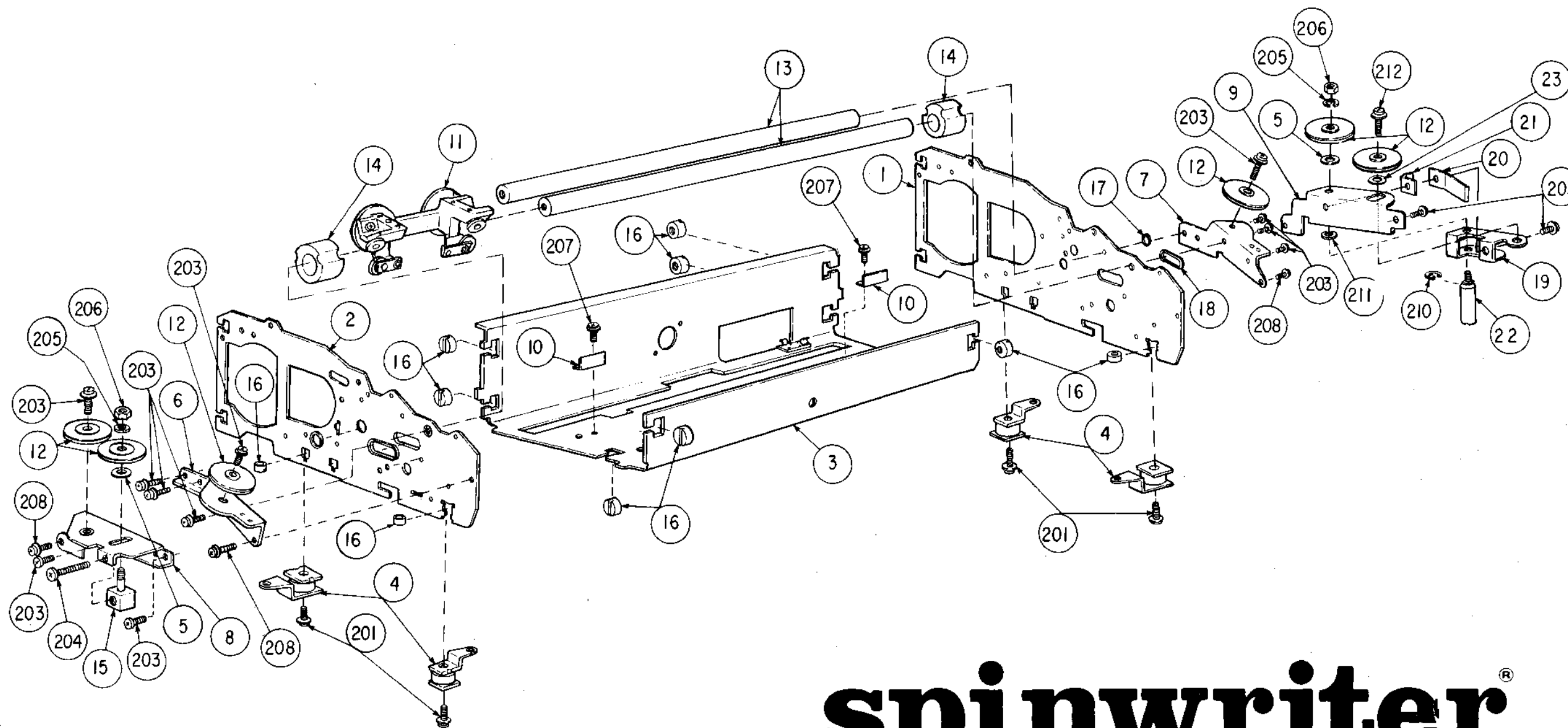


**NEC**

**NEC Information Systems, Inc.**



**spinwriter<sup>®</sup>**

**7700 Series Maintenance Manual**

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First Printing - August 1981  
Revised - August 1982

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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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## PREFACE

This manual provides detailed maintenance and repair procedures for servicing the NEC 7700 Series Spinwriter printers. Preventive maintenance includes scheduled cleaning, checking, lubricating, and replacing parts. Repair procedures include field troubleshooting, mechanical adjustments, and disassembly/assembly instructions. This manual also includes a complete illustrated parts breakdown and a complete set of schematics and wiring diagrams.

If repair service is not available from your local dealer, NEC offers contract maintenance service for your Spinwriter in most areas of the continental United States. Service for printers not on contract may also be offered in your area. In addition, NEC offers depot return service. For details on these services, call 800-343-5214.

### CAUTION

The Spinwriter comes equipped with a UL and CSA required and approved power plug. Always operate the Spinwriter with this plug installed and always insert the plug into a properly grounded outlet to avoid possible electrical shock.



## CHAPTER 1 GENERAL INFORMATION

This chapter contains the necessary general information for understanding Spinwriter operation. Included are a general description, an overview of the mechanical operation, a description of the system block diagram, a maintenance philosophy, and the switch functions for all models of the 7700 Series Spinwriter.

### 1.1 GENERAL DESCRIPTION

The 7700 Series Spinwriter (see Figure 1-1) is a serial impact printer that is offered in the following models.

- 7700D Diablo 1345 Type Printer Interface
- 7700Q Qume-Type Printer Interface
- 7710 Receive-Only ANSI Terminal
- 7715 Receive-Only Diablo 1610 Replacement Printer
- 7720 Keyboard Send/Receive ANSI Terminal
- 7725 Keyboard Send/Receive Diablo 1620 Replacement Terminal
- 7730 Receive-Only Centronics-Type Printer

The Receive-Only (RO) models contain an operator control panel. The Keyboard Send/Receive (KSR) models contain an operator control panel and a typewriter-like keyboard. Models 7700Q and 7700D can be ordered with optional operator control panels.

All 7700 Series Spinwriters share the same basic mechanisms and control electronics. They do not require any complicated adjustments. Field maintenance should be restricted to the subassembly replacement level. All replaceable subassemblies are preadjusted and prealigned.

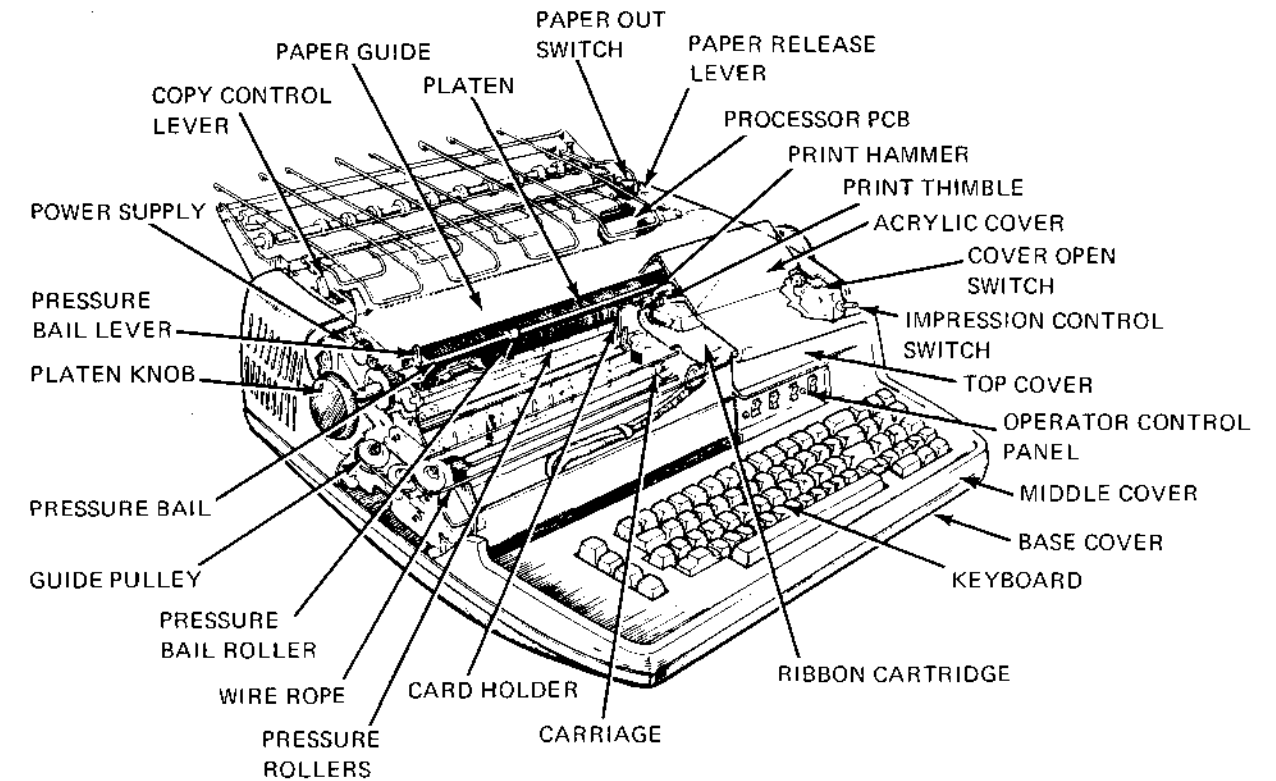


Figure 1-1 Major Components of the Spinwriter

### 1.2 PRINTER MECHANICAL OPERATION

The mechanical operation of the Spinwriter printers is similar to an office typewriter. A print hammer pushes one character against an inked ribbon. The ribbon, in turn, contacts the paper, transferring the image to the paper. Before the next character is printed, the ribbon advances to ensure a clear image. When a line has been printed, the paper advances to the next line.

The paper feed, printing, carriage, and ribbon mechanisms, which are part of the printer mechanical operation, are described in the following sections.

#### 1.2.1 Paper Feed Mechanisms

A friction feed mechanism (see Figure 1-2) is the most common type of paper feed used in the Spinwriter. A typewriter-like platen feeds paper and positions it vertically. The paper is held in place by the pressure of spring loaded pinch rollers mounted beneath the platen. Pin feed and tractor feed options,

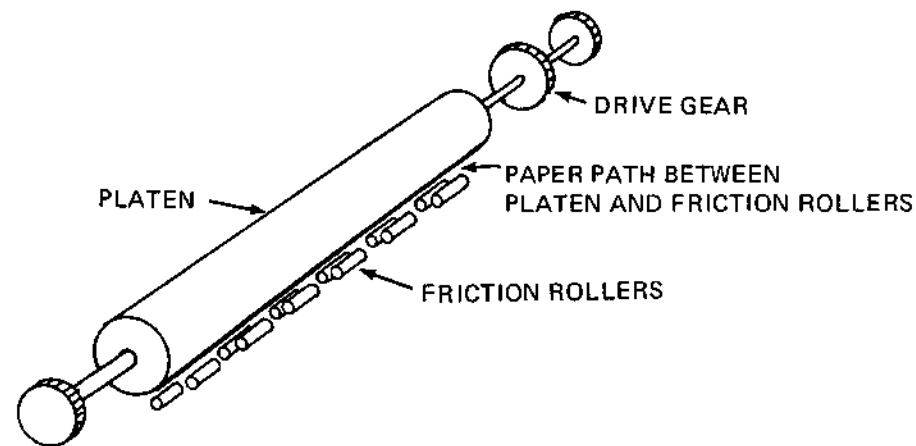


Figure 1-2 Friction Feed Mechanism

which provide more positive control of paper movement, are also available. A stepping motor, mounted on the right side of the printer mechanism, turns the platen or tractor assembly. Micro-processor commands, operating through the printer control electronics, move the paper in increments as fine as 1/48-inch.

### 1.2.2 Printing Mechanisms

The print characters are molded into a light-weight plastic print thimble (see Figure 1-3) containing 64 fingers. Each finger has two characters, one above the other. Therefore, each thimble can contain up to 128 different characters.

The print thimble is rotated by a servo motor left or right up to 180 degrees. The motor has a feedback circuit that is used by the printer electronics to keep track of the thimble velocity and direction of rotation. A rotary solenoid moves the thimble up and down to select one of the two characters on a finger. A solenoid-operated print hammer is positioned within the print thimble at a 90-degree angle to the axis of the platen. When the proper character is aligned for printing, a current pulse is applied to the hammer, which then strikes the plastic finger of the print thimble and drives the finger against the ribbon and the paper.

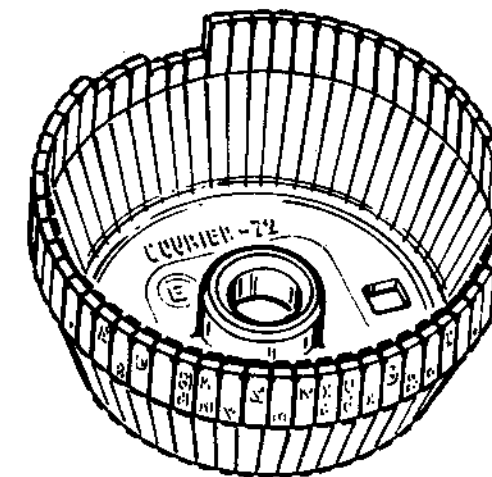


Figure 1-3 Print Thimble

### 1.2.3 Carriage Mechanisms

The print thimble, print hammer, rotate servo motor, and rotary solenoid are mounted on a mechanical assembly called the print carriage assembly (see Figure 1-4). Also mounted on the print carriage are the ribbon cartridge, a stepping motor to drive the ribbon feed, a solenoid to lift the ribbon for color change, and an end-of-ribbon sensor. The carriage assembly travels the width of the printer chassis on two guide rails that are parallel to the axis of the platen. A flexible cable transmits commands from the control electronics to the print carriage motors and solenoids. A Hall Effect sensor mounted underneath the print carriage senses the extreme left or right positions by detecting the left or right emergency (EM) plates. The left plate is used to establish the carriage home position (first print position).

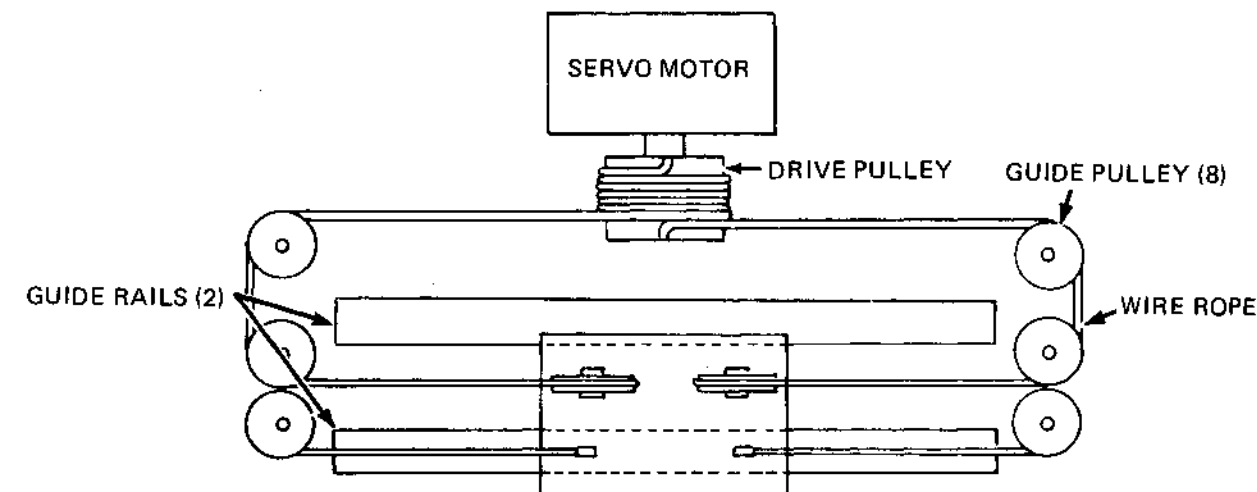


Figure 1-4 Print Carriage

A servo motor turns a drive pulley that moves the carriage assembly. The angle of motor rotation is precisely detected by a position transducer mounted on the servo motor shaft. This transducer allows carriage movement in increments as fine as 1/120-inch.

#### 1.2.4 Ribbon Mechanisms

Ribbon feed and ribbon lift are controlled by separate subsystems. A solenoid moves the ribbon cartridge up and down to select the proper ribbon color. A stepping motor advances the ribbon before printing a character.

### 1.3 SYSTEM BLOCK DIAGRAM

The main components of the 7700 Series Spinwriter (see Figure 1-5) are the 8085A Microprocessor Control System (MCS), servo control circuits, power supply, operator control panel and keyboard, and optional PCB.

These components are described in general in the following sections. For a detailed description of 7700 Series Spinwriter operation, see the 7700 Series Spinwriter Theory of Operation, Document 819-000063-700x.

#### 1.3.1 Microprocessor Control System

The MCS is the primary printer control unit; all control and data signals pass through it. Data received from the interface control section of the MCS is interpreted as print characters or control commands. Print characters are stored in memory for printing. Control commands are executed by the MCS as they are received.

##### 1.3.1.1 Control and Status

Examples of control commands include paper feed and print carriage motion. In addition, the MCS monitors various printer functions to ensure proper operation. For example, if the print carriage exceeds its leftmost or rightmost limit of travel or if the print carriage fails to respond to a motion command, the microprocessor issues a Drive Lock command that shuts off power to the servo mechanism. Other printer status checks include paper out, cover open, ribbon end, rotate home, and spacing home.

##### 1.3.1.2 Data Bus, Address Lines, and Interlock

The internal data path of the printer is an 8-bit bidirectional data bus that is common to the printer control and drive units. Separate address select lines controlled by the MCS determine access to the data bus. The data bus carries control commands from the MCS to the printer control and drive circuits, status information from the control and drive circuits to the MCS, and input/output (I/O) data between the MCS and the interface. The MCS also controls the address select circuits to activate and inhibit specific printer functions. For example, during printing the paper feed, print thimble, and ribbon feed address select lines are deactivated; their associated mechanical operations cannot occur. During paper feed, the print hammer control mechanism is inhibited. Such logical interlocks optimize operation and prevent damage to the mechanisms.

#### 1.3.2 Servo Control Circuits

The servo control circuits of the 7700 Series Spinwriter, which are controlled through time-sharing by the MCS, consist of a rotate servo circuit that controls character selection and a spacing servo circuit that controls carriage movement. Because the rotate and spacing servo circuits are equivalent, only the rotate servo circuit is described here. The following description can also be applied to the spacing servo circuit.

The rotate servo control circuit operates in two modes, velocity mode and positioning mode.

##### 1.3.2.1 Velocity Mode

The mode selection circuit of the servo control circuits (see Figure 1-6) is set to velocity mode when the MCS issues an eight-bit direction and velocity command to the servo circuits. In this mode, the summing circuit compares the latched velocity command with actual velocity data from the velocity detection circuit. The summing circuit sends a resultant error status output that is digitally amplified in the servo data conversion ROM and then applied to the servo driver. The servo motor is controlled so that the error signal goes to zero. Feedback from the servo motor is sent to the MCS, which sends a new velocity command to the servo circuits.

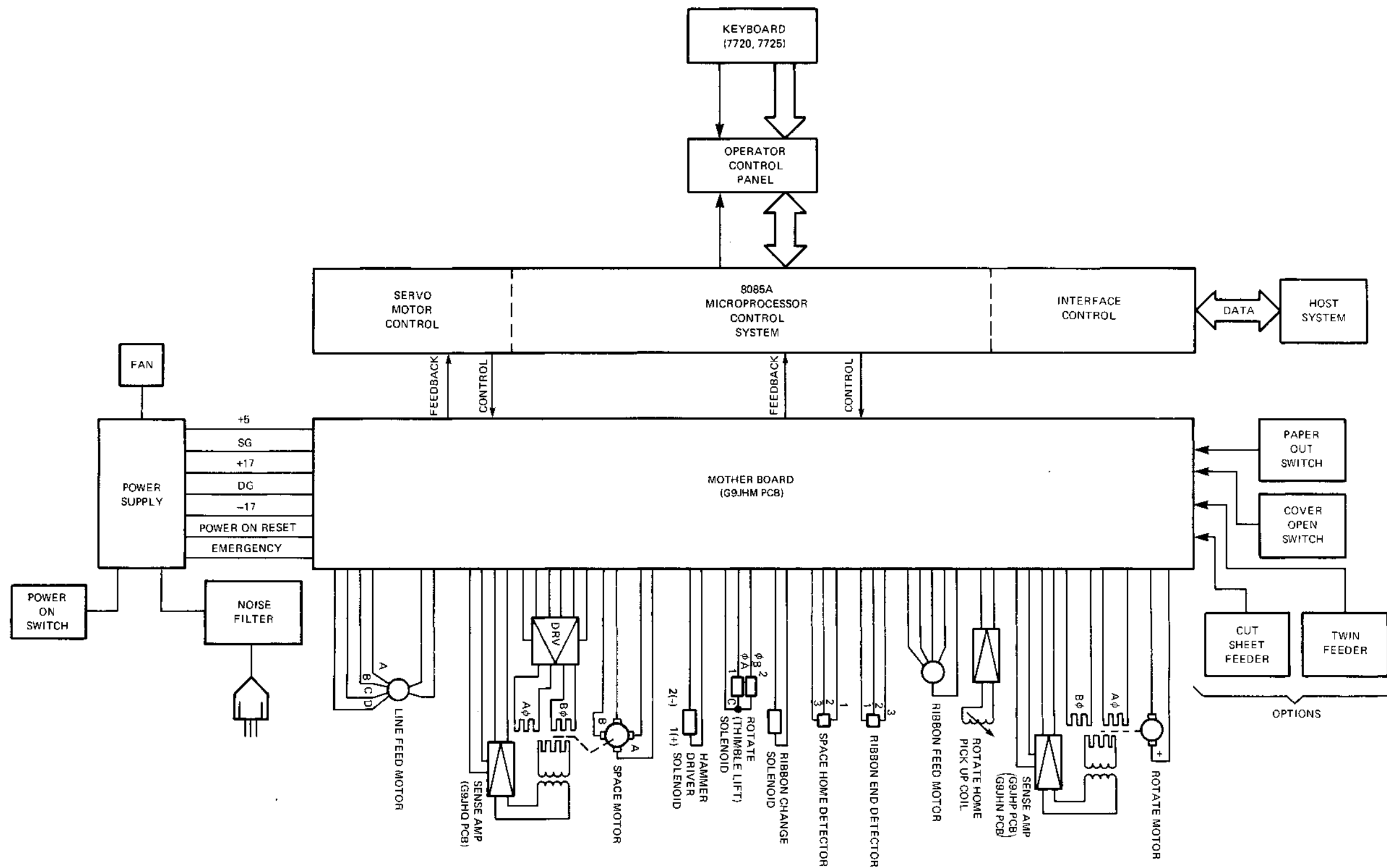


Figure 1-5 System Block Diagram

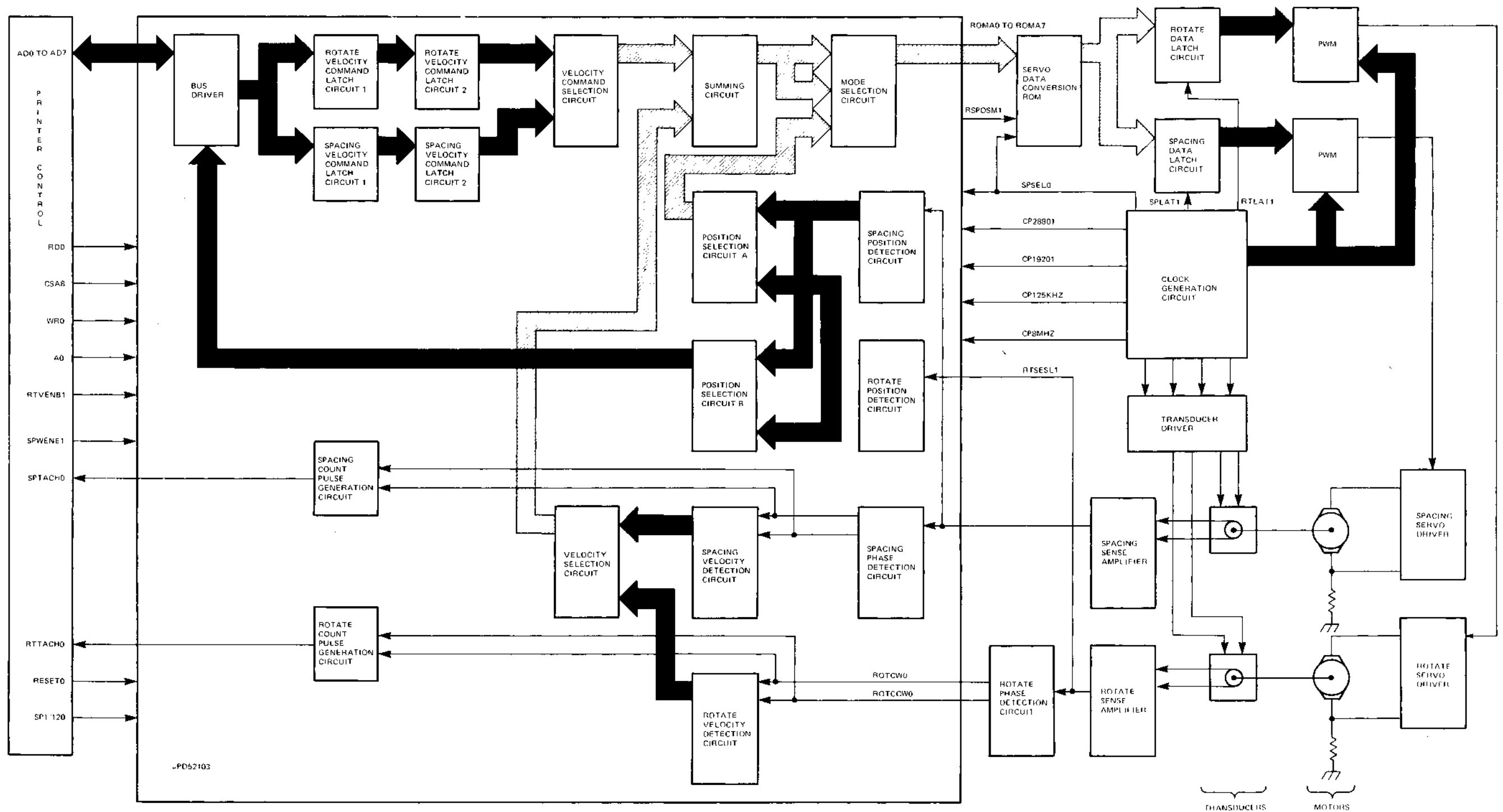


Figure 1-6 Servo Control Circuits Block Diagram

### 1.3.2.2 Positioning Mode

As the servo motor approaches the stop position in velocity mode, the MCS recognizes this approach and sends velocity command 00H (hexadecimal 00) to the servo circuits. This command switches the servo circuits to positioning mode. In positioning mode, the mode selection circuit selects the five-bit position data from the position selection circuit and combines it with the actual velocity data alone (the velocity command is 00H) from the summing circuit. The resultant error signal is digitally amplified in the servo data conversion ROM and applied to the servo driver. The servo motor is controlled so that the error signal goes to zero. Feedback from the motor is sent to the mode selection circuit. In this mode, the servo motor drives to the target stop position. When the motor stops, the mode selection circuit selects part of the velocity data to use as a damping factor to maintain the stop position.

### 1.3.3 Power Supply

The power supply is an efficient, one-piece, universal power supply that provides highly stabilized dc voltages for the printer electronics.

### 1.3.4 Operator Control Panel and Keyboard

The operator control panel is connected to the bidirectional data bus and allows the operator to select various printer functions such as number of lines per inch, number of characters per inch, and forms length. The KSR Models 7720 and 7725 also include a keyboard. Keyboard data is buffered by the control panel logic and sent to the MCS for processing and character generation.

### 1.3.5 Optional G9JHX PCB

The 7700 RS-232-C Spinwriters (7710, 7715, 7720, and 7725) may also contain an optional G9JHX PCB with extended functions for word processing applications and a 9600 baud capability.

## 1.4 MAINTENANCE PHILOSOPHY

The Spinwriter is designed for long life and trouble-free operation. Careful performance of the preventive maintenance procedures is the best assurance of a minimum of operational faults or failures. The troubleshooting procedures described in Chapter 3 assist in isolating faults to a particular subassembly. Field repair is best achieved at the modular level. For this reason, only assemblies and easily replaceable parts are listed as field maintenance items. Replacement and/or repair of defective items that are not included in the list of replacement parts should be performed at the factory or an equivalent service facility.

### 1.4.1 General Rules

You must always follow these general rules when performing replacement, assembly, adjustment, or preventive maintenance.

- Never remove or install any printed circuit board (PCB) or disconnect any connector while the power is on.
- Unplug the power cord before replacing any part.
- When disassembling or assembling units, use great care to avoid dropping any parts or hardware inside the housing. If you do, remove them immediately.
- When removing a connector, do not pull the wire bundle. Always hold the connector firmly by its sides to pull it out.
- The wire rope is easily damaged. Use caution when handling it. Take particular care when disassembling or assembling the carriage assembly.
- Do not remove any parts that are not specified in the replacement procedures.
- After completing an assembly procedure, lubricate the specified items following the proper procedures.
- Transport PCBs marked MOSIC USE or MOSIC in special static-free envelopes.



### 1.4.2 Required Maintenance Tools

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

Table 1-1 Maintenance Tools

ITEM	PART NUMBER	DESCRIPTION	CLASS
Common Tools			
1	---	Screwdriver 5/32 Tip	*
2	---	Phillips No. 1 Screwdriver	*
3	---	Phillips No. 2 Screwdriver	*
4	---	Phillips Long Shaft (No. 2, more than 8 inches long) Screwdriver	*
5	---	Feeler Gauges (Metric)	*
6	---	Connector Puller (3M3438)	*
7	---	Spring Hook	*
8	999-000002	Tension Gauge	*
9	---	12 Inch Ruler	*
Metric Tools			
1	999-000003-1	Box Driver 5.5 mm	* +
2	999-000003-2	Wrench 5.5 mm	* +
3	999-000003-3	Wrench 7 mm	* +
4	999-000003-4	Wrench 8 mm	* +
5	999-000003-5	Wrench 10.0 mm	* +
6	999-000003-6	Wrench 12.0 mm	* +
7	999-000003-7	Wrench 14.0 mm	* +
8	999-000003-8	Hex Key 1.5 mm	* +

Table 1-1 Maintenance Tools (cont'd)

ITEM	PART NUMBER	DESCRIPTION	CLASS
Special Tools			
1	911-317716	Hammer Position Jig	R
2	911-311551	Wire Rope Winding Tool	O
3	911-809075	PCB Puller	O
4	DU-7466	Narrow Extender Board (For Current Loop PCB)	O
5	DU-7467	Wide Extender Board (For Processor PCB)	O
6	999-000001	Lub Kit	R
7	999-000003-0	Metric Tool Kit	R
<p>NOTE: Special tools classified as optional are not required. Their associated adjustments or repairs can be made by alternate means.</p> <p>* Local Vendors + Metric Tool Kit R Required O Optional</p>			

### 1.5 SWITCH FUNCTIONS

Figures 1-7 to 1-12 illustrate the switch functions for the switches on the PCBs of the 7700 Series Spinwriters.

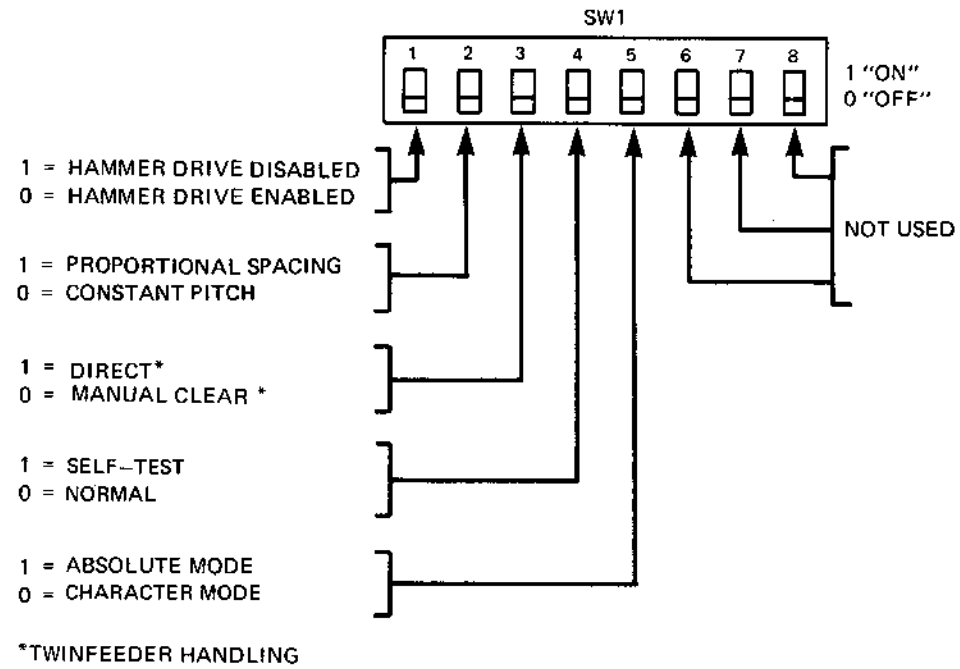


Figure 1-7 G9JHR PCB (7700Q) and G9JHU PCB (7700D) Switch Functions

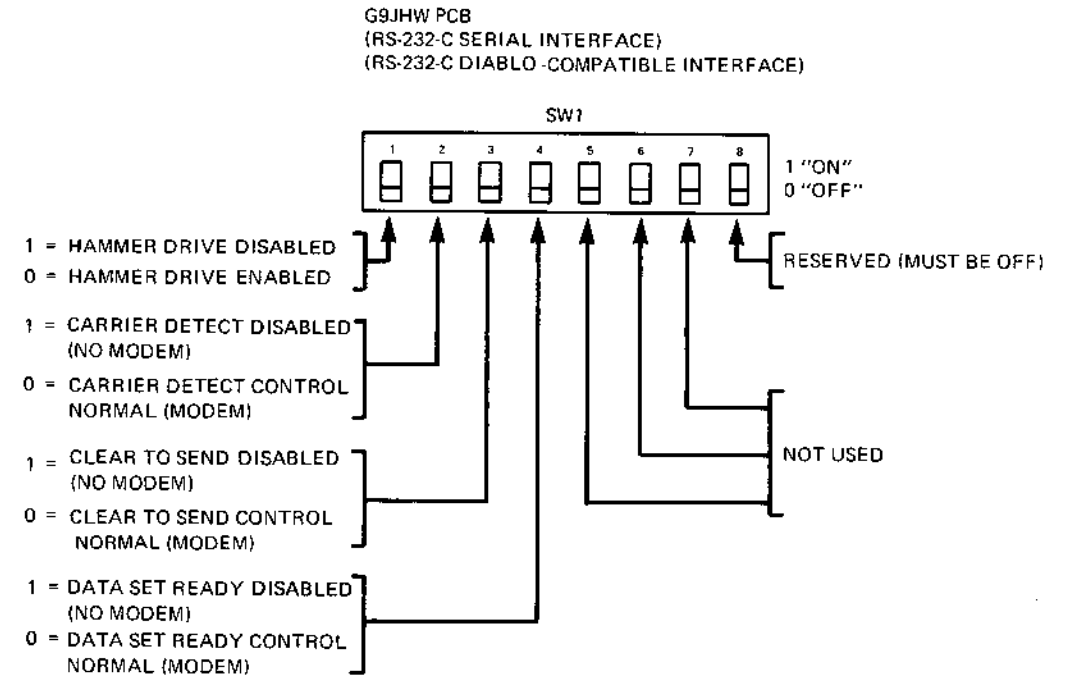


Figure 1-9 Later and Standard Switch Functions for Models 7710, 7715, 7720, and 7725

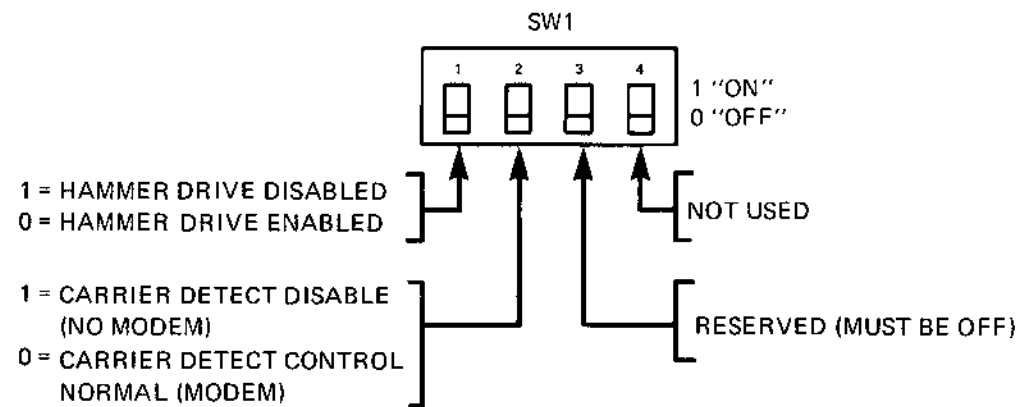


Figure 1-8 Earlier Switch Functions for Models 7710 (G9JHT-101) and 7715 (G9JHT-001)

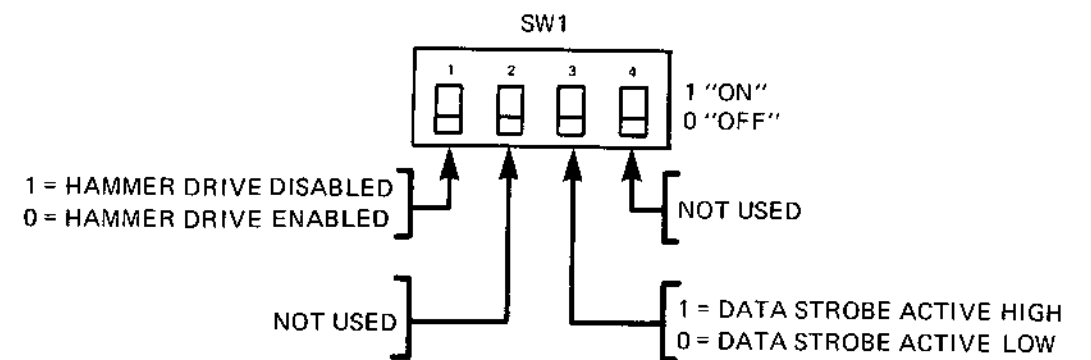


Figure 1-10 G9JHS PCB (7730) Switch Functions

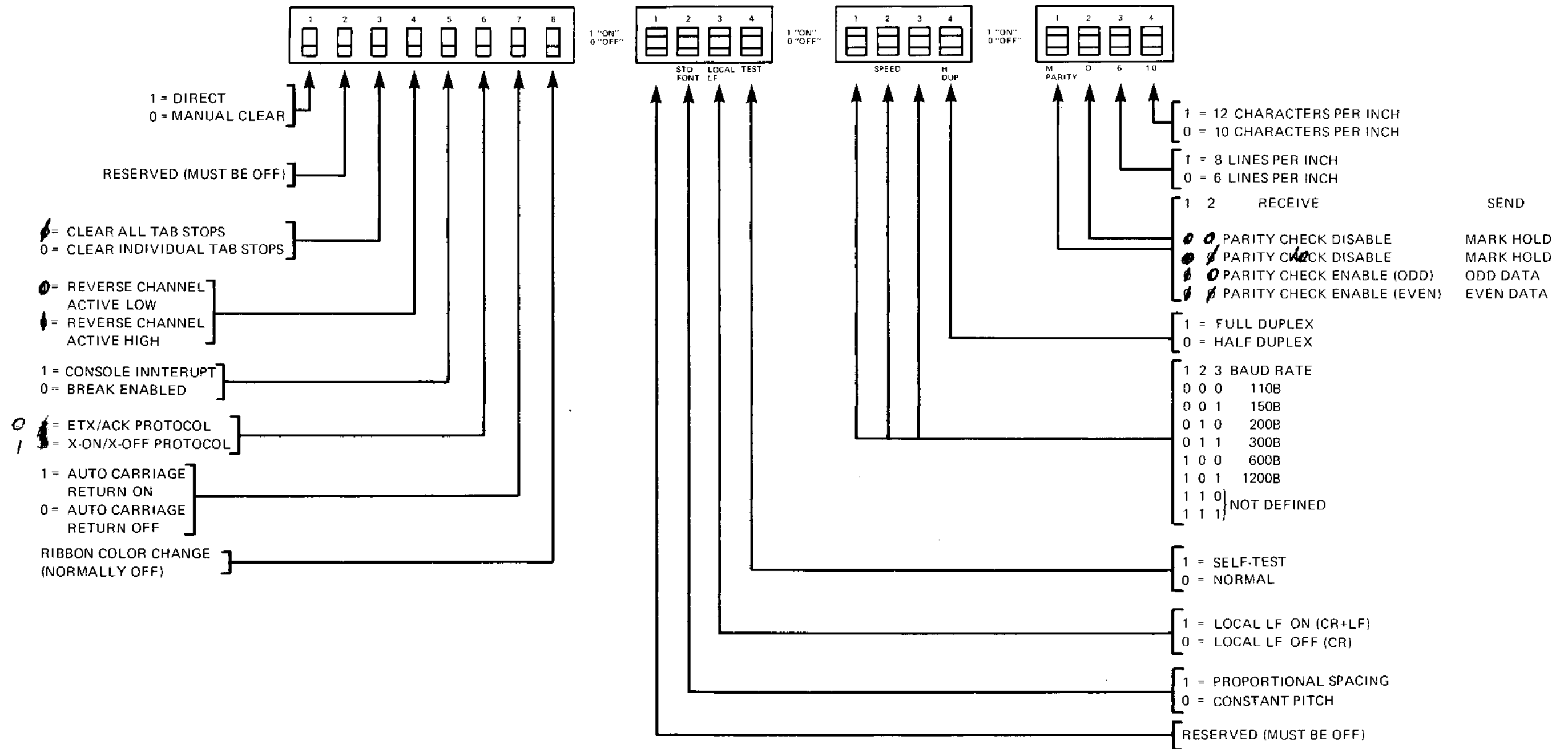


Figure 1-11 Operator Control Panel Switches - Models 7710, 7715, 7720 and 7725

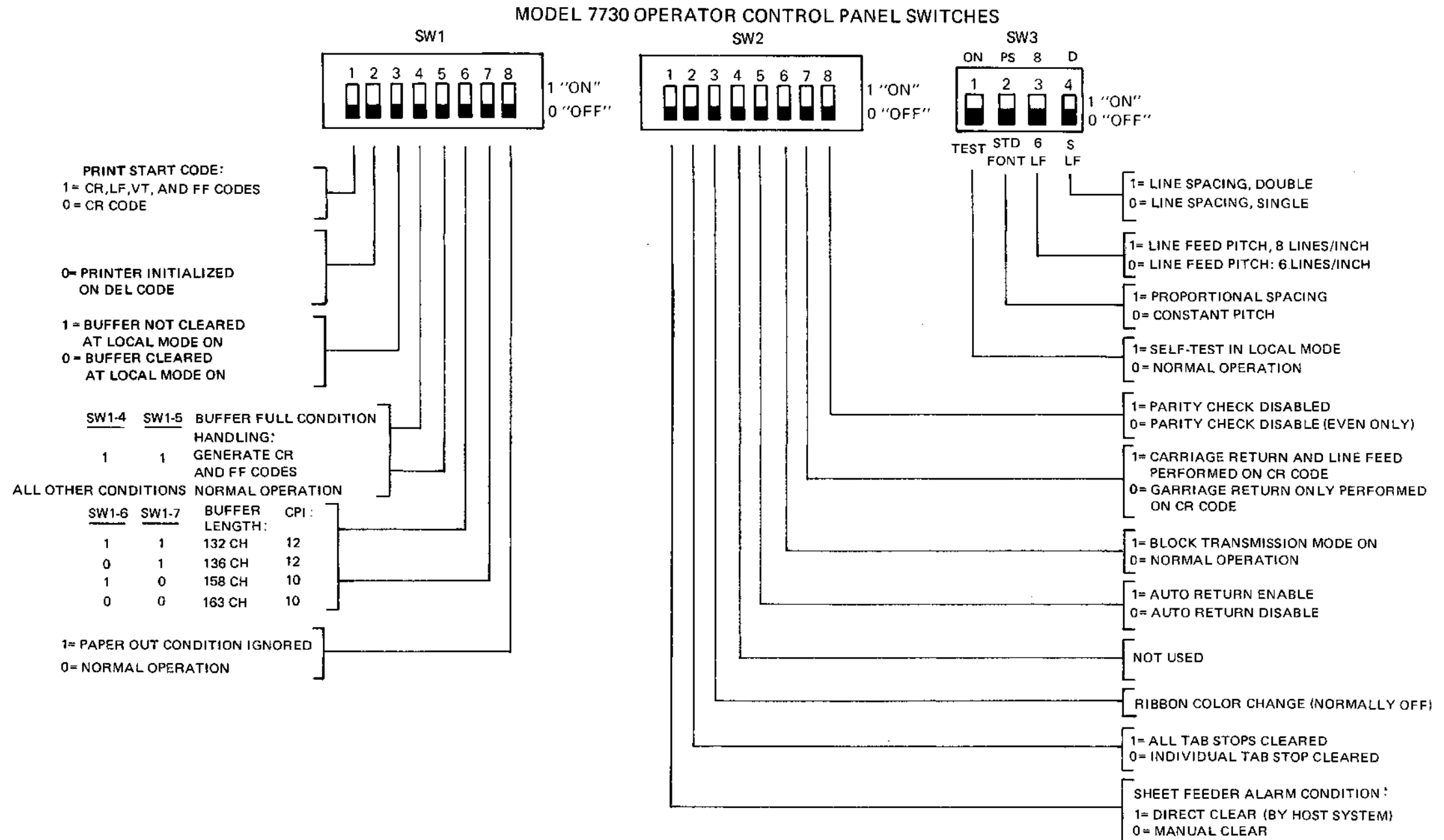


Figure 1-12 Operator Control Panel Switches - Model 7730

## CHAPTER 2 PREVENTIVE MAINTENANCE

Perform preventive maintenance (PM) once a year to clean, check, and lubricate the Spinwriter. Run the built-in self-function test to check out the printer (see the Spinwriter Product Description for your model). Generate a print sample in self-test mode (see the Spinwriter Product Description for your model) before beginning every PM procedure. Make another print sample after PM to see the overall improvement in print quality.

### 2.1 CLEANING

Inspect the complete Spinwriter for any accumulations of foreign material such as bits of paper and clips before performing these specific cleaning procedures.

- Using a soft cloth, remove dust and dirt from the carriage rails and rollers.
- Clean the base frame under the carriage.
- Remove the Processor PCB and clean the G9JHM PCB.
- Use a hand cleaner to remove stains on the cover. Clean the cover with a mild detergent only.
- Using a soft cloth, clean the platen with Fedron.

#### CAUTION

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

Do not use alcohol to clean the cover.

- Remove any pieces of paper attached to the tractor assembly and pressure bail.
- Reassemble the printer without the cover.

### 2.2 CHECKING

Run the self-function test and make a short print sample in self-printing test to make sure that the Spinwriter is functioning properly. Check the following items for proper adjustment and if adjustment is required, refer to the adjustment procedure indicated in parentheses.

- Hammer cover assembly firmly fixed in locking lever (see Section 5.1).
- Use the hammer jig (911-317716) to check hammer position (see Section 5.1).
- If the installed print thimble has a cutout, ensure that the last small finger on the right of the print thimble (see Figure 2-1) is centered on the hammer with power on (see Section 5.1).
- Ensure that the platen is firmly seated and check the clamp lever gap, which should be 0.016 to 0.027 inches (0.4 to 0.7 mm) (see Section 5.5).
- Ensure that the character density is even from the top to the bottom of each character along the print line (see Section 5.7).
- Check the line feed gears for smooth motion without any backlash or binding (see Section 5.6).

LAST SHORT FINGER

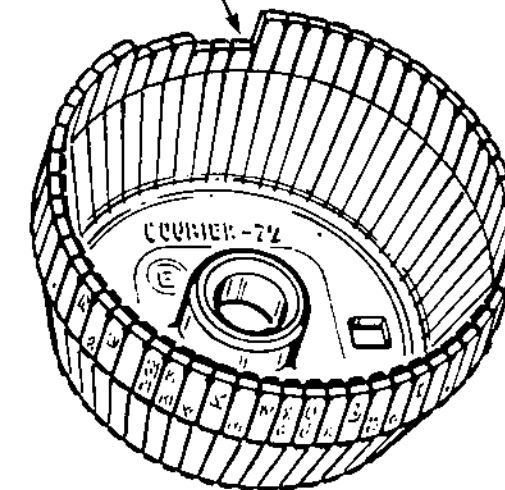


Figure 2-1 Last Short Finger on Print Thimble

- Visually check for any distortion of the platen and print thimble.
- Check the ribbon change function (see Section 5.2).
- Check the ribbon feed gear for backlash and free movement (see Section 5.3).
- Check the tractors (if any) for wear and proper adjustment (see Section 5.10).
- Check the paper out and cover open switches (see Sections 5.13 and 5.14).
- Ensure that the wire rope tension is 12.2 oz (350 gr) for a lift of 0.32 to 0.4 inches (8 to 10 mm). Also check the wire rope and the associated pulleys for damage or wear (see Section 5.12).
- Move the bail rollers to the far extremes of the ends of the platen and ensure that the gap between the platen and the bail shaft is 0.04 to 0.06 inches (1 to 1.5 mm) (see Section 5.11).
- Check for loose connectors and terminals.
- Ensure that all PCBs are firmly seated.
- Check the pressure rollers for proper tension on the platen (see Section 5.9).

2.3 LUBRICATION

The points shown in Figures 2-2 through 2-5 and listed in Tables 2-2 through 2-5 must be lubricated during an annual check. The recommended lubricants are listed in Table 2-1. Any equivalent lubricants not mentioned in this manual must be approved by NECIS before you use them.

Table 2-1 Lubricants

LUBRICANT	AMOUNT	CODE*
Nye Synthetic Oil 132G	1 to 2 drops	O
Nye Rheolube 368	Light brush coat	G
*O means oil and G means grease. These codes are used in the following tables to identify the proper lubricant to use.		

Figures 2-2, 2-3, and 2-4 indicate the location and the associated tables describe the lubricating requirements for the frame unit. Figure 2-5 indicates the location and the associated table describes the lubricating requirements for the carriage assembly.

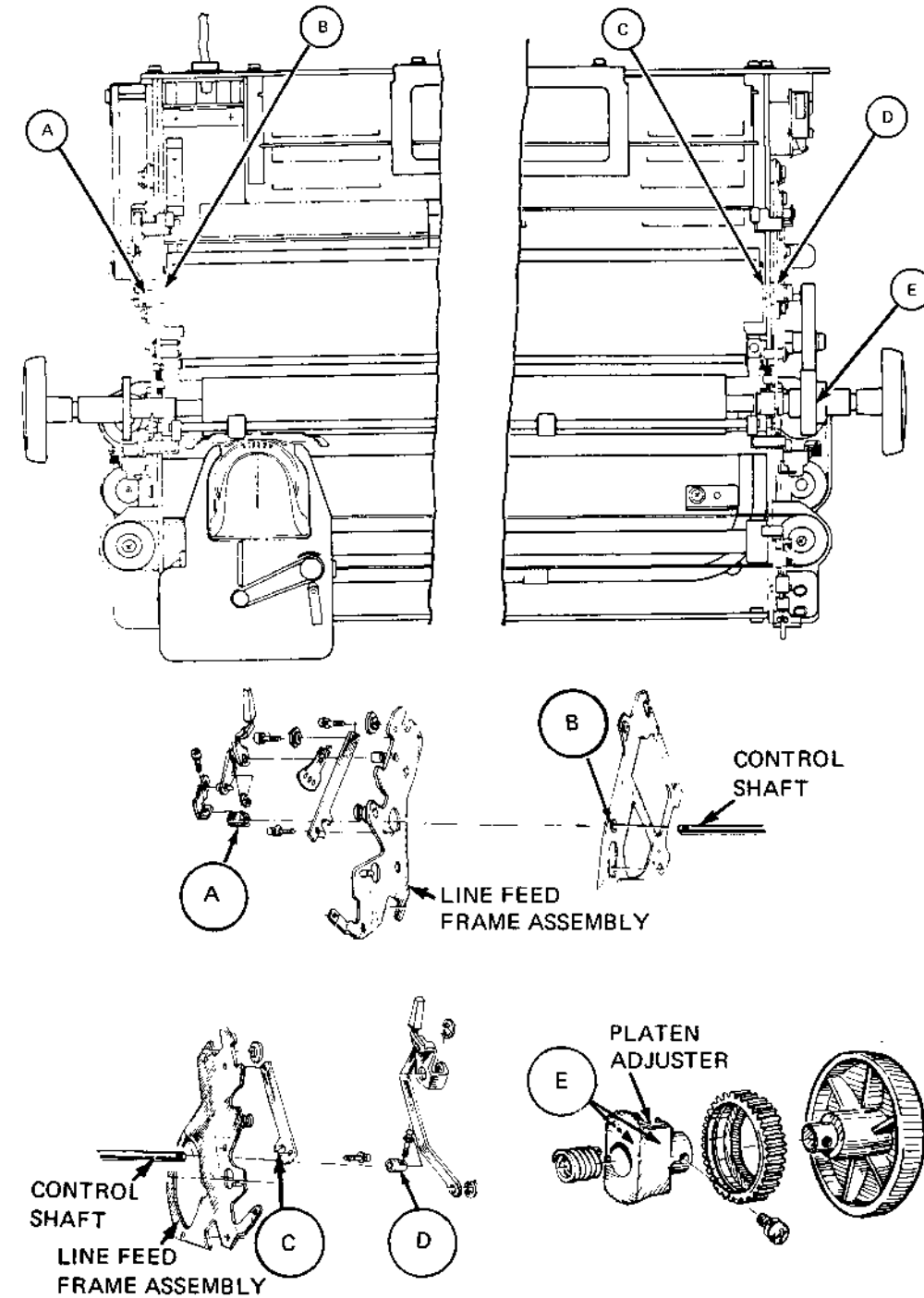


Figure 2-2 Spinwriter Lubricating Points - Top View

Table 2-2 Spinwriter Lubricating Points - Top View

SYMBOLS	AREAS TO BE LUBRICATED	LUB CODE
A	Outside of the fitting between the control shaft and line feed frame assembly	G
B	Inside of the fitting between the control shaft and line feed frame assembly	G
C	Inside of the fitting between the control shaft and line feed frame assembly	G
D	Outside of the fitting between the control shaft and line feed frame assembly	G
E	Platen adjuster	O

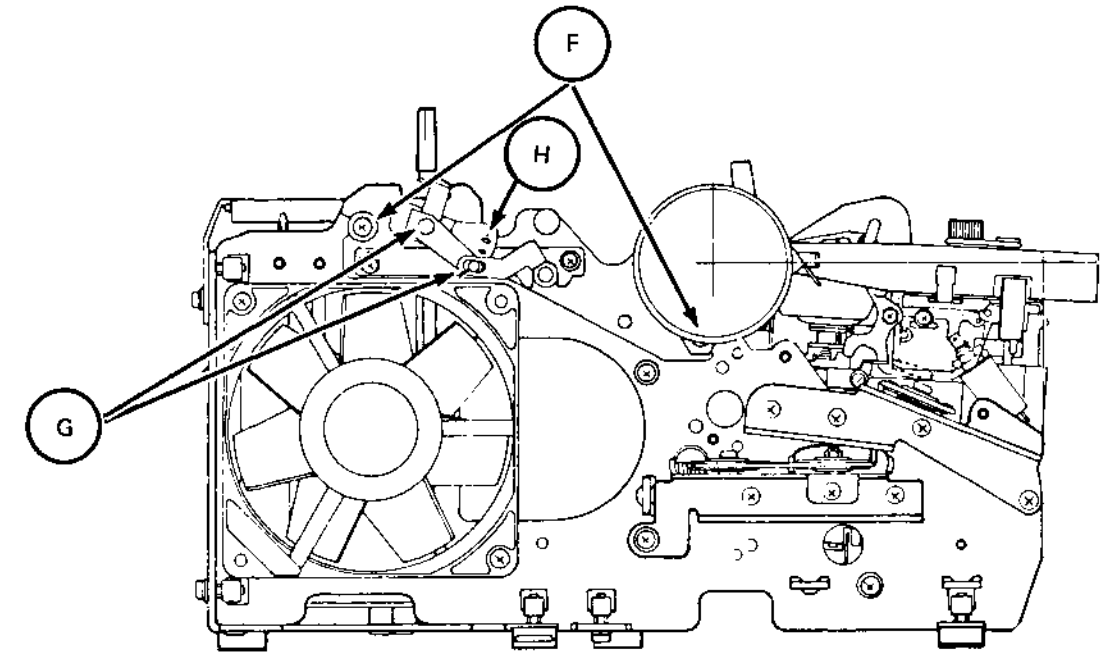


Table 2-3 Spinwriter Lubricating Points - Left Side View

SYMBOLS	AREAS TO BE LUBRICATED	LUB CODE
F	Line feed frame slide bushing	G
G	Control lever assembly fittings	G
H	Detent spring	G

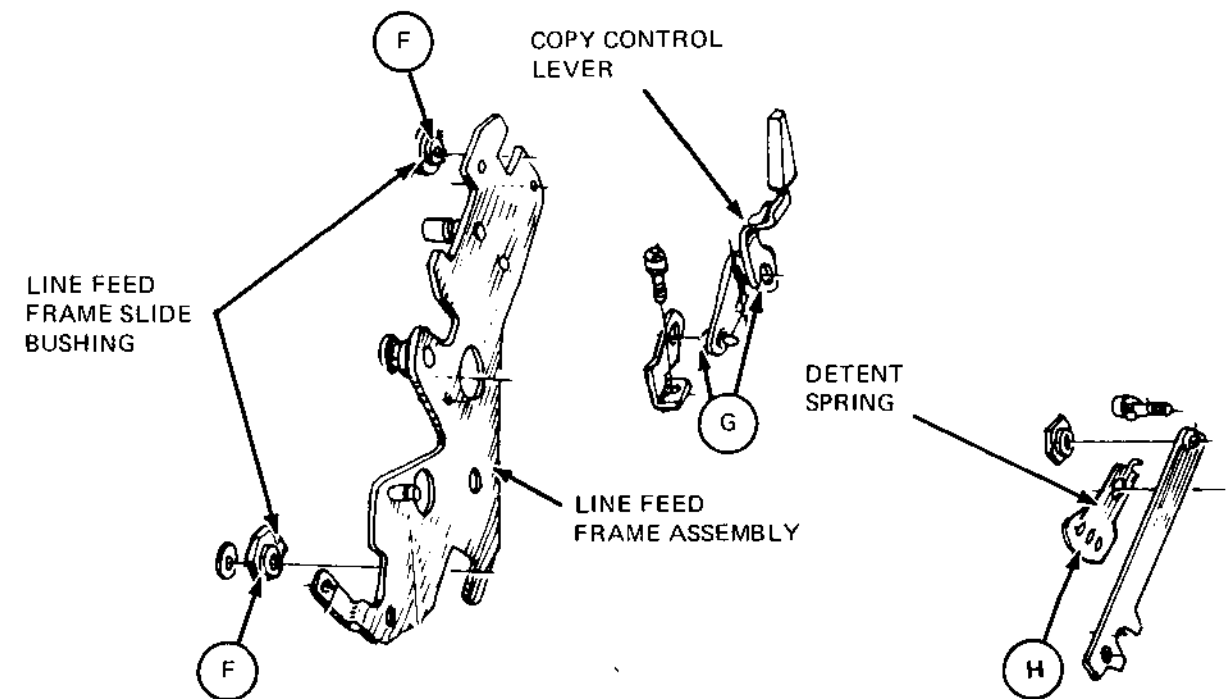


Figure 2-3 Spinwriter Lubricating Points - Left Side View

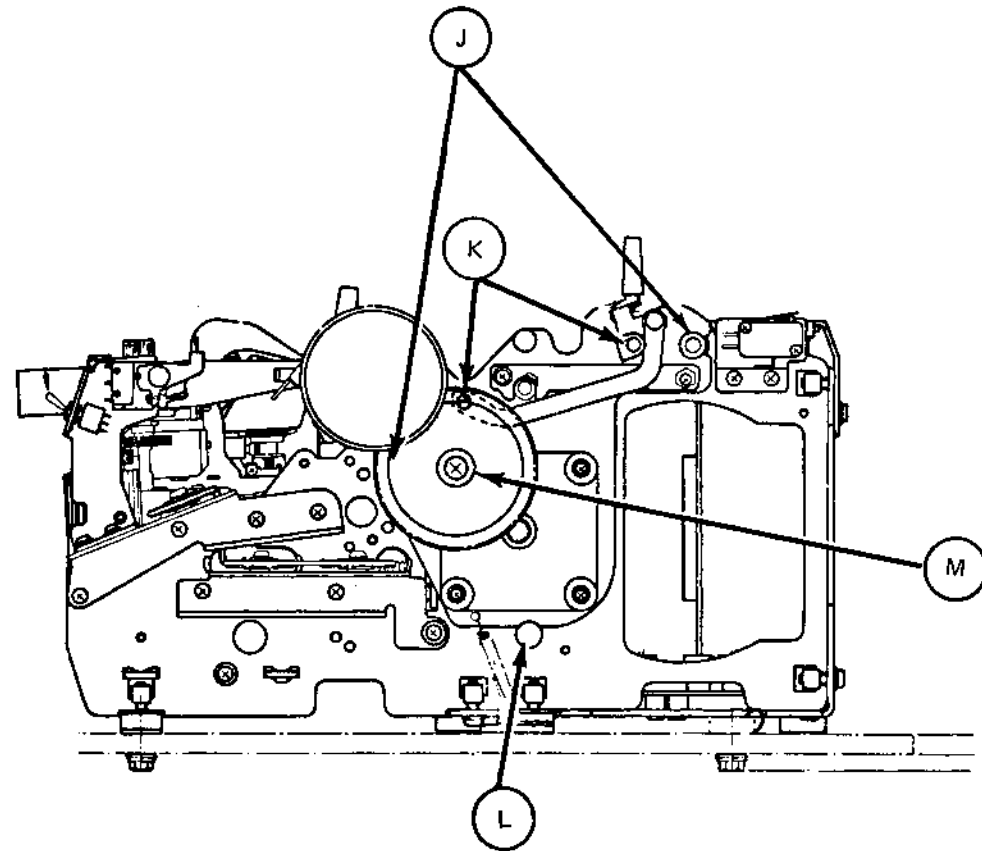


Figure 2-4 Spinwriter Lubricating Points - Right Side View

Table 2-4 Spinwriter Lubricating Points - Right Side View

SYMBOLS	AREAS TO BE LUBRICATED	LUB CODE
J	Line feed frame slide bushings	G
K	Paper release lever fittings	G
L	Line feed frame guide	G
M	Line feed idler gear bushing	G

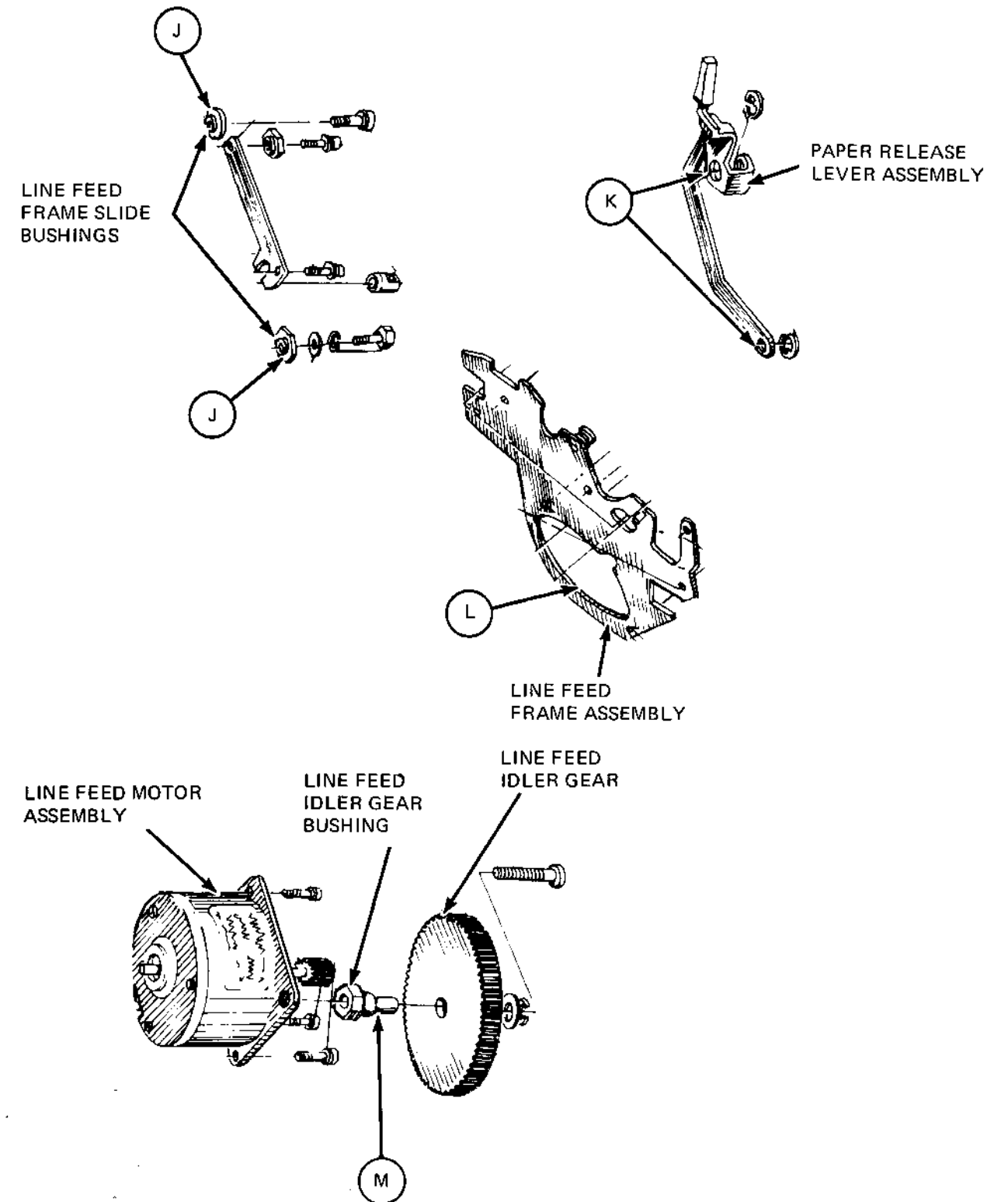


Figure 2-4 Spinwriter Lubricating Points - Right Side View (cont'd)



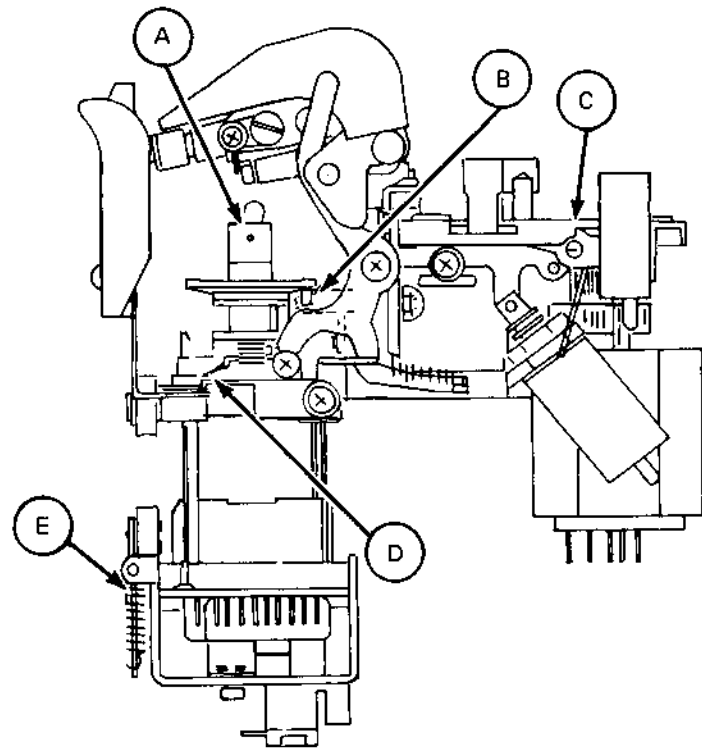


Figure 2-5 Carriage Assembly Lubrication Points - Side View

Table 2-5 Carriage Assembly Lubrication Points - Side View

SYMBOLS	AREAS TO BE LUBRICATED	LUB CODE
A	Rotate motor oil felt	O
B	Vertical motor cam follower rotating pivot and cam follower bearing	O
C	Ribbon base and ribbon change arm rotating pivot	O
D	Torque piece arm oil felt	O
E	Bearing holder rotating pivot and bearing	O

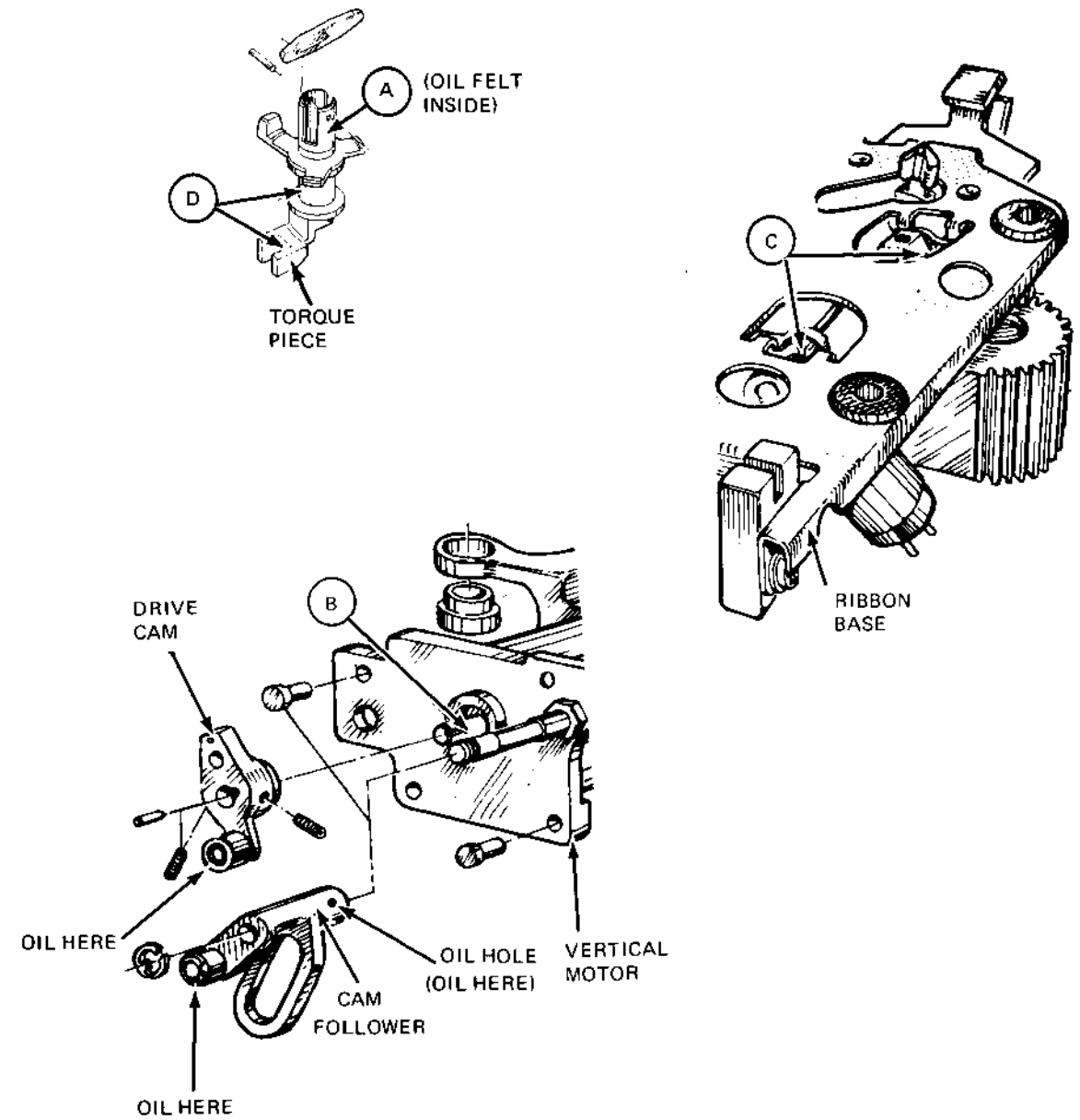


Figure 2-5 Carriage Assembly Lubrication Points - Side View (cont'd)

## 2.4 REPLACEMENT PARTS

The assemblies that require periodic replacement are listed in Table 2-6.

Table 2-6 Replacement Parts

ASSEMBLY	PART NUMBER	QTY	REPLACEMENT INTERVALS
Print Hammer Assembly	136-032022-B	1	Every 100 million characters
Wire Rope Assembly	136-031584-001-A	1	Every 200 million characters

## 2.5 SPARE PARTS

Table 2-7 lists the recommended spare parts.

Table 2-7 Spare Parts List

ITEM	PART NUMBER	DESCRIPTION	REQ QTY*
1	136-033910-A	Carriage Unit	1
2	136-033913-A	Spacing Motor Assembly	1
3	136-031585-A	Line Feed Motor Assembly	1
4	136-033915-GRP-A	Power Supply	1
5	136-031353-B	G9JHM PCB	1
6	136-035064-001-A	G9JHS (Centronics-Type PCB)	1
7	136-035060-001-A	G9JHU (Diablo-Type PCB)	1
8	136-033947-001-B	G9JHR (Qume-Type PCB)	1
9	136-033954-001-A	G9JHT-001 (7710 Control PCB)	1
10	136-033954-101-A	G9JHT-101 (7715 Control PCB)	1
11	136-035062-001-A	G9JHW-001 (7710/20 Control PCB)	1
12	136-035062-101-A	G9JHW-101 (7715/25 Control PCB)	1
13	136-031586-001-A	Platen Assembly	1
14	136-032022-B	Print Hammer Assembly	1
15	136-031584-001-A	Wire Rope Assembly	1
16	136-000151-GRP-A	Fan Kit	1
17	803-020001-A	Guide Pulley	3
18		Fuse	2

\*Based on a volume of 1 to 12 printers.

NOTE: The types and quantities of PCBs that you choose to stock should be based on the types of 7700 Series Spinwriters that you support.

### CHAPTER 3 TROUBLESHOOTING

This chapter suggests an approach for troubleshooting the Spinwriter. Each Spinwriter model incorporates a self-test feature that should be helpful in localizing faults. With the exception of power failures, most faults can be isolated by examining the printout or the results of the self-function test. Table 3-1, Troubleshooting Chart, is a suggested logical approach for localizing problems to the suspected faulty subassembly.

Table 3-1 Troubleshooting Chart

TROUBLE	CONDITION	PROBABLE CAUSES	CORRECTIVE ACTIONS
Entire failure of operation (no fan)	No dc output	No ac power  Fuse (power supply)	Verify ac power is present.*  Replace fuse.
	Abnormal	Inverter dc output	Replace power supply (see Sections 4.9 and 4.10).
Only fan operates	Abnormal dc output	Power supply	Replace power supply (see Sections 4.9 and 4.10).
	Indicator lit	Ribbon end detected	Replace the ribbon.*
		Cover open or cover open switch incorrect	Adjust (see Section 5.14).
	Miscellaneous	No paper, or the paper out switch incorrectly installed	Adjust (see Section 5.13).
Processor PCB		Replace PCB (see Sections 4.5 and 4.6).	
		G9JHM PCB	Replace PCB (see Sections 4.7 and 4.8).

Table 3-1 Troubleshooting Chart (cont'd)

TROUBLE	CONDITION	PROBABLE CAUSES	CORRECTIVE ACTIONS
Spacing, vertical, rotate functions incorrect	No spacing return	Home sensor defective	Replace carriage (see Sections 4.15 and 4.16).
	No vertical return	Vertical magnet defective	Replace carriage (see Sections 4.15 and 4.16).
	No rotate return	Home position out of phase	Replace carriage (see Sections 4.15 and 4.16).
	Miscellaneous	Processor PCB	Replace PCB (see Sections 4.5 and 4.6).
G9JHM PCB		Replace PCB (see Sections 4.7 and 4.8).	
Print thimble does not stop rotation		Processor PCB	Replace PCB (see Sections 4.5 and 4.6).
		G9JHM PCB	Replace PCB (see Sections 4.7 and 4.8).
		RT home sensor	Replace carriage (see Sections 4.15 and 4.16).
Impossible to start the printing operation, or the printing operation is stopped	Only the operation started	Processor PCB	Replace PCB (see Sections 4.5 and 4.6).
		Operator Control Panel PCB problem	Replace operator control panel PCB (see Sections 4.11 and 4.12). Verify interface voltage levels on proper pins (see Sections 4.11 and 4.12).
	Impossible to test printing	Operator Control Panel PCB problem	Replace operator control panel PCB (see Sections 4.11 and 4.12).
		Indicator lit	Cover open, or cover open switch incorrect  No paper, or paper out switch incorrect
		Ribbon end sensor	Replace ribbon end sensor or the carriage (see Sections 4.15 and 4.16).

Table 3-1 Troubleshooting Chart (cont'd)

TROUBLE	CONDITION	PROBABLE CAUSES	CORRECTIVE ACTIONS
Misprinting	Misprinting during the initial operation with normal execution of the vertical and rotate home positions	Processor PCB	Replace PCB (see Sections 4.5 and 4.6).
		G9JHM PCB	Replace PCB (see Sections 4.7 and 4.8).
	Misprinting during the initial operation with an unstable rotate position	Rotate home position incorrect	Replace carriage (see Sections 4.15 and 4.16).
	Vertical thimble position misselected	Vertical magnet malfunction	Replace carriage (see Section 4.15 and 4.16).
Uneven print density on sides of character		Incorrect rotate home position	Replace carriage (see Sections 4.15) and 4.16).
Uneven print density top to bottom of character		Incorrect hammer position	Adjust (see Section 5.1).
		Print thimble defective	Replace print thimble.*
		Improper platen height	Adjust (see Section 5.7).
Improper printing of character array	Improper vertical array	Improper print thimble installation	Install properly.*
		Processor PCB	Replace PCB (see Sections 4.5 and 4.6).
		G9JHM PCB	Replace PCB (see Sections 4.7 and 4.8).
	Improper horizontal array	Vertical magnet defective	Replace carriage (see Sections 4.15 and 4.16).
		Spacing wire tension out of adjustment	Adjust (see Section 5.12).
		Processor PCB	Replace PCB (see Sections 4.5 and 4.6).
		G9JHM PCB	Replace PCB (see Sections 4.7 and 4.8).
		Spacing motor defective	Replace spacing motor (see Sections 4.21 and 4.22).
		Rotate motor defective	Replace carriage (see Sections 4.15 and 4.16).

Table 3-1 Troubleshooting Chart (cont'd)

TROUBLE	CONDITION	PROBABLE CAUSES	CORRECTIVE ACTIONS
	Improper paper feed	Improper gear adjust	Adjust (see Section 5.6).
		Improper platen clamp lever adjustment	Adjust (see Section 5.5).
		Adjuster malfunction	Lubricate and clean (see Section 2.3).
Unacceptable print quality other than listed above		Dirty or worn out print thimble characters	Replace print thimble.*
		Worn out ribbon	Replace ribbon.*
		Ribbon feed gear backlash	Adjust (see Section 5.3).
		Platen gear out of adjustment	Adjust (see Section 5.6).
		Platen flawed	Replace platen.
		Processor PCB	Replace PCB (see Sections 4.5 and 4.6).
		G9JHM PCB	Replace PCB (see Sections 4.7 and 4.8).
Defective print hammer		Defective print hammer	Replace print hammer (see Sections 4.17 and 4.18).
		Improper ribbon feed	Replace carriage (see Sections 4.15 and 4.16).
Truncation of printed letters (incomplete)	Black truncation or red truncation	Ribbon mode slide switch incorrect	Adjust.
		Print thimble damaged	Replace print thimble.*
Color incorrect	Red is turned black, or black turned red	Platen flawed	Replace platen.
		Defective ribbon	Replace ribbon cartridge.
		Processor PCB	Replace PCB (see Sections 4.5 and 4.6).
		G9JHM PCB	Replace PCB (see Sections 4.7 and 4.8).
		Ribbon magnet defective	Replace carriage (see Sections 4.15 and 4.16).
Hammer impression control not functioning		Processor PCB	Replace PCB (see Sections 4.5 and 4.6).

Table 3-1 Troubleshooting Chart (cont'd)

TROUBLE	CONDITION	PROBABLE CAUSES	CORRECTIVE ACTIONS
		G9JHM PCB	Replace PCB (see Sections 4.7 and 4.8).
		Hammer impression control switch defective	Replace switch.
		Print hammer defective	Replace print hammer (see Sections 4.17 and 4.18).
Character missing		Ribbon mode slide switch incorrect adjustment	Adjust (see Section 5.2).
		Print thimble damaged	Replace print thimble.*
		Processor PCB	Replace the PCB (see Sections 4.5 and 4.6).
		G9JHM PCB	Replace PCB (see Sections 4.7 and 4.8).
		Ribbon magnet defective	Replace carriage (see Sections 4.15 and 4.16).
		Vertical magnet is defective	Replace carriage (see Sections 4.15 and 4.16).
		Print hammer defective	Replace print hammer (see Sections 4.17 and 4.18).
No paper feed		Inadequate line feed adjustment	Adjust (see Section 5.6).
		Processor PCB	Replace PCB (see Sections 4.5 and 4.6).
		G9JHM PCB	Replace PCB (see Sections 4.7 and 4.8)
Paper skew	Using tractor feed	Tractor shaft bent	Replace tractor feeder.
		Incorrect phasing of right and left tractor pins	Replace tractor feeder
	Using friction feed	Pressure roller not contacted against the platen	Adjust (see Section 5.11).

Table 3-1 Troubleshooting Chart (cont'd)

TROUBLE	CONDITION	PROBABLE CAUSES	CORRECTIVE ACTIONS
		Incorrect positioning of print paper	Set print paper container in parallel with or just behind platen.*
Ribbon end not detected		Defective ribbon cartridge	Replace cartridge.
	Indicator not lit	Ribbon end sensor defective	Replace carriage (see Sections 4.15 and 4.16).
	Miscellaneous	Processor PCB	Replace PCB (see Sections 4.5 and 4.6).
Cover open not detected	Indicator not lit	Cover open switch defective	Replace switch and adjust (see Section 5.14).
		Incorrect adjustment of cover open switch	Adjust (see Section 5.14).
	Miscellaneous	Processor PCB	Replace PCB (see Sections 4.5 and 4.6).
*See the Operator's Guide for your model.			



## CHAPTER 4 DISASSEMBLY, ASSEMBLY, AND REPAIR

The procedures described in this chapter are presented in the proper sequence for performing the required maintenance. In general, details are provided only for those items that have difficult locations for attaching hardware, must be removed or assembled in a prescribed order, or require specific techniques for removal or assembly. Procedures are omitted for items that can be disassembled and assembled using standard practices. To identify and locate items not listed, see Chapter 6.

### 4.1 MIDDLE COVER REMOVAL

Use this procedure to remove the middle cover.

- a. Open the top cover (see Figure 4-1).
- b. Pull the paper bail lever forward.
- c. Remove the forms handling option, if any.
- d. Simultaneously push both left and right platen clamp lever arms, then remove the platen.
- e. Remove the ribbon cartridge.
- f. For older Spinwriters, hold the cover sides with both palms and, using your thumbs, disengage the middle cover release levers (see Figure 4-2A) from the lever plates.

For newer Spinwriters, loosen the screw fasteners (see Figure 4-2B).

- g. Lift the cover off and use care to prevent the cover from contacting any interior mechanism.

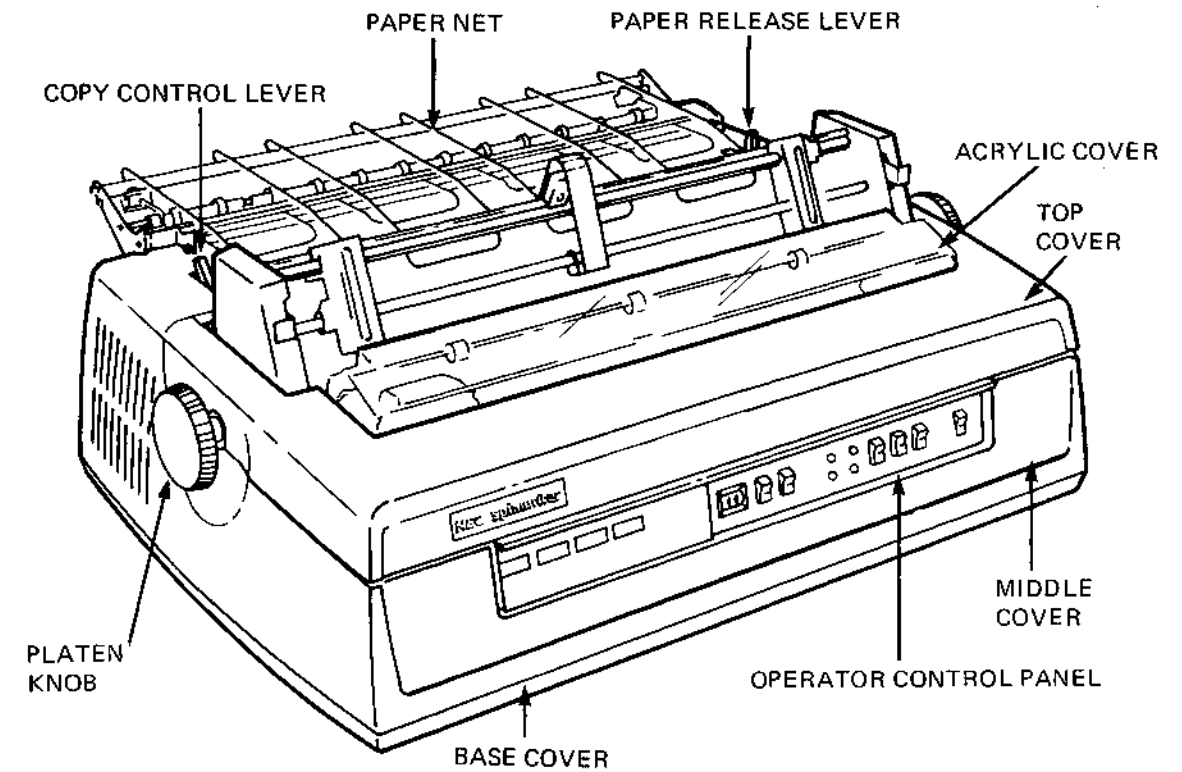


Figure 4-1 Spinwriter Showing External Components  
LEFT SIDE OF RELEASE LEVER (RIGHT SIDE - SAME LOCATION)

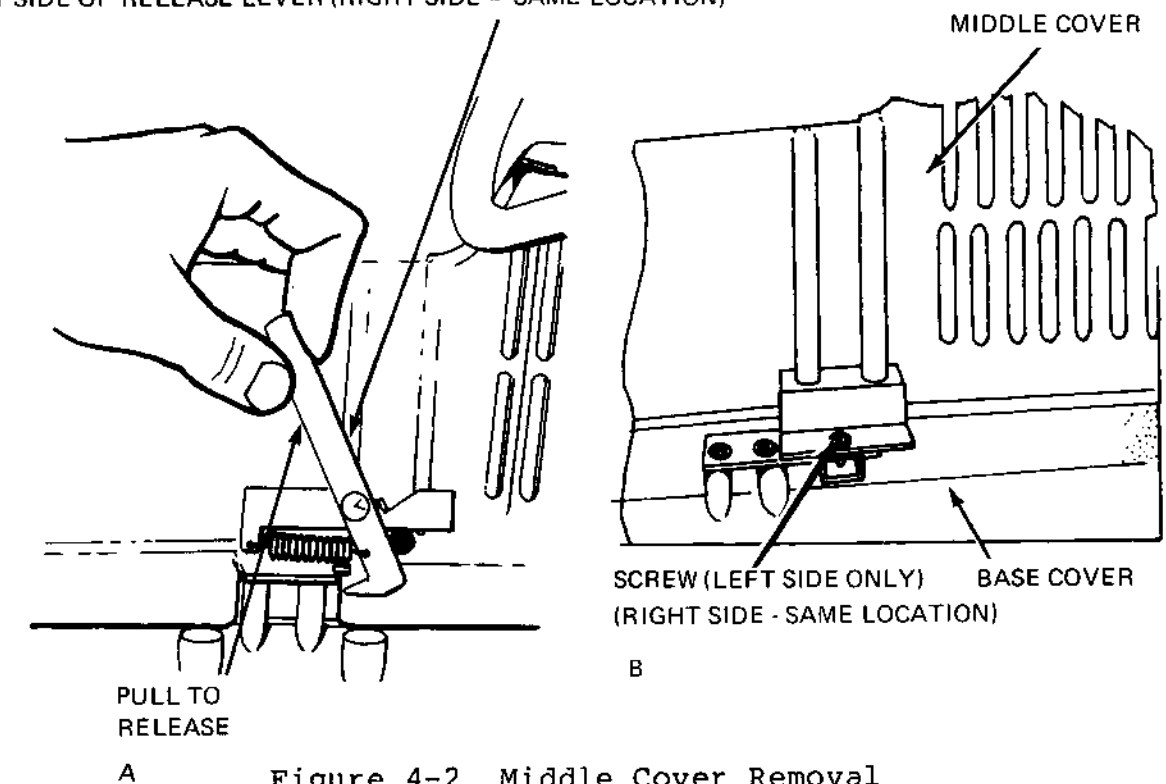


Figure 4-2 Middle Cover Removal

## 4.2 MIDDLE COVER INSTALLATION

Use this procedure to install the middle cover.

- a. For older Spinwriters, lift the top cover and, holding the middle cover release levers open with your thumbs, lower the middle cover into position.

### NOTE

Ensure that the levers are firmly engaged with the lever plates.

For newer Spinwriters, lower the middle cover into position and fasten the screws.

- b. Install the platen assembly. Ensure that it is properly seated in the platen clamp levers. Insert the ribbon cartridge.
- c. Install the forms handling option, if any.
- d. Check that the copy control lever and paper release lever do not touch the cover.
- e. Ensure that the paper out switch (see Section 5.13) and cover open switch (see Section 5.14) are adjusted properly (see Figure 4-3).

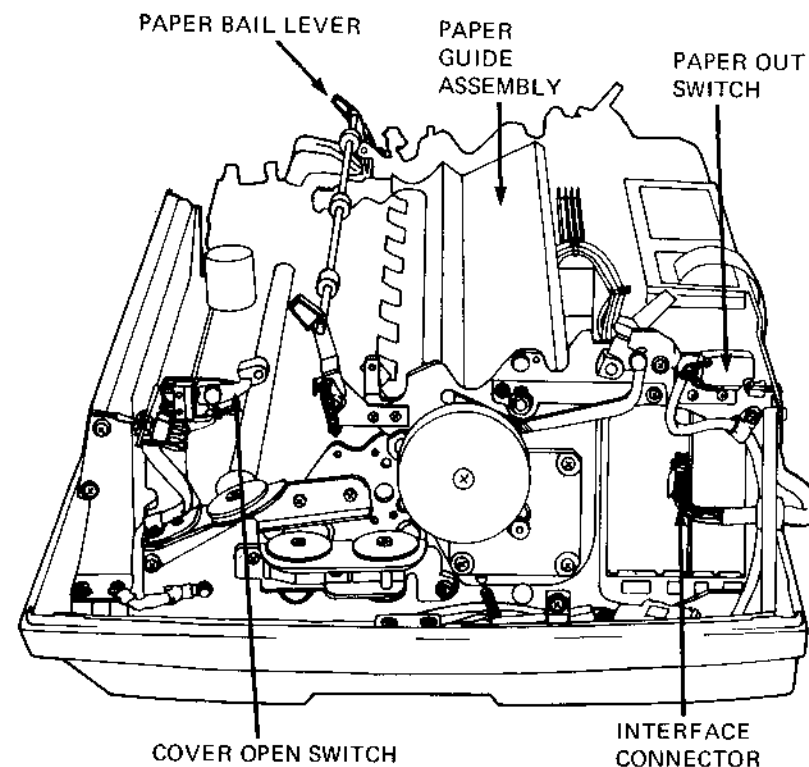


Figure 4-3 Spinwriter With Cover Removed - Side View

## 4.3 PAPER GUIDE REMOVAL

For older Spinwriters, lift out the paper guide. For newer Spinwriters, remove the screw shown in Figure 4-4 and remove the paper guide.

## 4.4 PAPER GUIDE INSTALLATION

For older Spinwriters, slide the paper guide into position. For newer Spinwriters, insert the paper guide in position and attach it with the screw shown in Figure 4-4.

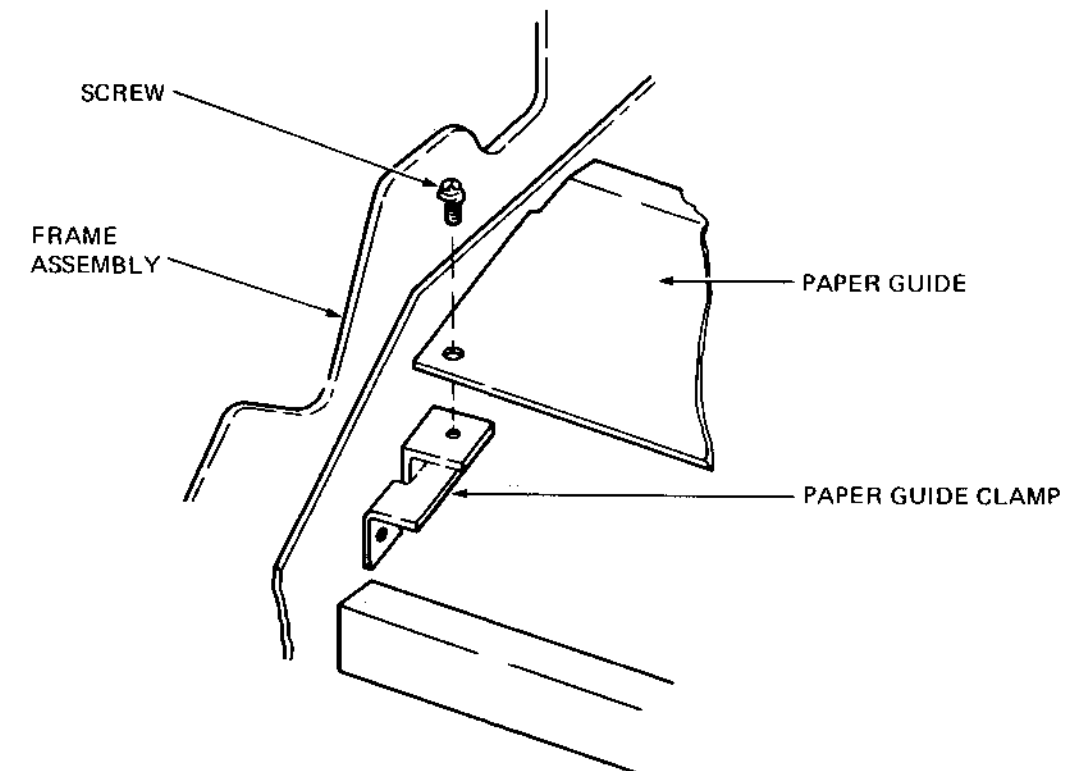


Figure 4-4 Paper Guide Attachment (Not on all Spinwriters)



#### 4.5 PROCESSOR PCB REMOVAL

Use this procedure to remove the Processor printed circuit board (PCB).

##### CAUTION

Never remove or install a PCB when power is on.

- a. Turn off the power.
- b. Disconnect the power cord from the ac outlet.
- c. Remove the middle cover (see Section 4.1).
- d. Remove the paper guide assembly (see Section 4.3).
- e. Disconnect the cable connectors attached to the PCB. Disconnect the interface connector cable and the operator control panel power connector, if any.

##### NOTE

To remove the interface cable, press the metal clip on the connector, then remove the cable.

- f. Loosen the screws securing the PCB holder (see Figure 4-5). Remove the holder.
- g. Pull out the PCB using the extraction tool, Part Number 911-809075, or your hands.

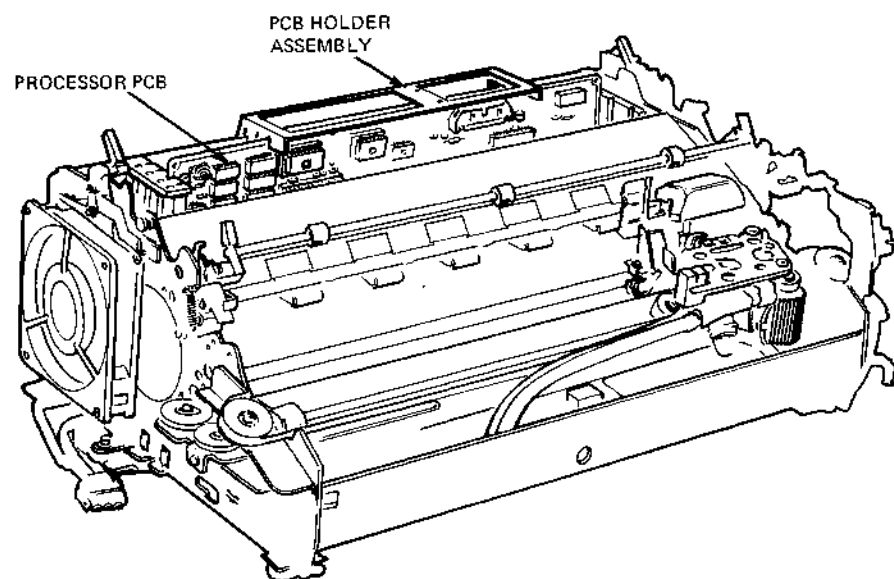


Figure 4-5 Processor PCB Location

#### 4.6 PROCESSOR PCB INSTALLATION

Reverse the removal procedures described in Section 4.5.

#### 4.7 G9JHM PCB REMOVAL

Use this procedure to remove the G9JHM PCB, which is located under the Processor PCB.

- a. Remove the middle cover (see Section 4.1).
- b. Remove the paper guide assembly (see Section 4.3).
- c. Remove the Processor PCB (see Section 4.5).
- d. Disconnect the cable connectors attached to the G9JHM PCB. Remove the screw that holds the green ground wire to the frame assembly.

##### NOTE

Do not detach the green ground wire from the G9JHM PCB.

- e. Push the three plastic tabs at the back of the G9JHM PCB towards the rear of the printer to release the back of the G9JHM PCB.
- f. Carefully lift up on the rear of the G9JHM PCB and slide it up and towards the rear of the printer.

#### 4.8 G9JHM PCB INSTALLATION

Use this procedure to install the G9JHM PCB, which is located under the Processor PCB.

- a. Insert the G9JHM PCB through the opening in the back of the printer and slide it under the spacing motor.
- b. Insert the front edge of the G9JHM PCB into the front plastic holders.

##### CAUTION

Do not pinch any cables while inserting the G9JHM PCB.

- c. Carefully push down on the rear edge of the G9JHM PCB until it is held securely by the three plastic tabs.
- d. Attach the green ground wire to the frame assembly.
- e. Connect all of the cable connectors to the G9JHM PCB.
- f. Replace the Processor PCB (see Section 4.6).
- g. Replace the paper guide assembly (see Section 4.4).
- h. Replace the middle cover (see Section 4.2).

#### 4.9 POWER SUPPLY REMOVAL

Use this procedure to remove the power supply.

##### WARNING

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

- a. Turn off the power and unplug the power cord from the outlet.
- b. Remove the middle cover (see Section 4.1).
- c. Remove the paper guide assembly (see Section 4.3).
- d. Remove the Processor PCB (see Section 4.5).
- e. For models with a control panel, remove the control panel ground straps (see Figure 4-6).
- f. Unplug all connectors from the G9JHM PCB.
- g. Remove the four screws securing the printer mechanism to the base (see Figure 4-6) and lift the mechanism out of the base.
- h. Remove the plug and green ground wire on the fan.
- i. Remove the seven screws shown in Figures 4-7 and 4-8 and remove the rear of the chassis from the base.
- j. Remove the power supply mounting screws (see Figure 4-9) and lift out the power supply.

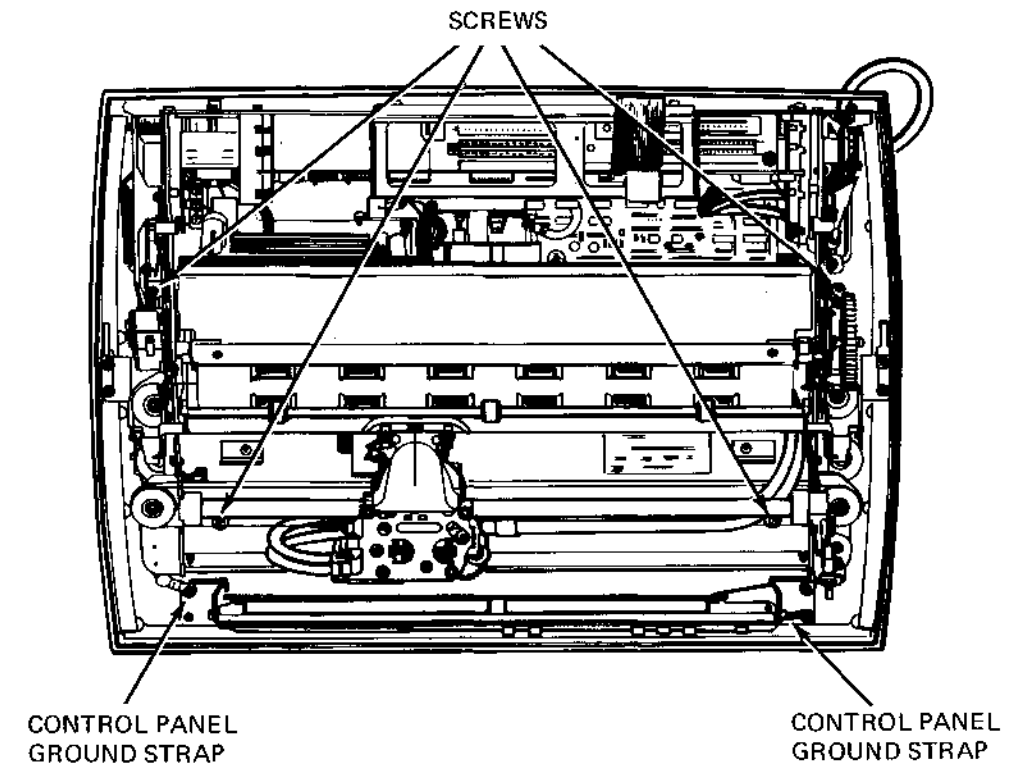


Figure 4-6 Printer Mechanism Base Retaining Screws

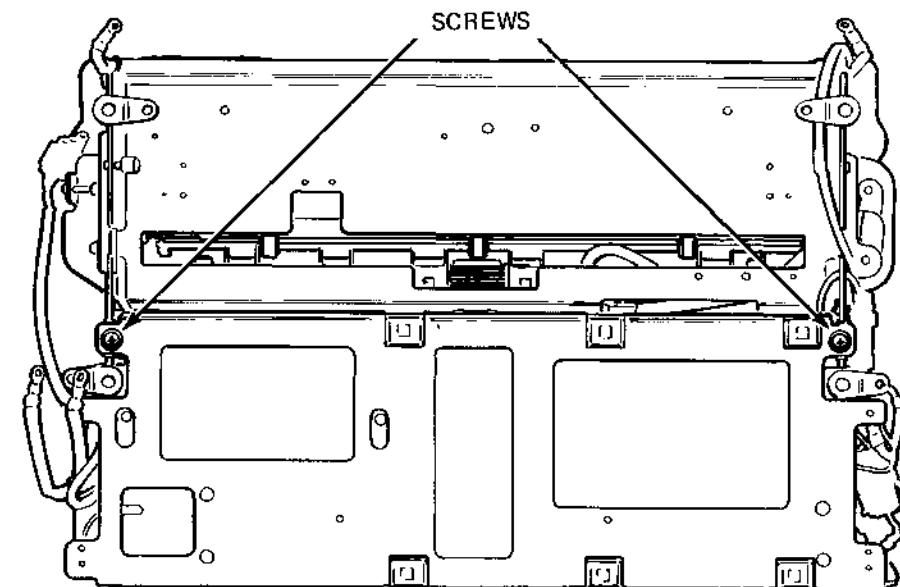


Figure 4-7 Base Chassis - Bottom View

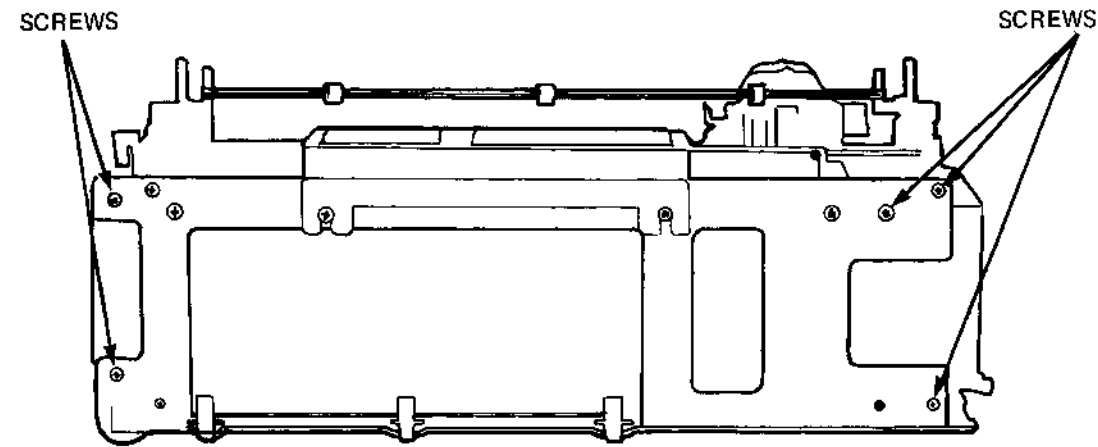


Figure 4-8 Base Chassis - Rear View

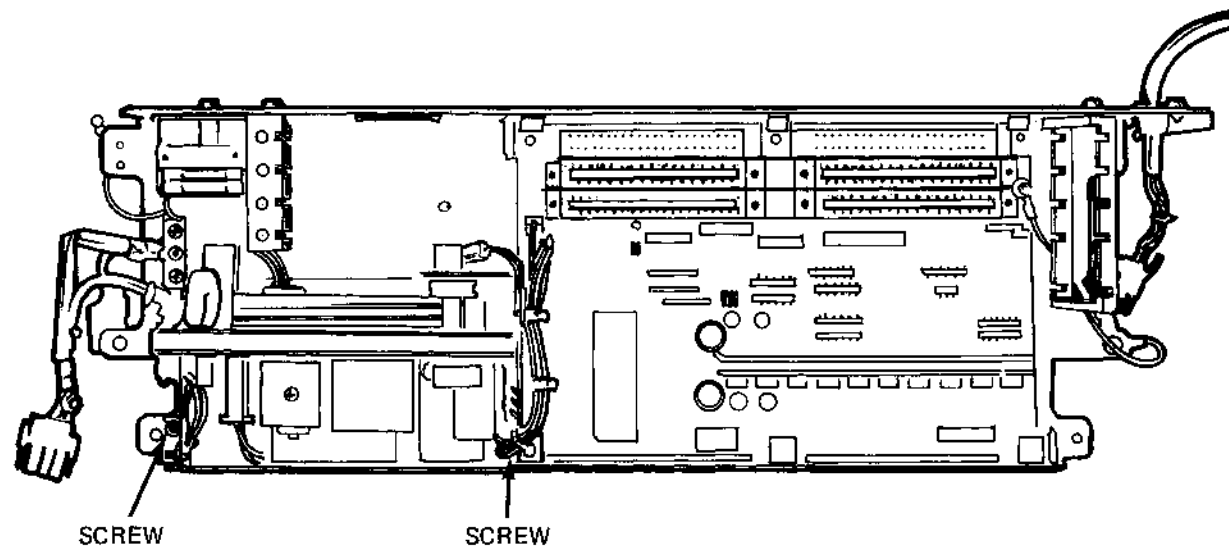


Figure 4-9 Power Supply - Top View

#### 4.10 POWER SUPPLY INSTALLATION

Reverse the removal procedure described in Section 4.9.

#### CAUTION

Use special care when handling the connecting and fan cords to avoid damaging them when performing the assembly procedures.

#### 4.11 OPERATOR CONTROL PANEL REMOVAL

Use this procedure to remove the operator control panel.

- a. Turn off the power and unplug the power cord from the ac outlet.
- b. Remove the middle cover (see Section 4.1).
- c. Disconnect the ribbon cables from the bottom of the panel.
- d. Disconnect the power connector.
- e. Remove the control panel assembly by removing the four screws that secure the brackets to the base (see Figure 4-10).
- f. Detach the Operator Control Panel PCB from the bracket assembly.

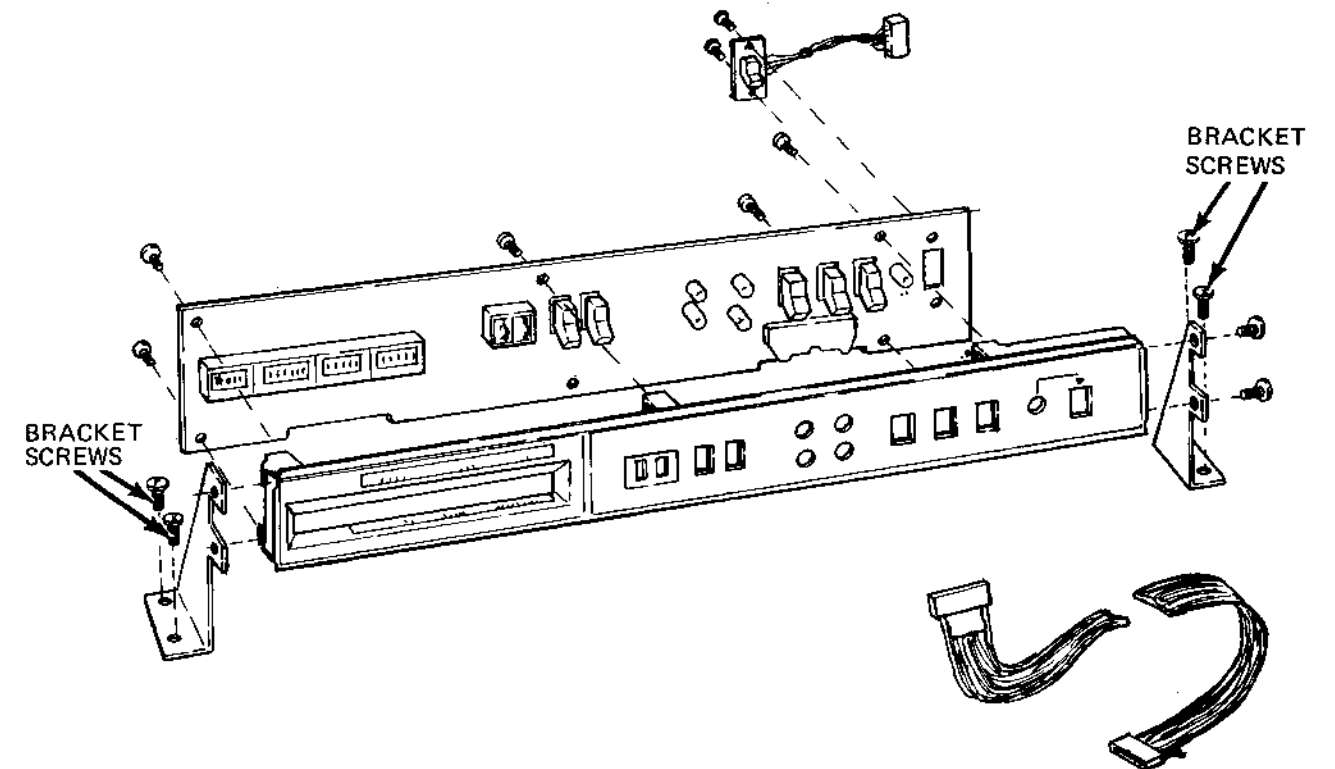


Figure 4-10 Typical Operator Control Panel

#### 4.12 OPERATOR CONTROL PANEL INSTALLATION

Reverse the disassembly procedure described in Section 4.11.

#### 4.13 KEYBOARD REMOVAL

Use this procedure to remove the keyboard.

- a. Turn off the power and unplug the power cord from the ac outlet.
- b. Remove the middle cover (see Section 4.1).
- c. Disconnect the keyboard connector (CN33) from the Operator Control Panel PCB.
- d. Remove the four screws securing the keyboard to the base and remove the keyboard (see Figure 4-11).

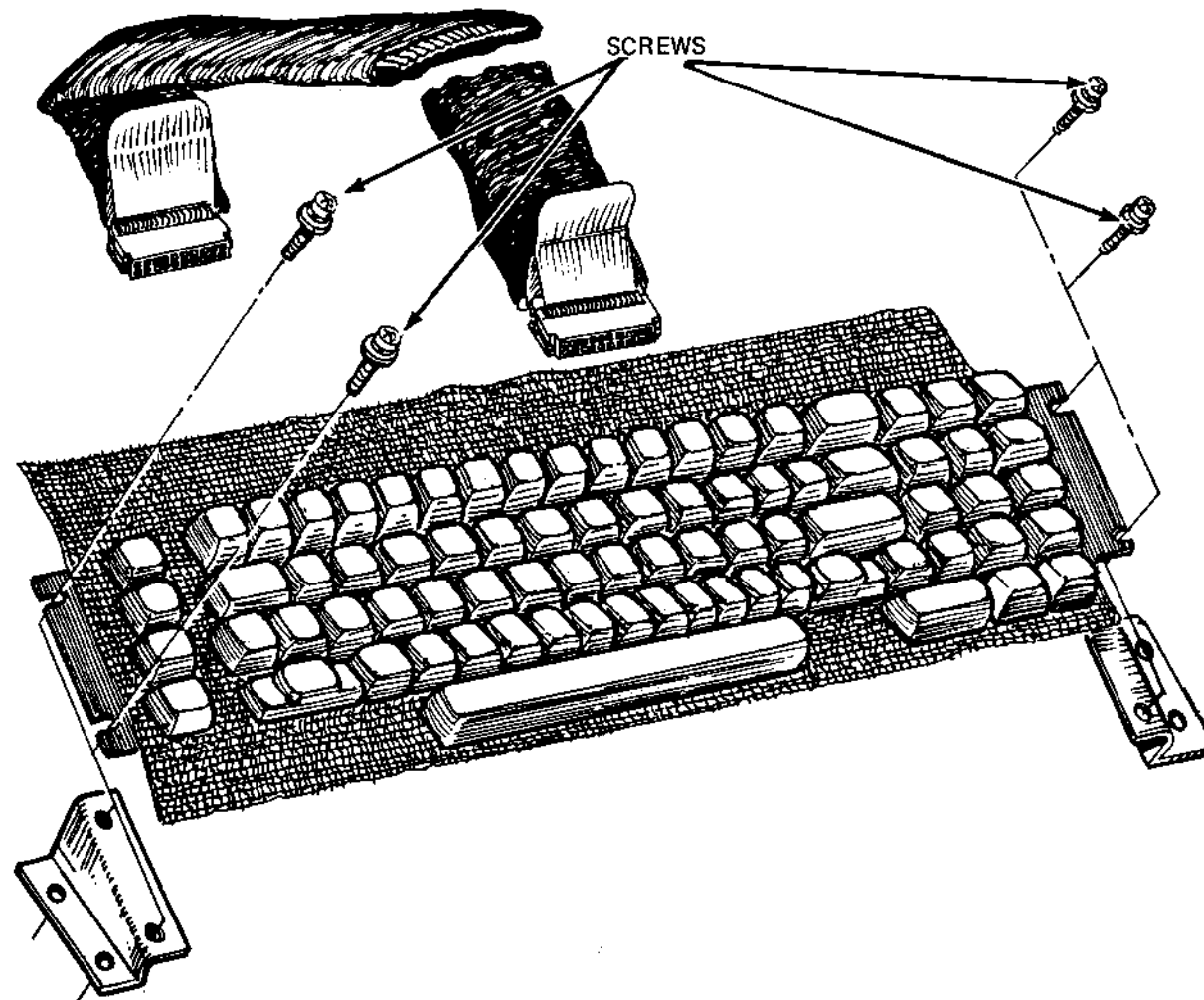


Figure 4-11 Keyboard

#### 4.14 KEYBOARD INSTALLATION

Reverse the disassembly procedures (see Figure 4-11) described in Section 4.13.

#### 4.15 CARRIAGE REMOVAL

Use this procedure to remove the carriage.

- a. Turn off the power and unplug the power cord from the ac outlet.
- b. Remove the middle cover (see Section 4.1).
- c. Remove the paper guide assembly (see Section 4.3).
- d. Remove the ribbon cartridge and the print thimble.
- e. Disconnect the carriage assembly connector (CN4) from the G9JHM PCB (see Figure 4-12).
- f. Disengage the carriage cable assembly from the cable clamps.
- g. Remove the three screws securing the carriage to the guide casting assembly. Two of the screws are on the left part of the carriage assembly and one is on the right (see Figure 4-13).

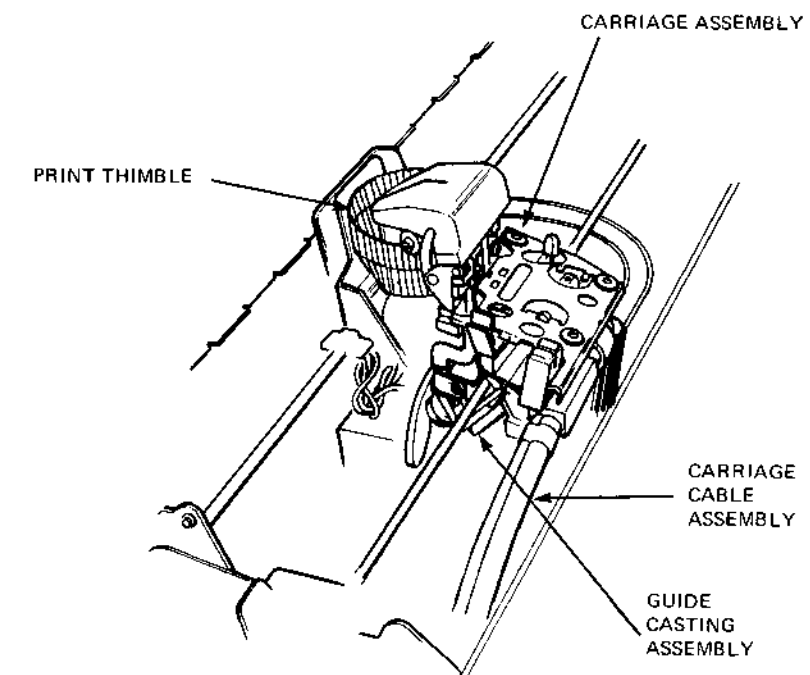


Figure 4-12 Carriage Location

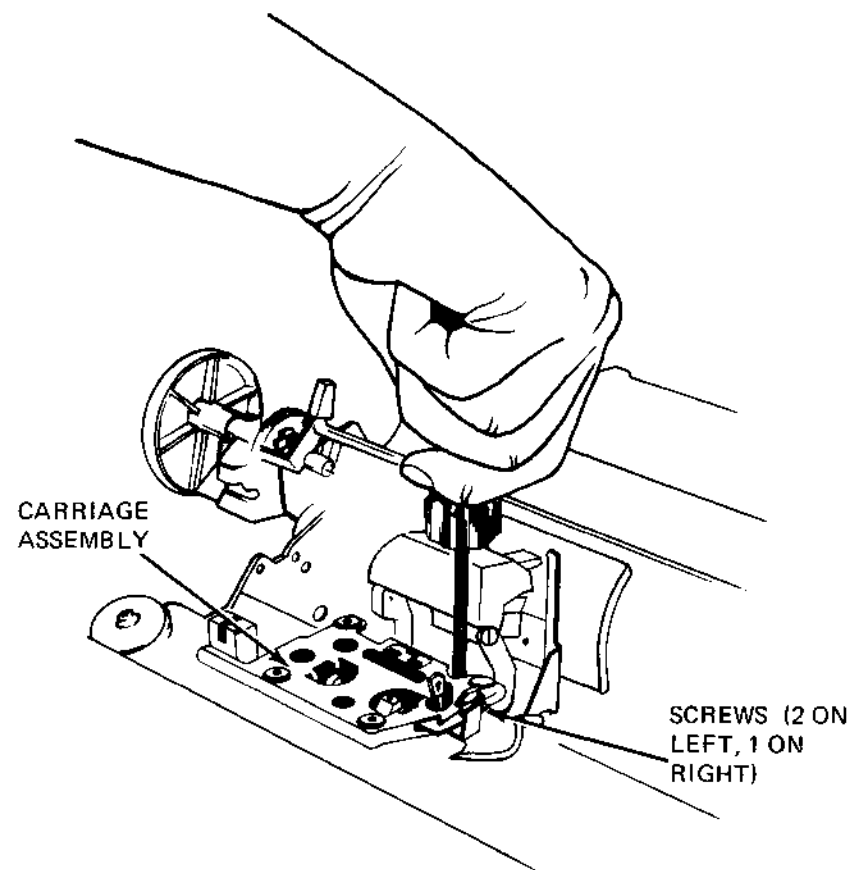


Figure 4-13 Carriage Removal

- h. Slightly lift and tilt the carriage assembly to the rear (DO NOT LIFT IT OUT YET). Slide the guide casting assembly to the extreme right while holding the carriage assembly in place.
- i. Hold the wire rope back with one hand to keep the carriage free of the wire. Pull the carriage slightly forward to disengage the rear bearing and gently lift the carriage out of the unit.

#### 4.16 CARRIAGE INSTALLATION

Use this procedure to install the carriage.

- a. Move the guide casting assembly to the extreme right.
- b. Hold the wire rope back with one hand and lower the carriage assembly centered between the rails.

- c. Slide the guide casting assembly under the carriage assembly and line up the screw holes. Ensure that the alignment pins between the guide assembly and carriage are firmly seated.

#### NOTE

Ensure that the rear bearing sits on the rear rail (see Figure 4-13).

- d. Secure the carriage to the guide casting assembly with three screws (see Figure 4-14).
- e. Move the carriage assembly to the extreme left. Engage the carriage cables in the clamps (small and large clamp).

#### NOTE

Ensure that the cables do not touch the left side frame.

- f. Secure connector CN4 to the G9JHM PCB. This connector is keyed to ensure proper pin alignment.
- g. Perform the following checks and/or adjustments.
  - Hammer adjustments - Section 5.1
  - Rotate home position setting - Section 5.1
  - Ribbon change adjustments - Section 5.2
  - Card holder adjustment - Section 5.4
  - Platen height - Section 5.7
  - First print position - Section 5.8
- h. Reinstall the paper guide assembly, cover, ribbon cartridge, and print thimble.

#### 4.17 PRINT HAMMER REMOVAL

Use this procedure to remove the print hammer.

- a. Turn off the power and unplug the power cord from the ac outlet.
- b. Open the top cover.
- c. Remove the ribbon cartridge and the print thimble.
- d. Raise the hammer cover assembly (see Figure 4-14) by unlocking the lock lever and tilting the hammer upward.
- e. Remove the four screws that secure the hammer to the hammer cover (see Figure 4-14).
- f. Remove the two terminal head screws shown in Figure 4-14.
- g. Remove the print hammer (see Figure 4-15).

#### NOTE

It is normally not necessary to remove or even to loosen the position plate screws (see Figure 4-14).

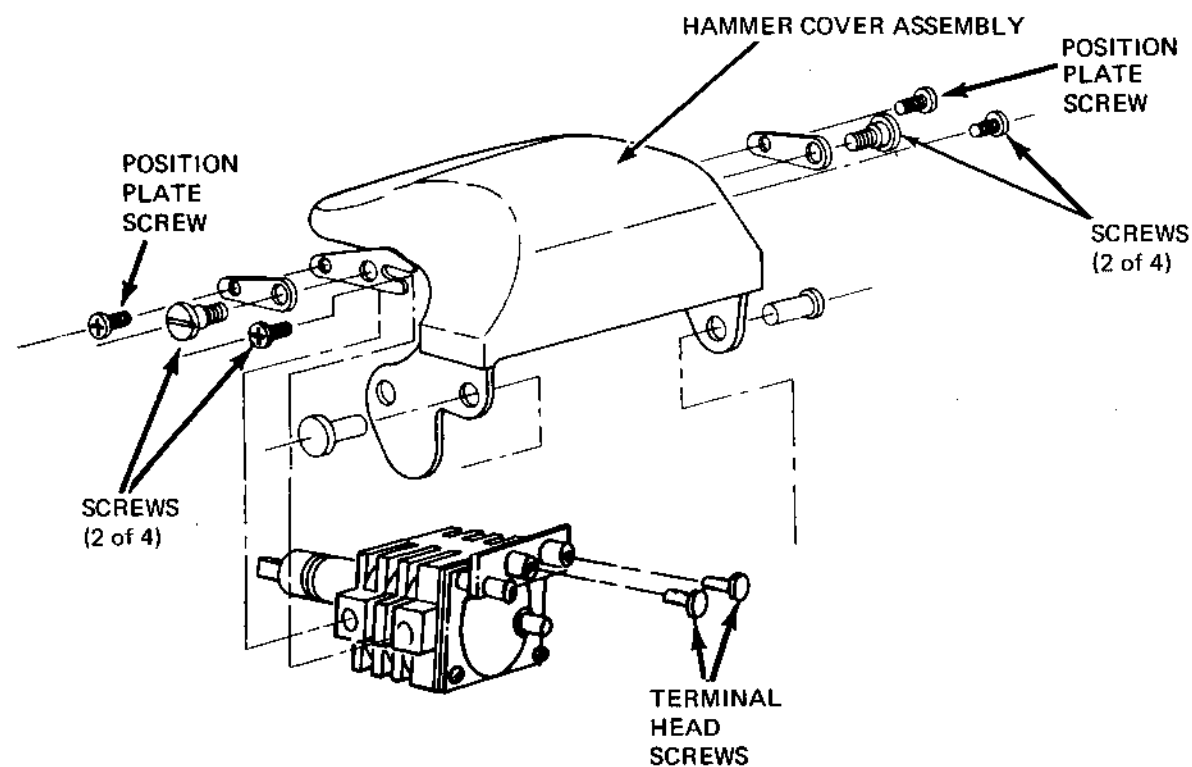


Figure 4-14 Print Hammer Disassembly

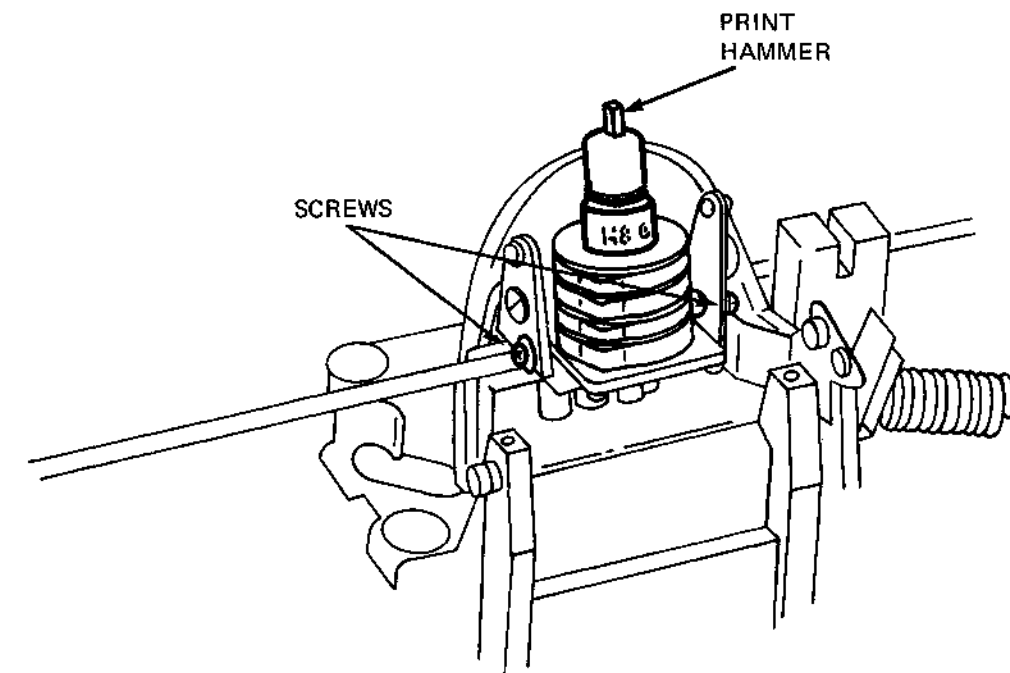


Figure 4-15 Print Hammer Removal and Assembly

#### 4.18 PRINT HAMMER INSTALLATION

Use this procedure to install the print hammer.

- a. Reverse the removal procedure given in Section 4.17.
- b. Perform the hammer assembly adjustments (see Section 5.1).

#### 4.19 WIRE ROPE REMOVAL

Use this procedure to remove the wire rope.

- a. Turn the power off and unplug the power cord from the ac outlet.
- b. Remove the middle cover (see Section 4.1).
- c. Remove the paper guide assembly (see Section 4.3).
- d. On models with the bottom feed option, remove the bottom paper guide assembly.

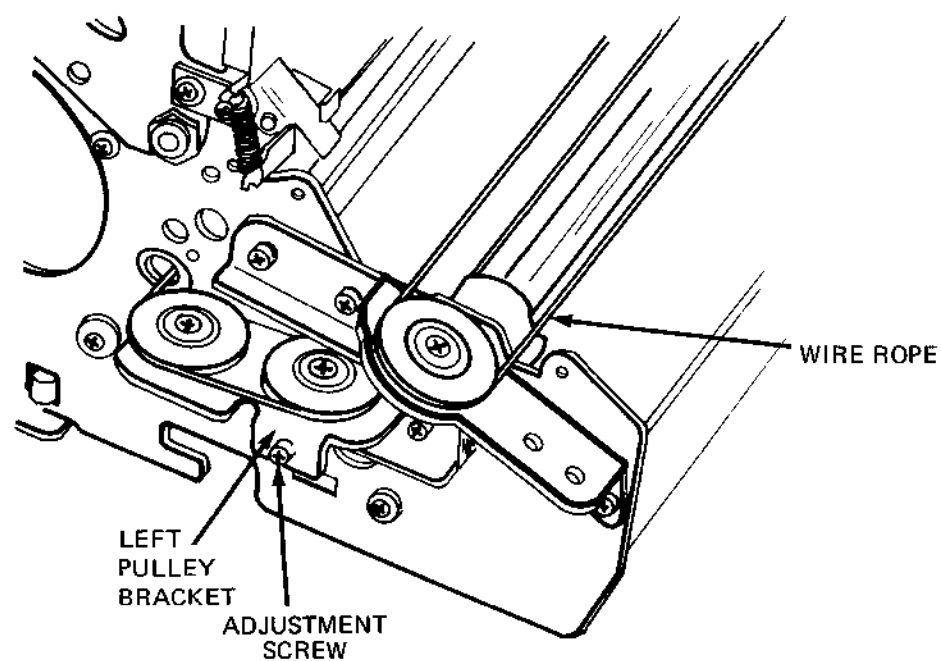


Figure 4-16 Wire Rope and Adjustment Screw Location

- e. Loosen the nut that locks the adjusting screw stud on the left pulley bracket (see Figure 4-16).
- f. Loosen the wire rope tension by turning the adjusting screw left (counterclockwise).
- g. Disconnect the right side wire at point B of the carrier assembly. Disengage the wire rope from right guide pulleys 4, 3, 2, and 1 and leave the wire on the drive pulley (see Figure 4-17A).
- h. Do the same with the left side wire, disconnecting it at point A and disengaging it from the left guide pulleys.
- i. Gently pull the right side wire so it unwinds naturally from the drive pulley.
- j. Do the same with the left side pulley.

#### 4.20 WIRE ROPE INSTALLATION

Use this procedure to install the wire rope.

- a. Insert the knot on the left side wire rope into the rear slot of the drive pulley (see Figure 4-17B).

#### NOTE

Both left and right side wires are identical.

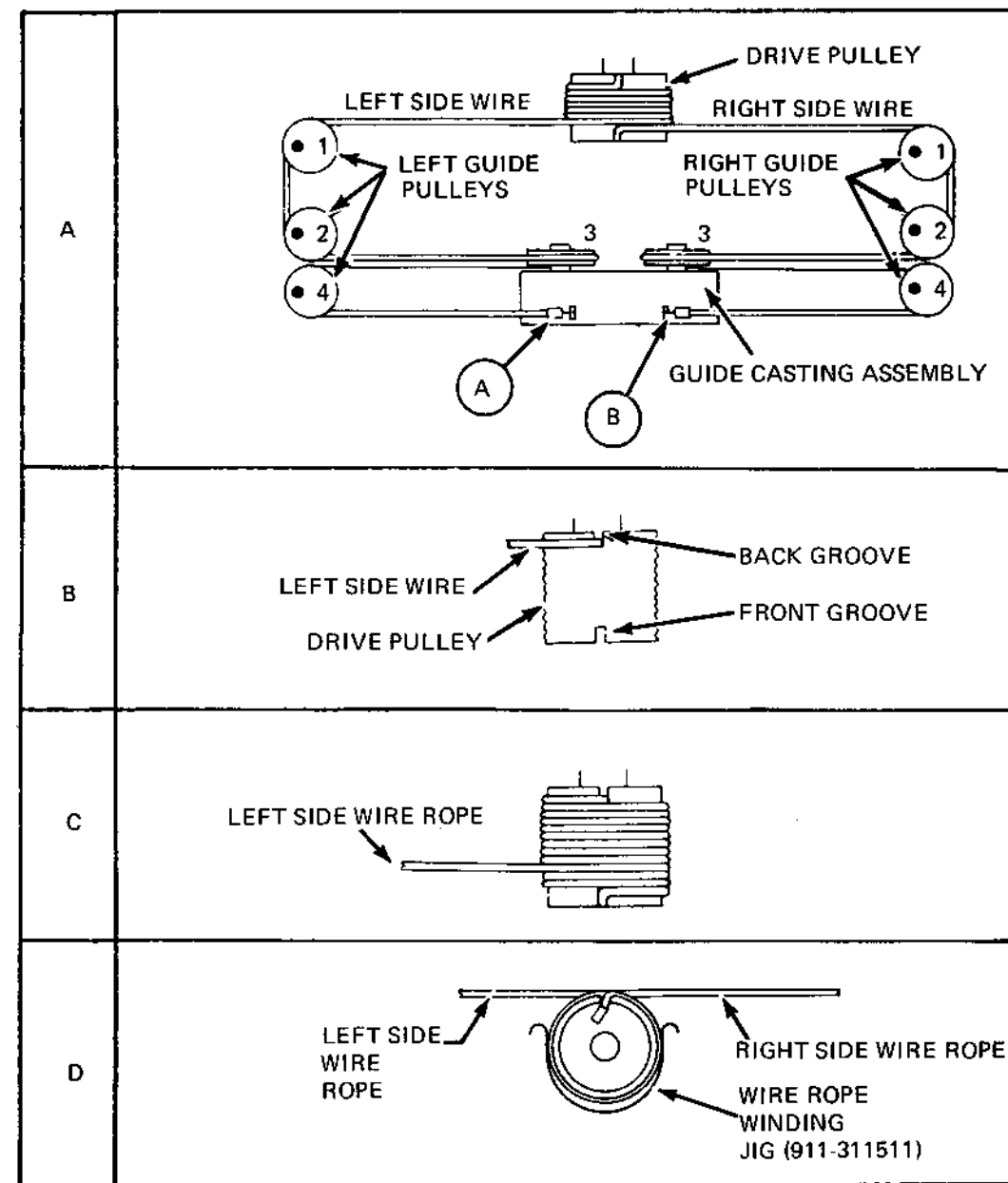


Figure 4-17 Wire Rope Assembled and Disassembled

- b. Turn the pulley right (clockwise) and wind the wire starting in the second groove and around the pulley until only two grooves are exposed (see Figure 4-17C).
- c. Insert the knot on the right side wire rope into the front slot, second groove.
- d. Apply tension to the right wire rope and pull the left side wire rope until both wire ropes are centered on the drive pulley.
- e. Set the winding jig on the drive pulley (see Figure 4-17D).
- f. Check that the adjusting screw on the left pulley bracket is fully loosened as indicated in step e of the disassembly procedure.
- g. Place the left side wire rope onto the four guide pulleys 1, 2, 3, 4, then attach the end loop of the wire to point A (see Figure 4-17A).
- h. Place the right side wire rope onto the four guide pulleys 1, 2, 3, 4, then attach the end loop of the wire to point B (see Figure 4-17A).
- i. Turn the adjusting screw right (clockwise) to tension the wire rope.
- j. Perform the wire rope tension adjustment as described in Section 5.12.
- k. Install the middle cover and platen (see Section 4.2).

#### 4.21 SPACING MOTOR REMOVAL

Use this procedure to remove the spacing motor.

- a. Turn off the power and unplug the power cord from the ac outlet.
- b. Remove the middle cover (see Section 4.1).
- c. Remove the paper guide assembly (see Section 4.3).
- d. On models with the bottom feed option, remove the bottom paper guide assembly.

- e. Remove the printer mechanism from the base (see Section 4.9, step g).
- f. Remove the wire rope (see Section 4.19).
- g. Remove the Processor PCB (see Section 4.5).
- h. Disconnect the spacing motor cable connector CN3 from the G9JHM PCB.
- i. Remove the spacing motor assembly by removing the two screws attaching the assembly to the frame. To do so, insert the long (more than 8 inches) #2 Philips screwdriver into the hole in the front of the frame unit to reach the screws.

#### 4.22 SPACING MOTOR INSTALLATION

Use this procedure to install the spacing motor.

- a. Reverse the removal procedures.
- b. Perform the wire rope tension adjustment as described in Section 5.12.

#### 4.23 INTERFACE CABLE CONSTRUCTION AND INSTALLATION (MODELS 7700Q and 7700D ONLY)

The interface cable for Models 7700Q and 7700D is not supplied by NECIS. Use the following information to construct a proper interface cable for these models.

##### 4.23.1 Cable Construction

The interface cable for Models 7700Q and 7700D must conform to the specifications for UL Style 2464 80°C 300 V (see Table 4-1 and Figures 4-18 and 4-19).

##### NOTE

The typical ribbon cable that is used for most interface cables cannot be used on Models 7700Q and 7700D.



Table 4-1 Interface Cable Specifications

ITEM	SPECIFICATION
Conductor material	Stranded tinned copper wire
Insulation	80°C PVC (UL STYLE 1095)
Conductor identification	Printed mark
Twisted pair	Approximately 30 mm lay (paired cable only)
Binder tape	Paper
Shield	Tinned copper wire braid (shielded cable only) Approximately 85% coverage
Sheath	80°C PVC Color: warm gray
Cable mark	UL AWM 2464 WV-1SC 80°C 300 V E74038 SWCC SHOWA 28 AWG
Number of conductors	50
Conductor size	0.08 mm
Wire number and diameter	No. 7/0.127 mm
Strand diameter	0.38 mm
Insulation thickness	0.33 mm
Insulation diameter	1.05 mm
Conductor arrangement:	
Center	4
First layer	10
Second Layer	15
Third layer	21

Table 4-1 Interface Cable Specifications (con't)

ITEM	SPECIFICATION
Cable diameter	8.9 mm approximately
Bonding tape thickness	0.05 mm approximately
Shield braided wire diameter	0.16 mm
Sheath thickness	1.2 mm
Overall diameter	12.2 mm approximately
Cable weight	195 kg/km approximately
Maximum conductor resistance	230.6 Ω/km at 20°C
Test voltage	1000 Vac for 1 minute
Minimum insulation resistance	50 MΩ/km at 20°C

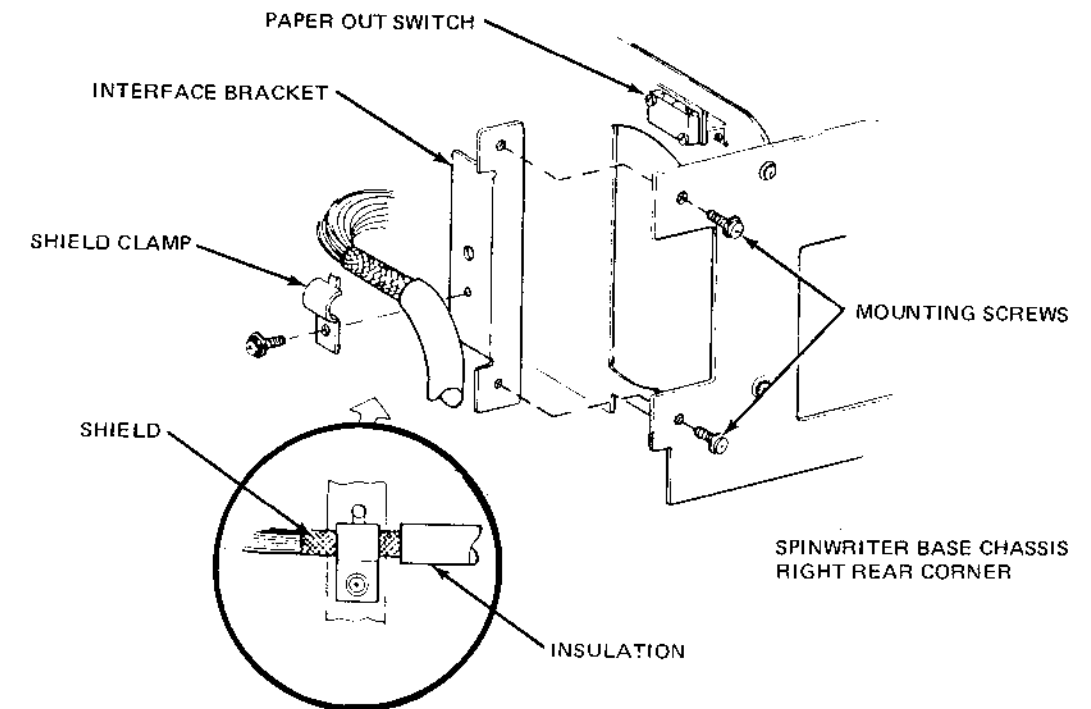


Figure 4-18 Cable Construction

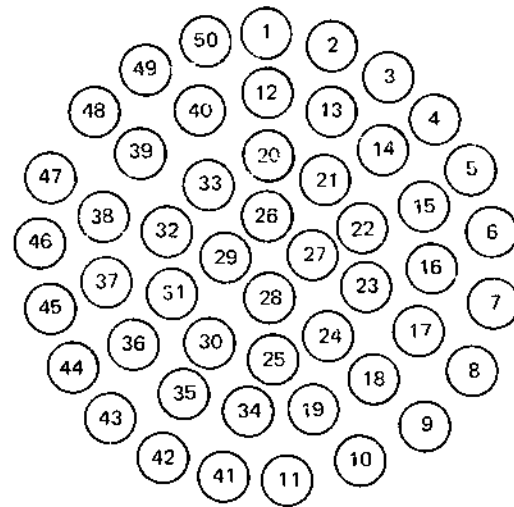


Figure 4-19 Conductor Arrangement

#### 4.23.2 Cable Installation

To install the interface cable, first order a 7700Q/D FCC Cable Kit, Part Number 158-050000-257 from any NECIS sales office. This kit includes a cable clamp and an interface bracket. Then install the interface on the Spinwriter using these parts and three mounting screws (see Figure 4-20).

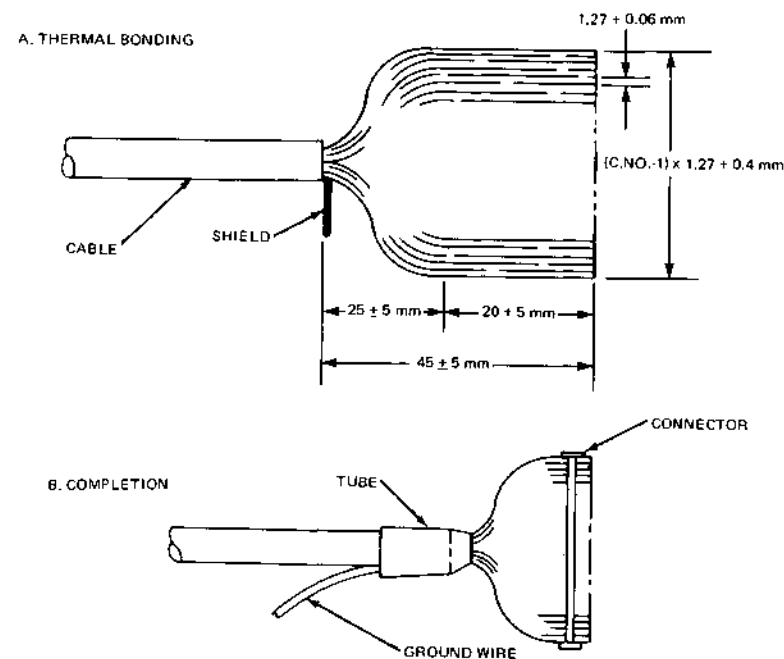


Figure 4-20 Interface Cable Installation

#### 4.24 OPTIONAL G9JHX PCB KIT INSTALLATION (MODELS 7710, 7715, 7720, AND 7725 ONLY)

Use this procedure to install the optional G9JHX PCB Kit.

- a. Remove the current Processor (G9JHW) PCB (see Section 4.5).

#### NOTE

Be sure to remove all cables from the G9JHW PCB before removing the PCB. To remove the interface cable (attached to CN30 of the G9JHW PCB), press the metal clip on the connector, then detach the interface cable assembly from the G9JHW PCB.

- b. Install the new G9JHW PCB in the same slot that the old G9JHW PCB was installed, then install the G9JHX PCB behind it (see Figure 4-21).
- c. Connect the interface cable, which was connected to CN30 of the G9JHW PCB, to CN40 of the G9JHX PCB.
- d. Connect the cable supplied in the kit to CN31 of the G9JHW PCB and CN42 of the G9JHX PCB (see Table 4-2 and Figure 4-22).

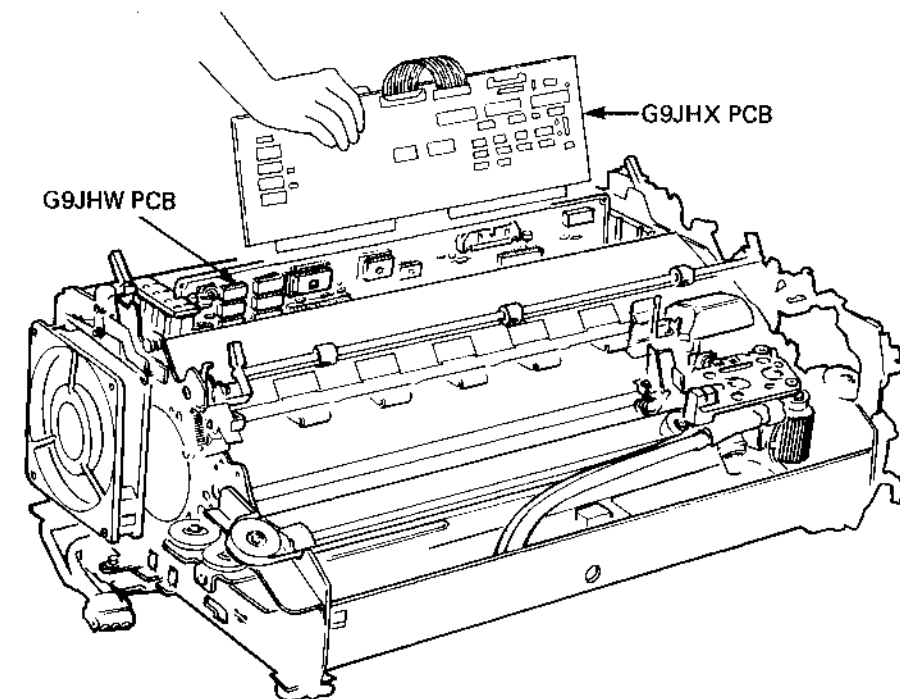


Figure 4-21 G9JHX PCB Installation

Table 4-2 G9JHX PCB Kit Cable Connections

CABLE	G9JHW PCB	G9JHX PCB
Connection Cable	CN31	CN42
Interface Cable	--	CN40
Operator Control Panel Cable	--	CN41
Battery Cable (Option)	--	CN43

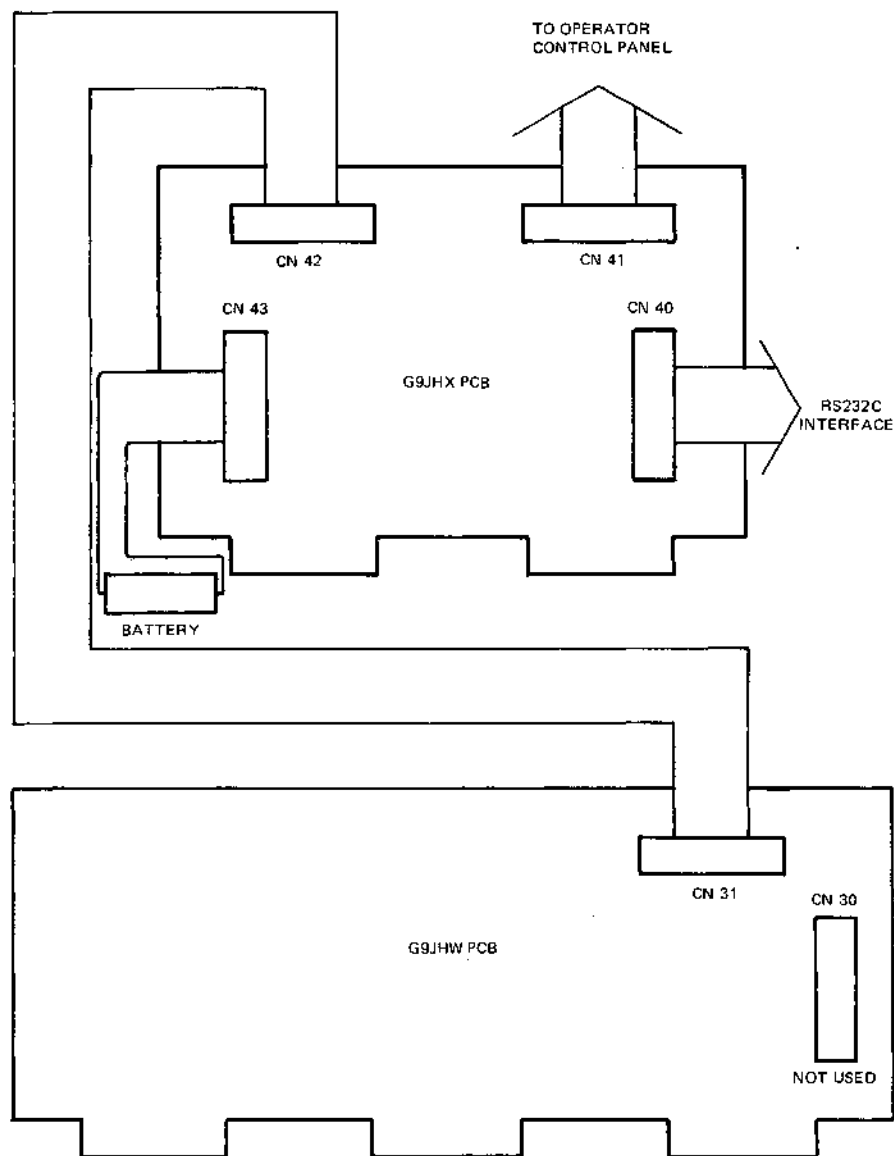


Figure 4-22 G9JHX PCB Kit Cable Connections

- e. Connect the operator control panel cable, which was connected to CN31 of the G9JHW PCB, to CN41 of the G9JHX PCB.
- f. Install the new PCB holder provided in the kit. Discard the old PCB holder.
- g. If you are also installing the optional battery accessory, install it at this time (see Figure 4-23), and connect the battery cable to CN43 on the G9JHX PCB.
- h. Install the paper guide assembly (see Section 4.4).
- i. Install the middle cover (see Section 4.2).

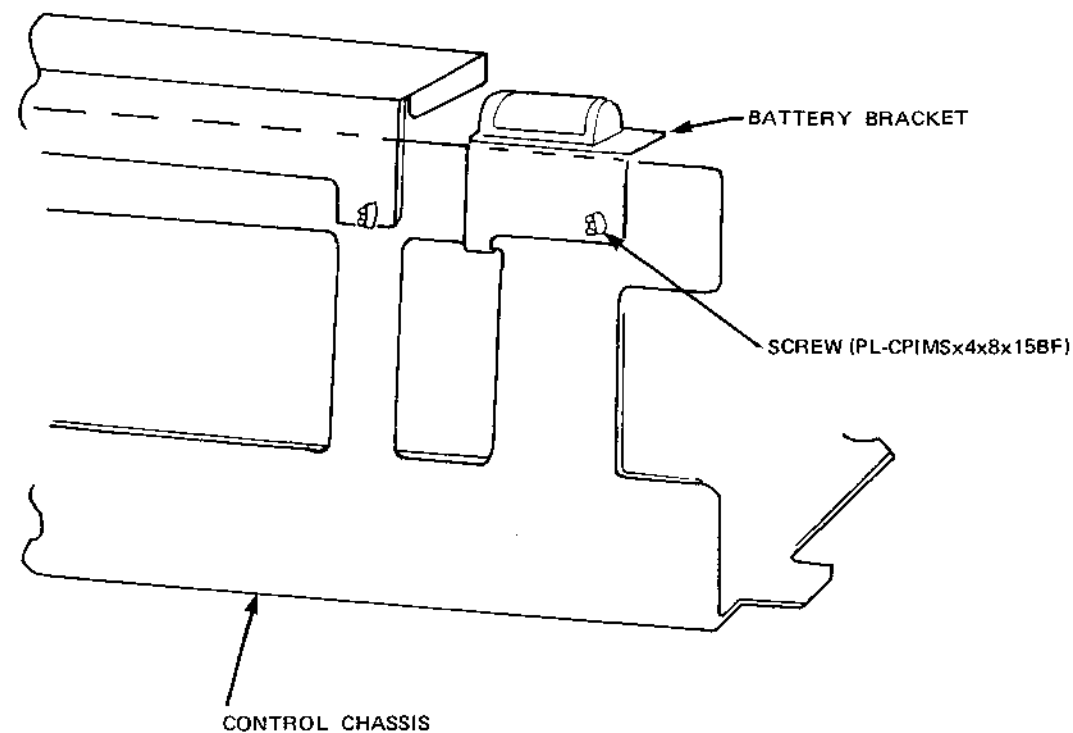


Figure 4-23 Battery Accessory Installation



## CHAPTER 5 ADJUSTMENTS

These adjustment procedures are essential for field maintenance of the Spinwriter. The adjustment standards must be followed at all times.

### 5.1 HAMMER ASSEMBLY ADJUSTMENTS

Use the following procedures to adjust the hammer assembly.

#### 5.1.1 Lock Lever Adjustment

Use this procedure to adjust the lock lever.

- a. Loosen the screw securing eccentric stud A (see Figure 5-1).
- b. Turn eccentric stud A until the lock lever secures the hammer cover assembly firmly in place.

#### 5.1.2 Hammer Position Adjustment

Use this procedure to adjust the hammer position (see Figure 5-1).

- a. Ensure that the print thimble is in the down position.
- b. Remove the print thimble and set the hammer position jig (Part Number 911-317716) in its place.
- c. Loosen the holding screws B and C on both sides of the hammer (see Figure 5-1).
- d. Align the top and end of the hammer in the jig as shown in Figure 5-2, then tighten the holding screws B (both sides).
- e. Verify that the alignment is still correct before tightening the holding screws C (both sides).

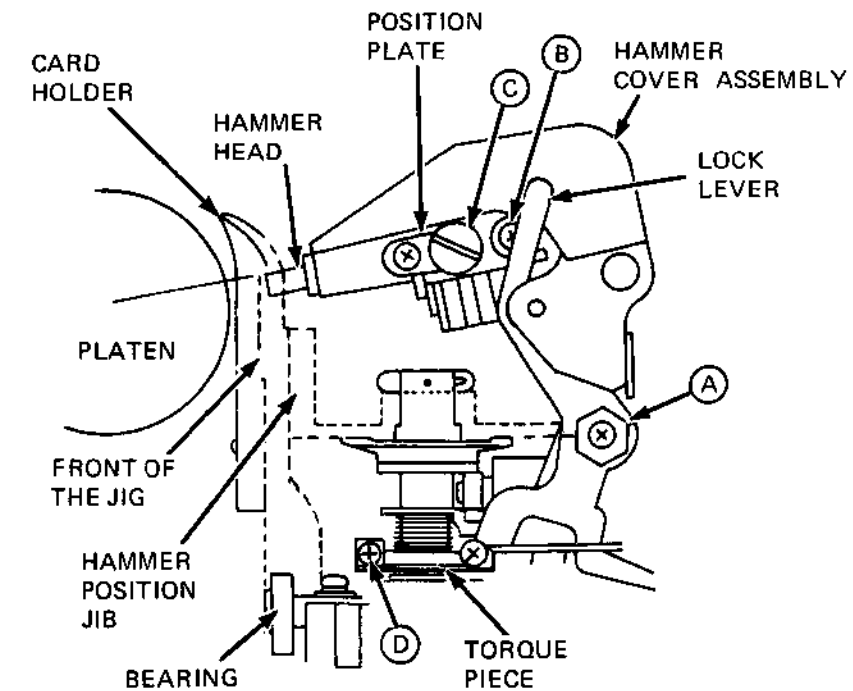


Figure 5-1 Print Hammer Adjustment

#### 5.1.3 Rotate Home Position Adjustment

Use this procedure to adjust the rotate home position.

- a. With the print thimble in the printer, turn power on.
- b. Check to see if the hammer is centered on the last short finger on the right side of the cutout on the print thimble (see Figure 2-1).
- c. To adjust, turn the power off. Loosen screw D (see Figure 5-1) of the torque piece. Turn the power on and turn the torque piece for proper alignment. Tighten screw D.
- d. Power the unit off and on to verify alignment.

#### NOTE

To make an added check, replace the print thimble with the hammer position jig while power is on. The hammer should align in the jig slot. Remove the jig before powering off the printer (see Figure 5-2).

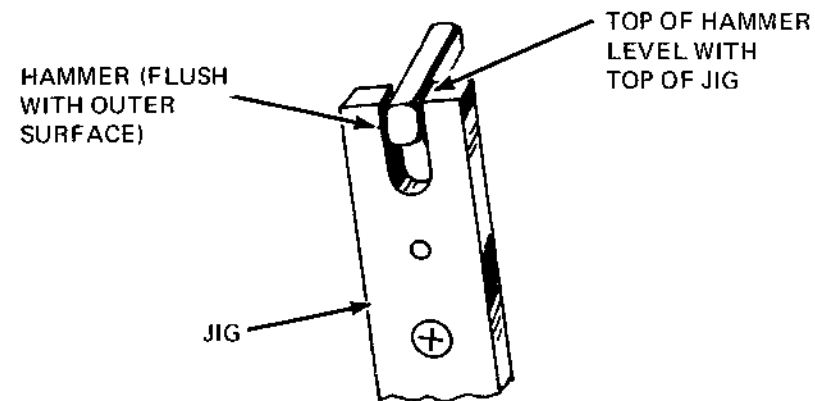


Figure 5-2 Hammer Head to Jig Slot Alignment

## 5.2 RIBBON COLOR CHANGE ADJUSTMENTS

Use a red/black fabric ribbon to perform the following adjustments.

### 5.2.1 Black Ribbon Color

Use this procedure to adjust the black ribbon color.

- Remove the ribbon cartridge and slide the ribbon mode slide switch to the right (red/black position) (see Figure 5-3).
- Adjust the ribbon base stopper using screw A (see Figure 5-3) so that the gap between the ribbon top edge and the top projection of the card holder bracket (see Figure 5-4) is  $0 \pm 0.004$  inch ( $0 \pm 0.1$  mm).

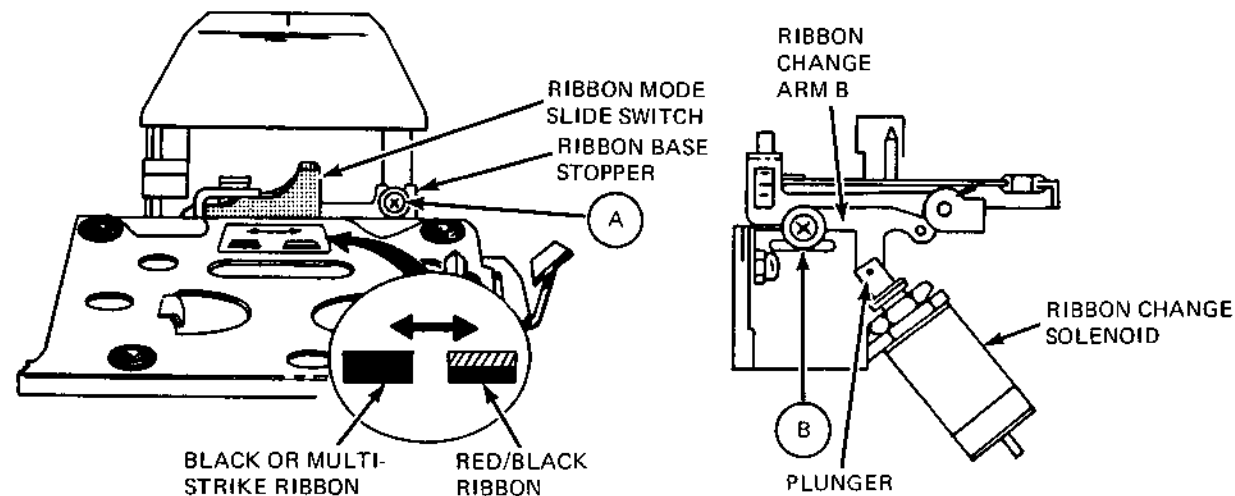


Figure 5-3 Ribbon Color Change Adjustment Location

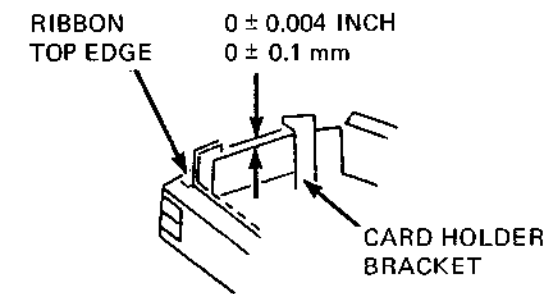


Figure 5-4 Ribbon Color Black Adjustment

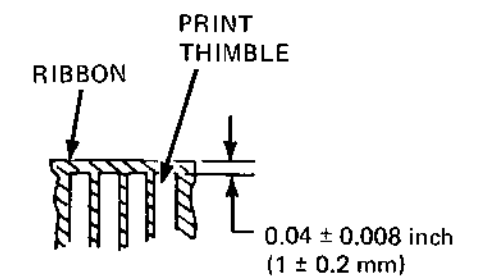


Figure 5-5 Ribbon Color Red Adjustment

### 5.2.2 Red Ribbon Color

Use this procedure to adjust the red ribbon color.

- Remove the ribbon cartridge and slide the ribbon mode slide switch to the right (red/black position).
- Loosen adjusting screw B (see Figure 5-3) and insert the ribbon cartridge.
- Turn the power on so that the ribbon platform is down.
- Move the ribbon change arm B up or down so that the gap between the ribbon top edge and the print thimble long finger top edge is  $0.04 \pm 0.008$  inch ( $1.0 \pm 0.2$  mm) (see Figure 5-5).
- Tighten adjusting screw B.

### 5.2.3 Characters Visible Position

Use this procedure to check the Characters Visible Position.

- Remove the ribbon cartridge and slide the ribbon mode slide switch to the left (black position).
- Insert the ribbon cartridge and remove any ribbon slack by turning the knob on the ribbon cartridge in the direction shown by the arrow on the cartridge.
- Turn the power on so that the ribbon platform is down and the short fingers of the print thimble are in front of the hammer assembly.

- d. Verify that the gap between the ribbon top edge and the top of the short fingers of the print thimble is 0 inch  $\pm$  0.04 inch (0 mm  $\pm$  1.0 mm) (see Figure 5-6).
- e. If the gap is incorrect, repeat the adjustments in Sections 5.1 and 5.2.

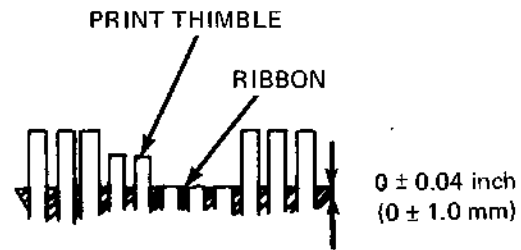


Figure 5-6 Characters Visible Position

### 5.3 RIBBON FEED GEAR ADJUSTMENT

Use this procedure to adjust the ribbon feed gear.

- a. Check the backlash between the idler gear and ribbon feed gear for a tolerance of 0.002 to 0.008 inch (0.05 to 0.2 mm).
- b. Loosen screws A and B (see Figure 5-7) and move the motor to remove backlash in the gears.
- c. Turn the idler gear manually to ensure that the gear rotates freely. Readjust if necessary.

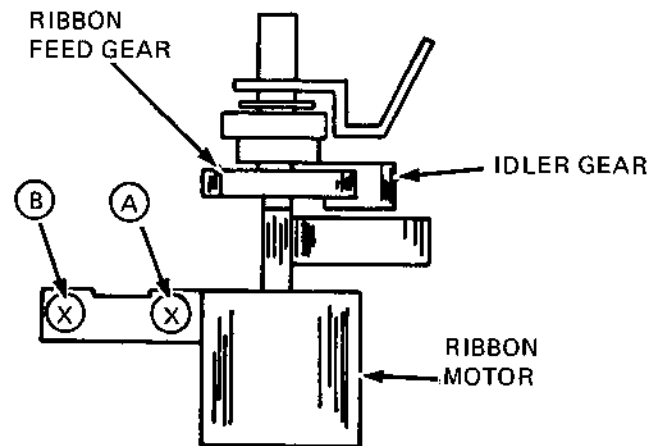


Figure 5-7 Ribbon Feed Gear Adjustment

### 5.4 CARD HOLDER ADJUSTMENT

Use this procedure to adjust the card holder.

- a. Push the copy control lever toward the rear of the printer (see Figure 5-8, arrow direction B).
- b. Loosen the screws (A) in Figure 5-8.
- c. Adjust the card holder position for a clearance of 0.024 to 0.032 inch (0.6 to 0.8 mm) between the card holder and the platen.
- d. Tighten the screws (A).

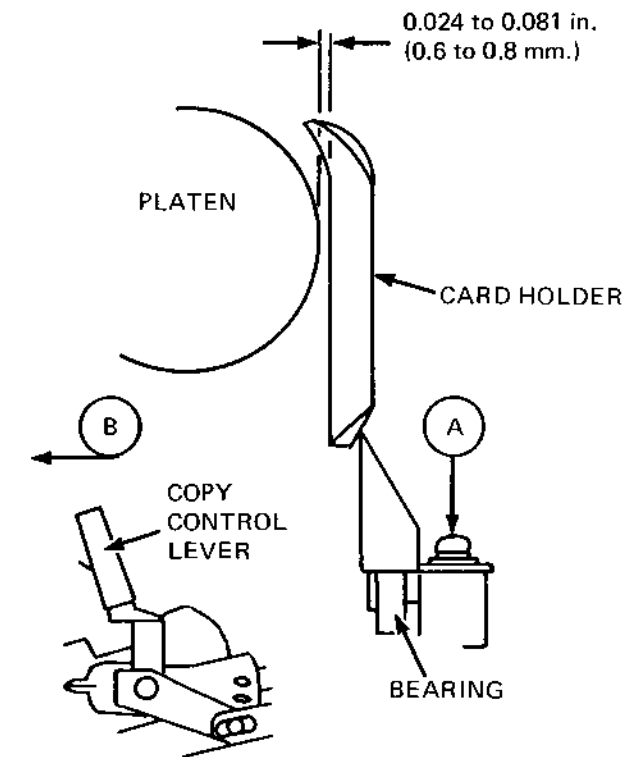


Figure 5-8 Card Holder Adjustment

### 5.5 PLATEN CLAMP LEVER ADJUSTMENT

Use this procedure to adjust the platen clamp lever.

- With the platen mounted in place, bring the bottom (see Figure 5-9, letter A) of the platen clamp lever to a level position by turning the eccentric bushing B. Push up and down on the clamp lever while turning the eccentric bushing B.
- Confirm that there is no play in the platen.

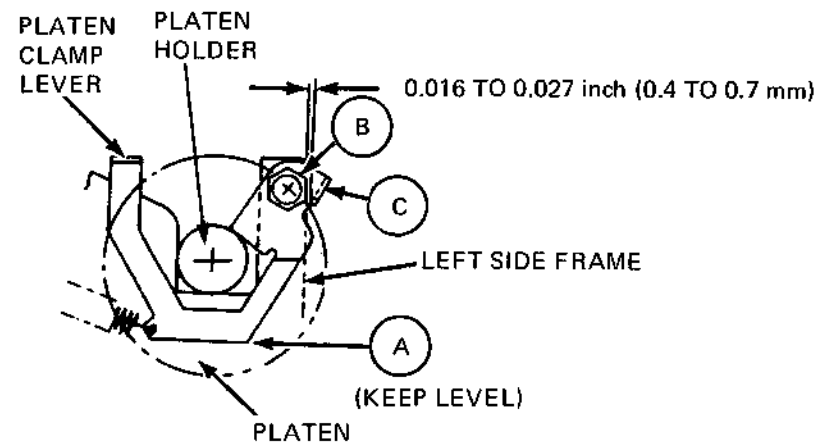


Figure 5-9 Platen Clamp Lever Adjustment

### 5.6 PLATEN GEAR ADJUSTMENT

Use this procedure to adjust the platen gear.

- Remove the platen assembly.
- Loosen the three screws (B) on the line feed motor (see Figure 5-10).
- Loosen screw A and adjust the eccentric idler shaft for zero backlash between the line feed idler gear and motor gear.
- Retighten screw A and check for smooth rotation, feeling only the inherent friction of the motor.
- Attach the platen assembly.

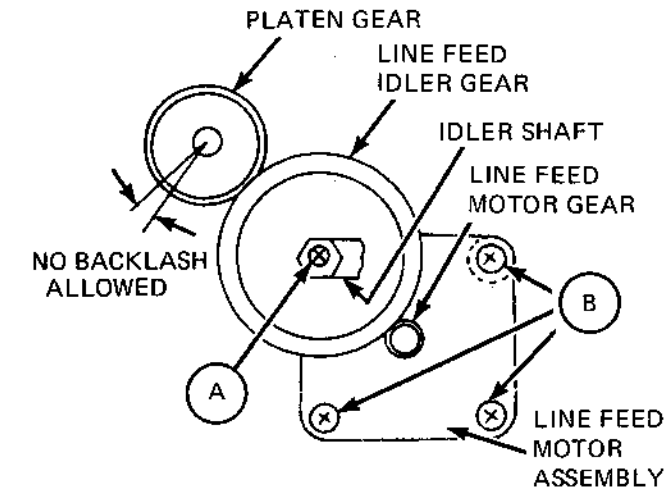


Figure 5-10 Platen Gear Adjustment

- Position the line feed motor for zero backlash between the line feed idler gear and the platen gear. Retighten the three screws (B). Do not overtighten these screws.
- Check for smooth rotation of the gears in both directions, feeling only the inherent friction of the line feed motor.

### 5.7 PLATEN HEIGHT

Use this procedure to adjust the platen height.

#### CAUTIONS

- This adjustment is made in the factory with special jigs. Do not attempt this adjustment in the field unless copy quality is illegible.
  - Reverse the platen assembly to ensure that the problem is not caused by a worn platen. Replace the platen in its correct position when completed. Also check for a worn ribbon or print thimble. If none of these checks correct the problem and you choose to adjust the platen height, follow this adjustment procedure.
- If print density varies from top to bottom of the character, platen height can be adjusted by screw A (see Figure 5-11). There is one on each side.



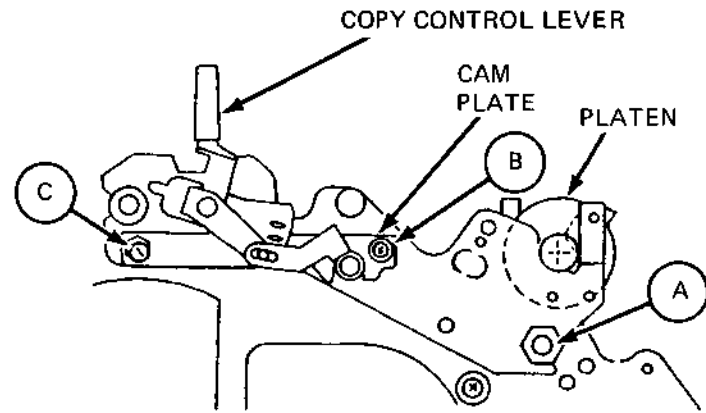


Figure 5-11 Platen Height Adjustment

- b. If print density varies from left to right of the print line, insert a worn ribbon and set the forms thickness lever for the lightest print possible on the acceptable side. (With a worn ribbon, it is easier to adjust the print line for equal print density throughout without overshooting the correct position of the platen.)
- c. Loosen screw B on the unacceptable end of the print line and adjust screw C until print density is uniform.

#### 5.8 FIRST PRINT POSITION AND RIGHT EMERGENCY PLATE ADJUSTMENTS

Perform the following procedures to adjust the first print position and the right EM plate.

##### 5.8.1 First Print Position Adjustment

Use this procedure to adjust the first print position.

- a. The first print position (the extreme left position) should be  $2.28 \pm 0.012$  inches ( $58 \pm 0.3$  mm) from the left side frame as shown in Figure 5-12. To adjust to this position, slide the left side EM plate on the base frame in the required direction (as indicated by the arrows).
- b. Confirm that the EM plate does not interfere with the sensor on the bottom of the carriage.

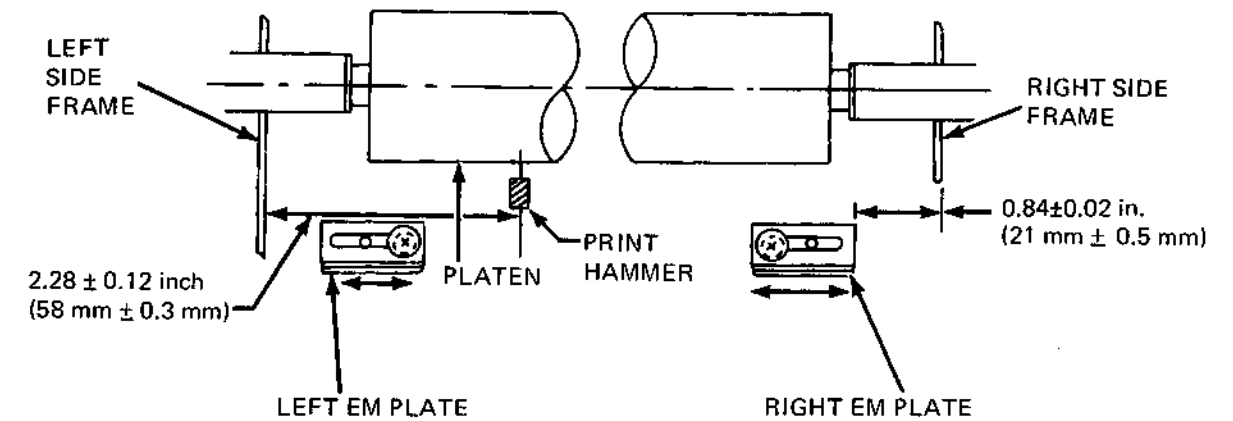


Figure 5-12 First Print Position and Right EM Plate Adjustment

- c. Confirm that the setting is correct by putting a sheet of paper in the printer so that the left edge of the paper is flush with the left side frame, powering up the printer, printing some test characters, and measuring the distance from the left side frame to the center of the first character.

##### 5.8.2 Position of Right EM Plate

Use this procedure to adjust the right EM plate.

- a. Position the right side EM plate  $0.84 \pm 0.02$  inch ( $21 \pm 0.5$  mm) from the inside of the right side frame as shown in Figure 5-12.
- b. Confirm that there is no interference between the EM plate and the sensor on the bottom of the carriage.

#### 5.9 PRESSURE ROLLER ADJUSTMENT

Use this procedure to adjust the pressure rollers.

- a. Remove the middle cover (see Section 4.1).
- b. Remove the paper guide (see Section 4.3).
- c. Replace the platen.
- d. Pull the copy control lever (see Figure 1-1) towards the front of the Spinwriter. Be sure this lever remains forward for the rest of this procedure.

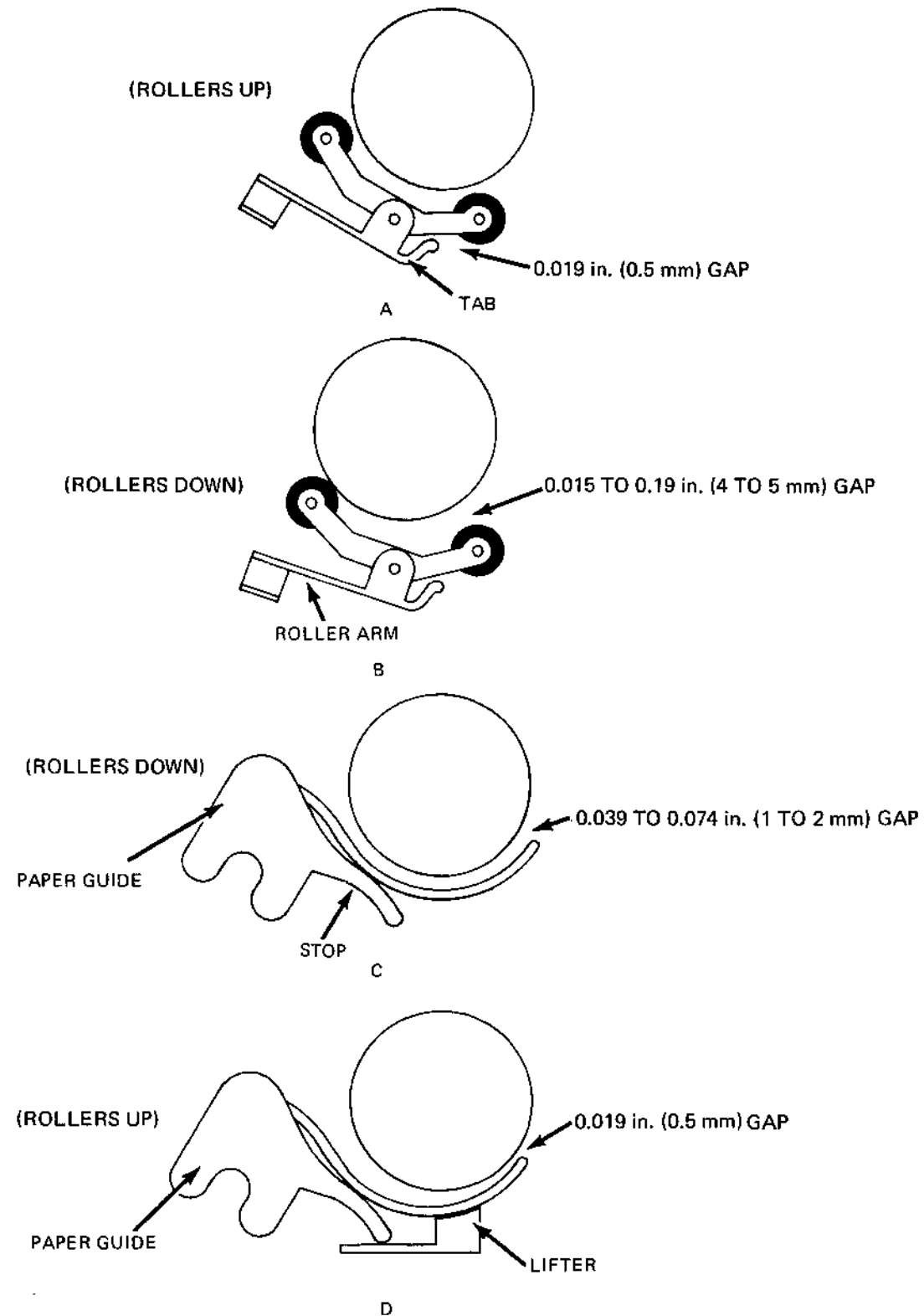


Figure 5-13 Pressure Roller Adjustment

- e. Push the paper release lever (see Figure 1-1) towards the rear of the Spinwriter. This action moves the pressure rollers up against the platen. Bend the roller assembly tabs (see Figure 5-13A) for a 0.019 inch (0.5 mm) gap between the tabs and the roller frames.
- f. Pull the paper release lever towards the front of the Spinwriter. This action lowers the pressure rollers. Bend the roller assembly roller arms (see Figure 5-13B) for a 0.15 to 0.19 inch (4 to 5 mm) gap between the front rollers and the platen.
- g. Remove the platen. Replace the paper guide (see Section 4.4). Replace the platen.
- h. With the pressure rollers remaining in the down position, bend the paper guide stops (see Figure 5-13C) for a gap of 0.039 to 0.074 inch (1 to 2 mm) between the front edges of the paper guide and the platen.
- i. Push the paper release lever towards the rear of the Spinwriter. Bend the roller assembly lifters (see Figure 5-13D) for a gap of 0.019 inch (0.5 mm) between the front edges of the paper guide and the platen.

## NOTE

Make sure the platen operates smoothly.

- j. Remove the platen. Replace the middle cover (see Section 4.2).

## 5.10 TRACTOR ASSEMBLY ADJUSTMENT (OPTION)

Use this procedure to adjust the vertical forms tractor.

- a. Remove the three screws holding the right cover. Remove the cover.
- b. Remove the three screws holding the left cover. Remove the cover.
- c. Loosen the screws (if necessary) that hold the steel rods in position.
- d. Mount the vertical tractor assembly on the Spinwriter.
- e. Adjust the tractor assembly so that the steel rods are parallel. Tighten the screws.

- f. Coat the screws with semipermanent sealant such as Loctite #222.

NOTE

If the screw holes have become so worn that the screws will not tighten, insert extra washers, then tighten the screws.

- g. If you have a loose idler gear on the tractor assembly, loosen the screw that holds the idler gear, adjust the idler gear for zero backlash, then tighten the screw that holds the idler gear.

CAUTION

Do not mesh the gears too tightly or damage can result. Make sure the idler gear turns freely.

- h. Remove the vertical tractor assembly from the Spinwriter. Replace the vertical tractor assembly covers.

5.11 PRESSURE BAIL ROLLER ADJUSTMENT

Use this procedure to adjust the pressure bail rollers.

- a. Slide the bail rollers (Figure 5-14) until they are outside the rubber part of the platen.

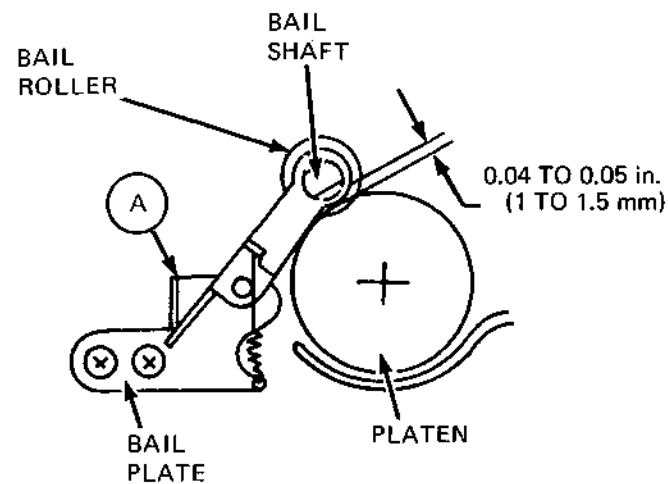


Figure 5-14 Pressure Bail Roller Adjustment

- b. Confirm that the gap between the bail shaft and the platen is within a range of 0.04 to 0.06 inch (1 to 1.5 mm).

- c. Bend the stopper A of the bail plate as required.

5.12 WIRE ROPE TENSION ADJUSTMENT

Use this procedure to adjust the wire rope tension.

- a. Loosen nut B (see Figure 5-15) on the left side guide pulley.
- b. Position the carriage at the far right margin.

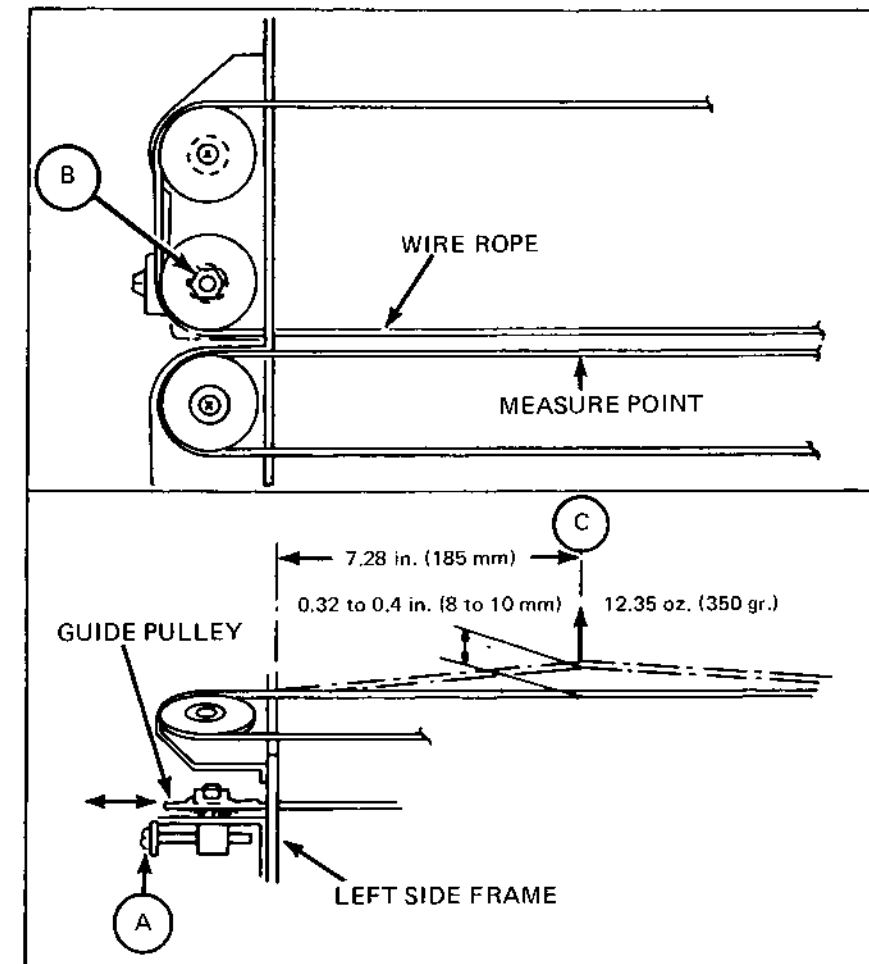


Figure 5-15 Wire Rope Adjustment

- c. Pull up on the wire rope at a point (C) 7.28 inches (185 mm) from the left side frame with a spring force of 12-1/4 oz (350 grams). Use a spring tension gauge with maximum range of 700 grams.
- d. Adjust screw A to produce a wire rope deflection of 0.32 to 0.4 inch (8 to 10 mm).
- e. Move the carriage unit to the right and left about ten times, then place it at the right end.
- f. Reconfirm step d. If the wire rope deflection is out of range, repeat steps c through e.
- g. Position the carriage at the far left margin.
- h. Pull up on the wire rope at a point 7.28 inches (185 mm) from the right side frame with a spring force of 12-1/4 oz (350 grams).
- i. Confirm a wire deflection of 6 to 10 mm. If the wire rope deflection is within range, tighten nut B. If the wire rope deflection is out of range, repeat steps b through h. That is, if a wire deflection is 8 to 10 mm, another deflection is allowed from 6 to 10 mm (see Table 5-1).

Table 5-1 Wire Rope Adjustment Specifications

DEFLECTION (mm)		ACCEPTABLE
LEFT SIDE	RIGHT SIDE	
8 to 10	8 to 10	Yes
6 to 8	8 to 10	Yes
8 to 10	6 to 8	Yes
6 to 8	6 to 8	No

## 5.13 PAPER OUT SWITCH ADJUSTMENT

Use this procedure to adjust the paper out switch.

- a. With the paper properly loaded, the paper end detector must not contact the actuator of the paper out switch (see Figure 5-16).
- b. When the paper is out, the paper out switch is activated by the paper end detector dropping to the paper out switch.
- c. If steps a and b are not satisfied, bend the paper end detector with pliers so that it will operate the switch properly.

## CAUTION

Be very careful when you adjust the paper end detector. Too much pressure will damage the assembly.

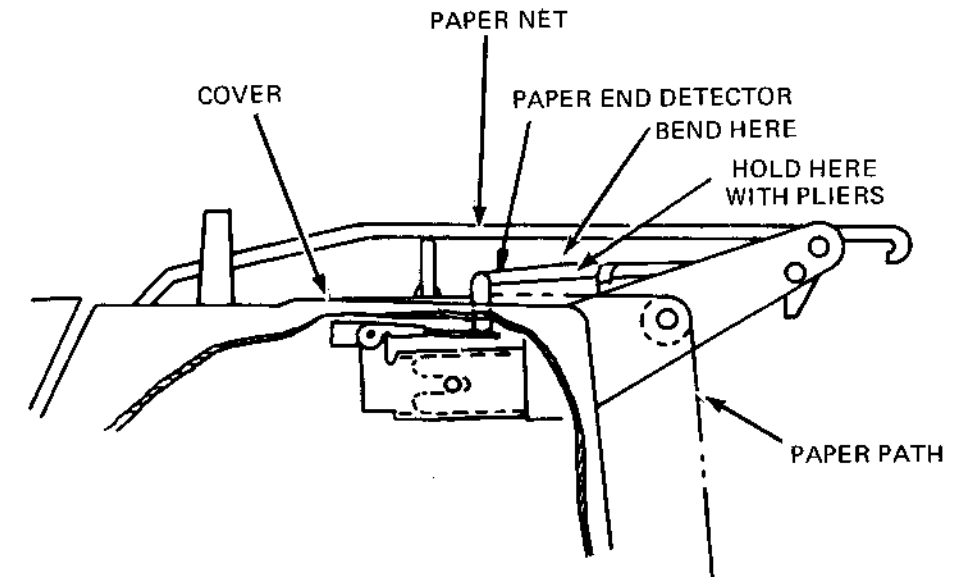


Figure 5-16 Paper Out Switch Adjustment

#### 5.14 COVER OPEN SWITCH ADJUSTMENT

Use this procedure to adjust the cover open switch.

- a. Raise the top cover.
- b. Loosen the two screws and adjust the cover open switch assembly so that the high point of the switch feeler engages the switch actuator with the cover closed.

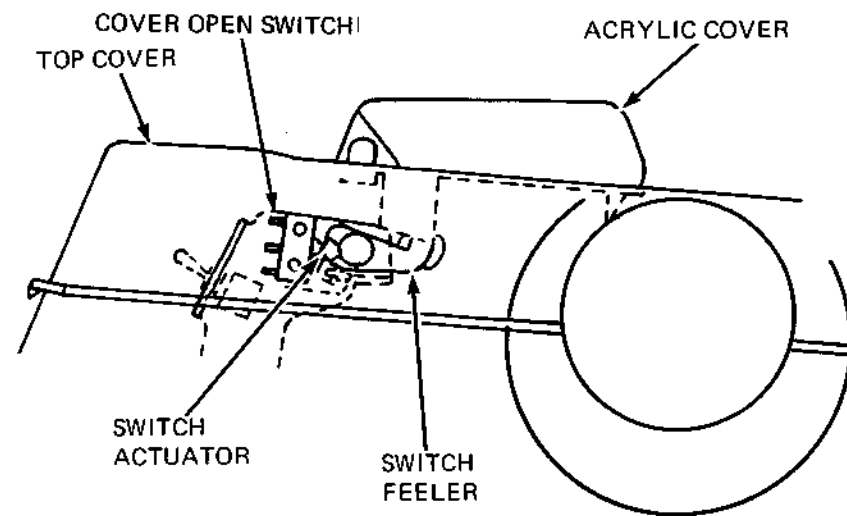


Figure 5-17 Cover Open Switch Adjustment



## 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 7700 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 in four columns.

- Item - contains the item numbers referred to in the callouts.
- 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
a.		b.		c.		d.

Galvanized pan-head metric screw with cross groove, where nominal diameter is 3 mm and length is 6 mm.

- 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	}	SEMUSU screw
S-CP○MS		
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.

Table 6-1 IPB List of Illustrations

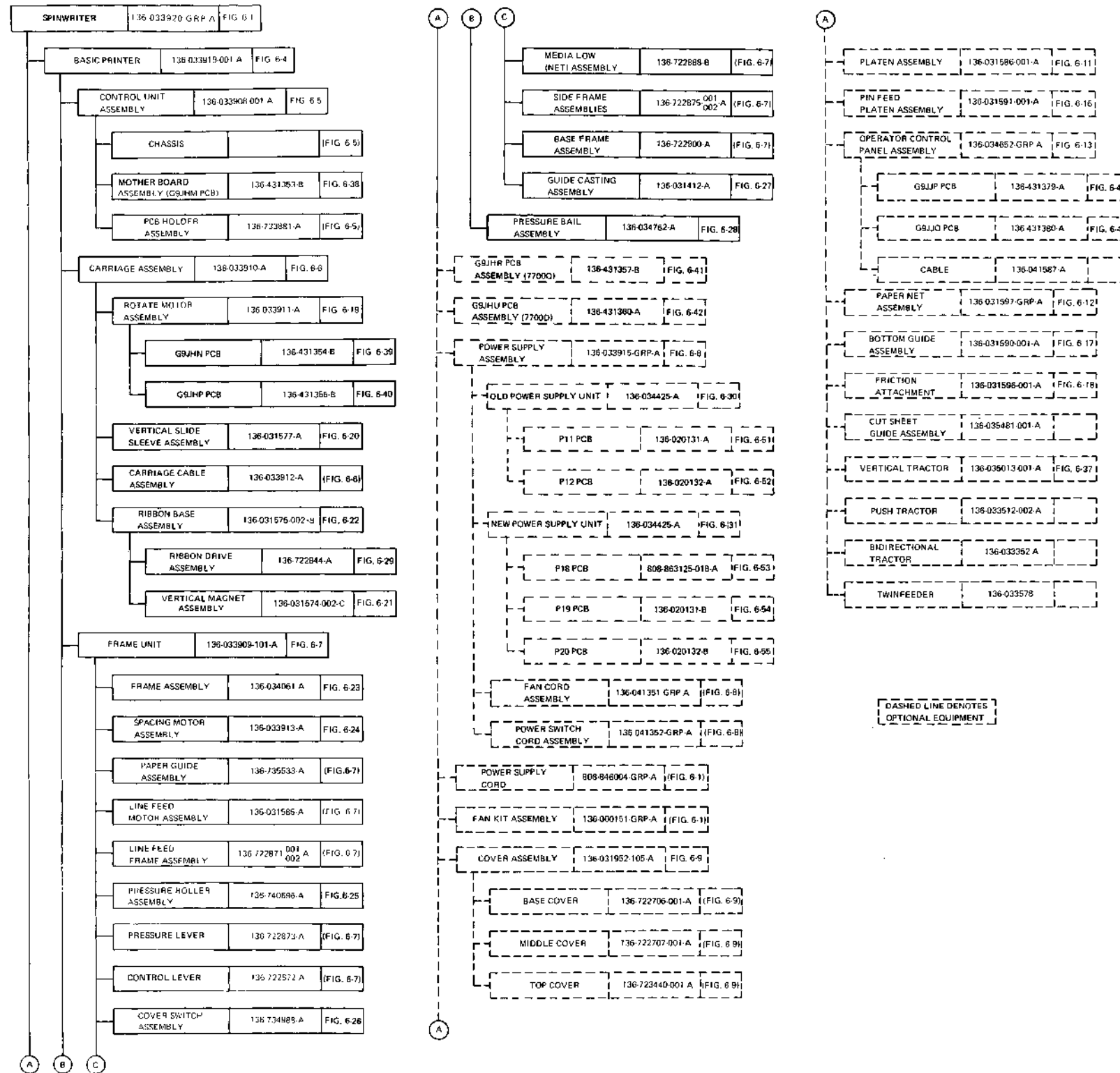
FIGURE NUMBER	DESCRIPTION	PART NUMBER
6-1	Spinwriter - Basic Models	136-033920-GRP-A
6-2	Spinwriter - RO Models	136-033920-GRP-A
6-3	Spinwriter - KSR Models	136-033920-GRP-A
6-4	Basic Printer	136-033919-001-A
6-5	Control Unit Assembly	136-033908-001-A
6-6	Carriage Assembly	136-033910-A
6-7	Frame Unit	136-033909-101-A
6-8	Power Supply Assembly	136-033915-GRP-A
6-9	Cover Assembly - Basic and RO	136-031592-GRP-A
6-10	Cover Assembly - KSR	136-031593-GRP-A
6-11	Platen Assembly	136-031586-001-A
6-12	Paper Net Assembly	136-031597-GRP-A
6-13	Operator Control Panel Assembly - Basic	136-034562-GRP-A
6-14	Operator Control Panel Assembly - RO and KSR	136-034651-GRP-A
6-15	Keyboard Assembly	136-031569-GRP-A

Table 6-1 IPB List of Illustrations (cont'd)

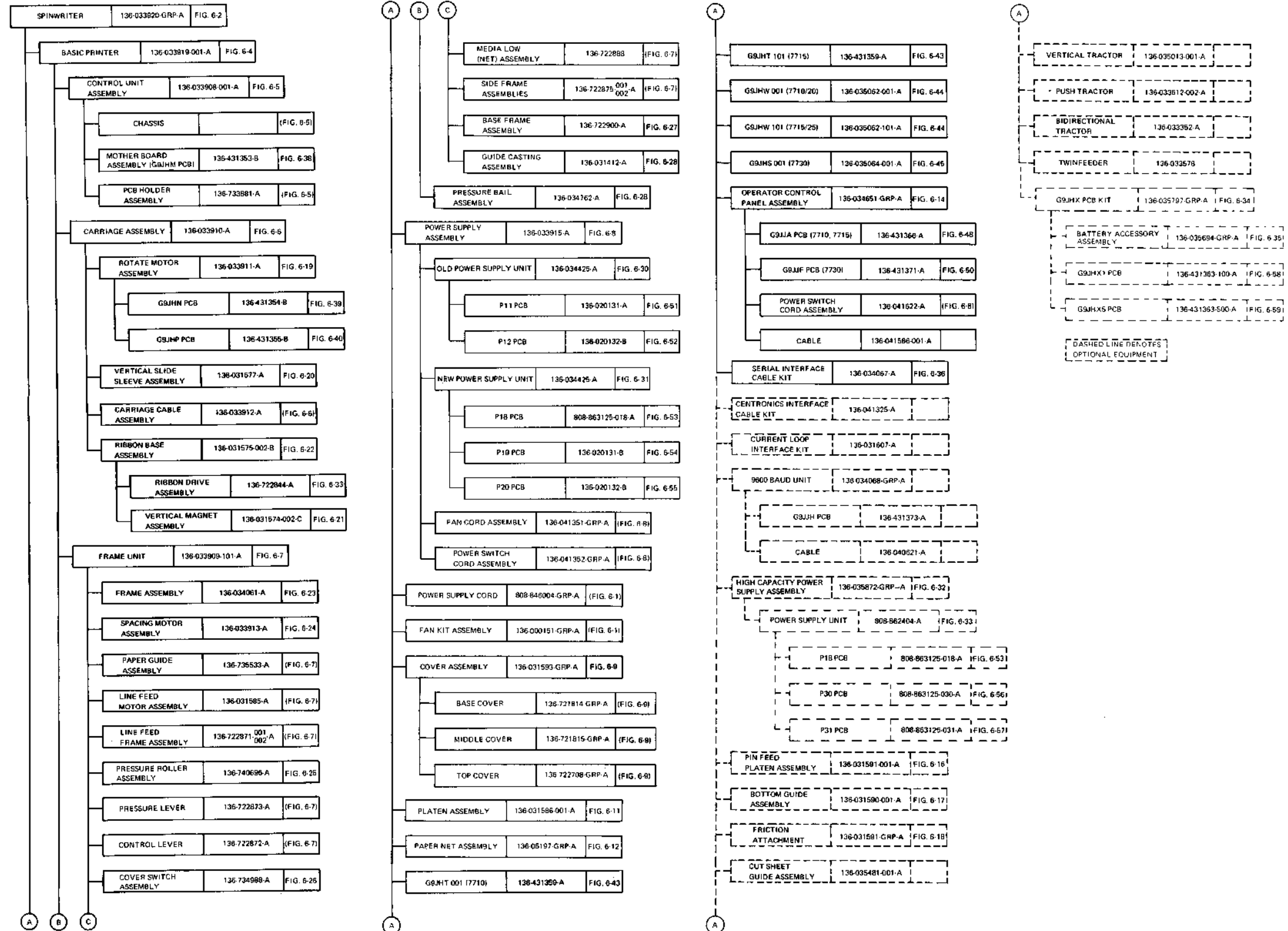
FIGURE NUMBER	DESCRIPTION	PART NUMBER
6-16	Pin Feed Platen Assembly	136-031591-001-A
6-17	Bottom Guide Assembly	136-031590-001-A
6-18	Friction Attachment	136-031596-001-A
6-19	Rotate Motor Assembly	136-033911-A
6-20	Vertical Slide Sleeve Assembly	136-031577-A
6-21	Vertical Magnet Assembly	136-031574-002-C
6-22	Ribbon Base Assembly	136-031575-002-B
6-23	Frame Assembly	136-034061-A
6-24	Spacing Motor Assembly	136-033913-A
6-25	Pressure Roller Assembly	136-740696-A
6-26	Cover Switch Assembly	136-734988-A
6-27	Guide Casting Assembly	136-031412-A
6-28	Pressure Bail Assembly	136-034762-A
6-29	Ribbon Drive Assembly	136-722844-A
6-30	Old Power Supply Unit	136-034425-A
6-31	New Power Supply Unit	136-034425-A
6-32	High Capacity Power Supply Assembly	136-035872-GRP-A
6-33	High Capacity Power Supply Unit	808-862404-202-A
6-34	G9JHX PCB Kit	136-035797-GRP-A
6-35	Battery Accessory Assembly	136-035694-001-A
6-36	Serial Interface Cable Assembly	136-034067-A
6-37	Vertical Forms Tractor	136-035013-001-A
6-38	Mother Board Assembly (G9JHM PCB)	136-431353-B
6-39	G9JHN PCB	136-431354-B
6-40	G9JHP PCB	136-431355-B
6-41	G9JHR PCB	136-431357-B
6-42	G9JHU PCB	136-431360-A
6-43	G9JHT PCB	136-431359-A
6-44	G9JHW PCB	136-431362-A
6-45	G9JHS PCB	136-431358-A
6-46	G9JJP PCB	136-431379-A
6-47	G9JJQ PCB	136-431380-B
6-48	G9JJA PCB	136-431366-A
6-49	G9JJB PCB	136-431367-A
6-50	G9JJF PCB	136-431371-A
6-51	P11 PCB	136-020131-A
6-52	P12 PCB	136-020132-A
6-53	P18 PCB	808-863125-018-A
6-54	P19 PCB	136-020131-B
6-55	P20 PCB	136-020132-B
6-56	P30 PCB	808-863125-030-A
6-57	P31 PCB	808-863125-031-A
6-58	G9JHX1 PCB	136-431363-100-A
6-59	G9JHX5 PCB	136-431363-500-A



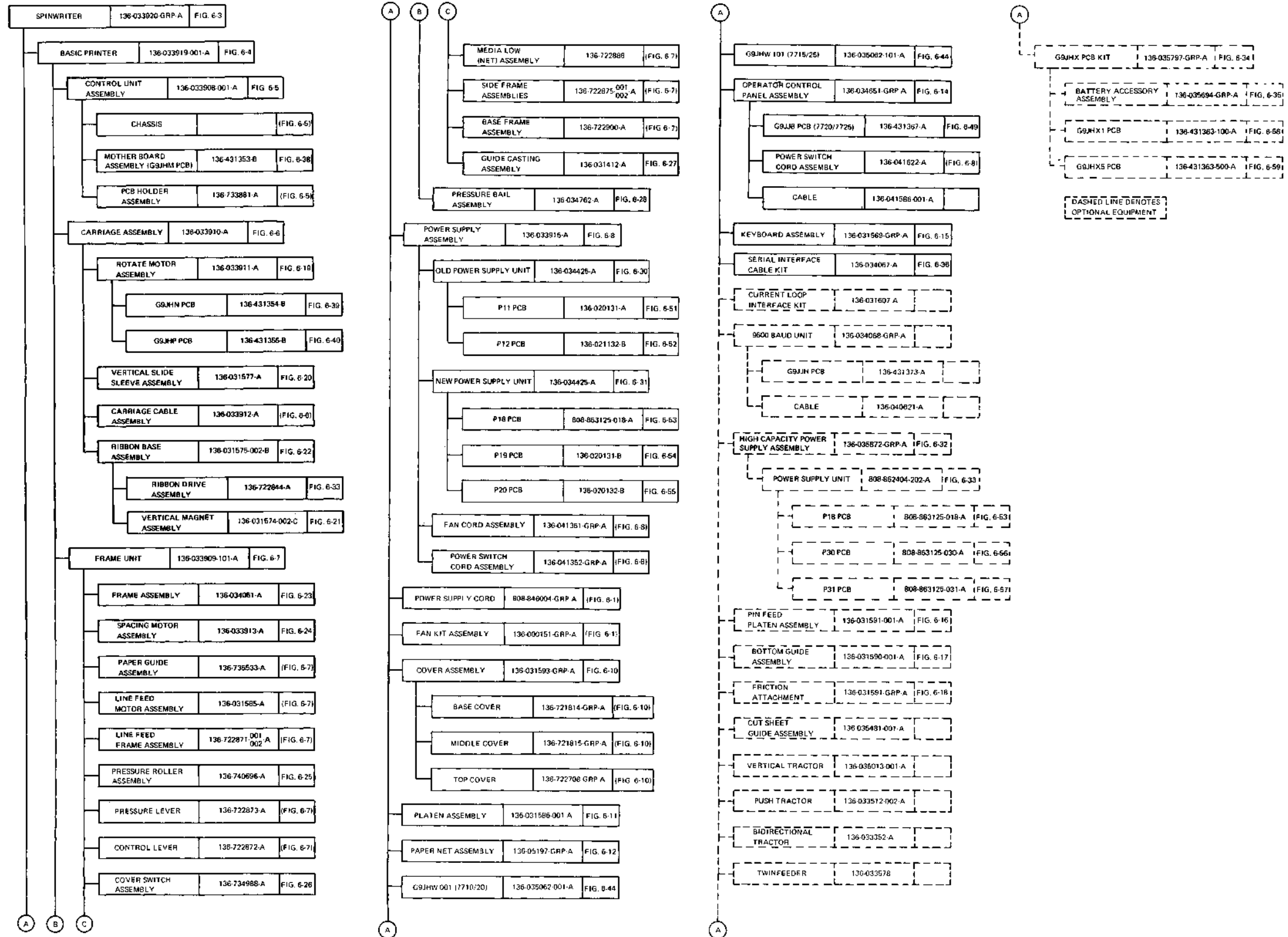
# FAMILY TREE—BASIC MODEL

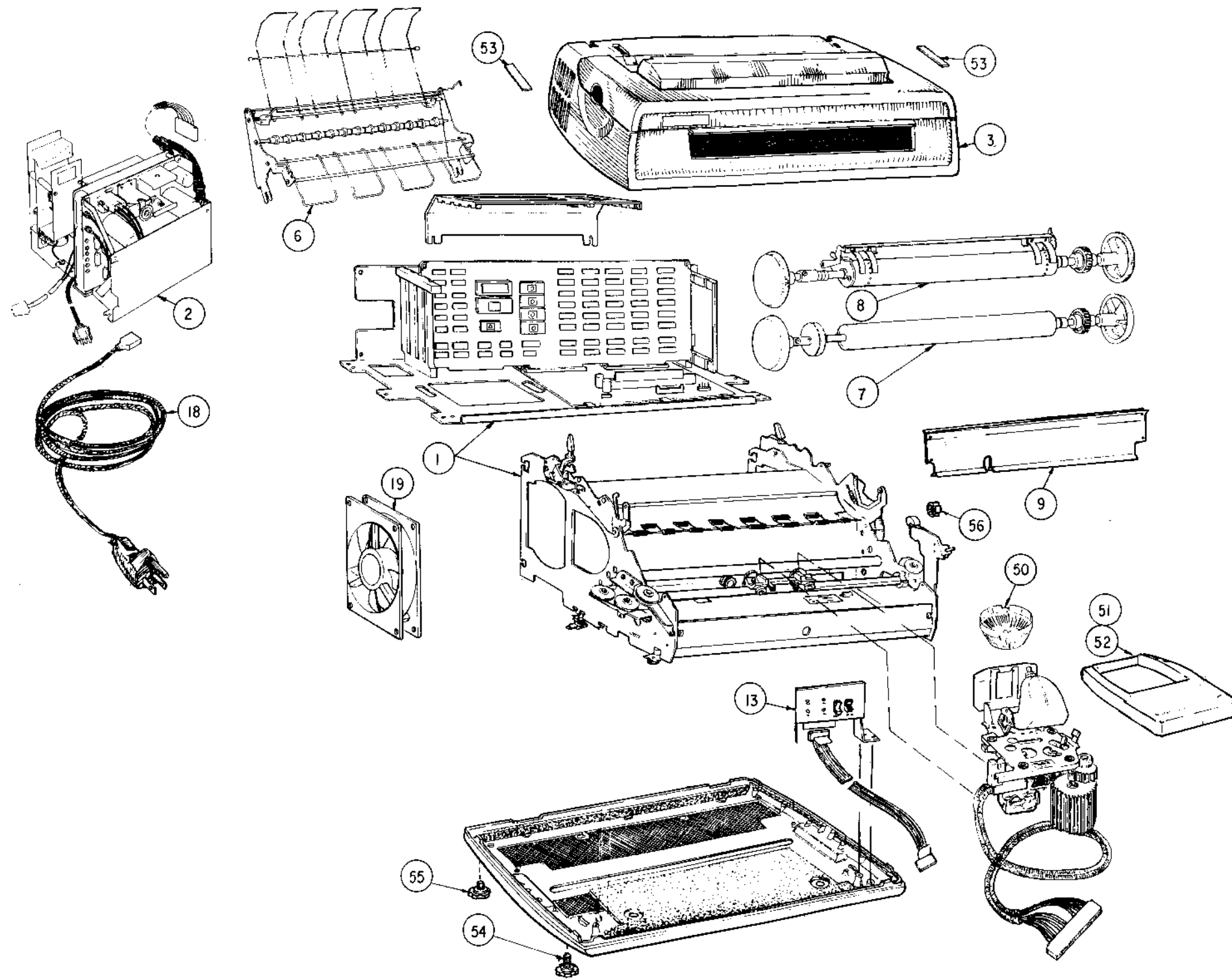


FAMILY TREE-RO MODELS



## FAMILY TREE—KSR MODELS

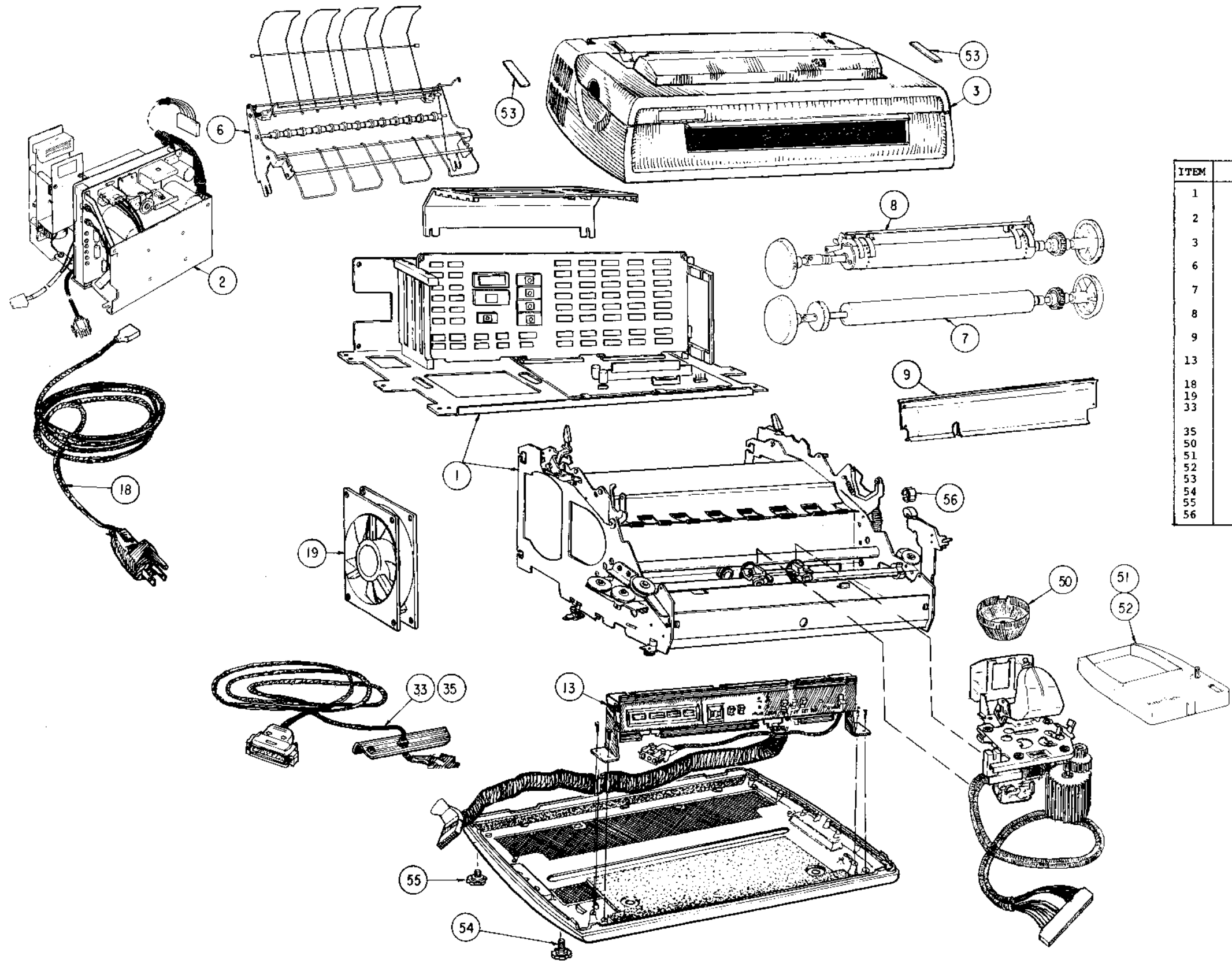




136-033920-GRP-A Spinwriter - Basic Models

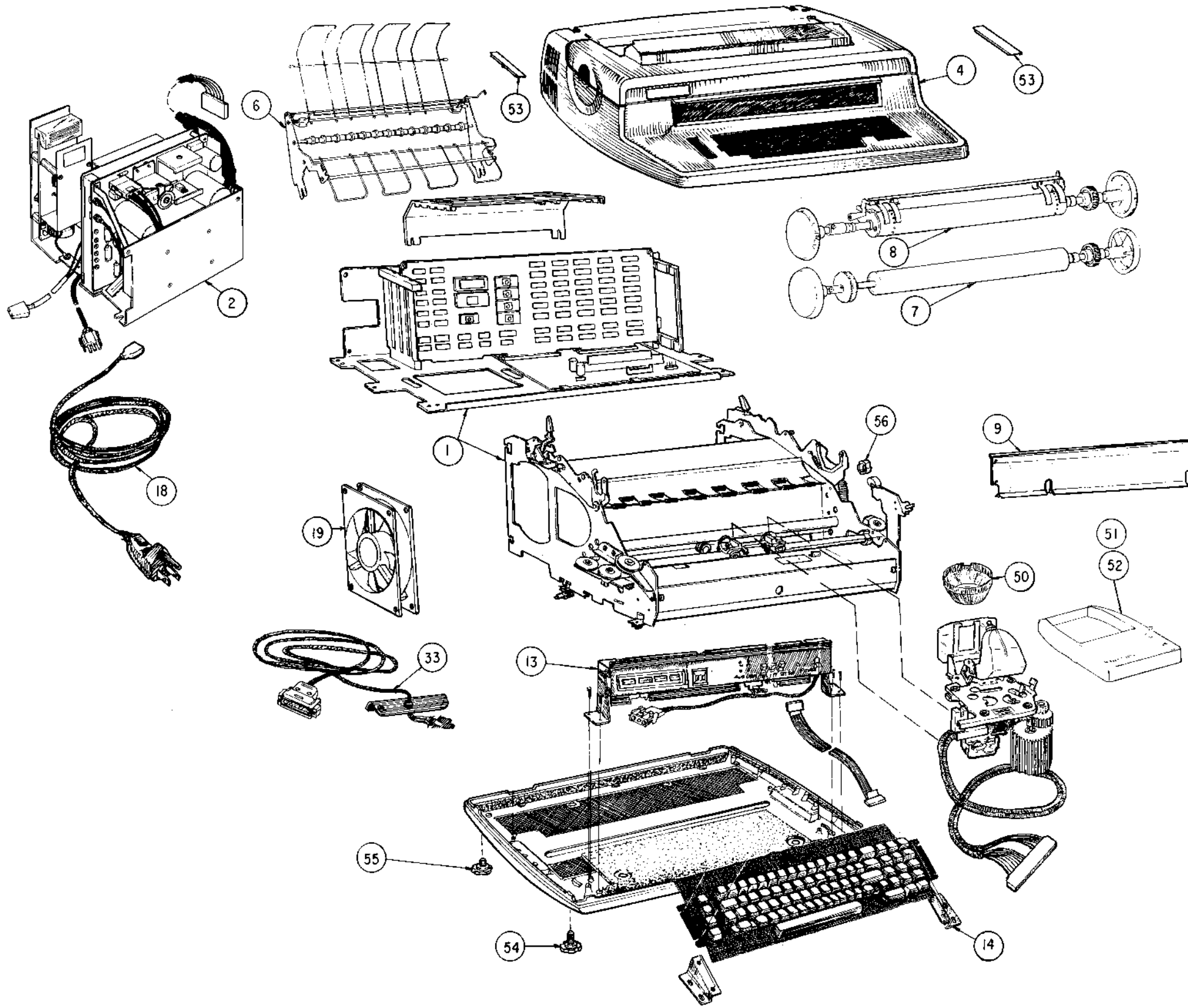
ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-033919-GRP-A	Basic Printer (See Figure 6-4 for Breakdown)	1
2	136-033915-GRP-A	Power Supply Assembly (See Figure 6-8 for Breakdown)	1
3	136-031592-GRP-A	Cover Assembly - Basic and RC (See Figure 6-9 for Breakdown)	1
6	163-031597-GRP-A	Paper Net Assembly (See Figure 6-12 for Breakdown)	1
7	136-031586-A	Platen Assembly (See Figure 6-11 for Breakdown)	1
8	136-031591-GRP-A	Pin Feed Platen Assembly (See Figure 6-16 for Breakdown)	1
9	136-031590-GRP-A	Bottom Guide Assembly (See Figure 6-17 for Breakdown)	1
13	136-034652-GRP-A	Operator Control Panel Assembly (See Figure 6-13 for Breakdown)	1
18	808-846004-GRP-A	Power Cord	1
19	136-000151-GRP-A	Fan (115 Vac)	1
50	803-020004-GRP-A	Print Thimble	AR
51	803-020006-GRP-A	Ribbon	AR
52	803-020025-GRP-A	Ribbon	AR
53	158-030002-102	Cover Inserts	2
54	136-732212-A	Shipping Bolt - Long	2
55	136-732211-A	Shipping Bolt - Short	1
56	136-780071-A	Carriage Bumper	2

Figure 6-1 Spinwriter - Basic Models



ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-033919-GRP-A	Basic Printer (See Figure 6-4 for Breakdown)	1
2	136-033915-GRP-A	Power Supply Assembly (See Figure 6-8 for Breakdown)	1
3	136-031592-GRP-A	Cover Assembly - Basic and RO (See Figure 6-9 for Breakdown)	1
6	163-031597-GRP-A	Paper Net Assembly (See Figure 6-12 for Breakdown)	1
7	136-031586-A	Platen Assembly (See Figure 6-11 for Breakdown)	1
8	136-031591-GRP-A	Pin Feed Platen Assembly (See Figure 6-16 for Breakdown)	1
9	136-031590-GRP-A	Bottom Guide Assembly (See Figure 6-17 for Breakdown)	1
13	136-034651-GRP-A	Operator Control Panel Assembly (See Figure 6-14 for Breakdown)	1
18	808-846004-GRP-A	Power Cord	1
19	136-000151-GRP-A	Fan (115 Vac)	1
33	136-034067-A	Serial Interface Cable Kit (See Figure 6-36 for Breakdown)	1
35	136-033918-A	Centronics Interface	1
50	803-020004-GRP-A	Print Thimble	AR
51	803-020006-GRP-A	Ribbon (Fabric)	AR
52	803-020025-GRP-A	Ribbon (Multistrike)	AR
53	158-830002-102	Cover Inserts	2
54	136-732212-A	Shipping Bolt - Long	2
55	136-732211-A	Shipping Bolt - Short	1
56	136-780071-A	Carriage Bumper	2

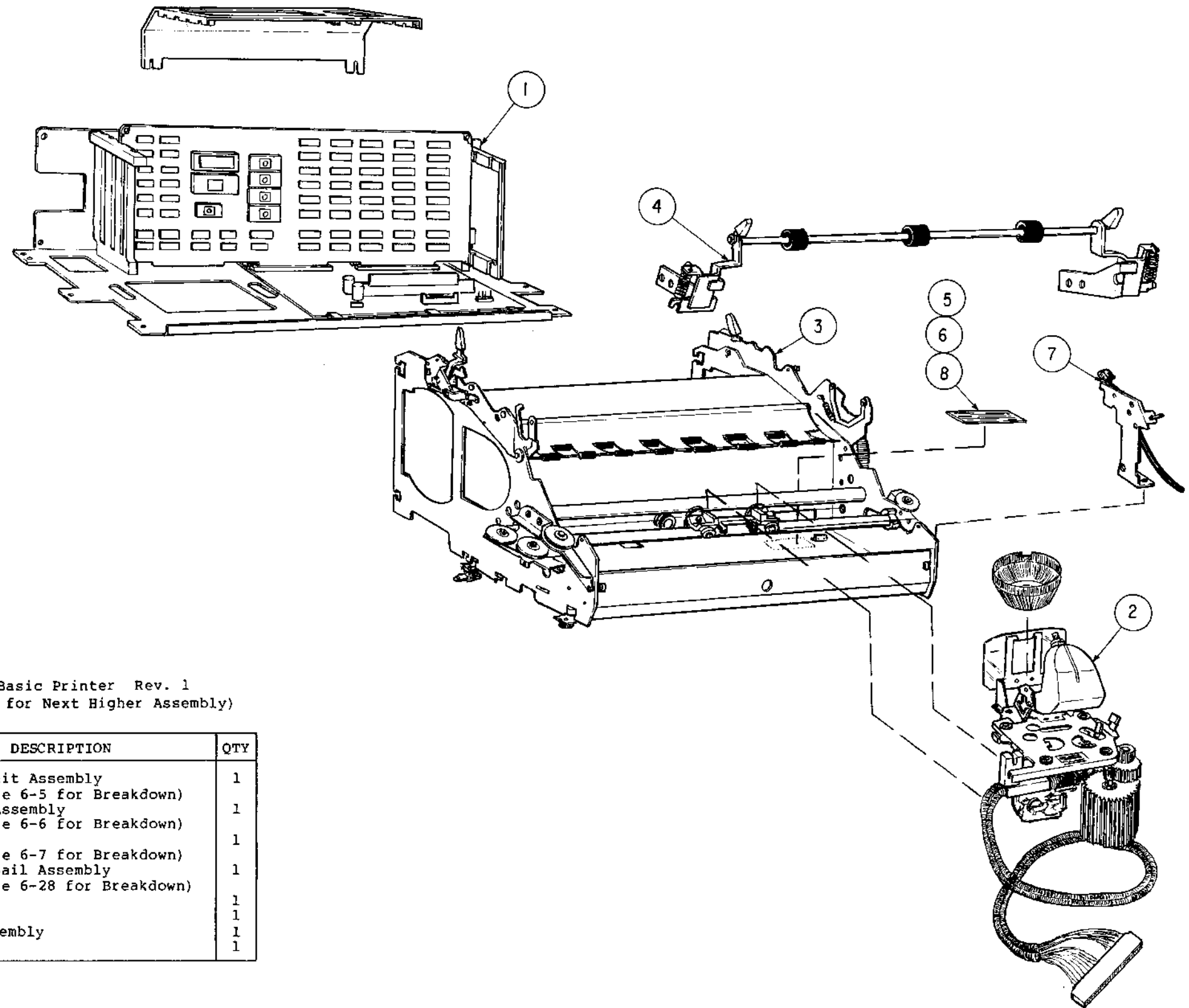
Figure 6-2 Spinwriter - RO Models



136-033920-GRP-A Spinwriter - KSR Models

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-033919-GRP-A	Basic Printer (See Figure 6-4 for Breakdown)	1
2	136-033915-GRP-A	Power Supply Assembly (See Figure 6-8 for Breakdown)	1
4	136-031593-GRP-A	Cover Assembly - KSR (See Figure 6-10 for Breakdown)	1
6	163-031597-GRP-A	Paper Net Assembly (See Figure 6-12 for Breakdown)	1
7	136-031586-A	Platen Assembly (See Figure 6-11 for Breakdown)	1
8	136-031591-GRP-A	Pin Feed Platen Assembly (See Figure 6-16 for Breakdown)	1
9	136-031590-GRP-A	Bottom Guide Assembly (See Figure 6-17 for Breakdown)	1
13	136-034651-GRP-A	Operator Control Panel Assembly (See Figure 6-14 for Breakdown)	1
14	136-031569-GRP-A	Keyboard Assembly (See Figure 6-15 for Breakdown)	1
18	808-846004-GRP-A	Power Cord	1
19	136-000151-GRP-A	Fan (115 Vac)	1
33	136-034067-A	Serial Interface Cable Kit (See Figure 6-36 for Breakdown)	1
50	803-020004-GRP-A	Print Thimble	AR
51	803-020006-GRP-A	Ribbon (Fabric)	AR
52	803-020025-GRP-A	Ribbon (Multistrike)	AR
53	158-030002-102	Cover Inserts	2
54	136-732212-A	Shipping Bolt - Long	2
55	136-732211-A	Shipping Bolt - Short	1
56	136-780071-A	Carriage Bumper	2

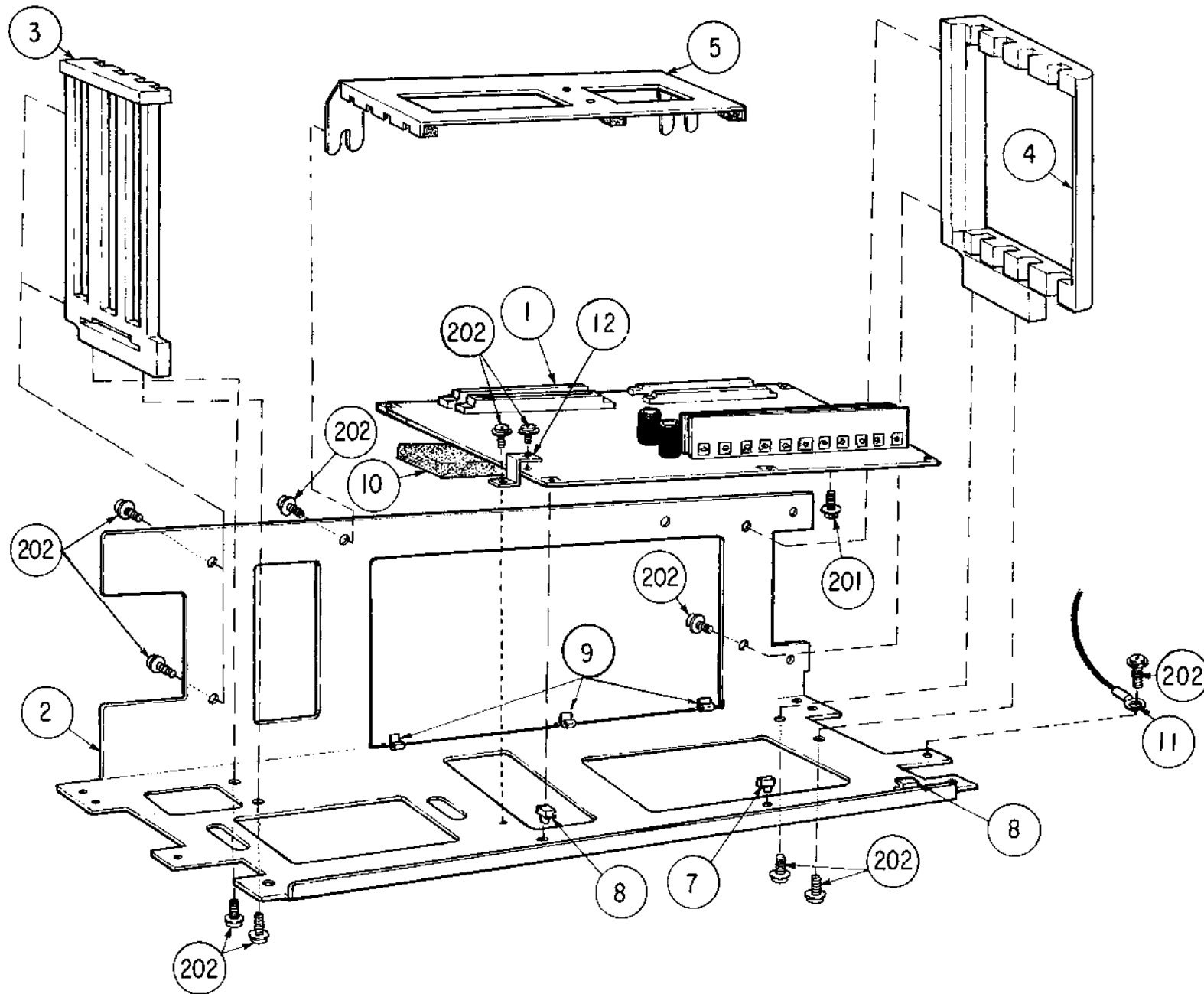
Figure 6-3 Spinwriter - KSR Models



136-033919-001-A 7700 Basic Printer Rev. 1  
 See Figures 6-1, 6-2, or 6-3 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-033908-A	Control Unit Assembly (See Figure 6-5 for Breakdown)	1
2	136-033910-A	Carriage Assembly (See Figure 6-6 for Breakdown)	1
3	136-033919-001-A	Frame Unit (See Figure 6-7 for Breakdown)	1
4	136-031587-A	Pressure Bail Assembly (See Figure 6-28 for Breakdown)	1
5	136-700655-A	Plate	1
6	136-700691-A	U L Plate	1
7	136-041321-A	RIB SW Assembly	1
8	136-700830-A	Label	1

Figure 6-4 Basic Printer



136-033908-GRP-A Control Unit Assembly Rev. 1  
(See Figure 6-4 for Next Higher Assembly)

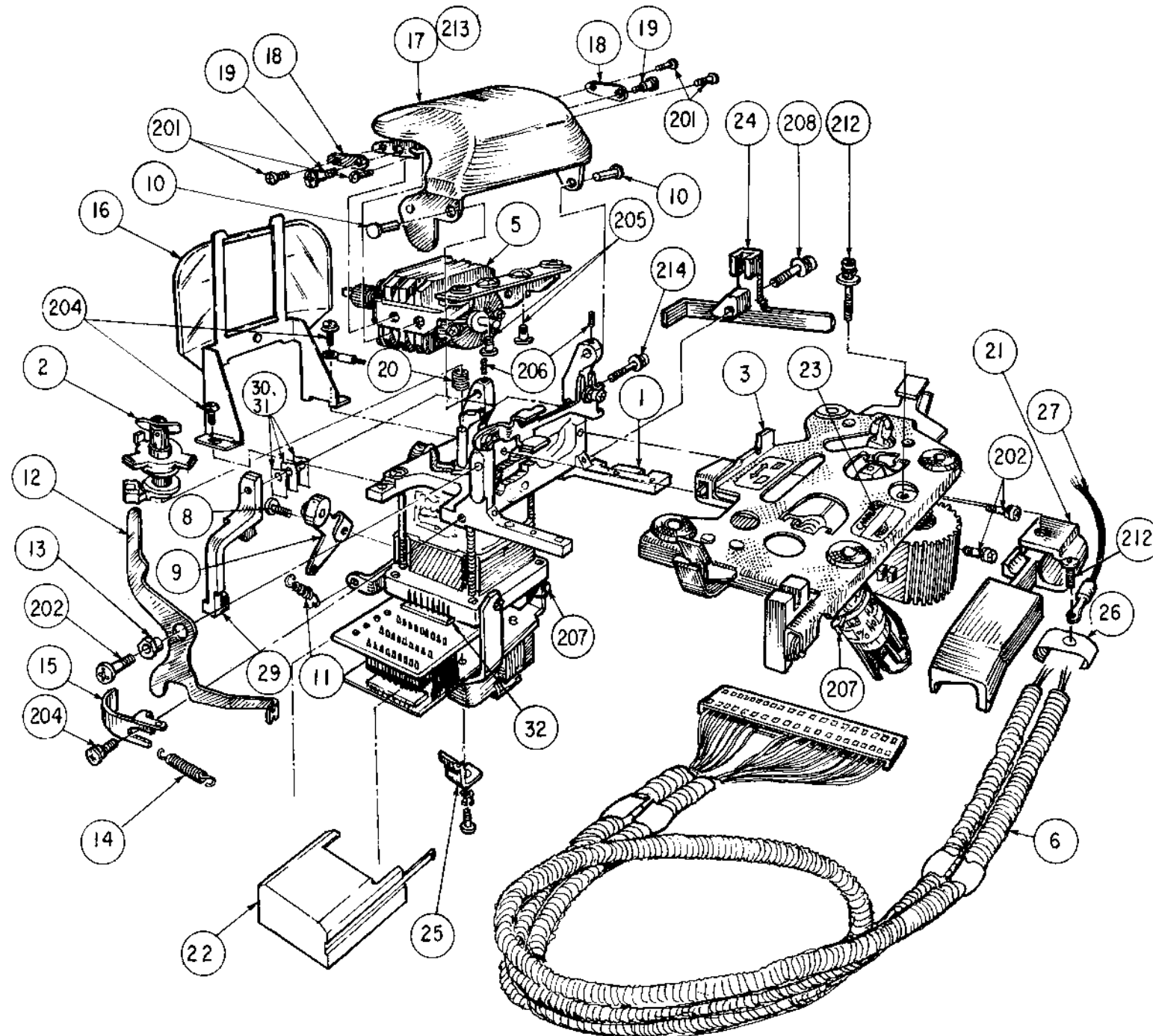
ITEM	PART NUMBER	DESCRIPTION	QTY	
			001	002
1	136-431353-A	G9JHM PCB (See Figure 6-38 for Breakdown)	1	
2	136-733880-A	Base Chassis B	1	1
3	136-723205-A	PCB Guide (L)	1	1
4	136-723206-A	PCB Guide (R)	1	1
5	136-733881-A	PCB Holder Assembly	1	1
6*	136-720164-A	Special Nut	6	6
7	136-726490-A	PC Support	1	1
8	808-811000-616-A	PC Support	2	2
9	808-811000-964-A	PC Support	3	3
10	136-733882-A	B/B Cushion	1	1
11	136-723216-002-A	Connection Cable	1	1
12	136-747364	Shorting Bar	1	1
201*	805-000004-014-0	CPIMSx4x14x15BF	3	3
202	805-300004-008-0	PL-CPIMSx4x8x15BF	11	11
203*	805-300004-016-0	PL-CPIMSx4x16x15BF	4	4
204*	805-500004-0	AHEXINx4x15BF	1	1
205*	805-610004-0	PIWAX4x15BF	1	1
206*	805-622004-0	#2STLWAX4x15BF	1	1

\* All of these items, except for one of item 201, are attaching parts that are not shown in this drawing.

Figure 6-5 Control Unit Assembly



136-033910-A Carriage Assembly Rev. 3  
(See Figure 6-4 For Next Higher Assembly)



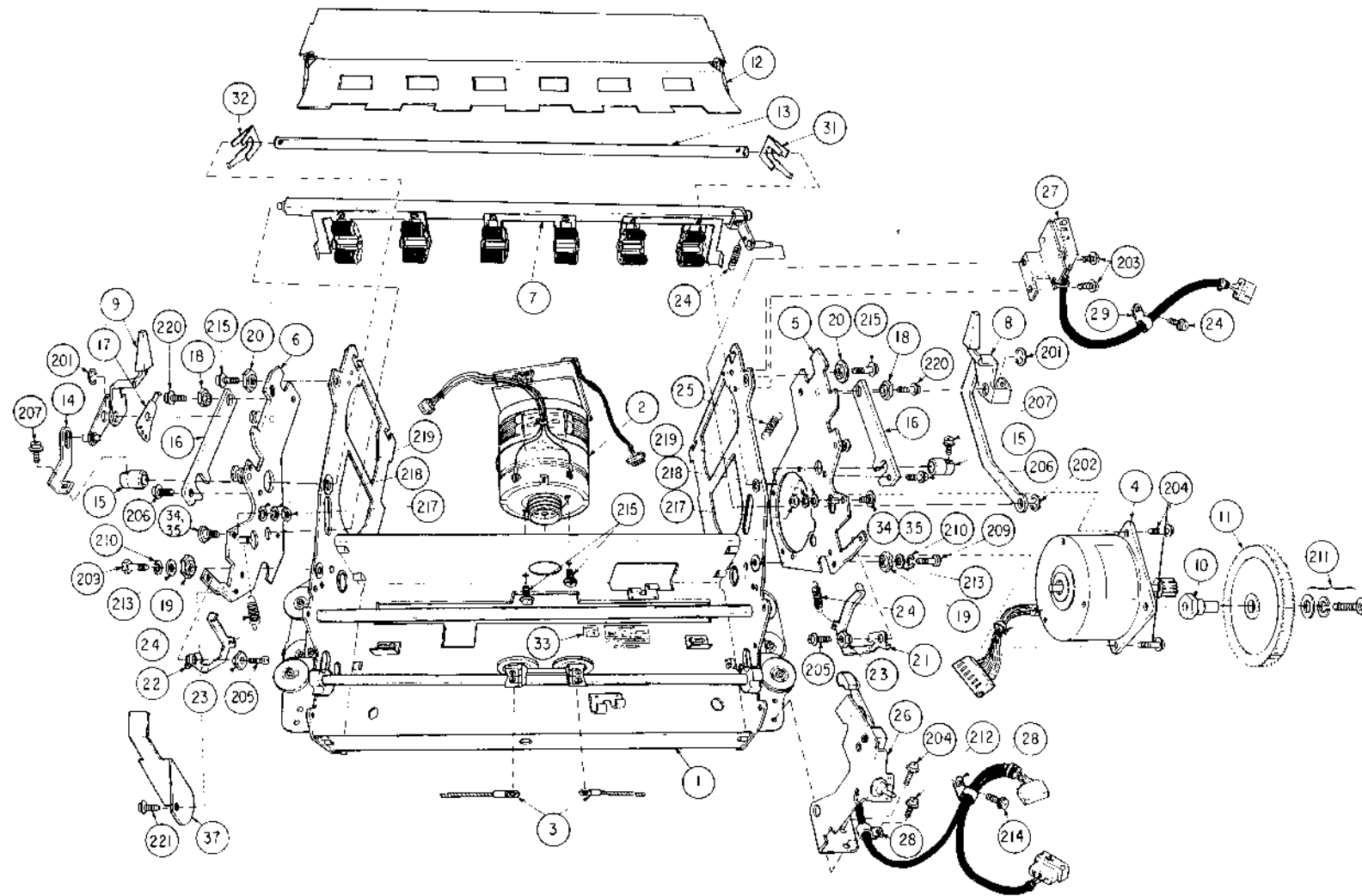
ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-033911-A	Rotate Motor Assembly (See Figure 6-19 for Breakdown)	1
2	136-031577-A	Vertical Slide Sleeve Assembly (See Figure 6-20 for Breakdown)	1
3	136-031575-002-B	Ribbon Base Assembly (See Figure 6-22 for Breakdown)	1
5	136-032022-B	Print Hammer Assembly	1
6	136-033912-B	Carriage Cable Assembly	1
8	136-722866-A	Pivot Screw	1
9	136-720287-A	Bearing Holder Assembly	1
10	136-710139-A	Stud (Hammer Cover)	2
11	136-720250-A	Bearing Holder Spring	1
12	136-711966-A	Lock Lever	1
13	136-711967-A	Eccentric Stud	1
14	136-711968-A	Lock Lever Spring	1
15	136-720254-B	Lock Lever Guide	1
16	136-720571-A	Card Holder Assembly	1
17	136-720288-A	Hammer Cover Assembly	1
18	136-712201-A	Position Plate	2
19	136-723810-A	Shoulder Screw	2
20	136-722836-A	Vertical Spring	1
21	136-723807-A	Cable Clamp A	1
22	136-734985-A	Inductosyn Cover	1
23	136-700608-001-A	Unit Label	1
24	136-723814-A	Cable Cover	1
25	136-723826-A	Cable Clamp B	1
26	136-725752-A	Spacer A	1
27	136-725750-A	Carrier FG Cable	1
29*	136-726414-A	Stopper Assembly	1
30*	136-726418-001-A	Shim	3
31*	136-726418-002-A	Shim	3
32	808-837001-A	Connector	1
201	805-300025-005-0	PL-CPIMS 2.5x5x15BF	4
202	805-310003-008-0	SL-CPIMS 3x8x15BF	3
204	805-300003-008-0	PL-CPIMS 3x8x15BF	3
205	805-330002-004-0	L-CPIMS 2x4x15BF	2
206	808-802002-303-0	Set Screw M3xL3	2
207	808-814004-923-A	IB Tie	3
208	805-300003-012-0	PL-CPIMS 3x12x15BF	2
209	808-835003-001-0	Lubricant (for items 8, 9, 11)	AR
210**	805-330003-010-0	L-CPIMS 3x10x15BF	3
212	805-300003-018-0	PL-CPIMS 3x18x15 BF	1
213	805-610026-0	PIWA 2.6x15BF	2
214	805-310003-010-0	SL-CPIMS 3x10x15BF	1

\* Items 30 and 31 are installed, if necessary, to make item 29 fit properly.

\*\* These three screws are not shown in the drawing. They are used to attach the carriage to the guide casting assembly.

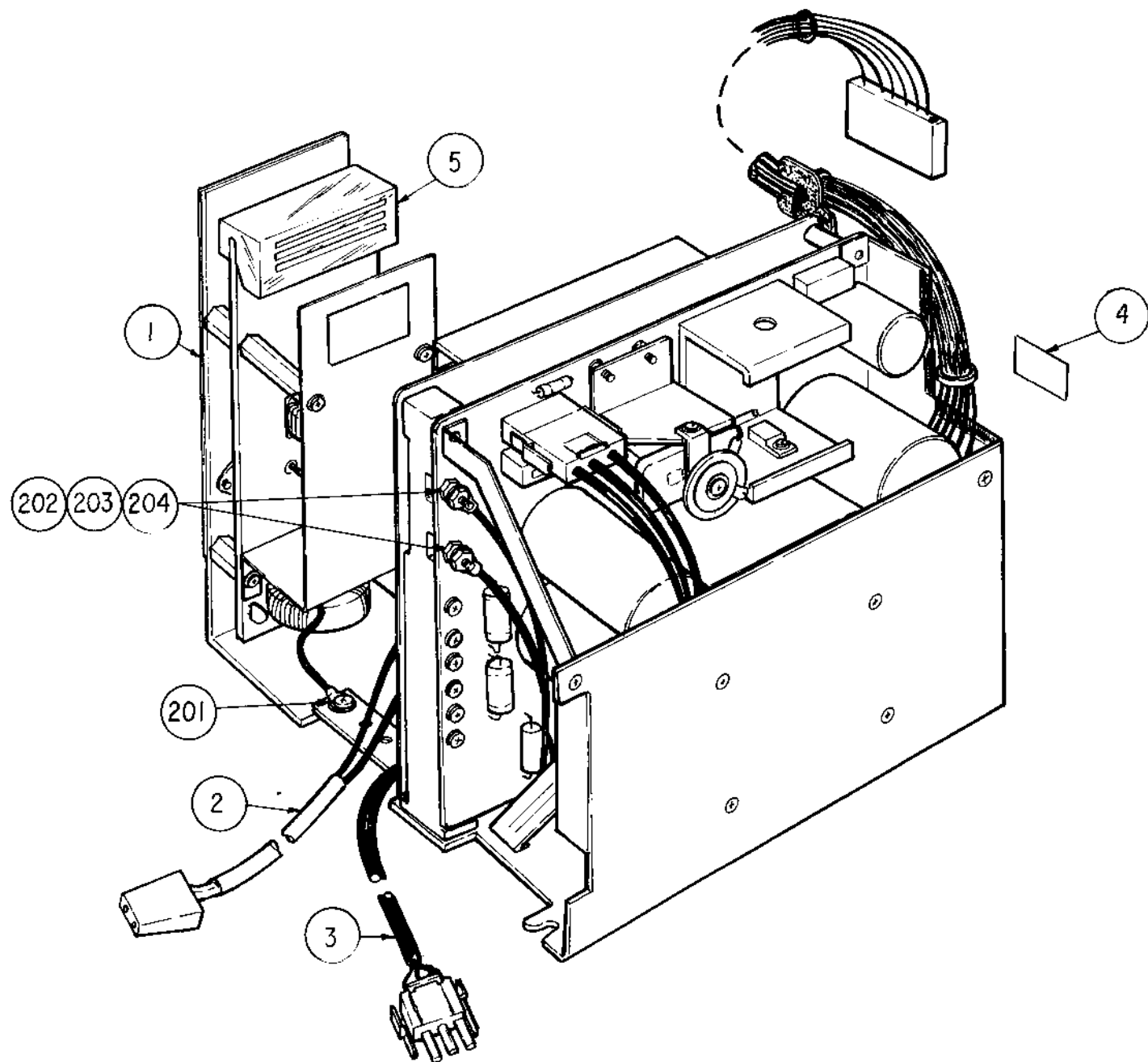
Figure 6-6 Carriage Assembly

136-033909-101-A Frame Unit Rev. 5  
(See Figure 6-4 for Next Higher Assembly)



ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-034061-A	Frame Assembly (See Figure 6-23 for Breakdown)	1
2	136-033913-A	Spacing Motor Assembly (See Figure 6-24 for Breakdown)	1
3	136-031584-001-A	Wire Rope Assembly	2
4	136-031585-A	Line Feed Motor Assembly	1
5	136-722871-001-A	Line Feed Frame Assembly - Right Side	1
6	136-722871-002-A	Line Feed Frame Assembly - Left Side	1
7	136-723002-A	Pressure Roller Assembly (See Figure 6-25 for Breakdown)	1
8	136-722873-A	Pressure Lever	1
9	136-722872-A	Control Lever	1
10	136-722720-A	Line Feed Idler Gear Bushing	1
11	136-722721-A	Line Feed Idler Gear	1
12	136-722756-A	Paper Guide Assembly	1
13	136-722741-A	Control Shaft	1
14	136-722743-A	Control Arm	1
15	136-722740-A	Control Cam	2
16	136-722742-A	Control Follower Plate	2
17	136-722746-A	Detent Spring	1
18	136-722723-A	P Gap Adjuster	2
19	136-722715-A	Line Feed Height Adjuster	2
20	136-722714-A	Line Feed Slide Bushing	2
21	136-723435-001-A	Platen Clamp Lever - Right Side	1
22	136-723435-002-A	Platen Clamp Lever - Left Side	1
23	136-710035-A	Eccentric Bushing	2
24	136-723969-A	Platen Clamp Spring	3
25	136-720390-A	Line Feed Frame Spring	1
26	136-734986-A	Cover Switch Assembly (See Figure 6-26 for Breakdown)	1
27	136-734988-A	Media Low (Net) Assembly	1
28	803-070031-003-A	Cable Clamp HP-3N	2
29	803-070031-004-A	Cable Clamp HP-4N	2
31	136-723971-001-A	FG Plate (Paper Guide) - Right Side	1
32	136-723971-002-A	FG Plate (Paper Guide) - Left Side	1
33	136-700665-A	Frame Label	1
34	136-727017-A	Special Spacer	2
35	136-732459-001-A	Spacer	1
36	136-732459-002-A	Spacer	1
37	136-744155-A	Guide Plate	1
201	803-010030-050-0	E Ring E-50	2
202	803-010030-032-0	E.Ring E-32	1
203	805-330004-008-0	L-CPIMSx4x8x15BF	2
204	805-300003-008-0	PL-CPIMSx3x8x15BF	4
205	805-330003-007-0	L-CPIMSx3x7x15BF	2
206	805-300003-006-0	PL-CPIMSx3x6x15BF	2
207	805-310003-008-0	SL-CPIMSx3x8x15BF	2
208	805-050004-012-0	HEXIMSx4x12x15BF	1
209	805-050004-020-0	HEXIMSx4x20x15BF	1
210	805-620004-0	#2STLWx4x15BF	2
211	805-300006-030-0	PL-CPIMSx6x30x15BF	1
212	805-300003-010-0	PL-CPIMSx3x10x15BF	1
213	805-610004-0	PIWx4x15BF	2
214	805-300004-010	PL-CPIMSx4x10x15BF	3
215	805-330004-010	L-CPIMSx4x10x15BF	4
216	804-030165-0	Lubricant (not shown)(Local Vendor only)	AR
217	805-500003-0	AHEXINx3x15BF	2
218	805-610003-0	PIWx3x15BF	2
219	805-622003-0	#2STLWx3x15BF	2
220	805-330003-008-0	L-CPIMSx3x8x15BF	2
221	805-300004-016-0	PL-CPIMSx4x16x15BF	1

Figure 6-7 Frame Unit



136-033915-GRP-A Power Supply Assembly Rev. 7  
 (See Figures 6-1, 6-2, or 6-3 for Next Higher Assembly)

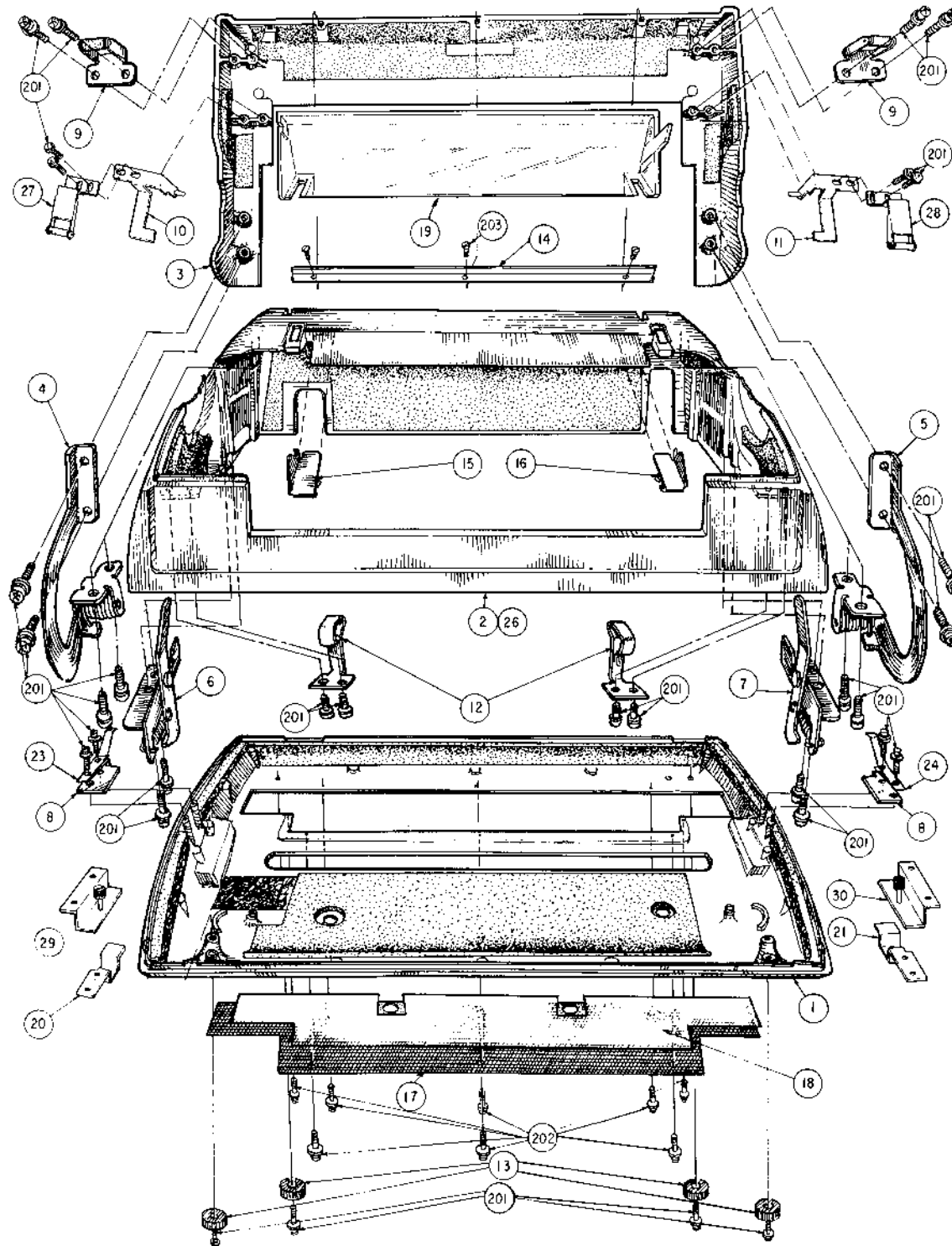
ITEM	PART NUMBER	DESCRIPTION	QTY*						
			101	102	111	112	103	113	
1	808-862404-101-A	Power Unit	1		1				
1	808-862404-102-A	Power Unit (See Figures 6-30 or 6-31 for Breakdown)		1		1	1	1	1
2	136-041351-001-A	Fan Cord Assembly	1	1	1	1	1	1	1
3	136-041352-001-A	Power Switch Cord Assembly			1	1			1
4	136-700608-004-A	Label	1	1	1	1	1	1	1
5	808-960301-005-A	Fuse 313005 (5 A)	1	1	1	1			
5	808-960301-003-A	Fuse 313003 (3 A)						1	1
201	805-311104-108-0	SL-CPBMSx4x8x3GF	2	2	2	2	2	2	2
202	805-501103-0	AHEXBNx3x3GF	2	2	4	4	2	4	4
203	805-622103-0	#2STLWAx3x3GF	2	2	4	4	2	4	4
204	805-601103-0	SBWAx3x3GF	2	2	4	4	2	4	4
205**	805-300004-008-0	PL-CPIMSx4x8x15BF	2	2	2	2	2	2	2
206**	805-300004-014-0	PL-CPIMSx4x14x15BF	1	1	1	1	1	1	1

\* 101 and 111 are 100V supplies. 102 and 112 are 115 V supplies. 103 and 113 are 230 V supplies.

\*\* Items 205 and 206 are attachments that are not shown in this drawing.

Figure 6-8 Power Supply Assembly

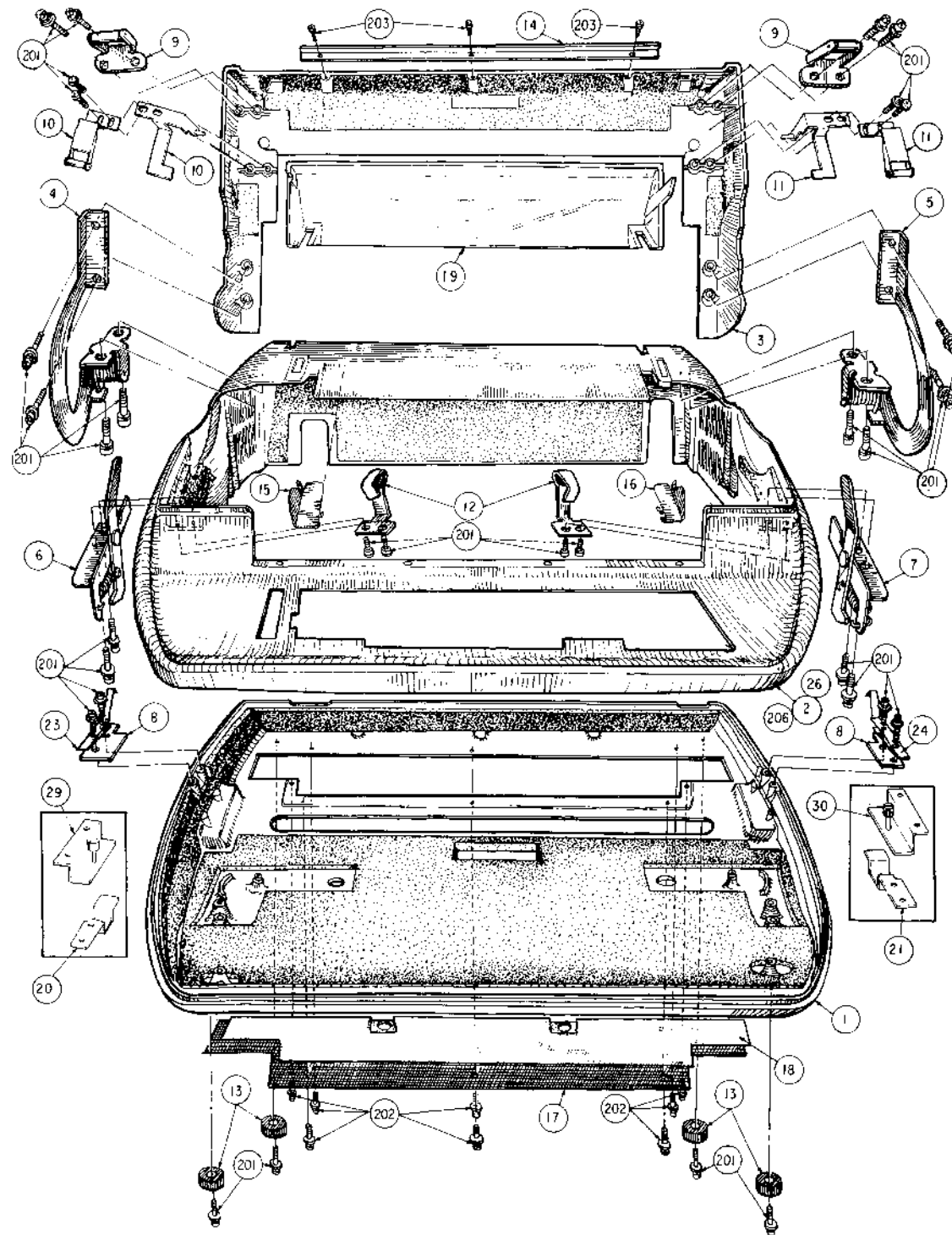
136-031592-GRP-A Cover Assembly - Basic and RO Rev. 11  
 (See Figure 6-1 or 6-2 for Next Higher Assembly)



ITEM	PART NUMBER	DESCRIPTION	QTY	
			105	125
1	136-722706-001-A	ROP Base Assembly	1	1
2	136-722707-001-A	ROP Middle Cover Assembly	1	1
3	136-723440-001-A	Top Cover Assembly	1	1
4	136-722660-011-A	Arm Assembly - Left	1	1
5	136-722660-012-A	Arm Assembly - Right	1	1
6	136-722664-001-A	Lever Assembly - Left	1	
7	136-722664-002-A	Lever Assembly Right	1	
8	136-722668-A	Lever Plate	2	
9	136-722672-B	Roller Assembly	2	2
10	136-723263-001-A	Hinge Assembly B-Left	1	1
11	136-723263-002-A	Hinge Assembly B-Right	1	1
12	136-722670-002-B	Leaf Spring	2	2
13	136-722679-A	Rubber Foot	4	4
14	136-721830-A	Handle	1	1
15	136-721816-001-A	Reverse Guide - Left	1	1
16	136-721816-002-A	Reverse Guide - Right	1	1
17	136-722682-A	Dust Cover	1	1
18	136-723454-A	Dust Damper Q	1	1
19	136-723271-A	Acrylic Cover	1	1
20	136-739734-001-A	Screw Plate		1
21	136-739734-002-A	Screw Plate		1
23	136-723458-001-A	Leaf Spring B-Right	1	
24	136-723458-002-A	Leaf Spring B-Left	1	
26	136-727105-A	Middle Damper H	1	1
27	136-740086-001-A	Roller Bracket Assembly	1	1
28	136-740086-002-A	Roller Bracket Assembly	1	1
29	136-739737-001-A	Screw Bracket Assembly - Left		1
30	136-739737-002-A	Screw Bracket Assembly - Right		1
201	805-300004-010-0	PL-CPIMSx4x10x15BF	32	32
202	805-300003-006-0	PL-CPIMSx3x6x15BF	8	8
203	805-010003-006-0	CFIMSx3x6x15BF	3	3
204	805-300004-010-0	PL-CPIMSx4x10x15BF	2	2
205	805-300004-012-0	PL-CPIMSx4x12x15BF	2	2

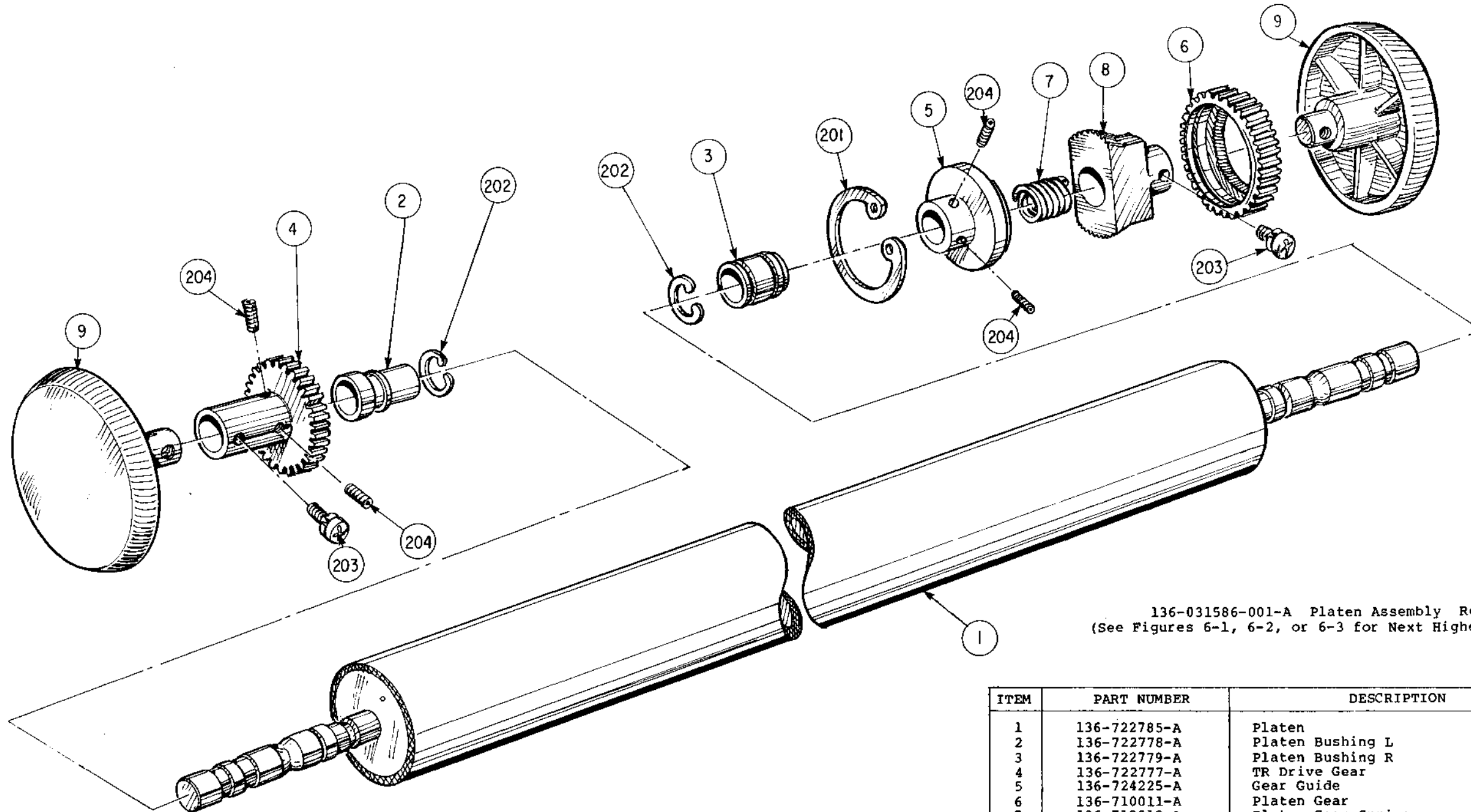
Figure 6-9 Cover Assembly - Basic and RO

136-031593-GRP-A Cover Assembly - KSR Rev. 10  
 (See Figure 6-3 For Next Higher Assembly)



ITEM	PART NUMBER	DESCRIPTION	QTY	
			005	125
1	136-721814-001-A	KSR Base Assembly	1	1
2	136-721815-001-A	KSR Middle Cover Assembly	1	1
3	136-723440-001-A	Top Cover Assembly	1	1
4	136-722660-011-A	Arm Assembly - Left	1	1
5	136-722660-012-A	Arm Assembly - Right	1	1
6	136-722664-001-A	Lever Assembly - Left	1	
7	136-722664-002-A	Lever Assembly - Right	1	
8	136-722668-A	Lever Plate	2	
9	136-722672-B	Roller Assembly	2	2
10	136-723263-001-A	Hinge Assembly B - Left	1	1
11	136-723263-002-A	Hinge Assembly B - Right	1	1
12	136-722670-002-B	Leaf Spring	2	2
13	136-722679-A	Rubber Foot	4	4
14	136-721830-A	Handle	1	1
15	136-721816-003-A	Reverse Guide - Left	1	1
16	136-721816-004-A	Reverse Guide - Right	1	1
17	136-722682-A	Dust Cover	1	1
18	136-723454-A	Dust Damper Q	1	1
19	136-723271-A	Acrylic Cover	1	1
20	136-739734-001-A	Screw Plate		1
21	136-739734-002-A	Screw Plate		1
23	136-723458-001-A	Leaf Spring B - Right	1	
24	136-723458-002-A	Leaf Spring B - Left	1	
26	136-725540-A	Urethane Clamp	2	2
27	136-740086-001-A	Roller Bracket Assembly	1	1
28	136-740086-002-A	Roller Bracket Assembly	1	1
29	136-739737-001-A	Screw Bracket Assembly		1
30	136-739737-002-A	Screw Bracket Assembly		1
201	805-300004-010-0	PL-CPIMSx4x10x15BF	32	32
202	805-300003-006-0	PL-CPIMSx3x6x15BF	8	8
203	805-010003-006-0	CFIMSx3x6x15BF	3	3
204	805-300004-010-0	PL-CPIMSx4x10x15BF	2	2
205	805-300004-012-0	PL-CPIMSx4x12x15BF	2	2
206	804-030192-003-0	Bond 300RS	AR	AR

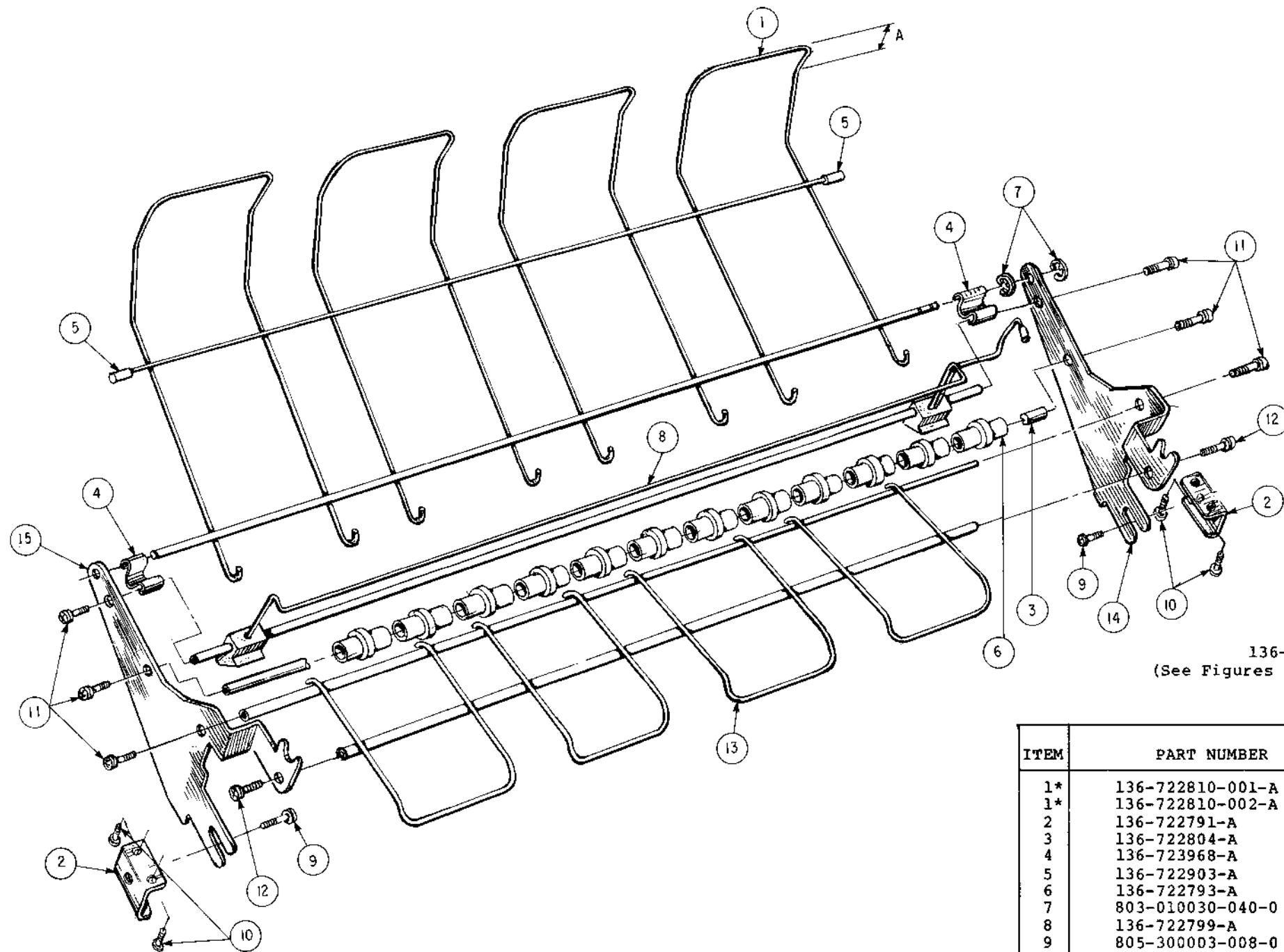
Figure 6-10 Cover Assembly - KSR



136-031586-001-A Platen Assembly Rev. 2  
 (See Figures 6-1, 6-2, or 6-3 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-722785-A	Platen	1
2	136-722778-A	Platen Bushing L	1
3	136-722779-A	Platen Bushing R	1
4	136-722777-A	TR Drive Gear	1
5	136-724225-A	Gear Guide	1
6	136-710011-A	Platen Gear	1
7	136-710012-A	Platen Gear Spring	1
8	136-722782-A	Adjuster	1
9	136-710021-009-A	Knob Mold	2
201	803-010034-032-A	Retaining Ring O-32	1
202	803-010032-010-0	Retaining Ring CE-10	2
203	805-330004-010-0	L-CPIMSx4x10x15BF	2
204	808-802002-404-0	Socket Screw M4L4	4
205	804-030165-0	Lubricant (Use on items 2 and 3) (Local Vendor only)	1.5 G
206	808-835016-A	Oil 132 G (Use on teeth of item 8)	0.05 G
207	808-835000-004-A	Screw Lock (not shown - Local Vendor only)	0.05 G

Figure 6-11 Platen Assembly



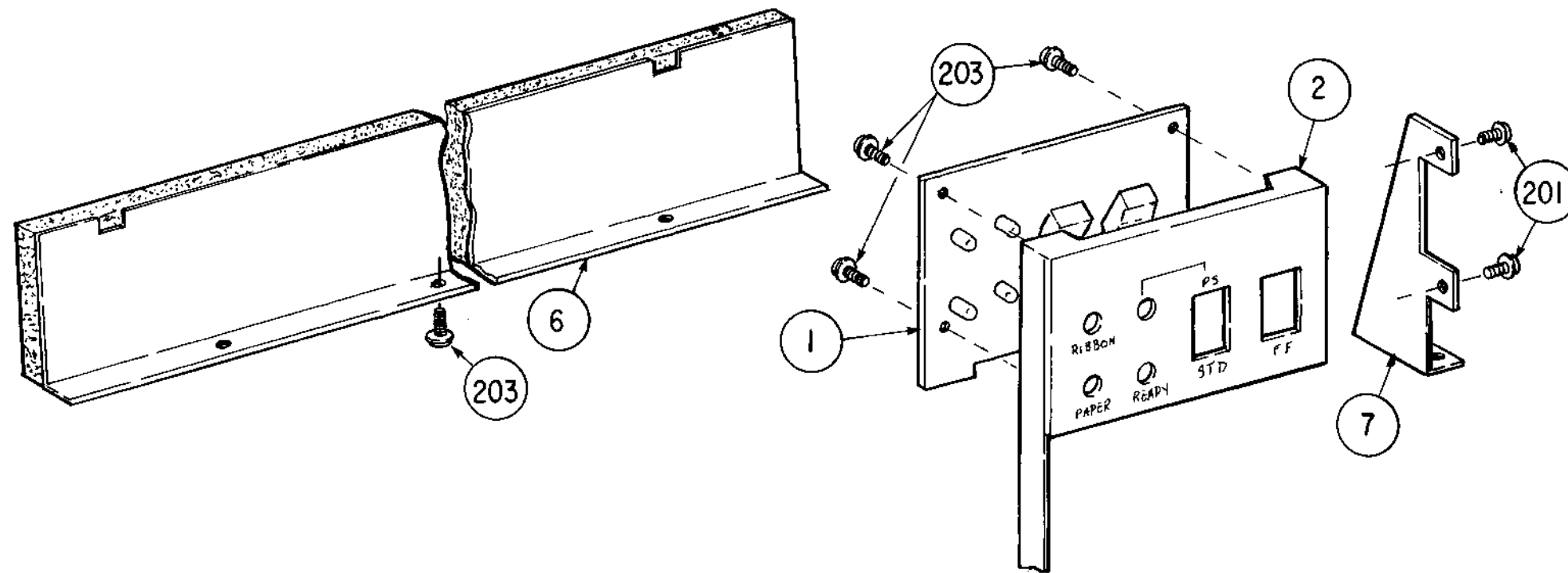
136-031597-GRP-A Paper Net Assembly Rev. 2  
 (See Figures 6-1, 6-2, or 6-3 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY	
			001	002
1*	136-722810-001-A	Guide Bar Assembly	1	
1*	136-722810-002-A	Guide Bar Assembly		1
2	136-722791-A	Guide Net Bracket	1	1
3	136-722804-A	Support Bar	1	1
4	136-723968-A	Spring (Paper Net)	2	2
5	136-722903-A	Cushion	2	2
6	136-722793-A	Guide Roller	12	12
7	803-010030-040-0	E Ring	4	4
8	136-722799-A	End Detector Assembly	1	1
9	805-300003-008-0	PL-CPIMSx3x8x15BF	2	2
10	805-300004-008-0	PL-CPIMSx4x8x15BF	4	4
11	805-330103-006-0	L-CPIMSx3x6x3GF	6	6
12	805-300103-008-0	PL-CPIMSx3x8x3GF	2	2
13	136-724220-A	Lower Guide Bar Assembly	1	1
14	136-724223-001-A	Guide Net Frame - Right	1	1
15	136-724223-002-A	Guide Net Frame - Left	1	1

\* Dimension A on the drawing is as follows:

- 001 - 1.04 in. (26.5 mm)
- 002 - 3.27 in. (83 mm)

Figure 6-12 Paper Net Assembly



136-034652-GRP-A Operator Control Panel Assembly - Basic Rev. 5  
(See Figure 6-1 for Next Higher Assembly)

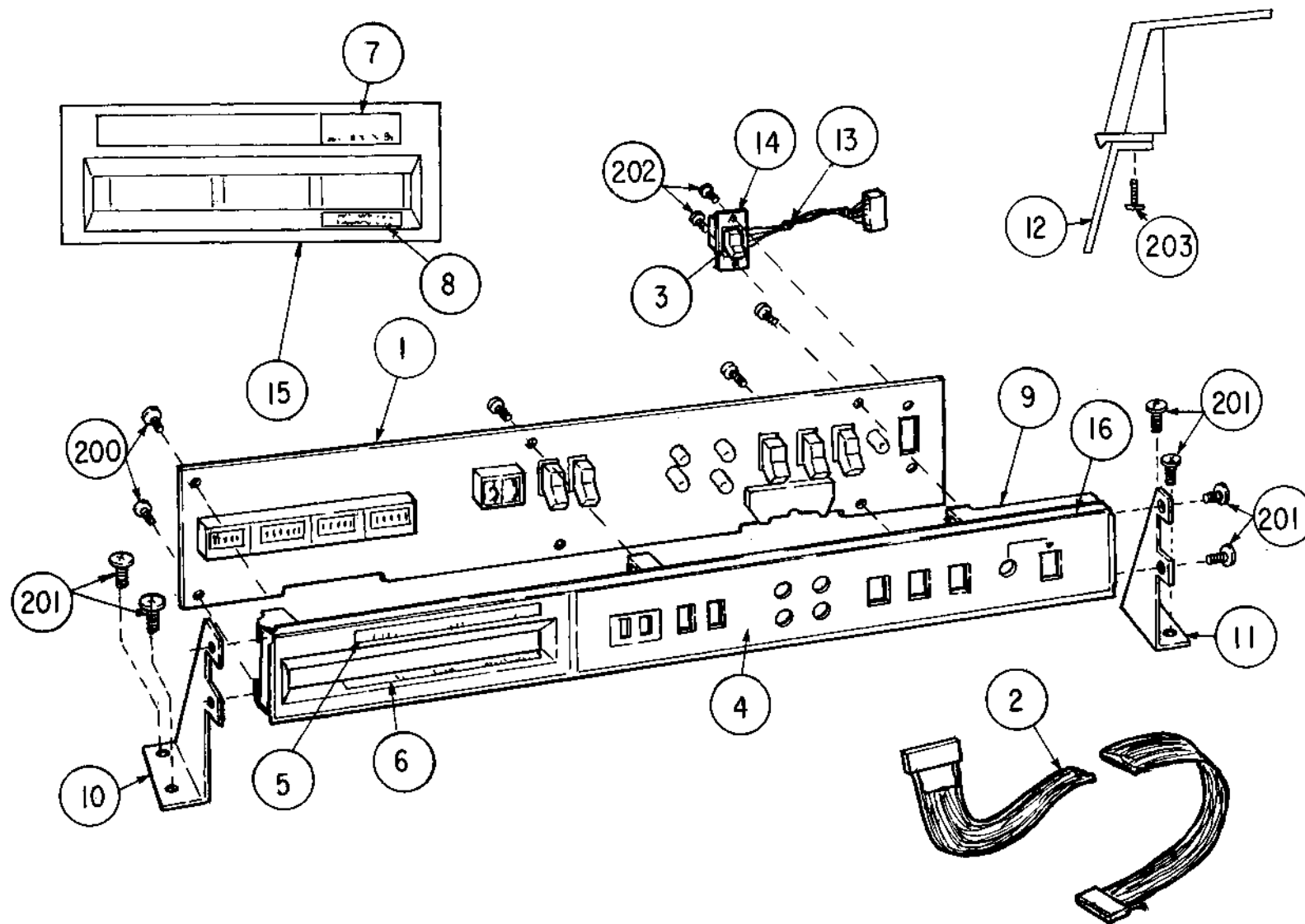
ITEM	PART NUMBER	DESCRIPTION	QTY	
			001*	002*
1	G9JJP PCB	136-431379-A (See Figure 6-46 for Breakdown)	1	
1	G9JJQ PCB	136-431380-B (See Figure 6-47 for Breakdown)		1
2	136-733888-001-A	Operator Panel		1
2**	136-733888-002-A	Operator Panel	1	
6	136-733922-A	Blank Panel	1	1
7	136-721829-002-A	Op Bracket B - Right Side	1	1
201	805-300004-010-0	PL-CPIMSx4x10x15BF	4	4
203	805-300003-008-0	PL-CPIMSx3x8x15BF	7	7

\* 001 is for the 7700D  
002 is for the 7700Q

\*\* This control panel does not have the Form Feed (FF) switch shown in the drawing.

Figure 6-13 Operator Control Panel Assembly - Basic





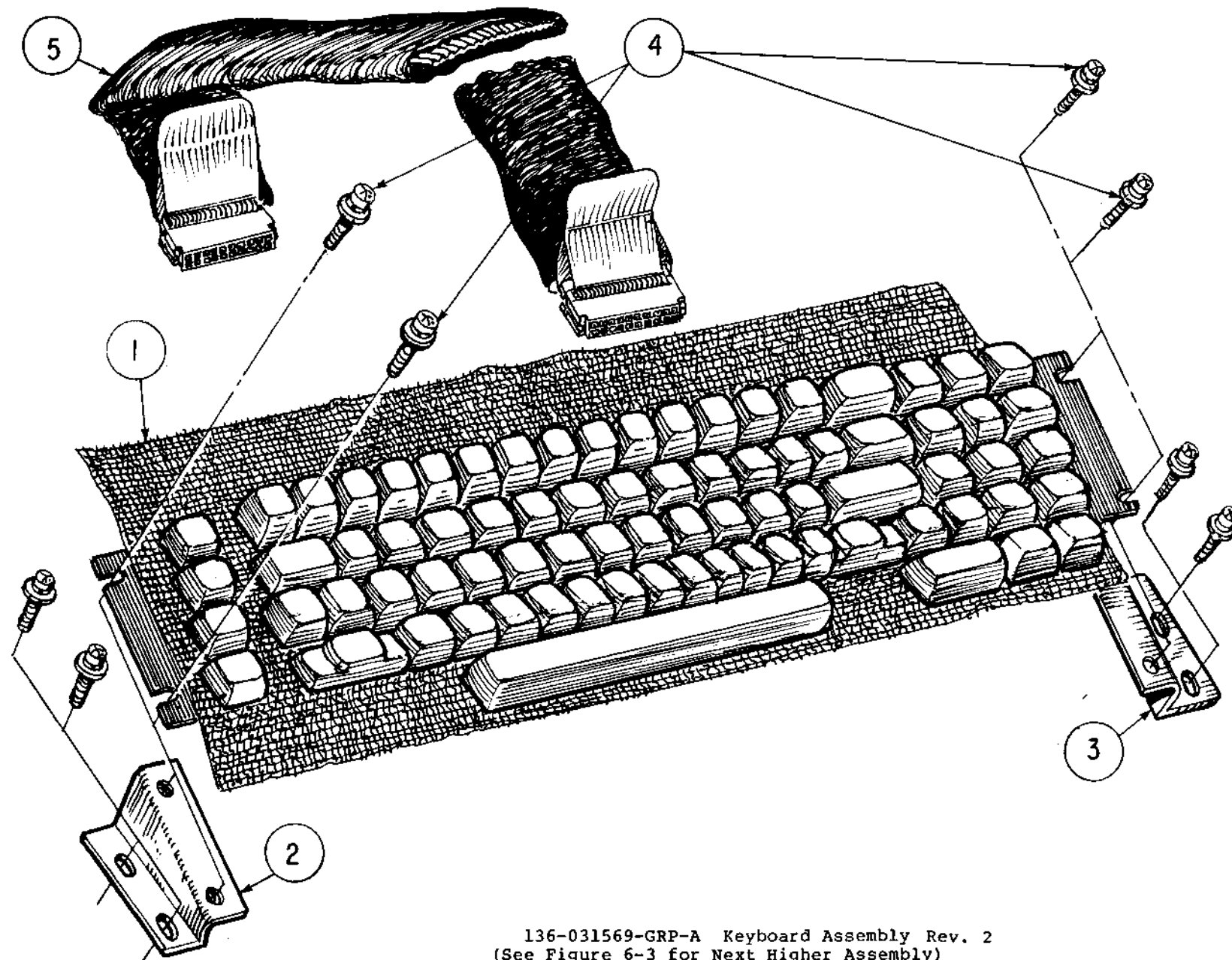
136-034651-GRP-A Operator Control Panel Assembly - RO and KSR Rev. 6  
 (See Figure 6-2 or Figure 6-3 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY		
			001*	002*	006*
1	136-431366-A	G9JJA PCB (See Figure 6-48 for Breakdown)	1		
1	136-431367-A	G9JJB PCB (See Figure 6-49 for Breakdown)		1	
1	136-431371-A	G9JJC PCB (See Figure 6-50 for Breakdown)			1
2	136-041586-001-A	Connector Cable	1	1	1
3	136-041622-A	Power Switch Cord Assembly	1	1	1
4	136-739294-001-A	Dress Sheet	1		
4	136-739294-002-A	Dress Sheet		1	
4	136-739294-004-A	Dress Sheet			1
5	136-739295-001-A	DIP Switch Label	1	1	
6	136-739295-002-A	DIP Switch Label	1	1	
7	136-739295-003-A	DIP Switch Label			1
8	136-739295-004-A	DIP Switch Label			1
9	136-739291-A	Operator Panel B	1	1	1
10	136-721829-001-A	Op Bracket B - Left Side	1	1	1
11	136-721829-002-A	Op Bracket B - Right Side	1	1	1
12	136-739296-A	Operator Window	1	1	1
13	808-814074-001-A	Pan Tie PLTM	1	1	1
14	136-727181-A	Power Switch Cover	1	1	1
15	136-739298-A	DIP Switch Hood	1	1	1
16	136-739300-A	OP Seal	1	1	1
18	136-739297-A	PCB Absorber	1	1	1
200	805-300003-008-0	PL-CPIMSx3x8x15BF	6	6	6
201**	805-300004-010-0	PL-CPIMSx4x10x15BF	8	8	8
202	805-310002-008-0	SL-CPIMSx2x8x15BF	2	2	2
203	805-000003-008-0	CPIMSx3x8x15BF	2	2	2

\* 001 is for Models 7710/7715  
 002 is for Models 7720/7725  
 006 is for Model 7730

\*\* Four of these screws attach the assembly to the printer.

Figure 6-14 Operator Control Panel Assembly - RO and KSR

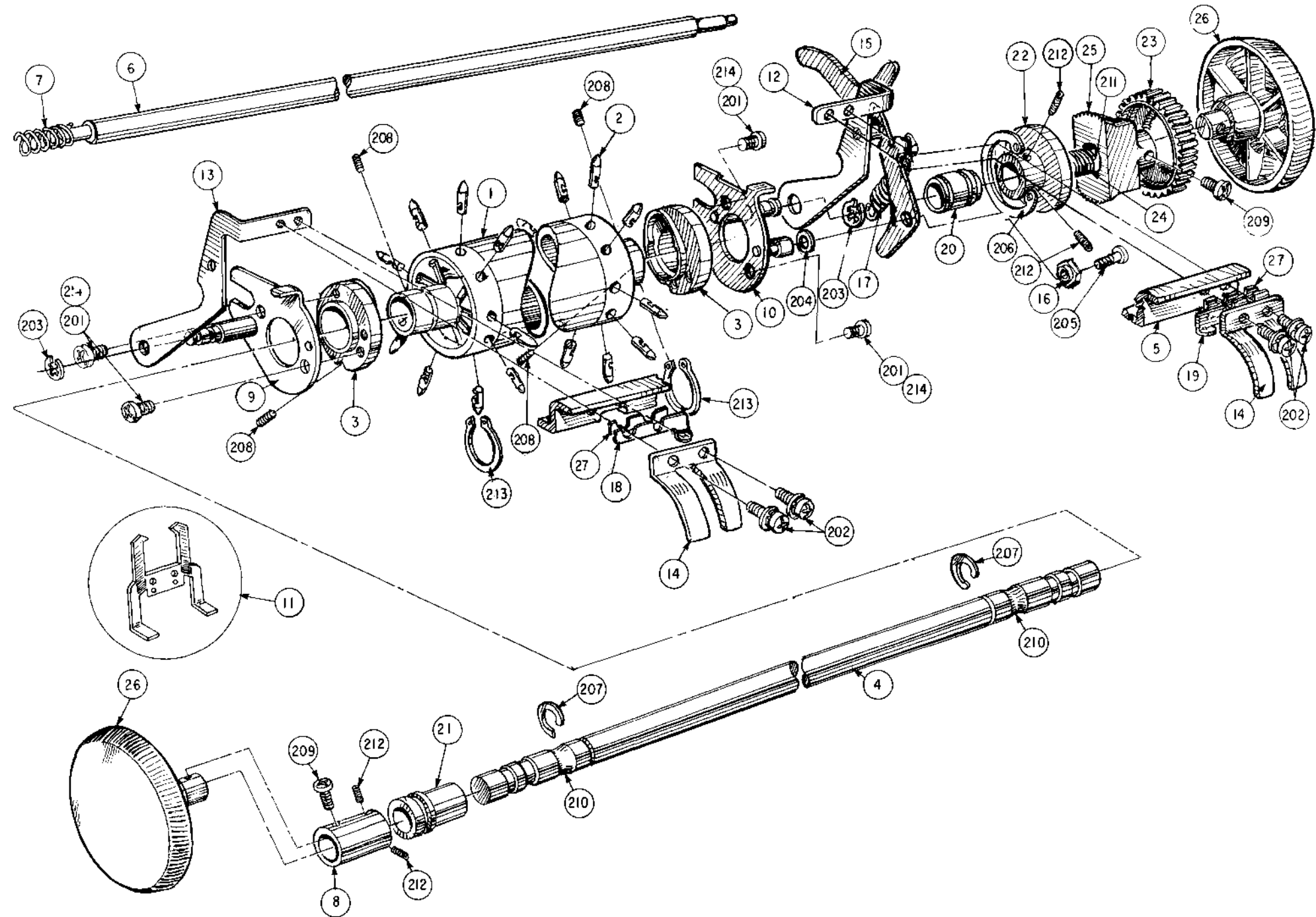


136-031569-GRP-A Keyboard Assembly Rev. 2  
(See Figure 6-3 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	804-020242-001-A	Keyboard	1
2	136-723212-A	Keyboard Bracket R	1
3	136-723211-A	Keyboard Bracket L	1
4	805-300004-008-0	PL-CPIMSx4x8x15BF	4
5	136-040571-A	Connection Cable	1

Figure 6-15 Keyboard Assembly

136-031591-001-A Pin Feed Platen Assembly Rev. 3  
(Option)  
(See Figure 6-1, 6-2, 6-3 for Next Higher Assembly)



ITEM	PART NUMBER	DESCRIPTION	QTY
1	See Table	Platen	1
2	136-723404-A	Sprocket Pin	18
3	136-723402-A	Cam	2
4	136-723014-A	Sprocket Platen Shaft	1
5	See Table	Cutter Bail	1
6	136-723009-A	Shaft	1
7	136-723012-A	Spring (Shaft Lock)	1
8	136-723013-A	Knob Holder	1
9	136-723006-001-A	Cam Control Plate Assembly	1
10	136-723006-002-A	Cam Control Plate Assembly	1
11	136-720573-A	Card Holder Bracket	1
12	136-723827-A	Arm Assembly	1
13	136-723823-001-A	Arm	2
14	136-723819-A	Sprocket Guide	1
15	136-723825-A	Lock Lever	1
16	136-710035-A	Eccentric Bushing	1
17	136-722879-A	Platen Clamp Spring	1
18	136-724631-001-A	Spacer	1
19	136-724631-002-A	Spacer	1
20	136-722779-A	Platen Bushing R	1
21	136-722778-A	Platen Bushing L	1
22	136-724225-A	Gear Guide	1
23	136-710011-A	Platen Gear	1
24	136-710012-A	Platen Gear Spring	1
25	136-722782-A	Adjuster	1
26	136-710021-009-A	Knob Mold	2
27	136-723963-002-A	Spacer	2
201	805-000103-006-0	CPIMSx3x6x3GF	4
202	805-300103-007-0	PL-CPIMSx3x7x3GF	4
203	803-010030-032-0	E-Ring	2
204	805-611103-0	PBWAx3x3GF	1
205	805-330103-008-0	L-CPIMSx3x8x3GF	1
206	803-010034-032-0	O-Ring	1
207	803-010032-010-0	CE-Ring	2
208	808-802002-304-0	Socket Set Screw	4
209	805-330004-010-0	L-CPIMSx4x10x15BF	2
210	804-030165-0	Lubricant (Local Vendor only)	1.5
211	808-835010-001-0	Daphne Mechanic Oil #35	0.001L
212	808-802002-404-0	Socket Set Screw	4
213	803-010031-016-0	C-Ring	2
214	808-835000-004-A	Screw Lock (Local Vendor only)	0.001L

GRP	PLATEN	CUTTER BAIL	PIN-TO-PIN LENGTH
001	136-723403-001-A	136-723818-001-A	16" (406.4 mm)
002	136-723403-002-A	136-723818-002-A	15" (381.0 mm)
003	136-723403-003-A	136-723818-003-A	14" (355.6 mm)
004	136-723403-004-A	136-723818-004-A	13" (330.2 mm)
005	136-723403-005-A	136-723818-005-A	12" (304.8 mm)
006	136-723403-006-A	136-723818-006-A	11" (279.4 mm)
007	136-723403-007-A	136-723818-007-A	10" (254.0 mm)
008	136-723403-008-A	136-723818-008-A	9" (228.6 mm)
009	136-723403-009-A	136-723818-009-A	8" (203.2 mm)
010	136-723403-010-A	136-723818-010-A	7" (177.8 mm)
011	136-723403-011-A	136-723818-011-A	6" (152.4 mm)
012	136-723403-012-A	136-723818-012-A	13 1/8" (333.38 mm)
013	136-723403-013-A	136-723818-013-A	9 1/2" (241.3 mm)
014	136-723403-014-A	136-723818-014-A	12 1/2" (317.5 mm)
015	136-723403-015-A	136-723818-015-A	11 1/2" (292.1 mm)
016	136-723403-016-A	136-723818-016-A	11 1/4" (285.75 mm)
017	136-723403-017-A	136-723818-017-A	10 1/8" (257.18 mm)
018	136-723403-018-A	136-723818-018-A	14 1/2" (368.3 mm)
019	136-723403-019-A	136-723818-019-A	4 1/2" (114.3 mm)
020	136-723403-020-A	136-723818-020-A	6 1/2" (165.1 mm)
021	136-723403-021-A	136-723818-021-A	11.8" (299.72 mm)
022	136-723403-022-A	136-723818-022-A	8.5" (215.9 mm)
023	136-723403-023-A	136-723818-023-A	13 7/8" (352.42 mm)
024	136-723403-024-A	136-723818-024-A	9.4" (238.76 mm)
025	136-723403-025-A	136-723818-025-A	3.5" (88.9 mm)
026	136-723403-026-A	136-723818-026-A	10.5" (266.7 mm)
027	136-723403-027-A	136-723818-027-A	14 3/8" (365.13 mm)
028	136-723403-028-A	136-723818-028-A	5 1/4" (133.35 mm)
029	136-723403-029-A	136-723818-029-A	7.5" (190.5 mm)
030	136-723403-030-A	136-723818-030-A	7.9" (200.66 mm)
031	136-723403-031-A	136-723818-031-A	8.9" (226.06 mm)
032	136-723403-032-A	136-723818-032-A	7.77" (197.36 mm)
033	136-723403-033-A	136-723818-033-A	5.5" (139.7 mm)
034	136-723403-034-A	136-723818-034-A	5.75" (146.05 mm)
035	136-723403-035-A	136-723818-035-A	15.5" (393.7 mm)
036	136-723403-036-A	136-723818-036-A	272 mm
037	136-723403-037-A	136-723818-037-A	363 mm
038	136-723403-038-A	136-723818-038-A	11.2" (284.48 mm)

Figure 6-16 Pin Feed Platen Assembly

136-031590-001-A Bottom Guide Assembly Rev. 2  
 (Option)  
 (See Figures 6-1, 6-2, or 6-3 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-722819-A	Rear Guide	1
2	136-722820-A	Front Guide	1
3	136-722815-001-A	BF Support Bracket - Left	1
4	136-722815-002-A	BF Support Bracket - Right	1
5	136-722816-A	Upper Guide	1
6	804-041070-001-0	Anti-Static Cloth	1
7	136-722115-A	Spacer	4
12	136-722889-A	Media Low (BF) Assembly	1
201	805-300103-012-0	PL-CPIMSx3x12x3 GF	4
202	805-000103-006-0	CPIMSx3x6x3GF	4
203	805-500103-0	AHEXINx3x3GF	4
204	805-300003-008-0	PL-CPIMSx3x8x15BF	4
205	805-300004-008-0	PL-CPIMSx4x8x15BF	2
206	805-622103-0	#2STLWx3x3GF	4
207	805-610103-0	PIWx3x3GF	4

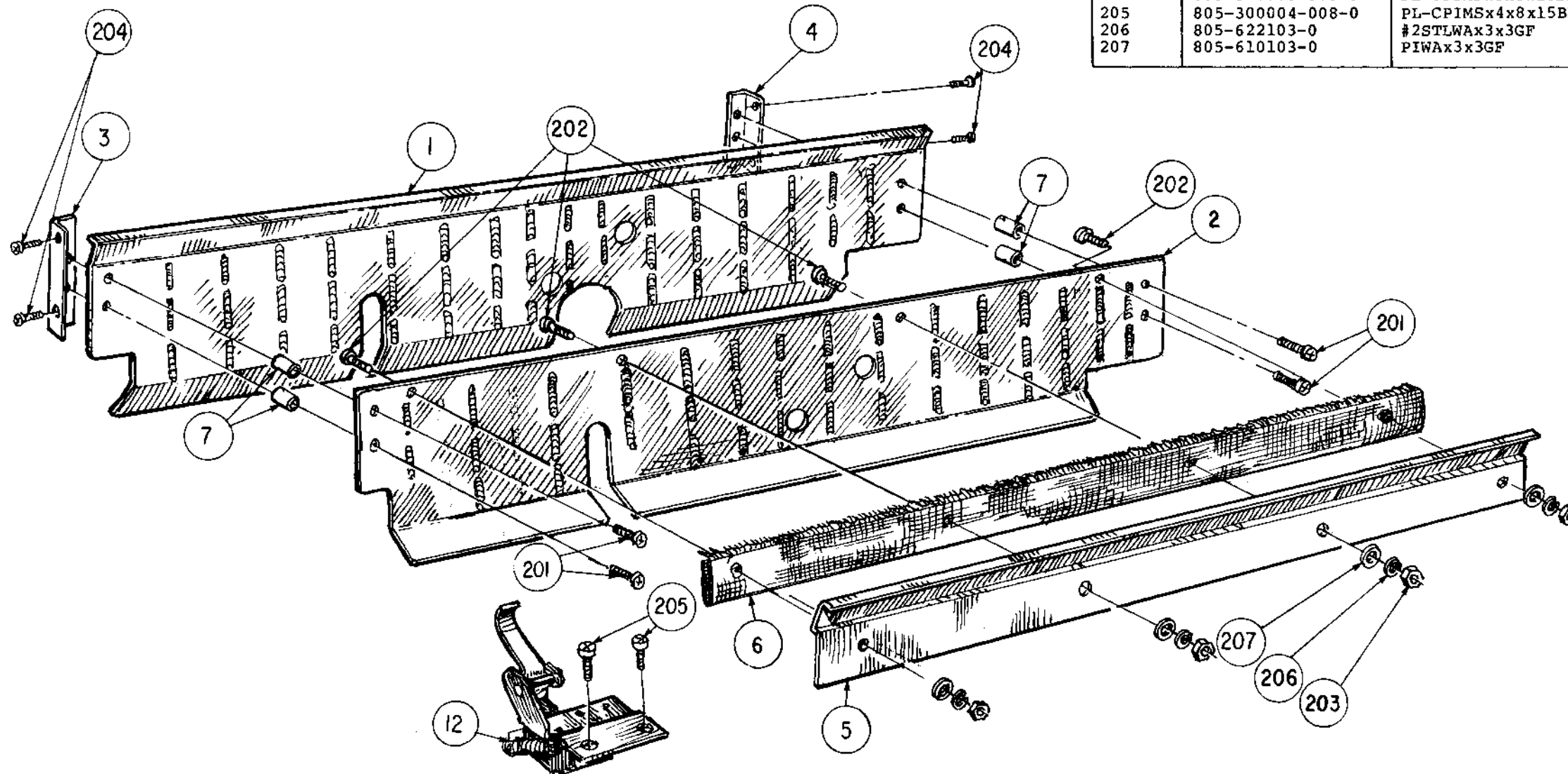
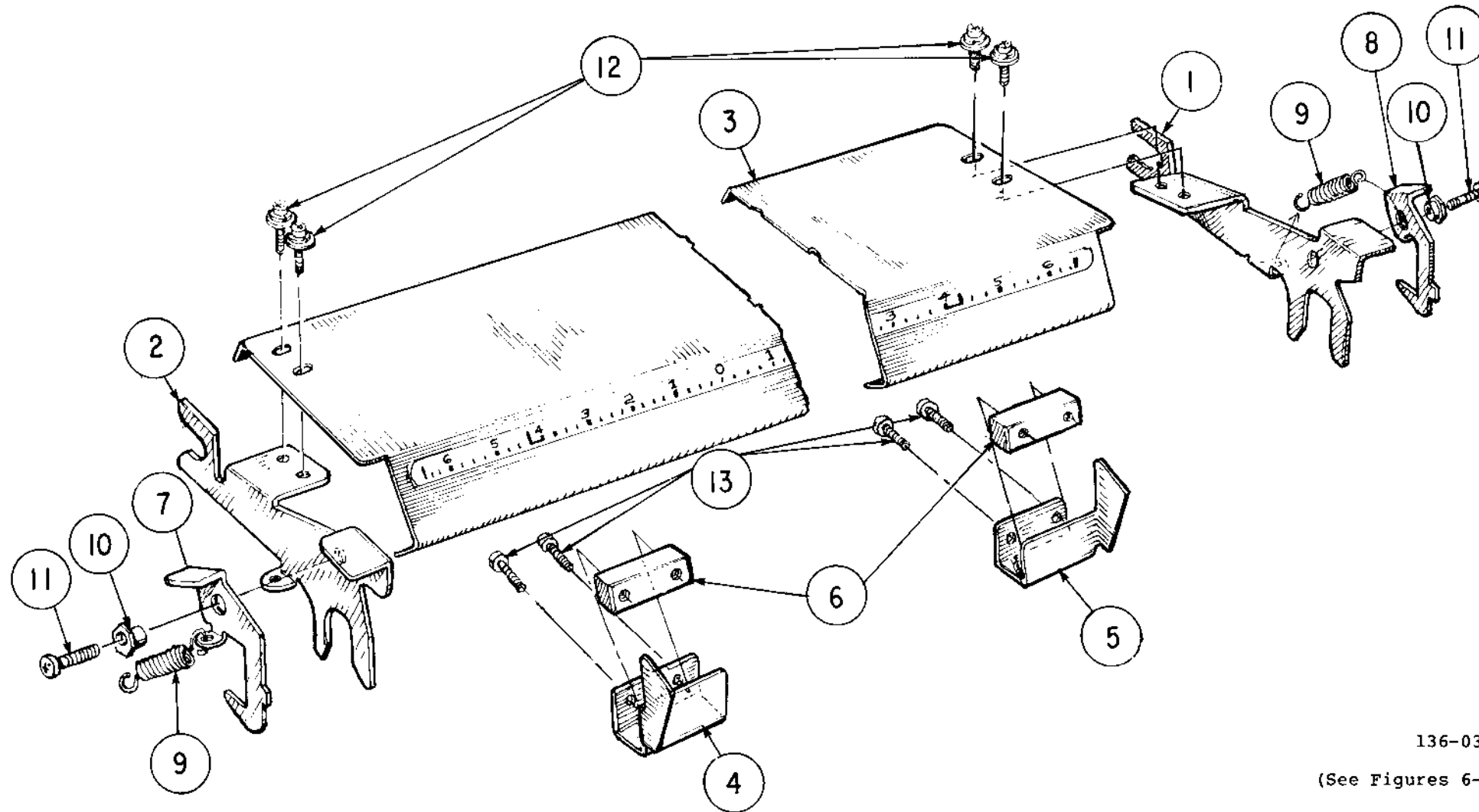


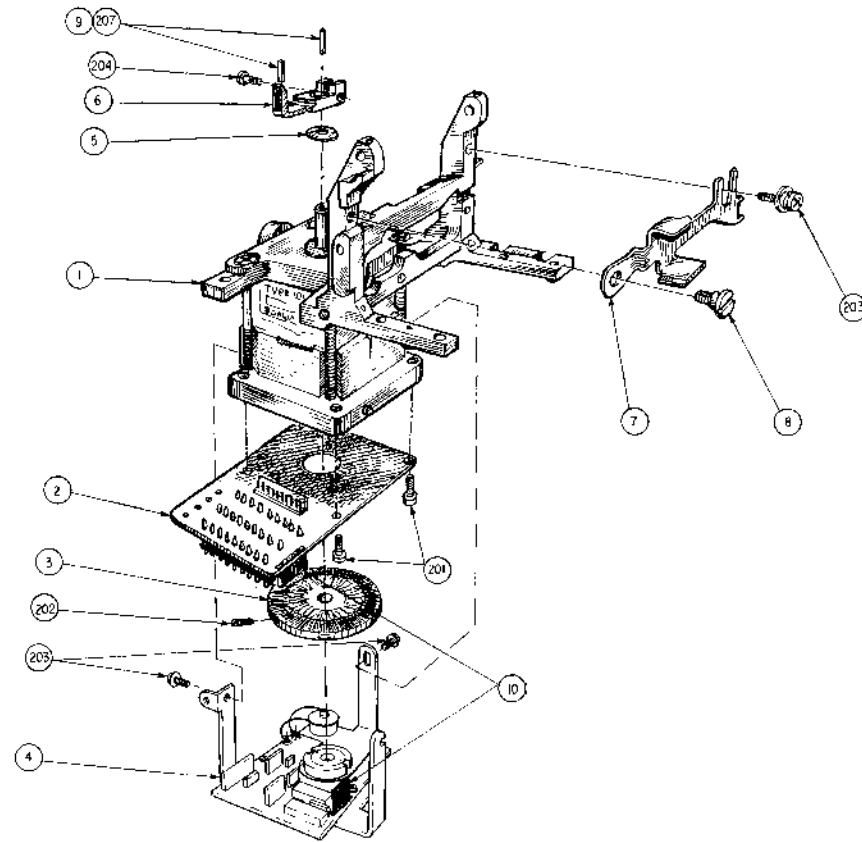
Figure 6-17 Bottom Guide Assembly



136-031596-001-A Friction Attachment Rev. 4  
 (Option)  
 (See Figures 6-1, 6-2, or 6-3 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-722821-001-A	Friction Bracket	1
2	136-722821-002-A	Friction Bracket	1
3	136-723001-A	Friction Guide Print	1
4	136-723800-001-A	Side Guide Assembly	1
5	136-723800-002-A	Side Guide Assembly	1
6	136-722999-A	Slider	2
7	136-722752-001-A	Lock Lever	1
8	136-722752-002-A	Lock Lever	1
9	136-722877-A	Clamp Lever Spring	2
10	136-710035-A	Eccentric Bushing	2
11	805-000003-006-0	CPIMSx3x6x15BF	2
12	805-300103-006-0	PL-CPIMSx3x7x3GF	4
13	805-060003-006-0	#2CTSx3x6x15BF	4

Figure 6-18 Friction Attachment

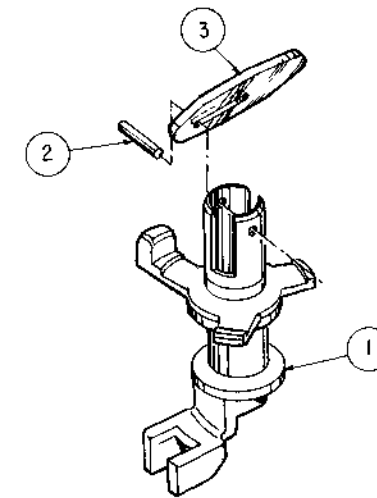


136-033911-A Rotate Motor Assembly Rev. 1  
(See Figure 6-5 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-722845-B	DC Servo	1
2*	136-431355-B	G9JHP PCB Assembly (See Figure 6-40 for Breakdown)	1
3	136-726509-A	Rotor Assembly	1
4*	136-734983-B	Trans Mount Assembly	1
5	136-712007-A	Shim	1
6	136-722831-A	Torque Piece	1
7	136-722848-A	Ribbon Base Stopper Assembly	1
8	136-722838-A	Special Screw	1
9	136-712380-A	Oil Felt	2
10*	808-844005-001-A	Jumper Lead Wire	1
201	805-000025-006-0	CPIMSx2.5x6x15BF	4
202	808-802002-303-0	Set Screw M3xL3	1
203	805-300003-006-0	PL-CPIMSx3x6x15BF	3
204	805-000003-008-0	CPIMSx3x8x15BF	1
205	808-835003-001-0	Silicon Rubber	AR
207	808-835016-A	Oil 132G	AR

\* Items 2 and 4 are permanently attached by item 10.  
Do not order them separately.

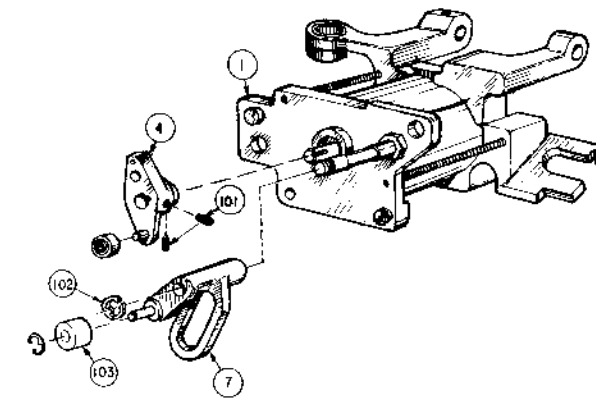
Figure 6-19 Rotate Motor Assembly



136-031577-A Vertical Slide Sleeve Assembly Rev. 4  
(See Figure 6-5 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-722890-A	Slide Sleeve Assembly	1
2	136-710113-B	Pivot Pin	1
3	136-710114-B	Lock Piece (Molded)	1

Figure 6-20 Vertical Slide Sleeve Assembly



136-031574-002-C Vertical Magnet Assembly Rev. 6  
(See Figure 6-22 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	804-020192-002-B	Rotary Magnet	1
4	136-722855-A	Drive Cam Assembly	1
7	136-710127-A	Drive Cam Follower Assembly	1
101	808-802002-303-0	Set Screw M3xL3	2
102	803-010030-020-0	Retaining Ring E-20	1
103	805-622003-0	#2STLWax3x15BF	1

Figure 6-21 Vertical Magnet Assembly

136-031575-002-B Ribbon Base Assembly Rev. 7  
 (See Figure 6-6 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
2	136-031574-002-B	Vertical Magnet Assembly (See Figure 6-21 for Breakdown)	1
4	136-720280-002-A	Ribbon Base Subassembly	1
5	136-720266-A	Ribbon Mode Slider 1	1
6	136-720258-A	Ribbon Base Pivot 1	1
7	136-722832-A	Ribbon Change Arm A	1
8	136-722833-A	Ribbon Change Arm B	1
9	136-720270-A	Ribbon Change Spring	1
10	804-020195-A	DC Solenoid (Ribbon Change)	1
11	136-722841-A	Torque Shaft Assembly	1
12	136-722844-A	Ribbon Drive Assembly (See Figure 6-29 for Breakdown)	1
13	804-041103-A	Magnetic Sensor Switch	1
201	136-726515-A	Special Retainer	1
202	808-802018-906-A	Spring Pin	1
203	805-300003-005-0	PL-CPIMSx3x6x15BF	1
204	805-310003-008-0	SL-CPIMSx3x8x15BF	2
205	805-300025-005-0	PL-CPIMSx2.5x5x15BF	2
206	808-802002-304-0	Socket Screw	1
207	803-010030-024-0	E Ring E-24	1
208	808-835000-004-A	Screw Lock (Local Vendor only)	AR

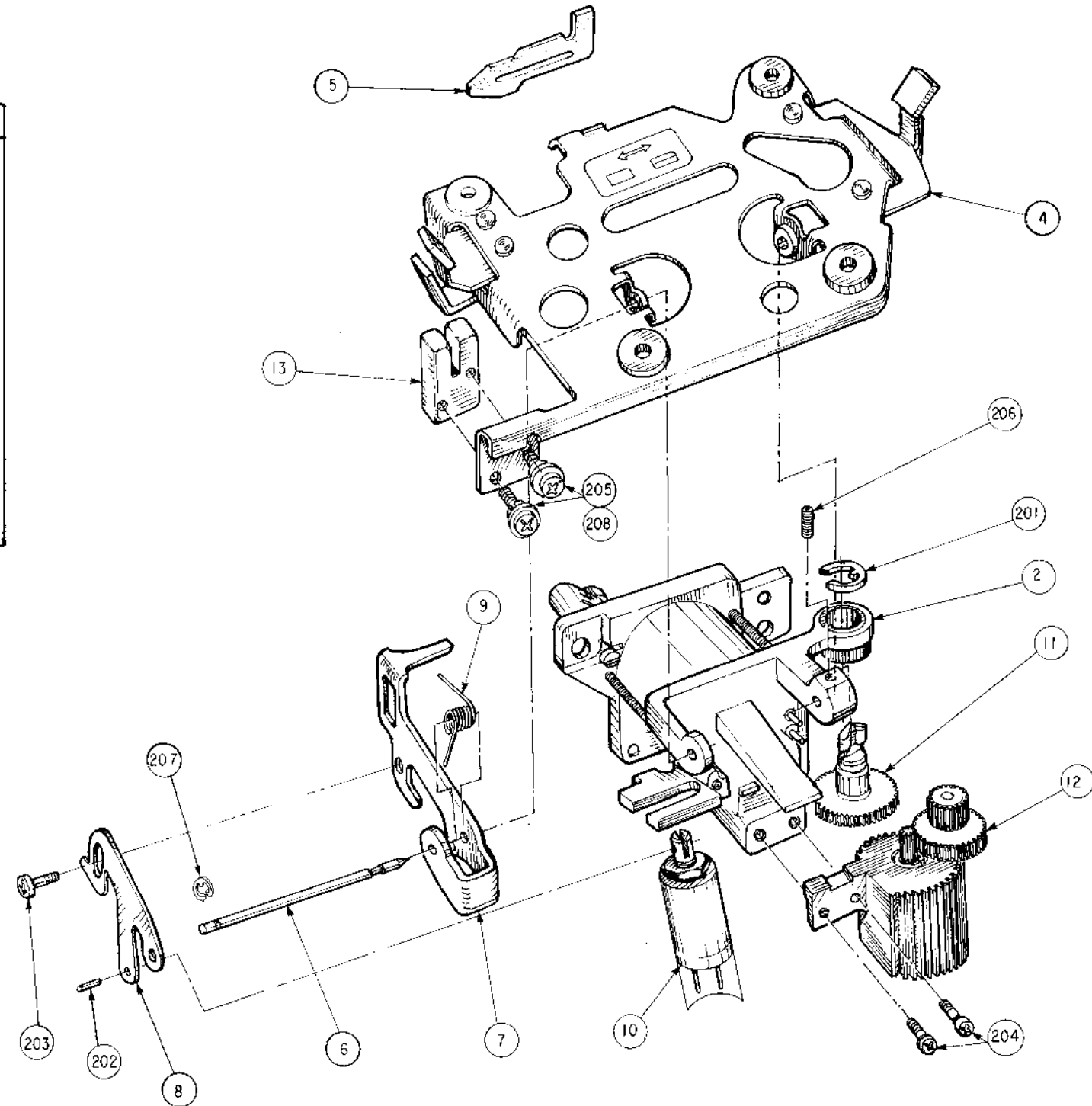
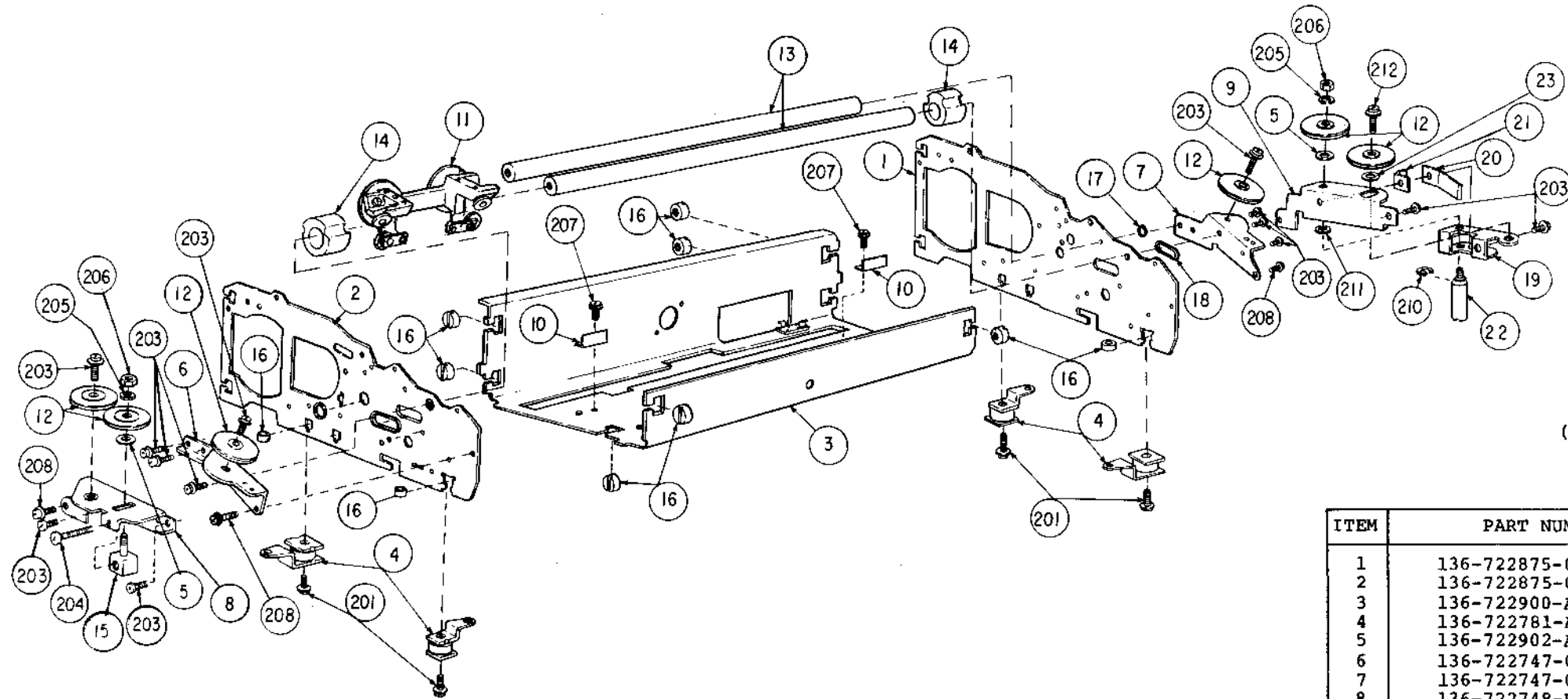


Figure 6-22 Ribbon Base Assembly

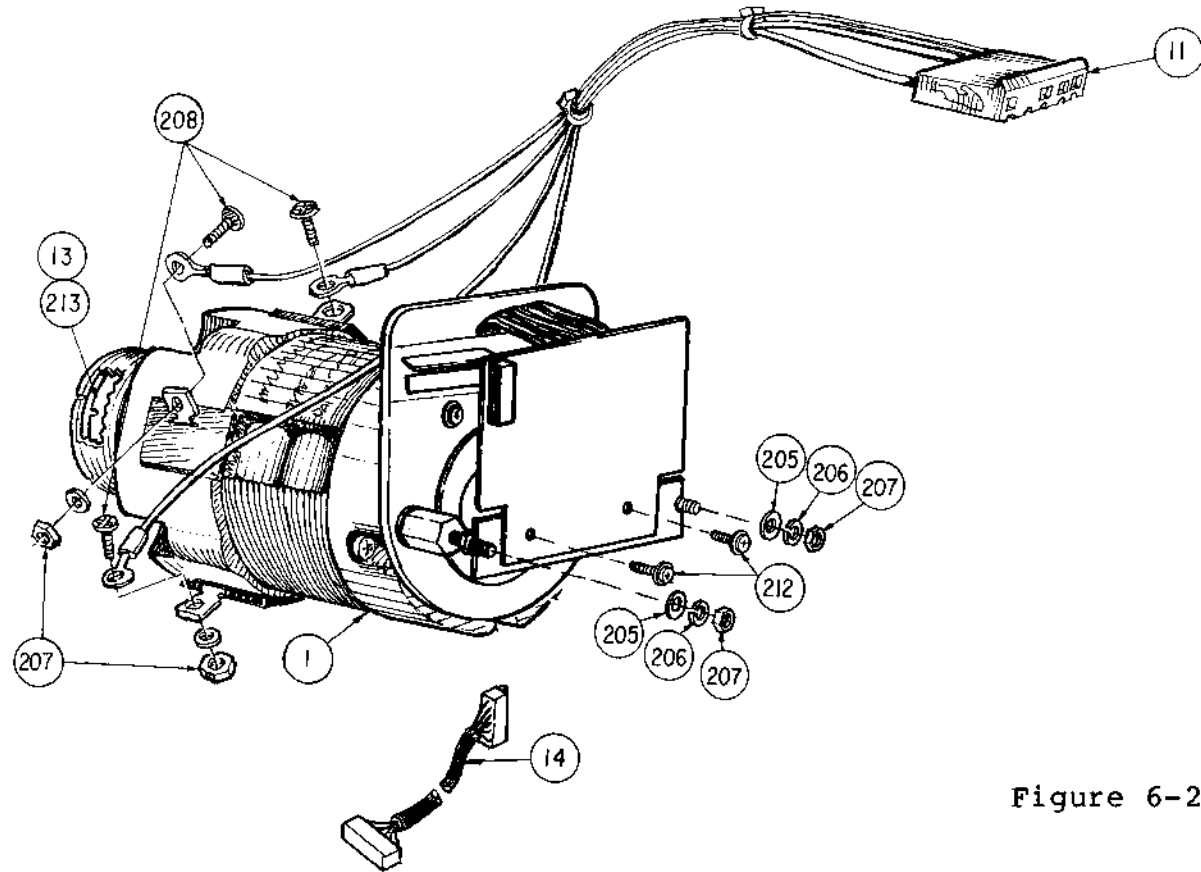


136-034061-A Frame Assembly Rev. 2  
(See Figure 6-7 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-722875-001-B	Side Frame Assembly - Right Side	1
2	136-722875-002-B	Side Frame Assembly - Left Side	1
3	136-722900-A	Base Frame Assembly	1
4	136-722781-A	Damper	4
5	136-722902-A	Washer	2
6	136-722747-001-A	Upper Pulley Bracket - Left Side	1
7	136-722747-002-A	Upper Pulley Bracket - Right Side	1
8	136-722748-B	Left Pulley Bracket	1
9	136-724236-B	Right Pulley Bracket	1
10	136-722728-A	EM Plate	2
11	136-034062-A	Guide Casting Assembly (See Figure 6-27 for Breakdown)	1
12	803-020001-A	Guide Pulley	6
13	136-720142-A	Guide Shaft	2
14	136-722784-A	Carriage Stopper	2
15	136-722887-A	Special Screw	1
16	136-720164-A	Special Nut	12
17	136-723436-A	Protect Bushing	2
18	136-722919-A	Protect Bushing	2
19	136-724229-B	Swing Arm	1
20	136-724230-A	Swing Arm Spring	1
21	136-724231-A	Special Nut	1
22	136-724232-A	Shoulder Screw	1
23	136-724233-A	Spacer	1
201	805-330004-016-0	L-CPIMSx4x16x15BF	4
202	805-300004-016-0	PL-CPIMSx4x16x15BF	4
203	805-330004-008-0	L-CPIMSx4x8x15BF	14
204	805-000004-030-0	CPIMSx4x30x15BF	1
205	805-622004-0	#2STLWax4x15BF	2
206	805-500004-0	AHEXINx4x15BF	2
207	805-300004-008-0	PL-CPIMSx4x8x15BF	2
208	805-300004-020-A	PL-CPIMSx4x20x15BF	4
210	803-010030-050-0	E Ring E-50	1
211	805-610004-0	PIWax4x15BF	1
212	805-330004-014-0	L-CPIMSx4 x14x15BF	1

Figure 6-23 Frame Assembly





136-033913-A Spacing Motor Assembly Rev. 5  
(See Figure 6-7 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-720219-A	SP Motor Assembly	1
11	136-040481-A	SP Motor Cable	1
13	136-727483-A	Spacing Drive Pulley	1
14	136-041326-A	SP Transformer Cable Assembly	1
205	805-610003-0	PIWx3x15BF	6
206	805-622003-0	#2STLWx3x15BF	2
207	805-500003-0	AHEXINx3x15BF	8
208	805-330003-006-0	L-CPIMSx3x6x15BF	4
212	808-835003-001-0	Silicon Rubber	AR
213	808-835000-001-A	Bond IS-415	0.001 L

Figure 6-24 Spacing Motor Assembly

136-740696-A Pressure Roller Assembly Rev. 1  
(See Figure 6-7 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-722755-A	Pressure Shaft	1
2	136-735534-A	Double Roller Assembly	3
3	136-722878-A	Pressure Arm Assembly	1
4	136-736483-001-A	Guide Limit - Left	1
5	136-736483-002-A	Guide Limit - Right	1
201	805-300003-008-0	PL-CPIMSx3x8x15BF	7

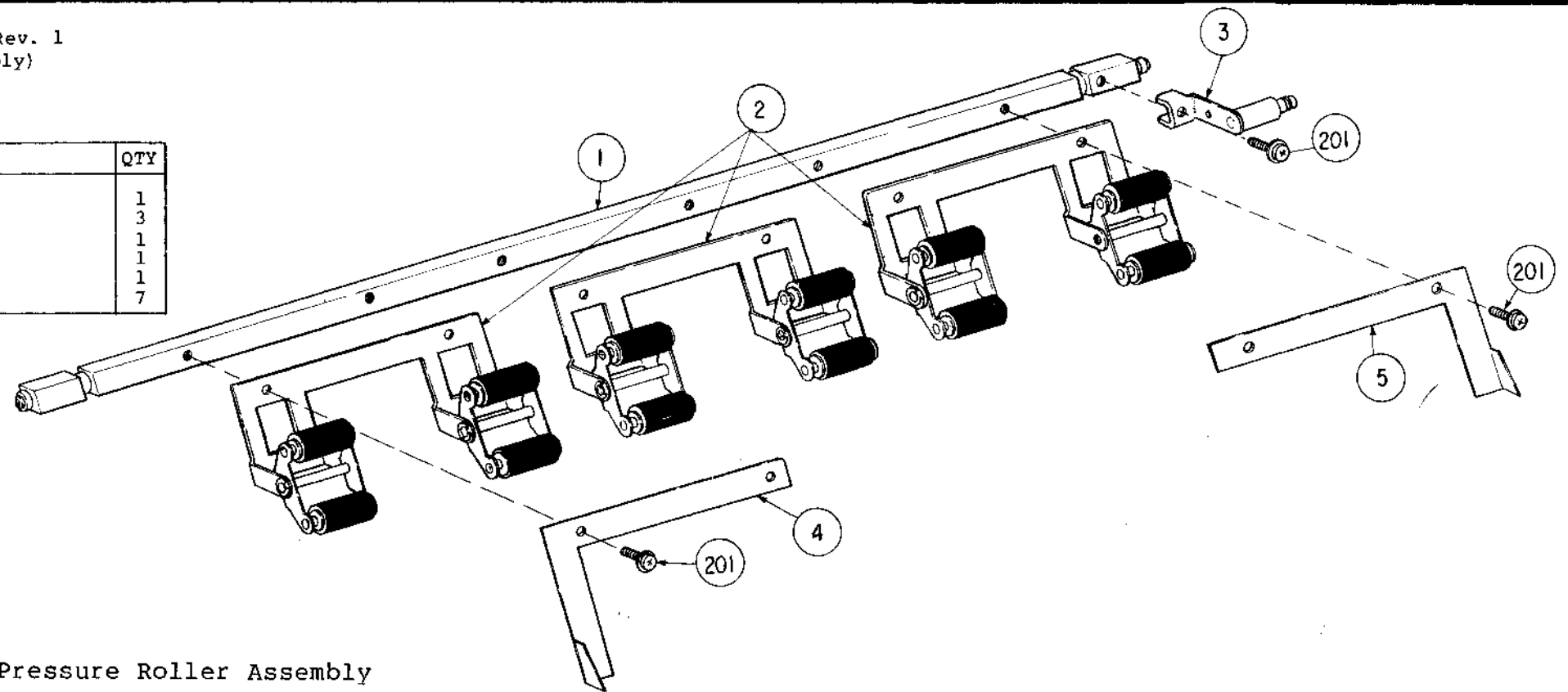
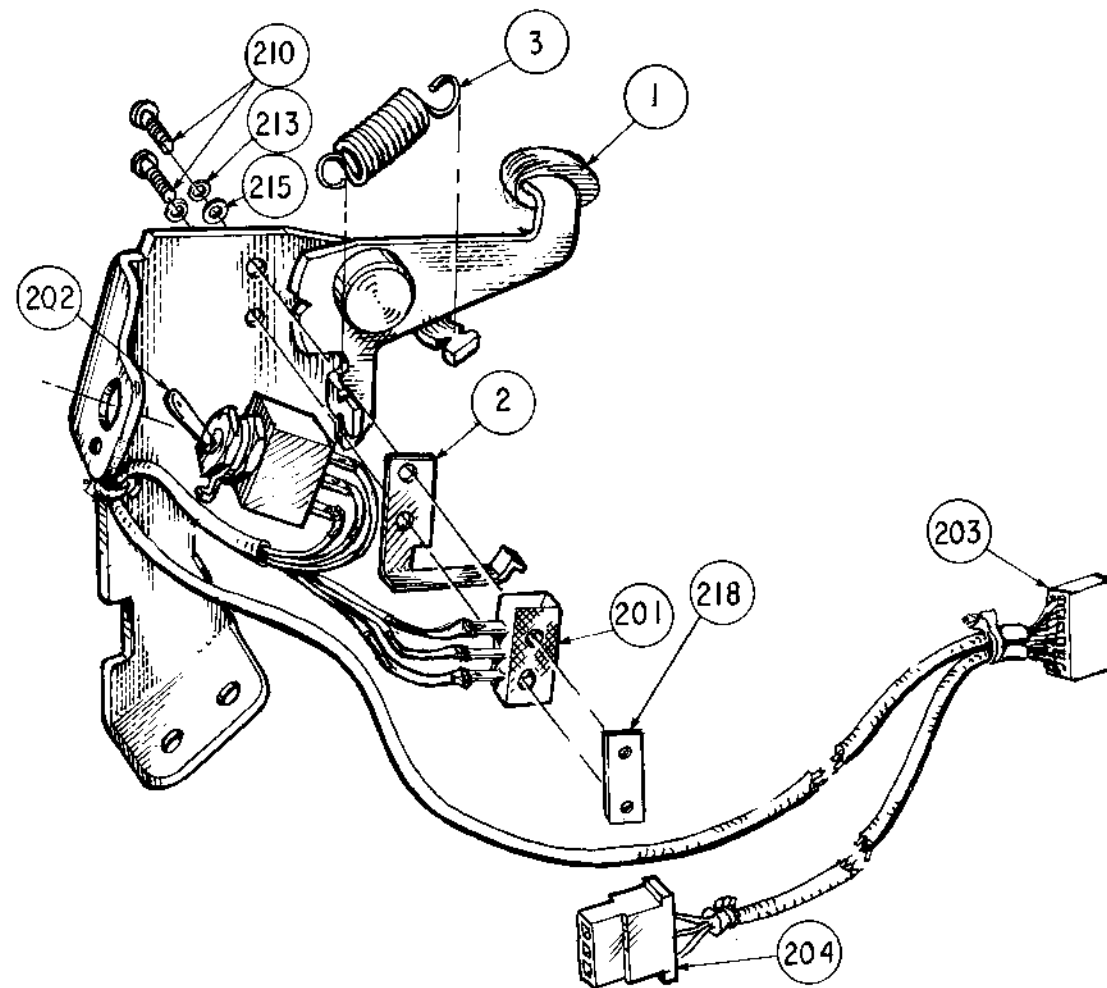


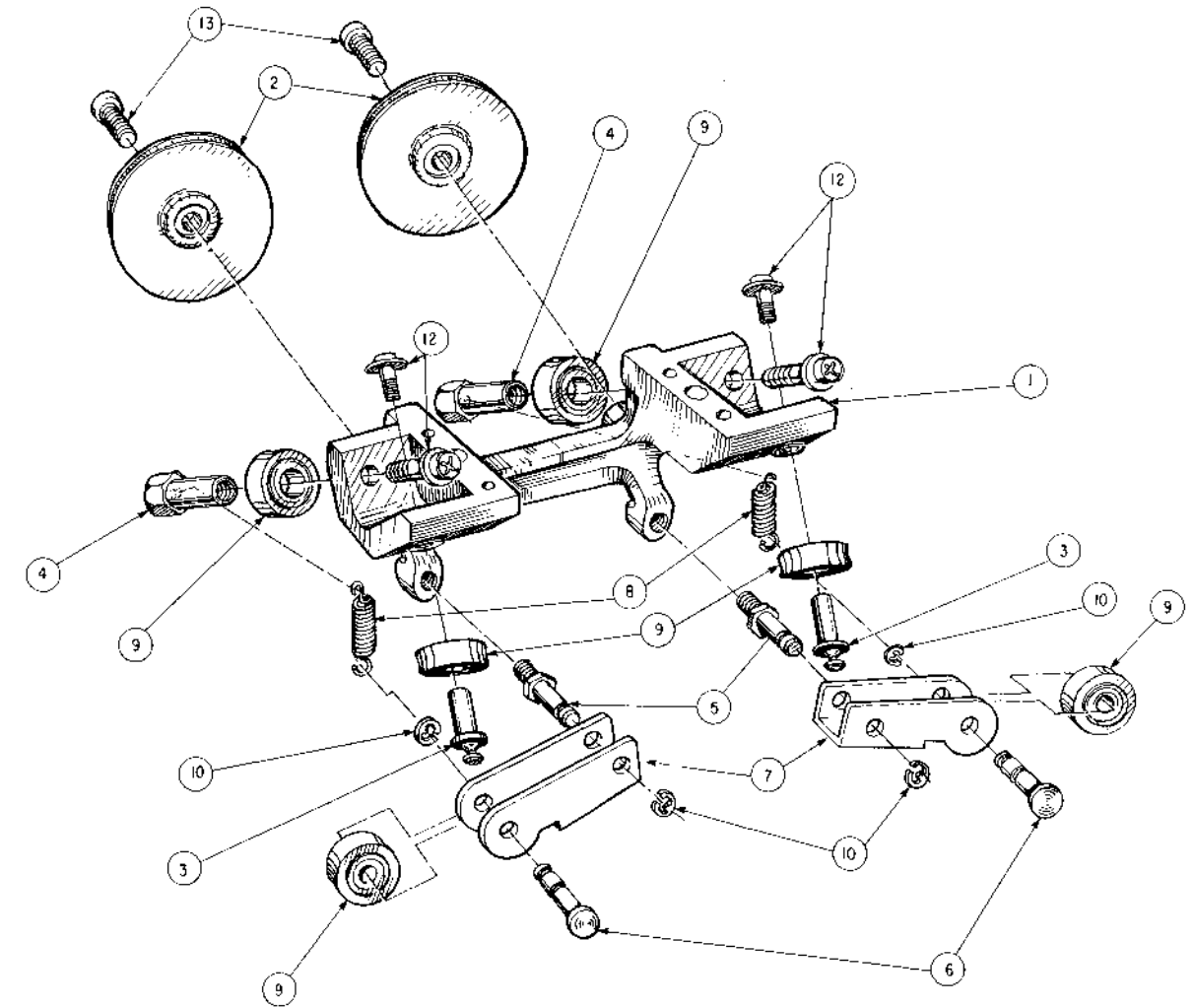
Figure 6-25 Pressure Roller Assembly



136-734988-A Cover Switch Assembly Rev. 4  
(See Figure 6-7 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-722884-A	Cover Switch Feeler Assembly	1
2	136-722787-A	Switch Stopper Spring	1
3	136-722893-A	Cover Switch Spring	1
201	808-950320-001-A	Switch	1
202	808-950314-005-A	Switch, Toggle	1
203	808-955111-281-A	Connector	1
204	808-955140-421-A	Connector	1
210	805-000002-012-0	CPIMSx2x12x15BF	2
213	805-620002-0	#2STLWx2x15BF	2
215	805-610002-0	PIWx2x15BF	2
218	136-726943-A	Switch Plate	1

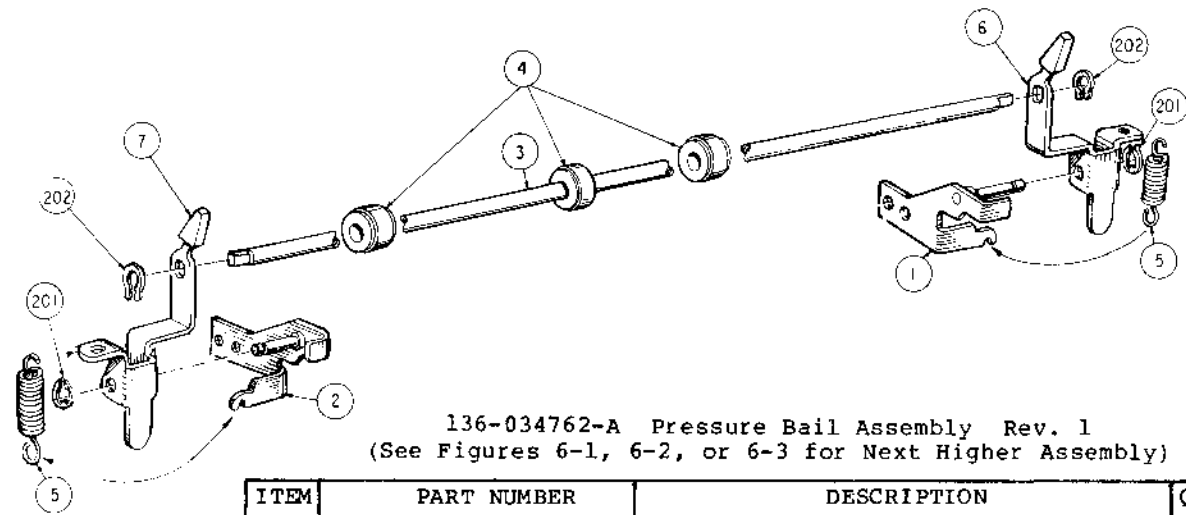
Figure 6-26 Cover Switch Assembly



136-031412-A Guide Casting Assembly Rev. 2  
(See Figure 6-7 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-720275-A	Guide Casting	1
2	803-020001-A	Guide Pulley	2
3	136-720248-A	Wire Hook	2
4	136-723434-A	Spring Anchor	2
5	136-723797-A	Stud (Bearing and Rotor)	2
6	136-723796-A	Bearing Stud	2
7	136-723795-A	Bearing Holder A	2
8	136-720277-A	Spring Guide Casting	2
9	803-020023-002-A	Ball Bearing Assembly	6
10	803-010030-032-0	E Ring E-32	4
12	805-320003-006-0	PL-CPIMSx3x6x15BF	4
13	805-000004-010-0	CPIMSxx 4x10x15BF	2

Figure 6-27 Guide Casting Assembly

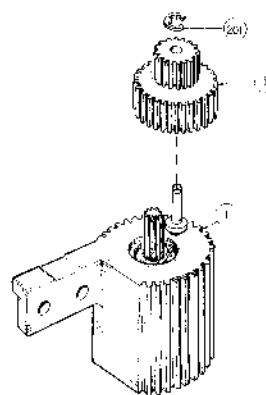


136-034762-A Pressure Bail Assembly Rev. 1  
(See Figures 6-1, 6-2, or 6-3 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-720122-001-A	Bail Plate Assembly - Right Side	1
2	136-720122-002-A	Bail Plate Assembly - Left Side	1
3	136-722769-A	Bail Shaft	1
4	808-805000-A	Bail Roller Assembly	3
5	136-710332-A	Bail Spring	2
6	136-722896-001-A	Bail Arm Assembly - Right Side	1
7	136-722896-002-A	Bail Arm Assembly - Left Side	1
201	803-010030-032-0	E Ring E-32	2
202	808-802006-050-0	Fastener GS-5.0	2
203*	805-300003-006-0	PL-CPIMSx3x6 x15BF	4

\* Screws #203 are not shown. They are used to fasten the pressure bail assembly to the printer.

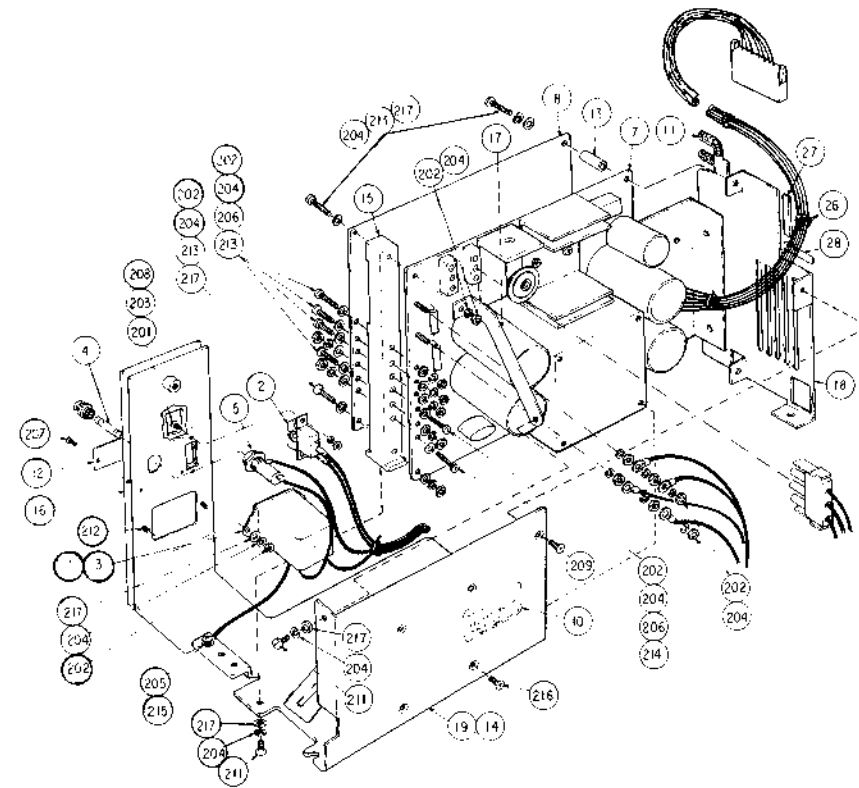
Figure 6-28 Pressure Bail Assembly



136-722844-A Ribbon Drive Assembly Rev. 3  
(See Figure 6-22 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	804-020201-A	Stepping Motor	1
3	136-722802-A	Idler Gear	1
201	803-010030-032-0	E Ring	1

Figure 6-29 Ribbon Drive Assembly

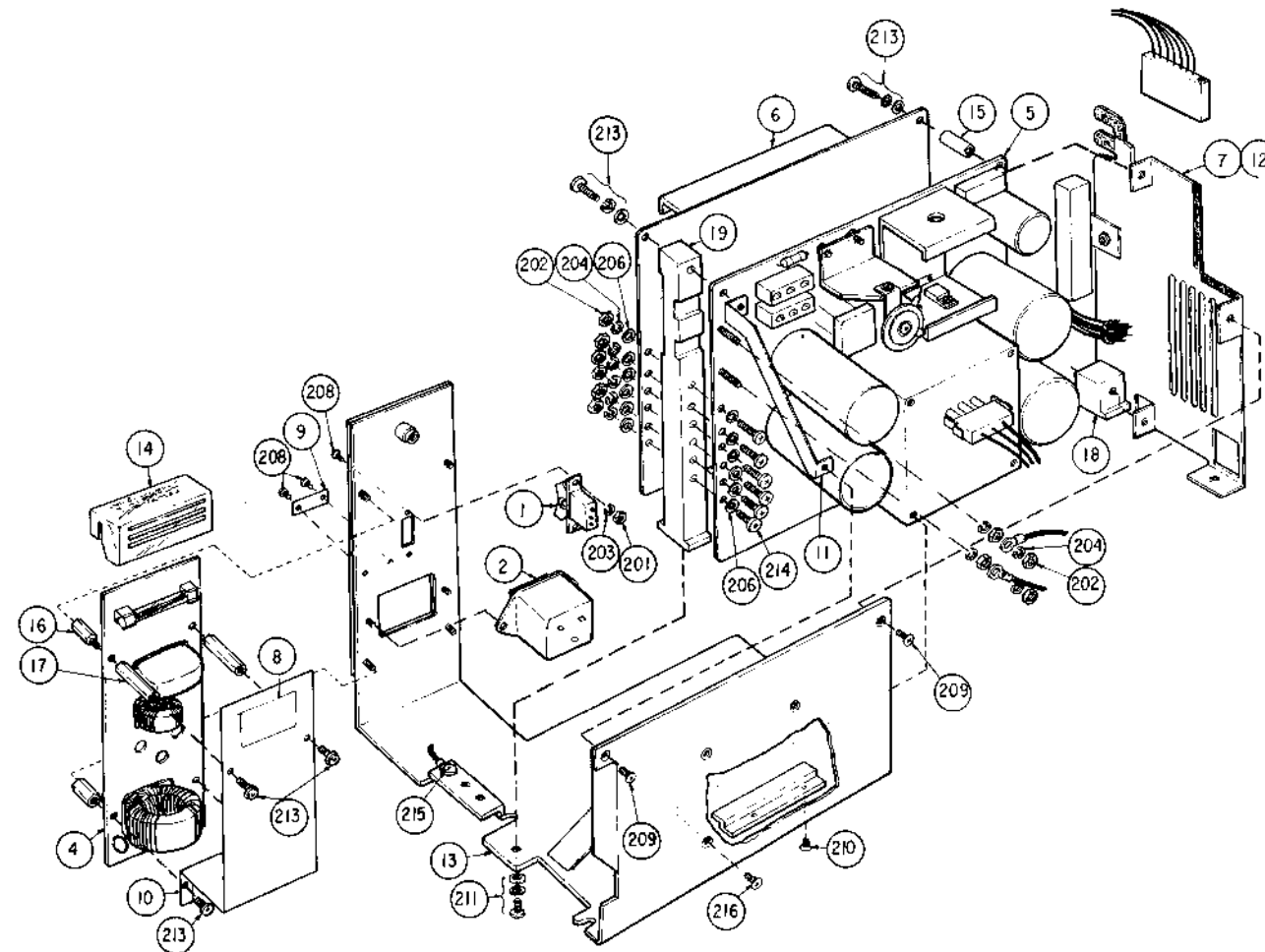


136-034425-A Old Power Supply Unit  
(See Figure 6-8 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	808-970204-001-A	Noise Filter 6EF2 or 610H6	1
2	808-950314-007-A	Switch U1J12QE-9	1
3	808-927005-002-A	Resistor ENB461D-14A or TNR15U5615	1
4	808-960301-002-A	Fuse, 115 Vac 313005 or ST4250V3A (5 A)	1
4	808-960301-003-A	Fuse, 230 Vac 313003 or ST4250V3A (3 A)	1
5	808-960311-001-A	Fuse Holder Cat. No. N1(S-N1301)	1
7	136-020131-A	P11 PCB (See Figure 6-51 for Breakdown)	1
8	136-020132-A	P12 PCB (See Figure 6-52 for Breakdown)	1
10	136-701405-A	Label	1
11	136-738501-A	Vinyl Tube	1
12	136-701406-A	Label for Conversion	1
13	136-738502-A	Collar	1
14	136-738503-A	Foot	1
15	136-738504-A	Foot	1
16	136-738505-A	Dress Panel	1
17	136-738506-A	Locking Bracket	1
18	136-738507-A	Insulating Plate	1
19	136-738508-A	Chassis	1
20	136-041512-A	Cable	1
21	136-041513-A	Cable	1
22	136-041514-A	Cable	1
23	136-738509-A	Strap	1
24	136-738510-A	Strap	1
25	136-738511-A	Strap	1
26	136-738512-A	Tie-Wrap	4
27	136-738513-001-A	Edge Cover	1
28	136-738513-002-A	Edge Cover	1
201	805-501102-0	ABExBNx2x3GF	2
202	805-501103-0	ABExBNx3x3GF	11
203	805-623102-0	#2PBLWx2x3GF	2
204	805-623103-0	#2PBLWx3x3GF	17
205	805-623104-0	#2PBLWx4x3GF	1
206	805-601103-0	SBWx3x3GF	12
207	805-001102-006-0	CPBMSx2x6x3GF	2
208	805-001102-008-0	CPBMSx2x8x3GF	2
209	805-011103-006-0	CPBMSx3x6x3GF	1
210	805-011103-008-0	CPBMSx3x8x3GF	2
211	805-001103-008-0	CPBMSx3x8x3GF	3
212	805-011103-010-0	CPBMSx3x10x3GF	3
213	805-001103-018-0	CPBMSx3x18x3GF	8
214	805-001103-025-0	CPBMSx3x25x3GF	2
215	805-001104-008-0	CPBMSx4x8x3GF	1
216	805-011104-008-0	CPBMSx4x8x3GF	4
217	805-611103-0	EBWx3x3GF	9

Figure 6-30 Old Power Supply Unit

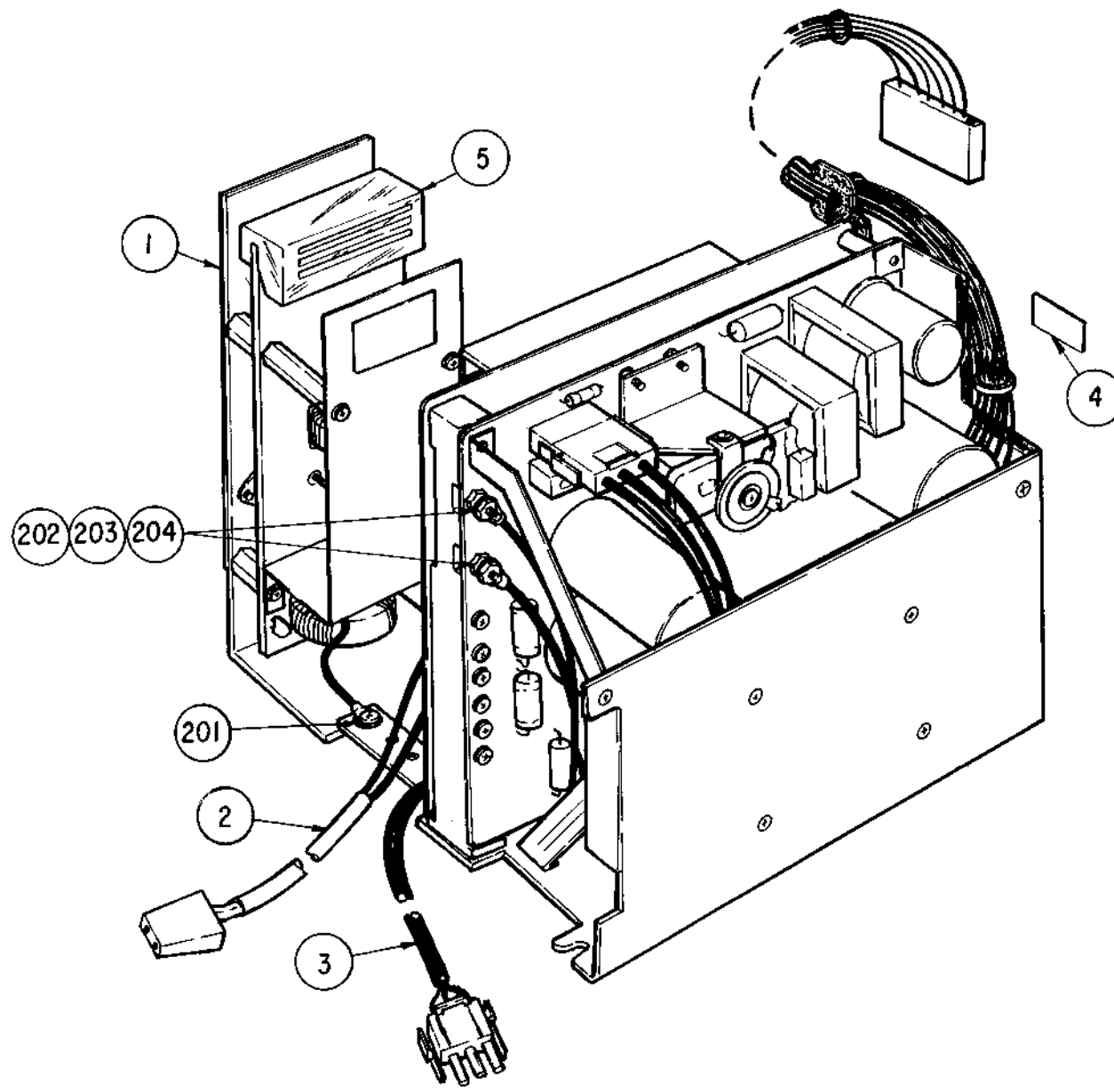
136-034425-A New Power Supply Unit Rev. 4  
(See Figure 6-8 for Next Higher Assembly)



ITEM	PART NUMBER	DESCRIPTION	QTY
1	808-950331-025-A	Switch U11J1ZQ1-9 or M-20120-B1A	1
2	808-955192-001-A	Inlet NC-173	1
3	808-930162-005-A	Resistor W20P43 K-FD1	1
4	808-863125-018-B	P18 PCB (See Figure 6-53 for Breakdown)	1
5	136-020131-B	P19 PCB (See Figure 6-54 for Breakdown)	1
6	136-020132-B	P20 PCB (See Figure 6-55 for Breakdown)	1
7	136-701405-A	Name Label	1
8	136-747693-A	Warning Label	1
9	136-701406-A	Input Voltage Plate	1
10	136-747694-A	Shield Plate	1
11	136-747695-A	Locking Bracket	1
12	136-738507-A	Insulating Plate	1
13	136-747696-A	Chassis	1
14	136-746698-A	Fuse Cover	1
15	136-738502-A	Collar	1
16	136-747697-001-A	Spacer	4
17	136-746697-002-A	Spacer	2
18	136-738503-A	PCB Support	1
19	136-738504-A	PCB Support	1
201	805-501102-0	AHExBNx2x3GF	2
202	805-501103-0	AHExBNx3x3GF	8
203	805-623102-0	#2PBLWx2x3GF	2
204	805-623103-0	#2PBLWx3x3GF	14
206	805-601103-0	SBWx3x3GF	12
208	805-001102-008-0	CPBMSx2x8x3GF	4
209	805-011103-006-0	CFBMSx3x6x3GF	2
210	805-011103-008-0	CFBMSx3x8x3GF	2
211	805-301103-008-0	PL-CPBMSx3x8x3GF	2
212	805-011103-008-0	CFBMSx3x8x3GF	2
213	805-301103-018-0	PL-CPBMSx3x18x3GF	7
214	805-001103-025-0	CPBMSx3x25x3GF	2
215	805-301104-008-0	PL-CPBMSx4x8x3GF	1
216	805-011104-008-0	CFBMSx4x8x3GF	4
217	805-611103-0	PBWx3x3GF	6

Note: 136-034425-A is the drawing number only. See the Power Supply Assembly IPB for actual unit part numbers.

Figure 6-31 New Power Supply Unit



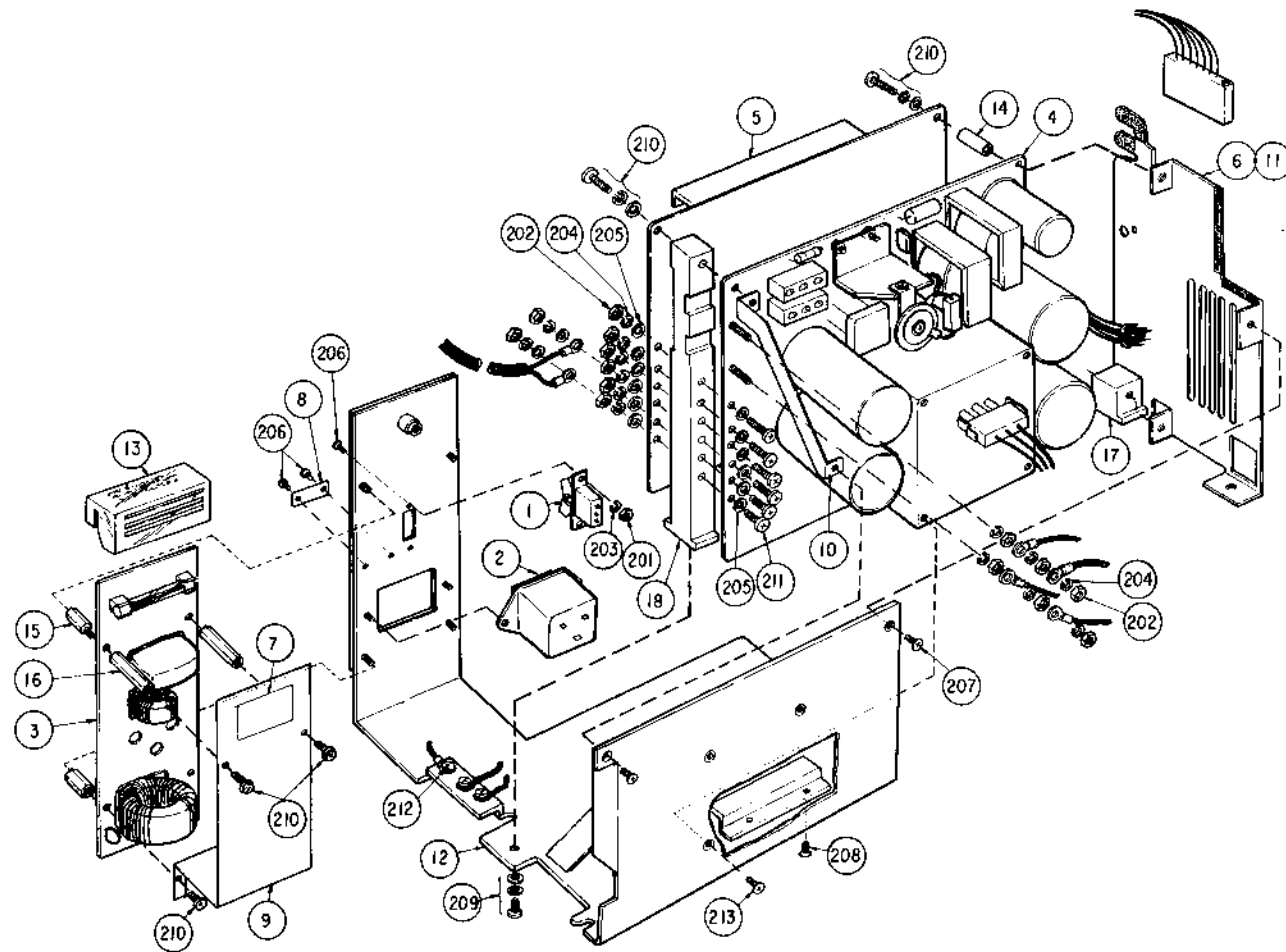
136-035872-GRP-A High Capacity Power Supply Assembly Rev. 2  
 (See Figures 6-2 or 6-3 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY*					
			201	202	211	212	203	213
1	808-862404-201-A	Power Supply Unit	1		1			
1	808-862404-202-A	Power Supply Unit (See Figure 6-33 for Breakdown)		1		1	1	1
2	136-041351-001-A	Fan Cord Assembly	1	1	1	1	1	1
3	136-041352-001-A	Power Switch Cord Assembly			1	1		1
4	136-700608-004-A	Unit Label	1	1	1	1	1	1
5	808-960301-005-A	Fuse 313005 (5 A)	1	1	1	1		
5	808-960301-003-A	Fuse 313003 (3 A)					1	1
201	805-311104-008-0	SL-CPBMSx4x8x3GF	2	2	2	2	2	2
202	805-501103-0	AHEXBNx3x3GF	2	2	4	4	2	4
203	805-622103-0	#2STLWx3x3GF	2	2	4	4	2	4
204	805-601103-0	SBWx3x3GF	2	2	4	4	2	4
205	805-300004-008-0	PL-CPIMSx4x8x15BF	2	2	2	2	2	2
206	805-300004-014-0	PL-CPIMSx4x14x15BF	1	1	1	1	1	1

\* 201 and 211 are 100 V supplies, 202 and 212 are 115 V supplies.  
 203 and 213 are 230 V supplies.

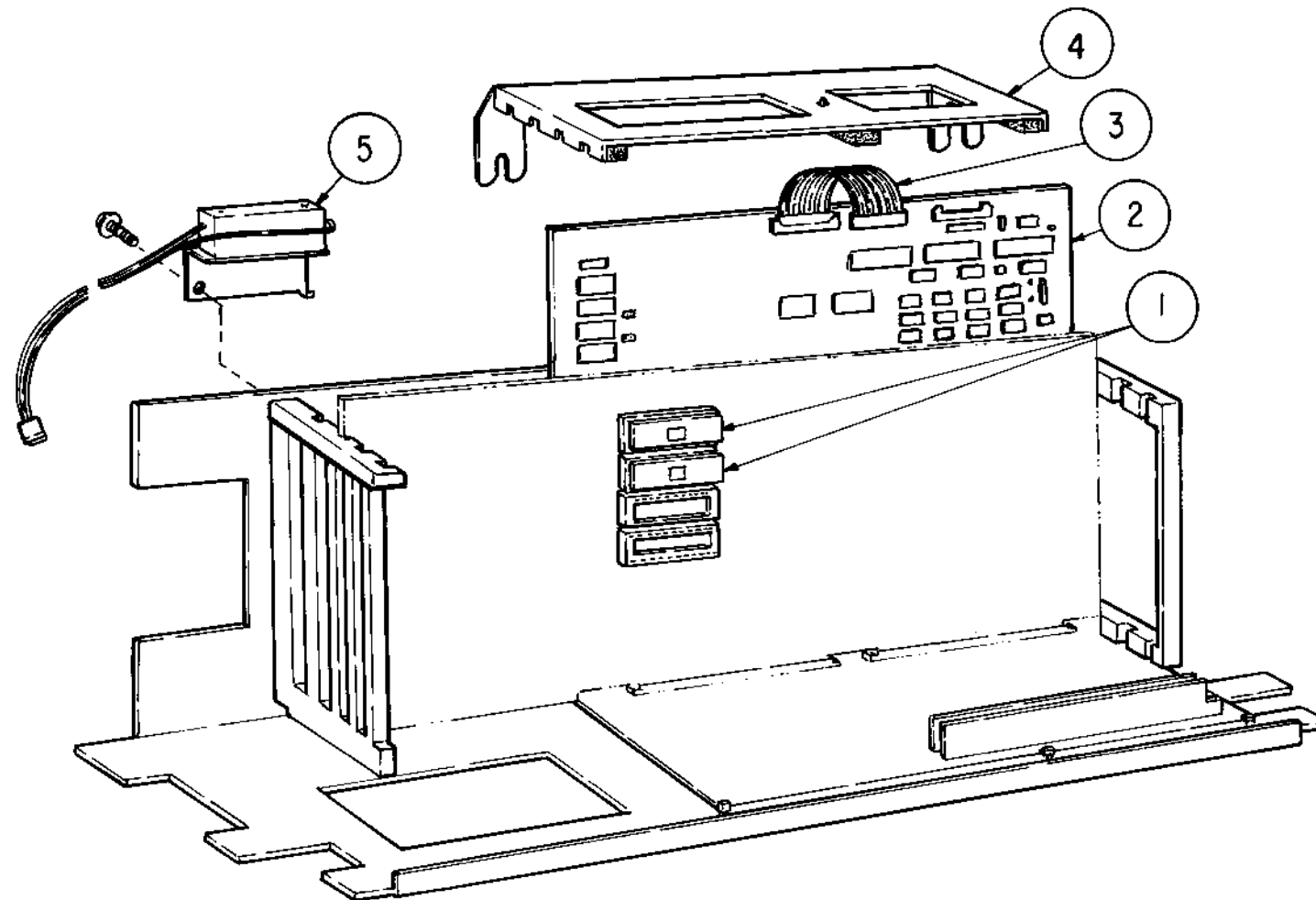
Figure 6-32 High Capacity Power Supply Assembly

808-862404-202-A High Capacity Power Unit Rev. 1  
 (See Figure 6-32 for Next Higher Assembly)



ITEM	PART NUMBER	DESCRIPTION	QTY
1	808-950331-025-A	Switch U11J1ZQI-9 or M-2012-B1A	1
2	808-955192-001-A	Inlet NC-173	1
3	808-863125-018-A	P18 PCB (See Figure 6-53 for Breakdown)	1
4	808-863125-030-A	P30 PCB (See Figure 6-56 for Breakdown)	1
5	808-863125-031-A	P31 PCB (See Figure 6-57 for Breakdown)	1
6	136-701405-A	Name Label	1
7	136-747693-A	Warning Label	1
8	136-701406-A	Input Voltage Plate	1
9	136-747694-A	Shield Plate	1
10	136-747695-A	Locking Bracket	1
11	136-738507-A	Insulating Plate	1
12	136-747696-A	Chassis	1
13	136-747698-A	Fuse Cover	1
14	136-738502-A	Collar	1
15	136-747697-001-A	Spacer	4
16	136-747697-002-A	Spacer	2
17	136-738503-A	PCB Support	1
18	136-738504-A	PCB Support	1
201	805-501102-0	AHEXBNx2x3GF	2
202	805-501103-0	AHEXBNx3x3GF	8
203	805-623102-0	#2PBLWx2x3GF	2
204	805-623103-0	#2PBLWx3x3GF	14
205	805-601103-0	SWBx3x3GF	12
206	805-001102-008-0	CPBMSx2x8x3GF	4
207	805-011103-006-0	CFBMSx3x6x3GF	2
208	805-011103-008-0	CFBMSx3x8x3GF	4
209	805-301103-008-0	PL-CPBMSx3x8x3GF	2
210	805-301103-018-0	PL-CPBMSx3x18x3GF	7
211	805-001103-025-0	CPBMSx3x25x3GF	2
212	805-301104-008-0	PL-CPBMSx4x8x3GF	1
213	805-011104-008-0	CFBMSx4x8x3GF	4
214	805-611103-0	PBWx3x3GF	6

Figure 6-33 High Capacity Power Unit



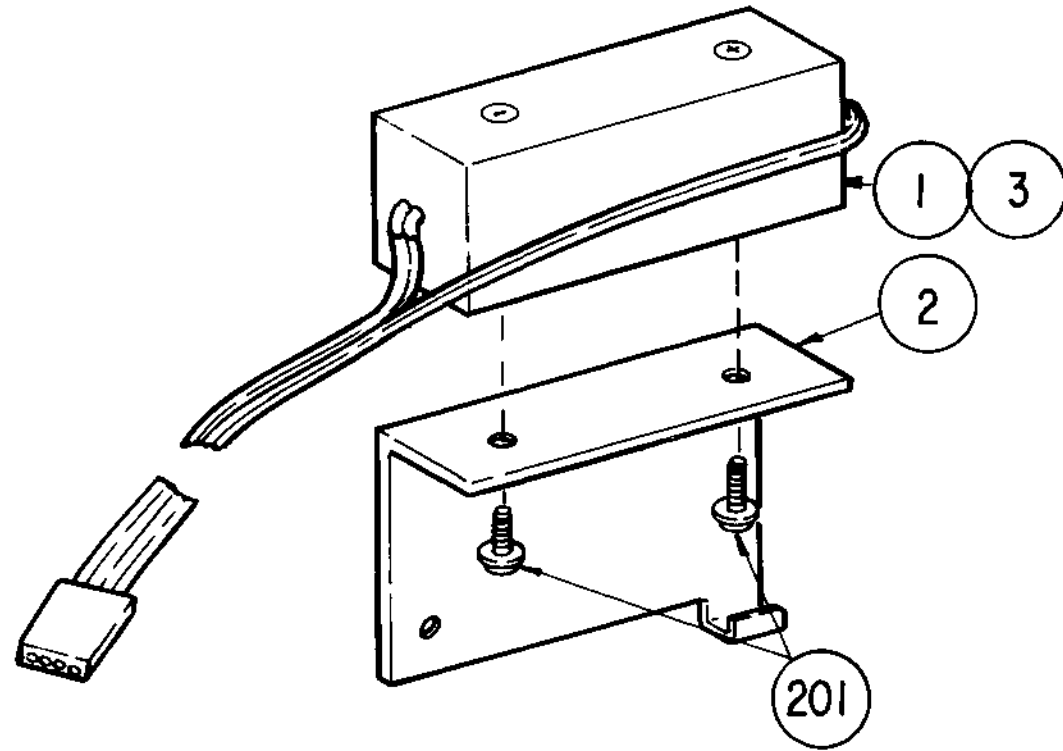
ITEM	PART NUMBER	DESCRIPTION	QTY			
			110	115	510	515
1	136-035063-901-A	PROM 2532 (2)	See Note 1			
2	136-035780-110-A	G9JHX110 PCB (See Figure 6-58 for Breakdown)	1			
2	136-035780-115-A	G9JHX115 PCB (See Figure 6-58 for Breakdown)		1		
2	136-035780-510-A	G9JHX510 PCB (See Figure 6-59 for Breakdown)			1	
2	136-035780-515-A	G9JHX515 PCB (See Figure 6-59 for Breakdown)				1
3	136-042178-001-A	G9JHX Interface Cable Assembly	1	1	1	1
4	136-747361-A	PCB Clamp Assembly	1	1	1	1
5	136-035694-001-A	Battery Accessory Assembly (See Figure 6-35 for Breakdown)	(Optional)			

Cable Connection Diagram

CABLE	CONNECTION POINTS	
	G9JHW PCB	G9JHX PCB
G9JHX Interface Cable	CN31	CN42
Battery Cable	--	CN43
Serial Interface Cable	--	CN40
Operator Control Panel Cable	--	CN41

- NOTES: 1. PROMs Z34 to Z37 on the G9JHW PCB must be removed and replaced with PROMs Z34 and Z35 in the kit. Normally a G9JHW PCB with the correct PROMs installed is included in the kit.
2. The installed PCB clamp must be replaced with the PCB clamp in the kit.
3. The cables must be attached as shown in the Cable Connection Diagram.
4. The Battery and Accessory Assembly cable must be connected as shown.
5. The operator control panel cable must be connected as shown.
6. The serial interface cable must be connected as shown.

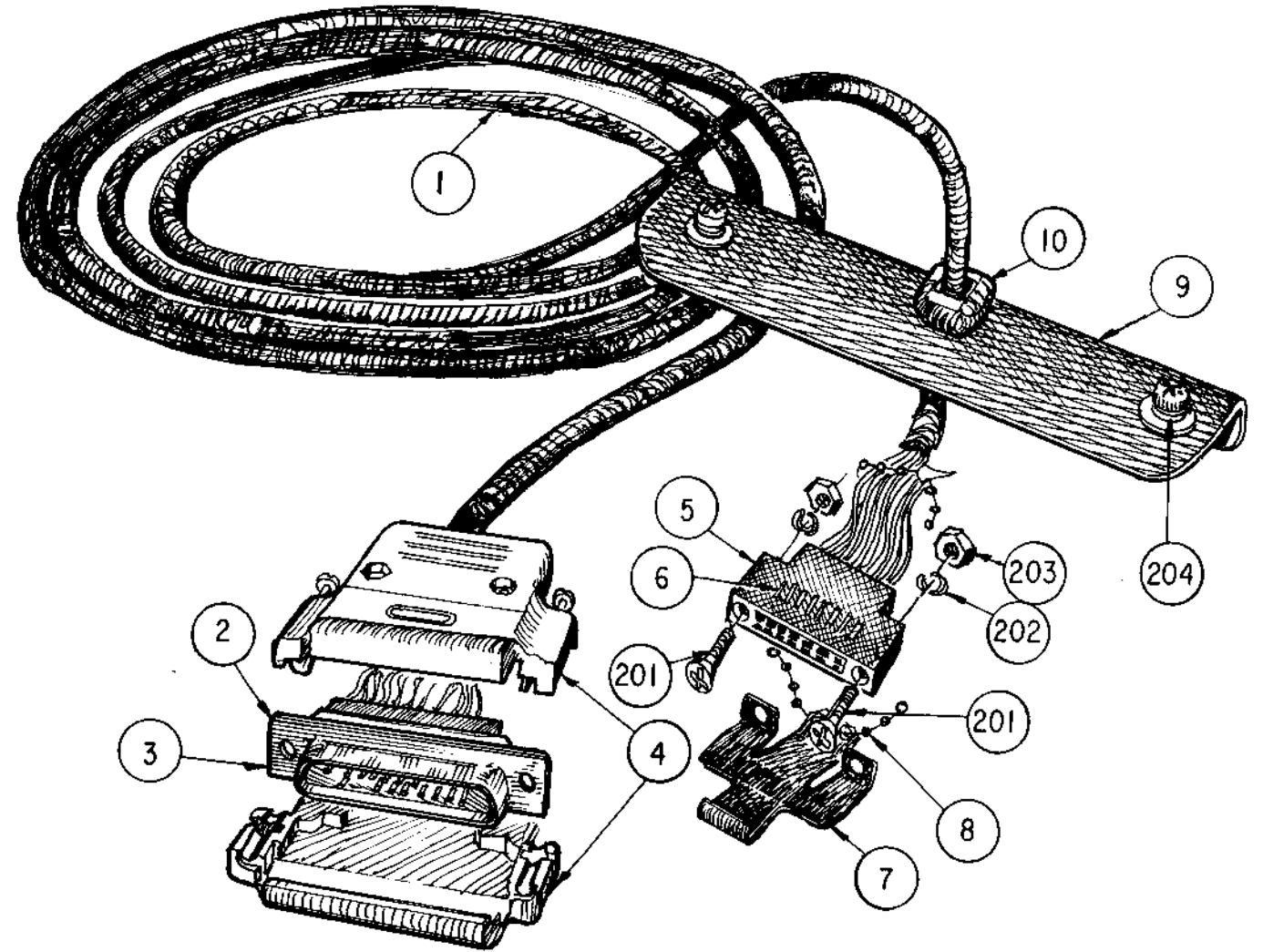
Figure 6-34 G9JHX PCB Kit



136-035694-001-A Battery Accessory Assembly Rev. 3  
(See Figure 6-34 for Next Higher Assembly)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	136-747351-001-A	Battery and Label Assembly	1
2	136-747352-A	Battery Bracket	1
3	136-739471-A	Battery Case	1
201	805-000023-006-0	CPIMSx2.3x6x15BF	2

Figure 6-35 Battery Accessory Assembly

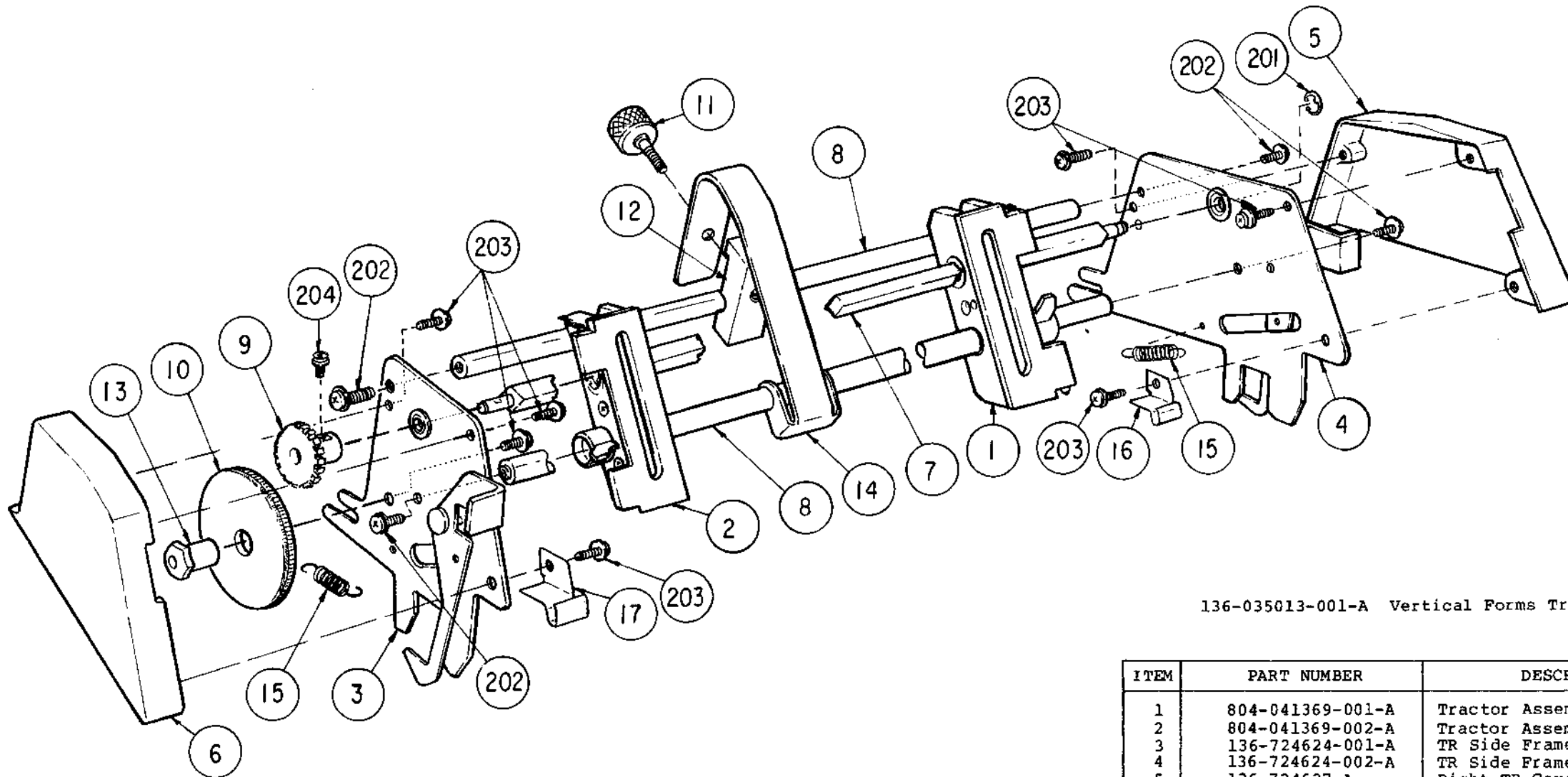


136-034067-A Serial Interface Cable Assembly Rev. 1

ITEM	PART NUMBER	DESCRIPTION	QTY
1	808-847002-0	Cable UL-2448 AWG 24x15	3.5 m
2	808-955113-205-A	Shell Housing DBC-25P-FO	1
3	808-955113-222-A	Contact 030-50635	12
4	802-710010-101-0	Housing DB-C2-J9	1
5	808-955140-804-A	Housing 2-86256-2	1
6	808-955140-802-A	Pressure Type Contact 86016-4	12
7	136-710322-B	Connector Lock	1
8	808-814005-A	IB Tie	1
9	136-723215-A	Bracket	1
10	808-814007-002-A	Cable Clamp SR-6N3-4	1
201	805-010023-014-0	CFIMSx2.3x14x15BF	2
202	805-622023-0	#2STLWx2.3x15BF	2
203	805-500023-0	AHEXINx2.3x15BF	2
204	805-300004-008-0	PL-CPIMSx4x8x15BF	2

Figure 6-36 Serial Interface Cable Assembly





136-035013-001-A Vertical Forms Tractor Assembly Rev. 1

ITEM	PART NUMBER	DESCRIPTION	QTY
1	804-041369-001-A	Tractor Assembly	1
2	804-041369-002-A	Tractor Assembly	1
3	136-724624-001-A	TR Side Frame Assembly	1
4	136-724624-002-A	TR Side Frame Assembly	1
5	136-724627-A	Right TR Cover	1
6	136-724628-A	Left TR Cover	1
7	136-722764-A	Drive Shaft	1
8	136-722762-A	Hold Shaft	2
9	136-722759-A	Drive Gear	1
10	136-724629-A	Idler Gear	1
11	136-724630-A	Lock Screw	1
12	136-724634-A	Lock Piece	1
13	136-724632-A	Idler Gear Bushing	1
14	136-724633-A	Center Guides	1
15	136-722879-A	Spring	2
16	136-740072-001-A	Tractor Lock Spring	1
17	136-740072-002-A	Tractor Lock Spring	1
201	803-010030-040-0	E-40	1
202	805-300004-008-0	PL-CPIMSx4x8x15BF	4
203	805-300103-008-0	PL-CPIMSx3x8x3GF	7
204	805-330003-006-0	L-CPIMSx3x6x15BF	1

Figure 6-37 Vertical Forms Tractor Assembly

136-431353-B G9JHM PCB Rev. 9

136-431353-B G9JHM PCB

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
C1-C3, C8, C12-C16	802-410030-001-0	Capacitor, Ceramic, 0.1 $\mu$ F, 50 Vdc, +80, -20%	9
C4, C5	808-935410-033-A	Capacitor, Tantalum, 6.8 $\mu$ F, 35 Vdc, +20%	2
C6, C7	808-935590-059-A	Capacitor, Ceramic, 3300 pF, 50 Vdc, +20%	2
C9, C10	808-935390-006-A	Capacitor, Electrolytic, 2200 $\mu$ F, 25 Vdc, +20%	2
C11	808-935411-014-A	Capacitor, Tantalum, 1 $\mu$ F, 16 Vdc, +20%	1
C17	808-935410-016-A	Capacitor, Tantalum, 22 $\mu$ F, 16 Vdc, +20%	1
CM1	808-935568-001-A	Capacitor Module B5BC0113-32	1
CN1	808-955150-054-A	Connector 5066-06AG	1
CN2	808-955111-146-A	Connector PS-34PA-D4T1-L1	1
CN3	808-955150-051-A	Connector 5066-03AG	1
CN4	808-955111-141-A	Connector PS-10PA-D4T1-L1	1
CN5	808-955132-433-A	Header 3428-2002LGC	1
CN6	808-955140-872-A	Post Header 87224-5	1
CN7	808-955142-610-A	Header 1-641126-0	1
CN8	808-955150-042-A	Connector 5142-04AG	1
CN9	808-955140-882-A	Pin Header 1-87633-4	1
D1, D7	808-923302-021-A	Rectifier, Silicon F14C	2
D2, D10, D11, D12	808-923009-531-A	Diode, Silicon 1S953	4
D3, D4	808-923505-245-A	Diode, Zener RD18FB, 18 Vdc, 1 W	2
D5, D9, D30	808-923330-001-A	Diode, F114B, 0.8A Fast Recovery	3
D6	808-923504-305-A	Diode, Zener, RD33EB, 33 Vdc 400 mW	1
D8	808-923504-115-A	Diode, Zener, RD5.1ER, 5.1 Vdc 250 mW	1
DM1-DM3	808-924003-002-A	Diode Module M1-101R	3
DM4	808-924003-001-A	Diode Module M1-101	1
DM5, DM6	808-923202-011-A	Diode Module 5DH1M	2
DM7	808-910000-544-A	Diode Module $\mu$ PA54H	1
Q1-Q4, Q10, Q13, Q15	808-920106-011-A	Transistor 2SB601	7
Q5, Q11, Q16, Q17	808-920008-831-A	Transistor 2SA883	6
Q21, Q23			
Q6, Q7, Q9, Q12, Q14	808-920405-601-A	Transistor 2SD560	5
Q8	808-920405-581-A	Transistor 2SD558	1
Q18, Q24	808-920200-972-A	Transistor 2SC97A	2
Q19, Q25	808-920223-341-A	Transistor 2SC2334	2
Q20, Q26	808-920010-101-A	Transistor 2SA1010	2
Q22, Q27	808-920005-711-A	Transistor 2SA571	2
Q80, Q81	808-920218-331-A	Transistor 2SC1833	2
R1	808-930165-101-A	Resistor, Wire Wound, AS-2-1 F	1
R2	802-310021-073-0	Resistor, Fixed Film, 10 k $\Omega$ , 1/4 W, +2%	1
R3, R4	802-310021-085-0	Resistor, Fixed Film, 33 k $\Omega$ , 1/4 W, +2%	2
R5, R8	802-310021-032-0	Resistor, Fixed Film, 200 $\Omega$ , 1/4 W, +2%	2
R6, R9	802-310021-043-0	Resistor, Fixed Film, 560 $\Omega$ , 1/4 W, +2%	2
R7	802-310021-055-0	Resistor, Fixed Film, 1.8 k $\Omega$ , 1/4 W, +2%	1
R10	802-310021-058-0	Resistor, Fixed Film, 2.4 k $\Omega$ , 1/4 W, +2%	1

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
R11	808-930324-042-A	Resistor, 510 $\Omega$ , 1/2 W, +1%	1
R12, R15	802-310021-025-0	Resistor, Fixed Film, 100 $\Omega$ , 1/4 W, +2%	2
R13, R14	802-310021-018-0	Resistor, Fixed Film, 51 $\Omega$ , 1/4 W, +2%	2
R16	808-930324-046-0	Resistor, 750 $\Omega$ , 1/2 W, +1%	1
R17	802-310004-092-0	Resistor, Wire Wound, 0.3 $\Omega$ , +5%	1
R18	802-310004-081-0	Resistor, Wire Wound, 0.1 $\Omega$ , +5%	1
R19	802-310021-001-0	Resistor, Fixed Film, 10 $\Omega$ , 1/4 W, +2%	1
R80	802-310021-088-0	Resistor, Fixed Film, 43 k $\Omega$ , 1/4 W, +2%	1
R81, R82	802-310021-065-0	Resistor, Fixed Film, 4.7 k $\Omega$ , 1/4 W, +2%	2
R83	802-310021-070-0	Resistor, Fixed Film, 7.5 k $\Omega$ , 1/4 W, +2%	1
RCM1	808-934901-002-A	Module CR-002	1
RM1	808-930394-014-A	Resistor Module NWR2-014	1
RM2	808-930394-013-A	Resistor Module NWR2-013	1
RM3	808-930394-018-A	Resistor Module NWR2-018	1
RM4	808-930394-016-A	Resistor Module NWR2-016	1
RM5	808-930394-015-A	Resistor Module NWR2-015	1
RM6	808-930394-008-A	Resistor Module NWR2-008	1
RM7	808-930394-009-A	Resistor Module NWR2-009	1
RM8, RM9	808-930394-017-A	Resistor Module NWR2-017	2
RM10	808-930394-001-A	Resistor Module NWR2-001	1
RM11	808-930394-011-A	Resistor Module NWR2-011	1
RM12	808-930394-024-A	Resistor Module NWR2-024	1
RM13	808-930394-025-A	Resistor Module NWR2-025	1
RM14	808-930394-023-A	Resistor Module NWR2-023	1
RM15	808-930394-027-A	Resistor Module NWR2-027	1
RM16	808-930394-026-A	Resistor Module NWR2-026	1
RM17	808-930394-002-A	Resistor Module NWR2-002	1
RM18	808-930394-010-A	Resistor Module NWR2-010	1
Z1, Z15, Z18	808-912100-061-A	Integrated Circuit SN7406N	3
Z2	808-912140-041-A	Integrated Circuit SN74LS04N	1
Z3	808-912140-031-A	Integrated Circuit SN74LS03N	1
Z4	808-914910-001-A	Integrated Circuit UHP-407	1
Z5	808-912100-091-A	Integrated Circuit SN7409N	1
Z6	808-919179-121-A	Integrated Circuit $\mu$ A7912	1
Z7	808-910201-433-A	Integrated Circuit $\mu$ PC14312H	1
Z8	808-914250-001-A	Integrated Circuit CD4051BE	1
Z9, Z10	808-910214-581-A	Integrated Circuit $\mu$ PC1458C	2
Z11	808-910202-771-A	Integrated Circuit $\mu$ PC177C	1
Z12	808-912100-451-A	Integrated Circuit SN7445N	1
Z13, Z14	808-912204-521-A	Integrated Circuit SN75452BP	2
Z16, Z17	808-910201-771-A	Integrated Circuit $\mu$ PC177C	2
Z19	808-912100-071-A	Integrated Circuit SN7407N	1
(1)	136-451353-G	G9JHM PCB	1
(86)	808-955130-389-A	Key 3518	2
(100)	804-030033-019-0	Tube AWG #19	AR
(102)	133-350040-0	Spacer B	4
(103)	136-725133-A	Bushing	20
(104)	805-310025-008-0	SL-CPIMSx2.5x8x15BF	20
(106)	136-733884-001-A	Spacer	1
(107)	136-733884-002-A	Spacer	1
(109)	136-733883-001-A	Heat Sink	1
(110)	136-733883-002-A	Heat Sink	1
(111)	808-837000-001-0	Silicon Rubber RTV	AR
(112)	133-310003-003-0	Separator	2

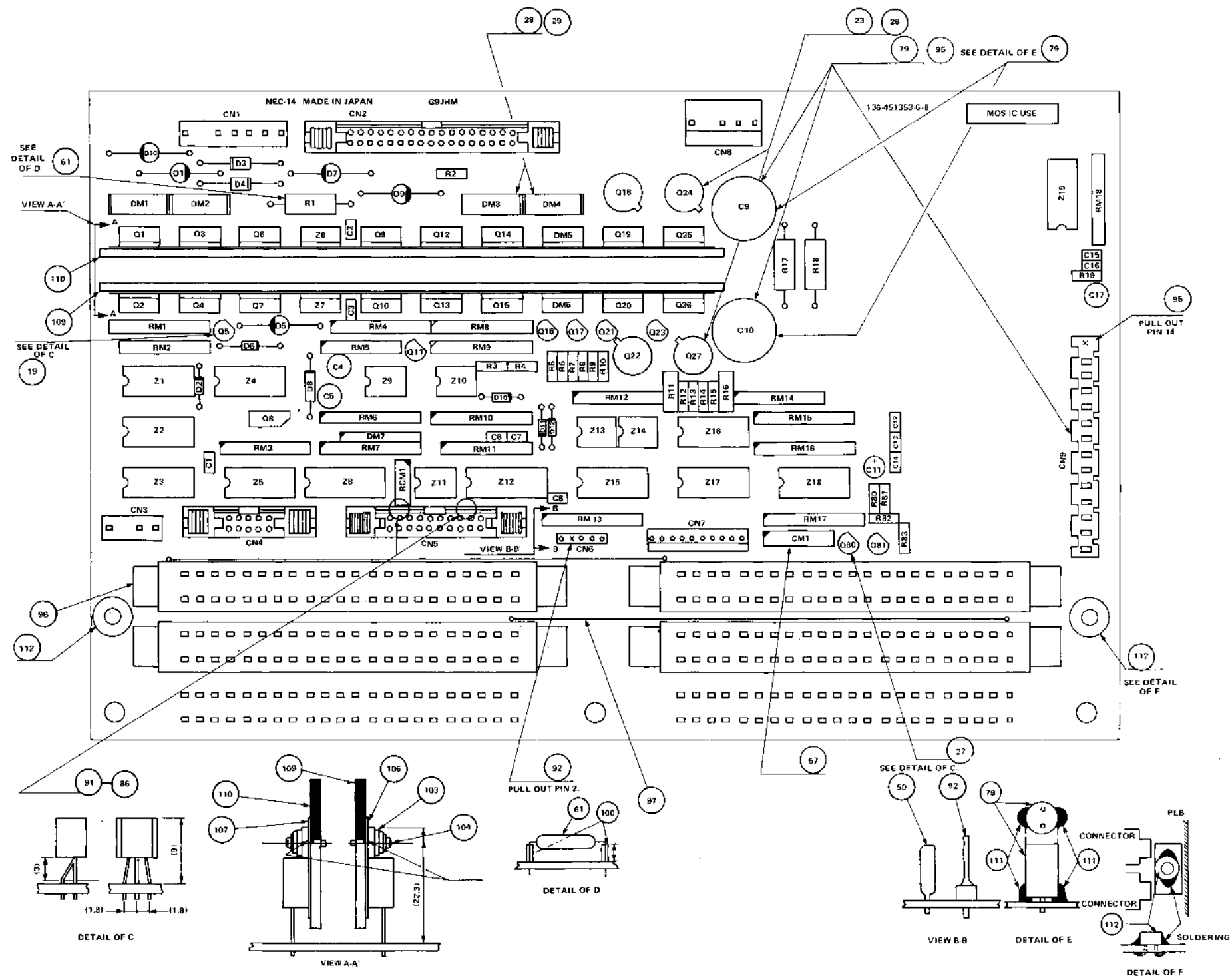
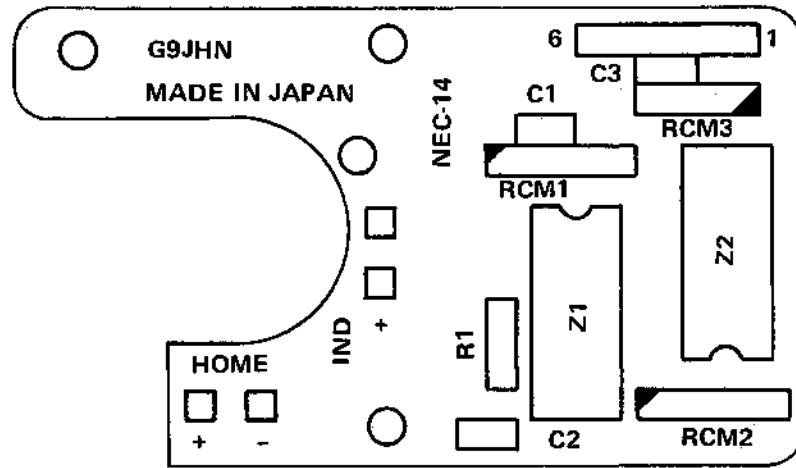


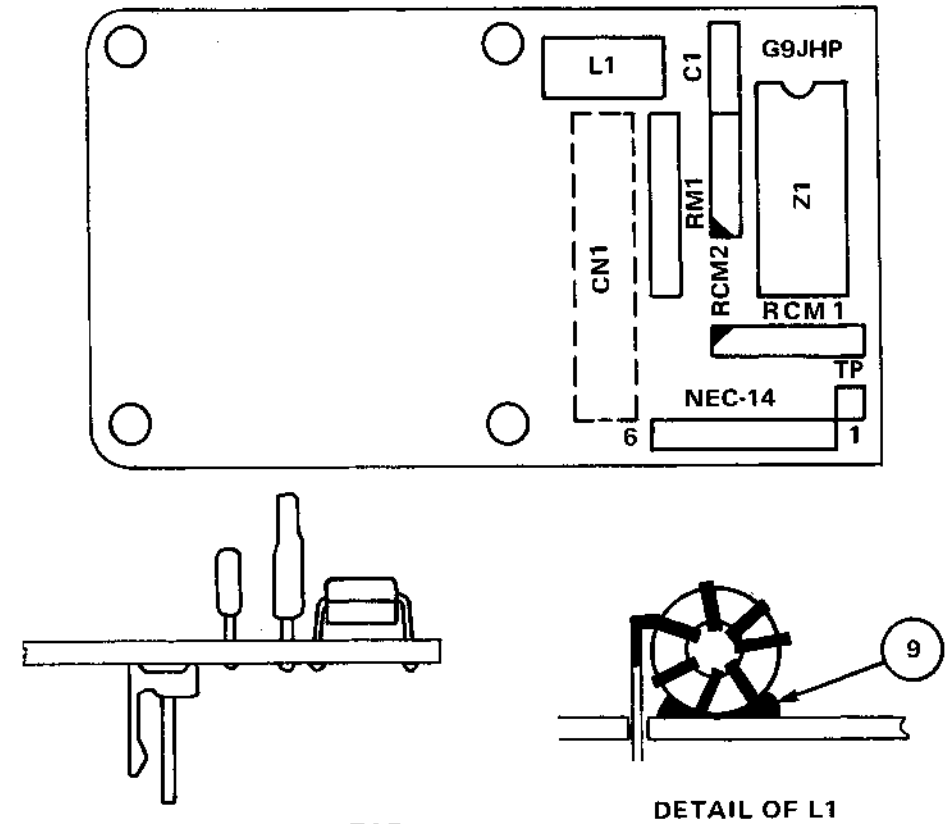
Figure 6-38 Mother Board Assembly (G9JHM PCB)



136-431354-B G9JHN PCB Rev. 5

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
C1	808-935590-479-A	Capacitor, ceramic, 22000 pF, 50 Vdc, +20%	1
C2, C3	808-410030-001-0	Capacitor, ceramic, 0.1 uF, 50 Vdc, +80-20%	2
IND +, -	803-070040-001-0	Wrapping Post	2
R1	808-930323-042-A	Resistor, RE35YQ510uF	1
RCM1, RCM2	808-934901-001-A	Resistor - Capacitor Module CR-001	2
RCM3	808-934901-002-A	Resistor - Capacitor Module CR-002	1
Z1, Z2	808-919101-011-A	Integrated Circuit 733C	2
	136-451354-A	G9JHN PCB	1

Figure 6-39 G9JHN PCB



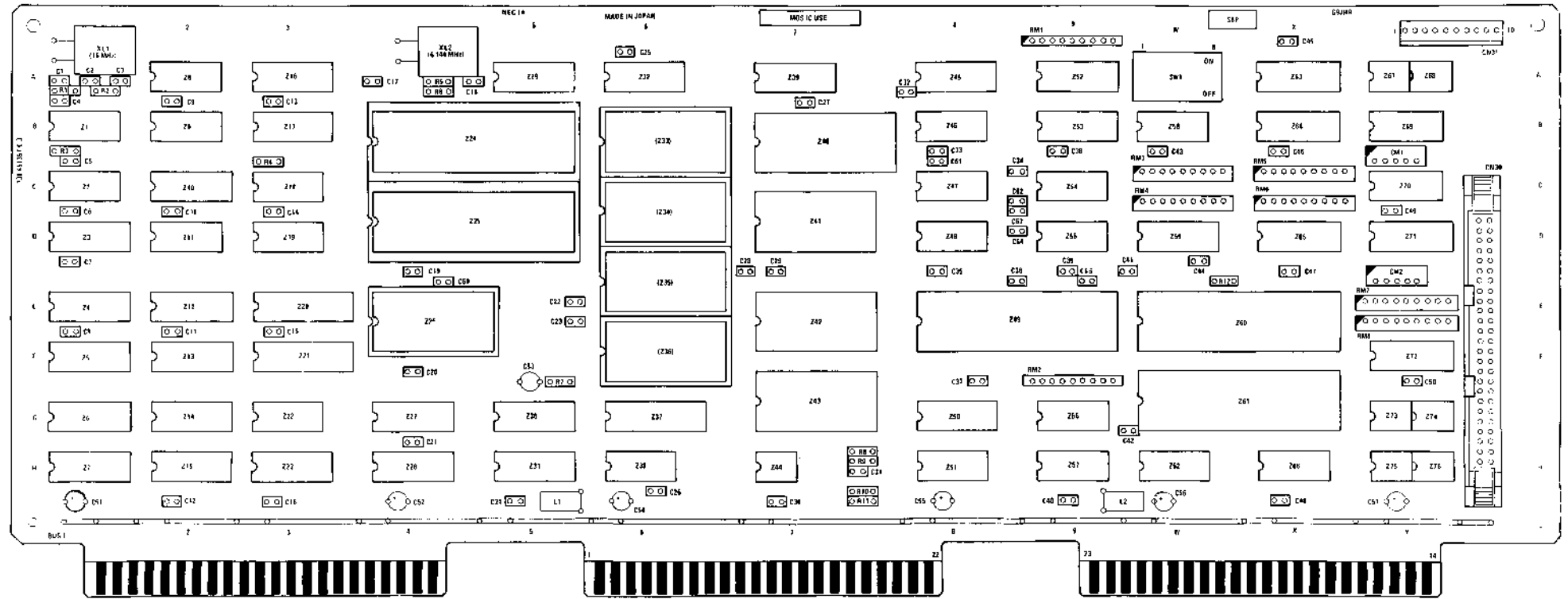
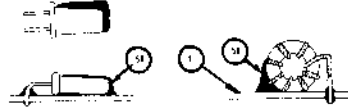
DETAIL OF CONNECTOR

DETAIL OF L1

136-431355-B G9JHP PCB Rev. 3

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
C1	808-935593-002-A	Capacitor, RPE150-127F155Z25	1
CN1	808-955142-610-A	Connector, MTA-100S Connector 1-641126-0	1
L1	808-940201-001-A	Inductor, SN3-201A	1
RCM1	808-934901-001-A	Resistor - Capacitor Module CR-001	1
RCM2	808-934901-002-A	Resistor - Capacitor Module CR-002	1
RM1	808-930394-012-A	Resistor Module NWR2-012	1
TP	803-070040-001-0	Wrapping Post	4
	136-990083-A	G9JHP PCB	1
(9)	808-835003-001-0	KE41RTV	AR

Figure 6-40 G9JHP PCB



136-431357-B G9JHR PCB Rev. 6

G9JHR PCB

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
C1, C3	808-935590-023-A	Capacitor, ceramic, 100 pF, 50 Vdc, +10%	2
C2	808-935590-019-A	Capacitor, ceramic, 68 pF, 50 Vdc, +10%	1
C4-C50	802-410030-001-0	Capacitor ceramic, 0.1 μF, 50 Vdc, +80-20%	47
C51-C57	808-935411-014-A	Capacitor, tantalum, 10 μF, 16 Vdc, +20%	7
C60-C65	808-935590-455-A	Capacitor, ceramic, 2200 pF, 50 Vdc, +20%	6
CM1, CM2	808-935569-001-A	Capacitor Module IHC-4-331KA	2
CN30	808-955130-437-A	Connector 3433-2002LC	1
CN31	808-955142-610-A	Connector 1-641126-0	1
L1, L2	808-940201-001-A	Inductor, SN3-201A	2
R1	802-310021-056-0	Resistor, Fixed Film, 2 K, 1/4 W, +2%	1
R2-R6, R10-R12	802-310021-049-0	Resistor, Fixed Film, 1 KΩ, 1/4 W, +2%	8
R7	802-310021-025-0	Resistor, Fixed Film, 100 Ω, 1/4 W, +2%	1
R8, R9	802-310021-042-0	Resistor, Fixed Film, 510 Ω, 1/4 W, +2%	2
RM1	808-930349-010-A	Resistor Module IHR-1/8-8-102JA	1
RM2	808-930349-004-A	Resistor Module IHR-1/8-8-681JA	1
RM3, RM5, RM7	808-930349-052-A	Resistor Module IHR-1/4-8-181JA	3
RM4, RM6, RM8	808-930349-006-A	Resistor Module IHR-1/8-8-391JA	3
SW1	808-950324-008-A	Switch, DIP 7-171474-8	1
XL1	808-970104-003-A	Crystal HC-43U 16 MHz	1
XL2	808-970104-002-A	Crystal HC-43U 6.144 MHz	1
Z1	808-912100-041-A	Integrated Circuit SN7404N	1
Z2	808-912120-741-A	Integrated Circuit SN74874N	1
Z3, Z45, Z50, Z53	808-912141-951-A	Integrated Circuit SN74LS195AN	4
Z4-Z7, Z12, Z13	808-912140-851-A	Integrated Circuit SN74LS85N	6
Z8	808-912140-201-A	Integrated Circuit SN74LS20N	1
Z9	808-912120-201-A	Integrated Circuit SN74S20N	1

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
Z10, Z64	808-912141-751-A	Integrated Circuit SN74LS175N	2
Z11, Z19, Z62	808-912140-081-A	Integrated Circuit SN74LS08N	3
Z14, Z15, Z27	808-912141-611-A	Integrated Circuit SN74LS161AN	6
Z28, Z30, Z31			
Z16, Z17	808-912141-931-A	Integrated Circuit SN74LS193N	2
Z18, Z54	808-912140-001-A	Integrated Circuit SN74LS00N	2
Z20, Z21, Z37	808-912143-731-A	Integrated Circuit SN74LS373N	3
Z22, Z55-Z58, Z66	808-912140-041-A	Integrated Circuit SN74LS04N	6
Z23, Z29, Z32, Z39	808-912141-381-A	Integrated Circuit SN74LS138N	4
Z24	808-910380-851-A	Integrated Circuit μPD8085AC	1
Z25	808-910504-001-A	Integrated Circuit μPD52103	1
Z26	136-033949-A	Integrated Circuit B2716(1) PROM	1
Z38, Z51	808-912140-861-A	Integrated Circuit SN74LS86N	2
Z40	808-910382-592-A	Integrated Circuit μPD8259C-5	1
Z41-Z43	808-910382-532-A	Integrated Circuit μPD8253C-5	3
Z44	808-912201-401-A	Integrated Circuit SN75140P	1
Z46, Z47	808-912140-741-A	Integrated Circuit SN74LS74AN	2
Z48	808-912140-321-A	Integrated Circuit SN74LS32N	1
Z49, Z60	808-910382-552-A	Integrated Circuit μPD8255AC-5	2
Z52	808-912141-511-A	Integrated Circuit SN74LS151N	1
Z59, Z65, Z71, Z72	808-914019-001-A	Integrated Circuit DS8837N	4
Z61	808-910381-551-A	Integrated Circuit μPD8155C	1
Z63	808-912142-791-A	Integrated Circuit SN74LS279N	1
Z67, Z68, Z73-Z76	808-912204-521-A	Integrated Circuit SN75452BP	6
Z69	808-912140-111-A	Integrated Circuit SN74LS11N	1
Z70	808-912140-141-A	Integrated Circuit SN74LS14N	1
(1)	136-451357-C	G9JHR PCB	1
(55)	802-730014-324-A	IC Socket 24 Pin	5
(56)	802-730014-040-A	IC Socket 40 Pin	2
(57)	808-820014-001-A	Mini Bus	1
(58)	808-837000-001-0	Silicon Rubber TSE385RTV	AR

Figure 6-41 G9JHR PCB

136-431360-A G9JHU PCB Rev. 5

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
BUS 1 (61)	808-820014-001-A	Mini Bus	1
C1, C3	808-935590-023-A	Capacitor, ceramic, 100 pF, 50 Vdc, +10%	2
C2	808-935590-019-A	Capacitor, ceramic, 68 pF, 50 Vdc, +10%	1
C4-C16, C18, C19 C21-C24, C26-C30 C33-C38, C40-C45	802-410030-001-0	Capacitor, ceramic, 0.1 $\mu$ F, 50 Vdc, +80. -20%	36
C17, C20	808-935590-002-A	Capacitor, ceramic, 12 pF, 50 Vdc, +10%	2
C25	808-935590-471-A	Capacitor, ceramic, 10000 pF, 50 Vdc, +20%	1
C31, C32, C39	808-935590-455-A	Capacitor, ceramic, 2200 pF, 50 Vdc, +20%	3
C81-C88	808-935411-014-A	Capacitor, tantalum, 10 $\mu$ F, 16 Vdc, +20%	8
CM1-CM5	808-935569-002-A	Capacitor Module IHC-4-222KA	5
CM6	808-935569-001-A	Capacitor Module IHC-4-331KA	1
CN30	808-955130-437-A	Connector, 3433-2002LC	1
CN31	808-955142-610-A	Connector, 1-641126-0	1
L1-L3	808-940201-001-A	Inductor SN3-201A	3
R1, R3-R6, R8, R9, R13	802-310021-049-A	Resistor, 1000 $\Omega$ , 1/4 W, +2%	8
R2	802-310021-056-A	Resistor, 2000 $\Omega$ , 1/4 W, +2%	1
R7, R12	802-310021-025-0	Resistor, 100 $\Omega$ , 1/4 W, +2%	2
R10, R11	802-310021-042-0	Resistor, 510 $\Omega$ , 1/4 W, +2%	2
RM1, RM5	808-930349-004-A	Resistor Module IHR-1/8-8-681JA	2
RM2	808-930349-010-A	Resistor Module IHR-1/8-8-102JA	1
RM3, RM7, RM9	808-930349-006-A	Resistor Module IHR-1/8-8-391JA	3
RM4, RM6, RM8	808-930349-052-A	Resistor Module IHR-1/4-8-181JA	3
SW1	808-950324-008-A	Switch, DIP 7-171474-8	1
XL1	808-970104-003-A	Crystal, HC-43U 16 MHz	1
XL2	808-970104-002-A	Crystal, HC-43U 6.144 MHz	1
Z1-Z4, Z32, Z37 Z59	808-912141-611-A	Integrated Circuit SN74LS161AN	7

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
Z5	808-912100-041-A	Integrated Circuit SN7404N	1
Z6, Z34-Z36, Z58	808-912141-951-A	Integrated Circuit SN74LS195AN	5
Z7, Z54	808-912140-321-A	Integrated Circuit SN74LS32N	2
Z8, Z9, Z16-Z19	808-912140-851-A	Integrated Circuit SN74LS85N	6
Z10, Z40, Z44 Z46, Z65	808-912141-381-A	Integrated Circuit SN74LS138N	5
Z11, Z28, Z60	808-912140-041-A	Integrated Circuit SN74LS04N	3
Z12, Z23, Z62 Z70, Z75	808-912140-081-A	Integrated Circuit SN74LS08N	5
Z13	808-912201-401-A	Integrated Circuit SN75140P	1
Z14	808-912120-741-A	Integrated Circuit SN74S74N	1
Z15, Z33, Z63	808-912140-001-A	Integrated Circuit SN74LS00N	3
Z20	808-912140-201-A	Integrated Circuit SN74LS20N	1
Z21, Z25, Z26, Z38	808-912143-731-A	Integrated Circuit SN74LS373N	4
Z22	808-912120-201-A	Integrated Circuit SN74S20N	1
Z24	808-912141-751-A	Integrated Circuit SN74LS175N	1
Z27	136-033949-A	Integrated Circuit B2716 (1) PROM	1
Z29	808-910504-001-A	Integrated Circuit $\mu$ PD52103D	1
Z30, Z31	808-912141-931-A	Integrated Circuit SN74LS193N	2
Z39	808-910380-851-A	Integrated Circuit $\mu$ PD8085AC	1
Z43, Z47, Z57	808-912140-861-A	Integrated Circuit SN74LS86N	3
Z45, Z69, Z72, Z77	808-912140-141-A	Integrated Circuit SN74LS14N	4
Z48	808-910382-592-A	Integrated Circuit $\mu$ PD8259C-5	1
Z49-Z51	808-910382-532-A	Integrated Circuit $\mu$ PD8253C-5	3
Z52, Z53, Z61	808-912140-741-A	Integrated Circuit SN74LS74AN	3
Z55, Z56	808-910382-552-A	Integrated Circuit $\mu$ PD8255AC-5	2
Z64	808-912142-791-A	Integrated Circuit SN74LS279N	1
Z66, Z67, Z73, Z74	808-912146-701-A	Integrated Circuit SN74LS670N	4
Z68	808-910381-551-A	Integrated Circuit $\mu$ PD8155C	1
Z71	808-912140-101-A	Integrated Circuit SN74LS10N	1
Z76, Z78, Z79	808-912204-521-A	Integrated Circuit SN75452BP	6
Z83-Z85			
Z80-Z82	808-914019-001-A	Integrated Circuit DS8837N	3
(1)	136-451360-C	G9JHU PCB	1
(59)	802-730014-040-A	IC Socket 40 Pin	2
(60)	802-730014-324-A	IC Socket 24 Pin	3
(63)	808-837000-001-0	Silicon Rubber TSE385RTV	AR

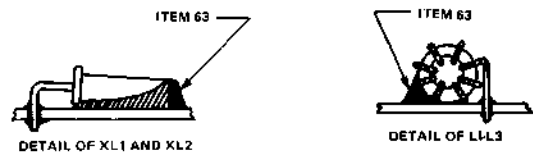
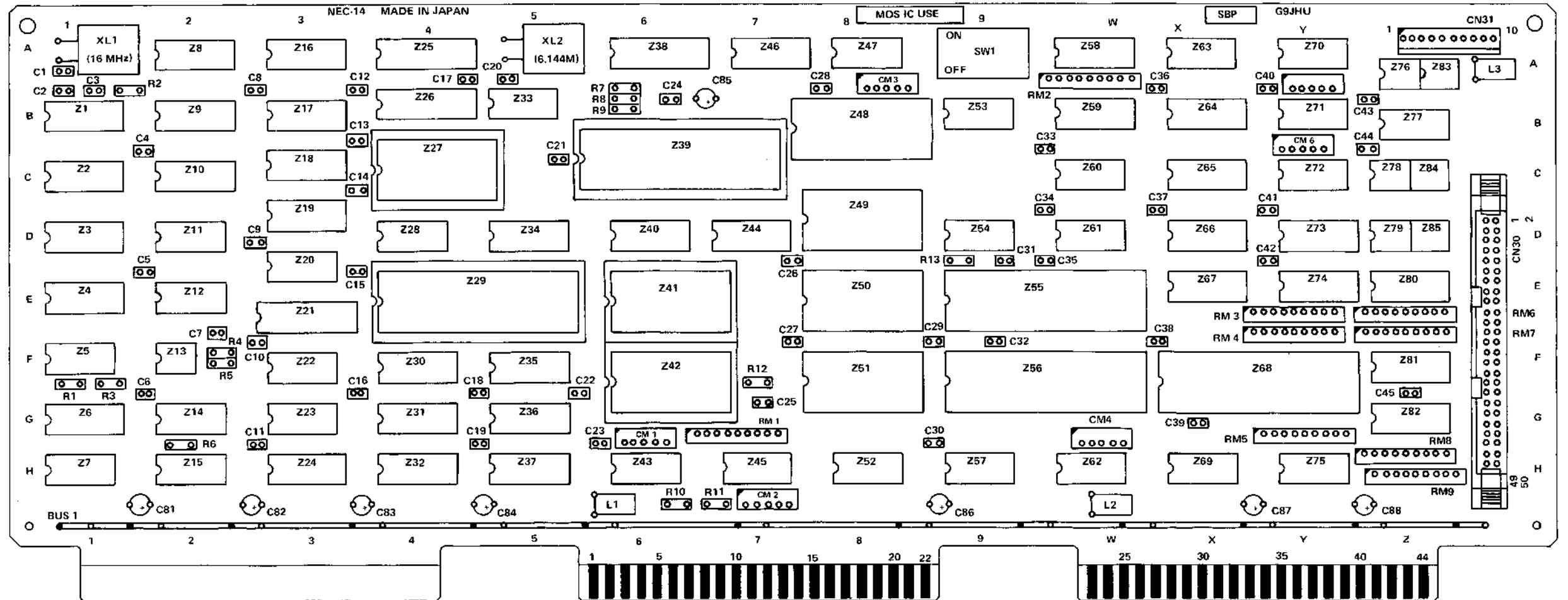


Figure 6-42 G9JHU PCB

136-431359-A G9JHT PCB Rev. 4

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
BUS1 (37)	808-820014-002-A	Mini Bus	1
C1, C6	808-935590-023-A	Capacitor, ceramic, 100 pF, 50 Vdc, +10%	2
C2-C4, C7-C9, C12-C33, C40-C45, C49-C53	808-410030-001-0	Capacitor, ceramic, 0.1 F, 50Vdc, +80 -20%	39
C5	808-935590-019-A	Capacitor, ceramic, 60 pF, 50 Vdc, +10%	1
C10, C11	808-935590-002-A	Capacitor, ceramic, 12 pF, 50 Vdc, +10%	2
C34-C38, C46-C48	808-935590-455-A	Capacitor, ceramic, 2200 pF, 50 Vdc, +20%	8
C39	808-935590-471-A	Capacitor, ceramic, 10000 pF, 50 Vdc, +20%	1
C54, C55	808-935590-035-A	Capacitor, ceramic, 330 pF, 50 Vdc, +10%	2
C61-C65	808-935411-014-A	Capacitor, tantalum, 10 $\mu$ F, 16 Vdc, +20%	5
C66, C67	808-935411-033-A	Capacitor, tantalum, 6.8 $\mu$ F, 35 Vdc, +20%	2
CM1-CM6	808-935569-002-A	Capacitor Module IHC-4-222KA	6
CN30	808-955140-103-A	Connector AMP 1-170850-7	1
CN31	808-955130-321-A	Connector 3429-1002 (3M)	1
L1-L3	808-940201-001-A	Inductor SN3-201A	3
R1, R3-R6, R8, R9 R13-R16	802-310021-049-0	Resistor, 1000 $\Omega$ , 1/4 W, +2%	11
R2	802-310021-056-0	Resistor, 2000 $\Omega$ , 1/4 W, +2%	1
R7, R12	802-310021-025-0	Resistor, 100 $\Omega$ , 1/4 W, +2%	2
R10, R11	802-310021-042-0	Resistor, 510 $\Omega$ , 1/4 W, +2%	2
RM1, RM4	808-930349-004-A	Resistor Module IHR-1/8-8-681JA	2
RM2	808-930349-010-A	Resistor Module IHR-1/8-8-102JA	1
RM3	808-930349-011-A	Resistor Module IHR-1/8-8-273JA	1
SW1	808-950313-004-A	Switch, DIP CTS 206-4	1
XL1	808-970104-003-A	Crystal HC-43U 16 MHz	1
XL2	808-970104-002-A	Crystal HC-43U 6.144 MHz	1
Z1	808-912100-041-A	Integrated Circuit SN7404N	1
Z2, Z33, Z56	808-912140-001-A	Integrated Circuit SN74LS00N	3
Z3, Z5, Z66, Z67	808-912140-081-A	Integrated Circuit SN74LS08N	4
Z4	808-912141-751-A	Integrated Circuit SN74LS175N	1
Z6	808-912120-741-A	Integrated Circuit SN74S74N	1

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
Z7, Z16	808-912141-931-A	Integrated Circuit SN74LS193N	2
Z8, Z39-Z41	808-912141-951-A	Integrated Circuit SN74LS195N	4
Z9, Z17, Z35, Z48	808-912143-731-A	Integrated Circuit SN74LS373N	4
Z10, Z11, Z18, Z19, Z23, Z29	808-912140-851-A	Integrated Circuit SN74LS85N	6
Z12	808-912120-201-A	Integrated Circuit SN74S20N	1
Z13-Z15, Z22 Z24, Z30	808-912141-611-A	Integrated Circuit SN74LS161AN	6
Z20	808-912140-201-A	Integrated Circuit SN74LS20N	1
Z21, Z36-Z38	808-912141-381-A	Integrated Circuit SN74LS138N	4
Z25	136-033949-A	Integrated Circuit B2716 (1) PROM	1
Z26	808-910380-851-A	Integrated Circuit $\mu$ PD8085AC	1
Z27	808-910504-001-A	Integrated Circuit $\mu$ PD52103D	1
Z28, Z42, Z59 Z68, Z69	808-912140-041-A	Integrated Circuit SN74LS04N	5
Z31, Z32	808-912140-321-A	Integrated Circuit SN74LS32N	2
Z34, Z61	808-912140-861-A	Integrated Circuit SN74LS86N	2
Z43	808-912201-401-A	Integrated Circuit SN75140P	1
Z44	808-910382-592-A	Integrated Circuit $\mu$ PD8259C-5	1
Z45-Z47	808-910382-532-A	Integrated Circuit $\mu$ PD8253C-5	3
Z49, Z57, Z57	808-912140-741-A	Integrated Circuit SN74LS74AN	3
Z50, Z60, Z71	808-912140-141-A	Integrated Circuit SN74LS14N	3
Z51	808-910382-512-A	Integrated Circuit $\mu$ PD8251AC	1
Z55, Z62	808-910340-421-A	Integrated Circuit $\mu$ PD4042C	2
Z63, Z65	808-910381-551-A	Integrated Circuit $\mu$ PD8155C	2
Z64	808-910382-552-A	Integrated Circuit $\mu$ PD8255AC-5	1
Z70	808-912143-671-A	Integrated Circuit SN74LS367AN	1
Z72, Z73	808-914120-015-A	Integrated Circuit MC1488L	2
Z74, Z75	808-914120-025-A	Integrated Circuit MC1489L	2
(35)	136-451359-B	G9JHT PCB	1
(36)	802-730014-324-A	IC Socket 24 Pin	4
(60)	802-730014-040-A	IC Socket 40 Pin	2
(61)	808-955130-389-A	Key 3518	2
	808-837000-001-0	Silicon Rubber TSE385RTV	AR



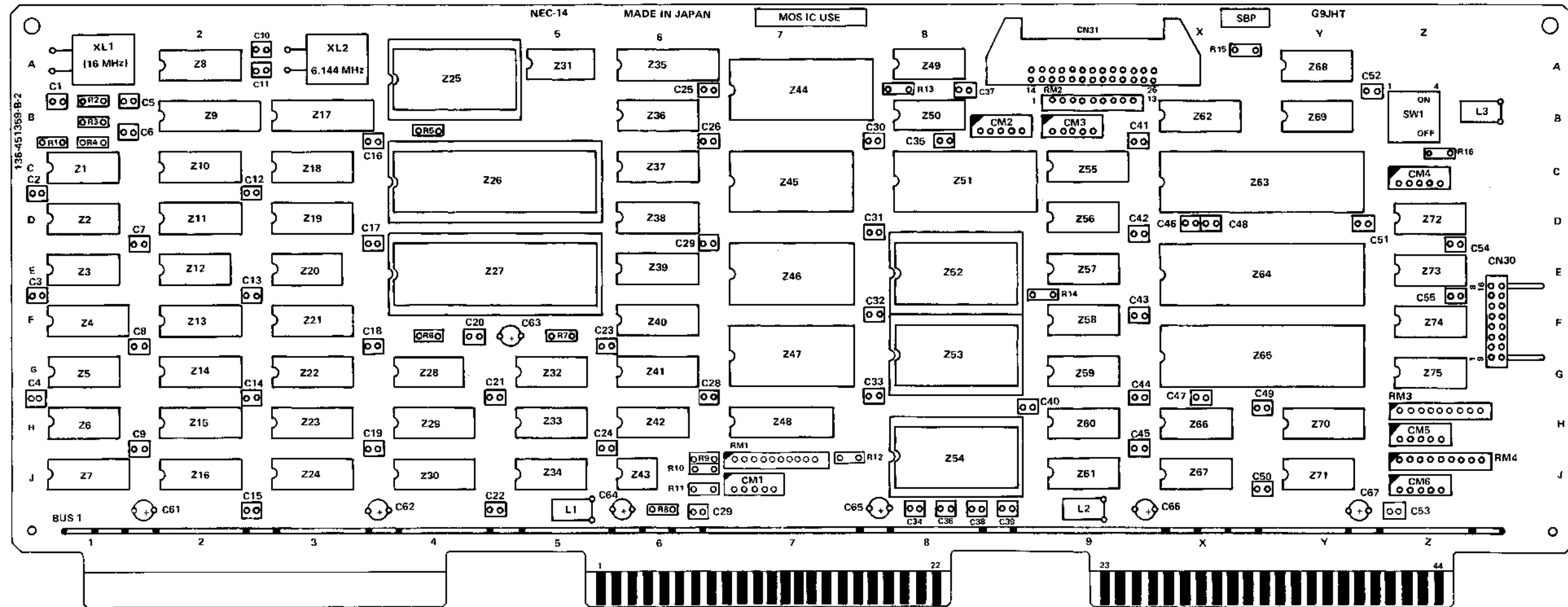
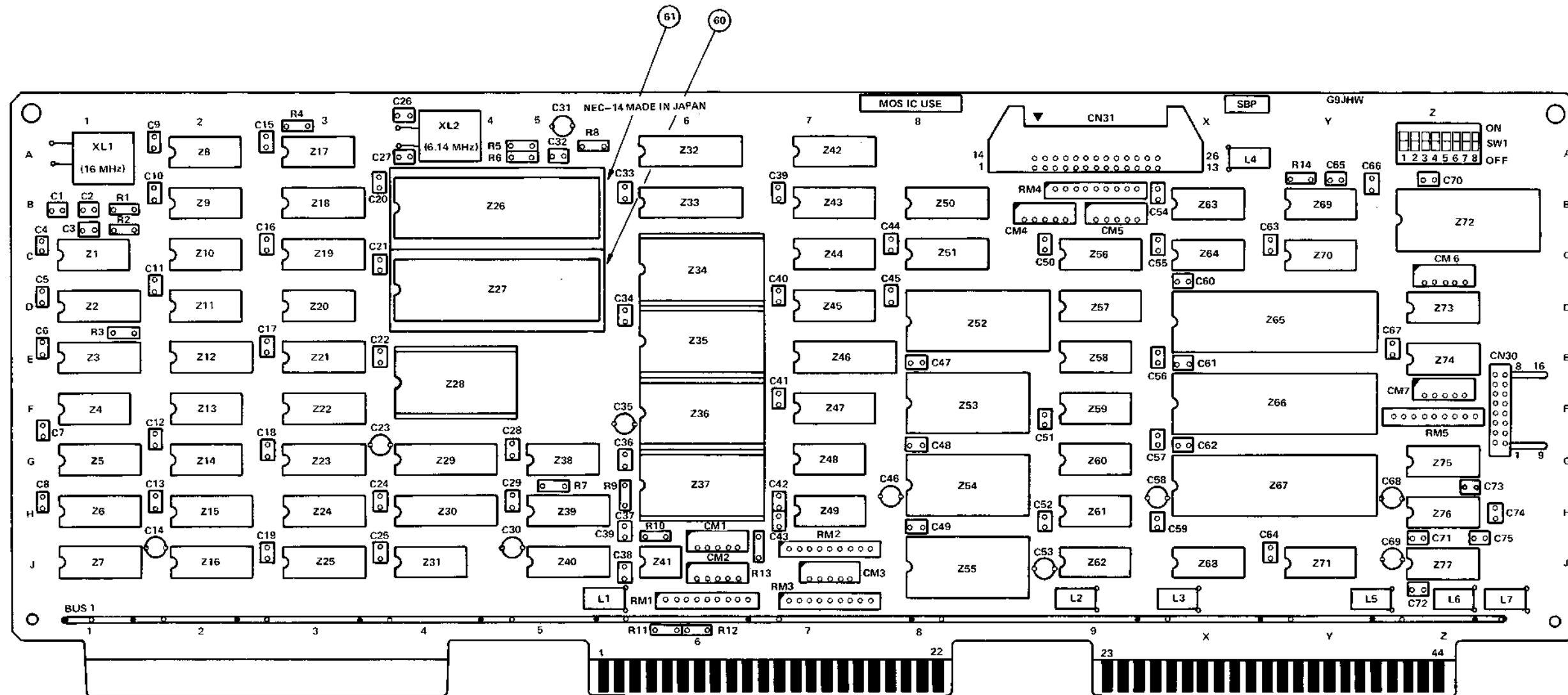


Figure 6-43 G9JHT PCB

## 136-431362-A G9JHW PCB Rev. 5

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
BUS1 (54)	808-820014-001-A	Mini Bus	1
C1, C3	808-935590-023-A	Capacitor, ceramic, 100 pF, 50 Vdc, +10%	2
C2	808-935590-019-A	Capacitor, ceramic, 68 pF, 50 Vdc +10%	1
C4-C13, C15-C22 C24, C25, C28, C29, C32-C34, C36-C42, C44, C45, C47-C52, C54, C55, C60-C64, C67, C70-72, C75	802-410030-001-0	Capacitor, ceramic, 0.1 $\mu$ F, 50 Vdc, +80 -20%	52
C14, C23, C30, C31 C35, C46, C53, C58	808-935411-014-A	Capacitor, tantalum, 10 $\mu$ F, 50 Vdc, +20%	8
C26, C27	808-935590-002-A	Capacitor, ceramic, 12 pF, 50 Vdc, +10%	2
C43	808-935590-471-A	Capacitor, ceramic, 10000 pF, 50 Vdc, +20%	1
C56, C57, C59, C65 C66	808-935590-455-A	Capacitor, ceramic, 2200 pF, 50 Vdc, +20%	5
C68, C69	808-935411-033-A	Capacitor, tantalum, 6.8 $\mu$ F, 16 Vdc, +20%	2
C73, C74	808-935590-035-A	Capacitor, ceramic, 330 pF, 50 Vdc, +10%	2
CM1-CM7	808-935569-002-A	Capacitor Module IHC-4-222KA	7
CN30	808-955140-103-A	Connector AMP1-170850-7	1
CN31	808-955132-321-A	Connector 3429-1002G	1
L1-L6	808-940201-001-A	Inductor SN3-201A	6
R1	802-310021-056-0	Resistor, 2000 $\Omega$ , 1/4 W, +2%	1
R2-R7, R9, R10, R14	802-310021-049-0	Resistor, 1000 $\Omega$ , 1/4 W, +2%	9
R8, R13	802-310021-025-0	Resistor, 100 $\Omega$ , 1/4 W, +2%	2
R11, R12	802-310021-042-0	Resistor, 510 $\Omega$ , 1/4 W, +2%	2
RM1, RM3	808-930349-004-A	Resistor Module IHR-1/8-8-681JA	2
RM2, RM4	808-930349-010-A	Resistor Module IHR-1/8-8-102JA	2
RM5	808-930349-011-A	Resistor Module IHR-1/8-8-273JA	1
SW1	808-950324-008-A	Switch, DIP 7-171474-8	1
XL1	808-970104-003-A	Crystal HC-43U 16 MHz	1
XL2	808-970104-002-A	Crystal HC-43U 6.144 MHz	1

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
Z1	808-912100-041-A	Integrated Circuit SN7404N	1
Z2, Z3	808-912141-931-A	Integrated Circuit SN74LS193N	1
Z4, Z14, Z38, Z63, Z64	808-912140-041-A	Integrated Circuit SN74LS04N	5
Z5, Z6, Z12, Z15, Z16, Z21	808-912141-611-A	Integrated Circuit SN74LS161AN	6
Z7, Z42, Z43, Z50	808-912141-381-A	Integrated Circuit SN74LS138N	4
Z8	808-912120-201-A	Integrated Circuit SN74S20N	1
Z9	808-912140-201-A	Integrated Circuit SN74LS20N	1
Z10, Z11, Z58, Z68	808-912140-081-A	Integrated Circuit SN74LS08N	4
Z13, Z20, Z71	808-912140-001-A	Integrated Circuit SN74LS00N	3
Z17	808-912120-741-A	Integrated Circuit SN74S74N	1
Z18	808-912141-751-A	Integrated Circuit SN74LS175N	1
Z19, Z44, Z45, Z57	808-912141-951-A	Integrated Circuit SN74LS195AN	4
Z22-Z25, Z39, Z40	808-912140-851-A	Integrated Circuit SN74LS85N	6
Z26	808-910380-851-A	Integrated Circuit $\mu$ PD8085AC	1
Z27	808-910504-001-A	Integrated Circuit $\mu$ PD52103D	1
Z28	136-033949-A	Integrated Circuit B2716 (1) PROM	1
Z29, Z30, Z32, Z33 Z46	808-912143-731-A	Integrated Circuit SN74LS373N	5
Z31, Z59	808-912140-861-A	Integrated Circuit SN74LS86N	2
Z41	808-912201-401-A	Integrated Circuit SN75140P	1
Z47	808-912143-671-A	Integrated Circuit SN74LS367AN	1
Z48, Z49, Z69	808-912140-141-A	Integrated Circuit SN74LS14N	3
Z51, Z56	808-910340-421-A	Integrated Circuit $\mu$ PD4042C	2
Z52	808-910382-592-A	Integrated Circuit $\mu$ PD8259C-5	1
Z53-Z55	808-910382-532-A	Integrated Circuit $\mu$ PD8253C-5	3
Z60, Z62, Z70	808-912140-741-A	Integrated Circuit SN74LS74AN	3
Z61, Z73	808-912140-321-A	Integrated Circuit SN74LS32N	2
Z65-Z67	808-910381-551-A	Integrated Circuit $\mu$ PD8155C	3
Z72	808-910382-512-A	Integrated Circuit $\mu$ PD8251AC	1
Z74, Z75	808-914120-025-A	Integrated Circuit MC1489L	2
Z76, Z77	808-914120-015-A	Integrated Circuit MC1488L	2
(1)	136-451362-C	G9JHW PCB	1
(57)	808-955130-389-A	Key 3518	2
(58)	808-837000-001-0	Silcon Rubber TSE385RTV	AR
(59)	802-730014-324-A	IC Socket 24 Pin	5
(60)	802-730014-040-A	IC Socket 40 Pin	1
(61)	802-730014-140-A	IC Socket 40 Pin IC-63-2806	1



- NOTES:
1. ITEM 57 IS INSERTED INTO ITEM 56.
  2. ITEM 59 IS IC SOCKET FOR 228,234-37.
  3. ITEM 60 IS IC SOCKET FOR 227.
  4. ITEM 61 IS IC SOCKET FOR 226.

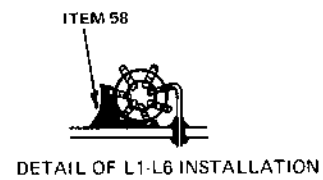


Figure 6-44 G9JHW PCB

136-431358-A G9JHS PCB Rev. 5

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
BUS1	808-820014-001-A	Mini bus	1
C1	808-935590-019-A	Capacitor, ceramic, 680 pF, 50 Vdc, +10%	1
C2, C6	808-935590-023-A	Capacitor, ceramic, 101 pF, 50 Vdc, +10%	2
C3-C5, C7-C13 C15-C17, C19-C34, C36, C39-C46, C48-C52, C56, C57	802-410030-001-0	Capacitor, ceramic, 0.1 $\mu$ F, 50 Vdc, +80-20%	45
C14, C18	808-935590-002-A	Capacitor, ceramic, 120 pF, 50 Vdc, +10%	2
C35	808-935590-471-A	Capacitor, ceramic, 103 pF, 50 Vdc, +20%	1
C37, C38, C47	808-935590-455-A	Capacitor, ceramic, 222 pF, 50 Vdc, +20%	3
C53, C55	808-935590-011-A	Capacitor, ceramic, 330 pF, 50 Vdc, +10%	2
C54	808-935590-065-A	Capacitor, ceramic, 562 pF, 50 Vdc, +10%	1
C81-C88	808-935411-014-A	Capacitor, tantalum, 10 $\mu$ F, 16 Vdc, +20%	8
CM1-CM6	808-935569-002-A	Capacitor Module IHC-4-222KA	6
CN30	808-955130-330-A	Connector 3431-1002	1
CN31	808-955130-321-A	Connector 3429-1002	1
L1-L3	808-940201-001-A	Inductor SN3-201A	3
R1	802-310021-056-0	Resistor, 2K $\Omega$ , 1/4 W, +2%	1
R2-R6, R9	802-310021-049-0	Resistor, 1K $\Omega$ , 1/4 W, +2%	11
R7, R8	802-310021-042-0	Resistor, 510 $\Omega$ , 1/4 W, +2%	2
R11, R12, R15	802-310021-025-0	Resistor, 100 $\Omega$ , 1/4 W, +2%	3
R14, R16, R20	802-310021-041-0	Resistor, 470 $\Omega$ , 1/4 W, +2%	3
RM1, RM4, RM5	808-930349-010-A	Resistor Module IHR-1/8-8-102JA	3
RM2, RM3	808-930349-004-A	Resistor Module IHR-1/8-8-681JA	2
SW1	808-950313-004-A	Switch DIP CTS206-4	1
XL1	808-970104-003-A	Crystal HC-43U 16 MHz	1
XL2	808-970104-002-A	Crystal HC-43U 6.144 MHz	1
Z1, Z33, Z38, Z41 Z42, Z79	808-912141-951-A	Integrated Circuit SN74LS195AN	6
Z2	808-912141-751-A	Integrated Circuit SN74LS175N	1
Z3, Z4, Z74, Z77	808-912141-931-A	Integrated Circuit SN74LS193N	4
Z5, Z6, Z24, Z28 Z29, Z32	808-912141-611-A	Integrated Circuit SN74LS161AN	6
Z7, Z65	808-912140-861-A	Integrated Circuit SN74LS86N	2
Z8	808-912100-041-A	Integrated Circuit SN7404N	1
Z9	808-912120-741-A	Integrated Circuit SN74S74N	1
Z10, Z26, Z66	808-912140-001-A	Integrated Circuit SN74LS00N	3
Z11, Z14, Z61, Z69 Z83, Z87	808-912140-081-A	Integrated Circuit SN74LS08N	6
Z12	808-912120-201-A	Integrated Circuit SN74S20N	1
Z13	808-912140-201-A	Integrated Circuit SN74LS20N	1
Z15, Z31, Z50 Z54, Z70, Z88	808-912140-041-A	Integrated Circuit SN74LS04N	6

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
Z16	808-912201-401-A	Integrated Circuit SN75140P	1
Z17, Z18, Z39, Z46, Z82	808-912143-731-A	Integrated Circuit SN74LS373N	5
Z19-Z22, Z25, Z27 Z23, Z58	808-912140-851-A	Integrated Circuit SN74LS85N	6
Z30, Z40, Z43, Z44 Z34	808-912140-321-A	Integrated Circuit SN74LS32N	2
Z35	808-912141-381-A	Integrated Circuit SN74LS138N	4
Z36	136-033949-A	Integrated Circuit B 2716 (1) PROM	1
Z37, Z57	808-910380-851-A	Integrated Circuit $\mu$ PD8085AC	1
Z45	808-910504-001-A	Integrated Circuit $\mu$ PD52103	1
Z51-Z53	808-912140-741-A	Integrated Circuit SN74LS74AN	2
Z55, Z56, Z72	808-910382-592-A	Integrated Circuit $\mu$ PD8259C-5	1
Z59, Z60	808-910382-532-A	Integrated Circuit $\mu$ PD8253C-5	3
Z62, Z64	808-912140-141-A	Integrated Circuit SN74LS14N	3
Z63	808-910382-552-A	Integrated Circuit $\mu$ PD8255AC-5	2
Z67, Z68	808-910340-421-A	Integrated Circuit $\mu$ PD4042C	2
Z71	808-912140-421-A	Integrated Circuit SN74LS42N	1
Z73	808-912143-671-A	Integrated Circuit SN74LS367AN	2
Z75, Z76	808-910381-551-A	Integrated Circuit $\mu$ PD8155C	1
Z78	808-912140-301-A	Integrated Circuit SN74LS30N	1
Z80	808-910321-141-A	Integrated Circuit $\mu$ PD2114LC	2
Z81	808-912141-391-A	Integrated Circuit SN74LS139N	1
Z84	808-912142-791-A	Integrated Circuit SN74LS279N	1
Z85, Z86	136-035066-001-A	Integrated Circuit 1K x 4 PROM (1)	1
(1)	808-912100-141-A	Integrated Circuit SN7414N	1
(64)	808-912100-081-A	Integrated Circuit SN7408N	2
(66)	136-451358-A	G9JHS PCB	1
(67)	808-955130-389-A	Key 3518	2
(68)	802-730014-040-A	IC Socket 40 PIN	2
	802-730014-324-A	IC Socket 24 PIN	4
	808-837000-001-0	Silicon Rubber TSE385RTV	AR

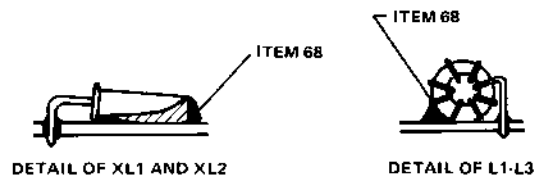
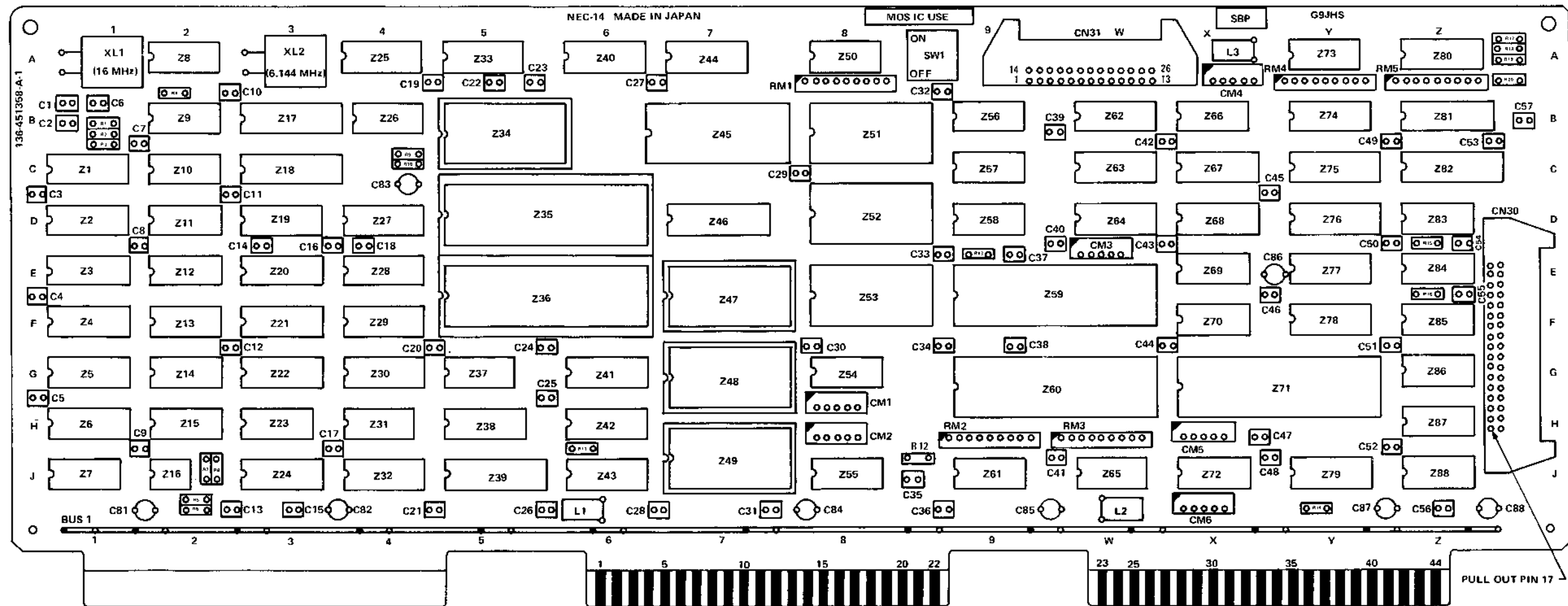
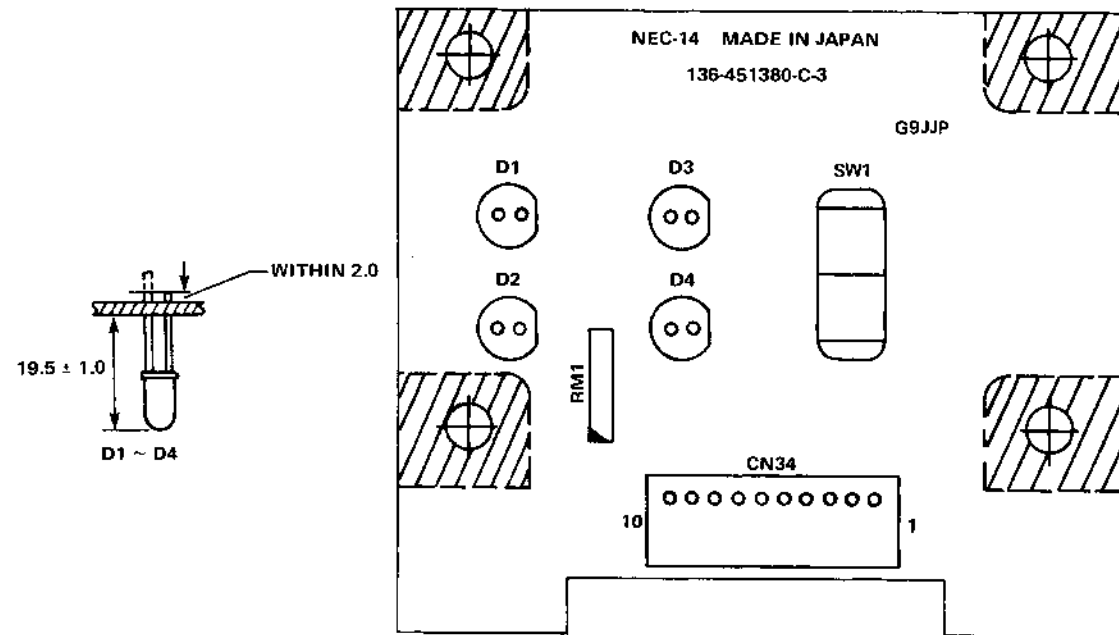


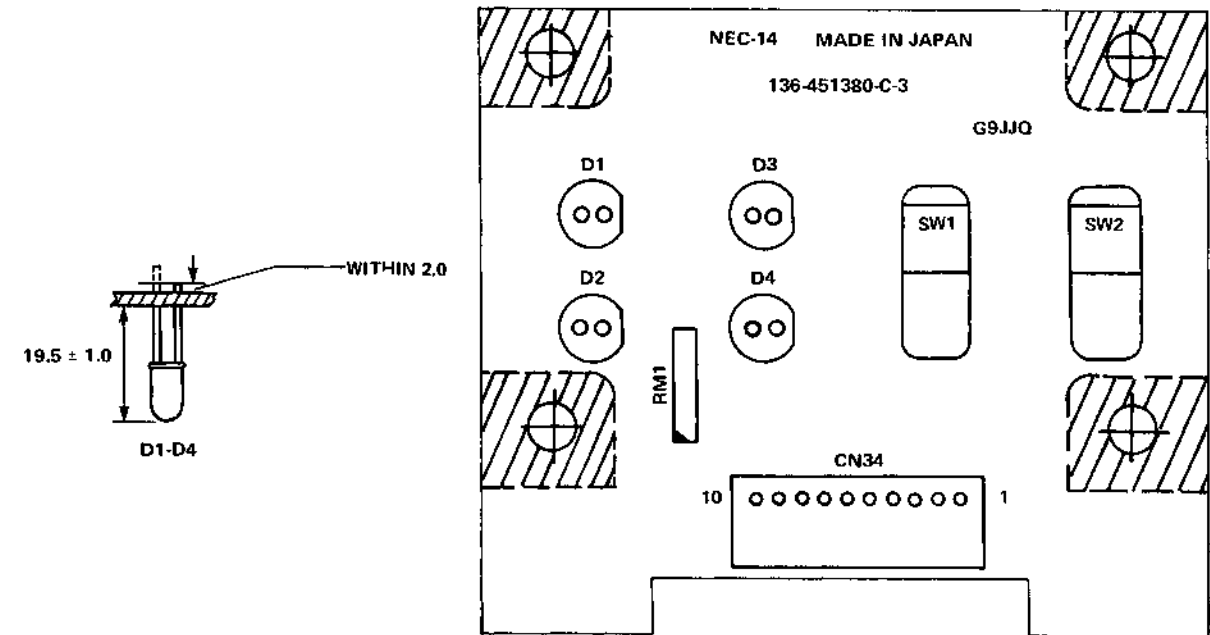
Figure 6-45 G9JHS PCB



136-431379-A G9JJP PCB Rev. 1

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
CN34	808-955142-810-A	Connector 1-641127-0	1
D1-D4	808-926501-041-A	LED SR603D	4
RM1	808-930328-210-A	Resister Module 4A-5Z-D5-330Ω RJ	1
SW1	808-950331-003-A	Switch 7101J1V3BE9	1
(1)	136-451380-C	G9JJP PCB (G9JJQ PCB)	1

Figure 6-46 G9JJP PCB



136-431380-B G9JJQ PCB Rev. 3

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
CN34	808-955142-810-A	Connector 1-641127-0	1
D1-D4	808-926501-041-A	LED SR603D	4
RM1	808-930328-210-A	Resister Module 4A-5Z-D5-330Ω RJ	1
SW1	808-950331-003-A	Switch 7101J1V3BE9	1
SW2	808-950331-006-A	Switch 7108J1V3BE9	1
(1)	136-451380-C	G9JJQ PCB	1

Figure 6-47 G9JJQ PCB

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
BUZ	808-960406-001-A	Buzzer CMB-06	1
C1, C4, C6	802-410002-049-0	Capacitor, 33 $\mu$ F, 10 Vdc, +20%	3
C2, C5	802-410030-001-0	Capacitor, ceramic, 0.1 $\mu$ F, 50 Vdc, +80 -20%	2
CM1	808-935569-001-A	Capacitor Module IHC-4-331KA	1
CN32	808-955130-321-A	Connector 3429-1002	1
D1-D12	808-923009-531-A	Diode, Silicon 1S953	12
D14-D18	808-926501-041-A	LED SR603D	5
DM1-DM4	808-910000-544-A	Diode Module $\mu$ PA54H	4
R1, R2	802-310021-049-0	Resistor, 1000 $\Omega$ , 1/4 W, +2%	2
R4	802-310021-017-0	Resistor, 47 $\Omega$ , 1/4 W, +2%	1
RM1	808-930349-010-A	Resistor Module IHR-1/8-8-102JA	1
RM3	808-930394-028-A	Resistor Module NWR2-028	1
RV1	808-930602-054-A	Resistor, variable PN822H501V	1
SW1	808-950324-008-A	Switch, DIP (8P) 7-171474-8	1
SW2-SW4	808-950313-024-A	Switch, DIP (4P) 206-214ST	3
SW5	808-950315-012-A	Switch 2A7MA-206-P2	1
SW6	808-950331-003-A	Switch 710J1V3BE9	1
SW7, SW8, SW10	808-950331-006-A	Switch 7108J1V3BE9	3
SW9	808-950331-005-A	Switch 7105J1V3BE9	1
Z1	808-912143-671-A	Integrated Circuit SN74LS367AN	1
Z6	808-912100-451-A	Integrated Circuit SN7445N	1
Z7	808-912100-071-A	Integrated Circuit SN7407N	1
(1)	136-451366-B	G9JJ- PCB	1
(48)	808-955130-389-A	Key 3518	1
(51)	133-381000-004-A	Wire A	2

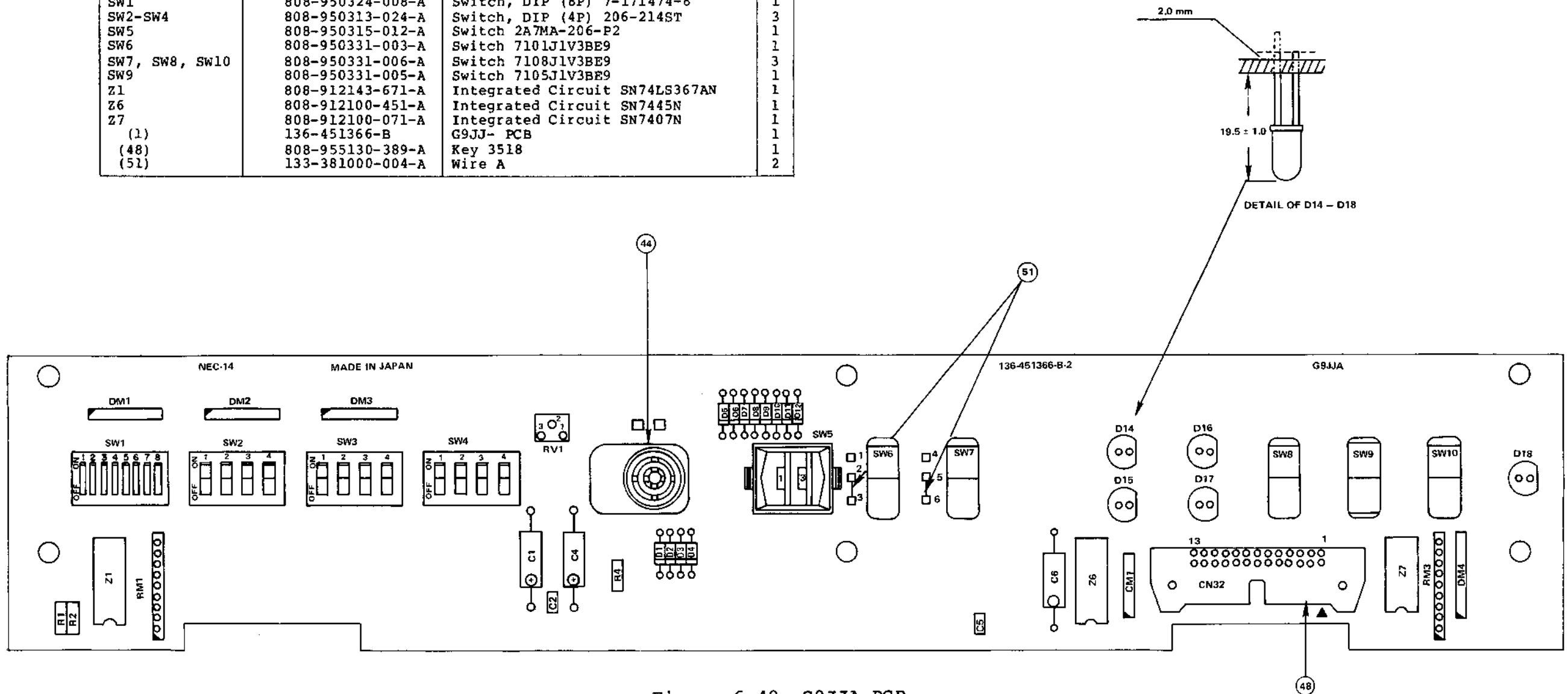
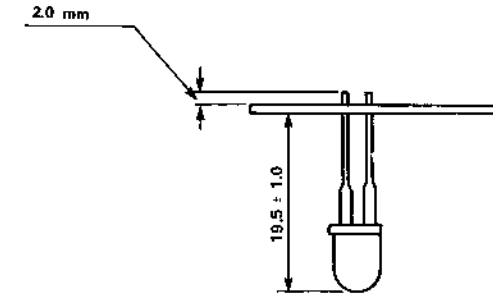


Figure 6-48 G9JJA PCB

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
BUZ	808-960406-001-A	Buzzer CMB-06	1
C1, C4, C6	808-410002-049-0	Capacitor, 33 $\mu$ F, 10 Vdc, +20%	3
C2, C5	802-410030-001-0	Capacitor, ceramic, 0.1 F, 50 Vdc, +80-20%	2
C3	808-935590-033-A	Capacitor, ceramic 270 pF, 50 Vdc, +10%	1
CM1	808-935569-001-A	Capacitor Module IHC-4-331KA	1
CN32	808-955130-321-A	Connector 3429-1002	1
CN33	808-955130-312-A	Connector 3428-1002	1
D1-D12	808-923009-531-A	Diode, Silicon 1S953	12
D14-D18	808-926501-041-A	LED SR603D	5
DM1-DM4	808-910000-544-A	Diode Module $\mu$ PA54H	4
R1, R2	802-310020-049-0	Resistor, 1000 $\Omega$ , 1/4 W, +2%	2
R4	802-310020-017-0	Resistor, 47 $\Omega$ , 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	Resistor, variable PN822H501V	1
SW1	808-950324-008-A	Switch, DIP (8P) 7-171474-8	1
SW2-SW4	808-950313-024-A	Switch, DIP (4P) 206-214ST	3
SW5	808-950315-012-A	Switch 2A7MA-206-P2	1
SW8, SW10	808-950331-006-A	Switch 7108J1V3BE9	2
SW9	808-950331-005-A	Switch 7105J1V3BE9	1
Z1	808-912143-671-A	Integrated Circuit SN74LS367AN	1
Z2	808-912143-731-A	Integrated Circuit SN74LS373N	1
Z3	808-912140-141-A	Integrated Circuit SN74LS14N	1
Z6	808-912100-451-A	Integrated Circuit SN7445N	1
Z7	808-912100-071-A	Integrated Circuit SN7407N	1
(1)	136-451366-B	G9JJ- PCB	1
(40)	808-955130-389-A	Key 3518	1



DETAIL OF D14 - D18

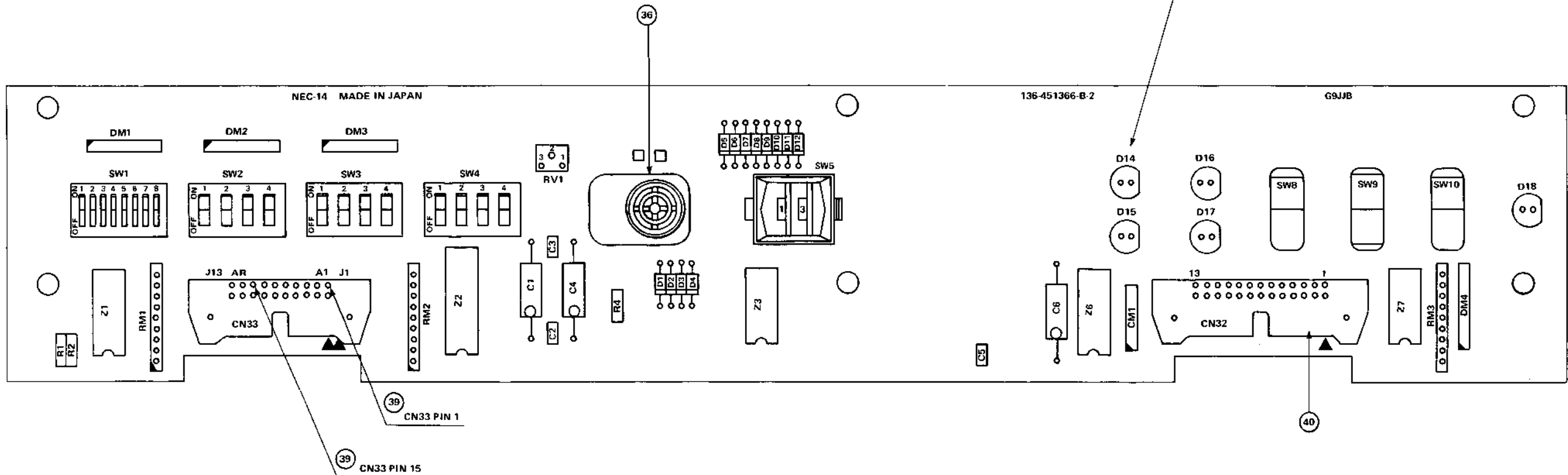


Figure 6-49 G9JJB PCB



COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
C1	802-410002-049-0	Capacitor, 330 $\mu$ F, 10 Vdc, +20%	1
C2	802-410030-001-0	Capacitor, ceramic, 0.1 $\mu$ F, 50 Vdc, +80-20%	1
CM1	808-935569-001-A	Capacitor Module IHC-4-331KA	1
CN32	808-955130-321-A	Connector, 79-(26P) 3429-1002	1
CN33	808-955140-345-A	Connector, 1-350944-0	1
D1-D3, D5-D12	808-923009-531-A	Diode, 1S953	11
D13-D17	808-926501-041-A	LED SR603D	5
DM1-DM4	808-910000-544-A	Diode Module PA54H	4
RM1	808-930394-028-A	Resistor Module NWR2-028	1
SW1, SW2	808-950324-008-A	Switch, 4P DIP 7-171474-8	2
SW3	808-950313-024-A	Switch, 4P DIP 206-214ST	1
SW4	808-950315-012-A	Switch, digital 2A7MA-206-P2	1
SW5	808-950331-003-A	Switch, 7101J1V3BE9	1
SW6, SW7, SW9	808-950331-006-A	Switch, 7108J1V3BE9	3
SW8	808-950331-005-A	Switch, 7105J1V3BE9	1
Z1	808-912100-451-A	Integrated Circuit SN7445N	1
Z2	808-912100-071-A	Integrated Circuit SN7407N	1
(1)	136-451371-A	G9JJF PCB	1
(21)	808-955130-389-A	Key 3518	1
(201)	805-000003-010-0	CPIMSx3x10x15BF	2
(202)	805-500003-0	AHEXINx3x15BF	2
(203)	805-610003-0	PIWAX3x15BF	2
(204)	805-622003-0	#2STLWAX3x15BF	2

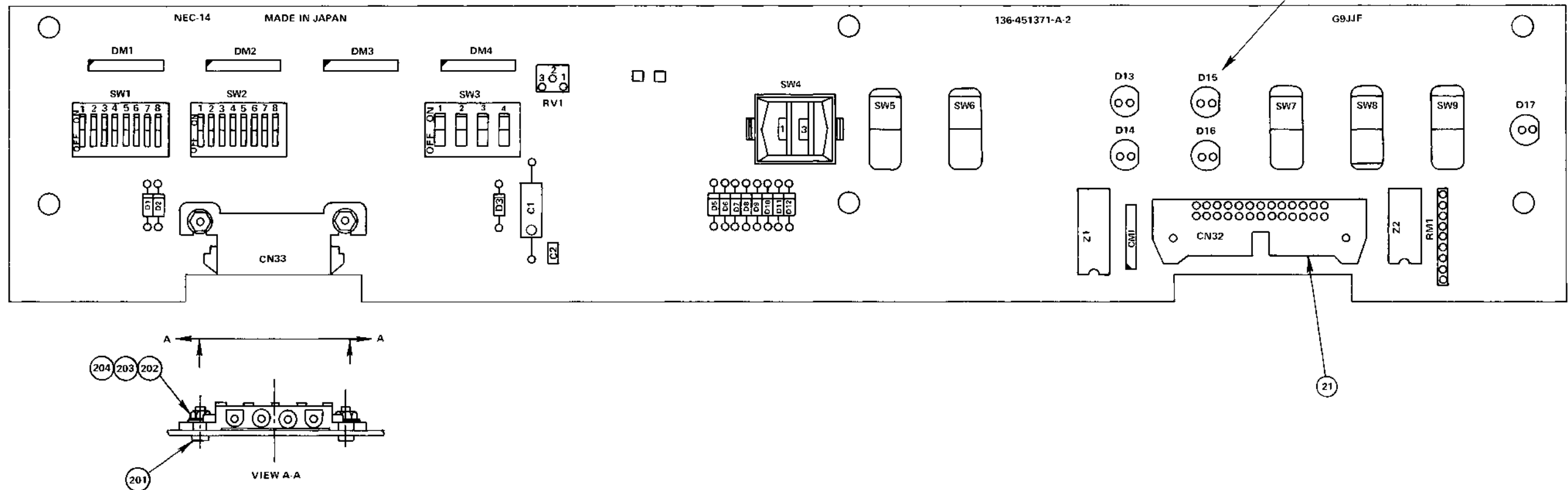
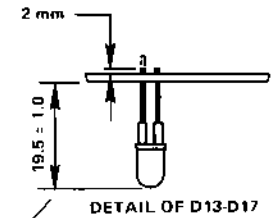


Figure 6-50 G9JJF PCB

136-020131-A P11 PCB

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
C51, C52	808-935361-023-A	Capacitor, 470 $\mu$ F ECET2DR471SW or 200LN470 or CEFTW2D471A	2
C53	808-935262-001-A	Capacitor, QP922J104J	1
C54	808-935361-021-A	Capacitor, 6800 $\mu$ F ECET16R682SW or 16LN6800 or CEFTW1C682N	1
C55	808-935161-012-A	Capacitor, 501N5002104K1 or MFA50V104K or CQ92M1H104KA	1
C56	808-935161-017-A	Capacitor, ECEA1AV221S or CEWSMIA221	1
C57, C58	808-935161-022-A	Capacitor, ECET25R153SW or 25LN15000 or CEFTWIE153N	2
C59	808-935563-003-A	Capacitor, ceramic, 2200pF, 400 Vac, +20%	1
CR51	808-926103-022-A	Triac AC16EGM(L)	1
J1B, J2B	808-955140-348-A	Pin Header 350429-1	2
L51	808-940311-001-A	Inductor TFM10558	1
Q51	808-920405-601-A	Transistor 2SD560	1
Q52	808-920218-331-A	Transistor 2SC1833	1
R51, R52	808-930461-005-A	Resistor, Fixed Film, 27 k $\Omega$ , 2 W, +5%	2
R53	808-930612-002-A	Resistor, W5P 0.15 $\Omega$ k	1
R54	802-310021-009-0	Resistor, Fixed Film, 22 $\Omega$ , 1/4 W, +2%	1
R55	802-310003-041-0	Resistor, 120 $\Omega$ , 1/2 W, +2%	1
R56, R57	802-310003-067-0	Resistor, 1500 $\Omega$ , 1/2 W, +2%	2
R58		Resistor, RNF2HU22	1
R59	802-310003-039	Resistor, 100 $\Omega$ , 1/2 W, +2%	1
RC51	808-924103-006-A	Rectifier, S10VB60	1
RC52	808-924105-002-A	Rectifier, ESAC8Z-004 or S10SC4M	1
RC53	808-924105-003-A	Rectifier, ESAC25-02C or S5KC20	1
RC54	808-924105-004-A	Rectifier, ESAC25-02N or S5K20R	1
T51	808-940506-002-A	Transformer, Constant Voltage FRT-13154	1
(1)		P11 PCB	1
(23)	136-738530-A	Bracket	1
(24)	136-734105-A	Spacer	1
(32)	136-738528-A	Heat Sink	1
(33)	136-738526-A	Heat Sink	1
(34)	136-738527-A	Heat Sink	1
(35)	808-955141-402-A	Terminal 42567-3 or 42335-3	8
(36)	808-955141-604-A	Terminal 61420-1 or 60832-1	13
(37)	136-738524-A	Transistor Spacer	5
(38)	136-725131-A	Bushing	5
(39)	136-738522-A	Collar	2
(40)	136-738525-A	Plate	5
(41)	136-738529-A	Bushing	2
(201)	805-501103-0	AHExBNx3x3GF	5
(202)	805-623103-0	#2BLWx3x3GF	10
(203)	805-601103-0	SBWx3x3GF	9
(204)	805-631103-0	PBWx3x3GF	3
(205)	805-001103-016-0	CPBMSx3x16x3GF	2
(206)	805-001103-014-0	CPBMSx3x14x3GF	5
(207)	805-001103-012-0	CPBMSx3x12x3GF	2
(208)	805-001104-010-0	CPBMSx4x10x3GF	2
(209)	805-623104-0	#2PBLWx4x3GF	2
(210)	805-631104-0	PBWx4x3GF	2
(211)	805-011103-006-0	CFBMSx3x6x3GF	1

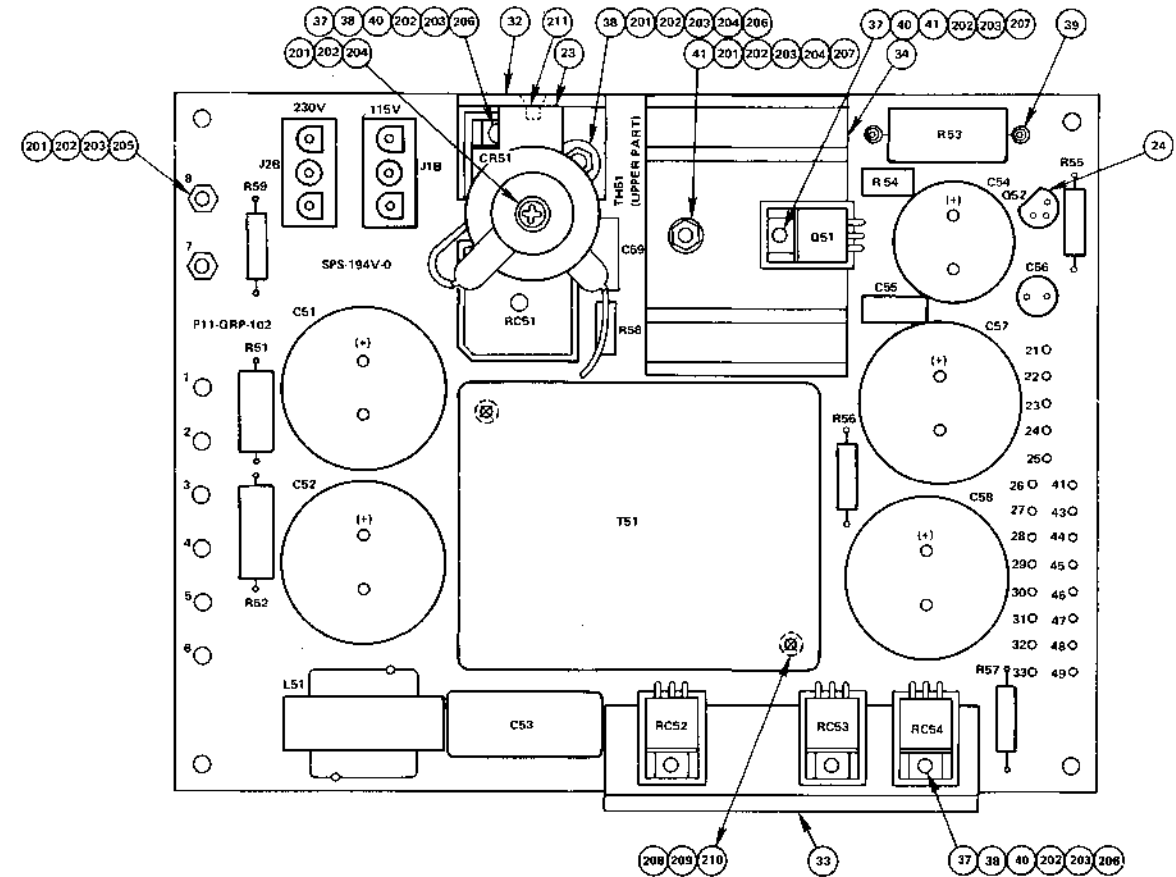


Figure 6-51 P11 PCB

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
C1-C12	808-935161-012-A	Capacitor, 501N5002104K1 or MFA30V104K or CQ92M1H104KA	12
C13	808-935361-017-A	Capacitor, ECEALAV221S 04 CEUSM1A221	1
C14	808-935161-015-A	Capacitor, 602M1003102G	1
C15	808-935161-013-A	Capacitor, 501N5002103K1 or MFA50V103K or CQ92M1H103KA	1
C16	808-935161-014-A	Capacitor, 501N5002222K1 or MFA50V222K or CQ92M1H222KA	1
C17	808-935361-018-A	Capacitor, ECEALEV221S or CEUSM1E221	1
C18	808-935361-019-A	Capacitor, ECEALCV220S or CEUSM1C220	1
C19	802-935263-101-A	Capacitor, MD12E106K or CF9L2E106KX	1
C20	808-935361-020-A	Capacitor, ECEALHV3R3S or CEUSM1H3R3	1
CR1	808-926003-001-A	Thyristor 03P1M	1
D1, D2, D6, D7	808-923009-531-A	Diode, 1S953	4
D3-D5, D9, D12	808-923302-011-A	Diode, F14B	5
D8, D10, D11, D13	808-923330-011-A	Diode, F14D or ERC25-04	4
D14, D15	808-924102-003-A	Diode, U19E	2
J3B	808-955176-001-A	PinHeader PS-9PA-S4T1-A1	1
Q1	808-920008-831-A	Transistor 2SA883	1
Q2-Q4, Q9, Q10	808-920218-331-A	Transistor 2SC1833	5
Q5, Q6	808-920227-020-A	Transistor 2SC2720	2
Q7, Q8	808-920227-088-A	Transistor 2SC2788	2
R1	802-310021-059-0	Resistor, 2700Ω, 1/4 W, +2%	1
R2	802-310021-075-0	Resistor, 12 kΩ, 1/4 W, +2%	1
R3	802-310021-077-0	Resistor, 15 kΩ, 1/4 W, +2%	1
R4	802-310021-058-0	Resistor, 2400Ω, 1/4 W, +2%	1
R5, R6	802-310003-067-0	Resistor, 1500Ω, 1/2 W, ±2%	2
R7	808-930612-003-0	Resistor, W5P68ΩK	1
R8, R9	808-930362-001-0	Resistor, RNF2HJ22	2
R10	808-930362-002-0	Resistor, RNF2HJ390ΩG	1
R11	802-310021-025-0	Resistor, 100Ω, 1/4 W, +2%	1
R12	802-310021-049-0	Resistor, 1000Ω, 1/4 W, +2%	1
RC1	808-924103-001-A	Rectifier S1VB10	1
RM1	808-930338-007-A	Resistor Module 8006	1
RM2	808-930338-008-A	Resistor Module 8003	1
RM3	808-930338-009-A	Resistor Module 7548	1
RM4	808-930338-010-A	Resistor Module 7549	1
RM5	808-930338-011-A	Resistor Module 8007	1
RM6	808-930338-012-A	Resistor Module 6038	1
RM7	808-930338-013-A	Resistor Module 6040	1
T1	808-940312-001-A	Transformer TFM 10550	1
T2	808-940315-001-A	Transformer TFM 10637	1
TM1	808-955176-002-A	PS-8PA-S4T1-A1	1
TM2	808-955176-001-A	PS-9PA-S4T1-A1	1
Z1	808-910210-421-A	Integrated Circuit μPC1042C	1
Z2	808-910201-411-A	Integrated Circuit μPC141C	1
Z3	808-910201-771-A	Integrated Circuit μPC177C	1
ZD1	808-923504-149-A	Diode, Zener RD68EB3	1
ZD2	808-923504-077-A	Diode, Zener RD43EB1	1
(1)		P12 PCB	1
(56)	136-734105-A	Spacer	9
(57)	136-738520-A	Insulator	2
(58)	136-738521-A	Spacer	3
(59)	136-738522-A	Collar	2
(60)	136-738523-A	Heat Sink	1
(201)	805-501103-0	AHE×BN×3×3GF	3
(202)	805-623103-0	#2BPBLW×3×3GF	2
(203)	805-601103-0	SBW×3×3GF	2
(204)	805-631103-0	ITBW×3×3GF	1
(205)	805-001103-016-0	CPBMS×3×16×3GF	2
(206)	805-001103-012-0	CPBMS×3×12×3GF	1

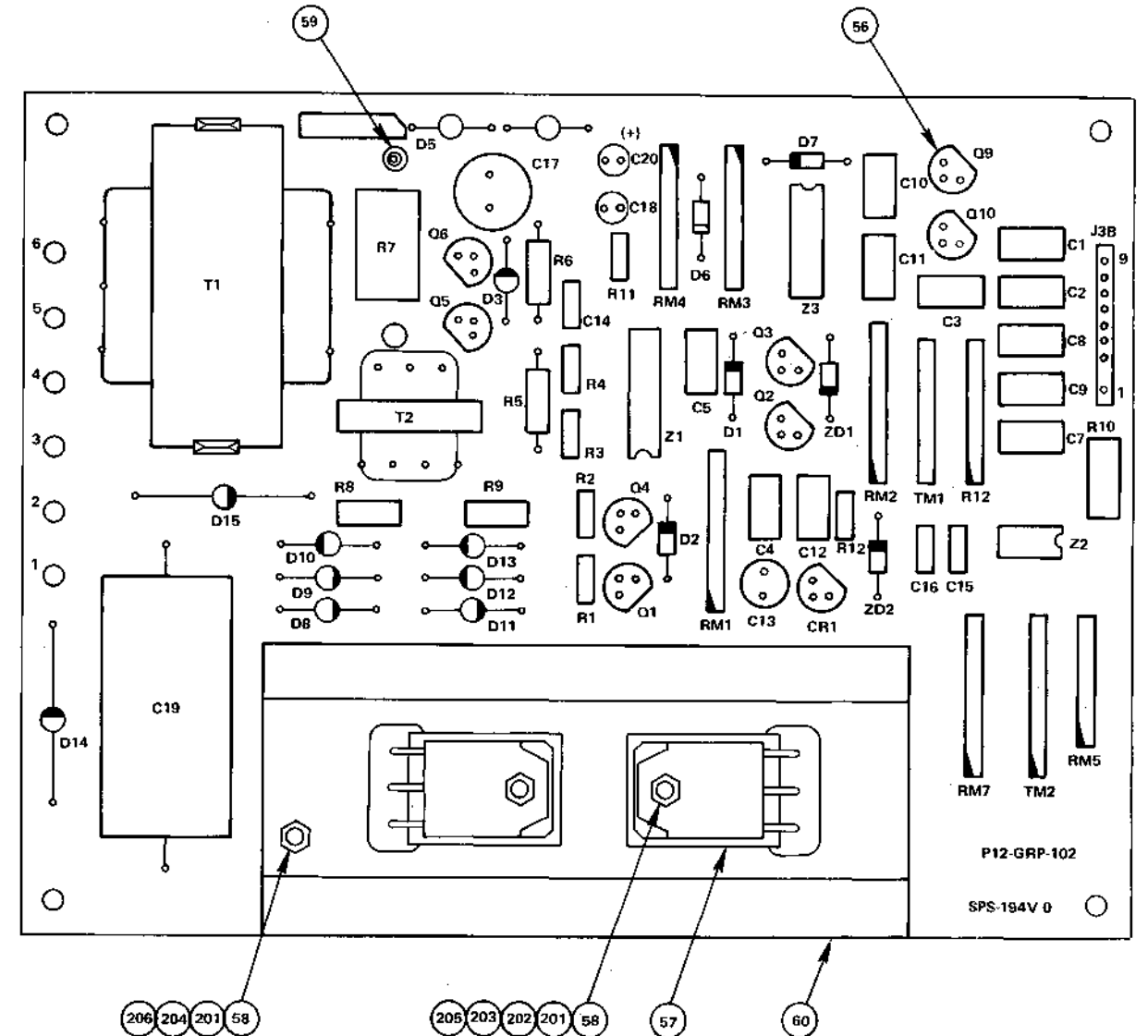


Figure 6-52 P12 PCB Rev. 4

136-020148-B P18 PCB Rev. 2  
 (See Figure 6-31 for Next Higher Assembly)

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
C101	808-935163-021-A	Capacitor, 0.47 $\mu$ F, 250 Vac, +20%	1
C102, C103	808-935563-004-A	Capacitor, 1000 pF, 400 Vac, +20%	2
C104	808-935163-022-A	Capacitor, 0.1 $\mu$ F, 250 Vac, +20%	1
C105, C106	808-935563-003-A	Capacitor, 2200 pF, 400 Vac, +20%	2
F101	808-960301-002-A	313005, 5A, 115 Vac	1*
	808-960301-003-A	313003, 3A, 230 Vac	1*
L101	808-940327-001-A	Inductor R15.8	1
L102	808-940327-002-A	Inductor R28	1
SQ101	808-927005-002-A	Surge Killer ENB461D-14A	1

\*F101 will be either a 5 A or 3 A fuse depending on the input voltage.

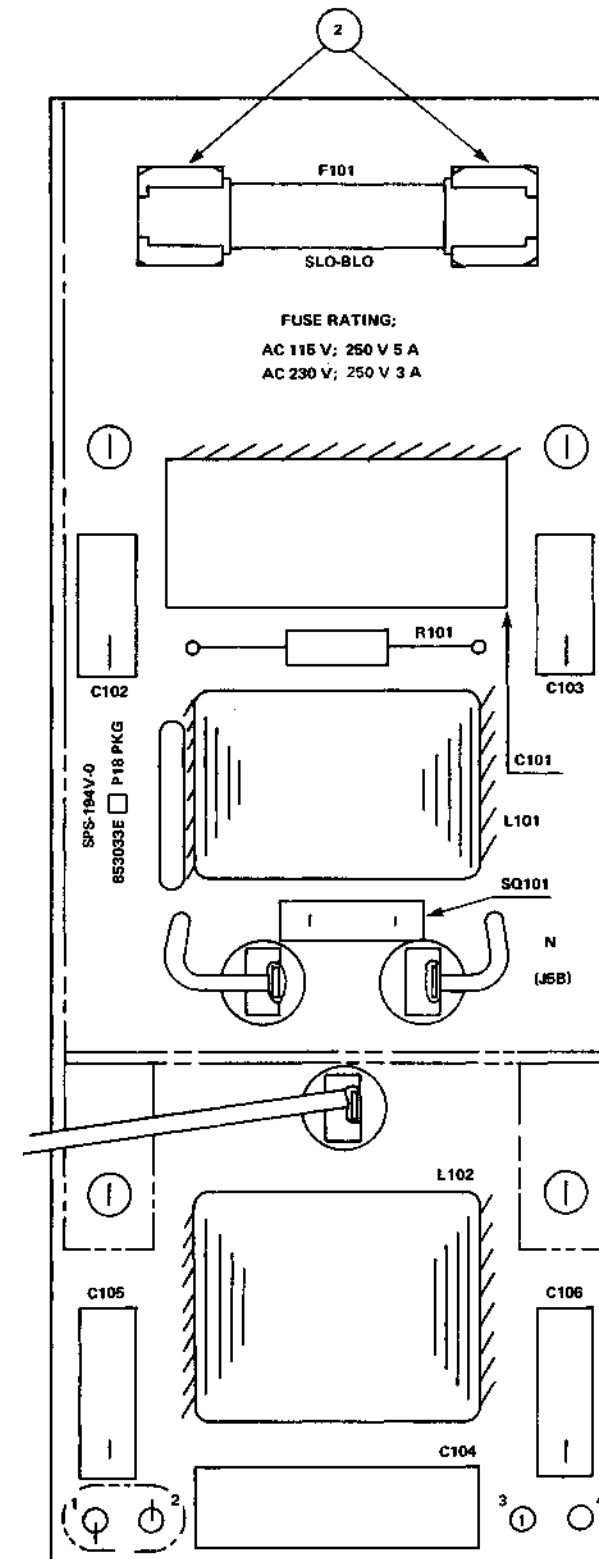


Figure 6-53 P18 PCB

136-020131-B P19 PCB Rev. 5  
 (See Figure 6-31 for Next Higher Assembly)

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
C51, C52	808-935375-001-A	Capacitor CE69W2D471D	2
C53	808-935162-002-A	Capacitor FPD-FCZ-4386	1
C54	808-935375-002-A	Capacitor 16PNH5800	1
C55	808-935262-004-A	Capacitor 0.1 $\mu$ F, 50 Vdc, +10%	1
C56	808-935462-001-A	Capacitor ESCF16E22	1
C57, C58	808-935371-005-A	Capacitor SM25VNSN15000Y	2
C59	808-935563-003-A	Capacitor 2200 pF, +20%	1
C60-C62	808-935563-004-A	Capacitor 1000 pF, +20%	3
CR51	808-927020-001-A	Triac BCR16FM10L	1
J1B, J1C	808-955140-348-A	Pinheader 350429-1	2
L51	808-940311-001-A	Inductor TFM10558	1
Q51	808-920405-601-A	Transistor 2SD560 or 2DS1022	1
Q52	808-920218-331-A	Transistor 2SC1833 or 2SC2719	1
R51, R52	808-930461-025-A	Resistor, 27 K $\Omega$ , 2W, +5%	2
R53	808-930612-002-A	Resistor W5P0.15 K $\Omega$	1
R54	808-310021-009-A	Resistor 22 $\Omega$ , 1/4 W, +2%	1
R55	808-930461-030-A	Resistor 120 $\Omega$ , 5W, +5%	1
R56, R57	808-930461-028-A	Resistor 1500 $\Omega$ , 5W, +5%	2
R58	808-930461-029-A	Resistor 22 $\Omega$ , 5W, +5%	1
R59	808-930461-026-A	Resistor 100 $\Omega$ , 1 W, +5%	1
R60	808-930461-024-A	Resistor 22 $\Omega$ , 2 $\theta$ , +5%	1
R61	808-310021-043-A	Resistor 560 $\Omega$ , 1/4 W, +2%	1
RC51	808-924103-006-A	Diode Bridge S10VB6C	1
RC52	808-924105-002-A	Diode Module ESA028-004 or S10SC4M	1
RC53	808-924105-003-A	Diode Module ESAC25-02C or S5KC20	1
RC54	808-924105-004-A	Diode Module ESAC25-02N or S5KC20R	1
T51	808-940506-002-A	Transformer FRT-13154-1	1
TH51	808-927003-004-A	Thermistor 2W-25(BY)	1
(31)	136-725133-A	Bushing B-17	4
(32)	136-747691-001-A	Insulator	4
(33)	136-747688-A	Heat Sink	1
(34)	136-747689-A	Heat Sink	1
(35)	136-747690-A	Heat Sink	1
(36)	136-747692-A	Bushing	6

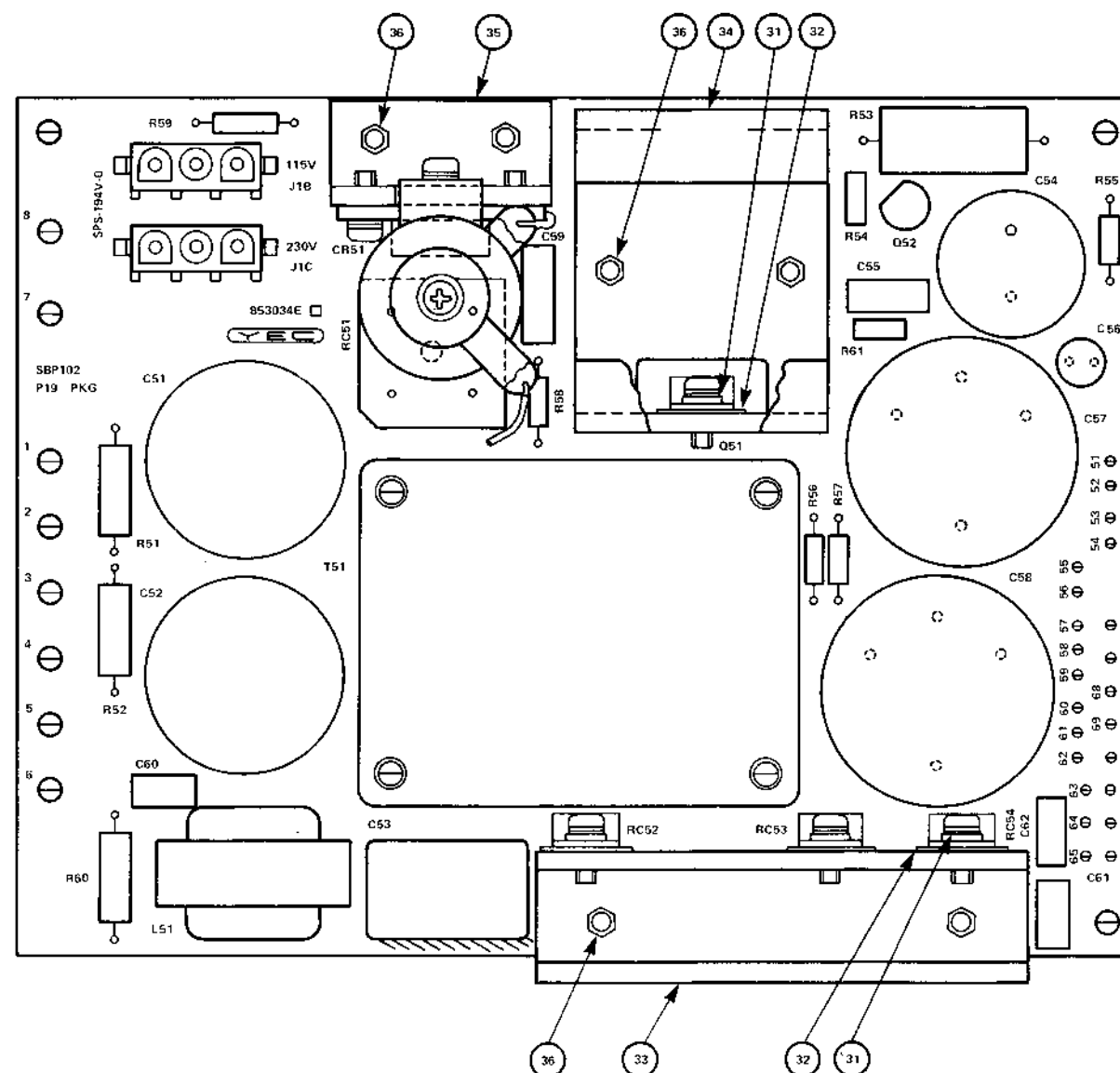


Figure 6-54 P19 PCB

136-020132-B P20 PCB Rev. 5  
 (See Figure 6-31 for Next Higher Assembly)

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
C1-C3, C5-C12	808-935262-004-A	Capacitor 0.1 μF, 50 Vdc, +10%	11
C4	808-935361-025-A	Capacitor ECEA50MR47	1
C13	808-935361-017-A	Capacitor ECEA1A5221	1
C14	808-935262-001-A	Capacitor 1000 pF, 50 Vdc	1
C15, C21	808-935262-003-A	Capacitor 10000 pF, 50 VDC, +10%	2
C16	808-935262-002-A	Capacitor 0.1 μF, 50 Vdc, +10%	1
C17	808-935361-027-A	Capacitor ECEA1ES221	1
C18	808-935361-026-A	Capacitor ECEA25M22	1
C19	808-935263-101-A	Capacitor MD12E106K	1
C20	808-935376-001-A	Capacitor 25TSL6R8Y	1
C22, C23	808-935563-004-A	Capacitor 1000 pF, +20%	2
CR1	808-926003-001-A	Thyristor 03PIM	1
D1, D2, D6, D7	808-923009-531-A	Diode 1S953	4
D3, D9, D12	808-923302-011-A	Diode F14B or SIV20	3
D8, D10, D11, D13	808-923330-001-A	Diode F114D or ERC25-04	4
D14, D15	808-924102-003-A	Diode U19E	2
J2B	808-955117-002-A	Pinheader IL-8P-S3EN2	1
Q1	808-920008-831-A	Transistor 2SA883 or 2SA1152 or 2SC1213A	1
Q2-Q4, Q9, Q10	808-920218-331-A	Transistor 2SC1833 or 2SC2719 or 2SC1213A	5
Q5, Q6	808-920277-211-A	Transistor 2SC2721	2
Q7, Q8	808-921003-001-A	Transistor 2SC2788 or 2SC2937 or 2SC2307	2
R1	802-310021-053-0	Resistor 1500Ω, 1/4 W, +2%	1
R2	802-310021-076-0	Resistor 13KΩ, 1/4 W, +2%	1
R3	802-310021-077-0	Resistor 15KΩ, 1/4 W, +2%	1
R4	802-310021-078-0	Resistor 16KΩ, 1/4 W, +2%	1
R5, R6	808-930461-028-0	Resistor 1500Ω, 5 W, +5%	2
R7	808-930612-003-0	Resistor W5P68ΩK	1
R8, R9	808-930461-029-0	Resistor 22Ω, 5 W, +5%	2
R10	808-930461-031-A	Resistor 180Ω, 5 W, +5%	1
R11, R12, R47	802-310021-049-0	Resistor 1 KΩ, 1/4 W, +2%	3
R45	802-310021-052-0	Resistor 1.3 KΩ, 1/4 W, +2%	1
R46	802-310021-059-0	Resistor 2.7 KΩ, 1/4 W, +2%	1
RC1	808-924103-001-A	Diode Bridge S1VB10 or 2B2DM	1
RC2	808-924004-002-A	Diode Module MI-101	1
RM1	808-930338-007-A	Resistor Module 8006	1
RM2	808-930338-008-A	Resistor Module 8003	1
RM3	808-930338-009-A	Resistor Module 8548	1
RM4	808-930338-010-A	Resistor Module 8549	1
RM5	808-930338-001-A	Resistor Module 8007	1
RM6	808-930338-012-A	Resistor Module 6038	1
RM7	808-930338-013-A	Resistor Module 6040	1
T1	808-940312-002-A	Transformer TFM10682	1
T2	808-940315-001-A	Transformer, Pulse TFM10637	1
TH1, TH2	808-927017-001-A	Thermistor D33A	2
TM1	808-955176-002-A	Pinheader PS-8PA-S4T1-A1 or 65507-408	1
TM2	808-955176-001-A	Pinheader PS-9PA-S4T1-A1 or 65507-409	1
Z1	808-910210-421-A	Integrated Circuit μPC1042C	1
Z2	808-910201-411-A	Integrated Circuit μPC141C	1
Z3	808-910201-771-A	Integrated Circuit μPC177C	1
ZD1	808-923504-117-A	Diode, Zener RD5.1EB1	1
ZD2	808-923504-097-A	Diode, Zener RD4.3EB	1
(52)	136-747691-002-A	Insulator	2
(53)	136-747687-A	Heat Sink	1
(54)	136-747692-A	Bushing	2

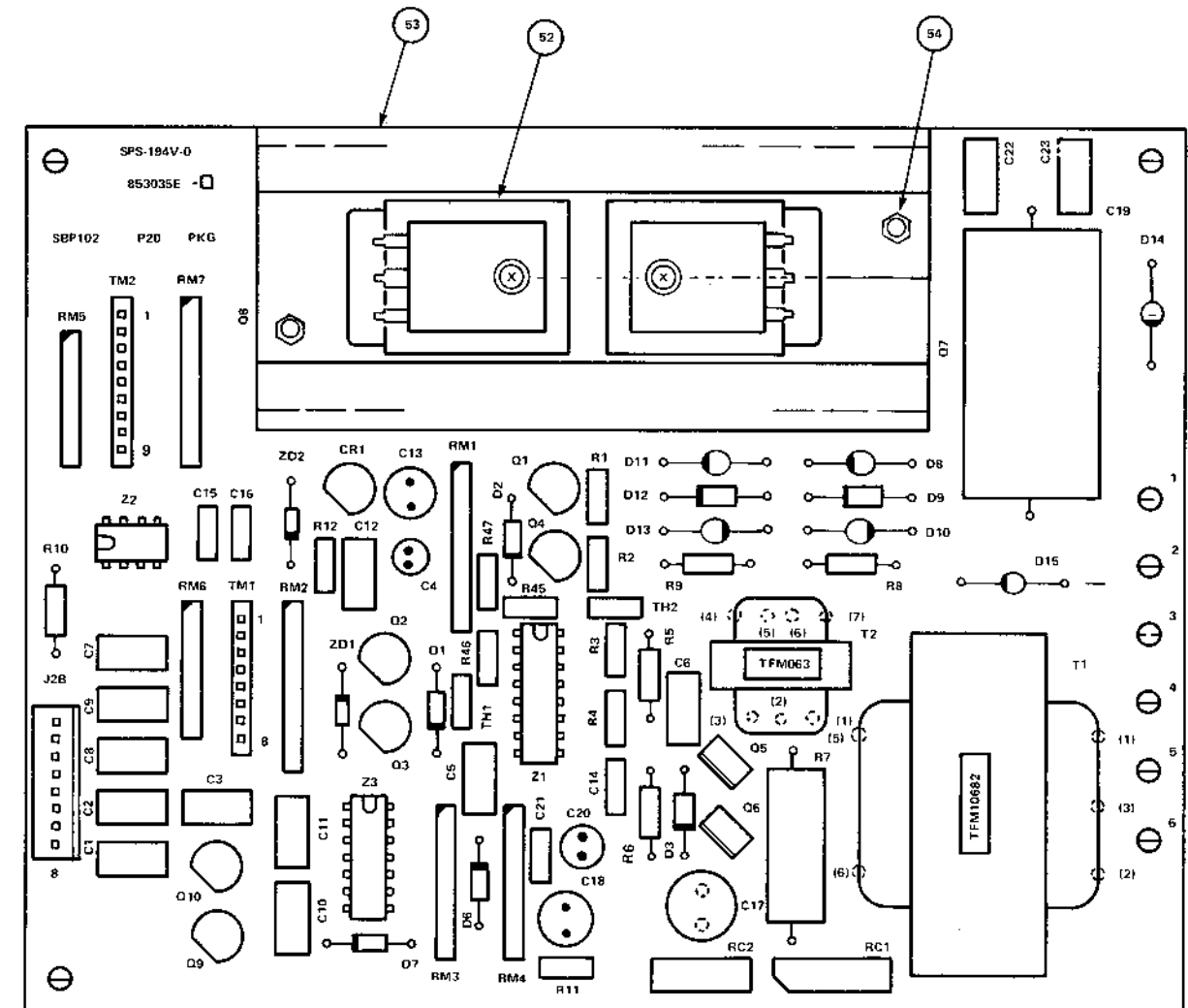


Figure 6-55 P20 PCB

808-863125-030-A P30 PCB Rev. 1  
 (See Figure 6-33 for Next Higher Assembly)

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
C51, C52	808-935375-001-A	Capacitor 200PNH4704 or CE69W2D471D	2
C53	808-935162-002-A	Capacitor, 0.1 $\mu$ F, 400 Vac, +10%	1
C54, C55	808-935371-005-A	Capacitor, Electrolytic 1500 $\mu$ F, 25 V	2
C56	808-935375-002-A	Capacitor 16PNH6800 or NMI6VNSN6800	1
C57	808-935563-005-A	Capacitor, ceramic 3300 pF, +20%	1
C58	808-935263-004-A	Capacitor, 10000 pF, 250 Vac, +10%	1
C59	808-935563-003-A	Capacitor, ceramic 2200 pF, +20%	1
C60-C62	808-935563-004-A	Capacitor, ceramic 1000 pF, +20%	3
CR51	808-927020-001-A	Triac BCR16FM10L	1
D51	808-923330-011-A	Diode F114D or ERC25-04	1
J1B, J1C	808-955140-348-A	Pinheader 350429-1	2
L51	808-940311-001-A	Inductor TFM10558	1
L52	808-940328-002-A	Inductor TFM10636	1
Q51	808-920223-331-A	Transistor 2SC2333 or 2SC2501	1
Q52	808-920223-351-A	Transistor 2SC2335 or 2SC2502	1
R51, R52	808-930461-025-A	Resistor, 27 K $\Omega$ , 2 W, +5%	2
R53, R54	802-310021-053-0	Resistor, 1500 $\Omega$ , 1/4 W, +2%	2
R55	802-310021-009-0	Resistor, 22 $\Omega$ , 1/4 W, +2%	1
R56, R57	802-310021-331-0	Resistor, 330 $\Omega$ , 1/4 W, +2%	2
R58	802-310021-001-0	Resistor, 10 $\Omega$ , 1/4 W, +2%	1
R59	808-930162-006-A	Resistor W5P0.3 K $\Omega$ or RGB5L0.3 K $\Omega$	1
R60	808-930461-032-A	Resistor, 22 K $\Omega$ , 2 W, +5%	1
R61	808-930461-029-A	Resistor ERD-50FJ220 or RDF50522 J	1
R62	808-930461-026-A	Resistor, 100 $\Omega$ , 1 W, +5%	1
R63	808-930461-024-A	Resistor, 22 $\Omega$ , 2 W, +5%	1
R64	808-930162-008-A	Resistor W5P4.7 K $\Omega$ or RGB5LY4.7 K $\Omega$	1
RC51	808-924103-006-A	Diode Bridge 510VB60	1
RC52	808-924109-002-A	Diode (Center Tap)	1
RC53	808-924109-003-A	Diode (Center Tap)	1
RC54	808-924109-001-A	Diode (Center Tap)	1
T51	808-940511-A	Transformer FRT-13153-1	1
T52	808-940328-001-A	Transformer TFM10635	1
TH51	808-927003-004-A	Thermistor 2W-25 (BY)	1
(34)	808-955150-130-A	Terminal 16261-M2 or 5033-2T	8
(35)	808-955150-131-A	Terminal 16262-M2 or 5033-4T	13
(36)	136-725133-A	Bushing B-17	4
(37)	136-747691-001-A	Insulator	3
(38)	136-747699-A	Insulator	1
(39)	136-747690-A	Heat Sink	1
(40)	136-747700-A	Heat Sink	1
(41)	136-747701-A	Bushing	4

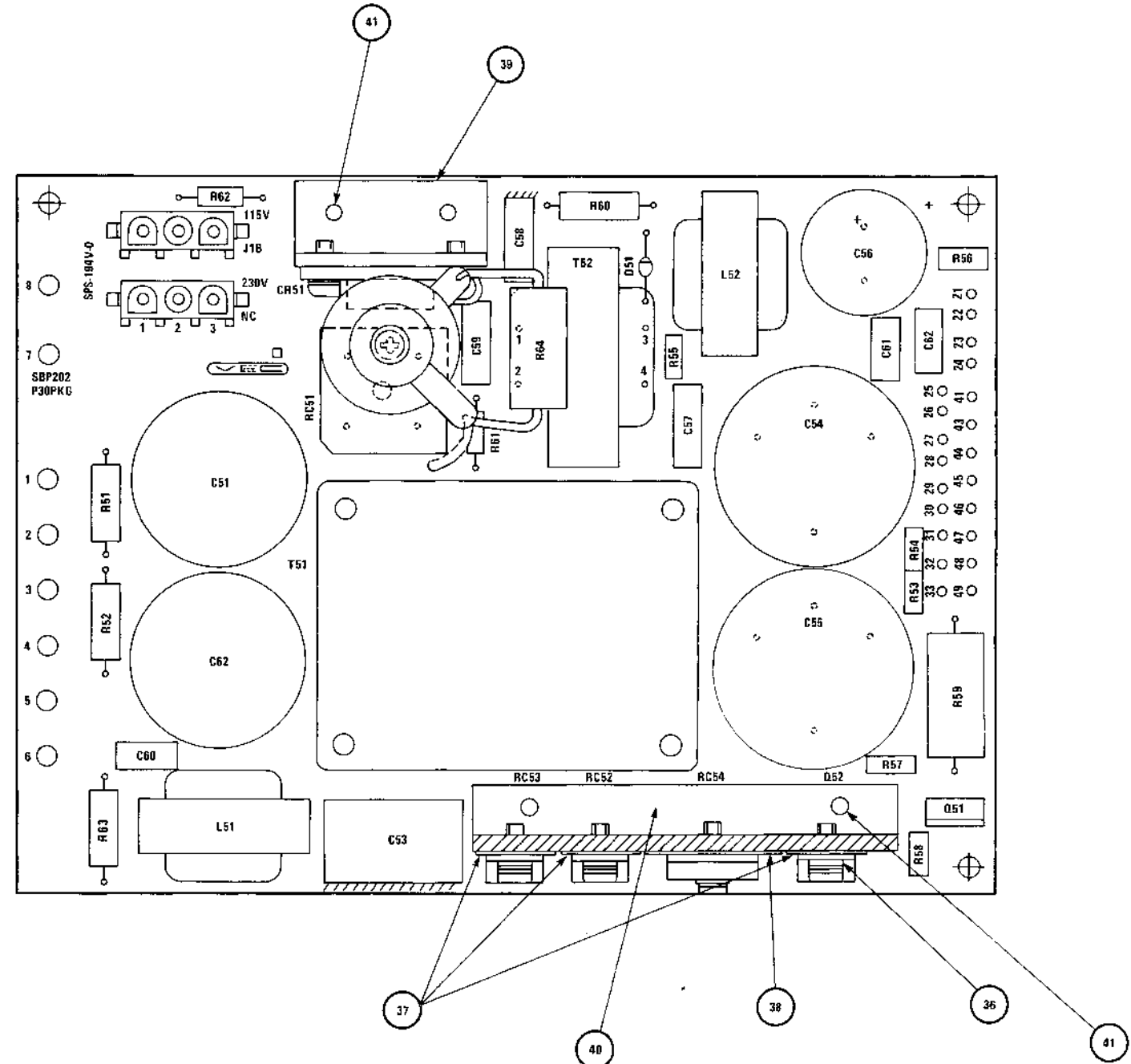


Figure 6-56 P30 PCB

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
C1	808-935361-017-A	Capacitor, electrolytic 220 µF	1
C2, C4, C6-C8, C12, C13, C18, C20, C21	808-935266-004-A	Capacitor DMY21H104K or C292M1H104KA or MFA50V104K	10
C3	808-935266-001-A	Capacitor DMY21H102G or 602M1003102G or MFA100V102G	1
C5	808-935263-101-A	Capacitor, 10 µF, 250 Vdc, +10%	1
C9	808-935361-025-A	Capacitor, electrolytic .47 µF	1
C10	808-935266-005-A	Capacitor DMY214472K or CQ92M1H472KA or MFA50V472K	1
C11, C22	808-935266-003-A	Capacitor DMYT21H103K or CQ92M1H103KA or MFA50V103K	2
C14	808-935266-006-A	Capacitor DMY21H473K or CQ92M1H473K or MFA50V473K	1
C15	808-935266-002-A	Capacitor DMY21H222K or CQ92M1H222KA or MFA50V222K	1
C16	808-935361-027-A	Capacitor, electrolytic 220 µF	1
C17	808-935376-001-A	Capacitor 25TLS6R8Y or CE04U1E6R8KD	1
C19	808-935361-026-A	Capacitor, electrolytic ECEA25M22	1
C23, C24	808-935563-004-A	Capacitor, ceramic 1000 pF, +20%	2
CR1	808-926003-001-A	Thyristor 03P1M	1
D1, D2, D12, D15, D16	808-923009-531-A	Diode 1S953	5
D3, D5, D8	808-923302-011-A	Diode F14B or SLV20	3
D4, D6, D7, D9	808-923330-011-A	Diode F114D or ERC25-04	4
D10, D11	808-924102-003-A	Diode U19E	2
J2B	808-955117-022-A	Pinheader IL-8P-S35N2	1
Q1, Q9, Q10	808-920008-831-A	Transistor 2SA883 or 2SA1152 or 2SA673A(K)	3
Q2, Q7, Q8, Q11-Q17	808-920218-331-A	Transistor 2SC1833 or 2SC2719 or 2SC1213A(K)	10
Q3, Q4	808-920227-211-A	Transistor 2SC2721	2
Q5, Q6	808-921003-001-A	Transistor 2SC2788 or 2SC2937 or 2SC2307	2
R1	802-310021-053-0	Resistor 1500Ω, 1/4 W, +2%	1
R2	802-310021-076-0	Resistor 13KΩ, 1/4 W, +2%	1
R3	802-310021-077-0	Resistor 15KΩ, 1/4 W, +2%	1
R4	802-310021-088-0	Resistor 16KΩ, 1/4 W, +2%	1
R5, R6	808-930461-028-A	Resistor 1500Ω, +5%	2
R7	808-930162-006-A	Resistor W5P47 K or RGB5L47 KΩ	1
R8, R9	808-930461-029-A	Resistor 22Ω +5%	2
R10, R11, R14	802-310021-049-0	Resistor 1KΩ, 1/4 W, +2%	3
R12	808-930461-033-A	Resistor 1KΩ, 1 W, +5%	1
R13	802-310021-166-0	Resistor 100Ω, 1/4 W, +2%	1
R15	802-310021-052-0	Resistor 1300Ω, 1/4 W, +2%	1
R16	802-310021-059-0	Resistor 2700Ω, 1/4 W, +2%	1
RC1	808-924103-001-A	Diode Bridge SLVB10 or 2B2DM	1
RC2	808-924004-002-A	Diode (Center Tap) MI-101	1
RM1	808-930338-007-A	Resistor Network 8006	1
RM2	808-930338-008-A	Resistor Network 8003	1
RM3	808-930338-014-A	Resistor Network 8005	1
RM4	808-930338-015-A	Resistor Network 7547	1
RM5	808-930338-016-A	Resistor Network 8008	1
RM6	808-930338-009-A	Resistor Network 7548	1
RM7	808-930338-010-A	Resistor Network 7549	1
RM8	808-930338-012-A	Resistor Network 6038	1
RM9	808-930338-013-A	Resistor Network 6040	1
T1	808-940312-002-A	Transformer TFM10682	1
T2	808-940315-001-A	Pulse Transformer TFM10637	1
TH1, TH2	808-927017-001-A	Thermistor D33A	2
TM1	808-955176-002-A	Pinheader PS-8PA-S4T1-A1 or DE7090B102KAC400V or V-7	1

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
TM2	808-955176-001-A	Pinheader PS-9PA-S4T1-A1 or 65507-409	1
Z1	808-910210-421-A	Integrated Circuit µPC1042C	1
Z2	808-910201-771-A	Integrated Circuit µPC177C	1
ZD1, ZD3	808-923504-117-A	Zener Diode 5.1 V	2
ZD2	808-923504-127-A	Zener Diode 5.6 V	1
ZD4	808-923504-097-A	Zener Diode 4.3 V	1
(57)	136-747691-002-A	Insulator	2
(58)	136-747687-A	Heat Sink	1
(59)	136-747701-A	Bushing	2

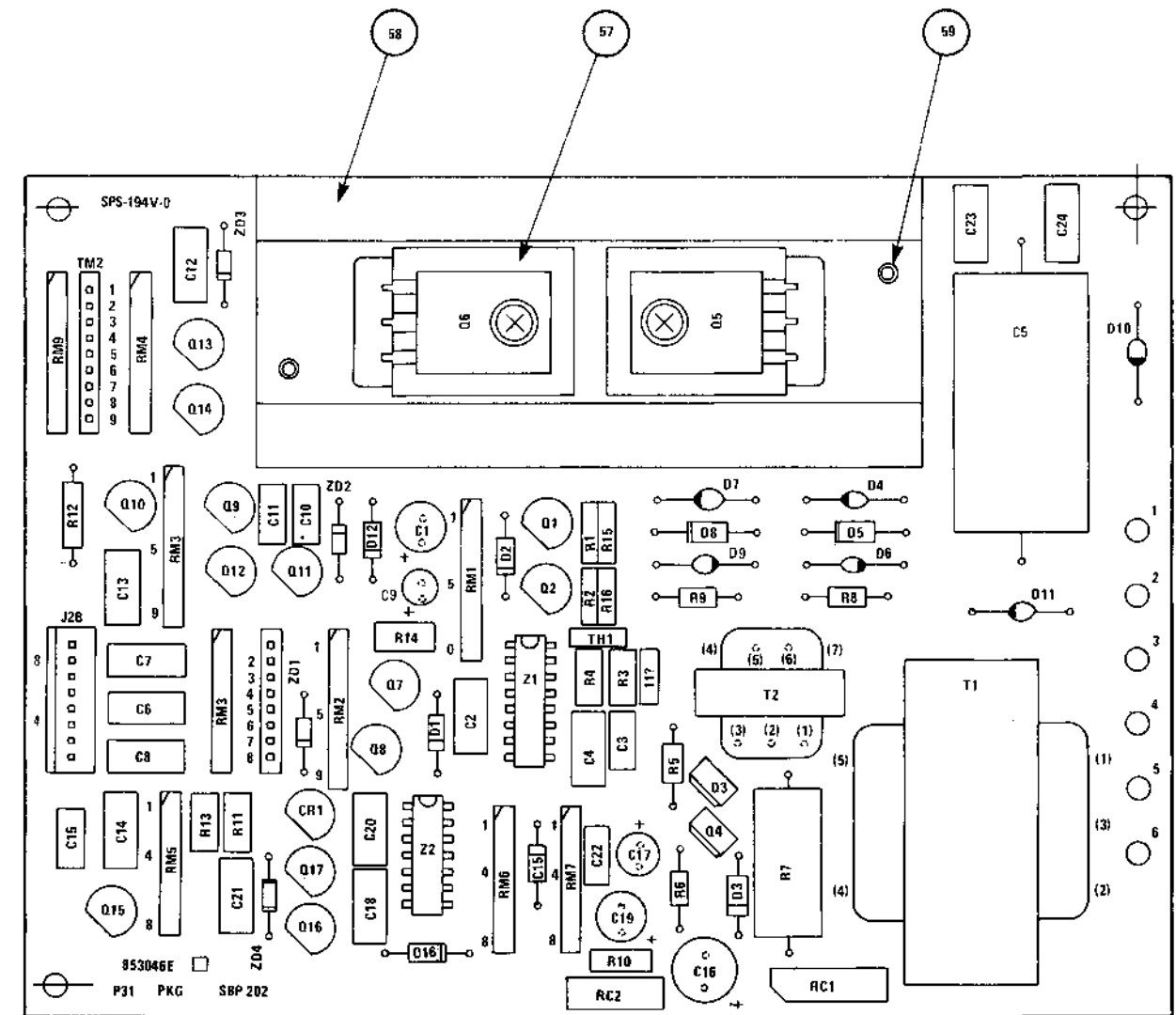


Figure 6-57 P31 PCB



COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
C1-C4, C6-C8, C10-C15, C20, C21, C23, C24, C26, C27, C30-C32, C35, C37-C43, C47	802-410030-001-0	Capacitor, ceramic 0.1 $\mu$ F, 50 Vdc, +80% -20%	31
C5, C9, C18, C19, C25, C33, C46	808-935411-014-A	Capacitor, tantalum 10 $\mu$ F, 16 Vdc, +20%	7
C16, C17	808-935590-002-A	Capacitor, ceramic 12 pF, 50 Vdc, +10%	2
C22, C28, C29, C34, C36	808-935590-455-A	Capacitor, ceramic 2200 pF, 50 Vdc, +20%	5
C44, C45	808-935411-033-A	Capacitor, tantalum, 6.8 $\mu$ F, 35 Vdc, +20%	2
C48, C49	808-935590-035-A	Capacitor, ceramic 330 pF, 50 Vdc, +10%	2
CM1-CM4	808-935569-002-A	Capacitor Module IHC-4-222KA	4
CN40	808-955140-103-A	Connector AMP1-17B50-7	1
CN41, CN42	808-955132-321-A	Connector 3429-1002G(3M)	2
CN43	808-955142-804-A	Connector 641127-4L	1
D1	808-924101-002-A	Diode 10DQ03	1
L1-L6	808-940201-001-A	Inductor SN3-201A	7
Q1	808-920011-531-A	Transistor 2SA1153	1
Q2-Q4	808-920227-201-A	Transistor 2SC2720	3
R1, R2	802-310021-031-0	Resistor 180 $\Omega$ , 1/4 W, +2%	2
R3	802-310021-041-0	Resistor 470 $\Omega$ , 1/4 W, +2%	1
R4, R12	802-310021-060-0	Resistor 3K $\Omega$ , 1/4 W, +2%	2
R5, R10	802-310021-065-0	Resistor 4700 $\Omega$ , 1/4 W, +2%	2
R6	802-310021-044-0	Resistor 620 $\Omega$ , 1/4 W, +2%	1
R7, R14	802-310021-073-0	Resistor 1K $\Omega$ , 1/4 W, +2%	2
R8, R15	802-310021-079-0	Resistor 18K $\Omega$ , 1/4 W, +2%	2
R9	802-310021-081-0	Resistor 22K $\Omega$ , 1/4 W, +2%	1
R11, R16	802-310021-062-0	Resistor 3600 $\Omega$ , 1/4 W, +2%	2
R13	802-310021-058-0	Resistor 2400 $\Omega$ , 1/4 W, +2%	1
R17, R19, R20	802-310021-049-0	Resistor 1000 $\Omega$ , 1/4 W, +2%	3
R18	802-310021-025-0	Resistor 100 $\Omega$ , 1/4 W, +2%	1
RM1, RM3, RM4, RM6	808-930349-011-A	Resistor Module IHR-1/8-8-273JA	4
RM2, RM5	808-930349-010-A	Resistor Module IHR-1/8-8-102JA	2
RV1	802-320002-008-0	Resistor, Variable NTP3/4P-203	1
SW1	808-950324-008-A	Switch, DIP 7-171474-8	1
XL1	808-970104-002-A	Crystal HC-43U6.144 MHz	1
Z1	808-910202-771-A	Integrated Circuit $\mu$ PC277C	1
Z2	808-912140-051-A	Integrated Circuit SN74LS05N	1
Z3, Z9, Z16	808-912143-731-A	Integrated Circuit SN74LS373N	3
Z8	808-914620-011-A	Integrated Circuit ICL8212CPA	1
Z10-Z13, Z17, Z18, Z22, Z23	808-919340-200-A	Integrated Circuit 446(200)	8
Z14, Z19, Z26	808-912141-381-A	Integrated Circuit SN74LS138N	3
Z15	808-910380-851-A	Integrated Circuit $\mu$ PD8085AC	1
Z20, Z27, Z33	808-912140-141-A	Integrated Circuit SN74LS14N	3
Z21	808-910382-552-A	Integrated Circuit $\mu$ PD8255AC-5	1
Z24, Z34	808-910381-551-A	Integrated Circuit $\mu$ PD8155C	2
Z25, Z28, Z29, Z39	808-912140-041-A	Integrated Circuit SN74LS04N	4
Z30, Z35	808-910340-421-A	Integrated Circuit $\mu$ PD4042C	2
Z31	808-910382-512-A	Integrated Circuit $\mu$ PD8251AC	1
Z32	808-912140-741-A	Integrated Circuit SN74LS74AN	1
Z36	808-912140-321-A	Integrated Circuit SN74LS32N	1
Z37	808-912140-001-A	Integrated Circuit SN74LS00N	1
Z38	808-912140-861-A	Integrated Circuit SN74LS86N	1

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
Z40, Z41	808-914120-025-A	Integrated Circuit MS1489L	2
Z42, Z43	808-914120-015-A	Integrated Circuit MC1488L	2
(1)	136-451363-B	G9JHX PCB	1
(53)	808-955130-389-A	Key 3518	2
(55)	808-835043-002-A	Tape NO4262	1
(56)	808-955158-124-A	IC Socket IC01T 24 Pins	4
(57)	808-955158-140-A	IC Socket IC01T 40 Pins	4
(58)	808-837000-001-0	Silicon Rubber TSE385RTV	AR

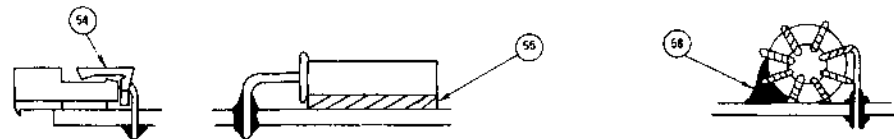
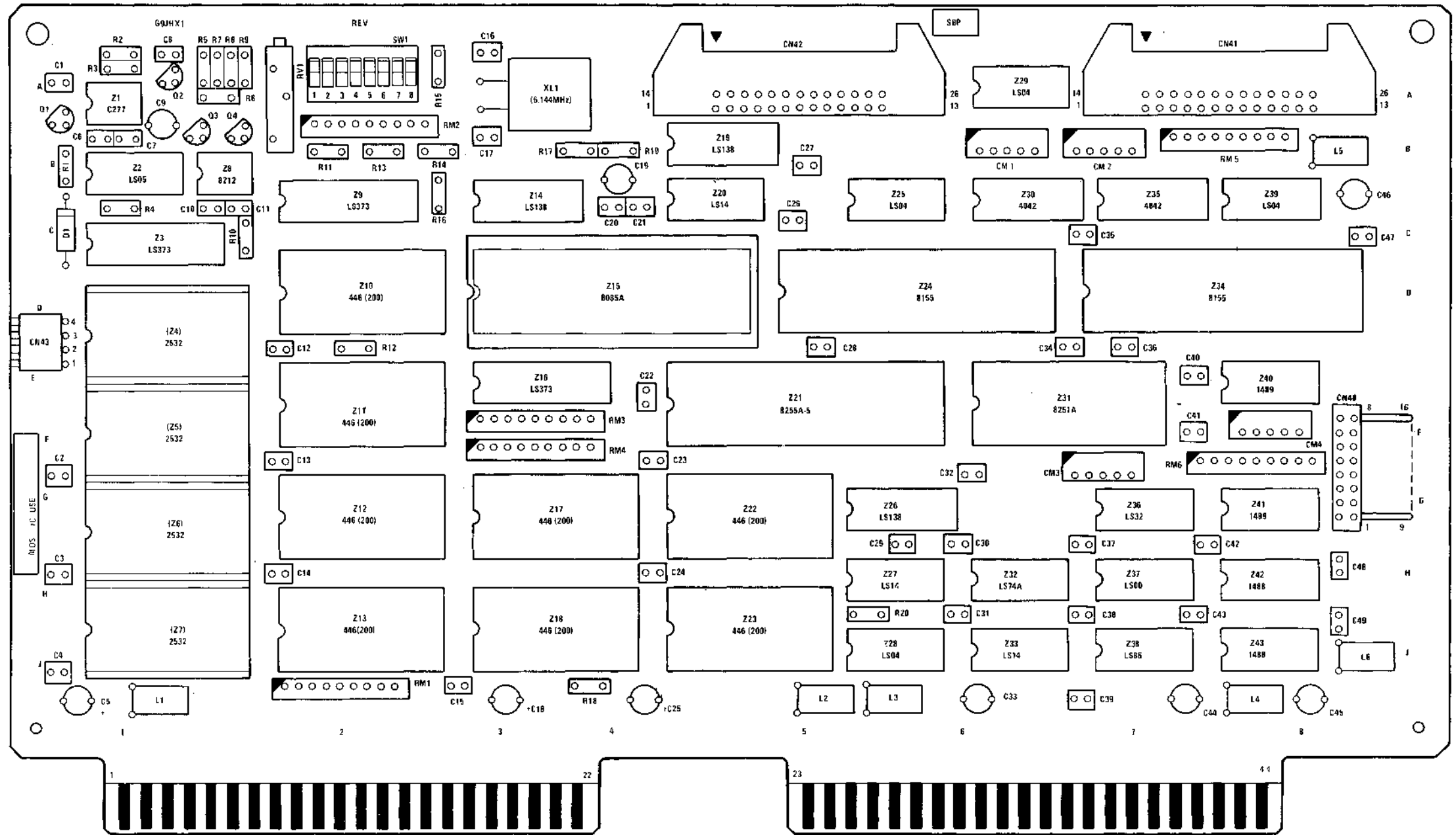
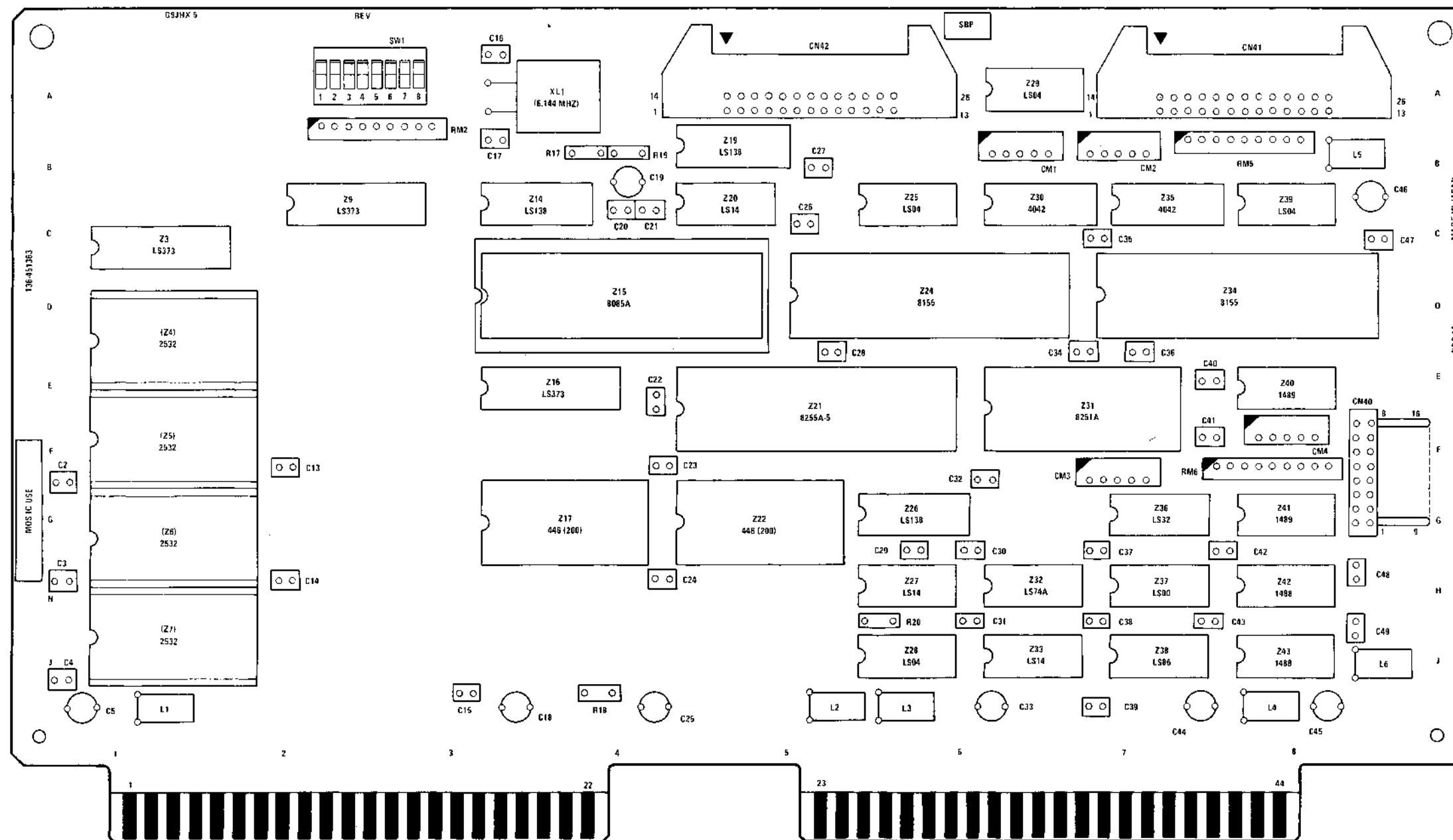


Figure 6-58 G9JHX1 PCB

136-431363-500-A G9JHX5 PCB Assembly Rev. 1

COMPONENT DESIGNATION	PART NUMBER	DESCRIPTION	QTY
C2-C4, C13-C15, C20, C21, C23, C24, C26, C27, C30-C32, C35, C37-C43, C47	802-410030-001-0	Capacitor, ceramic 0.1 $\mu$ F, 50 Vdc, +80% -20%	24
C5, C18, C19, C25, C33, C46	808-935411-014-A	Capacitor, tantalum, 10 $\mu$ F, 16 Vdc, +20%	6
C16, C17	808-935590-002-A	Capacitor, ceramic, 12 pF, 50 Vdc, +10%	2
C22, C28, C29, C34, C36	808-935590-455-A	Capacitor, ceramic, 2200 pF, 50 Vdc, +20%	5
C44, C45	808-935411-033-A	Capacitor, tantalum, 6.8 $\mu$ F, 35 Vdc, +20%	2
C48, C49	808-935590-035-A	Capacitor, ceramic, 330 pF, 50 Vdc, +10%	2
CM1-CM4	808-935569-002-A	Capacitor Module IHC-4-222KA	4
CN40	808-955140-103-A	Connector AMP1-17850-7	1
CN41, CN42	808-955132-321-A	Connector 3429-1002G (3M)	2
L1-L6	808-940201-001-A	Inductor SN3-201A	7
R17, R19, R20	802-310021-049-0	Resistor 1K $\Omega$ , 1/4 W, +2%	3
R18	802-310021-025-0	Resistor 100 $\Omega$ , 1/4 W, +2%	1
RM2, RM5	808-930349-010-A	Resistor Module IHR-1/8-8-102JA	2
RM6	808-930349-011-A	Resistor Module IHR-1/8-8-273JA	1
SW1	808-950324-008-A	Switch, DIP 7-171474-8	1
XL1	808-970104-002-A	Crystal HC-43U6.144 MHz	1
Z3, Z9, Z16	808-912143-731-A	Integrated Circuit SN74LS373N	3
Z14, Z19, Z26	808-912141-381-A	Integrated Circuit SN74LS138N	3
Z15	808-910380-851-A	Integrated Circuit $\mu$ PD8085AC	1
Z17, Z22	808-919340-200-A	Integrated Circuit 446 (200)	2
Z20, Z27, Z33	808-912140-141-A	Integrated Circuit SN74LS14N	3
Z21	808-910382-552-A	Integrated Circuit $\mu$ PD8255AC-5	1
Z24, Z34	808-910381-551-A	Integrated Circuit $\mu$ PD8155C	2
Z25, Z28, Z29, Z39	808-912140-041-A	Integrated Circuit SN74LS04N	4
Z30, Z35	808-910340-421-A	Integrated Circuit $\mu$ PD4042C	2
Z31	808-910382-512-A	Integrated Circuit $\mu$ PD8251AC	1
Z32	808-912140-741-A	Integrated Circuit SN74LS74AN	1
Z36	808-912140-321-A	Integrated Circuit SN74LS32N	1
Z37	808-912140-001-A	Integrated Circuit SN74LS00N	1
Z38	808-912140-861-A	Integrated Circuit SN74LS86N	1
Z40, Z41	808-914120-025-A	Integrated Circuit MC1489L	2
Z42, Z43	808-914120-015-A	Integrated Circuit MC1488L	2
(1)	136-451363-B	G9JHX PCB	1
(53)	808-955130-389-A	Key 3518	2
(55)	808-835043-002-A	Tape NO4262	1
(56)	808-955158-124-A	IC Socket ICOIT 24 Pins	4
(57)	808-955158-140-A	IC Socket ICOTT 40 Pins	1
(58)	808-837000-001-0	Silicon Rubber TSE385RTV	AR



NOTES:

1. Z4 TO Z7 ARE NOT INSTALLED.
2. ITEM 56 IS THE IC SOCKET FOR Z4 TO Z7
3. ITEM 57 IS THE IC SOCKET FOR Z15

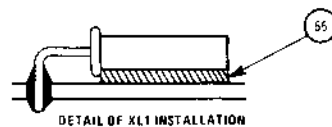


Figure 6-59 G9JHX5 PCB Assembly

Table 7-1 Logic and Schematic Diagrams (cont'd)

CHAPTER 7

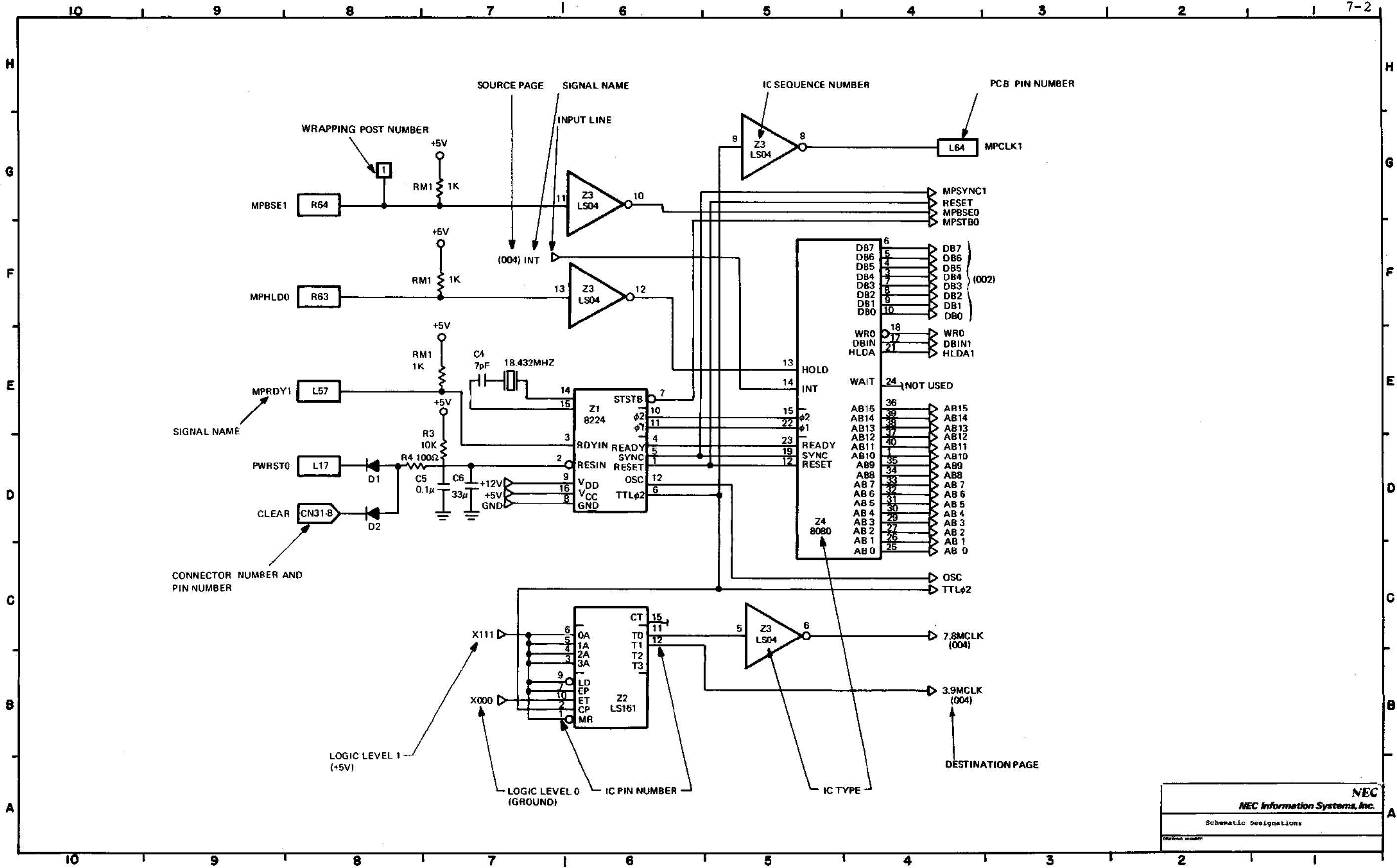
LOGIC AND SCHEMATIC DIAGRAMS

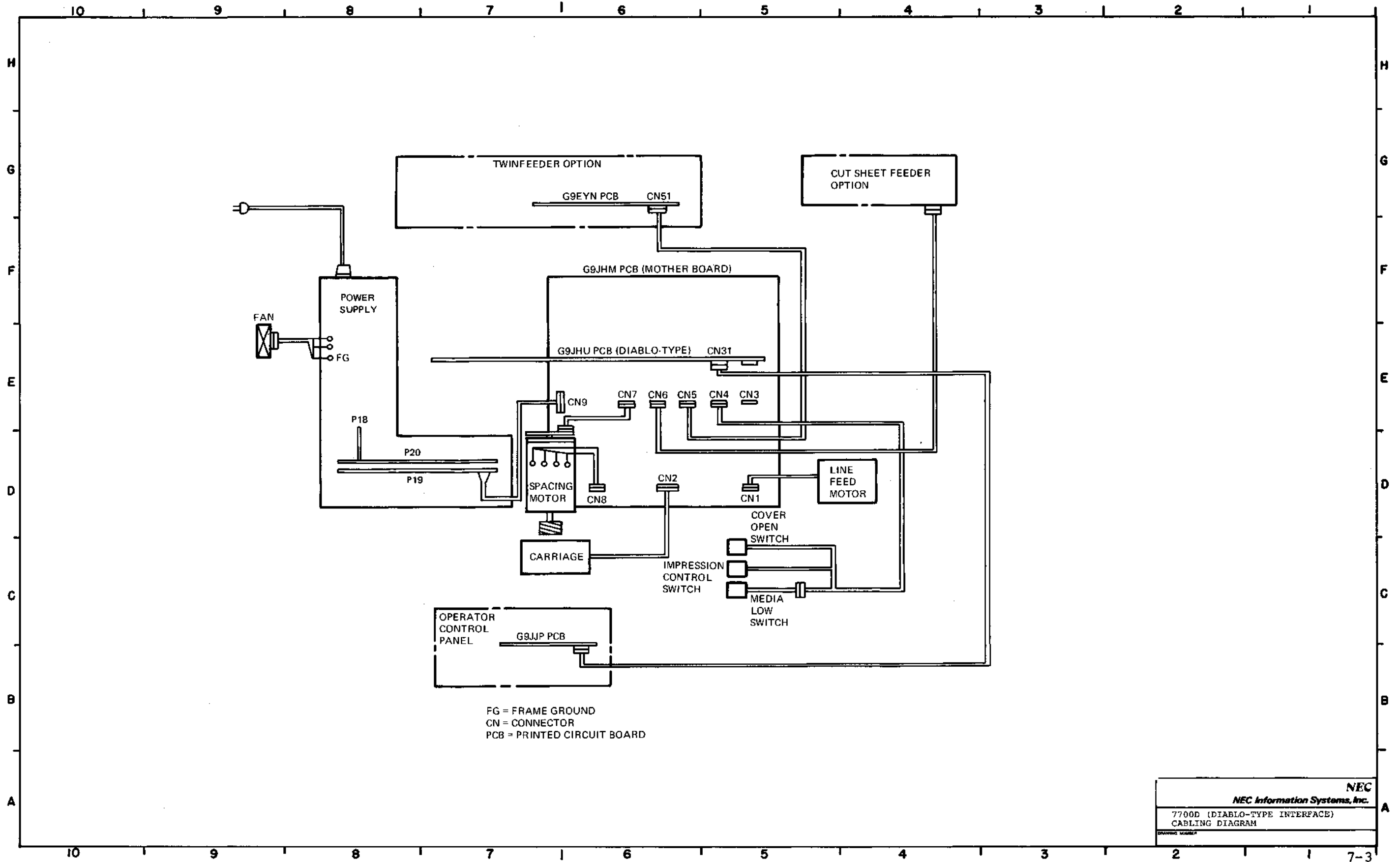
This chapter contains the logic and schematic drawings for the 7700 Series Spinwriters. The conventions used on the drawings to denote signal source and destination, test points, ground designation, pull up voltage, and so on are shown in the Schematics Designation diagram on page 7-2. The logic and schematic diagrams are arranged in numerical sequence and are listed in Table 7-1.

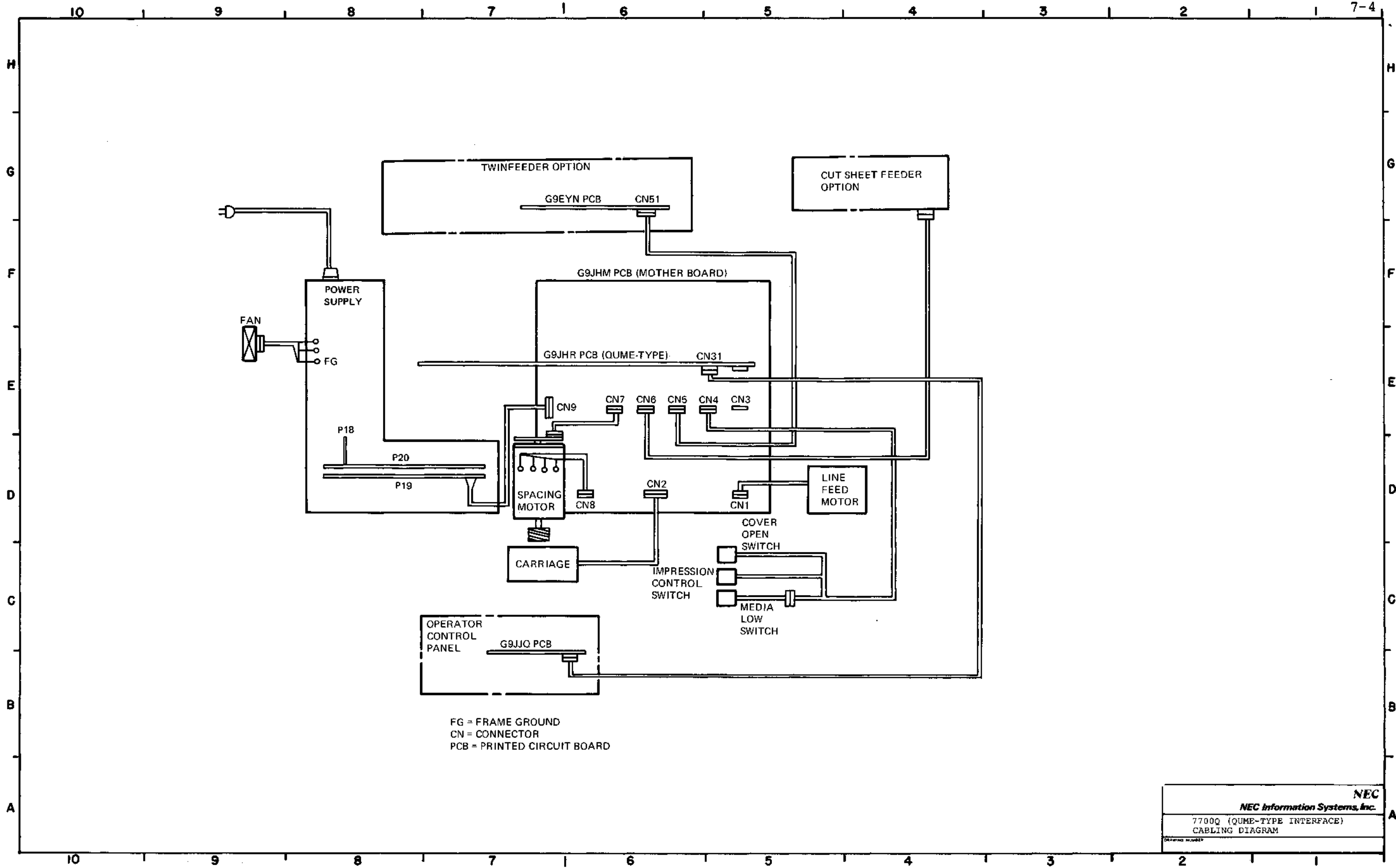
Table 7-1 Logic and Schematic Diagrams

DRAWING NUMBER	TITLE	PAGE
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	7710 (RO, RS-232-C Interface) Cabling Diagram	7-5
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	7720 (KSR, RS-232-C Interface) Cabling Diagram	7-7
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	7730 (RO, Centronics-Type Interface) Cabling Diagram	7-9
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	Current Loop Option Cabling Diagram	7-11
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136-100495-A	High Capacity Power Supply	7-13
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136-441353-A	G9JHM PCB (VT Magnet, Ribbon Change Magnet Driver Circuits)	7-15
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136-441353-A	G9JHM PCB (LF Motor Driver and Drive Lock)	7-17
136-441353-A	G9JHM PCB (RT Home Detect, Transducer Driver, Power Filter)	7-18
136-441353-A	G9JHM PCB (Mechanism Interface)	7-19

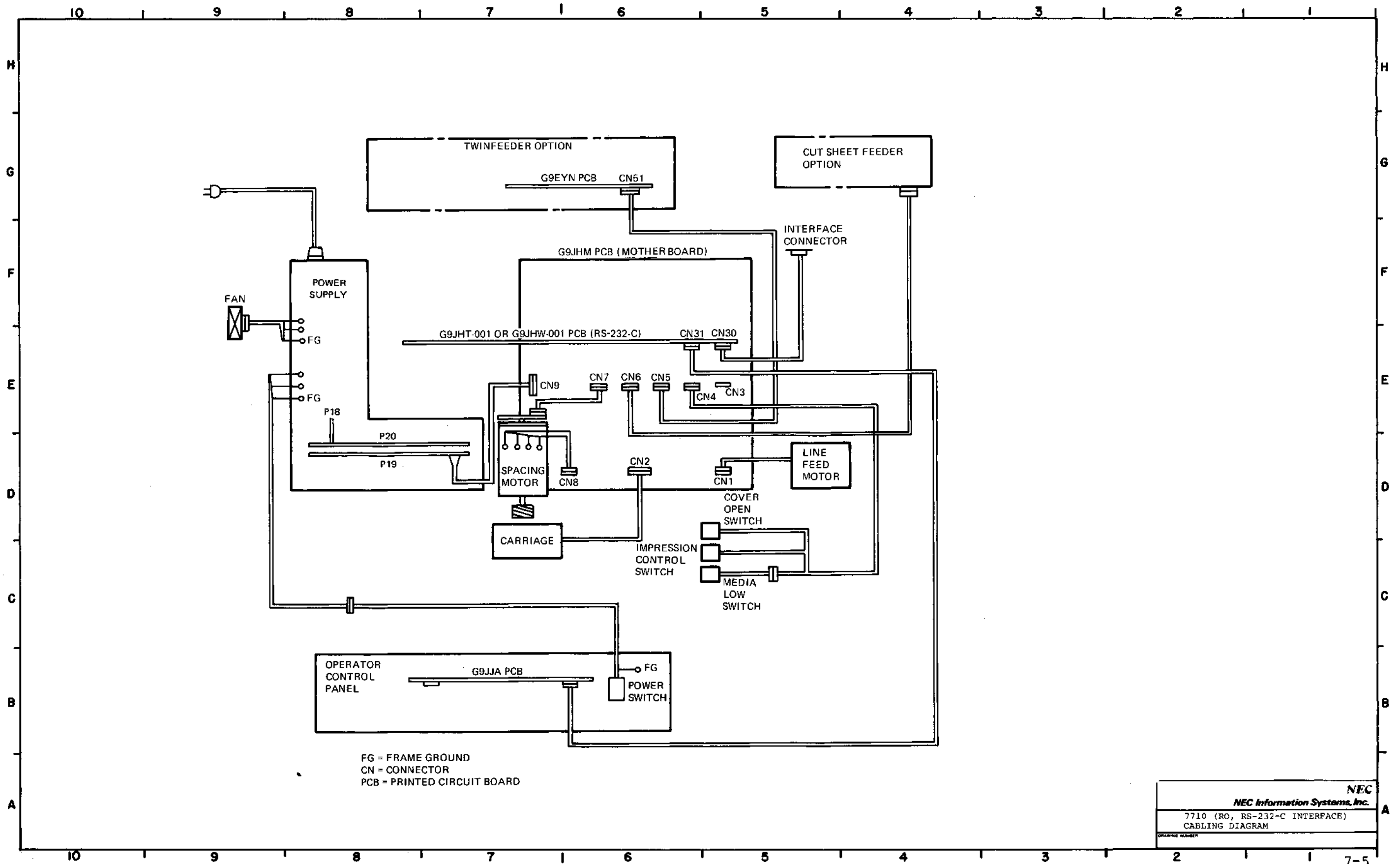
DRAWING NUMBER	TITLE	PAGE
136-441354-B	G9JHN PCB	7-20
136-441355-A	G9JHP PCB	7-21
136-441356-A	G9JHQ PCB	7-22
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136-441358-A	G9JHS PCB (Sheet 3 of 6)	7-31
136-441358-A	G9JHS PCB (Sheet 4 of 6)	7-32
136-441358-A	G9JHS PCB (Sheet 5 of 6)	7-33
136-441358-A	G9JHS PCB (Sheet 6 of 6)	7-34
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136-441371-A	G9JJF PCB	7-56
136-441379-A	G9JJJ PCB	7-57
136-441380-B	G9JJQ PCB	7-58









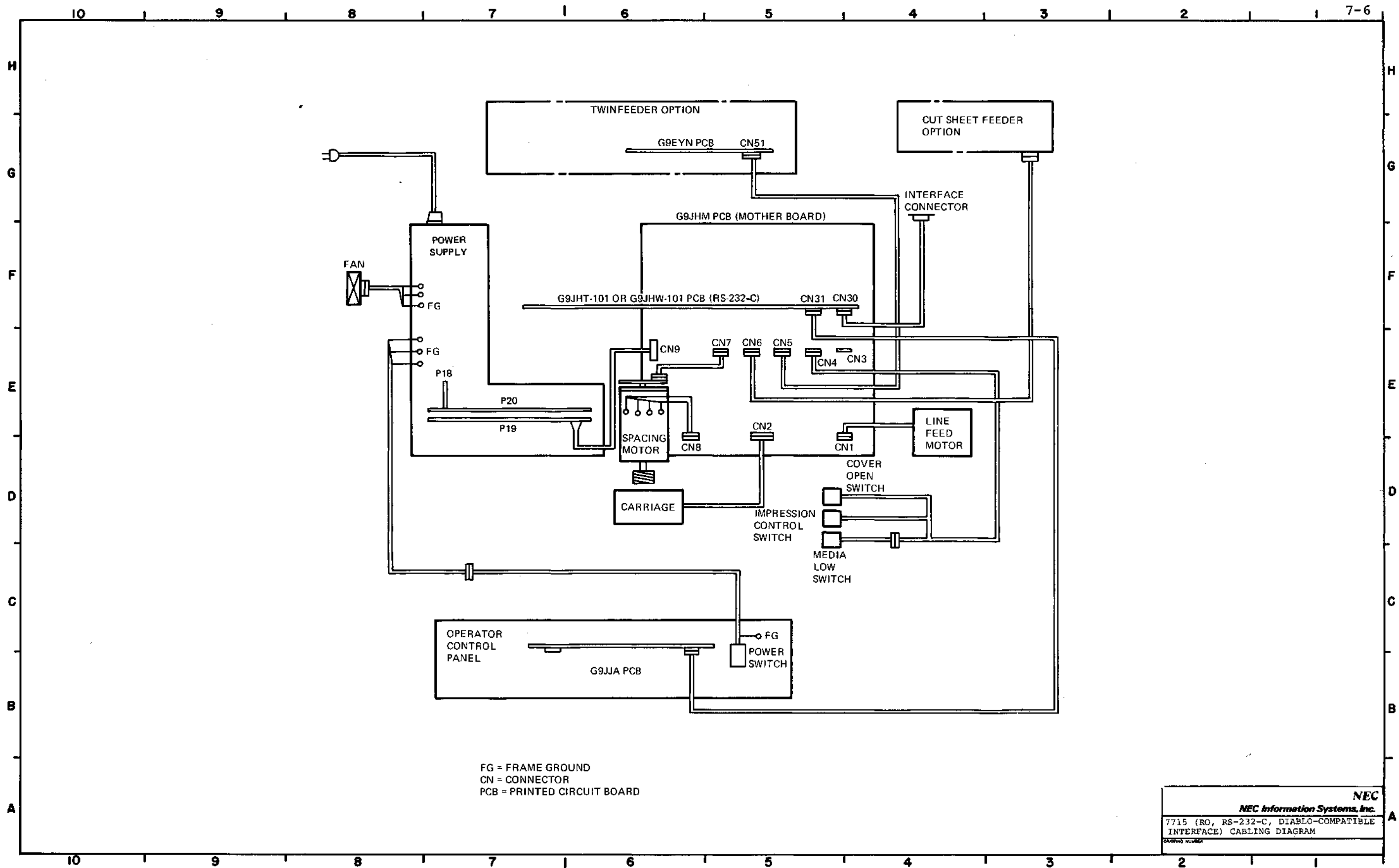


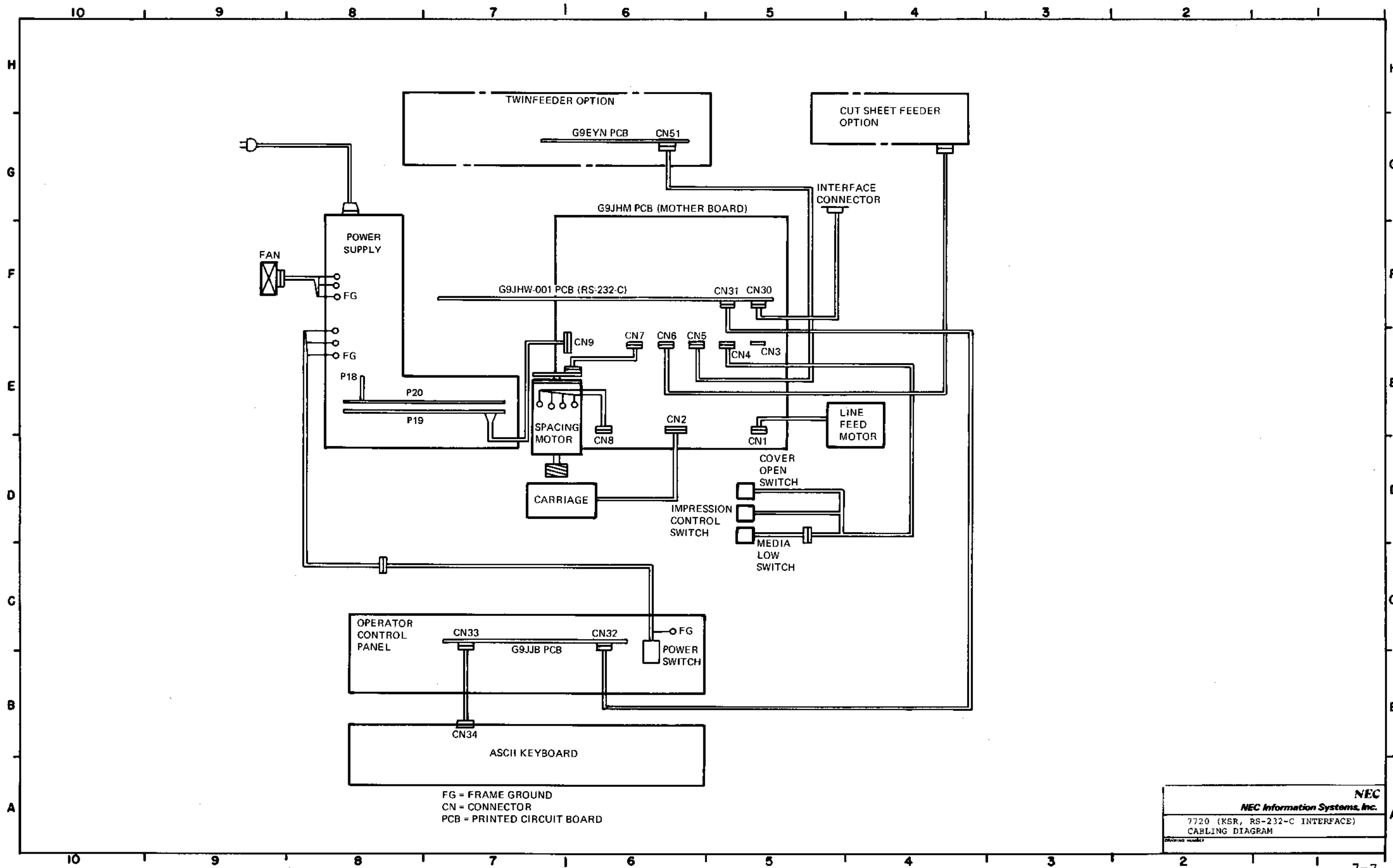
NEC

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7710 (RO, RS-232-C INTERFACE)  
 CABLING DIAGRAM

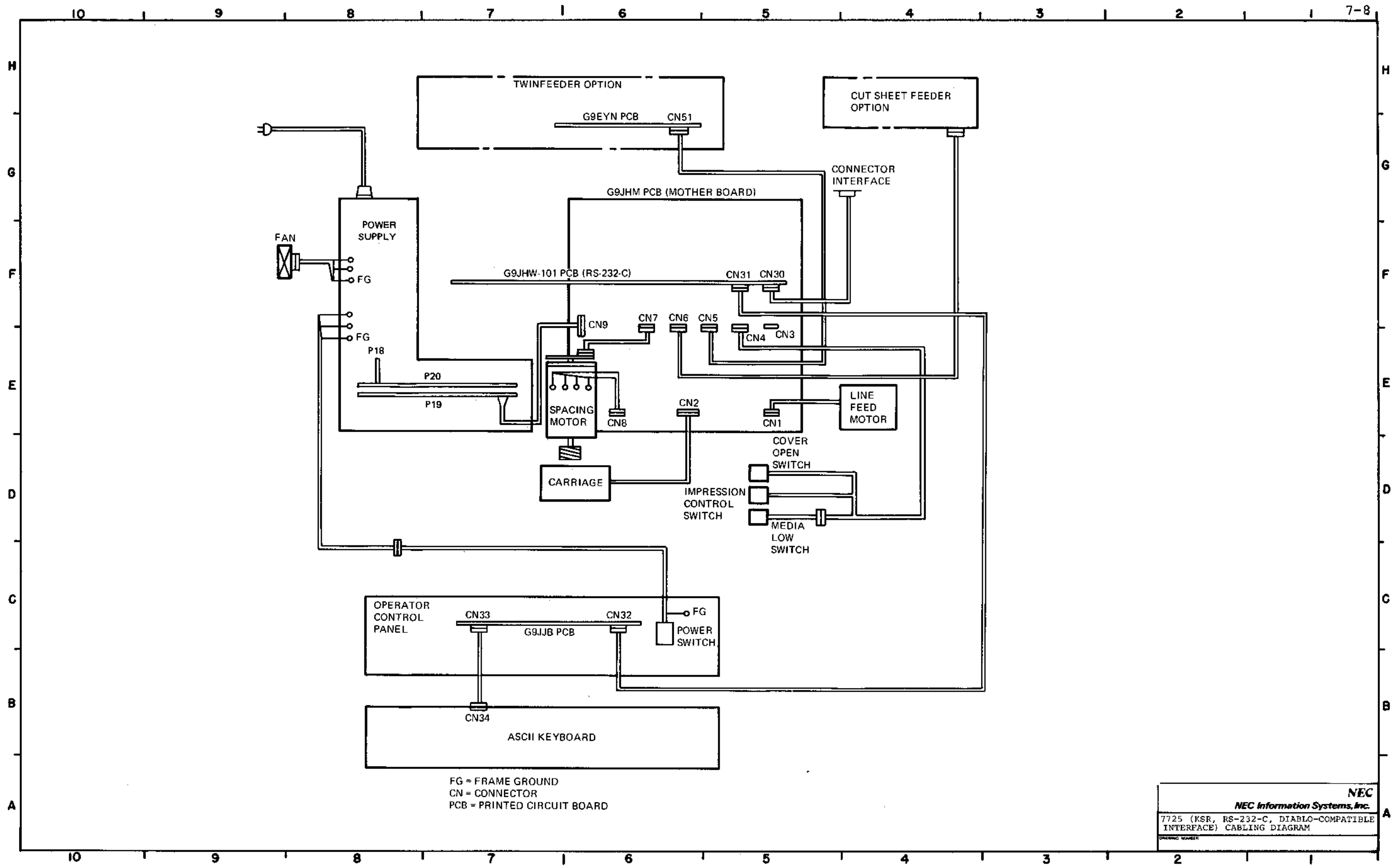
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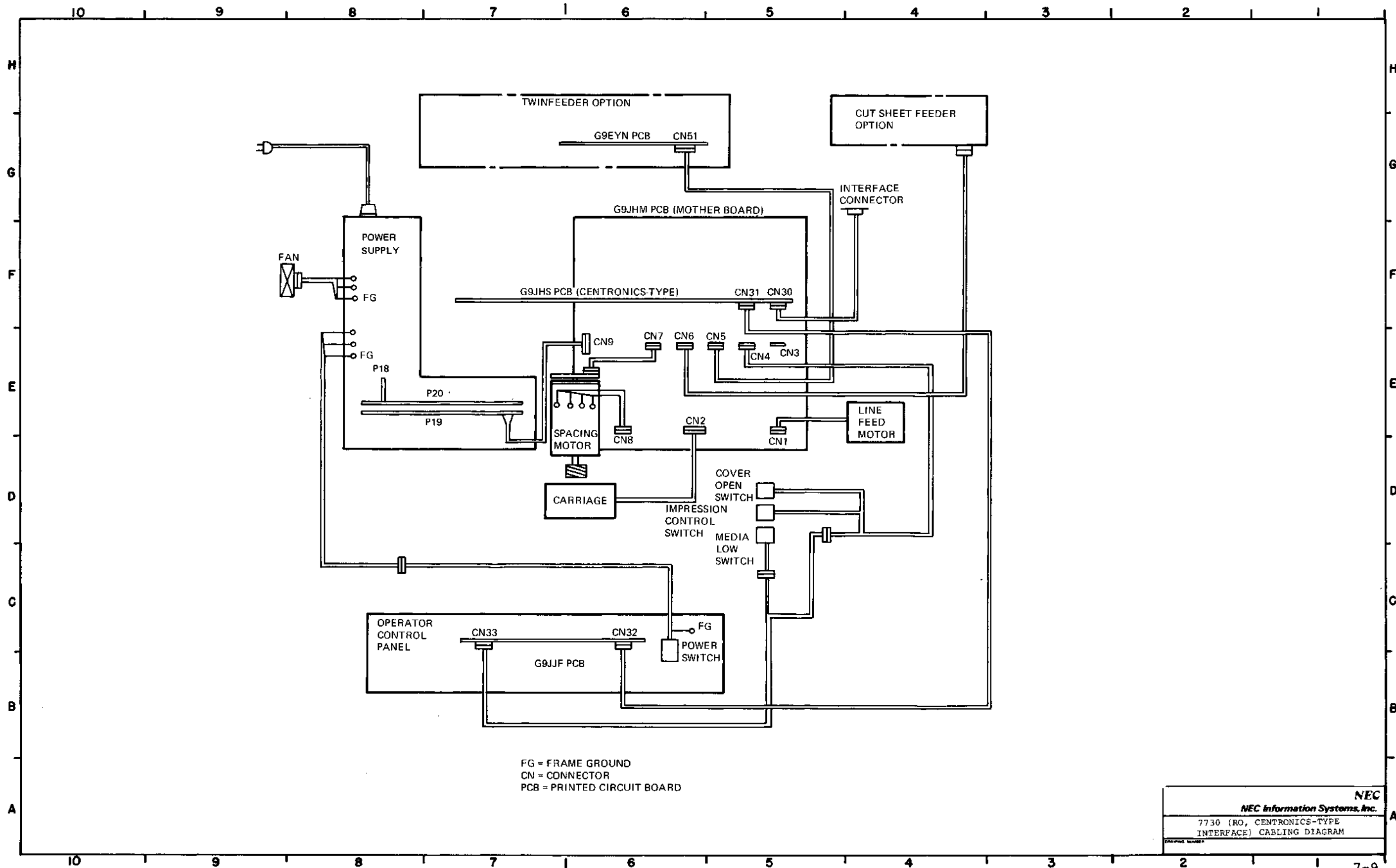


FG = FRAME GROUND  
 CN = CONNECTOR  
 PCB = PRINTED CIRCUIT BOARD

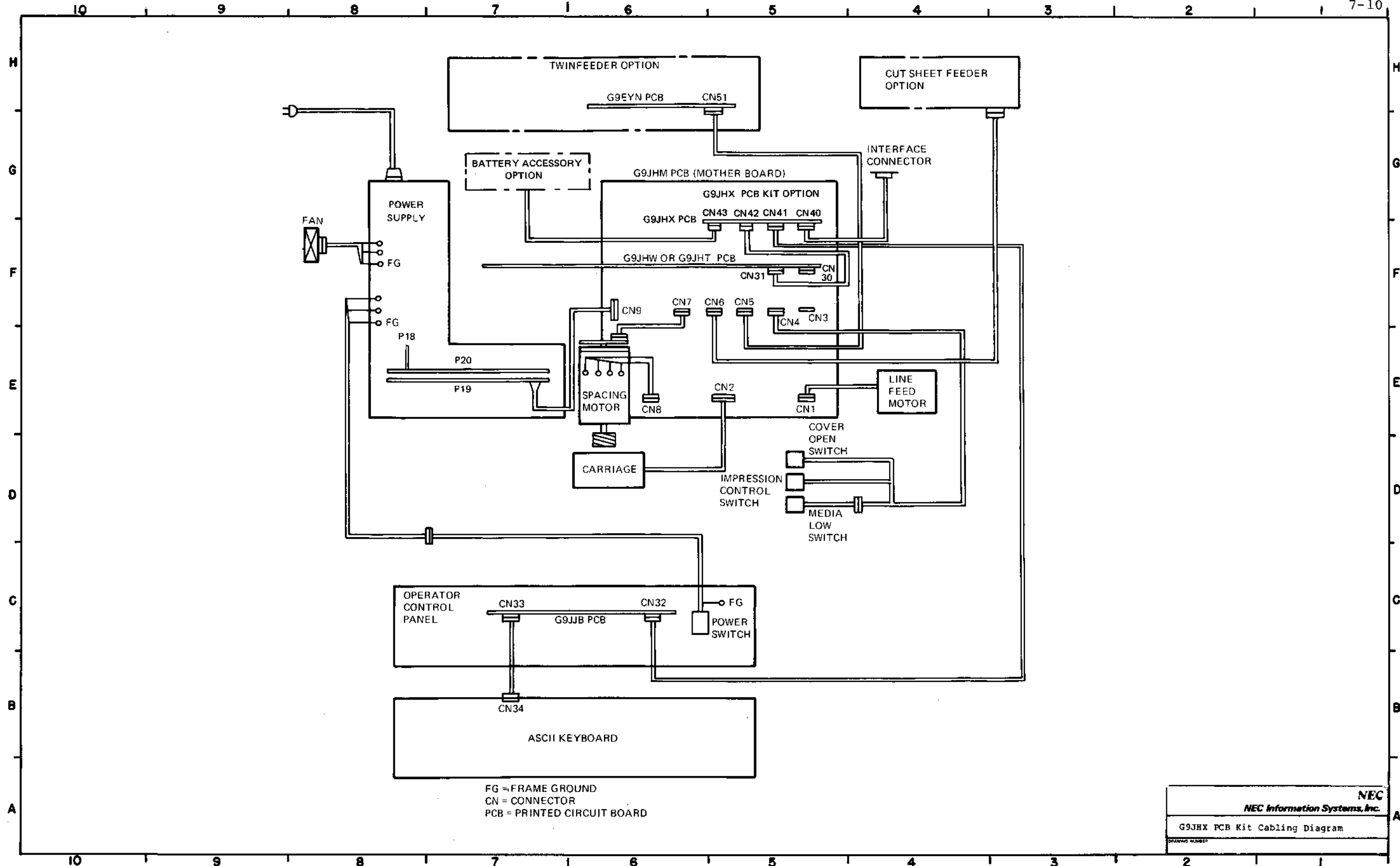
NEC  
 NEC Information Systems, Inc.  
 7720 (KSR, RS-232-C INTERFACE)  
 CABLING DIAGRAM



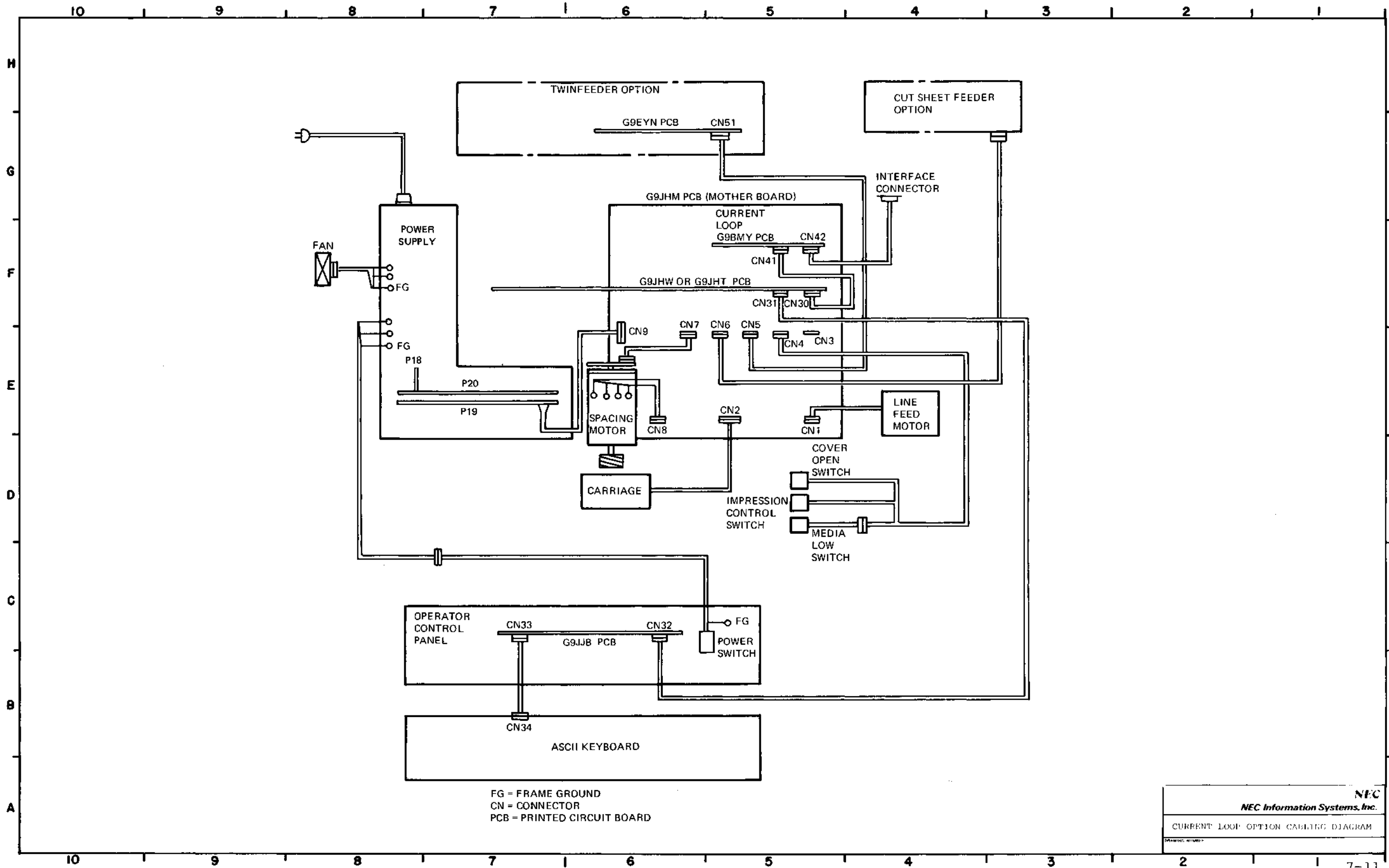
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 7725 (KSR, RS-232-C, DIABLO-COMPATIBLE  
 INTERFACE) CABLING DIAGRAM  
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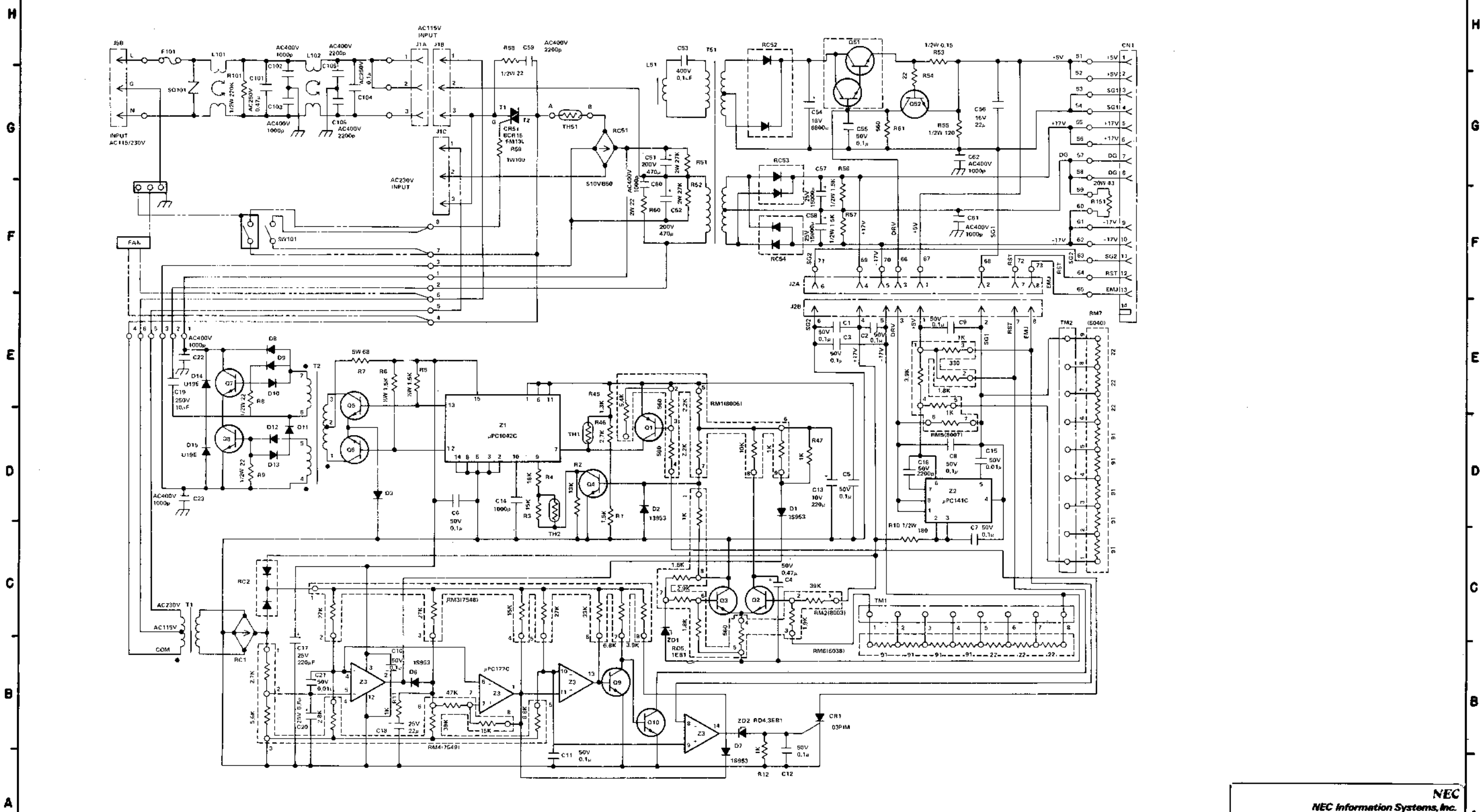


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 7730 (RO, CENTRONICS-TYPE  
 INTERFACE) CABLING DIAGRAM  
DRAWING NUMBER



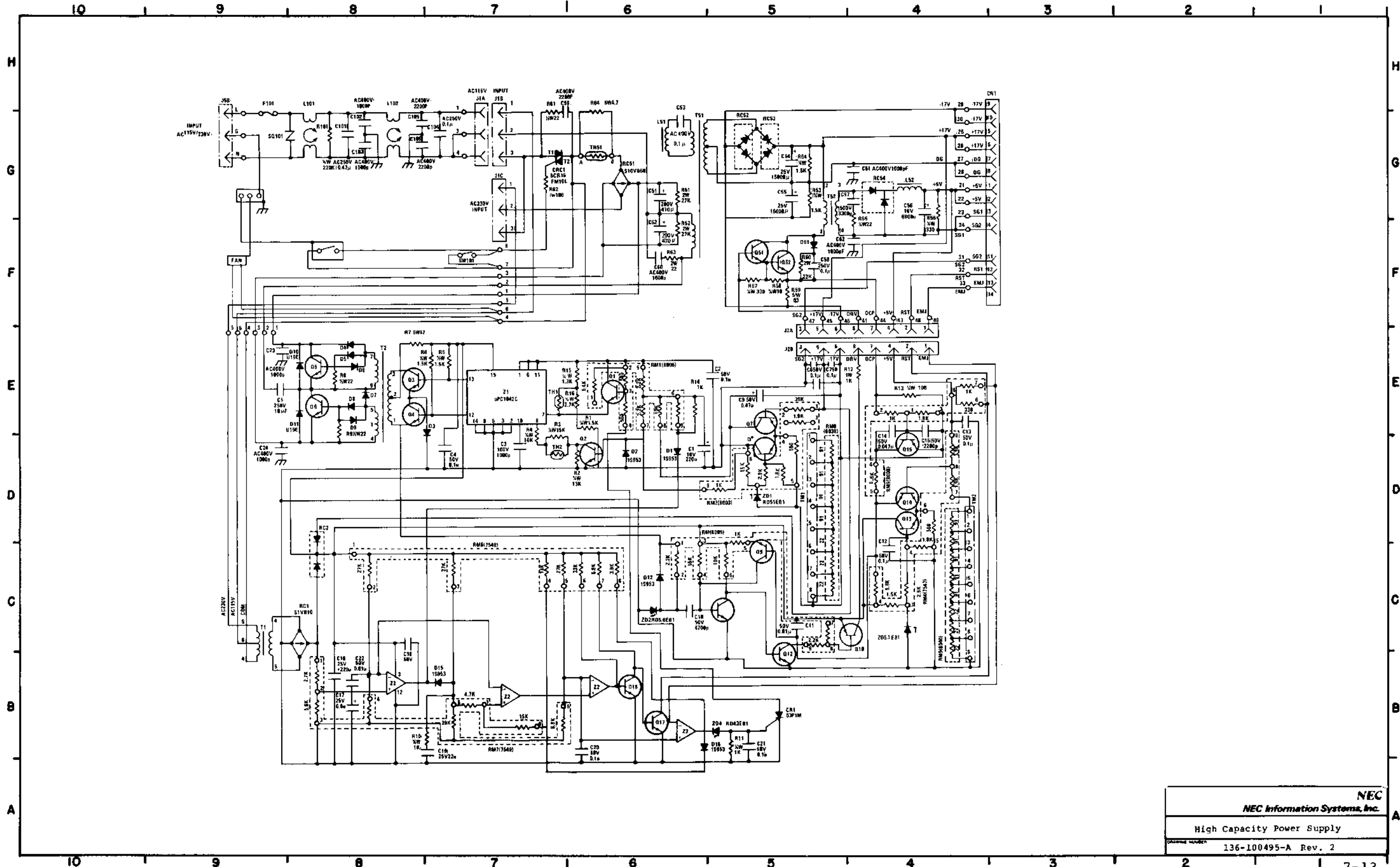
FG = FRAME GROUND  
 CN = CONNECTOR  
 PCB = PRINTED CIRCUIT BOARD



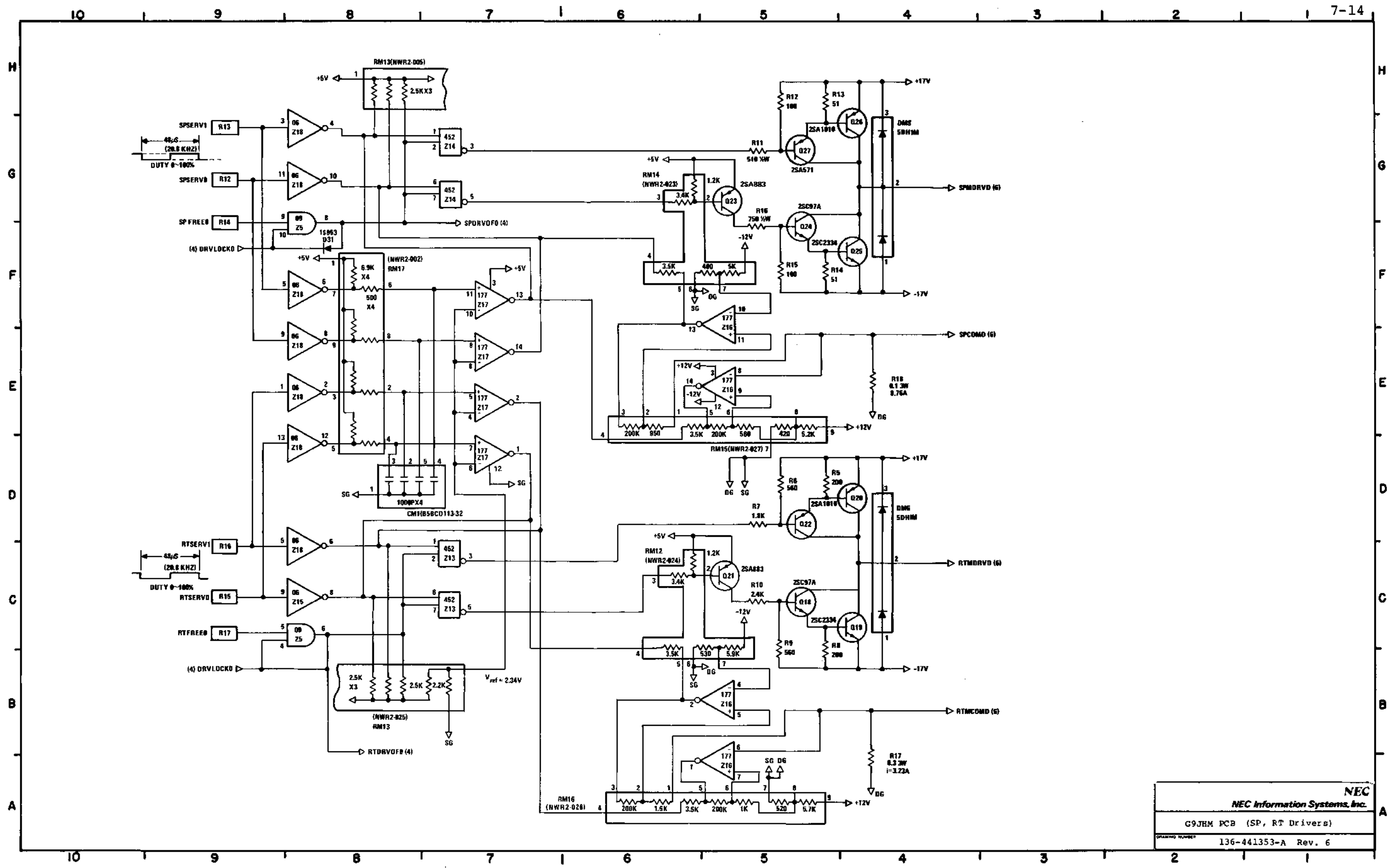


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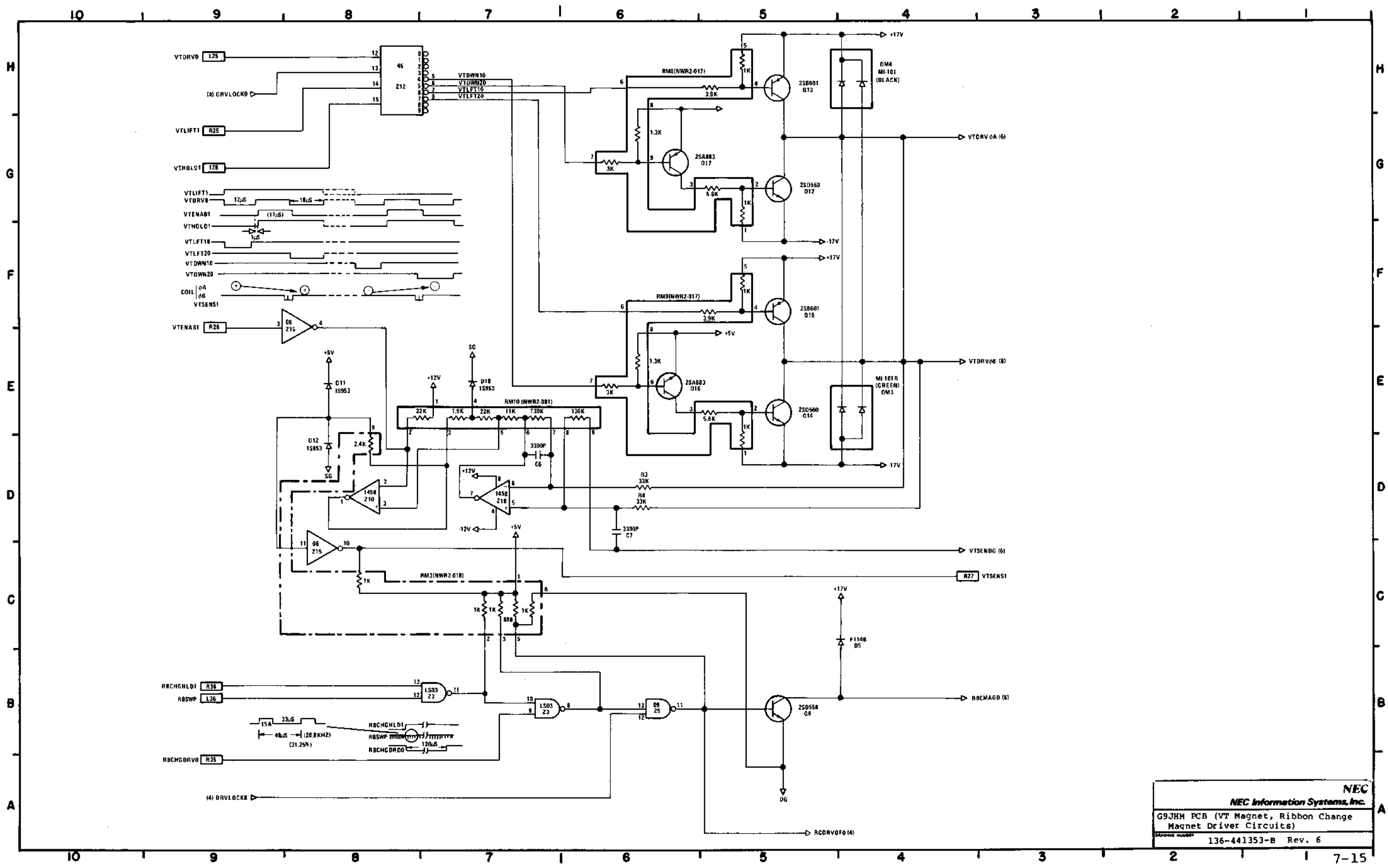




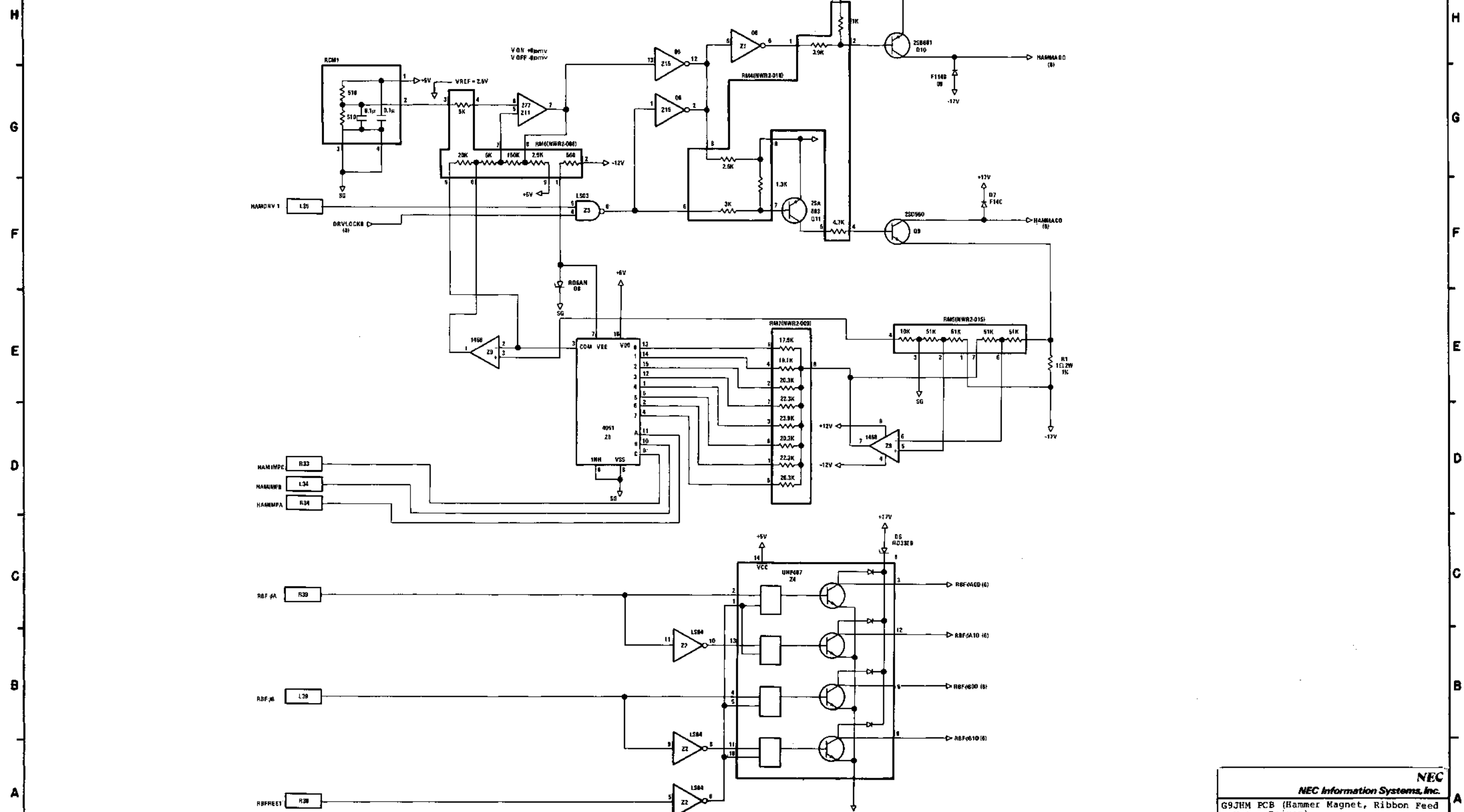
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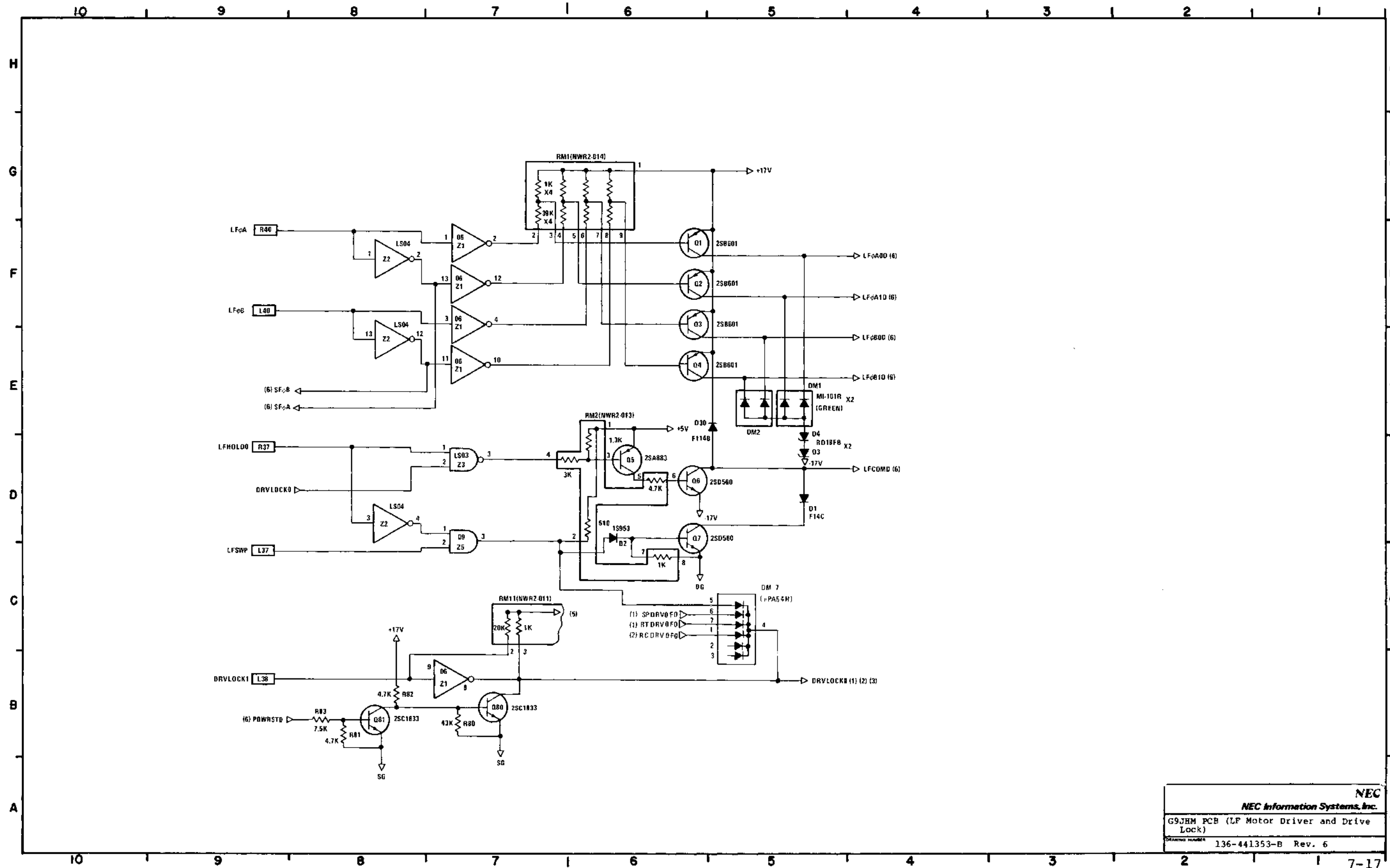
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 DRAWING NUMBER 136-441353-A Rev. 6



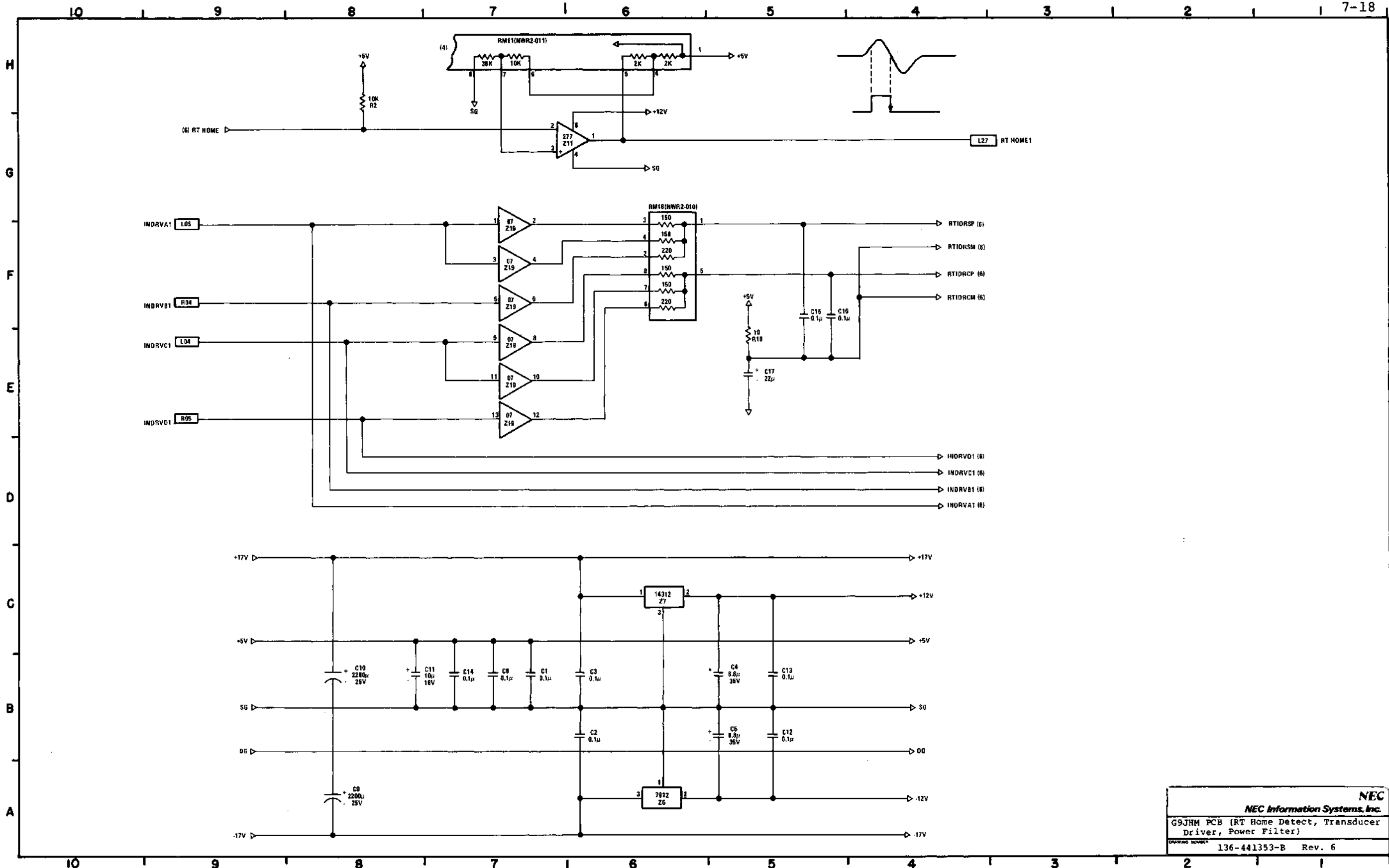
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 Magnet Driver Circuits)  
 136-441353-B Rev. 6



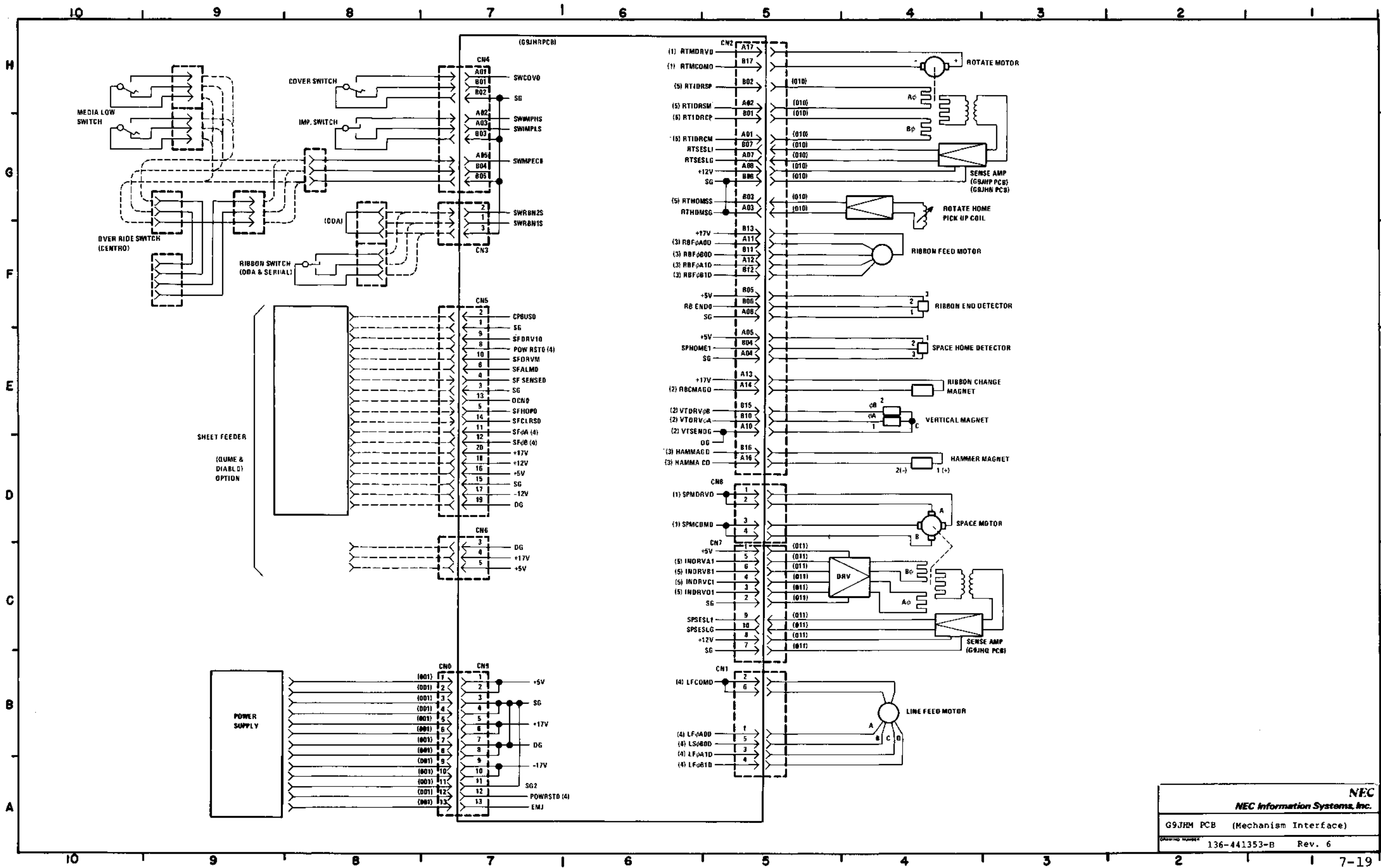
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 DRAWING NUMBER 136-441353-B Rev. 6



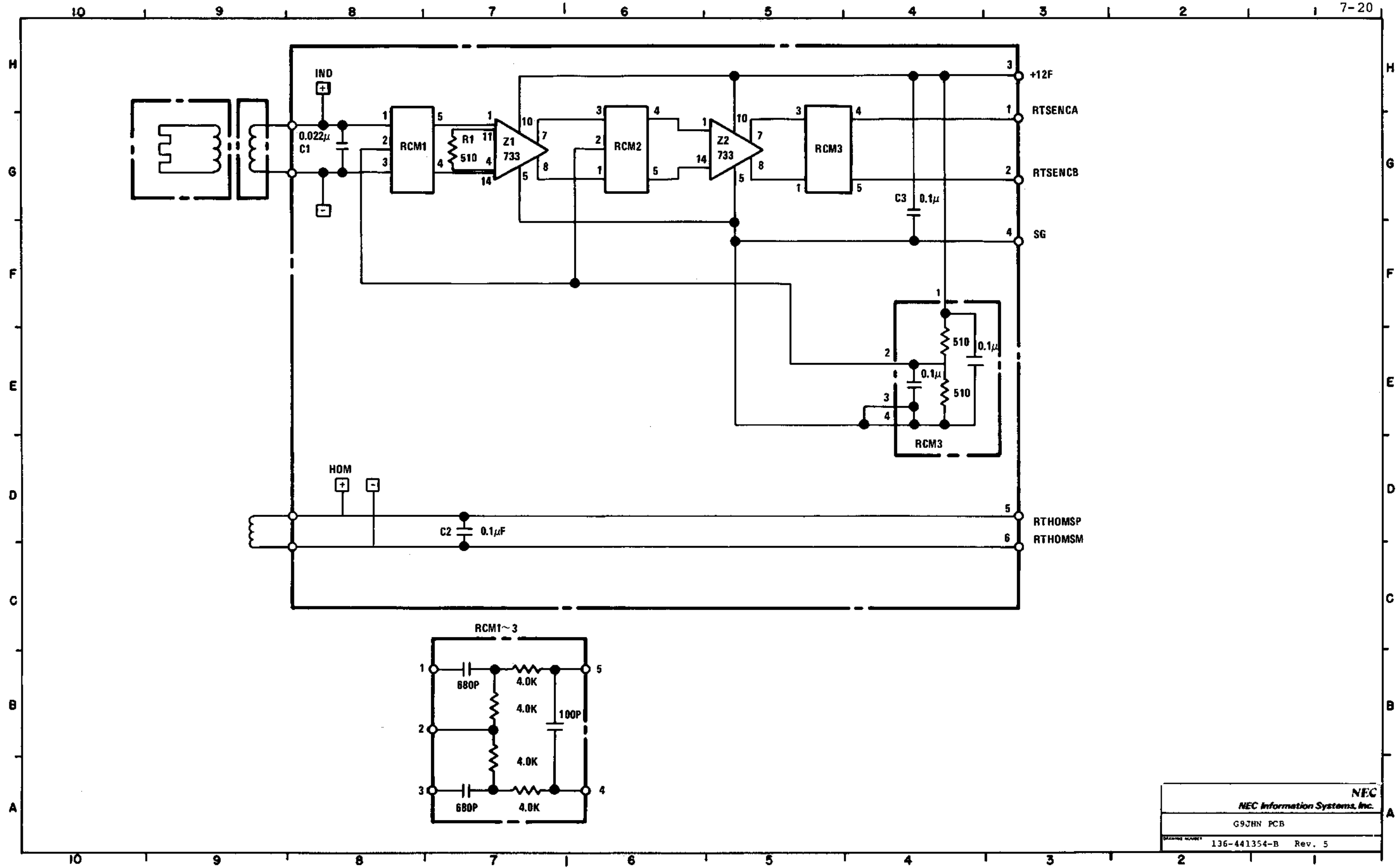
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 G9JHM PCB (LP Motor Driver and Drive Lock)  
 Drawing Number 136-441353-B Rev. 6



**NEC**  
*NEC Information Systems, Inc.*  
 G9JHM PCB (RT Home Detect, Transducer  
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DRAWING NUMBER 136-441353-B Rev. 6

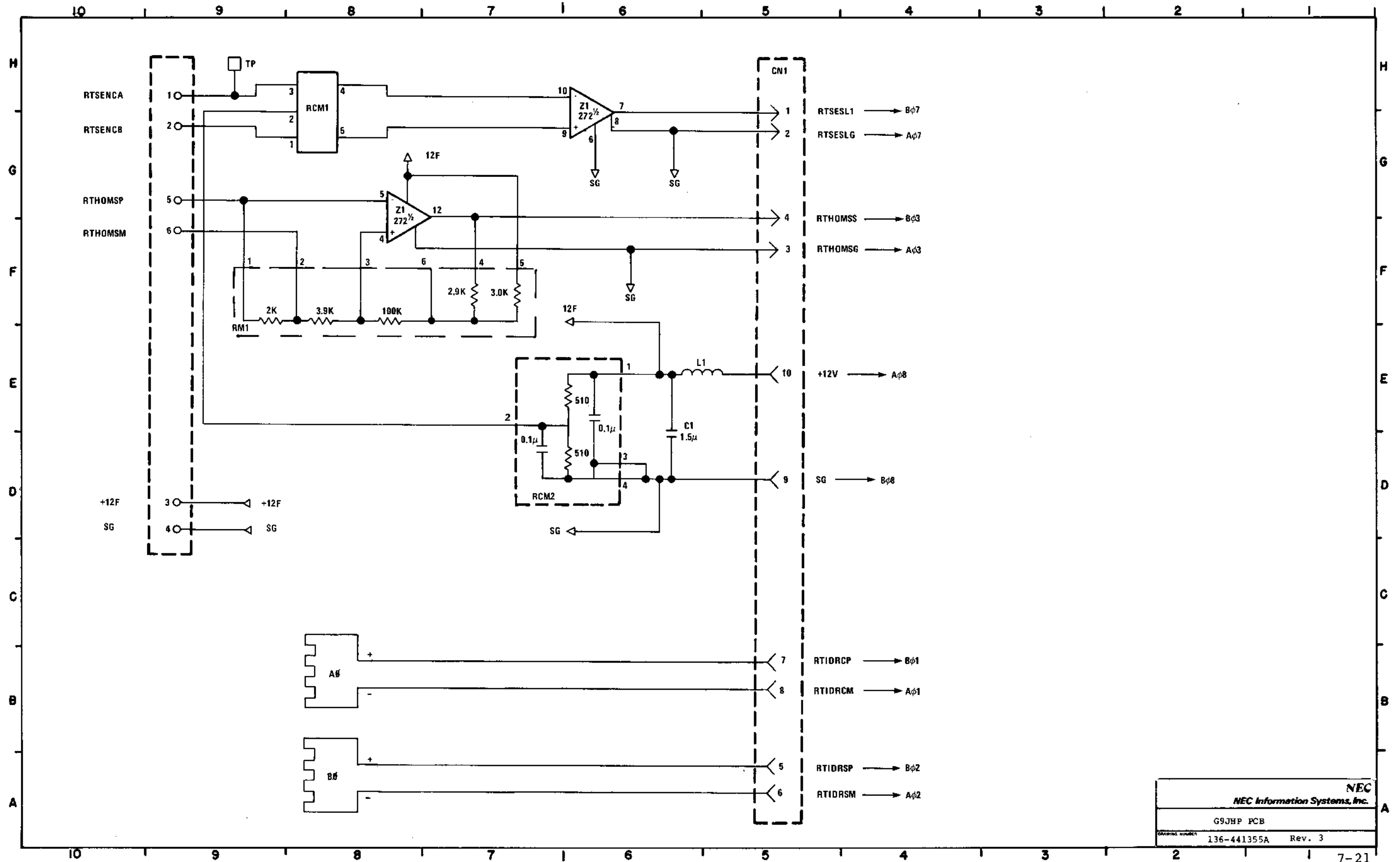


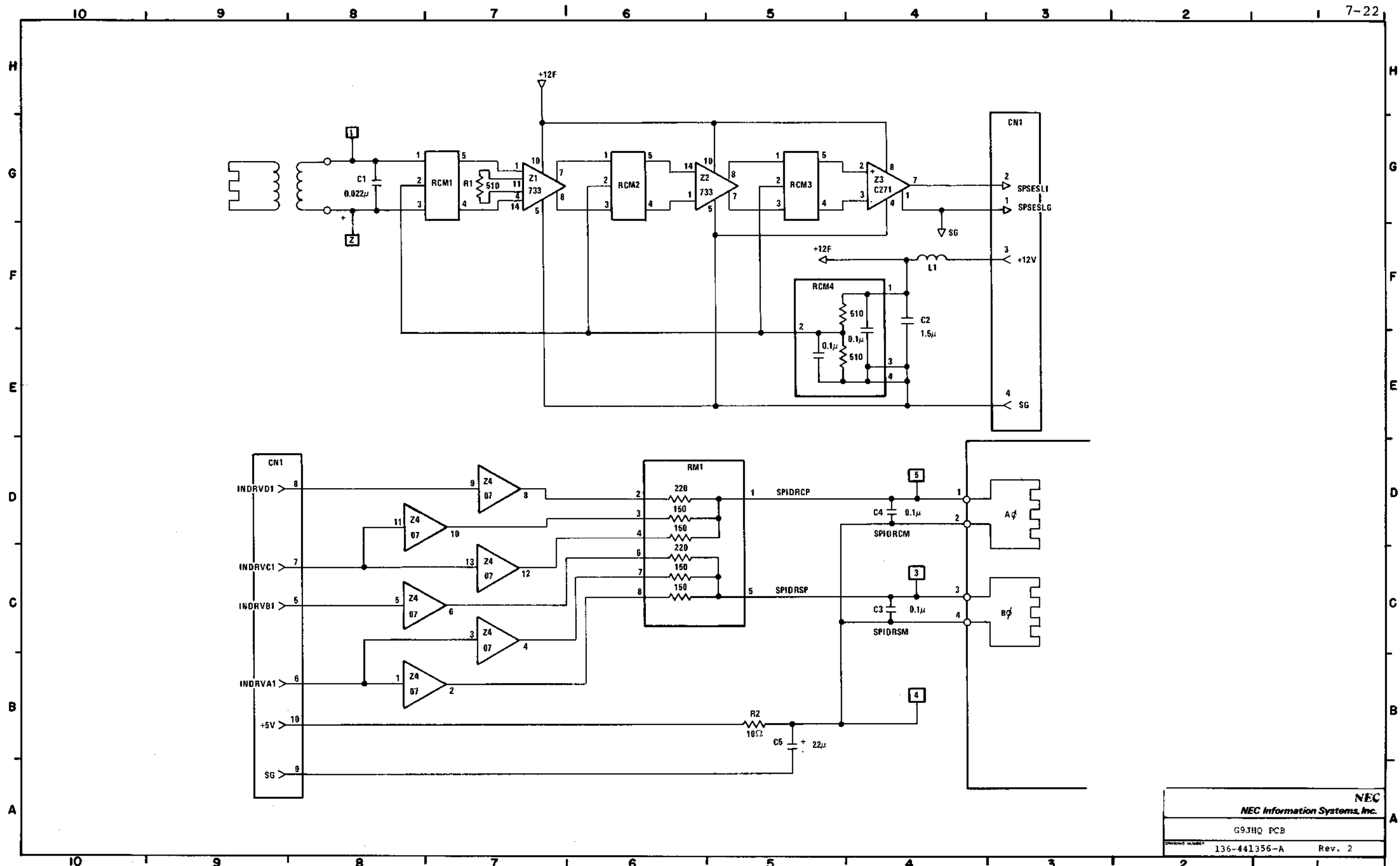
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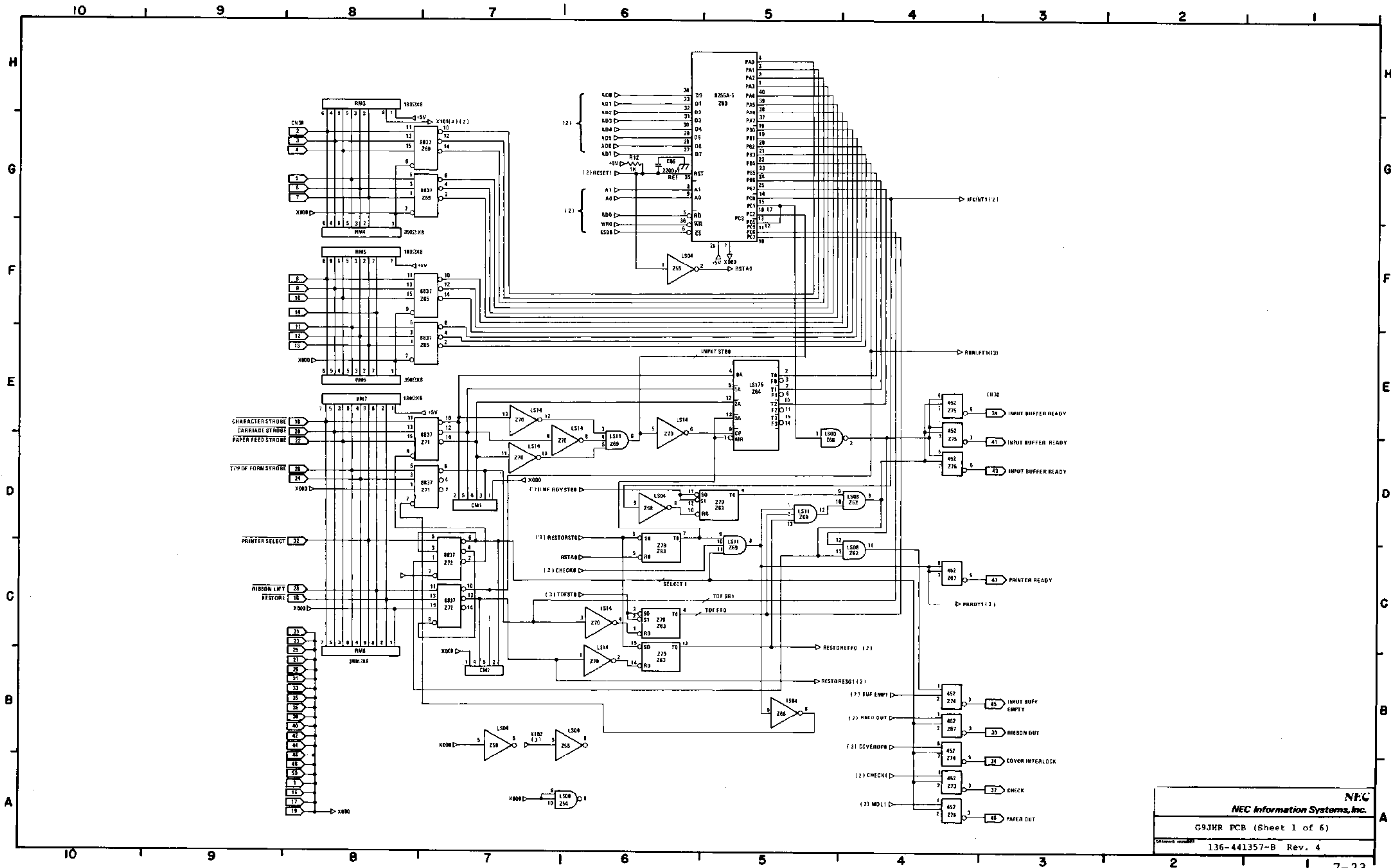
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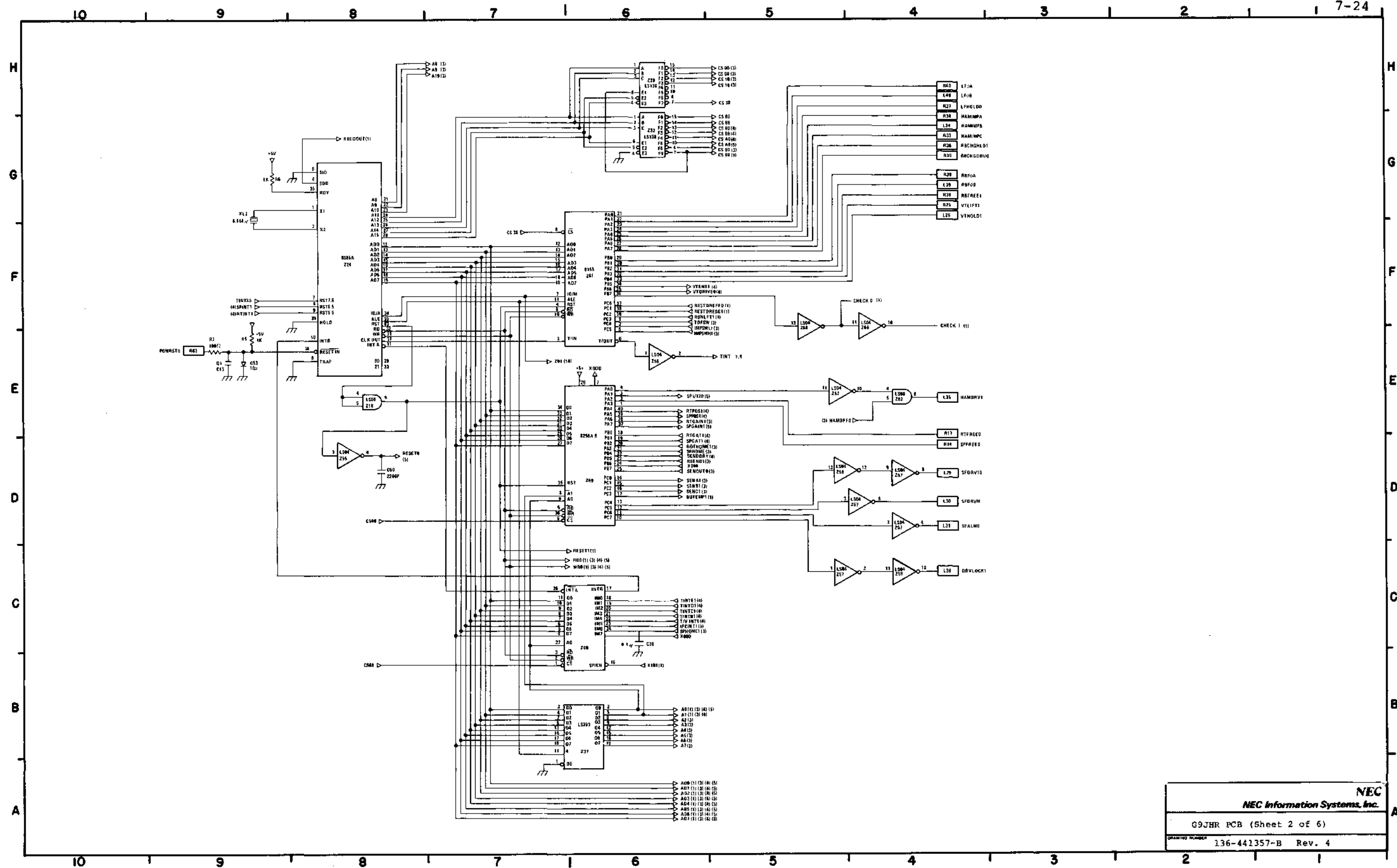


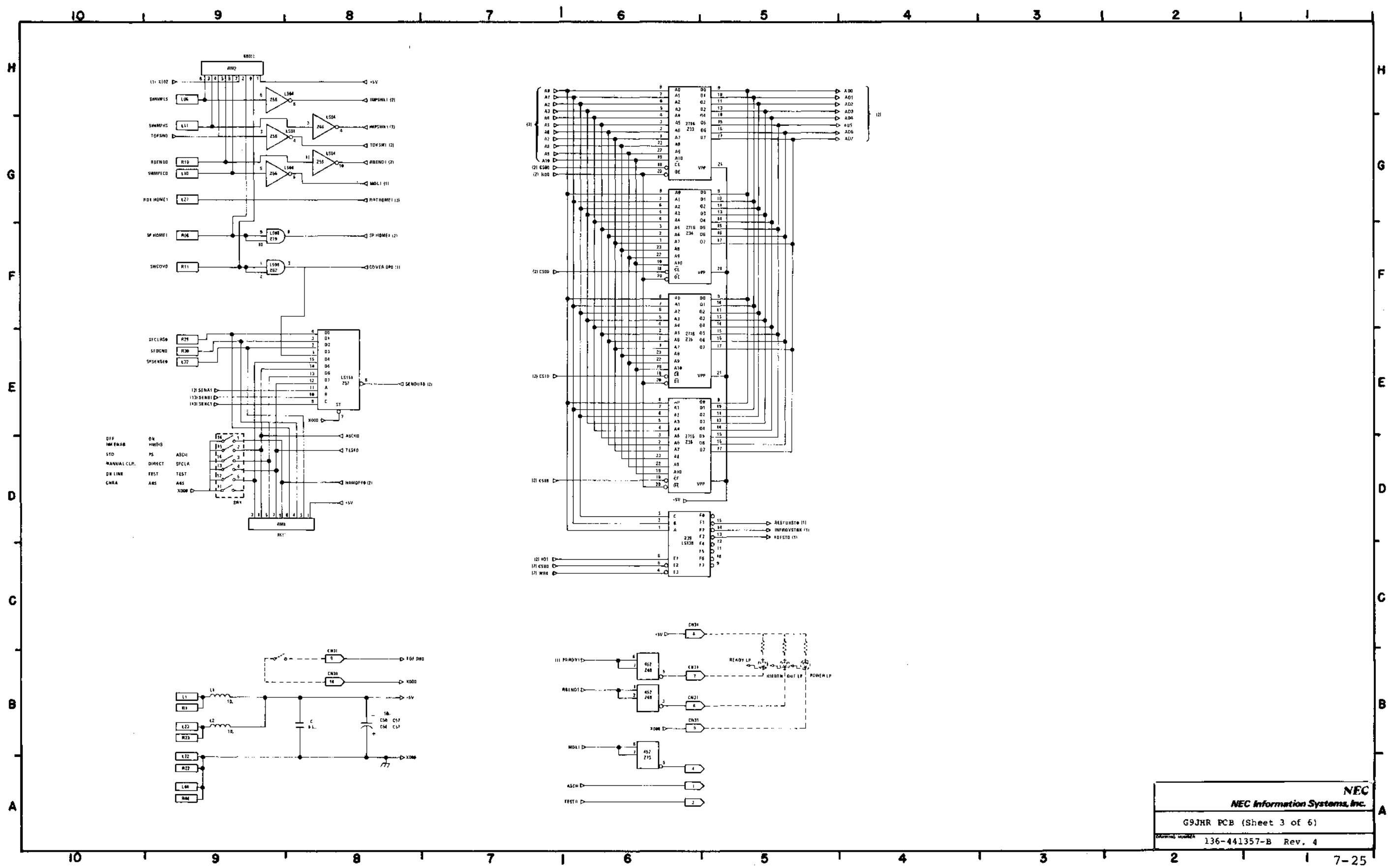


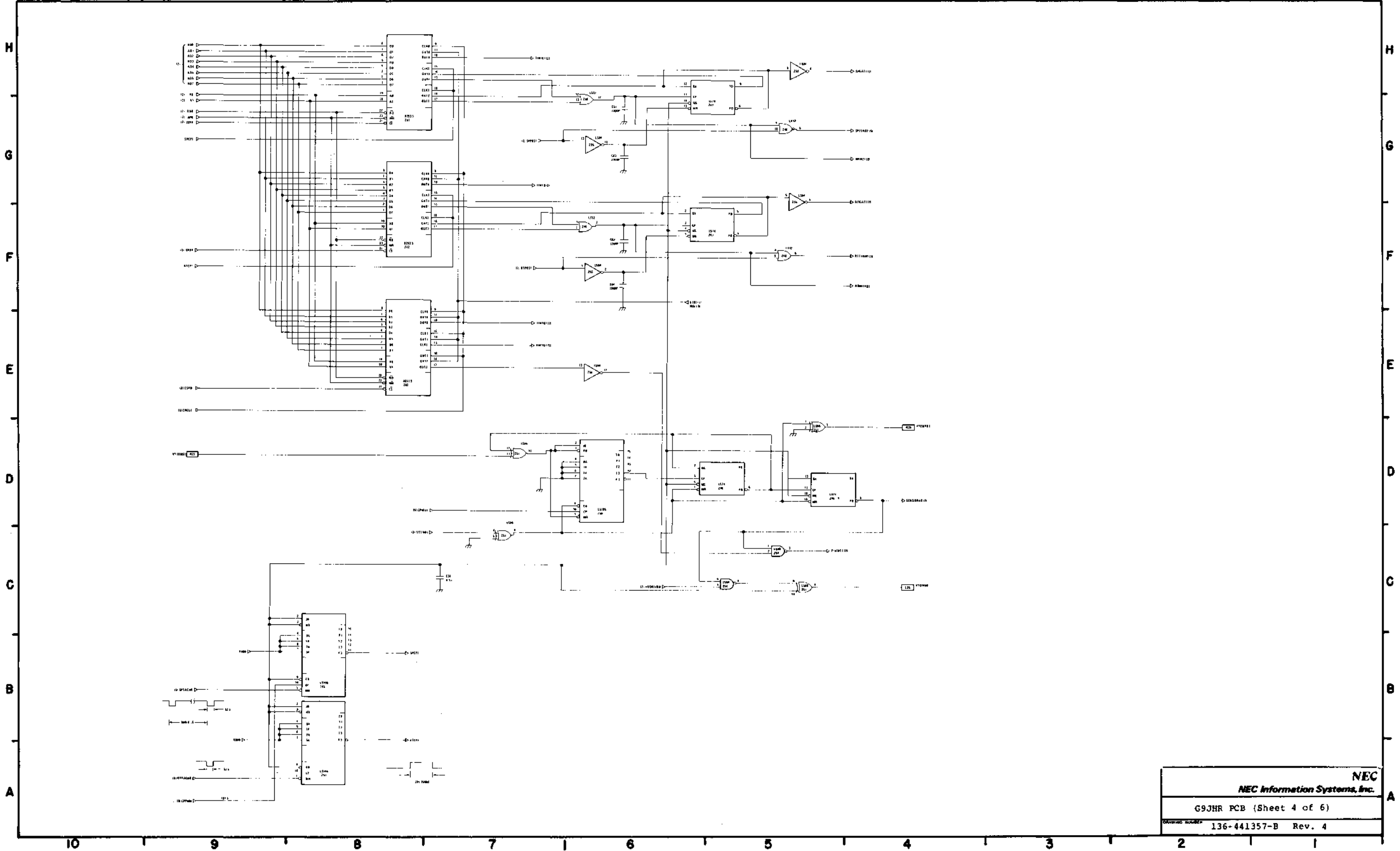


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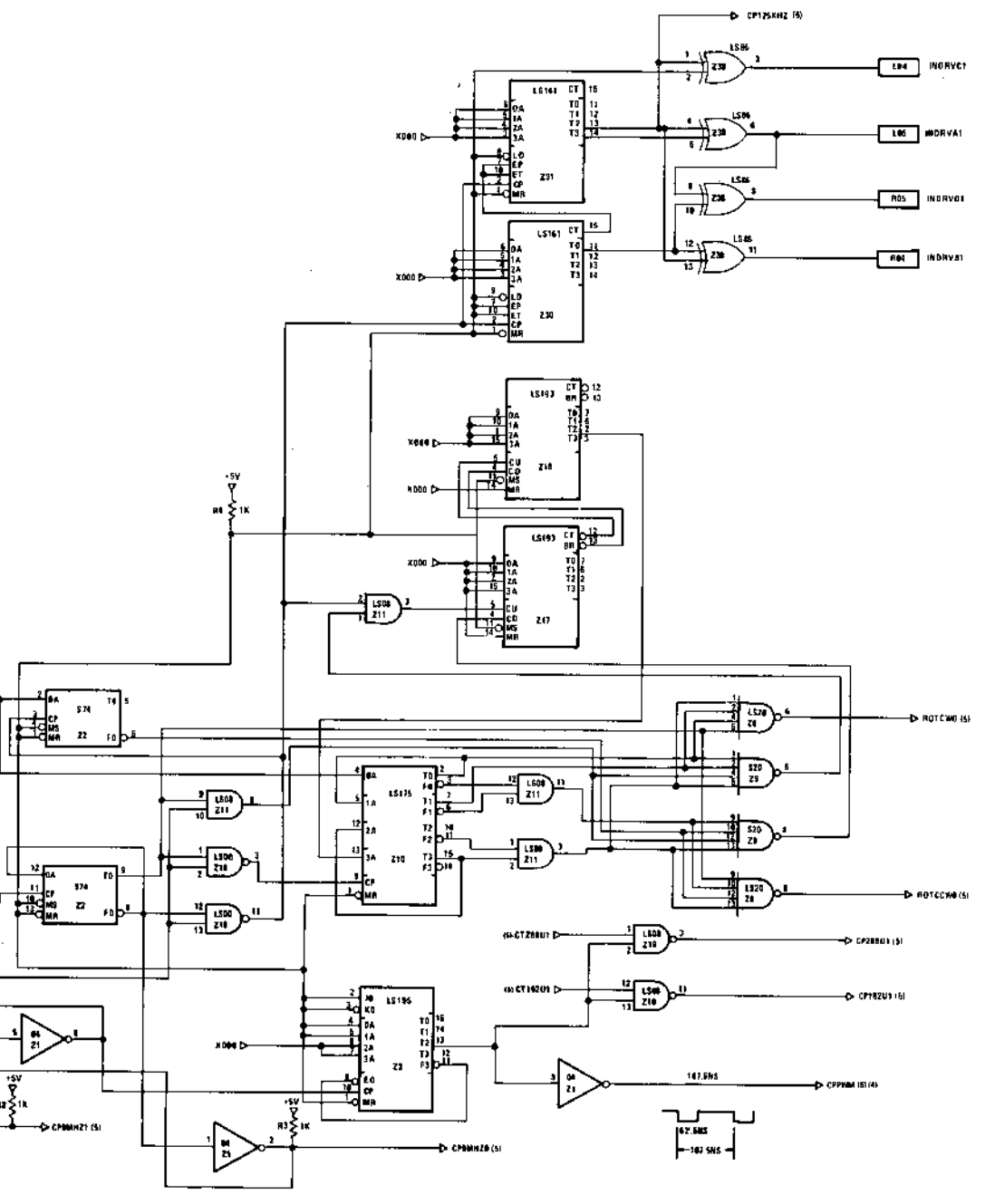
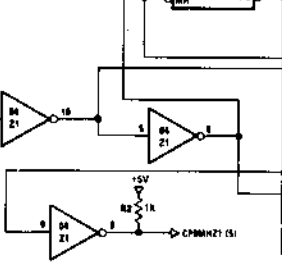
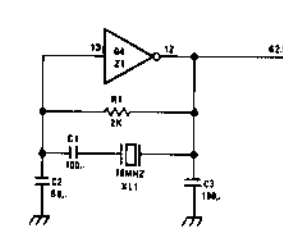
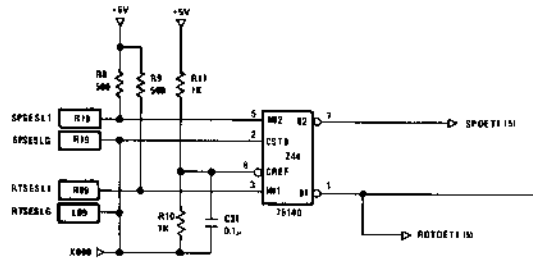
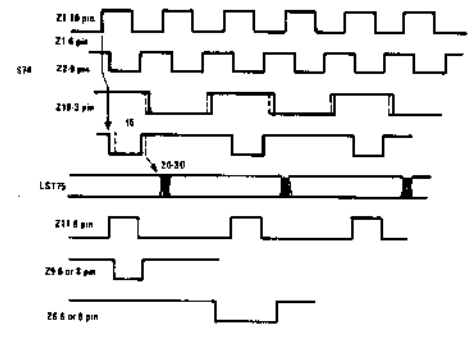




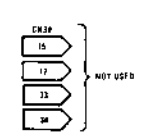
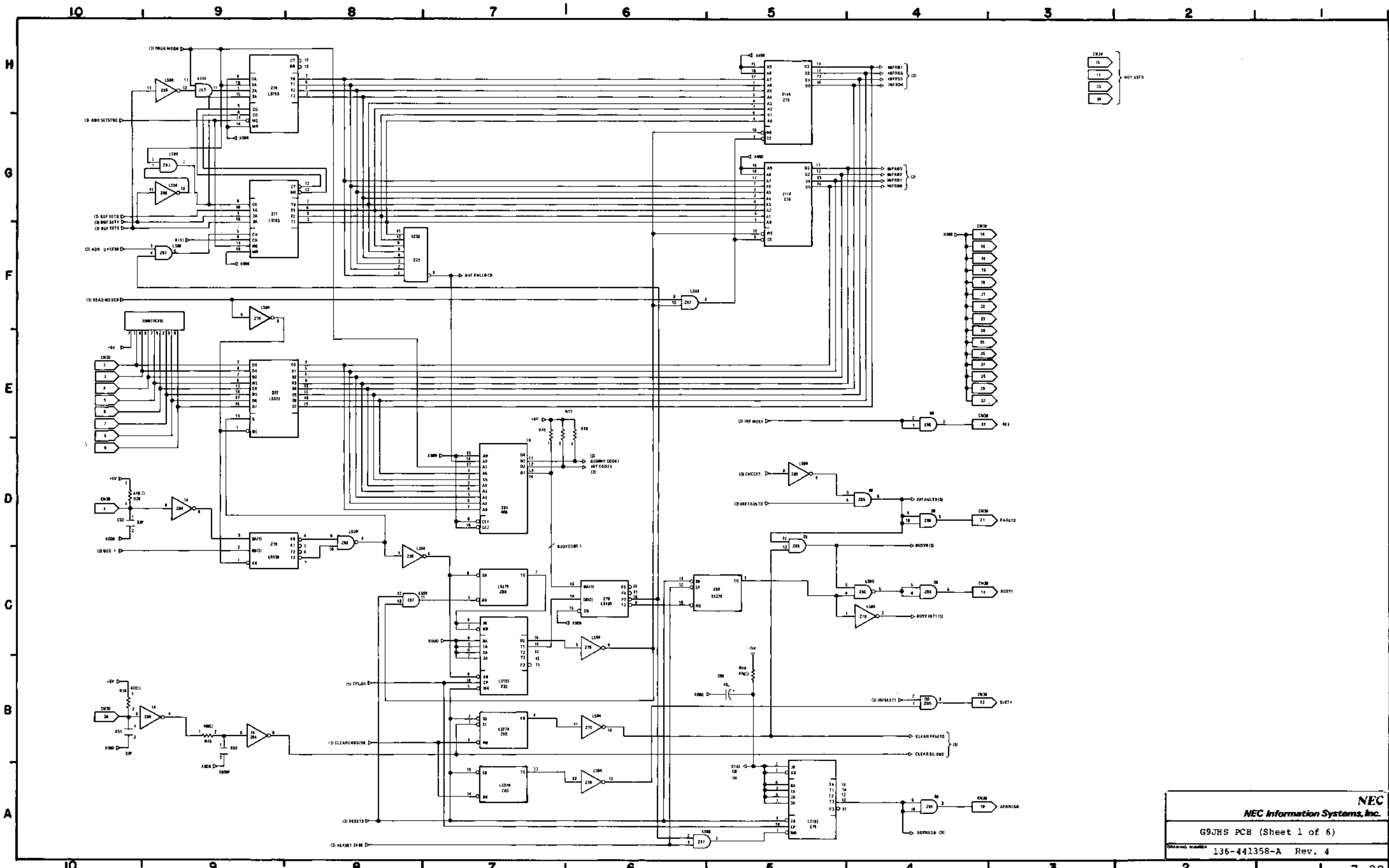




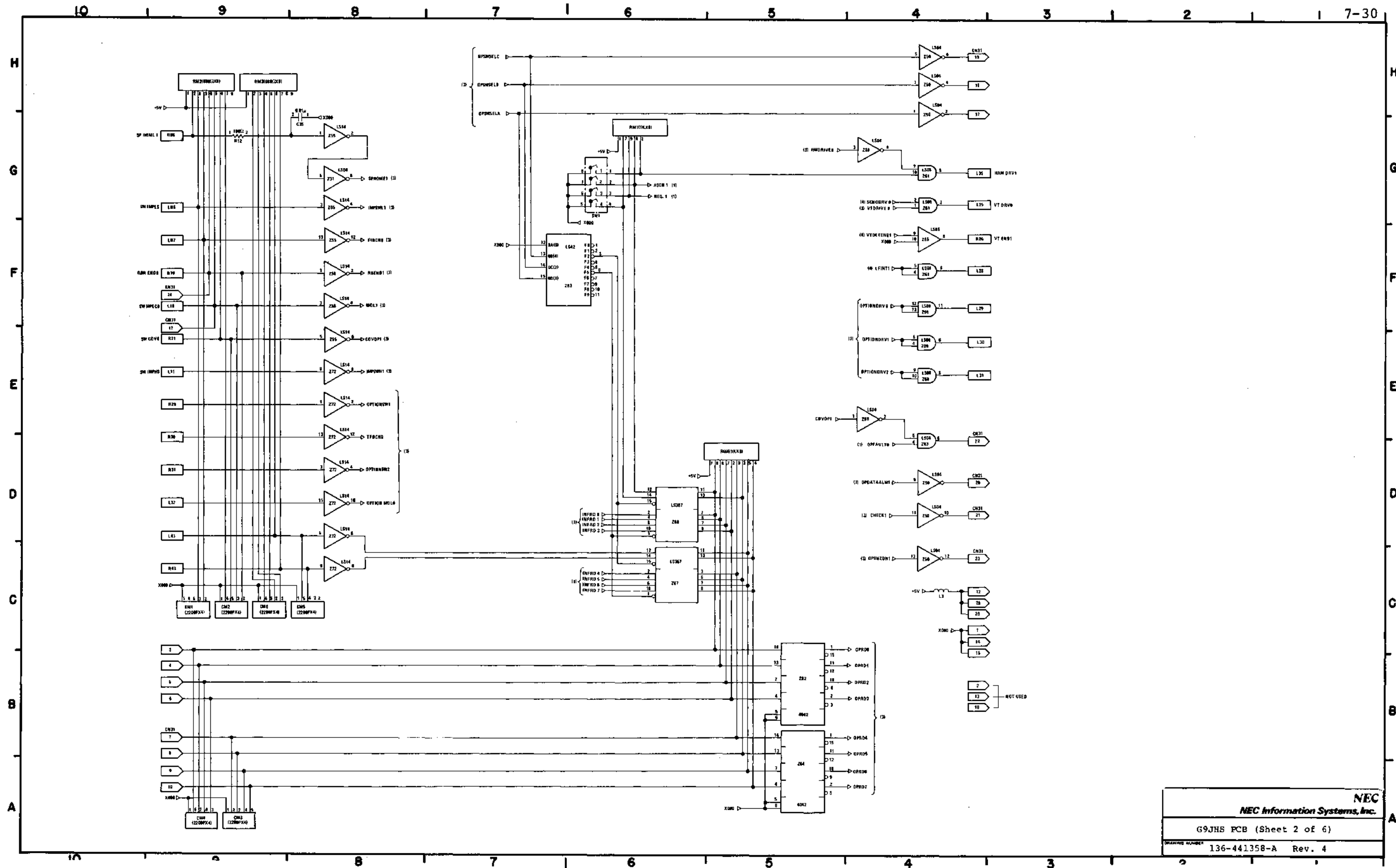


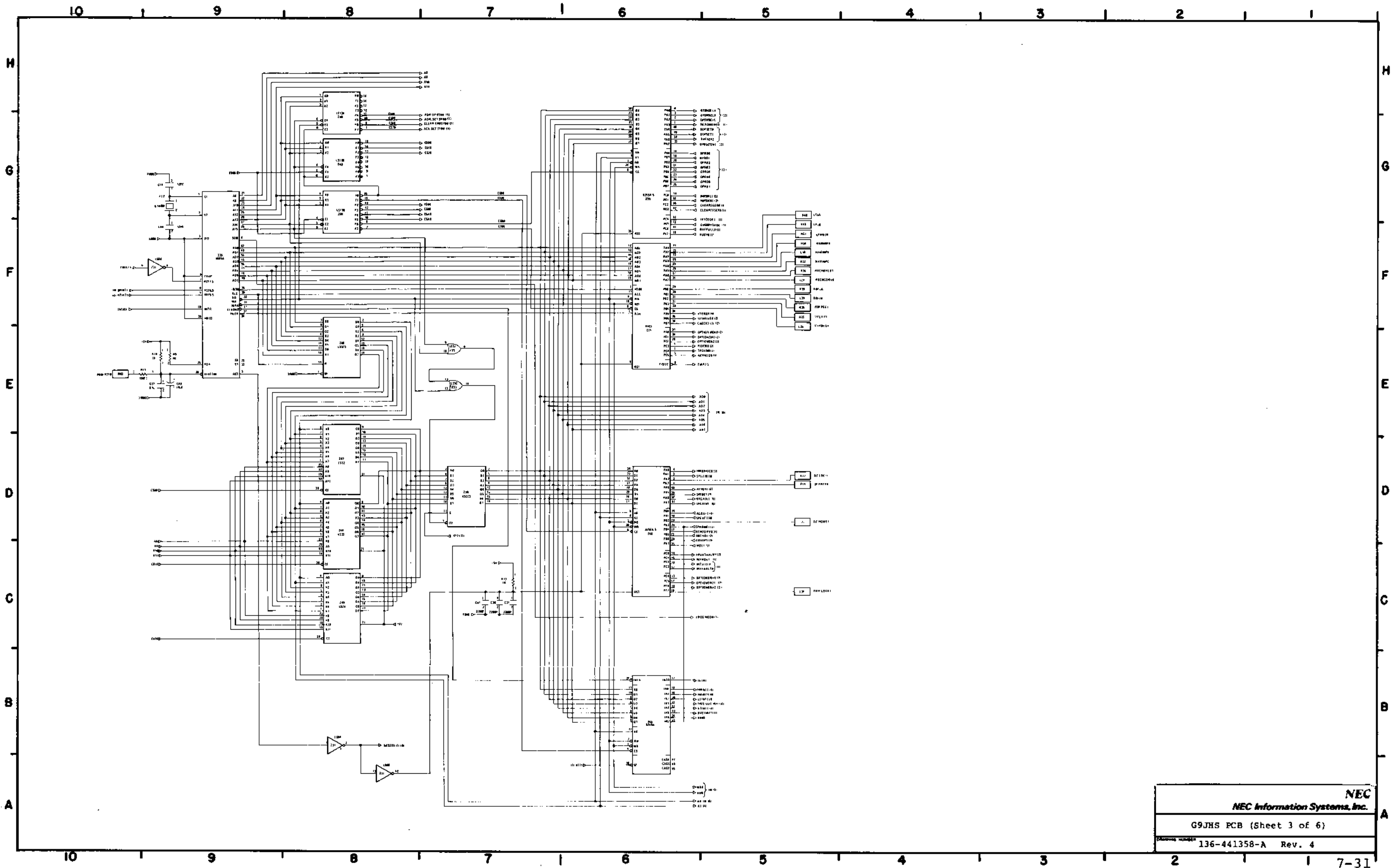






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 NEC Information Systems, Inc.  
 G9JHS PCB (Sheet 1 of 6)  
 DRAWING NUMBER 136-441358-A Rev. 4





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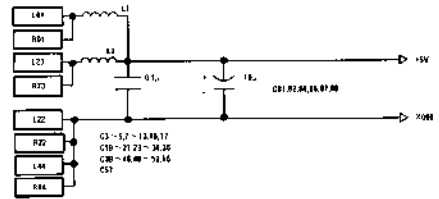
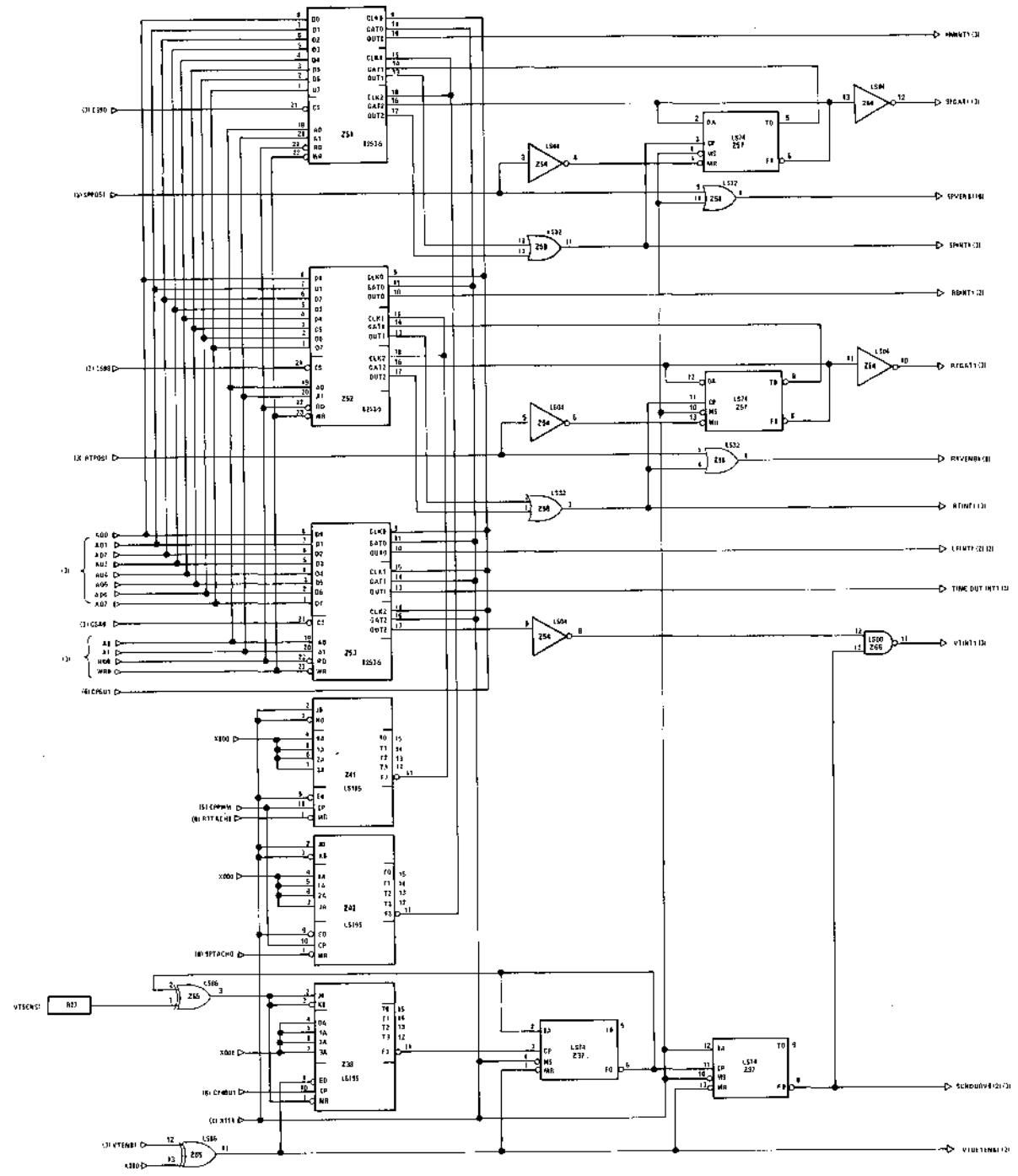
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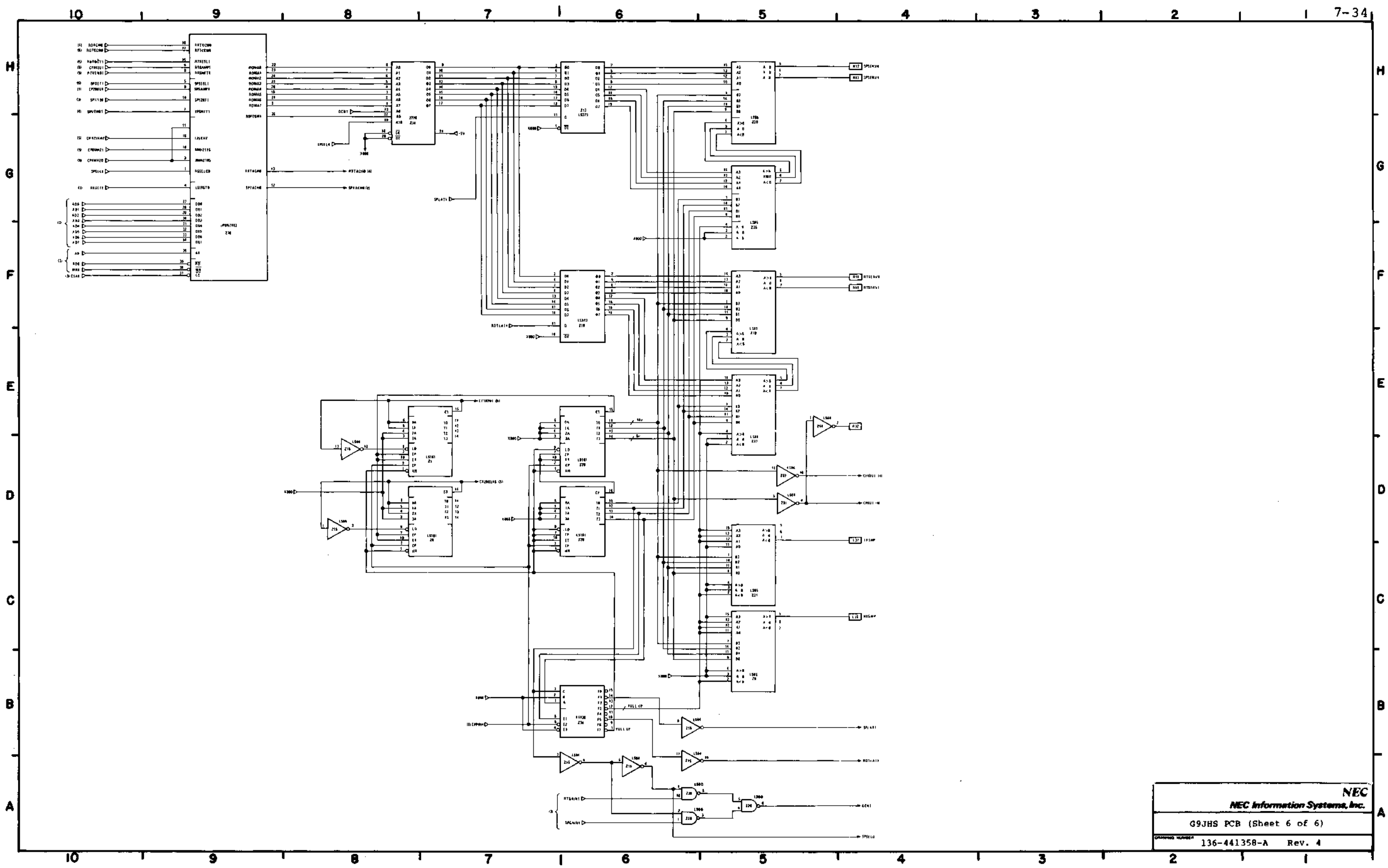


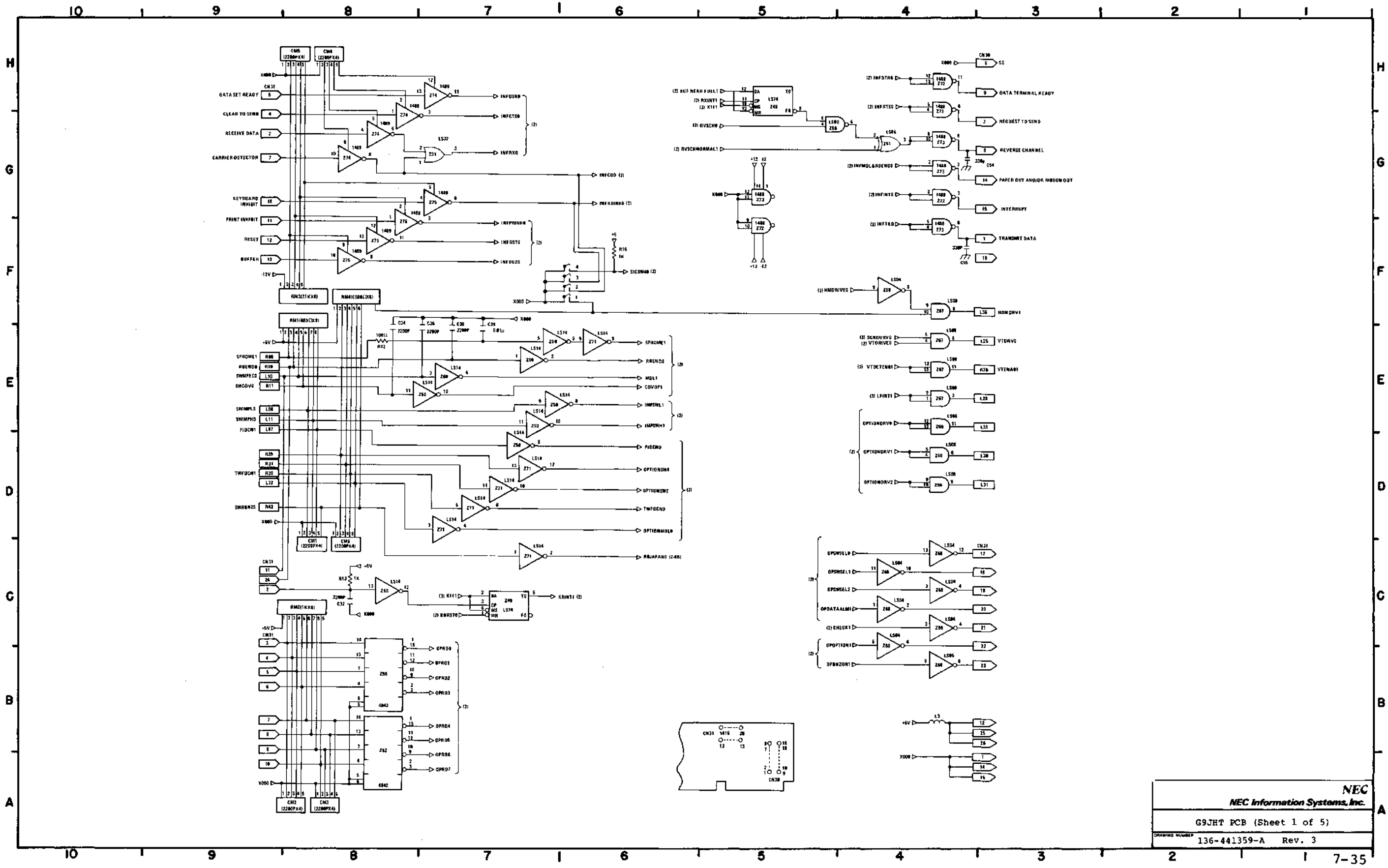
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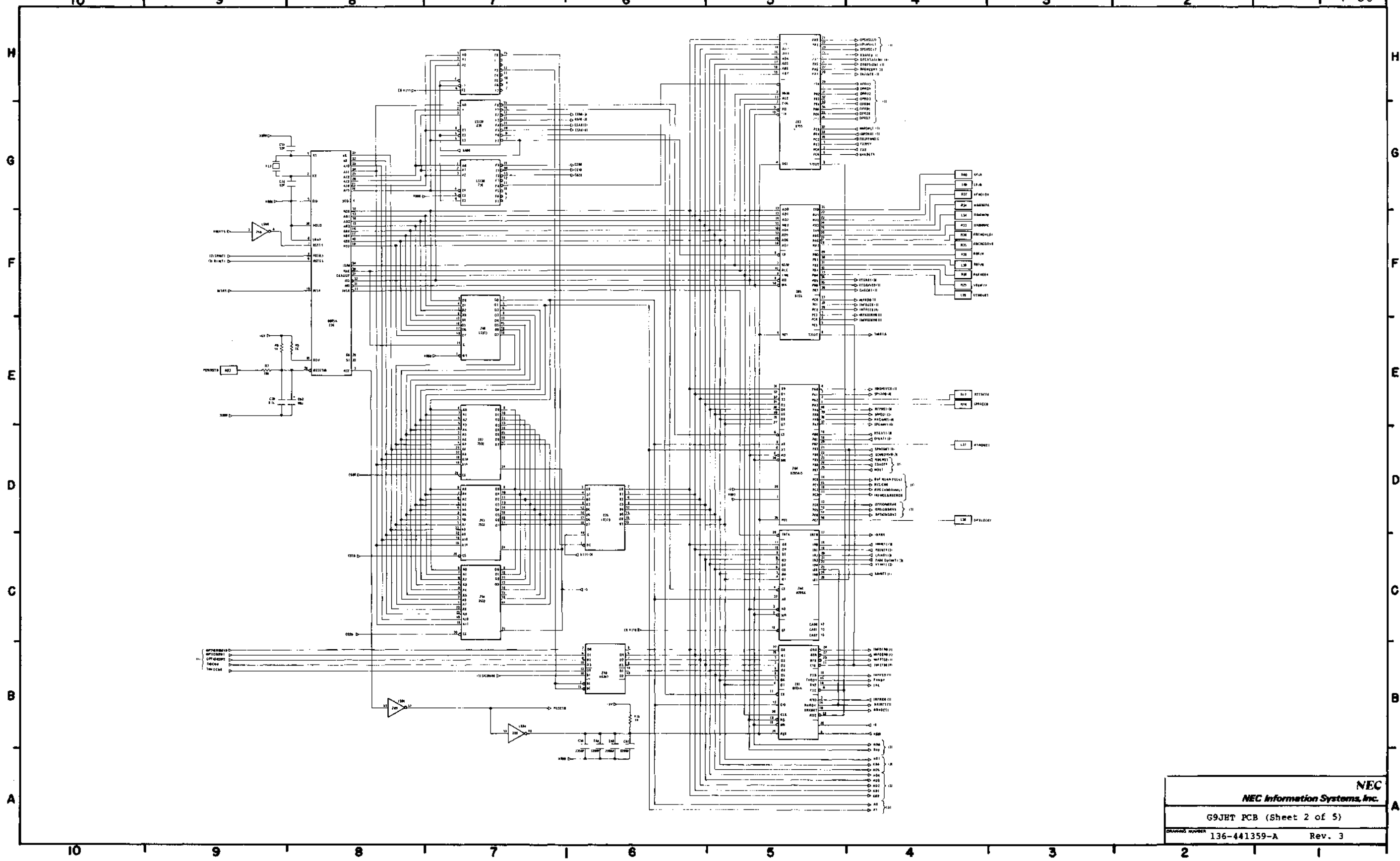
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DRAWING NUMBER 136-441358-A Rev. 4

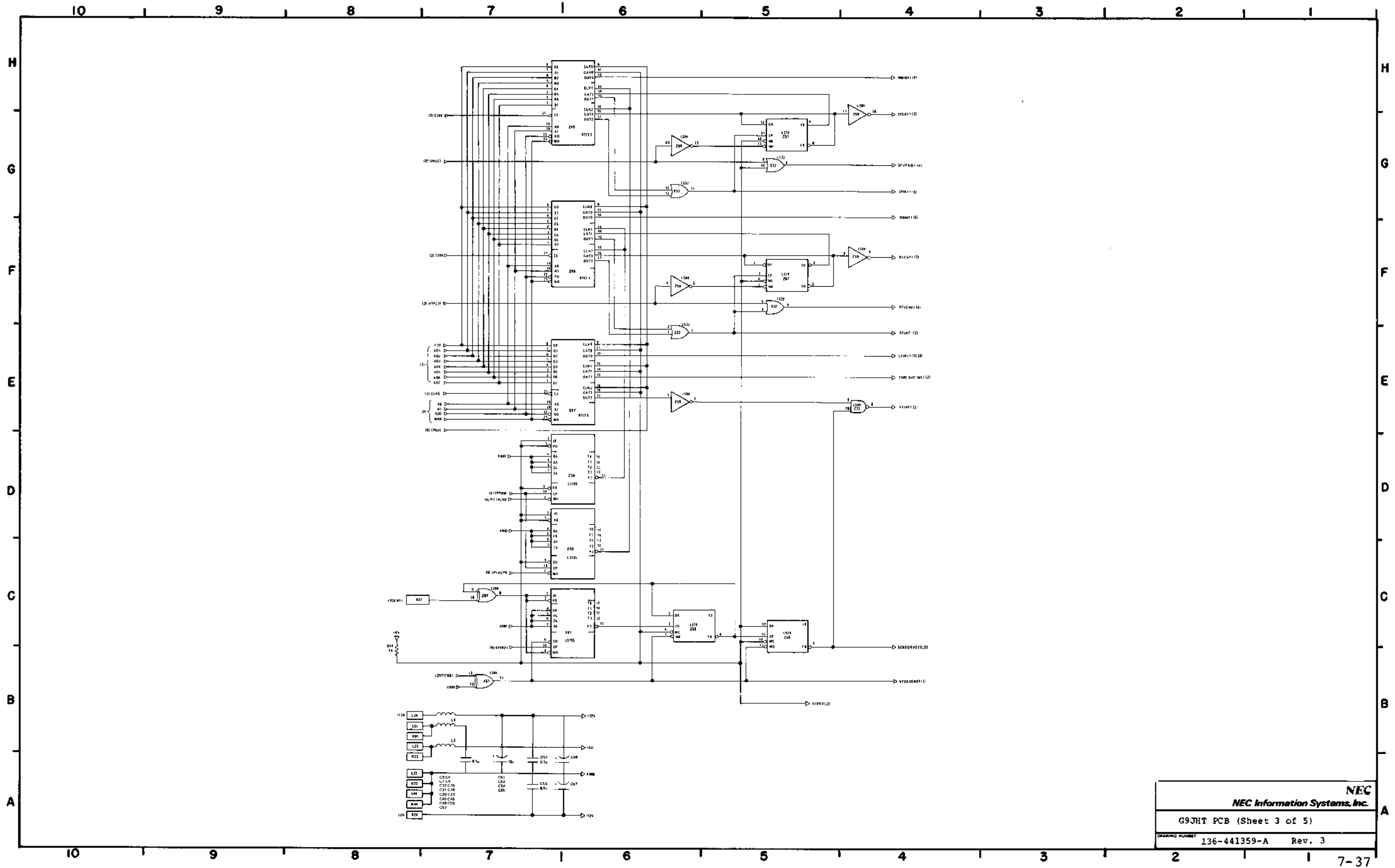






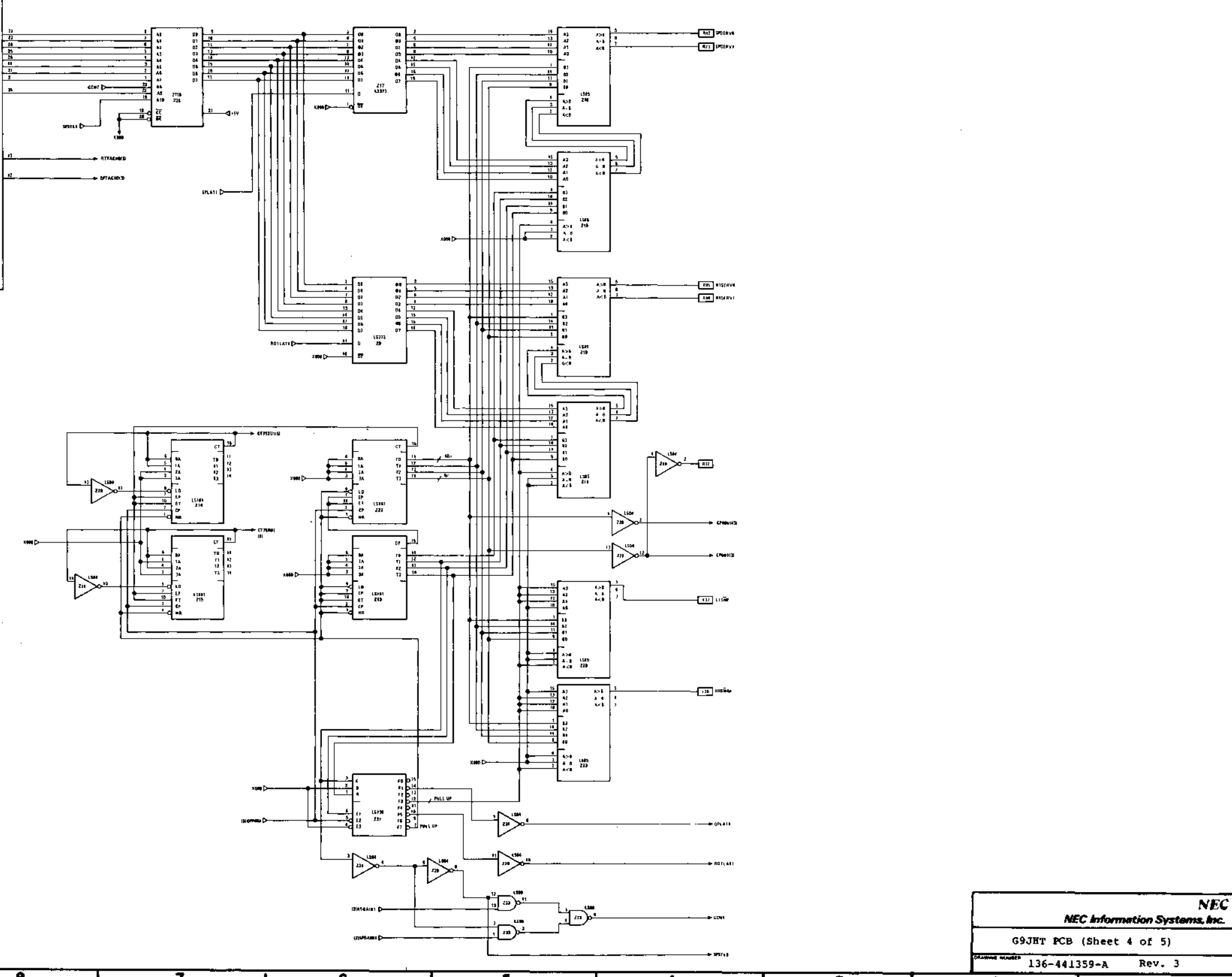
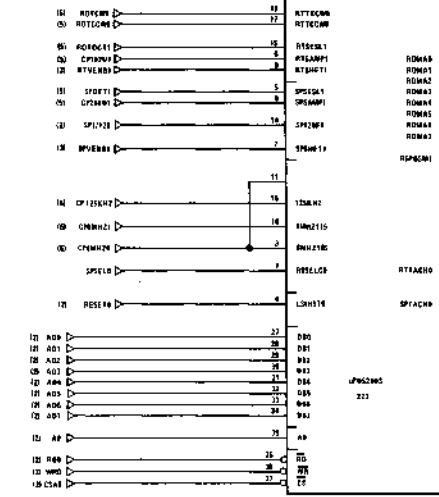


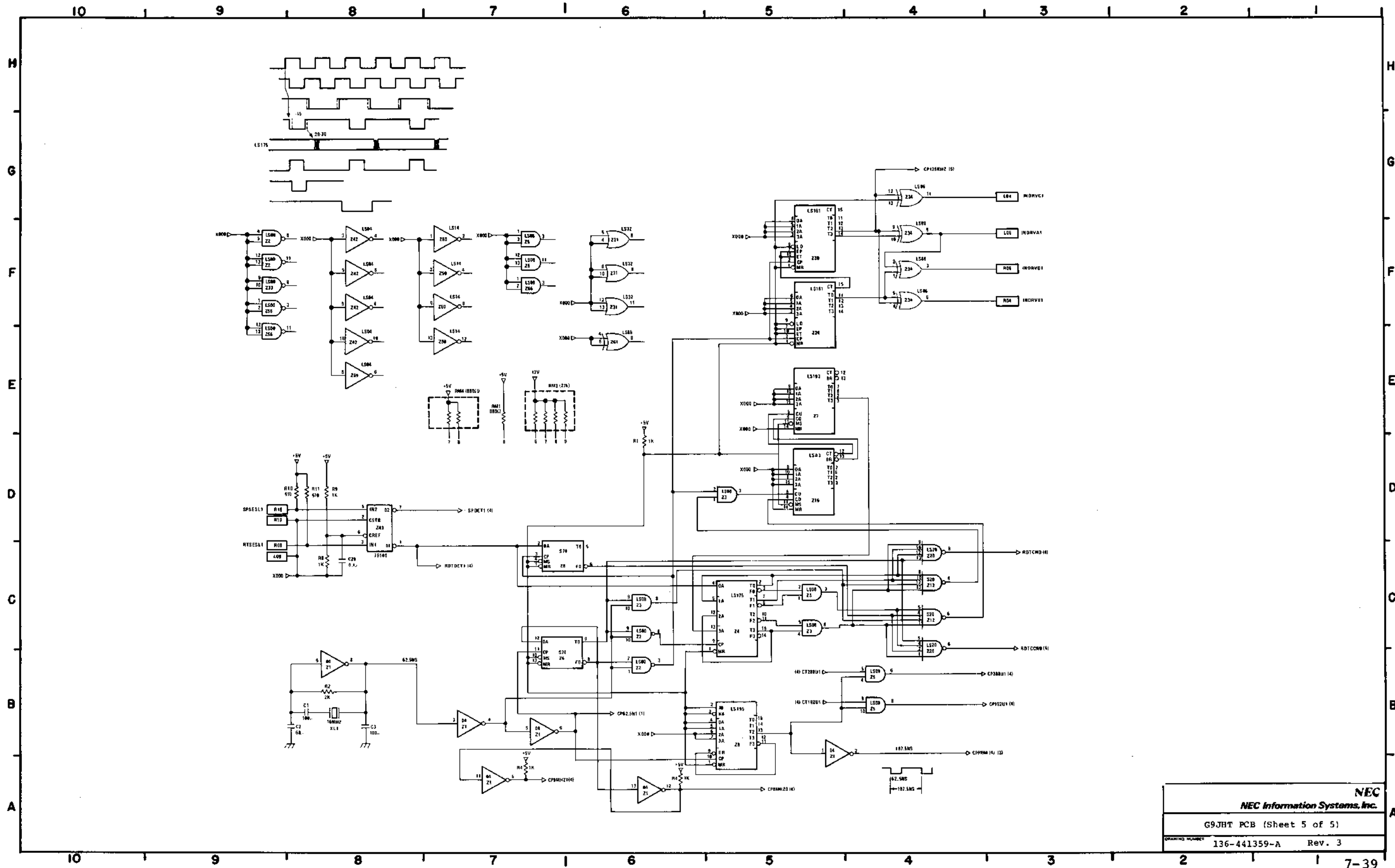




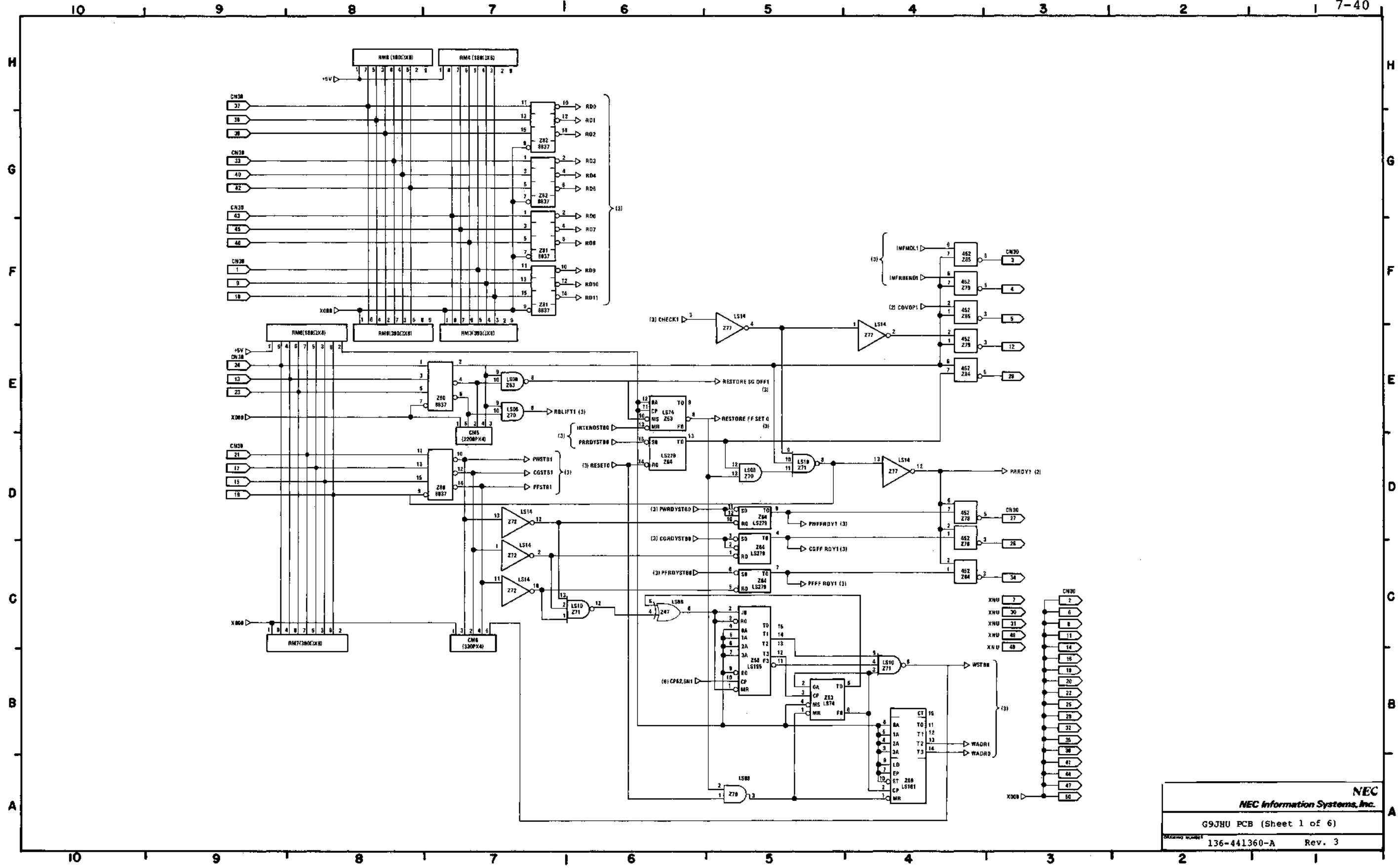
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 NEC Information Systems, Inc.  
 G9JHT PCB (Sheet 3 of 5)  
 DRAWING NUMBER: 136-441359-A Rev. 3  
 7-37

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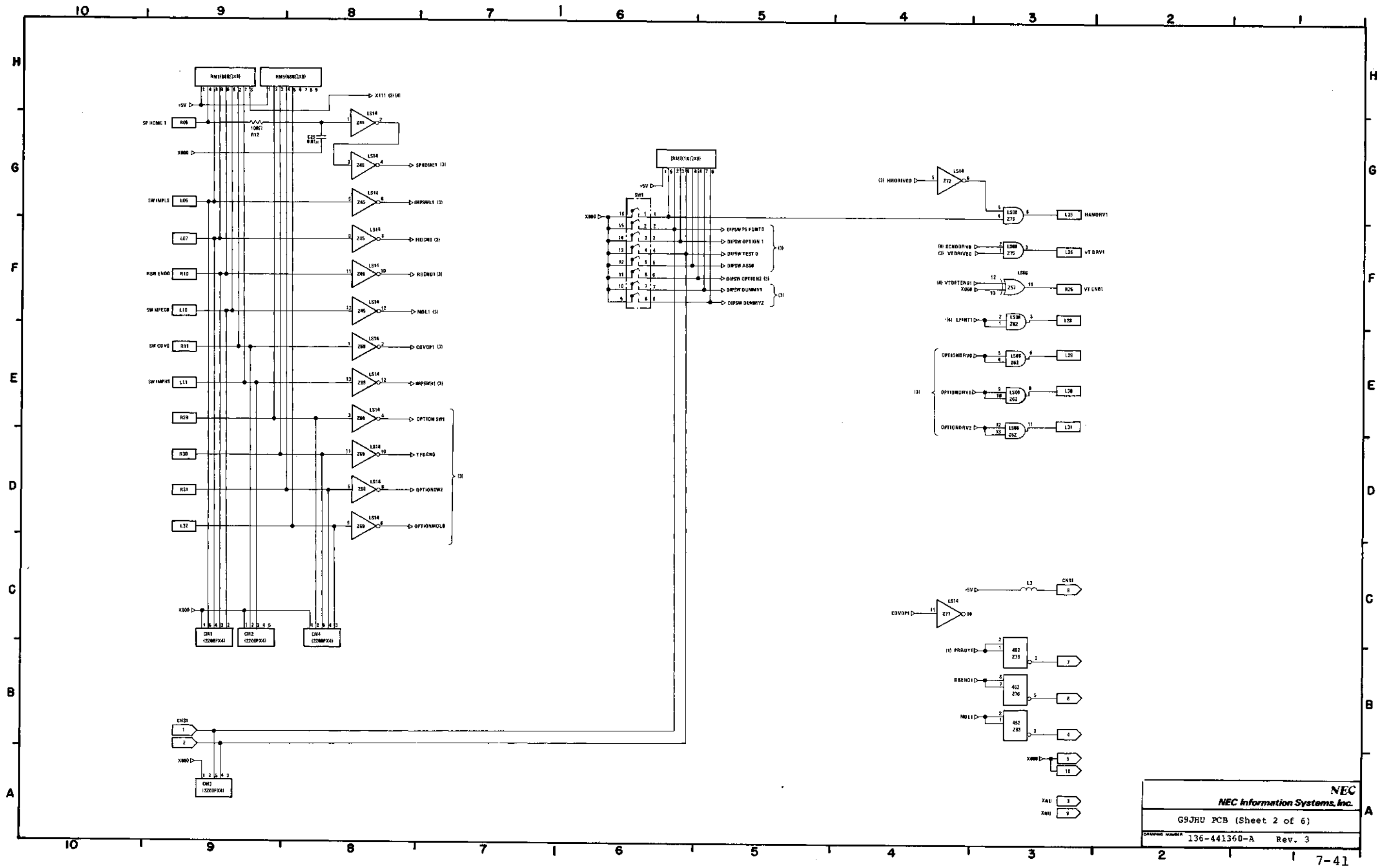




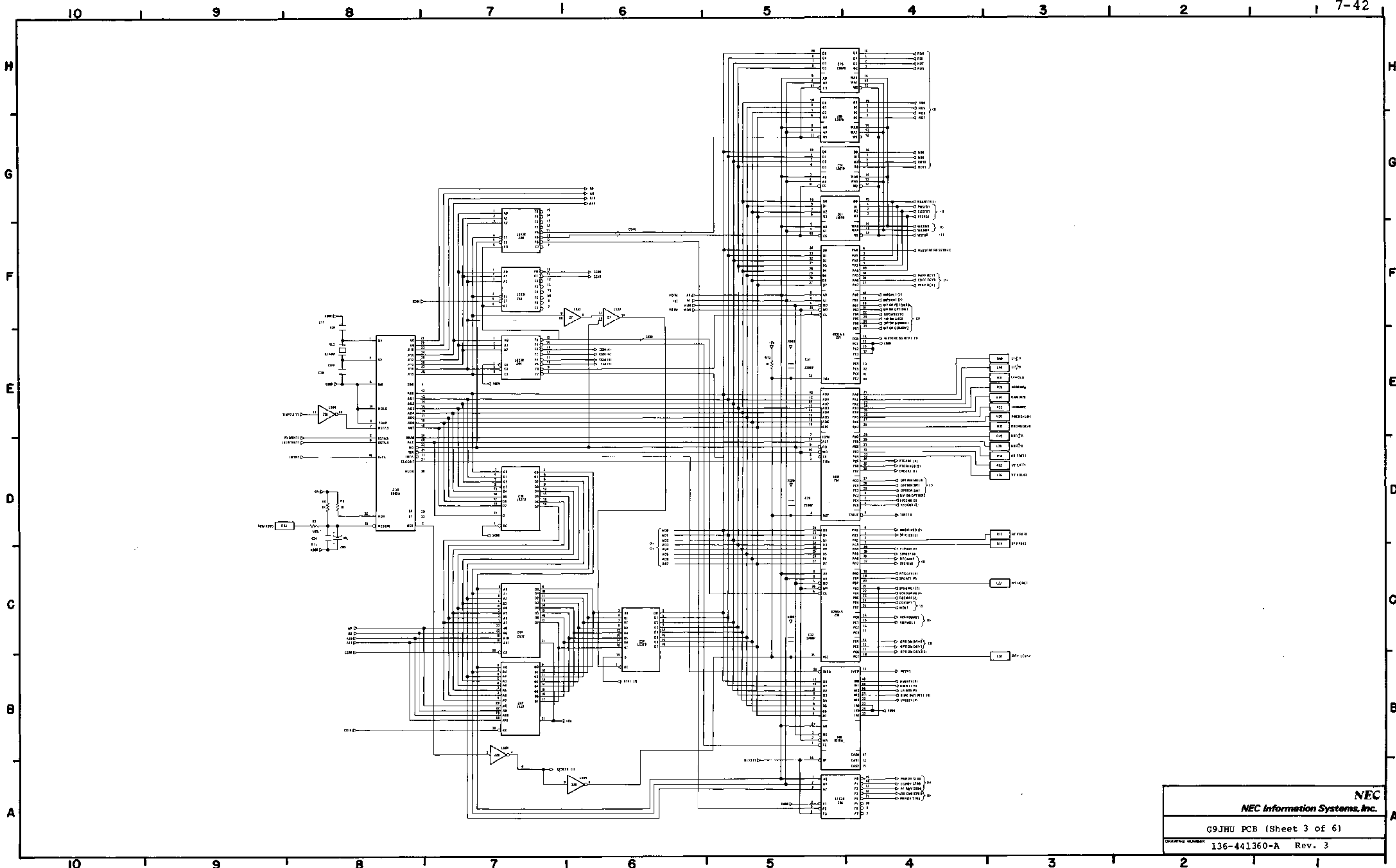
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 G9JHU PCB (Sheet 1 of 6)  
 136-441360-A Rev. 3



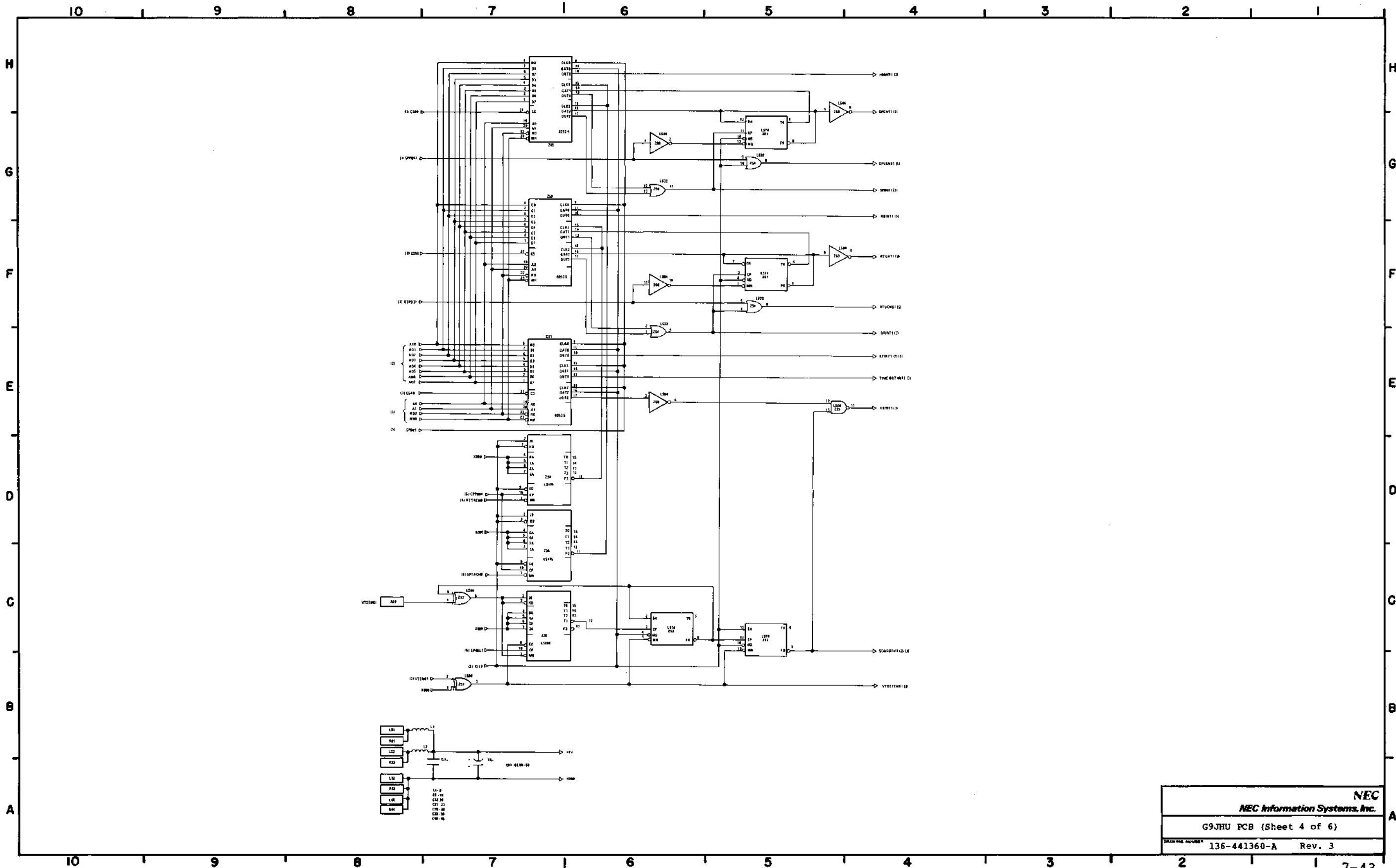
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 G9JHU PCB (Sheet 2 of 6)  
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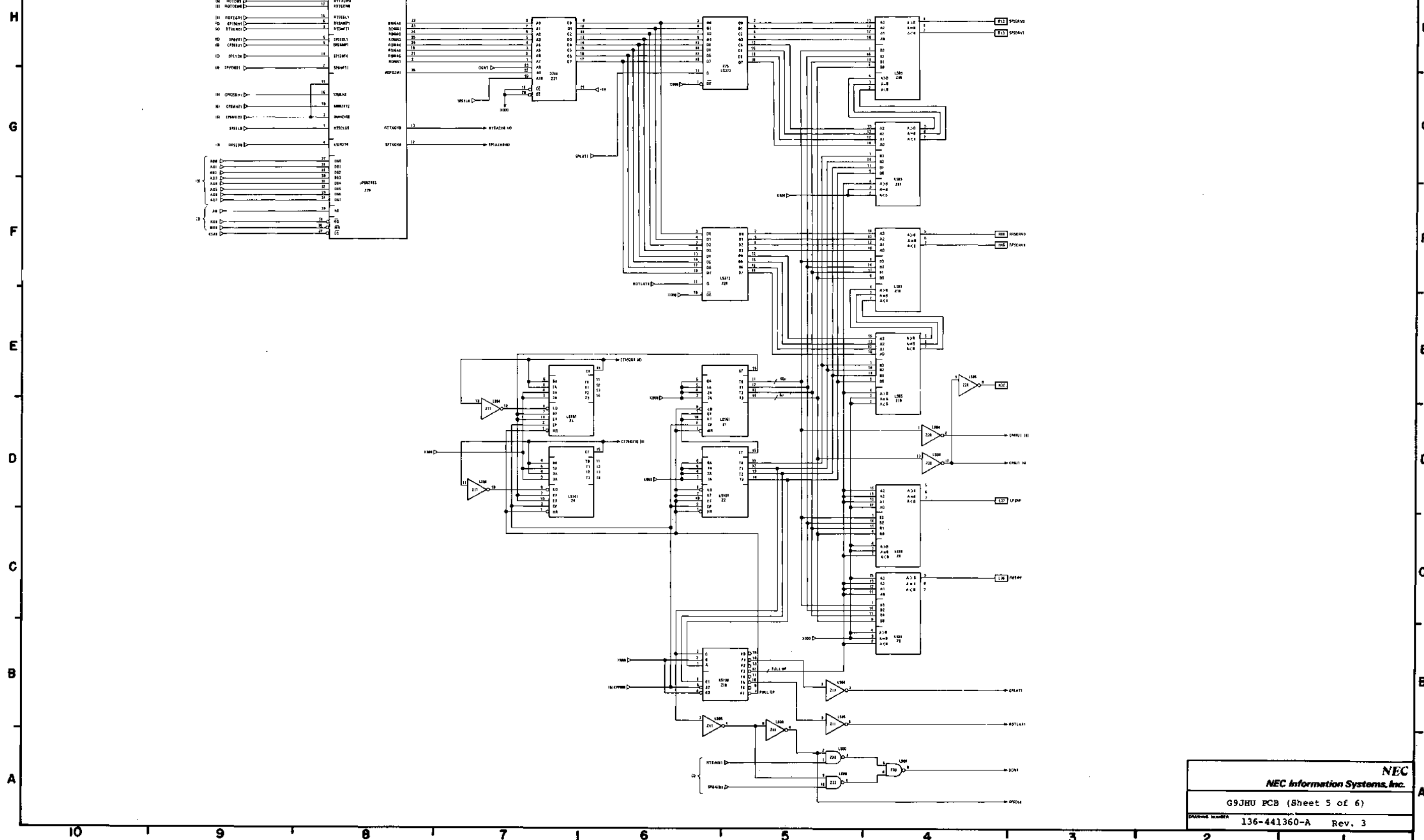
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 NEC Information Systems, Inc.

G9JHU PCB (Sheet 3 of 6)

DRAWING NUMBER 136-441360-A Rev. 3

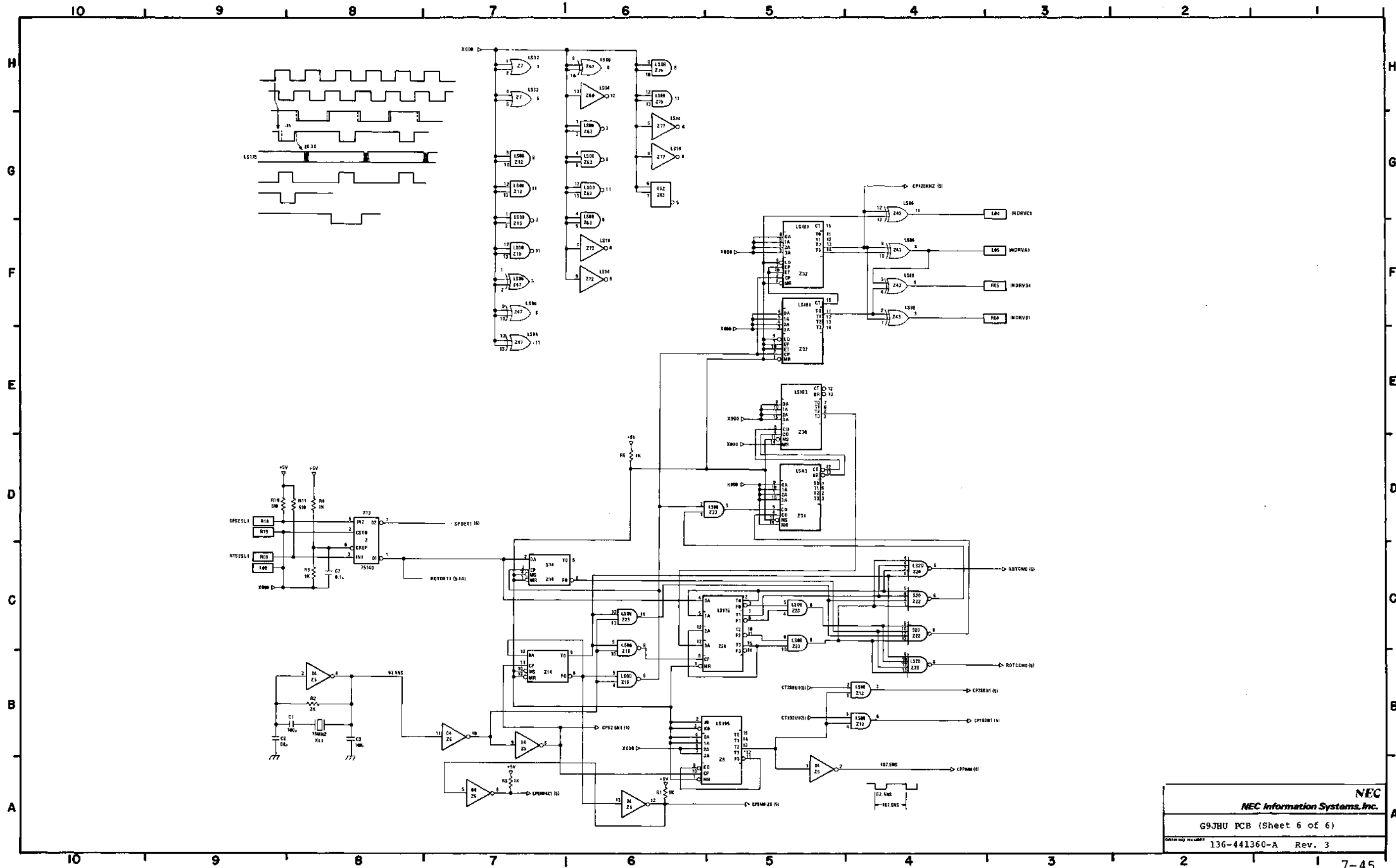


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 G9JHU PCB (Sheet 4 of 6)  
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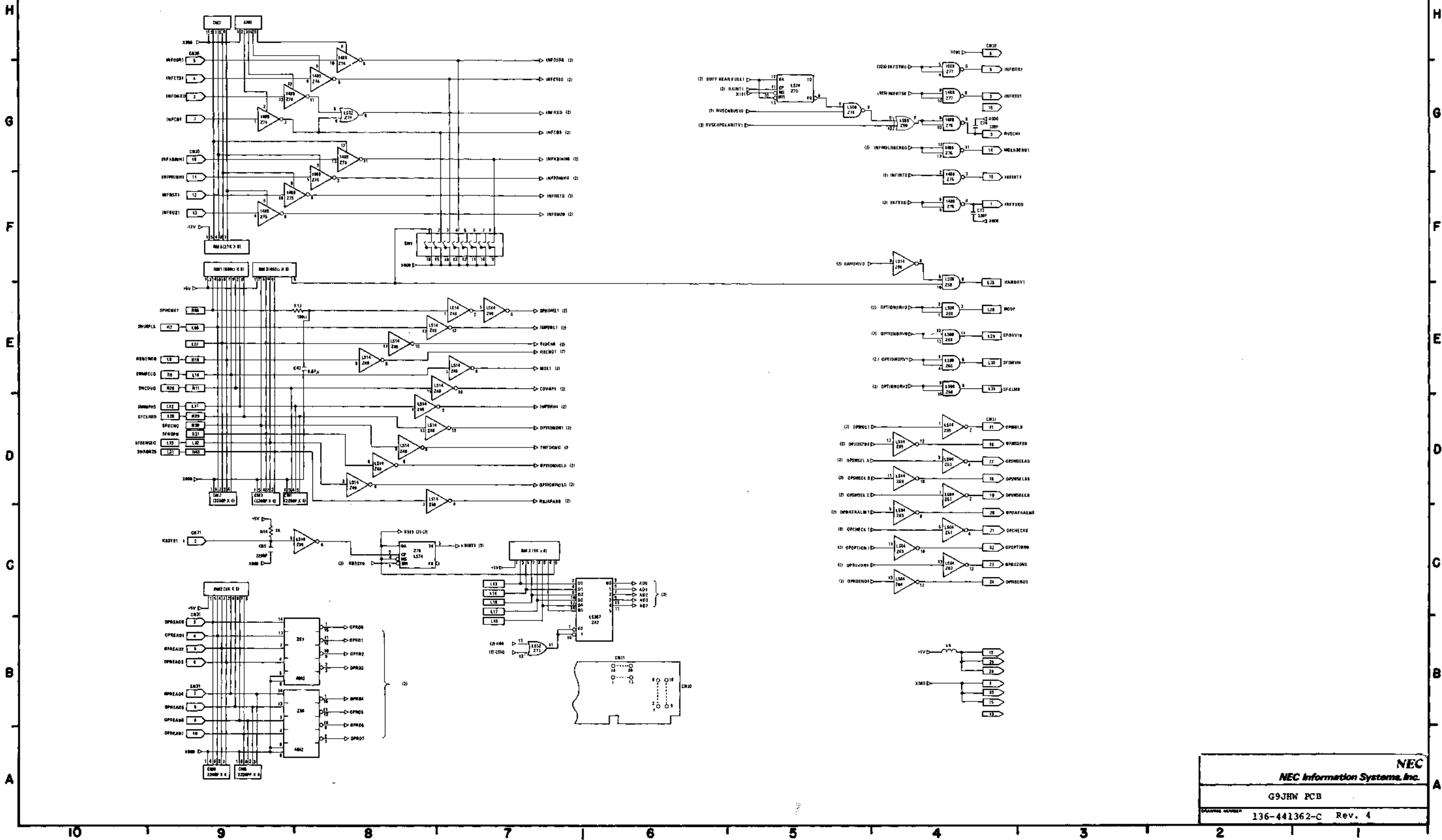


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 G9JHU PCB (Sheet 5 of 6)  
 DRAWING NUMBER 136-441360-A Rev. 3

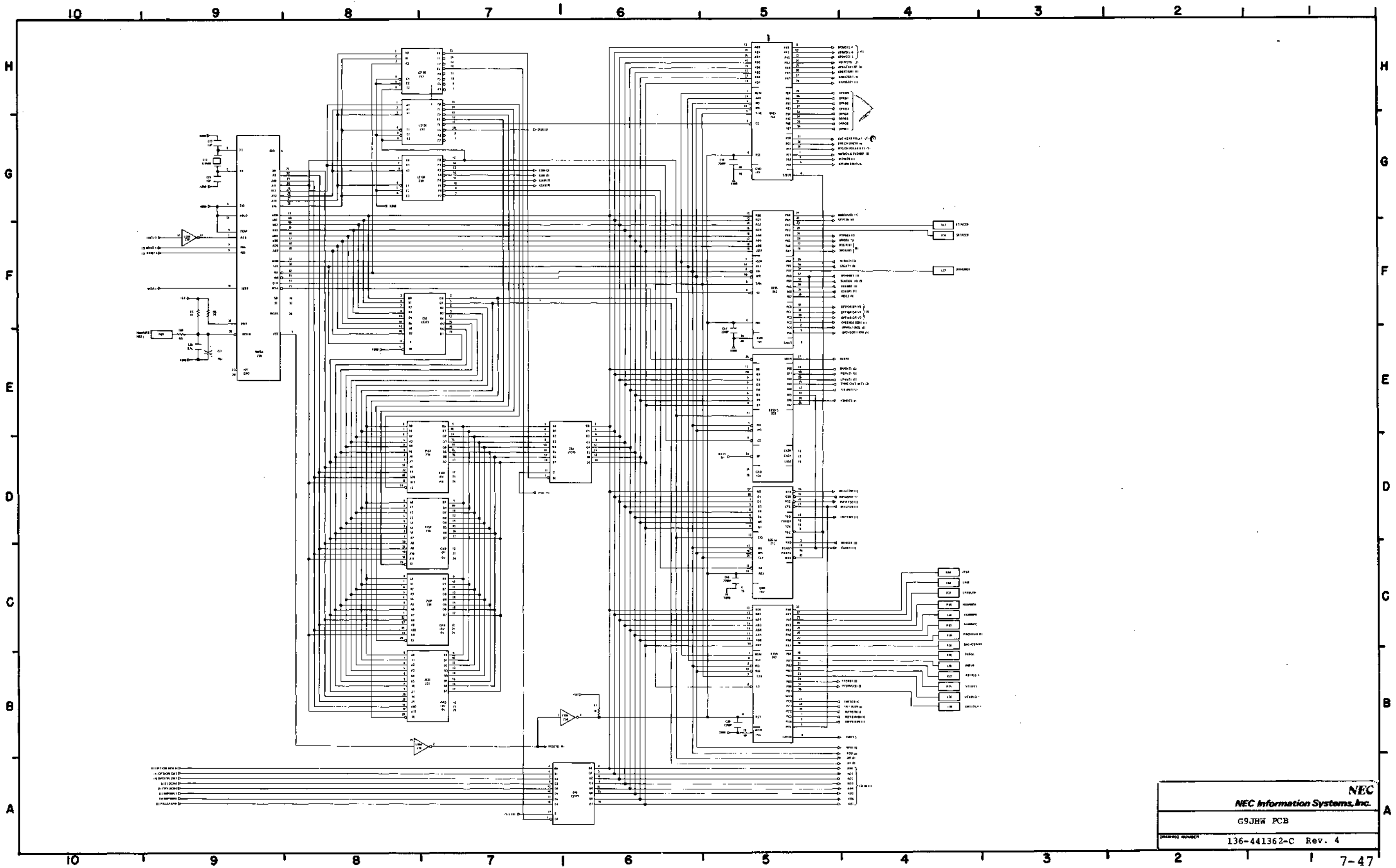




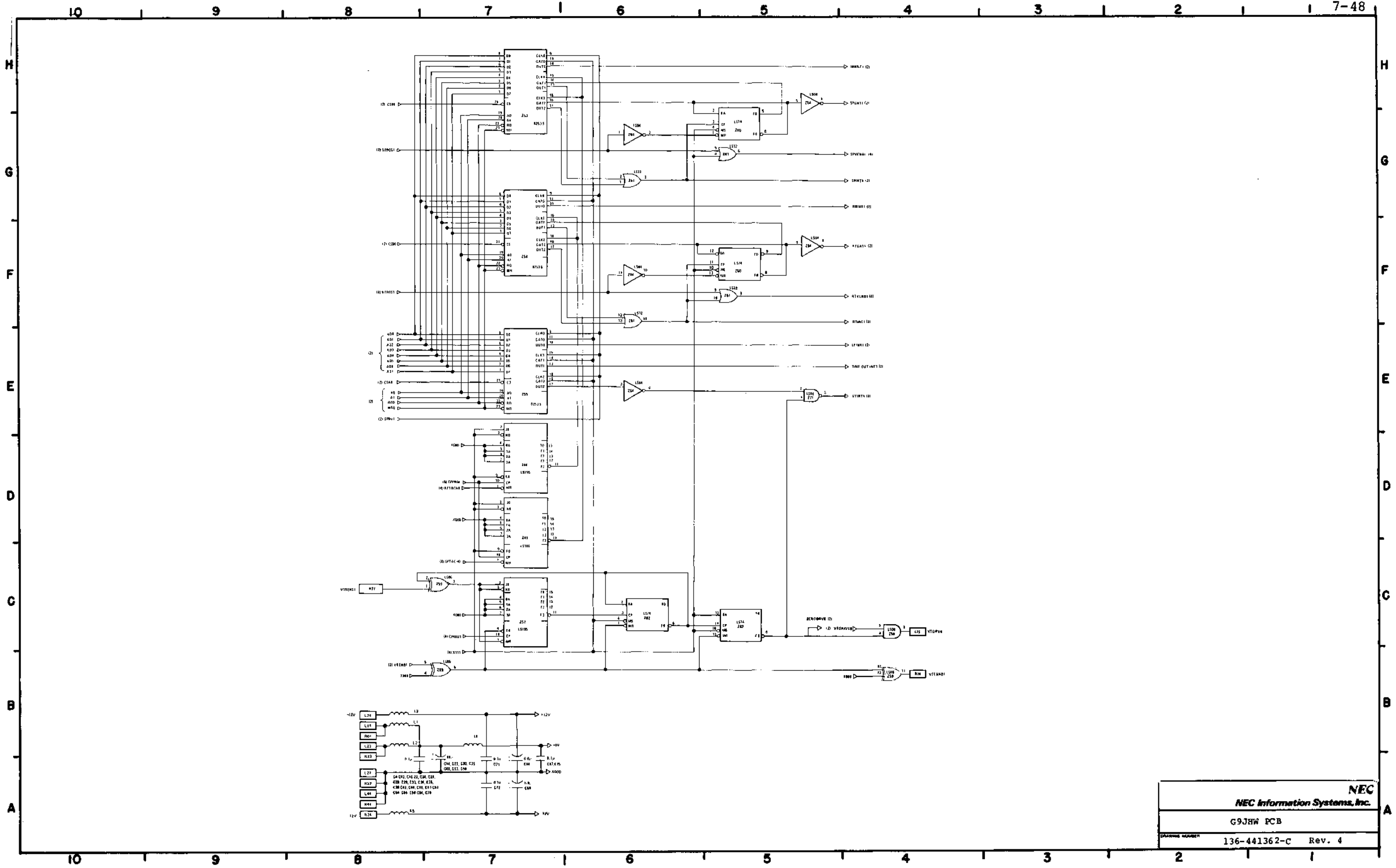
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 G9JHU PCB (Sheet 6 of 6)  
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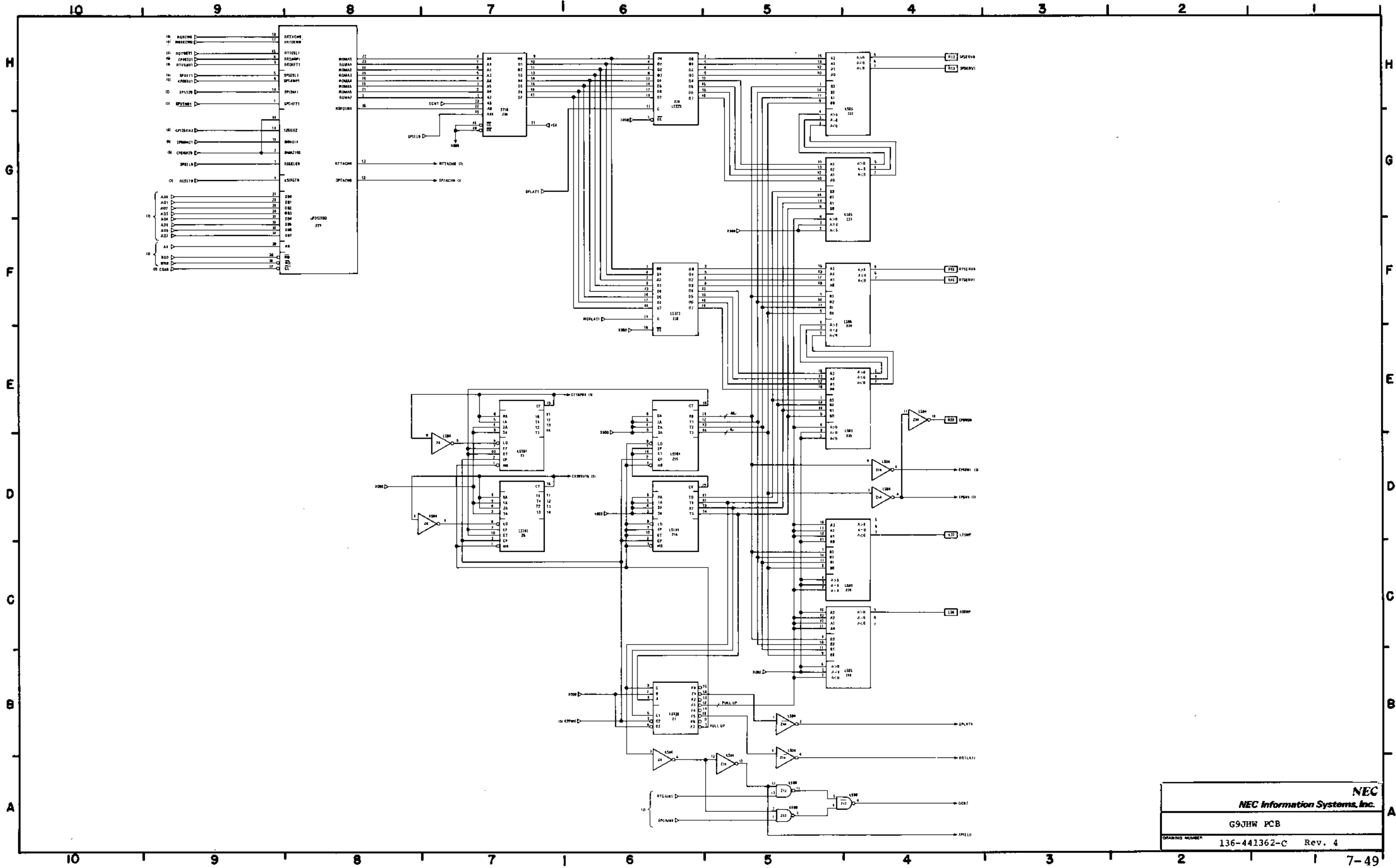
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 G9JHW PCB  
 DRAWING NUMBER 136-441362-C Rev. 4



**NEC**  
**NEC Information Systems, Inc.**  
G9JHW PCB  
DRAWING NUMBER 136-441362-C Rev. 4  
7-47



**NEC**  
**NEC Information Systems, Inc.**  
 G9JRW PCB  
 DRAWING NUMBER 136-441362-C Rev. 4



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 NEC Information Systems, Inc.  
 G9JHW PCB  
 DRAWING NUMBER 136-441362-C Rev. 4

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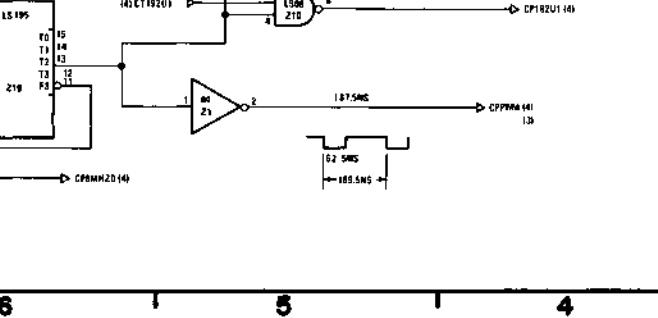
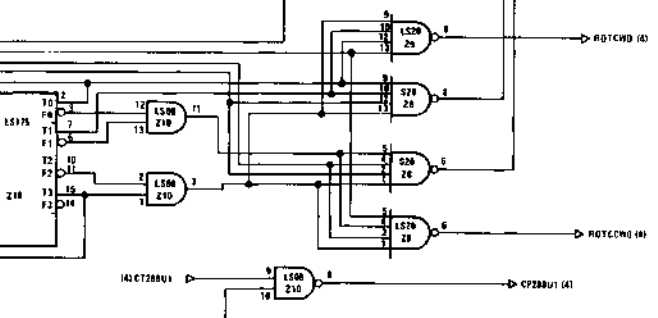
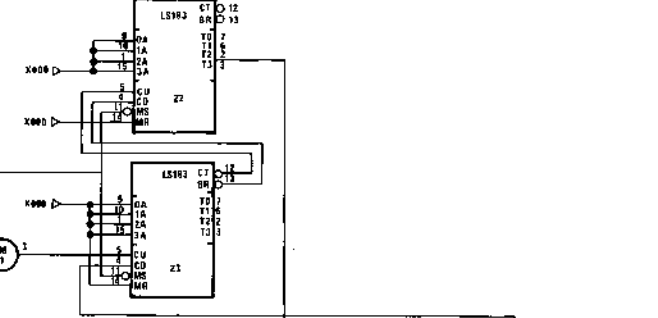
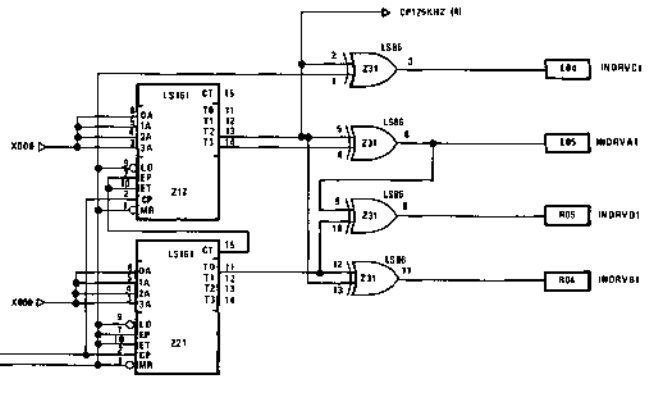
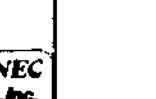
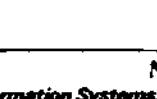
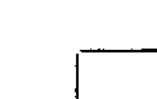
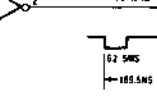
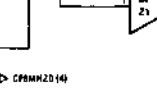
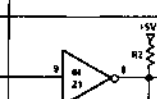
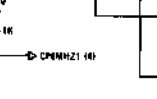
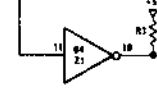
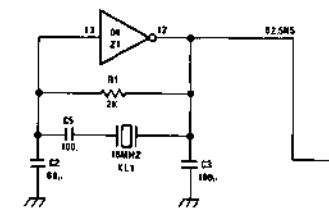
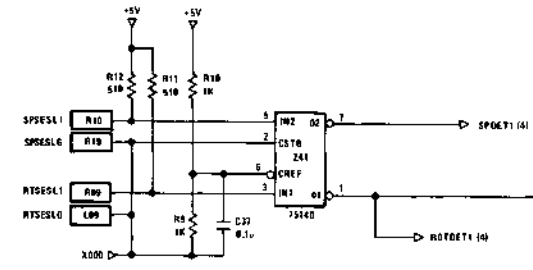
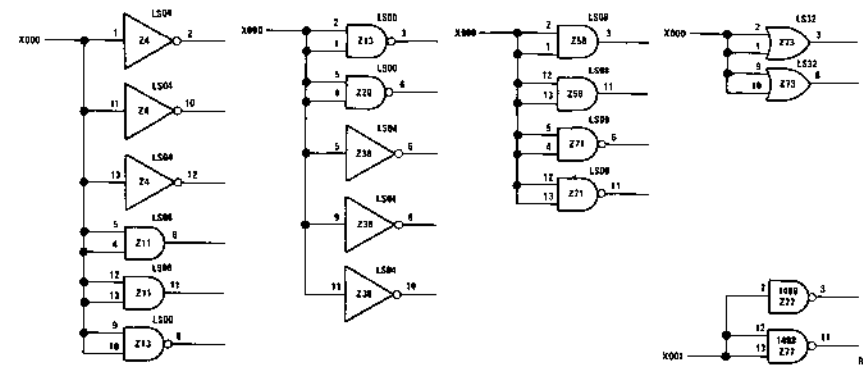
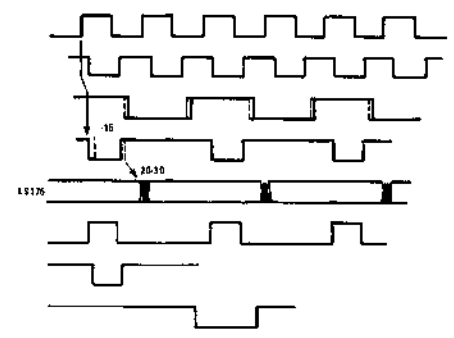
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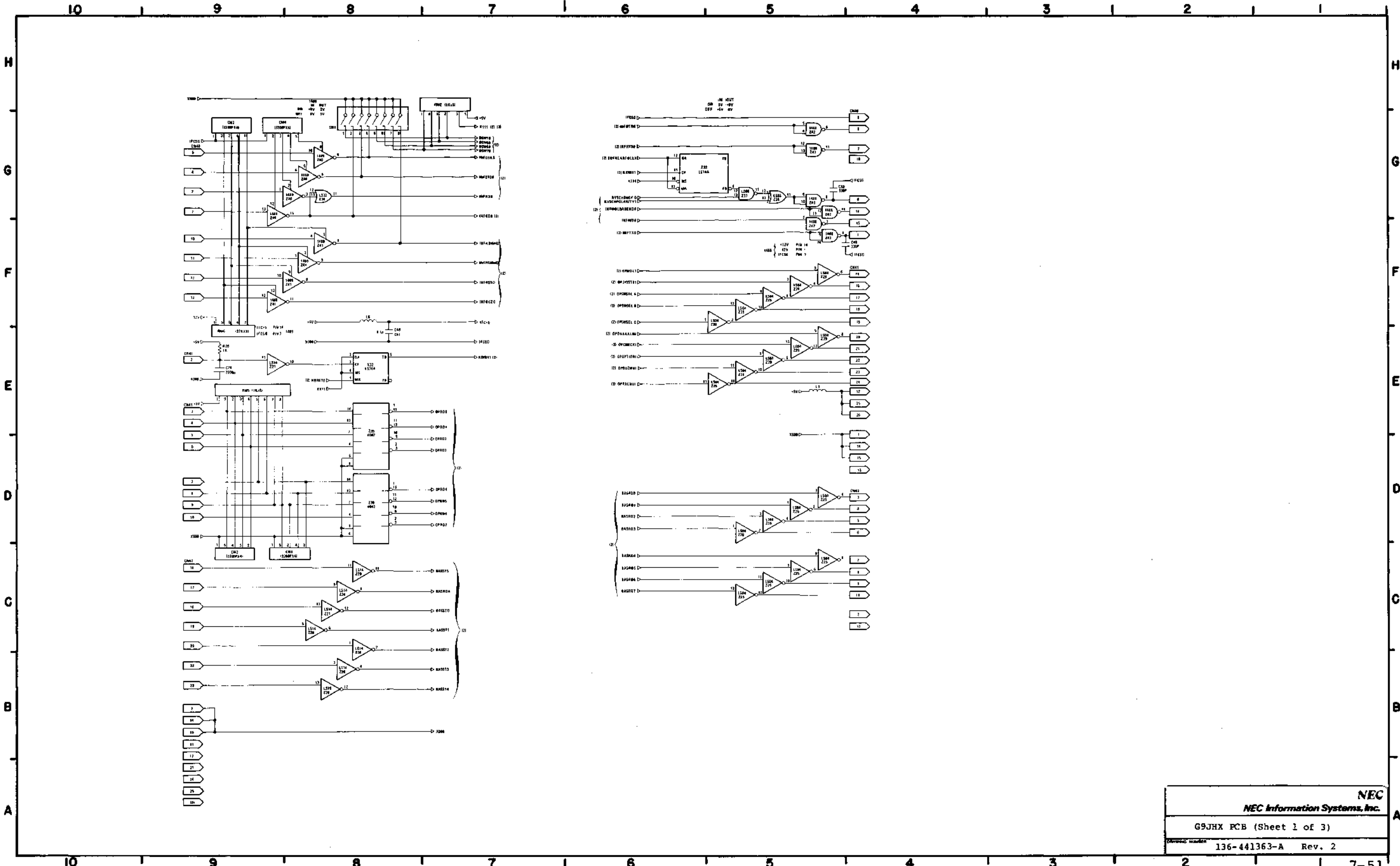
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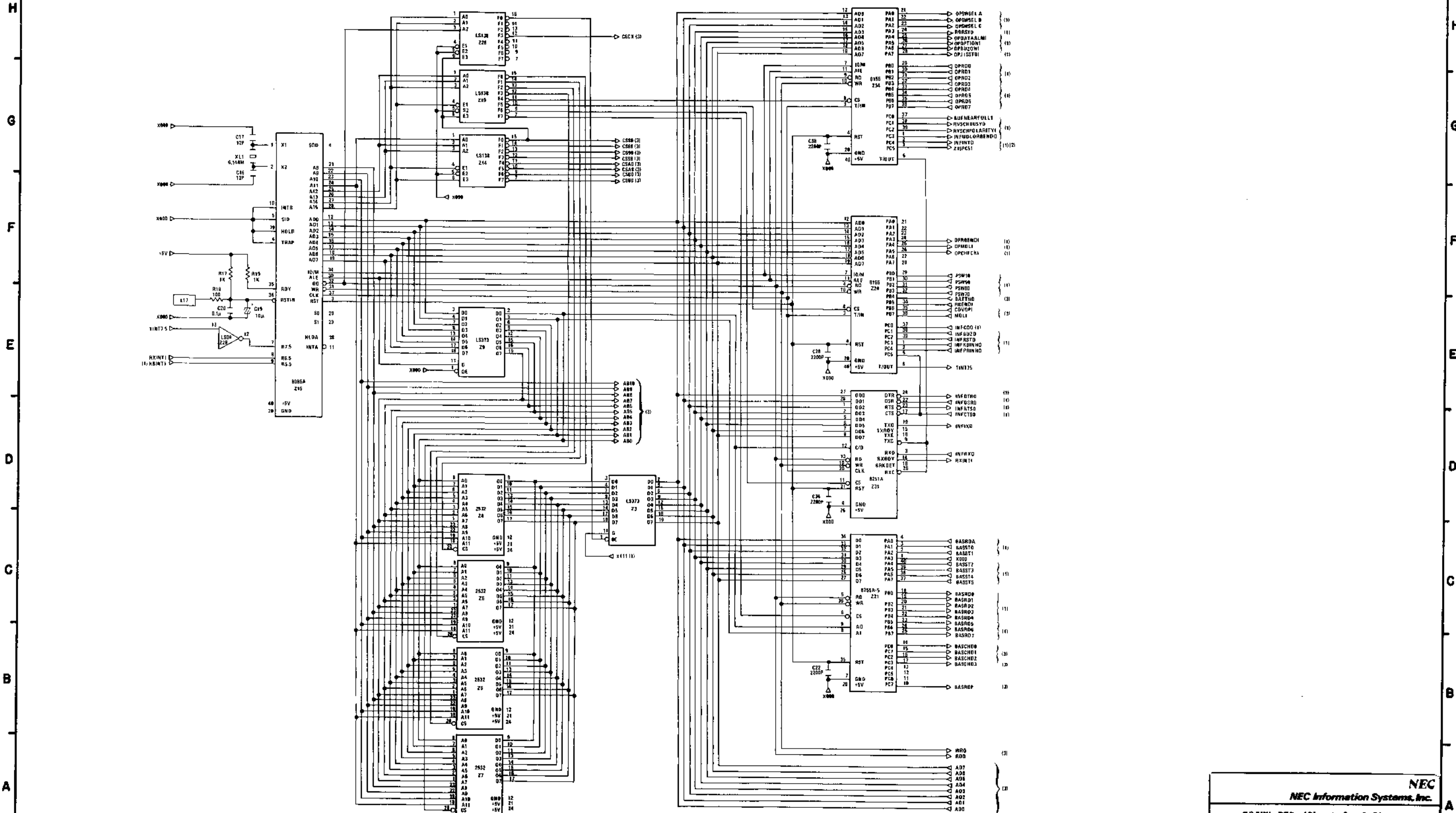
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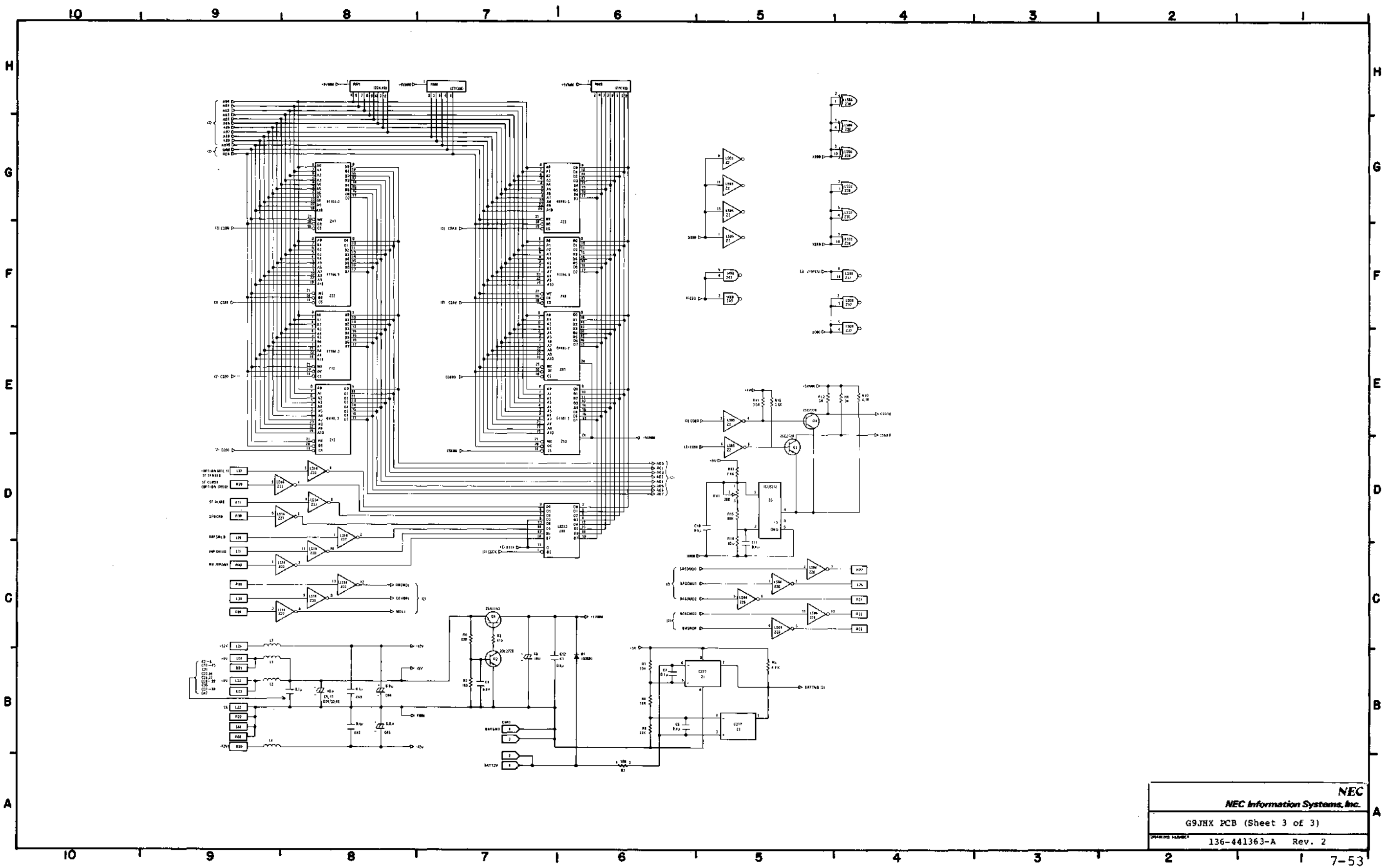
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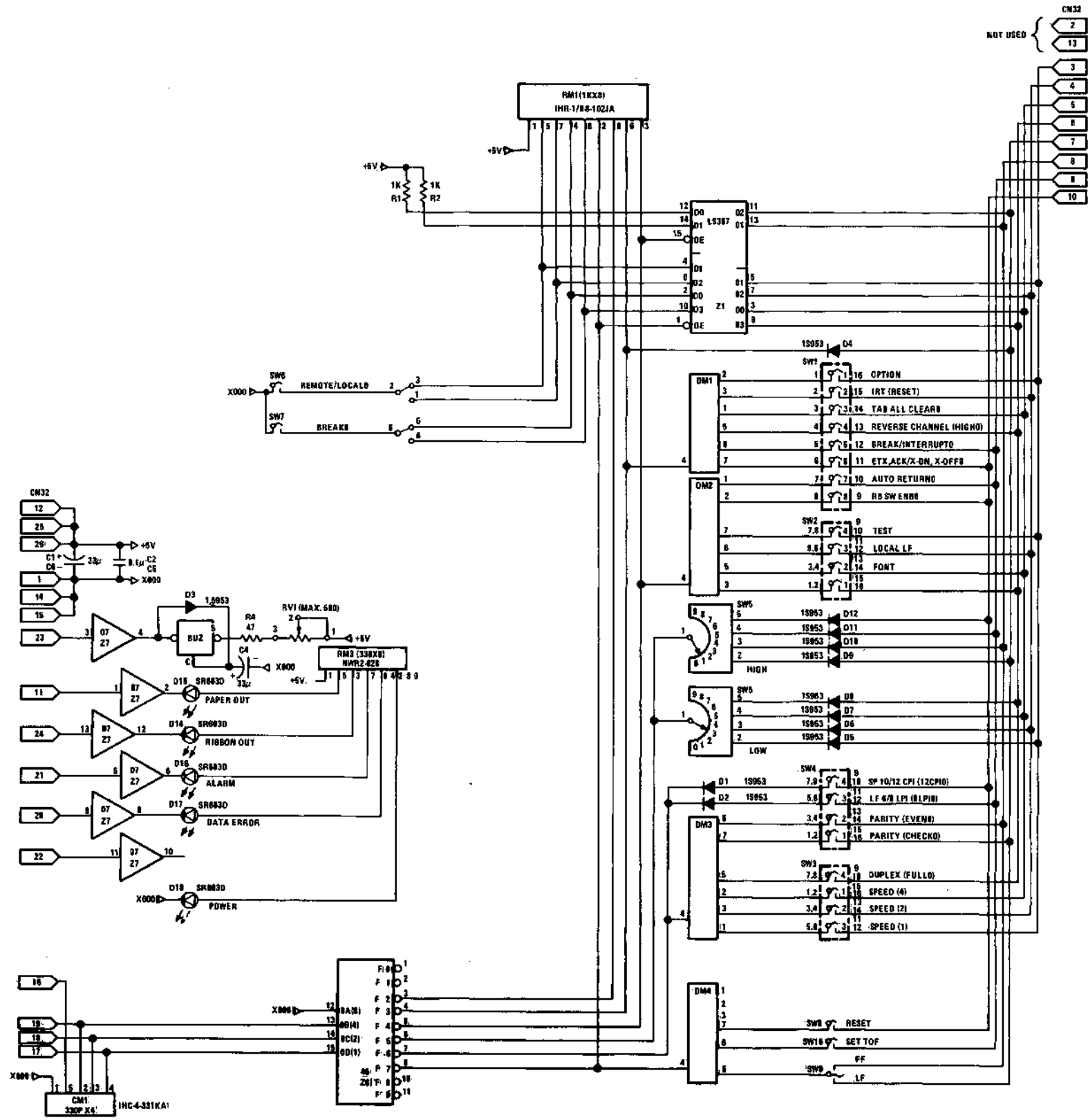




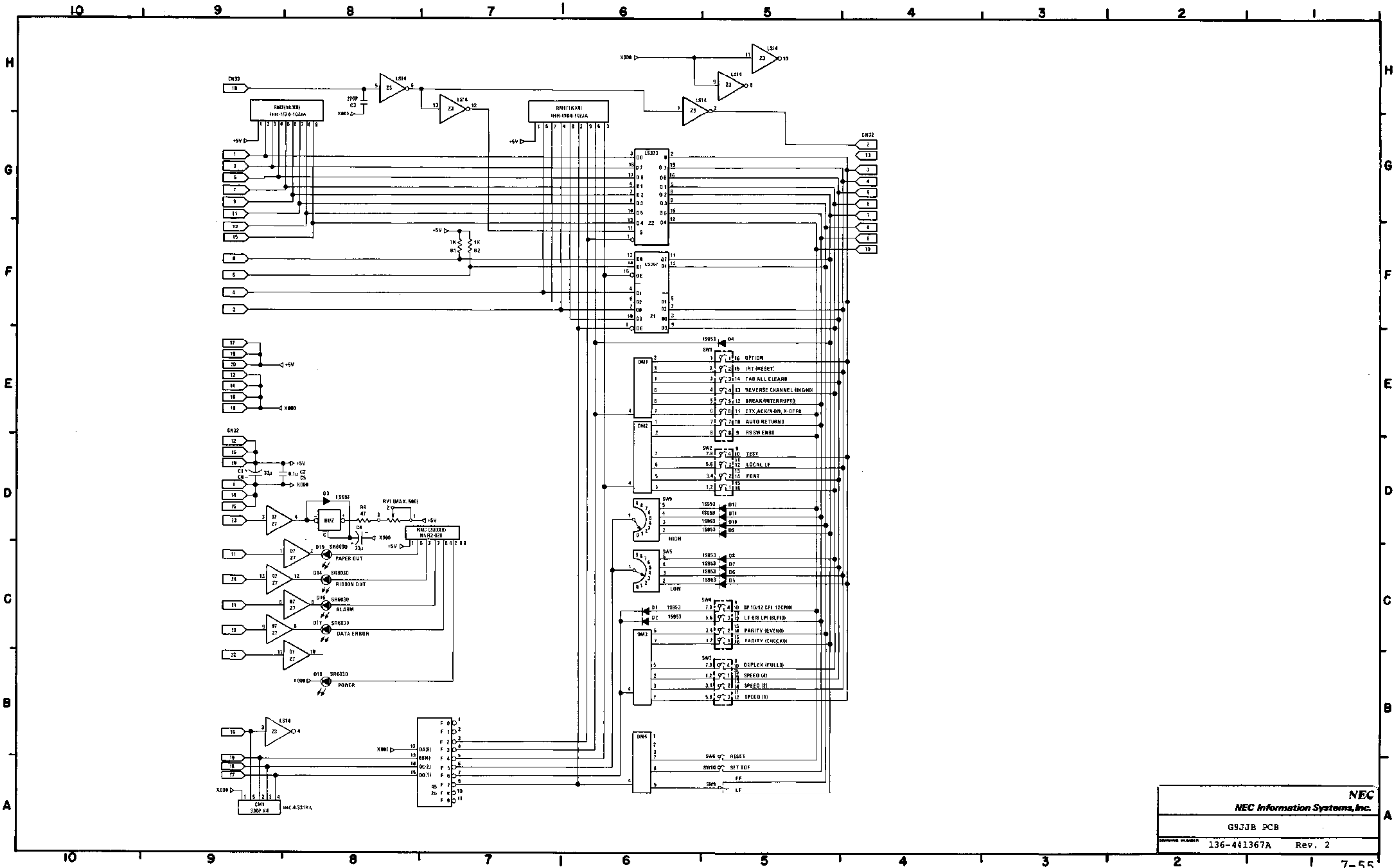




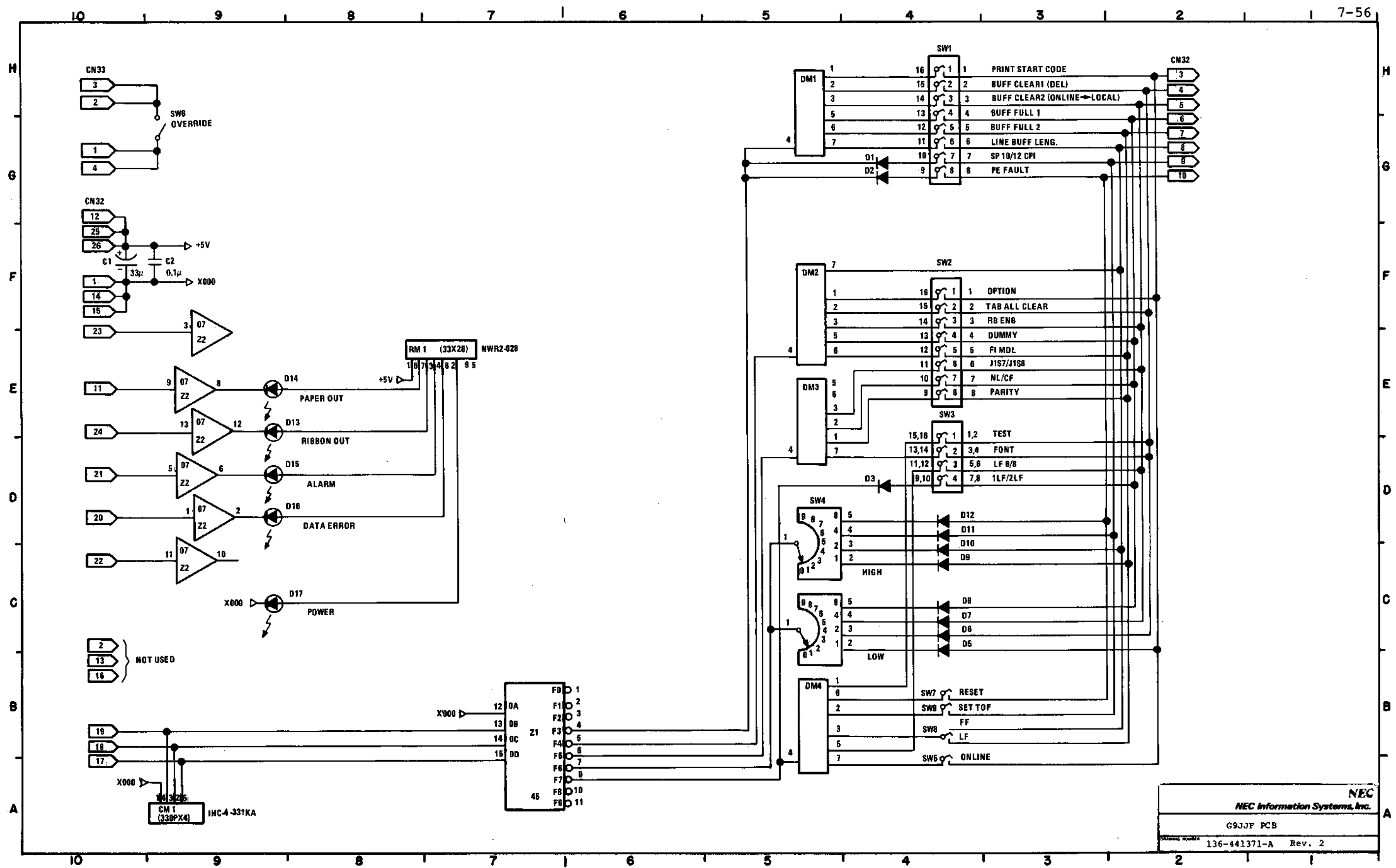
H G F E D C B A



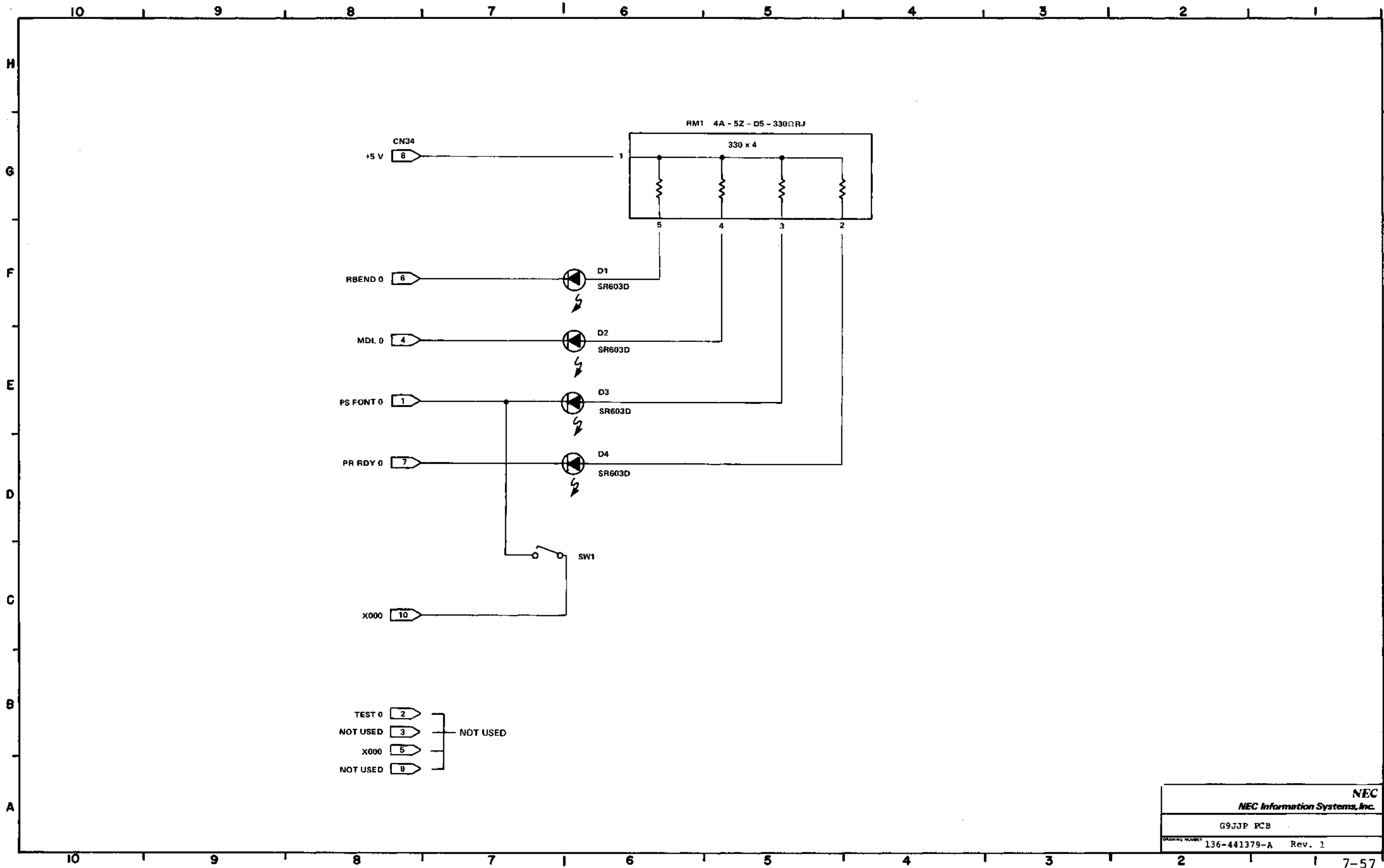
**NEC**  
 NEC Information Systems, Inc.  
 G9JJA PCB  
 DRAWING NUMBER 136-441366-A Rev. 2



**NEC**  
 NEC Information Systems, Inc.  
 G9JJB PCB  
 DRAWING NUMBER 136-441367A Rev. 2



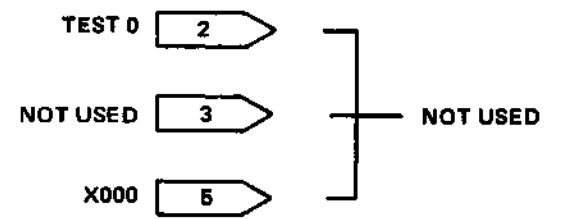
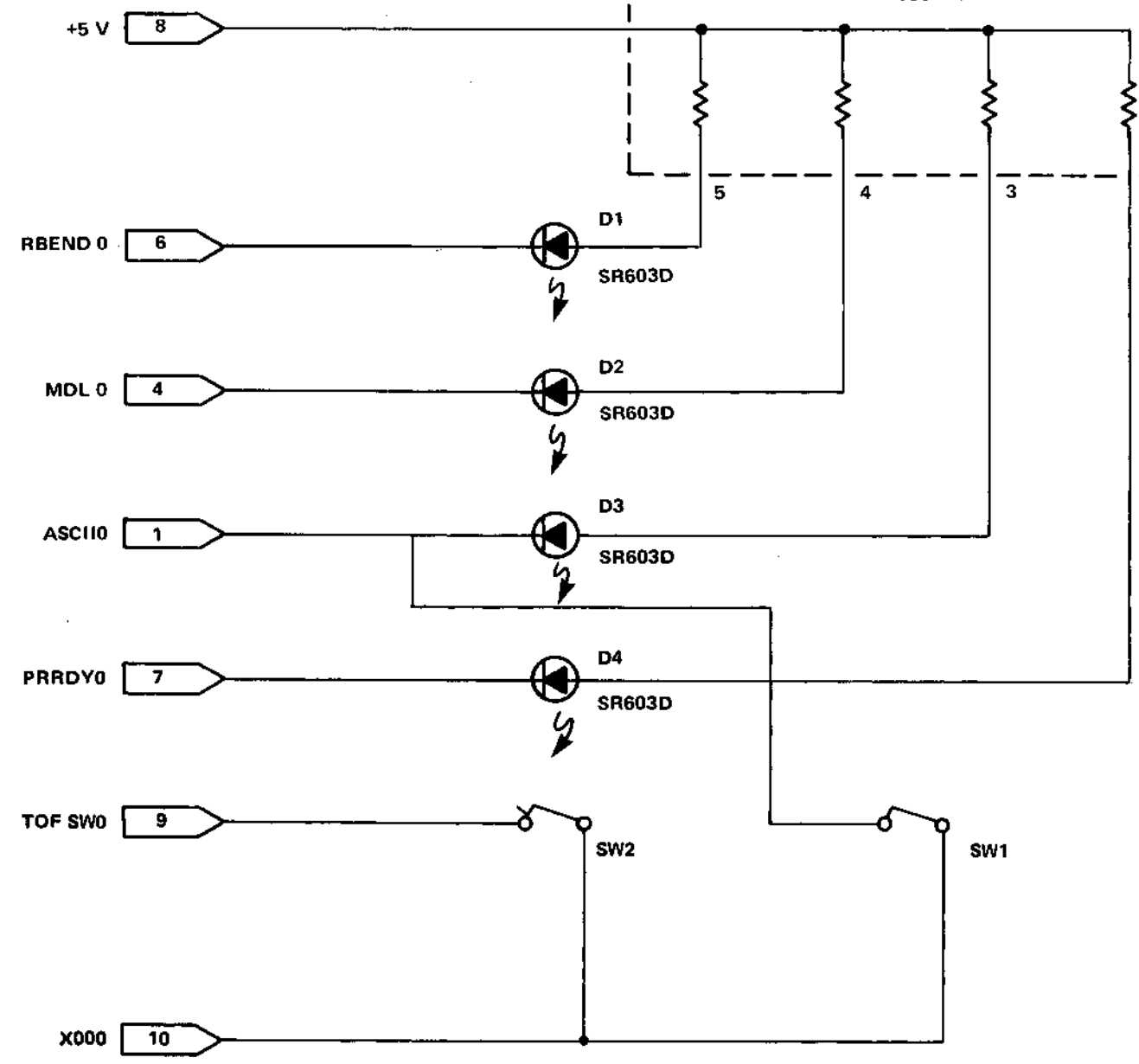
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 NEC Information Systems, Inc.  
 G9JJF PCB  
 136-441371-A Rev. 2



RM1 4A-5Z-D5-330Ω RJ

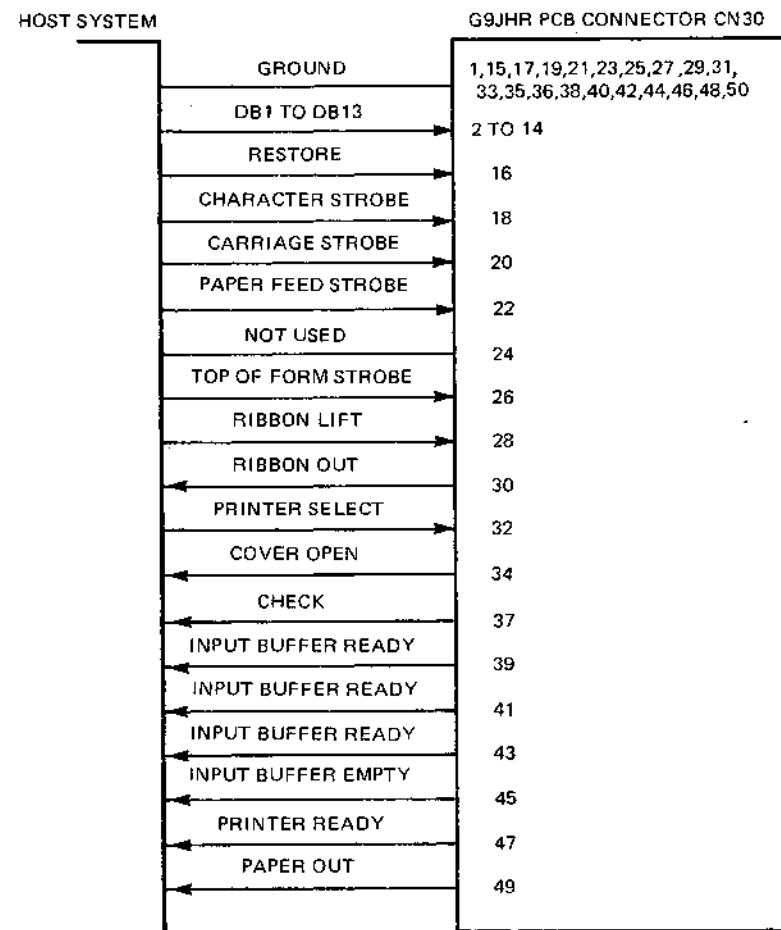
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CN34

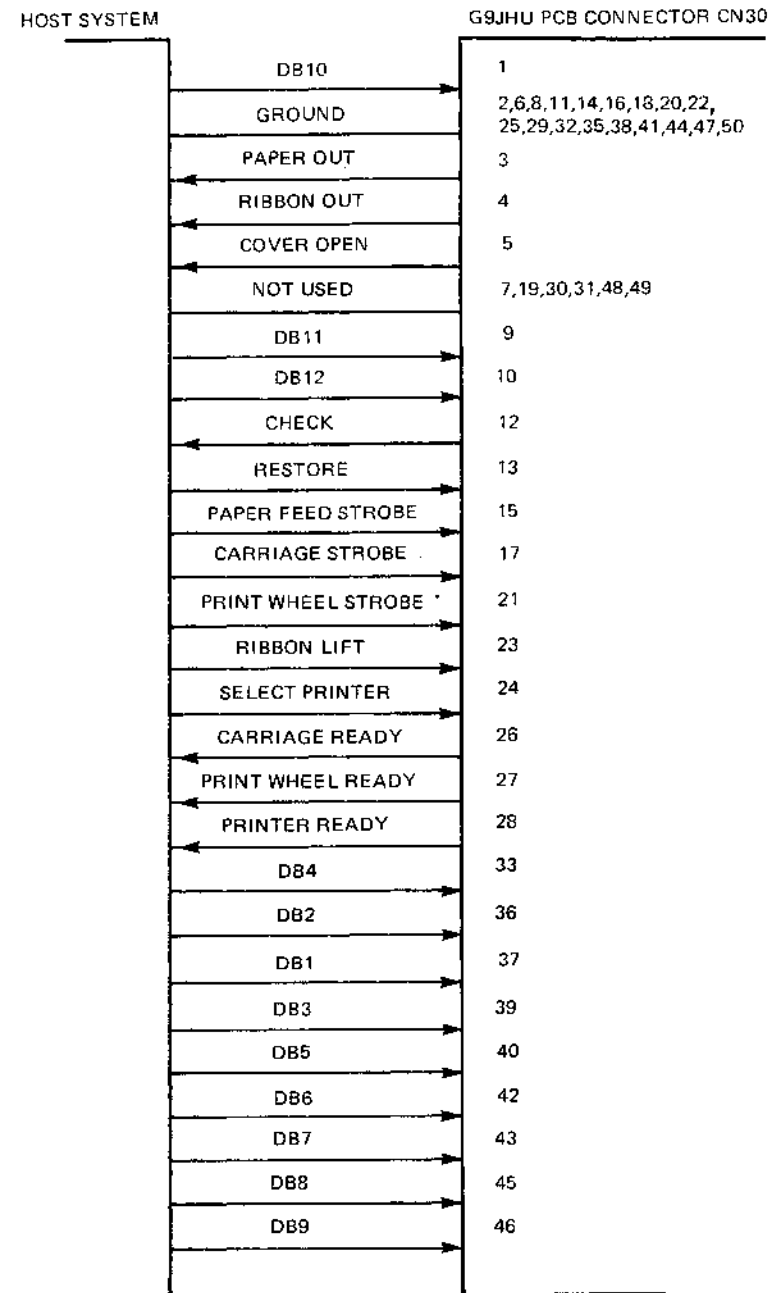


<b>NEC</b>
<i>NEC Information Systems, Inc.</i>
G9JJQ PCB
Drawing Number 136-441380-B

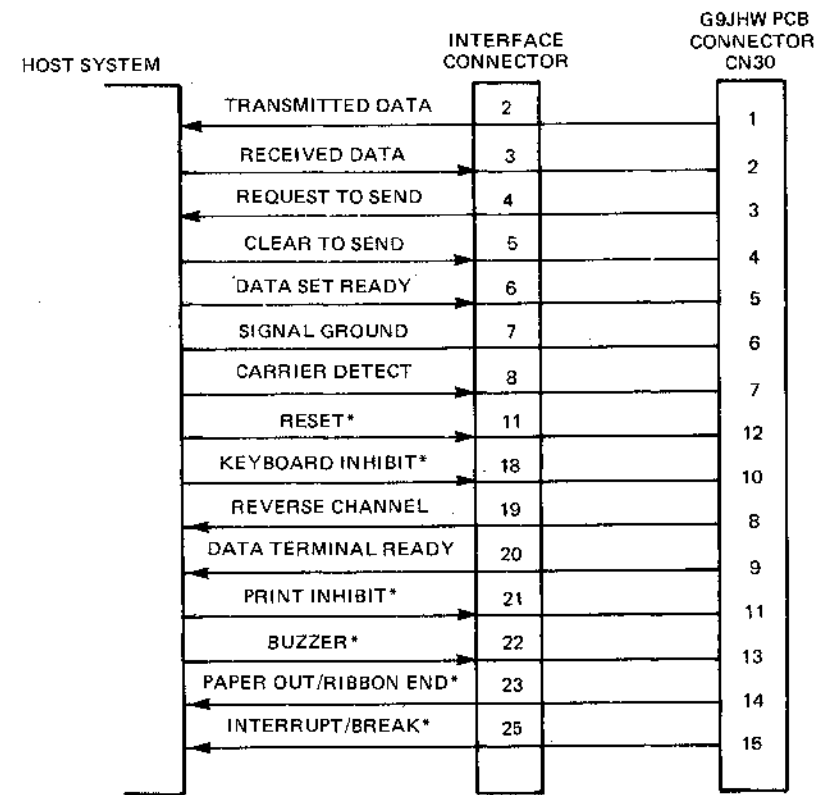
MODEL 7700Q INTERFACE CONNECTION DIAGRAM



MODEL 7700D INTERFACE CONNECTION DIAGRAM

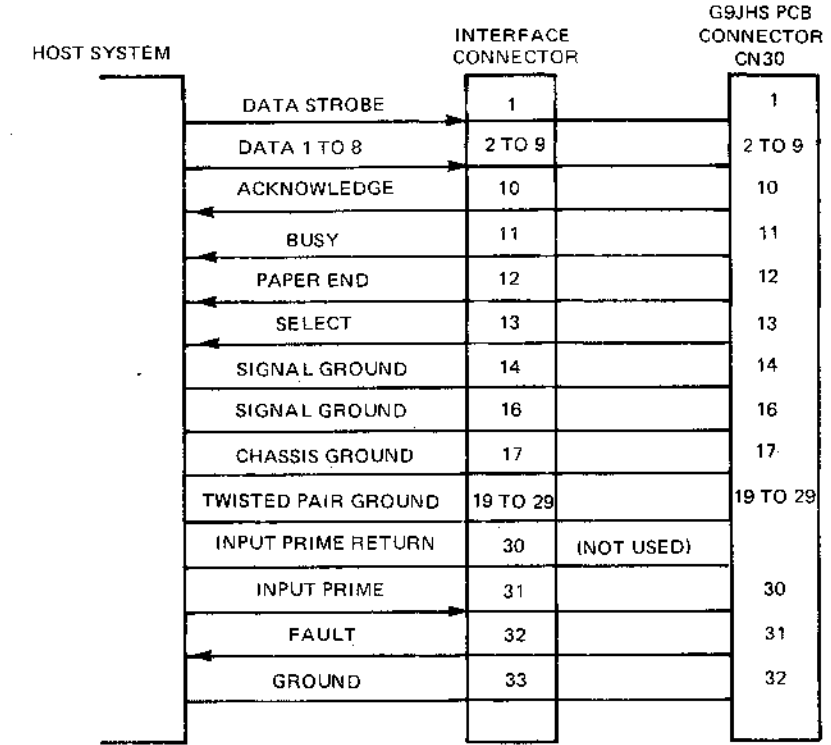


MODELS 7710,7715,7720,7725 INTERFACE CONNECTION DIAGRAM

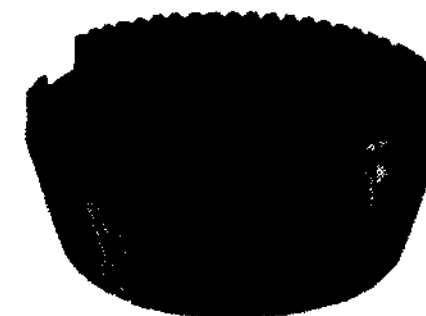


\*USED FOR DIRECT CONNECTION APPLICATIONS ONLY.

MODEL 7730 INTERFACE CONNECTION DIAGRAM







**NEC**

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