034863-002-A
6-20	Unidirectional Forms Tractor	136-035892-GRP-A

FAMILY TREE - BASIC MODELS



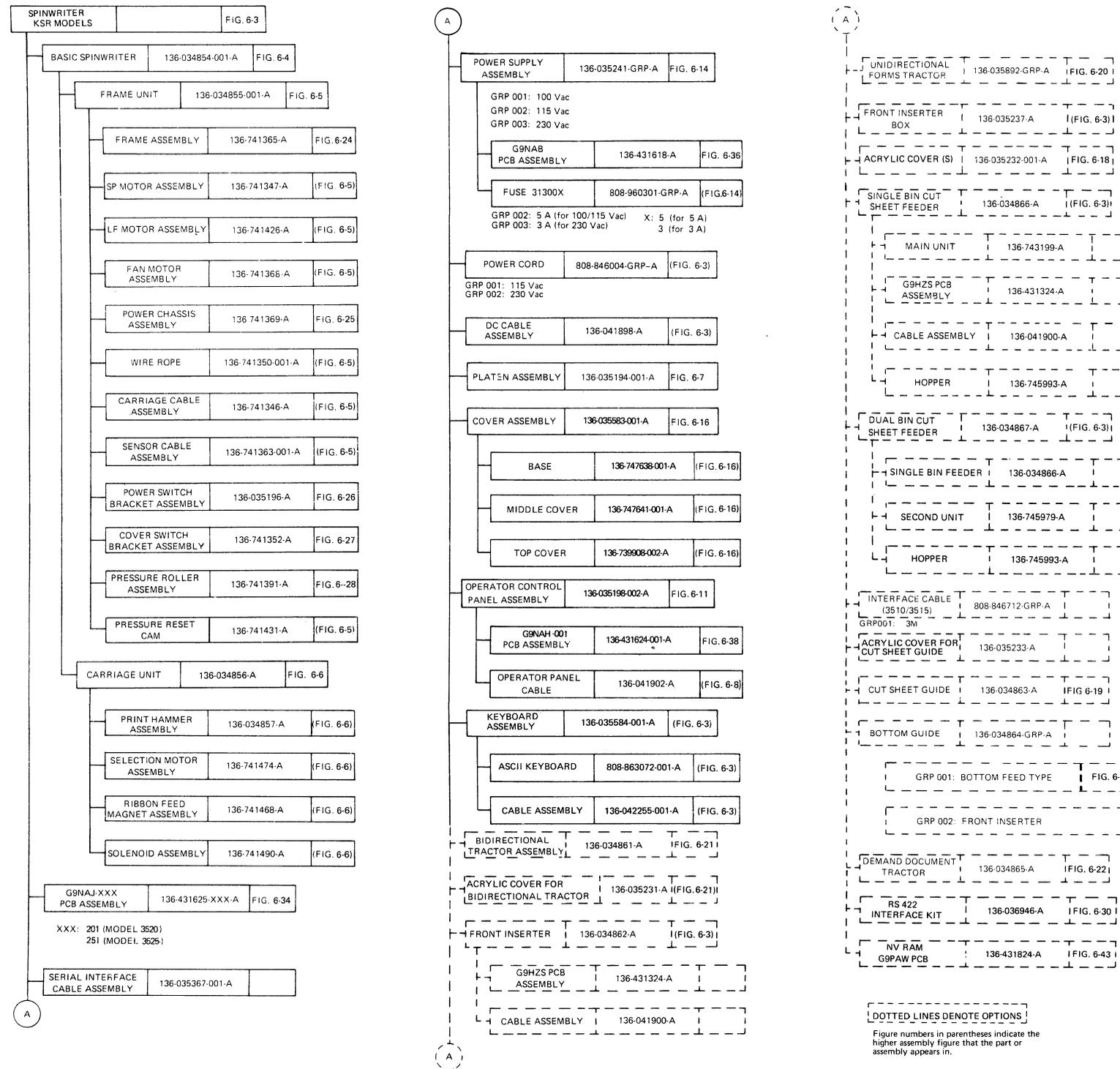
FAMILY TREE - RO MODELS



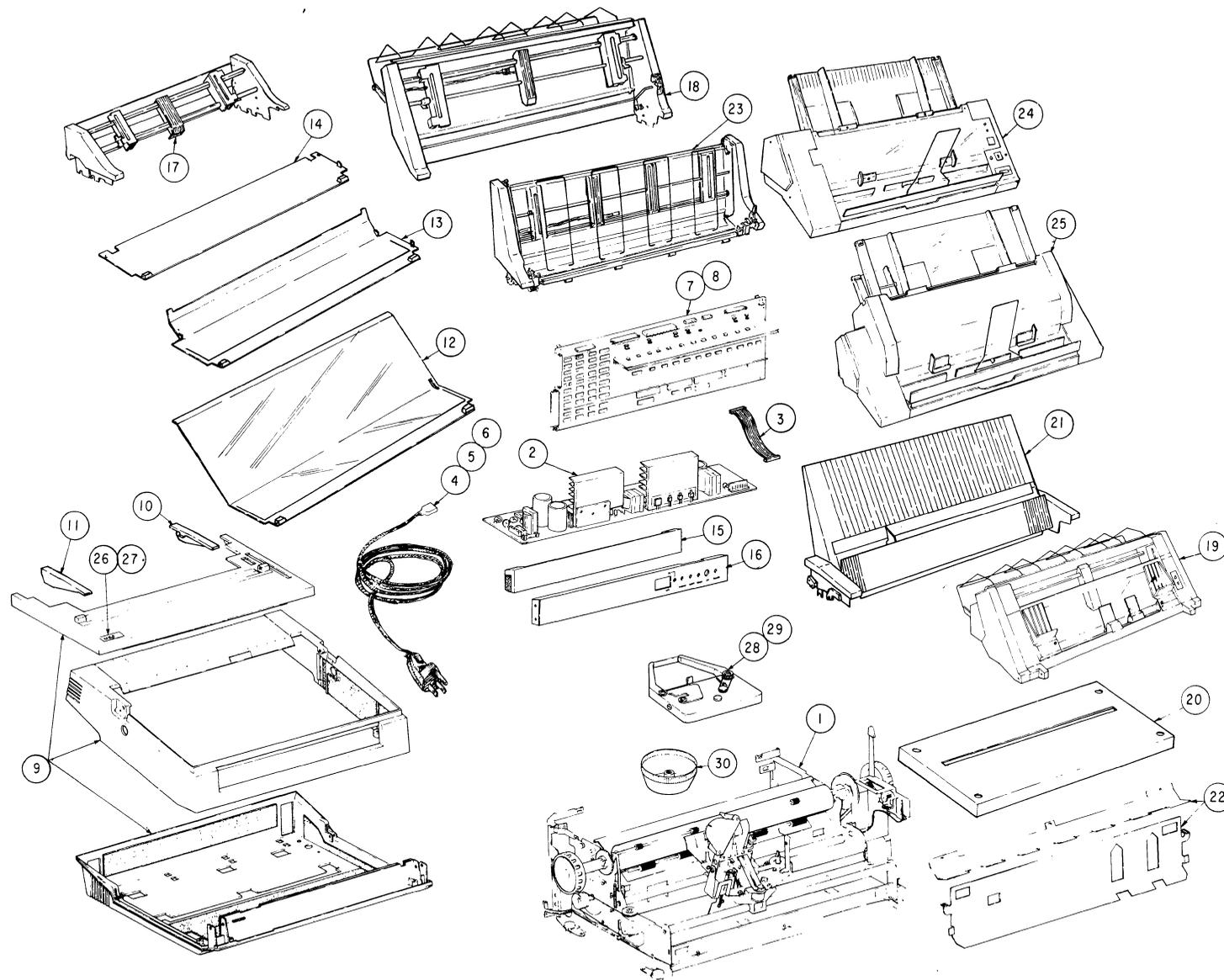
DOTTED LINES DENOTE OPTIONS

Figure numbers in parentheses indicate the higher assembly figure that the part or assembly appears in.

FAMILY TREE - KSR MODELS

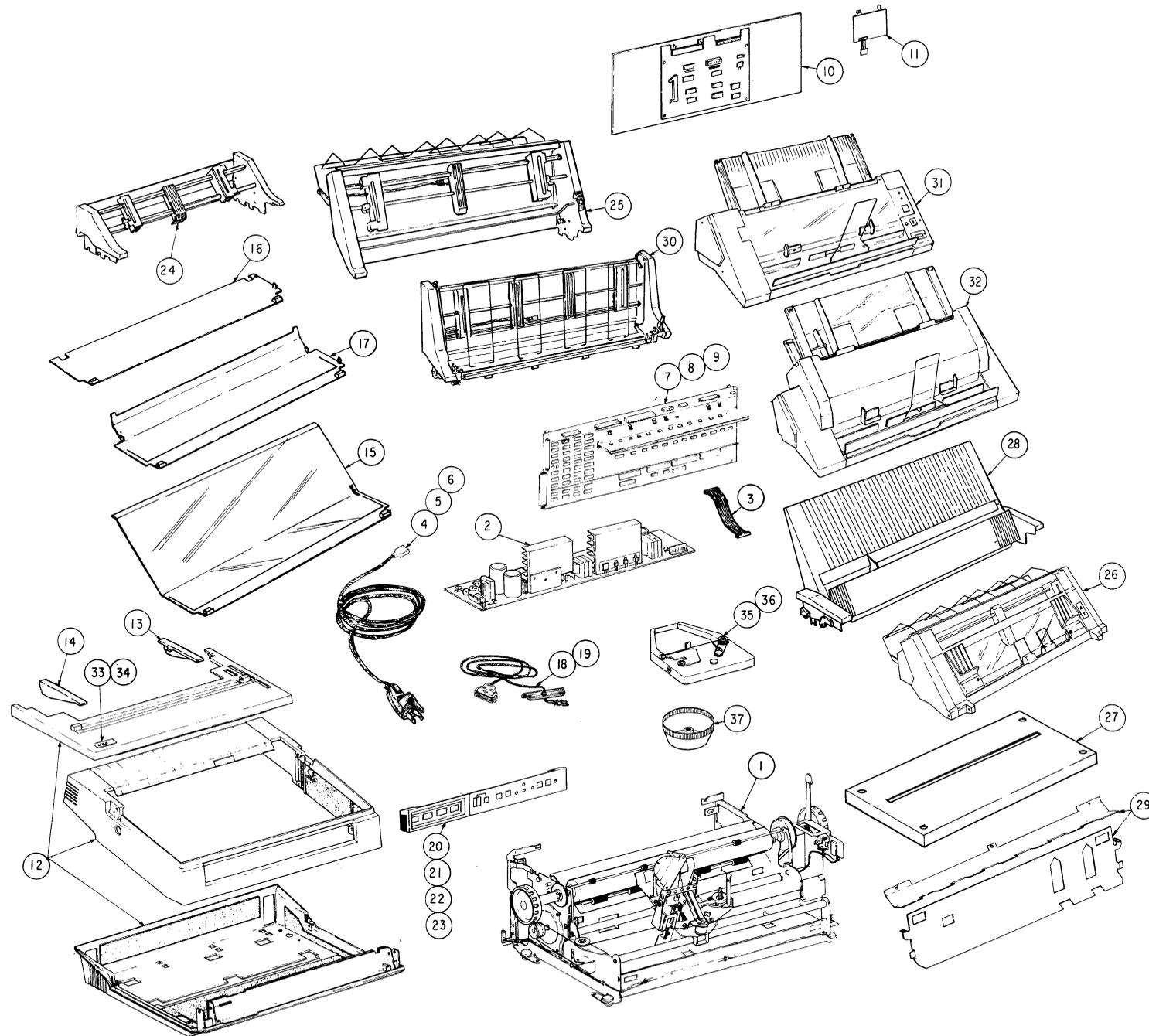


Spinwriter - Basic Models (3500Q and 3500D)



ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-034854-001-A	Basic Spinwriter (see Figure 6-4 for Breakdown)	1
2	136-035241-GRP-A	Power Supply Assembly (see Figure 6-14 for Breakdown)	1
3	136-041898-A	DC Cable Assembly	1
4	136-041392-001-A	Power Cord - 100 V	1
5	808-846004-001-A	Power Cord - 115 V	1
6	808-846004-002-A	Power Cord - 230 V	1
7	136-431619-A	G9NAC PCB Assembly (Qume Interface) (see Figure 6-32 for Breakdown)	1
8	136-431822-A	G9PAU PCB Assembly (Diablo Interface) (see Figure 6-31 for Breakdown)	1
9	136-035190-002-A	Cover Assembly (see Figure 6-15 for Breakdown)	1
10	136-741518-001-A	Cover Insert (R)	1
11	136-741518-002-A	Cover Insert (L)	1
12	136-035231-A	Acrylic Cover Assembly (L) for Bidirectional Tractor	1
13	136-035232-001-A	Acrylic Cover Assembly (S)	1
14	136-035233-A	Acrylic Cover Assembly (C) for Cut Sheet Guide	1
15	136-035191-A	Blank Panel Assembly (see Figure 6-17 for Breakdown)	1
16	136-035192-GRP-A	Operator Control Panel Assembly (see Figure 6-8 for Breakdown)	1
17	136-035892-GRP-A	Unidirectional Forms Tractor (See Figure 6-20 for Breakdown)	1
18	136-034861-A	Bidirectional Forms Tractor Assembly (see Figure 6-21 for Breakdown)	1
19	136-034862-A	Front Inserter	1
20	136-035237-A	Front Inserter Box	1
21	136-034863-002-A	Cut Sheet Guide (see Figure 6-19 for Breakdown)	1
22	136-034864-001-A	Bottom Feed Guide (see Figure 6-23 for Breakdown)	1
22	136-034864-002-A	Bottom Guide for Front Inserter	1
23	136-034865-A	Demand Document Tractor (see Figure 6-22 for Breakdown)	1
24	136-034866-A	One Bin Sheet Feeder	1
25	136-034867-A	Two Bin Sheet Feeder	1
26	136-700358	Label	1
27	158-030000-295	Label	1
28	808-862739-GRP-A	Ribbon Cartridge - Fabric	AR
29	808-862740-101-A	Ribbon Cartridge - Multistrike	AR
30	803-020004-GRP-A	Print Thimble	AR

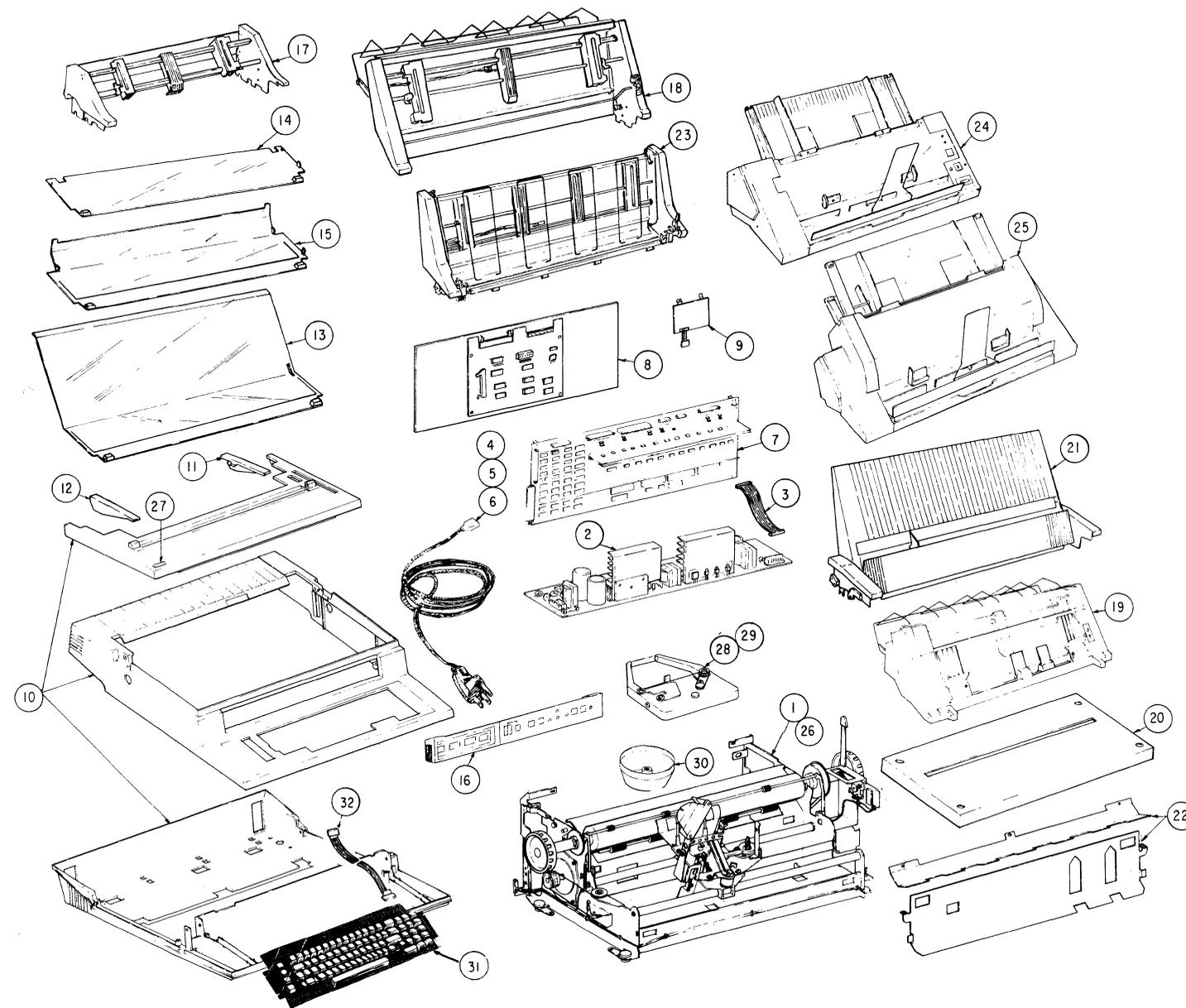
Figure 6-1 Spinwriter - Basic Models



ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-034854-001-A	Basic Spinwriter (see Figure 6-4 for Breakdown)	1
2	136-035241-GRP-A	Power Supply Assembly (see Figure 6-14 for Breakdown)	1
3	136-041898-A	DC Cable Assembly	1
4	136-042550-A	DC Cable Assembly (3530 and 3550)	1
5	136-041392-001-A	Power Cord - 100 V	1
6	808-846004-001-A	Power Cord - 115 V	1
7	808-846004-002-A	Power Cord - 230 V	1
8	136-431625-GRP-A	G9NAJ-xxx PCB Assembly (3510/3515) (see Figure 6-34 for Breakdown) xxx=101 (for 3510) 251 (for 3515)	1
9	136-431818-GRP-A	G9PAQ-xxx PCB Assembly (3530 and 3550) (see Figure 6-35 for Breakdown) xxx=001 (for 3530) 002 (for 3550)	1
10	136-431820-001-A	G9PAS-001 PCB Assembly (3500R) (see Figure 6-33 for Breakdown)	1
11	136-432106-A	G9RKY PCB Assembly (RS-422 Option 3500R, 3510/3515) (see Figure 6-44 for Breakdown)	1
12	136-431824-A	G9PAW PCB Assembly (Nonvolatile RAM Option 3510/3515) (see Figure 6-43 for Breakdown)	1
13	136-035190-002-A	Cover Assembly (See Figure 6-15 for Breakdown)	1
14	136-741518-001-A	Cover Insert (R)	1
15	136-741518-002-A	Cover Insert (L)	1
16	136-035231-A	Acrylic Cover Assembly (L) for Bidirectional Tractor	1
17	136-035232-001-A	Acrylic Cover Assembly (S) (see Figure 6-18 for Breakdown)	1
18	136-035233-A	Acrylic Cover Assembly (C) for Cut Sheet Guide	1
19	136-035199-101-A	Serial Interface Accessory (3500R/3510/3515)	1
20	136-035200-GRP-A	Centronics Interface Accessory (3530)	1
21	136-036782-001-A	Operator Control Panel (3550) (See Figure 6-13 for Breakdown)	1
22	136-035195-004-A	Operator Control Panel Assembly (3530) (see Figure 6-12 for Breakdown)	1
23	136-035198-001-A	Operator Control Panel Assembly (3510/3515) (see Figure 6-10 for Breakdown)	1
24	136-035242-001-A	Operator Control Panel Assembly (3500R) (see Figure 6-9 for Breakdown)	1
25	136-035892-GRP-A	Unidirectional Forms Tractor Assembly (See Figure 6-20 for Breakdown)	1
26	136-034861-A	Bidirectional Forms Tractor Assembly (see Figure 6-20 for Breakdown)	1
27	136-034862-A	Front Inserter	1
28	136-035237-A	Front Inserter Box	1
29	136-034863-002-A	Cut Sheet Guide (see Figure 6-19 for Breakdown)	1
30	136-034864-001-A	Bottom Feed Guide (see Figure 6-23 for Breakdown)	1
31	136-034864-002-A	Bottom Guide for Front Inserter	1
32	136-034865-A	Demand Document Tractor (see Figure 6-22 for Breakdown)	1
33	136-034866-A	One Bin Sheet Feeder	1
34	136-034867-A	Two Bin Sheet Feeder	1
35	136-700358	Label	1
36	158-030000-295	Label	1
37	808-862739-GRP-A	Ribbon Cartridge - Fabric	AR
	808-862740-101-A	Ribbon Cartridge - Multistrike	AR
	803-020004-GRP-A	Print Thimble	AR

Figure 6-2 Spinwriter - RO Models

Spinwriter - KSR Models (3520 and 3525)



ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-034854-001-A	Basic Spinwriter (see Figure 6-4 for Breakdown)	1
2	136-035241-GRP-A	Power Supply Assembly (see Figure 6-14 for Breakdown)	1
3	136-041898-A	DC Cable Assembly	1
4	136-041392-001-A	Power Cord - 100 V	1
5	808-846004-001-A	Power Cord - 115 V	1
6	808-846004-002-A	Power Cord - 230 V	1
7	136-431625-GRP-A	G9NAJ-xxx PCB Assembly (3520/3525) (see Figure 6-34 for Breakdown) xxx=201 (for 3520) 251 (for 3525)	1
8	136-432106-A	G9RKY PCB Assembly (RS-422 Option) (see Figure 6-44 for Breakdown)	1
9	136-431824-A	G9PAW PCB Assembly (Nonvolatile RAM Option)	1
10	136-035583-001-A	Cover Assembly (See Figure 6-16 for Breakdown)	1
11	136-741518-001-A	Cover Insert (R)	1
12	136-741518-002-A	Cover Insert (L)	1
13	136-035231-A	Acrylic Cover Assembly (L) for Bidirectional Tractor	1
14	136-035232-001-A	Acrylic Cover Assembly (S) (see Figure 6-18 for Breakdown)	1
15	136-035233-A	Acrylic Cover Assembly (C) for Cut Sheet Guide	1
16	136-035198-002-A	Operator Control Panel Assembly (3520/3525) (see Figure 6-11 for Breakdown)	1
17	136-035892-GRP-A	Unidirectional Forms Tractor Assembly (See Figure 6-20 for Breakdown)	1
18	136-034861-A	Bidirectional Forms Tractor Assembly (see Figure 6-21 for Breakdown)	1
19	136-034862-A	Front Inserter	1
20	136-035237-A	Front Inserter Box	1
21	136-034863-002-A	Cut Sheet Guide (see Figure 6-19 for Breakdown)	1
22	136-034864-001-A	Bottom Feed Guide (see Figure 6-23 for Breakdown)	1
22	136-034864-002-A	Bottom Guide for Front Inserter	1
23	136-034865-A	Demand Document Tractor (see Figure 6-22 for Breakdown)	1
24	136-034866-A	One Bin Sheet Feeder	1
25	136-034867-A	Two Bin Sheet Feeder	1
26	136-700358	Label	1
27	158-030000-295	Label	1
28	808-862739-GRP-A	Ribbon Cartridge - Fabric	AR
29	808-862740-101-A	Ribbon Cartridge - Multistrike	AR
30	803-020004-GRP-A	Print Thimble	AR
31	808-863072-001-A	ASCII Keyboard	1
32	136-042255-001-A	Cable Assembly	1

Figure 6-3 Spinwriter - KSR Models

136-034854-001-A Basic Spinwriter
 (see Figures 6-1, 6-2, or 6-3 For Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-034855-001	Frame Unit (see Figure 6-5 for Breakdown)	1
2	136-034856-A	Carriage Unit (see Figure 6-6 for Breakdown)	1

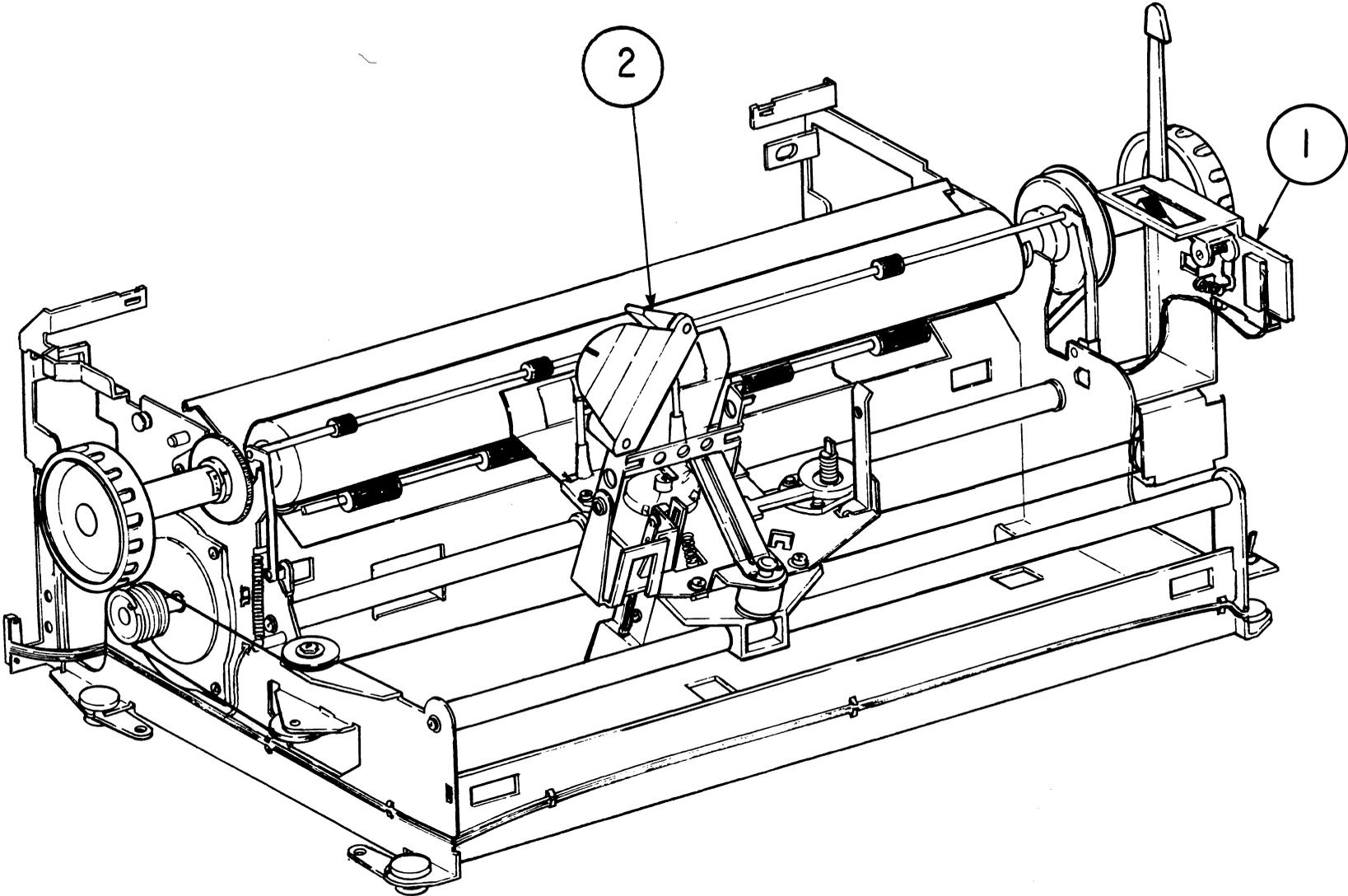


Figure 6-4 Basic Spinwriter

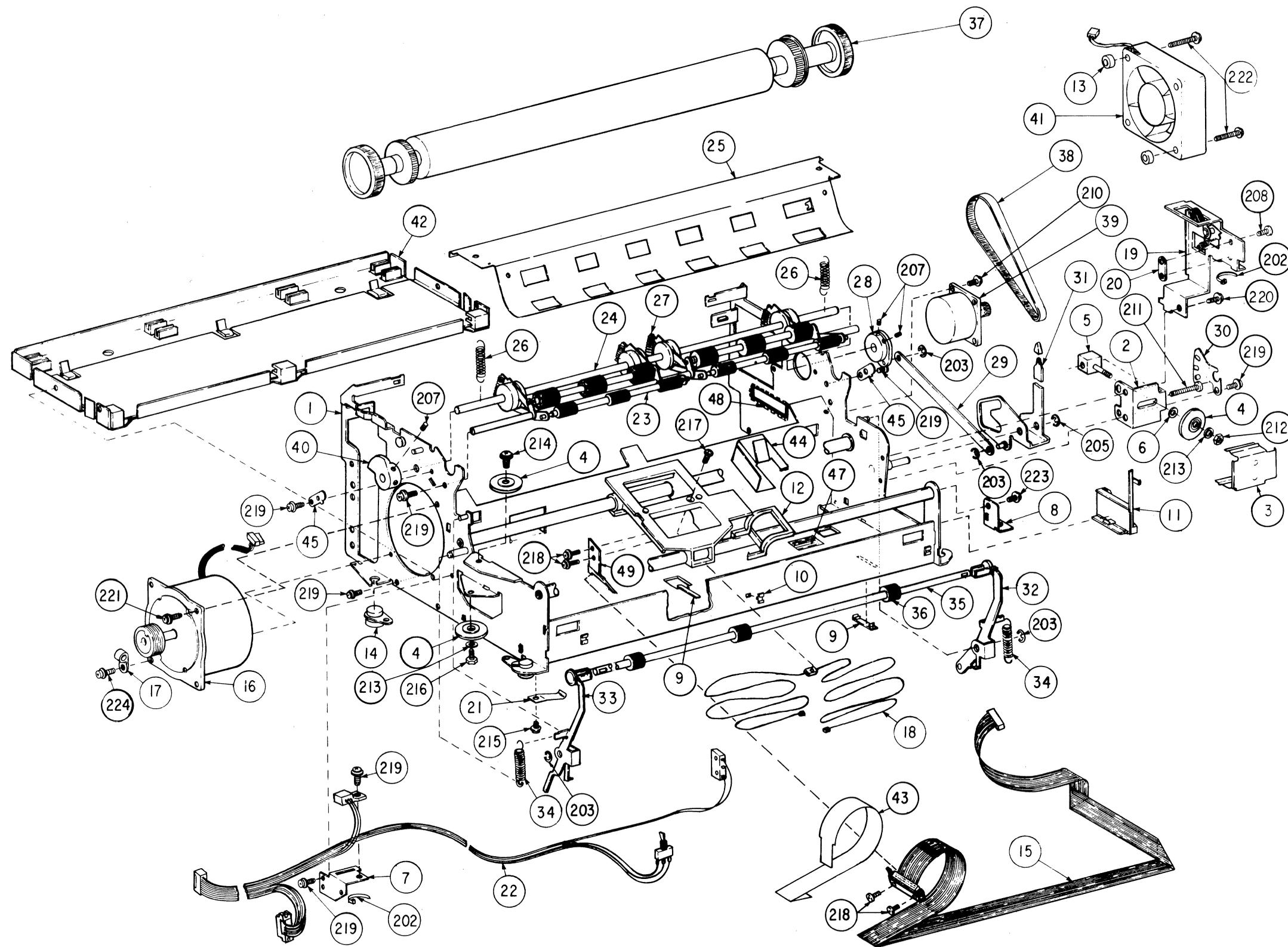


Figure 6-5 Frame Unit

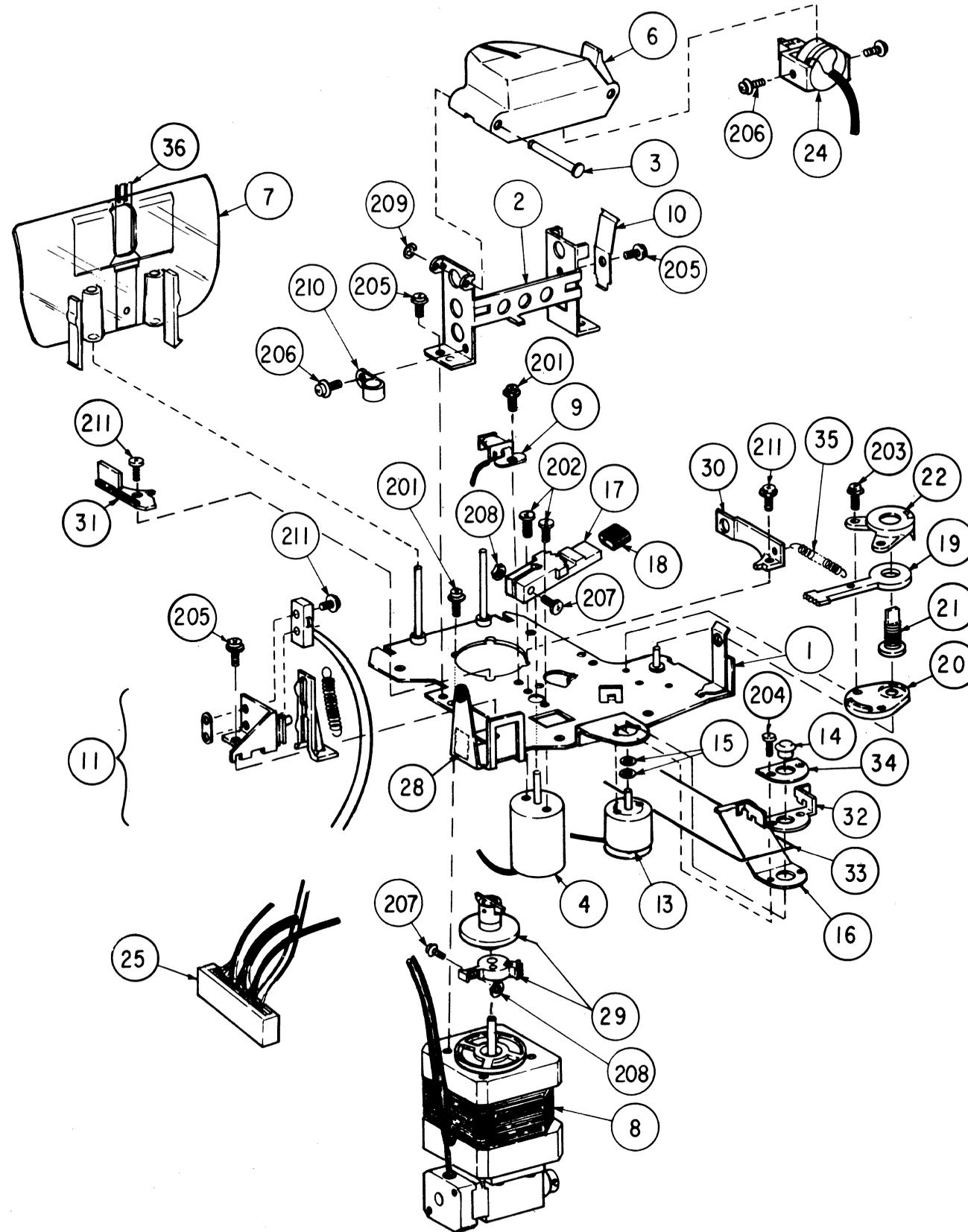
136-034855-001-A Frame Unit
(See Figure 6-4 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-741365-A	Frame Assembly	1
2	136-741338-A	Pulley Bracket (Right)	1
3	136-741366-A	Pulley Cover	1
4	803-020001-A	Guide Pulley	3
5	136-722887-A	Special Screw	1
6	136-722902-A	Special Washer	1
7	136-741361-A	SP Sensor Bracket	1
8	136-741362-A	Hammer Switch Bracket	1
9	136-741339-A	Frame Cable Clamp (A)	1
10	136-741341-A	Frame Cable Clamp (C)	5
11	136-741342-A	Cable Guide	1
12	136-741337-A	Cable Clamp (CR)	1
13	136-741334-A	Spacer	2
14	136-741345-A	Rubber Foot	4
15	136-741346-A	Carriage Cable Assembly	1
16	136-741347-A	SP Motor Assembly	1
17	803-070031-003-A	Nylon Clip (HP3N)	1
18	136-741350-001-A	Wire Rope Assembly	1
19	136-741352-A	Cover Switch Bracket (See Figure 6-27 for Breakdown)	1
20	136-741485-A	Screw Plate	1
21	136-741364-A	Frame Ground Plate	2
22	136-741363-A	Sensor Cable Assembly	1
23	136-741391-A	Pressure Roller Assembly (See Figure 6-28 for Breakdown)	1
24	136-741431-A	Pressure Reset Cam	1
25	136-747802-A	Paper Guide	1
26	136-741404-A	Spring, Paper Guide	2
27	136-741405-A	Spring, Pressure Plate	4
28	136-741400-A	Reset Arm	1
29	136-741406-A	Link, Reset Arm	1
30	136-741407-A	Release Cam Detent Spring	1
31	136-741408-A	Release Cam	1
32	136-747806-A	Right Latch Bail Arm	1
33	136-747807-A	Left Latch Bail Arm	1
34	136-741417-A	Spring, Bail Arm	2
35	136-747805-A	Bail Shaft	1
36	808-805000-A	Bail Roller	3
37	136-035194-001-A	Platen Assembly	1
38	808-805049-001-A	Micro-Pitch Belt (140T-80-9.5)	1
39	136-741426-A	LF Motor	1
40	136-741429-A	Insertion Switch Cam	1
41	136-741368-A	Fan	1
42	136-741369-A	Power Chassis Assembly (See Figure 6-25 for Breakdown)	1
43	136-741375-001-A	Frame Ground Plate A (CR)	1
44	136-741376-A	Frame Ground Plate B (CR)	1
45	136-741343-A	Platen Lock Plate	2
47	136-701847-A	Label	1
48	136-741383-A	Cable Guard	1
49	136-741335-B	Cable Connector Bracket, Carriage	1
202	808-814074-001-A	IB Tie	3
203	803-010030-032-0	E-32 E-Ring	4
205	803-010030-050-0	E-50 E-Ring	1
206	804-030165-0	Grease	AR
207	808-802002-408-0	Set Screw M4L8	4
208	805-300002-012-0	PL-CPIMSx2x12x15BF	2
210	805-300003-010-0	PL-CPIMSx3x10x15BF	2
211	805-000004-025-0	CPIMSx4x25x15BF	1
212	805-500004-0	AHEXINx4x15BF	1
213	805-622004-0	#2STLWax4x15BF	2

136-034855-001-A Frame Unit (cont'd)
(See Figure 6-4 for Next Higher Assembly)

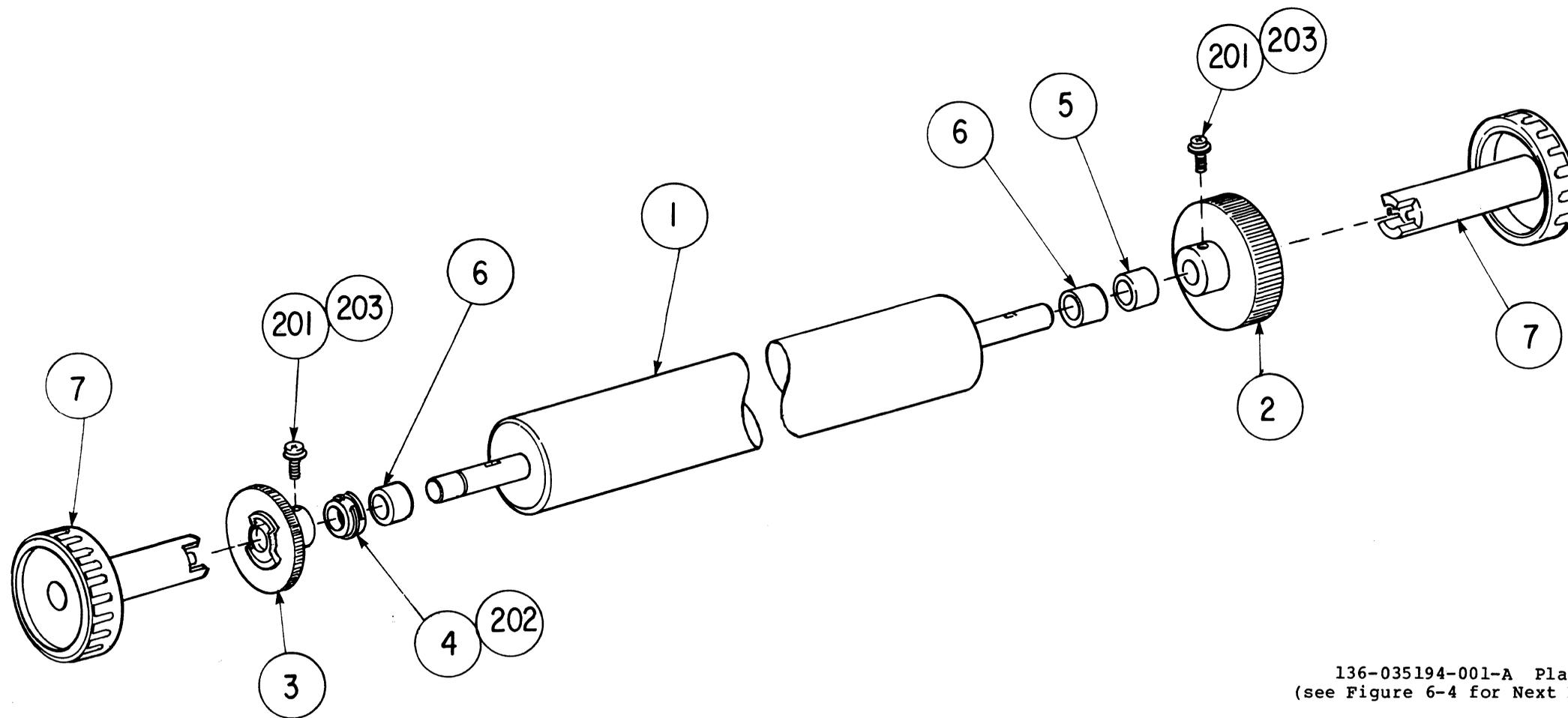
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214	805-330004-008-0	L-CPIMSx4x8x15BF	1
215	805-300003-005-0	PL-CPIMSx3x5x15BF	2
216	805-050004-008-0	HEXIMSx4x8x15BF	1
217	805-310003-010-0	SL-CPIMSx3x10x15BF	5
218	805-310025-010-0	SL-CPIMSx2.5x10x15BF	4
219	805-300004-008-0	PL-CPIMSx4x8x15BF	10
220	805-300004-010-0	PL-CPIMSx4x10x15BF	1
221	805-300004-012-0	PL-CPIMSx4x12x15BF	3
222	805-300004-045-0	PL-CPIMSx4x45x15BF	2
223	805-300003-002-0	PL-CPIMSx3x6x15BF	1
224	805-300004-014-0	PL-CPIMSx4x14x15BF	1

136-034856-A Carriage Unit
(see Figure 6-4 for Next Higher Assembly)



ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-741461-A	Carriage Frame	1
2	136-741466-A	Hammer Bracket	1
3	136-741467-A	Hammer Support Shaft	2
4	136-741468-A	Ribbon Feed Magnet	1
6	136-741472-A	Hammer Cover	1
7	136-741473-A	Card Holder (Standard)	1
	136-746608-A	Card Holder (Demand Document Tractor)	1
	136-740724-A	Card Holder (Front Inserter)	1
8	136-741474-A	Selection Motor	1
9	136-741475-A	Pickup Assembly	1
10	136-741479-A	Hammer Lock Spring	1
11	136-741480-A	Switch Assembly	1
13	136-741490-A	Solenoid	1
14	136-741491-A	Solenoid Cap	1
15	136-741492-A	Solenoid Spacer	2
16	136-741493-A	Ribbon Change Spring	1
17	136-741494-A	Ribbon Feed Gear	1
18	136-741495-A	Stopper, Rubber	1
19	136-741496-A	Ribbon Feed Arm	1
20	136-741497-A	Ribbon Clutch Base	1
21	136-741498-A	Ribbon Feed Clutch Assembly	1
22	136-741502-A	Ribbon Clutch Cover	1
24	136-034857-C	Print Hammer Assembly	1
25	808-955141-114-A	Connector	1
28	136-700608-001-A	Label	1
29	136-741514-B	Thimble Mount Unit	1
30	136-741519-A	Protection Bracket (R)	1
31	136-741523-A	Protection Bracket (L)	1
32	136-741520-A	Spring Holder	1
33	136-741521-A	Spring	1
34	136-741522-A	Plate	1
35	136-741528-A	Spring (RF)	1
36	136-747809-A	Print Mask	1
201	805-310003-008-0	SL-CPIMSx3x8x15BF	7
202	805-310003-006-0	SL-CPIMSx3x6x15BF	2
203	805-300003-010-0	PL-CPIMSx3x10x15BF	2
204	805-310025-007-0	SL-CPIMSx2.5x7x15BF	2
205	805-300003-006-0	PL-CPIMSx3x6x15BF	4
206	805-300003-008-0	PL-CPIMSx3x8x15BF	3
207	805-000003-010-0	CPIMSx3x10x15BF	1
208	805-500003-0	AHEXINx3x15BF	1
209	803-010030-024-0	E-24 E-Ring	2
210	803-070031-006-0	Cable Clamp HP-6N	1
211	805-310003-010-0	SL-CPIMSx3x10x15BF	2

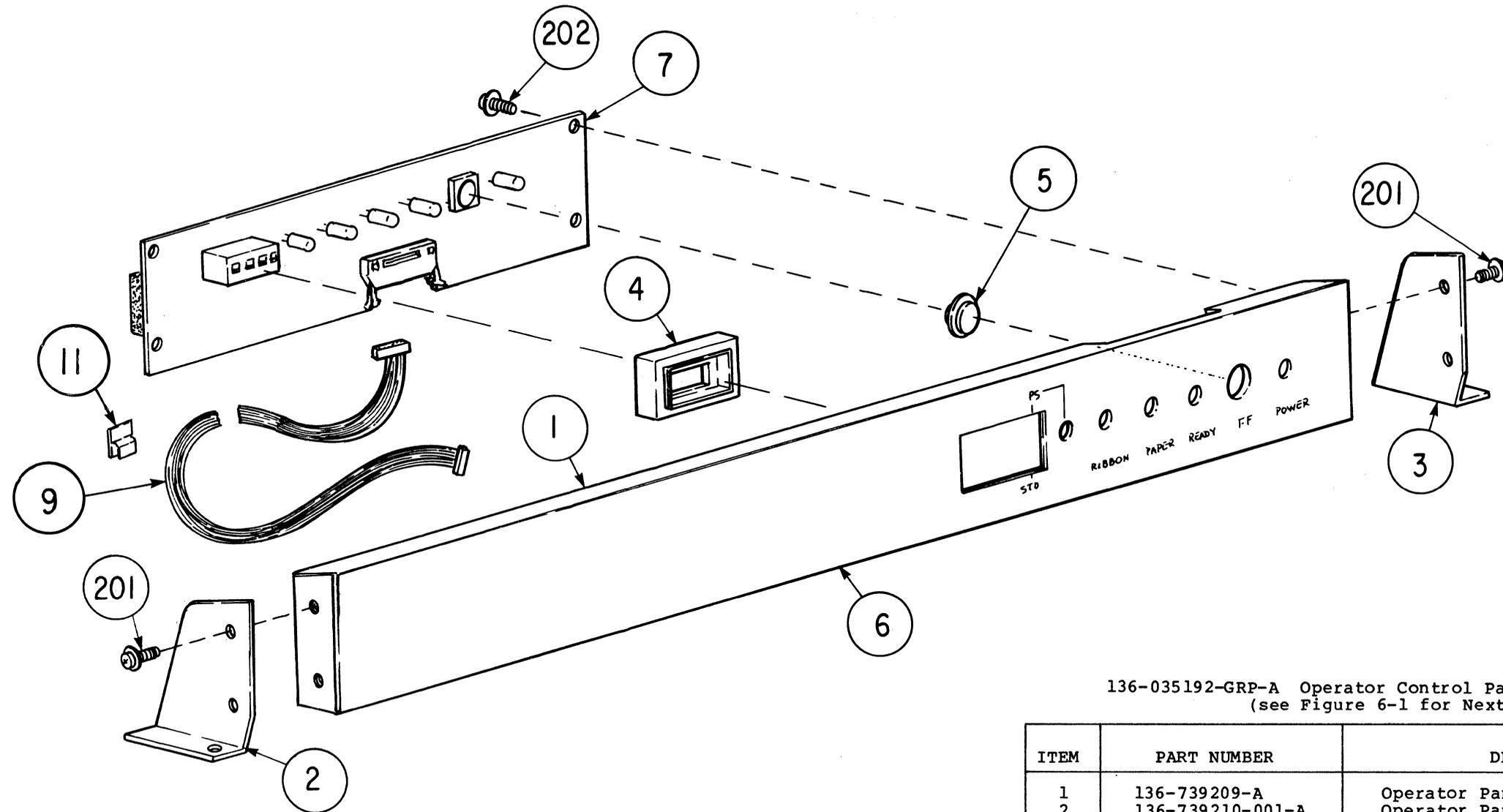
Figure 6-6 Carriage Unit



136-035194-001-A Platen Assembly
(see Figure 6-4 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-741419-001-A	Platen	1
2	136-741459-A	Platen Pulley	1
3	136-741421-A	TR Gear	1
4	136-741422-A	Platen Bushing (L)	1
5	136-741423-A	Platen Bushing (R)	1
6	136-741424-A	Platen Collar	2
7	136-741425-A	Platen Knob	2
201	805-310004-012-0	SL-CPIMSx4x12x15BF	2
202	840-030165-0	Lubricant	1.5 g
203	808-835000-004-A	Screw Lock	AR

Figure 6-7 Platen Assembly

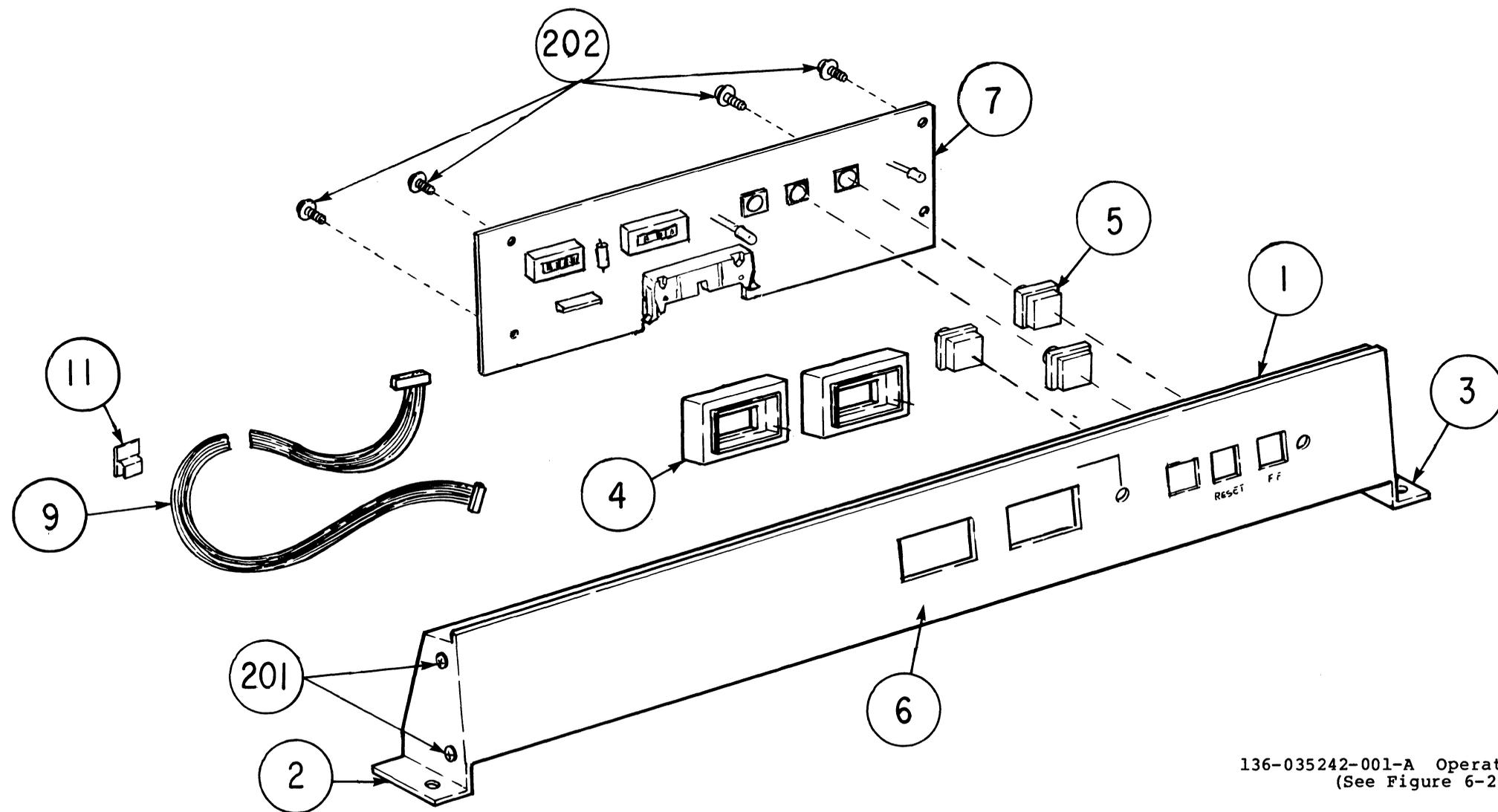


136-035192-GRP-A Operator Control Panel Assembly - 3500Q and 3500D
(see Figure 6-1 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY	
			001*	002*
1	136-739209-A	Operator Panel	1	1
2	136-739210-001-A	Operator Panel Bracket (L)	1	1
3	136-739210-002-A	Operator Panel Bracket (R)	1	1
4	136-739211-B	Switch Frame	1	1
5	136-739212-A	Switch Plate	1	
6	136-739213-A	Dress Sheet	1	
6	136-742539-A	Dress Sheet D		1
7	136-431623-A	G9NAG PCB Assembly (see Figure 6-36 for Breakdown)	1	1
9	136-041903-B	Operator Panel Cable	1	1
11	808-814112-0	Cable Clamp	1	1
201	805-300004-008-0	PL-CPIMSx4x8x15BF	4	4
202	805-300003-008-0	PL-CPIMSx3x8x15BF	4	4

NOTE: The Operator Control Panel Assembly shown is for Model 3500Q.
* GRP 001 is for Model 3500Q
GRP 002 is for Model 3500D

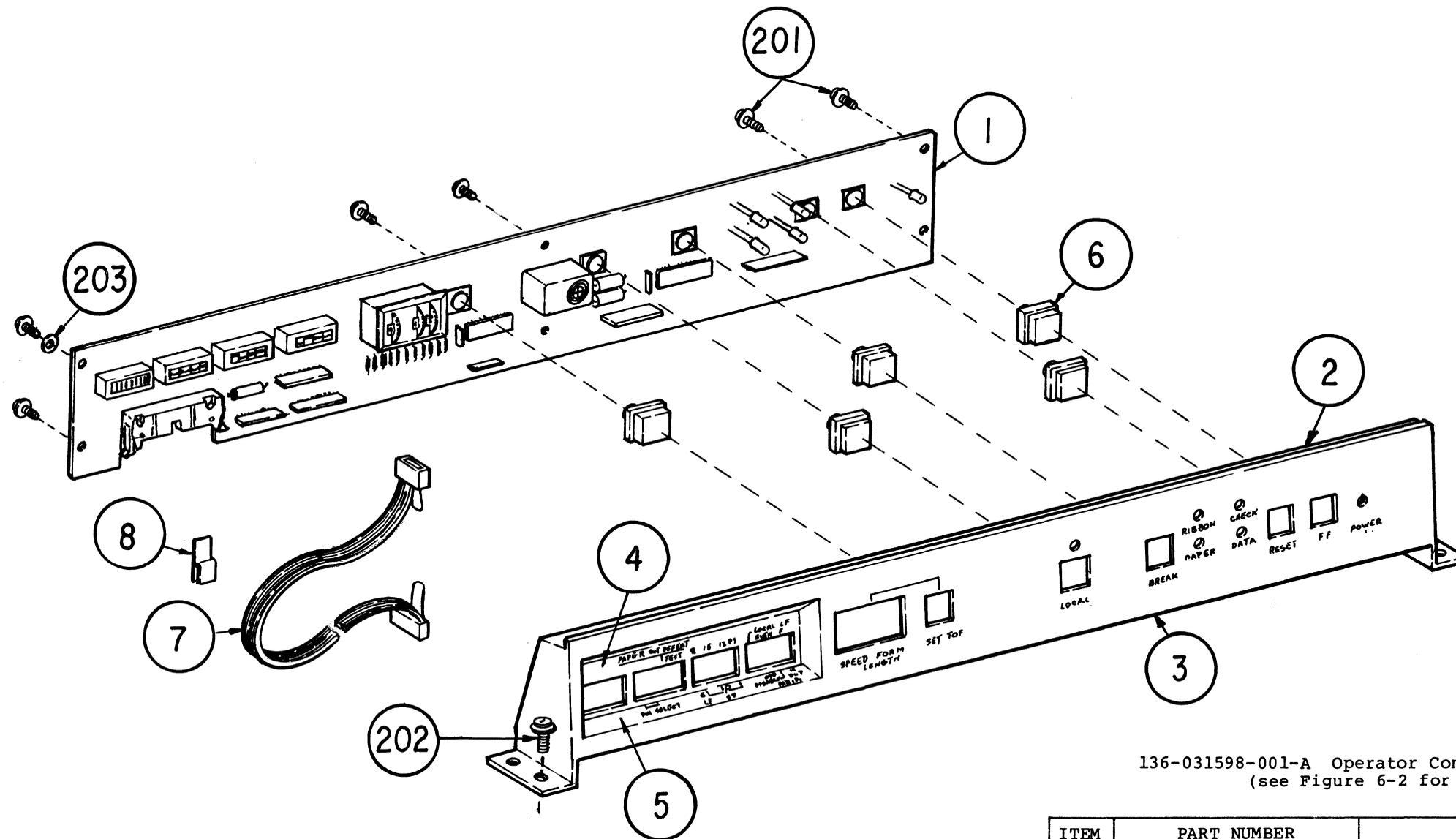
Figure 6-8 Operator Control Panel Assembly - 3500Q and 3500D



136-035242-001-A Operator Control Panel Assembly - 3500R
 (See Figure 6-2 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-742530-A	Operator Panel	1
2	136-739210-001-A	Operator Panel Bracket (L)	1
3	136-739210-002-A	Operator Panel Bracket (R)	1
4	136-739211-B	Switch Frame	2
5	136-742532-001-A	Switch Plate 2	3
6	136-742531-A	Panel Sheet	1
7	136-431821-A	G9PAT PCB Assembly (see Figure 6-41 For Breakdown)	1
9	136-041906-A	Cable Assembly	1
11	808-814112-O	Cable Clamp	1
201	805-300004-008-O	PL-CPIMSx4x8x15BF	4
202	805-300003-008-O	PL-CPIMSx3x8x15BF	4

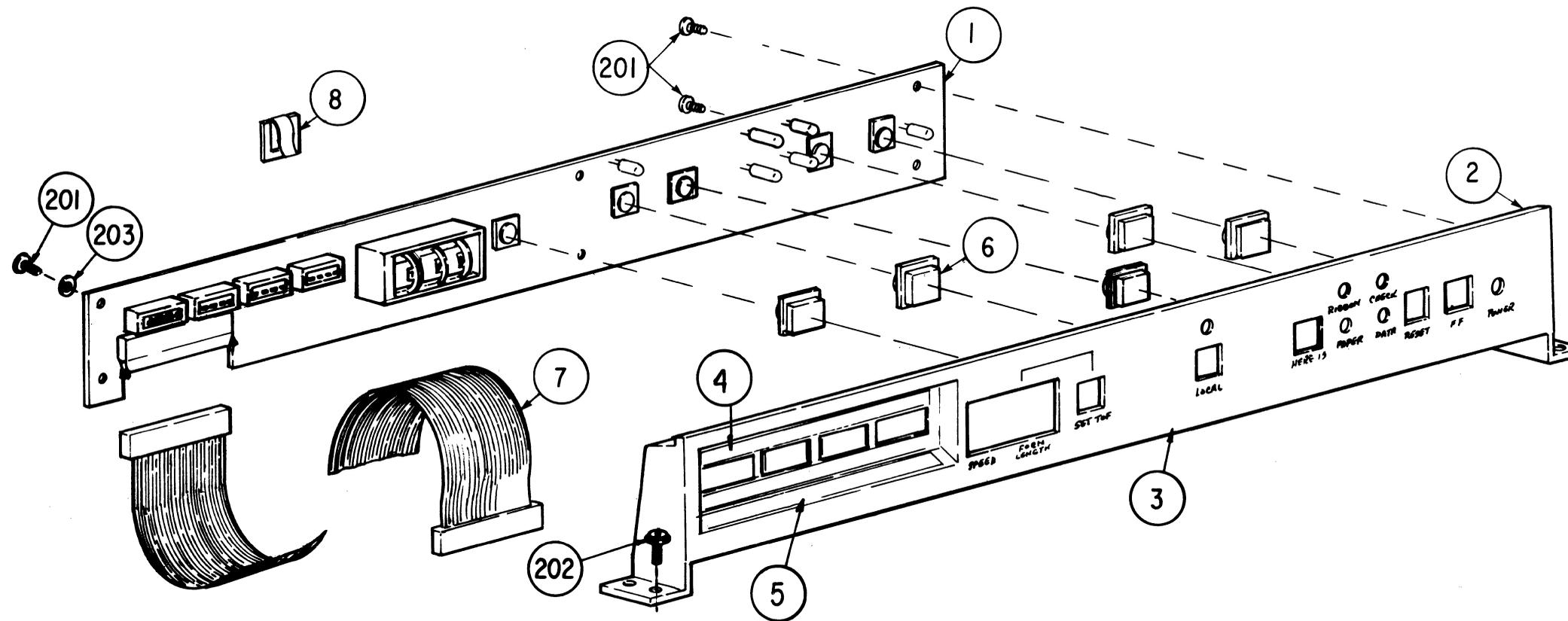
Figure 6-9 Operator Control Panel Assembly -
 Model 3500R



136-031598-001-A Operator Control Panel Assembly - 3510/3515
(see Figure 6-2 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-431626-001-A	G9NAK PCB Assembly (see Figure 6-37 for Breakdown)	1
2	136-742500-001-A	Operator Panel	1
3	136-742501-A	Panel Sheet	1
4	136-742502-001-A	Switch Label	1
5	136-742502-002-A	Switch Label	1
6	136-742483-A	Switch Cap	5
7	136-041902-A	Cable	1
8	808-814112-0	Cable Clamp	1
201	808-802045-308-0	PBTSx3x8x15BF	6
202	805-300004-010-0	PL-CPIMSx4x10x15BF	2
203	805-600003-0	SIWAx3x15BF	1

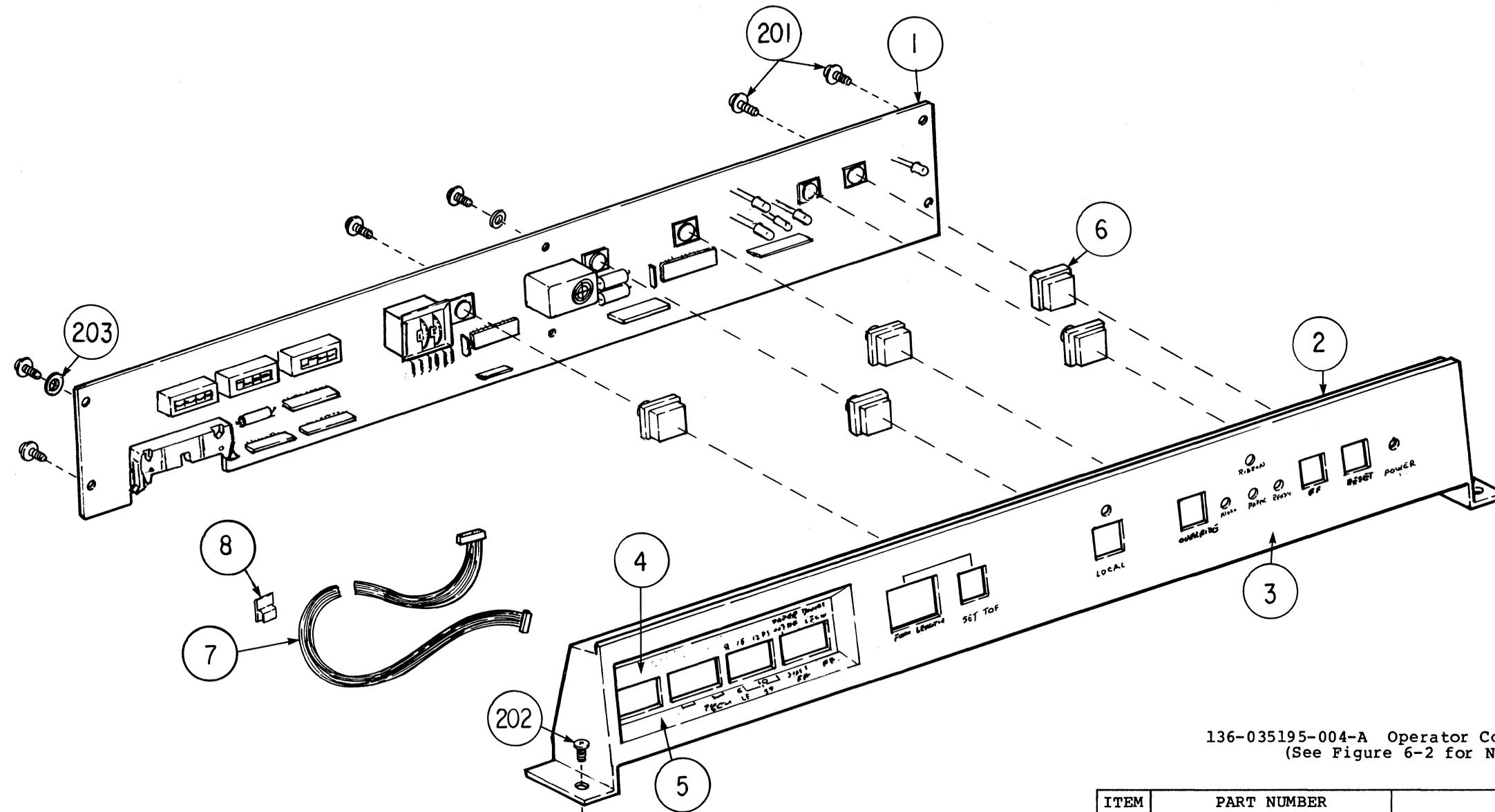
Figure 6-10 Operator Control Panel Assembly - Models 3510 and 3515



136-035198-002-A Operator Control Panel Assembly - 3520/3525
 (See Figure 6-3 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-431624-001-A	G9NAH-001 PCB Assembly (see Figure 6-38 for Breakdown)	1
2	136-742500-001-A	Operator Panel	1
3	136-747663-A	Panel Sheet (KSR)	1
4	136-742502-003-A	Switch Label	1
5	136-742502-004-A	Switch Label	1
6	136-742483-A	Switch Cap	5
7	136-041902-A	Operator Panel Cable	1
8	808-814112-0	Cable Clamp	1
201	808-802045-308-0	PBTSx3x8x15BF	6
202	805-300004-010-0	PL-CPIMSx4x10x15BF	2
203	805-600003-0	SIWAx3x15BF	1

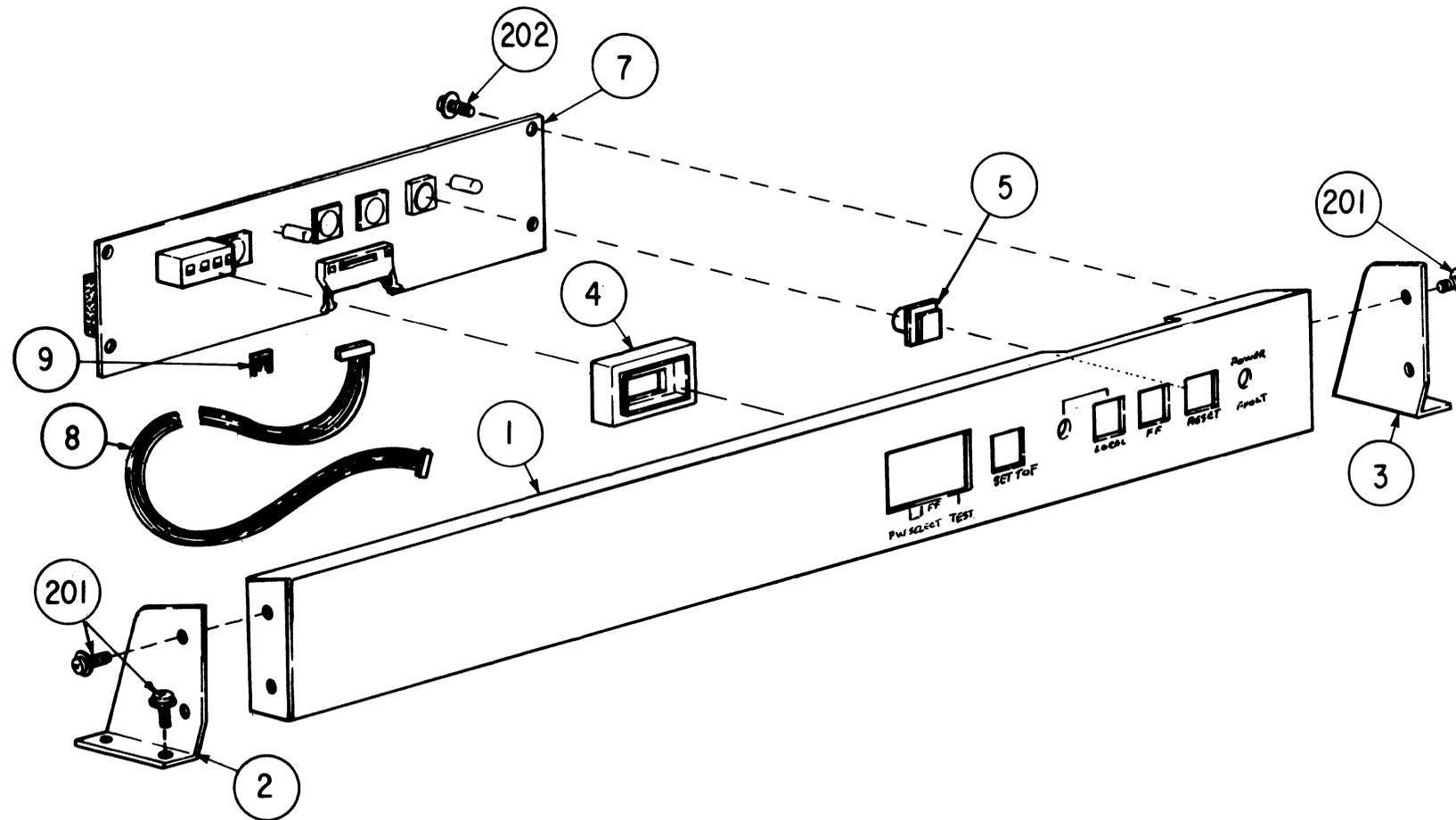
Figure 6-11 Operator Control Panel Assembly -
 3520 and 3525



136-035195-004-A Operator Control Panel Assembly - 3530
 (See Figure 6-2 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-431622-003-A	G9NAF-003 PCB Assembly (see Figure 6-39 for Breakdown)	1
2	136-742500-002-A	Operator Panel	1
3	136-742503-001-A	Panel Sheet	1
4	136-742502-003-A	Switch Label	1
5	136-742502-004-A	Switch Label	1
6	136-742483-A	Switch Cap	5
7	136-041902-A	Cable Assembly	1
8	808-814112-0	Cable Clamp	1
201	808-802045-308-0	PBTSx3x8x15BF	6
202	805-300004-010-0	PL-CPIMSx4x10x15BF	2
203	805-600003-0	SIWAX3x15BF	1

Figure 6-12 Operator Control Panel Assembly - 3530



136-036782-001-A Operator Control Panel Assembly - 3550

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-747667-A	Operator Panel B	1
2	136-739210-001-A	Bracket (L)	1
3	136-739210-002-A	Bracket (R)	1
4	136-747669-A	Switch Frame B	1
5	136-742532-002-A	Switch Plate 2	4
7	136-431627-A	G9NAL PCB Assembly	1
8	136-041906-A	Cable Assembly	1
9	808-814112-0	Cable Clamp	1
201	805-300004-008-0	PL-CPIMSx4x8x15BF	4
202	805-300003-008-0	PL-CPIMSx3x8x15BF	4

Figure 6-13 Operator Control Panel Assembly - 3550

136-135241-GRP-A Power Supply Assembly

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-431618-A	G9NAB PCB Assembly (see Figure 6-34 for Breakdown)	1
2	808-960301-002-A	Fuse 313005 5A	1
2	808-960301-003-A	Fuse 313003 3A	1

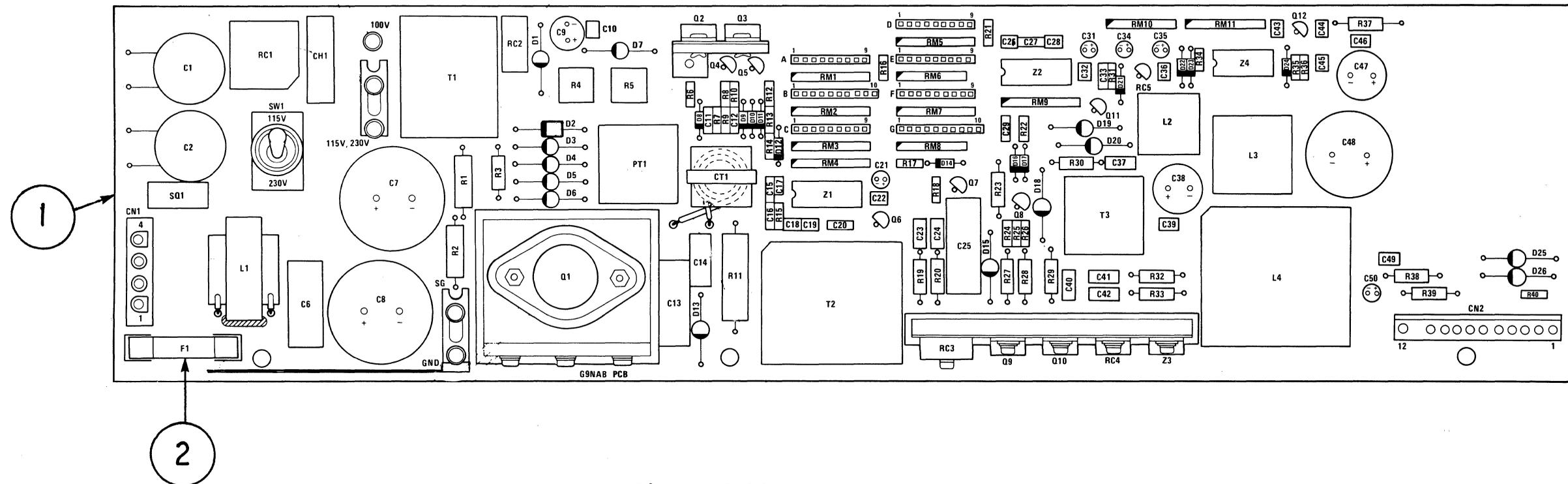
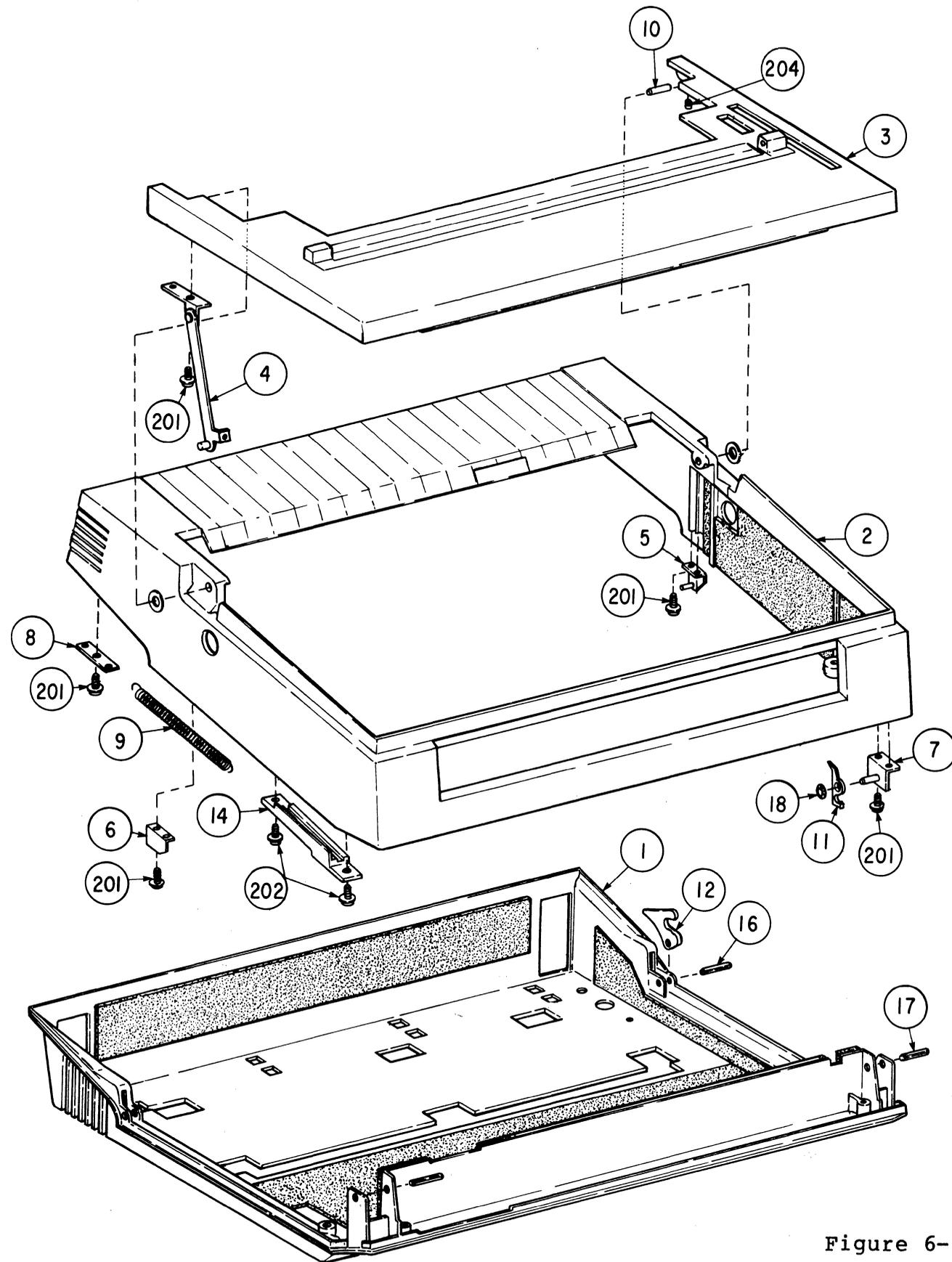


Figure 6-14 Power Supply Assembly

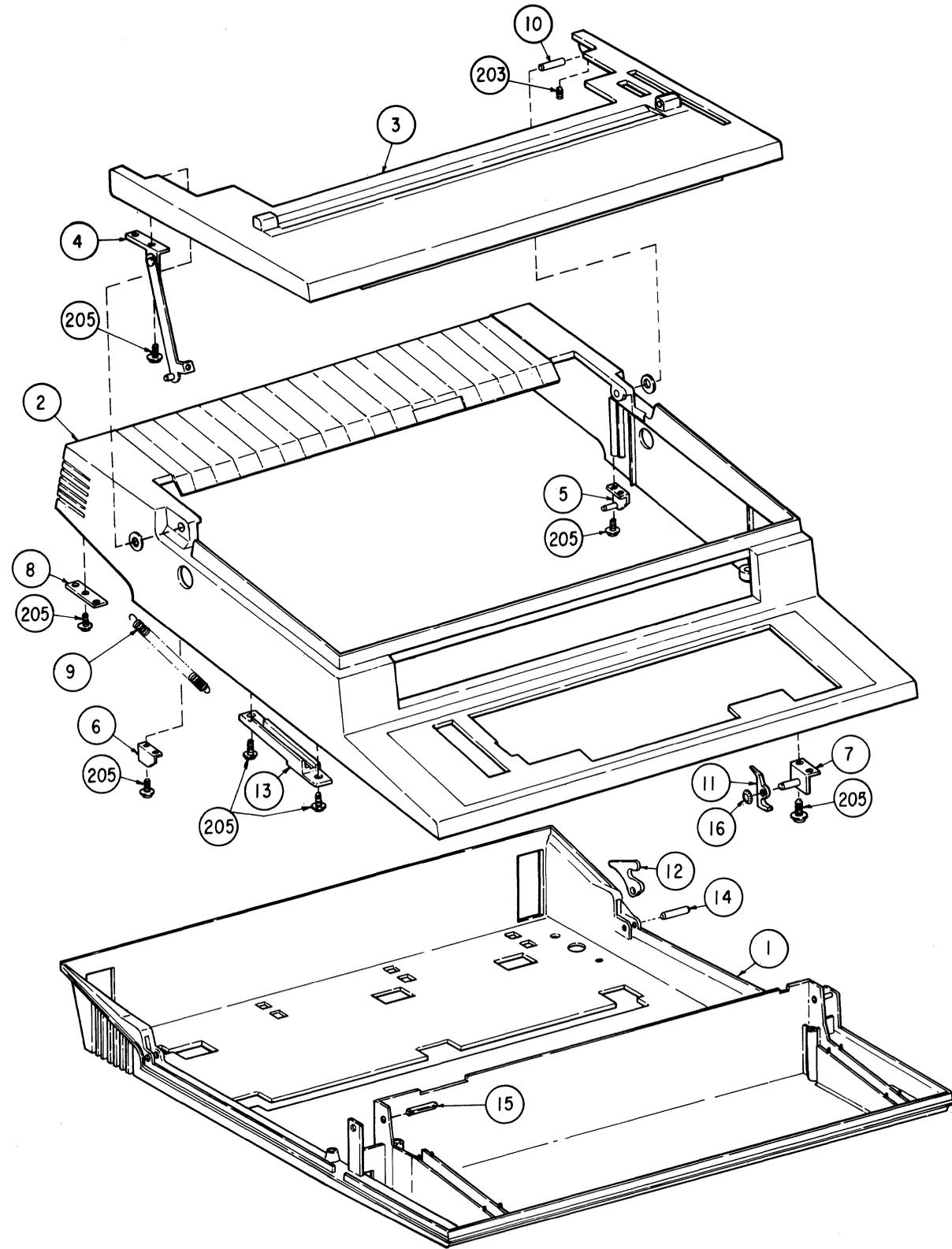


136-035190-GRP-A Cover Assembly
 (see Figure 6-1 or 6-2 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY		
			002	004	008
1	136-739937-002-A	Base Assembly	1		1
1	136-739937-004-A	Base Assembly		1	
2	136-739938-002-A	Middle Cover Assembly	1		1
2	136-739938-004-A	Middle Cover Assembly		1	
3	136-739939-001-A	Top Cover Assembly	1		
3	136-739939-004-A	Top Cover Assembly		1	
3	136-739939-008-A	3550 Top Cover Assembly			1
4	136-739915-A	Stay Unit Assembly	1	1	1
5	136-742465-001-A	Hook Bracket RR Assembly	1	1	1
6	136-742465-002-A	Hook Bracket LR Assembly	1	1	1
7	136-742466-A	Hook Bracket F Assembly	2	2	2
8	136-735383-A	Spring Bracket	1	1	1
9	136-739866-A	Spring	1	1	1
10	136-735386-A	Hinge Pin (Top)	1	1	1
11	136-739185-A	Front Hook	2	2	2
12	136-739919-002-A	Rear Hook (B)	2	2	2
14	136-739914-A	Slide Guide	1	1	1
16	803-010022-420-0	Spring Pin	2	2	2
17	803-010022-428-0	Spring Pin	2	2	2
18	803-050002-050-0	Retaining Ring SE-5	2	2	2
203	808-802044-412-0	BCBTSx4x12x15BF	10	10	10
204	808-802002-308-0	Set Screw M3x8	1	1	1

NOTE: GRP 002 is the standard cover assembly.
 GRP 004 has specially painted covers.
 GRP 008 is for Model 3550

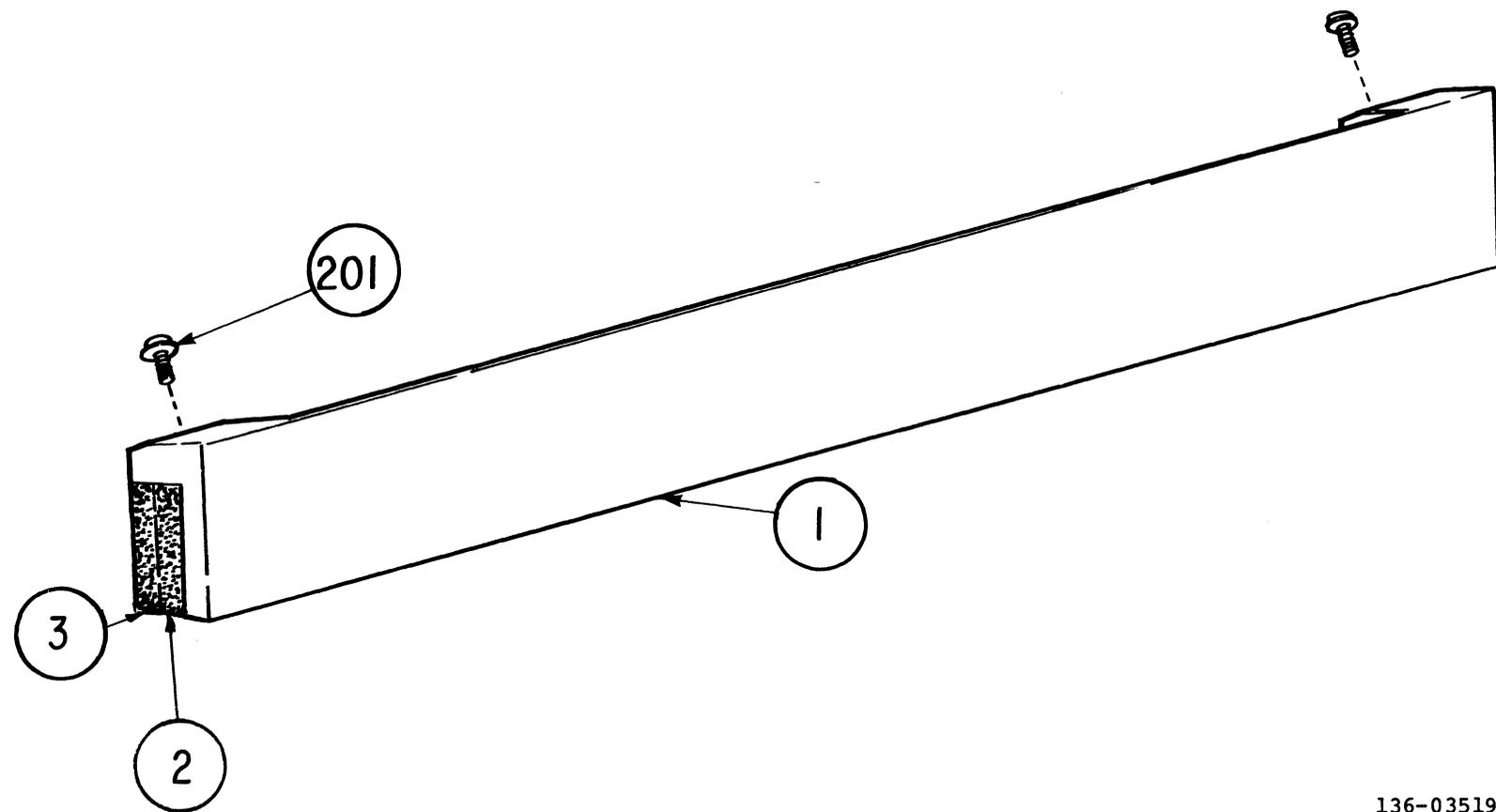
Figure 6-15 Cover Assembly



136-035583-001-A Cover Assembly KSR

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-747638-001-A	KSR Base Assembly	1
2	136-747641-001-A	KSR Middle Cover Assembly	1
3	136-739939-001-A	Top Cover Assembly	1
4	136-739915-A	Stay Unit Assembly	1
5	136-742465-001-A	Hook Bracket Assembly (R)	1
6	136-742465-002-A	Hook Bracket Assembly (L)	1
7	136-742466-A	Hook Bracket Assembly (F)	2
8	136-735383-A	Spring Bracket	1
9	136-739866-A	Spring	1
10	136-735386-A	Hinge Pin	1
11	136-739185-A	Front Hook	2
12	136-739919-A	Rear Hook	2
13	136-739914-A	Slide Guide	1
14	803-010022-420-0	Spring Pin	2
15	803-010022-428-0	Spring Pin	2
16	803-050002-050-0	SE Ring	2
203	808-802002-308-0	Set Screw M3x8	1
205	808-802044-412-0	BCBTSx4x12x15BF	10

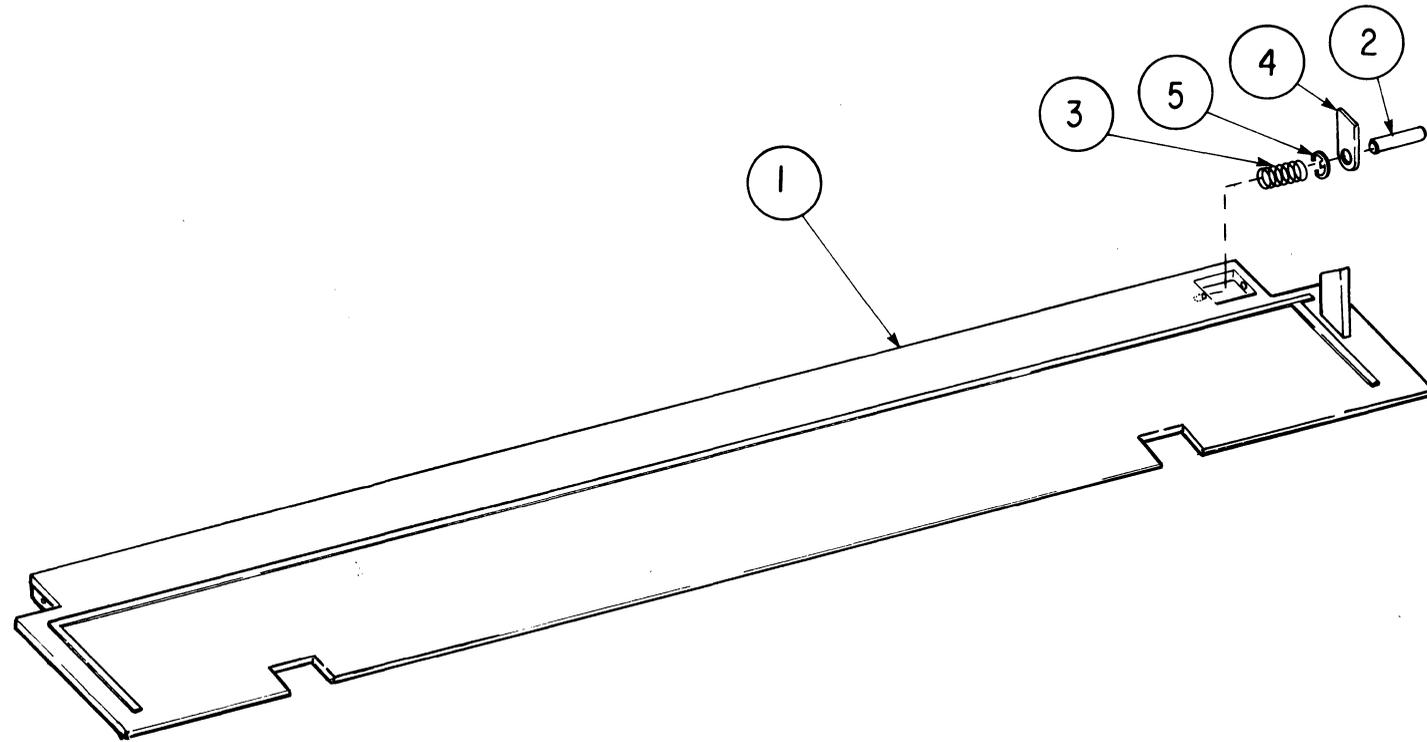
Figure 6-16 Cover Assembly KSR



136-035191-A Blank Panel Assembly
 (see Figure 6-1 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-739913-A	Blank Panel	1
2	136-742464-001-A	Damper	1
3	136-742464-002-A	Damper	1
201	805-300004-012-0	PL-CPIMSx4x12x15BF	2

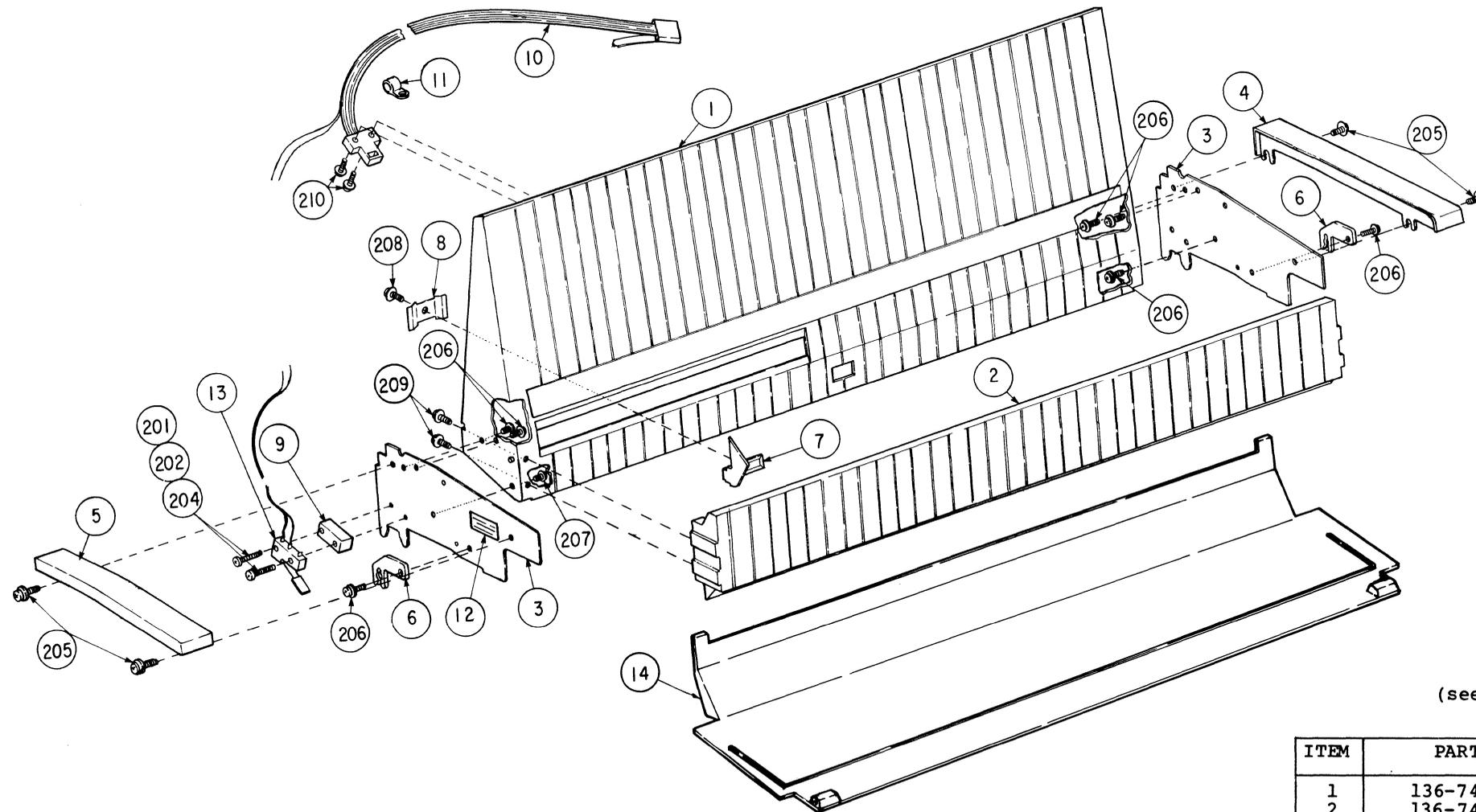
Figure 6-17 Blank Panel Assembly



136-035239-001-A Acrylic Cover (S) Assembly
 (see Figure 6-1, 6-2, or 6-3 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-742468-001-A	Canopy (S) (notched)	1
2	136-742455-A	Pin	1
3	136-742471-A	Spring	1
4	136-742472-A	Push Lever	1
5	803-010030-024-0	E Ring E-24	1

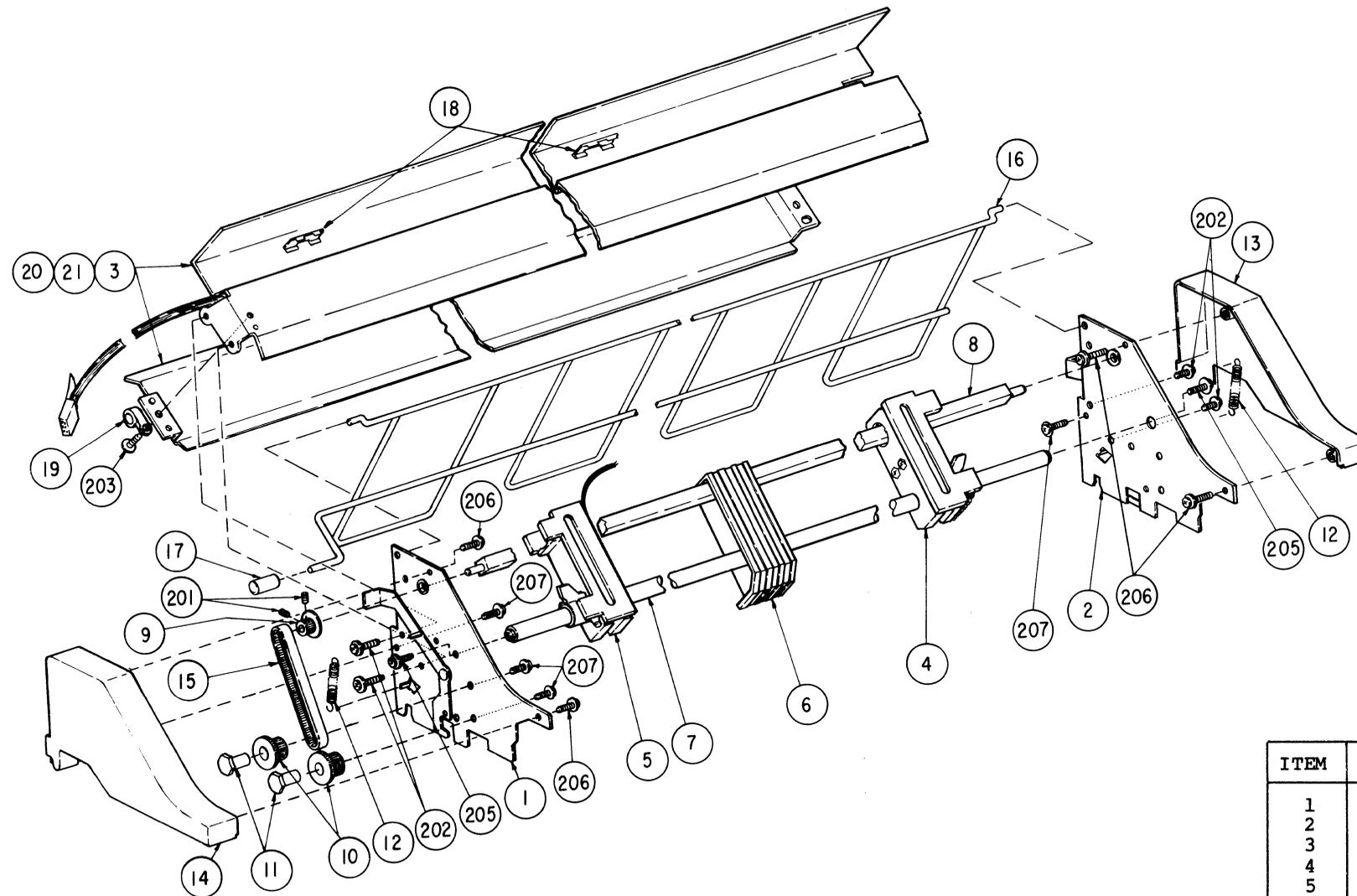
Figure 6-18 Acrylic Cover (S) Assembly



136-034863-002-A Cut Sheet Guide
(see Figure 6-1, 6-2, or 6-3 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-742802-002-A	Paper Support	1
2	136-742804-A	Paper Separator	1
3	136-742805-A	Side Frame (F)	2
4	136-742806-001-A	Friction Cover	1
5	136-742806-002-A	Friction Cover	1
6	136-741625-A	Lock Plate	2
7	136-742807-A	Edge Guide	1
8	136-742808-A	Guide Spring	1
9	136-742809-A	Switch Collar	1
10	136-742810-A	Sensor Cable Assembly	1
11	808-070031-002-A	Nylon Clip HP-2N	1
12	136-700608-008-A	Name Plate	1
13	808-950345-A	Micro Switch	1
14	136-035233-A	Acrylic Cover for Cut Sheet Guide (not part of 136-034863-002-A Assembly)	1
201	805-622002-0	#2STLWx2x15BF	2
202	805-610002-0	PIWx2x15BF	2
204	805-000002-020-0	CPIMSx2x20x15BF	2
205	805-300003-006-0	PL-CPIMSx3x6x15BF	4
206	805-300003-008-0	PL-CPIMSx3x8x15BF	6
207	805-300003-010-0	PL-CPIMSx3x10x15BF	1
208	805-230003-006-0	#2CBTSx3x6x15BF	1
209	805-230003-012-0	#2CBTSx3x12x15BF	4
210	805-300003-012-0	PL-CPIMSx3x12x15BF	2

Figure 6-19 Cut Sheet Guide



136-035892-GRP-A Unidirectional Forms Tractor
(see Figure 6-1, 6-2, or 6-3 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-747955-A	Frame (R)	1
2	136-747958-A	Frame (L)	1
3	136-747959-A	Stay Assembly	1
4	808-863237-001-A	Tractor Assembly (R)	1
5	808-863237-002-A	Tractor Assembly (L)	1
6	136-747975-A	Center Guide	1
7	136-741623-A	Hold Shaft	1
8	136-741624-A	Drive Shaft	1
9	136-741634-A	Tractor Pulley	1
10	136-741635-A	Tractor Gear	1
11	136-741636-A	Tractor Bushing	1
12	136-747963-A	Spring, Lock Lever	2
13	136-747964-003-A	Side Cover (R)	1
14	136-747964-004-A	Side Cover (L)	1
15	808-805049-008-A	Micro Pitch Belt (75T-80-6.4)	1
16	136-747970-A	Paper Net	1
17	136-747974-A	Rubber Foot	1
18	136-747977-A	Cable Clamp	2
19	803-070031-002-A	Nylon Clip (HP-2N)	1
20	136-700608-014-A	Name Plate	1
21	136-743196-A	Caution Label	1
201	808-802002-303-0	Set Screw	2
202	805-300003-006-0	PL-CPIMSx3x6x15BF	4
203	805-300103-006-0	PL-CPIMSx3x6x3BF	1
204	805-300103-008-0	PL-CPIMSx3x8x3GF	2
205	805-300004-008-0	PL-CPIMSx4x8x15BF	2
206	805-230103-014-0	#2CBTSx3x14x3GF	4
207	805-300103-014-0	PL-CPIMSx3x14x3GF	2

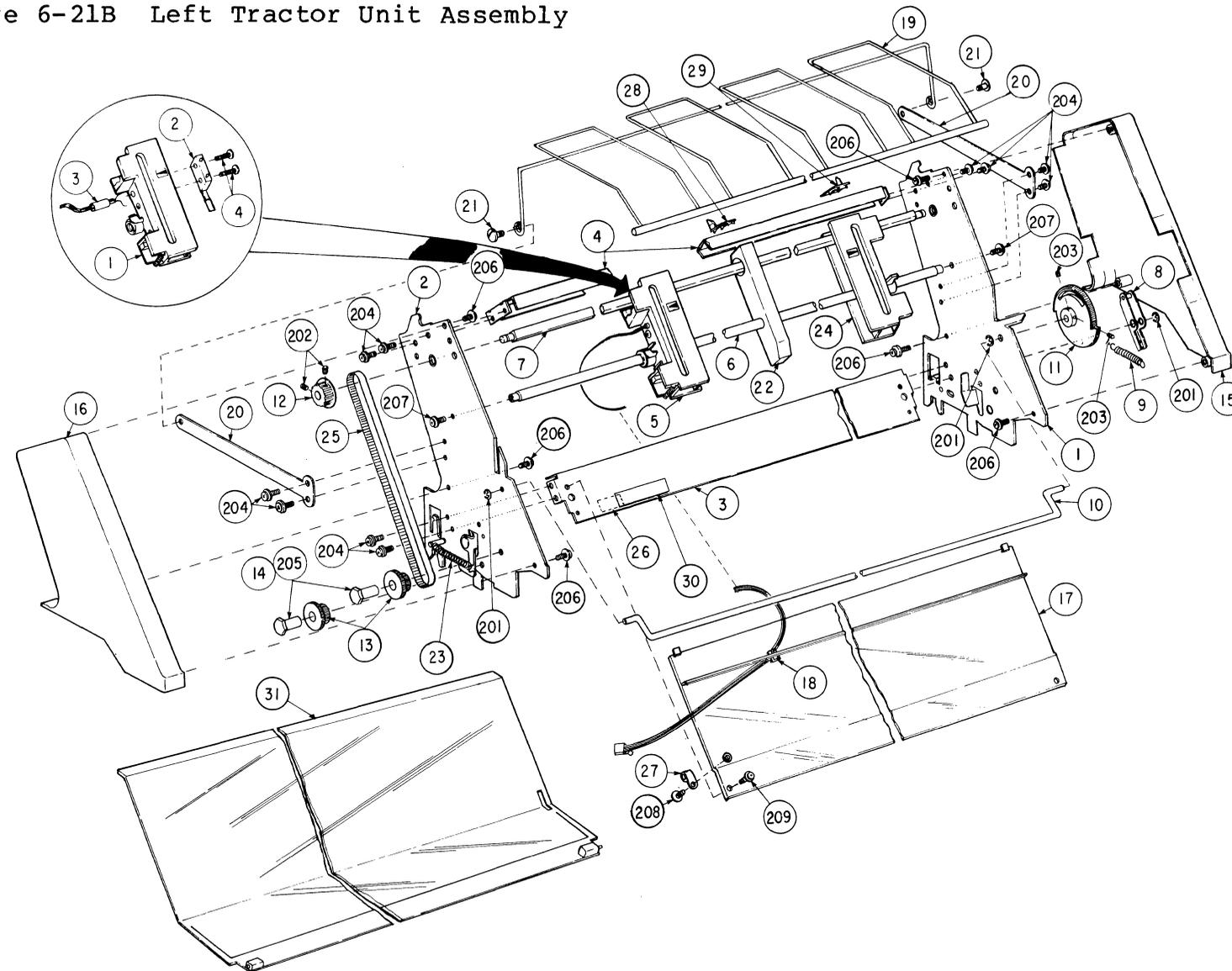
Figure 6-20 Unidirectional Forms Tractor

136-741621-A Left Tractor Unit Assembly

ITEM	PART NUMBER	DESCRIPTION	QTY
1	808-862458-001-A	BD Tractor Unit	1
2	808-950460-001-A	Sensor	1
3	136-741622-A	MDL Cable Assy	1
4	805-060023-012-A	CPTSx2.3x12x15BF	2

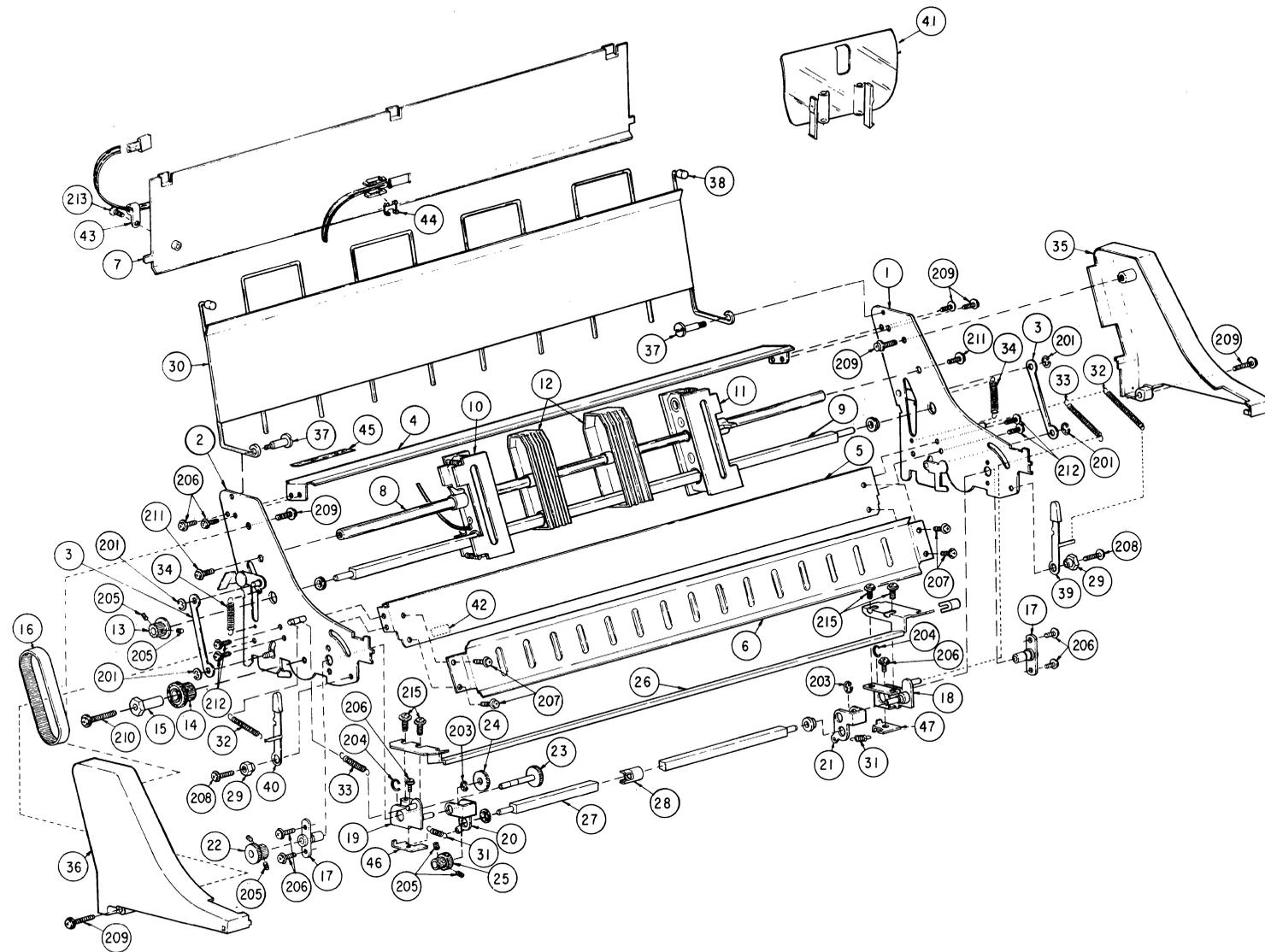
136-034861-A Bidirectional Forms Tractor Assembly
(see Figure 6-1, 6-2, or 6-3 for Next Higher Assembly)

Figure 6-21B Left Tractor Unit Assembly



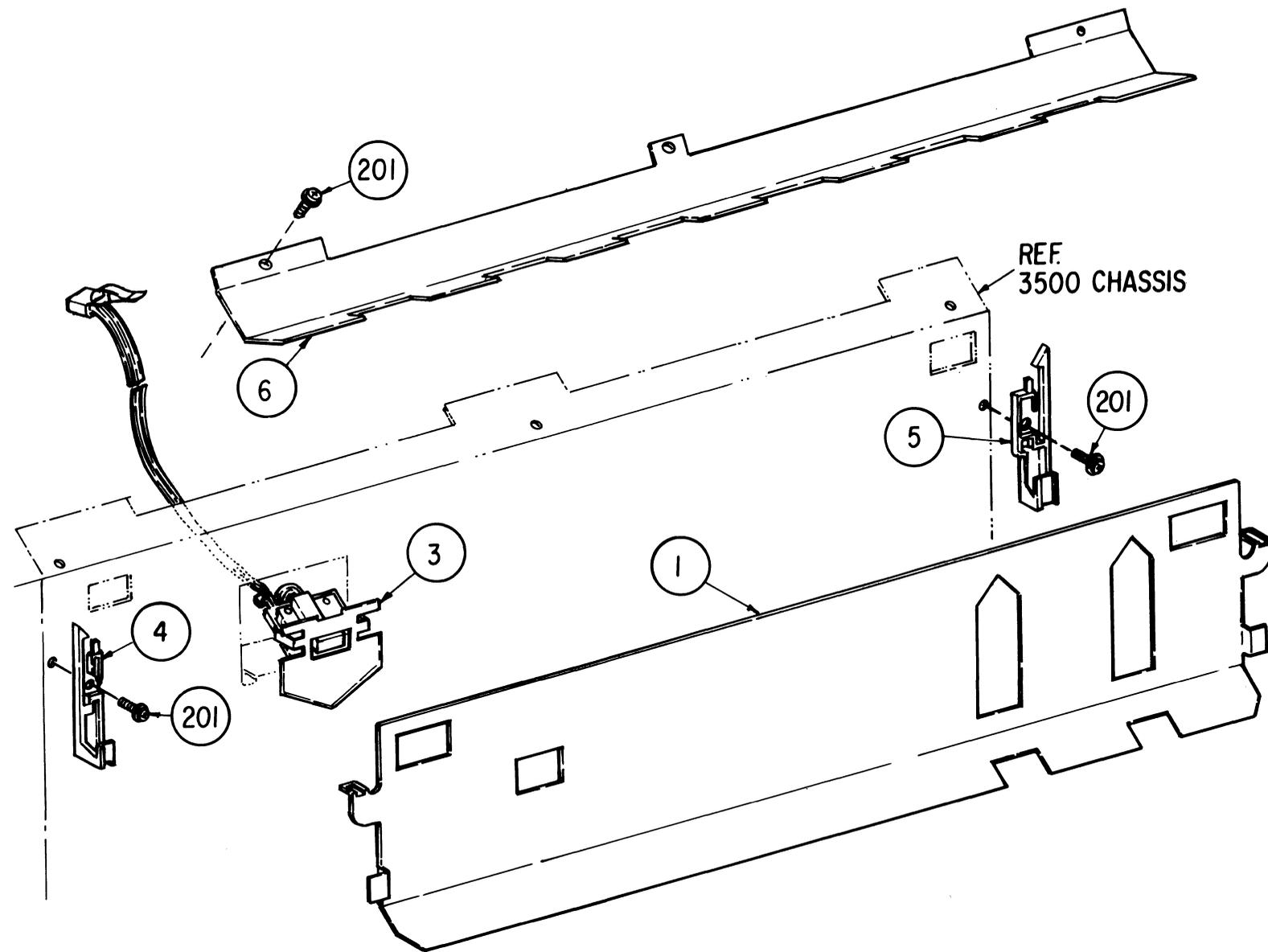
ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-741613-A	Right Side Frame Assembly	1
2	136-741618-A	Left Side Frame Assembly	1
3	136-741619-A	Lower Stay	1
4	136-741669-A	Upper Stay	1
5	136-741621-A	Left Tractor Unit Assembly	1
6	136-741623-A	Hold Shaft	1
7	136-741624-A	Drive Shaft	1
8	136-741626-A	Detent Lever Assembly	1
9	136-741630-A	Detent Spring	1
10	136-741631-A	Tension Lever	1
11	136-741633-A	Tension Knob	1
12	136-741634-A	Tractor Pulley	1
13	136-741635-A	Tractor Gear	2
14	136-741636-A	Tractor Bushing	2
15	136-741637-001-B	Right Side Cover	1
16	136-741637-002-B	Left Side Cover	1
17	136-741638-A	Rear Cover	1
18	136-741639-A	MDL Cable Clamp A	1
19	136-741641-A	Paper Net Assembly	1
20	136-741646-A	Net Arm	2
21	136-741647-A	Net Screw	2
22	136-741650-A	Center Guide	1
23	136-741651-A	Spring (Lock Lever)	1
24	808-862458-002-A	BD Tractor Unit	1
25	808-805049-002-A	Micro-Pitch Belt 140-T-80-6.4	1
26	136-700608-006-A	Name Plate	1
27	803-070031-002-A	Nylon Clip	1
28	136-741670-001-A	Left Side Guide	1
29	136-741670-002-A	Right Side Guide	1
30	136-743196-A	Caution Label	1
31	136-035231-A	Acrylic Cover for Bidirectional Forms Tractor (not part of 136-034861-A Assembly)	1
201	803-010030-032-0	E Ring E-32	3
202	808-802002-303-0	Set Screw M3xL3	2
203	808-802002-308-0	Set Screw M3xL8	2
204	805-300003-006-0	PL-CPIMSx3x6x15BF	8
205	805-300103-008-0	PL-CPIMSx3x8x3GF	2
206	805-300103-014-0	#2CBTSx3x14x3G	6
207	805-300004-008-0	PL-CPIMSx4x8x15BF	2
208	805-230003-010-0	#2CPTSx3x10x15BF	5
209	805-300163-006-0	PL-CPIMSx3x6x3GF	2

Figure 6-21 Bidirectional Forms Tractor



ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-746563-A	Side Frame (R)	1
2	136-746572-A	Side Frame (L)	1
3	136-746606-A	Link	2
4	136-746573-A	Upper Stay	1
5	136-741619-A	Lower Stay	1
6	136-746574-A	Lower Stay Cover	1
7	136-746575-A	Rear Cover	1
8	136-741623-A	Hold Shaft	1
9	136-741624-A	Drive Shaft	1
10	136-746576-A	Left Tractor Assembly	1
11	808-862843-001-A	Right Tractor Assembly	1
12	136-741650-A	Center Guide	2
13	136-741634-A	Tractor Pulley	1
14	136-741635-A	Tractor Gear	1
15	136-746578-A	Gear Bushing	1
16	808-805049-006-A	Micro Pitch Belt 80T-80-6.4	1
17	136-746579-A	Swing Arm Bushing	2
18	136-746581-001-A	Cutter Swing Arm (R)	1
19	136-746581-002-A	Cutter Swing Arm (L)	1
20	136-746585-001-A	Roller Arm (L)	1
21	136-746585-002-A	Roller Arm (R)	1
22	136-746586-A	Gear A (24T)	1
23	136-746587-A	Gear Shaft	1
24	136-746588-A	Gear B (24T)	1
25	136-746589-A	Gear (16T)	1
26	136-746590-A	Paper Cutter	1
27	136-746592-A	Roller Drive Shaft	1
28	136-778442-A	Feed Roller	4
29	136-746594-A	Eccentric Collar	2
30	136-746595-A	Paper Net	1
31	136-747674-A	Spring (Roller Arm)	2
32	136-746602-A	Spring (Release Lever)	2
33	136-746603-A	Spring (Swing Arm)	2
34	136-746604-A	Spring (Lock Lever)	2
35	136-746605-001-A	Side Cover (R)	1
36	136-746605-002-A	Side Cover (L)	1
37	136-746600-A	Screw, Paper Net	2
38	136-746607-A	Cushion, Paper Net	2
39	136-746609-001-A	Release Lever (R)	1
40	136-746609-002-A	Release Lever (L)	1
41	136-746608-A	Card Holder	1
42	136-700608-007-A	Unit Label	1
43	803-070031-002-A	Cable Clamp (HP-2N)	1
44	136-741639-A	Cable Clamp	1
45	136-743196-A	Caution Label	1
46	136-747675-001-A	Plate	1
47	136-747675-002-A	Plate	1
201	803-010030-024-0	E Ring (E-24)	4
202	803-010030-032-0	E Ring (E-32)	1
203	803-010030-042-0	E Ring (E-42)	2
204	803-010032-007-0	C Ring (CE-7)	2
205	808-802002-303-0	Set Screw	6
206	805-300003-006-0	PL-CPIMSx3x6x15BF	10
207	805-300103-006-0	PL-CPIMSx3x6x3GF	4
208	805-300003-010-0	PL-CPIMSx3x10x15BF	2
209	805-300103-014-0	PL-CPIMSx3x14x3GF	6
210	805-300003-022-0	PL-CPIMSx3x22x15BF	1
211	805-300004-008-0	PL-CPIMSx4x8x15BF	2
212	805-030003-006-0	C-BIMSx3x6x15BF	4
213	805-230003-010-0	#2 CBTSx3x10x15BF	1
214	804-030165-0	Lubricant	AR
215	805-300103-005-0	PL-CPIMSx3x5x3GF	4

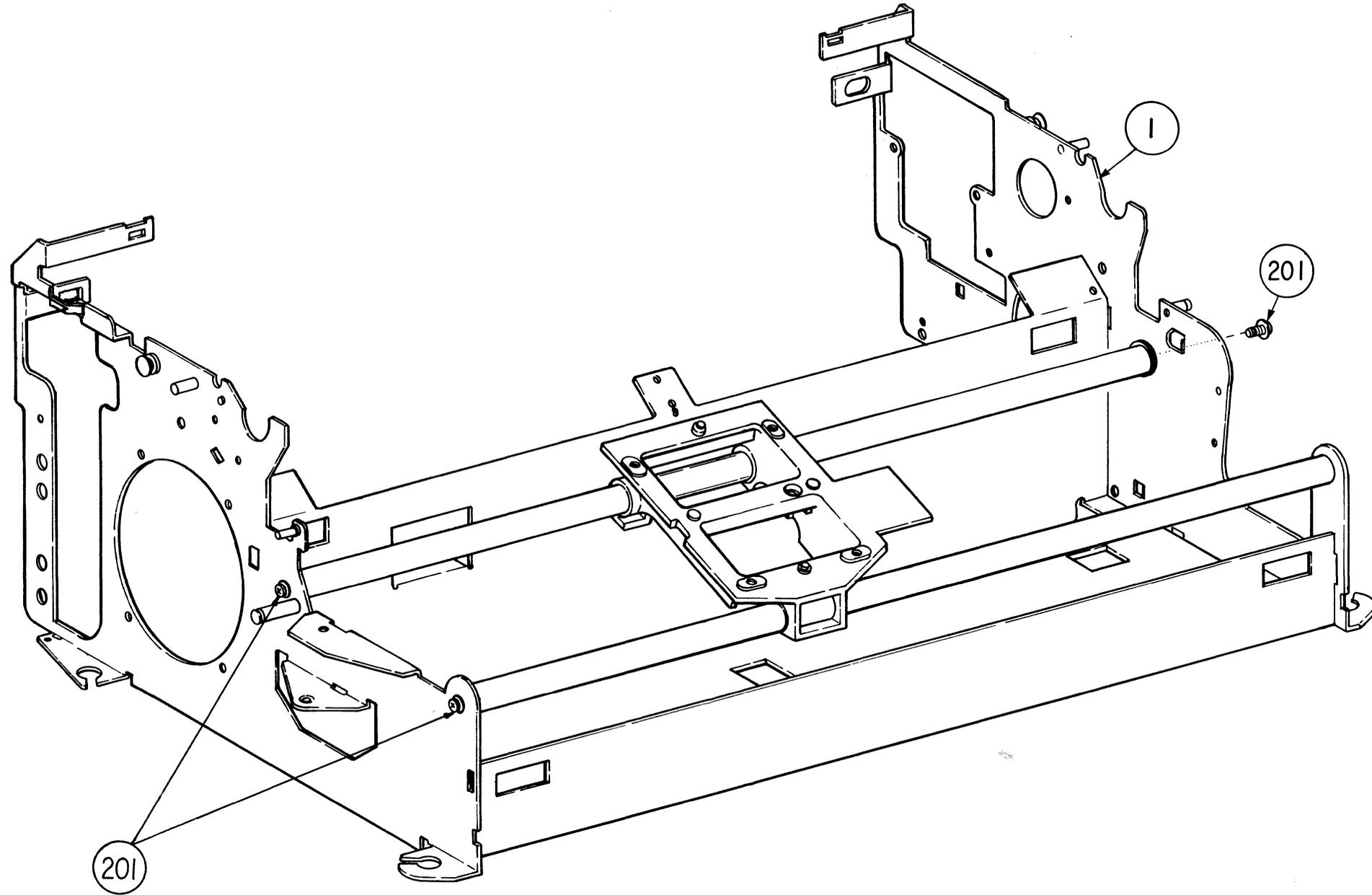
Figure 6-22 Demand Document Tractor



136-034864-001-A Bottom Feed Guide Assembly

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-747793-D	Bottom Feed Guide	1
3	136-752601-A	Sensor Cable Assembly	1
4	136-751377-001-A	Support Block (L)	1
5	136-751377-002-A	Support Block (R)	1
6	136-741662-B	Roof Guide	1
201	805-310003-006-0	SL-CPIMSx3x6x15BF	4

Figure 6-23 Bottom Feed Guide



136-741365-A Frame Assembly
 (see Figure 6-5 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1		Chassis	1
201	805-330004-008-0	Screw	3

NOTE: Screws 201 are not normally removed. Removing them will not permit disassembly of the frame assembly.

Figure 6-24 Frame Assembly

136-741369-A Power Chassis Assembly
 (see Figure 6-5 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-739316-A	Chassis	1
2	136-739338-A	Chassis Insulator	1
3	808-811000-964-A	PCB Support	3
4	136-741373-A	PCB Support	8
5	136-741456-A	PCB Support	3
6	136-741387-A	Frame Ground Plate	2
7	136-741389-A	Frame Ground Plate	2

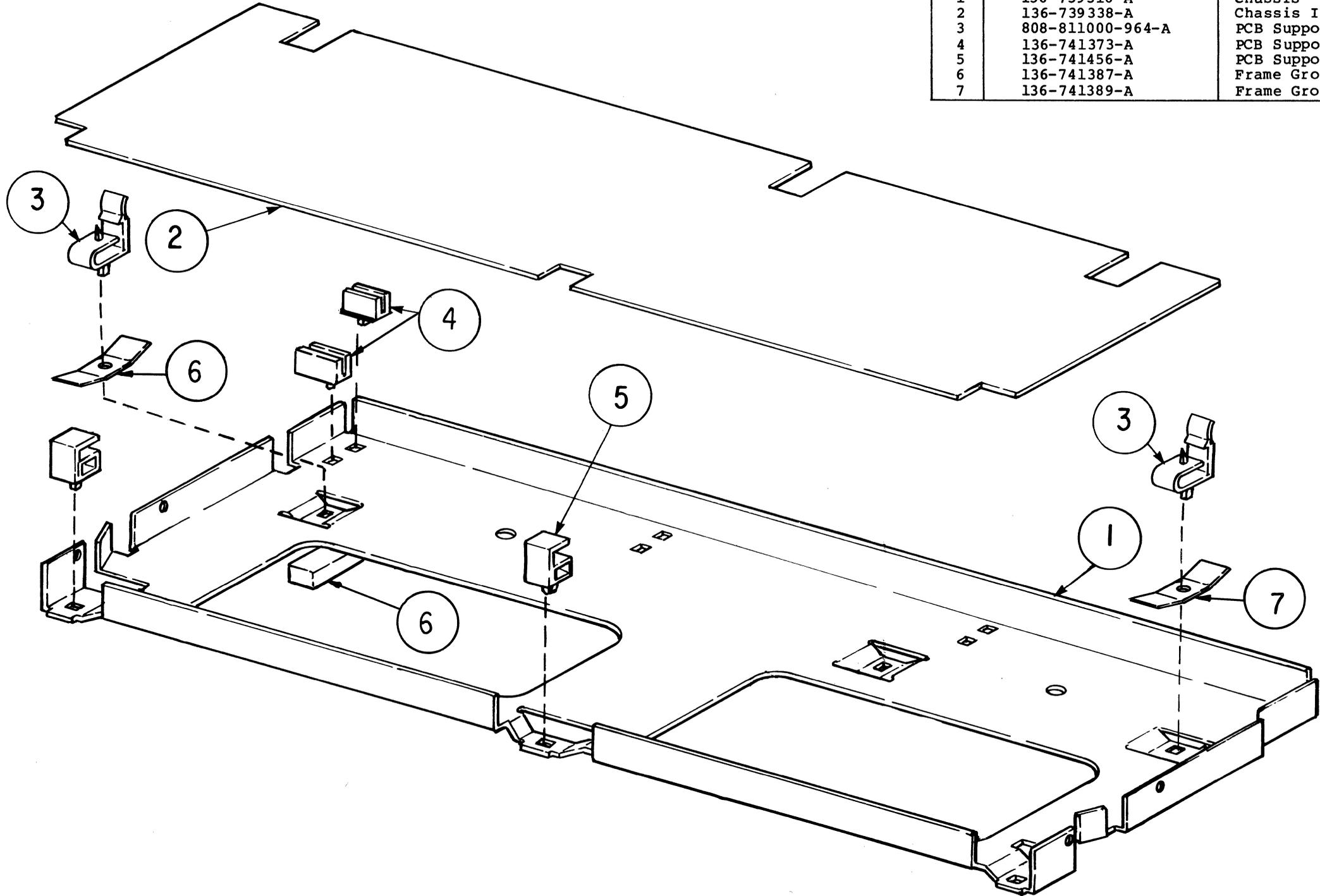
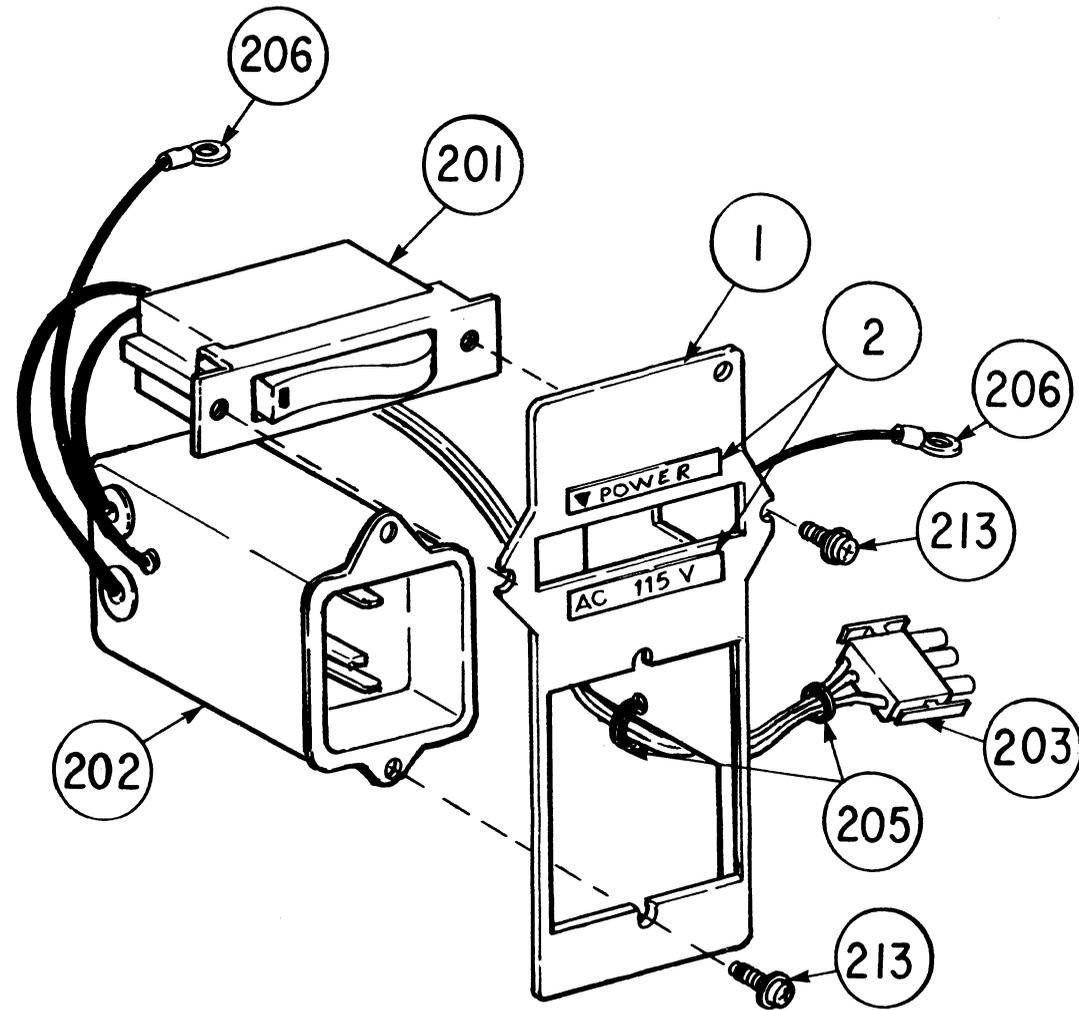


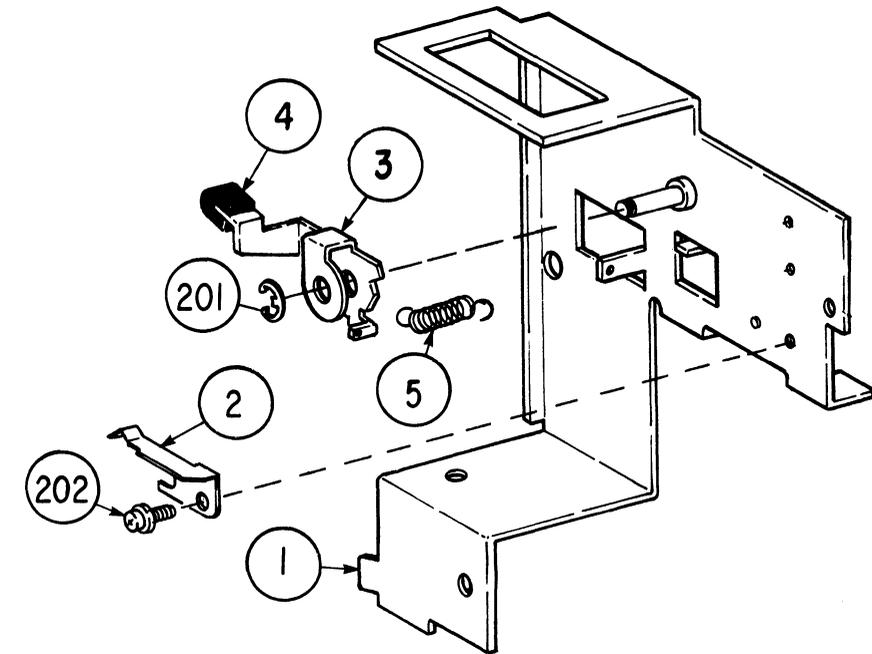
Figure 6-25 Power Chassis Assembly



136-035196-A Power Switch Bracket Assembly
(see Figure 6-5 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-739329-A	Power Switch Bracket	1
2	136-739325	Label	1
201	808-950346-003-A	Switch	1
202	808-970206-001-A	Noise Filter	1
203	808-955140-420-A	Connector 1-480702-0	1
205	808-814074-001-A	Pan Tie PLT1M	3
206	804-020012-114-B	Terminal FV1.25-M4	2
213	805-310003-008-0	SL-CPIMSx3x8x15BF	4

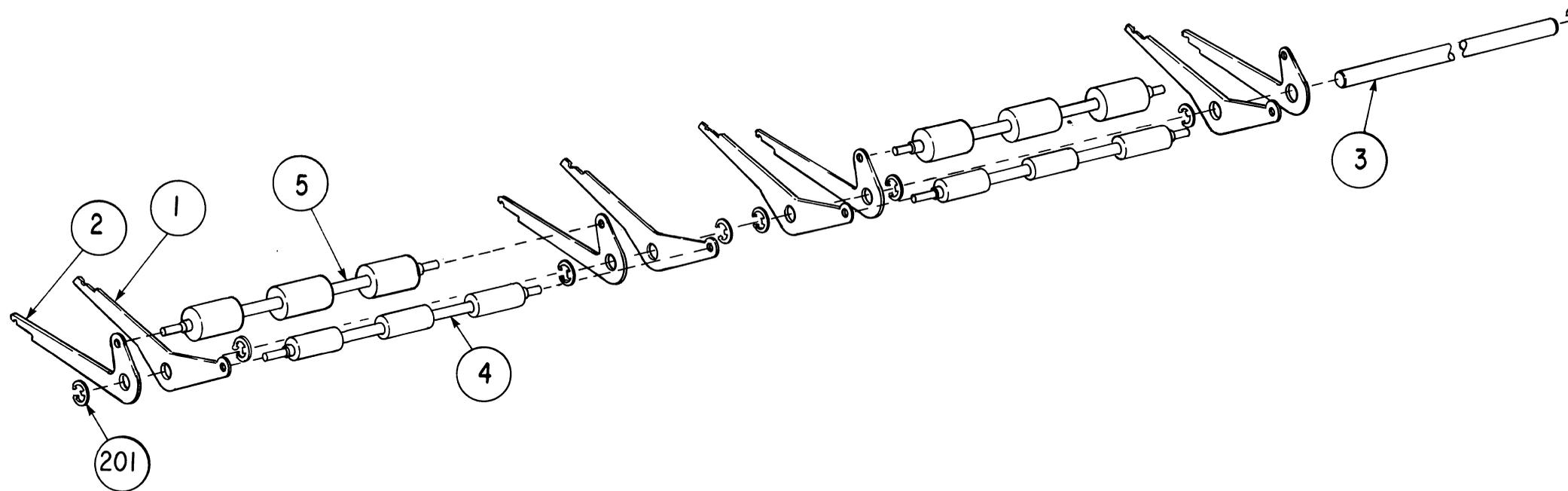
Figure 6-26 Power Switch Bracket Assembly



136-741352-A Cover Switch Bracket Assembly
(see Figure 6-5 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-741353-A	Cover Switch Bracket	1
2	136-741356-A	Switch Detent Spring	1
3	136-741357-A	Cover Switch Feeler	1
4	136-741358-A	Feeler Snap	1
5	136-741359-A	Feeler Spring	1
201	803-010030-040-0	E40 E Ring	1
202	805-310003-004-0	SL-CPIMSx3x4x15BF	1

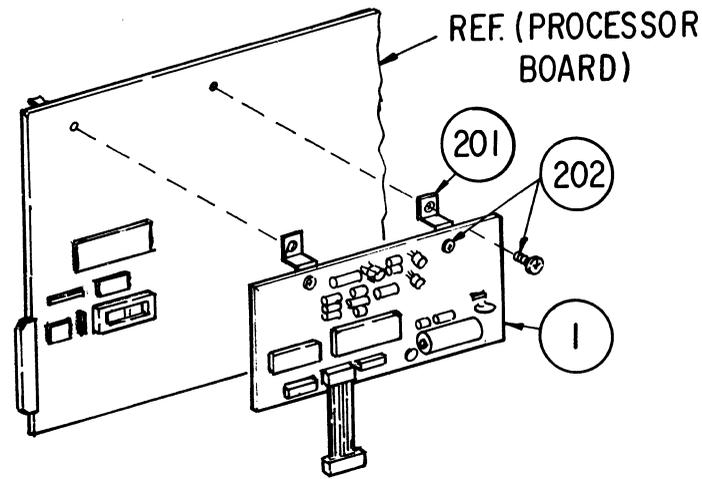
Figure 6-27 Cover Switch Bracket Assembly



136-741391-A Pressure Roller Assembly
 (see Figure 6-5 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-741392-A	Front Pressure Plate	4
2	136-741393-A	Rear Pressure Plate	4
3	136-741394-A	Pressure Shaft	1
4	136-741395-A	Front Pressure Roller	2
5	136-741396-A	Rear Pressure Roller	2
201	803-010030-064-0	E-64	8
202	804-030165-0	Lubricant	AR

Figure 6-28 Pressure Roller Assembly

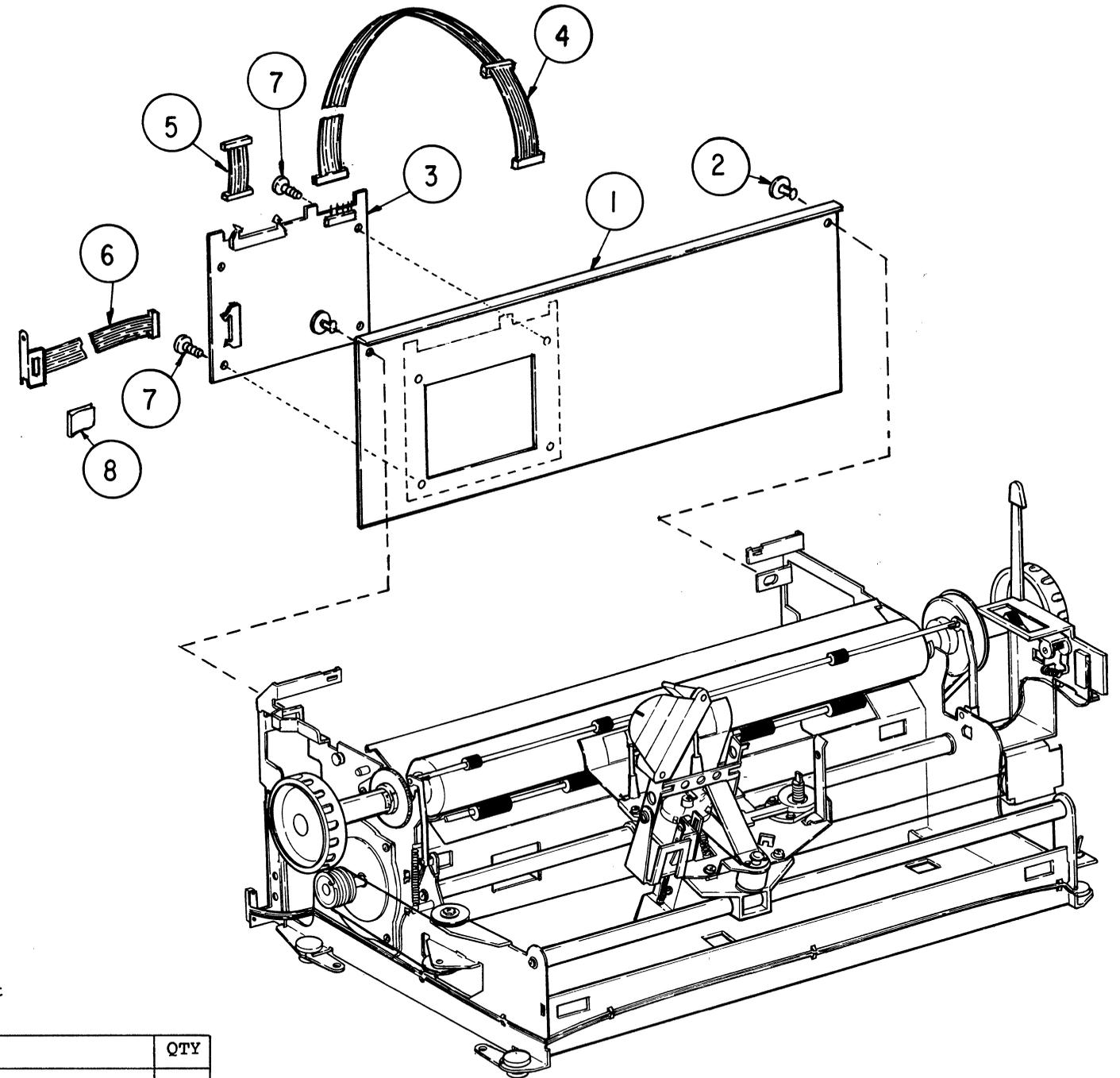


Nonvolatile RAM Assembly

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-431824-A	G9PAW PCB Assembly	1
201	136-747659-A	Bracket	2
202	805-300003-006-0	PL-CPIMSx3x6x15BF	4

NOTE: 201 and 202 are included in 1, see Figure 6-43.

Figure 6-29 Nonvolatile RAM Assembly



136-036946-A RS-422 Interface Kit

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-751034-A	Option Panel	1
2	808-811008-549-A	Fastener	2
3	136-432106-A	G9RKY PCB	1
4	136-042257-A	Option Dc Cable	1
5	136-042256-001-A	Connection Cable	1
6	136-035367-003-A	Serial Interface Cable	1
7	805-300003-008-0	PL-CPIMSx3x8x15BF	4
8	808-955130-399-A	Cable Clamp	1

Figure 6-30 RS-422 Interface Kit

PRINTED CIRCUIT BOARDS

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
C1, C14, C17, C22, C28, C31, C33, C96	802-410030-001-0	Capacitor, ceramic 0.1 μ f, 50 Vdc, -20+80%	8
C2, C4, C15, C23, C24, C32	808-935590-047-A	Capacitor, ceramic 1000 pf, 50 Vdc, \pm 10%	6
C3, C5, C16, C25, C26	808-935590-065-A	Capacitor, ceramic 5600 pf, 50 Vdc, \pm 10%	5
C11, C19, C34, C99, C111-C125	808-935411-014-A	Capacitor, tantalum 10 μ f, 16 Vdc, +20%	19
C12, C13, C18, C20, C21, C27, C29, C30, C41-C76, C80	808-935561-403-A	Capacitor 0.1 μ f, 50 Vdc, -20 + 80%	45
C81-C83	808-935590-039-A	Capacitor, ceramic 470 pf, 50 Vdc, \pm 10%	3
C84	808-935590-071-A	Capacitor, ceramic .01 μ f, 50 Vdc, \pm 10%	1
C85	808-935590-015-A	Capacitor, ceramic 47 pf, 50 Vdc, \pm 10%	1
C97	808-935590-067-A	Capacitor, ceramic 6800 pf, 50 Vdc, \pm 10%	1
C98	808-935374-001-A	Capacitor SXA-25-VB-1000	1
C100-C102	808-935369-068-A	Capacitor SM50VB10	3
CM1, CM2, CM6-CM8	808-935569-002-A	Capacitor Module, ceramic, 4 sections, 2200 pf \pm 10%	5
CM3-CM5, CM9, CM10	808-935569-001-A	Capacitor Module, ceramic, 4 sections, 330 pf, \pm 10%	5
CN21	808-955132-427-A	Connector 3433-1002LCG	1
CN22	808-955132-485-A	Connector 3431-2002SCG	1
CN23, CN24	808-955132-482-A	Connector 3408-2002SCG	2
CN25	808-955142-770-A	Connector 172407-1S	1
CN26	808-955142-671-A	Connector 172406-2S	1
CN27	808-955142-670-A	Connector 172406-1S	1
CN28	808-955132-484-A	Connector 3429-2002SCG	1
CN29	808-955142-654-A	Connector 640456-4S	1
(CN21-CN24, CN28)	808-955130-389-A	Key 3518	7
D1-D16, D21-D28, D33	808-923505-245-A	Diode, Zener 18 V (RD18FB)	25
D17, D18, D20	808-923302-021-A	Diode, silicon F14C	3
D19	808-923330-001-A	Diode F114 B	1
D29-D32	808-923505-315-A	Diode, Zener, 36 V (RD36FB)	4
DM1-15	808-923332-002-A	Diode Module 5EH2M	15
DM16, DM17, DM22	808-910000-544-A	Diode Module μ PA54H	3
DM18-DM21	808-924004-001-A	Diode Module MI-102R	4
L1-L4	802-530001-026-0	Inductor, H.F. 0.22 μ h \pm 20%	4
Q1-Q4, Q7-Q10, Q12, Q13, Q15, Q19-Q22	808-920405-601-A	Transistor 2SD560	15
Q5, Q6, Q11, Q14, Q16-Q18	808-920106-011-A	Transistor 2SB601	7
Q23, Q24	808-920209-431-A	Transistor 2SC943	2
Q25-Q28	808-920405-581-A	Transistor 2SD558	4
R5	802-310002-119-0	Resistor, ML20AD132G	1
R6, R7, R23, R28, R37, R38	802-310004-092-0	Resistor, 0.3, 3 W, \pm 5%	6
R16	802-310021-027-0	Resistor, 120 Ω , 1/4 W, \pm 2%	1
R39	802-310004-001-0	Resistor, 1.0 Ω , 3 W, \pm 5%	1
R40	802-310021-028-0	Resistor, 130 Ω , 1/4 W, \pm 2%	1
R41, R42, R49, R62, R73, R77, R78	802-310021-049-0	Resistor, 1000 Ω , 1/4 W, \pm 2%	7
R43	802-310021-035-0	Resistor 270 Ω , 1/4 W, \pm 2%	1
R44	802-310021-033-0	Resistor 220 Ω , 1/4 W, \pm 2%	1
R60	802-310021-091-0	Resistor, 56 K Ω , 1/4 W, \pm 2%	1
R61, R75, R76, R79	802-310021-025-0	Resistor, 100 Ω , 1/4 W, \pm 2%	4
R71, R72	802-310021-073-0	Resistor, 10 K Ω , 1/4 W, \pm 2%	2
R74	802-310021-001-0	Resistor, 10 Ω , 1/4 W, \pm 2%	1
R80, R81	802-310021-047-0	Resistor, 820 Ω , 1/4 W, \pm 2%	2

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
RM1	808-930394-041-A	Resistor Module, NWR2-041	1
RM2, RM3, RM6, RM8	808-930394-043-A	Resistor Module, NWR2-043	4
RM4, RM5	808-930394-048-A	Resistor Module, NWR2-048	2
RM7	808-930394-044-A	Resistor Module, NWR2-044	1
RM9	808-930394-040-A	Resistor Module, NWR2-040	1
RM19, RM21, RM22, RM24, RM29	808-930395-002-A	Resistor Module, NWR3-002	5
RM23, RM25-RM27	808-930395-001-A	Resistor Module, NWR3-001	4
RM28	808-930394-050-A	Resistor Module, NWR2-050	1
RM30	808-930394-049-A	Resistor Module, NWR2-049	1
RM31, RM33, RM36	808-930349-052-A	Resistor Module, IHR-1/4-8-181JA	3
RM32, RM34, RM37	808-930349-006-A	Resistor Module, IHR-1/8-8-391JA	3
RM35, RM38, RM39	808-930349-010-A	Resistor Module, IHR-1/8-8-102JA	3
RM40	808-930349-003-A	Resistor Module, IHR-1/8-8-471JA	1
SW1	808-950358-008-A	Switch, DIP, 8 sections,	1
XL1	808-970104-001-A	Crystal Oscillator, 6 MHZ, HC-43/U	1
Z1, Z4, Z6, Z8, Z11, Z12	808-912100-061-A	Integrated Circuit SN7406N	6
Z2, Z49	808-912140-041-A	Integrated Circuit SN74LS04N	2
Z3, Z10	808-910201-771-A	Integrated Circuit μ PC177C	2
Z5, Z9	808-912140-031-A	Integrated Circuit SN74LS03N	2
Z7, Z22, Z46	808-912140-081-A	Integrated Circuit SN74LS08N	3
Z13	808-910202-771-A	Integrated Circuit μ PC277C	1
Z14	808-910052-161-A	Integrated Circuit μ PB8216C	1
Z15, Z21, Z34, Z35, Z55, Z56	808-912100-041-A	Integrated Circuit SN7404N	6
Z16, Z20, Z23, Z27	808-912204-521-A	Integrated Circuit SN75452BP	4
Z17-Z19, Z24	808-914019-001-A	Integrated Circuit DS8837N	4
Z25	808-912140-141-A	Integrated Circuit SN74LS14N	1
Z26	808-912142-791-A	Integrated Circuit SN74LS279N	1
Z28	808-912100-001-A	Integrated Circuit SN7400N	1
Z29, Z48	808-912140-001-A	Integrated Circuit SN74LS00N	2
Z30	808-912140-101-A	Integrated Circuit SN74LS10N	1
Z31, Z32, Z38, Z39	808-912146-701-A	Integrated Circuit SN74LS670N	4
Z33	808-912141-381-A	Integrated Circuit SN74LS138N	1
Z36	808-912146-951-A	Integrated Circuit SN74LS195AN	1
Z37, Z44, Z47	808-912141-611-A	Integrated Circuit SN74LS161AN	3
Z40	808-912141-391-A	Integrated Circuit SN74LS139N	1
Z41	808-910381-551-A	Integrated Circuit μ PD8155C	1
Z42	808-910382-431-A	Integrated Circuit μ PD8243C	1
Z43	808-912140-741-A	Integrated Circuit SN74LS74AN	1
Z45	808-910511-085-A	Integrated Circuit μ PD8041AC-085	1
Z50	808-912143-731-A	Integrated Circuit SN74LS373N	1
Z51	808-910245-581-A	Integrated Circuit μ PC4558C	1
Z52	808-910511-070-A	Integrated Circuit μ PD8041AC-070	1
(Z53)	136-035206-A	Integrated Circuit 4kx8 EPROM(1)	1
Z54	808-910380-391-A	Integrated Circuit μ PD8039LC	1
(1)	136-451822-A	G9PAU PCB	1
(106) (Z45, Z52, Z54)	808-955157-140-A	IC Socket, 40 pin	3
(107) (Z53)	808-955157-124-A	IC Socket, 24 pin	1
(123)	804-173010-108-A	Wire, AWG24-8T	ASR
(124)	808-970915-006-A	Minibus	1
(125)	808-970914-005-A	Minibus	2
(126)	808-970914-003-A	Minibus	1
(127)	136-741377-B	DRV Heat Sink A	2
(128)	136-739322-001-B	Spacer	2
(130)	133-350039-0	Spacer A	2
(132)	803-010048-002-0	Rivet BSP-34	4
(133)	136-741367-A	PCB Lock	2
(134)	808-814062-354-A	Nylon Rivet	24

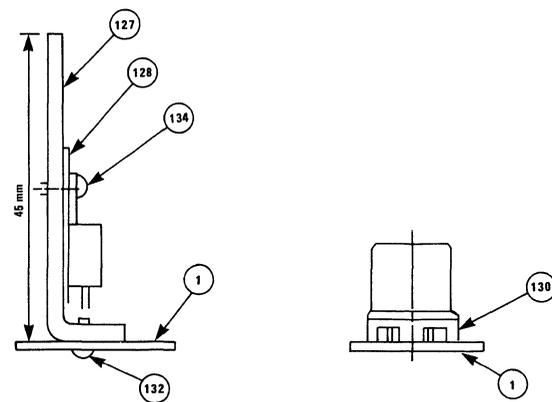
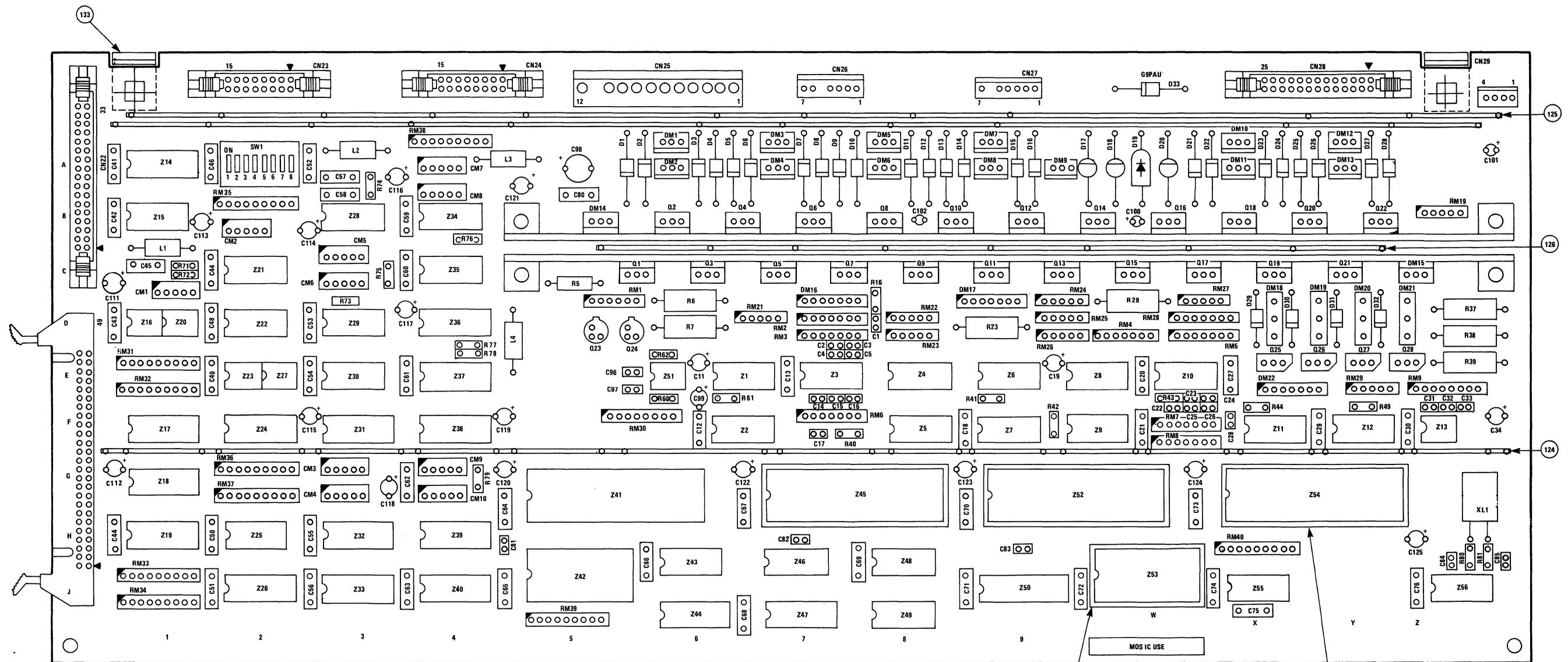


Figure 6-31 G9PAU PCB Assembly (3500D)

136-431619 G9NAC PCB Assembly

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
C1, C14, C17, C22, C28, C31, C33, C42, C96	802-410030-001-0	Capacitor, ceramic 0.1 μ f, 50 Vdc, -20+80%	9
C2, C4, C15, C23, C24, C32	808-935590-047-A	Capacitor, ceramic 1000 pf, 50 Vdc, \pm 10%	6
C3, C5, C16, C25, C26	808-935590-065-A	Capacitor, ceramic 5600 pf, 50 Vdc, \pm 10%	5
C11, C19, C34, C36, C41, C44, C51, C59, C64, C67, C69, C72, C73, C75, C77, C81, C85, C90, C92, C99	808-935411-014-A	Capacitor, tantalum 10 μ f, 16 Vdc, \pm 20%	20
C12, C13, C18, C20, C21, C27, C29, C30, C35, C37, C38-C40, C43, C45-C48, C50, C54-C56, C60-C63, C65, C66, C68, C70, C71, C74, C76, C78, C80, C82, C84, C86, C88, C89, C91, C93	808-935561-403-A	Capacitor 0.1 μ f, 50 Vdc, -20 + 80%	42
C49, C57, C58	808-935590-035-A	Capacitor, ceramic 330 pf, 50 Vdc, \pm 10%	3
C52, C53	808-935590-055-A	Capacitor, ceramic 2200 pf, 50 Vdc, \pm 10%	2
C79, C83, C87	808-935590-039-A	Capacitor, ceramic 470 pf, 50 Vdc, \pm 10%	3
C94	808-935590-071-A	Capacitor, ceramic .01 μ f, 50 Vdc, \pm 10%	1
C95	808-935590-015-A	Capacitor, ceramic 47 pf, 50 Vdc, \pm 10%	1
C97	808-935081-067-A	Capacitor, ceramic 6800 pf, 50 Vdc, \pm 10%	1
C98	808-935374-001-A	Capacitor 25 Vdc \pm 20%	1
C100, C101	808-935369-068-A	Capacitor SM50VB10	2
CM1, CM6, CM7	808-935569-002-A	Capacitor Module, ceramic, 4 sections, 2200 pf, \pm 10%	3
CM2-CM5, CM8	808-935569-001-A	Capacitor Module, ceramic, 4 sections, 330 pf, \pm 10%	5
CN21	808-955132-427-A	Header 3433-1002LC	1
CN22	808-955132-485-A	Header 3431-2002SC	1
CN23, CN24	808-955132-482-A	Header 3408-2002SC	2
CN25	808-955142-770-A	Header 1-172407-1	1
CN26	808-955142-671-A	Header 172406-2S	1
CN27	808-955142-670-A	Header 172406-1S	1
CN28	808-955132-484-A	Header 3429-2002	1
CN29	808-955142-654-A	Header 640456-4S	1
(CN21-CN24, CN28)	808-955130-389-A	Key 3518	5
D1-D16, D21-D28, D33	808-923505-245-A	Diode, Zener 18 V (RD18FB)	25
D17, D18, D20	808-923302-021-A	Diode, silicon F14C	3
D19	808-923330-001-A	Diode F114B	1
D29-D32	808-923505-315-A	Diode, Zener, 36 V (RD36FB)	4
DM1-15	808-923332-002-A	Diode Module 5EH2M	15
DM16, DM17, DM22	808-910000-544-A	Diode Module μ PA54H	3
DM18-DM21	808-924004-001-A	Diode Module MI-102R	4
L1-L4	802-530001-026-0	Inductor, H.F. 0.22 μ h \pm 20%	4
Q1-Q4, Q7-Q10, Q12, Q13, Q15, Q19-Q22	808-920405-601-A	Transistor 2SD560	15
Q5, Q6, Q11, Q14, Q16-Q18	808-920106-011-A	Transistor 2SB601	7
Q23, Q24	808-920209-431-A	Transistor 2SC943	2
Q25-Q28	808-920405-581-A	Transistor 2SD558	4
R5	802-310002-119-0	Resistor, ML20AD132G	1
R6, R7, R23, R28, R37, R38	802-310004-092-0	Resistor, 0.3, 3 W, \pm 5%	6
R16	802-310021-027-0	Resistor, 120 Ω , 1/4 W, \pm 2%	1
R39	802-310004-001-0	Resistor, 1.0 Ω , 3 W, \pm 5%	1
R40	802-310021-028-0	Resistor, 130 Ω , 1/4 W, \pm 2%	1
R41, R42, R49, R57, R62	802-310021-049-0	Resistor, 1000 Ω , 1/4 W, \pm 2%	5

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
R43	802-310021-035-0	Resistor, 270 Ω , 1/4 W, \pm 2%	1
R44	802-310021-033-0	Resistor, 220 Ω , 1/4 W, \pm 2%	1
R50-R52	802-310021-073-0	Resistor, 10 K Ω , 1/4 W, \pm 2%	3
R53	802-310021-001-0	Resistor, 10 Ω , 1/4 W, \pm 2%	1
R54-R56, R61	802-310021-025-0	Resistor, 100 Ω , 1/4 W, \pm 2%	4
R58, R59	802-310021-047-0	Resistor, 820 Ω , 1/4 W, \pm 2%	2
R60	802-310021-091-0	Resistor, 56 k Ω , 1/4 W, \pm 2%	1
RM1	808-930394-041-A	Resistor Module, NWR2-041	1
RM2, RM3, RM6, RM8	808-930394-043-A	Resistor Module, NWR2-043	4
RM4, RM5	808-930394-048-A	Resistor Module, NWR2-048	2
RM7	808-930394-044-A	Resistor Module, NWR2-044	1
RM9	808-930394-040-A	Resistor Module, NWR2-040	1
RM10, RM13, RM16	808-930349-006-A	Resistor Module, IHR-1/8-8-391JA	3
RM11, RM14, RM15	808-930349-052-A	Resistor Module, IHR-1/8-8-181JA	3
RM12, RM17	808-930349-010-A	Resistor Module, IHR-1/8-8-102JA	2
RM18	808-930349-003-A	Resistor Module, IHR-1/8-8-471JA	1
RM19, RM21, RM22, RM24, RM29	808-930395-002-A	Resistor Module, NWR3-002	5
RM23, RM25-RM27	808-930395-001-A	Resistor Module, NWR3-001	4
RM28	808-930394-050-A	Resistor Module, NWR2-050	1
RM30	808-930394-049-A	Resistor Module, NWR2-049	1
SW1	808-950358-008-A	Switch, DIP, 8 sections,	1
XL1	808-970104-001-A	Crystal Oscillator, 6 MHz, HC-43/U	1
Z1, Z4, Z6, Z8, Z11, Z12	808-912100-061-A	Integrated Circuit SN7406N	6
Z2, Z34, Z37	808-912140-041-A	Integrated Circuit SN74LS04	3
Z3, Z10	808-910201-771-A	Integrated Circuit μ PC177C	2
Z5, Z9	808-912140-031-A	Integrated Circuit SN74LS03N	2
Z7, Z22	808-912140-081-A	Integrated Circuit SN74LS08N	2
Z13	808-910202-771-A	Integrated Circuit μ PC277C	1
Z14	808-910052-161-A	Integrated Circuit μ PB8216C	1
Z15, Z26, Z32, Z33, Z49, Z50	808-912100-041-A	Integrated Circuit SN7404N	6
Z16-Z18, Z23, Z24	808-912204-521-A	Integrated Circuit SN75452BP	5
Z19-Z21, Z25	808-914019-001-A	Integrated Circuit DS8837N	4
Z27	808-912100-001-A	Integrated Circuit SN7400N	1
Z28, Z38	808-912140-001-A	Integrated Circuit SN74LS00N	2
Z29	808-912141-751-A	Integrated Circuit SN74LS175N	1
Z30	808-912140-141-A	Integrated Circuit SN74LS14N	1
Z31, Z39	808-912141-611-A	Integrated Circuit SN74LS161AN	2
Z35	808-912142-791-A	Integrated Circuit SN74LS279N	1
Z36	808-912140-111-A	Integrated Circuit SN74LS11N	1
Z40	808-919381-551-A	Integrated Circuit μ PD8155C	1
Z41	808-910382-431-A	Integrated Circuit μ PD8243C	1
Z42	808-910511-085-a	Integrated Circuit μ PD8041AC-085	1
Z43	808-912140-741-A	Integrated Circuit SN74LS74AN	1
Z44	808-912141-391-A	Integrated Circuit SN74LS139N	1
Z45	808-910511-070-A	Integrated Circuit μ PD8041AC-070	1
(Z46)	136-035206-A	Integrated Circuit 4KX8 EPROM	1
Z47	808-910380-391-A	Integrated Circuit μ PD8039LC	1
Z48	808-912143-731-A	Integrated Circuit SN74LS373N	1
Z51	808-910245-581-A	Integrated Circuit μ PC4558C	1
(1)	136-451619-E	G9NAC PCB	1
(106) (Z42, Z45, Z47)	808-955157-140-A	IC Socket, 40 pin	3
(107) (Z46)	808-955157-124-A	IC Socket, 24 pin	1
(118)	804-173010-108-A	Wire, AWG24-8T	ASR
(201)	808-970915-006-A	Minibus	1
(202)	808-970914-005-A	Minibus	2
(203)	808-970914-003-A	Minibus	1
(204)	136-741377-B	DRV Heat Sink A	2
(205)	136-739322-001-B	Spacer	2
(207)	133-350039-0	Spacer A	2
(209)	805-310025-008-0	SL-CPIMSx2.5x8x15BF	24
(210)	803-010048-002-0	Rivet BSP-34	4
(211)	136-741367-A	PCB Clip	2
	808-814062-354-A	Nylon Rivet	24

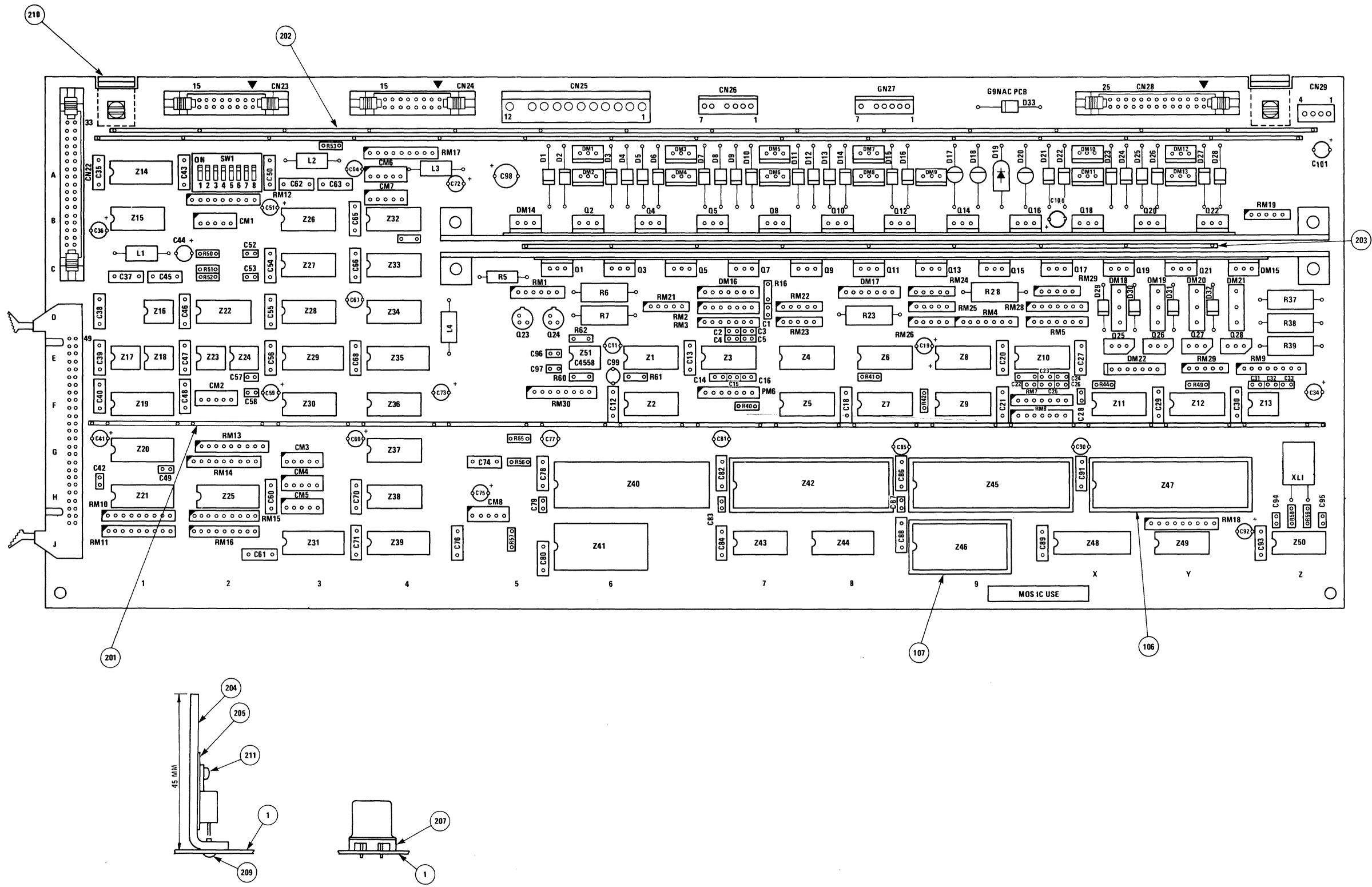


Figure 6-32 G9NAC PCB Assembly (3500Q)

136-431820-001-A G9PAS-001 PCB Assembly

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
C1, C43, C44, C79, C114, C116	808-935590-055-A	Capacitor, ceramic, 2200 pF, 50 Vdc, +10%	6
C2, C7, C15, C18, C24, C30, C33, C35	802-410030-001-0	Capacitor, ceramic, 0.1 μF, 50 Vdc, -20 +80%	8
C3, C5, C16, C25, C26, C34	808-935590-047-A	Capacitor, ceramic, 1000 pF, 50 Vdc, +10%	6
C4, C6, C17, C27, C28	808-935590-065-A	Capacitor, ceramic, 5600 pF, 50 Vdc, +10%	5
C8	808-935590-067-A	Capacitor, ceramic, 6800 pF, 50 Vdc, +10%	1
C9	808-935374-001-A	Capacitor SXA-25-VB-1000	1
C12, C20, C21, C36, C46, C52, C56, C58, C61, C64, C69, C72, C83, C88, C92, C93, C99, C104, C105	808-935411-014-A	Capacitor, tantalum, , 10 μF, 16 Vdc, +20%	19
C13, C14, C19, C22, C23, C29, C31, C32, C39, C40, C45, C47, C49, C51, C55, C57, C59, C60, C62, C63, C70, C71, C73, C74, C77, C80-C82, C84, C87, C90, C94, C96, C98, C100-C103, C106, C115	808-935561-403-A	Capacitor, 0.1 μF, 50 Vdc, -20 +80%	46
C37, C38, C111-C113	808-935411-033-A	Capacitor, tantalum, , 6.8 μF, 16 Vdc, +20%	5
C41, C42, C115, C116	808-935590-035-A	Capacitor, ceramic, 330 pF, 50 Vdc, +10%	4
C53, C54, C65-C67	808-935590-039-A	Capacitor, ceramic, 470 pF, 50 Vdc, +10%	5
C107	808-935590-071-A	Capacitor, ceramic, 1000 pF, 50 Vdc, +10%	1
C108, C109	808-935590-002-A	Capacitor, ceramic, 12 pF, 50 Vdc, +10%	2
C110	808-935590-015-A	Capacitor, ceramic, 47 pF, 50 Vdc, +10%	1
CM3-CM6	808-935569-002-A	Capacitor Module IHC-4-222KA	4
CN21	808-955132-474-A	Connector 3429-1002SCG	1
CN22	808-955132-485-A	Connector 3431-2002SCG	1
CN23, CN28	808-955132-484-A	Connector 3429-2002SCG	2
CN24	808-955132-482-A	Connector 3408-2002SCG	1
CN25	808-955142-770-A	Connector 172407-1S	1
CN26	808-955142-671-A	Connector 172406-2S	1
CN27	808-955142-670-A	Connector 172406-1S	1
CN29	808-955142-654-A	Connector 640456-4S	1
(CN21-CN24, CN28)	808-955130-389-A	Key 3518	5
D1-D17, D22-D29	808-923505-245-A	Diode, Zener 18V (RD18FB)	25
D18, D19, D21	808-923302-021-A	Diode F14C	3
D20	808-923330-001-A	Diode F114B	1
D30-D33	808-923505-315-A	Diode, Zener 36V (RD36FB)	4
D34-D37	808-923009-531-A	Diode, silicon 1S953	4
DM1-DM15	808-923332-002-A	Diode Module 5EH2M	15
DM16, DM17, DM22-DM25	808-910000-544-A	Diode Module μPA54H	6
DM18-DM21	808-924004-001-A	Diode Module MI-102R	4
L1-L4	802-530001-026-0	Inductor TP0410L-R22M	4
Q1-Q4, Q7-Q10, Q12, Q13, Q15, Q19-Q22	808-920405-601-A	Transistor 2SD560	15
Q5, Q6, Q11, Q14, Q16-Q18	808-920106-011-A	Transistor 2SB601	7
Q23, Q24	808-920209-431-A	Transistor 2SC943	2
Q25-Q28	808-920405-581-A	Transistor 2SD558	4
Q29	808-910201-433-A	Transistor μPC14312H	1
R1	802-310002-119-0	Resistor ML20AD132G	1
R2, R3, R6, R7, R10, R11	802-310004-092-0	Resistor wire wound 0.3Ω +5%	6
R4	802-310021-027-0	Resistor, 120 Ω, 1/4 W, +2%	1
R5, R25, R27, R29, R32, R33	802-310021-049-0	Resistor, 1000Ω, 1/4 W, +2%	6
R9	802-310021-053-0	Resistor, 1500Ω, 1/4 W, +2%	1
R12	802-310004-001-0	Resistor, wire wound, 1Ω, +5%	1
R13	802-310021-028-0	Resistor, 130Ω, 1/4 W, +2%	1
R14, R21, R28	802-310021-025-0	Resistor, 100Ω, 1/4 W, +2%	3
R15	802-310021-091-0	Resistor, 56KΩ, 1/4 W, +2%	1
R16	802-310021-035-0	Resistor, 270Ω, 1/4 W, +2%	1

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
R17	802-310021-033-0	Resistor, 220 Ω, 1/4 W, +2%	1
R18, R19	802-310021-073-0	Resistor, 10KΩ, 1/4 W, +2%	2
R20	802-310021-001-0	Resistor, 10 Ω, 1/4 W, +2%	1
R30, R31	802-310021-047-0	Resistor, 820Ω, 1/4 W, +2%	2
RM1, RM3, RM7, RM10, RM17	808-930395-002-A	Resistor Module NWR3-002	5
RM2	808-930394-041-A	Resistor Module NWR2-041	1
RM4, RM8, RM9, RM13	808-930395-001-A	Resistor Module NWR3-001	4
RM5, RM6, RM14, RM16	808-930394-043-A	Resistor Module NWR2-043	4
RM11, RM12	808-930394-048-A	Resistor Module NWR2-048	2
RM15	808-930394-044-A	Resistor Module NWR2-044	1
RM18	808-930394-040-A	Resistor Module NWR2-040	1
RM21-RM23	808-930349-010-A	Resistor Module IHR-1/8-8-102JA	3
RM24	808-930349-003-A	Resistor Module IHR-1/8-8-471JA	1
RM25	808-930394-049-A	Resistor Module NWR2-049	1
RM26	808-930394-050-A	Resistor Module NWR2-050	1
SW1-SW3	808-950358-008-A	Switch, DIP 7-171474-8	3
XL1	808-970104-002-A	Crystal HC-43/U 6.144 MHz	1
XL2	808-970104-001-A	Crystal HC-43/U 6MHz	1
Z1, Z4, Z6, Z8, Z11, Z12	808-912100-061-A	Integrated Circuit SN7406N	6
Z2	808-912140-041-A	Integrated Circuit SN74LS04N	1
Z3, Z10	808-910201-771-A	Integrated Circuit μPC177C	2
Z5, Z9	808-912140-031-A	Integrated Circuit SN74LS03N	2
Z7	808-912140-081-A	Integrated Circuit SN74LS08N	1
Z13	808-910202-771-A	Integrated Circuit μPC277C	1
Z14	808-910052-161-A	Integrated Circuit μPB8216C	1
Z15	808-912140-861-A	Integrated Circuit SN74LS86N	1
Z17	808-914120-015-A	Integrated Circuit MCL488L	1
Z19, Z26, Z33, Z34, Z57, Z58	808-912100-041-A	Integrated Circuit SN7404N	6
Z21	808-910382-512-A	Integrated Circuit μPD825LAC	1
Z22	808-912140-321-A	Integrated Circuit SN74LS32N	1
Z23	808-912140-741-A	Integrated Circuit SN74LS74AN	1
Z25	808-914120-025-A	Integrated Circuit MCL489L	1
Z27, Z28	808-910340-421-A	Integrated Circuit μPD4042BC	2
Z29, Z30	808-910381-551-A	Integrated Circuit μPD8155C	2
Z31	808-910511-070-A	Integrated Circuit μPD8041AC-070	1
Z32	808-910511-085-A	Integrated Circuit μPD8041AC-085	1
Z35	808-910382-592-A	Integrated Circuit μPD8259C-5	1
Z36	808-910382-532-A	Integrated Circuit μPD8253C-5	1
Z37	808-912141-381-A	Integrated Circuit SN74LS138N	1
(Z38, Z39, Z41)	136-035365-001-A	Integrated Circuit 4Kx8 EPROM	1 set
Z40, Z56	808-912143-731-A	Integrated Circuit SN74LS373N	2
Z52	808-912140-421-A	Integrated Circuit SN74LS42N	1
Z53	808-912141-391-A	Integrated Circuit SN74LS139N	1
Z54	808-912141-611-A	Integrated Circuit SN74LS161AN	1
Z55	808-910380-851-A	Integrated Circuit μPD8085AC	1
Z59	808-910245-581-A	Integrated Circuit μPC4558C	1
Z60	808-912100-451-A	Integrated Circuit SN7445N	1
Z61	808-912100-081-A	Integrated Circuit SN7408N	1
(1)	136-451820-B	G9PAS PCB	1
(106) (Z31, Z32, Z55)	808-955157-140-A	IC Socket, 40 Pin	3
(107) (Z38, Z39, Z41)	808-955157-124-A	IC Socket, 24 Pin	3
(125)	804-173010-108-A	Wire AWG24-8T	ASR
(128)	808-820014-004-A	Minibus	1
(129)	808-970914-003-A	Minibus	1
(130)	808-820014-006-A	Minibus	1
(133)	136-741377-B	DRV Heat Sink A	2
(136)	136-739322-001-B	Spacer	2
(137)	133-350039-0	Spacer A	2
(140)	803-010048-002-0	Rivet BSP-34	4
(143)	136-741367-A	PCB Lock	2
(146)	808-814062-354-A	Nylon Rivet	24

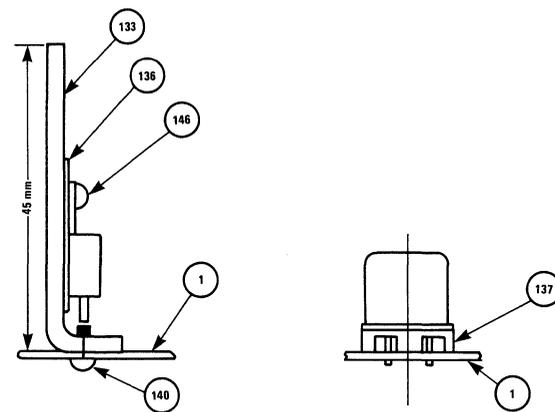
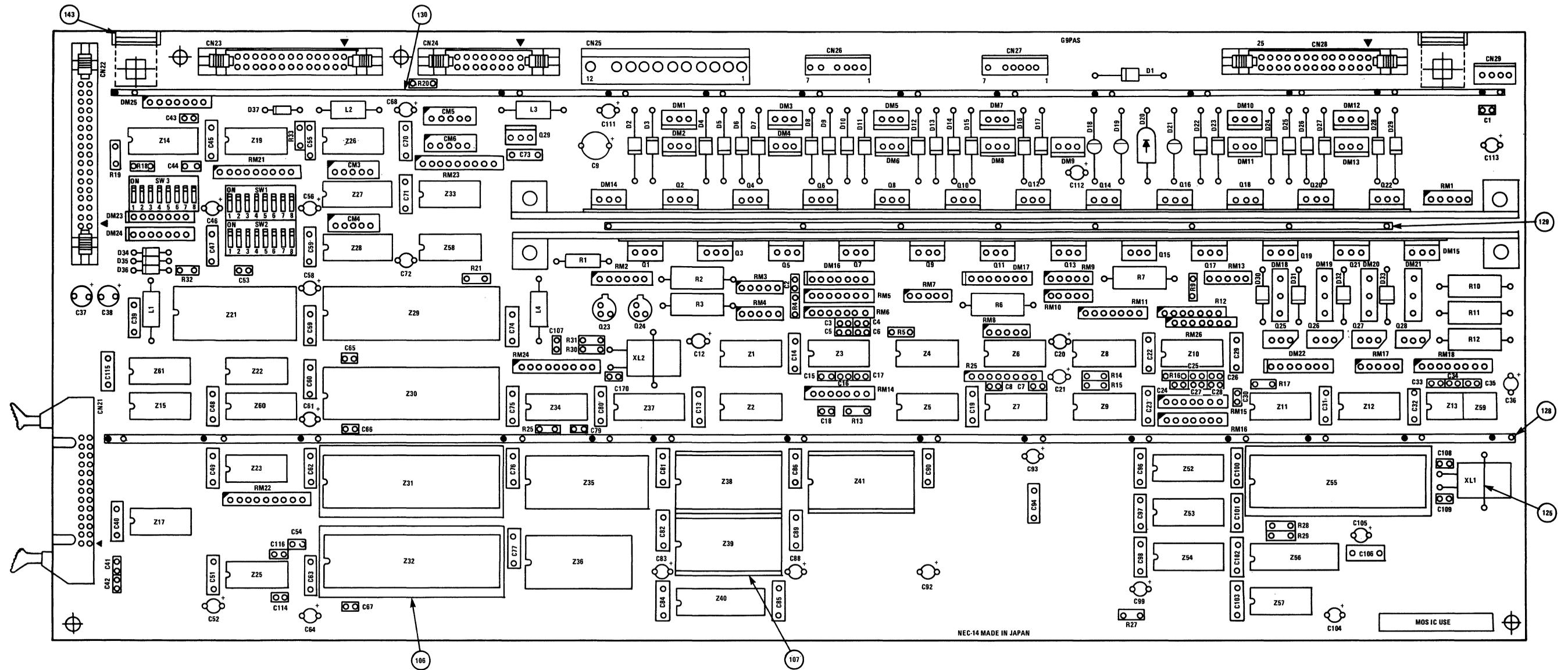


Figure 6-33 G9PAS-001 PCB Assembly (3500R)

136-431625-GRP-A G9NAJ-xxx PCB

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
C1, C43, C44, C78, C79, C114	808-935590-055-A	Capacitor, ceramic, 2200 pF, 50 Vdc, +10%	6
C2, C7, C15, C18, C24, C30, C33, C35	802-410030-001-0	Capacitor, ceramic, 0.1 μF, 50 Vdc, +80, -20%	8
C3, C5, C16, C25, C26, C34	808-935590-047-A	Capacitor, ceramic, 1000 pF, 50 Vdc, +10%	6
C4, C6, C17, C27, C28	808-935590-065-A	Capacitor, ceramic, 5600 pF, 50 Vdc, +10%	5
C8	808-935590-067-A	Capacitor, ceramic, 6800 pF, 50 Vdc, +10%	1
C9	808-935374-001-A	Capacitor, SXA-25-VB-1000	1
C12, C20, C21, C36, C46, C52, C56, C58, C61, C64, C69, C72, C83, C88, C92, C93, C99, C104, C105	808-935411-014-A	Capacitor, tantalum, 10 F, 16 Vdc, +20%	19
C13, C14, C19, C22, C23, C29, C31, C32, C39, C40, C45, C47-C51, C55, C57, C59, C60, C62, C63, C68, C70, C71, C73-C77, C80-C82, C84-C87, C89-C91, C94-C98, C100-C103, C106	808-935561-403-A	Capacitor, ceramic, 0.1 μF, 50 Vdc, +80 -20%	50
C37, C38, C111, C112, C113	802-935411-033-A	Capacitor, tantalum, 6.8 μF, 35 Vdc, +20%	5
C41, C42, C115, C116	808-935590-035-A	Capacitor, ceramic, 330 pF, 50 Vdc, +10%	4
C53, C54, C65-C67	808-935590-039-A	Capacitor, ceramic, 470 pF, 50 Vdc, +10%	5
C107	808-935590-071-A	Capacitor, ceramic, 10000 pF, 50 Vdc, +10%	1
C108, C109	808-935590-002-A	Capacitor, ceramic, 12 pF, 50 Vdc, +10%	2
C110	808-935590-015-A	Capacitor, ceramic, 47 pF, 50 Vdc, +10%	1
CM1-CM6	808-935569-002-A	Capacitor Module IHC-4-222KA	6
CN21	808-955132-474-A	Header 3429-1002SCG	1
CN22	808-955132-485-A	Header 3431-2002SCG	1
CN23, CN28	808-955132-484-A	Header 3429-2002SCG	2
CN24	808-955132-482-A	Header 3408-2002SCG	1
CN25	808-955142-770-A	S Header 172407-1	1
CN26	808-955142-671-A	S Header 172406-2S	1
CN27	808-955142-670-A	Header 172406-1	1
CN29	808-955142-654-A	Header 640456-4S	1
(CN21-CN24, CN28)	808-955130-389-A	Key 3518	7
D1-D17, D22-D29	808-923505-245-A	Diode, Zener, 18 Vdc, 1W	25
D18, D19, D21	808-923302-021-A	Rectifier, silicon F14C	3
D20	808-923330-001-A	Diode F114B	1
D30-D33	808-923505-315-A	Diode, Zener, 36 Vdc, 1W	4
DM1-DM15	808-923332-002-A	Diode Module 5EH2M	15
DM16, DM17, DM22	808-910000-544-A	Diode Module μPA54H	3
DM18-DM21	808-924004-001-A	Diode Module MI-102R	4
L1-L4	802-530001-026-0	Inductor TP0410L-R22	4
Q1-Q4, Q7-Q10, Q12, Q13, Q15, Q19-Q22	808-920405-601-A	Transistor 2SD560	15
Q5, Q6, Q11, Q14, Q16-Q18	808-920106-011-A	Transistor 2SB601	7
Q23, Q24	808-920209-431-A	Transistor 2SC943	2
Q25-Q28	808-920405-581-A	Transistor 2SD558	4
Q29	808-910201-433-A	Transistor μPC14312H	1
R1	802-310002-119-0	Resistor ML20AD132G	1
R2, R3, R6, R7, R10, R11	802-310004-092-0	Resistor, wire wound, 0.3Ω, +5%	6
R4	802-310021-027-0	Resistor, 120Ω, 1/4 W, +2%	1
R5, R24, R25, R27, R29, R32	802-310021-049-0	Resistor, 1 KΩ, 1/4W, +2%	6
R9	802-310021-053-0	Resistor, 1.5 KΩ, 1/4W, +2%	1
R12	802-310004-001-0	Resistor, wire wound, 1Ω, +5%	1
R13	802-310021-028-0	Resistor, 130Ω, 1/4W, +2%	1

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
R14, R21, R26, R28	802-310021-025-0	Resistor, 100Ω, 1/4W, +2%	4
R15	802-310021-091-0	Resistor, 56 KΩ, 1/4W, +2%	1
R16	802-310021-035-0	Resistor, 270Ω, 1/4W, +2%	1
R17	802-310021-033-0	Resistor, 220Ω, 1/4W, +2%	1
R18, R19	802-310021-073-0	Resistor, 10KΩ, 1/4W, +2%	2
R30, R31	802-310021-047-0	Resistor, 820Ω, 1/4W, +2%	2
RM1, RM3, RM7, RM10, RM17	808-930395-002-A	Resistor Module NWR3-002	5
RM2	808-930394-041-A	Resistor Module NWR2-041	1
RM4, RM8, RM9, RM13	808-930395-001-A	Resistor Module NWR3-001	4
RM5, RM6, RM14, RM16	808-930394-043-A	Resistor Module NWR2-043	4
RM11, RM12	808-930394-048-A	Resistor Module NWR2-048	2
RM15	808-930394-044-A	Resistor Module NWR2-044	1
RM18	808-930394-040-A	Resistor Module NRW2-040	1
RM19, RM21-RM23	808-930349-010-A	Resistor Module IHR-1/8-8-102JA	4
RM20	808-930349-011-A	Resistor Module IHR-1/8-8-273JA	1
RM24	808-930349-003-A	Resistor Module IHR-1/8-8-471JA	1
RM25	808-930394-049-A	Resistor Module NWR2-049	1
RM26	808-930394-050-A	Resistor Module NWR2-050	1
SW1	808-950358-008-A	Switch, Dip	1
XL1	808-970104-002-A	Crystal Oscillator, HC-43U 6.144 MHz	1
XL2	808-970104-001-A	Crystal Oscillator, HC43U 6 MHz	1
Z1, Z4, Z6, Z8, Z11, Z12	808-912100-061-A	Integrated Circuit SN7406N	6
Z2	808-912140-041-A	Integrated Circuit SN74LS04N	1
Z3, Z10	808-910201-771-A	Integrated Circuit μPC177C	2
Z5, Z9	808-912140-031-A	Integrated Circuit SN74LS03N	2
Z7	808-912140-081-A	Integrated Circuit SN74LS08N	1
Z13	808-910202-771-A	Integrated Circuit μPC277C	1
Z14	808-910052-161-A	Integrated Circuit μPB8216C	1
Z15	808-912140-861-A	Integrated Circuit SN74LS86N	1
Z16, Z17	808-914120-015-A	Integrated Circuit MC1488L	2
Z18, Z25	808-914120-025-A	Integrated Circuit MC1489L	2
Z19, Z20, Z26, Z33, Z34, Z57, Z58	808-912100-041-A	Integrated Circuit SN7404N	7
Z21	808-910382-512-A	Integrated Circuit μPD8251AC	1
Z22	808-912140-321-A	Integrated Circuit SN74LS32N	1
Z23, Z60	808-912140-741-A	Integrated Circuit SN74LS74AN	2
Z24, Z40, Z56	808-912143-731-A	Integrated Circuit SN74LS373N	3
Z27, Z28	808-910340-421-A	Integrated Circuit μPD4042C	2
Z29, Z30	808-910381-551-A	Integrated Circuit μPD8155C	2
Z31	808-810511-070-A	Integrated Circuit μPD8041AC-070	1
Z32	808-910511-085-A	Integrated Circuit μPD8041AC-085	1
Z35	808-910382-592-A	Integrated Circuit μPD8259C-5	1
Z36	808-910382-532-A	Integrated Circuit μPD8253C-5	1
Z37, Z43	808-912141-381-A	Integrated Circuit SN74LS138N	2
(Z38, Z39, Z41, Z42)	GRP101: 136-035723-001 GRP151: 136-035212-001-A GRP201: 136-035738-001-A GRP251: 136-035739-001-A	Integrated Circuit 4KX8 EPROM(4)	1 set
Z44, Z45, Z47-Z49, Z51	808-910321-141-A	Integrated Circuit μPD2114LC	6
Z52	808-912140-421-A	Integrated Circuit SN74LS42N	1
Z53	808-912141-391-A	Integrated Circuit SN74LS139N	1
Z54	808-912141-611-A	Integrated Circuit SN74LS161AN	1
Z55	808-910380-851-A	Integrated Circuit μPD8085AC	1
Z59	808-910245-581-A	Integrated Circuit μPC4558C	1
(1)	136-451625-B	G9NAJ PCB	1
(80)	802-730014-316-A	IC Socket 16-pin	1
(81) (Z31, Z32, Z55)	808-955157-140-A	IC Socket 40-pin	3
(82) (Z38, Z39, Z41, Z42)	808-955157-124-A	IC Socket 24-pin	4
(93)	804-173010-108-A	Wire AWG24-8T	AR
(94)	808-820014-004-A	Minibus	1
(95)	808-970914-003-A	Minibus	1
(96)	808-820014-006-A	Minibus	1
(97)	136-741377-B	DRV Heat Sink A	2
(98)	136-739322-001-B	Spacer	2
(100)	133-350039-0	Spacer A	2
(102)	803-010048-002-0	Rivet BSP-34	4
(103)	136-741367-A	PCB Lock	2
(109)	808-814062-354-A	Nylon Rivet	24

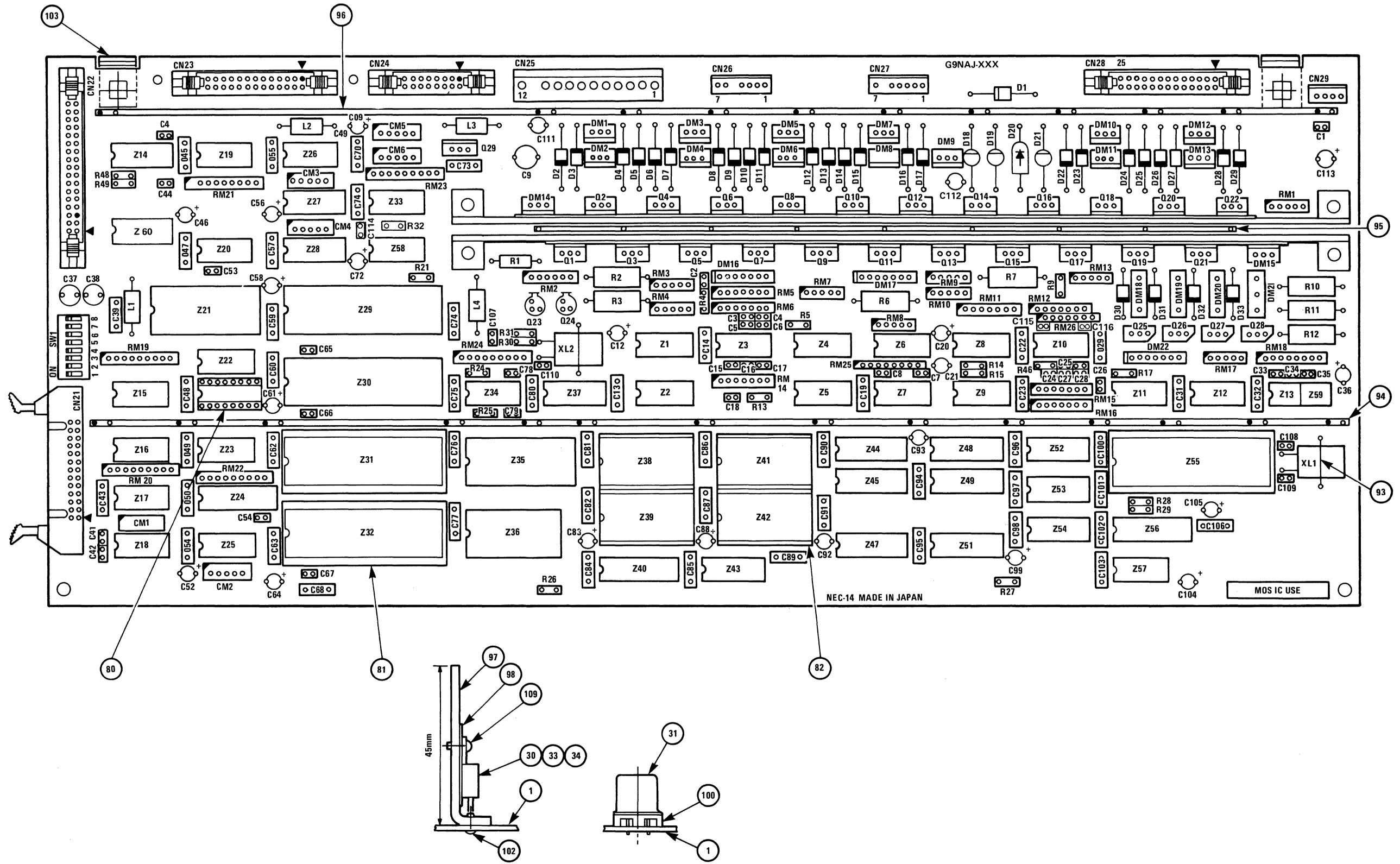


Figure 6-34 G9NAJ-xxx PCB Assembly (3510/15 and 3520/25)

136-431818-GRP-A G9PAQ-xxx PCB

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
C3, C44, C59, C78, C91, C102, C112, C150	808-935590-055-A	Capacitor, ceramic, 2200 pF, 50 Vdc, +10%	8
C5, C10, C16-C18, C21, C22, C25-C27, C32-C36, C38, C40, C42, C43, C45-C47, C49, C51-C53, C55, C57, C61, C63-C65, C67-C69, C71-C73, C76, C77, C79, C81, C83, C85, C87, C89, C90, C92, C93, C96, C98-C101, C104, C106, C107, C113, C116-C119, C121, C124, C126-C128, C131-C133, C136, C137, C139, C141-C143, C146-C148, C153	808-410030-001-0	Capacitor, ceramic, 0.1 μF, 50 Vdc, +80-20%	80
C6, C8, C19, C28, C29, C37	808-935590-047-A	Capacitor, ceramic, 1000 pF, 50 Vdc, +10%	6
C7, C9, C20, C30, C31, C60	808-935590-065-A	Capacitor, ceramic, 5600 pF, 50 Vdc, +10%	6
C11	808-935590-067-A	Capacitor, ceramic, 6800 pF, 50 Vdc, +10%	1
C12	808-935374-001-A	Capacitor SXA 25 V8-1000	1
C15, C23, C24, C39, C39, C41, C48, C56, C58, C62, C66, C70, C74, C75, C82, C88, C94, C95, C97, C103, C108, C114, C115, C120, C122, C123, C125, C129, C130, C134, C135, C138, C140, C144, C145, C149	808-935411-014-A	Capacitor, tantalum, 10 μF, 10 Vdc, +20%	35
C50, C54	808-935590-011-A	Capacitor, ceramic, 33 pF, 50 Vdc, +10%	2
C80, C84, C86, C105, C109	808-935590-039-A	Capacitor, ceramic, 470 pF, 50 Vdc, +10%	5
C110	808-935590-015-A	Capacitor, ceramic, 47 pF, 50 Vdc, +10%	1
C111	808-935590-071-A	Capacitor, ceramic, 0.01 μF, 50 Vdc, +10%	1
C151, C152	808-935369-068-A	Capacitor, electrolytic, 10 μF, 50 Vdc	2
C156, C157	808-935590-035-A	Capacitor, ceramic, 330 pf, 50 Vdc, +10%	2
CM1-CM4	808-935569-002-A	Capacitor Module IHC-4-222KA	4
CN21	808-955132-476-A	SCG Header 3432-1002	1
CN22	808-955132-485-A	SCG Header 3431-2002	1
CN23, CN28	808-955132-484-A	SCG Header 3429-2002	2
CN24	808-955132-482-A	SCG Header 3408-2002	1
CN25	808-955142-770-A	S Header 172407-1	1
CN26	808-955142-671-A	S Header 172406-2	1
CN27	808-955142-670-A	Header 172405-1	1
CN29	808-955142-654-A	Post Header 640456-4	1
D1-D17, D22-D29	808-923505-245-A	Diode, Zener, 18 Vdc, 1 W RD18FB	25
D18, D19, D21	808-923302-021-A	Rectifier, silicon F14C	3
D20	808-923330-001-A	Diode, silicon F114B	1
D30-D33	808-923305-315-A	Diode, Zener, 36 Vdc, 1 W	4
D35, D36	808-923009-531-A	Diode 1S953	2
DM1-DM15	808-923332-002-A	Diode Module 5EH2M	15
DM16, DM17, DM22-DM25	808-910000-544-A	Diode Module μPA54H	6
DM18-DM21	808-924004-001-A	Diode Module MI-102R	4
L1-L4	802-530001-026-0	Inductor TP0410L-R22M	4
Q1-Q4, Q7-Q10, Q12, Q13, Q15, Q19-Q22	808-920405-601-A	Transistor 2SD560	15
Q5, Q6, Q11, Q14, Q16-Q18	808-920106-011-A	Transistor 2SB601	7
Q23, Q24	808-920209-431-A	Transistor 2SC943	2
Q25-Q28	808-920405-581-A	Transistor 2SD558	4
R1	802-310002-119-0	Resistor ML20AD132G	1
R2, R3, R6, R7, R10, R11	802-310004-092-0	Resistor, wire wound, 0.3Ω, ±5%	6
R4	802-310021-027-0	Resistor, 120Ω, 1/4 W, +2%	1
R5, R8, R19, R20, R27, R28, R30, R32, R33, R38, R39	802-310021-049-0	Resistor, 1KΩ, 1/4 W, ±2%	11
R9	802-310021-053-0	Resistor, 1.5KΩ, 1/4 W, +2%	1
R12	802-310004-001-0	Resistor, wire wound, 1Ω, ±5%	1
R13	802-310021-028-0	Resistor, 130Ω, 1/4 W, +2%	1
R14, R18, R21, R36, R37	802-310021-025-0	Resistor, 100Ω, 1/4 W, ±2%	5
R15	802-310021-091-0	Resistor, 56KΩ, 1/4 W, +2%	1
R16	802-310021-035-0	Resistor, 270Ω, 1/4 W, ±2%	1
R17	802-310021-033-0	Resistor, 220Ω, 1/4 W, +2%	1
R22, R24, R25, R41, R42	802-310021-041-0	Resistor, 470Ω, 1/4 W, ±2%	5
R26, R29	802-310021-073-0	Resistor, 10KΩ, 1/4 W, +2%	2

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
R31	802-310021-001-0	Resistor, 10Ω, 1/4 W, +2%	1
R34, R35	802-310021-047-0	Resistor, 820Ω, 1/4 W, ±2%	2
R40	802-310021-065-0	Resistor, 4.7KΩ, 1/4 W, ±2%	1
RM1, RM3, RM7, RM10, RM17	808-930395-002-A	Resistor Module NWR3-002	5
RM2	808-930394-041-A	Resistor Module NWR2-041	1
RM4, RM8, RM9, RM13	808-930395-001-A	Resistor Module NWR3-001	4
RM5, RM6, RM14	808-930394-043-A	Resistor Module NWR2-043	4
RM16	808-930394-048-A	Resistor Module NWR2-048	2
RM11, RM12	808-930394-044-A	Resistor Module NWR2-044	1
RM15	808-930394-040-A	Resistor Module NWR2-040	1
RM18	808-930394-010-A	Resistor Module IHR-1/8-8-102JA	3
RM19-RM21	808-930394-003-A	Resistor Module IHR-1/8-8-471JA	1
RM22	808-930394-049-A	Resistor Module NWR2-049	1
RM23	808-930394-050-A	Resistor Module NWR2-050	1
RM24	808-930394-008-A	Switch, Dip	3
SW1-SW3	808-970104-001-A	Crystal Oscillator HC-43/U6MHz	1
XL1	808-912100-061-A	Integrated Circuit SN7406N	7
Z1, Z4, Z6, Z8, Z11, Z12, Z34	808-912140-041-A	Integrated Circuit SN74LS04N	3
Z2, Z20, Z47	808-910201-771-A	Integrated Circuit μPC177C	2
Z3, Z10	808-912140-031-A	Integrated Circuit SN74LS03N	2
Z5, Z9	808-912140-081-A	Integrated Circuit SN74LS08N	3
Z7, Z15, Z27	808-910202-771-A	Integrated Circuit μPC277C	1
Z13	808-910052-161-A	Integrated Circuit μPB8216C	1
Z14	808-912141-951-A	Integrated Circuit SN74LS195AN	2
Z16, Z23	808-912141-391-A	Integrated Circuit SN74LS139N	3
Z17, Z52, Z54	808-912142-791-A	Integrated Circuit SN74LS279N	1
Z18	808-912100-141-A	Integrated Circuit SN7414N	1
Z19	808-912100-081-A	Integrated Circuit SN7408N	2
Z21, Z22	808-910340-421-A	Integrated Circuit μPD4042BC	2
Z24, Z25	808-912140-001-A	Integrated Circuit SN74LS00N	2
Z26, Z50	808-912140-741-A	Integrated Circuit SN74LS74AN	1
Z28	808-912100-041-A	Integrated Circuit SN7404N	6
Z29, Z30, Z38, Z43, Z44, Z49	808-919381-551-A	Integrated Circuit μPD8155C	3
Z31-Z33	808-912140-301-A	Integrated Circuit SN74LS30N	1
Z35	808-912143-731-A	Integrated Circuit SN74LS373N	2
Z36, Z58 (Z37)	GRP001: 136-035213-001-A	Integrated Circuit 1KX4 PROM	1
Z39, Z40	GRP002: 136-035743-001-A	Integrated Circuit SN74LS193N	2
Z41, Z42, Z62-Z69	808-912141-931-A	Integrated Circuit μPD2114LC	10
Z45	808-910321-141-A	Integrated Circuit μPD8041AC-070	1
Z46	808-910511-070-A	Integrated Circuit μPD8041AC-085	1
Z48	808-910511-085-A	Integrated Circuit μPD8085AC	1
Z49	808-910380-851-A	Integrated Circuit SN74LS42N	1
Z51	808-912140-421-A	Integrated Circuit SN74LS42N	1
Z53	808-912141-611-A	Integrated Circuit SN74LS161AN	1
Z55	808-912140-931-A	Integrated Circuit SN74LS93N	1
(Z56, Z57, Z59, Z60)	GRP001: 136-035211-001-A	Integrated Circuit 4Kx8 EPROM (4)	1 set
Z61	GRP002: 136-035742-001-A	Integrated Circuit SN74LS244N	1
Z70	808-912142-441-A	Integrated Circuit μPC4558C	1
(1)	808-910245-581-A	G9PAQ PCB	1
(116)	136-451818-G	G9PAQ PCB	1
(117), (Z45, Z46, Z48)	802-730014-316-A	IC Socket 16 pin IC-30-1603	1
(118) (Z56, Z57, Z59, Z60)	808-955157-140-A	IC Socket 40 pin	3
(CN21-CN24, CN28)	808-955157-124-A	IC Socket 24 pin	4
(131)	808-955130-389-A	Key	7
(200)	804-173010-108-A	Wire AWG 24-8T	AR
(201)	808-820014-005-A	Minibus	1
(202)	808-970914-003-A	Minibus	1
(204)	808-820014-006-A	Minibus	1
(206)	136-741377-001-B	DRV Heat Sink A	2
(208)	136-739322-001-B	DRV Spacer	2
(210)	808-814062-354-A	Nylon Rivet	24
(214)	133-350039-0	Spacer A	2
(216)	803-010048-002-0	Rivet BSP-34	4
	136-741367-A	PCB Lock	2

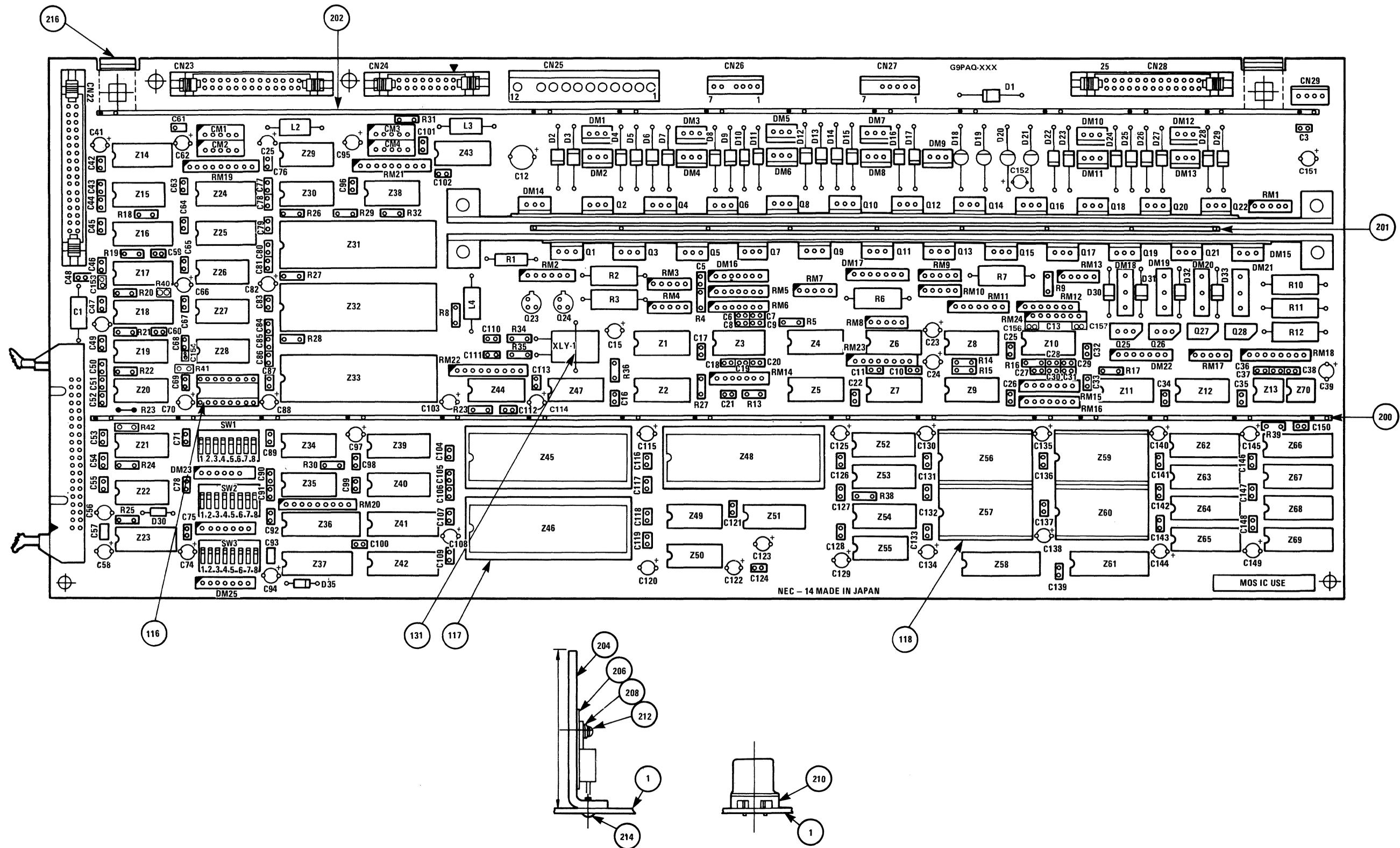


Figure 6-35 G9PAQ-xxx PCB Assembly (3530 and 3550)

136-431618-A G9NAB PCB Assembly

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
C1, C2	808-935563-002-A	Capacitor, ceramic, 4700 pf, 400 Vac	2
C6	808-935163-020-A	Capacitor, 250 V, .22 μ f, +20%	1
C7, C8	808-935393-001-A	Capacitor, 560 μ f, 200 Vdc	2
C9	808-935369-042-A	Capacitor, 220 μ f, 25 Vdc	1
C10, C17, C19, C22, C26, C32, C36, C39, C43-C46, C49	802-410030-001-0	Capacitor, ceramic, .1 μ f, 50 Vdc, -20 + 80%	13
C11	808-935566-017-A	Capacitor CK45B1H562KYF	1
C12, C15	808-935566-007-A	Capacitor CK45B1H821KYF	2
C13	808-935263-002-A	Capacitor, 33 pF, 400 Vdc, +10%	1
C14	808-935265-002-A	Capacitor, FPD22J103K	1
C16	808-935566-010-A	Capacitor CK45B1H152KYF	1
C18, C28	808-935590-039-A	Capacitor, ceramic 470 pF, 50 Vdc, +10%	2
C20, C33	808-935903-003-A	Capacitor, .047 μ f, 25 Vdc, +20%	2
C21, C31, C35, C50	808-935369-068-A	Capacitor, 10 μ F, 50 Vdc	4
C23, C24, C37, C41	808-935265-001-A	Capacitor, ECQ-F6222MZ	4
C25	808-935263-001-A	Capacitor, 2.2 μ f, 200 Vdc, +10%	1
C27, C29	808-935566-009-A	Capacitor, CK45B1H122KYF	2
C34	808-935369-071-A	Capacitor, 6.8 μ f, 50 Vdc	1
C38	808-935369-058-A	Capacitor, 1000 μ f, 35 Vdc	1
C40, C42	808-935566-019-A	Capacitor, CK45D1H103MYF	2
C47	808-935369-033-A	Capacitor, 3300 μ f, 16 Vdc	1
C48	808-935390-007-A	Capacitor, 10,000 μ f, 25 Vdc	1
C51	808-935374-002-A	Capacitor, SXA35VB100	1
CH1	808-927003-001-A	Thermistor, 6D-22	1
CN1	808-955140-365-A	Connector 350430-1	1
CN2	808-955142-770-A	Connector 172407-1	1
CT1	808-940324-002-B	Transformer T3242B	1
D1, D25, D26	808-923302-021-A	Diode, silicon F14C	3
D2	808-924105-002-A	Diode SD30V1.7A	1
D3-D5, D7, D15, D18-D20	808-923330-011-A	Diode, silicon F114D	7
D6, D13	808-924102-006-A	Diode, silicon U07M	2
D8-D12, D14, D16, D17, D21, D23, D24	808-923009-531-A	Diode, silicon IS953	11
D22	808-923504-045-A	Diode, silicon RD2.7EB	1
F1	808-960301-002-A	Fuse 5 A 125 V slo-blo	1
L1	808-940602-004-A	Inductor L6024B	1
L2	808-940602-003-B	Inductor L6023B	1
L3	808-940602-002-B	Inductor L6022B	1
L4	808-940602-001-B	Inductor L6021B	1
PT1	808-940324-003-B	Transformer T3243B	1
Q1	808-921002-001-A	Transistor 2SC2928	1
Q2	808-920010-101-A	Transistor 2SA1010	1
Q3, Q9	808-920223-311-A	Transistor 2SC2331	2
Q4, Q6, Q8, Q11	808-920011-531-A	Transistor 2SA1153	4
Q5, Q7, Q12	808-920227-201-A	Transistor 2SC2720	3
Q10	808-920223-351-A	Transistor 2SC2335	1
R1, R2	808-930461-101-A	Resistor ERG2ANJ303H	2
R3, R19, R28, R30, R32	808-930461-015-A	Resistor ERG12ANJ220	5
R4	808-930166-603-A	Resistor MO-4V10W4.7 K-AP	1
R5	808-930166-604-A	Resistor MO-4V10W13 K-AP	1
R6, R8, R12, R17, R31	802-310021-049-0	Resistor, 1 K Ω , 1/4 W, +2%	5
R7	802-310021-056-0	Resistor, 2 K Ω , 1/4 W, +2%	1
R9, R18	802-310021-044-0	Resistor, 620 Ω , 1/4W, +2%	2
R10, R13, R25, R36, R40	802-310021-073-0	Resistor, 10 K Ω , 1/4 W, +2%	5
R11	808-930461-102-A	Resistor ERG3ANJ392H	1
R14	802-310021-021-0	Resistor, 68 Ω , 1/4 W, +2%	1
R15, R22	802-310021-090-0	Resistor, 51 K Ω , 1/4 W, +2%	2
R16, R21	802-310021-081-0	Resistor, 22 K Ω , 1/4 W, +2%	2
R20	808-930461-105-A	Resistor ERG1ANJ220H	1
R23	808-930461-104-A	Resistor ERG1ANJ271H	1
R24	802-310021-072-0	Resistor, 9100 Ω , 1/4 W, +2%	1
R26	802-310021-066-0	Resistor, 5100 Ω , 1/4 W, +2%	1
R27	808-930461-023-A	Resistor ERG12ANJ101	1
R29	802-310002-124-0	Resistor ML20AD222G	1

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
R33	802-310002-099-0	Resistor ML20AD201G	1
R34	802-310021-057-0	Resistor, 2200 Ω , 1/4 W, +2%	1
R35	802-310021-037-0	Resistor, 330 Ω , +2%	1
R37	802-310002-092-0	Resistor ML20AD101G	1
R38	808-930461-103-A	Resistor ERG1ANJ561H	1
R39	802-310002-118-0	Resistor ML20AD122G	1
RC1	808-924103-061-A	Diode S10VB40	1
RC2	808-926301-001-A	Diode 2B2DM	1
RC3	808-924108-001-A	Diode S12KC20	1
RC4	808-924105-001-A	Diode SD40V4A	1
RC5	808-926003-001-A	Thyristor 03PLM	1
RM1, RM5	808-930394-037-A	Resistor Module NWRL-037	2
RM2, RM7	808-930394-036-A	Resistor Module NWRL-036	2
RM3	808-930394-047-A	Resistor Module NWRL-047	1
RM4, RM9	808-930394-038-A	Resistor Module NWRL-038	2
RM6, RM8	808-930393-016-A	Resistor Module NWRL-016	2
RM10	808-930393-020-A	Resistor Module NWRL-020	1
RM11	808-930394-039-A	Resistor Module NWRL-039	1
SQ1	808-927005-002-A	Surge Killer ENB461D-14A	1
SW1	808-950346-001-A	Switch CTN053	1
T1	808-940509-001-A	Transformer ETP-35K40A	1
T2	808-940323-003-B	Transformer T3233B	1
T3	808-940323-002-B	Transformer T3232B	1
Z1, Z2	808-910210-421-A	Integrated Circuit μ PC1042C	2
Z3	808-919179-121-A	Integrated Circuit μ A7912	1
Z4	808-910201-771-A	Integrated Circuit μ PC177C	1
(1)	136-451618-D	G9NAB PCB	1
(95)	808-960315-001-A	Fuse Holder TS-05	2
(96)	136-741385-A	Shield Plate	1
(100)	136-746232-001-B	Spacer	1
(101)	136-746232-002-B	Spacer	1
(102)	136-746233-001-A	Spacer	1
(103)	136-741384-A	Transistor Spacer	1
(104)	136-746233-002-A	Transistor Spacer	1
(105)	808-814062-354-A	Nylon Rivet	2
(106)	136-747151-A	Collar	2
(107)	136-725133-A	Bushing B-17	5
(112)	136-741388-A	Heat Sink A	1
(113)	136-741389-A	Heat Sink B	1
(114)	136-741390-A	Heat Sink C	1
(115)	136-746234-A	Heat Sink Plate	1
(116)	136-739332-A	Shorting Bar	2
A, C, D, E, F,	808-955183-009-A	Connector	5
B, G	808-955183-010-A	Connector	2
(121)	804-171001-080-A	Wire 0.8 TCW	0.12 m
(122)	804-030024-001-A	Tube AWG 19	0.12 m
(123)	804-183504-104-0	Wire ETFEAWG#30-4T	0.7 m
(124)	808-811004-009-A	Spacer A R-2051-16	5
(125)	803-010048-002-0	Rivet BSP-34	1
(126)	808-835031-002-A	Silicon Rubber	AR
(201)	805-501103-0	AHXB3x3GF	2
(202)	805-310025-008-0	SL-CPIMSx2.5x8x15BF	4
(203)	805-311103-008-0	SL-CPBMSx3x8x3GF	13
(204)	805-311103-014-0	SL-CPBMSx3x14x3GF	2
(205)	805-300003-012-0	PL-CPIMSx3x12x15BF	4
(208)	805-100003-010-0	CFIMSx3x10x15BF	3

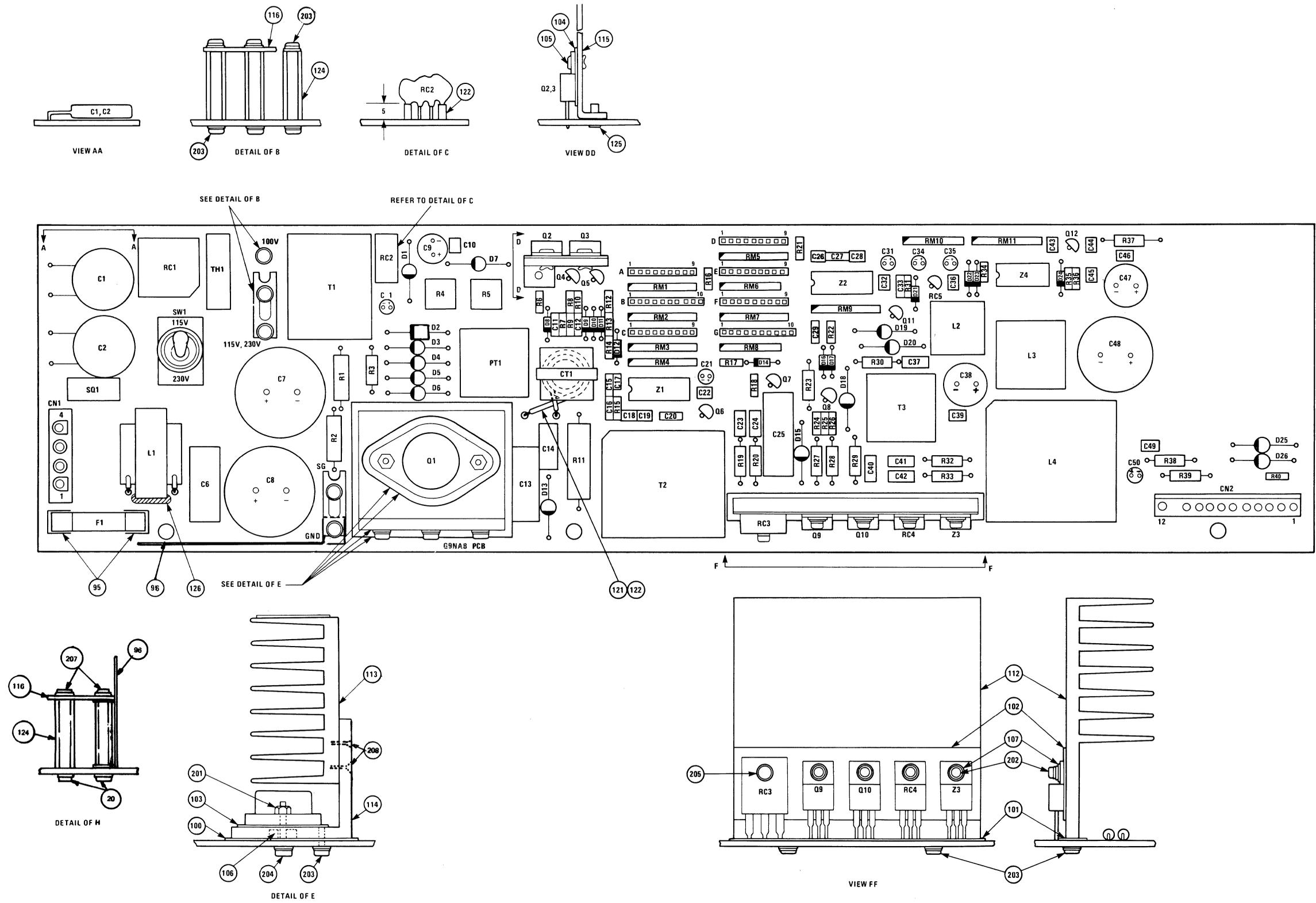
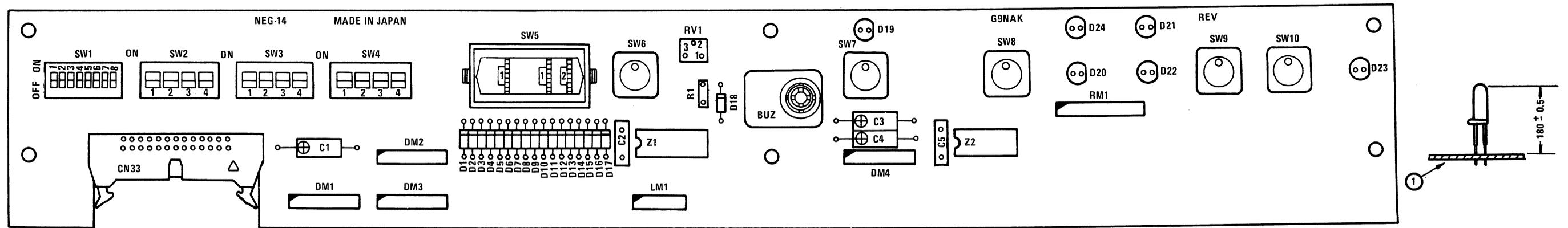


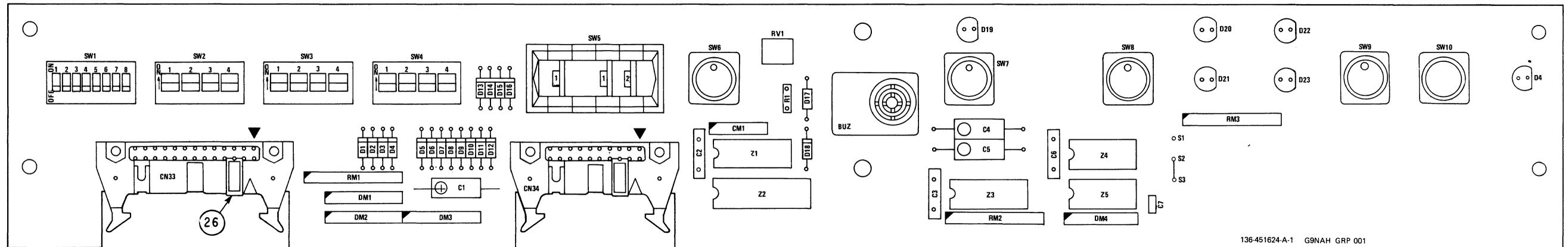
Figure 6-36 G9NAB PCB Assembly (All Models)



136-431626-001-A G9NAK PCB

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
BUZ	808-960406-001-A	Buzzer CMB-06	1
C1, C3, C4	802-410002-049-0	Capacitor, ceramic, 33 μ F, 50 Vdc, +20%	3
C2, C5	808-935561-403-A	Capacitor, ceramic, 0.1 μ F, 50 Vdc, +80 -20%	2
CM1	808-935569-001-A	Capacitor Module IHC-4-331KA	1
CN33	808-955132-474-A	Header 34-1002SCG	1
D1-D18	808-923009-531-A	Diode, silicon 1S953	18
D19-D24	808-926501-041-A	LED SR603D	6
DM1-DM4	808-910000-544-A	Diode Bridge μ PA54H	4
R1	802-310021-017-0	Resistor, 47 Ω , 1/4W, +2%	1
RM1	808-930394-028-A	Resistor Module NWR2-028	1
RV1	808-930602-054-A	Resistor, variable PN822H501V	1
SW1	808-950358-008-A	Switch, DIP	1
SW2-SW4	808-950313-024-A	Switch, DIP 206-214ST	3
SW5	808-950349-001-A	Switch, Rotary A7M	1
SW6-SW10	808-950351-001-A	Switch KHC10902	5
Z1	808-912100-451-A	Integrated Circuit SN7445N	1
Z2	808-912100-071-A	Integrated Circuit SN7407N	1
(1)	136-451626-B	G9NAK PCB	1

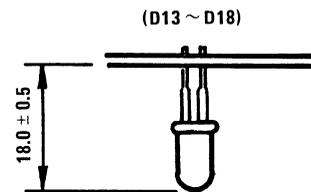
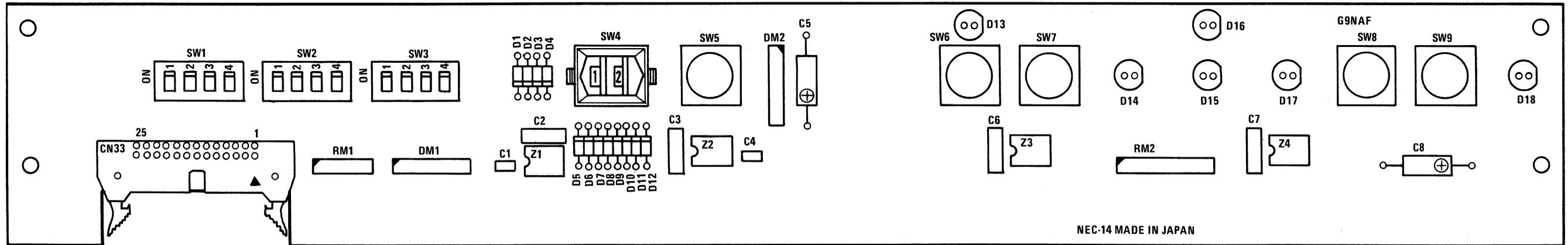
Figure 6-37 G9NAK PCB Assembly (3510 and 3515)



136-431624-GRP-A G9NAH-001 PCB Assembly

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
BUZ	808-960406-001-A	Buzzer	1
C1, C4, C5	802-410002-049-0	Capacitor, ceramic, 33 μ F, 50 Vdc, +20%	3
C2, C3, C6	808-935561-403-A	Capacitor, ceramic, 0.1 μ F, 50 Vdc, +80 -20%	3
C7	808-935561-135-A	Capacitor, ceramic, 270 pF, 50 Vdc, +80 -20%	1
CM1	808-935569-001-A	Capacitor Module IHC-4-331KA	1
CN33	808-955132-474-A	Connector 3429-1002SCG	1
CN34	808-955132-473-A	Connector 3428-1002SCG	1
D1-D18	808-923009-531-A	Diode 1S953	18
D19-D24	808-926501-041-A	Diode SR603D	6
DM1-D24	808-910000-544-A	Diode Module μ PA54H	4
R1	808-310021-017-0	Resistor, 47 Ω , 1/4 w, +2%	1
RM1, RM2	808-930349-010-A	Resistor Module IHR 1/8-8-102JA	2
RM3	808-930394-028-A	Resistor Module NWR2-028	1
RV1	808-930602-054-A	Variable Resistor PN822H501V	1
SW1	808-950358-008-A	Dip Switch	1
SW2-SW4	808-950313-024-A	DIP Switch 206-214ST	3
SW5	808-950349-001-A	Rotary Switch	1
SW6-SW10	808-950351-001-A	Switch KHC10902	5
Z1	808-912100-451-A	Integrated Circuit SN7445N	1
Z2	808-912143-731-A	Integrated Circuit SN74LS367AN	1
Z3	808-912143-671-A	Integrated Circuit SN74LS367AN	1
Z4	808-912100-071-A	Integrated Circuit SN7407N	1
Z5	808-912140-141-A	Integrated Circuit SN74LS14N	1
(1)	136-451624-A	G9NAH PCB	1
(26)	808-955138-389-A	Polarizing Key 3518	2

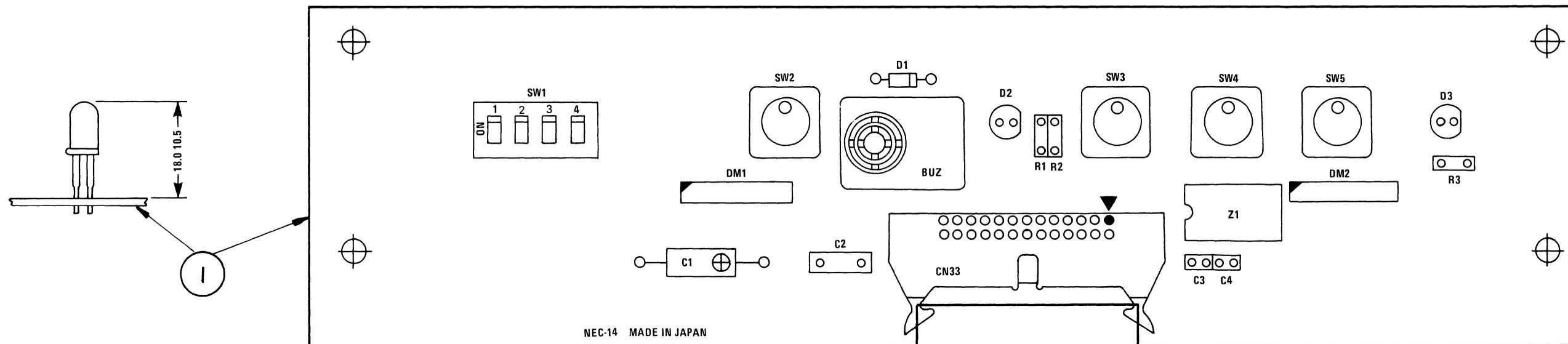
Figure 6-38 G9NAH-001 PCB Assembly (3520 and 3525)



136-431622-003-A G9NAF-003 PCB Assembly

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
C1, C4	808-935590-047-A	Capacitor, ceramic, 1000 pF, 50 Vdc, +10%	2
C2, C3, C6, C7	808-935561-403-A	Capacitor, ceramic, 0.1 μF, 50 Vdc, +80 -20%	4
C5, C8	802-410002-049-A	Capacitor, 33 μF, 10Vdc, +20%	2
CN33	808-955132-474-A	Header 3429-1002SCG	1
D1-D12	808-923009-531-A	Diode, Silicon 1S953	12
D13-D18	808-926501-041-A	LED SR603D	6
DM1, DM2	808-910000-544-A	Diode Bridge μPA54H	2
RM1	808-930349-015-A	Resistor Module IHR-1/8-4-152JA	1
RM2	808-930394-028-A	Resistor Module NWR2-028	1
SW1-SW3	808-950313-024-A	Switch 206-214ST	3
SW4	808-950349-011-A	Switch A7MA-246-P2-T11	1
SW5-SW9	808-950351-001-A	Switch KHC10902	5
Z1-Z4	808-912204-521-A	Integrated Circuit SN75452BP	4
(1)	136-451622-B	G9NAF PCB	1

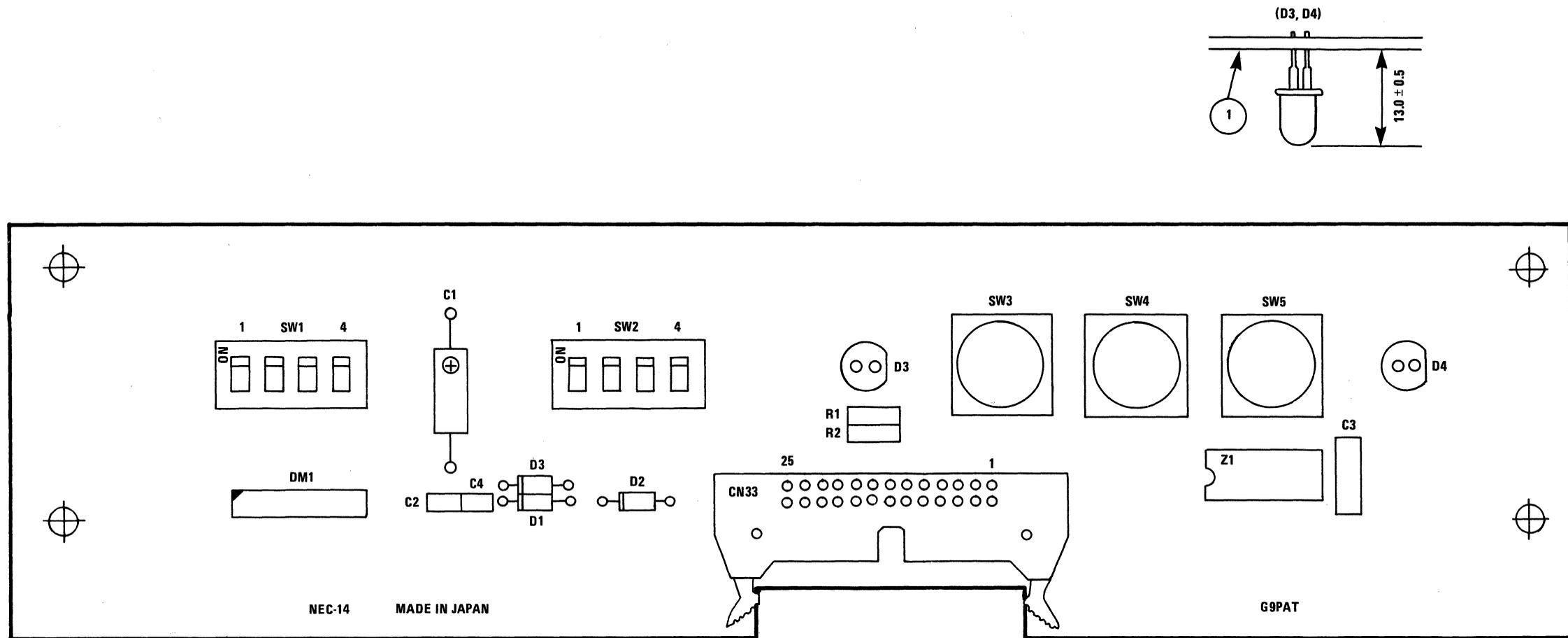
Figure 6-39 G9NAF-003 PCB Assembly (3530)



136-431627-A G9NAL PCB Assembly

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
BUZ	808-960406-001-A	Buzzer	1
C1	802-410002-049-0	Capacitor, 33 μ F, 10 Vdc, +2%	1
C2	808-935561-403-A	Capacitor, ceramic, 0.1 μ F, 50 Vdc, +80 -20%	1
C3, C4	808-935590-047-A	Capacitor, ceramic, 100 pF, 50 Vdc, +10%	2
CN33	808-955132-474-A	Connector 3429-1002SCG	1
D1	808-923009-531-A	Diode 1S953	1
D2, D3	808-926501-041-A	Diode SR603D	2
DM1, DM2	808-910000-544-A	Diode Module μ PA54A	2
R1, R3	802-310021-037-0	Resistor, 330 Ω , 1/4 W, +2%	2
R2	802-310021-017-0	Resistor, 47 Ω , 1/4 W, +2%	1
SW1	808-450313-024-A	DIP Switch 206-214ST	1
SW2-SW5	808-950351-001-A	Switch KHC10902	4
Z1	808-912100-061-A	Integrated Circuit SN7406	1
(1)	136-451627-A	G9NAL PCB	1

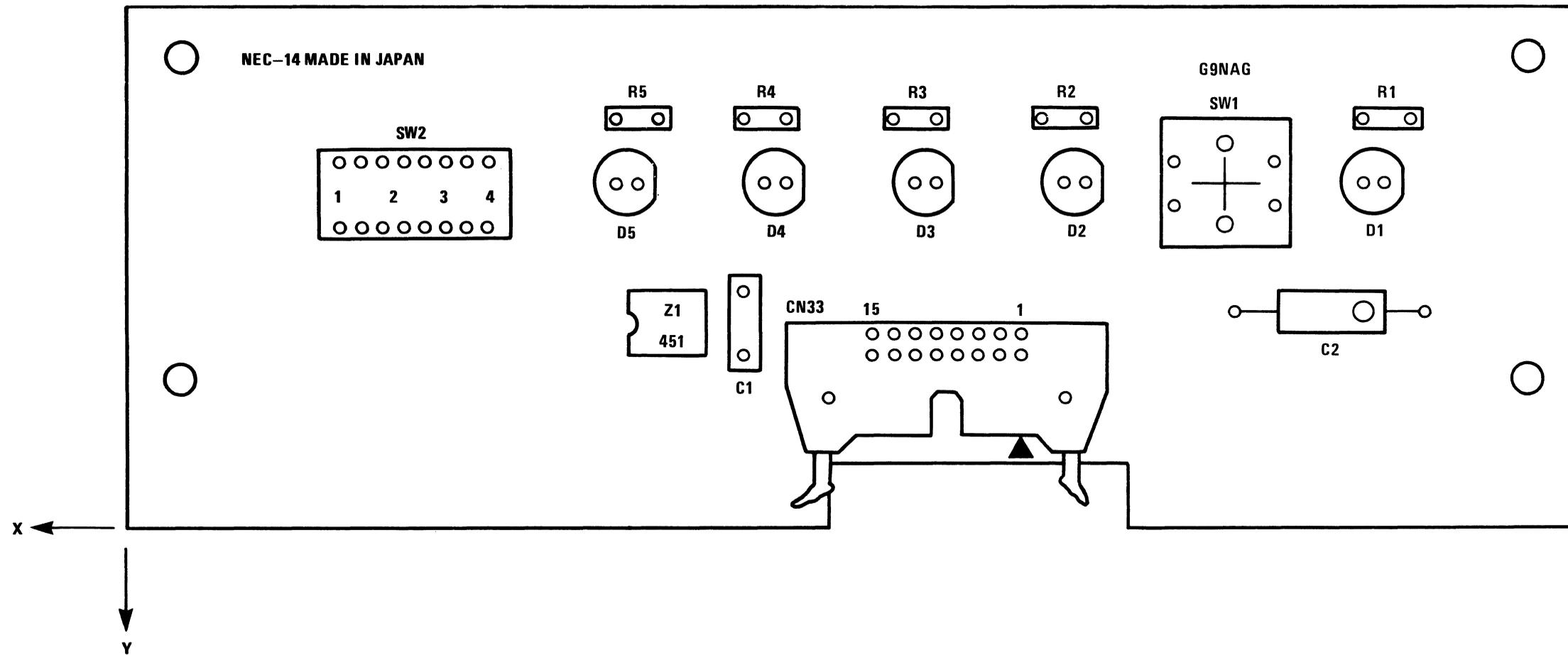
Figure 6-40 G9NAL PCB Assembly (3550)



136-431821-A G9PAT PCB Assembly

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
C1	802-410002-049-A	Capacitor, 33 μ F, 10 Vdc, +20%	1
C2, C4	808-935590-047-A	Capacitor, ceramic, 1000 pF, 50 Vdc, +10%	2
C3	808-935561-403-A	Capacitor, 0.1 μ F, 50 Vdc, -20+80%	1
CN33	808-955132-474-A	Connector 3429-1002SCG	1
D1-D3	808-923009-531-A	Diode, silicon 1S953	3
D3, D4	808-926501-041-A	LED SR603D	2
DM1	808-910000-544-A	Diode Bridge μ PA54H	1
R1, R2	802-310021-037-A	Resistor, 330 Ω , 1/4 W, +2%	2
SW1, SW2	808-950313-024-A	Switch 206-214ST	2
SW3-SW5	808-950351-001-A	Switch KHC10902	3
Z1	808-912100-071-A	Integrated Circuit SN7407N	1
(1)	136-451821-B	G9PAT PCB	1

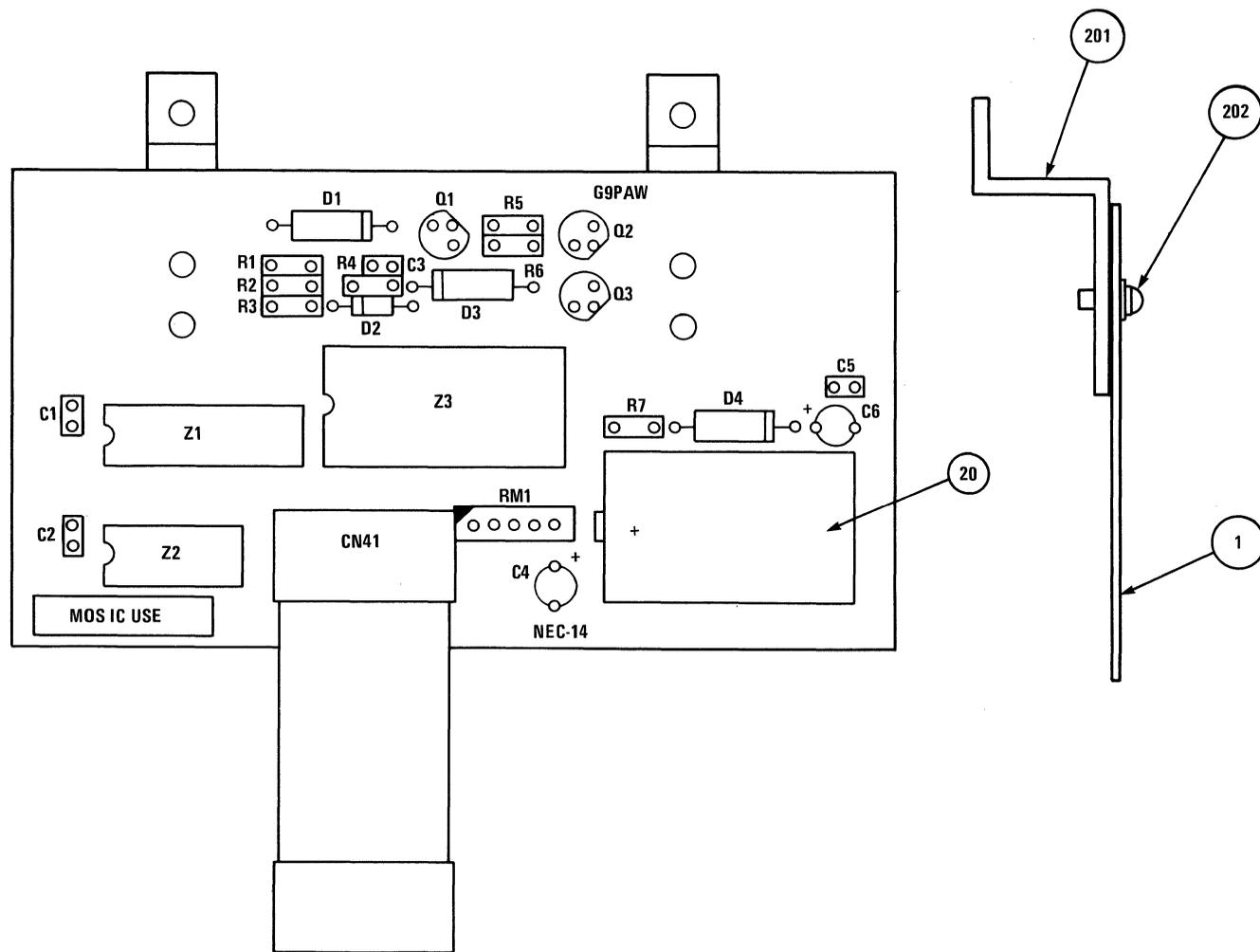
Figure 6-41 G9PAT PCB Assembly (3500R)



136-431623-A G9NAG PCB Assembly

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
C1	808-935561-403-A	Capacitor, 0.1 μ f, 50 Vdc, -20+80%	1
C2	802-410002-049-0	Capacitor, 33 μ f, 10 Vdc, \pm 10%	1
CN33	808-955132-472-A	Header 3408-1002SCG	1
D1-D5	808-926501-041-A	LED SR603D	5
R1-R5	802-310021-037-0	Resistor, 330 Ω , 1/4 W, \pm 2%	5
SW1	808-950351-001-A	Switch KHC10902	1
SW2	808-950313-024-A	Switch 206-214ST	1
Z1	808-912204-511-A	Integrated Circuit SN75451BP	1
(1)	136-451623-B	G9NAG PCB	1

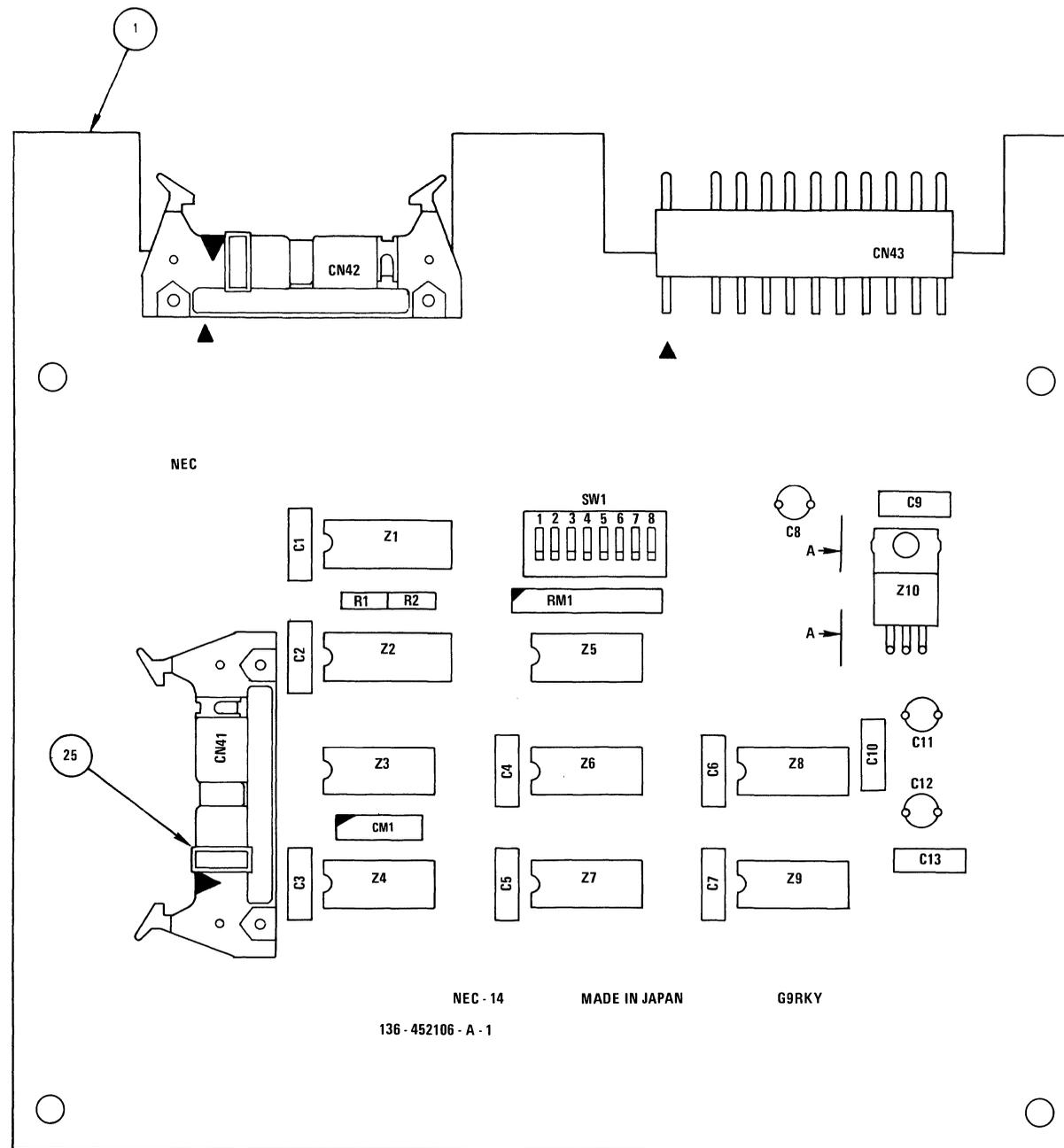
Figure 6-42 G9NAG PCB Assembly (3500D and 3500Q)



136-431824-A G9PAW PCB

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
C1, C2, C3, C5	802-41003-001-0	Capacitor 10 μ F, +30 +80%	4
C4, C6	808-935411-014-A	Capacitor tantalum 10 μ F, 16 Vdc, +20%	2
CN41	136-041907-A	Connector Cable	1
D1, D3	808-923504-065-A	Diode, RD3.3EB	2
D2	808-923009-531-A	Diode, 1S953	1
D4	808-924101-002-A	Diode, 10DQ03	1
Q1, Q3	808-920218-331-A	Transistor 2SC1833	2
Q2	808-920008-831-A	Transistor 2SA883	1
R1	802-310021-080-0	Resistor, 20 K Ω , 1/4 W +2%	1
R2	802-310021-057-0	Resistor, 2.2 K Ω , 1/4 W +2%	1
R3	802-310021-042-0	Resistor, 510 K Ω , 1/4 W +2%	1
R4	802-310021-023-0	Resistor, 82 K Ω , 1/4 W +2%	1
R5	802-310021-043-0	Resistor, 560 Ω , 1/4 W, +2%	1
R6	802-310021-049-0	Resistor, 1 K Ω , 1/4 W, +2%	1
R7	802-310021-065-0	Resistor, 4.7 K Ω , 1/4 W, +2%	1
RM1	808-930349-002-A	Resistor Module 133, 1/8 W +5% 4 elements	1
Z1	808-912143-731-A	Integrated Circuit SN74LS373N	1
Z2	808-912140-001-A	Integrated Circuit SN74LS00N	1
Z3	808-914936-001-A	Integrated Circuit TC5516AP	1
(1)	136-451824-B	G9PAW PCB	1
(20)	808-970705-001-A	Battery BP-2/3A-1P	1
(201)	136-747659-A	Bracket	2
(202)	805-300003-006-0	PL-CPIMSx3x6x15BF	4

Figure 6-43 G9PAW PCB Assembly (NVRAM Option 3510/20 and 3515/25)



136-432106-A G9RKY PCB

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
C1-C7, C9, C10, C13	808-935561-403-A	Capacitor, ceramic, 0.1 μ F, +80 -20%	10
C8	808-935411-014-A	Capacitor, tantalum, 10 μ F, 16 Vdc, +20%	1
C11, C12	808-935411-033-A	Capacitor, tantalum, 6.8 μ F, 25 Vdc, +20%	2
CM1	808-935569-002-A	Capacitor Module IHC-4-222KA	1
CN41, CN42	808-955132-474-A	Connector 3429-1002SCG	2
CN43	808-955142-962-A	Serial Connector 1-640389-2	1
R1, R2	802-310021-031-0	Resistor, 180 Ω , 1/4 W, +2%	2
RM1	808-930349-010-A	Resistor Module 102, 1/8 W, +5%, 8 element	1
SW1	808-950358-008-A	Switch, DIP	1
Z1	808-912201-721-A	Integrated circuit SN75172N	1
Z2	808-912201-731-A	Integrated circuit SN75173N	1
Z3, Z5	808-914120-015-A	Integrated circuit MC1488L	2
Z4, Z6	808-914120-025-A	Integrated circuit MC1489L	2
Z7	808-912140-041-A	Integrated circuit SN74LS04N	1
Z8	808-912140-001-A	Integrated circuit SN74LS00N	1
Z9	808-912140-082-A	Integrated circuit SN74LS08N	1
Z10	808-910201-433-A	Integrated circuit μ PC14312H	1
(1)	136-452106-A	G9RKY PCB	1
(25)	808-955130-389-A	Socket Connector 3518	2

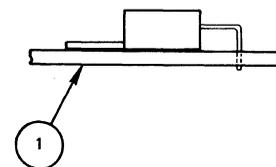


Figure 6-44 G9RKY PCB Assembly (RS-422 Option 3500R, 3510/20, and 3520/25)

CHAPTER 7

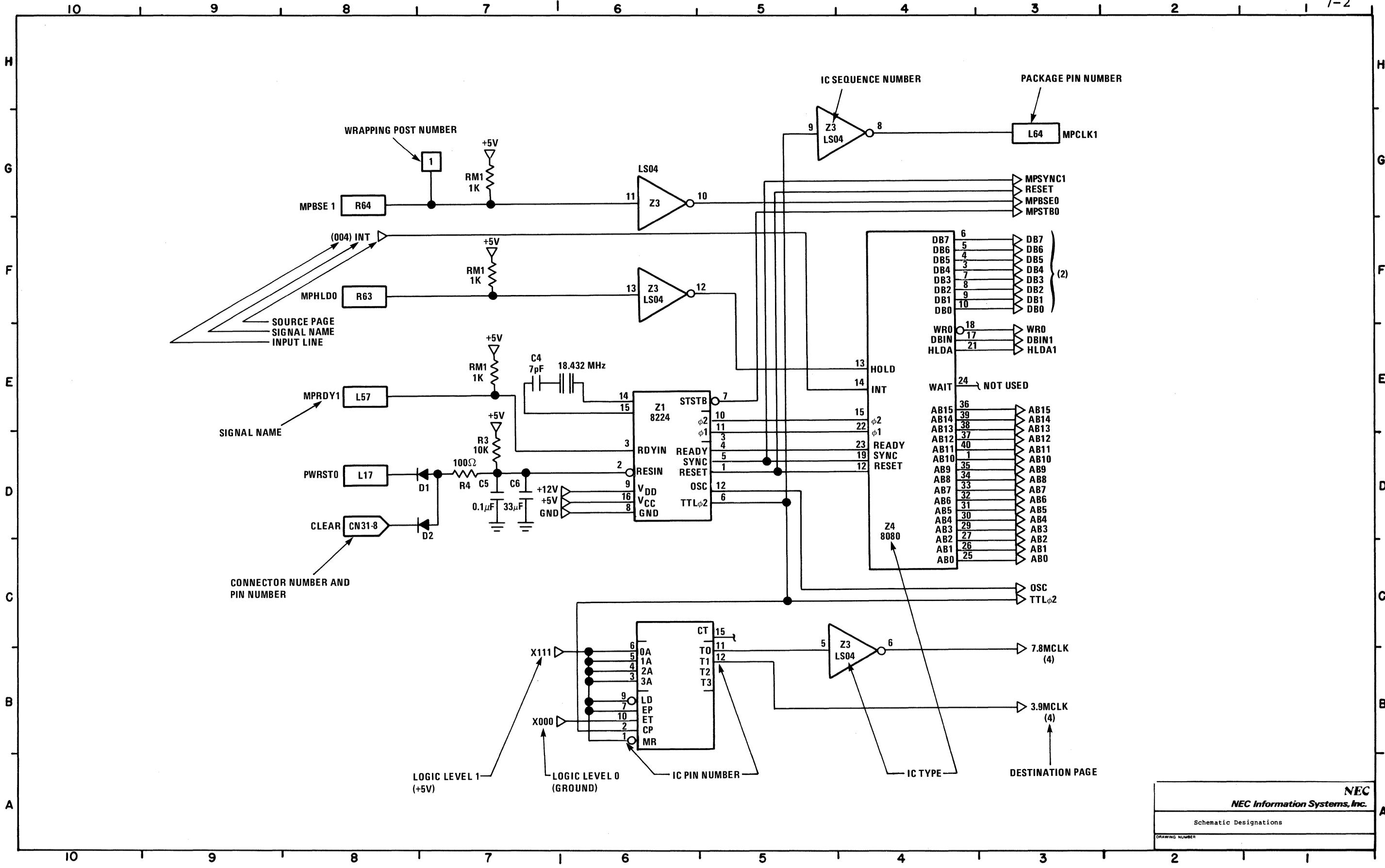
LOGIC AND SCHEMATIC DIAGRAMS

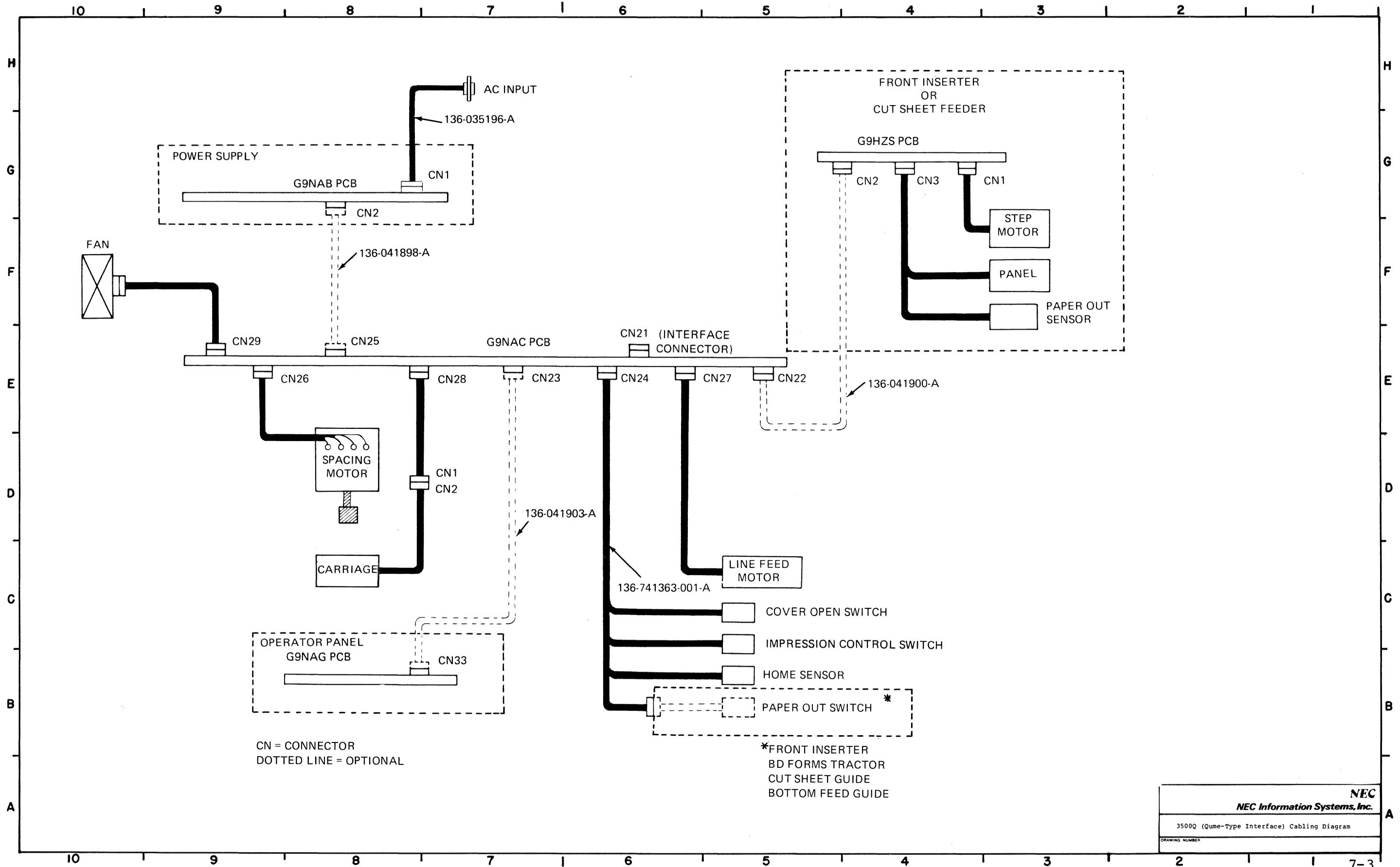
This chapter contains the logic and schematic drawings for the 3500 Series Spinwriters. The conventions used on the drawings to denote signal source and destination, test points, ground designation, pull up voltage, and so on are shown in the Schematics Designation diagram on page 7-2. The logic and schematic diagrams are arranged in numerical sequence and are listed in Table 7-1.

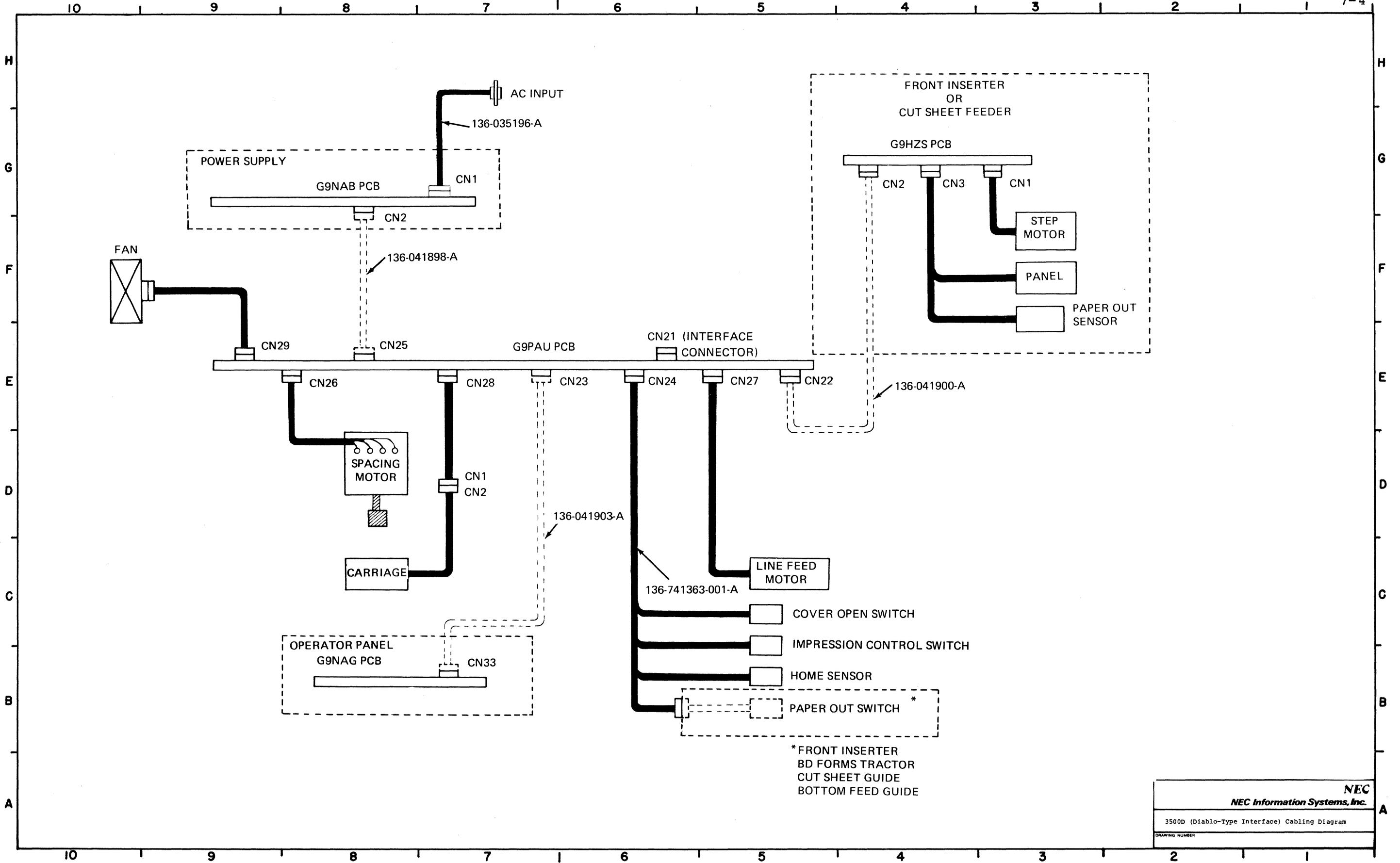
Table 7-1 Logic and Schematic Diagrams

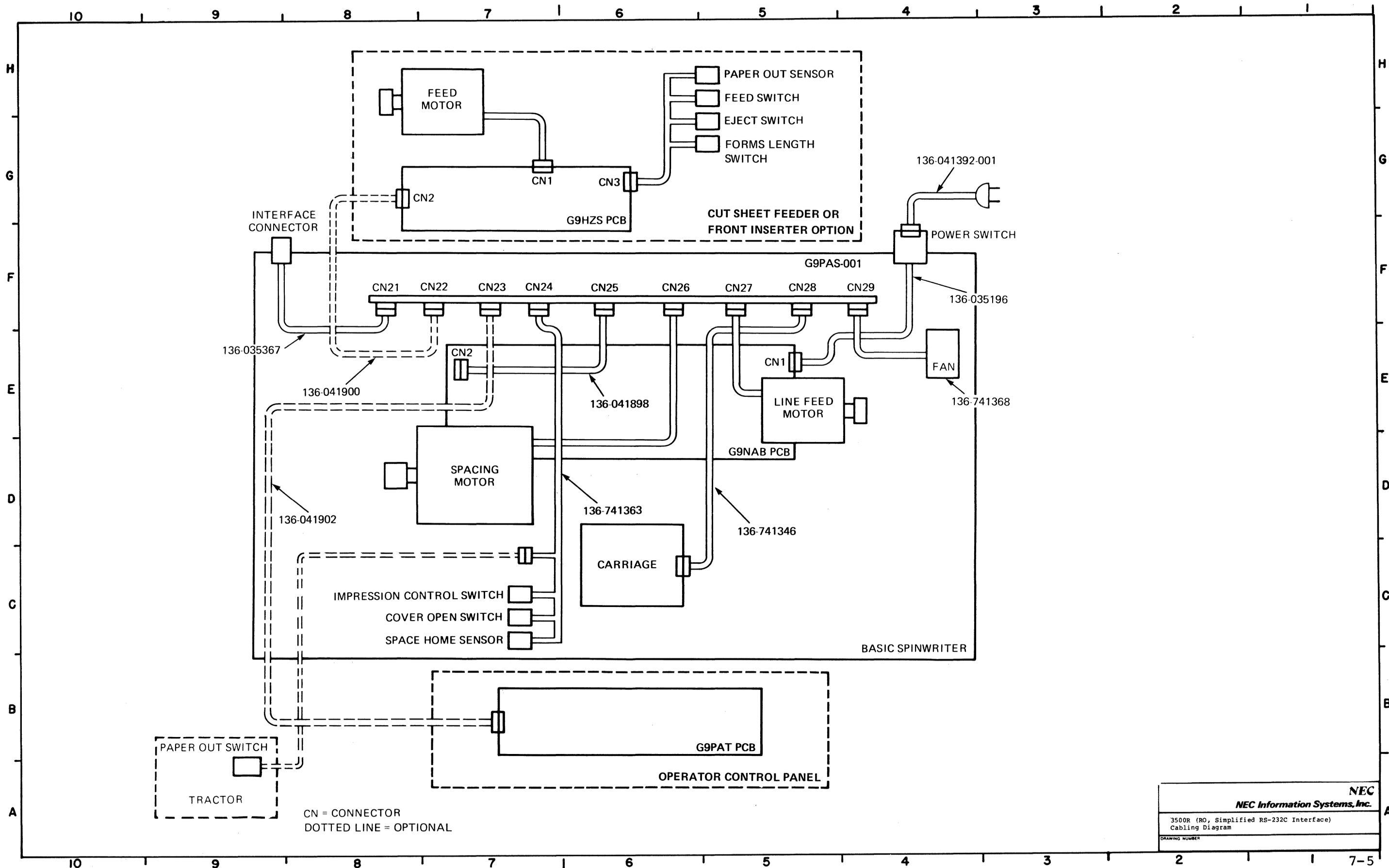
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	3500D (Diablo-Type Interface) Cabling Diagram	7-4
	3500R (RO, Simplified RS-232C Interface) Cabling Diagram	7-5
	3510/3515 (RO, RS-232C Interface) Cabling Diagram	7-6
	3520/3525 (KSR, RS-232C Interface) Cabling Diagram	7-7
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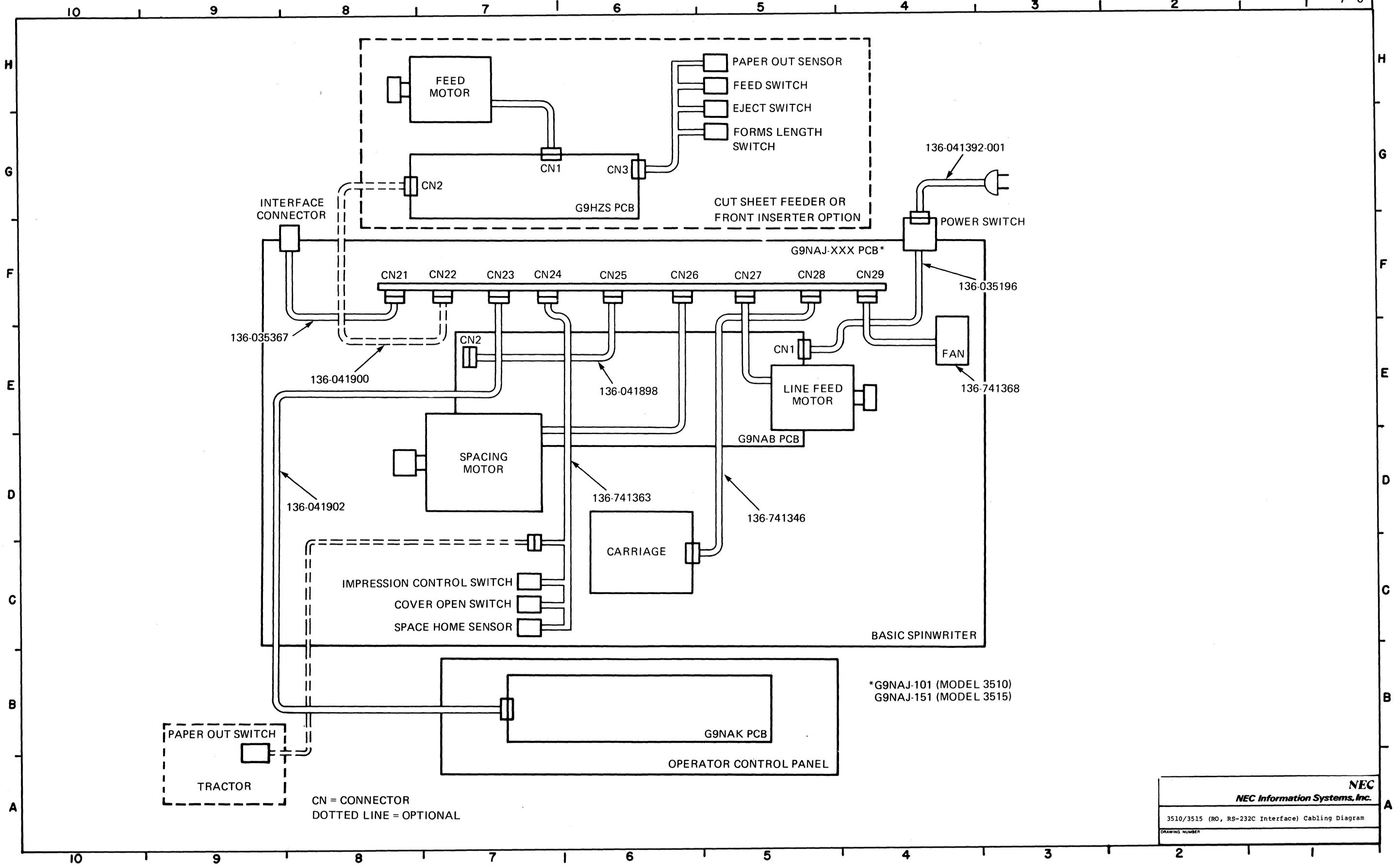


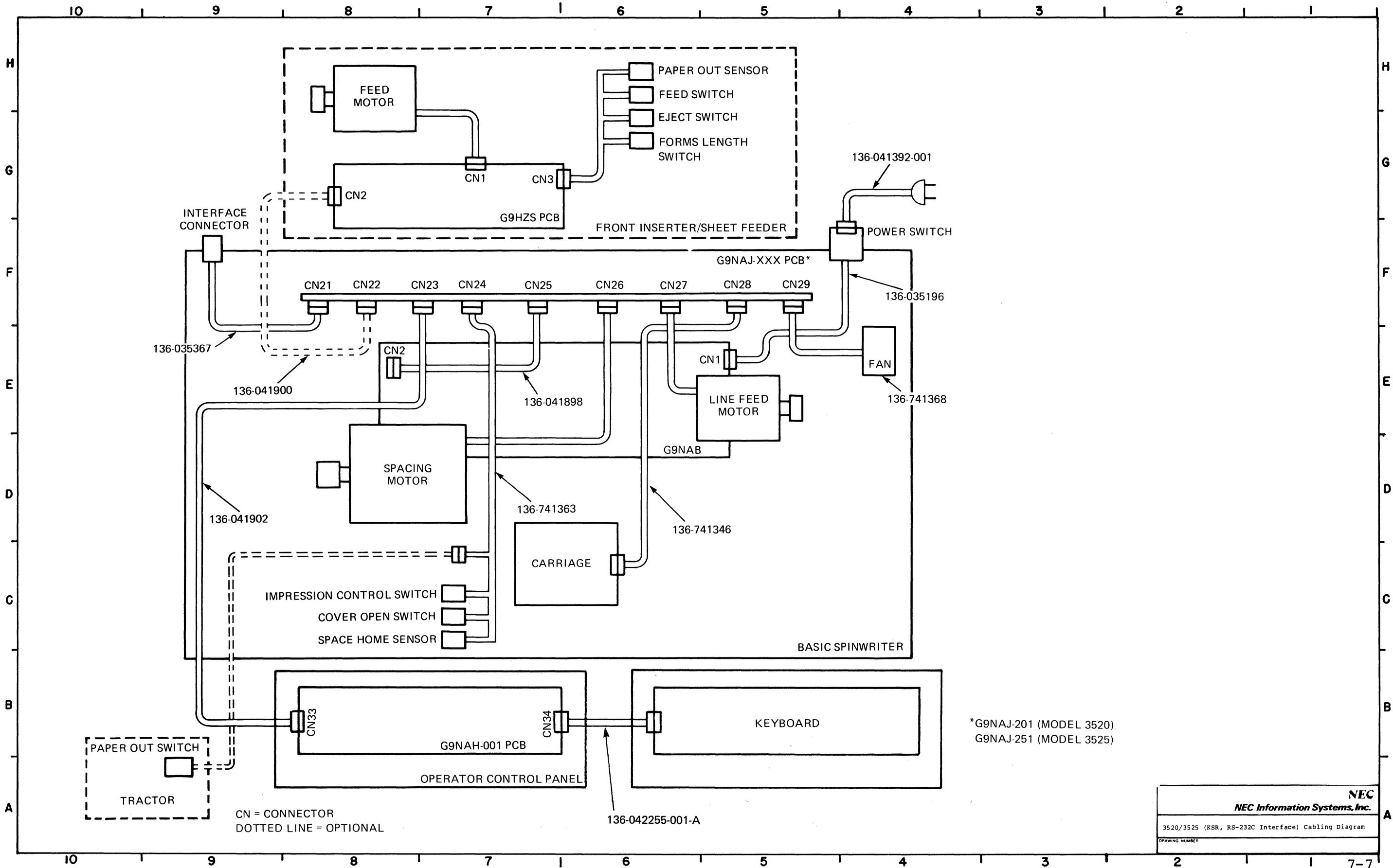


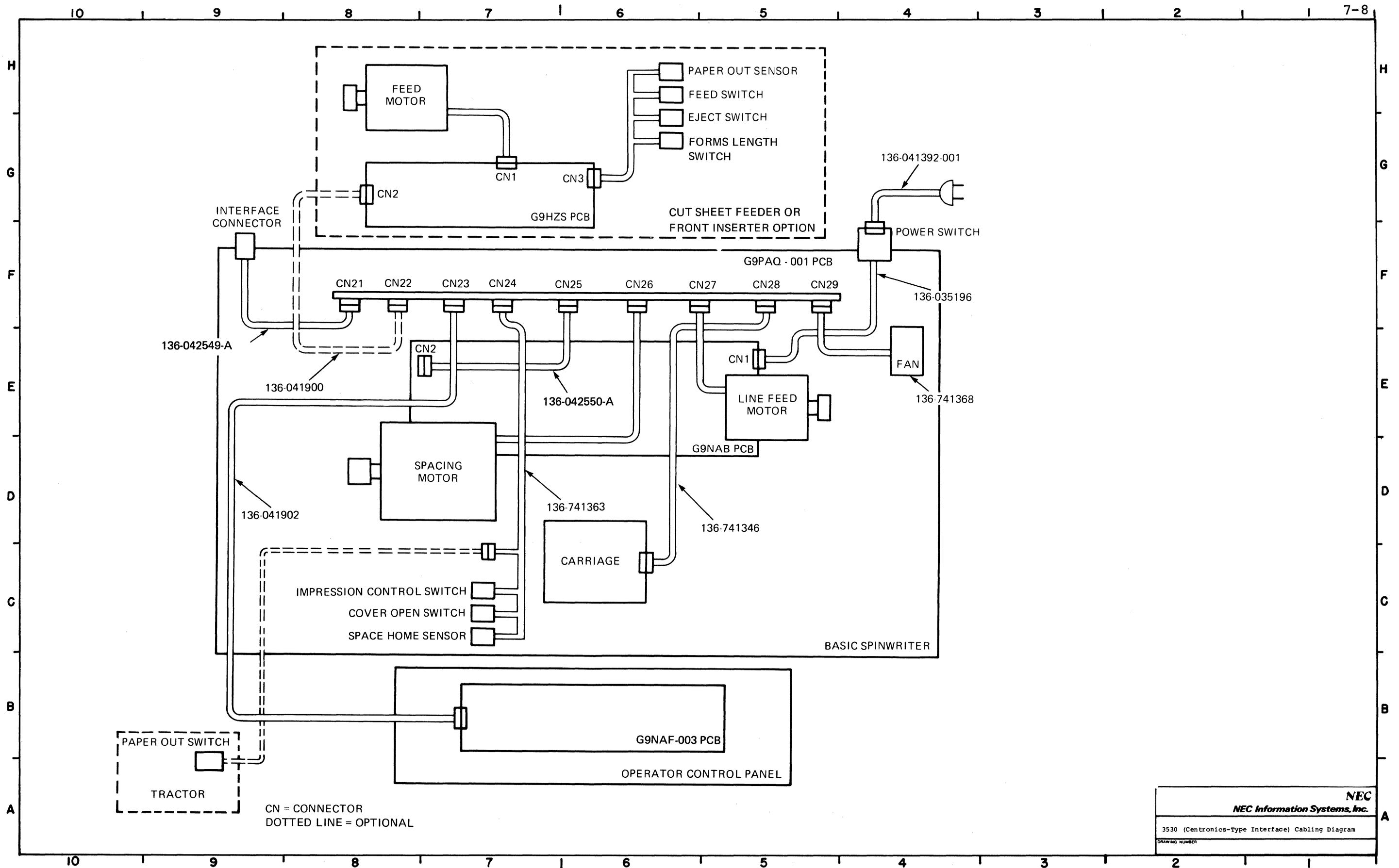
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3500R (RO, Simplified RS-232C Interface)
 Cabling Diagram

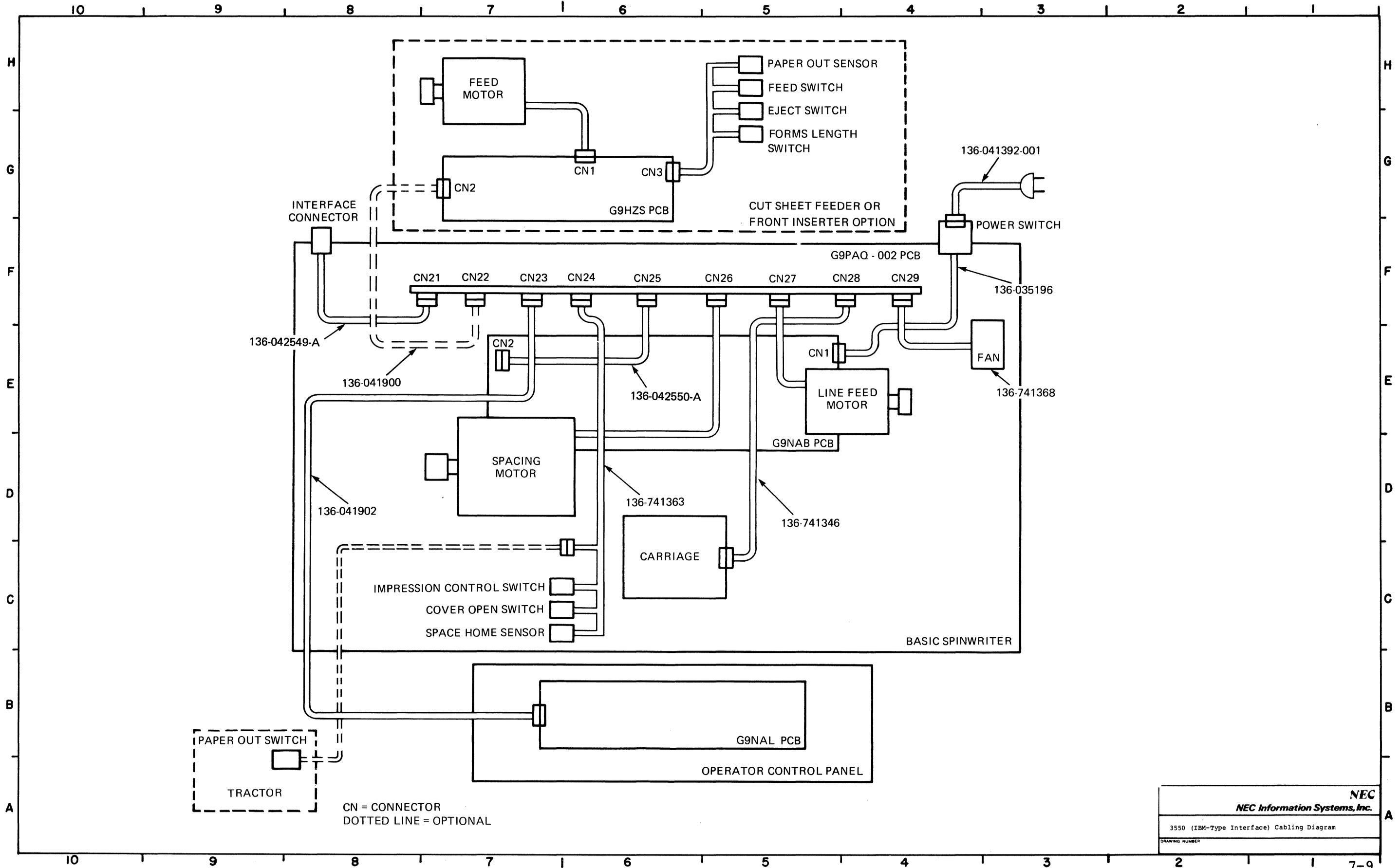
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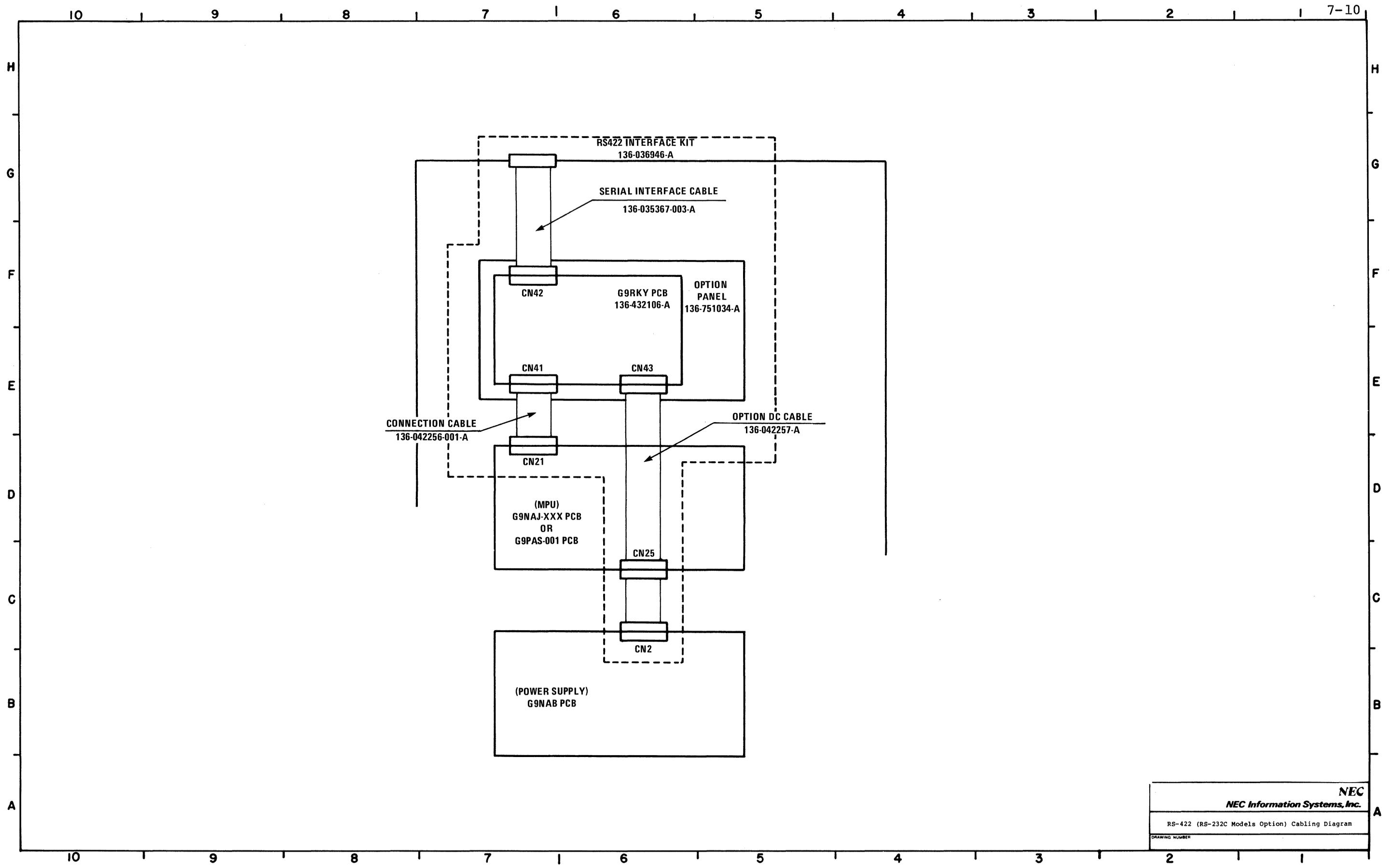


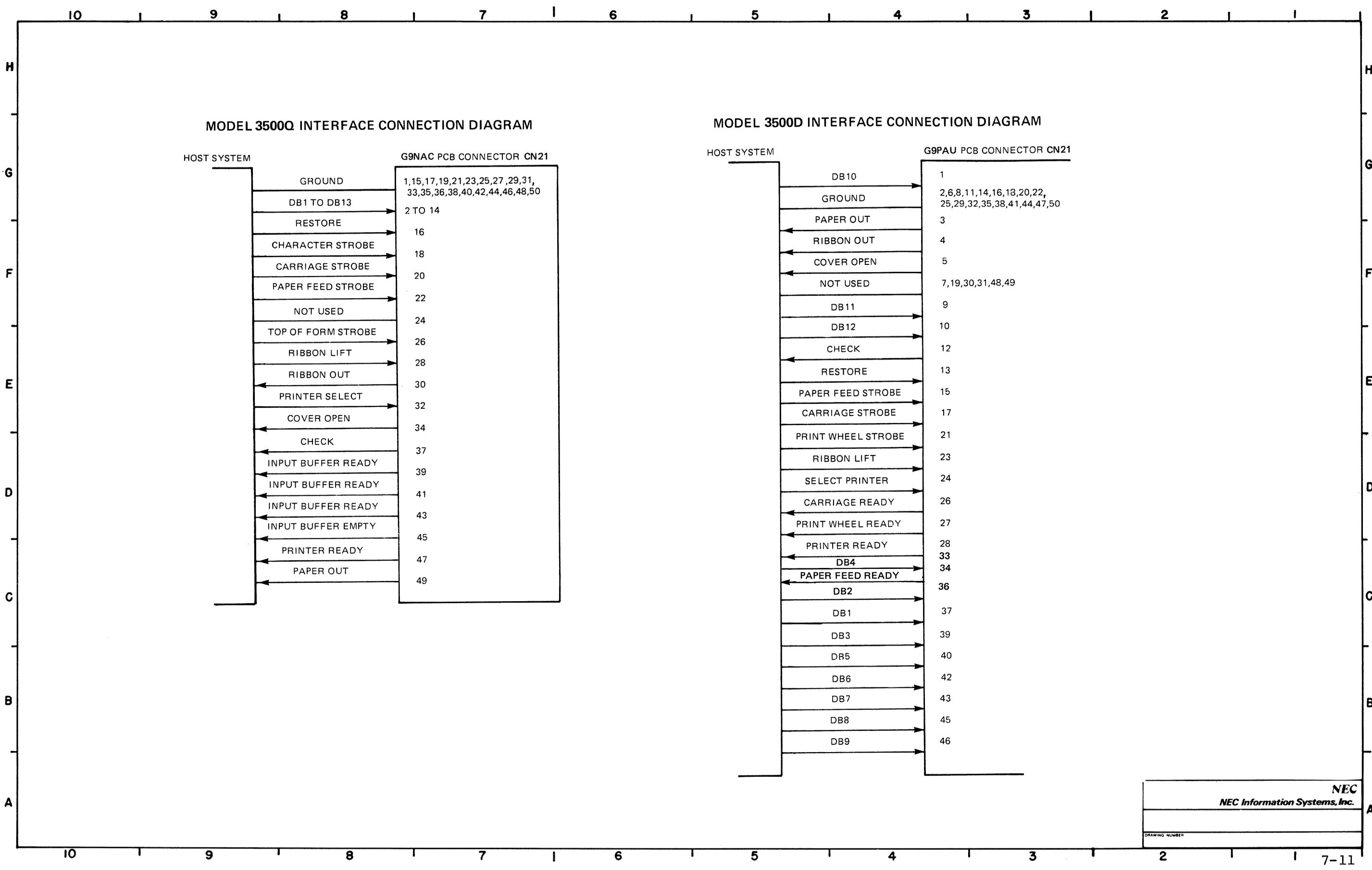




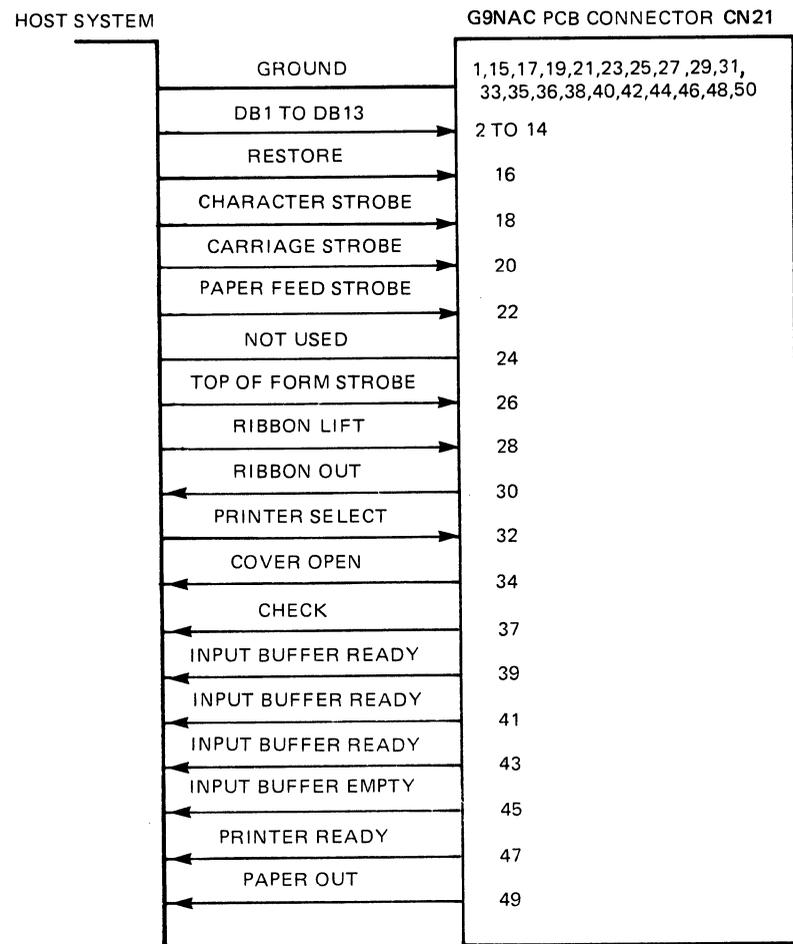
CN = CONNECTOR
 DOTTED LINE = OPTIONAL



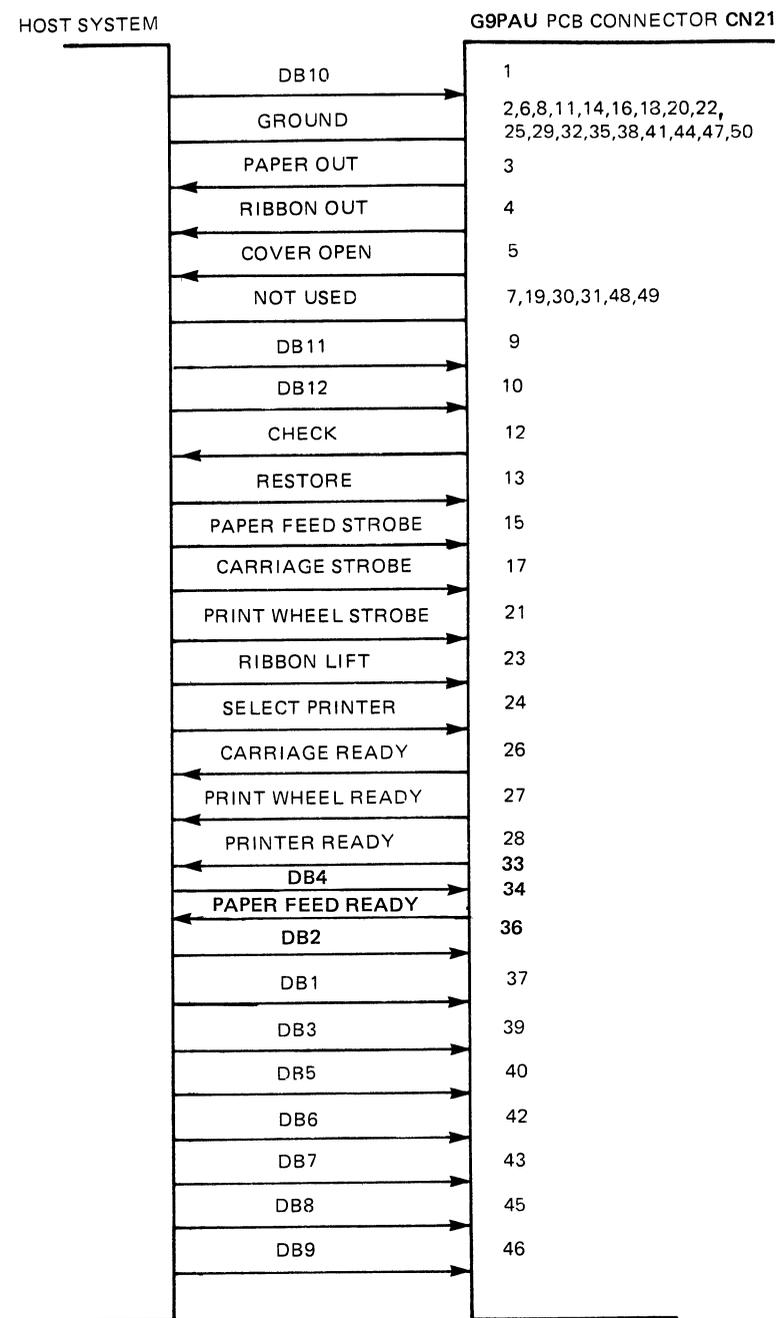




MODEL 3500Q INTERFACE CONNECTION DIAGRAM

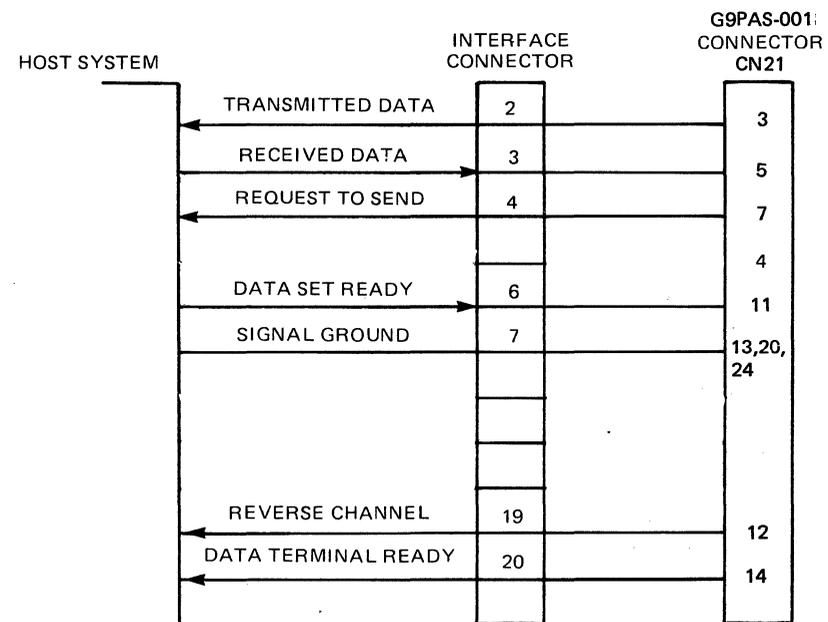


MODEL 3500D INTERFACE CONNECTION DIAGRAM

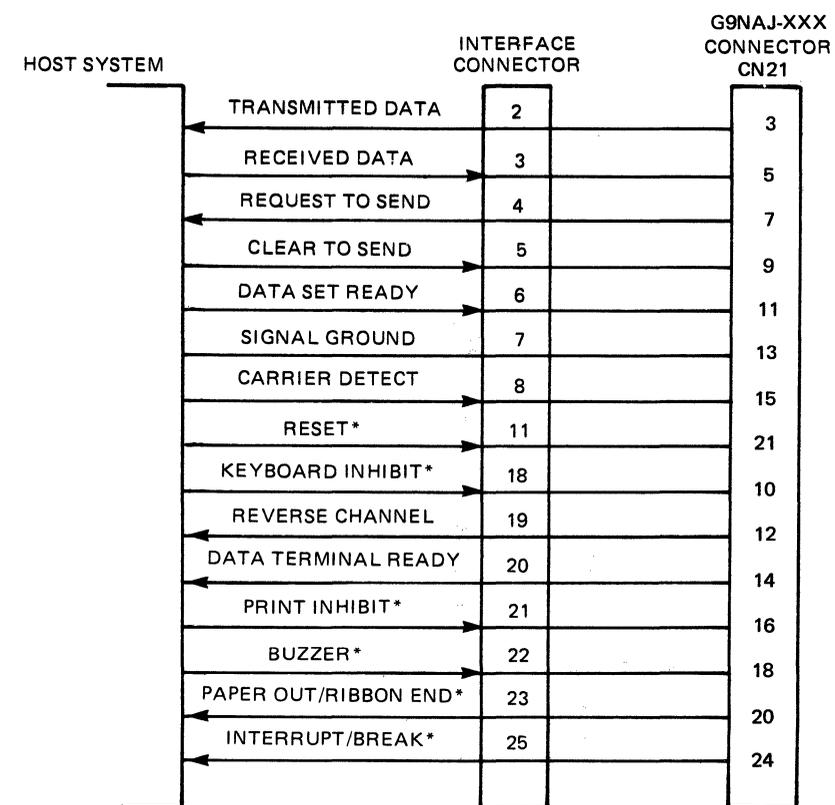


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MODEL 3500R INTERFACE CONNECTION DIAGRAM

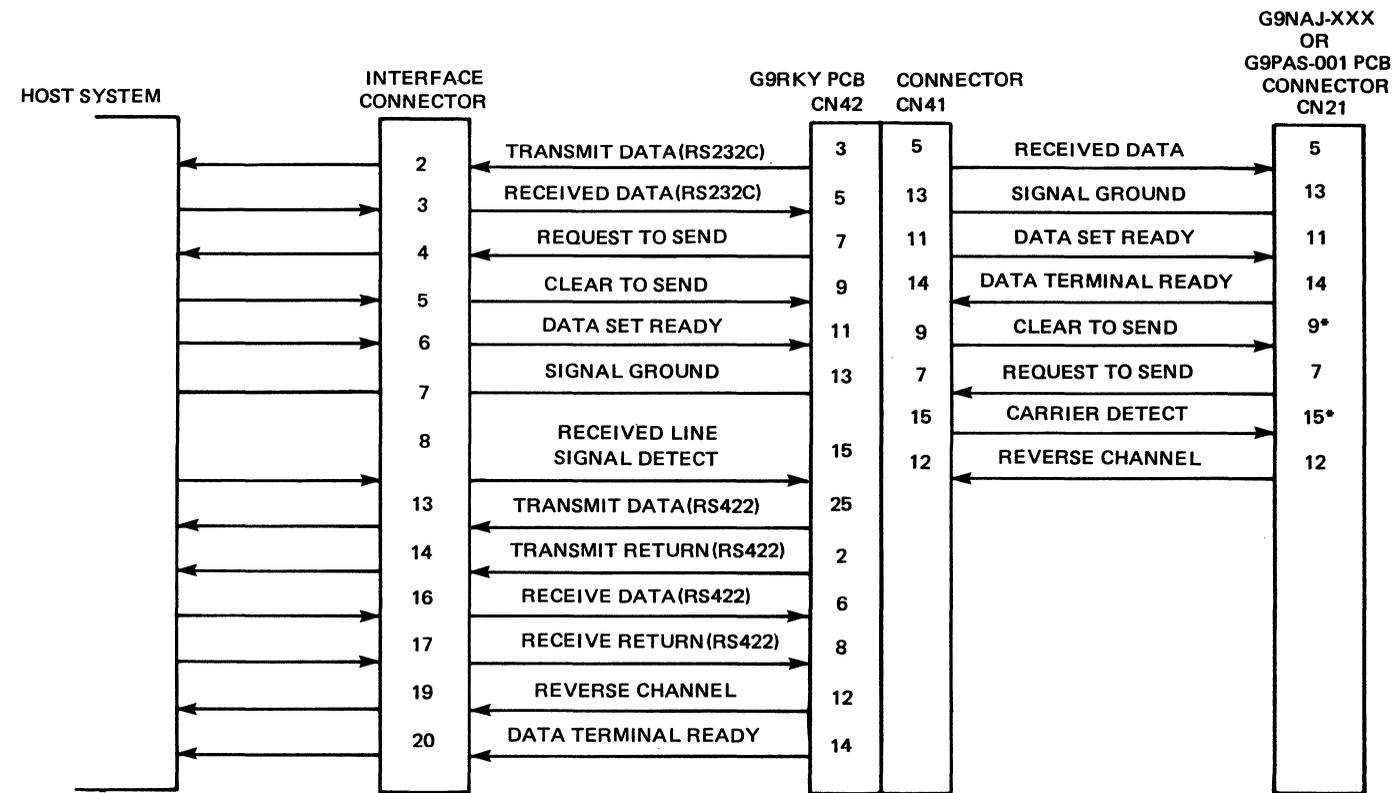


MODELS 3510,3515,3520,3525 INTERFACE CONNECTION DIAGRAM



*USED FOR DIRECT CONNECTION APPLICATIONS ONLY.

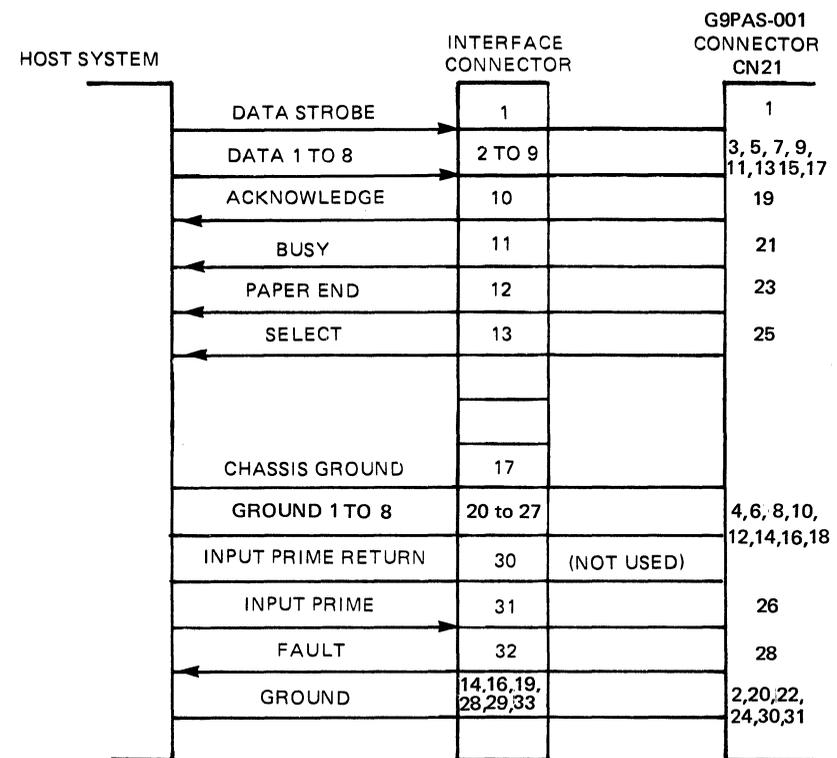
MODELS 3500R,3510,3515,3520,3525 WITH RS422 OPTION INTERFACE CONNECTION DIAGRAM



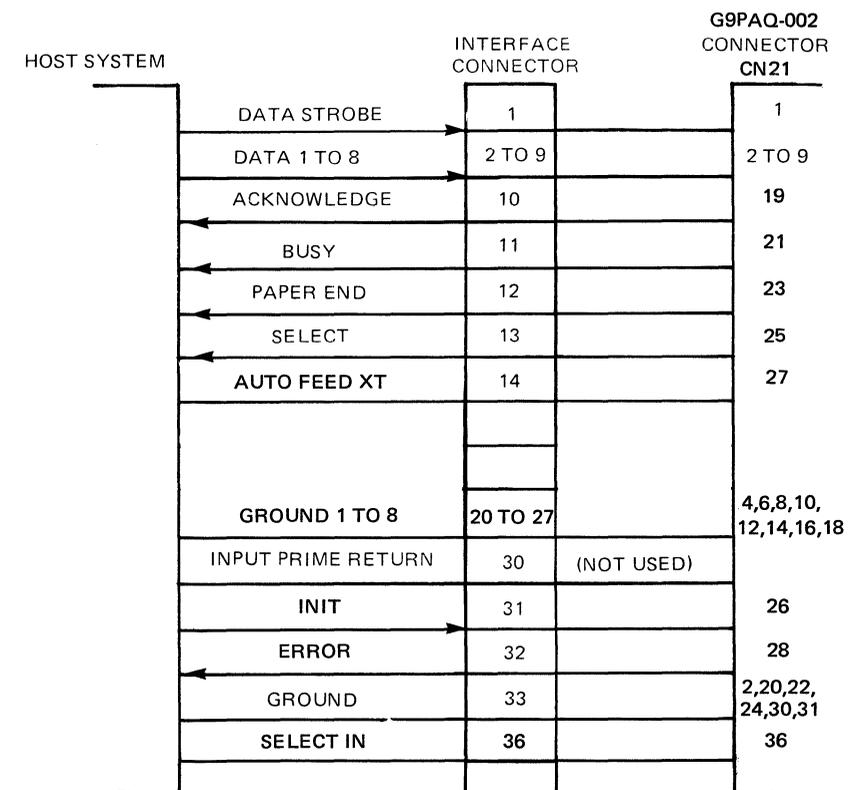
* NOT ON G9PAS-001
SEE SWITCH SETTINGS ON G9RKY PCB.

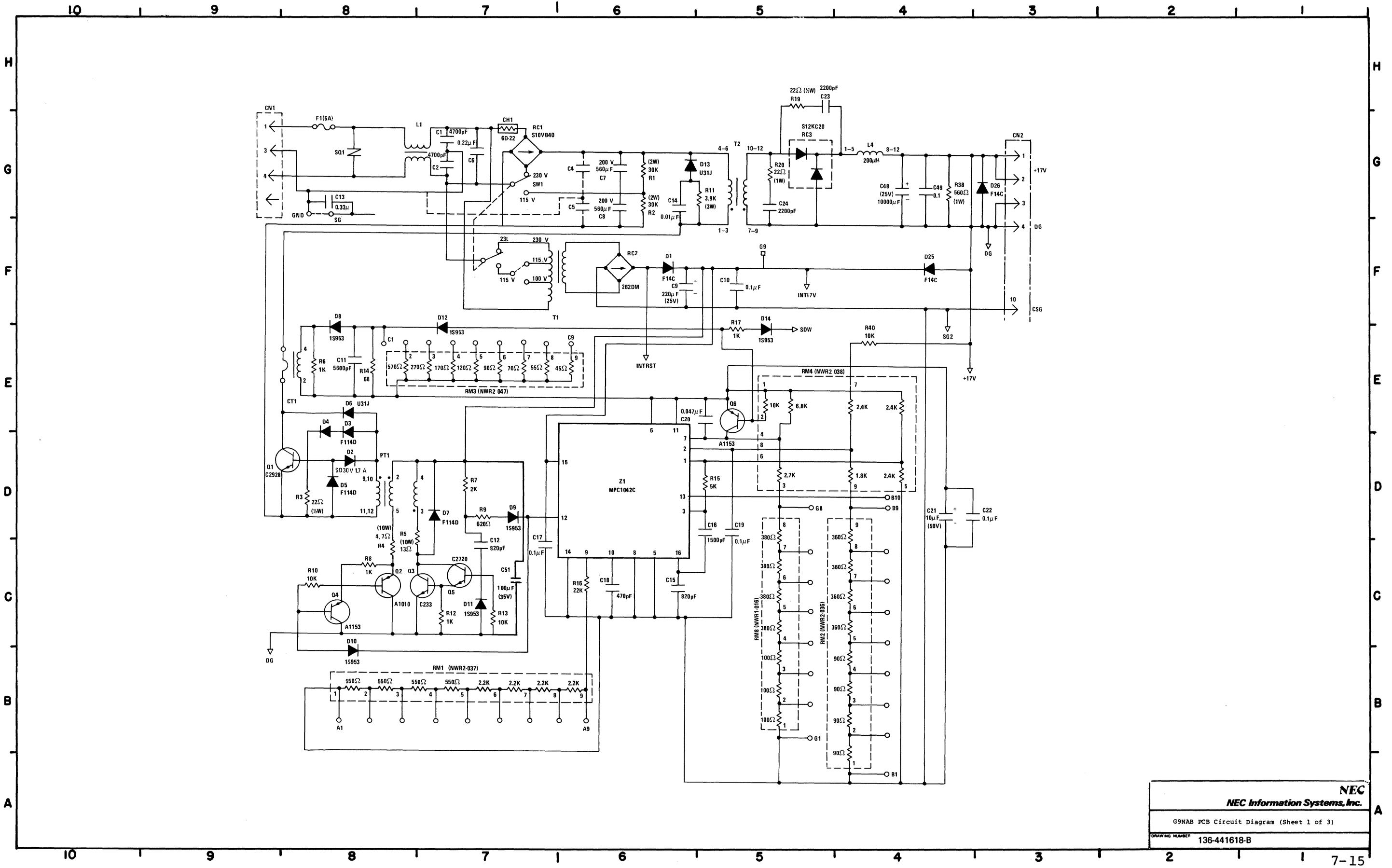
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MODEL 3530 INTERFACE CONNECTION DIAGRAM

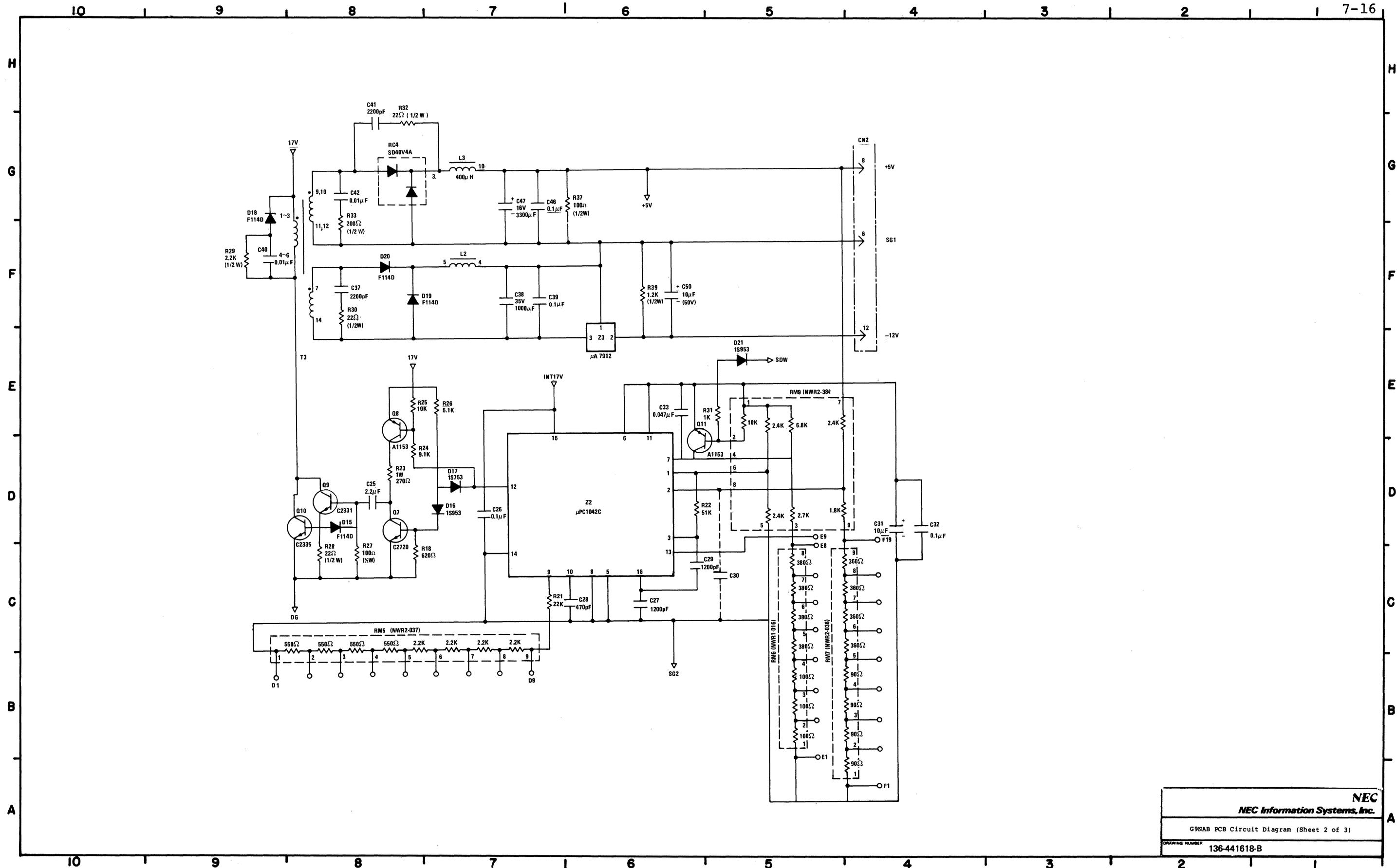


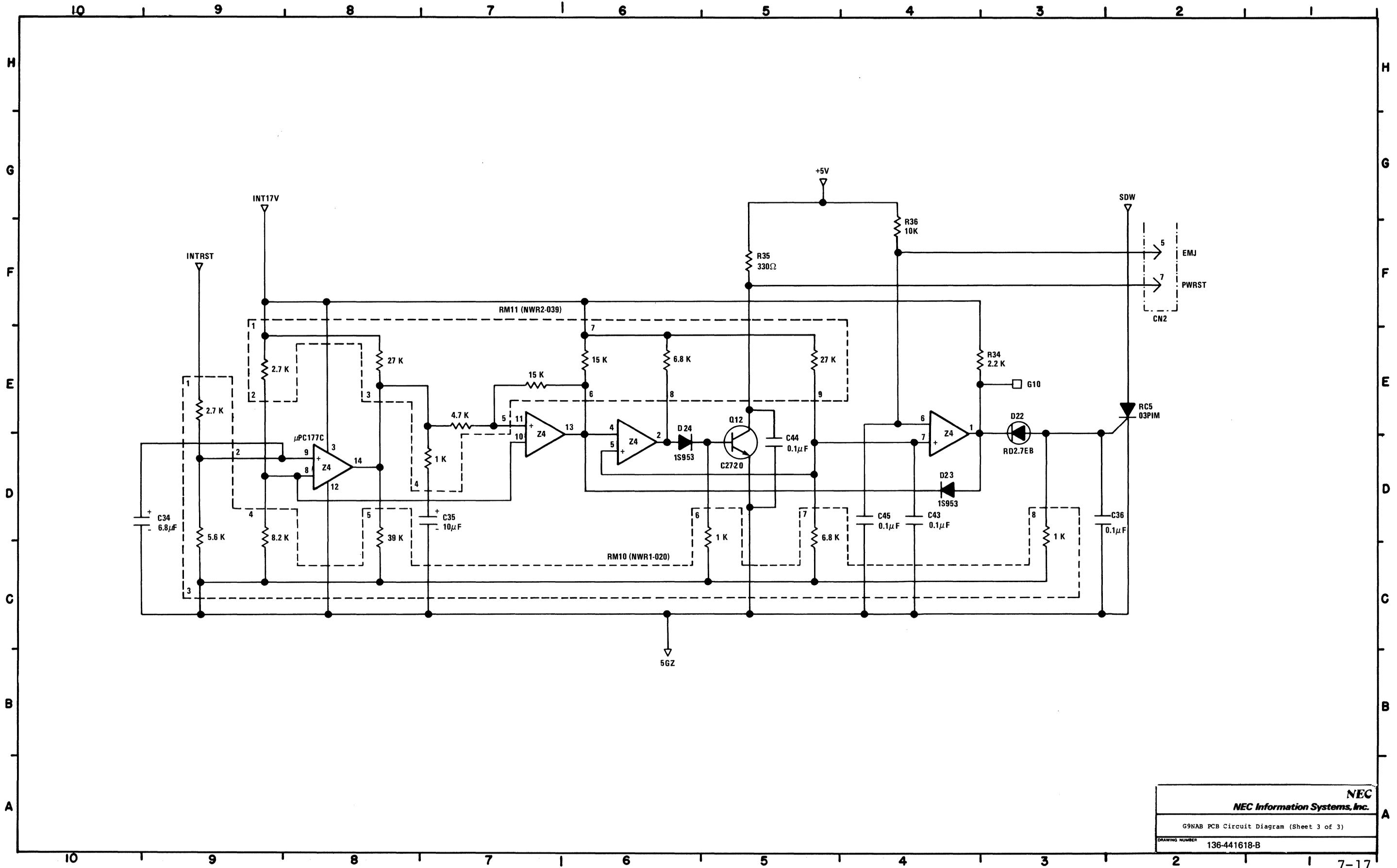
MODEL 3550 INTERFACE CONNECTION DIAGRAM





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 G9NAB PCB Circuit Diagram (Sheet 1 of 3)
 DRAWING NUMBER 136-441618-B

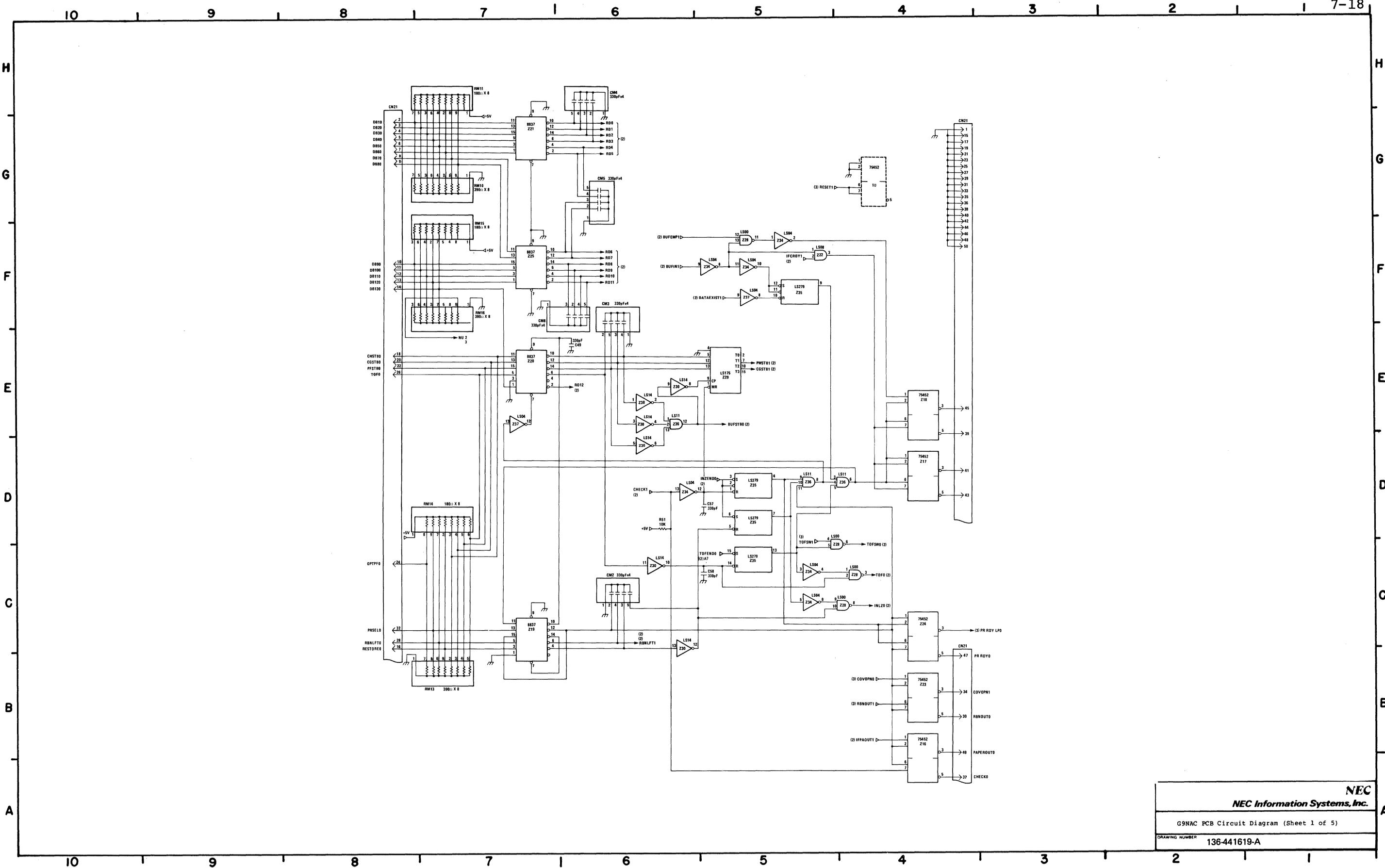




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G9NAB PCB Circuit Diagram (Sheet 3 of 3)

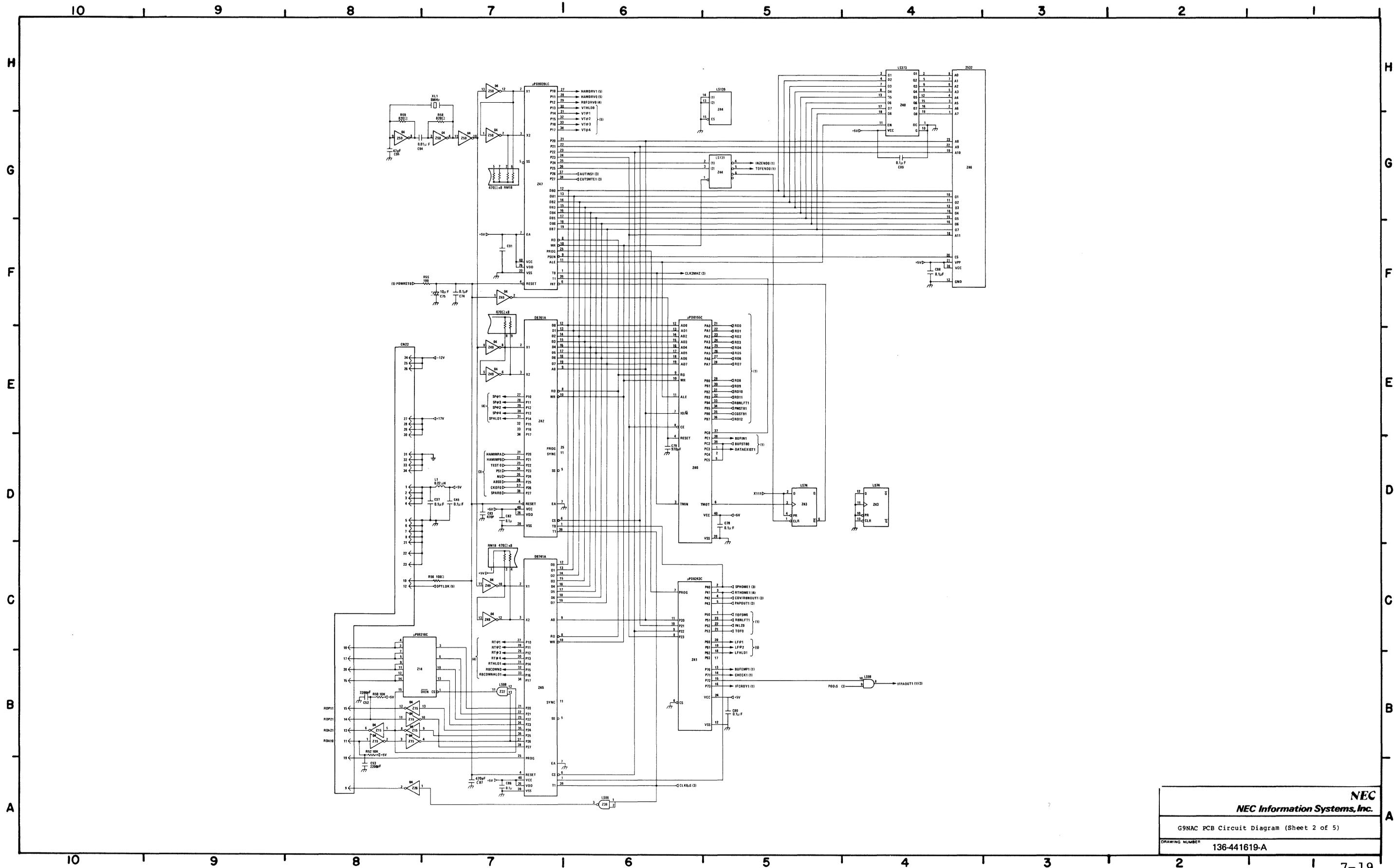
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G9NAC PCB Circuit Diagram (Sheet 1 of 5)

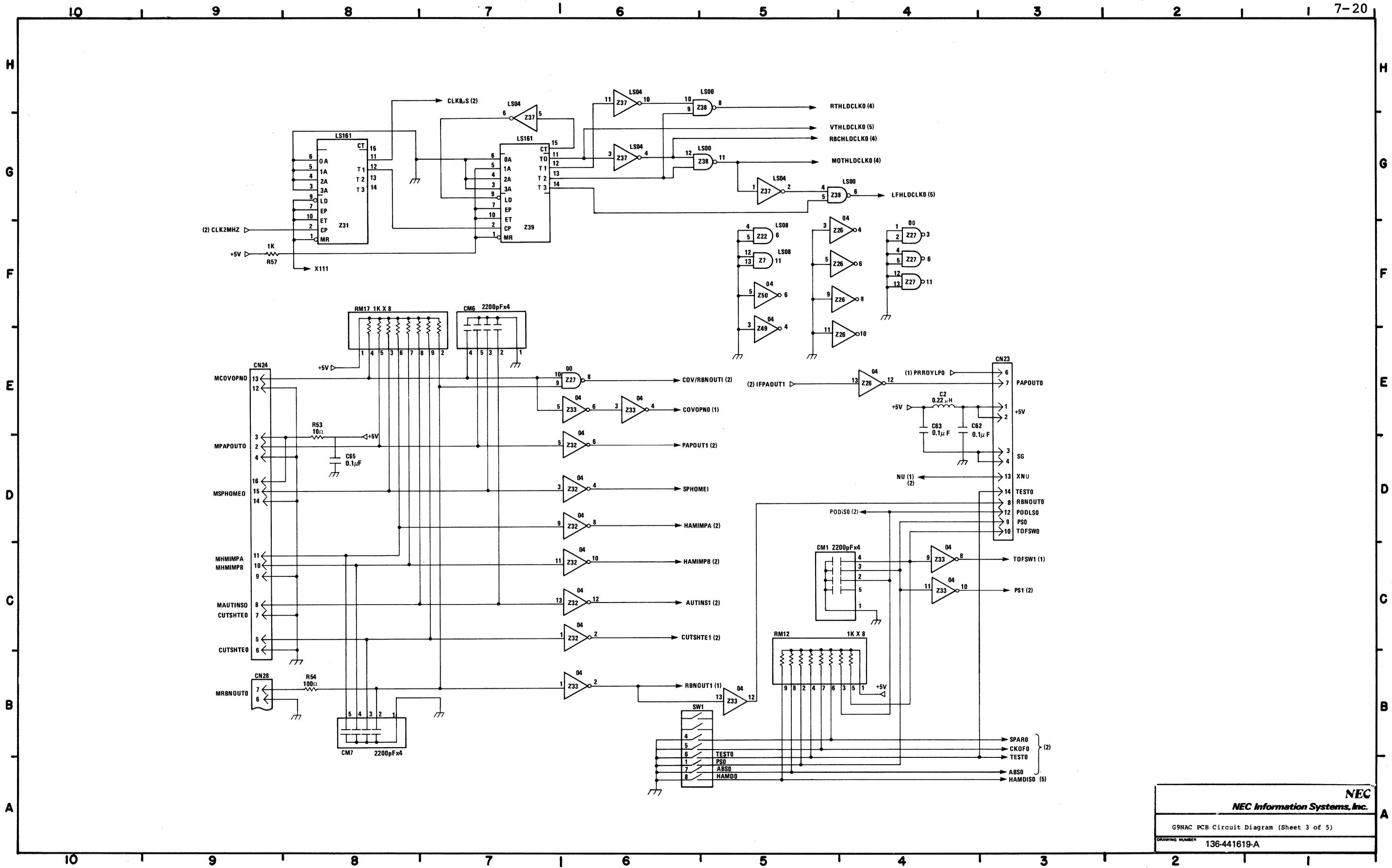
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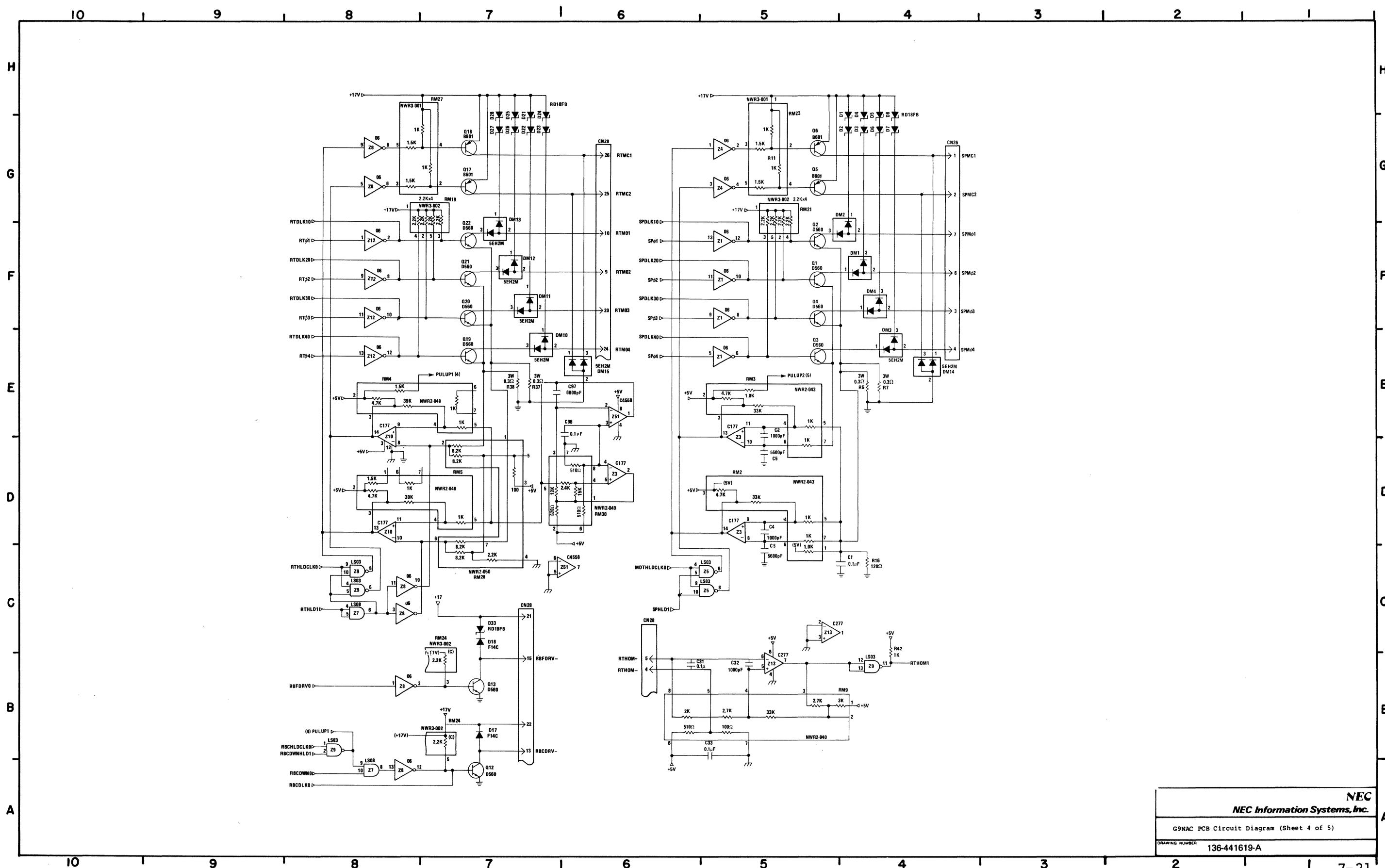


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G9NAC PCB Circuit Diagram (Sheet 2 of 5)

DRAWING NUMBER 136-441619-A

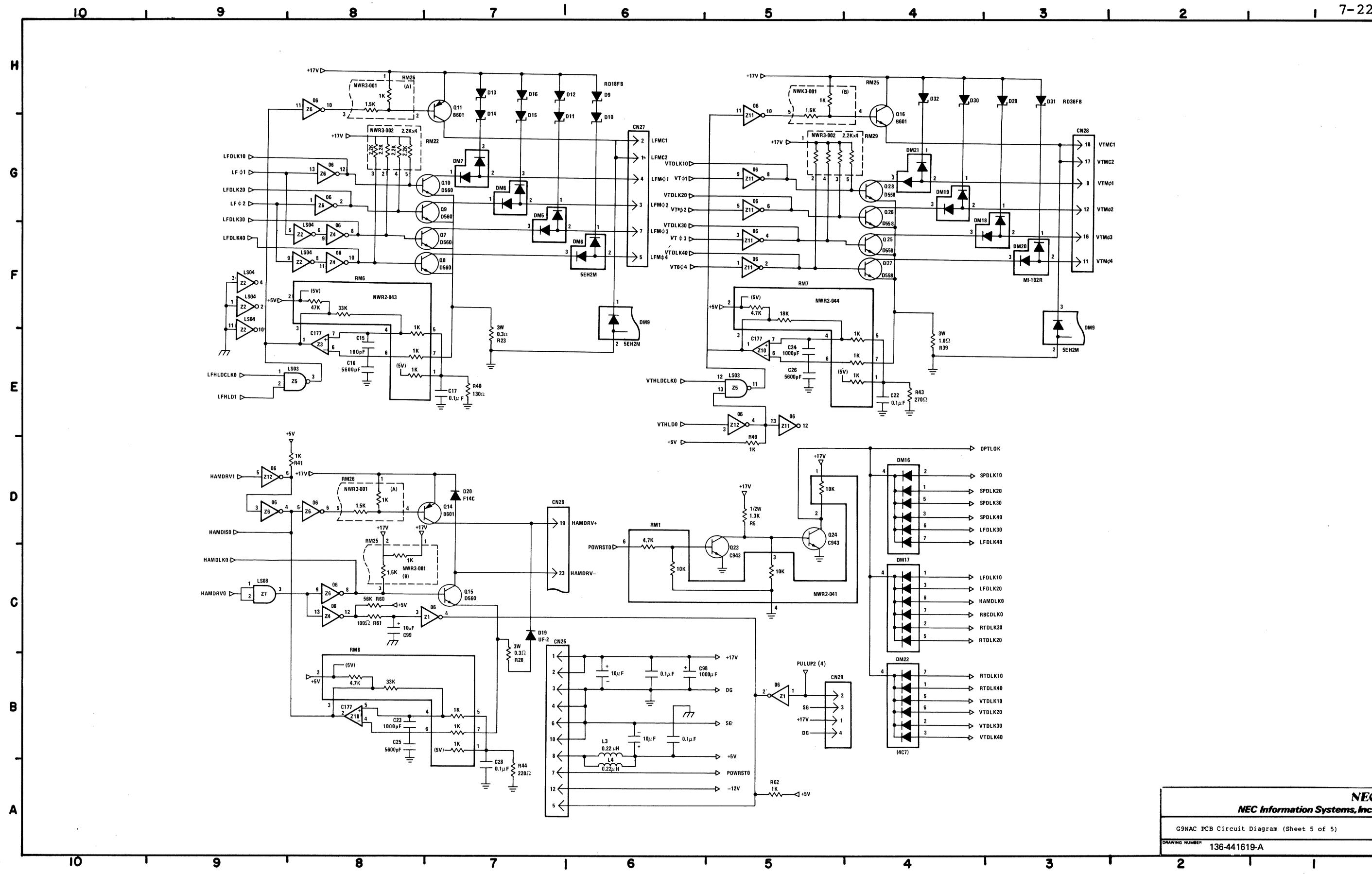


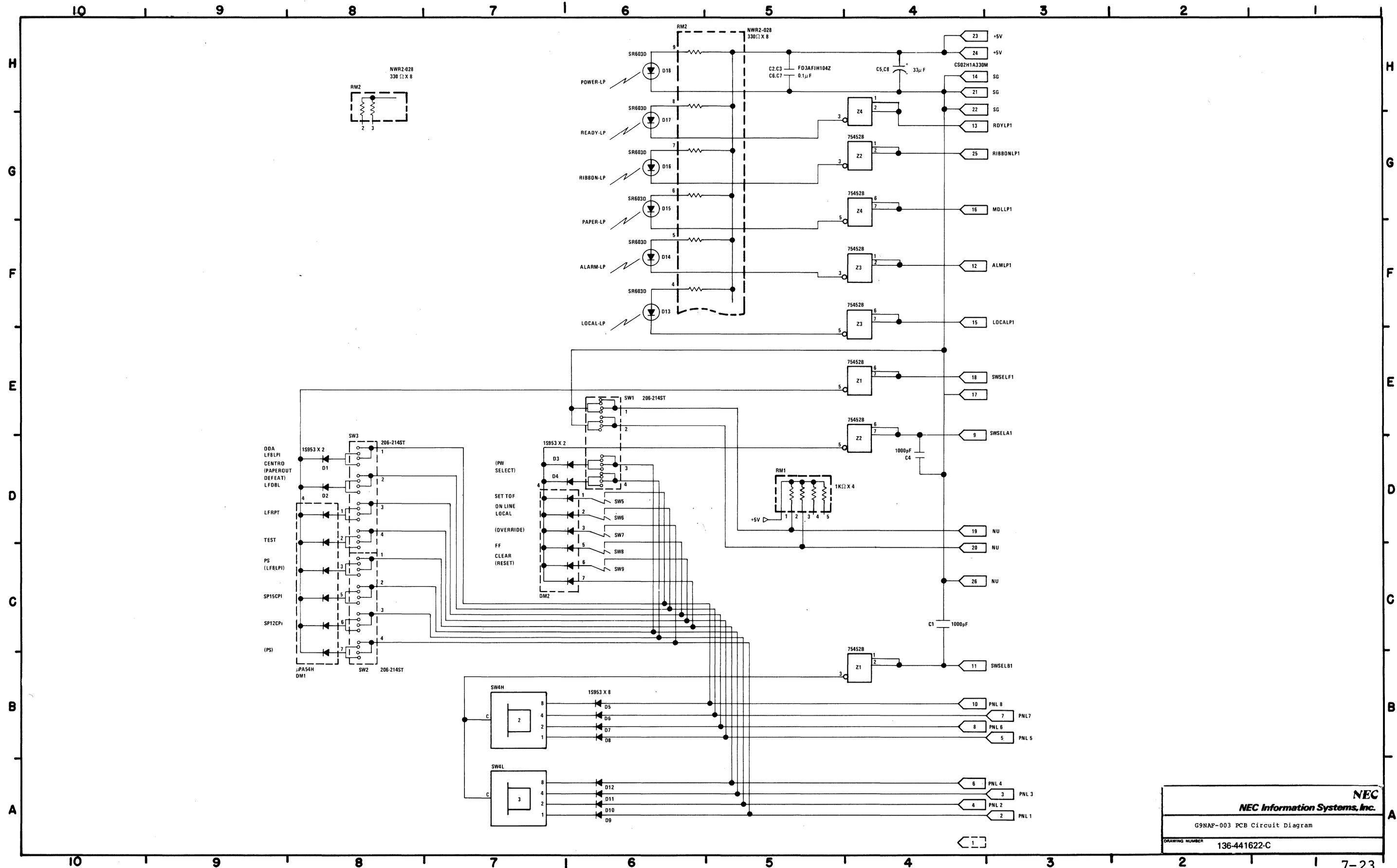


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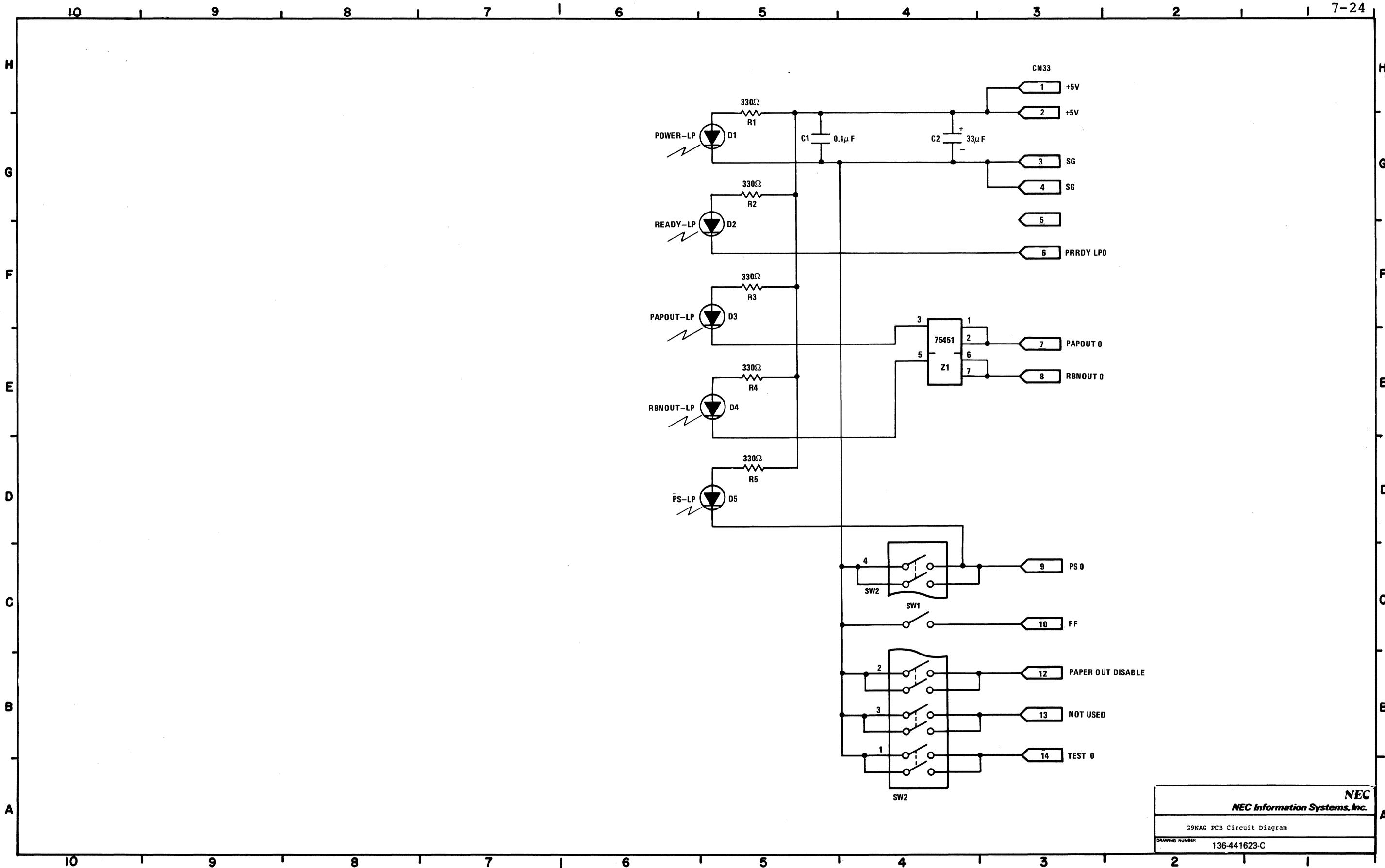
G9NAC PCB Circuit Diagram (Sheet 4 of 5)

DRAWING NUMBER 136-441619-A





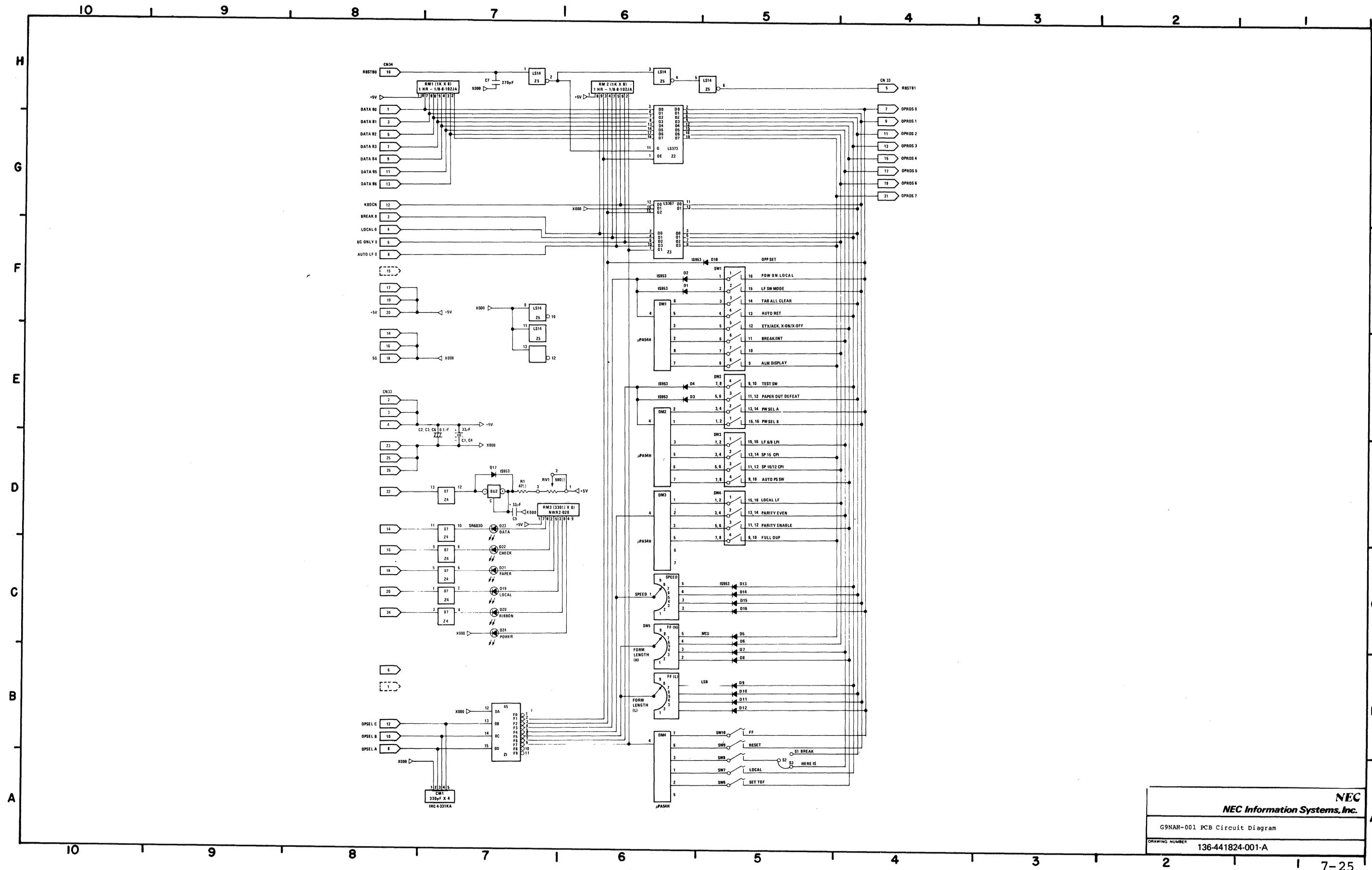
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 G9NAP-003 PCB Circuit Diagram
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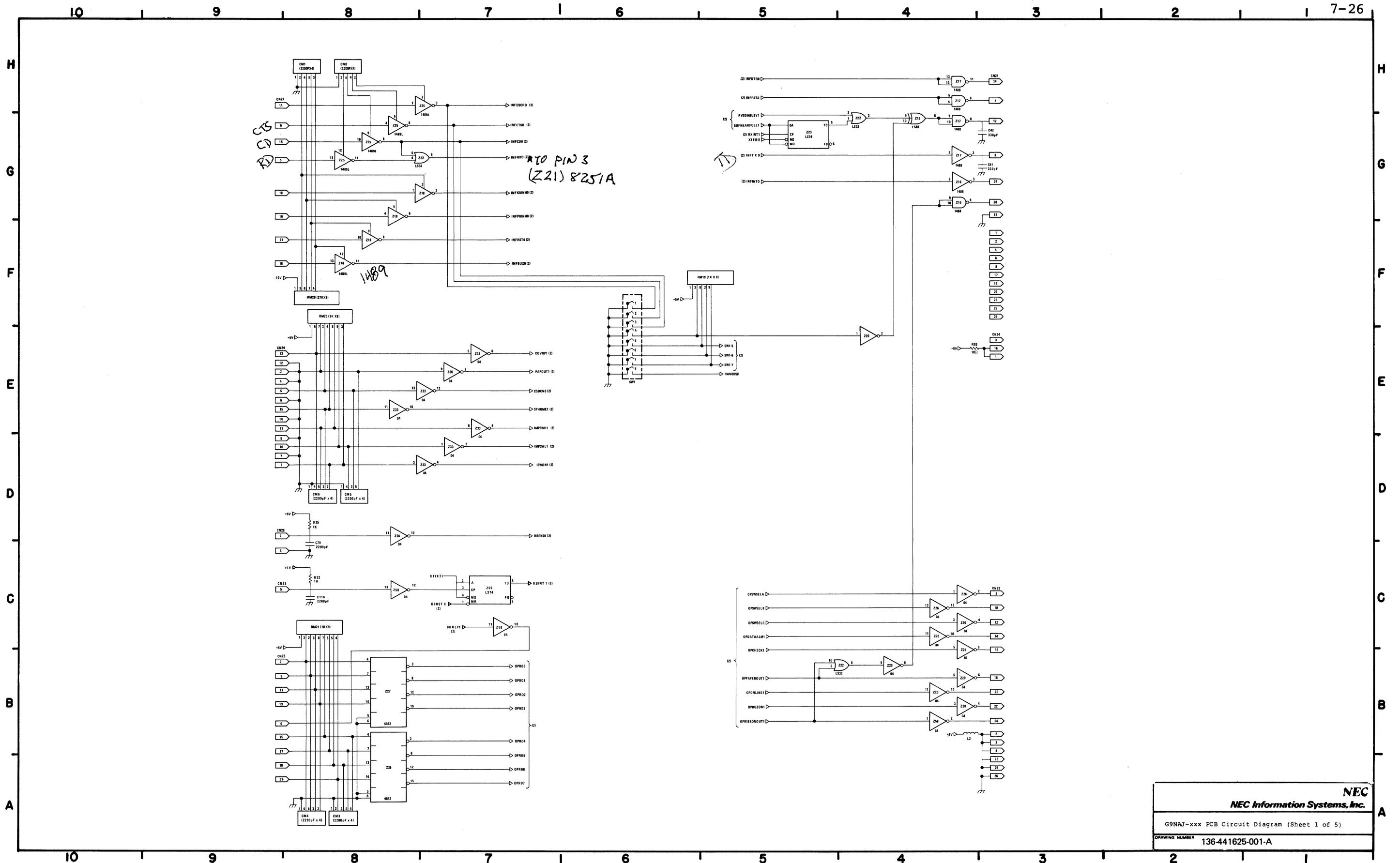
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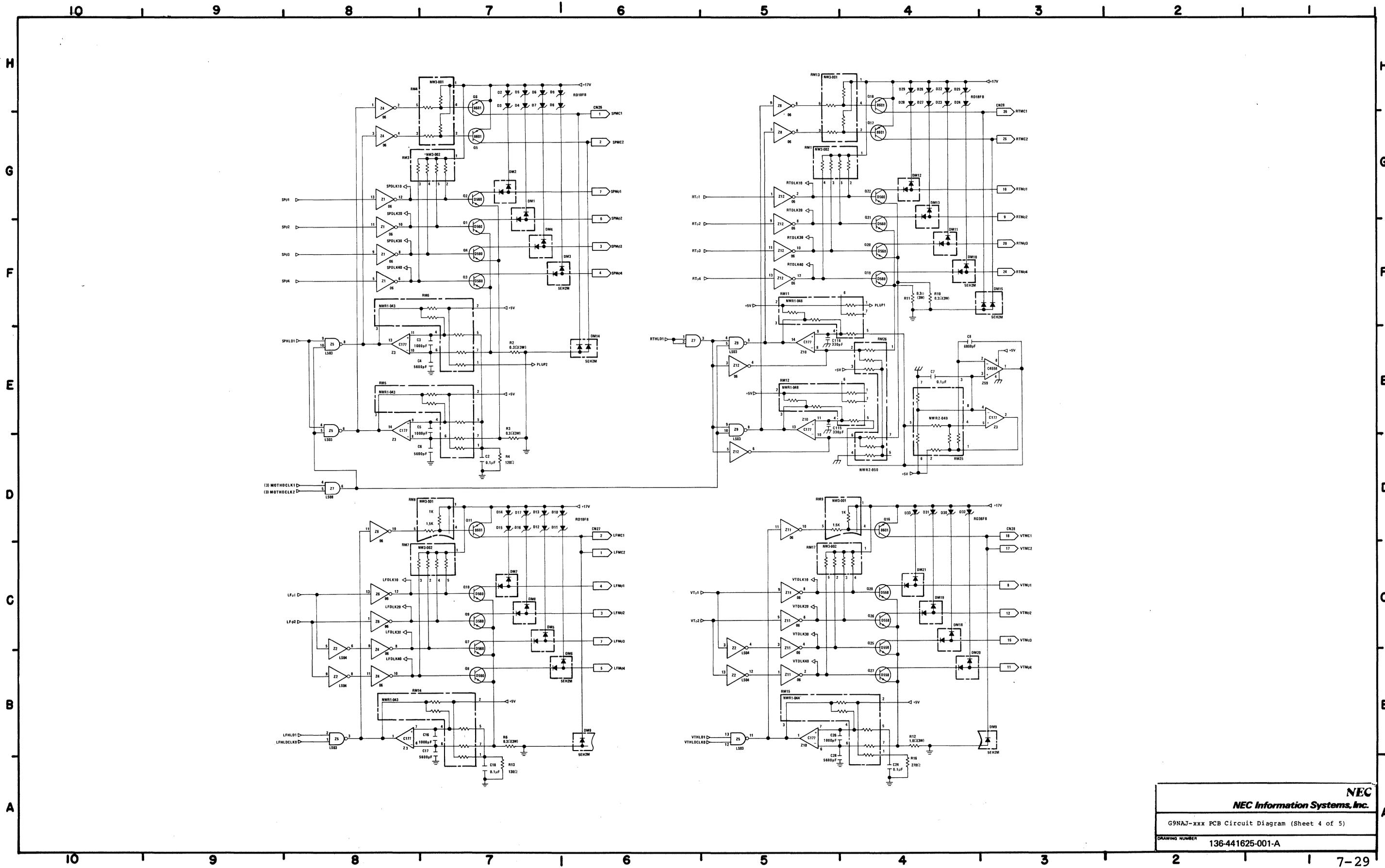
G9NAG PCB Circuit Diagram

DRAWING NUMBER 136-441623-C



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 G9NAR-001 PCB Circuit Diagram
 DRAWING NUMBER 136-441824-001-A

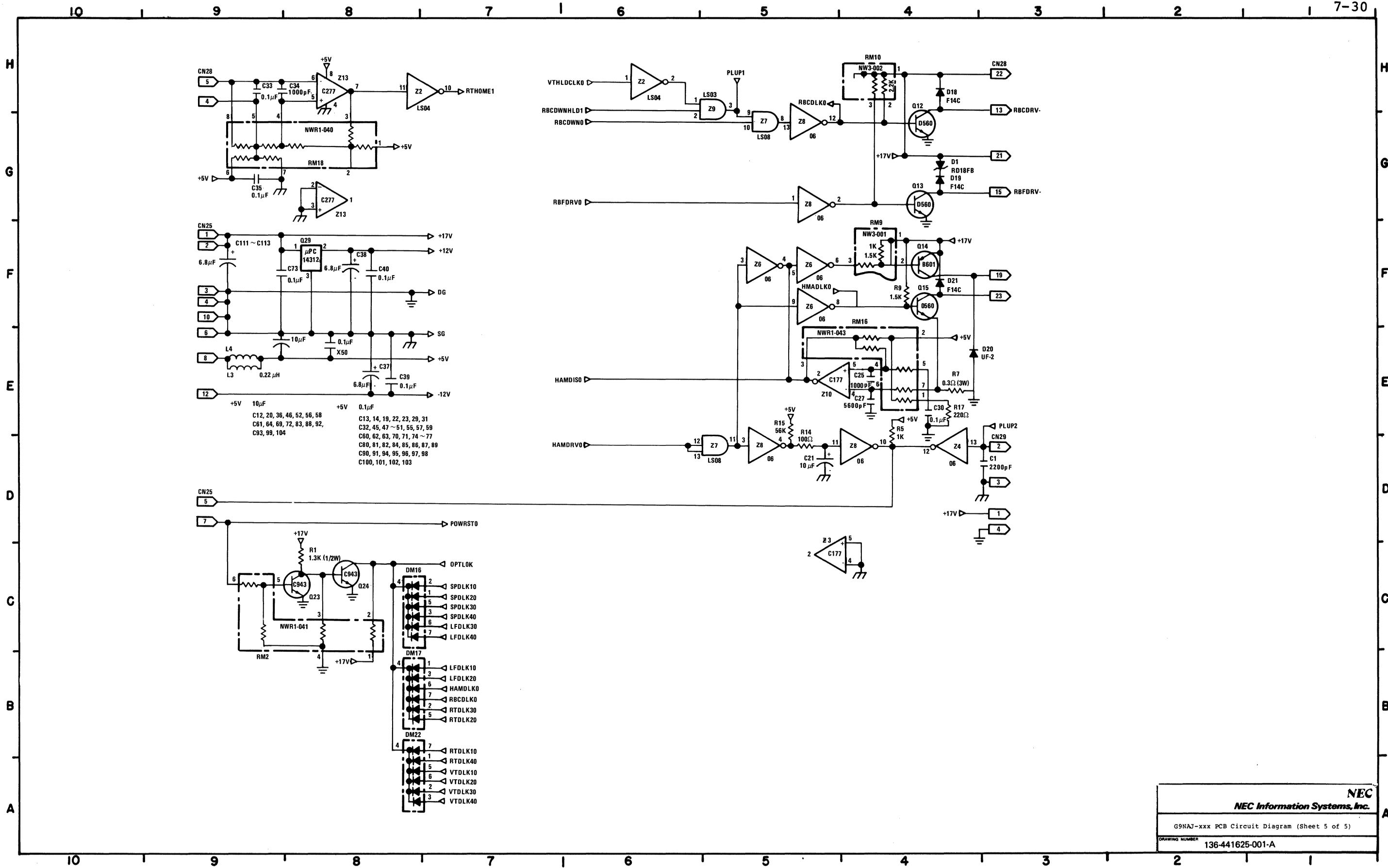


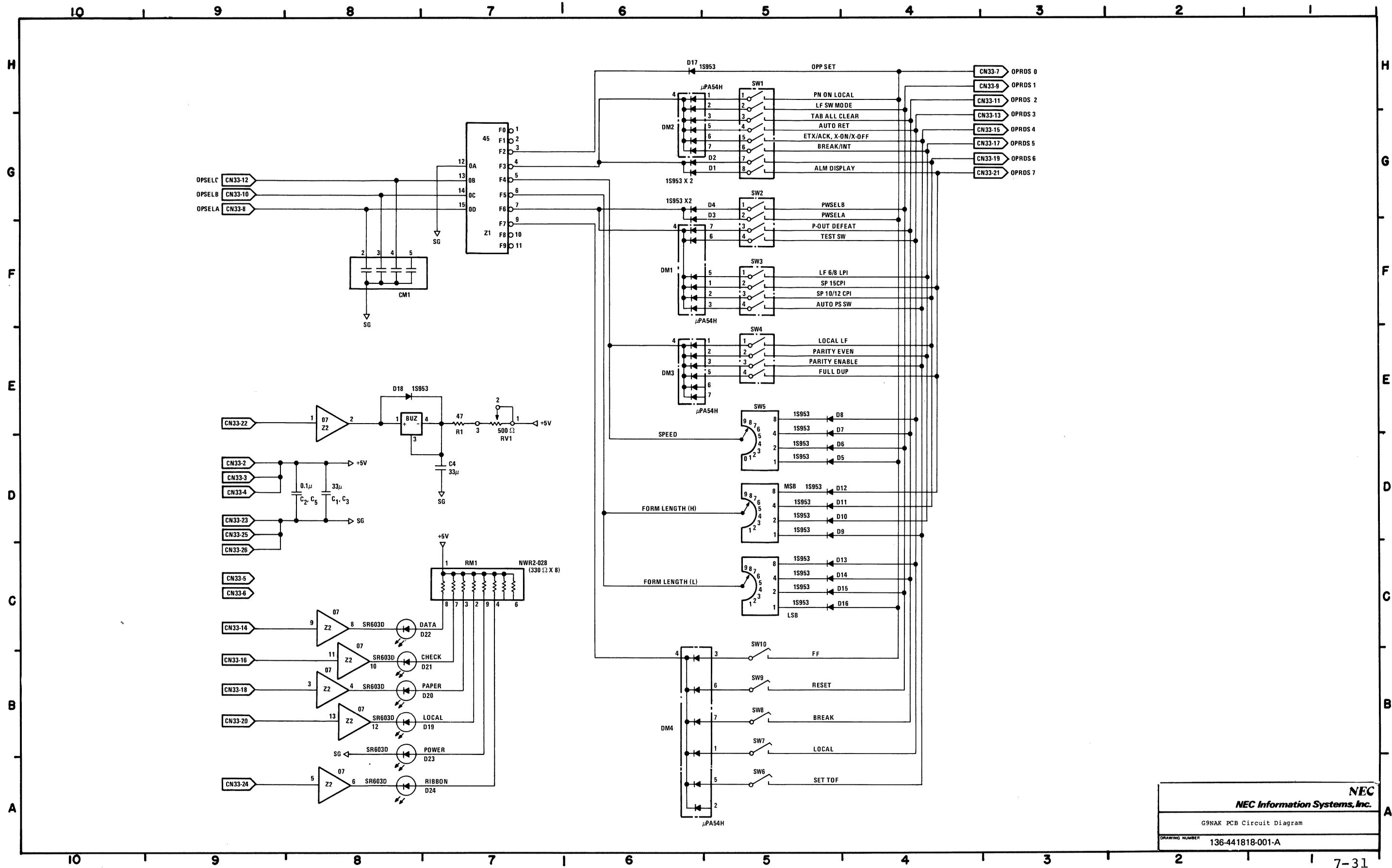


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G9NAJ-xxx PCB Circuit Diagram (Sheet 4 of 5)

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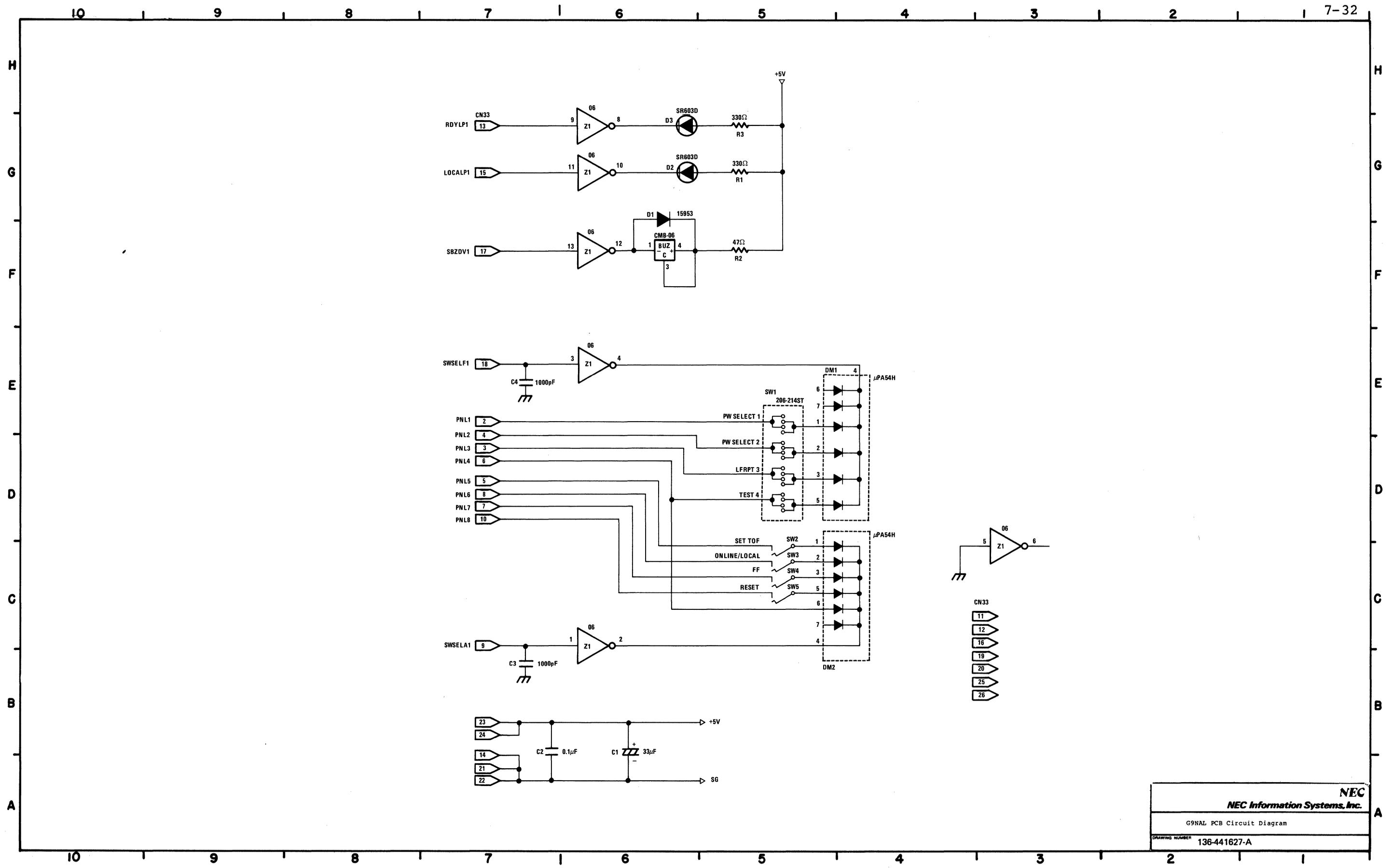




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G9NAK PCB Circuit Diagram

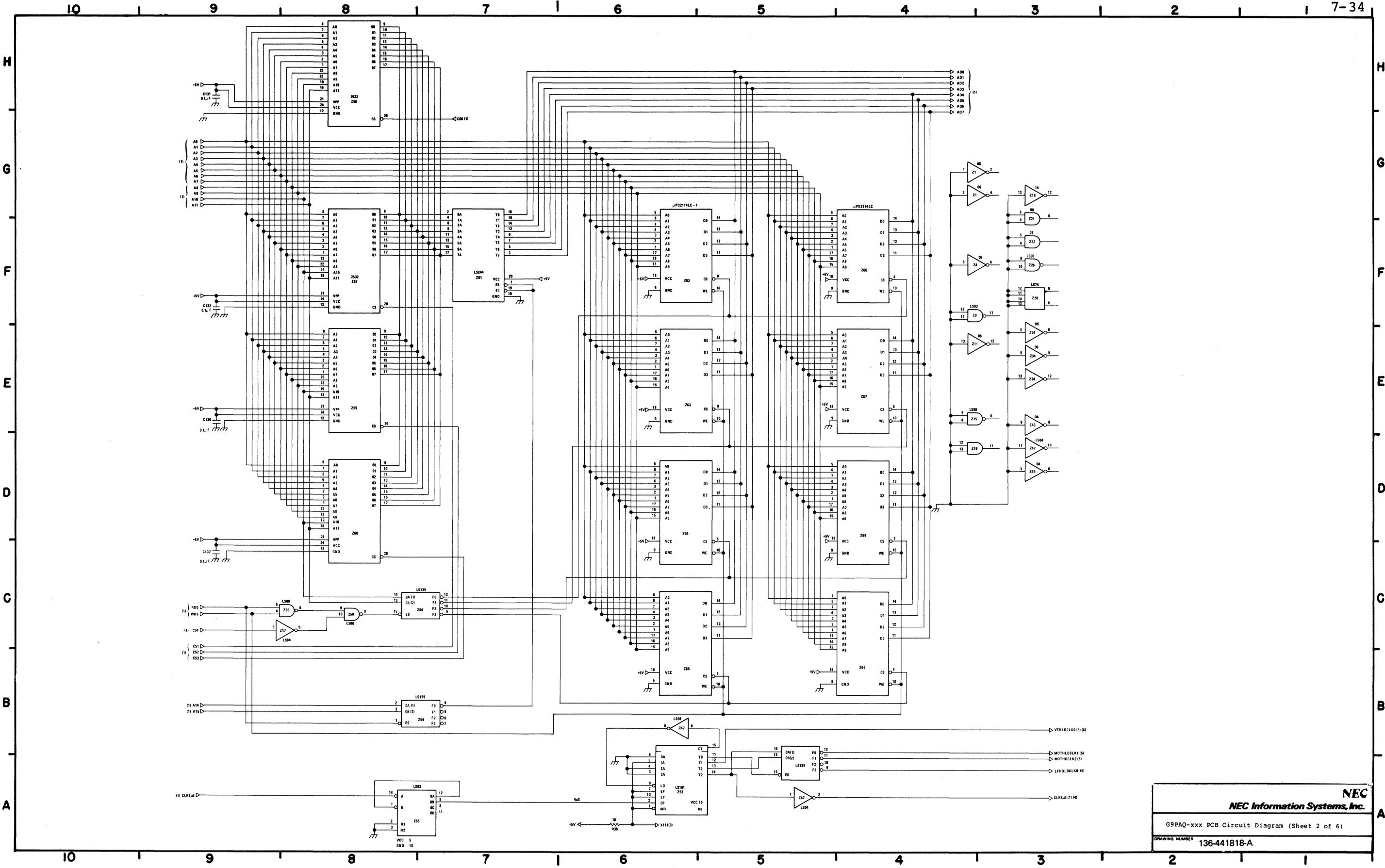
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G9NAL PCB Circuit Diagram

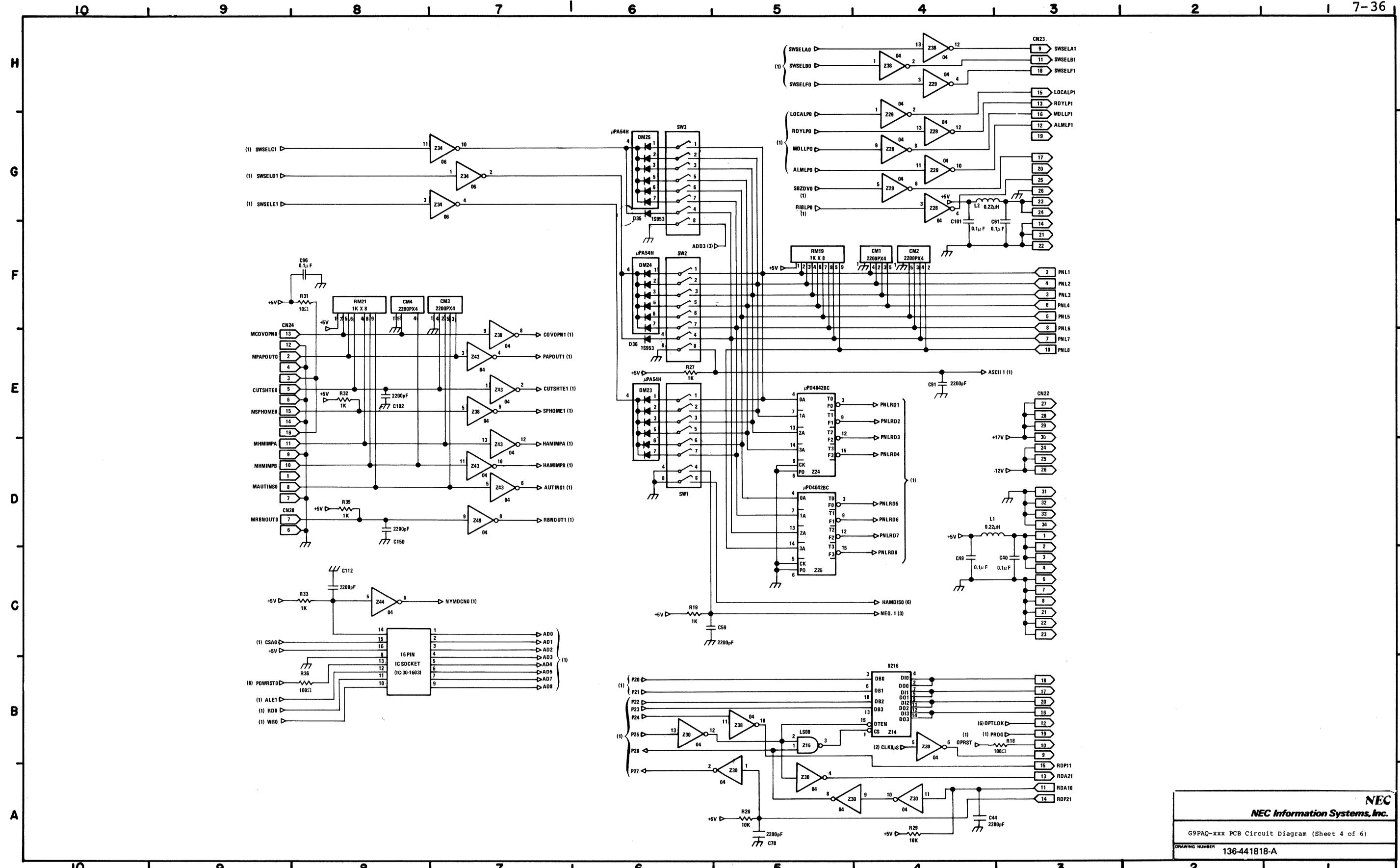
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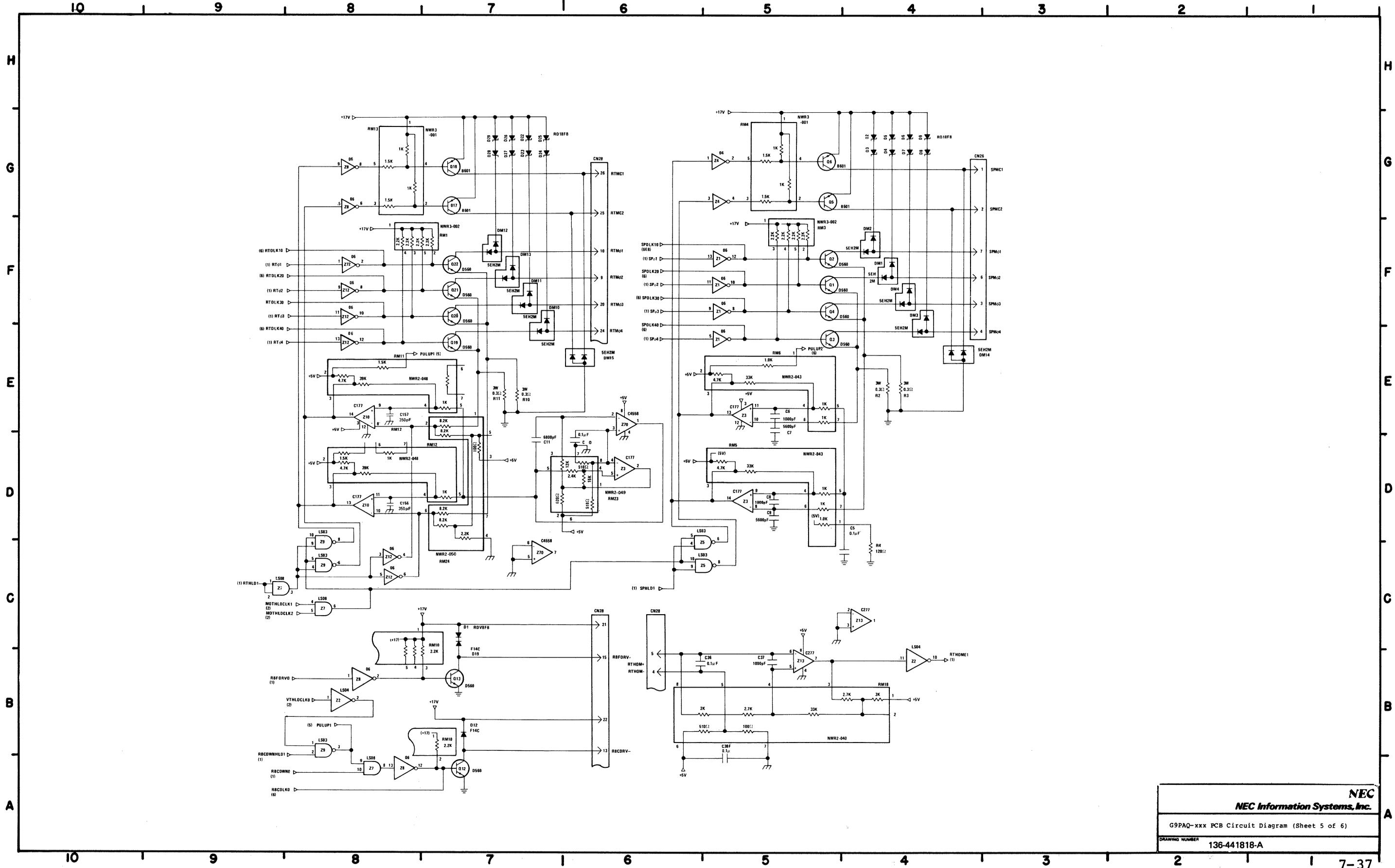


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GSPAQ-xxx PCB Circuit Diagram (Sheet 2 of 6)

DRAWING NUMBER 136-441818-A





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 G9PAQ-xxx PCB Circuit Diagram (Sheet 5 of 6)
 DRAWING NUMBER 136-441818-A

H

G

F

E

D

C

B

A

H

G

F

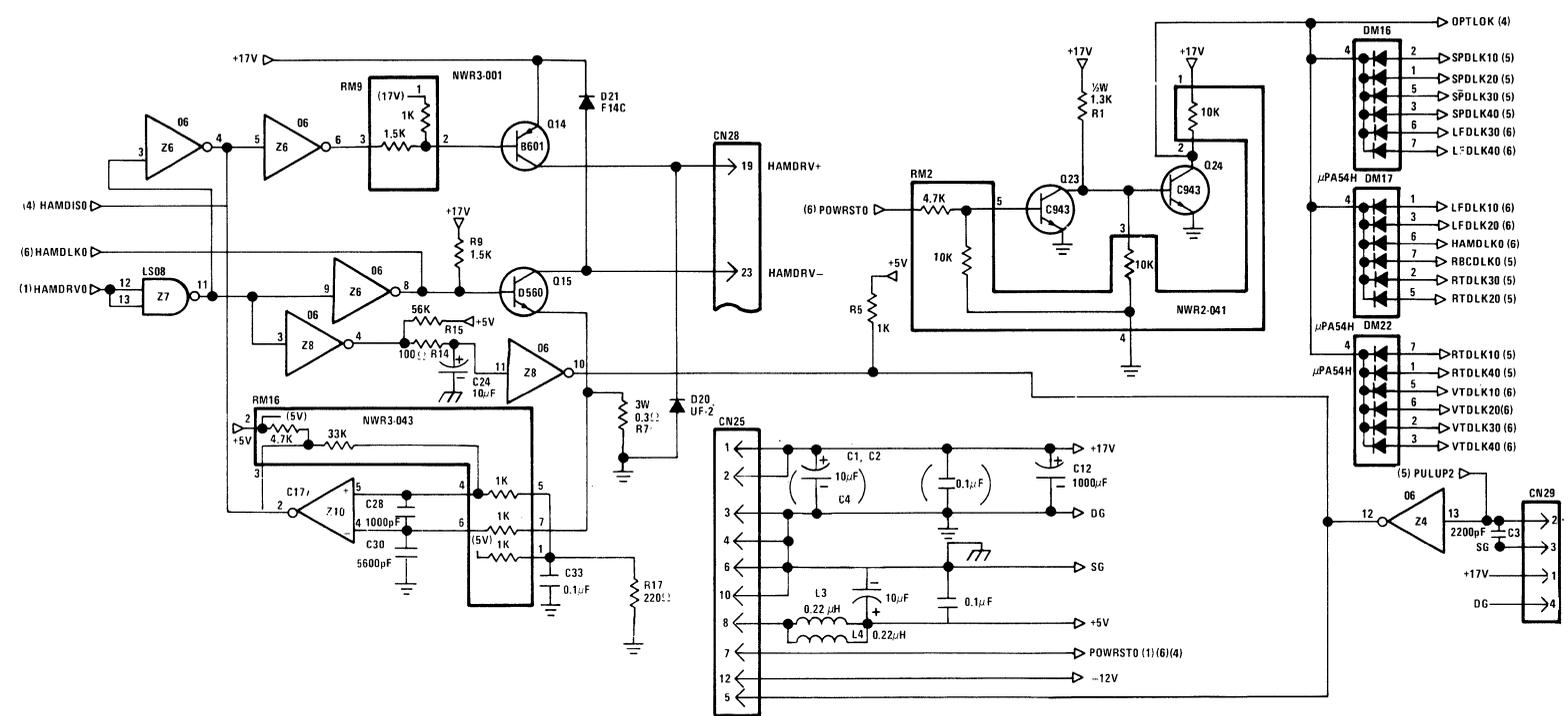
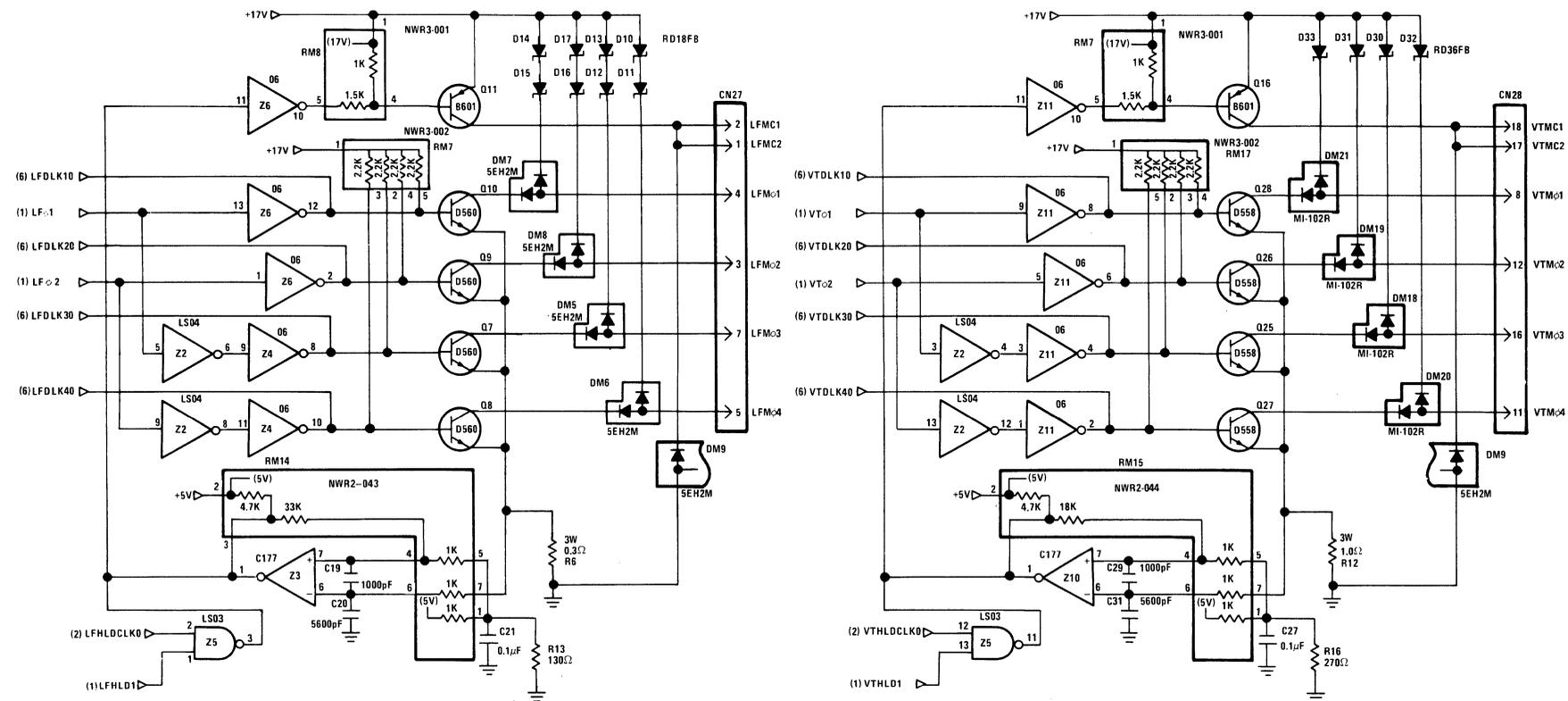
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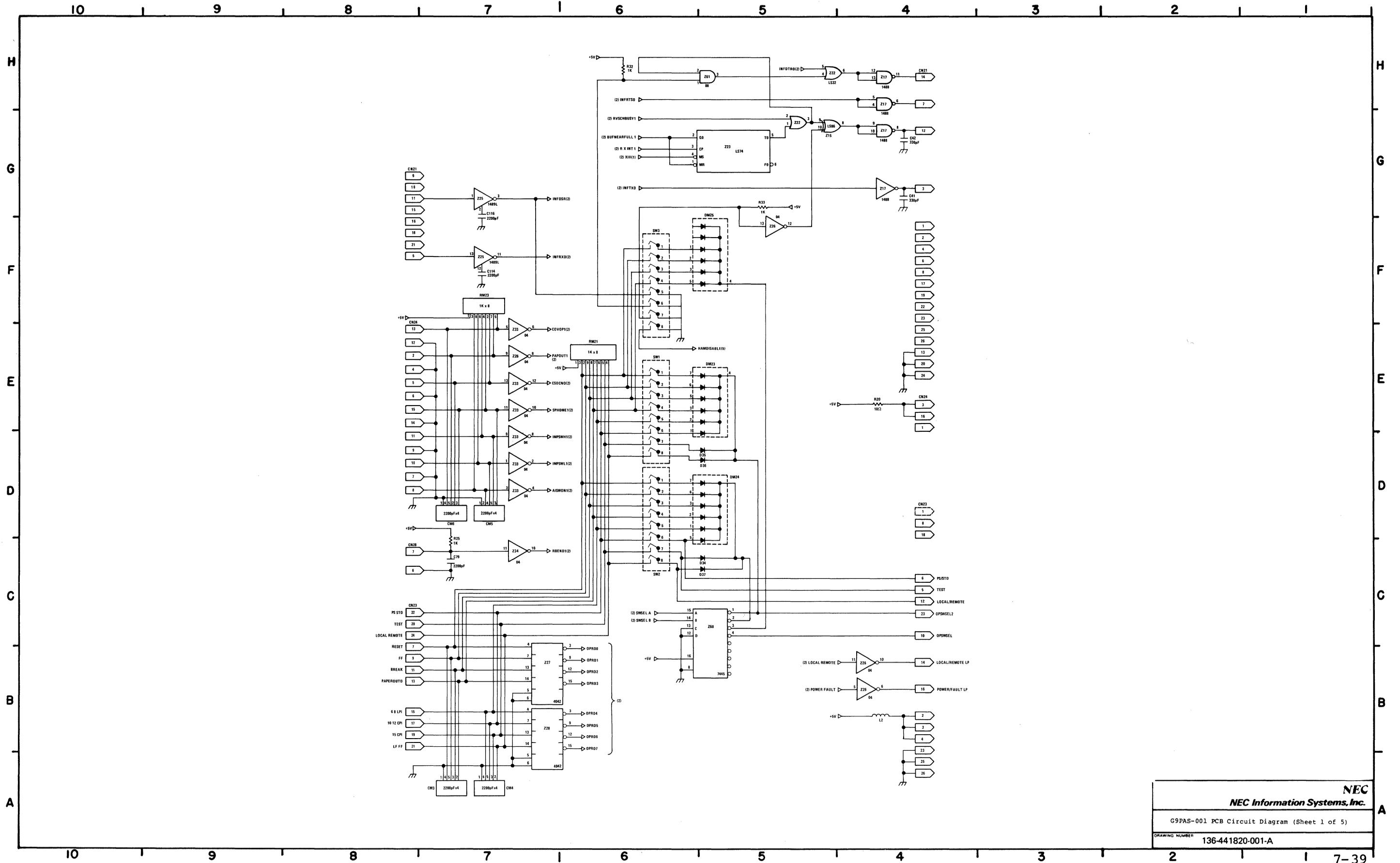
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C

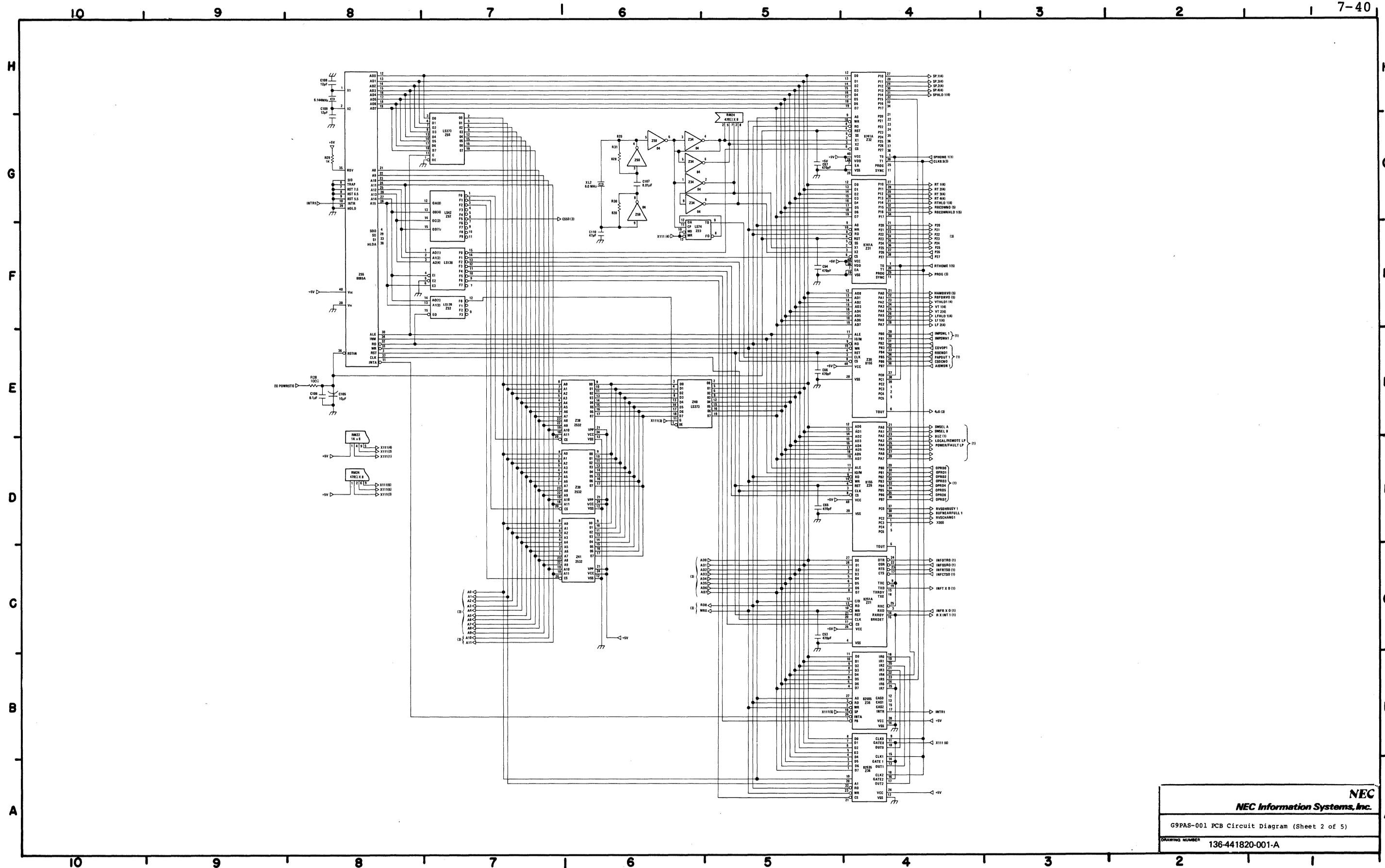
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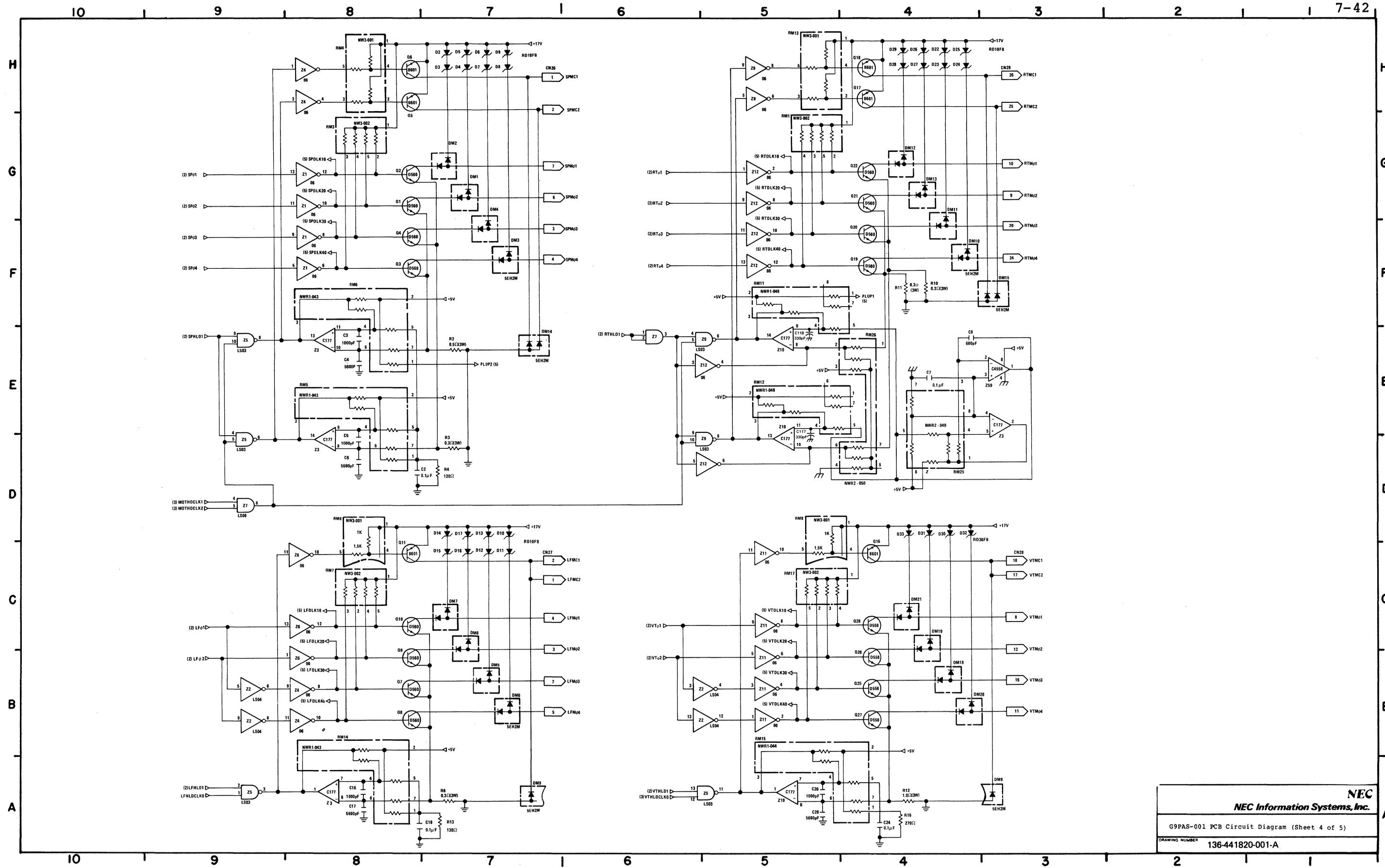
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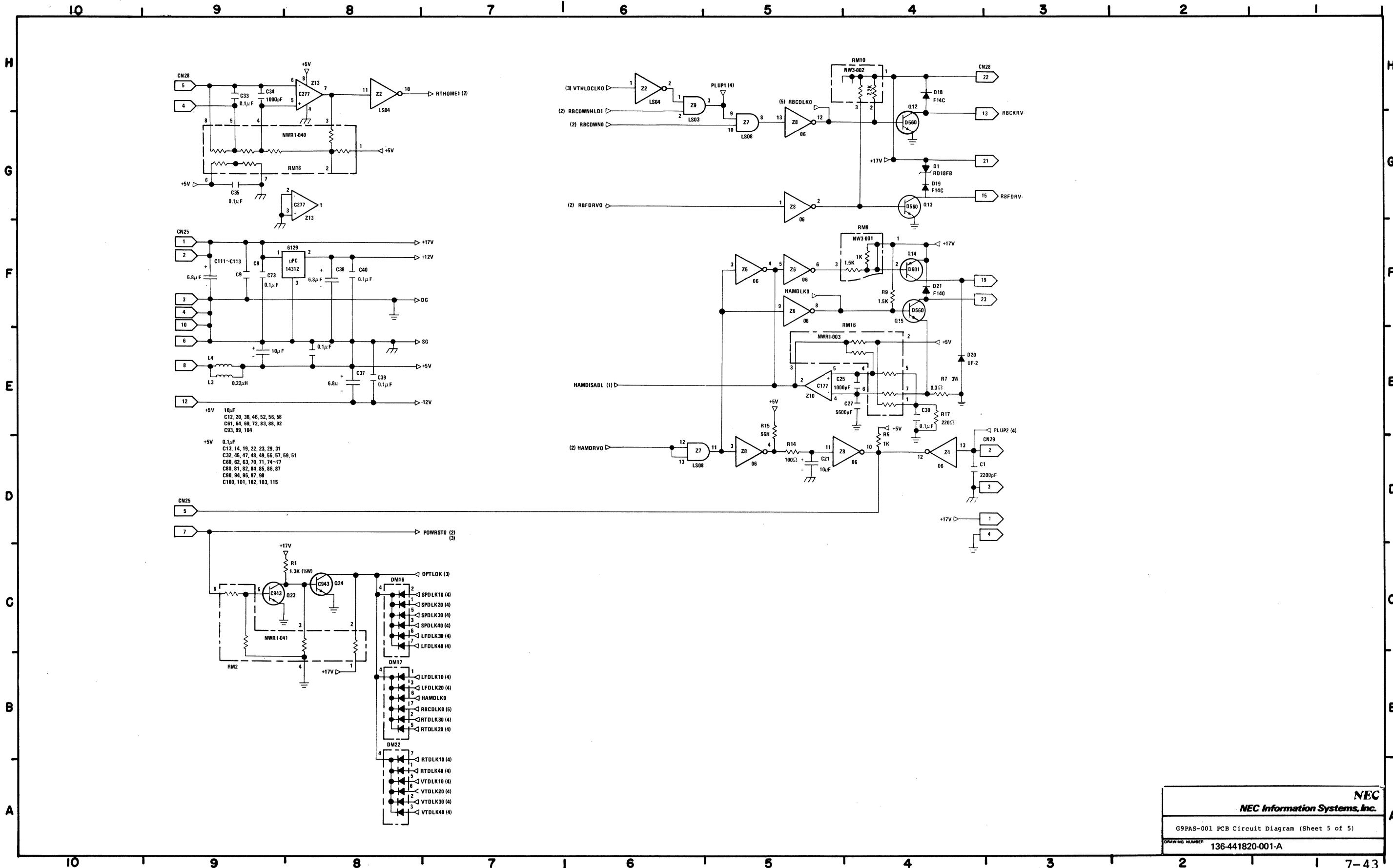


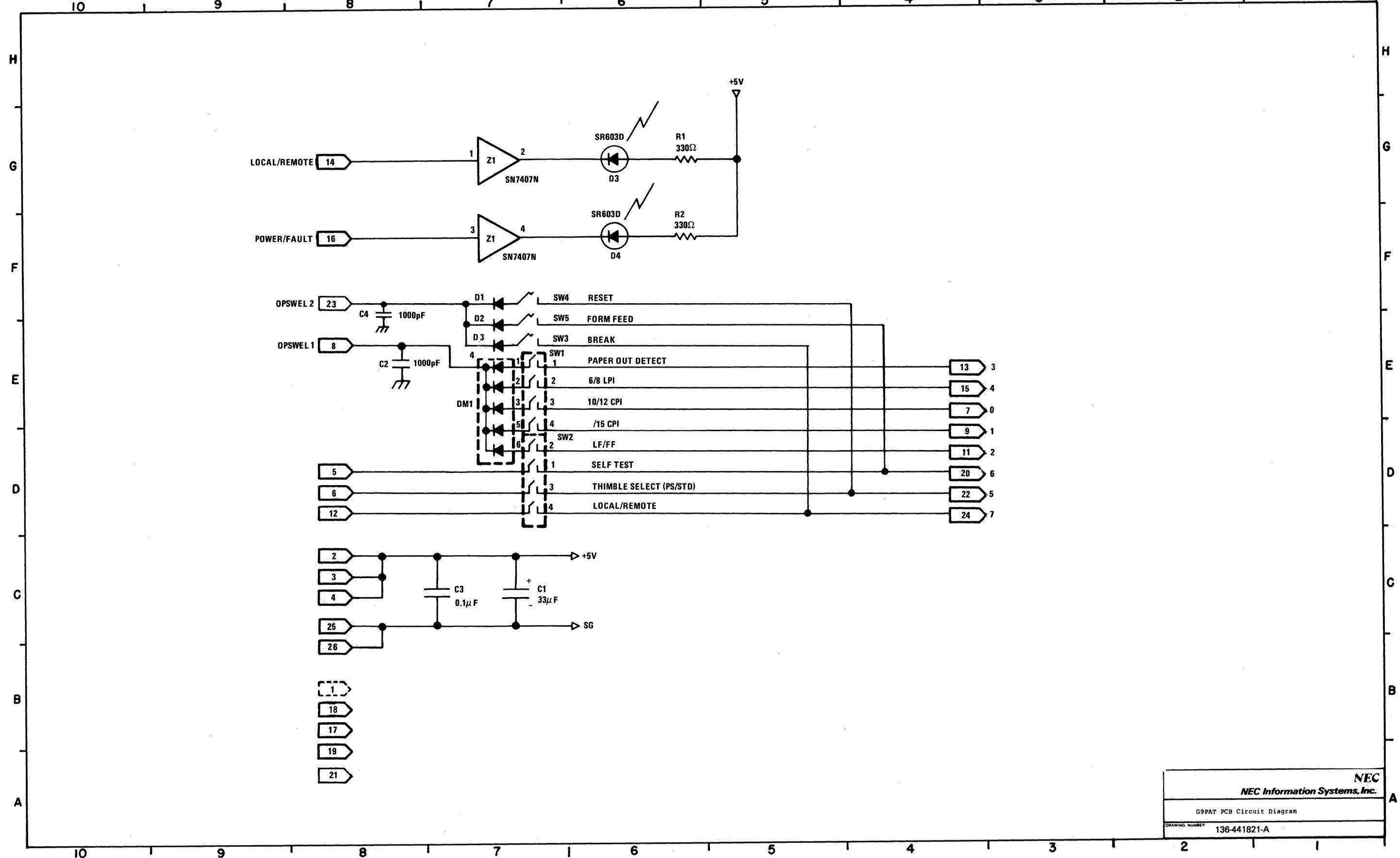


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 G9PAS-001 PCB Circuit Diagram (Sheet 1 of 5)
 DRAWING NUMBER 136-441820-001-A





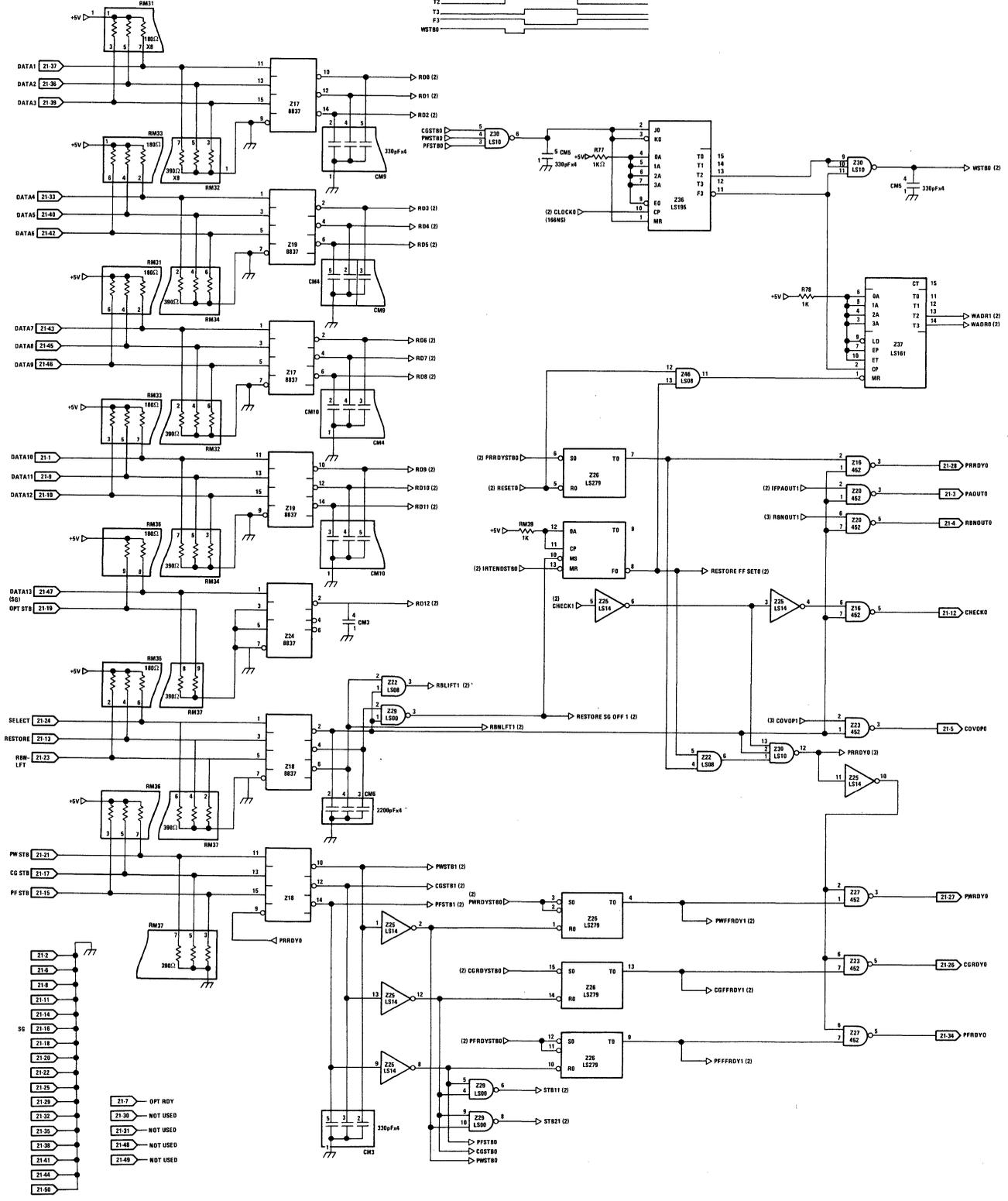
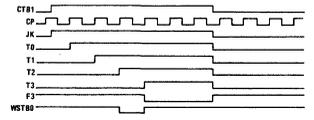
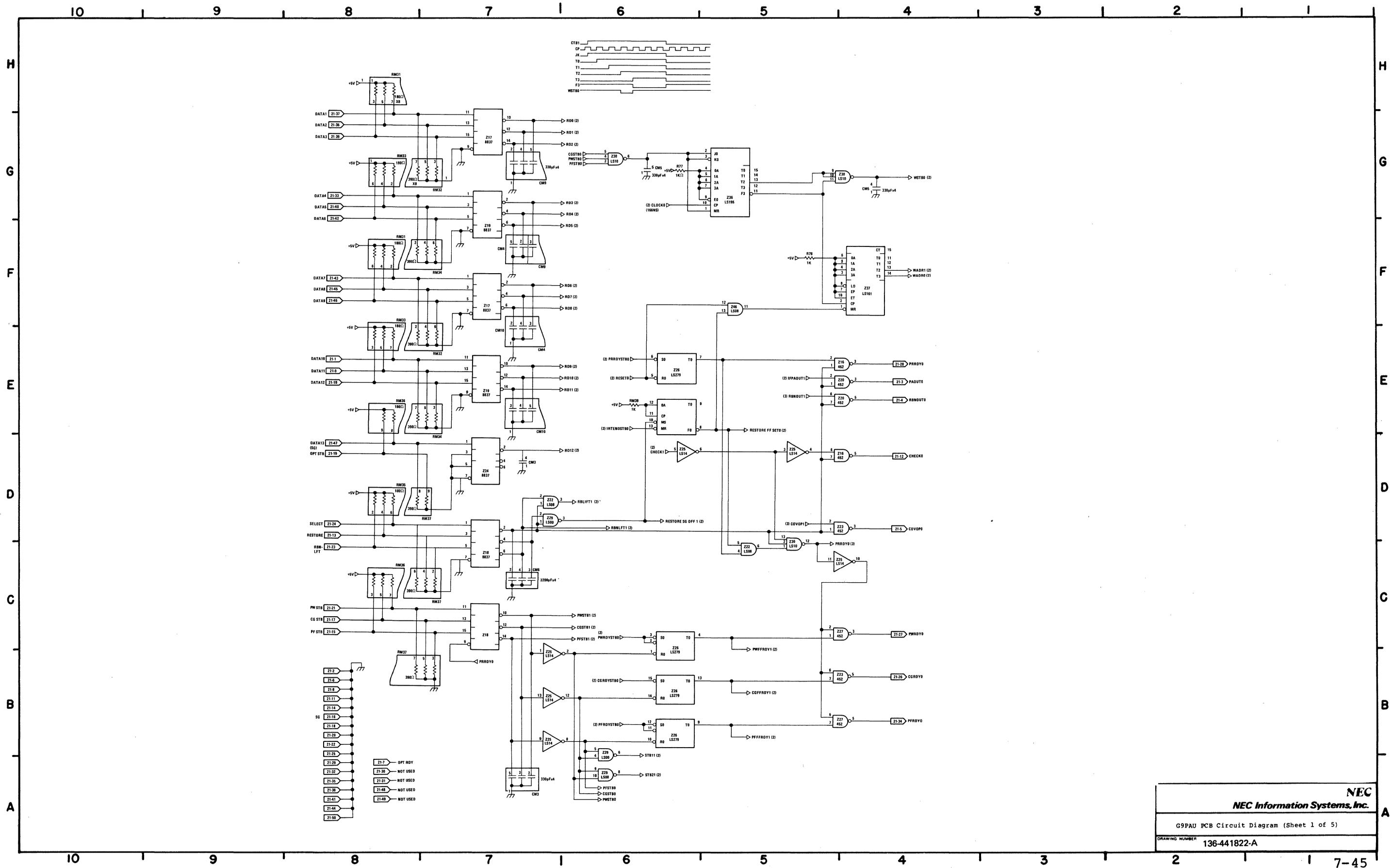




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G9PAT PCB Circuit Diagram

DRAWING NUMBER 136-441821-A

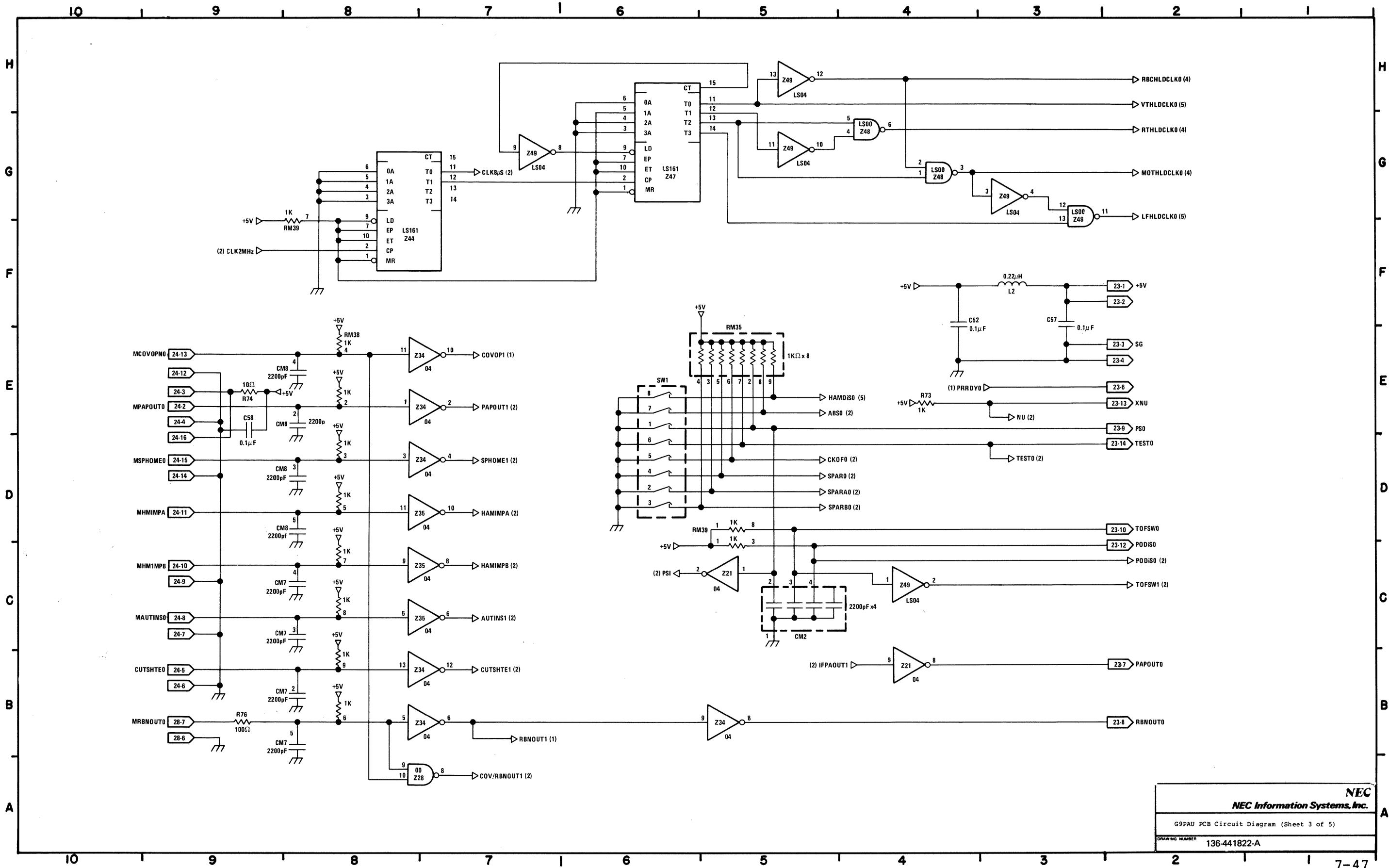


- 212
 - 214
 - 218
 - 2111
 - 2114
 - 2118
 - 2120
 - 2122
 - 2125
 - 2128
 - 2132
 - 2135
 - 2138
 - 2141
 - 2144
 - 2150
- 217 OPT RDY
 - 2130 NOT USED
 - 2131 NOT USED
 - 2148 NOT USED
 - 2149 NOT USED

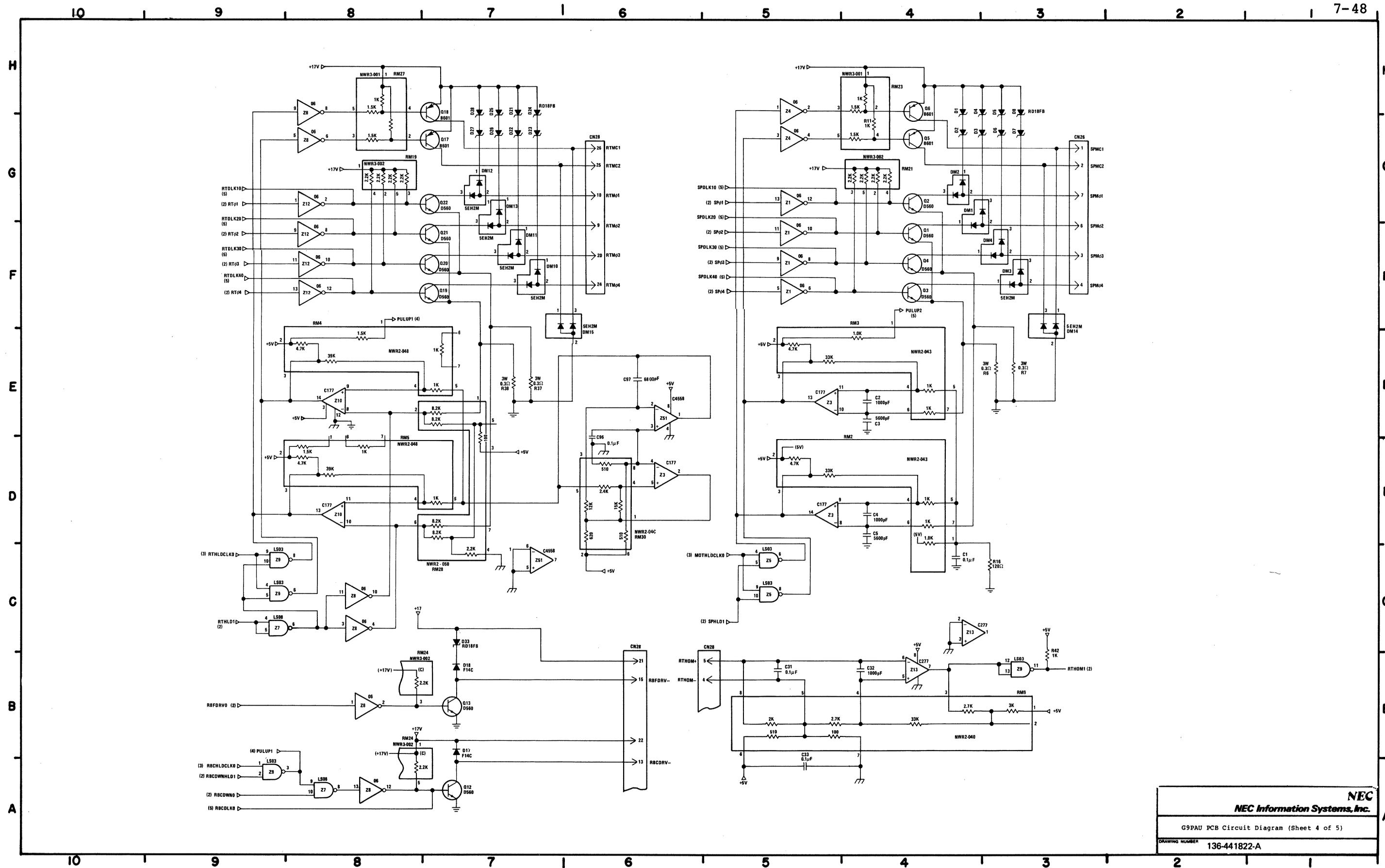
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G9PAU PCB Circuit Diagram (Sheet 1 of 5)

DRAWING NUMBER 136-441822-A



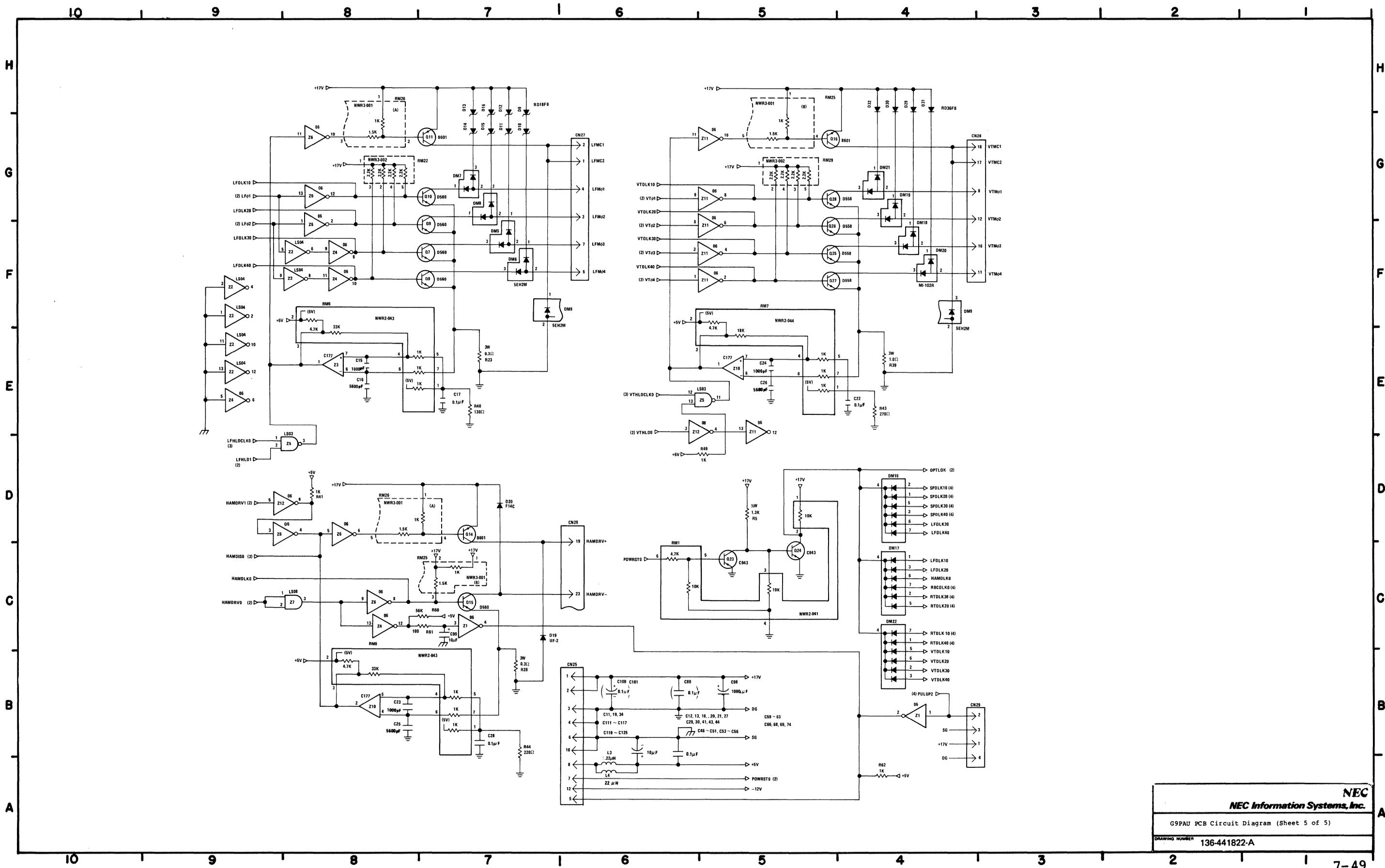
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 G9PAU PCB Circuit Diagram (Sheet 3 of 5)
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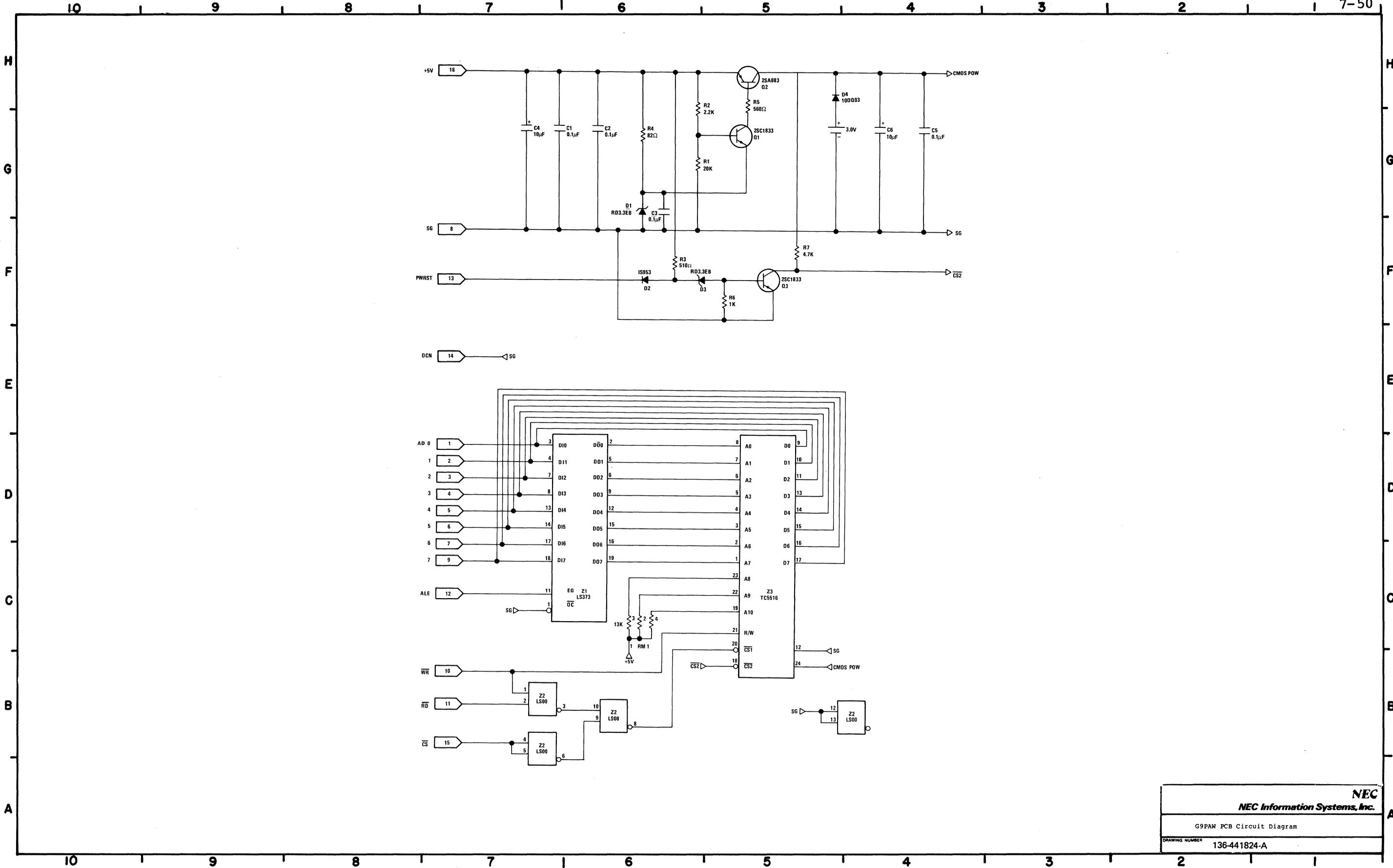
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G9PAU PCB Circuit Diagram (Sheet 4 of 5)

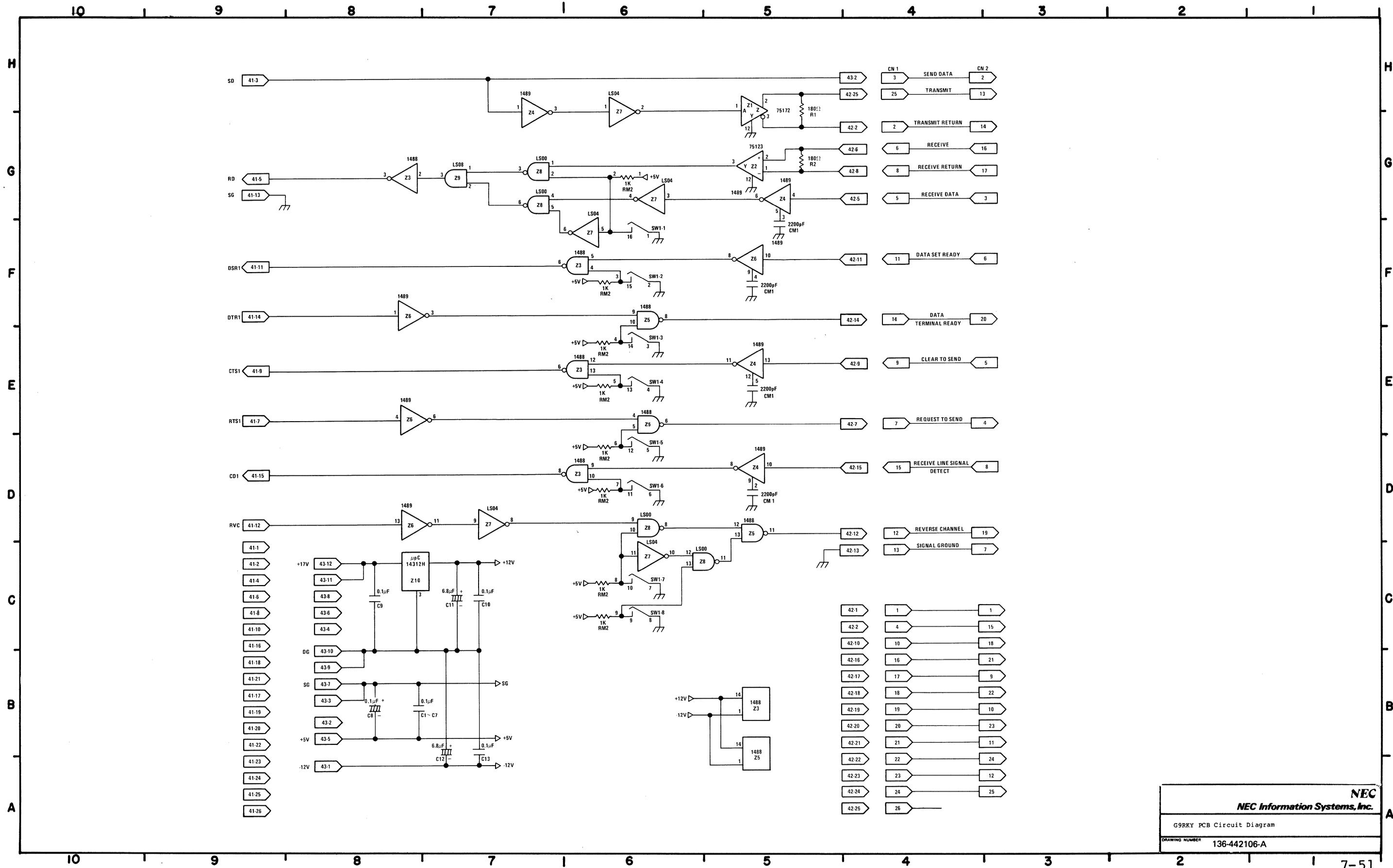
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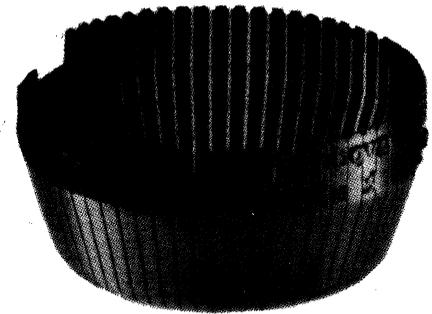
NEC
NEC Information Systems, Inc.
 G9PAU PCB Circuit Diagram (Sheet 5 of 5)
 DRAWING NUMBER 136-441822-A



NEC
NEC Information Systems, Inc.
 G9PAW PCB Circuit Diagram
 DRAWING NUMBER 136-441824-A



NEC
NEC Information Systems, Inc.
 G9RKY PCB Circuit Diagram
 DRAWING NUMBER 136-442106-A



NEC

NEC Information Systems, Inc.

5 Militia Drive, Lexington, Massachusetts 02173

(617) 862-3120