



**CONTROL DATA®
CARTRIDGE DISK DRIVE
MODEL 9427H**

**GENERAL DESCRIPTION
OPERATION
INSTALLATION AND CHECKOUT
THEORY OF OPERATION
DIAGRAMS
MAINTENANCE
MAINTENANCE AIDS
PARTS DATA
WIRE LISTS**

MAGNETIC PERIPHERALS INC.
 a subsidiary of
CONTROL DATA CORPORATION

HARDWARE MAINTENANCE MANUAL

PREFACE

This Manual provides the information needed to install, operate and maintain the Magnetic Peripheral Inc. Cartridge Disk Drive (Model 9427H) and is intended to be used as a guide by customer engineers and operators who require detailed information about the Cartridge Disk Drive's operations.

It is written to reflect the recommended service-replacement level of subassemblies and printed-circuit-board level by trained qualified customer engineers.

Certain adjustments must be made under dynamic conditions. If the Field Test Exerciser is not utilized for the adjustments appropriate provisions must be made in the computer system for such dynamic alignments.

Oscilloscope trace representations are typical waveforms. Some minor variations may be observed on individual units in actual practice.

The total content of the Manual is comprised of nine sections, each having a unique publication number, and is contained in one volume. The manual's publication number is that of the Table of Contents and front matter (77614950). This number, along with the unit HPC number, should be used when making reference to the Cartridge Disk Drive Product Manual.

The following table identifies the content of each volume:

	<u>SECTION NUMBER/TITLE</u>	<u>PUBLICATION NUMBER</u>
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*The I/O board documentation, device specification's and option switch setting's are contained in the Hardware Product Configuration (HPC) documentation package. The package is located in front of the product manual.

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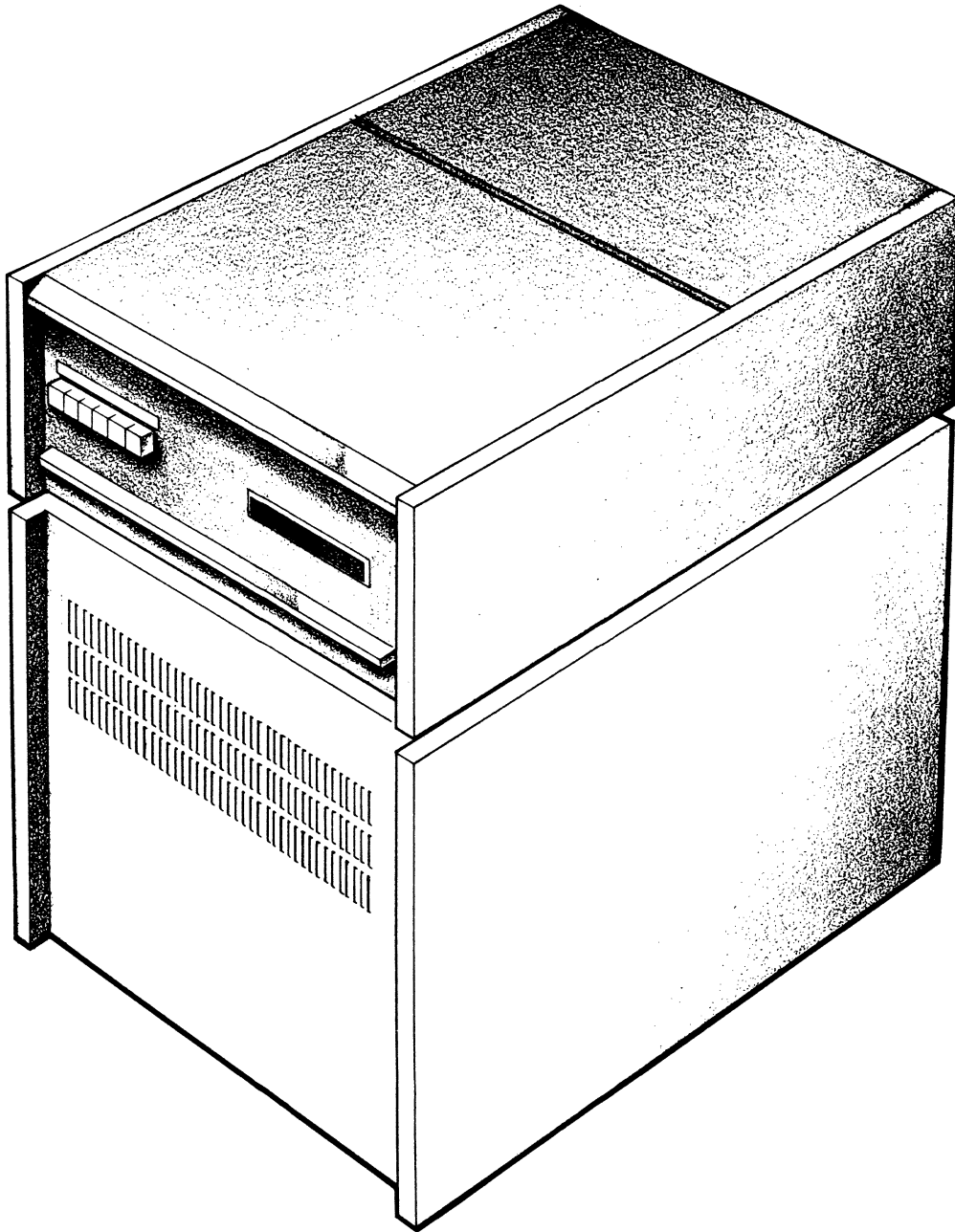


Figure 1-1. Model 9427 Cartridge Disk Drive (Cabinet Mount)

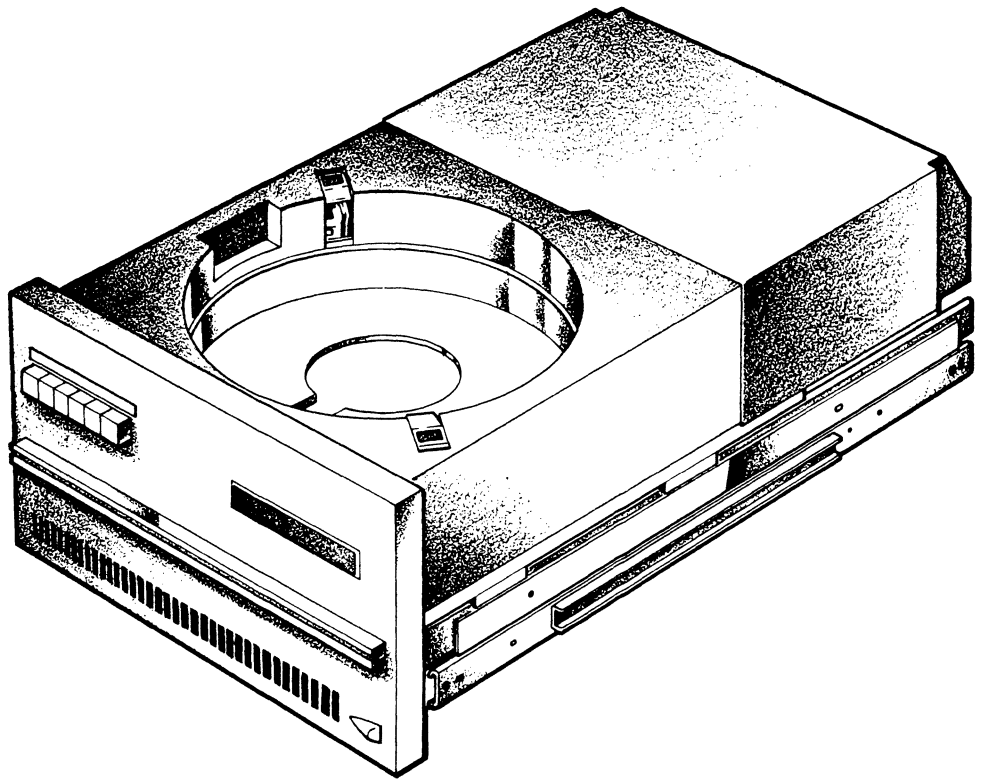


Figure 1-2 Model 9427 Cartridge Disk Drive (Rack Mount)

I GENERAL

1.1 INTRODUCTION

This manual applies to the CONTROL DATA MODEL 9427H Cartridge Disk Drive.

The 9427H Cartridge Disk Drive is designed to interface with and provide peripheral storage capabilities for data processing systems.

1.2 PURPOSE AND USE OF EQUIPMENT

The baseline 9427H is a voice coil actuated cartridge disk drive unit that directs the read/write heads to a desired location on a spinning disk surface, data is written or retrieved by selection of an appropriate head and activating the read/write control circuitry. 9427H uses a single removable disk cartridge, CDC 848 type, and a fixed disk which doubles the data storage capacity.

The 9427H is suitable for mounting in a standard 19-inch (482.6 mm) rack with 10-1/2-inch (266.7 mm) panel space and is also available in a cabinet. The deck contains the voice coil, analog and digital circuit boards in the interface card cage, the power supply power amplifier, the cartridge receiver, the spindle and drive motor, filter, air blower and cooling system.

The 9427H can be configured to utilize single sectored or multisectored cartridges. The read recovery circuitry will allow operation with or without missing clock patterns, frequently found in variable sector formats.

1.3 EQUIPMENT CONFIGURATION

The equipment consists of the Baseline unit and its options.

1.3.1 BASELINE CONFIGURATION

The baseline 9427H includes the following features:

- Power supply, 60/50 Hz 100-250 vac
- Multiple (hard) sectors or soft sector (missing Clock electronic sectoring) capability
- Sector addressing
- 200 tracks per inch
- Write protection
- Daisy chain interface
- Variable interface
- 2400 rpm spindle speed
- Straddle-erase heads
- Elco I/O cable connector

1.3.2 OPTIONS

The options available for the 9427H are as follows:

- Rack mounting
- Cabinet mounting
- 100 tracks per inch
- Fixed disk
- 1500 rpm spindle speed
- Fault (maintenance) board
- Pre-erase heads
- Elco, 3M, Winchester, and Amp I/O cable connector
- Brake Option

1.3.3 DISK FEATURES

- Cartridge Configuration

9427H uses a CDC 848 cartridge or any equivalent cartridge certified for 200 tpi operation or a CDC 847 or any approved equivalent IBM 5440 cartridge for 100 tpi heads.

- Disk Configuration

In addition to the removeable cartridge, the standard 9427H also employs a fixed disk; thereby providing for storage of up to 12 million bytes unformatted and providing a total of 4 recording surfaces.

1.3.4 OPERATIONAL CHARACTERISTICS

Operational characteristics of the 9427H are listed in Table 1-1.

Table 1-1. Operational Characteristics

Characteristics	Values
TRACK DENSITY	100 tip or 200 tpi
ACCESSING TIME	
Maximum access time	60 ms
Track-to-track access time	7.5 ms
Average access time	35 ms
SPINDLE SPEED	2400 rpm or 1500 rpm (+48 -67 rpm
	or +30 -42 rpm with input frequency
	+0.5 -1.0 Hz and input voltage +10%
	-15%)
LATENCY TIME	12.5 ms (at 2400 rpm) (20 ms at
	1500 rpm)
RECORDING	
Mode	Double Frequency
Density (nominal)	1530 bpi (outer track)
	2200 bpi (inner track)
Bit rate (nominal)	2.50 MHz (1.56 MHz at 1500 rpm)
Tracks per cylinder	2 (4 with fixed-disk option)
Cylinders per unit (200 TPI)	406 (numbered 0 through 405)
	408 (numbered 0 through 407, optional)
Cylinder per unit (100 TPI)	203 (numbered 0 through 202)
	204 (numbered 0 through 203, optional)
Sectors	1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 16, 20, 24, 25,
	29, 30, 32, 40, 48, 50, 60, 64 hard or
	missingclock soft sectoring
Units per controller I/O channel	4 maximum, in daisy-chain con-
	figuration
DATA CAPACITY	
Bits per track	62,500 nominal
Bits per cylinder	125,000 nominal (250,000 with fixed-
	disk option)
Bits per unit	50,000,000 nominal (1000,000,000
	with fixed-disk option)
CARTRIDGE DISK	
Disk per cartridge	1
Useable recording surfaces per	2
disk cartridge	

Table 1-1. Operational Characteristics (continued)

Characteristics	Values
Disk surface diameter Recording diameters	14 inches Track 407 (inner), 9.067 in (230.3 mm) Track 0 (outer), 13.137 in (333.7 mm)
Disk surface coating	nominal Magnetic oxide
READ/WRITE HEADS	(Standard CDC ramp-loading straddle erase and pre-erase available)
PHYSICAL (RACK-MOUNTED UNIT)	
Panel height	10.31 inch (261.9 mm) (mounts on 10.5 inch (266.7 mm) centers in relay rack)
Panel width	18.94 in (481.1 mm) (for 19-in (482.6 mm) rack)
Depth	30.63 in (778 mm) (see section 3 for required rack depth)
Weight	140-175 lbs (63.5-79.4 kg)
Shipping Weight	190-225 lbs (86.2-102.1 kg)
PHYSICAL (CABINET MOUNTED UNIT)	
Height	34 inches (863.6 mm)
Width	18.5 inches (469.9 mm)
Depth	29.75 inches (755.7 mm)
Weight	220-255 lbs (99.8-115.7 kg)
Shipping Weight	250-285 lbs (113.4-129.3 kg)
AIR FILTER	0.3 Micron 99%
ELECTRICAL	
Input power source	
60-Hz units	100-250 volts rms in 10-volt increments (+10%, -15%, 59-60.6 Hz, single phase)
50-Hz units	100-250 volts rms in 10-volt increments (+10%, -15%), 49-50.5 Hz, single-phase

Table 1-1. Operational Characteristics (continued)

Characteristics	Values																																		
ELECTRICAL (cont'd)																																			
<p>Input Current</p>	<p>The following current readings are made at 50 Hz and nominal line voltage with accessor performing worst-case (maximum power) repeat seeks.</p> <table border="1" data-bbox="906 659 1308 1226"> <thead> <tr> <th><u>Volts</u></th> <th><u>Amps</u></th> </tr> </thead> <tbody> <tr><td>100</td><td>5.6</td></tr> <tr><td>110</td><td>5.0</td></tr> <tr><td>120</td><td>4.6</td></tr> <tr><td>130</td><td>4.3</td></tr> <tr><td>140</td><td>4.0</td></tr> <tr><td>150</td><td>3.8</td></tr> <tr><td>160</td><td>3.6</td></tr> <tr><td>170</td><td>3.3</td></tr> <tr><td>180</td><td>3.2</td></tr> <tr><td>190</td><td>3.0</td></tr> <tr><td>200</td><td>2.9</td></tr> <tr><td>210</td><td>2.7</td></tr> <tr><td>220</td><td>2.6</td></tr> <tr><td>230</td><td>2.5</td></tr> <tr><td>240</td><td>2.4</td></tr> <tr><td>250</td><td>2.3</td></tr> </tbody> </table> <p>Surge current during spindle start is 2.6 times the above value and lasts 5 seconds.</p>	<u>Volts</u>	<u>Amps</u>	100	5.6	110	5.0	120	4.6	130	4.3	140	4.0	150	3.8	160	3.6	170	3.3	180	3.2	190	3.0	200	2.9	210	2.7	220	2.6	230	2.5	240	2.4	250	2.3
<u>Volts</u>	<u>Amps</u>																																		
100	5.6																																		
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120	4.6																																		
130	4.3																																		
140	4.0																																		
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170	3.3																																		
180	3.2																																		
190	3.0																																		
200	2.9																																		
210	2.7																																		
220	2.6																																		
230	2.5																																		
240	2.4																																		
250	2.3																																		
<p>Power Factor Power (Nominal)</p>	<p>0.8 310 watts, 1050 Btu/hr.</p>																																		
INPUT/OUTPUT CONNECTIONS	<p>Two connectors on the I/O panel at the rear of the unit. Refer to applicable I/O board schematic in HPC Configuration for the pin assignments. A terminator is required if the unit is the last (or only) unit connected to the controller. The terminator consists of DIP-packaged register networks which plug into the I/O board or an optional plug-in terminator.</p>																																		
<p>ENVIRONMENTAL (Operating)</p>	<p>Temperature: 60 to 90°F (15.6 to 32.2° C) with 12°F/hr maximum rate of change Humidity: 10 to 80% (no condensation) Altitude: Zero to 10,000 feet (3048 m)</p>																																		

II OPERATION

2.1 INTRODUCTION

This section provides the instructions and information required to operate the Model 9427H unit.

2.2 CONTROLS AND INDICATORS

Figure 2-1 depicts the locations of the controls and indicators. All switches and indicators are preassembled on a printed circuit board and mounted behind the control panel assembly. The control panel contains separate write protect switches and indicators for fixed and removable disks. ACTIVE (seeking, reading or writing) and READY indicators are also mounted on this panel. A functional description of the controls and indicators is given in Table 2-1.

2.3 OPERATING PRECAUTIONS

The following precautions and practices should be observed while operating unit to obtain best performance and reliability of the equipment:

1. Keep the access door closed to prevent unnecessary entry of atmospheric dust.
2. If a pinging or scratching sound (caused by head-to-disk contact) is heard and persists, stop the unit by using the Stop and Power Down procedure of this section and then call the customer service engineer.

NOTE

Appropriate steps should be taken to safeguard valuable data until the head-to-disk contact can be remedied. Such steps may include leaving the unit powered down, replacing the data cartridge with a scratch cartridge, and/or immediate transfer of the data that is on the fixed disk.

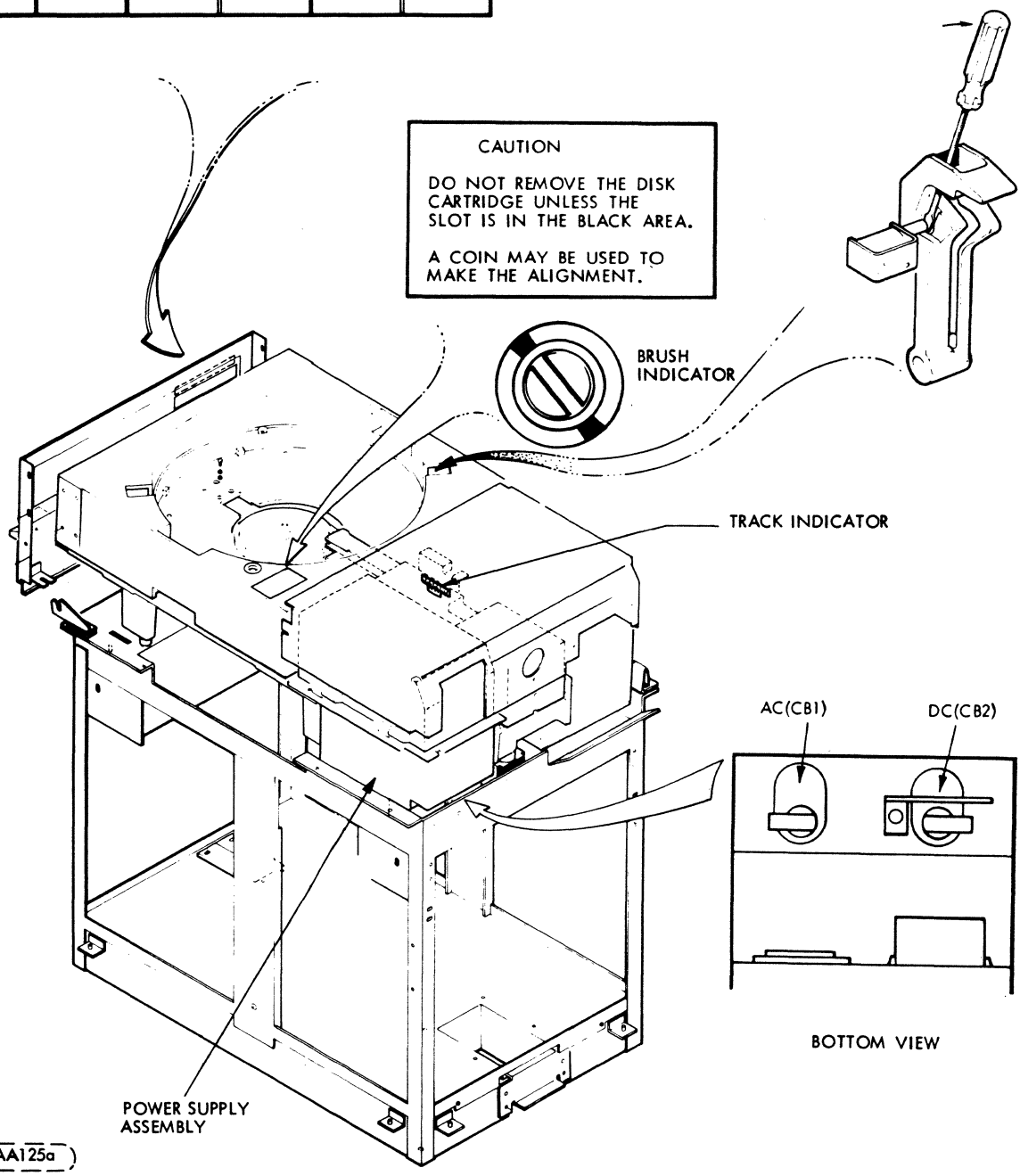
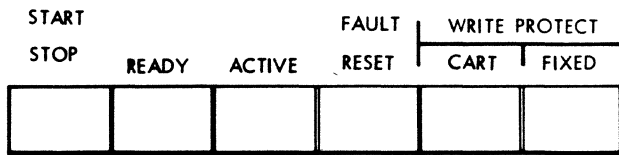


Figure 2-1. Controls And Indicators

Table 2-1 Controls And Indicators

Control or Indicator	Function
Power Assembly	
AC circuit breaker (CB1)	Provides AC power circuit protection, and main power switching.
DC circuit breaker (CB2)	Provides logic (DC) circuit protection.
Power receptacles	Provides connection for input power.
Elapsed Time Meter	Indicates cumulative hours with DC power on.
Voltage Adjust Plug, P12 (Refer to Installation and Checkout Section for adjustment connections)	Provides a means of selecting input voltage to transformer in power supply.
Control Panel	
START/STOP indicator/switch	<p>Start switch energizes spindle motor and initiates the first seek mode provided the following conditions are met:</p> <ol style="list-style-type: none"> 1. Circuit breakers are ON. 2. Disk cartridge cover properly installed. 3. Cartridge hold-down switches are closed. <p>Depressing the alternate action START/STOP switch at any time after the start cycle is initiated will cause the machine to stop unless a Stop Override signal is present from the controller. In this case, the machine will continue to run until the Stop Override signal is removed. (This is to prevent stopping during a read, write, or seek operation.)</p> <p>When the switch is depressed to stop machine, the indicator light remains illuminated until the disk rotation has stopped.</p>

Table 2-1. Controls And Indicators (-contd.)

Control or Indicator	Function
Control Panel	
	<p>The interlock solenoids energize at this time to permit access to the cartridge.</p>
	NOTE
	<p>The first seek mode is completely automatic and requires approximately 65 seconds to complete. The unit can be reset at any time after initiation of the start sequencing. In the event of a potentially damaging fault during this mode, the heads will automatically go into emergency retract and the machine will stop.</p>
READY indicator	<p>Illuminates when the unit is up to speed, the heads are loaded and the unit is ready for use. Extinguished during any fault, emergency retract, or stop operation.</p>
ACTIVE indicator	<p>Illuminates when the unit is actively engaged in any mode, i. e., direct (forward or reverse) seek, return to zero seek or read/write/erase.</p>
FAULT indicator/switch	<p>Indicator illuminates when any fault exists with the exception of a line power failure. In the event of a momentary line power drop, the unit heads will go into an emergency retract and the unit will stop. However, the unit will restart automatically when the power returns to normal. In the event of a non-damaging fault, i. e., more than one head selected, simultaneous read and write and etc., the fault indicator will be illuminated and the unit will report the condition to the controller.</p>

Table 2-1 Controls And Indicators (-contd.)

Control or Indicator	Function
Control Panel	
<p>FAULT indicator/switch (continued)</p>	<p>A Return-To-Zero-Seek command will reset the fault latch and extinguish the fault indicator. The unit can be reset by the FAULT switch if a momentary non-damaging fault has occurred. Pressing the FAULT switch clears the fault logic and extinguishes the indicator. A persistent fault, however, will not permit a reset.</p>
<p>W/PROT CART indicator/switch</p>	<p>This alternate-action switch remains slightly depressed, and is lit when on. When on, writing and erasing of data on the cartridge disk is inhibited.</p>
<p>W/PROT FIXED indicator/switch</p>	<p>This alternate-action switch remains slightly depressed and is lit when on. When on, writing and erasing of data on the fixed disk is inhibited.</p>
Cartridge Receiver	
<p>Brush indicator</p>	<p>Indicates the position of the brush motor.</p> <div style="text-align: center; border: 1px dashed black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>CAUTION</p> </div> <p>Do not remove the disk cartridge unless the slot is in the black area.</p> <p>A coin may be used to make the alignment.</p>
Carriage Assembly	
<p>Track indicator</p>	<p>Vernier scale located on the side of the carriage over read/write heads (see Figure 2-1). Readable only when electronics cover is removed. Movable zero mark identifies hundreds and tens digits of track number. The coincident moveable vernier identifies the units digit of the track number.</p>

3. To prevent damage and/or data loss, follow the Disk Cartridge Installation procedure of this section.
4. The operator should not attempt to override any interlocks in the system.

2.3.1 POWER UP FOR ON-LINE OPERATION

NOTE

Steps 1, 2 and 4 to be performed by maintenance personnel only.

1. Verify connection of all power and I/O Cables.
2. Verify installation of properly jumpered voltage adjust plug, P12 (see Section III for jumper information).
3. Verify that START/STOP switch is in STOP position (out).
4. Actuate AC circuit breaker, CB1, (rear of power supply assembly) and verify operation of blower motor. Actuate DC circuit breaker CB2.
5. Install disk cartridge in accordance with Disk Cartridge Installation procedure.
6. Depress START/STOP switch and verify START/STOP indicator illuminates.
7. Verify that FAULT indicator remains off.

NOTE

If FAULT indicator illuminates perform step 1 through 3 of Fault Operating Instruction Paragraph 2.4.

8. Approximately 65 seconds after START/STOP switch is depressed, READY is sent to the controller and the READY indicator illuminates. Disk drive is now ready to receive Seek, Read, Write and Erase commands from controller.

2.3.2 WRITE PROTECT

Write protection can be initiated either by the operator or controller.

- a) Operator Initiated Write Protect - Depress desired W/PROT switch (W/PROT CART or W/PROT FIXED) and verify that appropriate W/PROT lamp illuminated. Selected disk is now protected against controller Write or Erase command.
- b) Controller Initiated Write Protect (optional) - A disk may be protected by the controller itself providing that the Unit Select and Write Protect lines are active. Whichever disk is selected by the high-order Head Select line will then be protected from Write or Erase commands.

2.3.3 STOP AND POWER DOWN

Disk drive can be stopped by front panel switches provided STOP OVERRIDE is not commanded by controller.

NOTE

In the event STOP OVERRIDE is commanded when the START/STOP switch is depressed to STOP, the disk drive will continue operating. When STOP OVERRIDE is dropped by the controller, the unit will execute a normal stop sequence.

1. Depress START/STOP switch and verify the following actions occur:
 - a. READY lamp extinguishes and controller Ready goes off.
 - b. START indicator extinguishes and pack locks open after spindle stops rotating.
2. Remove Cartridge (if desired) in accordance with Disk Cartridge Removal (Normal) procedure.

NOTE

Step 3 to be performed by maintenance personnel only.

3. Set main circuit breaker CB1 of "off".

2.4 FAULT OPERATING INSTRUCTION

If FAULT indicator illuminates during operation or power up proceed as follows:

1. Depress FAULT switch. If lamp extinguishes, normal operation can be resumed. If FAULT lamp remains illuminated, proceed to step 2.
2. Depress START/STOP switch to STOP and allow spindle to stop rotating, then depress START/STOP switch to START. If FAULT lamp extinguishes, normal operation can be resumed. If lamp remains illuminated proceed to step 3.

3. Power down equipment in accordance with Stop and Power Down procedure. Call customer service engineer.

2.5 INPUT/OUTPUT LINES

Complete operations of the disk drive with the exception of power up, power down and start/stop can be performed by the controller. Input/Output signals exchanged between disk drive and controller and their functions are explained in Table 2-2.

2.6 DISK CARTRIDGE HANDLING AND STORAGE

The following practices should be observed when handling or storing disk cartridges. Refer to the manufacturer's instructions for more detailed maintenance and cleaning instructions, or refer to section 6 of this manual.

1. The cartridge dust cover should be on the cartridge while it is out of the disk receiver. This will insure a positive dust seal and immobilize the disk inside.
2. Cartridges can be stored flat or on the edge. Several can be stacked on top of one another. However, undue heavy loading should be avoided.

2.7 DISK CARTRIDGE INSTALLATION

The disk cartridge must be stored in the same environment as the Model 9427H for 60 minutes immediately preceding its use. Make certain disk cartridge has been cleaned and maintained in accordance with accepted preventive maintenance procedures. Refer to Figure 2-2 for the following procedure.

1. Raise cartridge access door on cabinet.

NOTE

Power must be on and START/STOP lamp must be off to release lock on hold-down arms.

2. Pull back hold-down arms.
3. To separate dust cover from the disk cartridge, hold cover release button to left while lifting cartridge handle.
4. Disengage dust cover from disk cartridge. Set cover aside.

CAUTION

Do not make abusive contact between the disk cartridge and the spindle. Make certain that the read/write heads are fully retracted and the disk cleaning brushes are completely out of the cartridge area. Remove any dust from magnetic chuck.

Table 2-2 Input/ Output Lines

Signal	Function
Input Lines	
CYL STR (Cylinder Strobe)	Gates the cylinder address into the unit. The contents of the cylinder address lines are valid only when the Cylinder Strobe is true.
CYL AD/0 - CYL AD/8 (Cylinder Address Bits $2^0 - 2^8$)	Nine lines that carry the cylinder address to the track address when gated by the Cylinder Strobe.
RTZS (Return to Zero Seek)	Causes carriage to return to cylinder 000.
HS/0 - HS/1 (Head Select)	Selects one of the two recording heads (two lines for four heads with fixed disk option). The line(s) contain the binary address of the desired head and must be held constant during a read or write operation.
Wr (Write Data/Clock)	Transmits double frequency encoded data and clock signals to the unit.
Write Gate	Enables write current during a write operation.
Erase Gate	Enables the erase current during a write operation.
Read Gate	Enables read data and clock information during a read operation.
Unit Select	Four select lines (one per unit) are used to select a unit to be accessed. The appropriate lines must remain active during any exchange with the controller, except when monitoring interrupts such as seek complete or seek error lines. A unit may be continuously selected for test purposes by actuating the desired Unit Select switch (SW1-1 through SW1-4) on the I/O board.
Wr Prot (Write Protect)	Prevents accidental destruction of previously written data by never allowing write or erase current to be on when write protect line is true.

Table 2-2. Input/Output Lines (-contd.)

Signal	Function
Input Lines	
Stop Ov (Stop Overri de)	After the unit has been started, a STOP OVERRIDE command along with UNIT SELECT will maintain the unit in a selected ON-LINE condition until the UNIT SELECT falls, even if the front panel START/STOP switch is set to STOP.
Output Lines	
On Cyl (On Cylinder)	Indicates that heads have reached the desired address. The On Cylinder condition will also be indicated when a seek error occurs.
Rd Data (Read Data)	Transmits digital information read from the disk to controller.
Rd Clk (Read Clock)	Carries clock signals read from the disk.
Index	Provides a sector 0 reference pulse from the unit to the controller. This pulse occurs once for each revolution of the disk.
Sector	The gated sector is from the cartridge if heads 0 or 1 are selected and is from the fixed disk (if installed) when heads 2 or 3 are selected. Two separate sector transducers are used as in the case of index and only one driver is used.
Skerr (Seek Error)	Indicates that the unit was unable to complete a seek operation. A RTZS command from the controller clears the Seek Error condition and returns the heads to cylinder 00.
Ad Int. (Address Interlock)	Indicates that illegal address has been sent.
Ad Ack (Address Acknowledge)	Indicates that address received is legal.

Table 2-2. Input/Output Lines (-contd.)

Signal	Function
	Output Lines
Fault	<p>Indicates that the unit has one or more fault conditions. Write and erase currents are inhibited by the presence of any of the following conditions:</p> <ol style="list-style-type: none"> 1. More than one head selected. 2. Read and Write gates true at the same time. 3. Read and Erase gates true at the same time. 4. Erase and no write driver on. 5. Write and no erase driver on. 6. Write, or erase gate and not On Cylinder. 7. Low voltage situation that could cause a loss in control of write and erase currents. 8. Fixed disk heads are selected with no fixed disk option installed. 9. Emergency retract condition.
Ready	<p>Present if the disk cartridge is installed, spindle motor speed, heads loaded, DC voltages within margin, no fault condition exists, unit selected, and terminator is present and has power.</p>
Wr Stat	<p>Indicates the unit is inhibited from writing on the Disk. This signal is present whenever the control panel WRITE PROTECT switch is on and the associated disk is selected, or when the controller Write protect is true.</p>
SA/0 - SA/5 (Sector Address)	<p>Six lines that carry the sector address for the selected disk.</p>
Density (optional)	<p>When negative true, the unit is operating in a 200 tpi mode; when not, unit is operating in 100 tpi mode.</p>

5. Place disk cartridge onto spindle hub (ensure head opening is toward read of machine).
6. Rotate cartridge slowly back and forth until cartridge detents.
7. Push handle down to seat cartridge.
8. Place dust cover (removed in step 4) open end down over cartridge.
9. Position hold-down arms over cartridge and dust cover.
10. Close cartridge access door.
11. Press START/STOP switch to apply power to spindle motor.

NOTE

If the spindle motor will not rotate, disk cartridge is not installed properly.

2.8 DISK CARTRIDGE REMOVAL

2.8.1 NORMAL REMOVAL

Refer to Figure 2-2 for the following procedure.

1. Depress START/STOP switch to STOP (in).
2. Raise cartridge access door after START/STOP indicator extinguishes.

CAUTION

If START/STOP lamp is still illuminated after 2 1/2 minutes and brushes are not fully retracted (brush indicator not retracted position) contact the Customer Engineer.

3. Pull back hold-down arms (arms will not move until cartridge is stopped).
4. Remove cartridge dust cover.
5. Push and hold cover release button to left with thumb and lift cartridge handle.
6. Lift cartridge clear of spindle.
7. Place dust cover in position on cartridge and fold over top handle.

NOTE

The handle may be swung out to carry the cartridge, but do not push the cover release button.

8. Close access door if another cartridge is not to be installed.

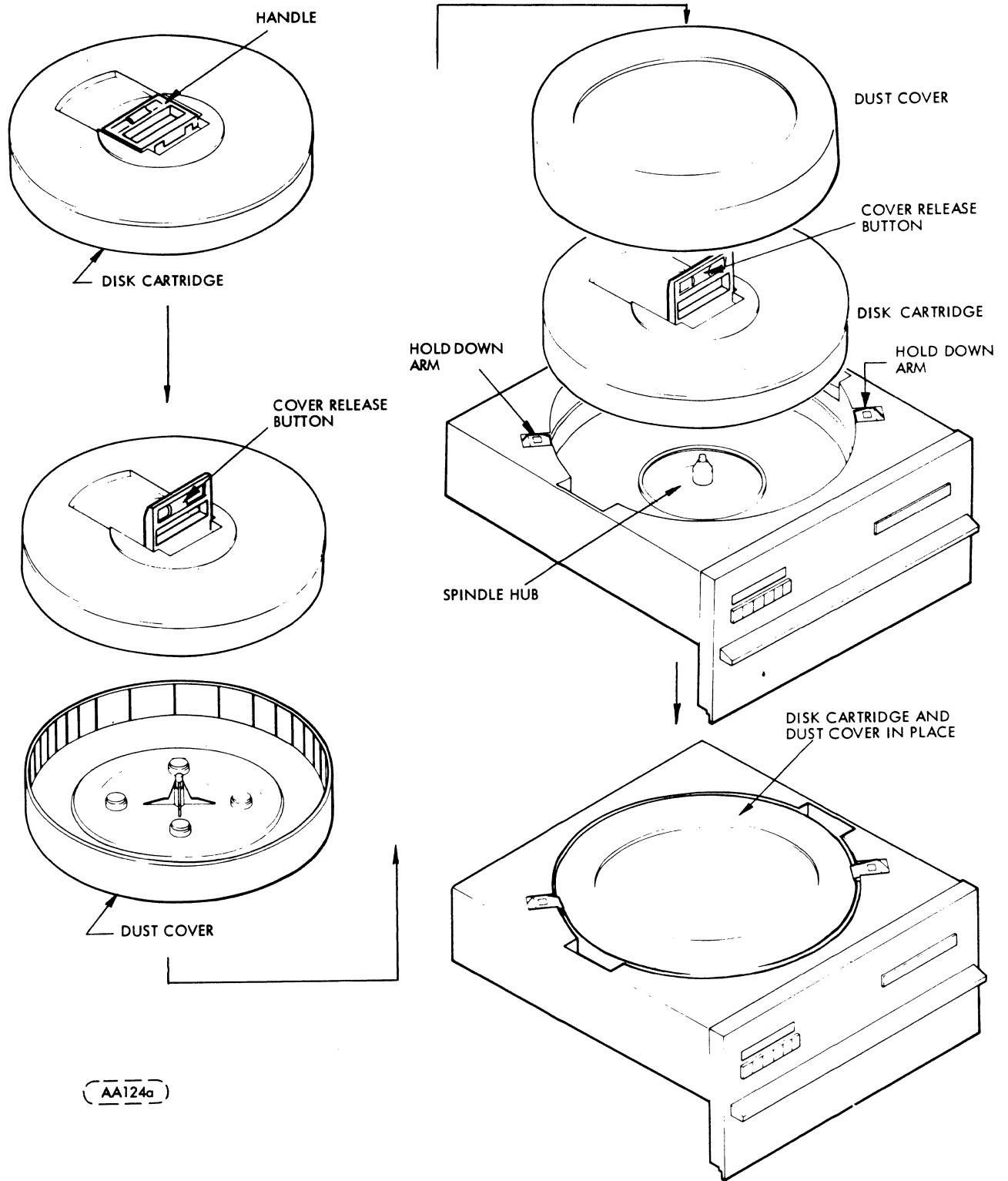


Figure 2-2 Disk Cartridge Installation

2.9 POWER FAILURE OR EMERGENCY STOP REMOVAL

Refer to Figure 2-2 for the following procedure.

NOTE

This procedure to be performed only by the Customer Engineer.

1. Wait approximately 3 minutes for cartridge to stop spinning.
2. Raise cartridge access cover.

CAUTION

If START/STOP lamp is not extinguished after waiting 3 minutes and brushes are not fully retracted, open top cover, and manually retract heads and brushes.

3. Release pack locks by inserting a flat head screwdriver (or similar object) into hole on top of pack lock. Press solenoid plunger into solenoid and tilt pack lock, (See Figure 2-1).
4. Remove cartridge dust cover.
5. Push and hold cover release button with thumb and lift cartridge handle.
6. Lift cartridge clear of spindle.
7. Place dust cover in position on cartridge and fold over top handle.

NOTE

The handle may be swung out to carry the cartridge but do not push the cover release button.

8. Close the access door if another cartridge is not to be installed.

III INSTALLATION AND CHECKOUT

3.1 INTRODUCTION

This section provides the information and procedures necessary to install and check-out the 9427H disk drive.

3.2 UNPACKING

During unpacking, exercise care so that any tools being used do not cause damage to the drive. As the drive is unpacked, inspect it for possible shipping damage. All claims for this type of damage should be filed promptly with the transporter involved. If a claim is filed for damages, save the original packing materials.

After the drive is unpacked perform the following procedure:

1. Clean the unit thoroughly.

CAUTION

While performing the following steps do not position the carriage manually. Such action could cause the Read/Write heads to load, causing damage to the heads and disk.

2. Remove four shipping brackets (5 pieces), cabinet mount only.
3. Remove three mounting bolts securing unit to plywood base, rack mount units only.
4. For those units that require AC and DC ground connected during shipping but separate during operation, , remove green jumper wire on rear of unit. Jumper wire is connected between AC ground on power supply and electronics cover below velocity transducer cap.
5. Remove electronics cover.
6. Remove the carriage lock pin and store it on the magnet as shown in Figure 3-1.
7. Re-install electronic cover.

3.3 SPACE ALLOCATION

Figures 3-2 and 3-3 show base cabinet and rack mount unit overall dimensions for determining space allocation.

3.4 LEVELING AND ALIGNING BASE CABINET UNIT

Position the cabinet in its operational location and level as follows:

1. Install jack screws provided in plastic container.
2. Lower jack screws in base cabinet until casters no longer contact floor.
3. Adjust jack screws as necessary until unit is level.

3.5 INSTALLATION OF RACK MOUNT SYSTEM WITH GRANT SLIDES

The Grant slides are constructed of a stationary channel, two inner telescoping channels, plus a fourth and innermost channel attaching to the unit. The attaching hardware and loose unit parts mentioned in the following steps make up an installation kit that is shipped with the unit. As a further item of identification, the installation kit for units equipped with Grant slides includes a round knob and a twist rod assembly that must be added to the unit as a means of latching it into the rack cabinet.

1. Remove unit from machine pallet shipping support as instructed.
2. Remove left and right red shipping standoffs from base casting.
3. Install pre-assembled side rails A and B as shown in Figure 3-4 with hardware packet provided. At this point, it is recommended that the unit be turned on its side on the foam shipping cushion for easier installation access.

CAUTION

Mounting hardware must be installed in sequence shown for proper electrical isolation of unit.

4. Adjust rack so that the dimensions correspond to those shown in Figure 3-5. Adjust the distance between front and rear slide mounting brackets to correspond to dimensions in Figures 3-5.
5. Install the slide assemblies into the rack at the desired height using twelve 10-32 x 5/8 inch (15.9 mm) screws (19), four washer plates (18), and twelve 10-32 hex machine nuts (20). Install the screws through the brackets and washer plates into the holes in the vertical rails of the rack and then install the nuts on the other side of the rails. Reference: Figures 3-6 and 3-7.
6. Make sure the slides are horizontal and equidistant from the base of the rack.

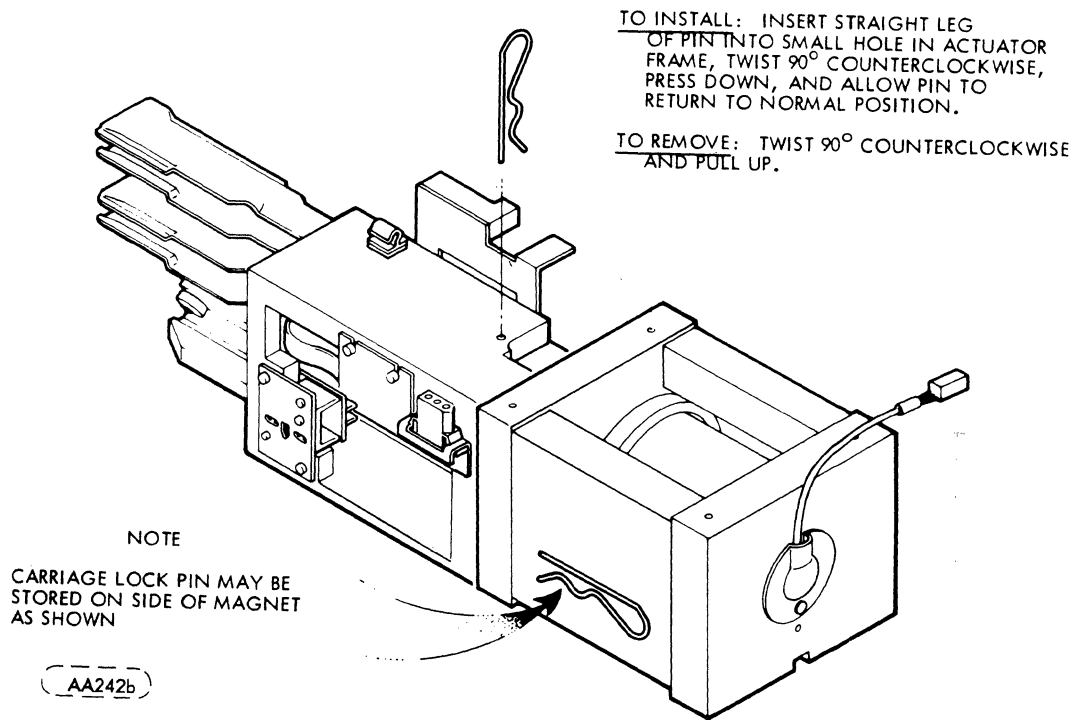


Figure 3-1. Carriage Lock Pin Location

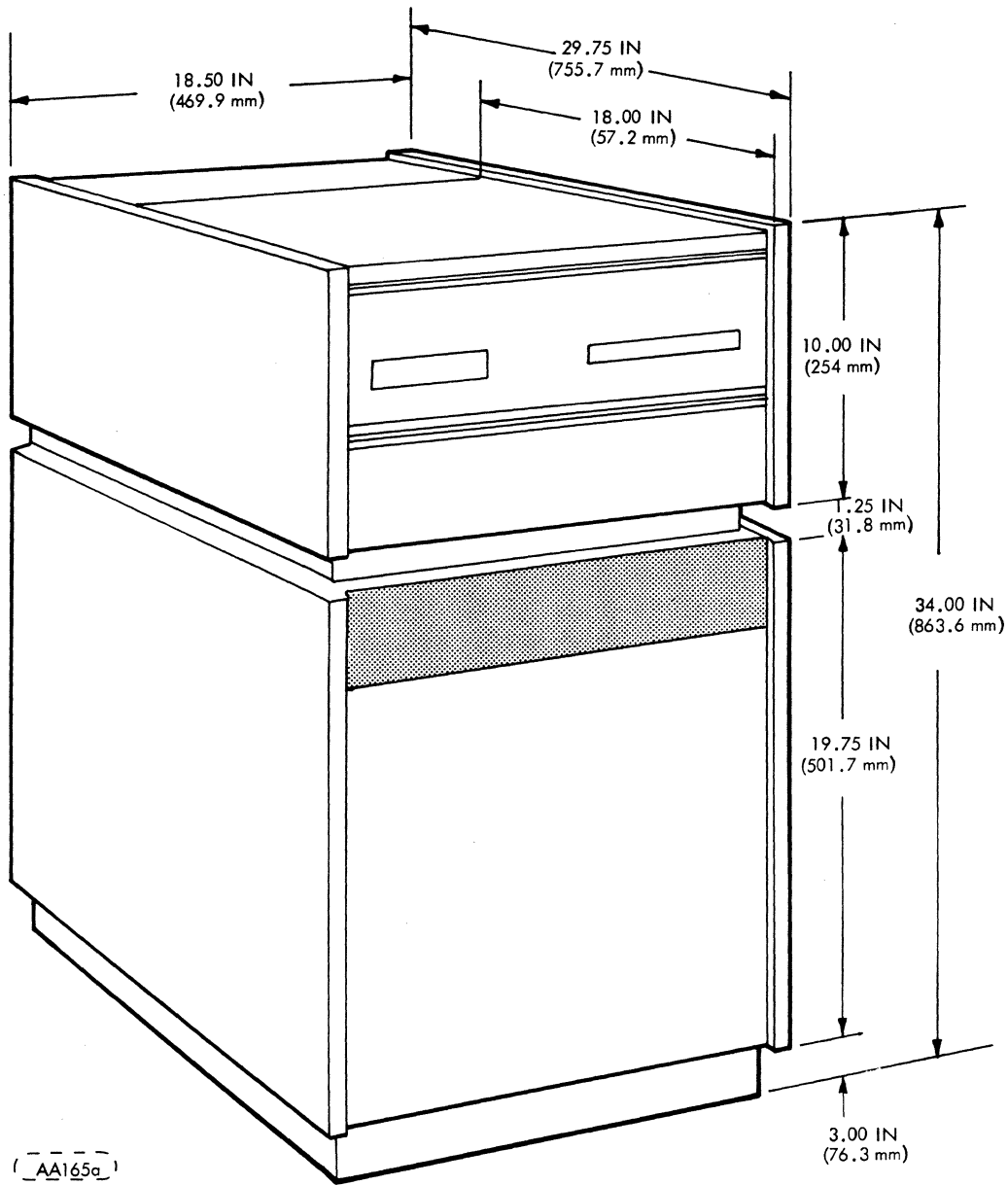


Figure 3-2. Base Cabinet Dimensions

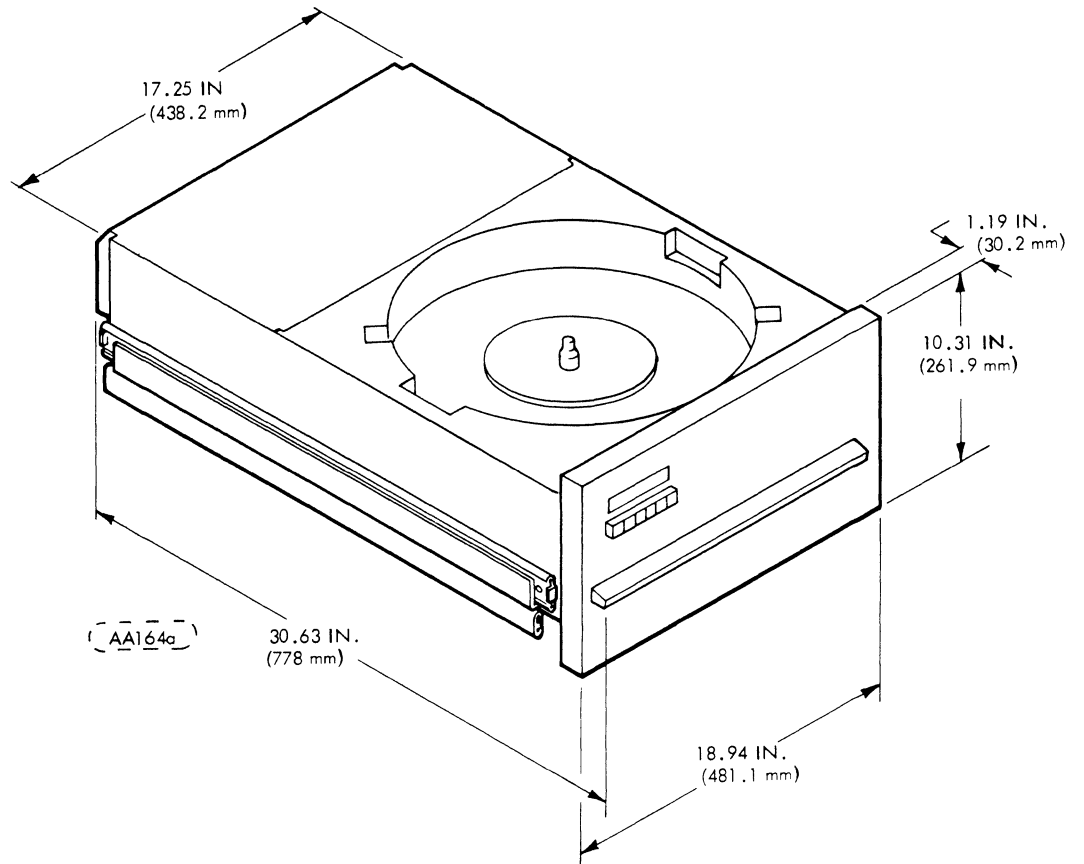


Figure 3-3. Rack Mount Unit Overall Dimensions (Grant Slider Attached)

7. Adjust the width across the outsides of the slides to be 17.75 to 17.80 inches (450.9 to 452.1 mm). If the rack construction does not allow this dimension to be held, then the optional (Accuride) rack mount system must be used (see Figure 3-5.)
8. Push the slide assemblies to the fully retracted position in the rack and then extend the inner section of the slides at least three inches (76.2 mm). While the inner section is held in this position, lift the 9427H unit and push it into the slides (see Figure 3-6).
9. Once the drive is pushed most of the way into the slides, pull it out of the rack approximately six inches (152.4 mm). Adjust the inner slide channel horizontally so that the retaining screws can be tightened. Tighten the retaining screws securely (see Figure 3-6.)
10. Pull the unit to full extension (approximately 30 inches or 762 mm), and insert the threaded end of the twist rod through the hole near the lower right-hand corner of the unit's front panel. Then attach the pre-assembled pivot bracket to the power supply support with hardware packet provided. (See Figures 3-8 and 3-9).
11. Install the knob assembly on the threaded end of the twist rod and adjust the location of the pivot bracket for correct operation of the latch.

NOTE

Approximate location for the pivot bracket is obtained by measuring the distance from the front edge of the front mounting rails (rack) to the machined notch in the bottom rear of the stationary portion of the slide. The pivot bracket is then adjusted forward or backward until this dimension is duplicated between the rubber bumper on the back of the front panel and the forward edge of the latch block arm. Exact location is where the latch easily engages and snugly holds the unit into the rack. Secure hardware.

12. Determine whether the installation requires use of a cable fender **(11)** at the rear of the unit. This fender is for the purpose of holding cables away from the ventilation outlet opening in the power supply and is not required if no cables threaten to encroach on the opening.
13. If required, install the fender of Step 12 using hardware provided. Fender should be attached to the electronics cover on either side of the power supply ventilation outlet (See Figure 3-9).

CAUTION

The cable fender must not be used as a handle. It will break off!.

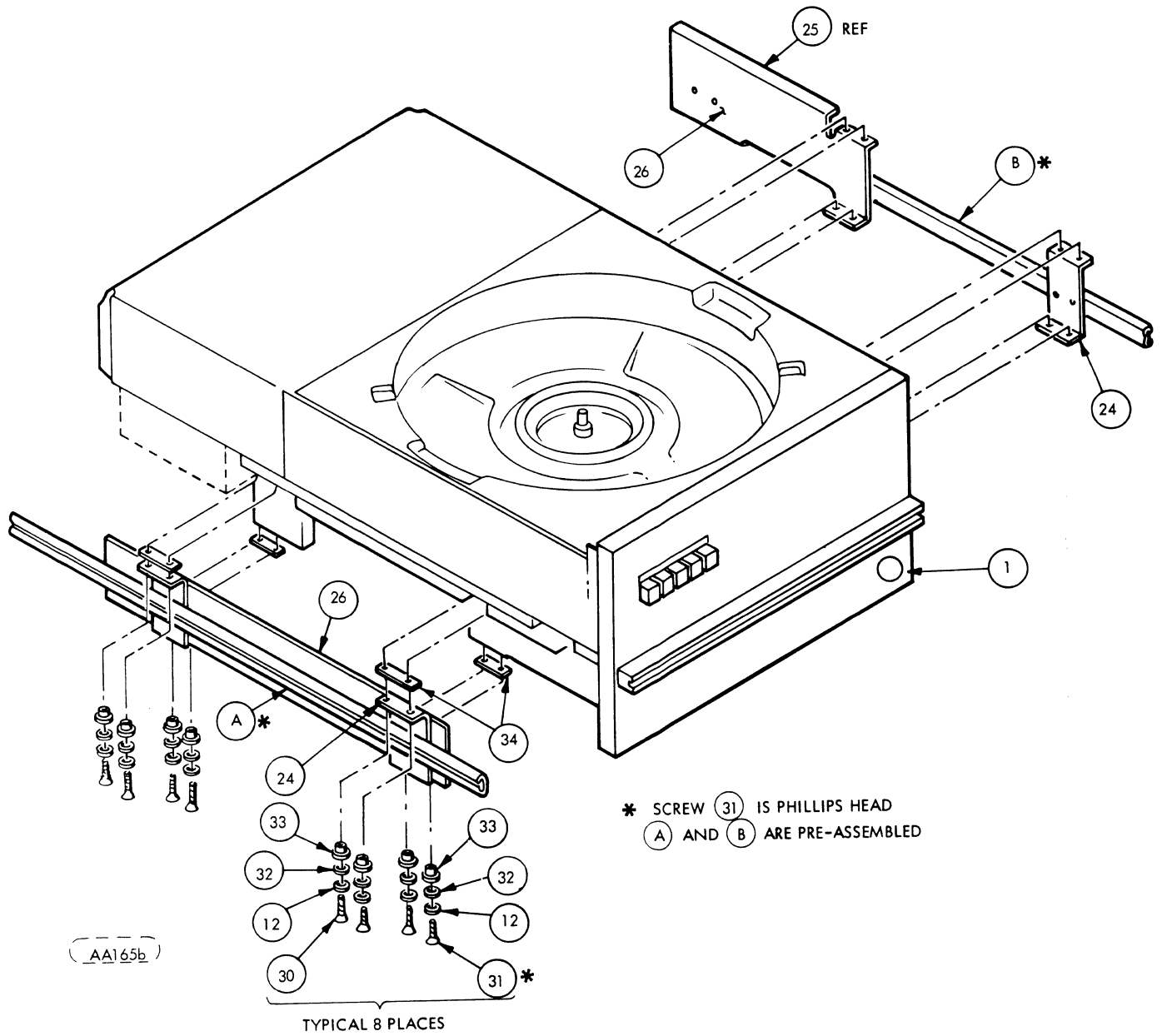
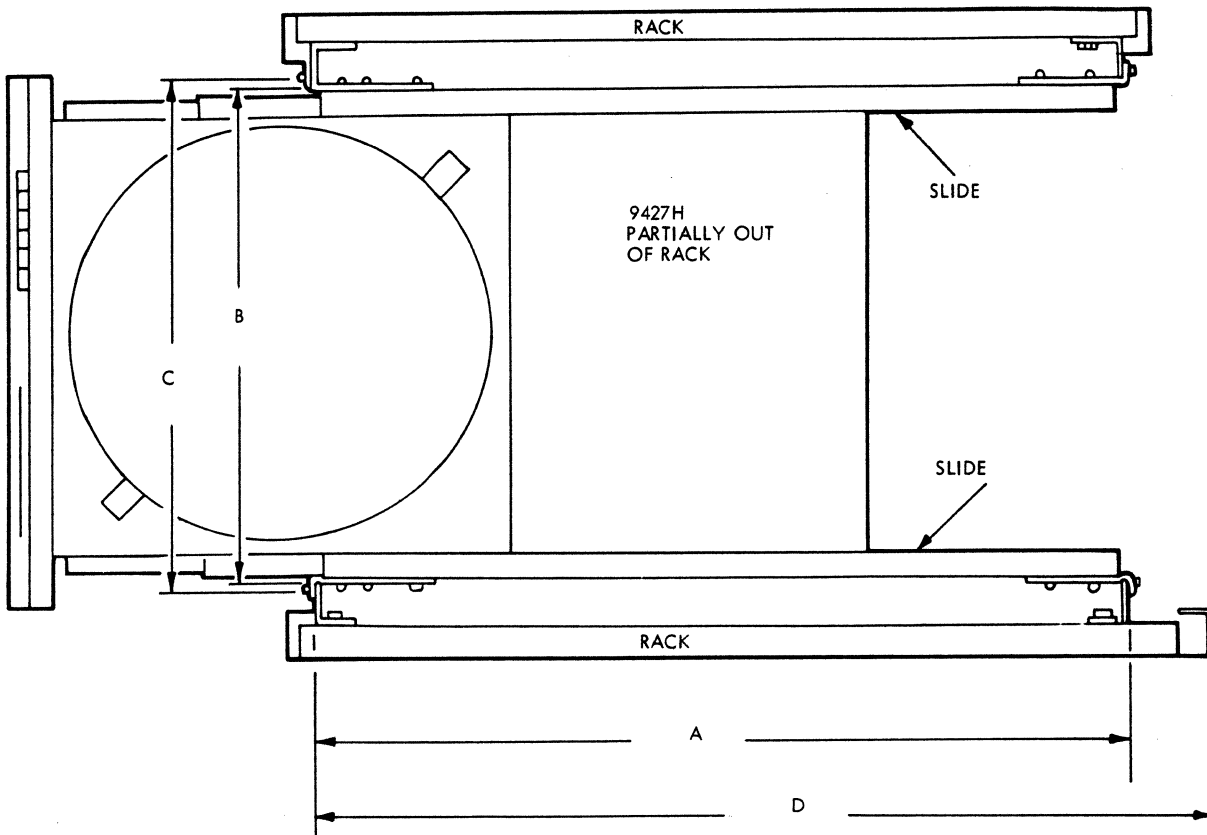


Figure 3-4. Side Rail Mounting



	GRANT SLIDES	ACCURIDE SLIDES
A. DISTANCE FROM FRONT MOUNTING RAILS TO REAR MOUNTING RAILS	28.50 - 29.00 IN. (724-737 mm)	21.25 - 22.12 OR 27.50 - 28.50 IN. (540-562 OR 699-724 mm) *
B. MINIMUM CLEARANCE BETWEEN MOUNTING RAILS (FRONT AND REAR)	17.75 IN. (451 mm)	17.625 IN. (447.7 mm)
C. DISTANCE BETWEEN MOUNTING HOLES (FRONT AND REAR)	18.31 - 18.51 IN. (465-470 mm)	17.86 - 18.56 IN. (454-471 mm)
D. MINIMUM LENGTH OF CABINET FROM FRONT MOUNTING RAILS (CABLE AND CONNECTOR CLEARANCE)	30.10 IN. (765 mm)	30.10 IN. (765 mm)

*These limits may be increased by 1.00 IN. (25.4 mm) on the high ends, but the slide extension will be correspondingly reduced.

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Figure 3-5. Rack Mount Slides Dimensions

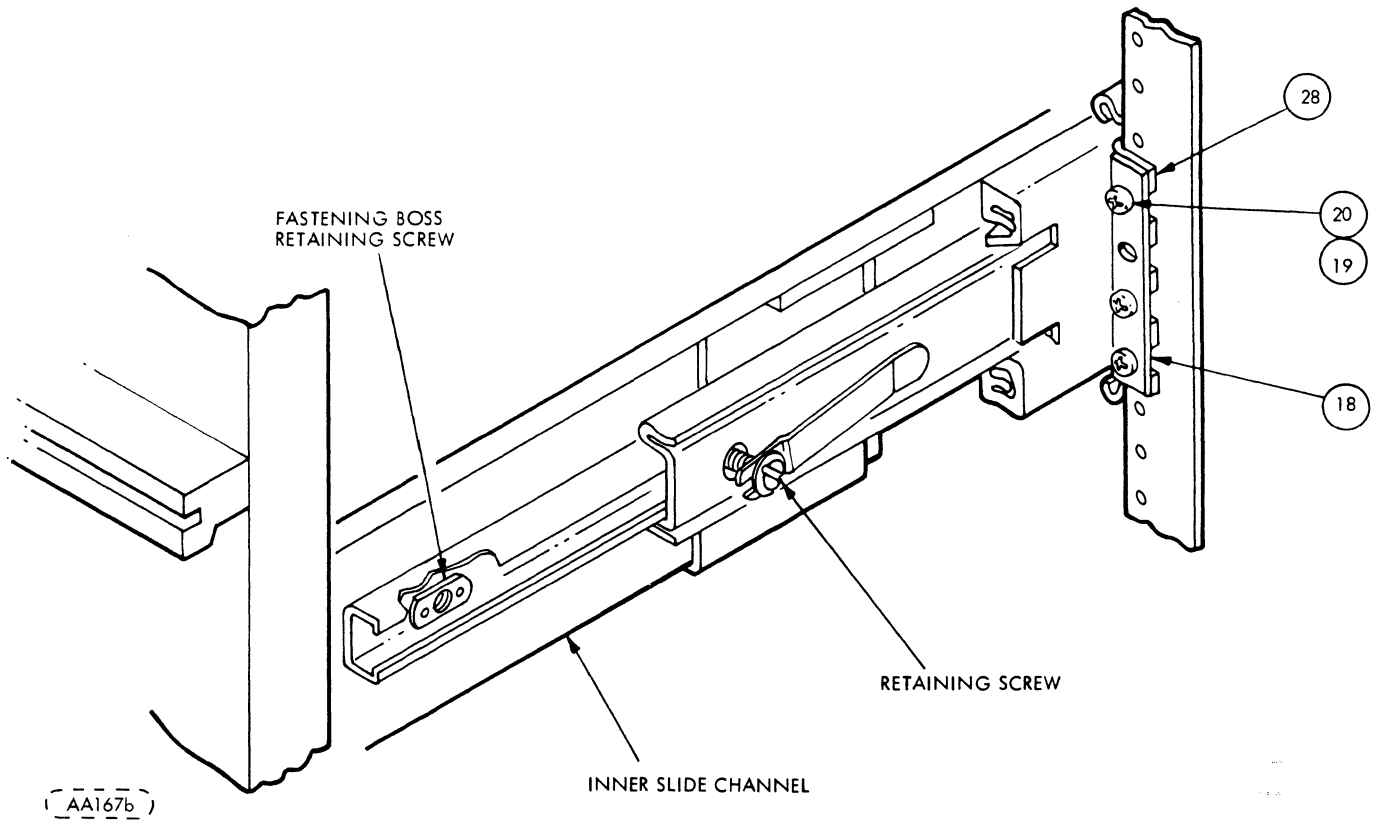


Figure 3-6. Inner Slide Extension Front Mounting Bracket

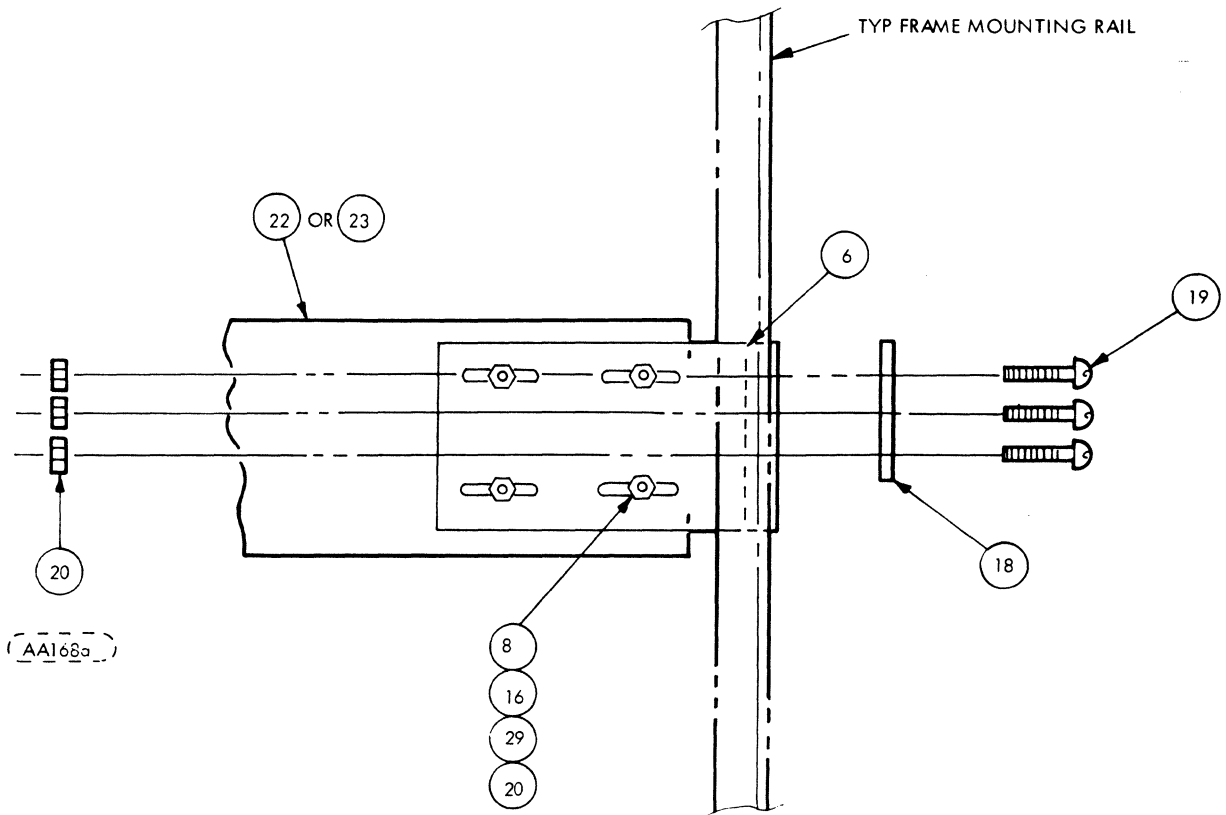


Figure 3-7. Rear Mounting Bracket

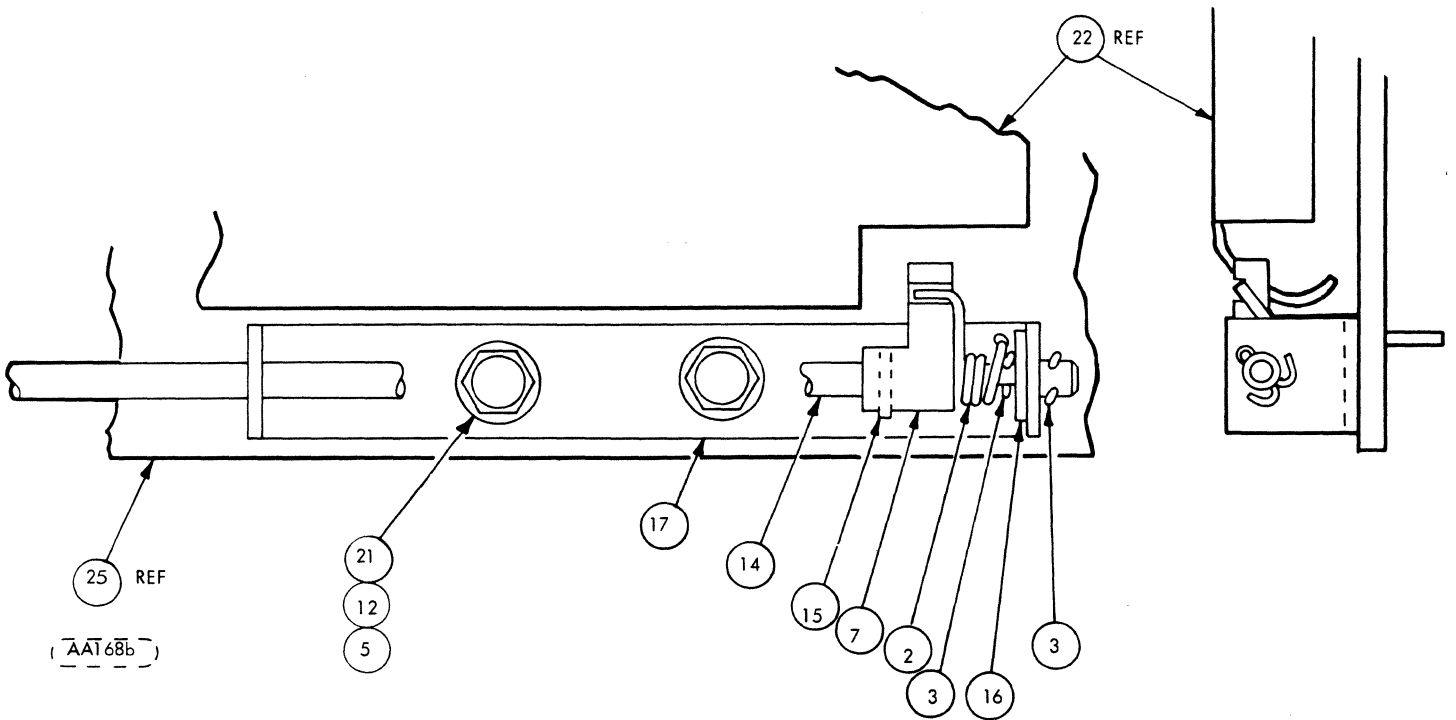


Figure 3-8. Pivot Bracket and Latch Assembly

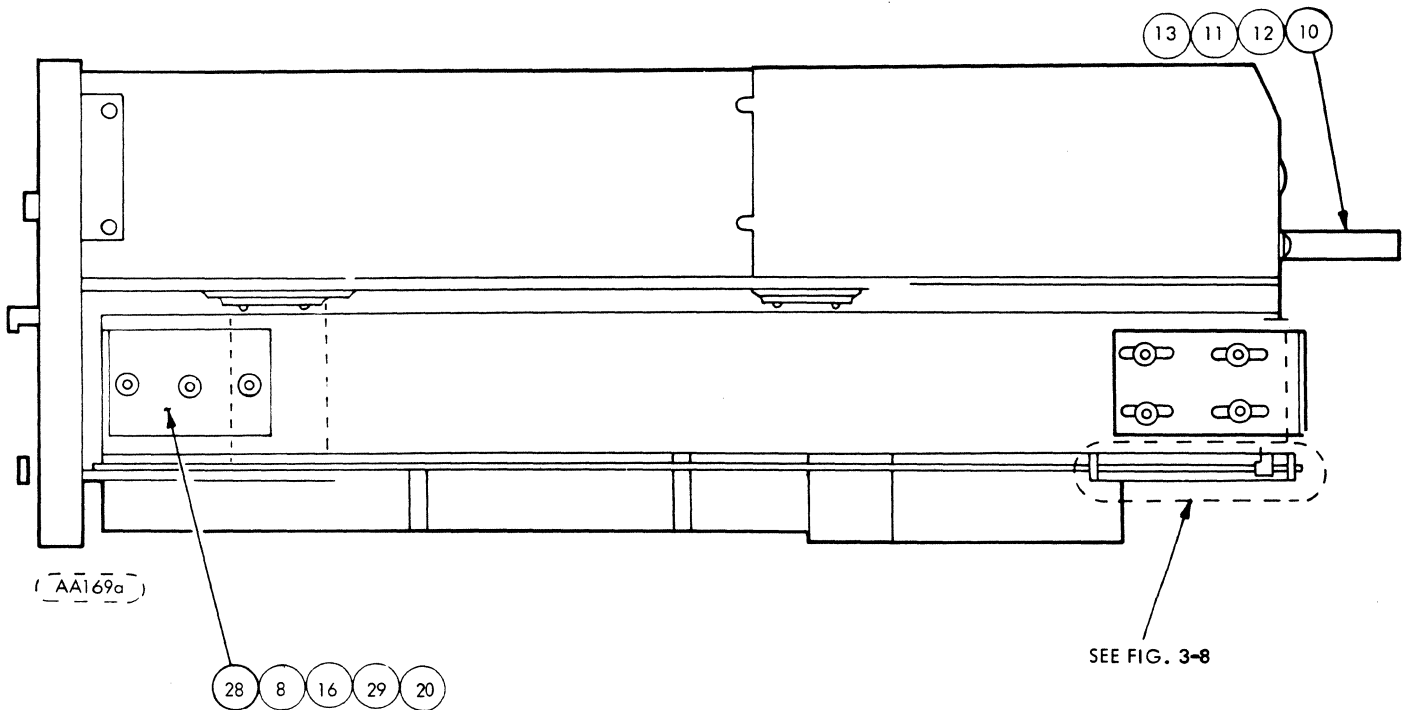


Figure 3-9. Right Side Rack Mount & Cable Fender

3.6 INSTALLATION OF RACK MOUNT SYSTEM WITH ACCURIDE SLIDES

The Accuride slides are constructed of three longitudinal members forming two pairs of telescoping channels, one pair above the other. The intermediate member is a vertically double channel, such that it constitutes the moving member of the lower pair of channels as well as the stationary member of the upper pair. The slide and bracket assemblies plus attaching hardware and loose unit parts mentioned in the following steps make up an installation kit that is shipped with the unit. As a further item of identification, the installation kit for units equipped with Accuride slides includes a triangular or wedgeshaped knob that must be added to the unit as a means of releasing the latch mechanism that secures the unit into the rack.

1. Install plastic slide mounts item (18) and plastic keyed slide mounts item (19) at the sides of the unit as shown in Figure 3-10. Mounting hardware for each of these items consists of two 8-32 x 5/8 inch (31.8 mm) pan head machine screws (4) and two No. 8 internal tooth lock washers (8). Place item (26) on ribbon cable directly behind keyed slide-mount on unit's left side.

NOTE

For correct orientation of the unkeyed mounts, the V Groove channels in the mounts should open downward. The flat side of the keyed mounts should be inboard and pointing downward, see Figure 3-10.

2. Install plastic stabilizers item (20) at the sides of the unit as shown in Figure 3-10. Mounting hardware for each of these items consists of two 8-32 x 1/2 in. (12.7 mm) pan head machine screws (24), two No. 8 internal tooth lock washers (8), and two No. 8 flat washers (17).

NOTE

The stabilizers should be mounted with their key extending downward. Leave the stabilizers slightly loose at this time.

3. Adjust the rack so that the dimensions correspond to those shown in Figure 3-5.
4. Adjust and secure the front mounting brackets such that the front of the flange of the bracket is flush with the front end of the slide.

NOTE

If necessary, the flanges may be located as much as one inch (25.4 mm) ahead of the slide ends in order to accommodate certain rack dimensions. Maximum extension of the unit out of the rack will be correspondingly reduced, however.

5. If necessary to meet cabinet dimensions, reverse the orientation of the rear mounting brackets of the slides. Adjust and secure the rear mounting brackets to agree with dimension "A" as set up in Step 3. In all cases, make sure that the white plastic button in each front bracket is inserted in one of the two holes provided that will be on top when bracket installation is complete. (The plastic button acts as a bearing between the stationary and moving parts of the slide. If necessary, remove buttons from incorrect holes and insert into the proper holes.)
6. Install the slides into the rack cabinet at the desired location (see Figure 3-5), making sure the slides are horizontal and equidistant from the base of the cabinet. Position the slides in the rack so that the distance between the insides of the uppermost sections of the slides is 16.45 ± 0.030 inches (418 ± 0.76 mm).

NOTE

The correct mounting hardware for the above step is twelve 10-32 x 5/8 inch (15.9 mm) pan head screws (6), twelve No. 10 flat washers (7), twelve 10-32 hex machine nuts (1), and twelve lock washers (21). Install the screws through the brackets and washers into the vertical rails, and then install nuts and lockwashers on the other side of the rails.

7. Pull the slides out to their full extension, approximately 29 inches (737 mm). The intermediate catch at 18 inches (457 mm) must be released on both slides. The slides will again lock at full extension.
8. Set the 9427H on top of the slides, making sure all four plastic mounts are resting on the uppermost edge of the slides and that the keys of the front mounts engage the notches in the slides.
9. Place Loctite (Grade C) on 8-32 x 5/16 (7.94 mm) pan head screws (12) and install through each slide into keyed mount-slide.
10. Adjust the stabilizers, installed in Step 2, as required to prevent wobbling and provide smooth operation of slides. Tighten the stabilizers securely.
11. Install knob assembly item (3) and latch assembly item (16) together and in the unit as shown in Figure 3-10.

NOTE

Hardware used to attach the knob assembly to the latch assembly consists of one each 8-32 x 5/8 inch (15.9 mm) pan head machine screw (4), No. 8 internal tooth lock washer (14), 8-32x1/4 inch (6.4 mm) spacer (9), and 8-32 hex machine nut (10). Reference: Figure 3-10.

Hardware for installation of the latch assembly in the unit consists of two 8-32 x 5/8 inch (15.9 mm) pan head machine screws (4), two No. 8 lock washers (14), and two No. 8 flat washers (17). These screws should be left slightly loose at this time.

12. Adjust the latch so that it catches the front rail of the rack, securely holding the unit in the retracted position, when the drive is pushed completely into the rack, and so that the latch-releases easily when the knob is pushed to the left.

NOTE

By loosening the proper pair of screws on the latch assembly, the latch can be moved either for and aft or left and right to meet this requirement.

13. Determine whether the installation requires use of a cable fender (13) at the rear of the unit. This fender is for the purpose of holding cables away from the ventilation outlet opening in the power supply and is not required if no cables threaten to encroach on the opening.
14. If required, install the fender of Step 13 using two 8-32 x 5/16 inch (7.9 mm) pan head machine screws (5), two No. 8 spring lock washers (14), and two 8-32 type U speed nuts (15) (attached to the electronics cover on either side of the power supply ventilation outlet).

CAUTION

The cable fender must not be used as a handle.
It will break off!

3.7 SECTOR OPTION CONVERSION PROCEDURE

Adjust sensor mount for required sector option as follows:

1. Depress Start/Stop switch to Stop (out) and wait for spindle to stop rotating (Start/Stop lamp extinguished).
2. Set main circuit breaker to Off position.
3. Remove front door panel (base cabinet only).
4. Remove module bottom cover.
5. Loosen the sensor mount screw (see Figure 3-11).
6. Lift rear of sensor mount and place the guide pin in the sensor mount hole selected in Table 3-1.
7. Tighten the sensor mount screw.
8. Perform the fixed-disk Index/Sector Transducer Check and Adjustment in Section 6 of Maintenance Manual.
9. Install module bottom cover.
10. Install front door panel (base cabinet only).
11. Open top cover (base cabinet only).
12. Remove electronics cover.
13. Remove clamp and card cage cover.
14. Using card extractor, remove sector PWA.
15. Locate sector PWA diagram on Sheet 2 of your device specification and switch selections located in your HPC document package 83449XXX.
16. Using sector PWA diagram and Table 3-1, determine present setting of S4 switch. Press present switch setting to Off position and press switch setting for new requirement to On position. Only one switch of S4 one through six can be in the On position.
17. Change switch positions on sector PWA diagram.
18. Carefully install sector PWA insuring that all pins are engaged.
19. Install card cage cover and clamp.
20. Install electronics cover.
21. Close top cover (base cabinet only).
22. Place unit on-line and verify operation with system software.

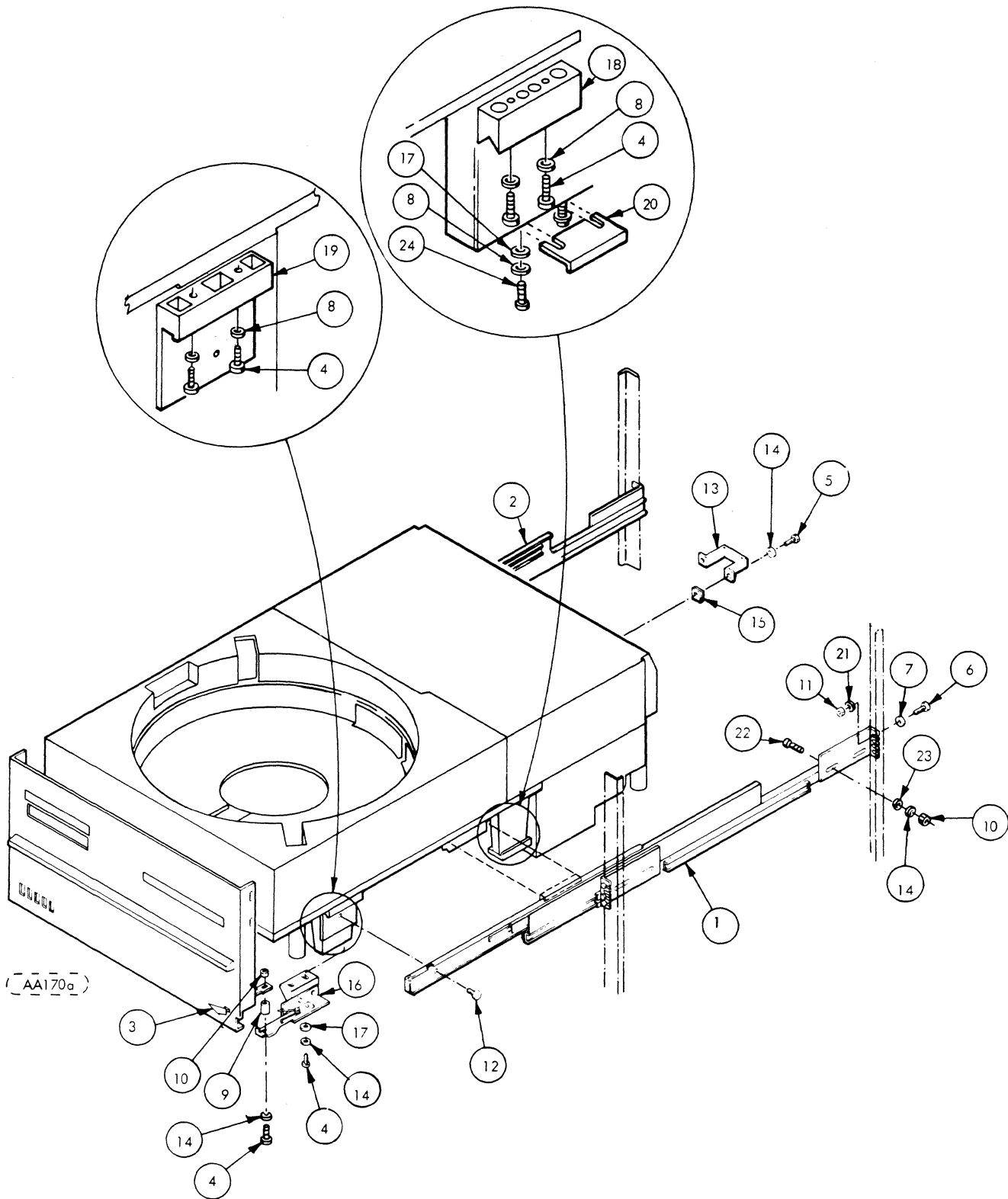


Figure 3-10. Rack Assembly Mounting

Table 3-1. Sector Option Conversion

SECTORS REQUIRED						SENSOR MOUNT	RING
						Hole #	Holes
29 or SOFT SECTOR						1	29
40	20	10	5			2	40
48	24	12	6	3		3	48
50	25					4	50
60	30	15				5	60
64	32	16	8	4	2	6	64
56	28	14	7			7	56
72	36	18	9			8	72
÷1	÷2	÷4	÷8	÷16	÷32	Division Count	
1	6	5	4	3	2	PWA SW4 Switch Setting	

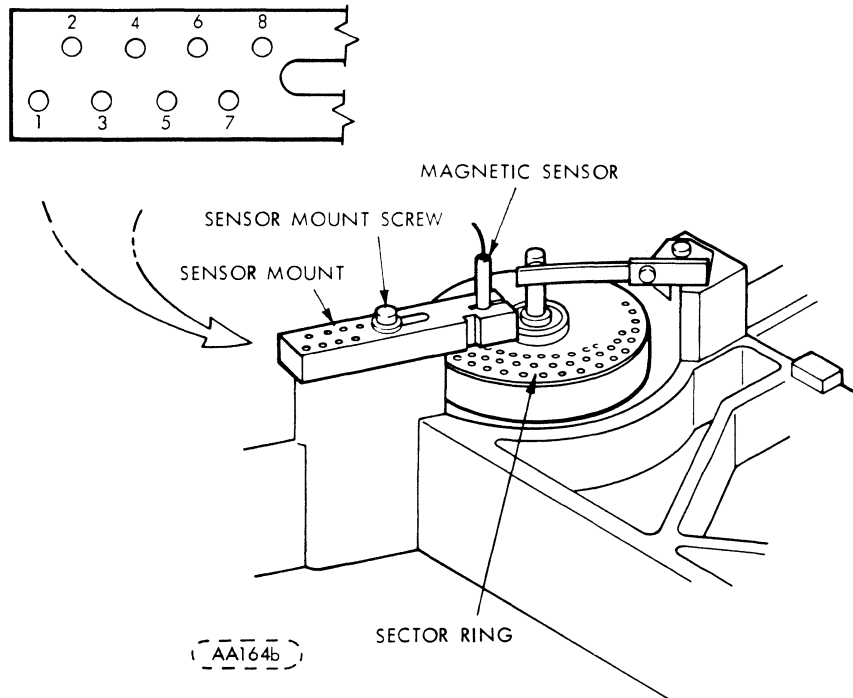


Figure 3-11. Sector Option Conversion

3.8 HZ/RPM CONVERSION

If HZ/RPM conversions are desired, they are available in standard option kits from the manufacturer. Depending on the specific conversion. Some or all of the following modifications may be required.

- a. Physical change of Drive Pulley and Belt.
- b. Physical change of R/W/E Board.
- c. Physical change of Head Option Components.
- d. Physical relocation of jumpers in voltage adjust plug.

If Hertz conversion is required, refer to Table 3-2 for appropriate belt and pulley for desired Hertz. Refer to Maintenance Section 6.6.23 for conversion procedure.

Table 3-2 Hz Conversion Pulley and Belt Configuration

<u>HZ</u>	<u>RPM</u>	<u>Pulley No.</u>	<u>Pulley Dia.</u>	<u>Belt No.</u>	<u>Belt Length</u>
50	2400	77599705	2.881 In. (73.2 mm)	75722940	30.375 In. (772 mm)
60	2400	77599706	2.404 In. (61.1 mm)	75722930	29.625 In. (753 mm)
50	1500	77599707	1.761 In. (44.7 mm)	75722920	28.625 In. (727 mm)
60	1500	77599708	1.479 In. (37.6 mm)	75722910	28.125 In. (714 mm)

3.9 CABLING AND CONNECTION

Unit Intracabbling

Inspect the cabling in the cabinet for agreement with Figure 3-2. Check for proper seating of connectors and logic cards.

3.9.1 INPUT/OUTPUT CABLES

All input/output cables exit at the rear of the disk drive. Refer to applicable I/O board schematic in HPC package located in front of manual for connector pin/signal assignments for these cables. If an external terminator assembly is used in A2J2, the DIP terminators must be removed from the I/O board. If daisy chaining is used, the terminator is installed in A2J2 or the DIP terminators are installed in the last unit of the chain. Refer to Figure 3-13 for a typical daisy chain configuration. The function of each signal name is described in Section 2, Table 2-2.

CAUTION

Refer to I/O option diagrams in HPC package located in front of manual for assignments of I/O signals to each terminal on the I/O board connector. Be sure the terminals on the I/O cable from the controller and/or daisy-chained unit have the correct configuration and the correct assignments. **BE ESPECIALLY CAREFUL WHEN UTILIZING 3M TYPE I/O CABLES, SINCE THERE IS NO MECHANICAL "KEY" TO PREVENT PLUGGING THE CONNECTOR IN 180 DEGREES FROM THE PROPER POSITION, WHICH WILL RESULT IN DAMAGE TO THE CIRCUITRY.** Check to make sure that the I/O cable lead terminating at terminal (1) on a 3M I/O board is a ground lead from the controller and/or daisy-chained unit. Terminal (1) on all 3M I/O board connectors is a ground lead, and is located as shown in Figure 3-14. Utilize the same precautions when relocating adapter boards

CAUTION (continued)

for 3M to Elco, or 3M to Winchester connectors. Adapter boards with the blue strip lead are marked for proper connection into the 3M connectors on the I/O board. The connector designation and pin sequence is marked on one side of each connector.

3.9.2 GROUNDING OPTION

The disk drive is shipped with logic (dc) ground and chassis (ac) ground connected together -- see Figure 3-15 (A)-- at the front left hand corner of the power supply. If the system configuration requires the separation of these grounds, perform the following procedures.

1. Open top cover (base cabinet only).
2. Remove electronics cover.
3. Open power supply cover assembly.
4. Rearrange spacers to configuration shown in Figure 3-15 (B).
5. Close power supply cover.
6. Install electronics cover.
7. Close top cover.

3.9.3 POWER CABLES

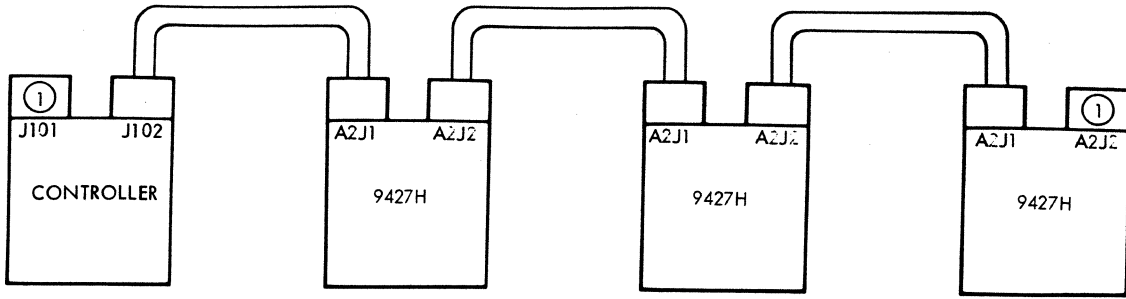
The ac power cable plugs into the bottom of the power supply assembly. The power cable should exit the unit through the bottom of the cabinet or rack.

3.10 INPUT POWER REQUIREMENTS

Refer to the equipment specification in HPC package listed in front of manual. Ascertain that P12 is jumpered according to Figure 3-16.

CAUTION






When units are field configured for any line voltage other than 120 V, 60-Hz, 4.6-Amp or 120/240 V, 60-Hz, 16-Amp, the CSA monogram must be removed because unit no longer complies with requirements of the Canadian Standards Association.



AA226c

- NOTES: 1. TERMINATOR.
 2. MAXIMUM OF FOUR UNITS.
 3. MAXIMUM CABLE LENGTH FROM CONTROLLER TO LAST UNIT IS 50 FEET (15.24 M)

Figure 3-12. Daisy Chain Configuration

-  EOT ASSEMBLY
-  RETRACT
-  POSITION XDUCER SLIDER
-  VELOCITY XDUCER
-  POSITION XDUCER SCALE

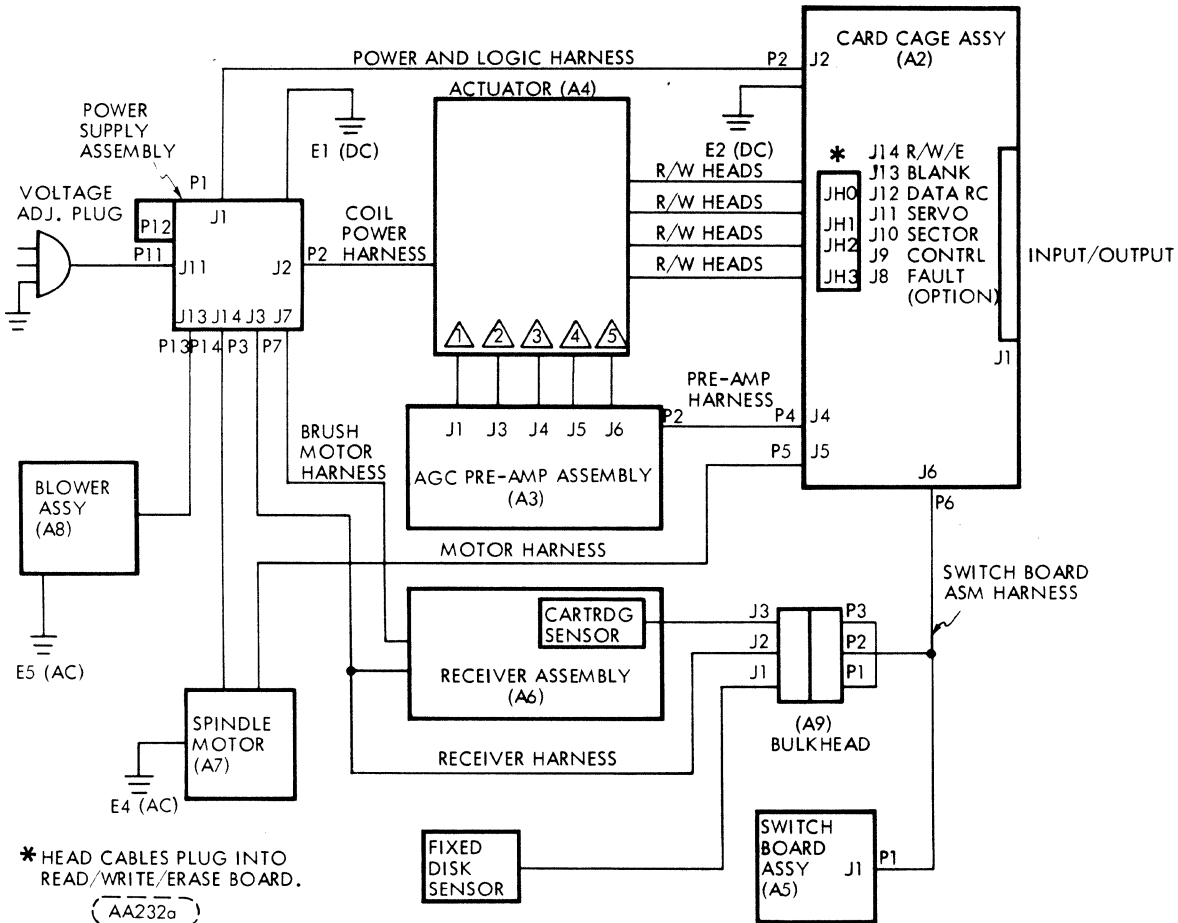


Figure 3-13. Simplified Intracabling Diagram

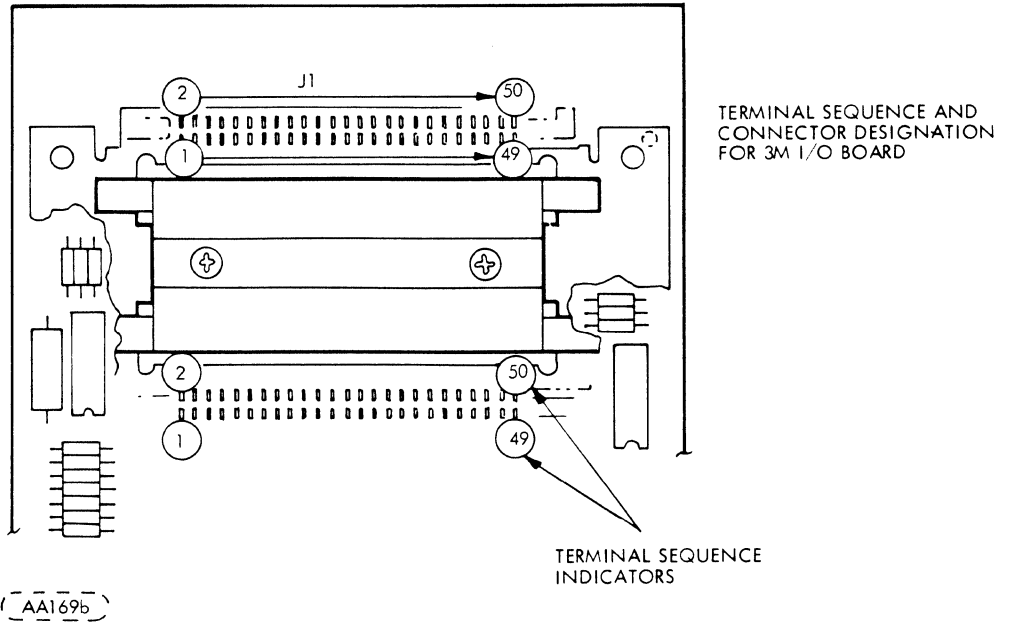
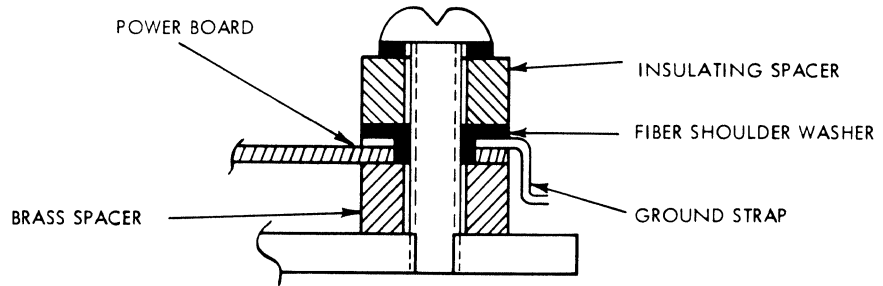


Figure 3-14. 3M I/O Board Connector Terminal Assignments

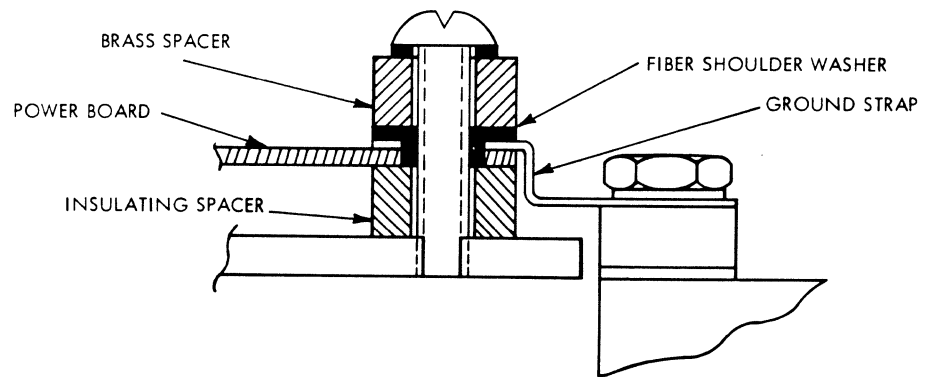
NOTE

GROUND MUST BE INSTALLED WHEN DYNAMIC BRAKE OPTION IS INSTALLED.



(A)

LOGIC (DC) GROUND CONNECTED TO CHASSIS (AC) GROUND

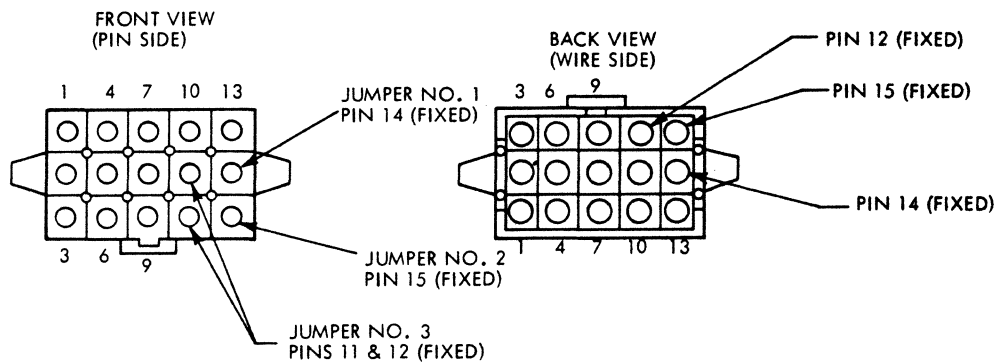


(B)

LOGIC (DC) GROUND ISOLATED FROM CHASSIS (AC) GROUND

(AA229b)

Figure 3-15. Grounding Option



NOTE

For proper pin configuration use above illustration.
Ignore pin numbering on connector.

VOLTAGE	JUMPER #1		JUMPER #2	
	FIXED PIN	MOVEABLE PIN	FIXED PIN	MOVEABLE PIN
100	14	4	15	7
110	14	3	15	7
120	14	2	15	7
130	14	1	15	7
140	14	6	15	8
150	14	5	15	8
160	14	4	15	8
170	14	3	15	8
180	14	2	15	8
190	14	1	15	8
200	14	6	15	9
210	14	5	15	9
220	14	4	15	9
230	14	3	15	9
240	14	2	15	9
250	14	1	15	9

AA231a

Figure 3-16. Voltage Adjustment Plug P12 and Adjustment Table

3.11 ENVIRONMENT

Operating and storage environment of the unit is as follows:

Operating status	60 to 90°F (15.6 to 32.2°C) (12°F/hr maximum fluctuation) 10 to 80% relative humidity (provided there is no condensation)
Non-operating status	-30 to +150°F (-34.4 to 65.6°C) 5 to 95% relative humidity (providing there is no condensation)

3.12 OPTION SWITCHES

Various modes of operation are made possible by option switches located on the Sector, Data Recovery, Control and I/O boards. These switches are factory set to customer requirements.

The unique settings of the switches (and their locations) are shown in the switch specifications in the HPC package located in the front of the manual.

3.13 INITIAL CHECKOUT AND STARTUP PROCEDURE

This procedure should be used to make the first power application to the unit. The procedure assumes that the preceding procedures and requirements of this section have been performed and satisfied.

1. Check that the power supply assembly circuit breakers is OFF.
2. Open top cover.
3. Grasp and turn spindle. Spindle should rotate with little resistance.
4. Wipe spindle surface and hub clean using gauze dampened with media cleaning solution.

CAUTION

Do not position the carriage manually. Such action could cause the read/write heads to load and be damaged.

5. Use a vacuum cleaner to remove any dust or dirt from interior of cartridge receiver.
6. Check that START/STOP switch is off.

7. Make certain that input power cable is connected to correct external AC power source, and P12 jumper plug is correctly jumpered and in place. (See Figure 3-16 for Jumper Installation information.)

NOTE

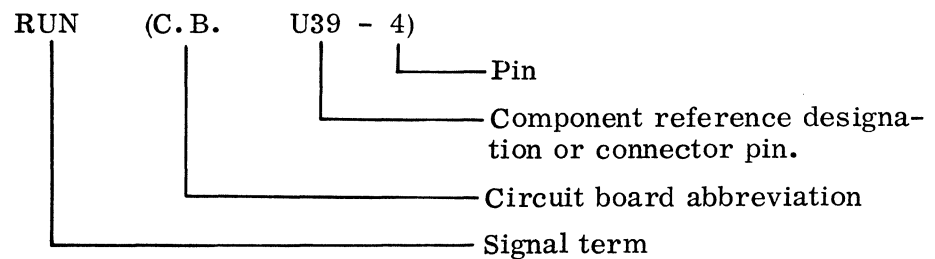
When units have a daisy chain configuration for AC power, prior to connecting the AC cable the proper phasing should be verified at device end for each device.

8. If external AC power to the unit is protected by circuit breaker, set circuit breaker to ON position.
9. Set power supply assembly circuit breakers to ON position and check that blower starts.
10. Pull back cartridge hold-down arms.
11. Install disk cartridge (refer to Disk Cartridge Installation procedure in Section 2).
12. Inspect and clean disk cartridge as specified in Preventative Maintenance portion of Section 6.
13. Press START switch to apply power to spindle motor.
14. Spindle drive motor and disk cleaner brush motor starts.
15. Assure READY light is illuminated in a maximum of 70 seconds.
16. Allow device and pack to reach thermal stabilization (20 minutes).
17. Run diagnostics.
18. If diagnostics fail, troubleshoot or make any necessary adjustments and rerun diagnostics. (See Section 6 for all Check and Adjustment procedures and Section 7 for Maintenance aids.)
19. Installation complete.

IV THEORY OF OPERATION

4.1 INTRODUCTION

The theory of operation is described in terms of the major functions that the disk drive performs during normal and emergency operation and the circuitry and hardware involved in the performance of these functions. Signal origins and destinations and component locations are shown in parenthesis. For example, if the signal term RUN is referred to, it would appear as follows:



Circuit board abbreviations used in this description are as follows:

C.B. = Control Board	S.B. = Servo Board
S.C. = Sector Board	R/W/E = Read/Write/Erase Board
D.R. = Data Recovery Board	I.P. = Inductosyn Preamplifier Board
P.B. = Power Board	

4.1.1 DISK DRIVE

Disk drive is achieved through a belt driven spindle. The spindle is rotated at 1500 or 2400 rpm (depending on rpm option installed) by the disk drive motor.

4.1.2 ACTUATOR

The actuator consists of the carriage, carriage track, magnet assembly, and cam mount. The actuator is the device that supports and moves the read/write heads. Lateral forward and reverse movement of the carriage on the carriage track is controlled by the servo signal. (P.B. J2-1, J2-2) The basic signal is developed in the servo board and processed by a power amplifying stage mounted on the power amplifier board (power supply). The power amplifier output current is applied to the voice coil positioner (part of carriage). The signal causes an electric field about the voice coil positioner. This electric field interacts with the permanent magnetic field of the magnet assembly, which moves the voice coil either into or out of the permanent magnetic field. Current polarity to the voice coil determines the direction of motion, while current amplitude determines the acceleration and velocity of the motion.

The voice coil positioner is a bobbin-wound coil that is free to slide in and out of the forward face of the magnet assembly. Fastened to the positioner is a head/arm receiver which holds the two (four with fixed disk option) read/write heads. The head/arm receiver mounts on the carriage and bearing assembly that moves along the carriage track on ball bearing rollers. Movement of the positioner in or out of the magnet causes the same motion to be imparted to the entire carriage assembly. This linear motion is the basis for positioning the read/write heads to particular cylinder of tracks on the disk. (Refer to paragraph 4.6 for detailed information on read/write head loading and unloading.)

The actuator contains a optical switch for detecting each end of travel. A negative-going pulse is generated by these optical switches at forward and reverse end of travel.

4.1.3 HEAD/ARM ASSEMBLIES

Two head/arm assemblies (four with fixed disk option) are mounted on the carriage. A head/arm assembly consists of a read/write and erase coil package (head assembly) mounted at the end of a supporting arm structure. The head assembly, which includes a cable and plug, is mounted on a gimbal ring which in turn is mounted on a floating arm. This method of mounting allows the head assembly to pivot (independent of the arm) tangentially and radially relative to a data track on the disk surface. Such motion is required to compensate for possible irregularities in the disk surface.

The arm structure consists of a floating arm secured to a heavier fixed arm. The end of the fixed arm opposite the head installs in the carriage assembly. The floating arm is the mounting point for the head and is necessarily flexible so that it can respond during loading and unloading.

The freedom and mobility of the head are necessary elements to insure proper functioning with interchangeable disk cartridges. Vertical motion by a disk surface (due to warpage or imperfection) is countered by a move in the opposite direction by the gim-balled head and/or floating arm. As a result, flight height remains nearly constant.

4.2 OPERATIONS

Refer to the applicable schematic, block diagram, intercabling diagram flow chart and timing charts for the following discussion.

4.2.1 POWER UP/FIRST SEEK

When the main circuit breaker, CB1 (power supply) is actuated, an initial reset, CLEAR (C.B. U39-12) is generated which clears all latches. After approximately 60 ms (+5v supply settling time) CLEAR disappears. At this time, provided the pack locks are closed and no faults exist, the disk drive can be started by depressing the START/STOP push button.

Actuating the START/STOP pushbutton generates RUN (C.B. U39-4) which, in turn, energizes the spindle motor and start relay, starts the brush cycle, initiates the spindle motor start delay, illuminates the start indicator, and latches the disk cartridge in place. After approximately 4 secs the start motor relay is de-energized and the start capacitor is removed from the motor start winding.

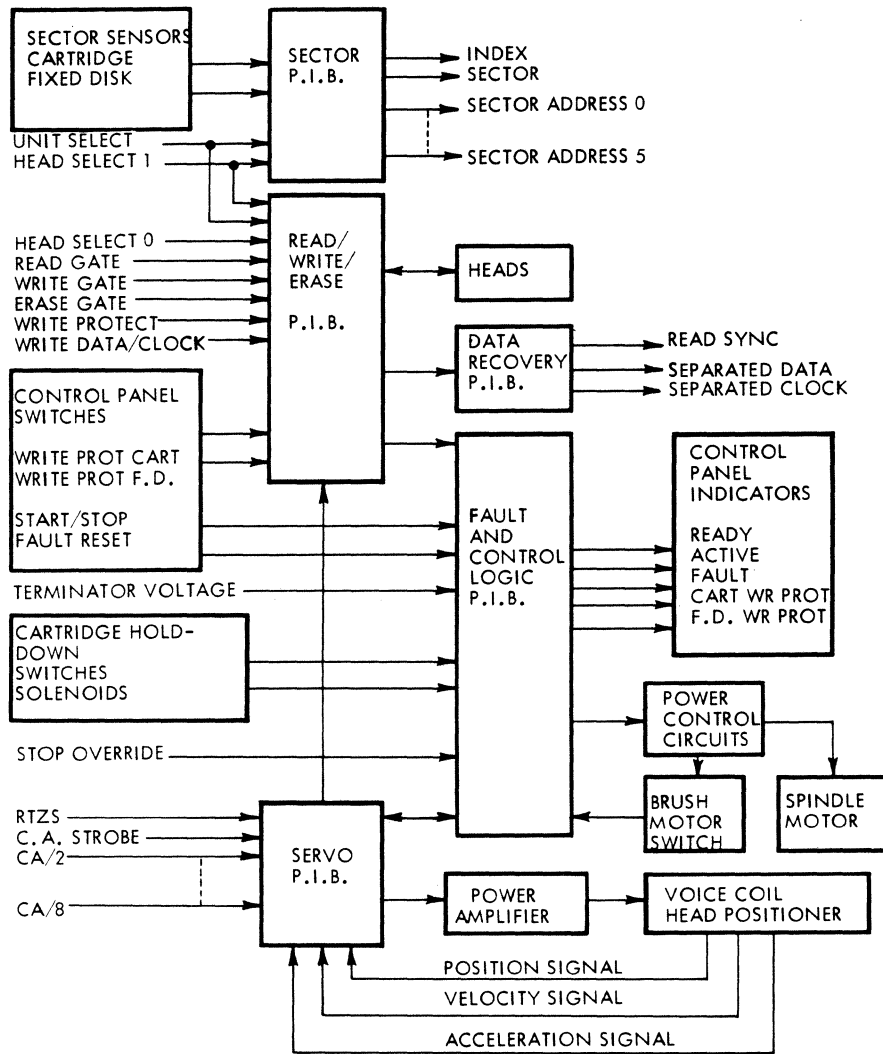
During the brush cycle, the disk brushes are passed across the entire surface of the disk to remove any foreign particles. When the brushes reach the end of travel, the motor is mechanically reversed and the brushes move outboard until they reach the home position, at which time the brush motor is de-energized by the closure of a SPDT switch (Cartridge Receiver A6SW3). The closure of this switch generates BRUSH CYCLE COMPLETE (C.B. U32-12). BRUSH CYCLE COMPLETE clocks K1 flip-flop control (C.B. U18) provided spindle speed is within 20% of nominal value.

The completion of the brush cycle is followed by a 50 second servo delay, after which Servo Enable (C.B. A10) initiates the operation called first seek. The function of first seek is to calibrate the disk cylinders or tracks with the track counter (S.B. U11, U12, U13). This is accomplished by driving the read/write heads inboard until they reach forward end of travel (FEOT) then out-board until the first even-numbered cylinder is crossed. The first even-numbered cylinder encountered is identified as track 408 and each succeeding track crossed decrements the track counter until track 000 is reached, at which time, ON CYL (S.B. B20) is generated. ON CYL initiates READY (C.B. A8) and assuming the unit is selected (reference daisy chain configuration) the controller is notified that first seek is complete.

4.2.2 OPERATIONAL SEEK

Refer to Figure 4-2 for the following discussion.

If, at the completion of first seek, data is to be read from or written on the disk, an operational seek is performed. To initiate an operational seek, the address of the desired track is strobed into the disk drive of nine (9) lines (S.B. B2-B10).



AA226a

Figure 4-1. Model 9427H Block Diagram

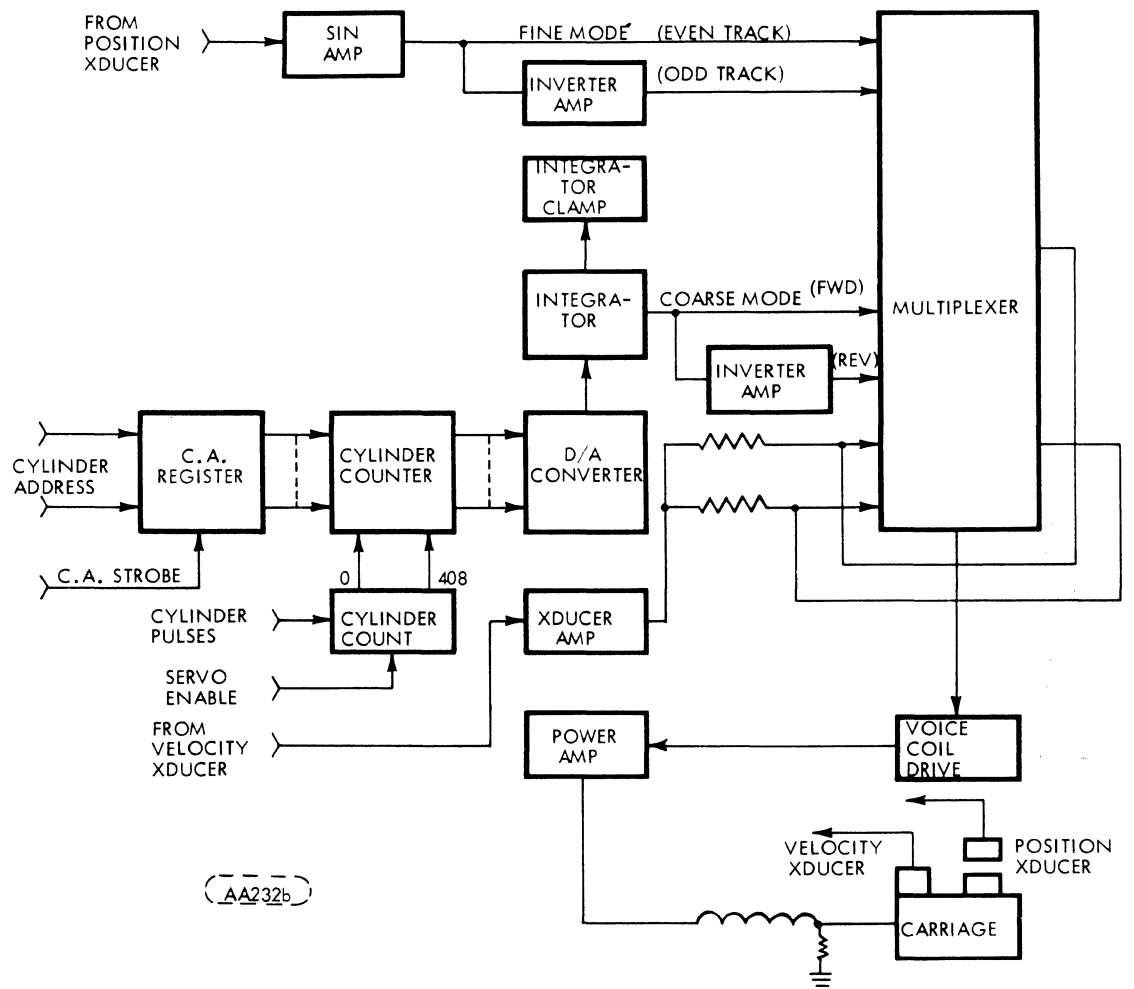
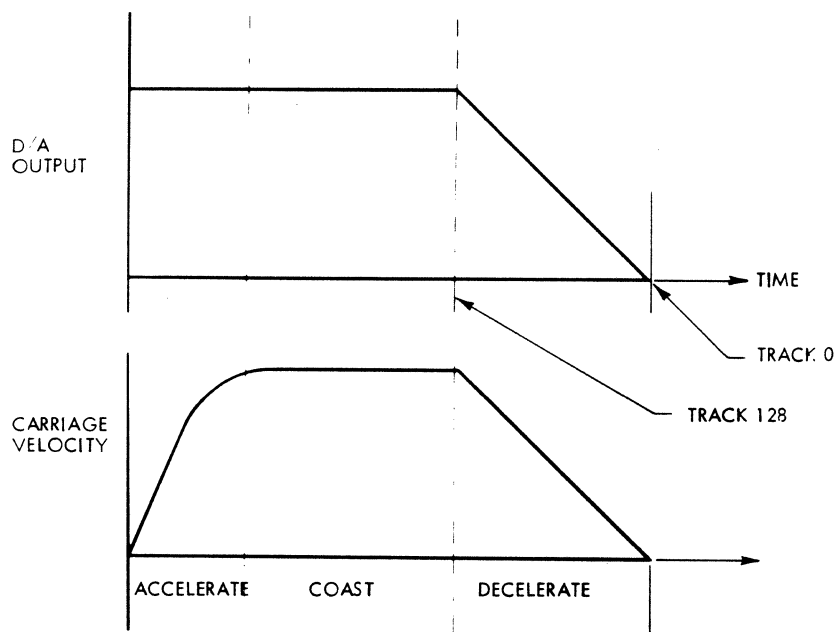


Figure 4-2. Servo System Block Diagram

The number of tracks that the read/write head has to travel from its present track to the selected track is determined by calculating the difference between the track address (S.B. U4,U5,U6,U15) and the track counter (S.B. U18,U19,U20). The absolute value of this digital difference is applied to a D/A converter (S.B. U39) whose output provides an analog signal to the voice coil for movement of the read/write head to the desired track. Voice coil movement, hence read/write head movement during an operational seek consists of two modes: (1) coarse and (2) fine. During the coarse mode the voice coil is driven at a velocity determined by the number of tracks remaining in the seek.

The fine mode is employed to bring the carriage to a stop without overshoot when the desired cylinder is reached. Figure 4-3 shows the D/A converter output and the velocity profile for a typical long seek. During the first part of the seek the carriage is accelerated by the maximum output of amplifier AR4 (S.B.) until it reaches maximum velocity. From this point on, the carriage is driven at a constant velocity (coast) until it is 128 cylinders from the desired destination at which time it decelerates uniformly until it reaches the last track. Upon reaching the last track the system switches to the fine mode and the position signal from the encoder is utilized to bring the carriage to the center of the track. Approximately 2 ms after the head has settled within 200 microinches of the selected track center, ON CYL (S.B. B20) is generated. SKER (S.B. B16) is generated if the carriage goes beyond either end of travel (FEOT or REOT) or if ON CYL is not present 0.5 seconds after the initiation of SERVO EN, C.A. STROBE or RTZS. A SERVO INH automatically removes power from the voice coil by forcing an inhibit on the servo output multiplexer (S.B. U42).



(AA226b)

Figure 4-3. Seek Velocity Profile

4.2.3 RETURN-TO-ZERO SEEK (RTZS)

When RTZS is commanded by the controller, the track counter (S. B. U18, U19, U20) is set to 408 and the address register (S. B. U4, U5, U6, U15) is reset to zero. However, the invert line (U6-3) to the address register is set for non-inverting operation. As a result the address register indicates a cylinder address of 424. Consequently the difference between the track counter and address register is 16 (424-408). Since counting by the track counter and address register is inhibited, the difference is held constant, resulting in the carriage being driven at a constant speed of approximately 16 ips (406 mm/sec). When the forward end of travel (FEOT) is reached, the address register is shifted back to the normal inverter mode thereby establishing an address of 000. This causes the carriage to reverse direction and as soon as the first even-numbered track is encountered the count inhibit signal is removed from the track counter, allowing it to count down normally from 408 to 000 as described in First Seek.

4.2.4 WRITE/ERASE DATA

Writing on any one of four recording surface (2 cartridge and 2 fixed disk) requires that the disk drive be able to select the desired read/write head. Selections of the heads is accomplished by means of two input lines termed HS/0 and HS/1 (Head Select 0 and 1). The logic condition of HS1 determines whether the cartridge or fixed disk is selected while the logic condition of line HS0 determines whether the upper or lower surface of the disk is selected.

Once the disk surface and read/write head has been selected, a write function is initiated by the controller commanding UNIT SELECT and WRITE GATE. These two controller inputs generate a write line term W/E INA (R/W/E B4) and a write enable term WR EN (R/W/E B2). With the logic thus conditioned by these signals, WR DATA and CLOCK applied to the disk drive (R/W/E A3) then can be recorded. With WR EN at a high level, incoming data and clock pulses (R/W/E A3) will clock the write data flip-flop (R/W/E U10). As a result the outputs of the flip-flop will be a composite of frequency encoded data and clock which alternately switch a voltage dependent current source (R59-R70) through two power transistors (R/W/E Q6, Q7). The outputs of these transistors drive write current through one half of the head winding then the other via head select circuits (R/W/E U14, U16).

Recording on tracks 256 or greater requires a reduction in write current due to bit density. When the read/write head is moved to track 256 or greater for purposes of writing, ZONE (S. B. A20) is generated, causing (R/W/E U11-2) to go to ground thereby reducing the current to the read/write heads.

An erase function is initiated by the controller commanding a UNIT SELECT (C. B. B9) and ERASE GATE (C. B. A12). These two controller commands generate terms ER EN (C. B. B26) and W/E/ INH (C. B. A24). Term ER EN turns on a transistor switch (R/W/E U11) in series with the selected erase winding via erase diodes (R/W/E U17 - Diode matrix) and the +15V center tap voltage.

4.2.5 READ DATA

To initiate a read operation, READ GATE and UNIT SELECT are commanded by the controller. The read head output is processed by differentiation of the recorded flux reversals as follows: The signal is amplified by a linear low noise differential amplifier (R/W/E AR2) and differentiated by AR1 (R/W/E). The resulting differentiated signal simultaneously drives a cross-over detector (R/W/E U2) and isolation stage (R/W/E Q12, Q13) which provides a monitor for the differentiated analog signal at the I/O connector.

Cross-over detection is achieved by a dual differential receiver (R/W/E U2) which digitizes the differentiated signal by generating positive and negative edges for each analog zero cross-over point. This digitized double frequency information (R/W/E A6) is coupled to the data recovery circuitry where phase and frequency tracking is established.

Phase and frequency tracking of the double frequency data is accomplished by means of a digital phase lock loop (Figure 4-4). The loop is comprised of a comparator, current pump, voltage controlled oscillator, data window generator, reference signal generator and acquisition detector.

Initially, the comparator (D.R. U27) derives a phase error signal between the pulsed data (double frequency data) and the out-of-lock reference signal. This TTL signal is applied to the current pump (D.R. Q1, 2, 3, 10, 11, 12) where it is integrated to develop a dc level (V_c).

V_c passes the ac component which is controlled by the value of R38 and the current from the bidirectional pump (D.R. Q10, Q11). The resultant voltage, V_{re} , corresponds to the input data frequency and the superimposed square waveform is utilized for phase synchronism.

The current pump output corrects the VCO (D.R. Q4-Q9) bringing its output to a nominal 5MHZ for a 2.5 MHZ data rate (2400 rpm disk speed). Since the phase locked oscillator is a closed loop, the current pump drives the dc level (V_c) to reach a steady state when the signal at the comparator is a square waveform. Frequency synchronism is achieved at this point. When the loop is locked at its center frequency. The component of V_c is symmetrical.

At the beginning of the lock procedure, the disparity between the data window (D.R. U23-2) and pulsed data (D.R. U23-1) triggers a fixed time out signal, FT TRACK (D.R. B23) which increases the current available in the current pump, thereby increasing the rate of VCO correction.

After frequency and phase synchronization have been achieved the double frequency pulse data is decoded into SEP DATA (D.R. A4, B4, A5, B5) and SEP CLOCK (D.R. A3, B3, A2, B2).

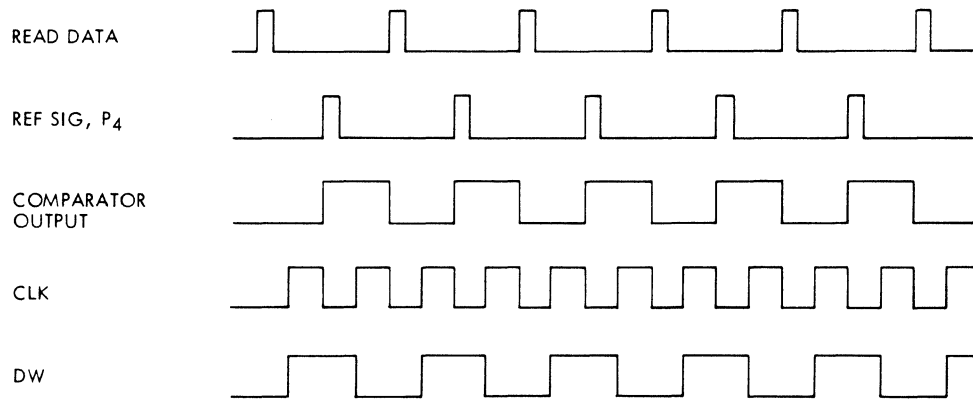
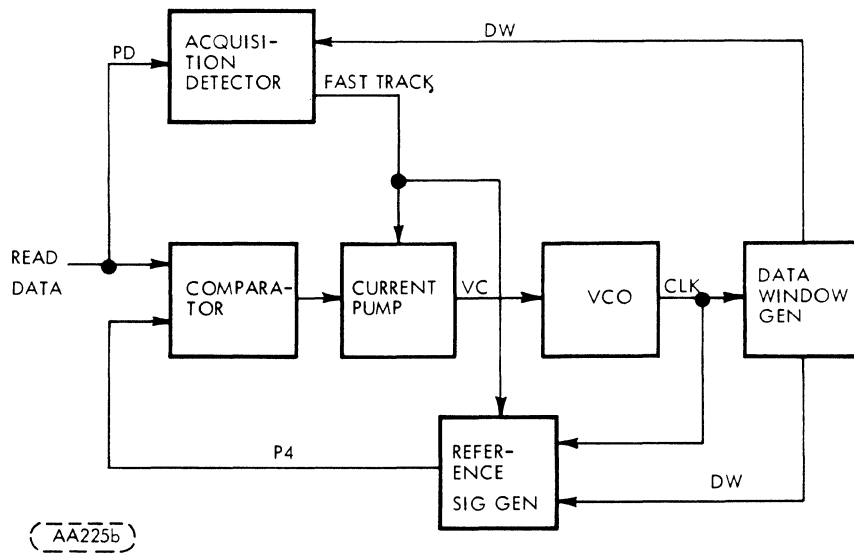


Figure 4-4. Digital Phase - Lock Loop And Timing Diagram

4.3 SECTORING

The sectoring system is capable of producing all standard sectoring formats. This is accomplished by moving the sensor over the desired row of holes on the sector ring and selecting the desired prescaling factor using S3 (S.C.). Refer to Section 2 (Operation) for switch setting and resulting prescaling factor.

Refer to Figure 4-5 for the following discussion.

Monitoring the position of the disk comes under the function known as sectoring. Position information is derived from pulse trains generated by two magnetic sensors. One sensor (for reading cartridge sectors) is mounted in the receiver area and senses notches on the disk armature plate. The other sensor (for reading fixed disk sectors) is mounted beneath the drive motor pulley and senses chemically milled holes in the sector ring. Both sensors generate negative-going pulses which indicate the center of the notch or hole. The pulse trains generated by these two sensors are separated into index and sector pulses by the sector board.

4.3.1 FIXED DISK

Index pulses are separated from sector pulses by two NOR gates (S.C. U26-3), U26-4) and a one-shot multivibrator (S.C. U32). The separated pulses drive the prescaling counter (S.C. U33) and the sector address counter (S.C. U17). The counters are reset by receiving an index pulse and incremented by receiving a sector pulse. The count of the sector pulses is utilized to generate a six-bit sector address field (S.C. B2, B3, B6, B8, B11, B14). The sector address and index pulses are outputted upon command of the controller.

The index pulse can be transmitted at one of two times depending on the setting of SW1-1 and 2 (S.C.). If both switches are open, the index pulse output will appear simultaneously with the next sector pulse (DELAYED INDEX). If both switches are closed, the index pulse will appear at the output simultaneously with the input (DIRECT INDEX).

4.3.2 CARTRIDGE DISK

Cartridge disk index and sector pulse processing is handled, with minor exceptions, in the same manner as described for the fixed disk. Index and sector pulses are sensed from the Cartridge armature plate by the index/sector transducer and fed to the Sector board at A22. Index pulses are separated from sector pulses by two NOR gates (S.C. U19-3), U19-4) and a one-shot multivibrator (S.C. U25). The separated pulses drive the prescaling counter (S.C. U14) which divides the separated sector pulses by 32, 16, 8, 4, 2 or 1. The count of the sector pulses is utilized to generate a six-bit sector address field (S.C. B2, B3, B6, B8, B11, B14). The sector address and index pulses are output upon command of the controller. Delayed and direct index pulses are provided for the cartridge disk the same as the fixed disk.

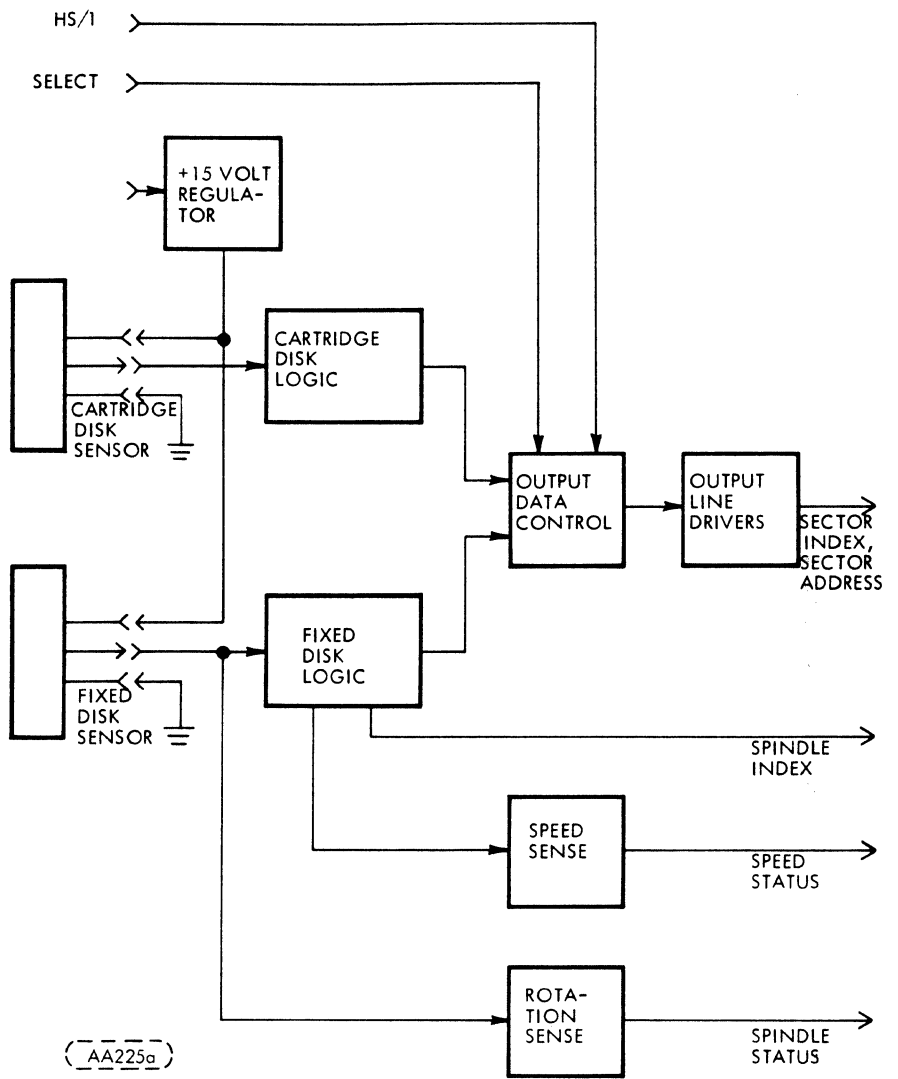


Figure 4-5. Sector System Block Diagram

4.3.3 SOFT SECTOR

Under certain circumstances it is desirable to operate the disk drive with only a single sector. This mode of operation is called soft sector. Cartridges used for soft sector have only a single notch to be detected by the sensor. The single pulse generated each revolution by this notch will always be interpreted by the sector board as a sector pulse. The configuration of two switches SW1-2 and SW2-7 (S.C.) effectively substitutes this sector pulse for the missing index pulse.

Data received from the controller in the soft sector mode will be in a format containing a unique 8-bit pattern for identification of the start of a sector address.

4.4 FAULT DETECTION

Fault conditions in the disk drive are divided into two classes:

(1) damaging and (2) non-damaging.

4.4.1 DAMAGING FAULTS

Damaging faults are those which will cause damage to the read/write head or to disk surfaces. These faults will occur as a result of subnormal spindle speed or supply voltage failure on the servo or inductosyn pre-amp boards.

To provide protection for the heads and media, the spindle speed (C.B. B8, U11-8) and the servo board supply voltages (C.B. A27, A30, B27, B30, U11-13) are continuously monitored. Any reduction in spindle speed below the set tolerance level or the occurrence of any non-transient voltage fault will set the emergency retract latch causes the disk drive to generate the term FAULT (C.B. U35-13, U14-10) illuminate the fault lamp (C.B. U15-6), retract the heads via K1 relay and switch the unit out of the run mode (C.B. U24-6, U31-9). The emergency retract latch can only be reset after the fault condition is cleared and the START/STOP switch is returned to the STOP position or with a power up clear (C.B. U18-10).

4.4.2 NON-DAMAGING FAULTS

Non-damaging faults are those that are not dangerous from the point of equipment safety but are those that will lead to degraded operation (i.e., read and write failures). These non-damaging faults are read/write head current faults, command faults and voltage failures.

A current fault (R/W/E B7) will occur under one of the following conditions:

1. Write current but no erase current
2. Erase current but no write current
3. More than one head selected for a write/erase operation
4. Excessive current leakage on the write driver output line during a read.

A current fault sets the fault latch (C.B. B20, U35-13). The fault latch will also set, if an attempt to write is made when the heads are not on cylinder or an attempt is made to read at the same time write or erase is enabled. Other conditions that will generate Fault signals are attempting to select heads 2 or 3 when there is no fixed disk or when there is a voltage failure in the read/write, data recovery or sectoring circuitry. The term, FAULT, generated by any of the above fault condition inhibits write and erase and disables the READY line (optional) to the controller. A FAULT will also illuminate a front panel indicator and enables a fault line to the controller. Non-damaging faults can be reset by the front panel FAULT RESET pushbutton, or by the controller RTZS command (option).

4.5 WRITE PROTECTION

Data on the cartridge or fixed disk may be protected by depressing the appropriate front panel WRITE PROTECT switch. The signal developed by WRITE PROTECT switch is gated with HS/1 (C.B. A20, U7-5, 6 or U7-1, 2) and assuming that the protected head is selected, write protected status (C.B. U21-6) will be enabled. This status will occur whether or not the unit is selected (reference daisy chain configurations). If the unit is selected (C.B. U43-6) PROT STAT (C.B. B21) will be transmitted to the controller.

The controller can initiate write protection by commanding Unit Select and WR PROT (C.B. B23, U7-13). These signals condition the write protect logic and illuminate the appropriate WRITE PROTECT indicator. The indicator will remain illuminated as long as the unit is selected, the appropriate heads are selected and the controller initiated WR PROT is in effect.

4.6 HEAD LOADING

The read/write heads must be loaded to the disk surfaces before exchanging data with the controller. The heads must be retracted from load position and driven clear of the disk when power is removed from the unit or the disk velocity falls below a predetermined rpm.

Head loading amounts to allowing spring pressure of the floating arm (part of head/arm assembly) to move the aerodynamically shaped head face toward the disk surface. When the cushion of air caused by the spinning disk is encountered, it resists any further approach by the head. Spring pressure is designed to just equal the opposing cushion pressure (function of disk rpm) at the required height. As a result, the head flies. However, if the spring pressure exceeds the cushion pressure, which would happen if the disk cartridge lost enough speed, the head stops flying and contacts the disk surface, causing damage to the head and the disk surface.

The floating arm is designed to maintain a constant loading force. While the heads are retracted, head cams on the cam mount bear against the floating arm cam surfaces. The cams counter the loading force and force the heads to the unloaded position. As the carriage moves forward, the cam surface rides off the cam just after the read/write head moves out over the disk surface. The loading force now moves the head face toward the air layer on the surface of the spinning disk until the opposing forces achieve a state of equilibrium. The heads are thus loaded and the carriage is forced to continue toward the spindle until the forward end of travel (FEOT) signal occurs.

4.7 HEAD RETRACT

Two situations will cause the read/write heads to be moved back past the loading ramp. These two situations are normal and emergency retract.

4.7.1 NORMAL RETRACT

Normal retract will occur when the START/STOP switch is returned to the STOP position. This causes the disabling of SERVO EN (C. B. A10). When SERVO EN goes to zero, the address register (S. B. U4, U5, U6, U15) is set to 424 as in RTZS. However, the track counter (S. B. U18, U19, U20) is set to 440. Since counting is inhibited under this circumstance, the carriage will move outboard at a constant rate of 16 ips (406 mm/sec). When the carriage contacts the reverse stop microswitch, (A4SW1), REV STOP (P. A. J2-12) is generated. One-half second after the occurrence of REV STOP the power amplifier is disabled.

4.7.2 EMERGENCY RETRACT

In the event of a damaging power failure or the spindle motor velocity drops below the tolerance limit, an emergency retract is initiated. Either of these conditions de-energizes the voice coil relay (P. B. K1). The openings of K1 initiates a 0.5 second delay which allows the carriage, by means of spring loaded effect of the voice coil connections to move to a position away from the unloading ramp. After the delay, triac, Q5 (P. B.) discharges a 100,000 Uf Capacitor (P. B.) through the voice coil thus unloading and retracting the heads.

4.8 CYLINDER LOCATING AND POSITIONING

The system for locating and counting tracks (cylinders) on the disk is comprised of a position encoder or transducer and an up/down counters.

4.8.1 CYLINDER LOCATIONS

Cylinder locations are determined by counting the zero crossings of the COS signal from a reference point using an up/down counter system (S. B. U18, U19, U20). A cylinder is defined as the space between two transitions of COS. Whenever the transitions occur a clock pulse (S. B. U32-11 & 6) is generated, causing the cylinder counter to count up or down depending on the state of the up/down signal (S. B. U30-5 & 6). The state of the up/down signal is determined by the logical levels of SIN and COS just prior to the clock pulse. By examining the wave forms in Figure 4-6, it can be seen that whenever the expression SIN COS is true, the count will be down and whenever the expression is false, the count will be up. An odd numbered cylinder is defined as one where the slope of SIN signal is positive for positive displacement and an even numbered track is one where the slope of SIN is negative for positive displacement. Initial location of the track is established during FIRST SEEK.

4.8.2 CYLINDER POSITIONING

The position encoder or transducer, schematically depicted in Figure 4-7 is a capacitively coupled linear displacement transducer. The encoder has two elements. One element (the scale) is rigidly mounted while the other element (the slider) is attached to the carriage-assembly and moves parallel to the scale as the read/write heads are moved in and out. Both the scale and the slider has 0.005 inch (0.127 mm) strips of copper, spaced 0.005 inches (0.127 mm) apart, which function as plates of a capacitor. The copper strips are electrically connected as shown in Figure 4-7. A 50 KHZ excitation voltage is applied to the copper strips on the scale so that the voltage on adjacent strips is 180° out of phase.

As the slider moves parallel to the scale a sinusoidally 50 KHZ signal is coupled to the slider. The amplitude of the sinusoid at any given point is a function of distance of the slider strips with respect to the scale strips with zero crossings occurring every 0.005 in. (0.127 mm) (see Figure 4-8). This signal is phase demodulated and peak detected on the I. P. Board. The SIN & COS signal is used to generate clock pulses for counting tracks. The phase relationship of these signals determine the direction of travel of the carriage. The zero crossings of the SIN signal are aligned to coincide with the center of the cylinder locations on the disk.

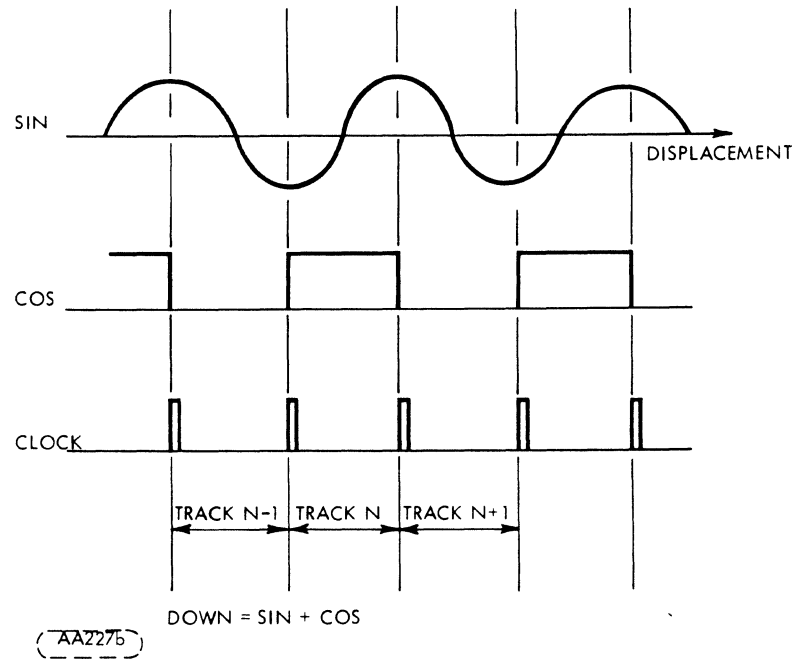
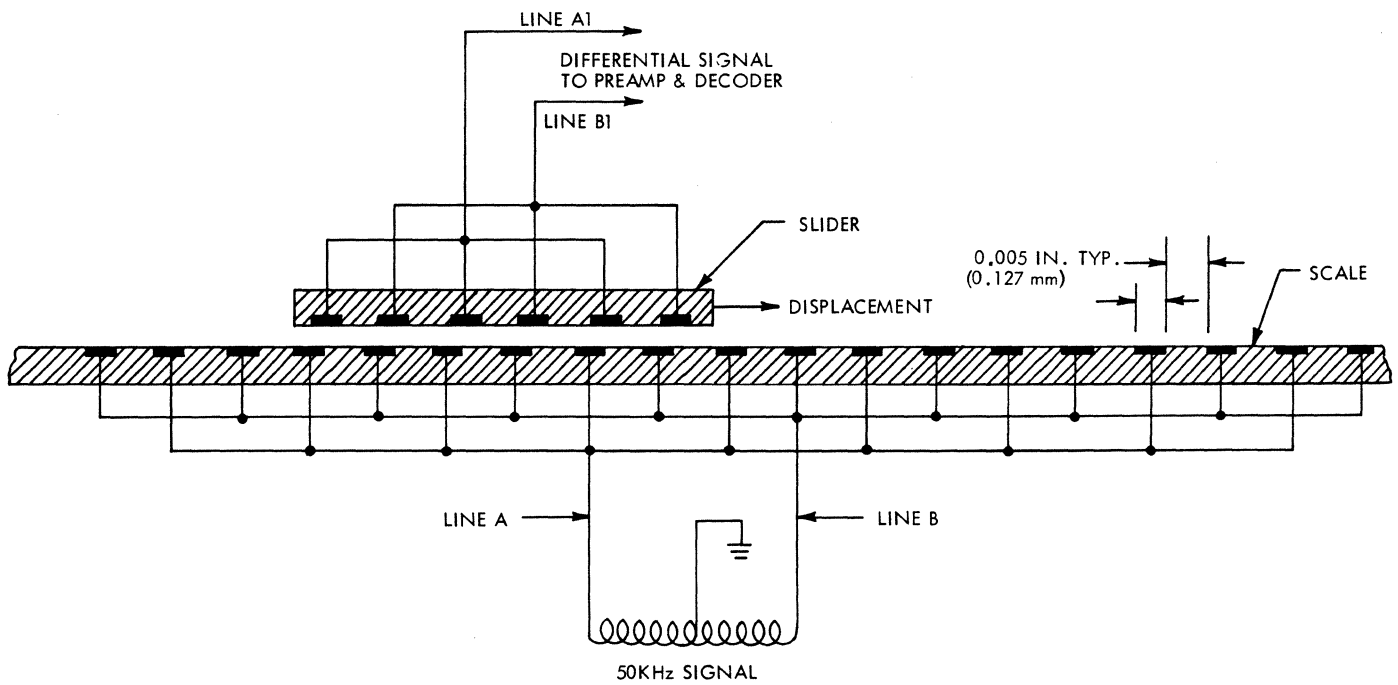
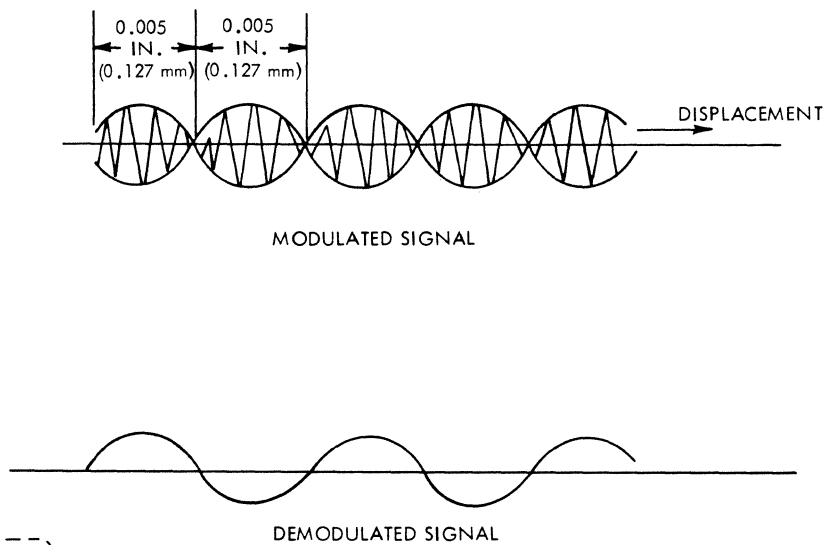


Figure 4-6. Counting Logic



AA229a

Figure 4-7. Capacitively Coupled Linear Displacement Transducer



AA228b

Figure 4-8. Position Transducer Signal

V

DIAGRAMS

5.1 INTRODUCTION

This section contains the intracabling diagram, a key to the logic diagram symbology, a Table of commonly used Integrated Circuits, Printed Circuit Board documentation, and electrical schematics.

Input/Output (I/O) Board documentation is included in the Hardware Product Configurator (HPC) Document Package located in front of the manual. It may be desirable to insert the I/O Board portion in front of this Section.

Also included in the HPC package is a "Device Specification" which defines the correct switch settings for the option selection switches which are located on circuit boards, and the terminator resistor values on the I/O Board. The value specified determines the Resistor Module (RM) installed on the I/O Board. The RM Part Numbers are listed in parts Data, Section 8. In addition, documentation describing Special Options, Special Printed Circuit Boards, and other customer unique features is included in the HPC package.

5.2 INTRACABLING DIAGRAM

The intracabling diagram (Figure 5-1) details the cable connection between each major assembly and the mother board. Sheet 2 of Figure 5-1 is to be used when tracing signals between the Fault Isolation Retention Module (FIRM) and the unit.

5.3 CIRCUIT BOARD DOCUMENTATION

Each of the following circuit board figures consists of an assembly drawing and parts list, a connector diagram, and a schematic diagram.

<u>CIRCUIT BOARD TITLE</u>	<u>BOARD IDENT. NO.</u>	<u>FIGURE NO.</u>
Control Board Assembly	75297508	5-15
Control Board Assembly	75297509	5-15
Sector Board Assembly	75883201	5-16
Servo Board Assembly	77831400	5-17
Data Recovery Board Asm.	75297105	5-18
Read/Write/Erase (2400 RPM)	75891100	5-19
Read/Write/Erase (1500 RPM)	75880500	5-19
AGC Servo Preamp Bd Asm	77831200	5-20
Power Supply Board No. 1	77830321	5-21
Power Supply Board No. 2	77830330	5-22
Spindle Motor Brake Asm	75866206	5-23
Switch Board Assembly	75299103	5-24
Switch Board Assembly	75299102	5-24
Component Board - Mother	75870203	

(For reference only 5-1)

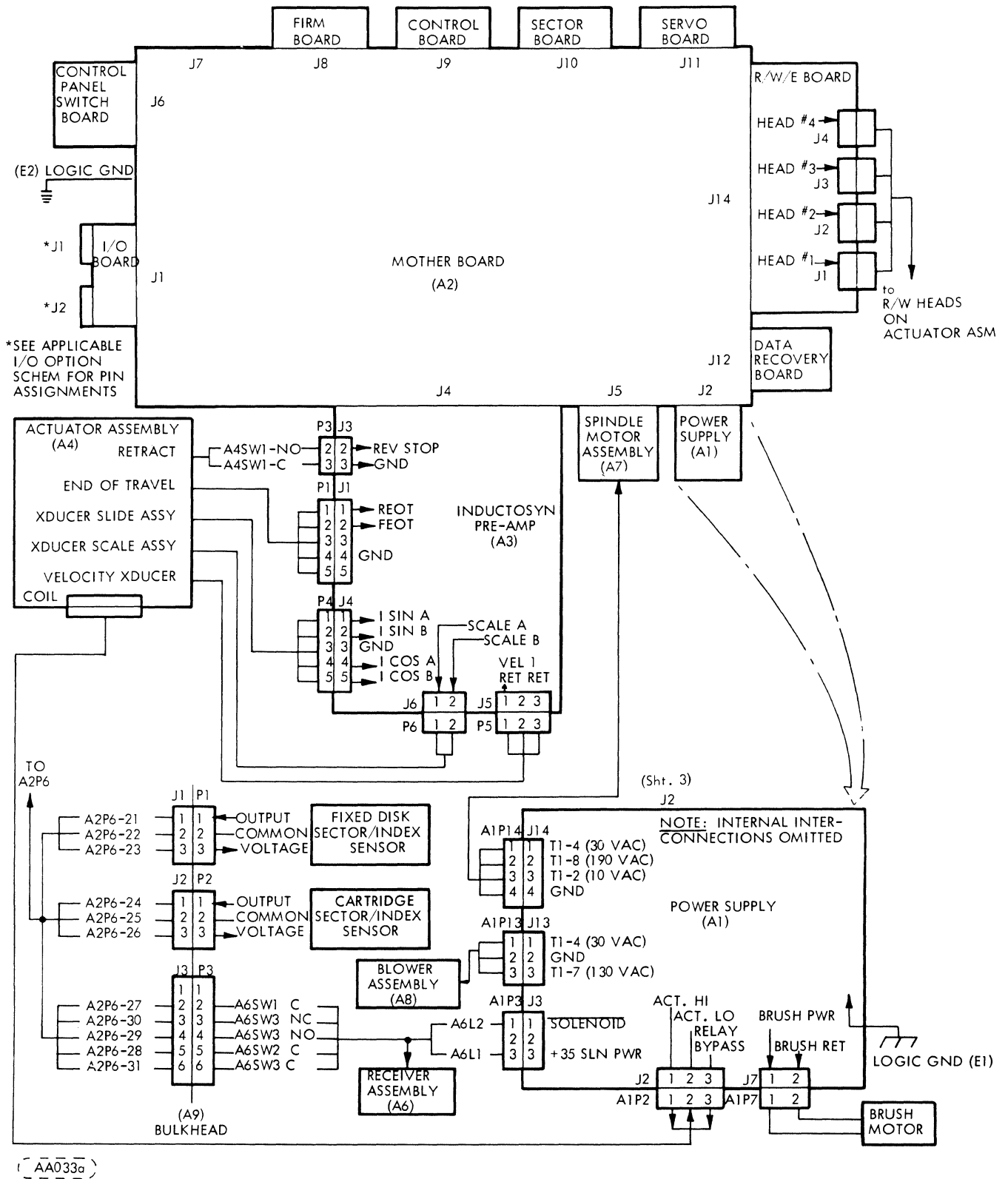
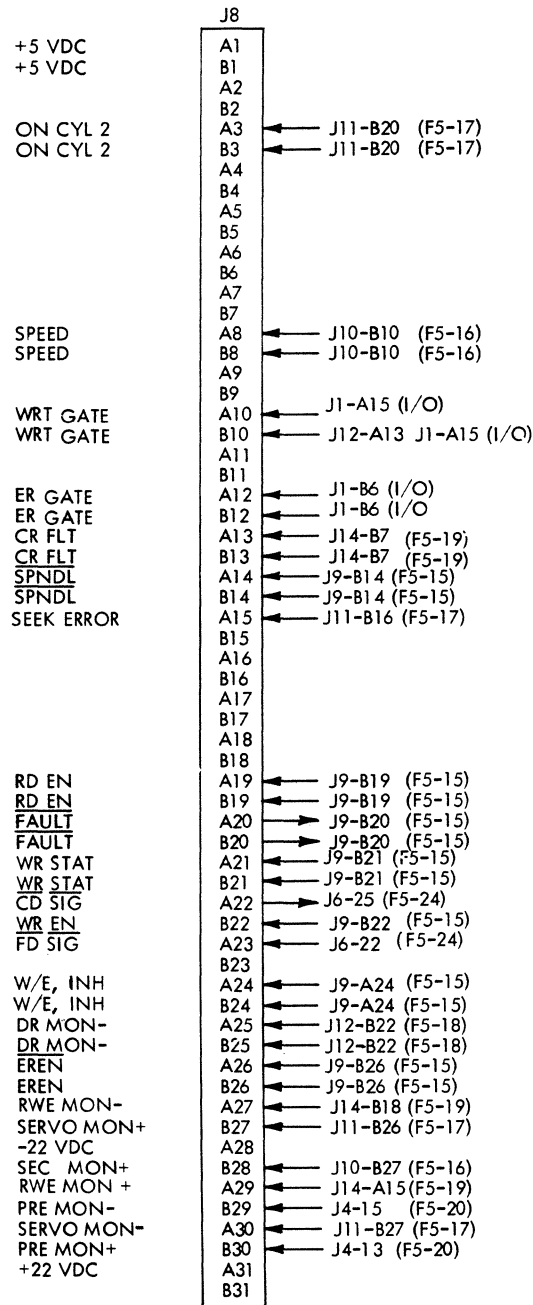


Figure 5-1. Detailed Intracabling Diagram (Sheet 1 of 2)

FIRM BOARD



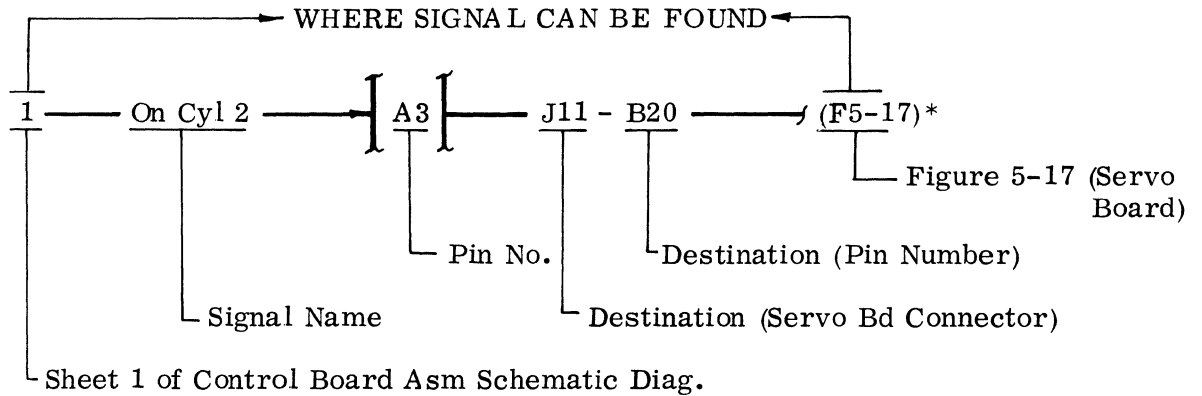
AA053a

Figure 5-1. Detailed Intracabling Diagram (Sheet 1 of 2)

5.3.1 Connection Diagrams

Logic signals can be traced throughout the unit by using the circuit board connector diagrams. Each diagram lists the sheet number(s) of the accompanying schematic and the next connector diagram(s) figure number on which the signal can be found.

EXAMPLE: Figure 5-15 Control Board Assembly



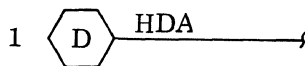
*(I/O)

I/O Board (refer to HPC package
Located in front of manual)

5.3.2 Schematic Diagrams

Multiple sheet (SET of pages) circuit board schematics are sequentially numbered (1, 2, 3 etc) in the upper right-hand corner of each schematic sheet. Symbology for Sheet to sheet connections and board to board connections are as follows:

- Sheet to Sheet ON PAGE example:

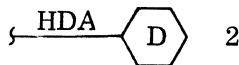


1 = Signal "from" sheet 1 of SET

D = ON sheet reference (from sht 1 of set)

HDA = Signal name (from sh 1 of set,
location (D))

- Sheet to Sheet OFF PAGE example:

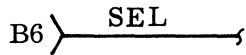


2 = Signal "to" sheet 2 of SET

D = OFF sheet reference (to sheet 2 of set)

HDA = Signal name (to sheet 2 of set,
location (D))

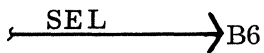
- Board to Board ON PAGE example:



B6 = Pin Location of board connector
(Ref Para. 5.3.1)

SEL = Signal name (Ref Para. 5.3.1)

- Board to Board OFF PAGE example:



B6 = Pin location of board connector
(Ref para. 5.3.1)

SEL = Signal name (Ref para. 5.3.1)

5.4 MAJOR ELECTRICAL DIAGRAMS

<u>Figure Title</u>	<u>Figure Number</u>
AC-DC Power Distribution:	
● Without Dynamic Brake	5-25
● With Dynamic Brake	5-26
● Without Dynamic Brake and Special RFI Filters	5-27
● Without Dynamic Brake and with Filters & Power Input Assembly	5-28
● With Dynamic Brake and Spl RFI Filters	5-29
Baseplate Electronics	5-30

5.5. LOGIC DIAGRAM SYMBOLOGY

5.5.1 General Information

Logic symbols are drawn with inputs on the left and outputs on the right whenever space and layout permit.

Power supply connections, discrete timing components, etc, may be shown connected to the top or bottom of the symbol. Unused pins and unused elements need not be shown. Figure 5-2 illustrates functionally equivalent symbols.

5.5.2 General Signal Annotation

S = Set input to bistable device

R = Reset (Clear) input to bistable device

G = Gate input has no direct action on circuit, but must be present before inputs (and/or outputs) are able to function. If more than one gate is used a numeric suffix is added (G1, G2, etc.)

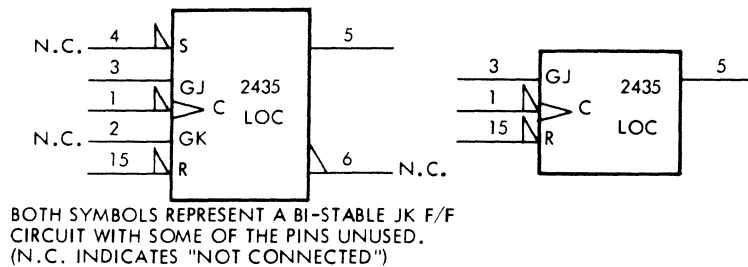
D = Identifies a signal which requires the presence of another signal to perform its function.

C = Strobe pulse. Usually used to gate "D" inputs into a bistable device.

T = Toggle input. Bistable device changes state each time "T" assumes its specified state.

J = J output conditioned by leading edge of dynamic toggle (G).

K = K output conditioned by leading edge of dynamic toggle (G).



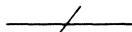
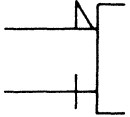
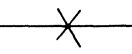
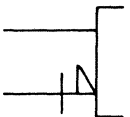
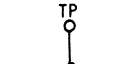
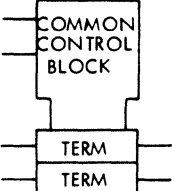
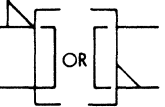
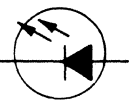
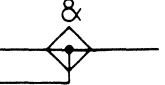

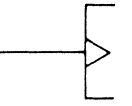
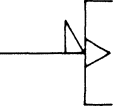
(AA142a)

Figure 5-2. Functionally Equivalent Symbols

5.5.3 Symbology

Logic Symbols are as described in Table 5-1.

Table 5-1. Logic Symbology








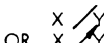

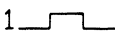


	INDICATES NON-STANDARD LOGIC LEVELS		A HIGH LEVEL ON THE LOWER INPUT "INHIBITS" THE BLOCK OUTPUT FROM ASSUMING ITS ACTIVE STATE
	INDICATES NON-LOGIC (ANALOG) SIGNALS		A LOW LEVEL ON THE LOWER INPUT "INHIBITS" THE BLOCK OUTPUT FROM ASSUMING ITS ACTIVE STATE
	TEST POINT		INPUTS TO THE COMMON CONTROL BLOCK AFFECT EVERY TERM IN THE ARRAY. INPUTS TO EACH TERM AFFECT ONLY THAT TERM.
	INDICATES TWO OR MORE LINES WHICH CARRY THE SAME INFORMATION (USUALLY DIFFERENTIALLY)		LIGHT EMITTING DIODE
	WIRED "AND" CIRCUIT		TRIAC
	DYNAMIC INPUT ACTIVE DURING THE TRANSITION FROM LOW TO HIGH STATE		
	DYNAMIC INPUT ACTIVE DURING THE TRANSITION FROM HIGH TO LOW STATE		

(AA142c)

5.5.4 Function Symbology

Function symbols are as described in Table 5-2.

Table 5-2. Function Symbols

	OSCILLATOR	$X \rightarrow Y$	DECODER
	AMPLIFIER		DIGITAL TO ANALOG CONVERTER
	"AND" GATE	mVR	VOLTAGE REGULATOR OUTPUT VALUE "m"
	"OR" GATE	MUX	MULTIPLEXER
	"EXCLUSIVE OR"	SR	SHIFT REGISTER
	FUNCTION GENERATOR	CNTR	COUNTER
	LEVEL CONVERSION	ALU	ARITHMETIC LOGIC UNIT
	SCHMITT TRIGGER	RCVR	RECEIVER
	SINGLE SHOT		
	SUMMING CIRCUIT		
	THRESHOLD (ANALOG OUTPUT) OR COMPARATOR (BINARY OUTPUT) PRODUCES A CHANGE IN THE OUTPUT SIGNAL WHEN INPUT EXCEEDS A PREDETERMINED LEVEL "m".		

(AA142d)

5.5.5 Abbreviations

ADR = ADDRESS
AMP = AMPLIFIER
CART = CARTRIDGE
CNT = COUNT
COM = COMMON
CUR = CURRENT
CYL = CYLINDER
DIFF = DIFFERENCE
E = ERASE
EN = ENABLE
EOT = END OF TRAVEL
FWD = FORWARD
HD = HEAD
LD = LOAD
NC = NORMALLY CLOSED
NO = NORMALLY OPEN
PWR = POWER
R = READ
REV = REVERSE
RTZS = RETURN TO ZERO SEEK
SEL = SELECT
T = TRACK
T.A. = TRACK ADDRESS
VEL = VELOCITY
W = WRITE

5.5.6 IC Index and Cross Reference

Refer to Table 5-3 for a cross-reference between CDC element number and manufacturer type.

Table 5-3. Integrated Circuit Index & Cross Reference

CDC DESIGNATION		MANUFACTURING DESIGNATION	
ELEMENT	PART NUMBER	TYPE	FUNCTION
4001	15135000	4001	CMOS QUAD 2 INPUT NOR
4002	15133000	4002	CMOS DUAL 4 INPUT NOR
4008	15133100	4008	CMOS 4 BIT ADDER
4011	15133200	4011	CMOS QUAD 2 INPUT NAND
4012	15133300	4012	CMOS DUAL 4 INPUT NAND
4013	15133400	4013	CMOS DUAL "D" FLIPFLOP
4019	15133500	4019	CMOS QUAD AND-OR-SELECT
4023	15133700	4023	CMOS TRIPLE 3 INPUT NAND
4024	15133800	4024	CMOS 7 STAGE BINARY COUNTER
4029	15134100	4029	CMOS PRESETTABLE UP-DOWN COUNTER
4030	15134200	4030	CMOS QUAD EXCLUSIVE OR
4035	15134300	4035	CMOS SHIFT REGISTER
4047	15134600	4047	CMOS RESETTABLE RETRIGGERABLE ONE-SHOT
4049	15134700	4049	CMOS HEX INVERTER BUFFER
4050	15134800	4050	CMOS HEX BUFFER
4053	15135100	4053	CMOS BIDIRECTIONAL ANALOG MUX
4528	15135400	4528	CMOS DUAL RESETTABLE RETRIGGERABLE ONE-SHOT
195	15104300	9602	TTL DUAL RETRIGGERABLE ONE-SHOT
175	15104800	7474	TTL DUAL "D" FLIPFLOP
146S	15109200	74504	TTL HEX INVERTER
243S	15109400	745112	TTL DUAL J-K FLIPFLOP
175S	1519700	74574	TTL DUAL "D" FLIPFLOP
140L	15112300	74L00	TTL QUAD 2 INPUT NAND
146L	15112700	74L04	TTL HEX INVERTER
341	15126600	LM339	QUAD COMPARATOR
327	15132600	MC1468	DUAL 15 VOLT REGULATOR
195L	15150700	96L02	TTL DUAL RETRIGGERABLE ONE-SHOT
146	36187100	7404 '9016	TTL HEX INVERTER
209	36187900	7453	TTL 4 WIDE 2 INPUT AND-OR-INVERT
140H	36188700	74H00	TTL QUAD 2 INPUT NAND
141	50250700	7410 '9003	TTL TRIPLE 3 INPUT NAND
173H	50251700	3004	TTL QUAD 2 INPUT NAND
149H	50251800	3021	TTL QUAD EXCLUSIVE OR
140S	50254600	74500	TTL QUAD 2 INPUT NAND
141S	50254700	74510	TTL TRIPLE 3 INPUT NAND
208S	50254900	74520	TTL DUAL 4 INPUT NAND
140	51651900	7400 '9002	TTL QUAD 2 INPUT NAND
146	51701800	7404 '9016	TTL HEX INVERTER
158	51761500	74161/9316	TTL 4 BIT BINARY COUNTER

(AA156a)

5.5.7 Circuit Types and Waveforms

Figure 5-3 illustrates a typical integrated circuit. Figures 5-4 through 5-14 illustrates the various types of circuits and associated waveforms.

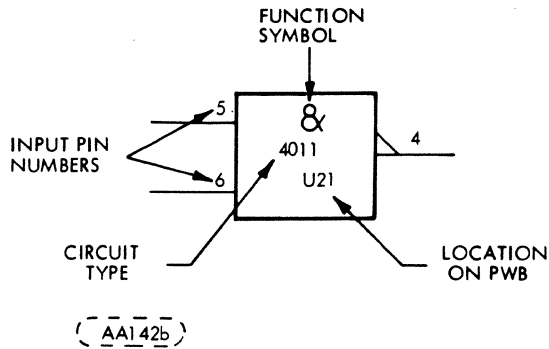


Figure 5-3. Typical Integrated Circuit

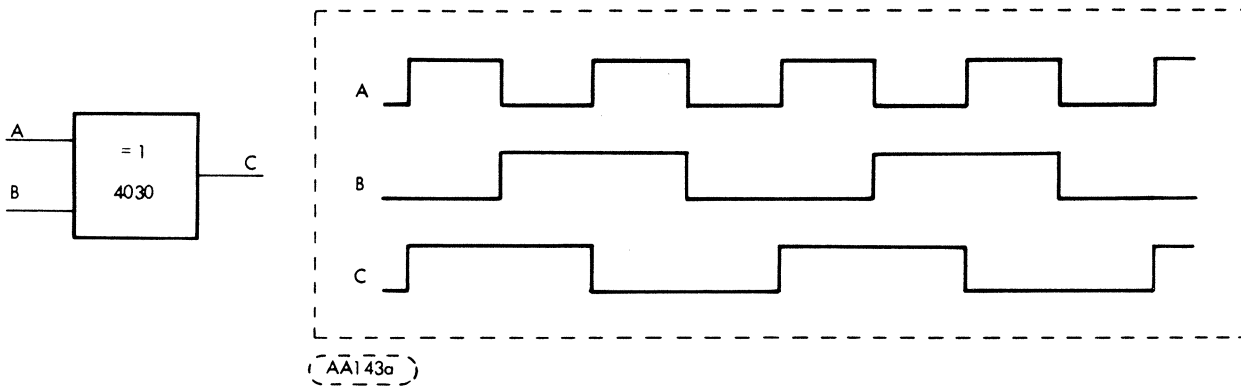


Figure 5-4. Exclusive OR

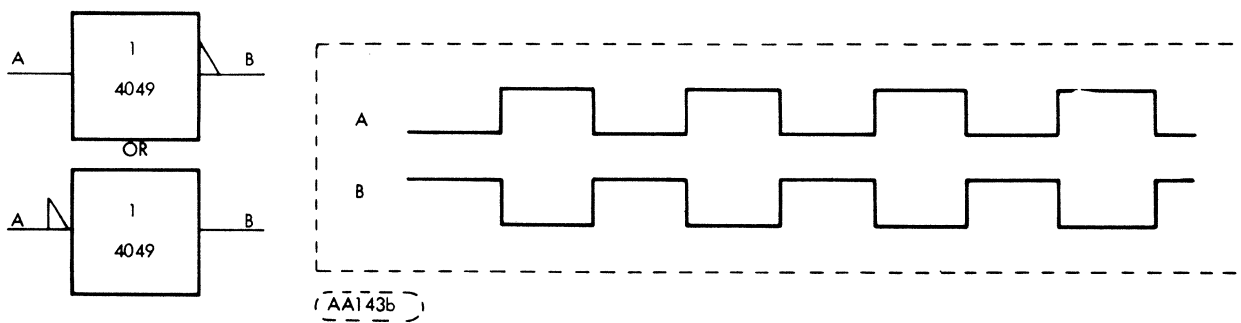
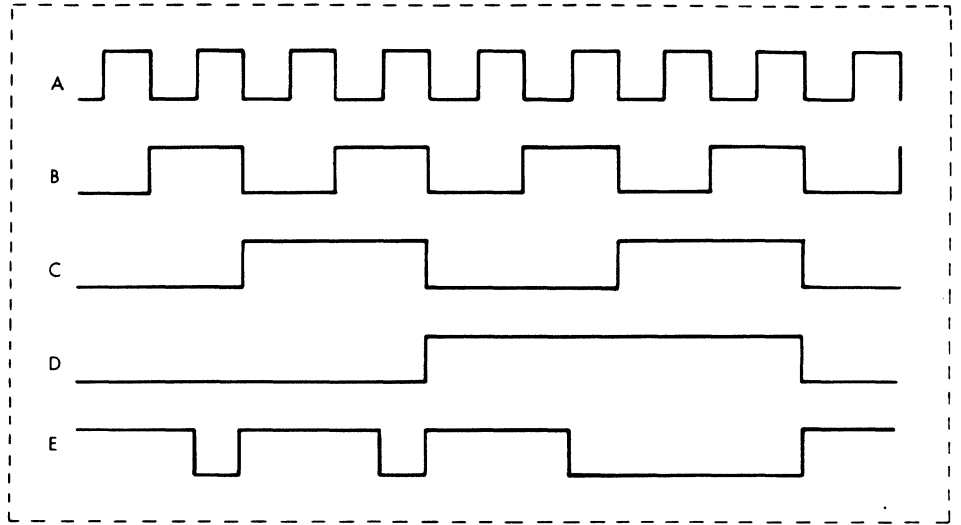
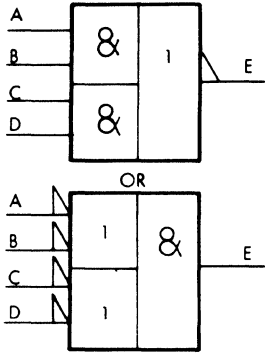
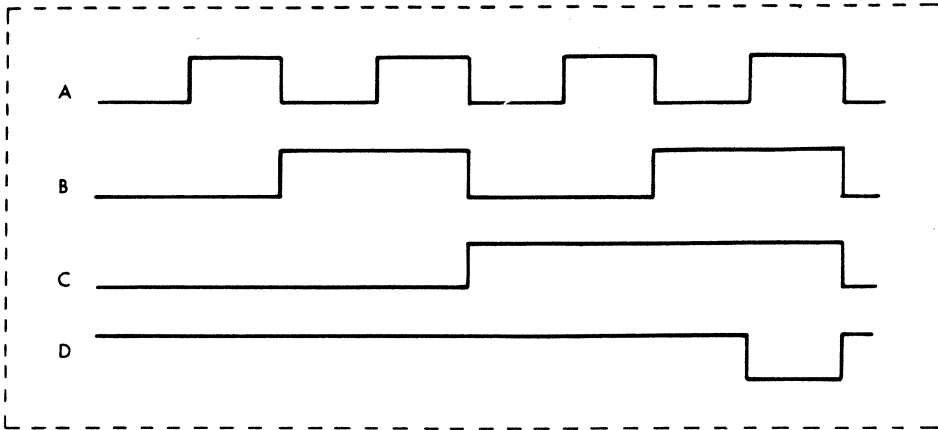
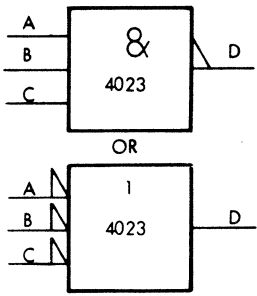


Figure 5-5. Invert

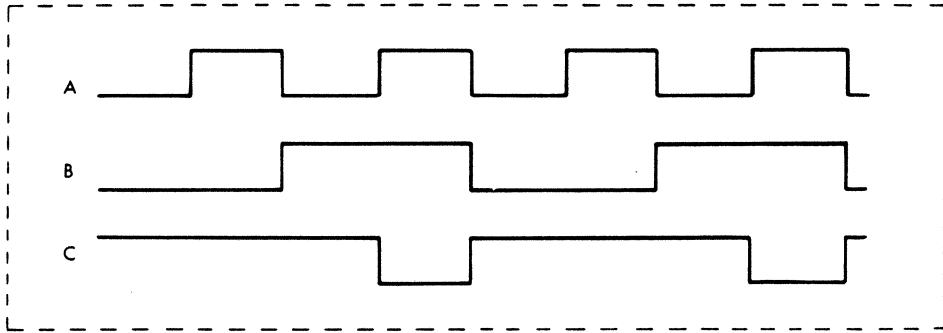
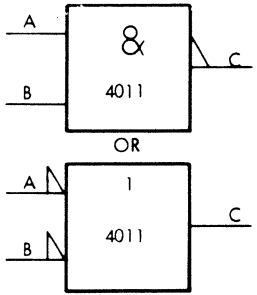


(AA143c)

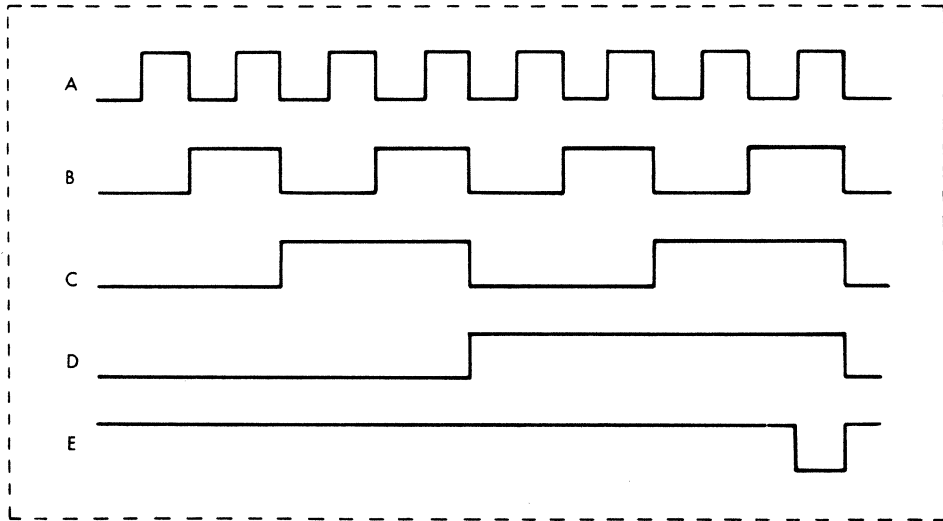
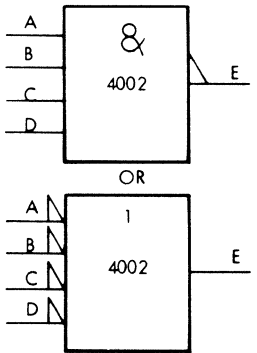
Figure 5-6. AND-OR-INVERT



(AA144a)



(AA144b)



(AA144c)

Figure 5-7 Positive NAND Negative NOR

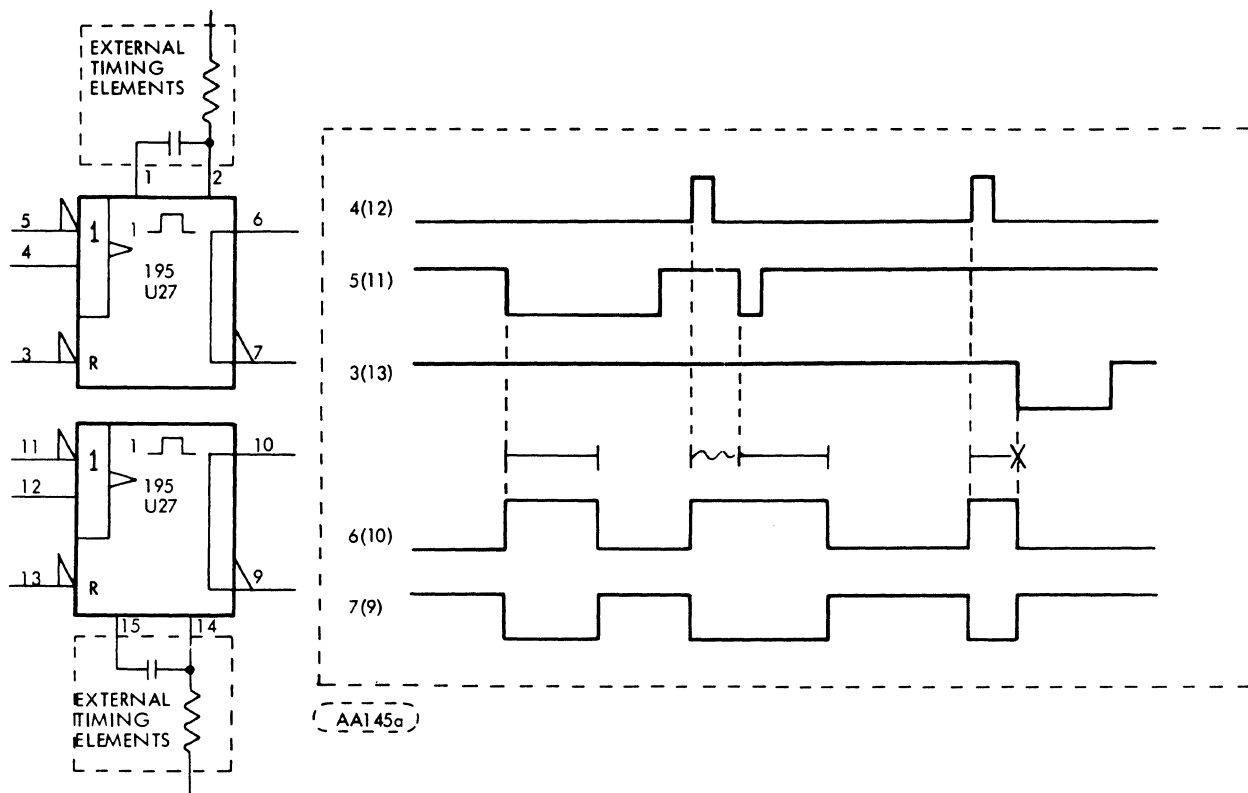


Figure 5-8. Retriggerable, Resettable, Monostable Multivibrator (One Shot)

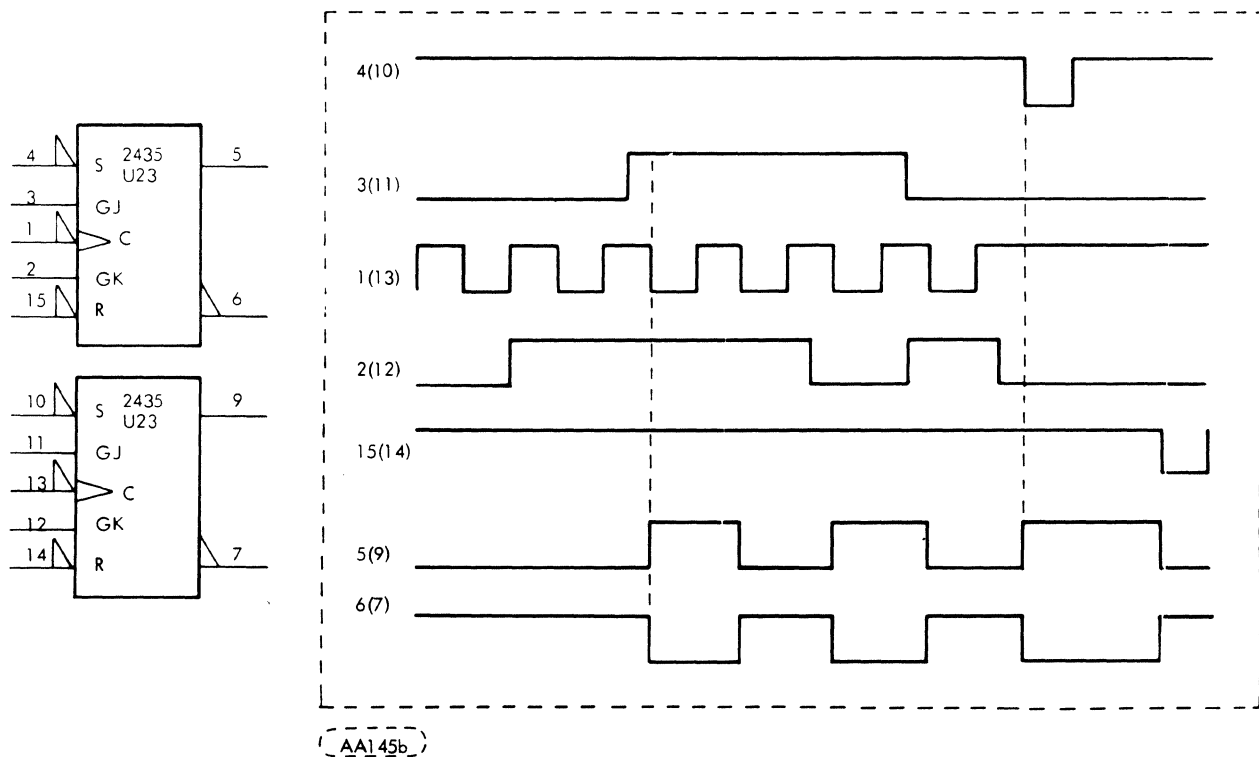


Figure 5-9. 'JK' Type F/F

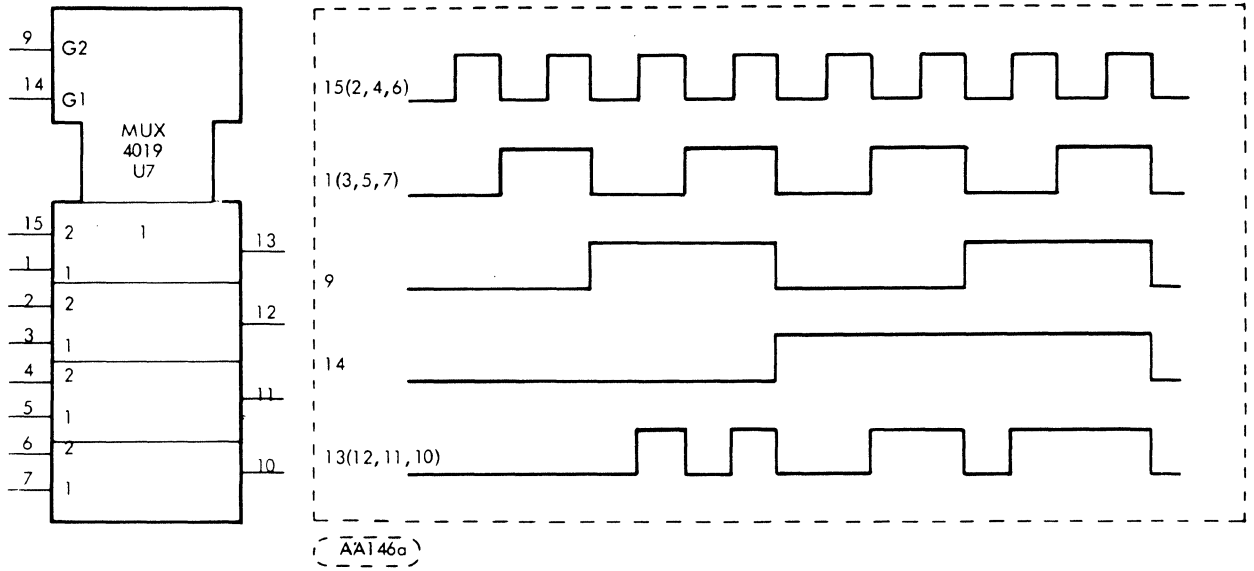


Figure 5-11. Quad 2 X 1 Multiplexer

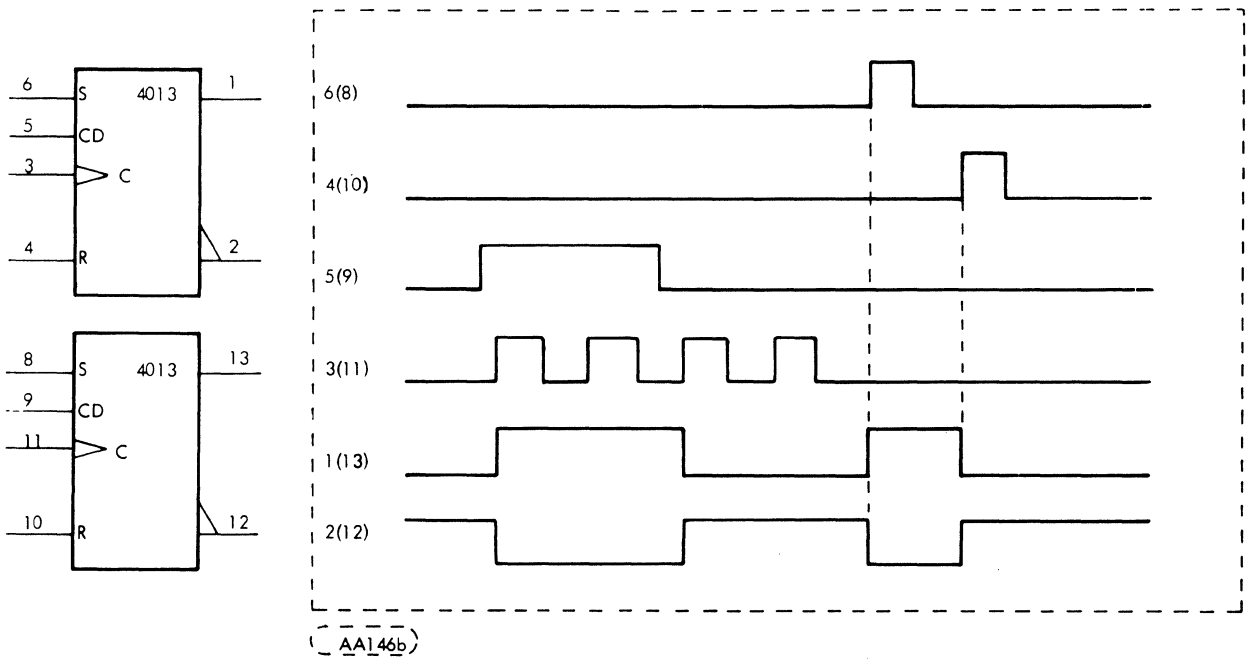
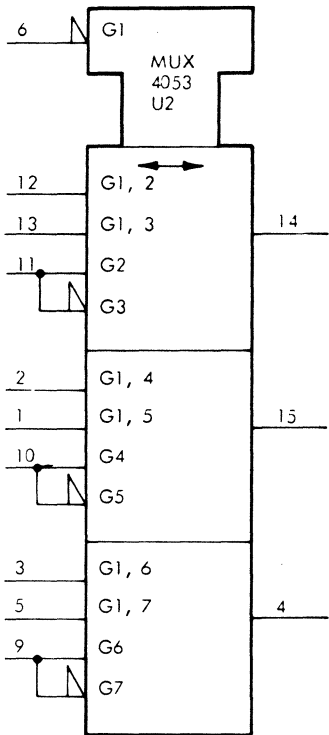
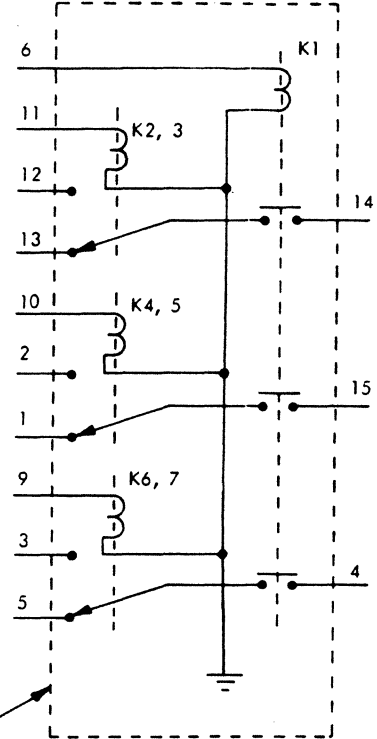


Figure 5-12. 'D' Type F/F



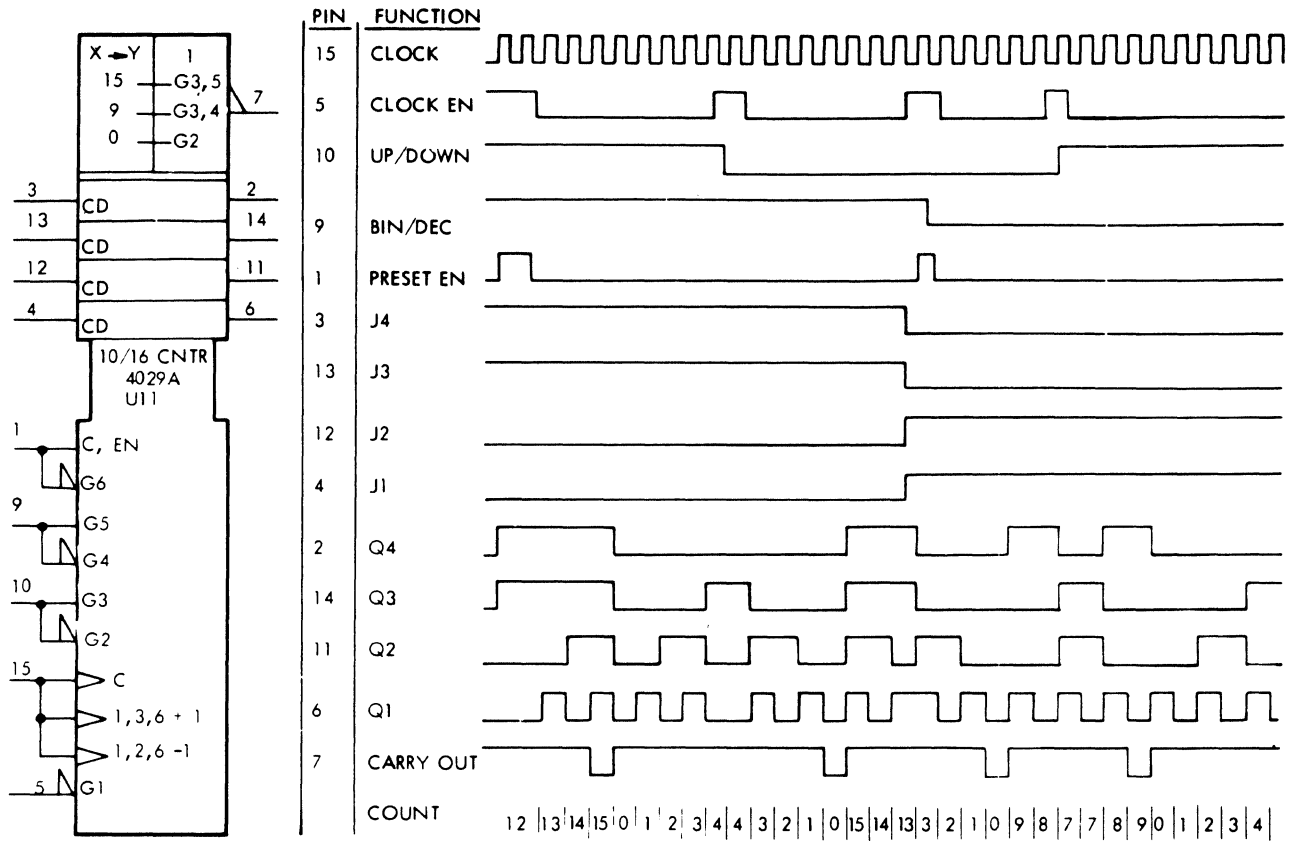
TRUTH TABLE			
INPUTS		BIDIRECTIONAL CHANNEL TO PIN 14	
PIN 6	PIN 11	PIN 12	PIN 13
L	L	NO	YES
L	H	YES	NO
H	X	NO	NO
		BIDIRECTIONAL CHANNEL TO PIN 15	
PIN 6	PIN 10	PIN 2	PIN 1
L	L	NO	YES
L	H	YES	NO
H	X	NO	NO
		BIDIRECTIONAL CHANNEL TO PIN 4	
PIN 6	PIN 9	PIN 3	PIN 5
L	L	NO	YES
L	H	YES	NO
H	X	NO	NO



THIS IS THE FUNCTIONAL EQUIVALENT OF THREE SINGLE POLE DOUBLE THROW RELAYS IN SERIES WITH A THREE POLE SINGLE THROW RELAY.

(AAT48b)

Figure 5-13. Bidirectional Analog Multiplexer

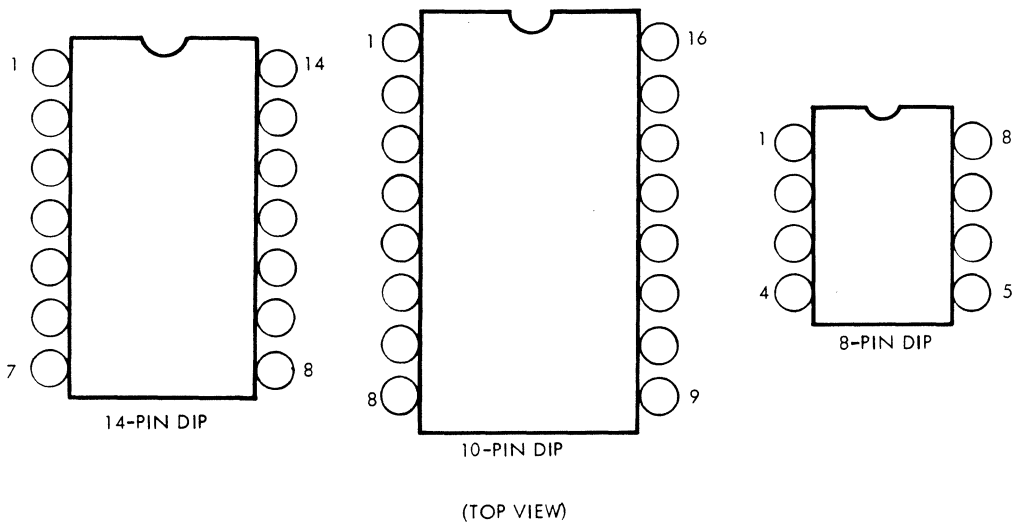


(AA149b)

Figure 5-14. Decimal/Binary Up/Down Presettable Counter

5.5.8 IC Package Layout

The pin locations for typical Integrated Circuit (IC) packages are shown below.



(BB009a)

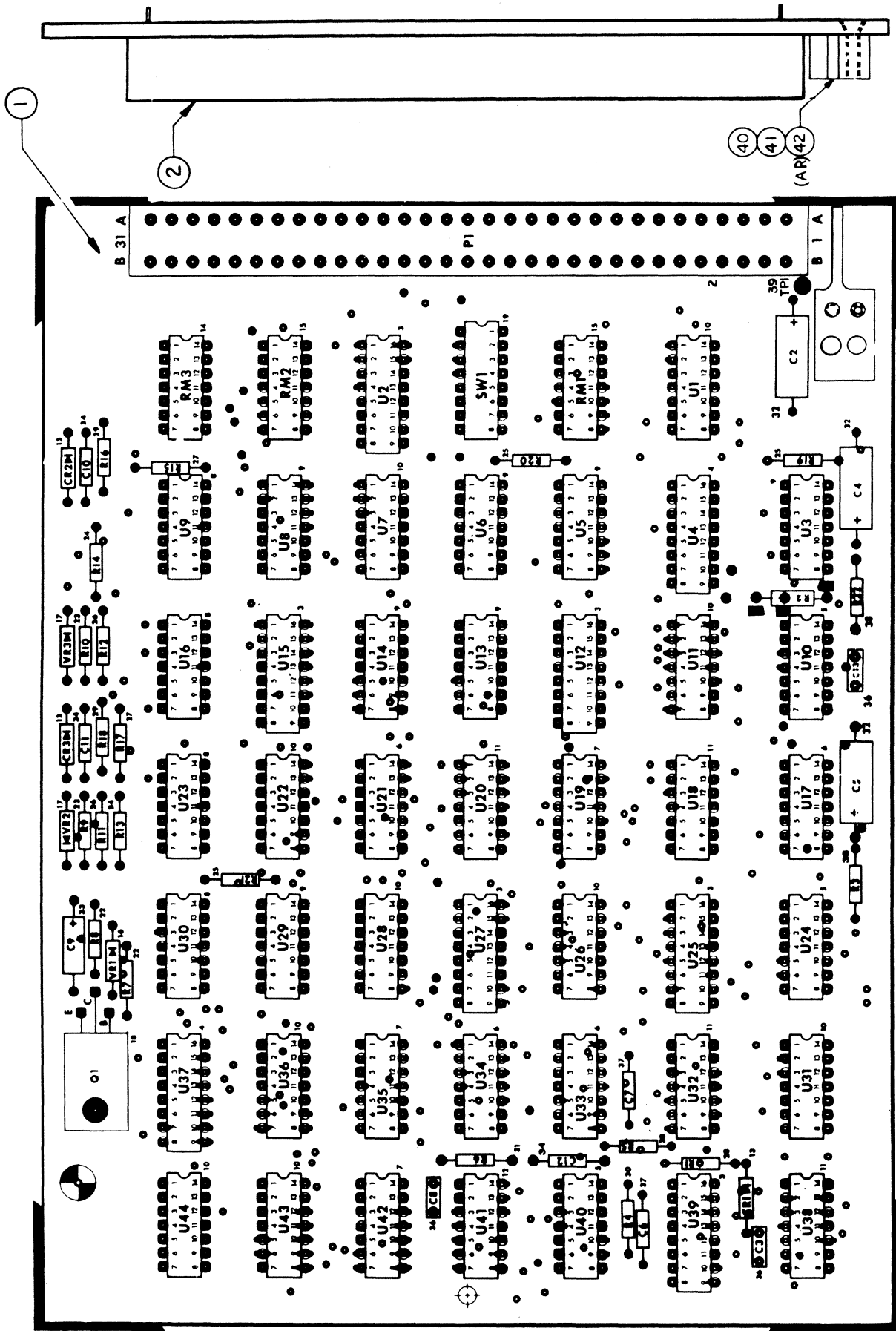
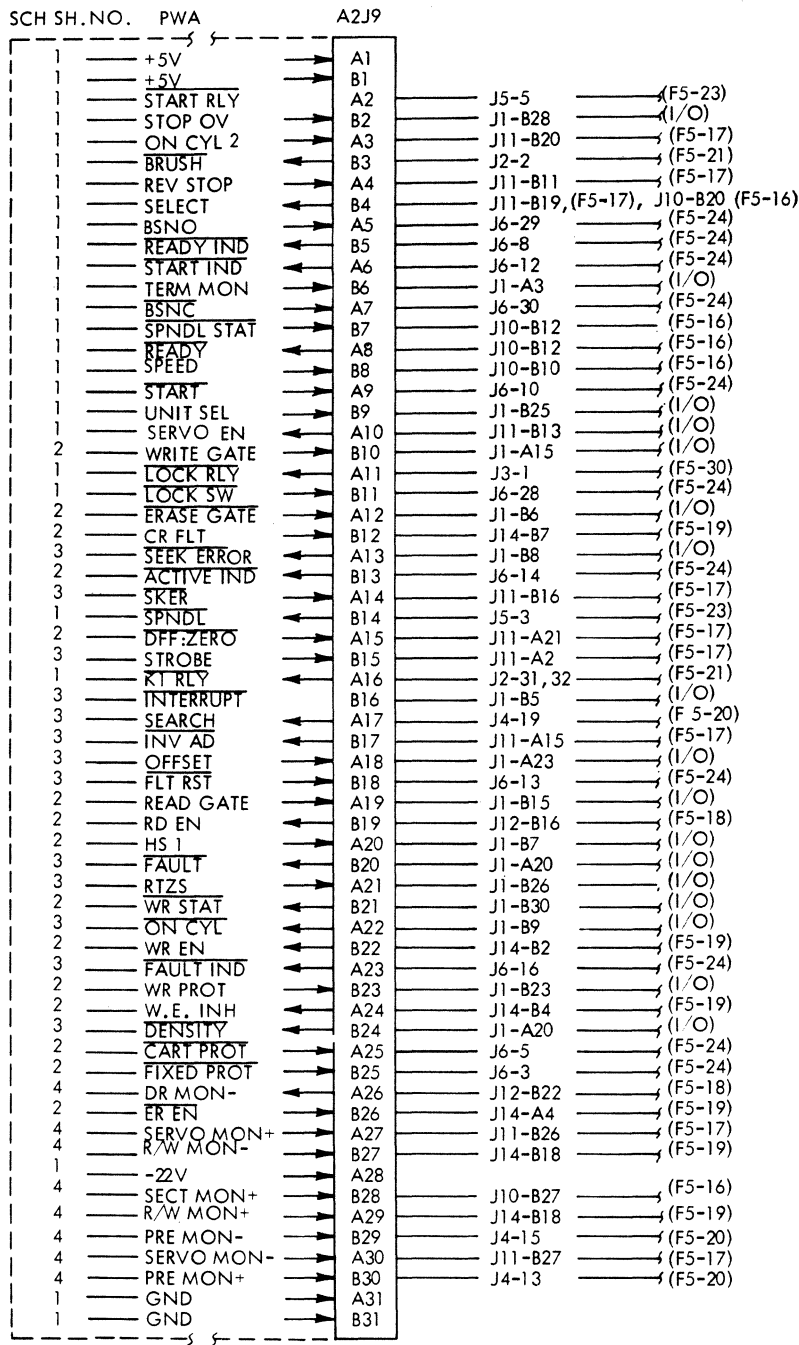


Figure 5-15. Control Board Assembly (Sheet 1 of 7)

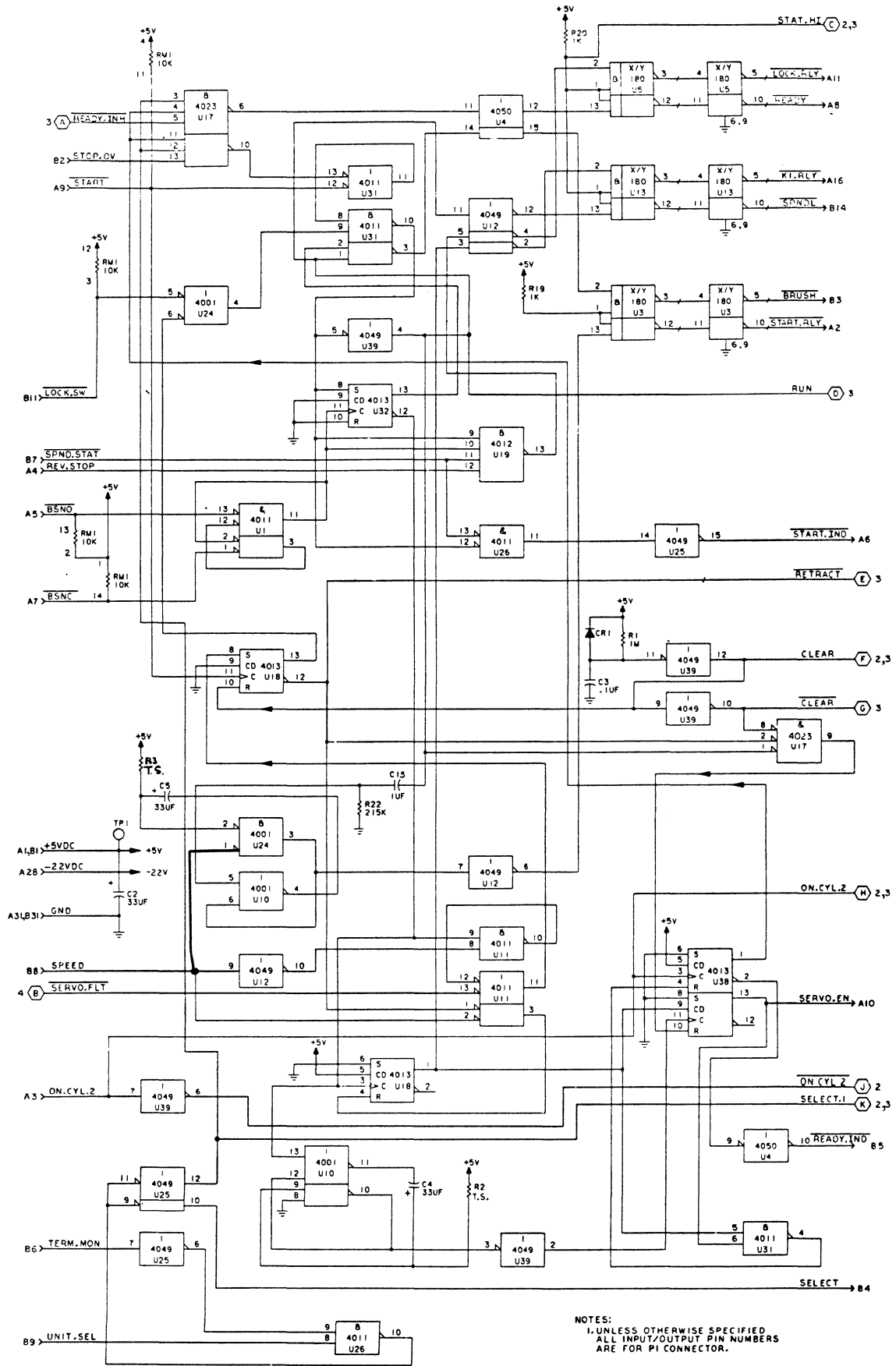
<u>ITEM NO.</u>	<u>IDENTIFICATION NUMBER</u>	<u>DRAWING TITLE</u>
1	75297406	Board PC Control
1	75892420	PWB, Control Board
2	77836070	PWB Socket Connector
3	15134700	CMOS 4049B
4	15134800	CMOS 4050B
5	15135000	CMOS 4001B
6	15133700	CMOS 4023B
7	15133300	CMOS 4012B
8	15126600	IC LM339
9	51768200	IC Dual
10	15133200	CMOS 4011B
11	15133400	CMOS 4013B
12	15134600	IC 4047 CMOS 1 Shot
13	51736700	Diode 1N914A
14	75009901	Res Pac 2% 1.0K (13)
15	75009993	Res Pac 2% 10K (7)
16	50240107	Volt Reg 5.6 V 5%
17	50240101	Diode Zener 3.3V
18	75752400	Transistor Power
19	83452205	Switch-8 Position
21	93640012	Stud-Self Clinching
22	94360344	Res 1/4W 1% 2.87K
23	94360187	Res 1/4W 1% 80.6
24	94360287	Res 1/4W 1% 806
25	94360300	Res 1/4W 1% 1.00K
26	94360317	Res 1/4W 1% 1.50K
27	94360346	Res 1/4W 1% 3.01K
28	94360596	Res 1/4W 1% 1.00 Meg
29	94360500	Res 1/4W 1% 100K
30	94360457	Res 1/4W 1% 39.2K
31	92512629	Res 2.2M Ohm 1/4W 1
32	24504353	Cap 10V 20% 33UF
33	24504329	Cap 35V 20% 1.0UF
34	92496211	Cap Non-Elect 470 pf
36	92496046	Capacitor .1UF .50V
37	92496219	Capacitor 2200 PF
38	94360532	Res 1/4W 1% 215K
39	92498021	Terminal, Swaged
40	83479901	Key, Inject, Mold
41	10125703	Scr Flat Hd
42	75312701	Spec-Adhesive, Epoxy
43	92512000	Resistor Test Sel.
44	77612165	Terminal, Slotted
44	75732602	Pin-Wire Wrap-Intch
45	94357500	Resistor Test Sel
47	92583002	Nut Lock

Figure 5-15. Control Board Assembly (Sheet 2 of 7)



AA092a

Figure 5-15. Control Board Assembly (Sheet 3 of 7)



NOTES:
 1. UNLESS OTHERWISE SPECIFIED
 ALL INPUT/OUTPUT PIN NUMBERS
 ARE FOR PI CONNECTOR.

Figure 5-15. Control Board Assembly (Sheet 4 of 7)

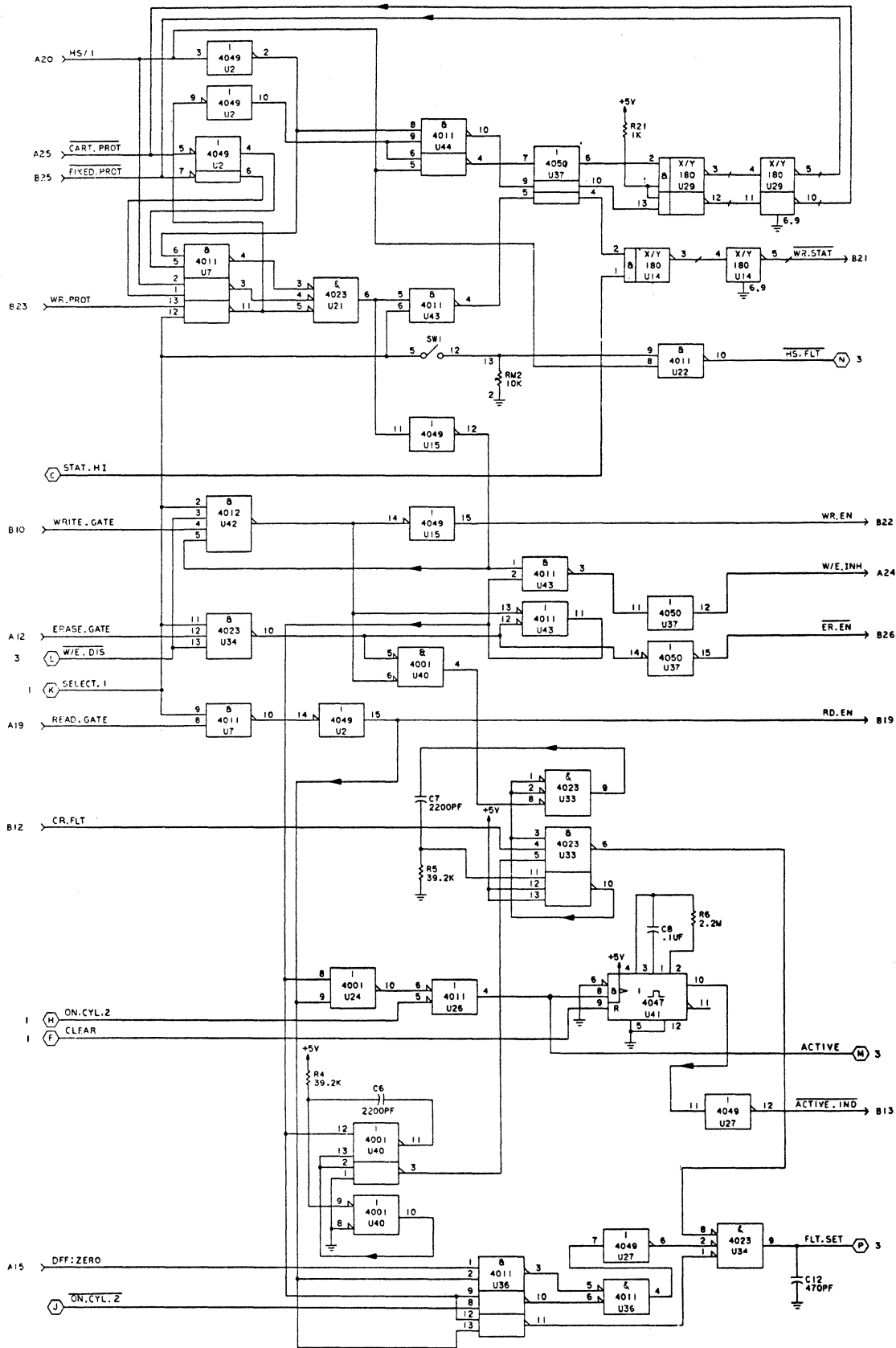


Figure 5-15. Control Board Assembly (Sheet 5 of 7)

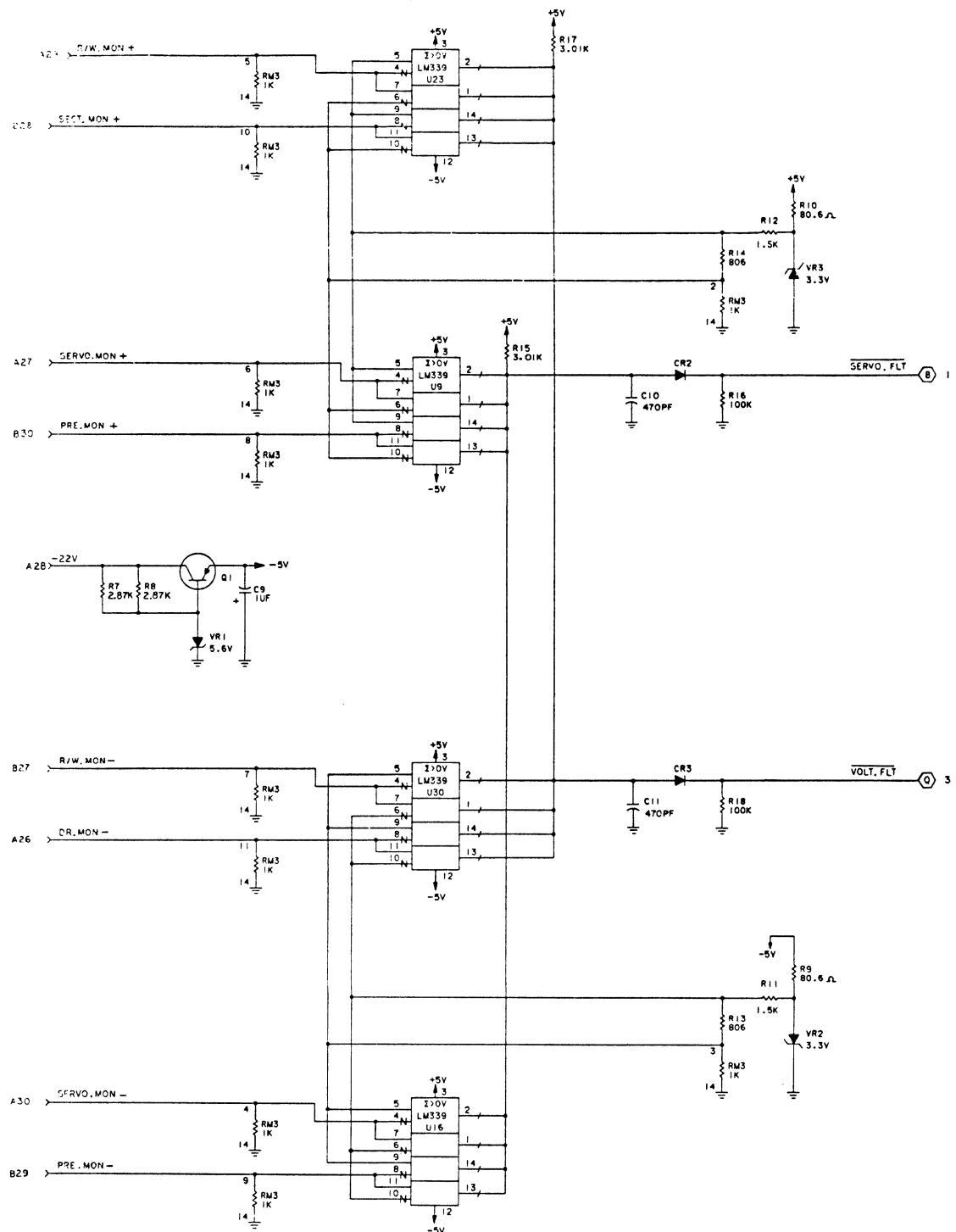
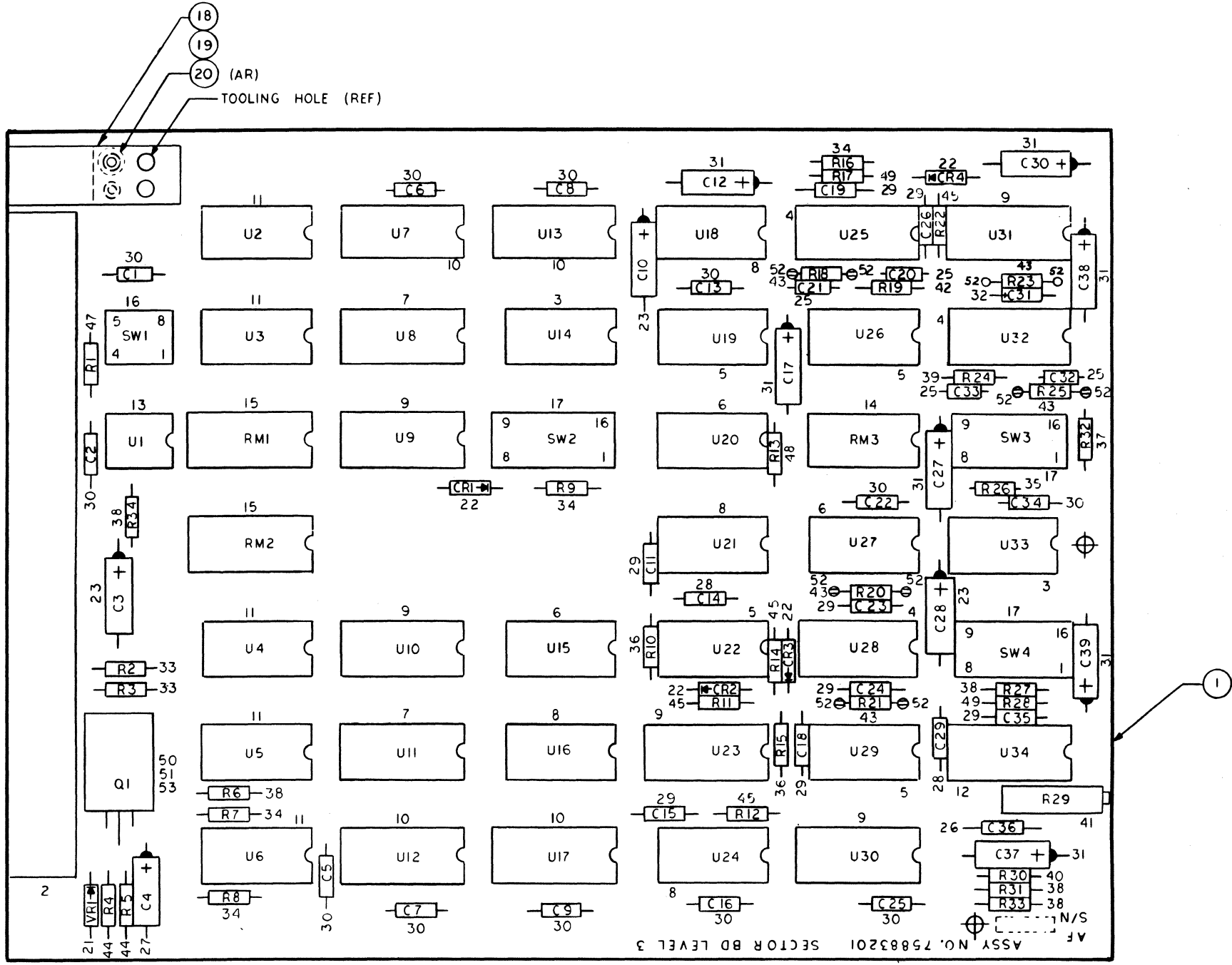


Figure 5-15. Control Board Assembly (Sheet 7 of 7)

Figure 5-16. Sector Board Assembly (Sheet 1 of 8)

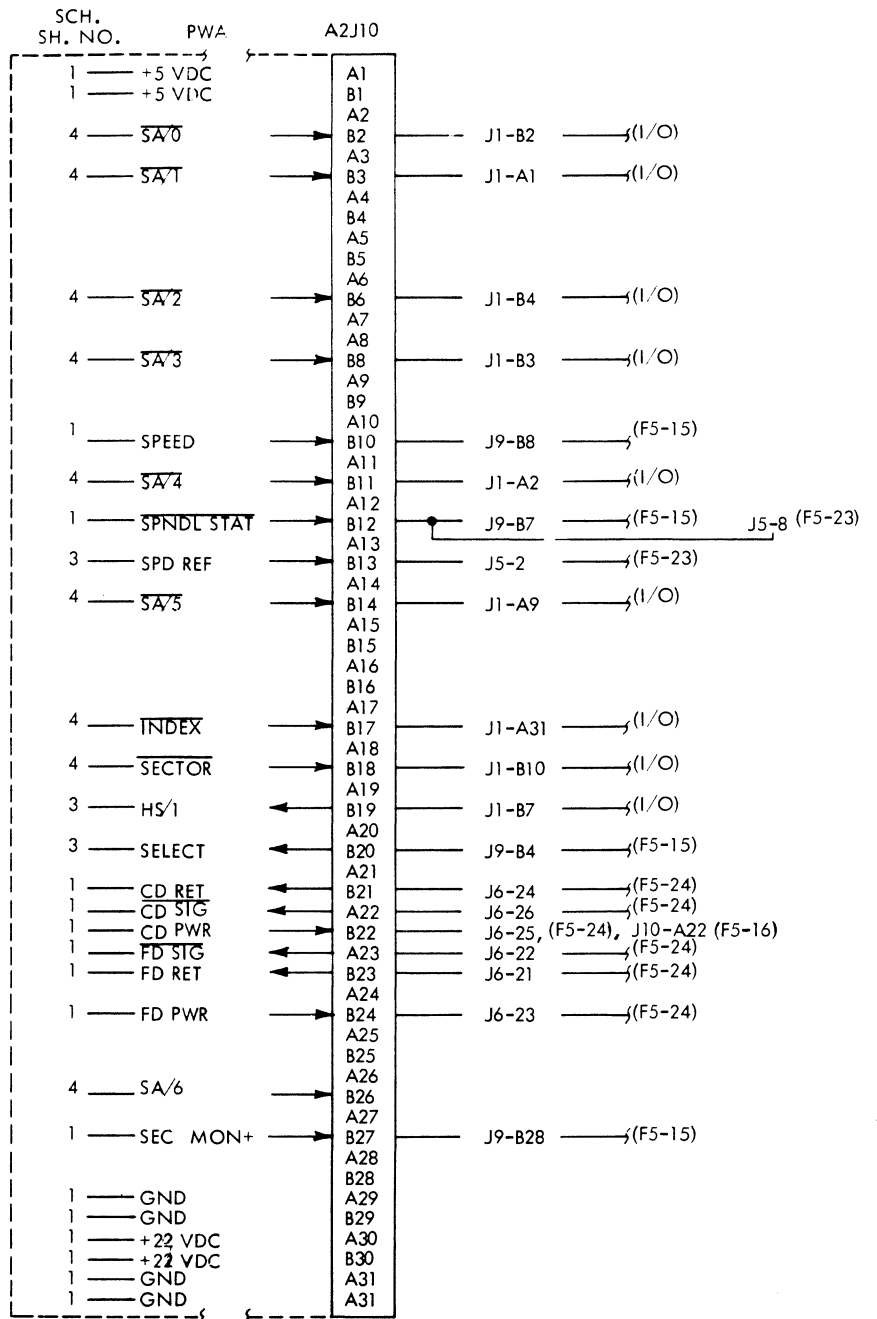


<u>ITEM NO.</u>	<u>IDENTIFICATION NO.</u>	<u>DRAWING TITLE</u>
1	75883101-0	PWB Sector Level 3
2	77836070-1	PWB Socket Connector
3	15133800-1	CMOS 4024B
4	15135400-8	CMOS 4528B
5	15135000-6	CMOS 4001B
6	15133400-0	CMOS 4013B
7	15133500-7	CMOS 4019B
8	15133200-4	CMOS 4011B
9	15134700-2	CMOS 4049B
10	15134100-5	CMOS 4029B
11	51768200-1	IC Dual
12	15150700-1	IC, 96L02
13	15112100-1	IC NE555
14	75009993-9	Res Pac 2% 10K (7)
15	75738605-7	Resistor Module 150
16	83452201-3	Switch-4 Position
17	83452205-4	Switch-8 Position
18	83479701-1	Key, Inject Mold
19	10125703-8	Scr Flat Hd
20	75312701-8	Spec-Epoxy Adhesive
21	50240118-5	Diode Zener 16V
22	51736700-9	Diode 1N914A
23	24504353-4	Cap 10V 20% 33UF
25	94227256-8	Cap MICA 2000
26	15164040-6	Cap 50V 5% 4700
27	24504329-4	Cap 35V 20% 1.0 UF
28	92496205-3	Cap 100V 10% 100
29	92496215-2	Cap 100V 10% 1000
30	92496227-7	Cap 100V 20% .01UF
31	92427039-0	Cap Electro 6.8MF 35
32	17706704-8	Cap 10V 10% 2.2UF
33	94360328-2	Res 1/4W 1% 1.96K
34	94360224-3	Res 1/4W 1% 178
35	94360534-5	Res 1/4W 1% 225K
36	94360416-5	Res 1/4W 1% 14.7K
37	17705946-6	Res 1/4W 5% 2.7Meg
38	24500067-4	Res 1/4W 5% 1.5K
39	94360517-0	Res 1/4W 1% 150K
40	94360420-7	Res 1/4W 1% 16.2K
41	77612042-0	Res VAR 3/4W 10% 100K

Figure 5-16. Sector Board Assembly (Sheet 2 of 8)

<u>ITEM NO.</u>	<u>IDENTIFICATION NO.</u>	<u>DRAWING TITLE</u>
42	94360518-8	Res 1/4W 1% 154K
43	94357500-1	Resistor Test Select
44	94360300-1	Res 1/4W 1% 1.00K
45	94360454-6	Res 1/4W 1% 36.5K
47	94360100-5	Res 1/4W 1% 10.0
48	17705936-7	Res 1/4W 5% 1.0 Meg
49	94360468-6	Res 1/4W 1% 51.1K
50	75752300-6	Transistor Power
51	93640012-6	Stud-Self Clinching
52	77612165-9	Terminal, Slotted
52	75732602-0	Pin-Wire Wrap, Intch
53	92583002-8	Nut Lock

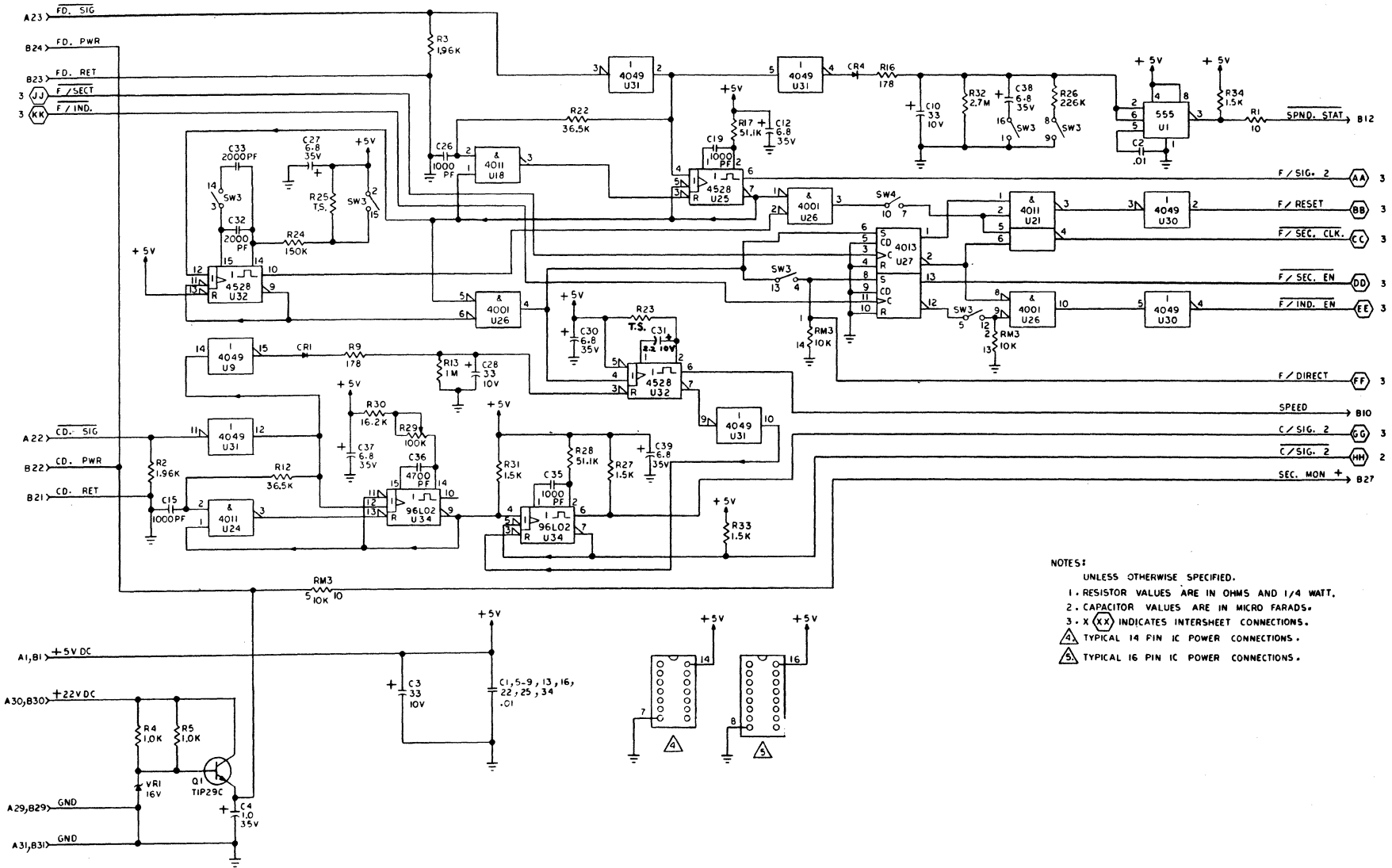
Figure 5-16 Sector Board Assembly (Sheet 3 of 8)



(AA091b)

Figure 5-16. Sector Board Assembly (Sheet 4 of 8)

Figure 5-16. Sector Board Assembly (Sheet 5 of 8)



- NOTES:
- 1. RESISTOR VALUES ARE IN OHMS AND 1/4 WATT.
 - 2. CAPACITOR VALUES ARE IN MICRO FARADS.
 - 3. X (XX) INDICATES INTERSHEET CONNECTIONS.
 - △ TYPICAL 14 PIN IC POWER CONNECTIONS.
 - △ TYPICAL 16 PIN IC POWER CONNECTIONS.

Figure 5-16. Sector Board Assembly (Sheet 6 of 8)

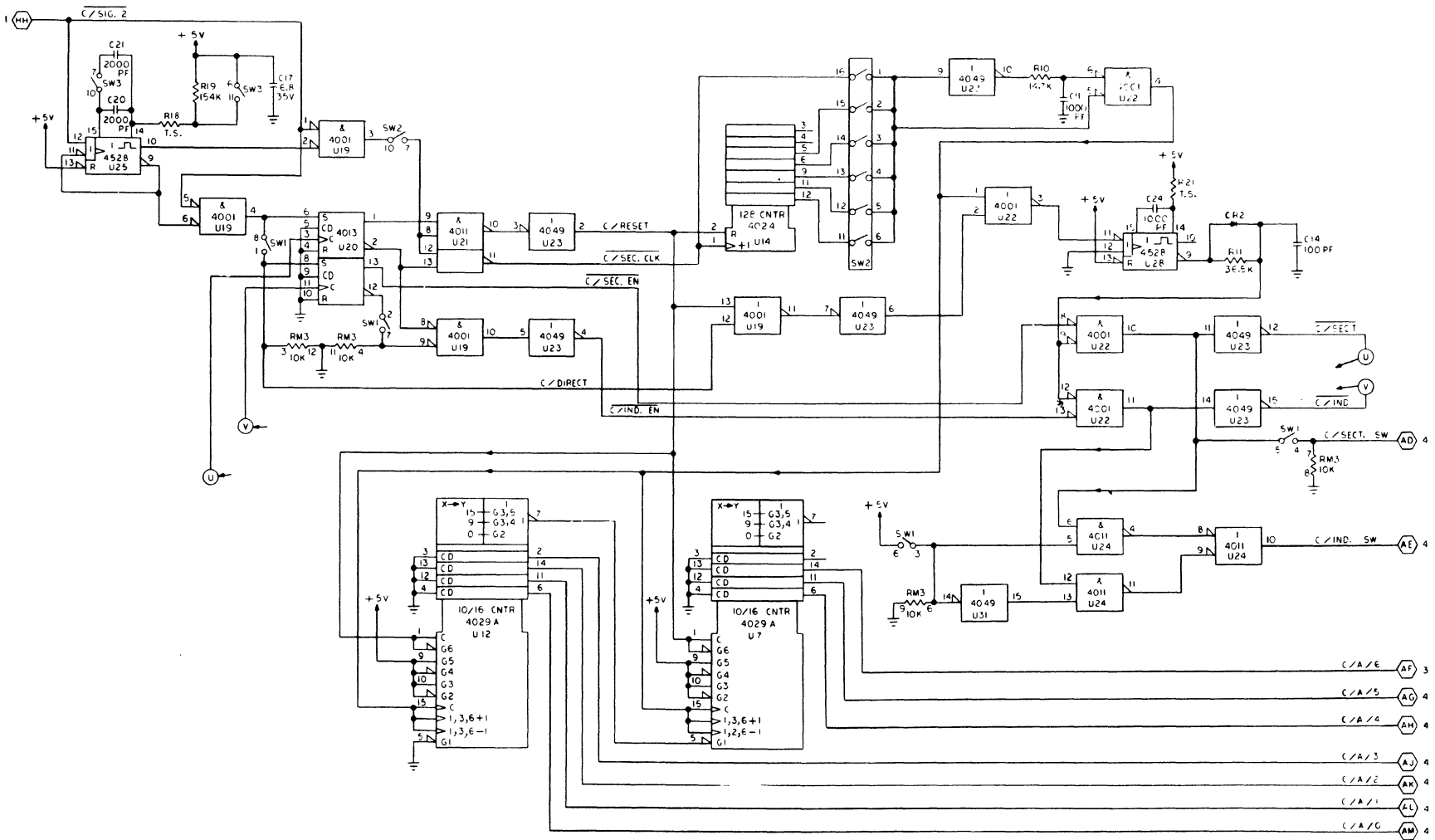


Figure 5-16. Sector Board Assembly (Sheet 7 of 8)

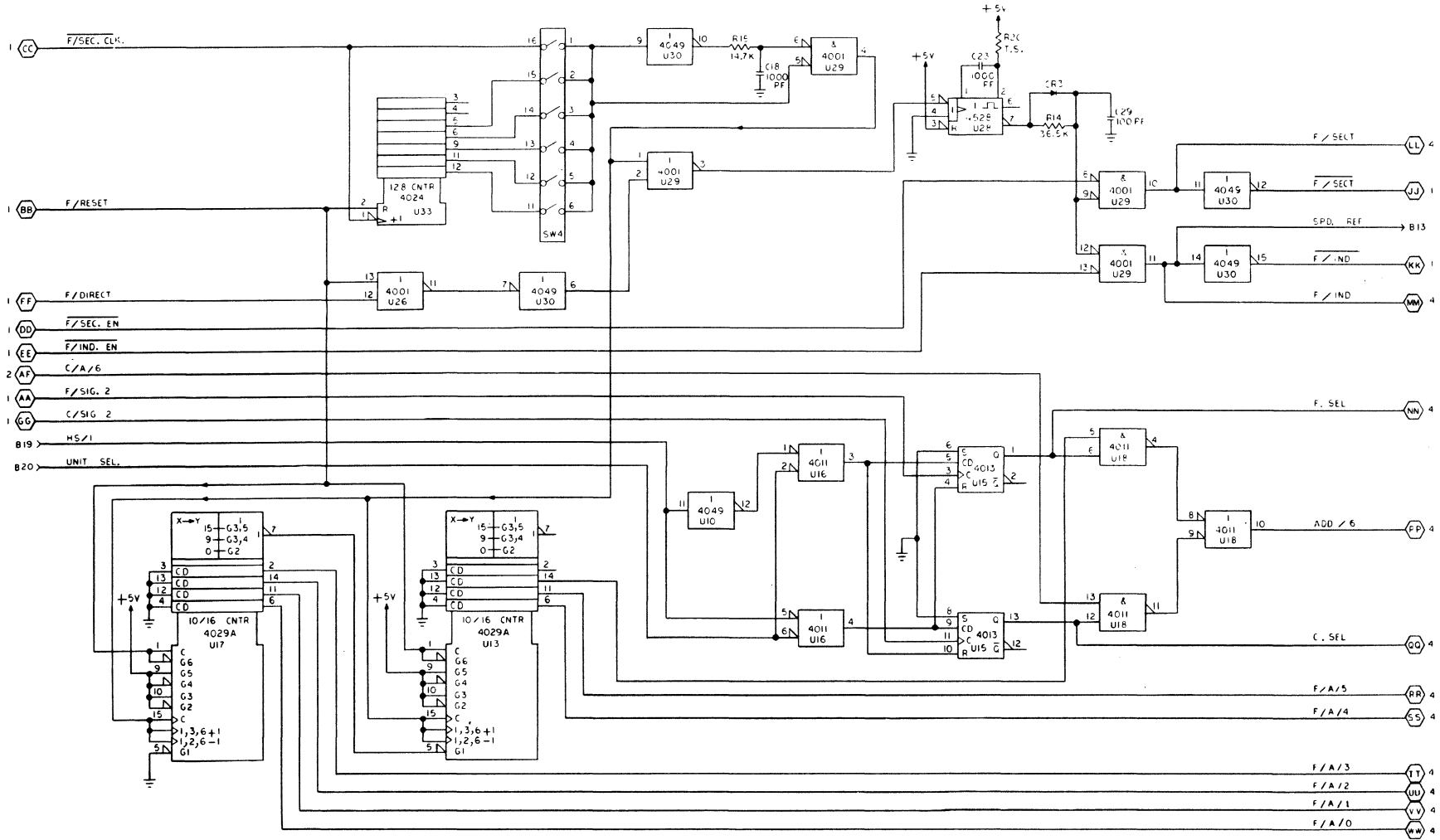
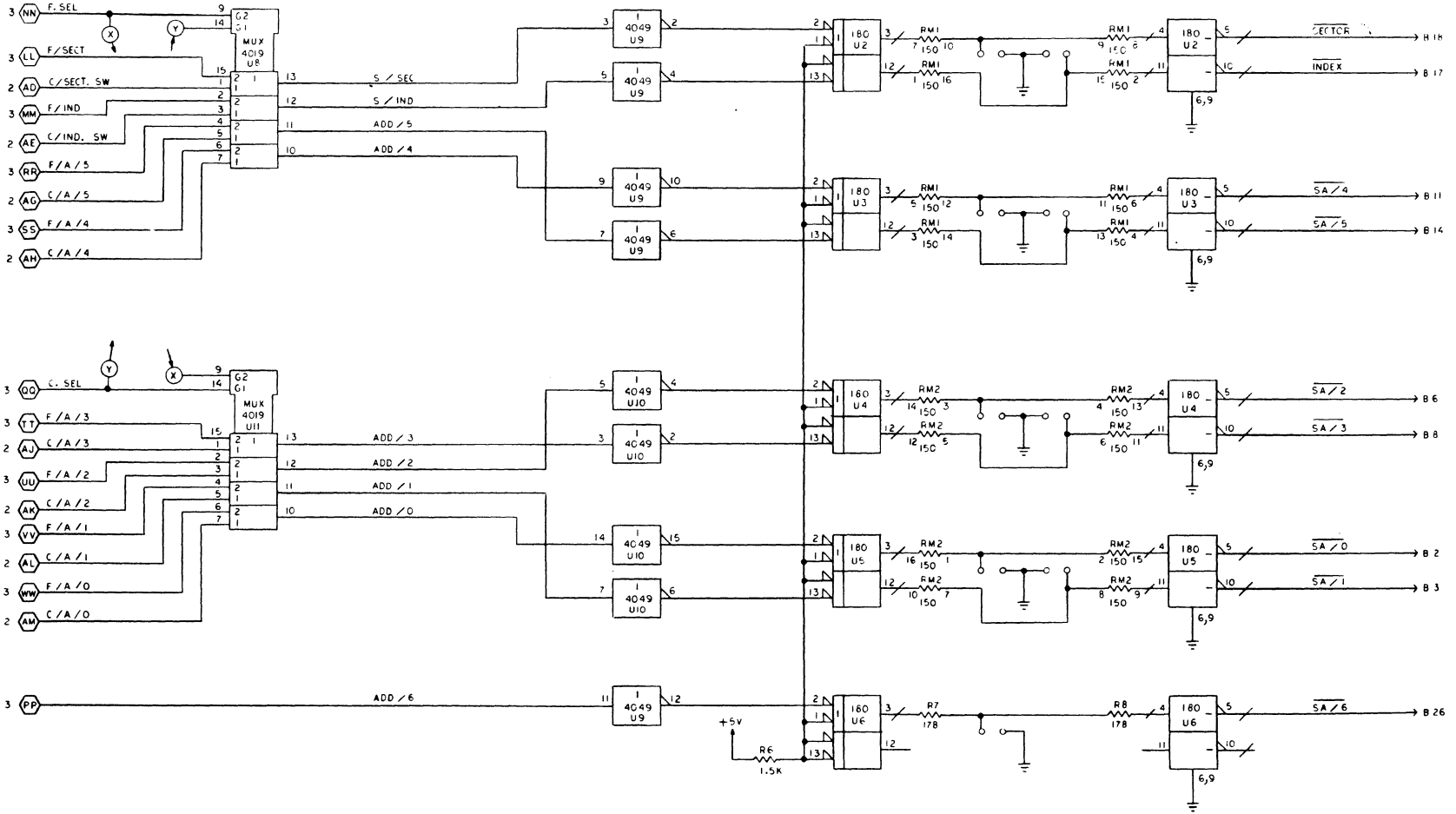


Figure 5-16. Sector Board Assembly (Sheet 8 of 8)

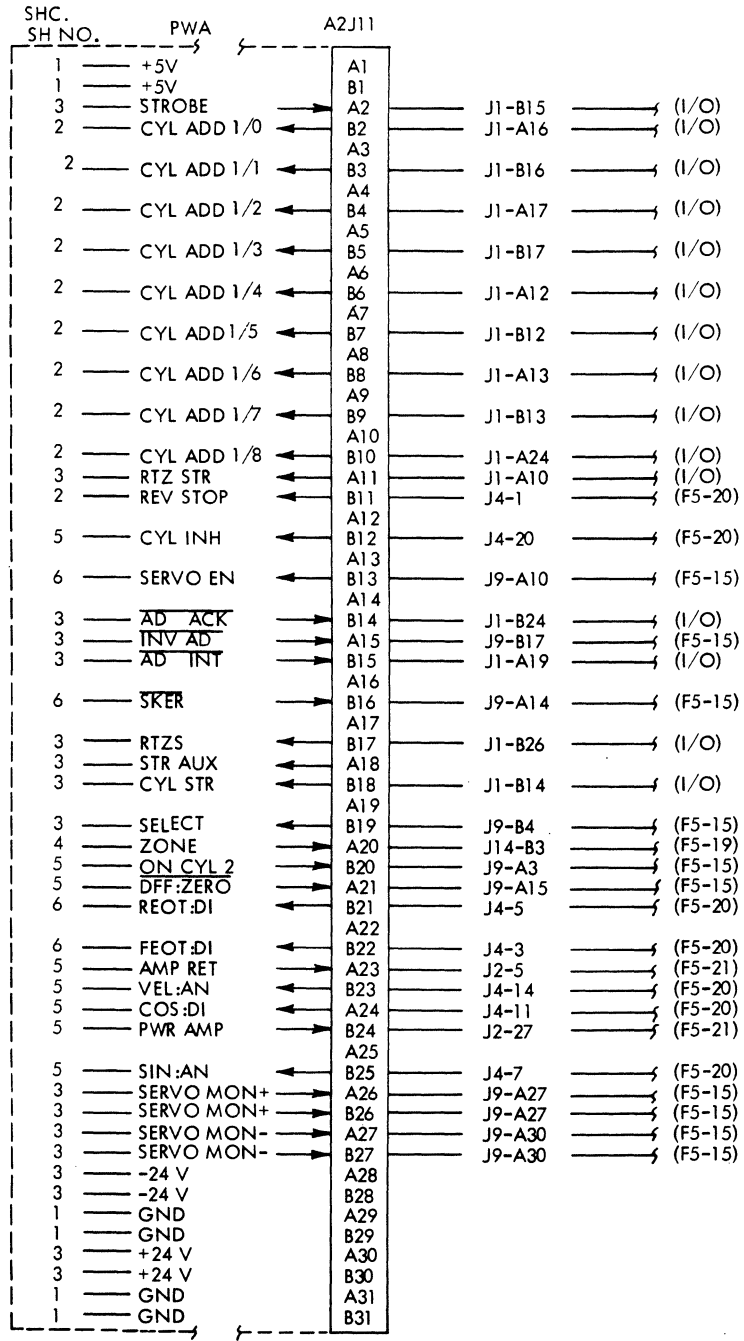


ITEM NO.	IDENTIFICATION NO.	DRAWING TITLE
1	77831170-4	PWB Servo
2	77836070-1	PWB Socket Connector
3	83479901-7	Key, Inject Mold
4	10125702-0	Scr Flat Hd
5	75312701-8	Spec-Epoxy Adhesive
6	77612165-9	Terminal, Slotted
6	75732602-0	Pin-Wire Wrap, Intch
7	15144900-6	IC 74LS00
8	15145000-4	IC 74LS02
9	15145100-2	IC 74LS04
10	15145400-6	IC 74LS08
11	15145600-1	IC 74LS10
12	15146300-7	IC 74LS74
13	15146400-5	IC 74LS86
14	15146900-4	IC 74LS175
15	15147000-2	IC 74LS193
16	15148200-7	IC 74LS283PC
17	51812800-4	IC Dual
18	50252900-1	IC Rec 2 CM
19	51768200-1	IC Dual
20	15150700-1	IC
21	15156600-7	IC MLM 201AP1
22	15129400-6	IC AH 5012
23	15132702-0	IC D to A Converter
24	15132600-6	IC Volt Regulator
25	75300900-0	ID Square Root Circu
26	75737000-2	ID Servo Input
27	75737200-8	ID Servo EOT
28	75009935-0	Res Pac 2% 5.1K (13)
29	83452207-0	Switch-10 Position
30	83452201-3	Switch-4 Position
31	94357500-1	Resistor Test Select
32	92577253-5	Res 1/2W 1% 357
33	94360384-5	Res 1/4W 1% 7.50K
34	94360443-9	Res 1/4W 1% 28.0K
35	94360446-2	Res 1/4W 1% 30.1K
36	94360452-0	Res 1/4W 1% 34.8K
37	94360487-6	Res 1/4W 1% 80.6K
38	94360284-7	Res 1/4W 1% 750
39	94360476-9	Res 1/4W 1% 61.9K
40	94360362-1	Res 1/4W 1% 4.42K
41	94360536-0	Res 1/4W 1% 237K
42	94360386-0	Res 1/4W 1% 7.87K
43	94360368-8	Res 1/4W 1% 5.11K
44	94360344-9	Res 1/4W 1% 2.87K
45	94360492-6	Res 1/4W 1% 90.9K
46	94360464-5	Res 1/4W 1% 46.4K
47	94360528-7	Res 1/4W 1% 196K

Figure 5-17. Servo Board Assembly (Sheet 2 of 10)

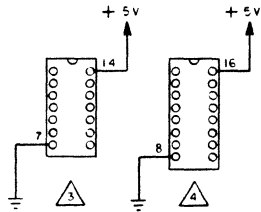
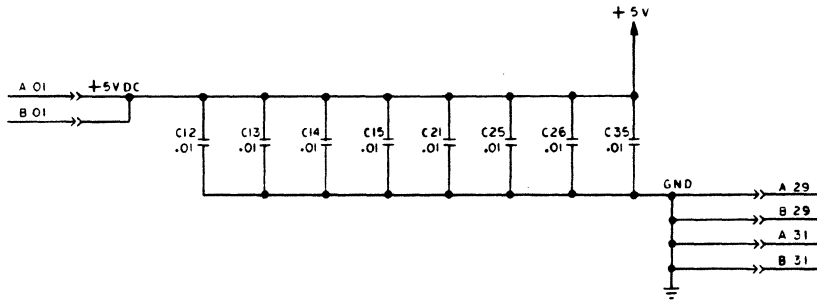
ITEM NO.	IDENTIFICATION NO.	DRAWING TITLE
48	94360480-1	Res 1/4W 1% 68.1K
49	94360520-4	Res 1/4W 1% 162K
50	92512468-7	Res 1/4W 6.8 Ohm
51	94360400-9	Res 1/4W 1% 10.0K
52	94360300-1	Res 1/4W 1% 1.00K
53	92496227-7	Cap 100V 20% .01UF
54	75808520-3	Cap 100V 10% 390
55	75808506-2	Cap 100V 10% 27
56	94227244-4	Cap 100V 2% 560
57	94227247-7	Cap 100V 2% 750
58	94227257-6	Cap 500V 2% 2200
59	75808545-0	Cap 100V 10% 0.047UF
60	75808513-8	Cap 100V 10% 100
61	75808516-1	Cap 100V 10% 180
62	24504369-0	Cap 15V 20% 10UF
63	75808518-7	Cap 100V 10% 270
64	92496217-8	Capacitor 1500 PF
65	24504339-3	Cap 35V 20% 6.8UF
66	24504329-4	Cap 35V 20% 1.0UF
67	51736700-9	Diode 1N914A
68	50240105-2	Diode, Silicon
69	50240106-0	Diode, Sil Zener 5.1V
70	75808533-6	Cap 100V 10% 4700
71	50241400-6	Diode Special
72	94240452-2	Cap 50V 10% 270PF

Figure 5-17. Servo Board Assembly (Sheet 3 of 10)



AA091a

Figure 5-17. Servo Board Assembly (Sheet 4 of 10)



- NOTES:
UNLESS OTHERWISE SPECIFIED
1. RESISTOR VALUES ARE IN OHMS , 1/4 W , 1% .
 2. CAPACITOR VALUES ARE IN MICROFARADS .
 3. TYPICAL POWER CONNECTIONS FOR 14 PIN DIPS.
 4. TYPICAL POWER CONNECTIONS FOR 16 PIN DIPS.
 5. XXX ○ INDICATES INTERSHEET CONNECTION BY SHEET NUMBER, ZONE AND SIGNAL IDENTIFIER.
 6. △ QUIET GROUND

Figure 5-17. Servo Board Assembly (Sheet 5 of 10)

Figure 5-17. Servo Board Assembly (Sheet 6 of 10)

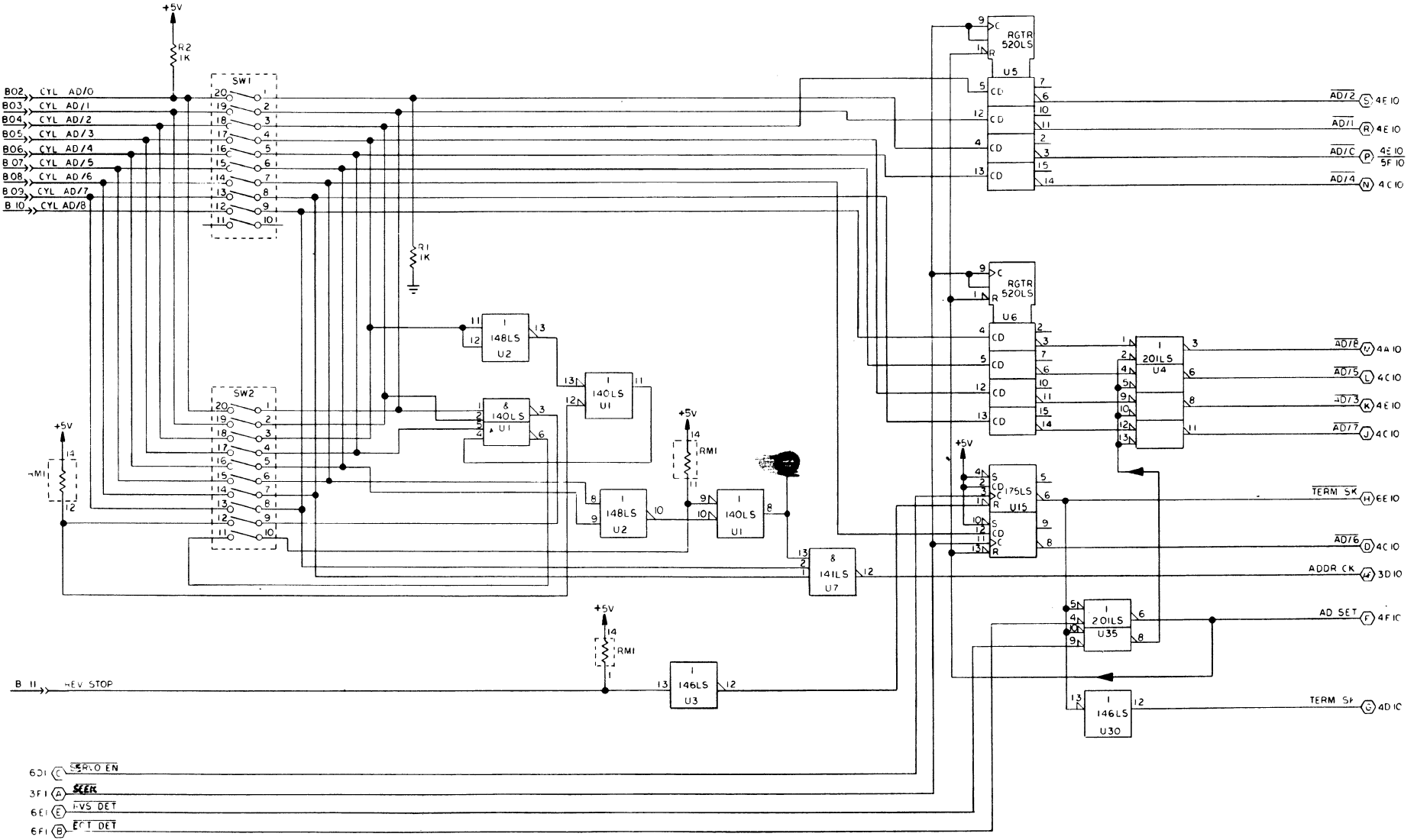


Figure 5-17. Servo Board Assembly (Sheet 7 of 10)

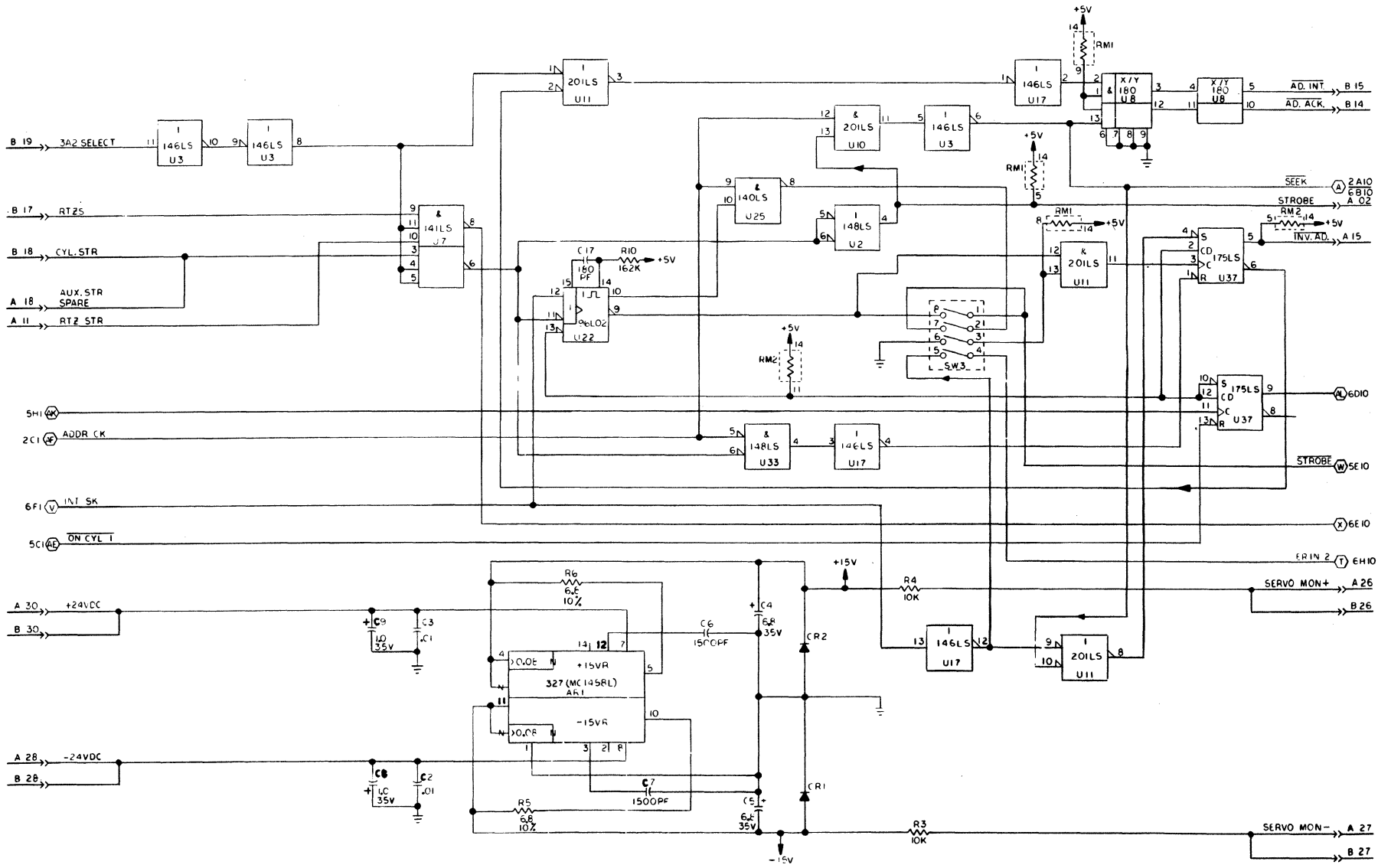


Figure 5-17. Servo Board Assembly (Sheet 8 of 10)

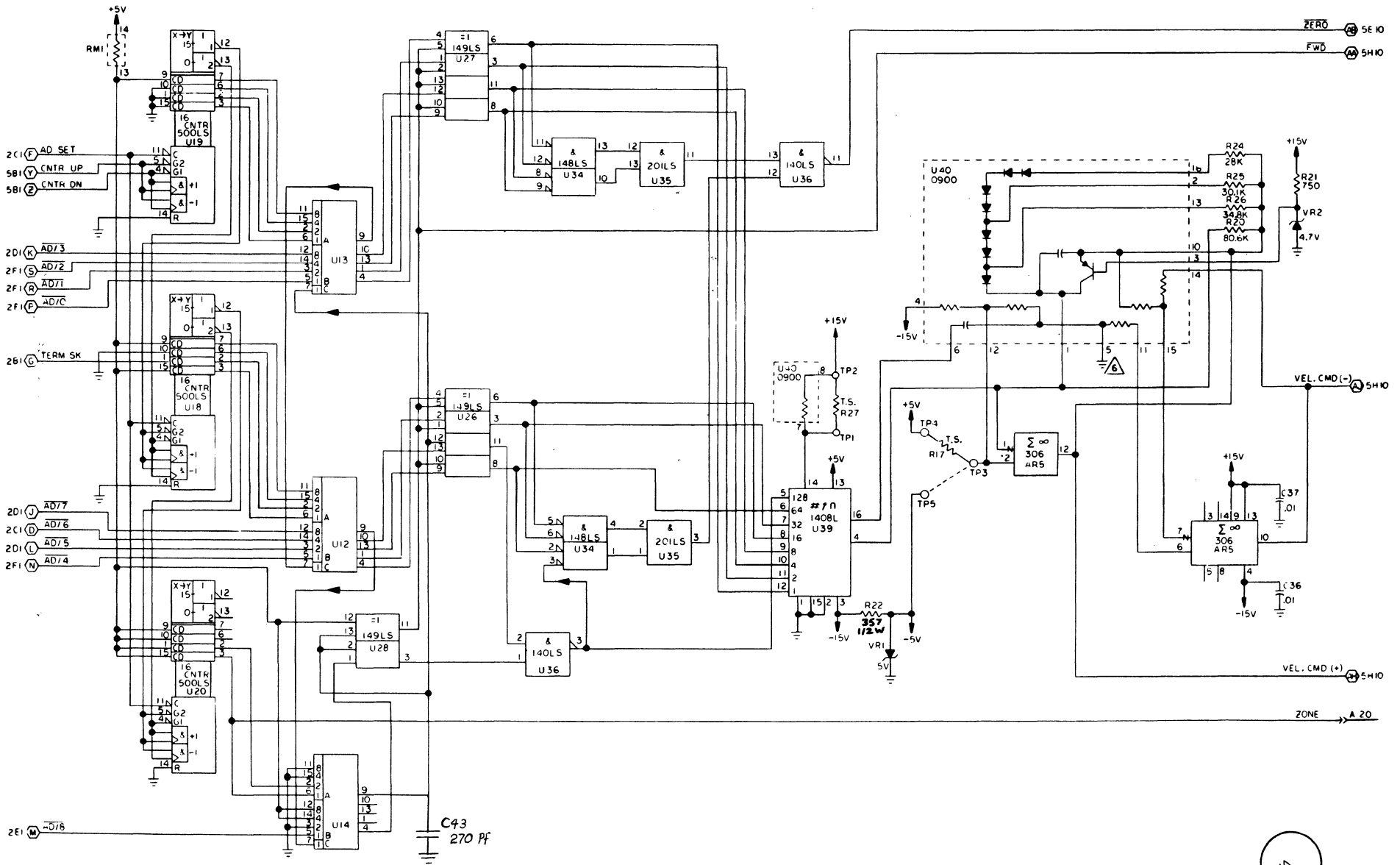


Figure 5-17. Servo Board Assembly (Sheet 9 of 10)

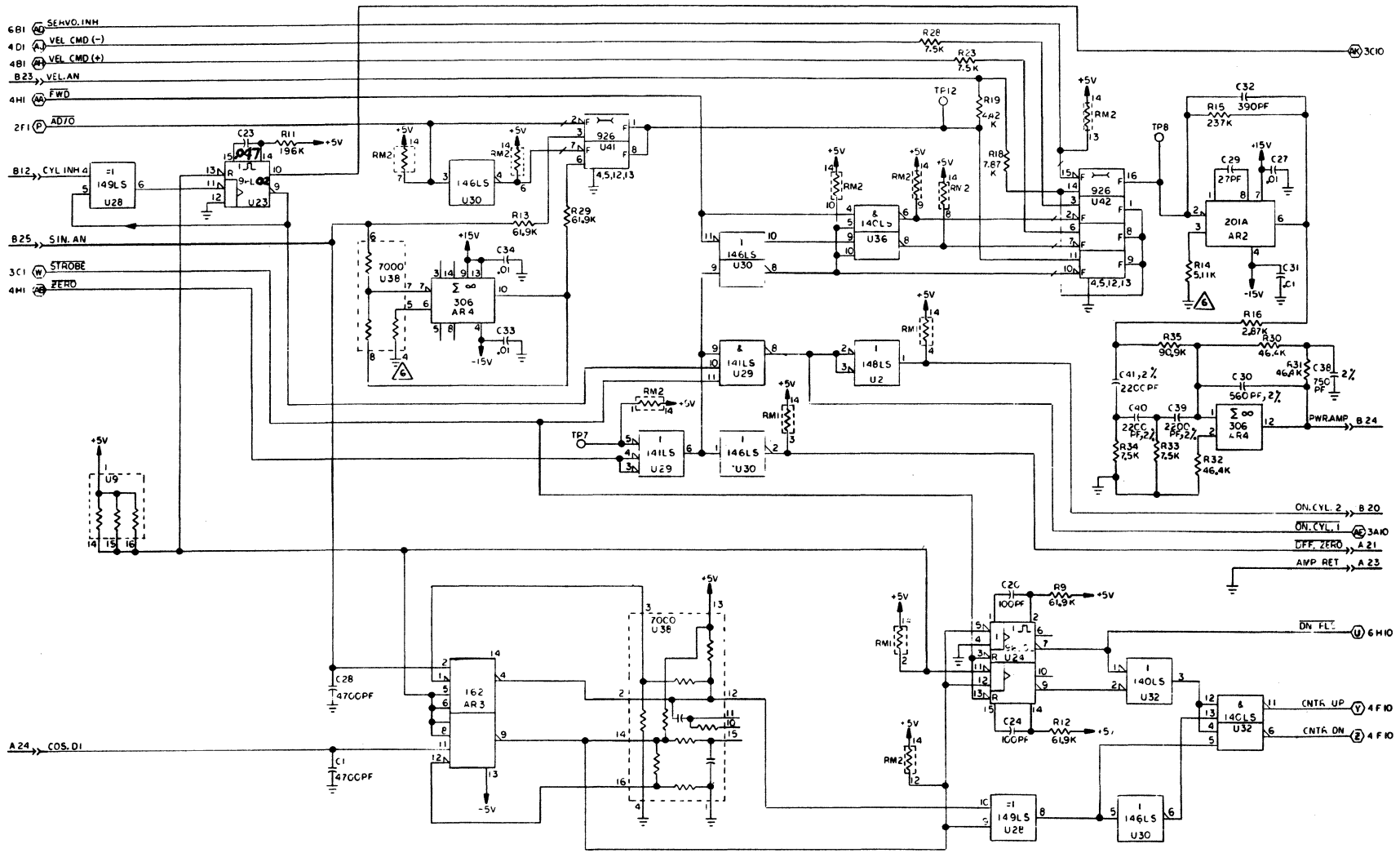


Figure 5-17. Servo Board Assembly (Sheet 10 of 10)

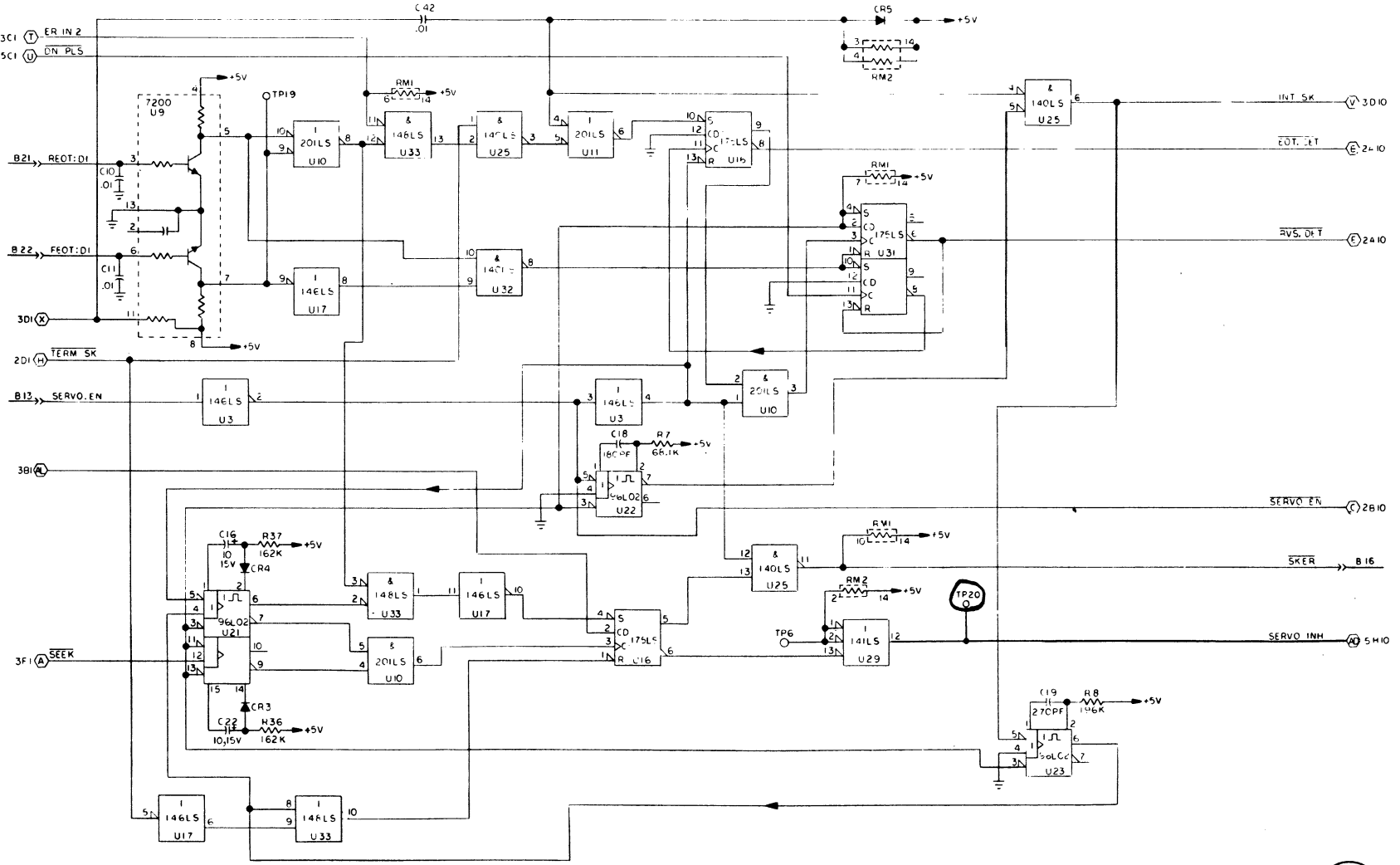
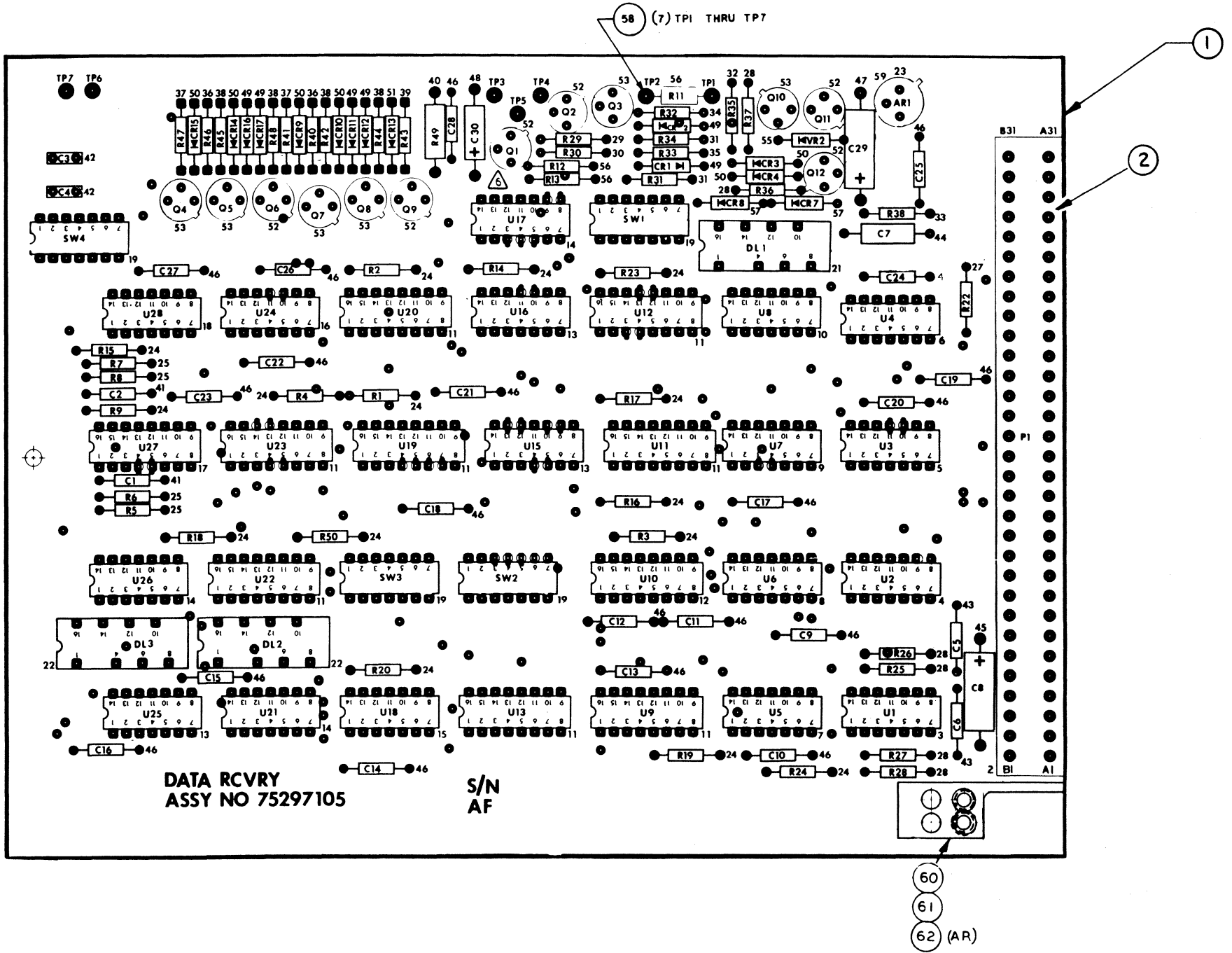


Figure 5-18. Data Recovery Board Asm (Sheet 1 of 7)



1

2

58 (7) TPI THRU TP7

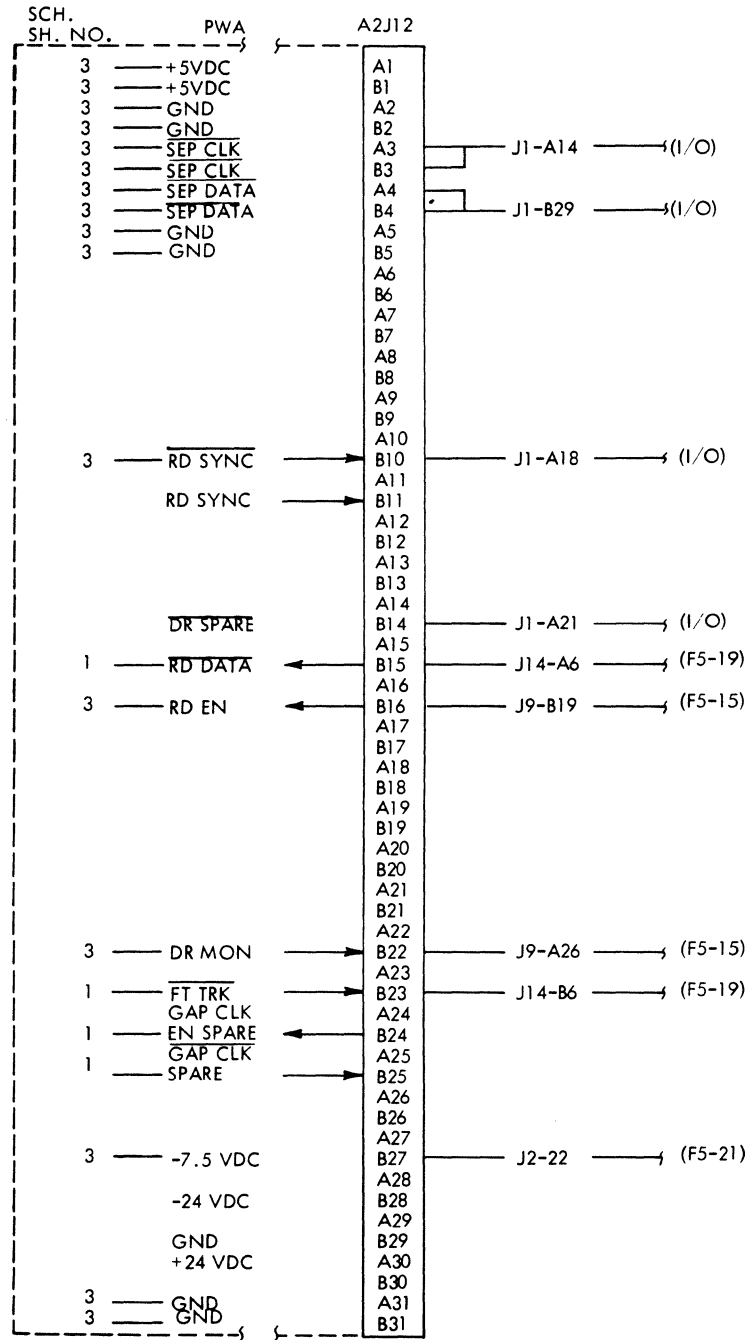
60
61
62 (AR)

<u>ITEM NO.</u>	<u>IDENTIFICATION NUMBER</u>	<u>DRAWING TITLE</u>
1	75297005	Board PC Data - Recove
2	77836070	PWB Socket Connector
3	51768200	IC Dual
4	36187900	IC 7453
5	15112700	IC 75L04
6	15158700	IC 74S140
6	00005070	IC 500 HM Dual, Intch
7	15112300	IC 74L00
8	96744156	IC 7474
8	15104800	IC 7474, Intch
9	88882100	IC 74H00
9	36188700	IC CA 74H00 HS Quad, Intch
10	88885300	IC 74S20
10	50254900	IC Dual 4, Intch
11	15158600	IC 74S112
11	15109400	IC 74S112, Intch
12	15160600	IC 93L16
12	00005060	IC 4-Bit Counter, Intch
13	88884300	IC 74 S00
13	50254600	IC 74S00, Intch
14	88883700	IC 74S04
14	15109200	IC 74S04, Intch
15	88923000	IC 74S74
15	15109700	IC Dual D Flip-Flop, Intch
16	88884200	IC 74S10
16	50254700	IC Triple 3, Intch
17	88886500	IC 9602
17	15104300	IC 9602, Intch
18	88924500	IC 7404
18	36187100	IC 7404, Intch
19	83452204	Switch, 7 Position
21	83406502	Delay Line 100 NS
22	83456501	Delay Line 50 NS
23	15130400	Volt Regulator
24	94360300	Res 1/4W 1% 1.00K
25	94360430	Res 1/4W 1% 20.5K
27	94360335	Res 1/4W 1% 2.32K
28	94360224	Res 1/4W 1% 178
29	94360220	Res 1/4W 1% 162
30	94360359	Res 1/4W 1% 4.12K
31	94360232	Res 1/4W 1% 215
32	94360316	Res 1/4W 1% 1.47K
33	94360200	Res 1/4W 1% 100
34	94360257	Res 1/4W 1% 392
35	94360280	Res 1/4W 1% 681
36	94360163	Res 1/4W 1% 51.1
37	94360165	Res 1/4W 1% 47.5
38	94360264	Res 1/4W 1% 464
39	94360272	Res 1/4W 1% 562

Figure 5-18. Data Recovery Board Asm (Sheet 2 of 7)

<u>ITEM NO.</u>	<u>IDENTIFICATION NUMBER</u>	<u>DRAWING TITLE</u>
40	24500131	Res 1/2W 5% 47
41	92496147	Cap Non-Elect 1200PF
42	94227236	Cap 300V 2% 270
43	92496267	Cap Non El 220PF 200
44	92496393	Cap Non Electrolytic
45	24504353	Cap 10V 20% 33UF
46	92496227	Cap 100V 20% 0.01UF
47	24504339	Cap 35V 20% 6.8UF
48	24504329	Cap 35V 20% 1.0UF
49	51736700	Diode 1N914A
50	50241400	Diode Silicon
51	11801200	Spec Diode Germanium
52	50210310	TSTR, SNPN, 15V NN3646
53	50211510	TSTR, SPNP, 12V NN4258
55	50240146	Diode Silicon
56		
57	24553500	Diode Silicon Planar
58	92498021	Terminal, Swaged
59	94335900	Pad-Transistor Mtg
60	83479801	Key, Inject, Mold
61	10125703	Scr Flat Hd
62	75312701	Spec-Epoxy Adhesive

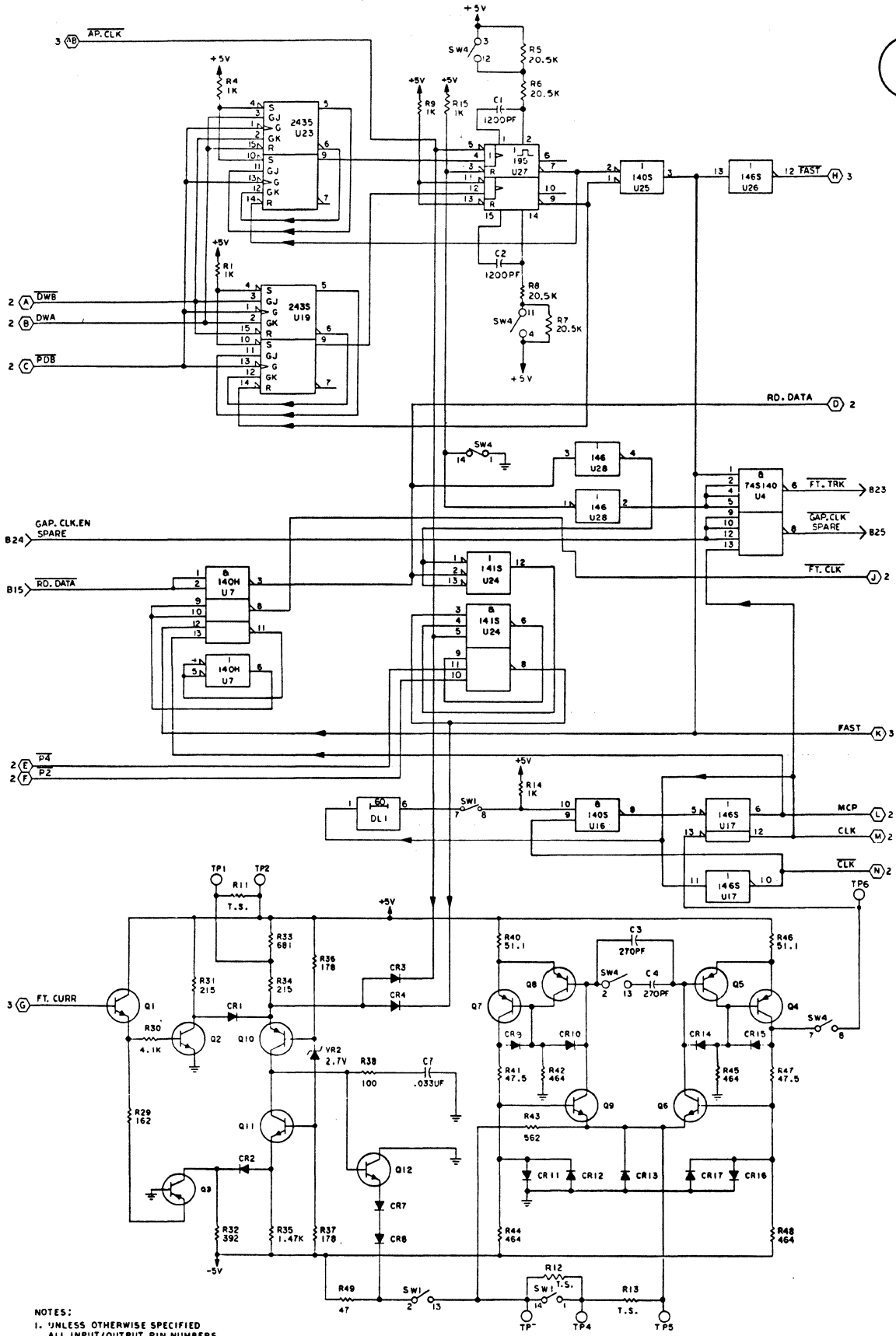
Figure 5-18. Data Recovery Board Asm (Sheet 3 of 7)



(AA089c)

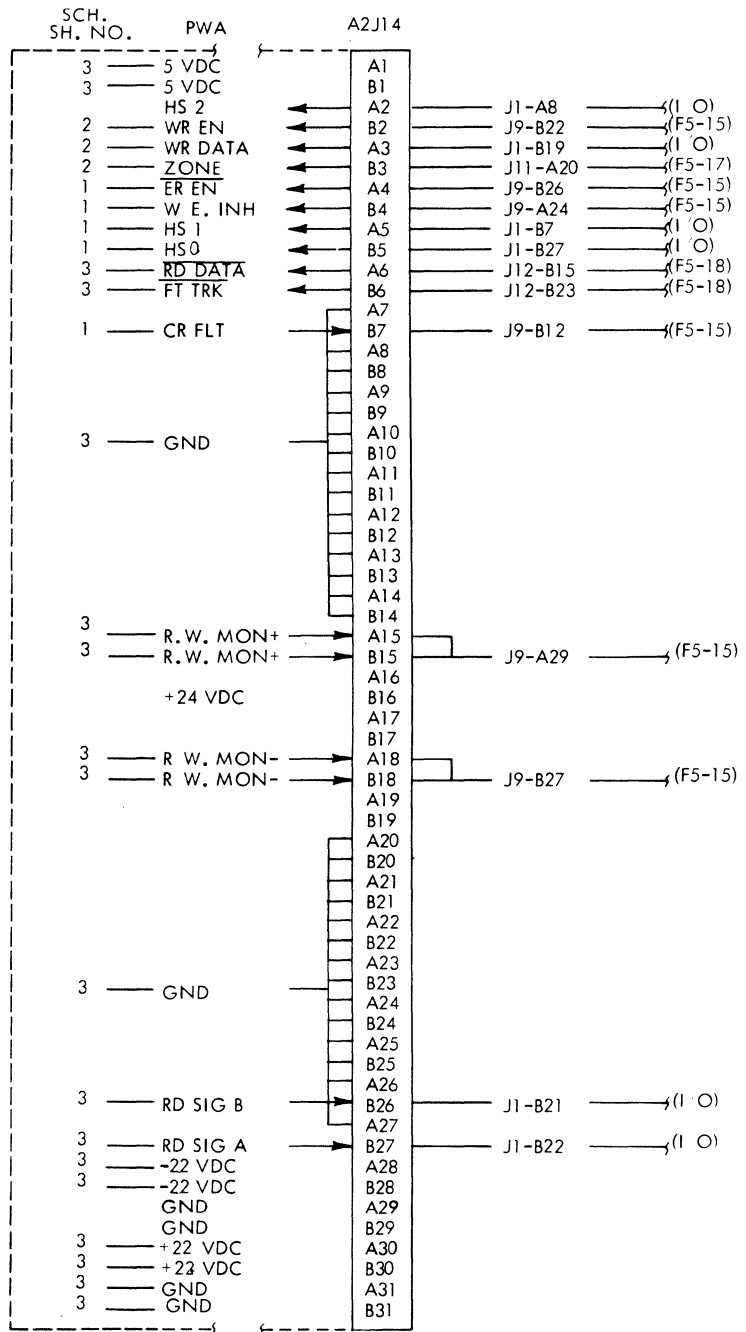
Figure 5-18. Data Recovery Board Asm (Sheet 4 of 7)

1



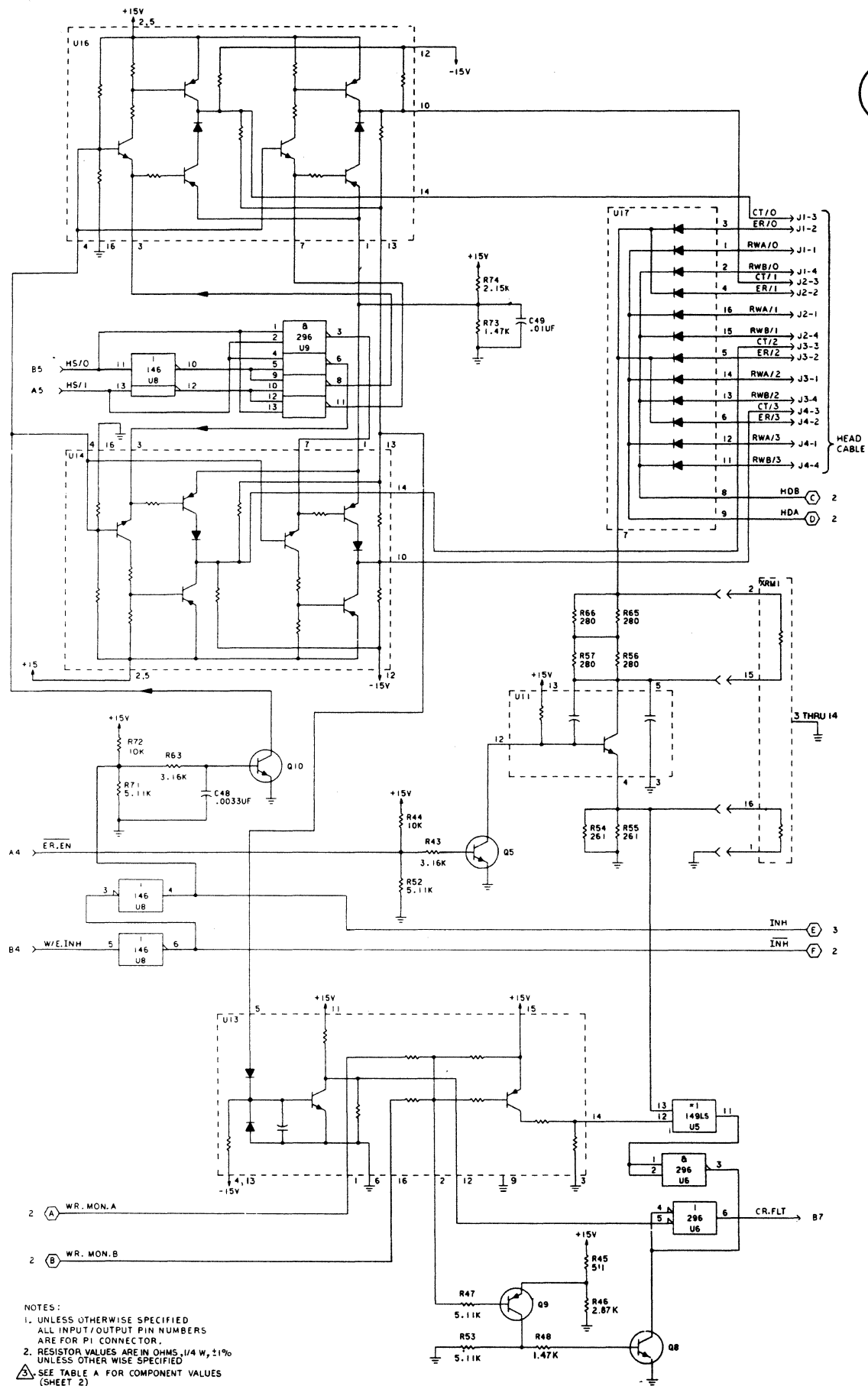
NOTES:
 1. UNLESS OTHERWISE SPECIFIED
 ALL INPUT/OUTPUT PIN NUMBERS
 ARE FOR PI CONNECTOR.

Figure 5-18. Data Recovery Board Asm (Sheet 5 of 7)



AA090a

Figure 5-19. Read/Write/Erase Bd Asm (Sheet 4 of 7)



NOTES:
 1. UNLESS OTHERWISE SPECIFIED ALL INPUT/OUTPUT PIN NUMBERS ARE FOR P1 CONNECTOR.
 2. RESISTOR VALUES ARE IN OHMS, 1/4 W, 5% UNLESS OTHERWISE SPECIFIED
 ⚠ SEE TABLE A FOR COMPONENT VALUES (SHEET 2)

Figure 5-19. Read/Write/Erase Bd Asm (Sheet 5 of 7)

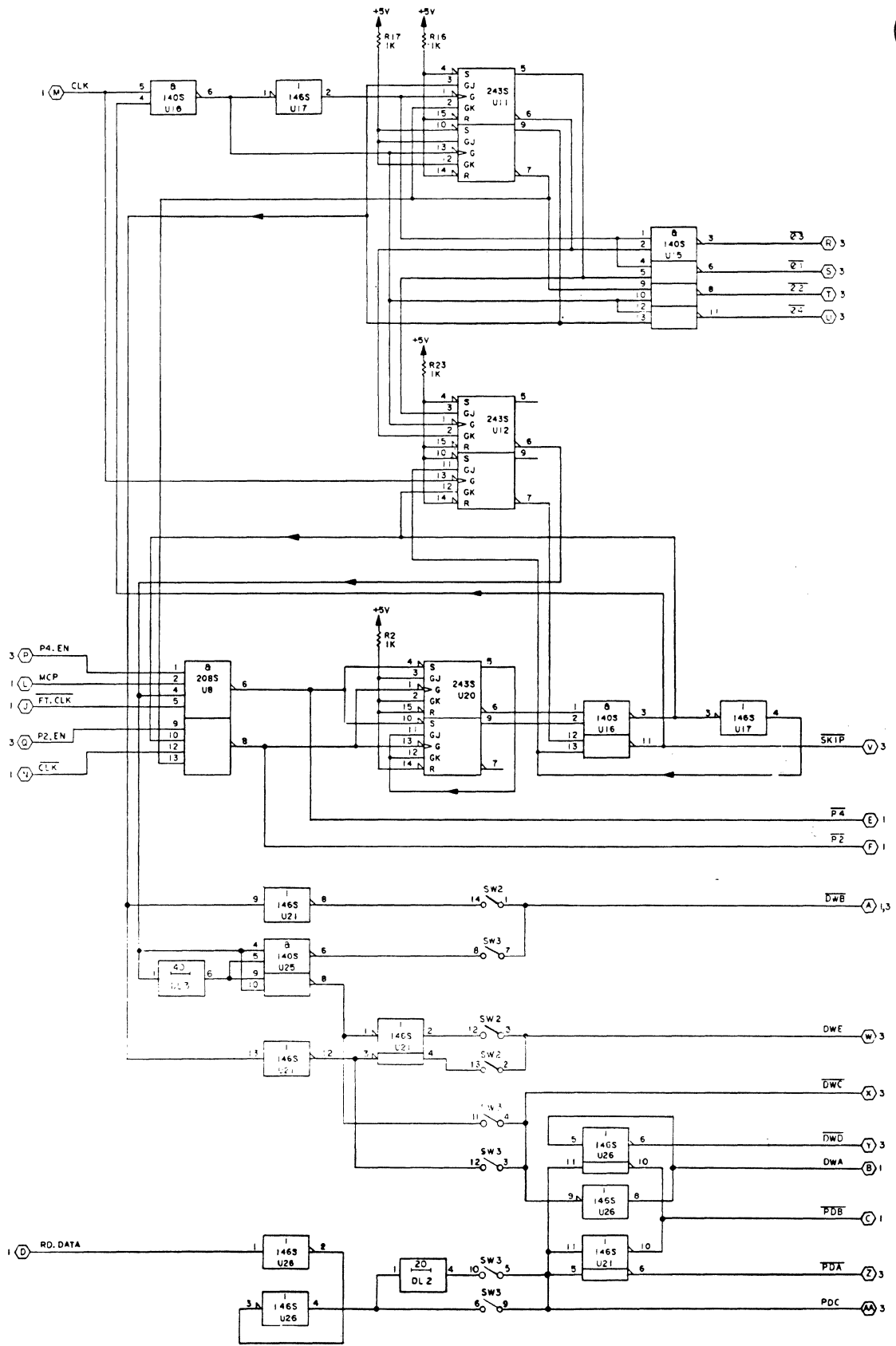


Figure 5-18. Data Recovery Board Asm (Sheet 6 of 7)

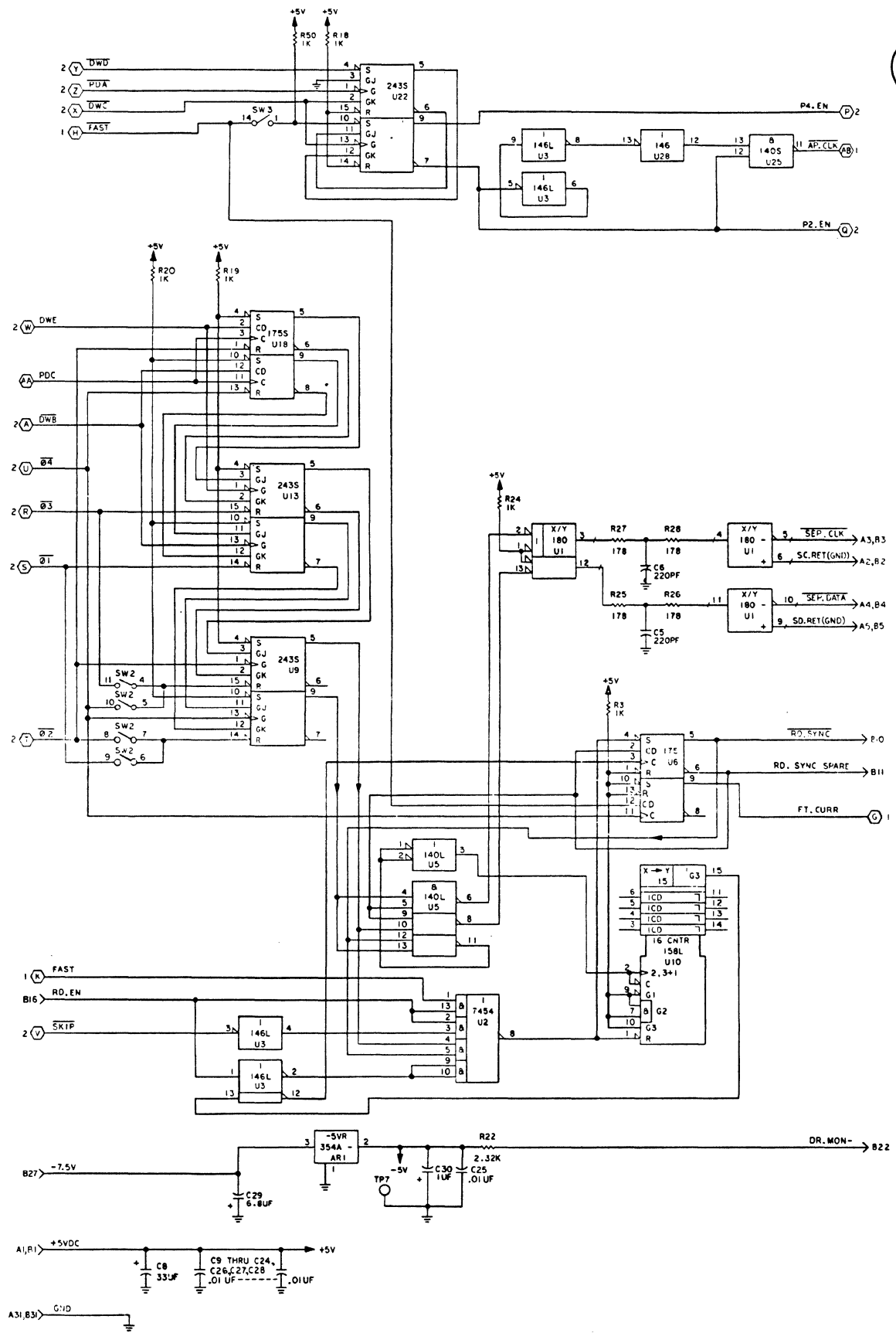
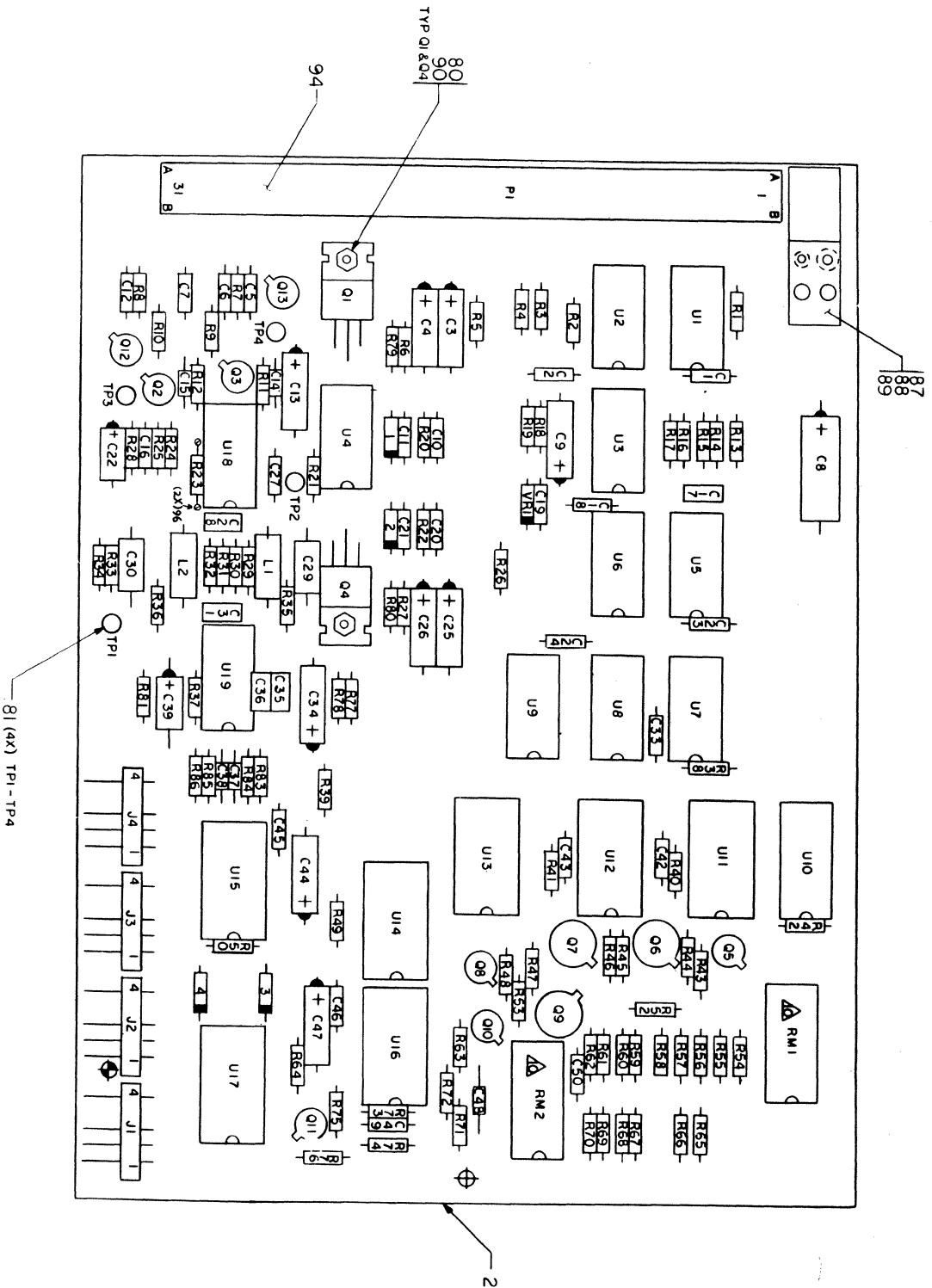


Figure 5-18. Data Recovery Board Asm (Sheet 7 of 7)



DIO	PL ITEM
CR1	25
CR2	25
CR3	26
CR4	26

REG	PL ITEM
VRI	27

CONN	PL ITEM
J1	93
J2	93
J3	93
J4	93
PI	94

TERM BD	PL ITEM
TP1	81
TP2	81
TP3	81
TP4	81

IND	PL ITEM
L1	95
L2	95

TSTR	PL ITEM
Q1	20
Q2	22
Q3	22
Q4	21
Q5	22
Q6	23
Q7	23
Q8	22
Q9	24
Q10	22
Q11	22
Q12	22
Q13	22

IC	PL ITEM
U1	13
U2	14
U3	15
U4	16
U5	17
U6	18
U7	19
U8	19
U9	18
U10	12
U11	7
U12	9
U13	8
U14	10
U15	5
U16	10
U17	6
U18	11
U19	11

RES MOD	PL ITEM
RM1	92
RM2	92

CAP	PL ITEM
C1	69
C2	69
C3	63
C4	63
C5	85
C6	68
C7	68
C8	60
C9	62
C10	69
C11	69
C12	85
C13	64
C14	76
C15	76
C16	67
C17	70
C18	69
C19	69
C20	69
C21	69
C22	65
C23	69
C24	69
C25	63
C26	63
C27	68
C28	71
C29	74
C30	74
C31	72
C32	-
C33	69
C34	64
C35	75
C36	73
C37	76
C38	76
C39	65
C40	-
C41	-
C42	85
C43	85
C44	61
C45	69
C46	69
C47	61
C48	66
C49	69
C50	85

RES	PL ITEM
R56	34
R57	34
R58	38
R59	33
R60	33
R61	33
R62	33
R63	42
R64	43
R65	34
R66	34
R67	33
R68	33
R69	33
R70	33
R71	44
R72	47
R73	39
R74	40
R75	38
R76	47
R77	32
R78	50
R79	91
R80	91
R81	50
R82	-
R83	51
R84	31
R85	31
R86	51

RES	PL ITEM
R1	39
R2	39
R3	35
R4	35
R5	47
R6	49
R7	47
R8	47
R9	37
R10	37
R11	31
R12	31
R13	34
R14	34
R15	34
R16	47
R17	47
R18	31
R19	31
R20	30
R21	50
R22	30
R23	29
R24	40
R25	40
R26	47
R27	49
R28	41
R29	31
R30	46
R31	31
R32	46
R33	50
R34	41
R35	31
R36	31
R37	48
R38	36
R39	31
R40	38
R41	38
R42	39
R43	42
R44	47
R45	36
R46	86
R47	44
R48	39
R49	31
R50	45
R51	-
R52	44
R53	44
R54	33
R55	33

Figure 5-19. Read/Write/Erase Bd Asm (Sheet 1 of 7)

(XX2410)

<u>ITEM NO.</u>	<u>IDENTIFICATION NUMBER</u>	<u>DRAWING TITLE</u>
	75891100	Comp Bd Assy - R/W/E (2400 RPM)
	75880500	Comp Bd Assy - R/W/E (1500 RPM)
2	75891120	PWB R/W/E
5	75300300	ID Read Matrix Special
6	75300400	Diode Matrix Special
7	75300500	Current Zone Special
8	75300600	ID R/W Fault Special
9	75300700	Write Switch Special
10	75300800	IC Head Select Special
11	15126900	IC 733C Video Amp
12	15158600	IC 74S112
13	88898200	IC 7410
14	50252900	IC 75107
15	50251700	IC TTL4
16	15132600	IC Volt Regulator
17	15146400	IC 74LS86
18	88924400	IC 7400
19	51701800	IC 7404
20	75752300	Transistor Power
21	75752400	Transistor Power
22	50210310	TSTR, SNPN, 15V NN3646
23	75722201	Transistor NPN 2N2219A
24	50211210	TSTR, SPNP, 60V NN3645
25	50241001	Diode Silicon
26	50241400	Diode Silicon
27	50240106	Diode, Sil Zener 5.1V
29	94357500	Res Test Select
30	94360168	Res 1/4W 1% 51.1
31	94360216	Res 1/4W 1% 147
32	94360210	Res 1/4W 1% 127
33	94360240	Res 1/4W 1% 261
34	94360243	Res 1/4W 1% 280
35	94360252	Res 1/4W 1% 348
36	94360268	Res 1/4W 1% 511
37	94360288	Res 1/4W 1% 825
38	94360300	Res 1/4W 1% 1.00K
39	94360316	Res 1/4W 1% 1.47K
40	94360332	Res 1/4W 1% 2.15K
41	94360340	Res 1/4W 1% 2.61K
42	94360348	Res 1/4W 1% 3.16K
43	94360360	Res 1/4W 1% 4.22K
44	94360368	Res 1/4W 1% 5.11K
45	94360375	Res 1/4W 1% 6.04K
46	94360220	Res 1/4W 1% 162
47	94360400	Res 1/4W 1% 10.0K

Figure 5-19. Read/Write/Erase Bd Asm (Sheet 2 of 7)

<u>ITEM NO.</u>	<u>IDENTIFICATION NUMBER</u>	<u>DRAWING TITLE</u>
48	94360160	Res 1/4W 1% 42.2 - Not Used on 75891100
49	92512464	Resistor 3.3 Ohm 1/4
*50	92512464	Res 1/4W 5% 10
*51	24500075	Res 1/4W 1% 2.00K
60	24504374	Cap 15V 20% 68UF
61	24504383	Cap 20V 20% 15UF
62	24504371	Cap 15V 20% 22UF
63	24504339	Cap 25V 20% 6.8UF
64	24504379	Cap 20V 20% 3.30UF
65	24504346	Cap 10V 20% 4.7UF
66	94240433	Cap 50V 10% 3300
*67	94240401	Cap 50V 10% 1000
68	94240411	Cap 50V 10% 0.01UF
69	92496227	Cap 100V 20% 0.01UF
70	94227218	Cap 500V +/- PF 47
*71	94227236	Cap 300V 2% 270
*72	94227226	Cap 300V 2% 100
73	94227252	Cap 100V 2% 1200
74	94240448	Cap 50V 10% 0.10 UF
75	94227248	Cap 100V 2% 820 - Not Used on 75891100
76	94240435	Cap 50V 10% 5600 - Not Used on 75891100
80	95683502	Stud, Press
81	92498021	Terminal, Swaged
82	94335900	Pad-Transistor Mtg
85	94240400	Cap 50V 10% 470
86	94360344	Res 1/4W 1% 2.87
87	83479701	Key, Inject, Mold
88	10125703	Scr Flat Hd
89	75312701	Spec-Epoxy Adhesive
90	92583002	Nut, Lock
91	24500006	Res 1/4W 5% 4.3
92	94260301	Socket 16 Pin
93	75772401	Connector Hdr
94	77836070	PWB Socket Connector
*95	94356324	Inductor 10UH
96	77612165	Terminal

* - Differences in components on 75880500 Assembly are as follows:

50	24500015	Res 1/4W 5% 10
51	94360329	Res 1/4W 1% 2.00K
67	94240408	Cap 50V 10% 1500
71	94227241	Cap 100V 2% 430
72	94227230	Cap 500V 2% 150
95	94356326	Inductor 15UH

Figure 5-19. Read/Write/Erase Bd Asm (Sheet 3 of 7)

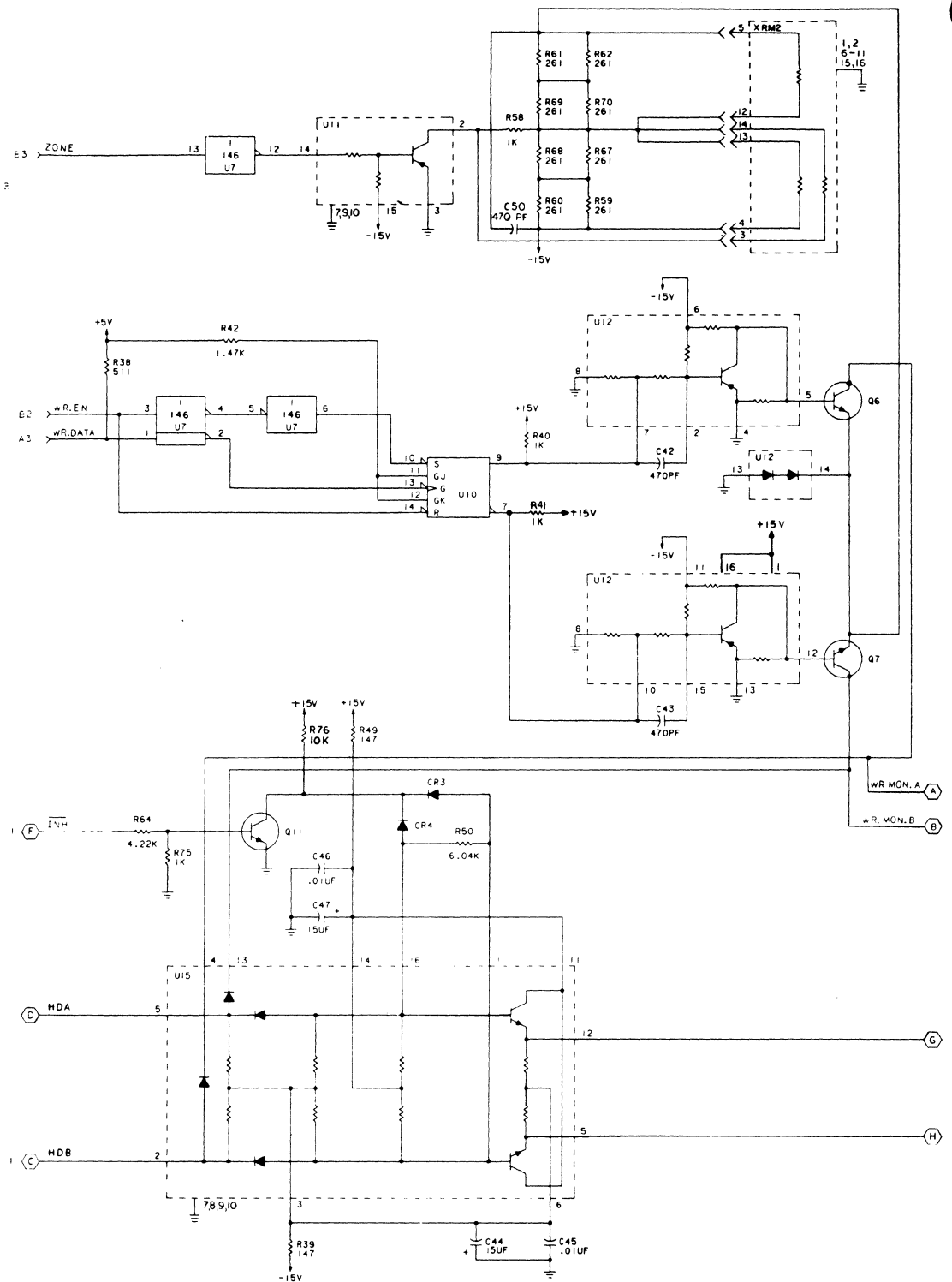


TABLE A Δ

ASM. NO.	C38	C37	C35	L2	L1	C28	C31	C15	C14	R23
1500										T.S.
75880500	5600pf	5600pf	820pf	15uh	15uh	430pf	150pf	5600pf	5600pf	T.S.
2400										T.S.
75891100	3300pf	3300pf	—	10uh	10uh	270pf	100pf	3300pf	3300pf	T.S.

Figure 5-19. Read/Write/Erase Bd Asm (Sheet 6 of 7)

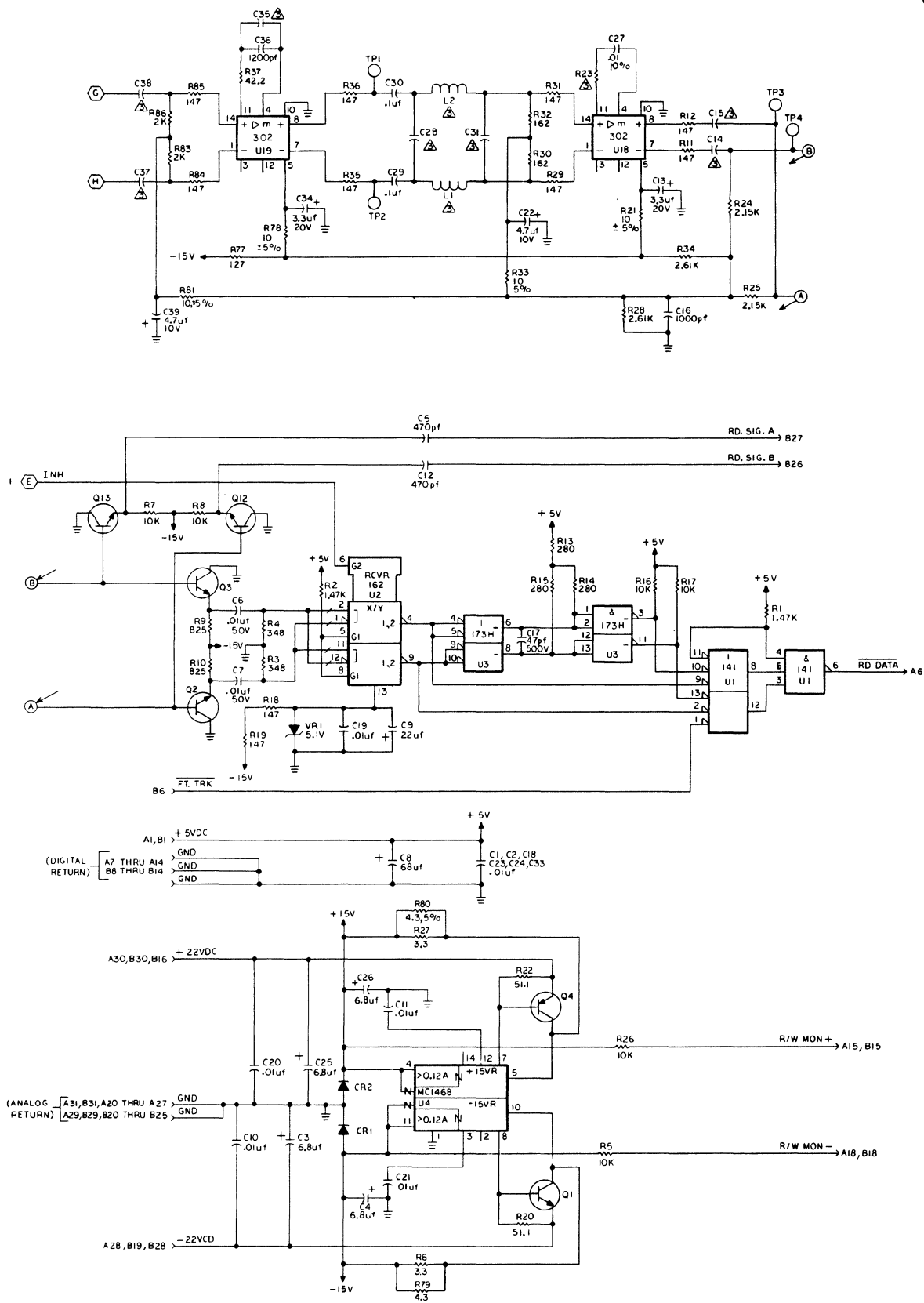
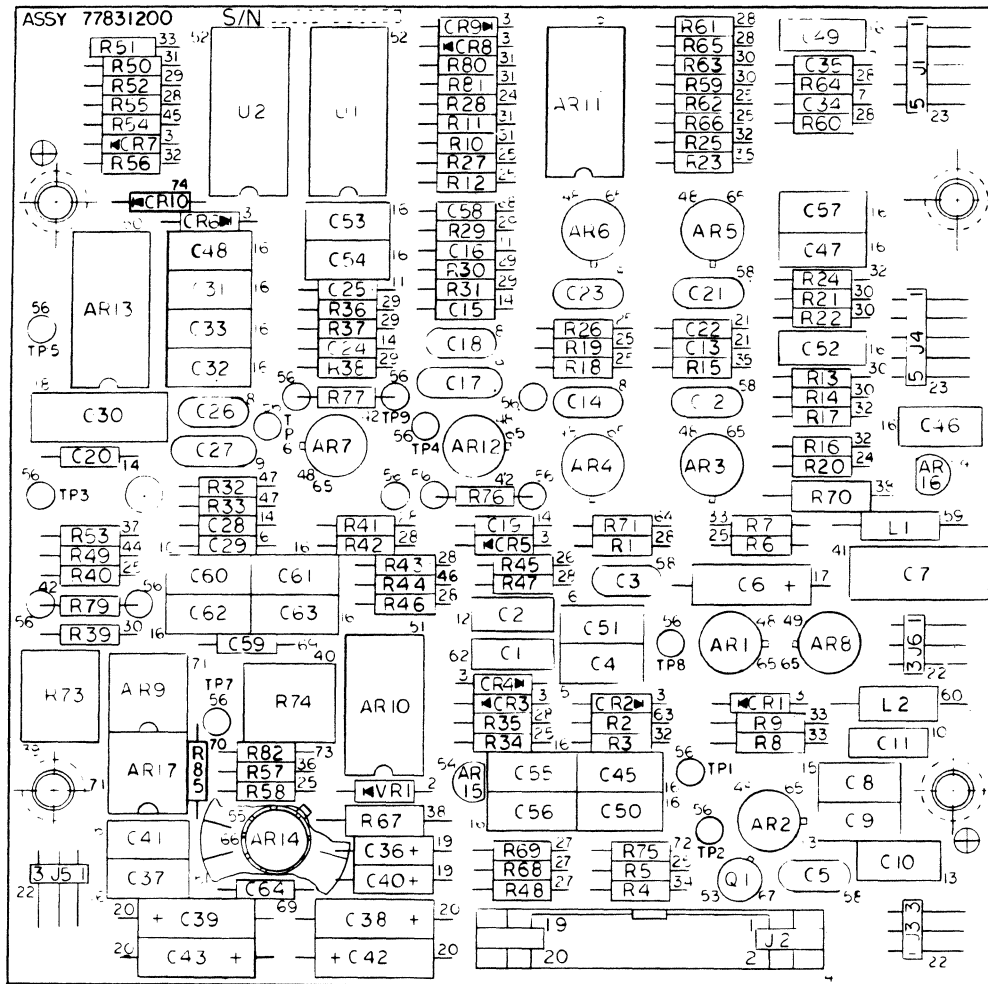


Figure 5-19. Read/Write/Erase Bd Asm (Sheet 7 of 7)



XX244a

Figure 5-20. AGC Servo Preamplifier Board Assembly (Sheet 1 of 6)

<u>ITEM NO.</u>	<u>IDENTIFICATION NO.</u>	<u>DRAWING TITLE</u>
1	77831221-5	PC Bd, AGC Pre Amp
2	50240115-1	Diode Silicon
3	51736700-9	Diode 1N914A
4	94359510-8	Connector 3M 20 Pin
5	83453805-0	Capacitor
6	75808526-0	Cap 100V 10% 1200
7	92496205-3	Cap 100V 10% 100
8	95593012-8	Capacitor 150PF 1000
9	95593008-6	Capacitor Disk 1000V
10	94227244-4	Capacitor MICA 560PF
11	92496215-2	Cap 100V 10% 1000
12	94227250-1	Capacitor 0.001 MFD
13	83465070-7	Capacitor
14	75808531-0	Cap 100V 10% 3300
15	93453801-9	Capacitor
16	83453835-7	Capacitor
17	24504382-3	Cap 20V 20% 10UF
18	83453817-5	Capacitor
19	24504329-4	Cap 35V 20% 1.0UF
20	24504339-3	Cap 35V 20% 6.8UF
21	92496227-7	Cap 100V 20% .01UF
22	75743703-3	Header-Right Angle
23	75743705-8	Header-Right Angle
24	94360336-5	Res 1/4W 1% 2.37K
25	94360368-8	Res 1/rW 1% 5.11K
26	94360204-5	Res 1/4W 1% 110
27	94360384-5	Res 1/4W 1% 7.50K
28	94360400-9	Res 1/4W 1% 10.0K
29	94360429-8	Res 1/4W 1% 20.0K
30	94360468-6	Res 1/4W 1% 51.1K
31	94360500-6	Res 1/4W 1% 100K
32	94360529-5	Res 1/4W 1% 200K
33	94360596-4	Res 1/4W 1% 1.00Meg
34	94360328-2	Res 1/4W 1% 1.96K
35	17705946-6	Res 1/4W 5% 2.7 Meg
36	94360446-2	Res 1/4W 1% 30.1K
37	94360238-3	Res 1/4W 1% 249
38	24500153-2	Res 1/2W 5% 390
39	94372604-2	Res Vari 20% 2.0K
40	94372606-7	Res Vari 20% 10K
41	83453809-2	Capacitor Rect
42	94357500-1	Resistor Test Select
44	94360480-1	Res 1/4W 1% 68.1K
45	94360417-3	Res 1/4W 1% 15.0K
46	94360300-1	Res 1/4W 1% 1.00K
47	94360329-0	Res 1/4W 1% 2.00K

Figure 5-20. AGC Servo Pream p Bd Asm (Sheet 2 of 6)

ITEM NO.	IDENTIFICATION NO.	DRAWING TITLE
48	83452801-0	IC CA3130T
49	83452804-4	IC CA3080T
50	51812800-4	IC Dual
51	15126600-4	IC LM339
52	15135100-4	CMOS 4053 2 Channel M
53	16547200-2	Trans PNP 2N2907A
54	83452805-1	IC 78L12AWC
55	83452806-9	IC 79M05AHC
56	92498021-2	Terminal, Swaged
57	75738867-3	Spacer-Standoff
58	95593011-0	Capacitor 56 PF
59	94356358-5	Inductor 6800UH
60	94356356-9	Inductor 4700UH
61	51853102-5	Heatsink
62	94227240-2	Capacitor MICA 390 P
63	94360452-0	Res 1/4W 1% 34.8K
64	94360388-6	Res 1/4W 1% 8.25K
65	94335903-4	Pad-Transistor Mount
66	94335900-0	Pad-Transistor Mtg
67	94335901-8	Pad-Transistor Mount
68	75808504-7	Cap 100V 10% 18
69	75808506-2	Cap 100V 10% 27
70	17705953-2	Res 1/4W 5% 5.1 Meg
71	15156600-7	IC 201A
72	94360274-8	Res 1/4W 1% 590
73	17705944-1	Res 1/4W 5% 2.2 Meg
74	50241400-6	Diode, Silicon
75	94360361-3	Res 1/4W 4.32K 1%

Figure 5-20. AGC Servo Pream p Bd Asm (Sheet 3 of 6)

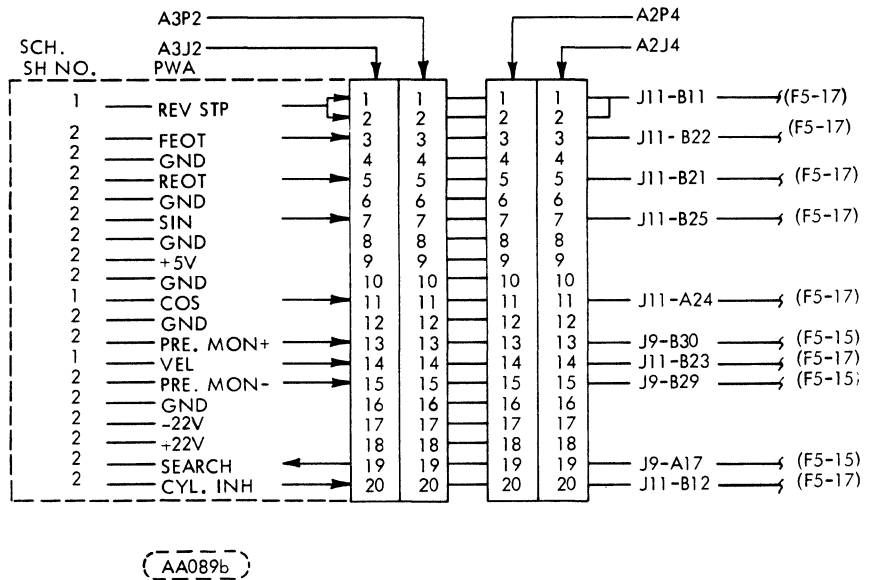
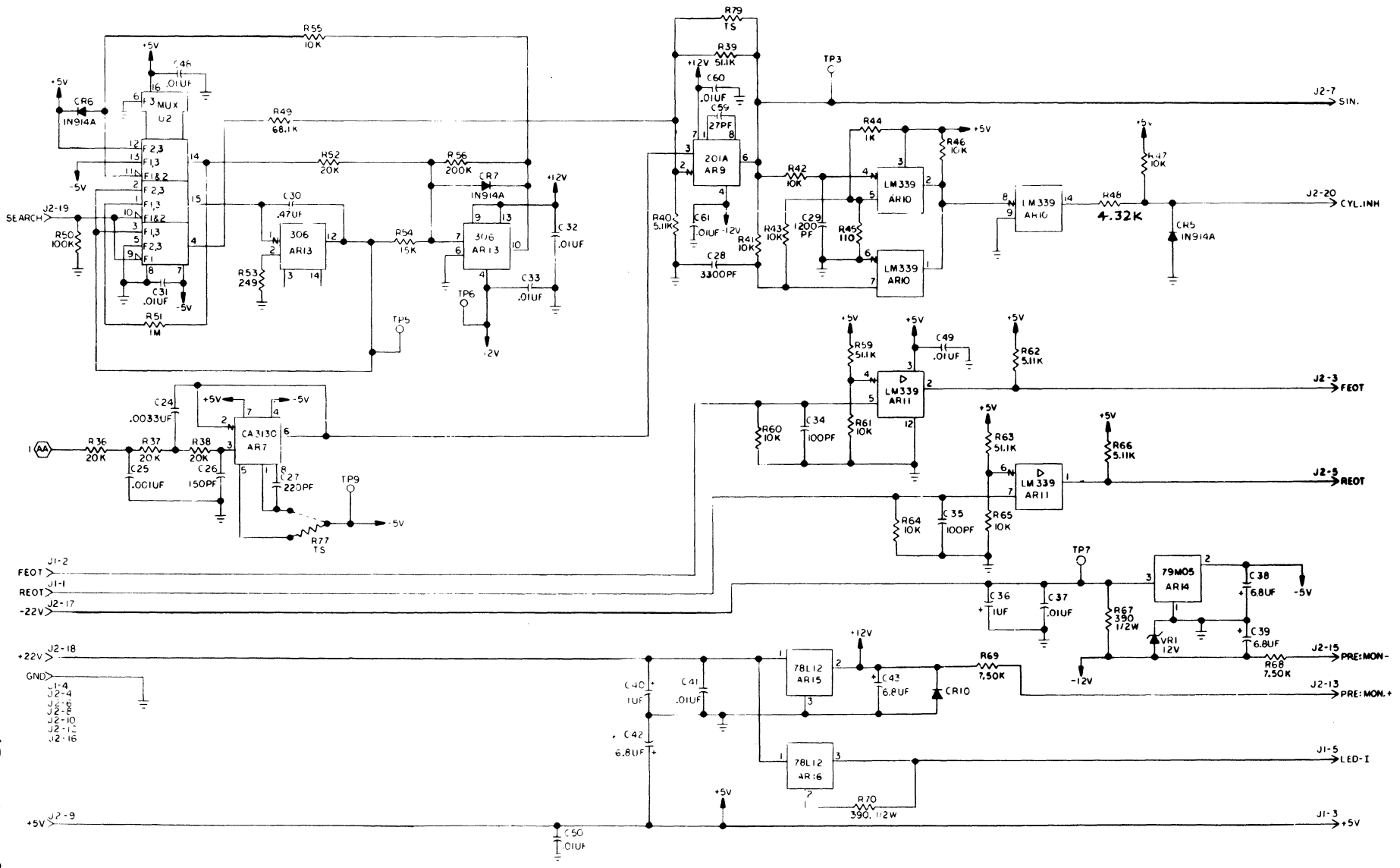
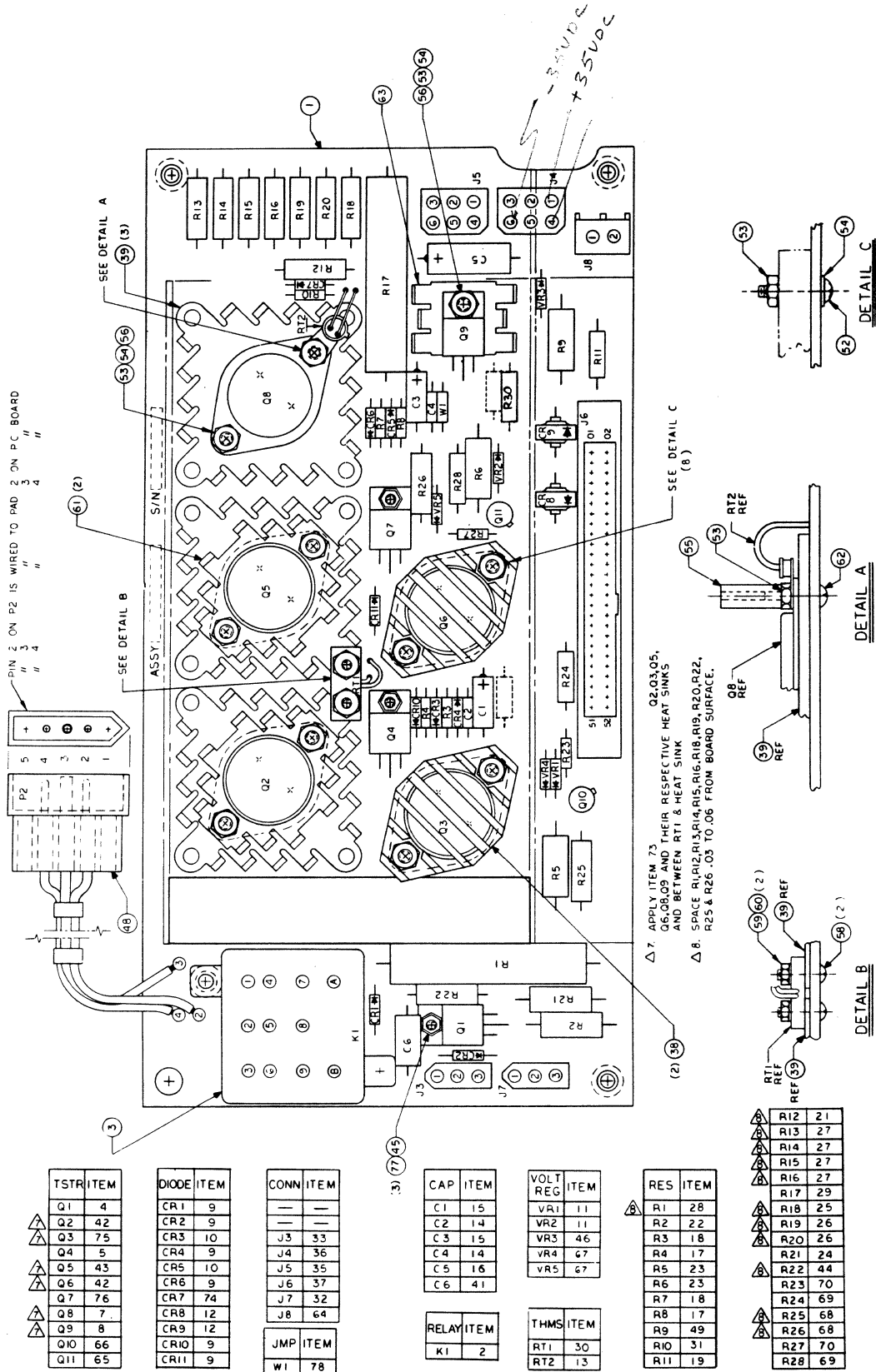


Figure 5-20. AGC Servo Preamplifier Board Assembly (Sheet 4 of 6)

Figure 5-20. AGC Servo Preamplifier Bd Asm (Sheet 6 of 6)





TSTR	ITEM
Q1	4
Q2	42
Q3	75
Q4	5
Q5	43
Q6	42
Q7	76
Q8	7
Q9	8
Q10	66
Q11	65

DIODE	ITEM
CR1	9
CR2	9
CR3	10
CR4	9
CR5	10
CR6	9
CR7	74
CR8	12
CR9	12
CR10	9
CR11	9

CONN	ITEM
J3	33
J4	36
J5	35
J6	37
J7	32
J8	64
JMP	
W1	78

CAP	ITEM
C1	15
C2	14
C3	15
C4	14
C5	16
C6	41

VOLT REG	ITEM
VR1	11
VR2	11
VR3	46
VR4	67
VR5	67

RES	ITEM
R1	28
R2	22
R3	18
R4	17
R5	23
R6	23
R7	18
R8	17
R9	49
R10	31
R11	19

R12	21
R13	27
R14	27
R15	27
R16	27
R17	29
R18	25
R19	26
R20	26
R21	24
R22	44
R23	70
R24	69
R25	68
R26	68
R27	70
R28	69

Figure 5-21 Power Suppy Bd No. 1 (Sheet 1 of 6)

<u>ITEM NO.</u>	<u>IDENTIFICATION NO.</u>	<u>DRAWING TITLE</u>
1	77830323-0	PWB Pwr Sup #1
2	22940804-2	Relay Gen Purp 3PDT
3	22940901-6	Relay Socket Retainer
4	75752300-6	Transistor Power
5	75752402-0	Transistor Power
7	50221700-3	Transistor MJ 4502
8	15151500-4	Volt Regulator
9	50241001-2	Diode Silicon
10	51736700-9	Diode 1N914A
11	50240920-4	Diode Zener
12	77832208-1	Diode Silicon
13	77612612-0	Thermistor
13	83465304-0	Therm Sensor Switch-Intch
14	92496227-7	Cap 100V 20% .01UF
15	17706043-1	Cap 50V 20% 4.7UF
16	24504386-4	Cap 20V 20% 47UF
17	94360236-7	Res 1/4W 1% 237
18	94360200-3	Res 1/4W 1% 100
19	24500139-1	Res 1/2W 5% 100
21	94318601-5	Resistor WW 3W 1.5
22	24507118-8	Res 1W 5% 51
23	24507139-4	Res 1W 5% 390
24	24507170-9	Res 1W 5% 2.0K
25	94318632-0	Resistor WW 3W 100
26	94318661-9	Resistor WW 3W 1000
27	94318697-3	Resistor WW 3W 0.5
28	62065805-4	Resistor
29	95594151-3	Res Fxd Wire WD 10W
30	77830604-3	Thermistor Probe
31	94360100-5	Res 1/4W 1% 10.0
32	75808402-4	Conn Wafer 3-Pin
33	75808403-2	Conn Wafer 3-Pin MFM
35	75808448-7	Conn Wafer 6-Pin
36	75808451-1	Conn Wafer 6-Pin
37	97109269-7	Conn 32 Pin Male
38	75811802-0	Heatsink
39	95596205-5	Heatsink
40	75738874-9	Standoff
41	75808553-4	Cap 100V 10% 220,000
42	77830635-7	Motorola Tran2N6030
43	94646506-0	Motorola Tran 2N5630
44	94318625-4	Res Wire WD 3W 50 OH
45	93650012-6	Stud-Self Clinching
46	50240108-6	Volt Reg 6.2V 5%
47	75738858-2	Standoff
48	83456701-8	Pwr Bd Harness Assy
49	92512399-4	Res 1W 1.2K 10
52	92743168-4	Screw SS Pan Hd 6-32

Figure 5-21. Power Supply Bd No. 1 (Sheet 2 of 6)

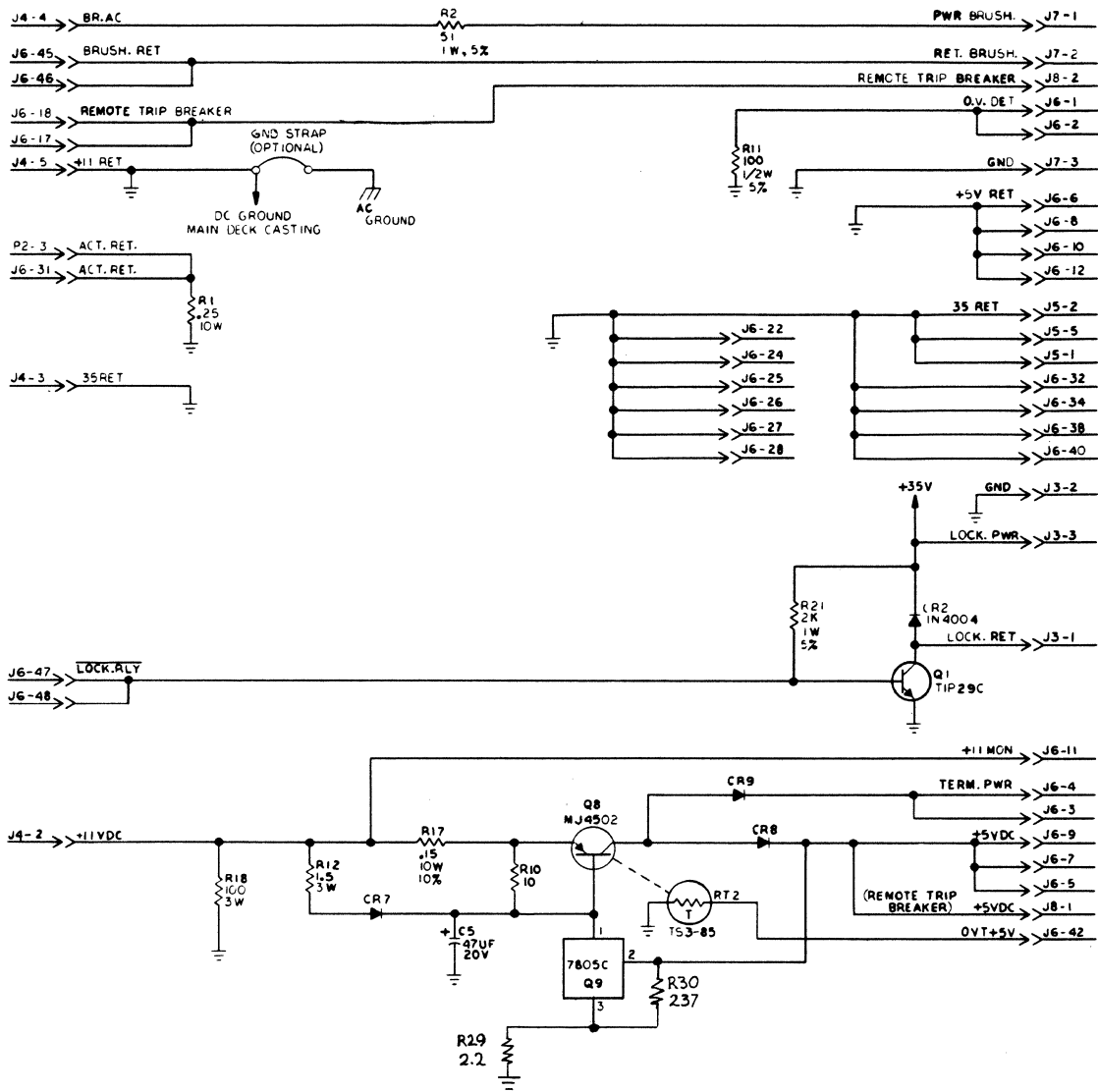
<u>ITEM NO.</u>	<u>IDENTIFICATION NO.</u>	<u>DRAWING TITLE</u>
53	95510026-8	Nut Hex Mach Screw
54	10126103-0	Wash Int Tooth LK #6
55	83475701-5	Std Off-Wind Tunnel
56	92743164-3	Screw SS Pan Hd 6-32
57	10125603-0	Washers Plain 4
58	92743088-4	Screw-Mach Hd SS 4-4
59	10126101-4	Wash Int Tooth Lock
60	10125103-1	Scr Nut-Hex Mach 4-4
61	77830638-1	Heat Dissipator
62	92743166-8	Screw-Pan Hd 6-32X5
63	94778801-4	Heatsink
64	95882700-8	Connector
65	75722200-5	Transistor NPN
66	16547200-2	Trans PNP 2N2907A
67	50240102-9	Diode-Zener 3.6V
68	94318604-9	Resistor 3 3W
69	24500174-8	Res 1/2W 5% 3.0K
70	94360368-8	Res 1/4W 1% 5.11K
73	95533600-3	Grease
74	83452901-8	Diode A14B
75	92162069-6	Transistor 2N3055
76	75752302-2	Transistor Power
77	92583002-8	Nut Lock
78	77832252-9	Lead Electrical
80	15164522-3	Res 1/4W 2.2 Ω 5%

Figure 5-21. Power Supply Bd No. 1 (Sheet 3 of 6)

CONNECTOR	DESTINATION (SCH)
J3	F5-31, BASEPLATE ELECTRONICS
J4 & J5	F5-26, F5-27, F5-28, F5-29 or F5-30, AC-DC POWER DISTRIBUTION.
J6	F5-22, POWER SUPPLY BD NO. 2
J7 & J8	F5-31, BASEPLATE ELECTRONICS
P2	DESTINATION NOT SHOWN - SIGNAL USED WHEN ADJUSTING HEADS TO BYPASS RELAY K1.

AA291c

Figure 5-21. Power Supply Bd No. 1 (Sheet 4 of 6)



NOTES: UNLESS OTHERWISE SPECIFIED
 1. RESISTANCE VALUES ARE IN OHMS
 1/4W, 1%

Figure 5-21. Power Supply Bd No. 1 (Sheet 5 of 6)

Figure 5-21. Power Supply Bd No. 1 (Sheet 6 of 6)

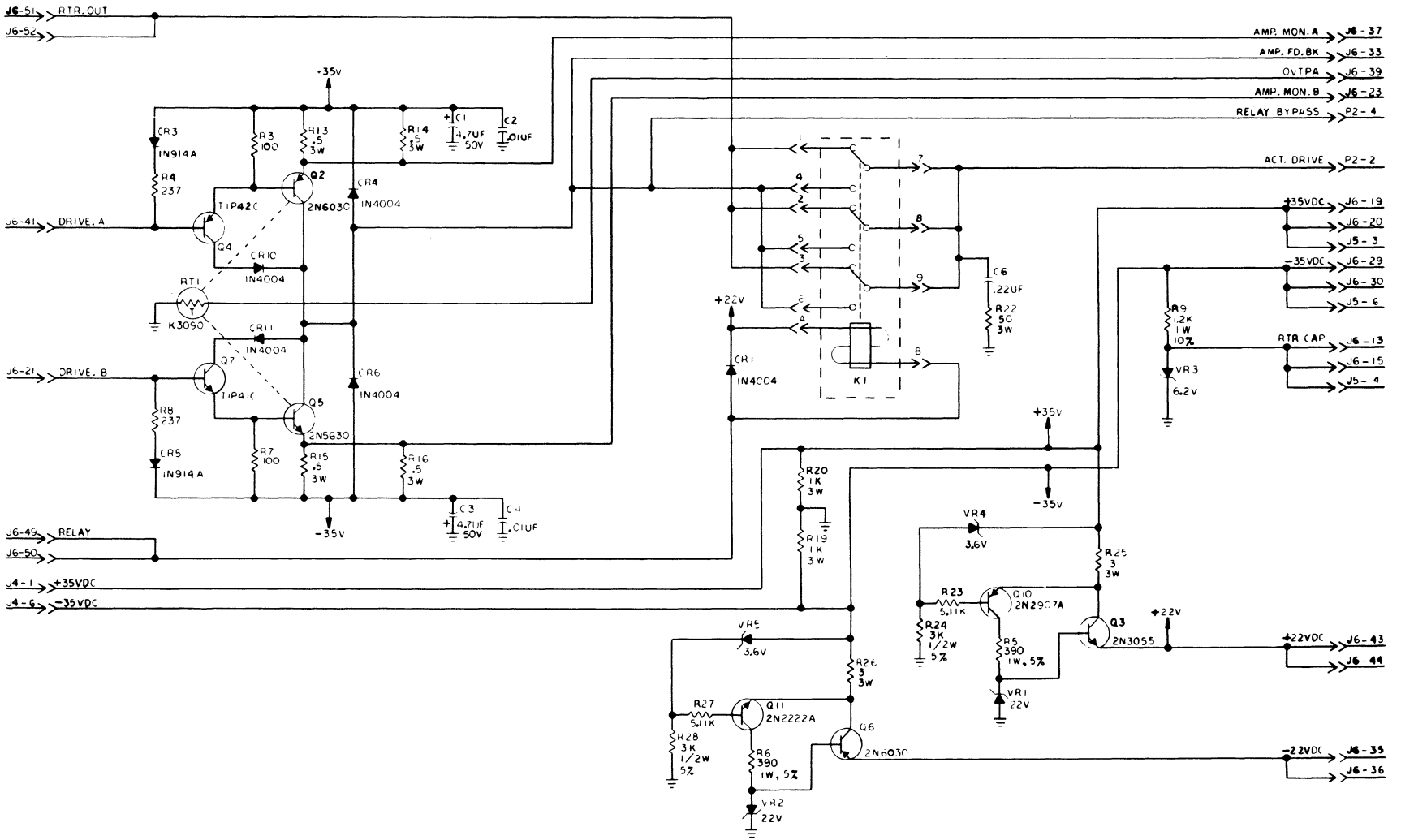
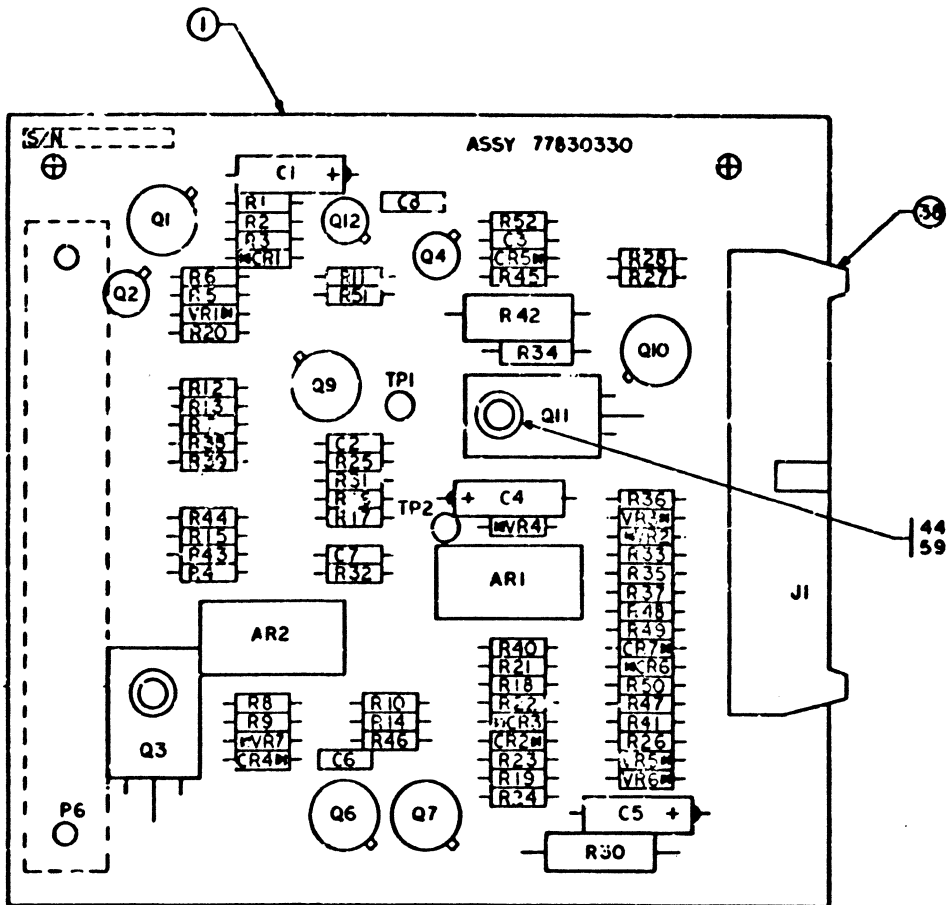


FIGURE 5-22. POWER SUPPLY BD, NO. 2 (SHEET 1 OF 6)



P6
 35, 36 → -22VDC
 45, 44 → +22VDC
 5, 7, 9 → +5VDC

RES	PL ITEM
R1	22
R2	32
R3	22
R4	26
R5	27
R6	31
R7	30
R8	43
R9	43
R10	43
R11	23
R12	24
R13	23
R14	23
R15	23
R16	33
R17	27
R18	22
R19	22
R20	28
R21	29
R22	25
R23	25
R24	29
R25	42
R26	24
R27	26
R28	28
R29	—
R30	41

RES	PL ITEM
R31	30
R32	28
R33	28
R34	35
R35	28
R36	28
R37	24
R38	49
R39	50
R40	57
R41	24
R42	47
R43	51
R44	51
R45	54
R46	31
R47	58
R48	58
R49	58
R50	58
R51	26
R52	22

TSTR	PL ITEM
Q1	8.45
Q2	5
Q3	36
Q4	6
Q5	—
Q6	7.45
Q7	4.45
Q8	—
Q9	3.45
Q10	20.45
Q11	2
Q12	3

DIO	PL ITEM
CR1	12
CR2	12
CR3	12
CR4	11
CR5	12
CR6	12
CR7	12

CAP	PL ITEM
C1	18
C2	21
C3	17
C4	19
C5	19
C6	53
C7	56
C8	60

IC	PL ITEM
ARI	10
AR2	55

VOLT REG	PL ITEM
VR1	14
VR2	13
VR3	13
VR4	15
VR5	15
VR6	16
VR7	52

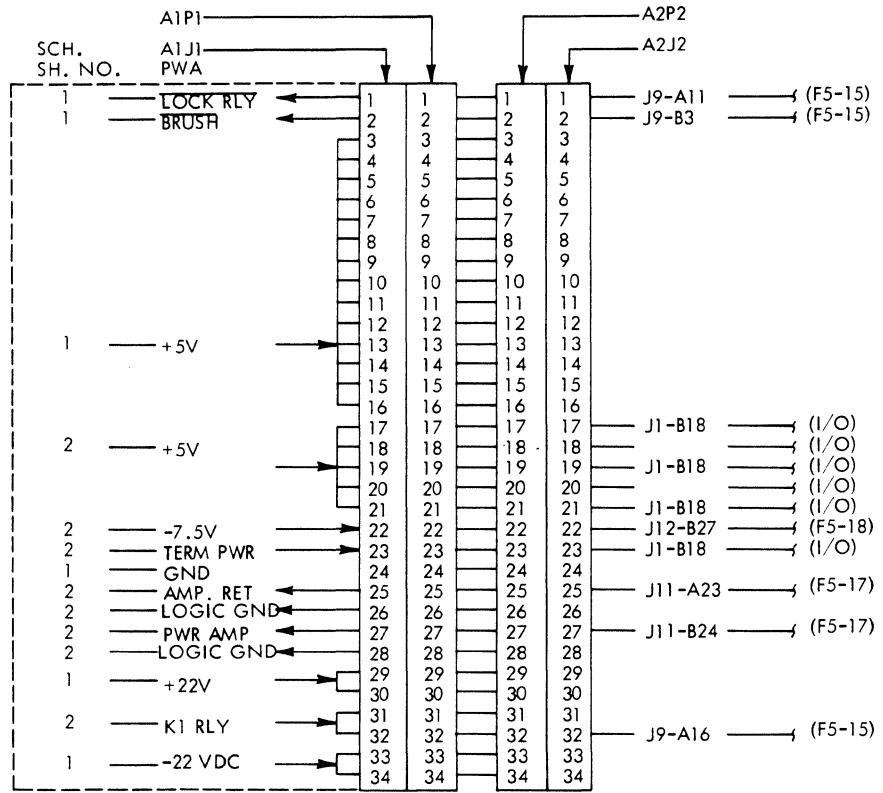
TERM	PL ITEM
TP1	40
TP2	40

ITEM NO.	IDENTIFICATION NO.	DRAWING TITLE
1	77830334-7	PWB Pwr Sup #2
1	77830333-0	PWB Pwr Sup #2, Intch
2	75752300-6	Transistor Power
3	50219900-3	Transistor-Unijunction
4	95592700-9	Tstr Silicon PNP
5	75722200-5	Transistor NPN
6	16547200-2	Trans PNP 2N2907A
7	75722201-3	Transistor NPN 2N2219A
8	95327201-0	Silicon Triac
9	83464203-5	Sensitive Gate Triac
10	51812800-4	IC Dual UA 747
11	50241001-2	Diode Silicon
12	51736700-9	Diode 1N914A
13	50240102-9	Diode-Zener 3.6V
14	50240109-4	Diode Silicon
15	50240117-7	Diode Zener
16	50240110-2	Diode Silicon
17	92496227-7	Cap 100V 20% .01UF
18	24504337-7	Cap 35V 20% 4.7UF
19	24504339-3	Cap 35V 20% 6.8UF
20	83464202-7	IC
21	75808533-6	Cap 100V 10% 4700
22	94360200-3	Res 1/4W 1% 100
23	94360236-7	Res 1/4W 1% 237
24	94360280-5	Res 1/4W 1% 681
25	94360284-7	Res 1/4W 1% 750
26	94360300-1	Res 1/4W 1% 1.00K
27	94360329-0	Res 1/4W 1% 2.00K
28	94360368-8	Res 1/4W 1% 5.11K
29	94360380-3	Res 1/4W 1% 6.81K
30	94360385-2	Res 1/4W 1% 7.68K
31	94360400-9	Res 1/4W 1% 10.0K
32	94360448-8	Res 1/4W 1% 31.6K
33	94360568-3	Res 1/4W 1% 511K
35	24500170-6	Res 1/2W 5% 2.0K
36	75885251-1	Diode, Silicon Control
38	94359502-5	Header Flat Cable
39	97113325-1	Connector Header
40	92498021-2	Terminal, Swaged
41	94318633-8	Resistor WW 3W 110
42	94360550-1	Res 1/4W 1% 332K
43	94360240-9	Res 1/4W 1% 261
44	93640012-6	Stud-Self Clinching
45	94335900-0	Pad-Transistor Mtg
46	95694204-9	Spacer
47	24507118-8	Res 1W 5% 51
49	94360400-9	Res 1/4W 1% 10.0K

Figure 5-22. Power Supply Bd No. 2 (Sheet 2 of 6)

<u>ITEM NO.</u>	<u>IDENTIFICATION NO.</u>	<u>DRAWING TITLE</u>
50	94360355-5	Res 1/4W 1% 3.7K
51	94360384-5	Res 1/4W 1% 7.50K
52	50240106-0	Diode Silicon , Zener, 5.1V
54	94360373-8	Res 1/4W 1% 5.76K
55	15126600-4	IC LM339
56	75808537-7	Cap 100V 10% 0.01 UF
57	94360311-8	Res 1/4W 1% 1.30K
58	94360325-8	Res 1/4W 1% 1.82K
59	92583002-8	Nut Lock
60	94354832-1	Capacitor Ceramic
61	94360304-3	Res 1/4W 1% 1.1K

Figure 5-22. Power Supply Bd No. 2 (Sheet 3 of 6)



CONNECTOR	DESTINATION
P6	F5-21, POWER SUPPLY NO. 1

AA089a

Figure 5-22. Power Supply Bd No. 2 (Sheet 4 of 6)

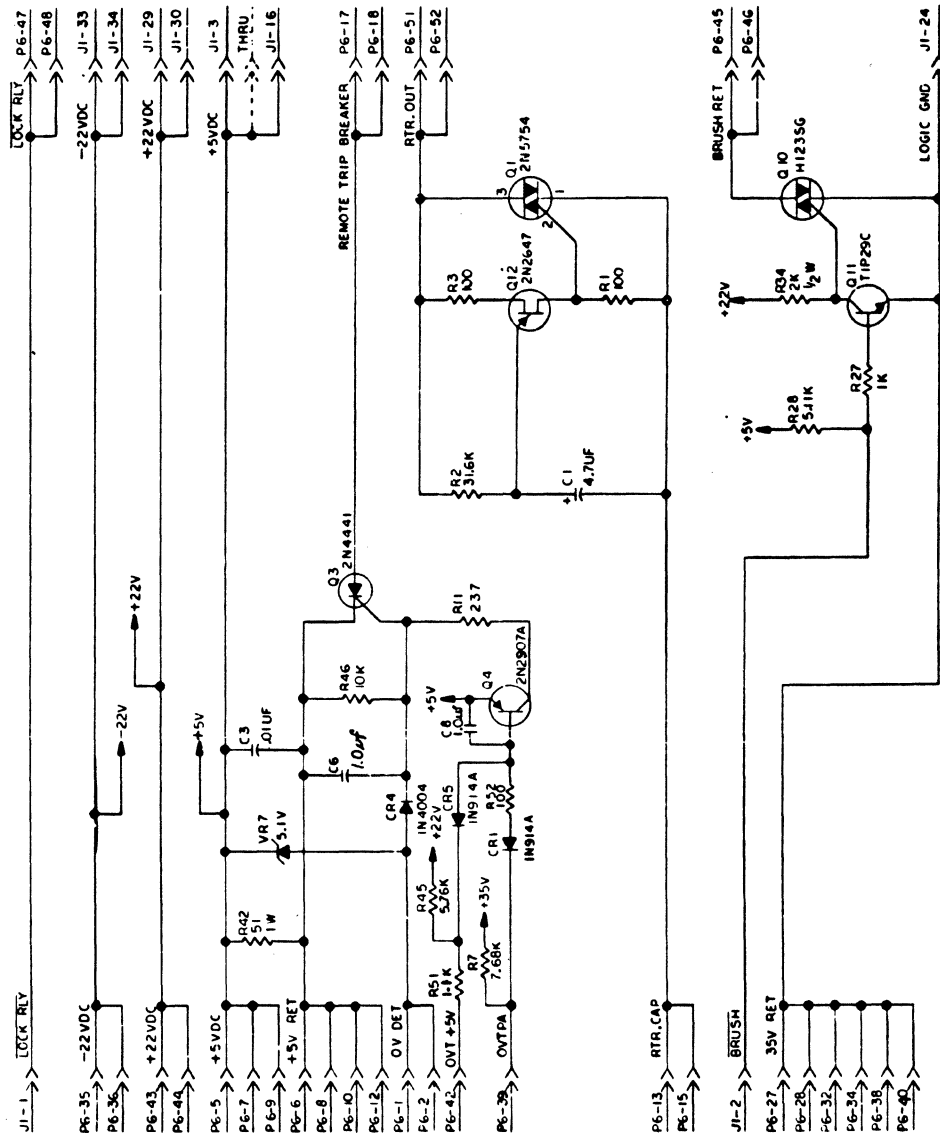
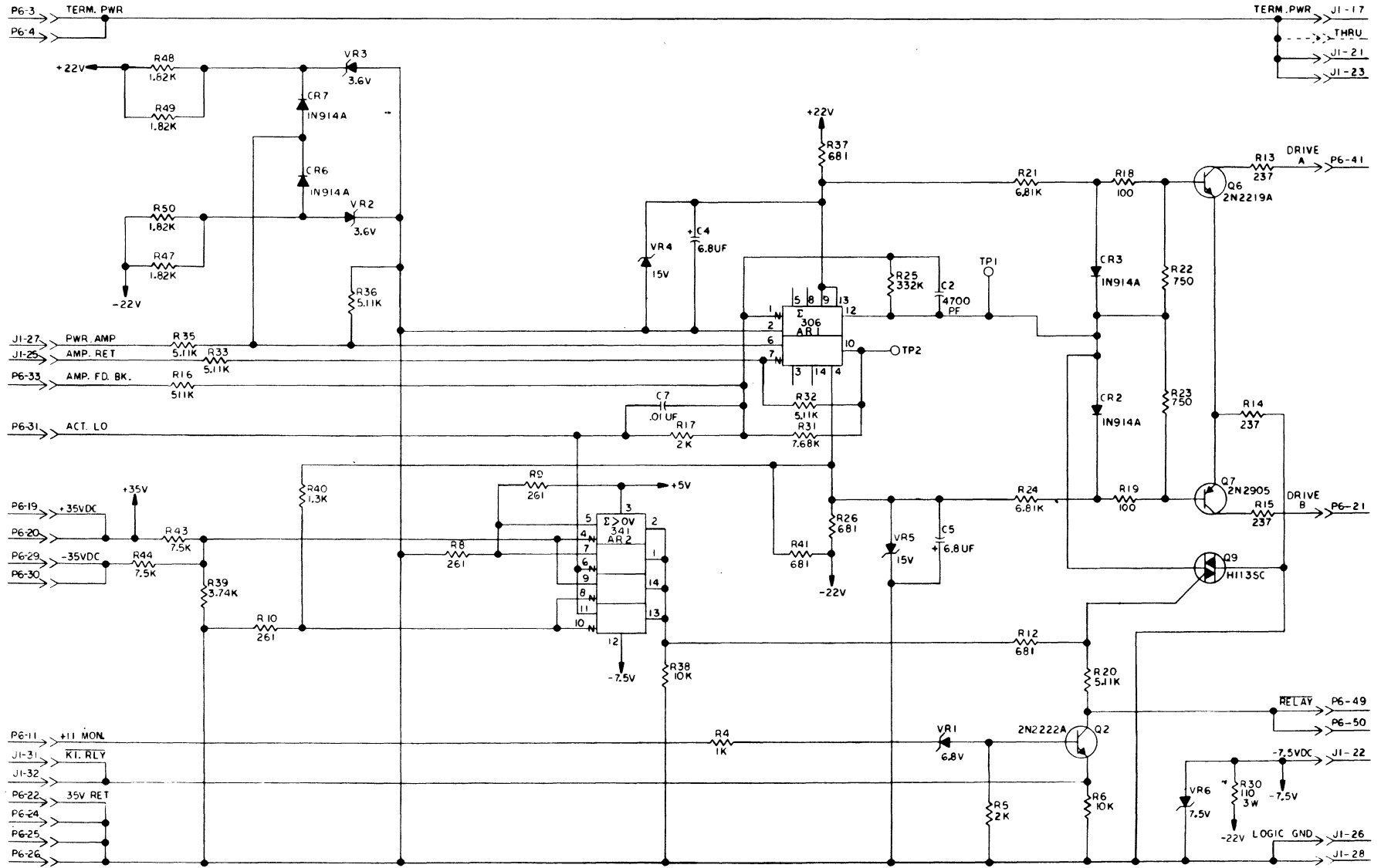


Figure 5-22. Power Supply Bd No. 2 (Sheet 5 of 6)

Figure 5-22. Power Supply Bd No. 2 (Sheet 6 of 6)



<u>ITEM NO.</u>	<u>IDENTIFICATION NUMBER</u>	<u>DRAWING TITLE</u>
1	75866107	PWB, Spindle Mtr Brke
2	75885581	Connector PWB
2	00005184	Connector PR017579, Intch
3	94240452	Cap 50V 10% 0.22 MF
5	94240448	Cap 50V 10% 0.10 UF
6	15133200	CMOS 4011B
8	15134700	CMOS 4049B
9	15135000	CMOS 4001B
10	51768200	IC Dual
11	51736700	Diode 1N914A
12	17705953	Res 1/4W 5% 5.1Meg
14	24500087	Res 1/4W 5% 10K
16	94360500	Res 1/4W 1% 100K
17	24504346	Cap 10V 20% 4.7UF
18	17705951	Res 1/4W 5% 4.3Meg
19	83452013	Cap 100V 10% 0.22 UF
20	94360357	Res 1/4W 1% 3.92K

Figure 5-23. Spindle Motor Brake Asm (Sheet 2 of 4)

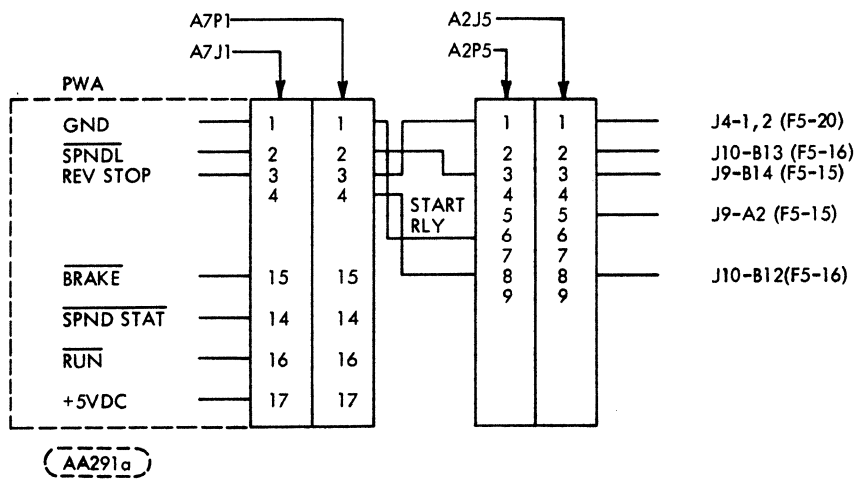


Figure 5-23. Spindle Motor Brake Asm (Sheet 3 of 4)

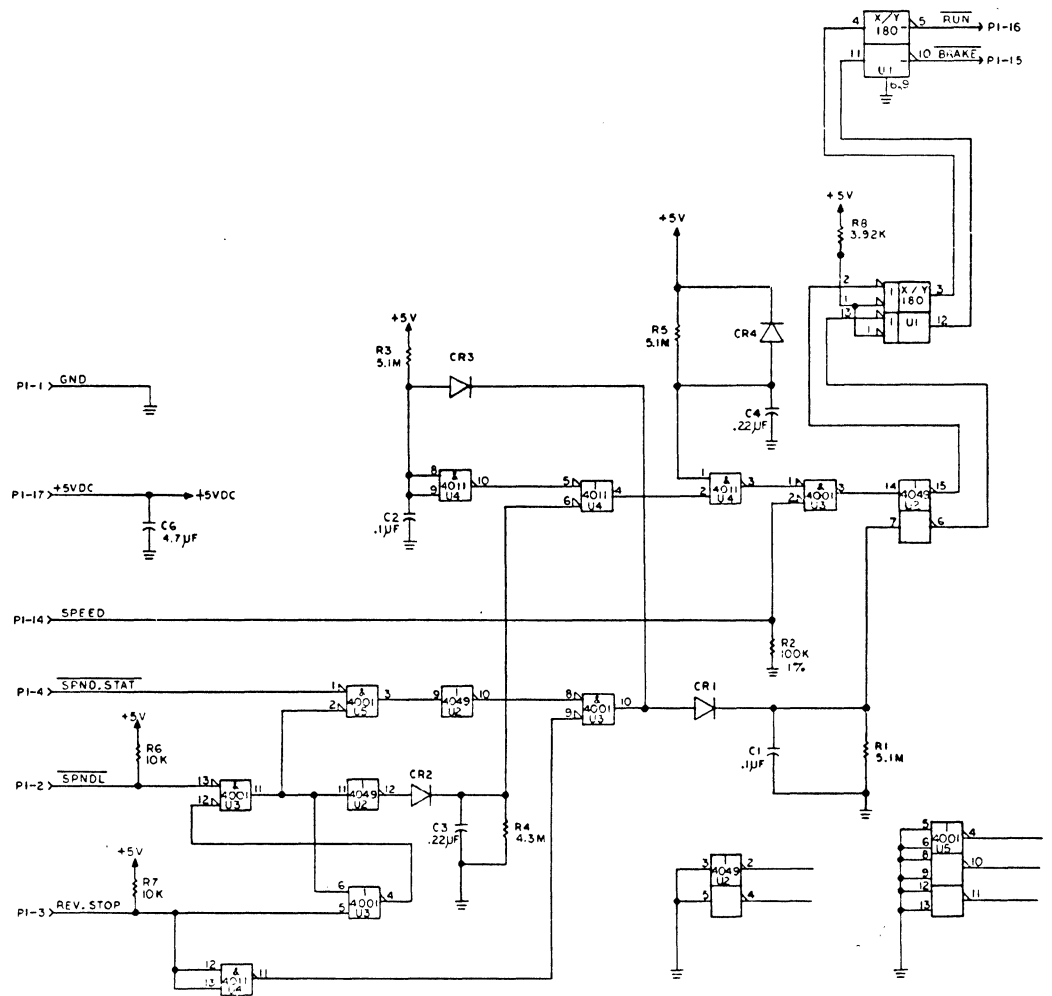


Figure 5-23. Spindle Motor Brake Asm (Sheet 4 of 4)

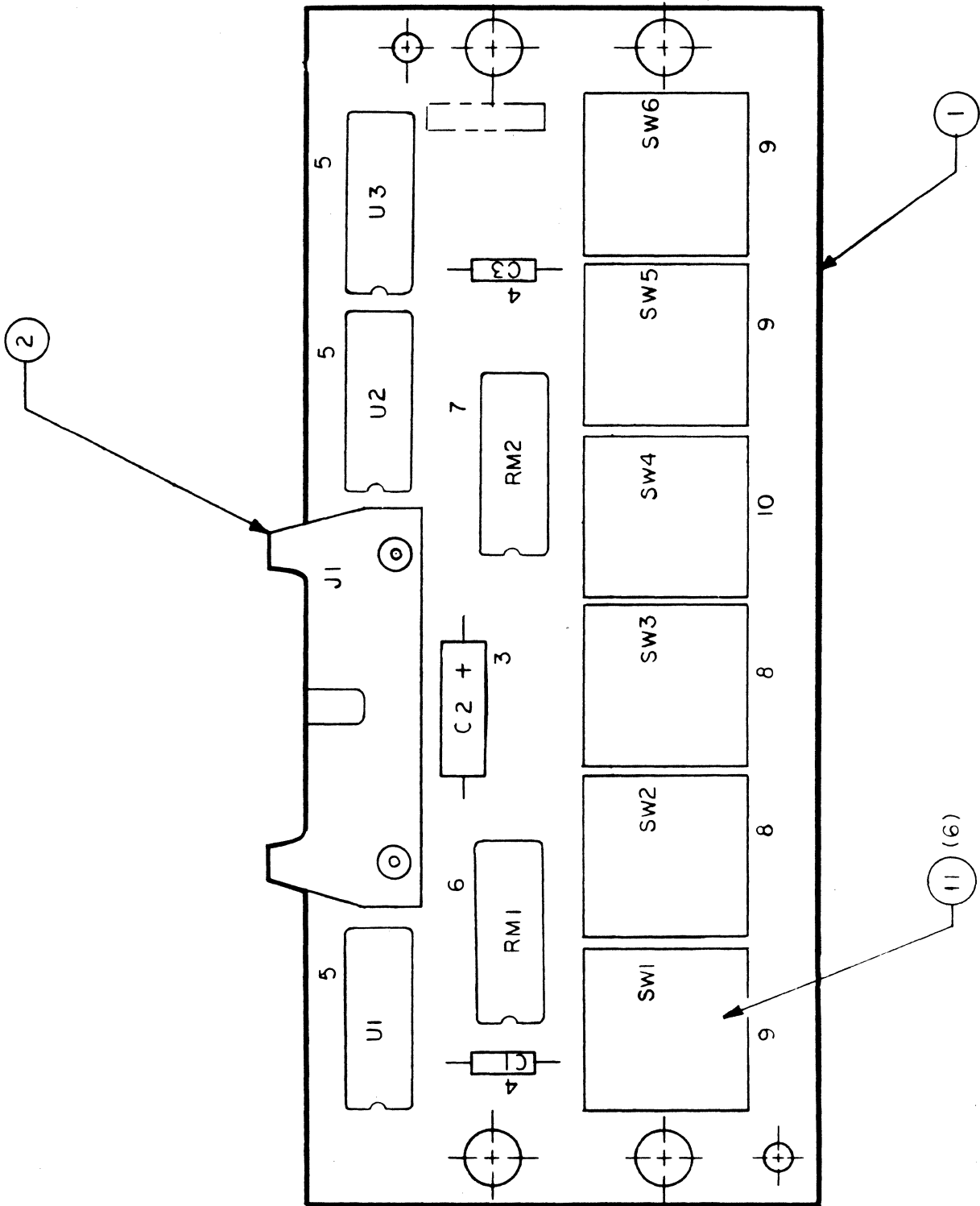
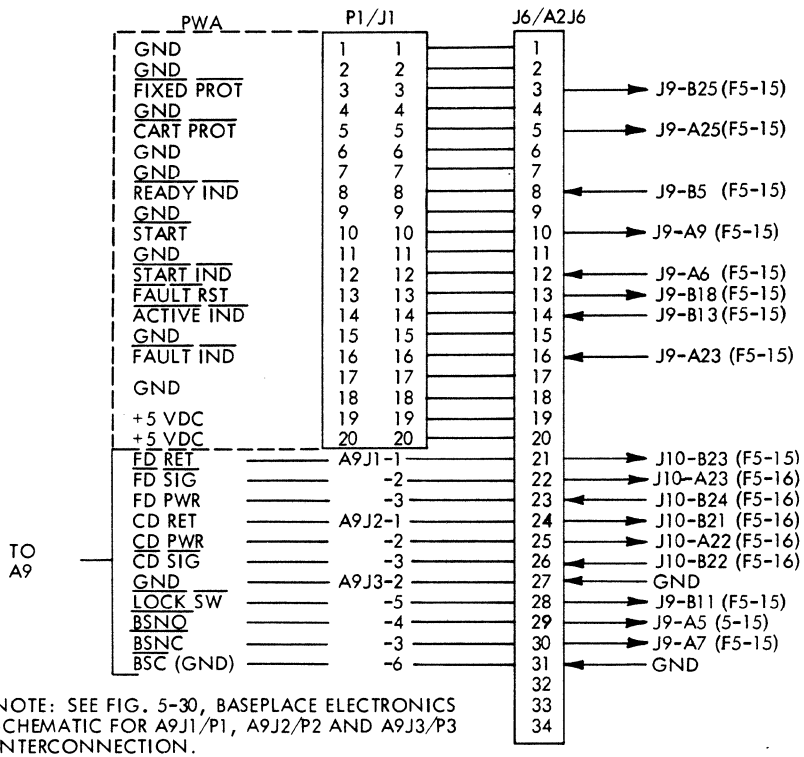


Figure 5-24. Switch Bd Asm (Sheet 1 of 4)

<u>ITEM NO.</u>	<u>IDENTIFICATION NUMBER</u>	<u>DRAWING TITLE</u>
1	75299001	PC Board, Switch
2	94359505	Conn 20 Pin Rt Angle
3	24504353	Cap 10V 20% 33UF
4	92496227	Cap 100V 20% .01UF
5	51768200	IC Dual
6	75009976	Res Pac 2% 2.0K (7)
7	75009955	Res Pac 2% 100K (7)
8	75299600	Switch Assy
9	75299700	Switch Assy
10	75299800	Switch Assy
11	83490700	Button - Switch Assy (on 75299103 only)
11	75299900	Button-Switch Assy (on 75299102 only)

Figure 5-24. Switch Bd Asm (Sheet 2 of 4)



AA057c

Figure 5-24. Switch Bd Asm (Sheet 3 of 4)

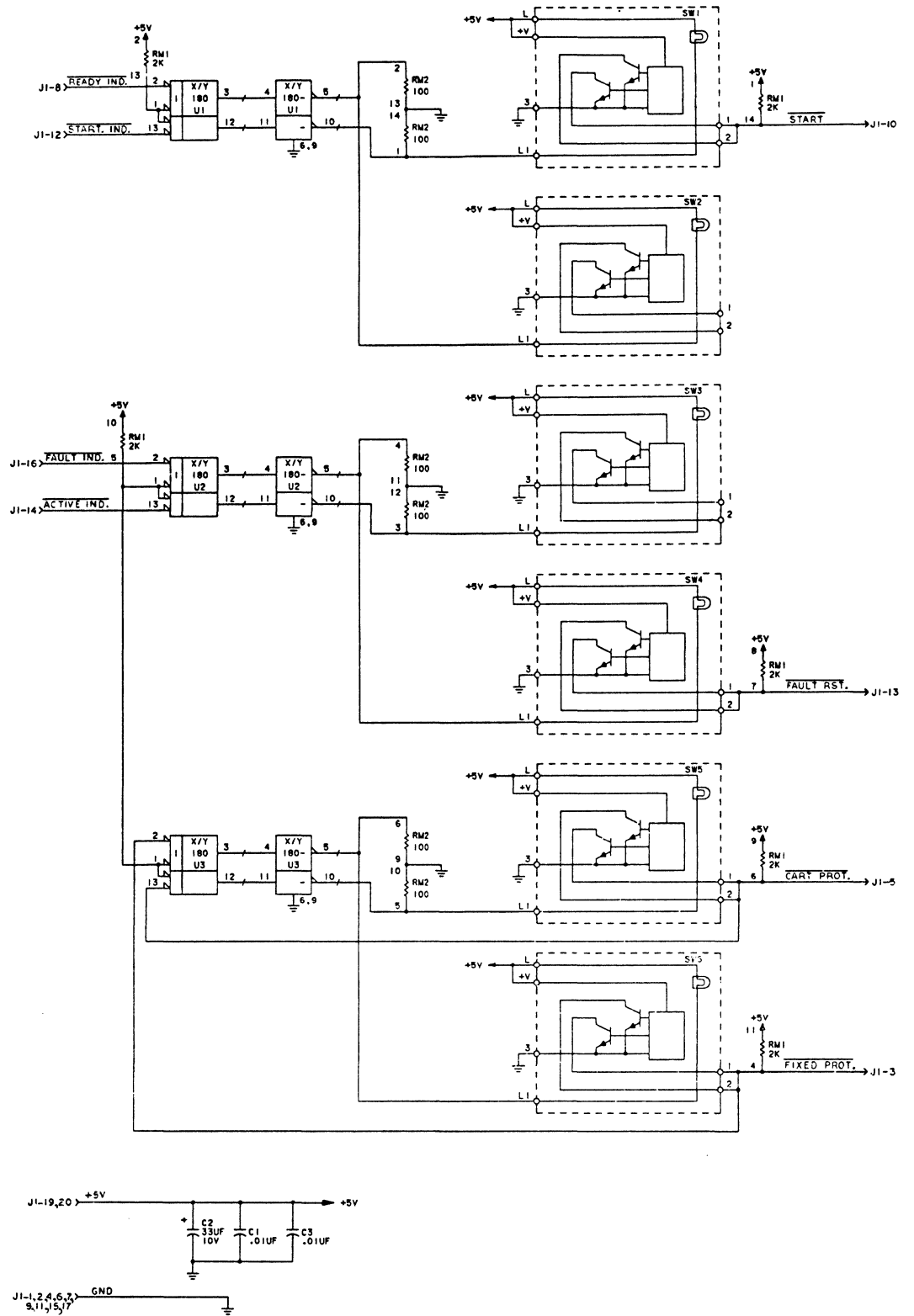


Figure 5-24. Switch Bd Asm (Sheet 4 of 4)

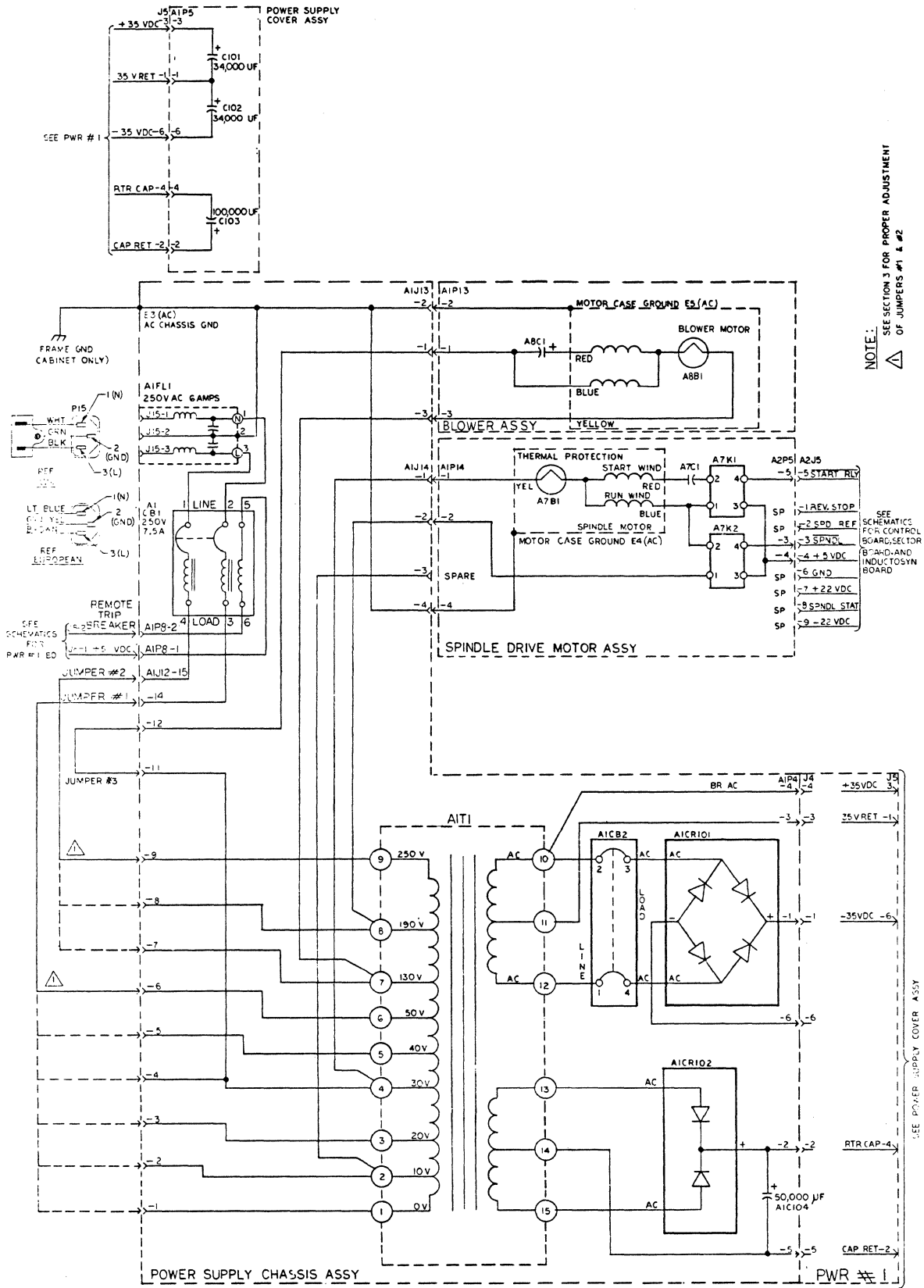


Figure 5-25. AC-DC Without Dynamic Brake

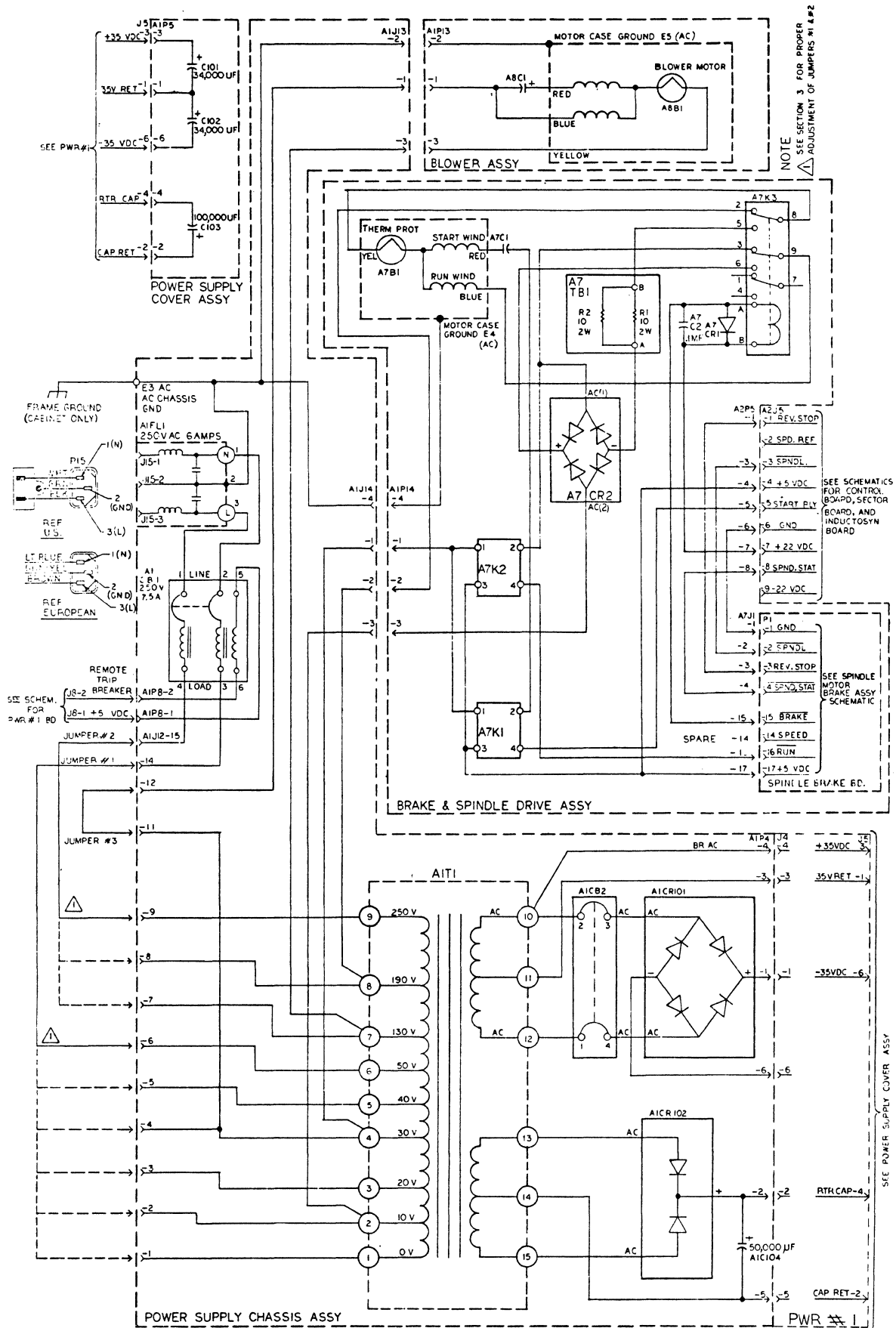


Figure 5-26. AC-DC With Dynamic Brake

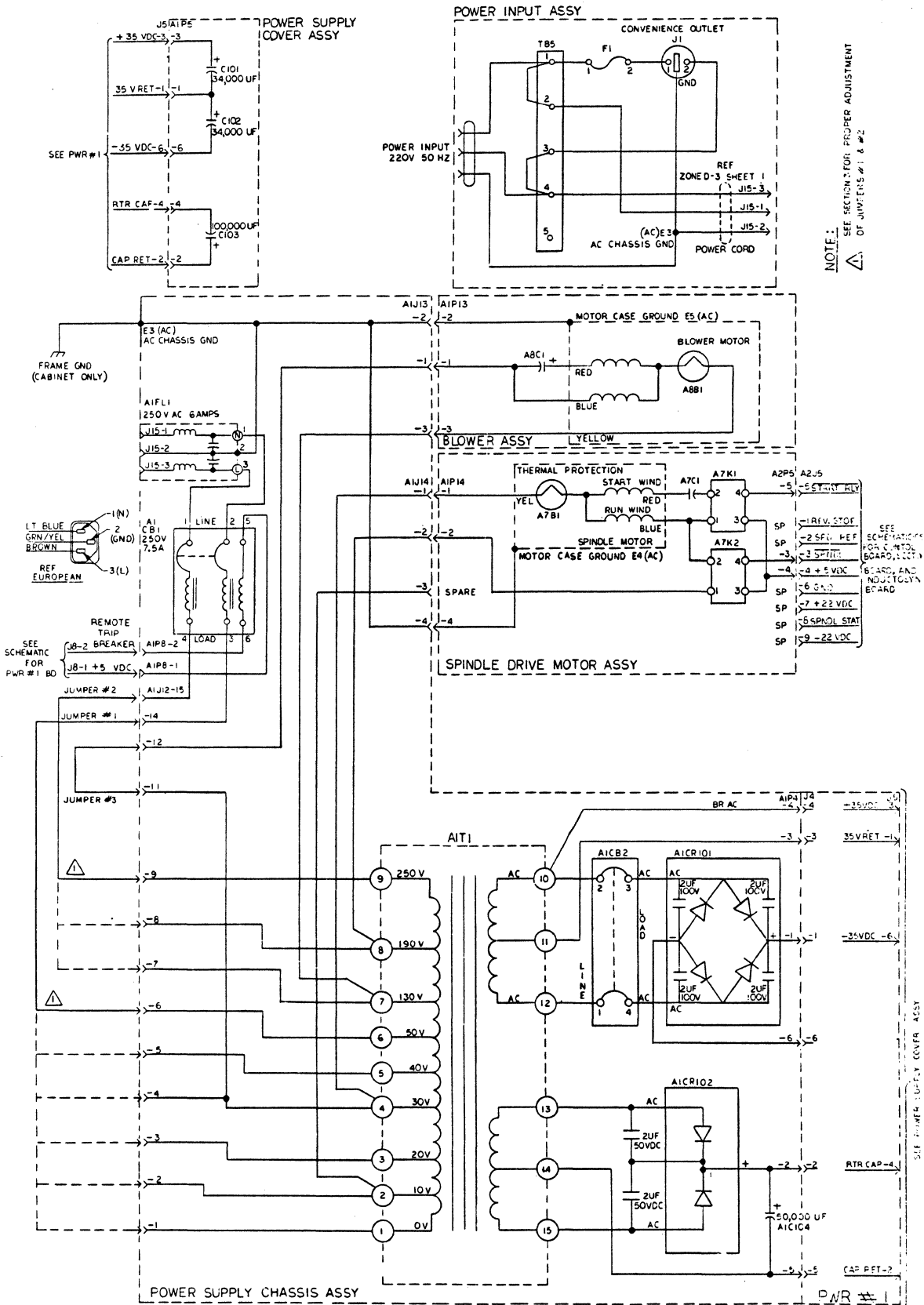


Figure 5-27. AC-DC Without Brake and With Filters and Power Input Assembly

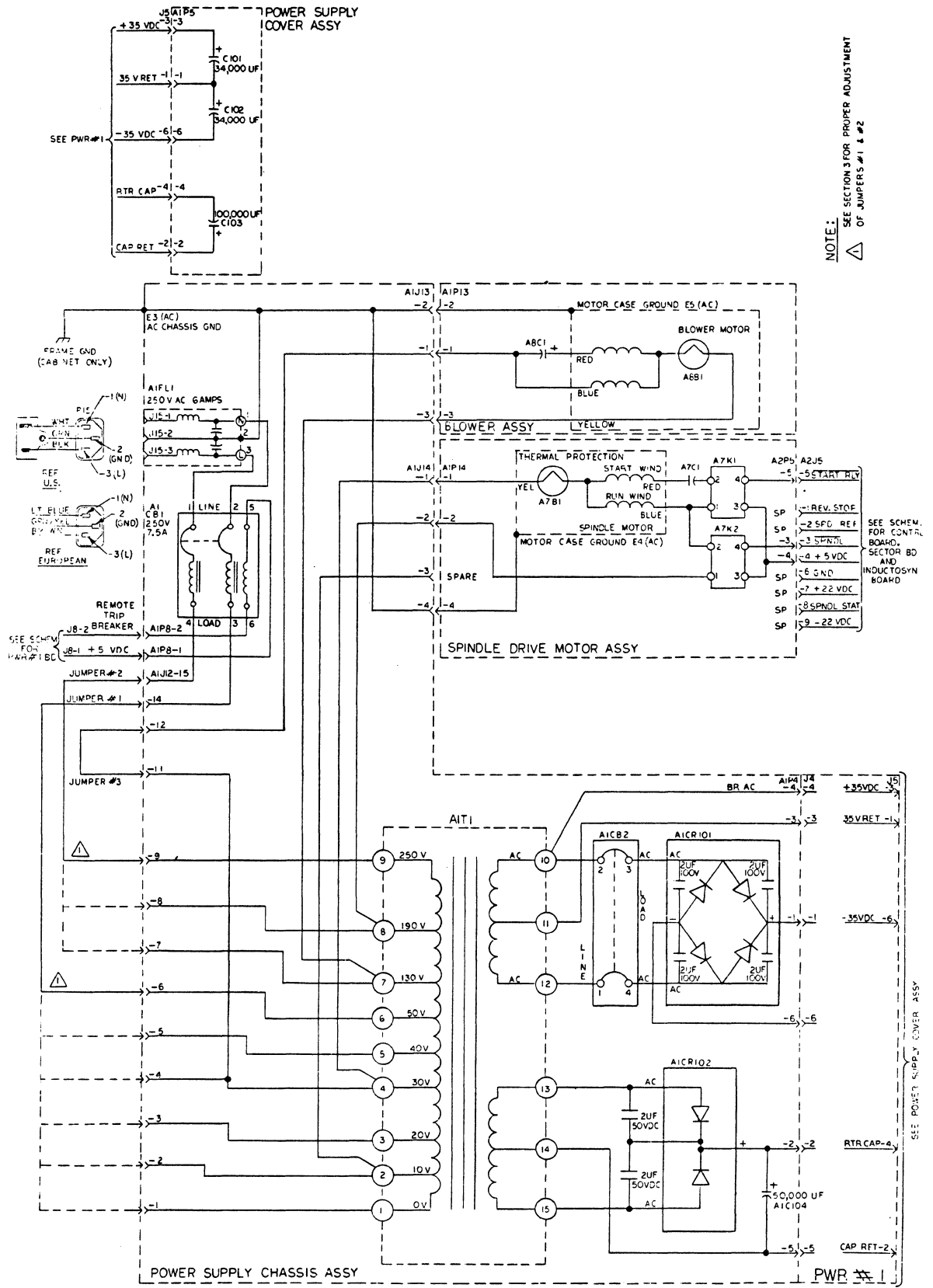


Figure 5-28. AC-DC Without Dynamic Brake - With Filters

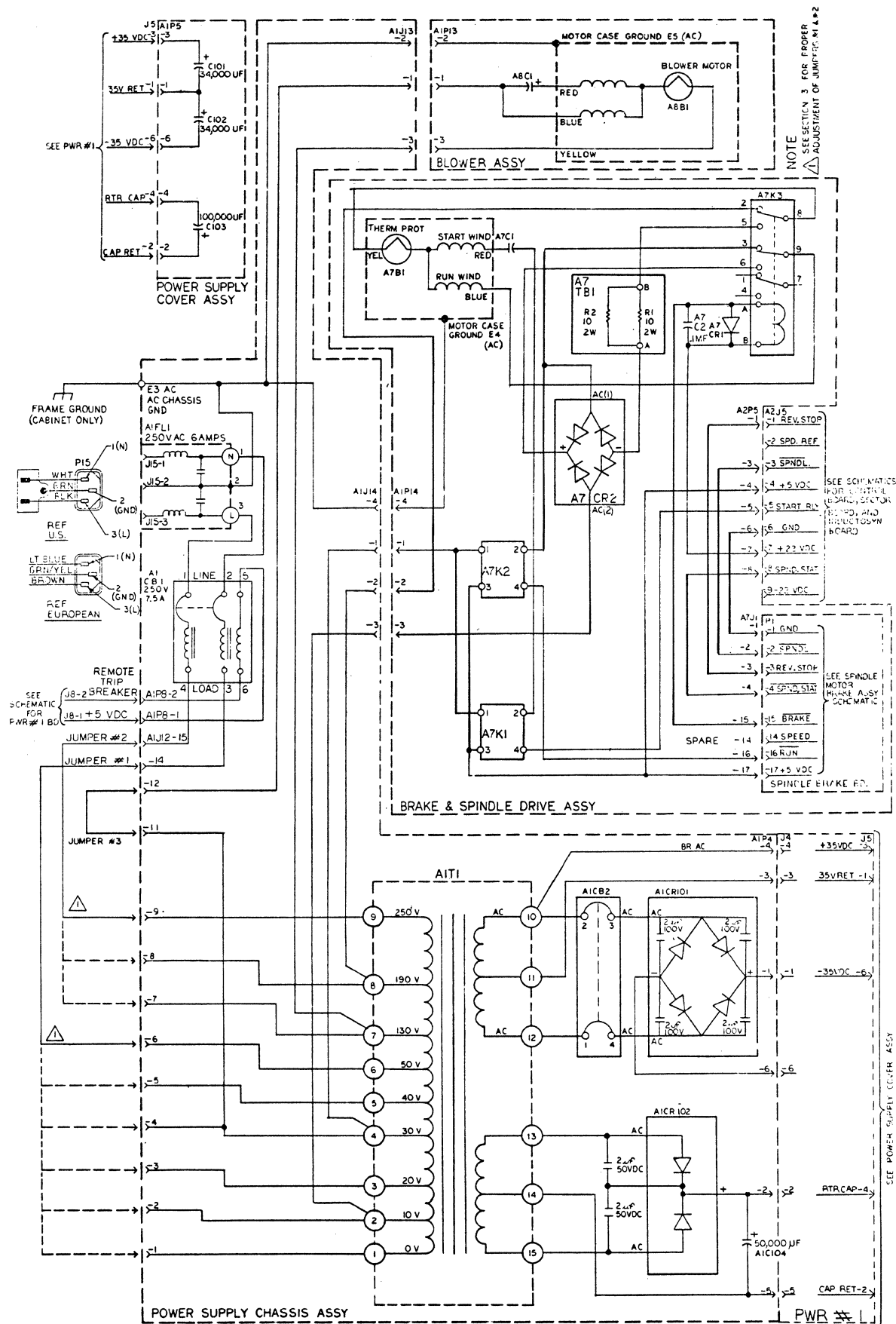


Figure 5-29. AC-DC With Brake and Filters

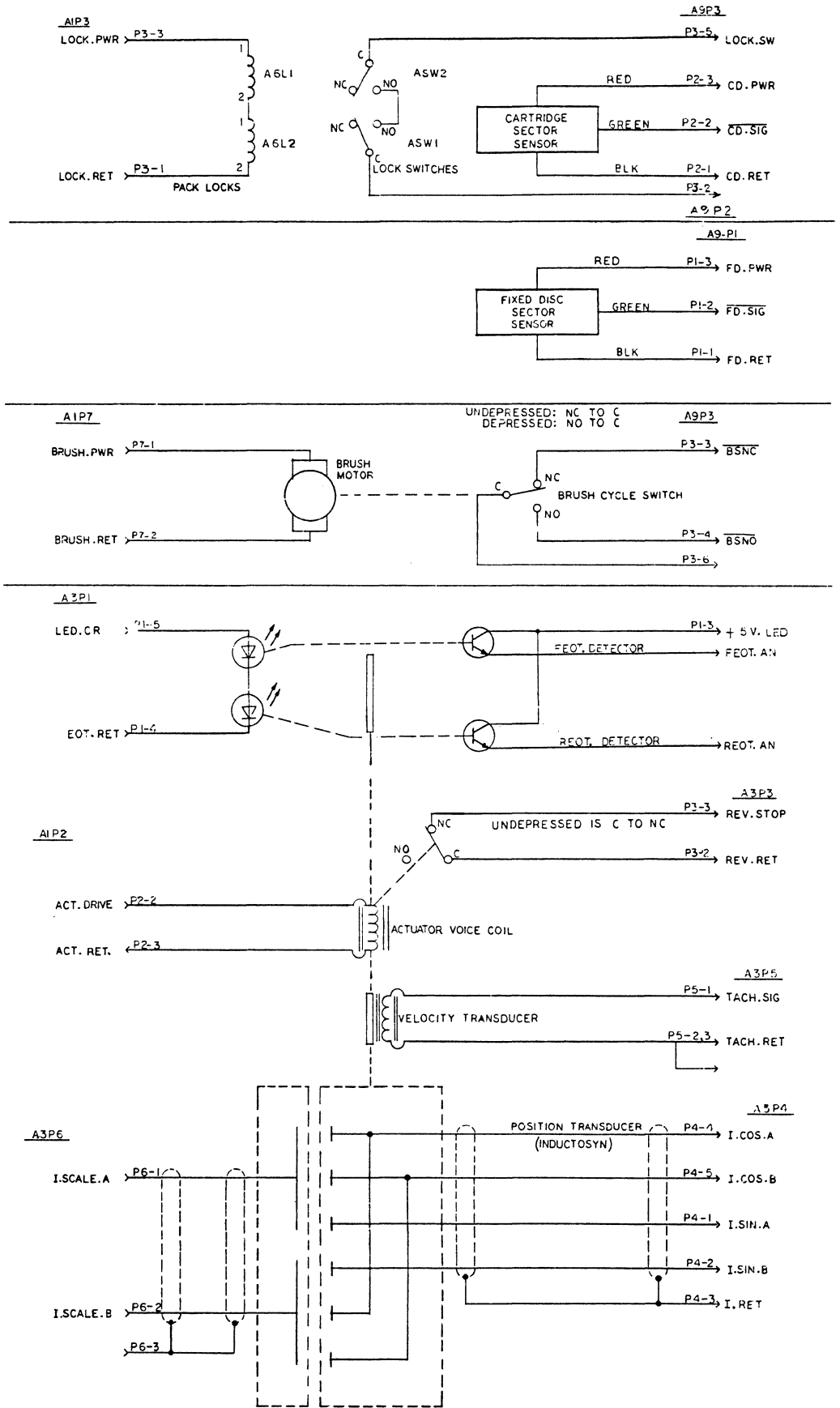


Figure 5-30. Baseplate Electronics

VI MAINTENANCE

6.1 INTRODUCTION

This section contains the instructions required to maintain the Model 9427H Disk Drive. The information is provided in the form of preventive maintenance and corrective maintenance. All maintenance should be performed by qualified and trained service personnel, using the procedures specified in this section.

6.2 MAINTENANCE TOOLS

The special tools required to maintain the disk drive are listed in Table 6-1.

6.3 MAINTENANCE MATERIALS

The materials used in the procedures of this section are listed in Table 6-2.

6.4 MAINTENANCE INDEX AND SCHEDULE

The Model 9427H is designed to require minimal preventive maintenance. The preventive maintenance index provided in Table 6-3 is meant to be used only as a general guideline. The preventive maintenance index consists of several levels based on a calendar period or on hours of operation (whichever comes first). The elapsed time meter, which is located on the power board, records the cumulative hours of operation.

Table 6-1. Maintenance Tools

DESCRIPTION	CDC PART NUMBER
Plastic Feeler Gauges	Commercially available plastic shim
Head Alignment Tool	75797900
Multimeter, Simpson 260 (or equivalent) Oscilloscope, Dual-Trace, Tektronix 453 (or equivalent)	
Ball Allen Drivers (1/16, .050, 9/64, 5/32, 3/32)	
CE Disk Cartridge Model 847-51	89296000
Card Extender	75861504
Card Extractor	83485801 (or equivalent)*
Fault Board Kit, including: Fault Board	83457801 75863204
Instruction Manual	75535900
Armature Plate Simulator	83455500
Pin Extractor for Voltage Plug A1P12 Molex Products Corp. HT-2038 Extractor	
OEM Field Tester (2400 RPM)	75279303
OEM Field Tester (1500 RPM & 2400 RPM)	75279305
Torque Screwdriver 1-30 in/lbs with Hex Bit Adapter and Phillips Adapter	Commercially available
Bulb Removal Tool	83439200

*

WARNING

: Exercise care to avoid damage to cards or to attached components, when using card extraction tool.

Table 6-2. Maintenance Materials

MATERIAL	SOURCE
Gauze, Lint-Free	Control Data 12209713
Media Cleaning Solution	Control Data 82365800
Loctite, Grade C	Loctite Corporation
Loctite Primer, Grade N	Loctite Corporation
Tongue Depressors	Commercially available
Tape, Masking	Commercially available
Duco Cement (or Equivalent)	Commercially Available
Adhesive (RTV 108)	Commercially available

The corrective maintenance procedures listed in Table 6-3 are included to facilitate the replacement of malfunctioning assemblies. Adjustment procedures are provided to adjust the unit to the published specifications. Maintenance personnel should read the entire procedure prior to performing any of the steps. Steps of these procedures should be performed in sequence.

The check and adjustments procedures listed in Table 6-3 may be used to check for malfunctioning parts, to determine whether the disk drive is operating within published specifications, or to adjust the disk drive for proper operations.

6.5 PREVENTIVE MAINTENANCE PROCEDURES

6.5.1 CONTROL PANEL LAMP REPLACEMENT

CAUTION

Do not remove buttons from alternate action switches when they are in the depressed position or internal damage to the switch will occur.

1. Remove the Switch Button from the switch assembly by pulling the button outward from the switch. Note Orientation of metal bracket inside pushbutton cover for re-installation during Step 4.
2. Using the bulb removal tool, remove the lamp from the socket (Do not turn the lamp since it is a plug-in device).
3. Install new lamp.
4. Re-install Switch Button. Care must be taken that the metal tabs on the push-button bracket do not come in contact with the metal clamps supplying voltage to the lamp or damage to the switch logic will occur.

Table 6-3. Maintenance Index and Schedule (Sheet 1 of 3)

PREVENTIVE MAINTENANCE	<u>Schedule</u>
Control Panel Lamp Replacement	6
Inspect and Clean Read/Write Heads	3
Disk Cartridge Inspection and Cleaning	3
Fixed Disk Inspection and Cleaning	3
Absolute Filter Removal and Replacement (Office or Industrial Environment)	4
Absolute Filter Removal and Replacement (Computer Room Environment)	5
Pre-Filter Cleaning (Base Cabinet)	3
Pre-Filter Cleaning (Rack Mount Unit only)	3
Disk Brush-Check and Replacement	5
Inspect and Dry Magnetic Chuck	0
DEFINITION OF SCHEDULE	
Level 0 - Daily, depending on condition state Level 1 - Weekly or 150 hours (no preventive maintenance scheduled) Level 2 - Monthly or 500 hours (no preventive maintenance scheduled) Level 3 - Quarterly or 1500 hours Level 4 - Semi-annually or 3000 hours (no preventive maintenance scheduled) Level 5 - Annually or 6000 hours Level 6 - 15,000 hours	

Table 6-3. Maintenance Index and Schedule (Sheet 2 of 3)

CORRECTIVE MAINTENANCE	
REMOVAL AND REPLACEMENT PROCEDURES (R & R)	
<u>Title</u>	<u>Paragraph No.</u>
Actuator Assembly R & R	6.6.1
Head R & R	6.6.2
EOT Assembly R & R	6.6.3
Fixed Disk R & R	6.6.4
Position Transducer Scale R & R	6.6.5
Velocity Transducer R & R	6.6.6
Velocity Transducer Magnet R & R	6.6.7
Spindle Assembly R & R	6.6.8
Cartridge Disk Index/Sector Transducer R & R	6.6.9
Fixed Disk Index/Sector Transducer R & R	6.6.10
Static Eliminator R & R	6.6.11
Sector Ring R & R	6.6.12
Cartridge On Switch R & R	6.6.13
Disk Brush Assembly R & R	6.6.14
Brush Motor R & R	6.6.15
Spindle Drive Motor Assembly R & R	6.6.16
Card Cage Printed Circuit Board R & R	6.6.17
Power Supply R & R	6.6.18
Piggyback Power Board R & R	6.6.19
Card Cage/Mother Board R & R	6.6.20
Blower Motor Assembly R & R (Base Cabinet	6.6.21
Blower Motor Assembly R & R	6.6.22
Drive Motor and Belt R & R	6.6.23
Idler Assembly R & R	6.6.24
Pack Lock Assembly or Pack Lock Solenoid R & R	6.6.25

Table 6-3 Maintenance Index and Schedule (Sheet 3 of 3)

CORRECTIVE MAINTENANCE	
CHECK AND ADJUSTMENT PROCEDURES (C & A)	
<u>Title</u>	<u>Paragraph No.</u>
Temperature Stabilization Check and Adjustment	6.7.1
AGC Servo Preamplifier and Inductosyn C & A	6.7.2
FEOT Check and Adjustment	6.7.3
Head Alignment Check and Adjustment	6.7.4
Head Skew and Index-to-Burst Period Check and Adjustment	6.7.5
Track Indicator Check and Adjustment	6.7.6
Cartridge-On Switch Check and Adjustment	6.7.7
Static Eliminator Check	6.7.8
Disk Brush Switch Check and Adjustment	6.7.9
Cartridge Index/Sector Transducer C & A	6.7.10
Fixed Disk Index/Sector Transducer C & A	6.7.11

6.5.2 INSPECT and CLEAN READ/WRITE HEADS

1. Depress START/STOP switch to STOP (out) and wait for spindle to stop rotating (START/STOP light extinguished).
2. Open top cover.
3. Set main circuit breaker to off position.
4. Remove electronics cover.
5. Upper heads can be cleaned and removed without removal of actuator. To clean and remove lower heads, perform removal steps 1 through 21 of the actuator assembly removal and replacement procedure.

CAUTION

Do not smoke while cleaning heads. Do not touch head face. When cleaning or buffing, always move tongue depressor perpendicular to length of head/arm assembly. Do not leave residue or lint on head faces.

6. Inspect heads for dirt on head face. Clean heads, if required, as follows:
 - a. Use lint-free gauze on a tongue depressor to lightly dry buff head face.
 - b. If dry buffing does not remove dirt, dampen (do not soak) gauze with media cleaning solution and wipe head face. Use dry gauze to lightly buff head face.
7. Install actuator by performing replacement steps 1 through 22 of Actuator Removal and Replacement procedure, if lower heads were cleaned.

6.5.3 DISK CARTRIDGE INSPECTION and CLEANING

1. Depress START/STOP switch to STOP (out) and wait for spindle to stop rotating (START/STOP lamp extinguished).
2. Remove disk cartridge.
3. Using a bright, directional light, inspect both sides of disk. If disk is dirty, have disk cartridge cleaned.
4. If disk surface is scratched, cartridge should be replaced.

6.5.4 FIXED DISK INSPECTION and CLEANING

Cleaning of fixed disk will not normally be necessary, if disk area is kept covered. Clean disk by performing the following procedure.

1. Perform removal steps 1 through 11 of fixed disk removal and replacement procedures.
2. Inspect fixed disk brushes for dust. If brushes are dirty and show excessive wear, replace all brushes.
3. Slowly rotate spindle by hand and inspect both sides of disk. If scratches are found, replace disk.
4. To clean disk, wrap a piece of lint free gauze around tongue depressor and dampen (do not soak) with media cleaning solution.
5. While rotating spindle by hand, move tip of spatula (applying moderate pressure) across disk to outer edge.
6. Repeat step 5 for both disk surfaces until gauze comes away clean from disk surface.
7. Wrap a clean, dry piece of gauze around spatula and repeat step 5 to remove any residue left by cleaning solution.
8. To complete installation, perform replacement steps 4 through 9 of fixed disk removal and replacement procedure.

6.5.5 ABSOLUTE FILTER R & R

1. Depress START/STOP switch to STOP (out) and wait for spindle to stop rotating (START/STOP lamp extinguished).
2. Open top cover (base cabinet only).
3. Set main circuit breaker to off position.
4. Remove left side panel of unit (when received from rear of unit, base cabinet only).
5. Loosen filter clamp (Figure 6-1) and swing clamp clear of filter.
6. Remove filter expander bracket.
7. Slide blower expander forward until filter is free.
8. Remove filter.

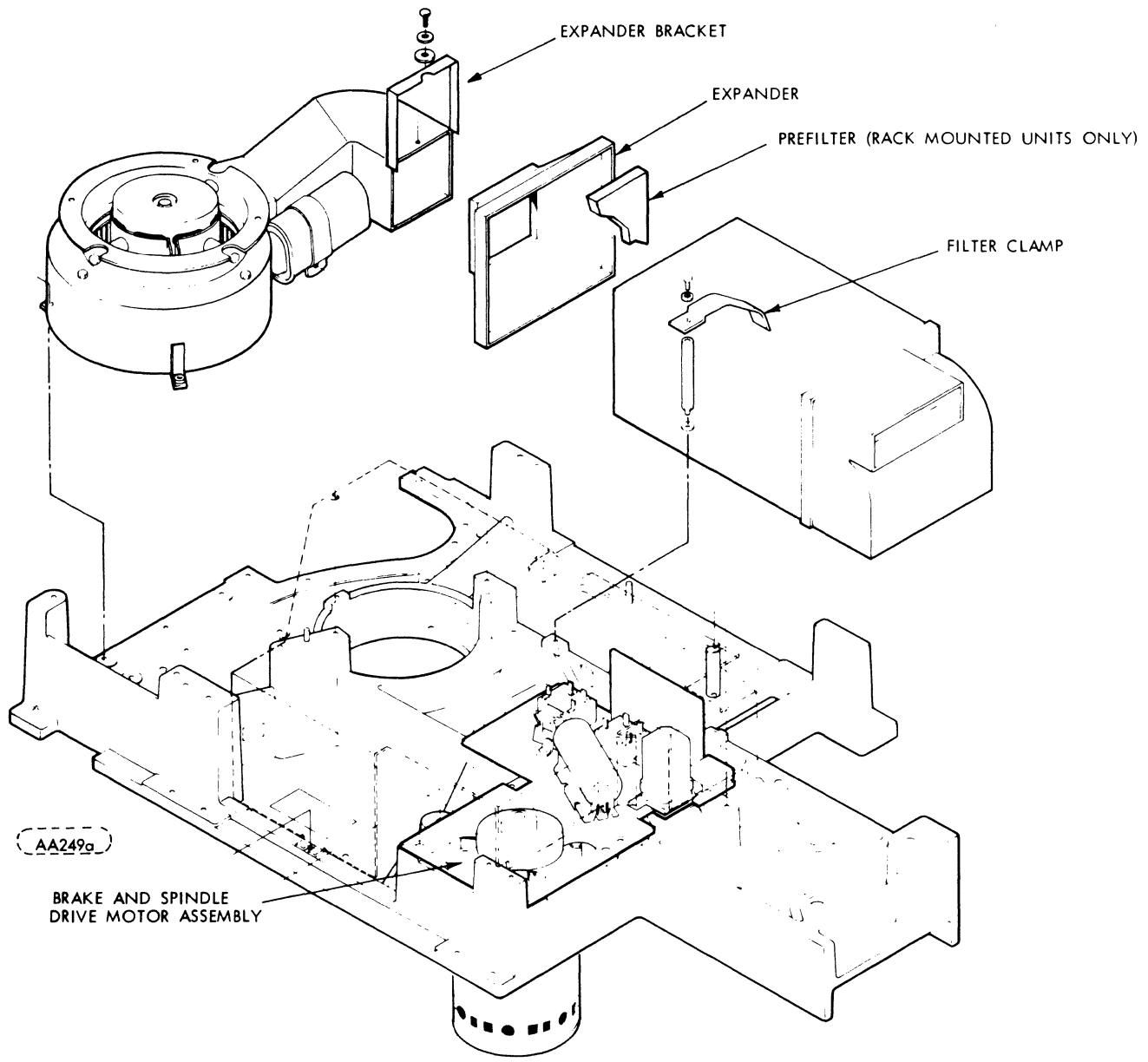


Figure 6-1. Filter Mounting

9. Remove pre-filter (Rack Mount Units only).
10. Clean pre-filter (Rack Mount Units only).
11. Secure pre-filter to new absolute filter by applying Duco cement at the four corners. Use old filter as a reference making sure pre-filter does not block unfiltered side of absolute filter (rack-mount units only).
12. Install replacement absolute filter and pre-filter.

NOTE

Insure that foam gasket between absolute filter and power supply are properly aligned. If not properly aligned, air flow can be restricted causing damage to power supply.

13. Install filter expander.
14. Install expander bracket.
15. Install filter clamp.
16. Install cabinet side skin.
17. Close top cover.

6.5.6 PRE-FILTER CLEANING (Base Cabinet)

1. Remove front end panel by pulling panel out at the top until fasteners release, then lift panel off tabs until clear of cabinet.
2. Remove pre-filter from cabinet.
3. Remove pre-filter element from aluminum frame and clean by washing in warm water and soap.
4. Rinse and dry filter element and install in aluminum frame.
5. Install filter in cabinet. Insure that expanded metal screen is up.
6. Install front end panel.

6.5.7 PRE-FILTER CLEANING (Rack Mount Unit Only)

1. Depress START/STOP switch to STOP (out) and wait for spindle to stop rotating (START/STOP lamp extinguished).
2. Set main circuit breaker to off position.

3. Loosen filter clamp (Figure 6-1) and swing clamp clear of filter.
4. Remove filter expander bracket.
5. Slide blower expander forward until filter is free.
6. Remove pre-filter.
7. Clean pre-filter by washing in warm water and soap.
8. Rinse and dry pre-filter.
9. Install pre-filter to absolute filter by applying Duco cement at the four corners, making sure pre-filter does not block unfiltered side of absolute filter.

NOTE

Insure that foam gasket between absolute filter and power supply is properly aligned. If not properly aligned, air flow can be restricted causing damage to power supply.

10. Install filter expander.
11. Install expander bracket.
12. Install filter clamp.

6.5.8 DISK BRUSH CHECK and REPLACEMENT

1. Perform removal steps 1 through 11 of disk brush assembly R&R procedure.
2. If disk brushes are dirty and show excessive ware, replace all brushes. Pull brush horizontally to remove from holding bracket. The new brush snaps into place when seated properly.
3. Perform replacement steps 3 through 11 of disk brush assembly removal and replacement procedure.

6.5.9 INSPECT and DRY MAGNETIC CHUCK

This procedure should be performed at least once each day, if device goes through dewpoint daily.

NOTE

If the Drive is stored or operated in environmental conditions outside the envelope in the Product Specification, condensation will form in the Drive. In order to prevent corrosion, use a soft absorbent cotton cloth and wipe dry the surface of the Chuck.

1. Depress START/STOP switch to STOP (out) and wait for spindle to stop rotating (START/STOP lamp extinguished).
2. Remove disk cartridge.
3. Inspect Magnetic Chuck for condensation.
4. If condensation is present use a soft absorbent cotton cloth and wipe dry.

6.6 CORRECTIVE MAINTENANCE PROCEDURES (R & R)

6.6.1 ACTUATOR ASSEMBLY R & R

The actuator assembly must be removed to clean or replace lower read/write heads.

● REMOVAL

1. Depress START/STOP switch to STOP (out) and wait for spindle to stop rotating (START/STOP lamp extinguished).
2. Remove Disk Cartridge.
3. Remove top cover by lifting cover straight up (base cabinet only).
4. Set main circuit breaker to off position.
5. Remove electronics cover from card cage.
6. Remove rear door (base cabinet only).
7. Remove power supply cover and disconnect A1P5.
8. Disconnect A3P1, A3P2, A3P3, A3P4, A3P5 and A3P6 from AGC Preamplifier.
9. Remove the four screws securing the AGC preamplifier to the magnet and remove preamplifier.

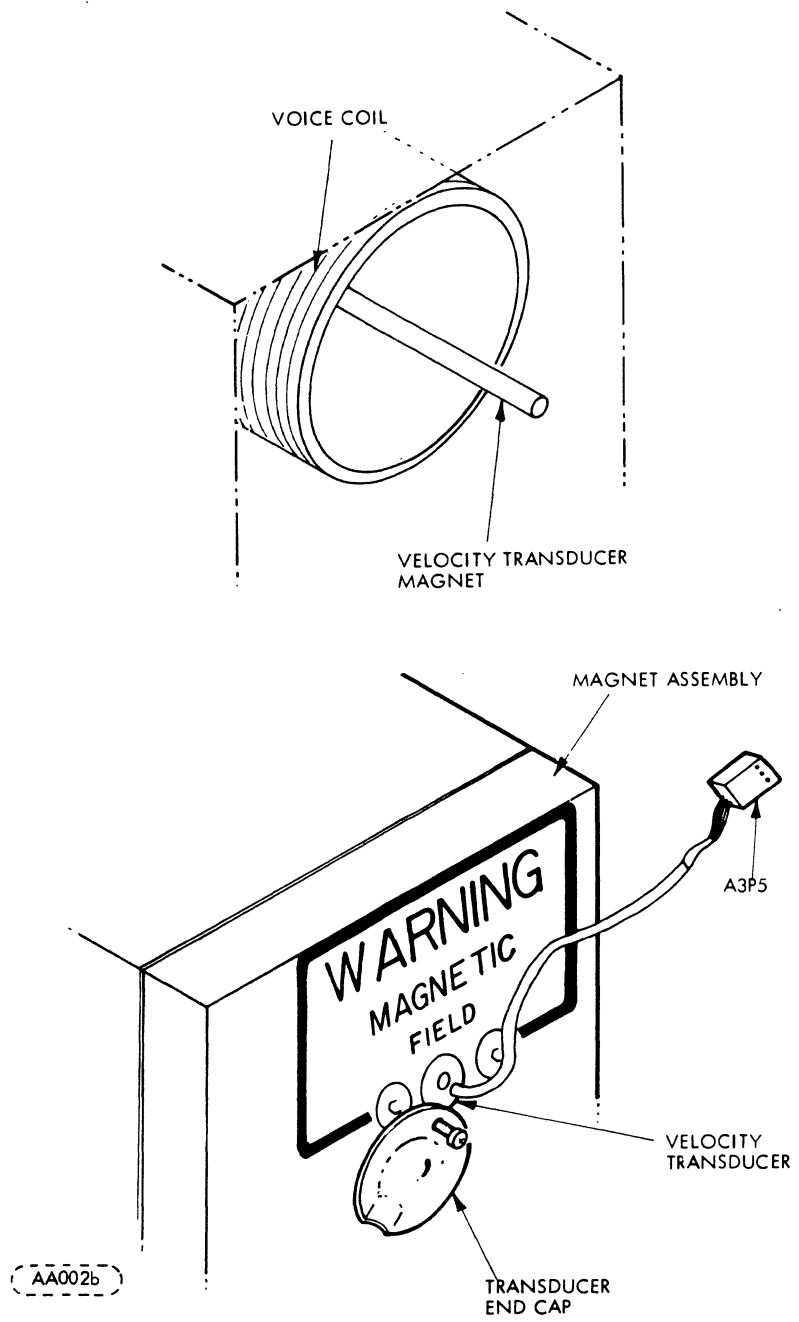


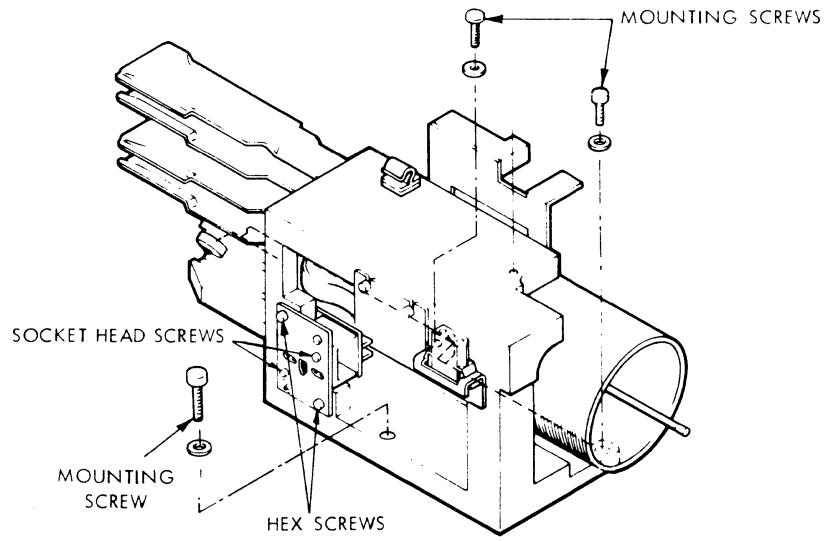
Figure 6-2 Velocity Transducer Location

10. Between the two sets of upper and lower heads, and approximately half way along the length of the head arm assembly, insert a 1/16 inch (1.59 mm) thick, 1/2 inch (12.7 mm) wide rolled up masking tape (or similar spacer) to prevent the head pads from touching when actuator is removed.
11. Remove card cage, by performing removal Steps 1 through 13 of card cage removal and replacement procedure.
12. Remove velocity transducer end cap and velocity transducer (see Figure 6-2 and Figure 6-10).
13. Remove two screws that fasten the magnet to the main deck. Screws are located underneath the base casting, one screw in back of magnet and one in front (see Figure 6-3).
14. Move carriage and voice coil assembly forward.
15. Lift magnet slightly and very carefully slide the magnet assembly out from the voice coil. Extreme care must be taken to avoid any bending stress to the velocity transducer magnet.
16. Unplug A1P2 (see Figure 6-13) connecting the voice coil flexible lead to the power supply.
17. Unlace A3P6 located on top of actuator frame.
18. Remove head harness clip for heads 3 and 4 located on front of voice coil.
19. Using 9/64 ball Allen driver, remove the three mounting bolts from the actuator frame securing the actuator to the deck (see Figure 6-3).
20. Lift rear of actuator frame to clear guide pin then pull actuator frame slightly back from eccentric screw located at front of actuator frame then lift actuator clear of unit.

CAUTION

Extreme care must be exercised to avoid damage to fixed disk, position transducer scale and position transducer slider.

21. Heads, velocity transducer magnet and EOT assembly can be replaced at this time, if required. When actuator is removed the heads should be cleaned.



AA250a

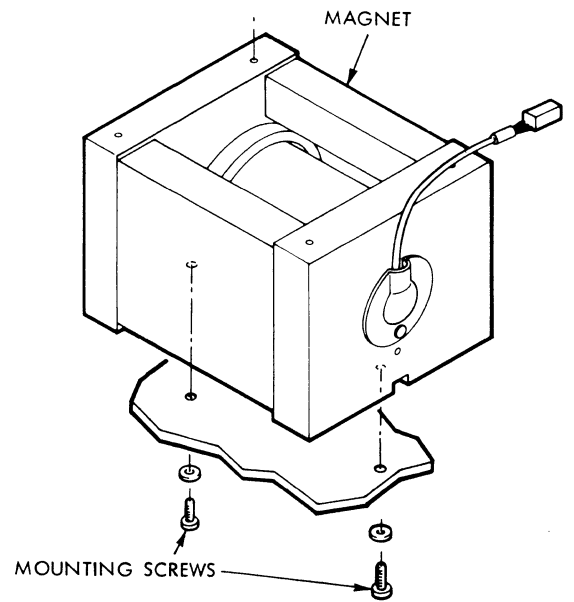


Figure 6-3. Actuator, Magnet and EOT Mounting

● REPLACEMENT

1. To install new actuator assembly, align slot at front of actuator frame with eccentric screw and slide frame forward while clearing guide pin until holes for mounting screws are aligned.

CAUTION

Extreme care must be exercised to avoid damage to fixed disk, position transducer scale and position transducer slider.

2. Using 9/64 ball Allen drive, install the three mounting bolts securing the actuator to the disk (see Figure 6-3).
3. Install head harness clip for heads 3 and 4.
4. Relace A3P6 across top of actuator frame.
5. Connect A1P2 (see Figure 6-13) connecting the voice coil flexible head to the power supply.
6. Very carefully slide magnet assembly onto the two guide pins. Extreme care must be taken to avoid any bending stress to the velocity transducer magnet.
7. Fasten magnet to the main deck with the two mounting screws (see Figure 6-3).
8. Install velocity transducer and velocity transducer end cap (see Figure 6-2).
9. Install card cage by performing replacement Steps 3 through 9 of card cage removal and replacement procedure.
10. Remove spacers from between heads.
11. Install AGC servo preamplifier to the top of magnet with the four mounting screws.
12. Connect A3P1, A3P2, A3P3, A3P4, A3P5.
13. Connect A1P5 and install power supply cover.
14. Install rear door.
15. Connect field tester/exerciser to unit.
16. Perform AGC Servo Preamplifier and Inductosyn Check and Adjustment.

17. Perform FEOT Check and Adjustment.
18. Perform Head Alignment Check and Adjustment.
19. Perform Index - to - Burst Check and Adjustment.
20. Perform Track Indicator Check and Adjustment.
21. Install electronics cover.
22. Install top cover (Base Cabinet only).

6.6.2 HEAD R & R

● REMOVAL

a. Upper Heads

1. Depress START/STOP switch to STOP (out) and wait for spindle to stop rotating (START/STOP Lamp extinguished).
2. Remove top cover by lifting cover straightup (base cabinet only).
3. Remove disk cartridge.
4. Set main circuit breaker to off position.
5. Remove electronics cover. Remove cover from card cage.
6. Remove head harness clamp (Fig. 6-4).
7. Remove quadraclip between head plugs and card cage.
8. Remove clip holding head lead springs to carriage assembly.
9. Remove power supply cover assembly.
10. Loosen upper head clamps (Fig. 6-5 and 6-6).

CAUTION

Extreme care should be exercised when removing heads. Do not touch head face with fingers. Do not allow head to bang against anything.

11. Remove Head #0 or #1.

● REPLACEMENT

1. Install replacement head.
2. Tighten head clamps. (Note Torque Requirement during Head Alignment).
3. Install power supply cover assembly.
4. Install clip holding head lead springs to carriage assembly.
5. Install quadraclip.

CAUTION

Insure head cables are dressed such that the voice coil does not touch any cable when heads are loaded and extended to cylinder 405. This can be verified when doing head alignment check and adjustment.

6. Install head harness clamp.
7. Install card cage cover
8. Install CE Disk Cartridge.
9. Perform Head Alignment Check and Adjustment.
10. Perform Index to Burst Check and Adjustment.
11. Install electronics cover.

● REMOVAL

b. Lower Heads

1. Perform Removal Steps 1 through 21 of Actuator Assembly Removal and Replacement procedure.
2. Loosen lower head clamps (Fig. 6-5 and 6-6).

CAUTION

Extreme care should be exercised when removing heads. Do not touch head face with fingers. Do not allow head to bang against anything.

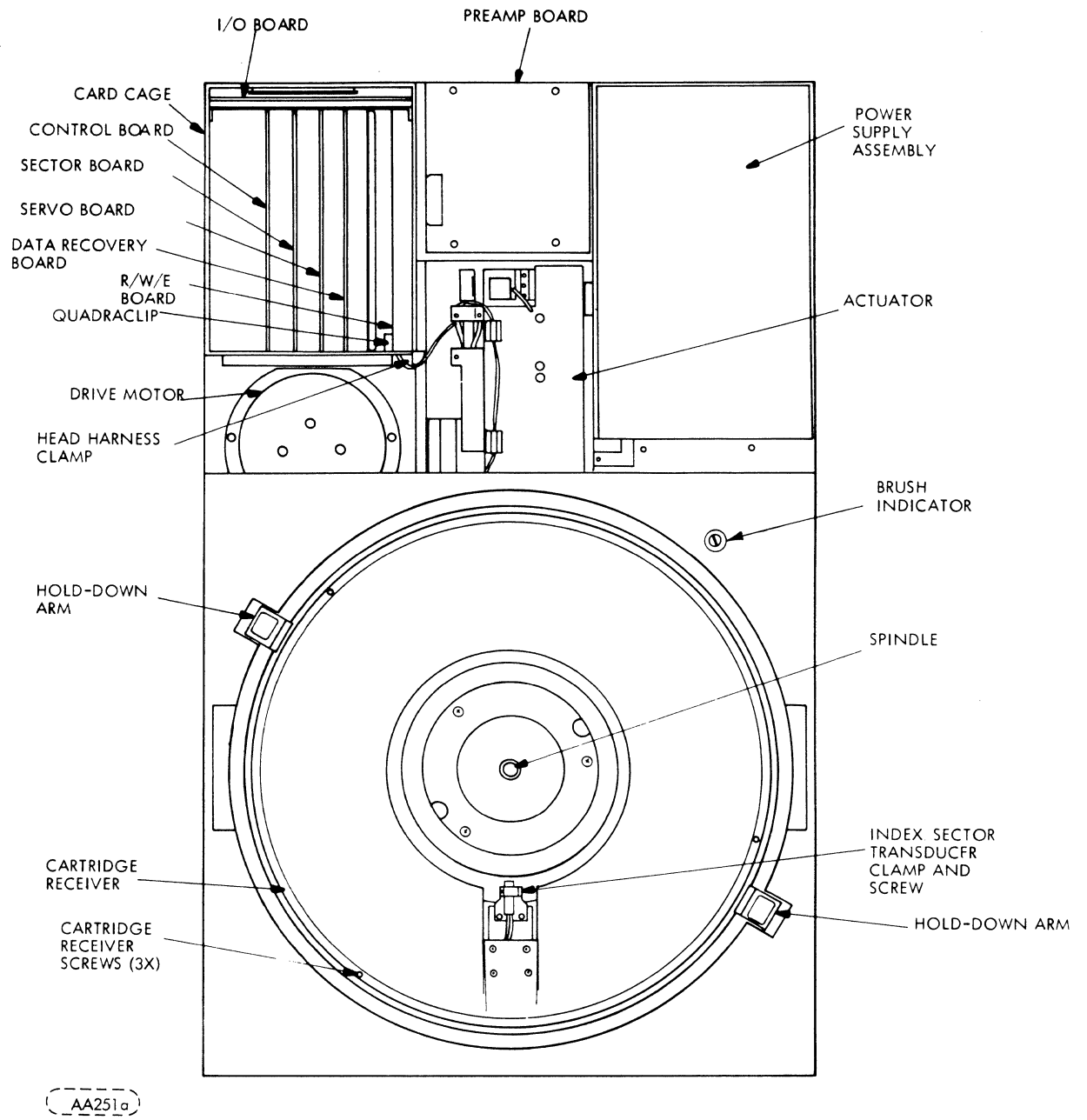
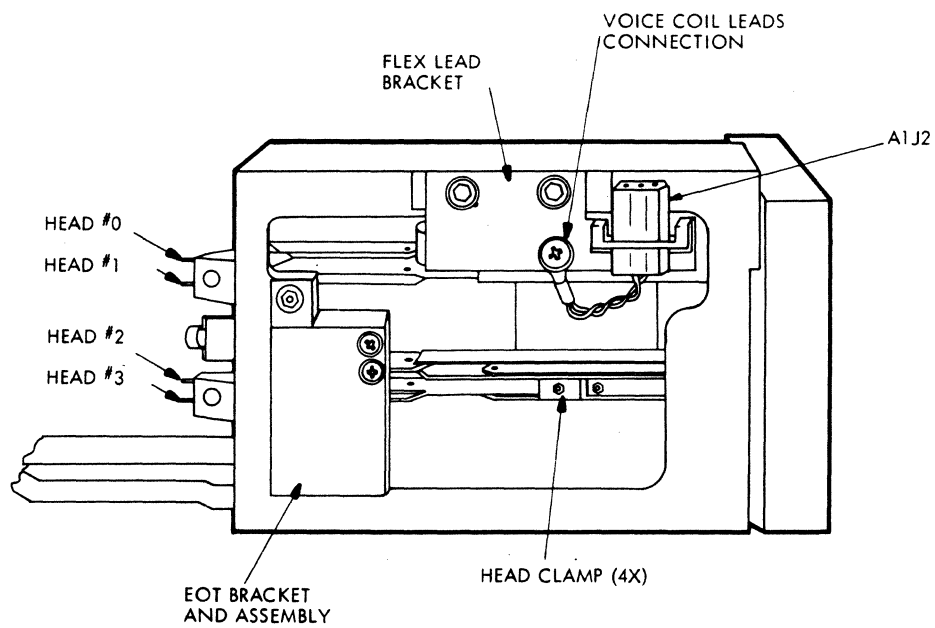
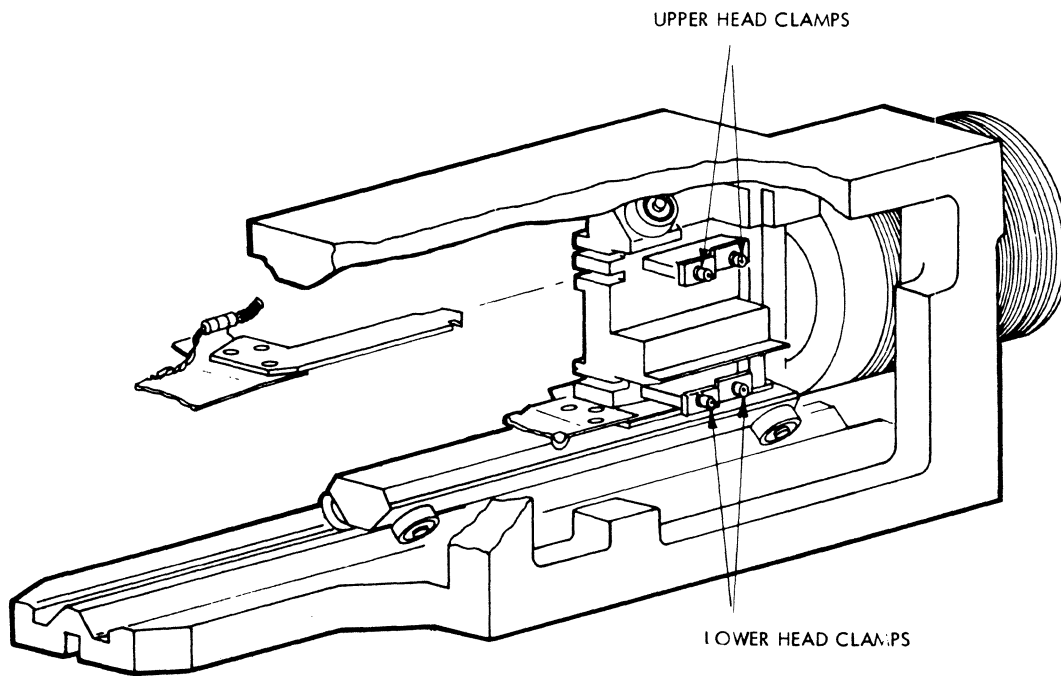


Figure 6-4. Module Location (Above Deck)



AA001b

Figure 6-5. Actuator Assembly -Heads Installed



AA001b

Figure 6-6. Head Removal and Replacement

3. Remove Head #2 or #3.

- **REPLACEMENT**

1. Install replacement head.
2. Tighten head clamps. (not Torque Requirement during Head Alignment).
3. Install spacer between heads.
4. Perform replacement Steps 1 through 22 of Actuator Assembly Removal and Replacement procedure.

6.6.3 EOT ASSEMBLY R & R

- **REMOVAL**

1. Depress START/STOP switch to STOP (out) and wait for spindle to stop rotating (START/STOP lamp extinguished). Remove cartridge.
2. Open top cover (base cabinet only).
3. Set main circuit breaker to off position.
4. Remove electronics cover.
5. Remove power supply cover and disconnect A1P5.
6. Remove Relay K1 from power supply board.
7. On EOT assembly bracket remove top and bottom mounting hex screws (see Figure 6-3.
8. Remove EOT assembly.

- **REPLACEMENT**

1. Install new EOT assembly.

CAUTION

Insure the EOT scale on carriage assembly does not rub against EOT assembly.

2. Install relay K1.
3. Install power supply cover and connect A1P5.
4. Perform FEOT Check and Adjustment.

5. Perform Head Alignment Check and Adjustment.
6. Perform Index to Burst Period Check and Adjustment.
7. Perform Track Indicator Check and Adjustment.
8. Install electronics cover.
9. Close top cover (base cabinet only).

6.6.4 FIXED DISK R & R

● REMOVAL (see Figure 6-10)

1. Depress START/STOP pushbutton to STOP (out) and wait for spindle to stop rotating (START/STOP lamp extinguished).
2. Remove top cover by lifting cover straight up (base cabinet only).
3. Remove disk cartridge.
4. Set main circuit breaker to off position.
5. Remove electronics cover.
6. Remove power supply cover and disconnect A1P5.
7. On rack mounted units with Accuride slides, remove coupling screw securing latch knob to latch mechanism (see Figure 6-7).
8. Disconnect ground straps from front panel (one on rack mounted units, two on base cabinet units if present).
9. Remove front panel by loosening two screws at bottom of panel and removing two screws on each side of panel (see Figure 6-7).
10. Remove the three screws from inside cartridge receiver.
11. Lift the cartridge receiver up until connector A9P2 can be unplugged (see Figure 6-7). After A9P2 is unplugged further remove cartridge receiver.

CAUTION

While lifting cartridge receiver be extremely careful to avoid damage to the fixed disk.

12. Remove fixed disk clamp (see Figure 6-8).
13. Remove fixed disk.

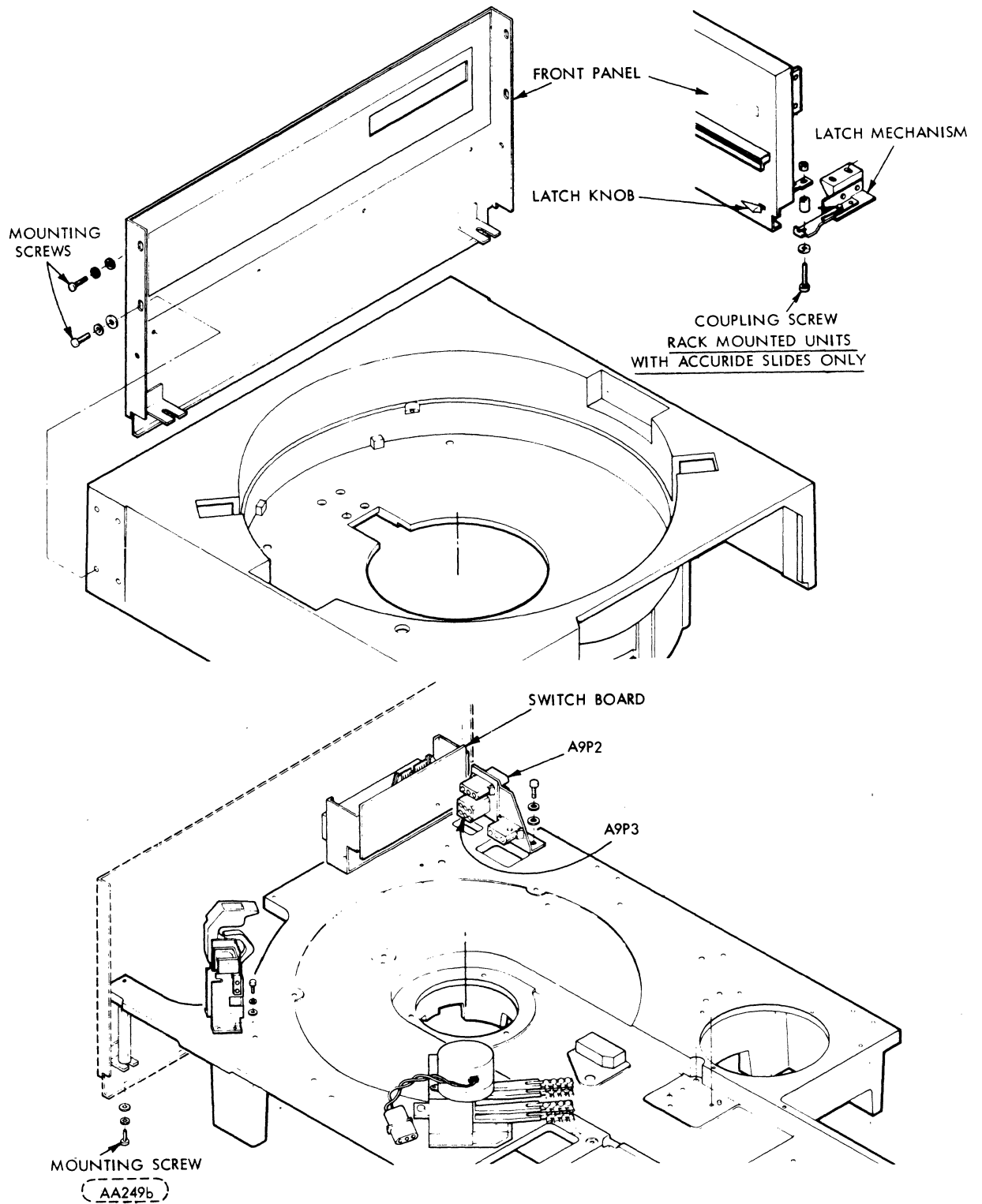


Figure 6-7. Front Panel Removal

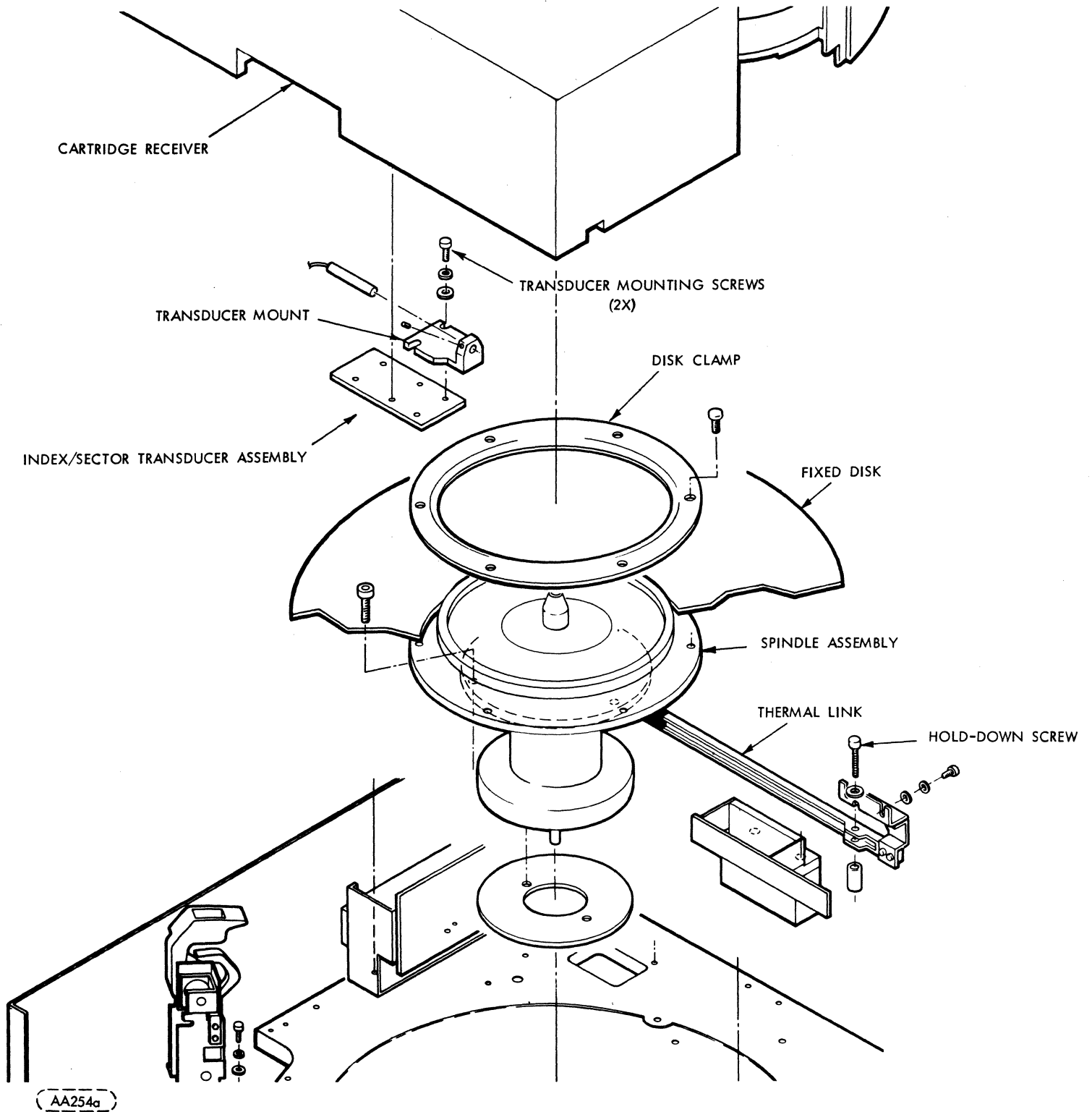


Figure 6-8. Fixed Disk Removal

● REPLACEMENT

1. Inspect replacement disk for defects, replace if required.
2. Install fixed disk and insure proper seating.
3. Install disk clamp. Torque screws to 12 in/lbs.
4. Install cartridge receiver by aligning it on the two small pins on the deck and connecting A9P2.

CAUTION

While installing cartridge receiver be extremely careful to avoid damage to fixed disk and receiver harness.

5. Fasten cartridge receiver with three screws.
6. Install front panel and ground straps. Insure that insulating strips are still mounted to front panel and there is electrical isolation between front panel and deck.
7. Install latch assembly or knob as required.
8. Perform index to burst period check and adjustment procedure.
9. Install electronics cover.
10. Install top cover (base cabinet only).

6.6.5 POSITION TRANSDUCER SCALE R & R

● REMOVAL

1. Depress START/STOP pushbutton to STOP (out) and wait for spindle to stop rotating (START/STOP lamp extinguished).
2. Remove top cover by lifting cover straight up (base cabinet only).
3. Remove disk cartridge.
4. Set main circuit breaker to Off position.
5. Remove electronics cover.
6. Remove power supply cover and disconnect A1P5.
7. On rack mounted units with Accuride slides, remove coupling screw securing latch knob to latch mechanism (see Figure 6-7).
8. Disconnect ground straps from front panel (one on rack mounted units, two on base cabinet units).

9. Remove front panel by loosening two screws at bottom of panel and removing two screws on each side of panel (see Figure 6-7).
10. Remove the three screws from inside cartridge receiver.
11. Lift the cartridge receiver up until connector A9P2 can be unplugged (see Figure 6-7). After A9P2 is unplugged further remove cartridge receiver.

CAUTION

While lifting cartridge receiver be extremely careful to avoid damage to the fixed disk.

12. Perform removal Steps 1 through 11 of upper head removal and replacement procedure.
13. Loosen two screws in thermal link bracket (Figure 6-19).
14. Disconnect A3P6 from AGC preamp Board and unlace from actuator frame.
15. Remove transducer scale assembly by removing the two mounting screws (Item 3, Figure 6-10), which hold position transducer mount block to deck.

CAUTION

Extreme care must be exercised in preventing face of transducer from coming in contact with other parts.

● **REPLACEMENT**

1. Install replacement transducer scale assembly.
2. Verify that thermal link bracket is flush with top of transducer scale. If not, adjust thermal link hold-down screw (Fig. 6-9).
3. Tighten screws in thermal link bracket.
4. Lace A3P6 over top of actuator frame and connect to AGC preamp board.
5. Perform Steps 1 through 8 of upper heads replacement procedure.
6. Install cartridge receiver by aligning it on the two small pins on the deck and connecting A9P2.

CAUTION

While installing cartridge receiver be extremely careful to avoid damage to fixed disk.

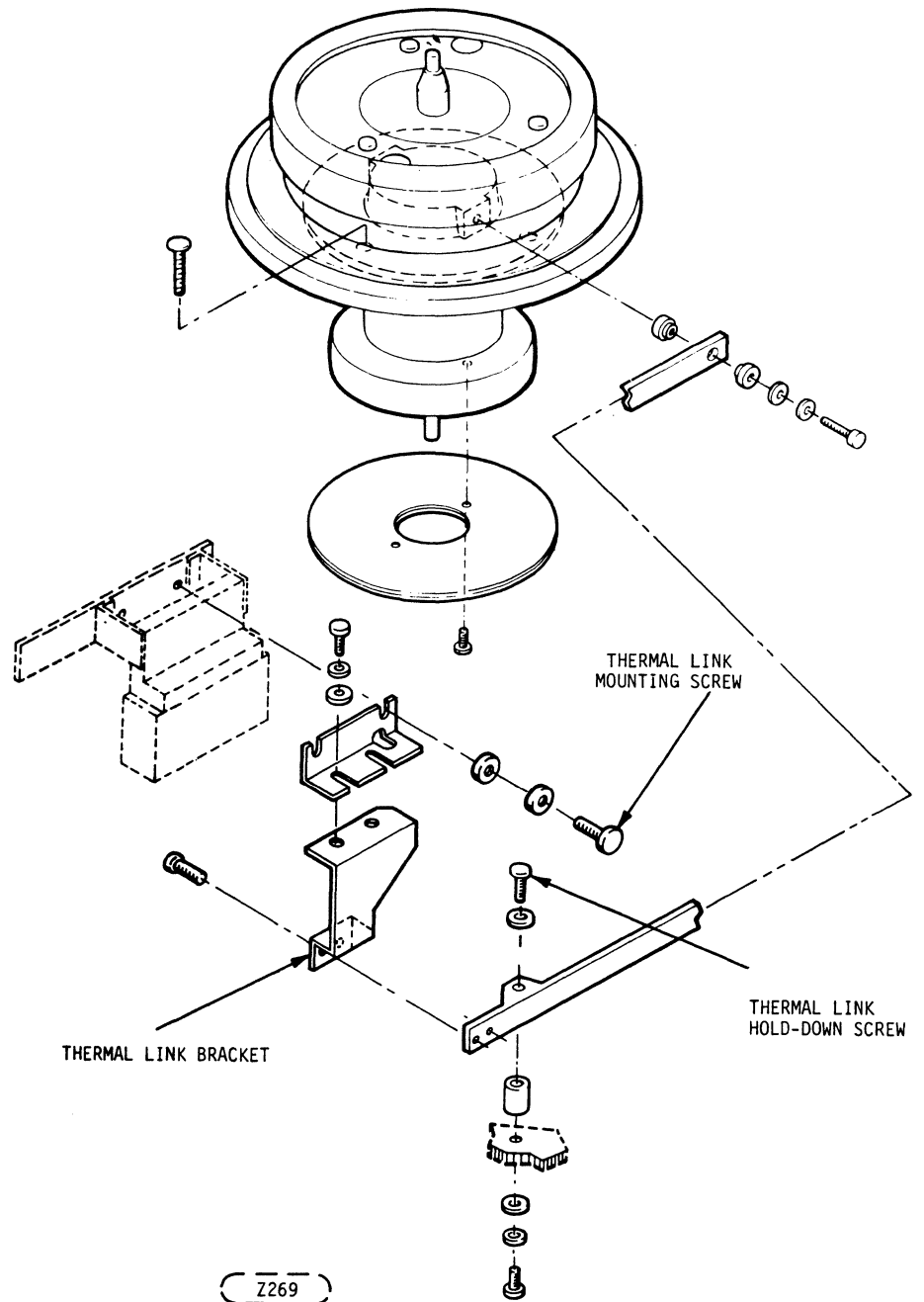


Figure 6-9. Thermal Link R & R

7. Fasten cartridge receiver with three screws.
8. Install front panel and ground straps.
9. Install latch assembly or knob as required.
10. Perform AGC Servo Preamplifier and Inductosyn Check and Adjustment.
11. Perform FEOT Check and Adjustment.
12. Perform Head Alignment Check and Adjustment.
13. Perform Index-to-Burst Check and Adjustment.
14. Perform Track Indicator Check and Adjustment.
15. Install electronics cover.
16. Install top cover (base cabinet only).

6.6.6 VELOCITY TRANSDUCER R & R

● REMOVAL

1. Depress START/STOP switch to STOP (out) and wait for spindle to stop rotating (START/STOP Lamp extinguished).
2. Open top cover (base cabinet).
3. Set main circuit breaker to Off position.
4. Remove electronics cover.
5. Disconnect connector A3P5 from Preamp Board
6. Remove transducer and end cap from magnet assembly (Fig. 6-2).
7. Loosen velocity transducer set screw (Figure 6-10) through hole in preamp and magnet assembly.
8. Remove transducer through rear of magnet assembly.

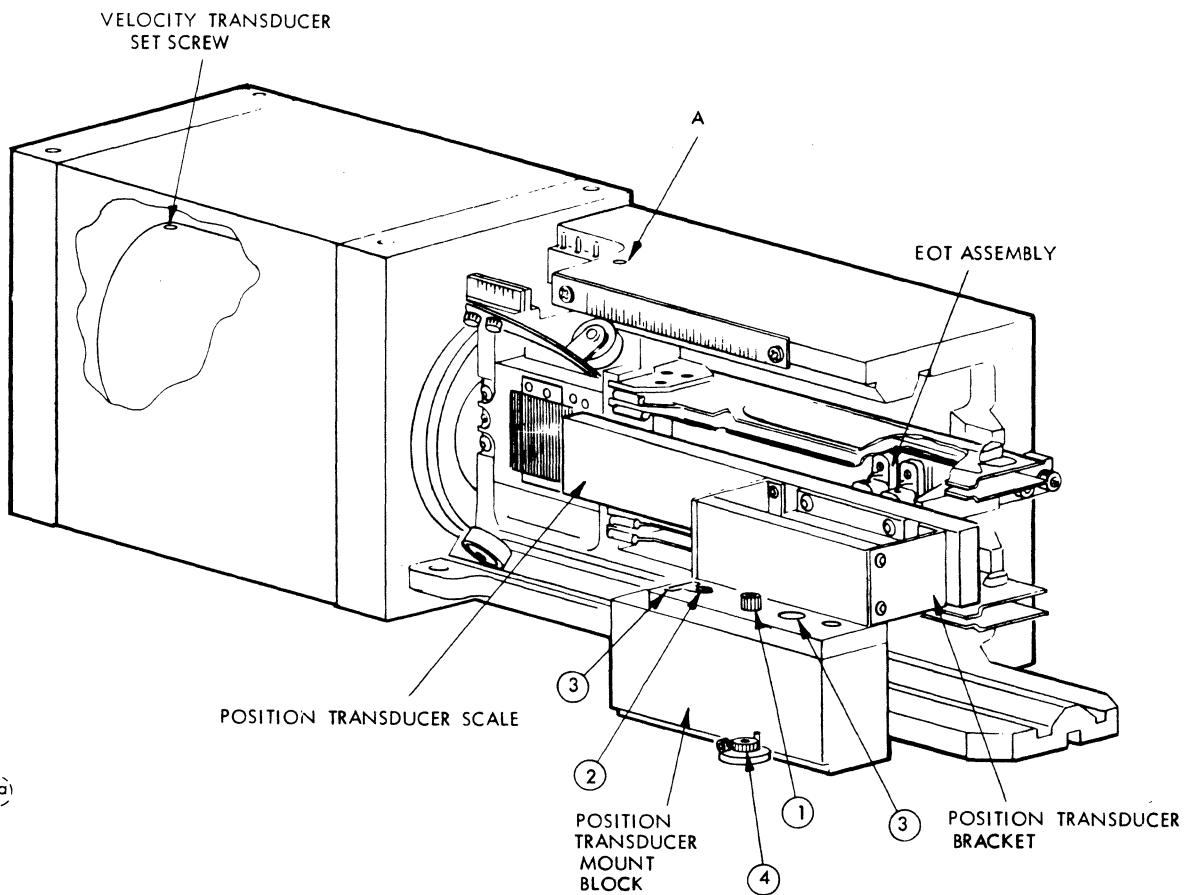
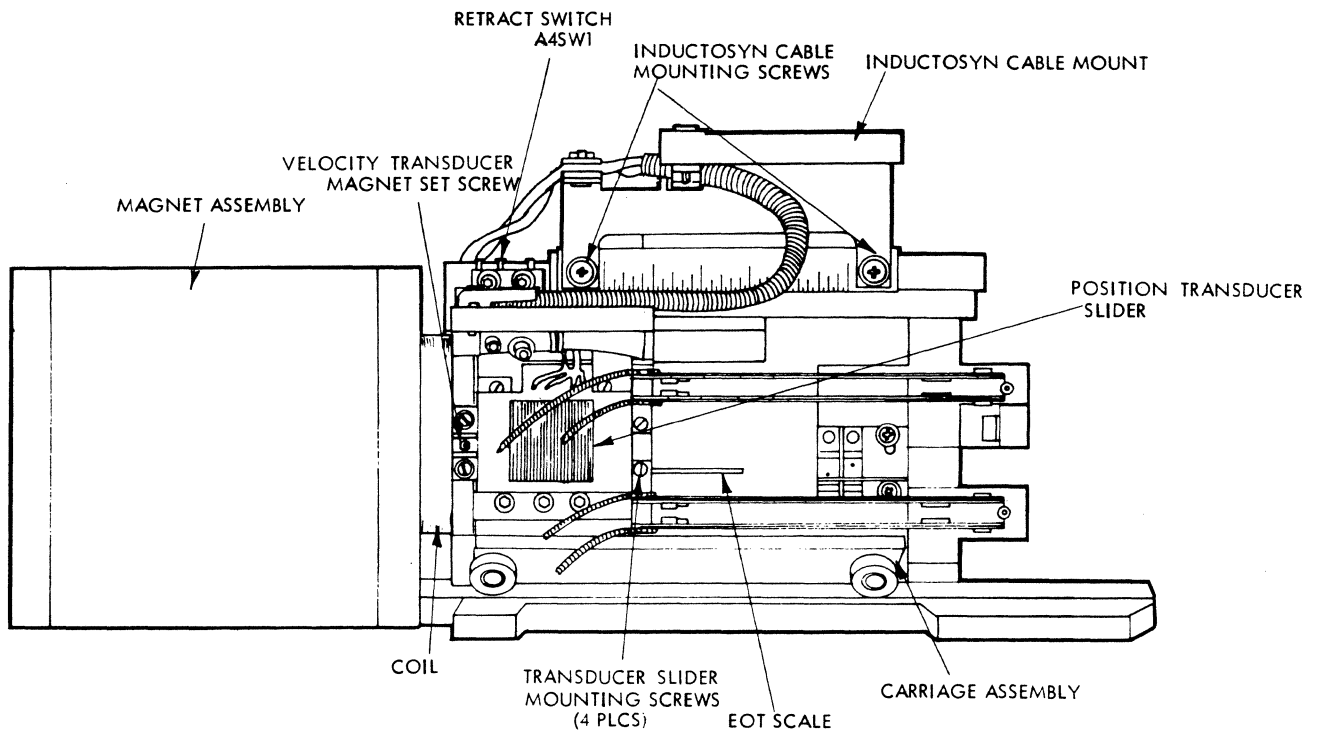
● REPLACEMENT

1. Insert replacement transducer into magnet assembly until flush with end of magnet.
2. Tighten set screw through hole in preamp Board.
3. Install velocity transducer and cap.
4. Connector A3P5 to preamp Board.
5. Connect Field Tester/Exerciser to Unit.
6. Install disk cartridge.
7. Remove A1P2 from the actuator and power up drive for normal operation. Insure that K1 has energized.
8. Manually load heads.
9. Move carriage by hand insuring that the velocity transducer magnet is not rubbing against velocity transducer. If rubbing occurs, unload heads, power down unit and reposition transducer or transducer magnet.
10. Push carriage forward so that carriage is at forward stop position.

CAUTION

While performing Steps 11 and 12 keep hands clear of carriage.

11. Reconnect A1P2.
12. Execute RTZ command from field tester.
13. Perform temperature stabilization procedure.
14. Perform alternate seek between cylinders 293 and 405 (146 and 202 for 100 TPI units).
15. Monitor "on cylinder" signal from field tester and adjust velocity gain potentiometer (see Figure 6-14) for a seek time of 35 ± 1 milliseconds. (See Fig. 6-17b).
16. Install electronics cover.
17. Close top cover.



AA0013a)

Figure 6-10. Actuator Assembly

6.6.7 VELOCITY TRANSDUCER MAGNET R & R

● REMOVAL

CAUTION

Keep replacement transducer magnet in its shipping container until ready for installation since contact between magnet and metal objects is harmful to magnet.

1. Depress Start/Stop switch to Stop (out) and wait for spindle to stop rotating (Start/Stop lamp extinguished).
2. Remove disk cartridge.
3. Open top cover.
4. Set main circuit breaker to off position.
5. Remove electronics cover.
6. Remove rear door panel (base cabinet only).
7. Remove power supply cover and disconnect A1P5.
8. Disconnect A3P1, A3P2, A3P3, A3P4, A3P5 and A3P6 from AGC Servo Preamplifier.
9. Remove AGC Servo Preamplifier.
10. Remove velocity transducer end cap and velocity transducer (see Figure 6-2).
11. Remove two screws that fasten the magnet to the main deck. Screws are located underneath the base casting (see Figure 6-3).
12. Lift the magnet slightly and very carefully slide the magnet assembly out from the voice coil. Extreme care must be taken to avoid any bending stress to the velocity transducer magnet.
13. Remove card cage by performing removal Steps 1 through 13 of card Cage removal and replacement procedure.
14. Loosen velocity transducer magnet set screw (Fig. 6-10) and remove magnet.

● REPLACEMENT

1. Install replacement velocity transducer magnet and tighten set screw.
2. Very carefully slide magnet assembly onto the two guide pins. Extreme care must be taken to avoid any bending stress to the velocity transducer magnet.
3. Fasten magnet to the main deck with the two mounting screws (see Figure 6-3).
4. Install card cage by performing Steps 3 through 9 of Card Cage removal and replacement procedure.
5. Install velocity transducer and velocity transducer end cap.
6. Install AGC Servo Preamplifier.
7. Connect A3P1, A3P2, A3P3, A3P4, A3P5 and A3P6 to AGC Servo Preamplifier.
8. Install power supply cover and connect A1P5.
9. Install rear door panel.
10. Install disk cartridge.
11. Remove A1P2 from the actuator and power up drive for normal operation. Insure that K1 has energized.
12. Manually load heads.
13. Move carriage by hand insuring that the velocity transducer magnet is not rubbing against velocity transducer. If rubbing occurs, unload heads, power down unit and reposition transducer or transducer magnet.
14. Push carriage forward so that carriage is at forward stop position.

CAUTION

While performing Steps 11 and 12 keep hands clear of carriage.

15. Reconnect A1P2.
16. Execute RTZ command from field tester.
17. Perform temperature stabilization procedure.

18. Perform alternate seek between cylinders 293 and 405 (146 and 202 for 100 TPI units).
19. Monitor "on cylinder" signal from field tester and adjust velocity gain potentiometer (see Figure 6-14) for a seek time of 35 ± 1 milliseconds.
20. Install electronics cover.
21. Close top cover.

6.6.8 SPINDLE ASSEMBLY R & R

● REMOVAL

1. Depress START/STOP pushbutton to STOP (out) and wait for spindle to stop rotating (START/STOP lamp extinguished).
2. Remove top cover by lifting cover straightup (base cabinet only).
3. Remove disk cartridge.
4. Set main circuit breaker to off position.
5. Remove electronics cover.
6. Remove power supply cover and disconnect A1P5.
7. On rack mounted units with Accuride slides, remove coupling screw securing latch knob to latch mechanism (see Figure 6-7).
8. Disconnect ground straps from front panel (one on rack mounted units, two on base cabinet units if present).
9. Remove front panel by loosening two screws at bottom of panel and removing two screws on each side of panel (see Figure 6-7).
10. Remove the three screws from inside cartridge receiver.
11. Lift the cartridge receiver up until connector A9P2 can be unplugged (see Figure 6-7). After A9P2 is unplugged further remove cartridge receiver.

CAUTION

While lifting cartridge receiver be extremely careful to avoid damage to the fixed disk.

12. Remove fixed disk clamp.

13. Remove fixed disk, carefully avoiding contact with recording surfaces. Place disk on soft clean surface.
14. Remove mounting screws from thermal link bracket (Figure 6-9).

CAUTION

Do not perform Step 15 until Step 14 has been performed.

15. Remove thermal link hold-down screw (Figure 6-9).
16. Remove cabinet panels from both sides (base cabinet only).
17. Remove Module bottom cover.
18. Unplug connector A9P1.
19. Perform removal Steps 1 through 6 of the sector ring removal and replacement procedure.
20. Remove spindle drive belt (Figure 6-11).
21. Rotate spindle to positions where spindle mounting bolts are visible through access hole and remove bolts through access hole.
22. Carefully lift spindle slightly.
23. Detach thermal link from spindle. Note sequence of fiber washers mounting bolt (Figure 6-9). Swing thermal link out of the way.
24. Remove spindle assembly.

● **REPLACEMENT**

1. Attach thermal link to replacement spindle.
2. Install spindle with the mounting bolts.
3. Rotate spindle and verify that thermal link is not contacting spindle flange.
4. Install thermal link hold-down screw and tighten until thermal link bracket is flush with top of transducer scale. (Figure 6-9).

CAUTION

Do not perform Step 5 until Step 4 has been performed.

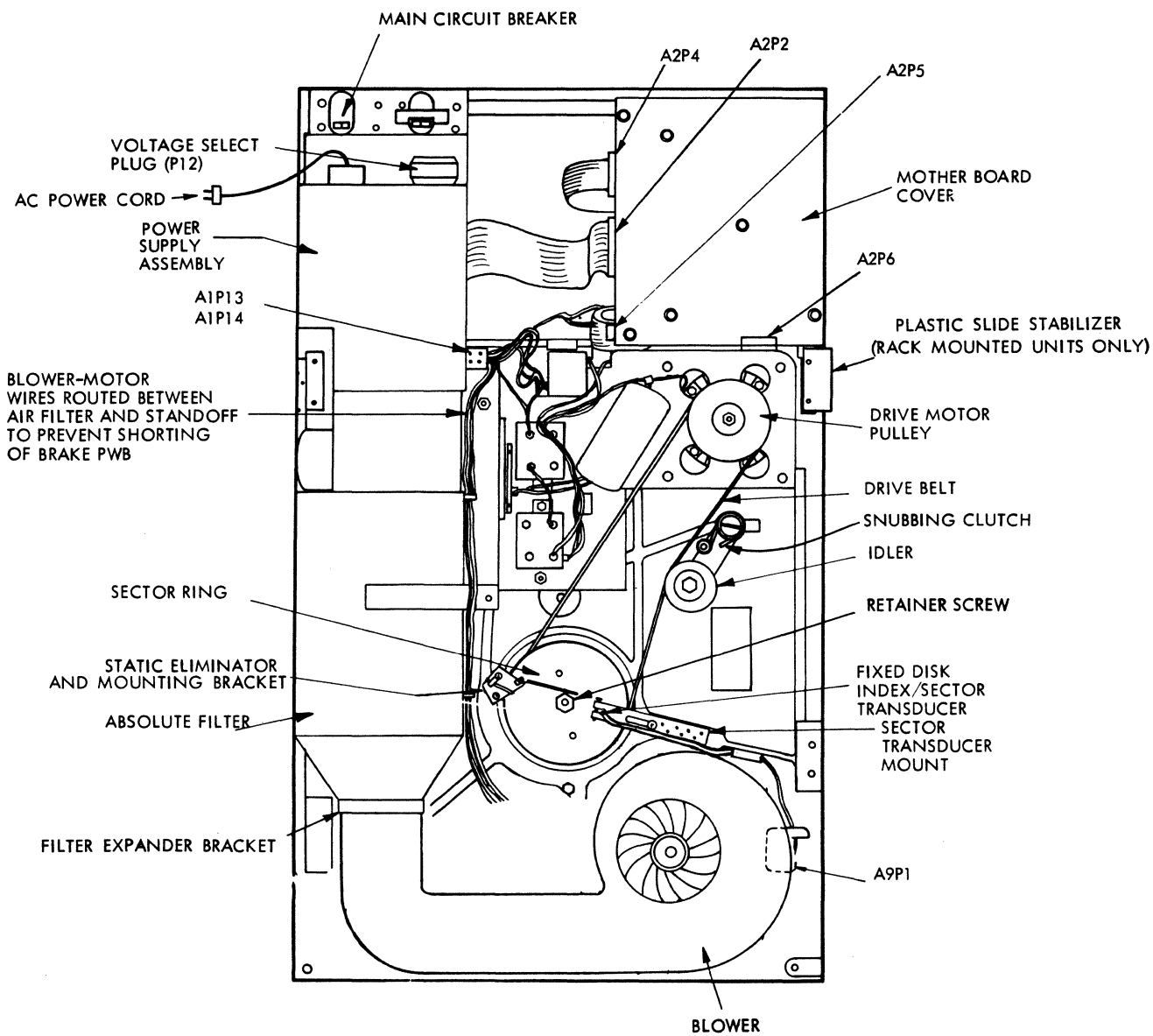
5. Install thermal link bracket screws.
6. Install drive belt.
7. Install sector ring.
8. Install transducer mount assembly by performing replacement Steps 7 through 12 of the sector ring removal and replacement procedure.
9. Reconnect A9P1.
10. Clean spindle rim area with media cleaning solution.
11. Prior to installing fixed disk, inspect disk for scratches or defects. If disk is unacceptable, replace with new one.
12. Clean disk surface with lint-free gauze, dampened (not soaked) with media cleaning solution.
13. Install fixed disk and insure proper seating.
14. Install disk clamp. Torque screws to 12 in./lbs.
15. Install cartridge receiver by aligning it on the two small pins on the deck and connecting A9P2.

CAUTION

While installing cartridge receiver be extremely careful to avoid damage to fixed disk and receiver harness.

16. Fasten cartridge receiver with three screws.
17. Install front panel and ground straps. Insure that insulating strips are still mounted to front panel and there is electrical isolation between front panel and deck.
18. Install latch assembly or knob as required.
19. Perform Fixed Disk Index/Sector Transducer Check and Adjustment.
20. Perform Static Eliminator Check.
21. Perform Cartridge Index/Sector Transducer Check and Adjustment.
22. Perform AGC Servo Preamplifier and Inductosyn Check and Adjustment.
23. Perform EOT Check and Adjustment.
24. Perform Head Alignment Check and Adjustment.

25. Perform Index to Burst Period Check and Adjustment procedure.
26. Install module bottom cover.
27. Install side panels (base cabinet only).
28. Install electronics cover.
29. Install top cover (base cabinet only).



AA251b

Figure 6-11. Module Locator (Below Deck)

6.6.9 CARTRIDGE DISK INDEX/SECTOR TRANSDUCER R & R

● REMOVAL

1. Depress START/STOP pushbutton to STOP (out) and wait for spindle to stop rotating (START/STOP lamp extinguished).
2. Remove top cover by lifting cover straightup (base cabinet only).
3. Remove disk cartridge.
4. Set main circuit breaker to off position.
5. Remove electronics cover.
6. Remove power supply cover and disconnect A1P5.
7. On rack mounted units with Accuride slides remove coupling screw securing latch knob to latch mechanism (see Figure 6-7).
8. Disconnect ground straps from front panel (one on rack mounted units, two on base cabinet units if present).
9. Remove front panel by loosening two screws at bottom of panel and removing two screws on each side of panel (see Figure 6-7).
10. Remove the three screws from inside cartridge receiver.
11. Lift the cartridge receiver up until connector A9P2 can be unplugged (see Figure 6-7). After A9P2 is unplugged further remove cartridge receiver.

CAUTION

While lifting cartridge receiver be extremely careful to avoid damage to the fixed disk.

12. Remove transducer assembly from receiver by removing 4 screws (Figure 6-8).
13. Remove transducer from mount by loosening clamp Allen set screw.

● REPLACEMENT

1. Install new transducer into mount. Tighten Allen screw.
2. Install transducer assembly on receiver with four mounting screws making sure harness lies in groove.

3. Install cartridge receiver by aligning it on the two small pins on the deck and connecting A9P2.

CAUTION

While installing cartridge receiver be extremely careful to avoid damage to fixed disk and receiver harness.

4. Fasten cartridge receiver with three screws.
5. Install front panel and ground straps. Insure that insulating strips are still mounted to front panel and there is electrical isolation between front panel and deck.
6. Install latch assembly or knob as required.
7. Perform Cartridge Index/Sector Transducer Check and Adjustment.
8. Perform Index-to-Burst period check and adjustment.
9. Install electronics cover.
10. Install top cover (base cabinet only).

6.6.10 FIXED DISK INDEX/SECTOR TRANSDUCER R & R

● REMOVAL

1. Depress START/STOP switch to STOP (out) and wait for spindle to stop rotating (START/STOP lamp extinguished).
2. Remove top cover by lifting cover straightup (base cabinet only).
3. Remove disk cartridge.
4. Set main circuit breaker to off position.
5. Remove right side panel (when viewed from rear of unit, base cabinet only).
6. Remove module bottom cover.
7. On rack mounted units with Accuride slides, remove coupling screw securing latch knob to latch mechanism (see Figure 6-7).
8. Disconnect ground straps from front panel (one on rack mounted units, two on base cabinet units is present).
9. Remove front panel by loosening two screws at bottom of panel and removing two screws on each side of panel (see Figure 6-7).
10. Remove electronics cover.

11. Remove the three screws from inside cartridge receiver.
12. Lift the cartridge receiver up until connector A9P2 can be unplugged (see Figure 6-7). After A9P2 is unplugged further remove cartridge receiver.

CAUTION

While lifting cartridge receiver be extremely careful to avoid damage to the fixed disk.

13. Disconnect A9P1 and unlace harness from around blower motor assembly.
14. Loosen index sector transducer clamp screw.
15. Remove transducer from mount.

● **REPLACEMENT**

1. Install new transducer in mount.
2. Connect A9P1 and lace harness around blower motor assembly.
3. Perform fixed disk index/sector transducer check and adjustment procedure.
4. Replace cartridge receiver by aligning it on the two small pins on the deck and connecting A9P2.

CAUTION

While installing cartridge receiver be extremely careful to avoid damage to fixed disk and receiver harness.

5. Fasten cartridge receiver with three screws.
6. Install front panel and ground straps. Insure that insulating strips are still mounted to front panel and there is electrical isolation between front panel and deck.
7. Install latch assembly or knob as required.
8. Install electronics cover.
9. Install module bottom cover.
10. Install cabinet side panel.
11. Install top cover.

6.6.11 STATIC ELIMINATOR AND RETAINER SCREW R & R

● REMOVAL

1. Depress START/STOP switch to STOP (out) and wait for spindle to stop rotating (START/STOP lamp extinguished).
2. Remove disk cartridge.
3. Set main circuit breaker to off position.
4. Remove right side panel (when viewed from rear of unit, base cabinet only).
5. Remove module bottom cover.
6. Remove static eliminator (Figure 6-11) by removing one screw.
7. At the cartridge receiver side, align one of the holes in the spindle assembly with one of the Allen head screws which mounts the spindle to the base deck. Insert the proper size wrench into the screw head. This will prevent the spindle turning while removing the retainer screw.
8. Remove retainer screw (Figure 6-11).

● REPLACEMENT

1. Apply Loctite to threads of replacement retainer screw and install.
2. Install replacement static eliminator.
3. Adjust static eliminator for contact with spindle shaft (retainer screw) to a spring deflection of approximately 1/32 in. (0.79 mm).
4. Perform Static Eliminator Check procedure.
5. Install module bottom cover.
6. Install cabinet side panel.

6.6.12 SECTOR RING R & R

● REMOVAL

1. Depress START/STOP switch to STOP (out) and wait for spindle to stop rotating (START/STOP lamp extinguished).
2. Set main circuit breaker to off position.
3. Remove right side panel (when viewed from rear of unit, base cabinet only), and remove module bottom cover.
4. Remove transducer assembly mount (see Figure 6-11) by removing one screw (note orientation of sector option).
5. Remove static eliminator and its mounting bracket (see Figure 6-11).
6. Remove sector ring (see Figure 6-11) by removing two screws.

- **REPLACEMENT**

1. Install replacement sector ring.
2. Install static eliminator and bracket.
3. Install transducer and mount.
4. Perform Fixed Disk Index/Sector Transducer Adjustment procedure.
5. Adjust static eliminator for contact with spindle shaft.
6. Perform Static Eliminator Check.
7. Install module bottom cover.
8. Install cabinet side panel.

6.6.13 Cartridge On Switch R&R

- **REMOVAL**

1. Depress START/STOP pushbutton to STOP (out) and wait for spindle to stop rotating (START/STOP lamp extinguished).
2. Remove top cover by lifting cover straightup (base cabinet only).
3. Remove disk cartridge.
4. Set main circuit breaker to off position.
5. Remove electronics cover.
6. Remove power supply cover and disconnect A1P5.
7. On rack mounted units with Accuride slides, remove coupling screw securing latch knob to latch mechanism (see Figure 6-7).
8. Disconnect ground straps from front panel (one on rack mounted units, two on base cabinet units if present).
9. Remove front panel by loosening two screws at bottom of panel and removing two screws on each side of panel (see Figure 6-7).
10. Remove the three screws from inside cartridge receiver.
11. Lift the cartridge receiver up until connector A9P2 can be unplugged (See Figure 6-7). After A9P2 is unplugged further remove cartridge receiver.

CAUTION

While lifting cartridge receiver be extremely careful to avoid damage to the fixed disk.

12. Disconnect wires from cartridge on switch.
13. Remove two screws, washers and nuts securing switch assembly to hold-down arm and remove switch. (reference Figure 6-12).

● **REPLACEMENT**

1. Install replacement switch.
2. Close hold-down arms.
3. Check switch status with multimeter set on RX1 scale. Indication should be zero ohms.
4. With disk cartridge installed, check switch status with multimeter set to RX1 scale. Meter should indicate zero ohms.
5. If switch does not read zero ohms, adjust as follows:
 - a. Loosen hold-down arm adjustment screws (figure 6-12).
 - b. Adjust hold-down arm for contact with cartridge disk cover.
 - c. Tighten adjustment screws.
6. Check switch status with multimeter for zero ohms. If switch does not indicate zero ohms, replace switch.
7. Connect wires to switch.
8. Override solenoid (see Figure 2-1) and open hold-down arms.
9. Install cartridge receiver by aligning it on the two small pins on the deck and connecting A9P2.

CAUTION

While installing cartridge receiver be extremely careful to avoid damage to fixed disk and receiver harness.

10. Fasten cartridge receiver with three screws.
11. Install front panel and ground straps. Insure that insulating strips are still mounted to front panel and there is electrical isolation between front panel and deck.
12. Install latch assembly or knob as required.

13. Perform index to burst period check and adjustment procedure.
14. Install electronics cover.
15. Install top cover (base cabinet only).

6.6.14 Disk Brush Assembly R & R

● REMOVAL

1. Depress START/STOP pushbutton to STOP (out) and wait for spindle to stop rotating (START/STOP lamp extinguished).
2. Remove top cover by lifting cover straight up. (Base cabinet only)
3. Remove disk cartridge.
4. Set main circuit breaker to off position.
5. Remove electronics cover.
6. Remove power supply cover and disconnect A1P5.
7. On rack mounted units with Accuride slides, remove coupling screw securing latch knob to latch mechanism (see Figure 6-7).
8. Disconnect ground straps from front panel (one on rack mounted units, two on base cabinet units).
9. Remove front panel by loosening two screws at bottom of panel and removing two screws on each side of unit holding front panel to cartridge receiver (see Figure 6-7).
10. Remove the three screws from inside cartridge receiver.
11. Lift the cartridge receiver up until connector A9P2 can be unplugged (see Figure 6-7). After A9P2 is unplugged further remove cartridge receiver.

CAUTION

While lifting cartridge receiver be extremely careful to avoid damage to the fixed disk.

12. Disconnect A1P3 and A1P7.
13. Disconnect wires from brush retract switch (see Figure 6-12).
14. Remove three mounting screws from the brush assembly. One screw is countersunk.
15. Remove brush assembly.

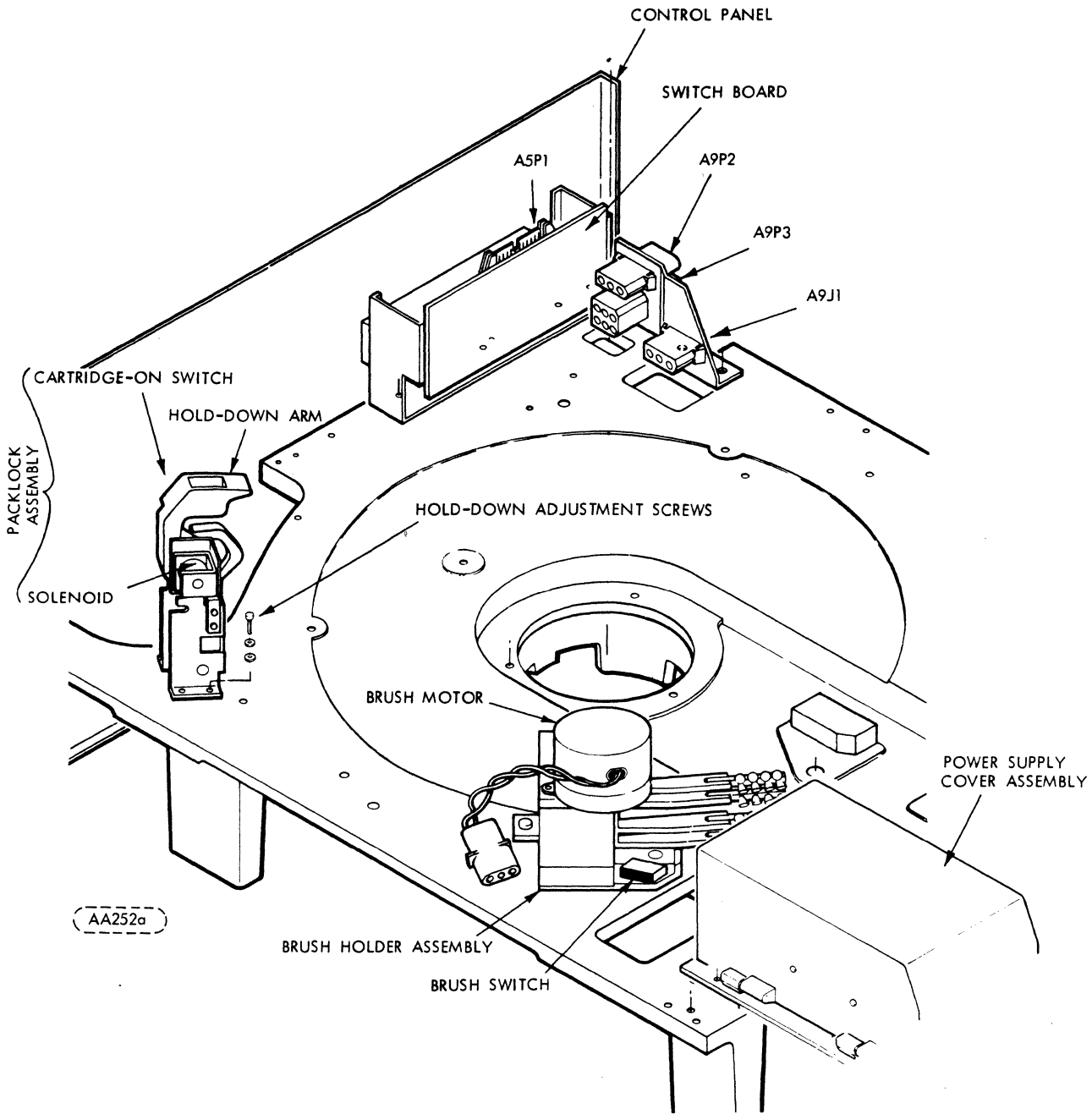


Figure 6-12. Packlock and Brush Assemblies

● **REPLACEMENT**

1. Install new brush assembly with the 3 mounting screws.

NOTE

Verify that brushes are full retracted for the following check.

2. With a multimeter set on RX1 scale check that switch actuates when brushes are clear of disk area.
3. If switch actuation does not occur as indicated in previous step, replace switch.
4. Reconnect wires to brush retract switch.
5. Install cartridge receiver by aligning it on the two small pins on the deck and connecting A9P2.

CAUTION

While installing cartridge receiver be extremely careful to avoid damage to fixed disk and receiver harness.

6. Fasten cartridge receiver with three screws.
7. Install front panel and ground straps. Insure that insulating strips are still mounted to front panel and there is electrical isolation between front panel and deck.
8. Install latch assembly or knob as required.
9. Connect A1P3 and A1P7.
10. Install power supply cover and reconnect A1P5.
11. Perform Index to Burst Period Check and Adjustment procedure.
12. Install electronics cover.
13. If necessary mark up label on cartridge receiver showing brush alignment when full retracted.
14. Install top cover (base cabinet only).

6.6.15 Brush Motor R & R

● REMOVAL

1. Perform removal Steps 1 through 12 of Disk brush removal procedure.
2. Remove the two mounting screws from the motor.
3. Remove brush motor.

● REPLACEMENT

1. Install new brush motor. Insure brushes are fully retracted. Turn motor as necessary until mounting holes are aligned and brushes are fully retracted. Brush indicator should align with indicator on cartridge receiver.
2. Perform replacement Steps 3 through 11 of Disk brush removal and replacement procedure to complete installation.

6.6.16 Spindle Drive Motor Assembly R & R

● REMOVAL

1. Depress START/STOP switch to STOP (out) and wait for spindle to stop rotating (START/STOP lamp extinguished).
2. Set main circuit breaker to off position.
3. Disconnect unit from main power source.

CAUTION

Failure to disconnect or turn off main power source may result in injury to service personnel.

4. Remove both cabinet side panels (base cabinet only).
5. Remove module bottom cover.
6. Disconnect A2P5, A1P13 and A1P14 (Figure 6-11) from power supply.
7. Remove plastic slide stabilizer (rack mount unit only).
8. Loosen tension of idler pulley by pulling back on snubbing clutch spring and remove drive belt (Figure 6-11).

CAUTION

Do not lose rubber isolation washers between motor deck and plate.

9. Support motor assembly to prevent it from falling and remove four mounting screws (see Figure 6-1).
10. Carefully lower drive motor assembly out of unit.
11. Remove locking collar on drive motor pulley and remove pulley from shaft.

● REPLACEMENT

1. Install pulley on replacement drive motor assembly. Install locking collar and torque to 27 in/lbs. Pulley must be 0.031 ± 0.010 inches (0.79 ± 0.25 mm) above motor plate. See Figure, Section 6.6.23.
2. Install replacement drive motor assembly. Insure that rubber isolation washers are on all mounting screws on both sides of motor plate.
3. Install drive belt making sure tension is removed from idler pulley by pulling back on snubbing clutch spring.
4. Connect A2P5, A1P13 and A1P14.
5. Check resistance between drive motor plate and module casting. If dc ground is connected to ac ground, resistance should be less than 1 ohm. If dc ground is isolated from ac ground, resistance should be greater than 1000 ohms.
6. Install module bottom cover.
7. Install cabinet side panels.
8. Connect unit to main power source.

6.6.17 Card Cage Printed Circuit Board R & R

1. Depress START/STOP switch to STOP (out) and wait for spindle to stop rotating (START/STOP lamp extinguished).
2. Set main circuit breaker to off position.
3. Open top cover (base cabinet only).
4. Remove electronics cover.

5. Remove clamp from card cage cover.
6. Remove card cage cover.
7. Using card extractor remove required circuit board. Not setting of any option switches (I/O Control, Sector and Data Recovery board). Set option switches an replacement board to same settings.

NOTE

If I/O Board is to be replaced, remove four board mounting screws. Also terminator modules, if required, must be removed from old board and installed in new one.

NOTE

If R/W/E Board is replaced, head connectors must be disconnected and two resistor modules must be removed from old board and installed in new one.

CAUTION

Insure head cables are dressed such that the voice coil does not touch any cable when heads are loaded and extended to cylinder 405.

8. Carefully install replacement board, insuring that all pins are engaged before completely installing board.
9. If the following circuit boards are replaced, the designated checks and adjustments must be performed.
 - A. Servo Preamp:
 1. AGC Servo Preamplifier and Inductosyn Check and Adjustment.
 2. FEOT Check and Adjustment.
 3. Head Alignment.
 4. Index-to-Burst Period Check and Adjustment.
 - B. Servo Board
 1. Connect Field Tester/Exerciser to unit.
 2. Perform Temperature Stabilization.
 3. Perform Steps 19 through 27 of AGC Servo Preamplifier and Inductosyn Check and Adjustment.
 - C. Sector Board
 1. Index-to-Burst Period Check and Adjustment.

10. Install card cage cover and clamp.
11. Install electronics cover.

6.6.18 Power Supply R & R

● REMOVAL

1. Depress START/STOP switch to STOP (out) and wait for spindle to stop rotating (START/STOP lamp extinguished).
2. Set main current breaker to Off position.
3. Disconnect unit from main power source.

CAUTION

Failure to disconnect or turn off main power source may result in injury to service personnel.

4. Open top cover (base cabinet only).
5. Remove electronics cover.
6. Remove AC line cord (see Figure 6-11).
7. Open power supply cover assembly, disconnect A1P5 and remove cover.
8. Disconnect A1P2, A1P13 and A1P14 (see Figure 6-11).
9. Disconnect A1P2, A1P3 and A1P7 (see Figure 6-13).
10. Disconnect ribbon cable A2P2 from mother board (see Figure 6-11).
11. Disconnect ground strap to frame.
12. Remove four screws holding power supply in place.
13. Remove power supply.

● REPLACEMENT

NOTE

Power supply is shipped with logic (DC) ground and chassis (AC) ground connected together. Verify needed configuration from removed power supply or see paragraph 3.9.2 (Grounding Option) of Installation instructions.

1. Install new power supply so that mounting holes are aligned.

CAUTION

Insure gasket between power supply and absolute filter is properly aligned. If not properly aligned, air flow can be restricted causing damage to power supply.

2. Reverse removal procedure to complete installation.

6.6.19 Piggyback Power Board R & R

● REMOVAL

1. Depress START/STOP switch to STOP (out) and wait for spindle to stop rotating (START/STOP lamp extinguished).
2. Open top cover (base cabinet only).
3. Set main current breaker to off position.
4. Disconnect unit from main power source.

CAUTION

Failure to disconnect or turn off main power source may result in injury to service personnel.

5. Remove electronics cover.
6. Open power supply cover assembly.
7. Disconnect A1P5 and remove power supply cover.
8. Disconnect A1P1, A1P2, A1P3, A1P4, A1P7 and A1P8 (see Figure 6-13).
9. Remove DC grounding screw noting assembly configuration.
10. Remove screw and insulating washer from wind tunnel located between relay K1 and power board #2.
11. Remove board assembly being careful not to lose spacers located under ground option (corner of board assembly).

● REPLACEMENT

1. Install new board assembly.
2. Reverse removal procedure to complete installation.

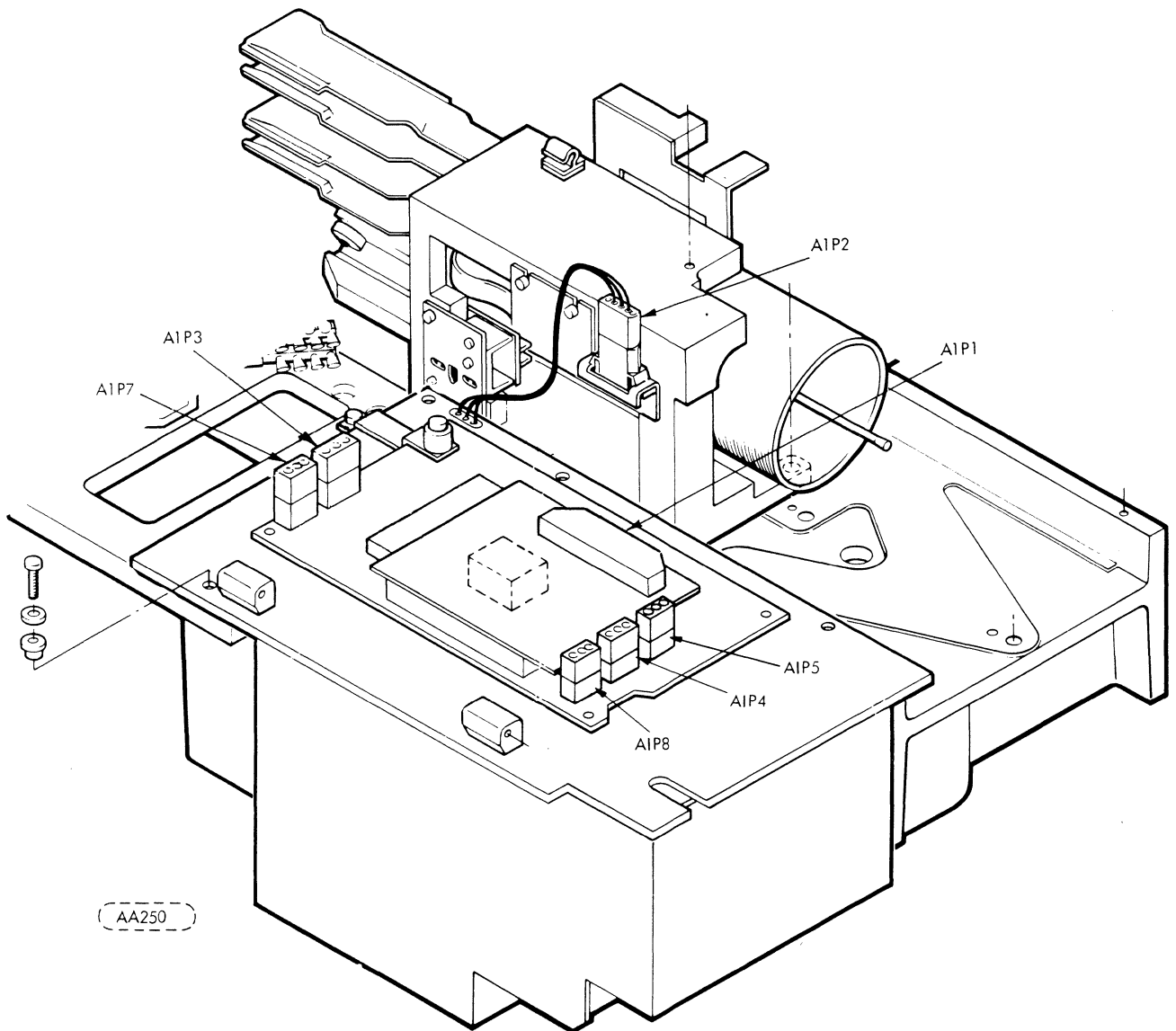


Figure 6-13. Power Supply Assembly

6.6.20 Card Cage/Mother Board R & R

● REMOVAL

1. Depress START/STOP switch to STOP (out) and wait for spindle to stop rotating (START/STOP lamp extinguished).
2. Open top cover (base cabinet only).
3. Set main circuit breaker to off position.
4. Disconnect unit from main power source.

CAUTION

Failure to disconnect or turn off main power source may result in injury to service personnel.

5. Remove electronics cover.
6. Disconnect I/O connector ribbon cables.
7. Remove four screws holding I/O Board to card cage and remove Board. Disregard this step if card cage is only removed to facilitate other removal and replacement procedures.
8. Remove card page cover and clamp and quadraclip from head connectors on R/W/E board (see Figure 6-4).
9. Disconnect head connectors.
10. Remove rear door panel (base cabinet only).
11. Disconnect A2P2, A2P4, A2P5 and A2P6 from mother board (see Figure 6-11).
12. Disconnect ground strap from deck plate.
13. Remove three screws securing card cage and remove card cage.
14. Using card extractor, remove all boards.
15. Remove the 5 screws holding the mother cover and board together. Watch for fiber washer.
16. Separate mother cover and board from card cage. Do not lose star washers.

- **REPLACEMENT**

1. Attach mother cover and board to card cage assembly. Be careful not to overtighten, plastic bracket strips out easily.
2. Install all circuit boards.
3. Install card cage with three mounting screws.
4. Install connectors removed in Steps 9 and 11.

CAUTION

Insure head cables are dressed such that the voice coil does not touch any cable when heads are loaded and extended to cylinder 405.

5. Install quadraclip and head cable clamp.
6. Replace I/O Board if removed in Step 7. (Removal procedures).
7. Reconnect I/O Ribbon Cables.
8. Install ground strap.
9. Install card cover and clamp.
10. Install electronics cover.
11. Install rear door panel (base cabinet only).
12. Connect unit to main power source.
13. Close top cover (base cabinet only).

6.6.21 Blower Motor Assembly R & R (Base Cabinet)

- **REMOVAL**

1. Depress START/STOP switch to STOP (out) and wait for spindle to stop rotating (START/STOP lamp extinguished).
2. Set main circuit breaker to off position.
3. Remove top cover by lifting cover straight up (base cabinet only).
4. Remove front door and both side cabinet panels (base cabinet only).
5. Disconnect ground straps from front panel if present.
6. Remove front panel by loosening two screws at bottom of panel and removing two screws on each side of panel (see Figure 6-7).

7. Remove the pre-filter and disconnect A1P13 (Figure 6-11) from power supply assembly.
8. Remove filter expander bracket and absolute filter (Figure 6-1).
9. Remove nuts from studs that secure module to base frame (two nuts are in pre-filter area and one nut is below actuator magnet).
10. Unlace motor harness.
11. Support blower assembly to prevent it from falling and remove three screws securing blower assembly.
12. Remove blower assembly.

● **REPLACEMENT**

1. Install replacement blower motor assembly.
2. Reverse the removal procedure to complete the installation.

NOTE

Slightly tighten the three screws securing the blower motor then align the air chute with the absolute filter. Finish tightening the blower motor screws (do not over compress rubber washes on the three screws).

6.6.22 Blower Motor Assembly R & R

● **REMOVAL**

1. Depress START/STOP switch to STOP (out) and wait for spindle to stop rotating (START/STOP lam extinguished).
2. Set main circuit breaker to off position.
3. Unlatch the latch assembly securing the unit in the cabinet.
4. Remove the front panel by loosening two screws at the bottom of the panel and removing two screws on each side of the panel (see Figure 6-7).
5. Disconnect plug A1P13 from power supply (see Figure 6-11).
6. Remove filter, expander, bracket and absolute filter (see Figure 6-1).
7. Unlace the motor harness from side of main deck.
8. Remove the air inlet cover (held in place by three screws).

9. Remove the three screws holding the blower motor in place and remove blower motor.

● REPLACEMENT

1. Install blower motor assembly.
2. Reverse the removal procedure to complete the installation.

NOTE

Slightly tighten the three screws securing the blower motor then align the air chute with the absolute filter. Finish tightening the blower motor screws (do not over compress rubber washers on the three screws).

6.6.23 DRIVE MOTOR PULLEY AND BELT R & R

● REMOVAL

1. Depress START/STOP switch to STOP (out) and wait for spindle to stop rotating (START/STOP lamp extinguished).
2. Set main circuit breaker to Off position.
3. Disconnect unit from main power source.

CAUTION

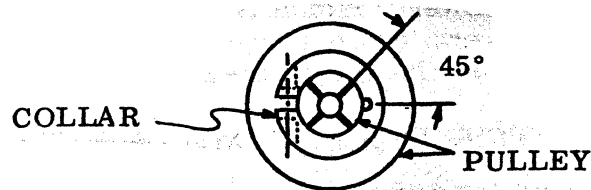
Failure to disconnect or turn off main power source may result in injury to service personnel.

4. Remove rear door panel and right side panel (when viewed from rear of unit, cabinet only).
5. Extend unit to its fully extended position (rack only).
6. Remove module bottom cover.
7. Remove mounting screw from fixed disk index sensor mount. Note hole orientation of dowel pin for sector option (see Figure 3-11).
8. Remove small screw and spacer holding snubbing clutch spring to idler arm (see Figure 6-13.1).
9. Remove spindle drive belt from pulleys.
10. Remove belt by guiding belt between static eliminator and retainer screw (see Figure 6-11).

11. Remove locking collar on drive motor pulley.
12. Remove drive motor pulley. Be careful not to lose Woodruff key.

● REPLACEMENT

1. Place Woodruff key into drive motor keyway.
2. Install new drive motor pulley. Insure that Woodruff key is properly placed in keyway.



3. Install locking collar per figure above and tighten to 27 in/lbs. Gap between drive motor plate and top of pulley must be 0.031 ± 0.01 in. (0.79 10.25 mm).
4. Install new drive belt.

CAUTION

If you wish to exercise idler assembly by hand, you must either remove small screw holding snubbing clutch spring to idler arm or pull back on end of spring to remove tension. Snubbing clutch spring will become damaged if idler arm is pulled back pulled back without releasing snubbing clutch.

5. Install small screw and spacer holding snubbing clutch to idler arm.
6. Replace fixed disk sensor mount.
7. Perform Fixed Disk Index/Sector Transducer Check and Adjustment.
8. Install module bottom cover.
9. Install side panel and rear door panel (cabinet only).
10. Connect unit to main power source.

6.6.24 IDLER ASSEMBLY R & R

● REMOVAL

1. Depress START/STOP switch to STOP (out) and wait for spindle to stop rotating (START/STOP lamp extinguished).
2. Set main circuit breaker to Off position.
3. Disconnect unit from main power source.

CAUTION

Failure to disconnect or turn off main power source may result in injury to service personnel.

4. Remove rear door panel and right side panel (when viewed from rear of unit, cabinet only).
5. Extend unit to its fully extended position (rack only).
6. Remove module bottom cover.
7. Remove small screw and spacer holding snubbing clutch spring to idler arm (see Figure 6-13.1).
8. Allow spindle drive belt to drop off pulley.
9. Remove snubbing clutch and stud-snob (see Figure 6-13.1). Note: left-hand thread on stud-snob.
10. Remove idler assembly and idler spring. Note orientation of spring (see Figure 6-13.1).
11. Thoroughly clean stud-stub using media cleaning solution. Also clean lubricant off stud-snob and deck area around stud-stub. Insure that all parts are cleaned of Molykote lubricant.

NOTE

Do not place any lubricant on fully assembled non-lubricated idler assembly.

● REPLACEMENT

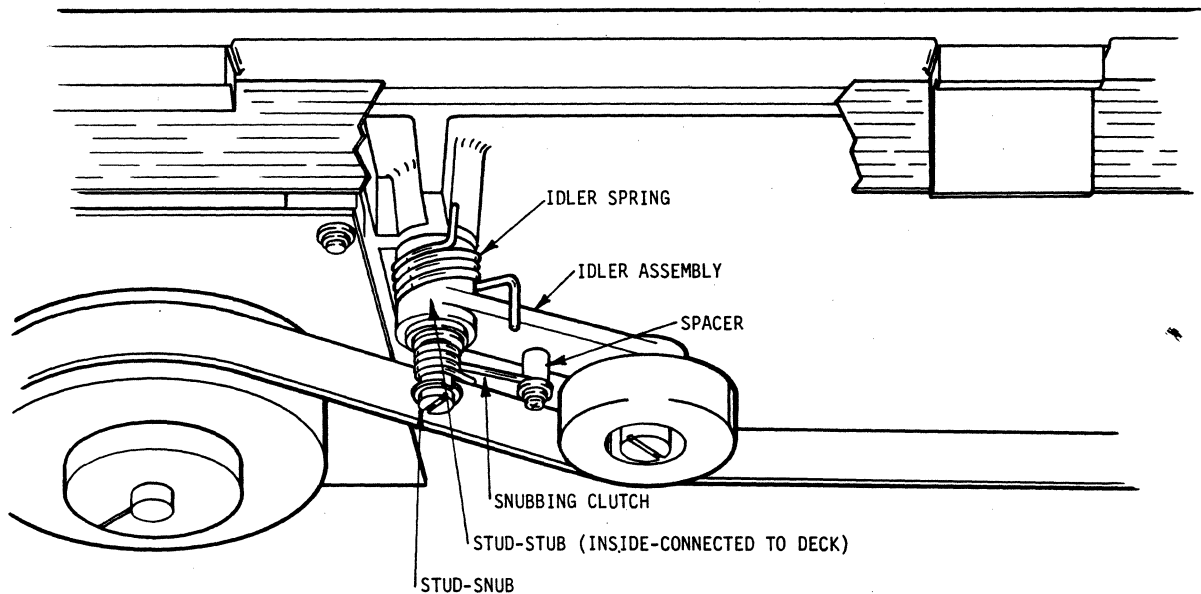
1. If stud-stub became loose during disassembly, remove stud-stub and clean threads of old Loctite. Apply Loctite Primer and Loctite "C" to first two threads and reinstall stud-stub into deck torquing stud to 30 in/lbs. Allow Loctite to set (20 minutes minimum).
2. Place the idler spring on idler arm.

3. Slide idler assembly and spring onto stud-stub. Verify orientation according to Figure 6-13.1.
4. Install snubbing clutch and stud-snob.
5. Install spindle drive belt.

CAUTION

If you wish to exercise idler assembly by hand, you must either remove small screw holding clutch spring to idler arm or pull back on end of spring to remove tension. Snubbing clutch spring will become damaged if idler arm is pulled back without releasing snubbing clutch.

6. Install small screw and spacer holding snubbing clutch to idler arm.
7. Install module bottom cover.
8. Replace side panel and rear door panel (cabinet only).
9. Connect unit to main power source.



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FIGURE 6-13.1. IDLER ASSEMBLY

6.6.25 PACK LOCK ASSEMBLY OR PACK LOCK SOLENOID R & R

● REMOVAL

1. Depress START/STOP switch to STOP (out) and wait for spindle to stop rotating (START/STOP lamp extinguished).
2. Remove top cover by lifting cover straight up (base cabinet only).
3. Extend unit to its fully extended position (rack only).
4. Remove disk cartridge.
5. Set main circuit breaker to Off position.
6. Remove electronics cover.
7. On rack mounted units, remove coupling screw securing latch knob to latch mechanism (see Figure 6-7).
8. Disconnect ground straps from front panel (one on rack-mounted units, two on base cabinet units if present).
9. Remove front panel by loosening two screws at bottom of panel and removing two screws on each side of unit holding front panel to cartridge receiver (see Figure 6-7).
10. Remove the three screws from inside cartridge receiver.
11. Lift the cartridge receiver up until connector A9P2 can be disconnected. After A9P2 is disconnected, further remove cartridge receiver.

CAUTION

While lifting cartridge receiver be extremely careful to avoid damage to the fixed disk.

12. If not replacing solenoid only, proceed to Step 18. Remove solenoid from pack lock assembly and receiver harness.
13. Loosely install replacement solenoid on pack lock assembly.
14. With the pack lock in an open position, place a 0.015 in. (0.38 mm) shim between pack lock and solenoid plunger. Push solenoid toward pack lock as far as it will go (plunger touching rear of solenoid).
15. Tighten solenoid screws and remove shim.
16. Using a small screwdriver, push back plunger and verify clearance.

17. Reconnect receiver harness to solenoids. Proceed to Step 3 of Replacement Procedure.
18. Using a pencil, outline the outside edges of the bracket legs on the pack lock assembly to be removed.
19. Note orientation of the wires connected to the pack lock switch.
20. Disconnect receiver harness terminals connected to pack lock switch and pack lock solenoid.
21. Remove pack lock assembly from deck.

● REPLACEMENT

1. Install new pack lock assembly within outline on deck.
2. Connect receiver harness terminals to pack lock switch and pack lock solenoid.
3. Install cartridge receiver by aligning it on the two small pins on the deck and connecting A9P2.

CAUTION

While installing cartridge receiver be extremely careful to avoid damage to fixed disk and receiver harness.

4. Fasten cartridge receiver with three screws.
5. Install front panel to cartridge receiver. Insure that insulating strips are still mounted to brackets on front panel and there is electrical isolation between front panel and deck.
6. Connect ground straps.
7. Install latch assembly (rack only).
8. Perform Index to Burst Period Check and Adjustment.
9. Install electronics cover.
10. Install top cover (base cabinet only).

6.7 CHECK AND ADJUSTMENT PROCEDURES

This section contains procedures that may be used to check for malfunctioning parts, to determine whether disk drive is operating within published specifications, or to adjust disk drive for proper operations. Before any electronics checks or adjustment are performed, the disk drive must go through a temperature stabilization process.

6.7.1 Temperature Stabilization Check and Adjustment

1. If disk unit has not been operating, or a CE disk cartridge has been installed, allow unit to exercise for twenty minutes. For an additional ten minutes, allow unit to sit in a heads loaded, unit ready condition. Perform this with electronic cover on. Perform needed checks and adjustments or;
2. If disk unit has been operating, allow unit to sit in a heads loaded, unit ready condition, for ten minutes (with electronic cover on), before proceeding with checks and adjustments.

6.7.2 AGC Servo Preamplifier and Inductosyn Check and Adjustment

NOTE 1

Prior to performing this adjustment perform Steps 12, 13 and 14. If Step 14 is within spec proceed with Step 15, if not, start with Step 1.

NOTE 2

Portions of the Inductosyn alignment must be made under dynamic conditions. If the Field Test Exerciser is not utilized appropriate provisions must be made in the computer system to cover these conditions.

CAUTION

In performing this procedure, care must be exercised to prevent severe and extended contact between position transducer and slider.

1. If position transducer, AGC preamp, or Servo Board has been replaced, insure that all connectors are plugged into their respective receptacles.
2. Connect field tester/exerciser to unit.

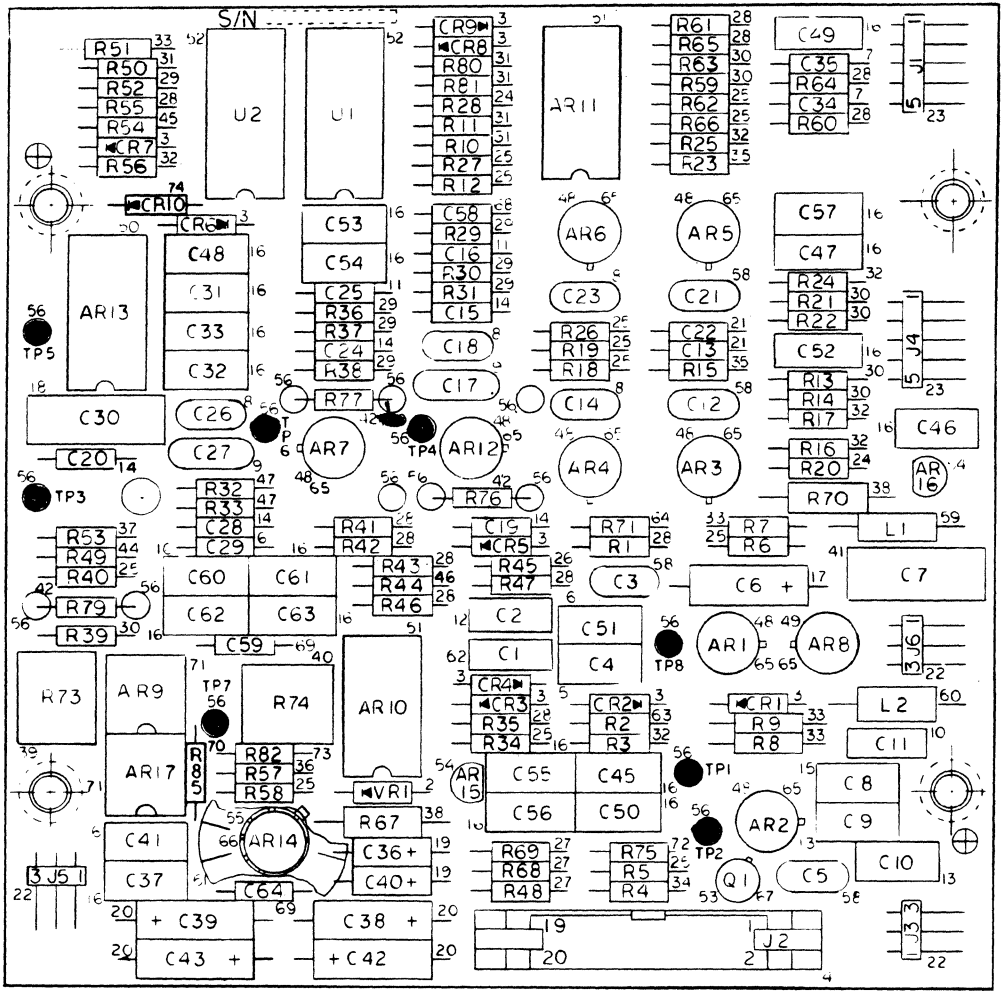
3. Remove A1P2 from the actuator and power up drive for normal operation. It is necessary that a disk cartridge is installed in the drive and relay K1 on power board #1 has energized.
4. Install a jumper from TP1 to -5V supply (TP9). See Figure 6-14.
5. Connect oscilloscope to C24 (point A of Figure 6-14). Set scope for internal trigger and auto sync.
6. Move carriage by hand, back and forth between cylinders 000 and 405 (000 and 202 for 100 TPI units) and observe waveform on oscilloscope.
7. If amplitude of waveform is $1.0 \pm .05$ volts peak to peak (see Figure 6-15), do not make any adjustment and proceed to Step 9, if not proceed to Step 8.
8. If waveform is not within above stated tolerances, loosen transducer mount block forward-most screw (right item 3, Figure 6-10), and adjust cam (item 4, Figure 6-10) for proper amplitude. If this adjustment is not sufficient, loosen transducer scale mounting screw (item 1, Figure 6-10). It may be necessary to make sequential adjustments of the cam and eccentric screw to obtain proper amplitude tolerances.
9. Tighten transducer scale mounting screw (item 1, Figure 6-10) to 20 in/lb.
10. Verify the waveform amplitude is still $1.0 \pm .05$ volts peak to peak between cylinders 000 and 405 (000 and 202 for 100 TPI units).
11. Remove jumper from TP1 and TP9.
12. Connect oscilloscope to TP3.
13. Move carriage by hand back and forth between cylinders 000 and 405 (000 and 202 for 100 TPI units) and observe waveform on oscilloscope.
14. Amplitude of waveform must be $5^{+.6}_{-.2}$ volts peak to peak. If not, repeat Steps 4 through 10 again. If adjustment cannot be performed replace AGC preamp. Waveform will be similar to Figure 6-15 except for difference in amplitude.
15. Push carriage forward so that carriage is at forward stop position.

CAUTION

While performing Steps 16 and 17 keep hands clear of carriage.

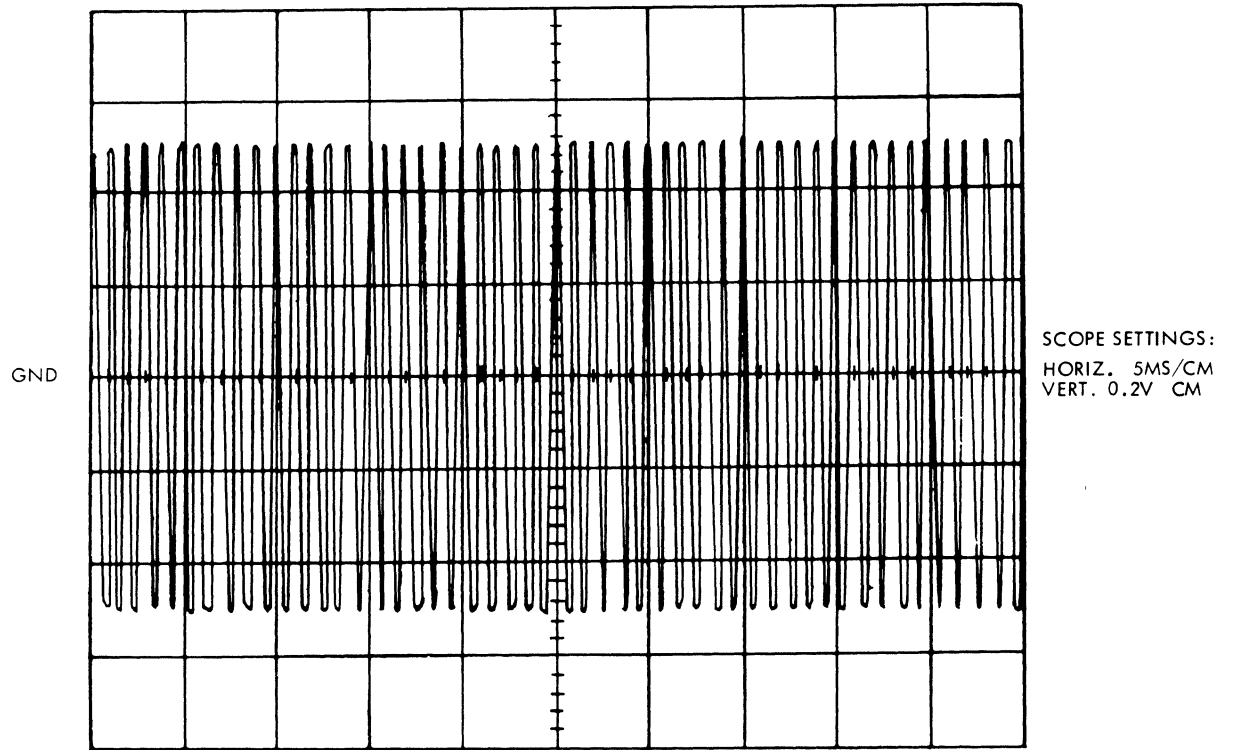
16. Reconnect A1P2.
17. Execute RTZ Command from field tester.

18. Perform temperature stabilization procedure.
19. Perform alternate seek between cylinders 293 and 405 (146 and 202 for 100 TPI units).
20. Monitor "On Cylinder" signal from field tester and adjust velocity gain potentiometer R73 (see Figure 6-14) for a seek time of 35 ± 1 milliseconds (see Figure 6-17b). Adjust sync to get correct waveform.
21. Perform an alternate seek from cylinder 200 to 201 (100 to 101 for 100 TPI units). Sync oscilloscope with "On Cylinder" signal on exerciser. Monitor TP3 and adjust potentiometer R74 on preamp board (see Figure 6-14) so that the amplitudes are balanced (in relationship to each other) within ± 100 mv of logic ground. Figure 6-16a shows waveforms unbalanced and Figure 6-16b shows them balanced.
22. This adjustment should be repeated whenever the drive exceeds ± 150 mv from logic ground.
23. Verify the adjustment, seeking from cylinder 000 to 001, and from 400 to 401 (000 to 001 and 200 to 201 for 100 TPI units). It may be necessary to adjust R74 to bring all three locations into adjustment.
24. Verify the adjustment again seeking from cylinder 000 to 002 and 400 to 402 (000 to 002 and 200 to 202 for 100 TPI units). It may be necessary to adjust R74 to bring both locations into adjustment (see Figure 6-16c).
25. Perform alternate seek between cylinders 293 and 405 (146 and 202 for 100 TPI units).
26. Monitor waveform at TP3. The peak to peak amplitude of the last full sinewave before "On Cylinder" goes negative must be $5 \pm .5$ volts (see Figure 6-17). Figure 6-17 shows a forward seek.
27. By resyncing oscilloscope obtain a reverse seek waveform (see Figure 6-17b). The peak to peak amplitude of the last full sinewave before "On Cylinder" goes negative must be $5 \pm .5$ volts.
28. Perform EOT Check and Adjustment Procedure.
29. Perform Head Alignment Check and Adjustment Procedure.
30. Perform Index-to-Burst Check and Adjustment Procedure.



XX244a

Figure 6-14. Preamp Board Adjustment Location



(AA005b)

Figure 6-15. Position Transducer Waveform

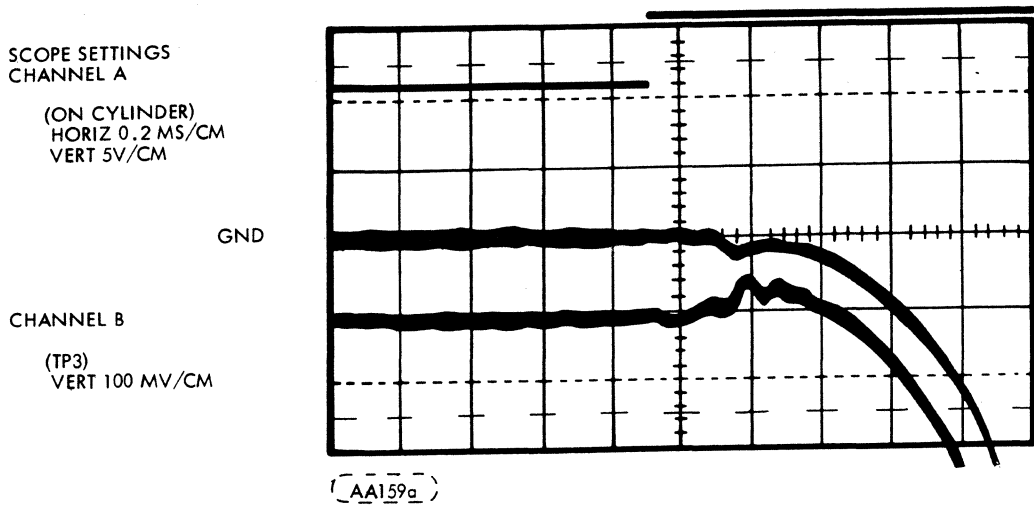


Figure 6-16a. OneTrack Seek Unbalanced

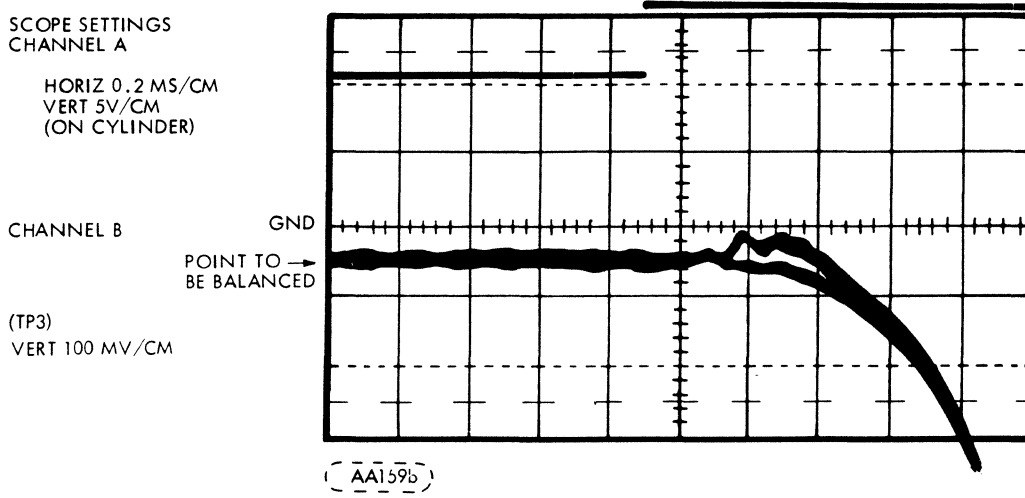


Figure 6-16b. One Track Seek Balanced

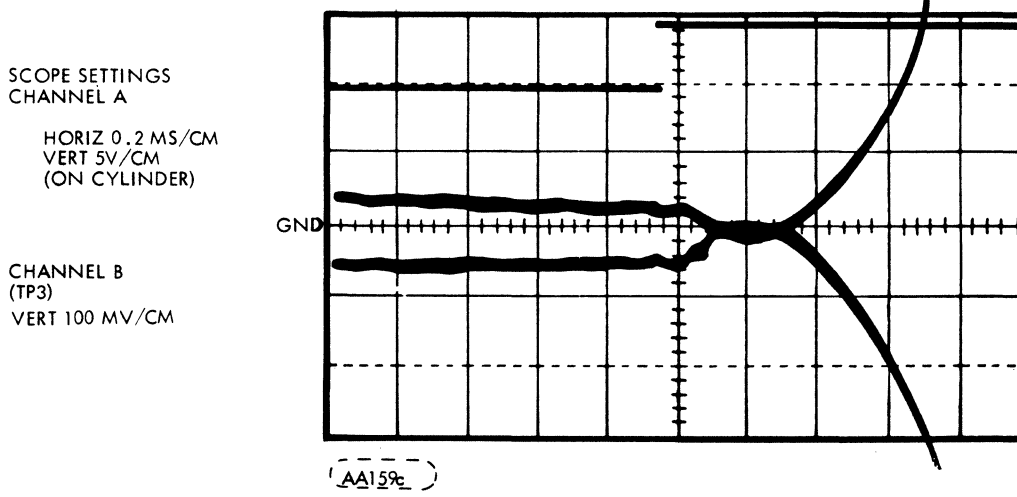
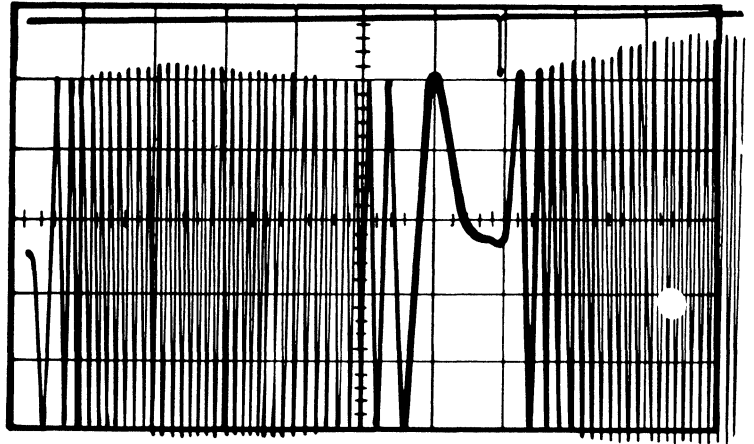


Figure 6-16c. Two Track Seek within Tolerance

SCOPE SETTINGS
CHANNEL A
ON CYLINDER

HORIZ 5MS/CM
VERT 5V/CM

CHANNEL B
TP3
VERT 1V/CM



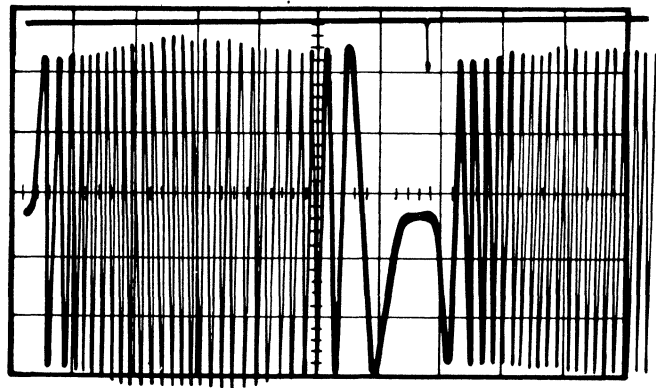
(AA180a)

FWD SEEK

Figure 6-17a. Forward Seek

SCOPE SETTINGS
CHANNEL A
ON CYLINDER
HORIZ 5MS/CM
VERT 1V/CM

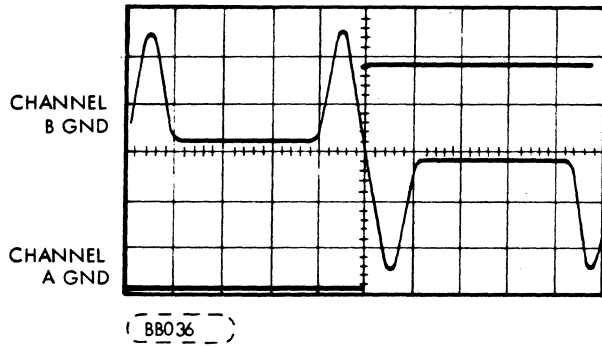
CHANNEL B
TP3
VERT 1V/CM



(AA180b)

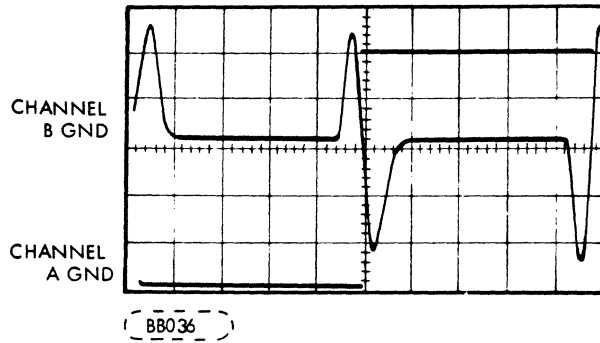
RVS SEEK

Figure 6-17b. Reverse Seek



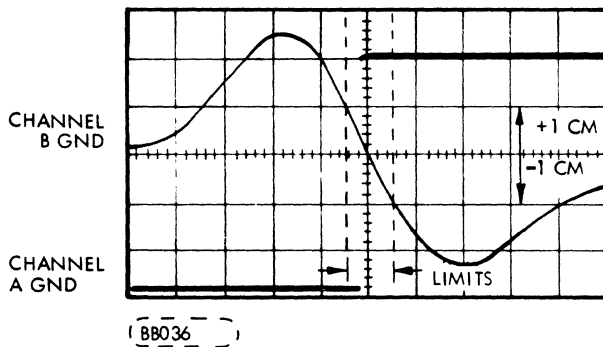
SCOPE SETTINGS:
 HORIZ 2MS/CM
 VERT "B" UNCAL-
 ADJUST FOR
 5 CM HIGH
 VERT "A" 1V/CM

FIGURE 6-18a



SCOPE SETTINGS
 HORIZ 5MS/CM
 VERT "B" UNCAL
 ADJUST FOR
 5 CM HIGH
 VERT "A" 1V/CM

FIGURE 6-18b



SCOPE SETTINGS:
 HORIZ 5MS/CM
 X10
 VERT "B" UNCAL
 VERT "A" 1V/CM

FIGURE 6-18c

Figure 6-18. FEOT Waveforms (Typical)

6.7.3 FEOT Check and Adjustment

NOTE

EOT adjustments must be made under dynamic conditions. Alternate seek to cylinder address 410 and 408 (205 and 204 on 100 TPI units) and cycle restarts and required to perform this adjustment.

Appropriate provisions must be made in the computer system for these conditions if the Field Test Exerciser is not utilized.

1. Set main circuit breaker to off position.
2. Connect Field Tester/Exerciser to unit.
3. Install servo board on card extender.
4. Set main circuit breaker to on position.
5. Depress START/STOP switch to START (in) and wait for completion of first seek.
6. Perform temperature stabilization procedure.
7. Unplug A1P2 on actuator.
8. On Servo Board, ground TP20 and TP21.
9. Set Actuator at forward stop and reconnect A1P2.
10. Perform RTZ function on Field/Tester Exerciser.
11. Insure that error halt switch is down on Field Tester/Exerciser.
12. Monitor TP19 on Servo board with channel A of oscilloscope and sync negative on this signal. Monitor TP3 (Figure 6-14) on AGC Preamp board with channel B of oscilloscope. Place channel B in uncalibrated vertical position and adjust until waveform is five centimeters in amplitude.
13. Perform alternate seek in the access mode between cylinders 408 and 410. (204-205 for 100 TPI). Alternate seek in the access mode is defined as movement of the heads back and forth between cylinders without performing a read operation.)

NOTE

Horizontal sweep time of Figure 6-18a and 6-18b depends upon switch settings on the I/O board.

14. Adjust oscilloscope until waveform looks similar to Figure 6-18a or 6-18b. Place crossover of signals A and B in middle of screen and place horizontal sweep time to 10X. Waveform should be similar to Figure 6-18c depending on sweep time.
15. If waveform is not within limits shown in Figure 6-18c, slightly loosen two socket head screws (Phillips on early units) on EOT Detector (Figure 6-3). Place screw driver in slot and adjust detector horizontally to limits shown in Figure 6-18c.

NOTE

Limits are defined as signal A must go Positive within ± 1 vertical centimeter of signal B ground along slope of signal B.

16. Tighten screws and verify that adjustment has not changed.
17. Unplug A1P2 on actuator.
18. On Servo Board, remove grounds from TP20 and TP21.
19. Set actuator at forward stop and reconnect A1P2.
20. Perform RTZ function on Field/Tester Exerciser.
21. Perform Head Alignment Check and Adjustment.
22. Perform Index to Burst Period Check and Adjustment procedure.

6.7.4 Head Alignment Check and Adjustment

NOTE

Refer to HPC package located in front of manual for option switch and terminator locations.

1. Depress START/STOP switch to STOP and wait for spindle to stop rotating (START/STOP LAMP extinguished).
2. Remove disk cartridge and install CE disk cartridge. Refer to disk cartridge removal and installation procedure in section 2.
3. Open top cover (base cabinet only).
4. Set main circuit breaker to off position.
5. Remove electronics cover.
6. Record setting of all switches on I/O board.
7. Verify that resistor modules are installed on I/O board. If not, install terminator plug in I/O board connector J1 if required.
8. Install OEM field tester. If no OEM field tester or system is available to perform the required functions refer to HPC package to star select unit and terminator power

CAUTION

K1 should not be removed until main circuit breaker is in off position. With K1 removed, emergency retract is disabled. Consequently, heads must be manually retracted if spindle slows down below tolerance limit.

9. Open power supply cover and remove relay K1 to provide access to heads.
10. Disconnect A1P2 (Note Orientation).
11. Set main circuit breaker to on position.
12. Depress W/PROT CART and W/PROT FIXED switches to ON (in).
13. Depress START/STOP switch to start (in) and allow spindle to attain operating speed.
14. Reconnect A1P2, but reverse orientation as noted in Step 10, immediately upon completion of brush cycle.
15. Perform temperature stabilization procedure.
16. Select upper head of disk cartridge and command unit to seek to cyl 146₁₀ (73₁₀ for 100 TPI units). For units without OEM tester proceed to Step 17.
17. For other units proceed to Step 19.

128
16
2

17. If no OEM field tester or system is available to perform required functions, refer to HPC package for proper switch settings.
18. After switches have been set to select head and cylinder desired, momentarily toggle cylinder address strobe switch on then off. This must be performed quickly or a seek error might occur.
19. Actuator should move to cylinder #146 (#73 for 100 TPI units).
20. Place oscilloscope external sync on Sector (P1-B10 on I/O Board for multi-sector units, index (P1-A31 I/O Board) for single-sector units without field tester and index (on field tester) for single-sector units with field tester.
21. Also monitor this signal and set up oscilloscope to indicate one complete revolution. Horizontal setting will be 2 ms/cm uncalibrated (see Figure 6-19A).
22. Monitor TP1 and TP2 on I/O board with channels A and B of the oscilloscope.
23. Set Oscilloscope to add signals and invert one channel.

NOTE

Head alignment waveform should be as indicated in Figure 6-19. If center crossover for both upper and lower cartridge heads are within ± 0.8 cm of horizontal center heads need not be adjusted. If alignment is outside this tolerance adjust heads, so that, center crossover is less than ± 0.5 cm of horizontal center.

24. Using the horizontal position control, move the display so that these crossovers are displayed exactly within the 10-cm scope graticle, similar to Figure 19B. Do not change the time base established in Step 21 for the balance of this adjustment procedure.
25. Loosen upper head clamp if adjustment required (Figure 6-6).
26. Using head alignment tool (CDC #75797900) adjust head for signal shown in Figure 6-19.
27. Tighten upper head clamp and torque to 6 ± 0.5 inch/lbs.
28. Select lower head of disk cartridge. If no OEM field tester and no system is available to perform selection, refer to HPC package for proper switch settings.
29. Loosen lower head clamp if adjustment required (Figure 6-6).
30. Using head alignment tool adjust head for signal shown in Figure 6-19.
31. Tighten lower head clamp and torque to 6 ± 0.5 inch pounds.
32. If new heads have been installed or actuator has been removed proceed to Step 16 of index-to-lurst period check and adjustment. Otherwise continue procedure.

33. Depress START/STOP switch to STOP (out) and wait for spindle to stop rotating (START/STOP lamp extinguished).
34. Remove CE disk cartridge.
35. Set main circuit breaker to off position.
36. Disconnect A1P2, reverse plug, and reconnect.
37. Install K1 and close power supply cover.
38. Set all switches on I/O board back to original positions noted in Step 6.
39. Disconnect oscilloscope.
40. Install electronics cover.
41. Close top cover (base cabinet only).

6.7.5 Head Skew and Index-to-Burst Period Check and Adjustment

NOTE

Refer to HPC package located in front of manual for option switch and terminator locations.

1. Depress START/STOP switch to STOP and wait for spindle to stop rotating (START/STOP lamp extinguished).
2. Remove disk cartridge and install CE disk cartridge. Refer to disk cartridge removal and installation procedure in section 2.
3. Set main circuit breaker to off position.
4. Open top cover.
5. Remove electronics cover.
6. Record setting of all switches on I/O board.
7. Verify that resistor modules are installed on I/O board. If not, install terminator plug in I/O board connector J1 if required.
8. Install OEM field tester. If no OEM field tester or system is available to perform the required functions refer to HPC package to star select unit and terminator power.

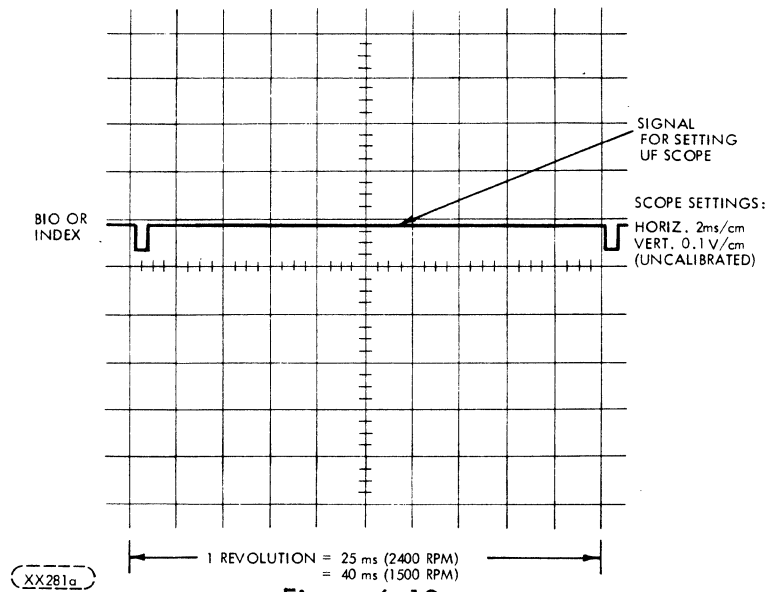


Figure 6-19a.

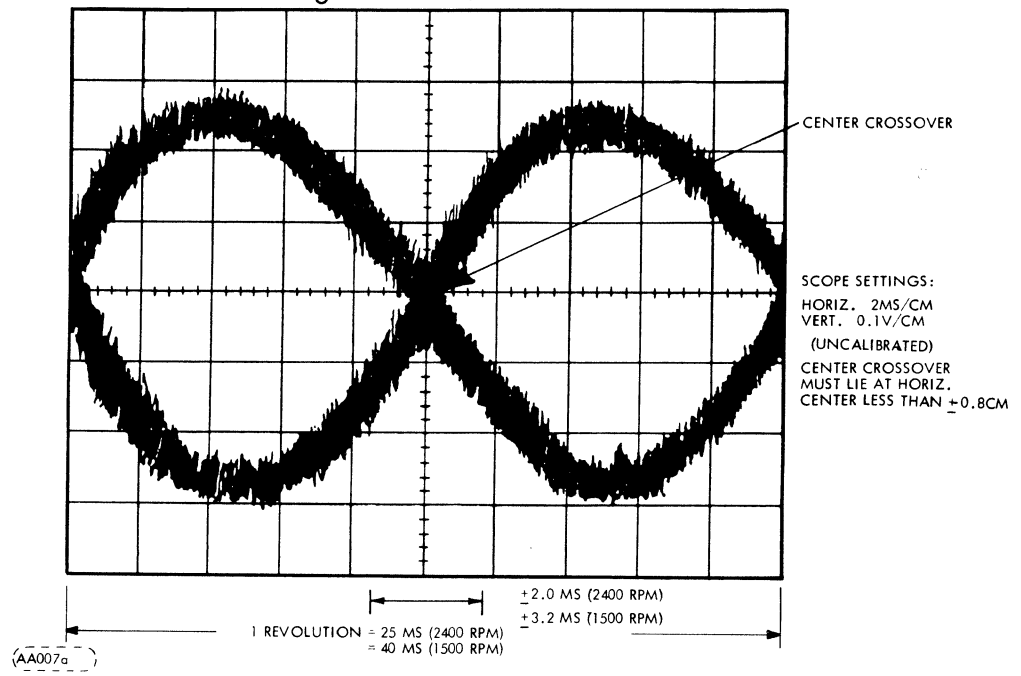


Figure 6-19b. Head Alignment Waveform

CAUTION

K1 should not be removed until main circuit breaker is in off position. With K1 removed, emergency retract is disabled. Consequently, heads must be manually retracted if spindle slows down below tolerance limit.

9. Open power supply cover and remove relay K1 to provide access to heads.
10. Disconnect A1P2 (note orientation).
11. Set main circuit breaker to on position.

12. Depress **W/PROT CART** and **W/PROT FIXED** switches to on (in).
13. Depress **START/STOP** switch to **start** (in) and allow spindle to attain operating speed.
14. **Reconnect A1P2, but reverse orientation as noted in Step 10, immediately upon completion of brush cycle.**
15. Perform temperature stabilization procedure.
16. Select upper head of disk cartridge and command unit to **seek to cyl 10₁₀** (5₁₀ for 100 TPI units). For units without OEM tester proceed to Step 17. For other units proceed to Step 19.
- ~~18.~~ If no OEM field tester or system is available to perform required functions, refer to HPC package for proper switch settings.
- ~~18.~~ After switches have been set to select head and cylinder desired, momentarily ~~toggle cylinder address strobe switches on then off.~~ This must be performed quickly or a seek error might occur.
19. Actuator should move to cylinder #10 (#5 for 100 TPI units).
20. Place oscilloscope external sync and channel A on sector (P1-B10 on I/O Board) for multi-sector units, index (P1-A31 I/O board) for single-sector units without field tester and index (on field tester) for single-sector units with field tester (see Figure 20).
21. Connect oscilloscope channel B to TPI on I/O Board.

NOTE

Head-skew check (Steps 22 through 24) should only be performed if a head has been replaced. If the check fails specification, keep replacing that head until the check passes specification. All measurements are to be made on the peak of the leading pulse derived by the CE pack regardless of polarity. To measure head skew with reliable accuracy, the index-to-data burst should be observed on a delayed sweep having a time base of 1 μ s per division for straddle-erase heads and 5 μ s per division for pre-erase heads. An alternate procedure is to change the index-to-burst timing so the pulse can be centered on the scope screen having the above horizontal time base (Figure 6-20b).

22. With the upper head of the disk cartridge selected, place the burst pulse in the center of the scope (Figure 6-20b).
23. Next select the lower head of the disk cartridge. If no OEM field tester or system is available to perform the selection, refer to the HPC package for the proper switch settings.
24. With the lower head of the disk cartridge selected, measure the difference between the burst point of the upper head to the burst point of the lower head. The head-to-head difference must be within the following limits:
 - 3 μ s maximum for straddle-erase heads (2400 RPM)
 - 4 μ s maximum for straddle-erase heads (1500 RPM)
 - 4 μ s maximum for pre-erase heads (2400 RPM).
25. Select the upper head of the disk cartridge. If no OEM field tester or system is available to perform the required functions, refer to the HPC package for the proper switch settings.
26. Check and record the index-to-burst period as shown in Figure 6-20a.
27. Select the lower head of the disk cartridge. If no OEM field tester or system is available to perform the selection, refer to the HPC package for the proper switch settings.
28. Check and record the index-to-burst period as shown in Figure 6-20a.
29. Determine which head has the lowest index-to-burst period and verify that it meets the following limits:
 - 100.0 \pm 5 μ s for pre-erase heads (2400 RPM)
 - 18.8 \pm 3 μ s for straddle-erase heads (2400 RPM)
 - 30.0 \pm 5 μ s for straddle-erase heads (1500 RPM).

If the check meets the above limits, go to Step 31, if not, continue procedure.

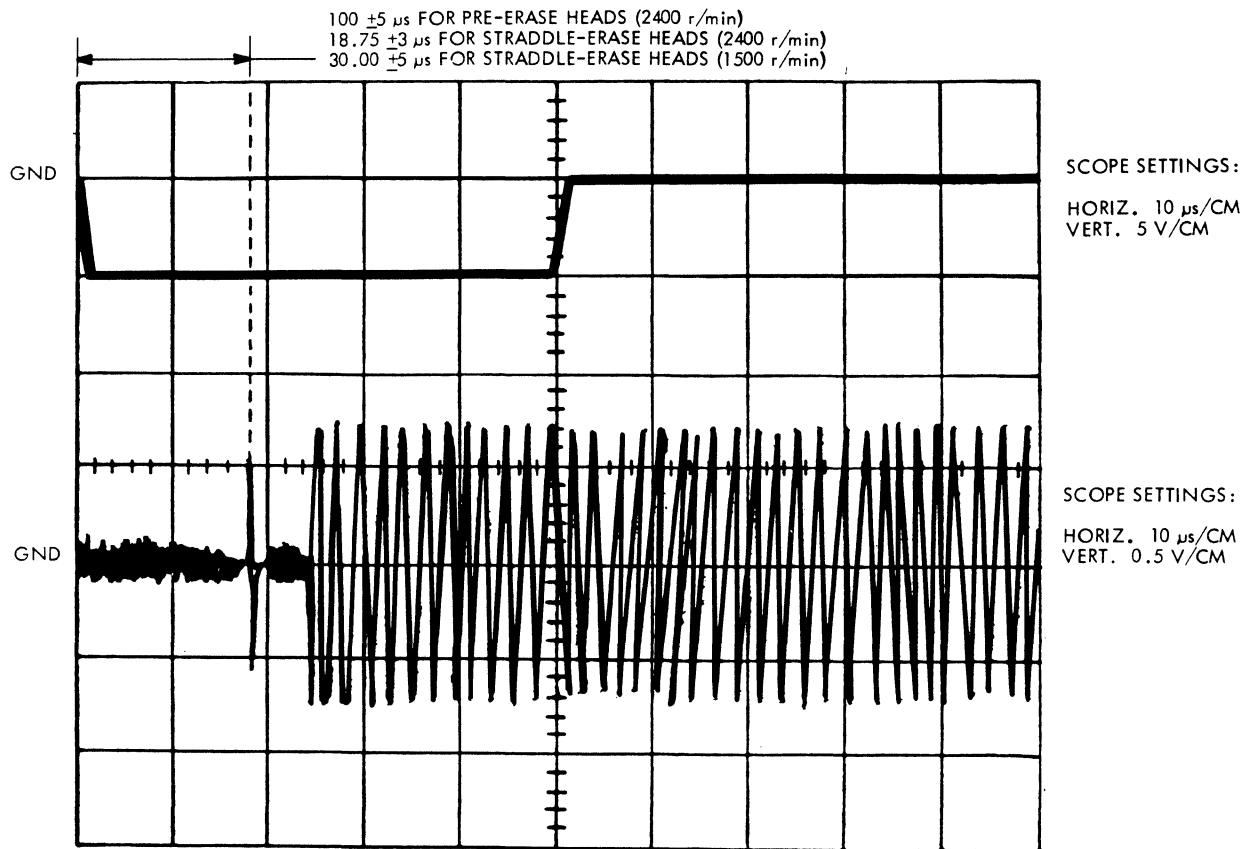
30. If the head with the lowest index-to-burst period does not fall within the above limits, select that head and adjust the potentiometer on the sector board to the following:
 - 100.0 \pm 1 μ s for pre-erase heads (2400 RPM)
 - 18.8 \pm 0.1 μ s for straddle-erase heads (2400 RPM)
 - 30.0 \pm 0.5 μ s for straddle-erase heads (1500 RPM).

If the potentiometer is not present or if the adjustment range of the potentiometer does not reach far enough, depress the START/STOP pushbutton to STOP and perform the cartridge index/sector transducer check and adjustment. Then repeat Steps 26 through 30.

31. Depress START/STOP switch to STOP (out) and wait for spindle to stop rotating (START/STOP lamp extinguished).
32. Remove CE disk cartridge.
33. Set main circuit breaker to Off position.
34. Disconnect A1P2, reverse plug, and reconnect.
35. Install K1 and close power supply cover.
36. Set all switches on I/O board back to original positions noted in step 6.
37. Disconnect oscilloscope.
38. Install electronics cover.
39. Close top cover (base cabinet only).

6.7.6 Track Indicator Check and Adjustment

1. Open top cover (base cabinet only).
2. Remove electronics cover.
3. Set main circuit breaker to on position.
4. Install disk cartridge.
5. Depress START/STOP switch to START (in) and wait for unit to complete FIRST SEEK.
6. Check that zero marks on fixed and moveable sections of track indicators (Figure 6-21) are lined up.
7. If marks are not aligned, loosen fixed section of track indicator and position for alignment with moveable section.
8. Check that gap between the fixed and moveable sections of track indicator is 0.1 to 0.3 inches (2.54 to 7.62 mm).
9. Install electronics cover.

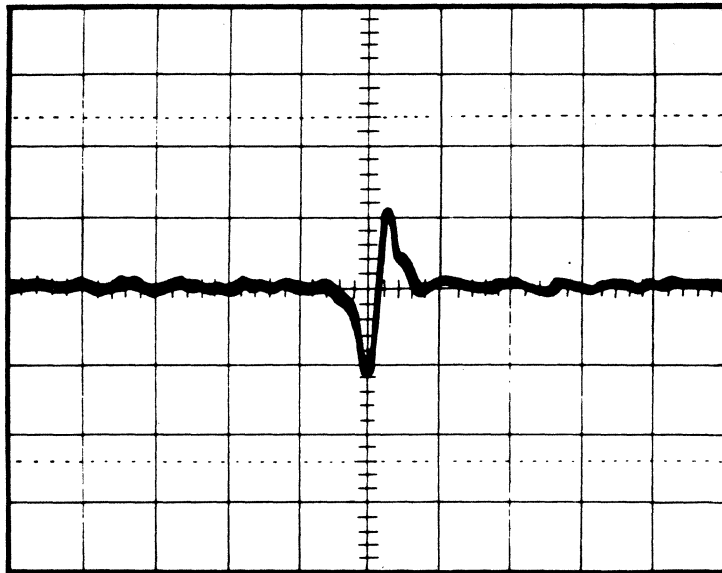


(AA007b)

NOTE

Measurement to be made at the peak of the leading pulse regardless of polarity. Some CE modes produce pulses inverted to pulse shown in Figure.

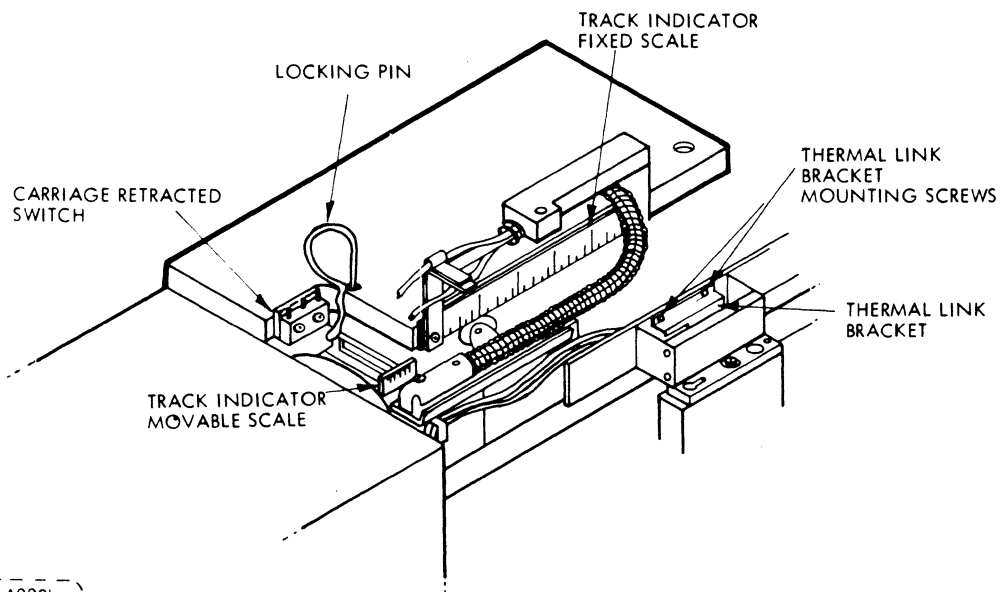
Figure 6-20a Index - to - Burst Period Waveforms



XX174b

HEAD 0

Figure 6-20b. Index-to-Burst Waveforms



AA008b

Figure 6-21. Track Indicator

6.7.7 CARTRIDGE-ON SWITCH CHECK and ADJUSTMENT

NOTE

There are two cartridge-on switches, one on each Hold-Down arm.

Perform cartridge-on switch removal and replacement procedure except for actual removal of switches.

6.7.8 STATIC ELIMINATOR CHECK

1. Depress START/STOP switch to STOP (out) and wait for spindle to stop rotating (START/STOP lamp extinguished).
2. Remove disk cartridge.
3. Open top cover (base cabinet only).
4. Set main circuit breaker to off position.
5. Using multimeter check for five ohms or less between module ground and side of rotating spindle cone while turning spindle by hand.
6. If resistance is above five ohms clean static eliminator and perform Step 5 again.
7. If multimeter indicates no continuity or high resistance after cleaning replace static eliminator by following Static Eliminator Removal and Replacement procedure.

6.7.9 DISK BRUSH SWITCH CHECK and ADJUSTMENT

Perform disk brush assembly removal and replacement procedure except for actual removal of brush assembly.

6.7.10 CARTRIDGE INDEX/SECTOR TRANSDUCER CHECK and ADJUSTMENT

1. Depress START/STOP switch to STOP (out) and wait for spindle to stop rotating (START/STOP lamp extinguished).
2. Open top cover (base cabinet only).
3. Remove disk cartridge.
4. Set main circuit breaker to off position.
5. Install armature plate simulator onto spindle as shown in Figure 6-22.

6. Using plastic shim stock, adjust clearance A to 0.030 ± 0.005 inch (0.76 ± 0.13 mm) for 2400 RPM units and $0.018 + 0.005$ inch ($0.46 + 0.13$ mm) for 1500 r/min units. The adjustment is made by loosening the clamp screw and sliding the transducer in or out for proper clearance. Tighten the clamp screw.
7. After the transducer is properly adjusted, perform the Index to Burst Period Check and Adjustment procedure.

6.7.11 Fixed Disk Index/Sector Transducer Check and Adjustment

1. Set main circuit breaker to off position.
2. Remove cabinet skin from left side (base cabinet only).
3. Remove module bottom cover.
4. Using plastic shim stock, check clearance A (Fig. 6-23). Clearance should be between $0.010 + 0.003$ inch ($0.25 + 0.076$ mm). If clearance is out of tolerance, loosen transducer clamp and slide transducer in or out to adjust for proper clearance.
5. Tighten transducer clamp.
6. Install side skin removed in step 2.

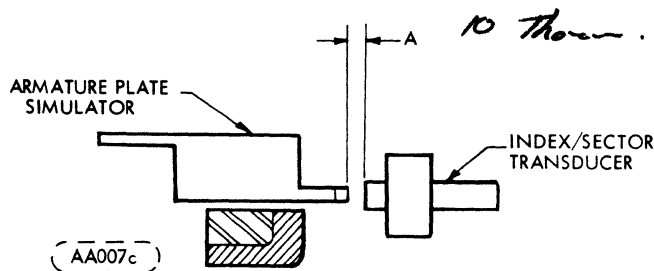


Figure 6-22 Index/Sector Transducer Adjustment

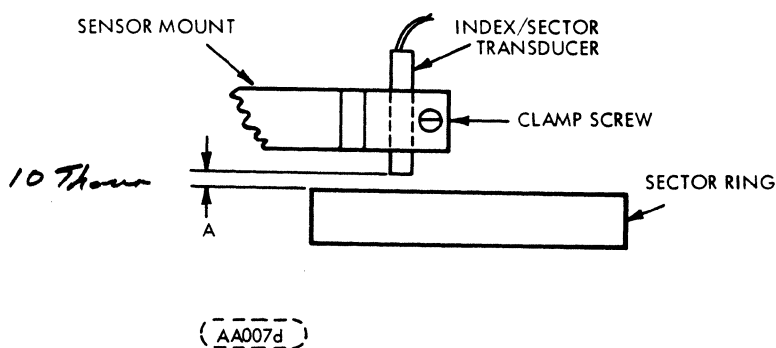


Figure 6-23 Fixed Disk Index/Sector Transducer Adjustment

VII MAINTENANCE AIDS

7.1 GENERAL

This section contains information useful for maintaining the 9427H Disk Drive.

7.2 CIRCUIT BOARD DESCRIPTION

All disk drive electronics is contained on printed circuit boards. Six of the boards (R/W/E, Data Recovery, Sector, Servo, Control & I/O) measure 6 in. x 8 in. (152 x 203 mm) and are plugged into the card cage assembly mother board. The Inductosyn Pre-amp board measures 5 in. x 8 in. (127 x 203 mm) and is mounted on top of the magnet assembly. The Power board measures 4.75 in. x 7.50 in. (121 x 191 mm) and is part of the power supply assembly. Both integrated and discrete circuit are used on the boards.

7.3 CIRCUIT BOARD LOCATIONS

The Printed Circuit Boards are located in the Card Cage as shown in Figure 7-1.

SPARE	(J7)	I/O BOARD (J1)
FAULT BOARD (OPTION)	(J8)	
CONTROL BOARD	(J9)	
SECTOR BOARD	(J10)	
SERVO BOARD	(J11)	
DATA RECOVERY BOARD	(J12)	
SHIELD		
R/W/E BOARD	(J14)	

(AA149a) Figure 7-1. Circuit Board Location

7.4 TROUBLESHOOTING DIAGRAMS


The following diagrams are intended to guide service personnel to the probable cause of malfunctions in the 9427H disk drive.

The first series of diagrams illustrate the normal sequence of events when everything is functioning properly. However, at certain intervals during the normal sequential flow, service personnel are directed to specific flow chart locations if a malfunction does occur (refer to paragraph 7.5).

NOTE

In the flowcharts, imperative instructions (e.g. replace control board) are intended only to suggest a possible cause of the malfunction and the recommended solution.


7.5 FLOW DIAGRAM REFERENCES

Each diagram page is sequentially page numbered in the upper right-hand corner of the page. When the diagram flow is interrupted (), the page location, where the flow will be continued is referenced in the Lower right-hand corner of the page.

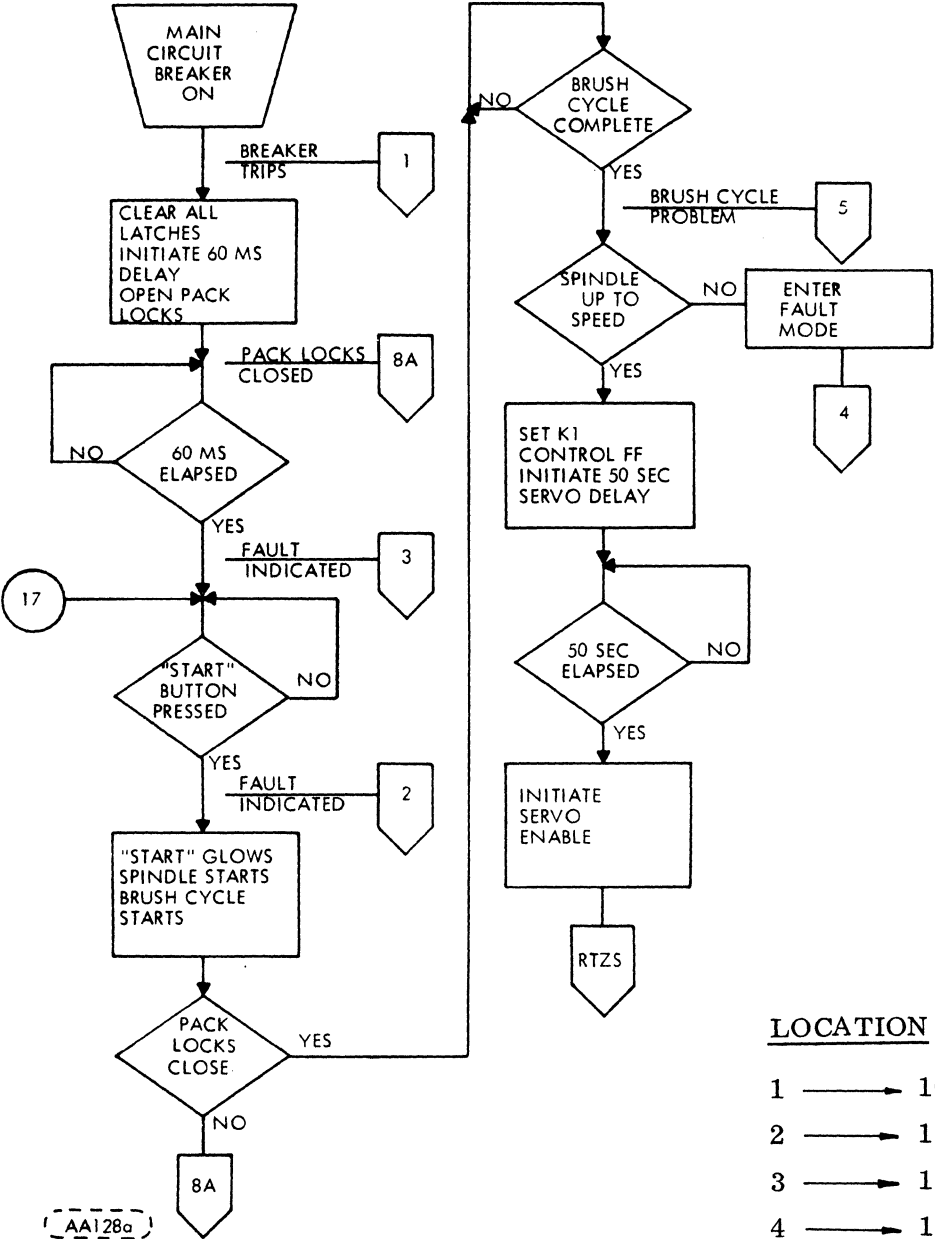
EXAMPLE:



Location
3 → 18

This indicates that the flow will continue on another page or a Fault has occurred, and on page 18 the flow will start at  .

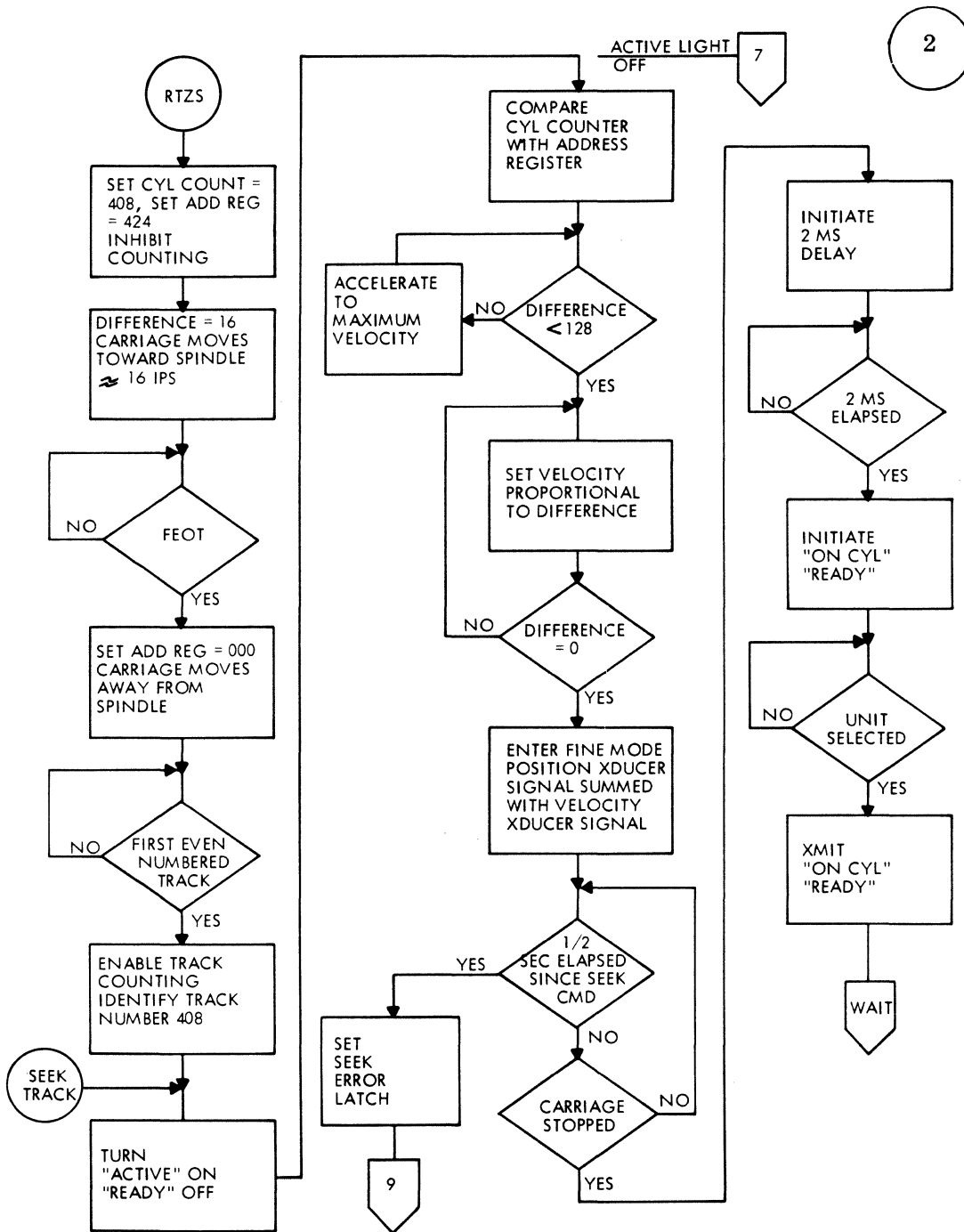
1



LOCATION

- 1 → 10
- 2 → 10 or 18
- 3 → 18
- 4 → 18
- 5 → 11
- 8A → 6
- RTZS → 2

(AA128a)

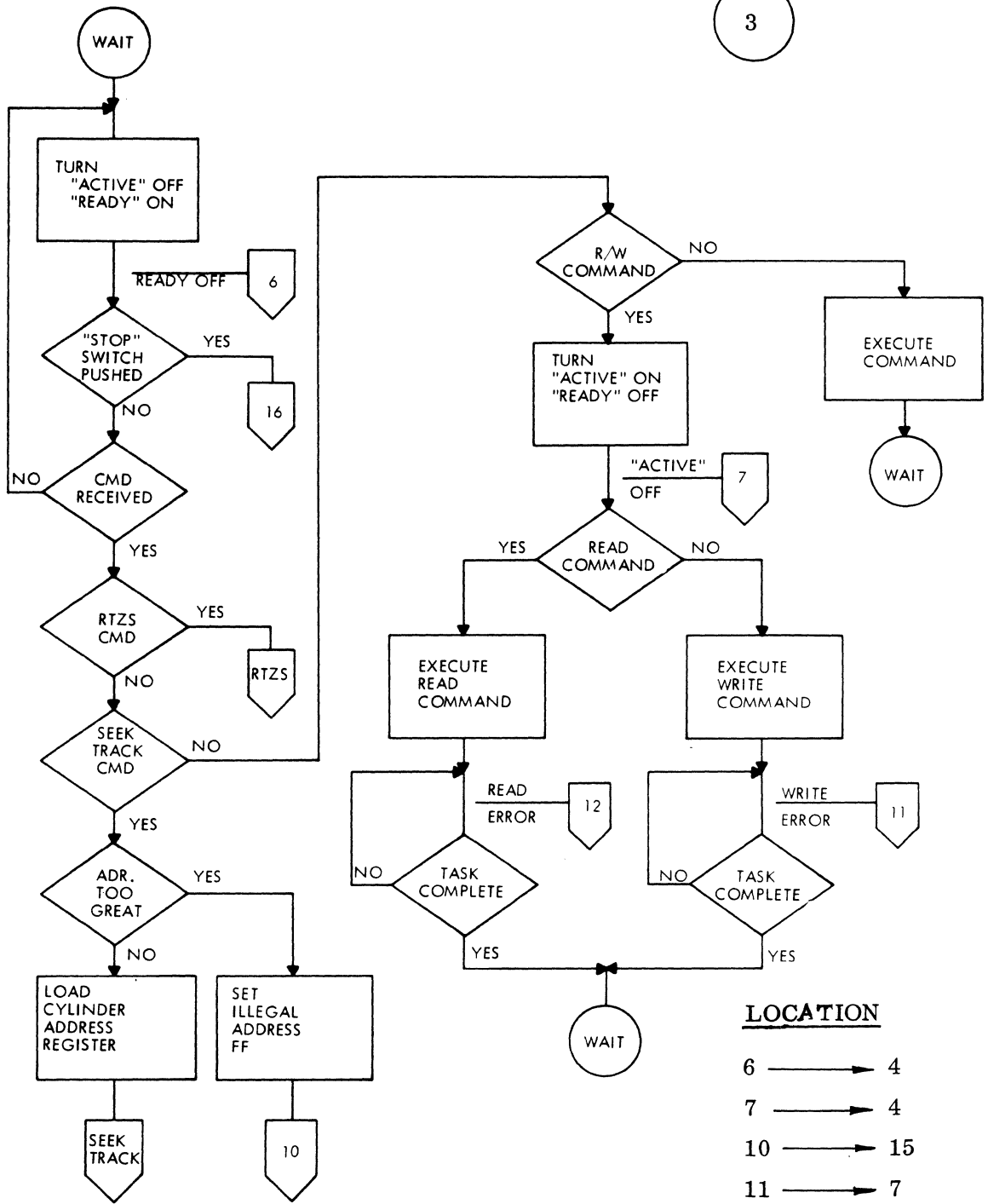


(AA128b)

LOCATION

7 → 4
 9 → 23
 WAIT → 3

3

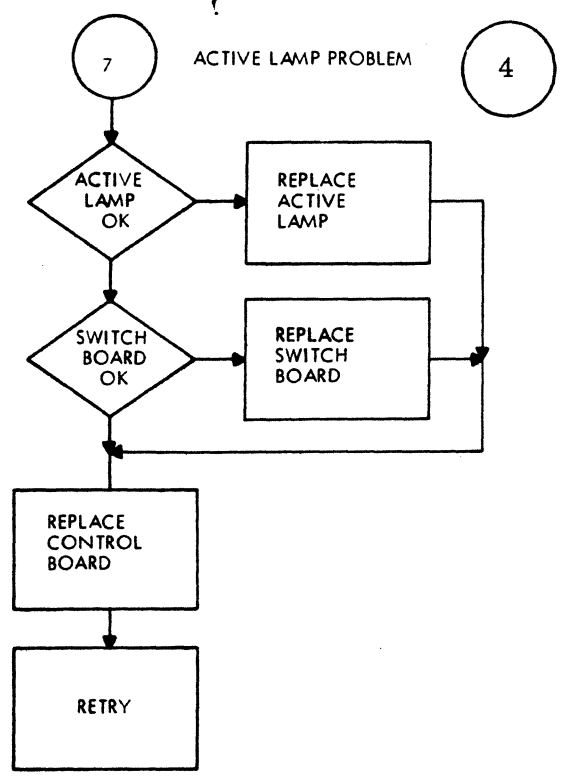
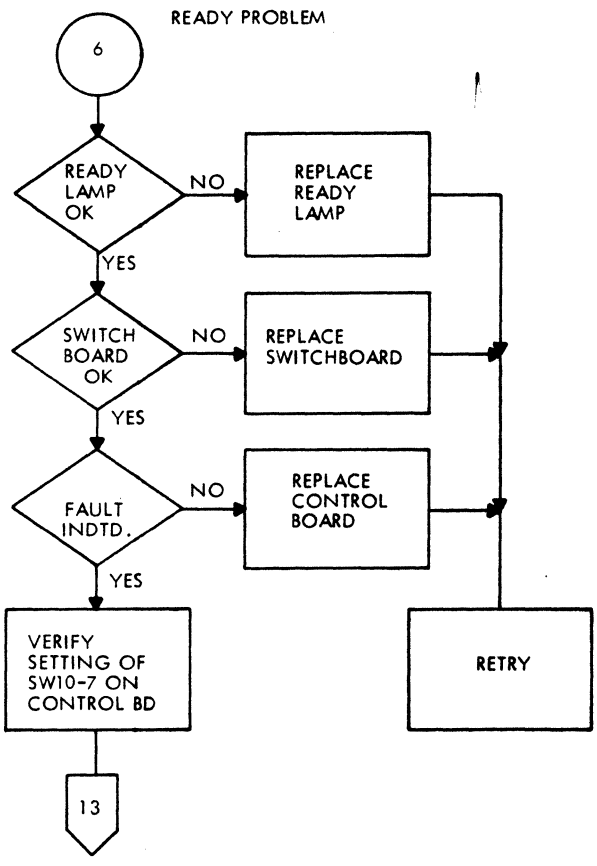


(AA129a)

LOCATION

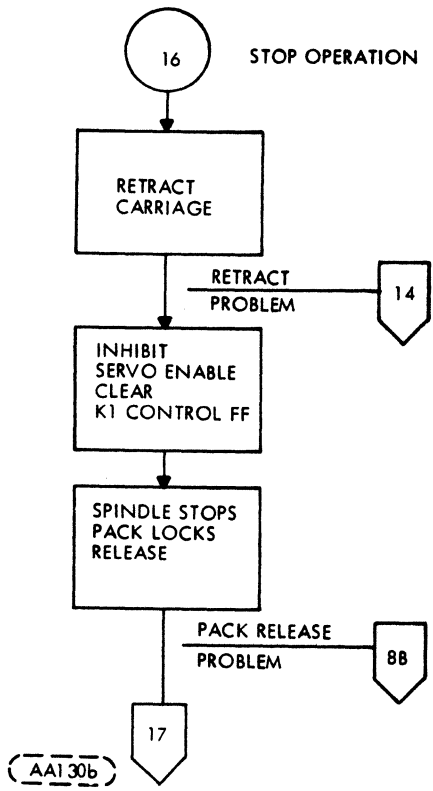
- 6 → 4
- 7 → 4
- 10 → 15
- 11 → 7
- 12 → 8
- 16 → 3

- SEEK TRACK → 2
- RTZS → 2



(AA129c)

(AA129b)

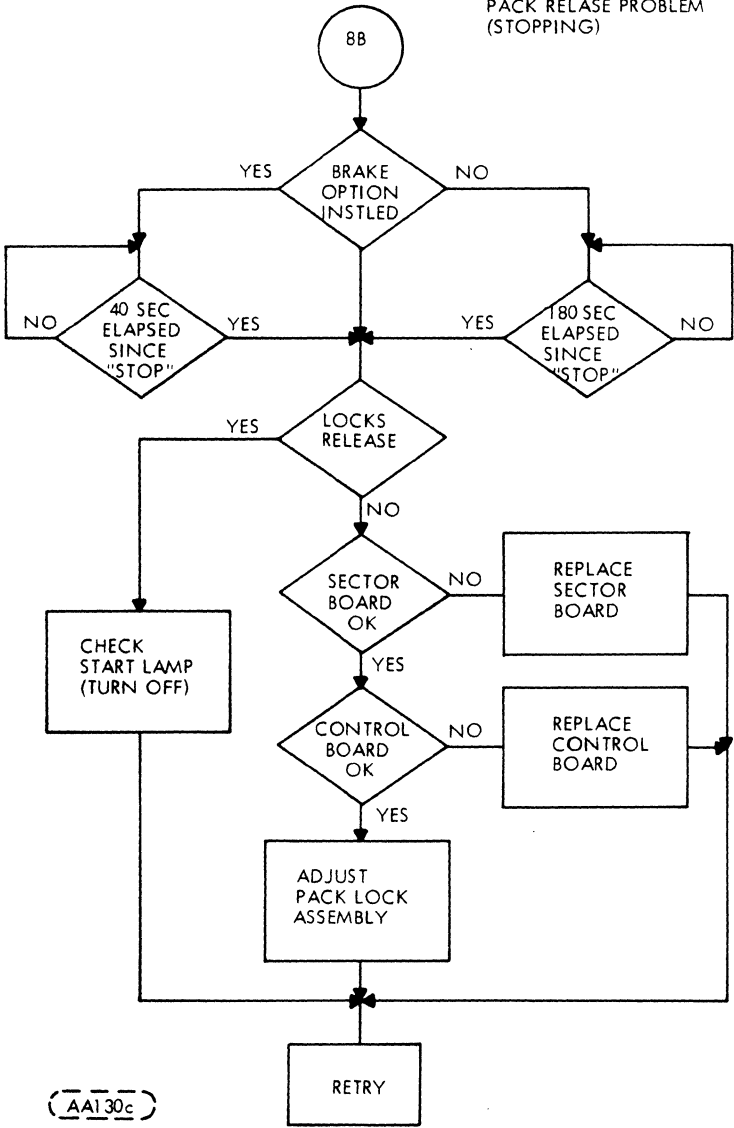


(AA130b)

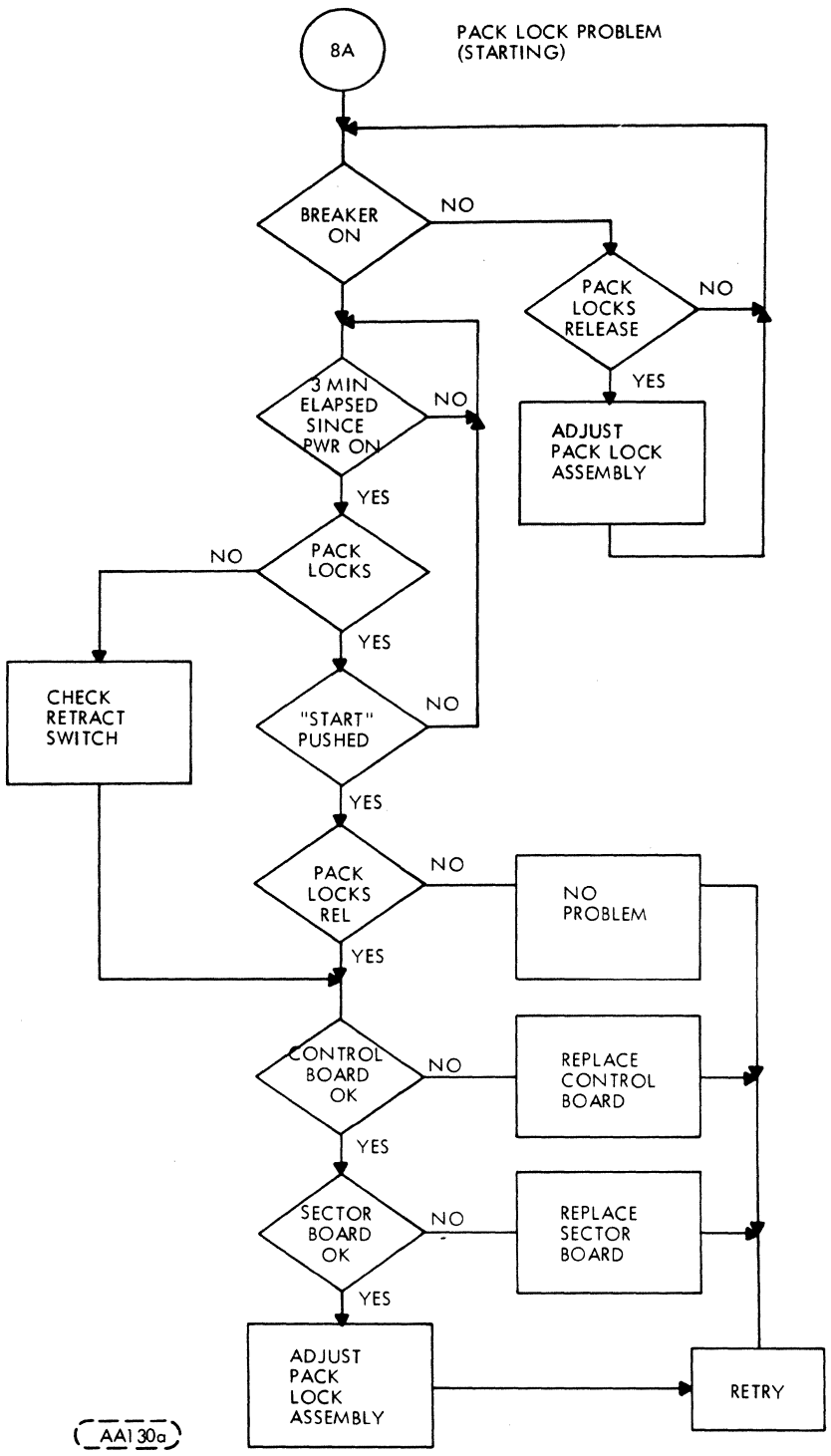
LOCATION

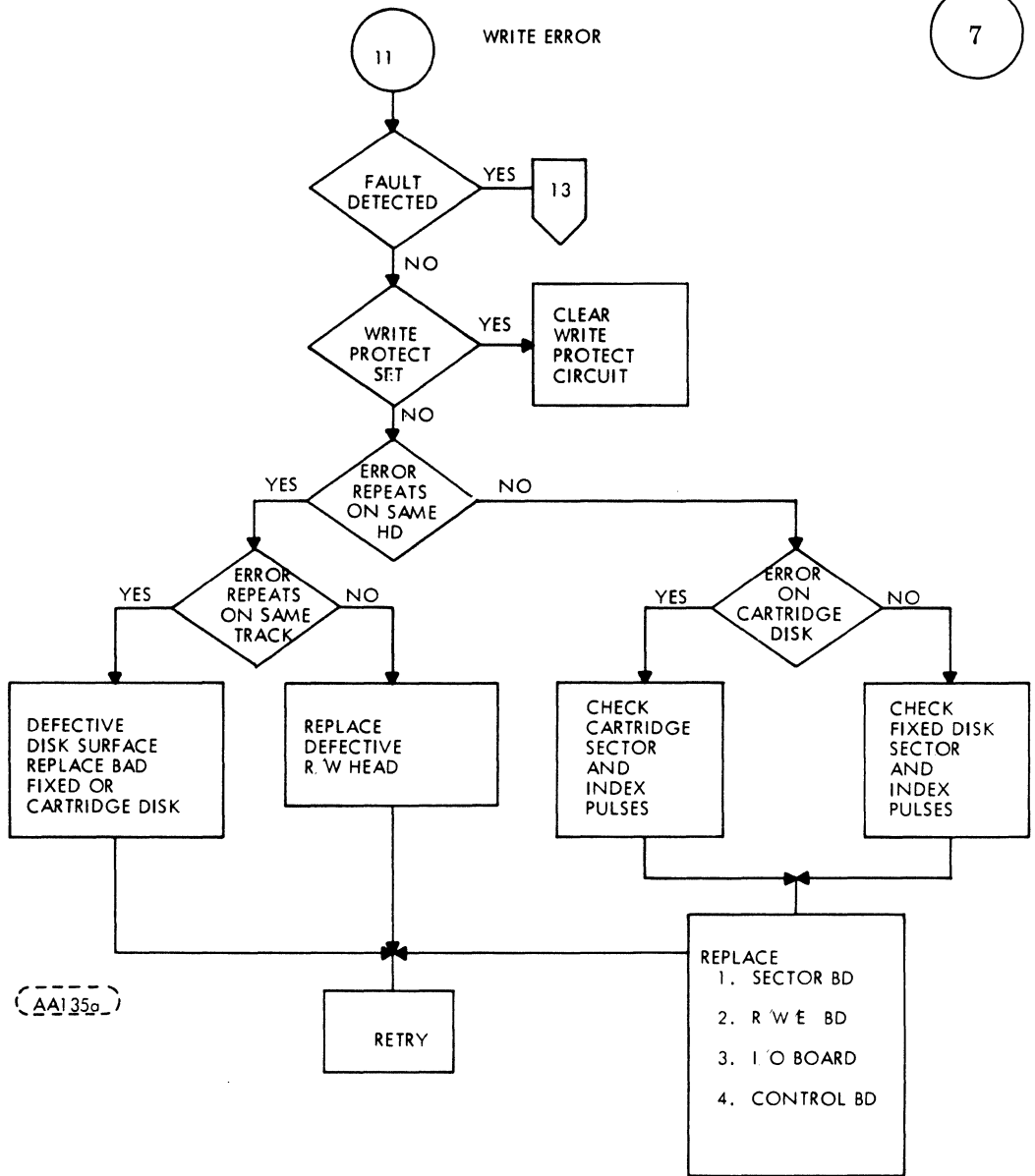
- 8B → 5
- 13 → 19
- 14 → 17
- 17 → 1

PACK RELEASE PROBLEM (STOPPING)



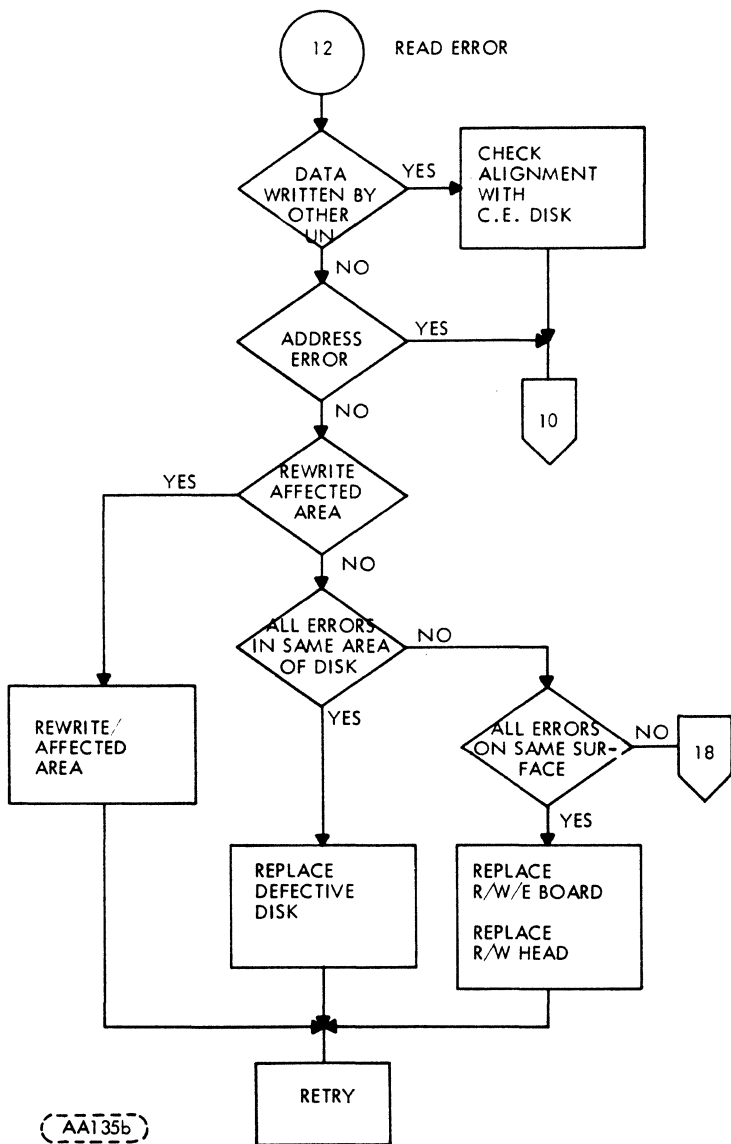
AA130c





LOCATION

13 → 19

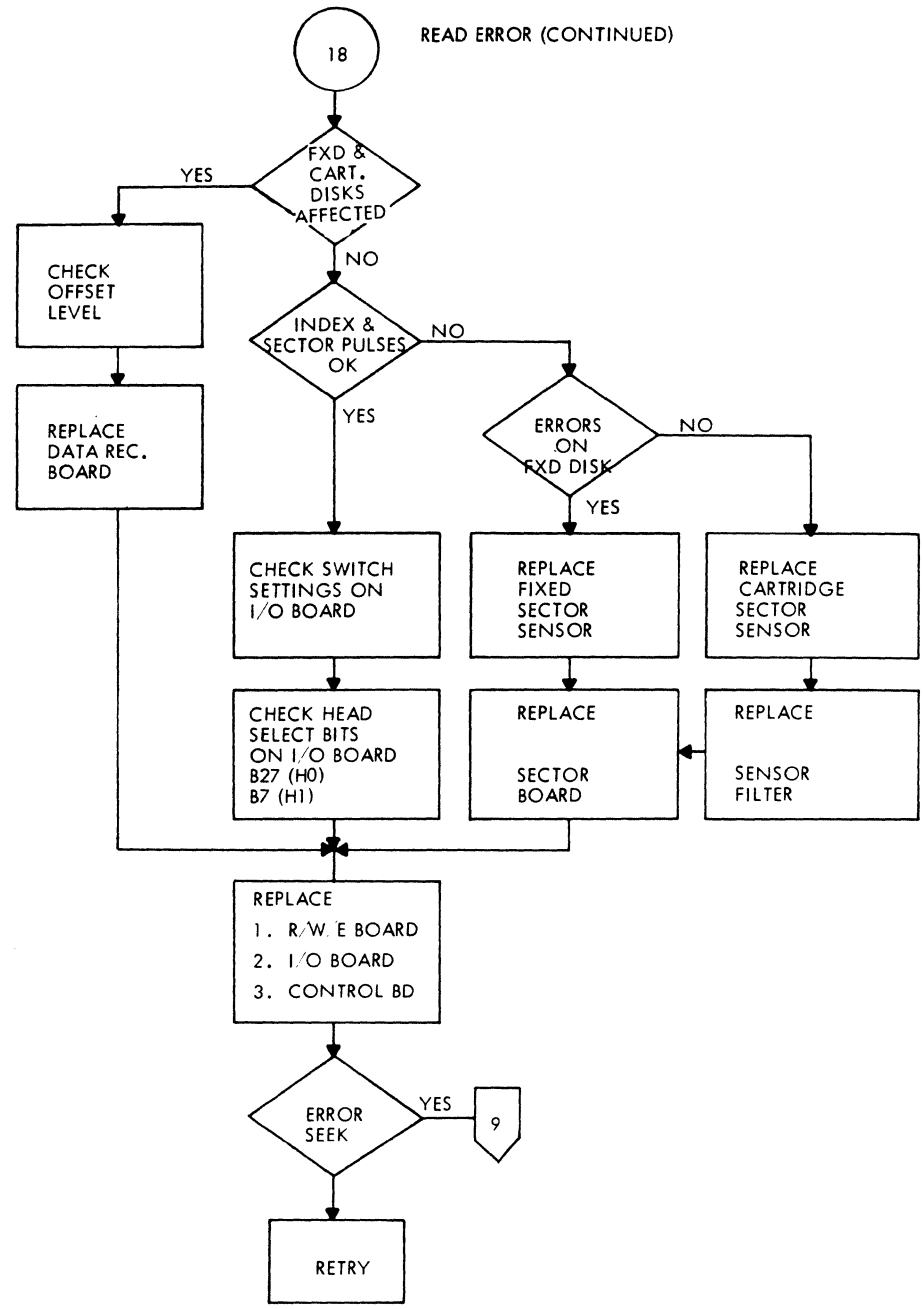


AA135b

LOCATION

10 ———> 15

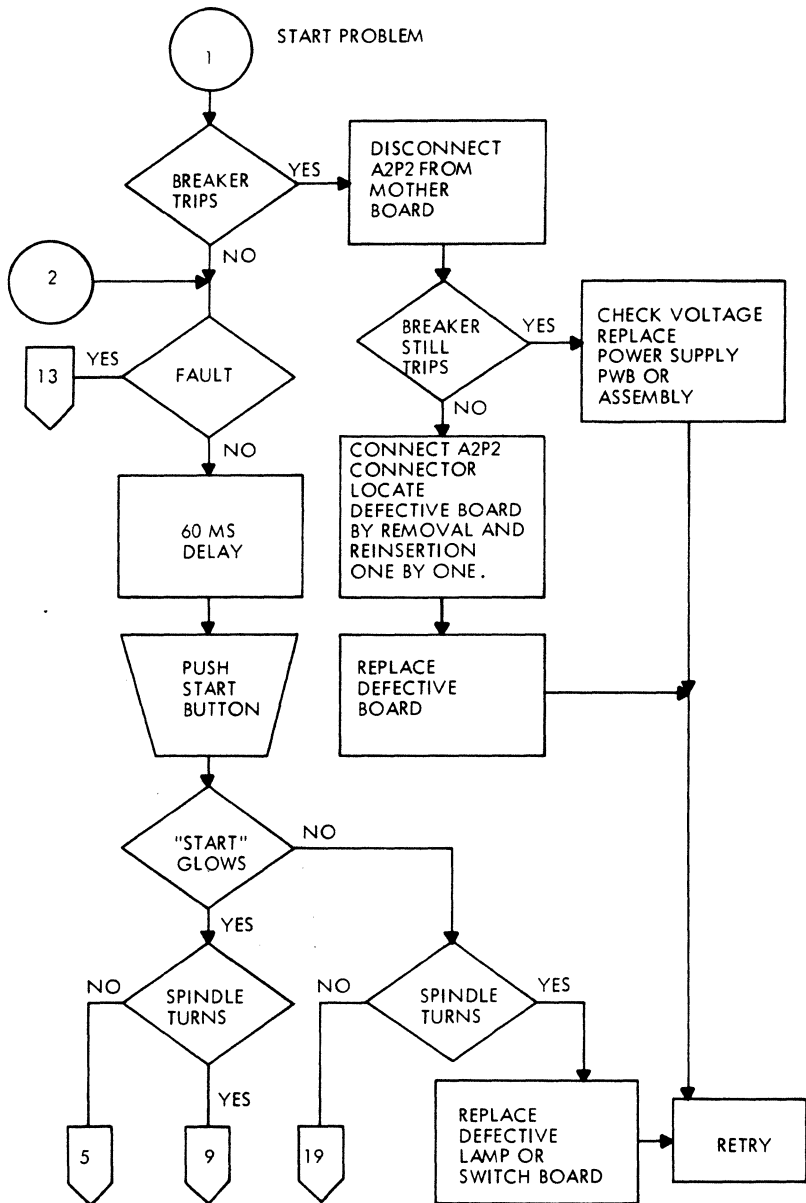
18 ———> 9



(AA136a)

LOCATION

9 → 23



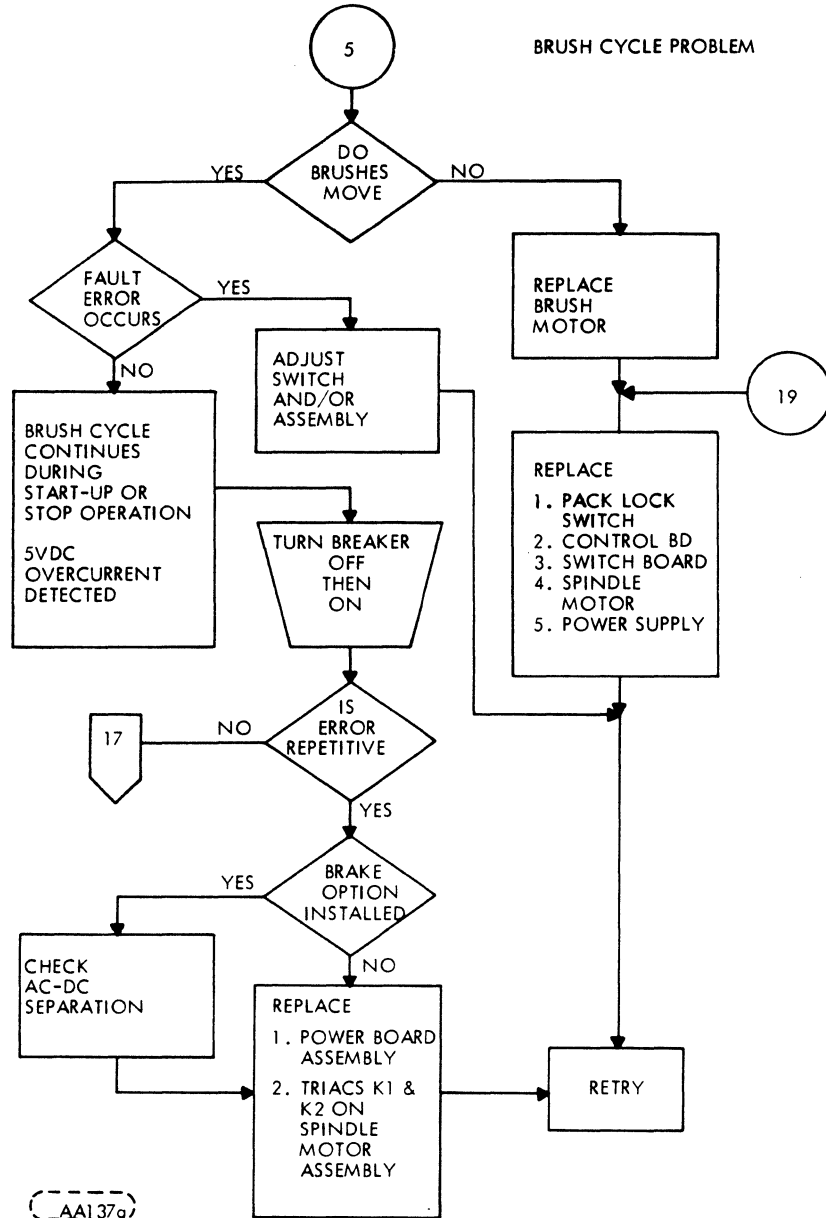
AA136b

LOCATION

- 5 —————> 11
- 9 —————> 23
- 13 —————> 19
- 19 —————> 11

BRUSH CYCLE PROBLEM

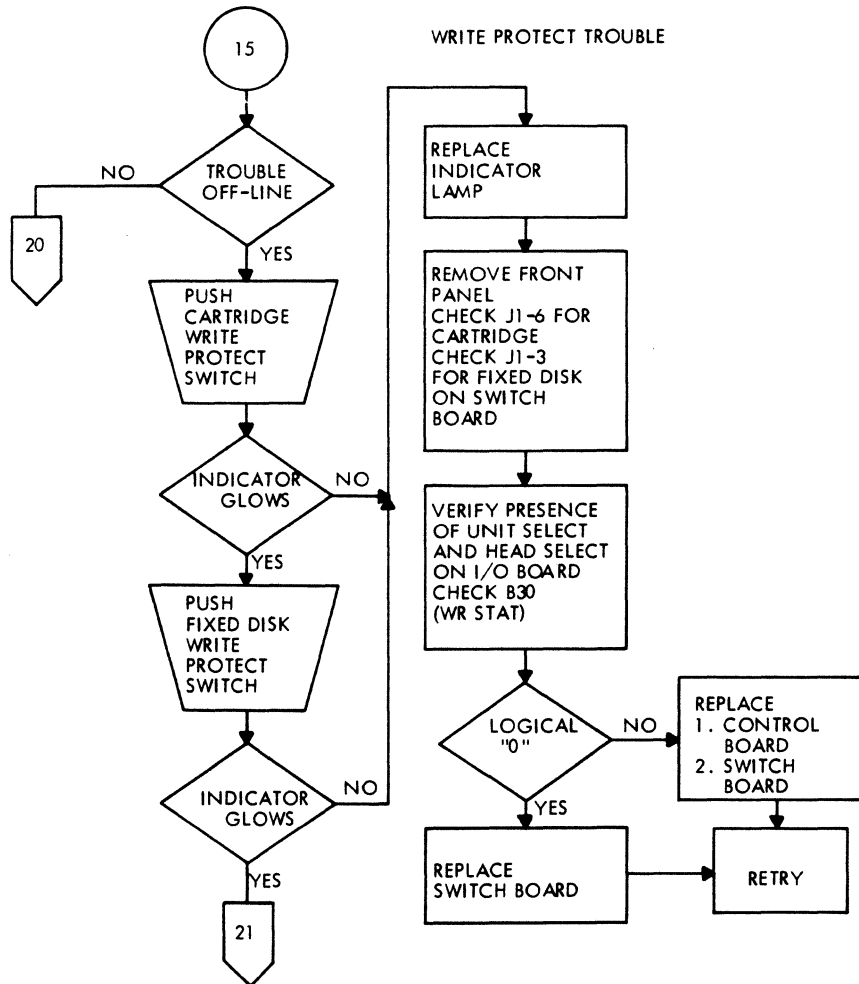
11



(AAL37a)

LOCATION

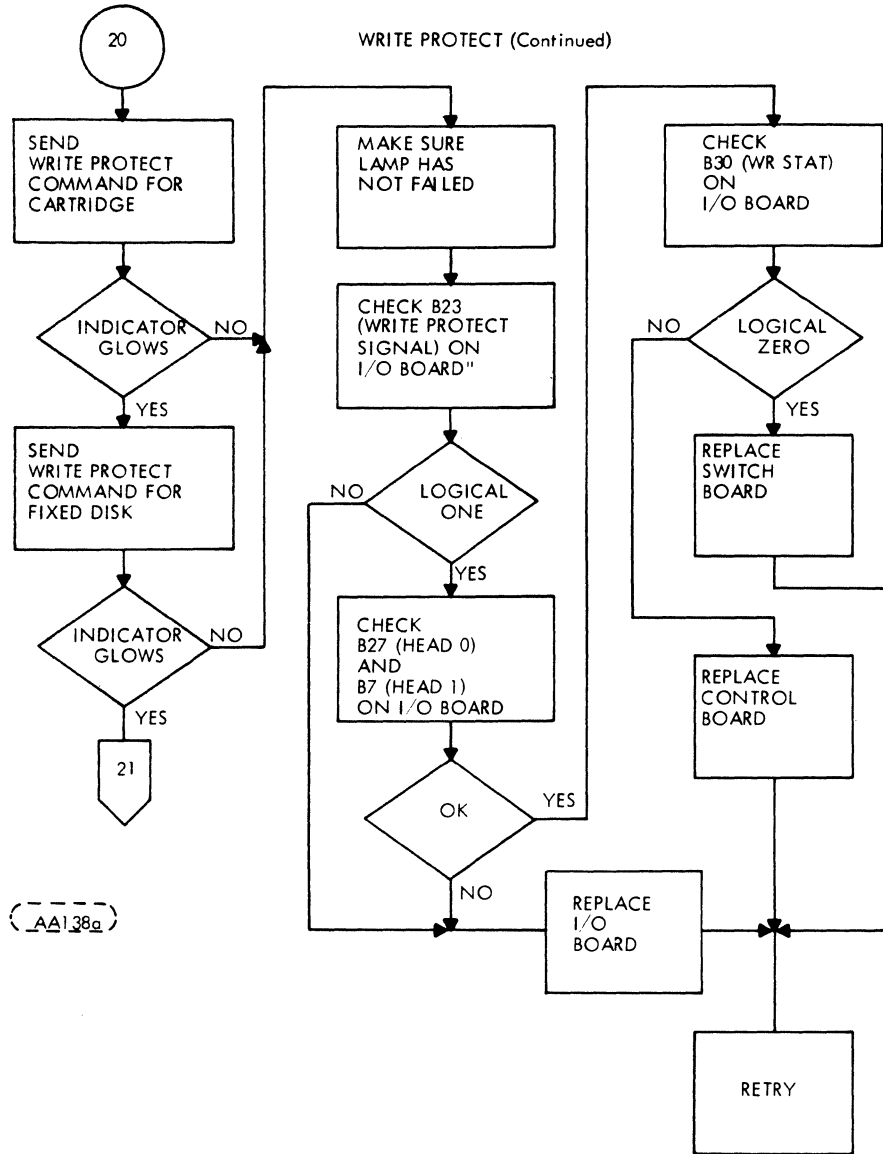
17 → 1



AA137b

LOCATION

21 → 14

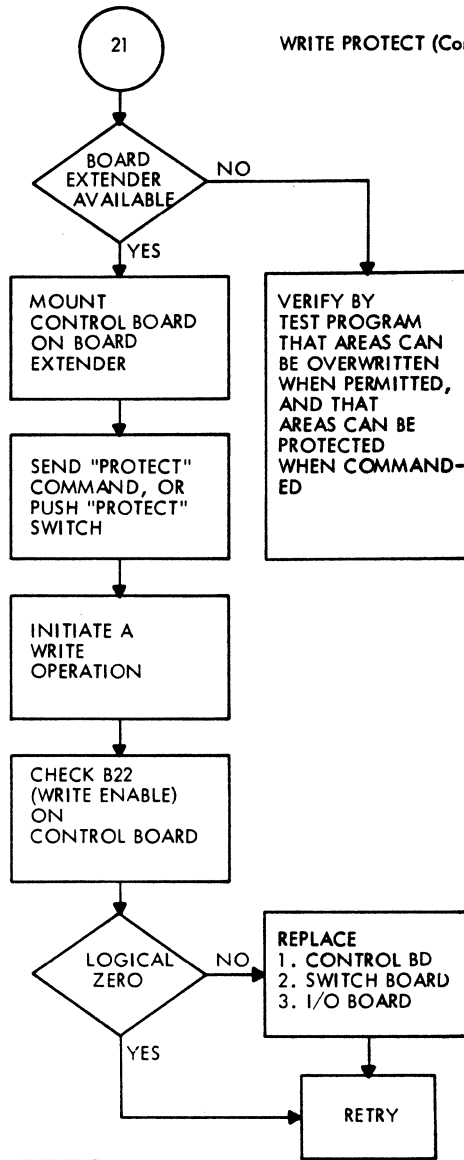


AA138g

LOCATION

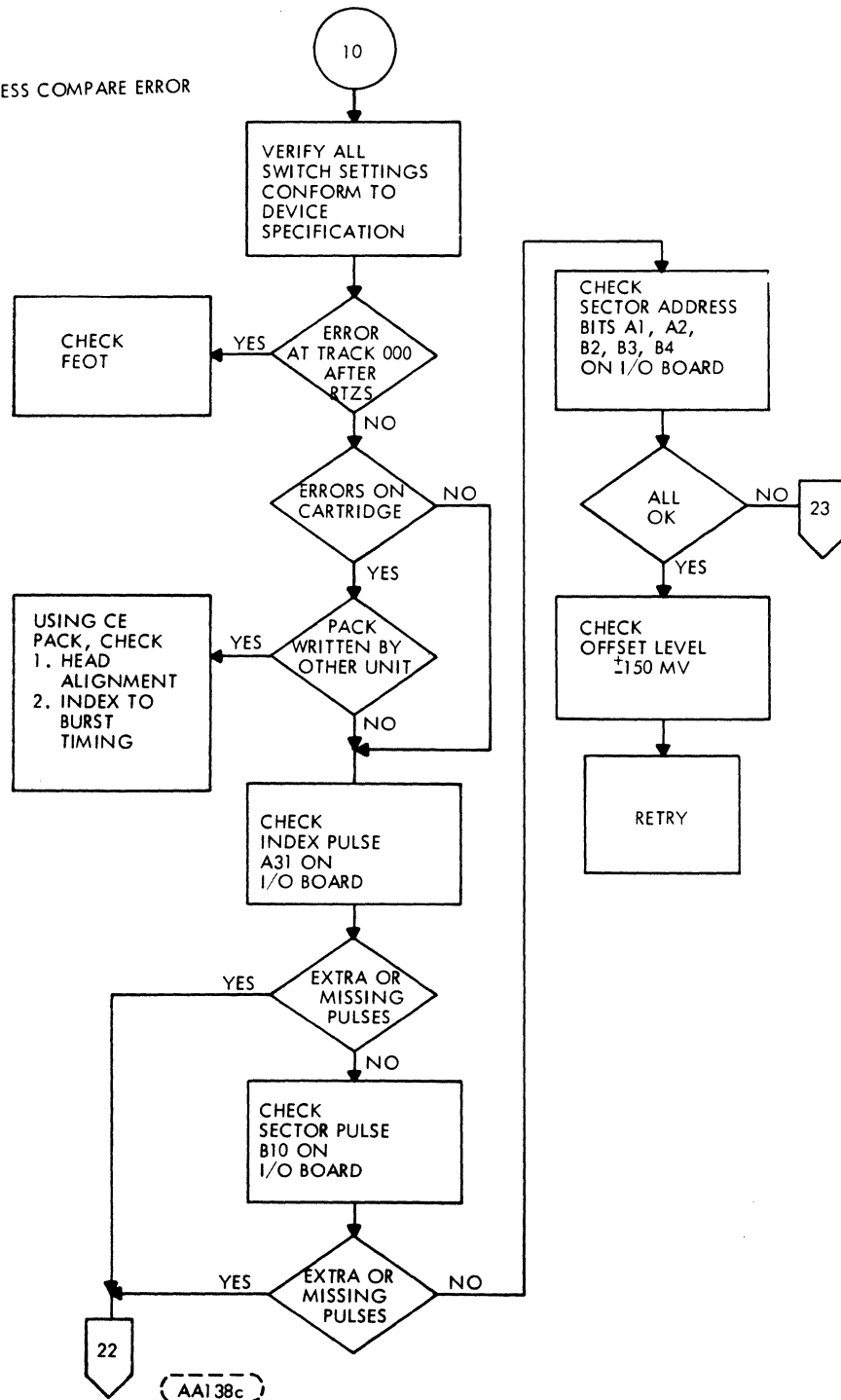
21 → 14

WRITE PROTECT (Continued)



(AA138b)

ADDRESS COMPARE ERROR

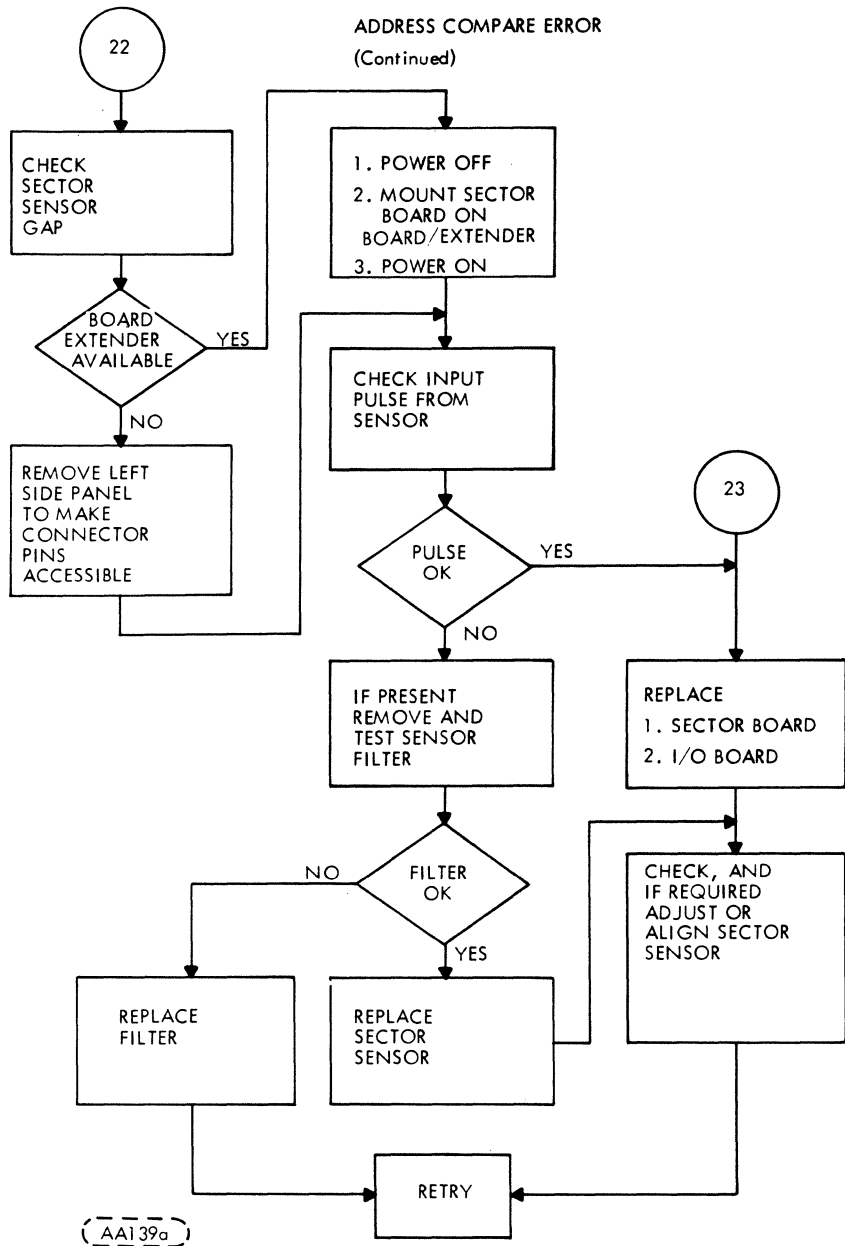


(AA1 38c)

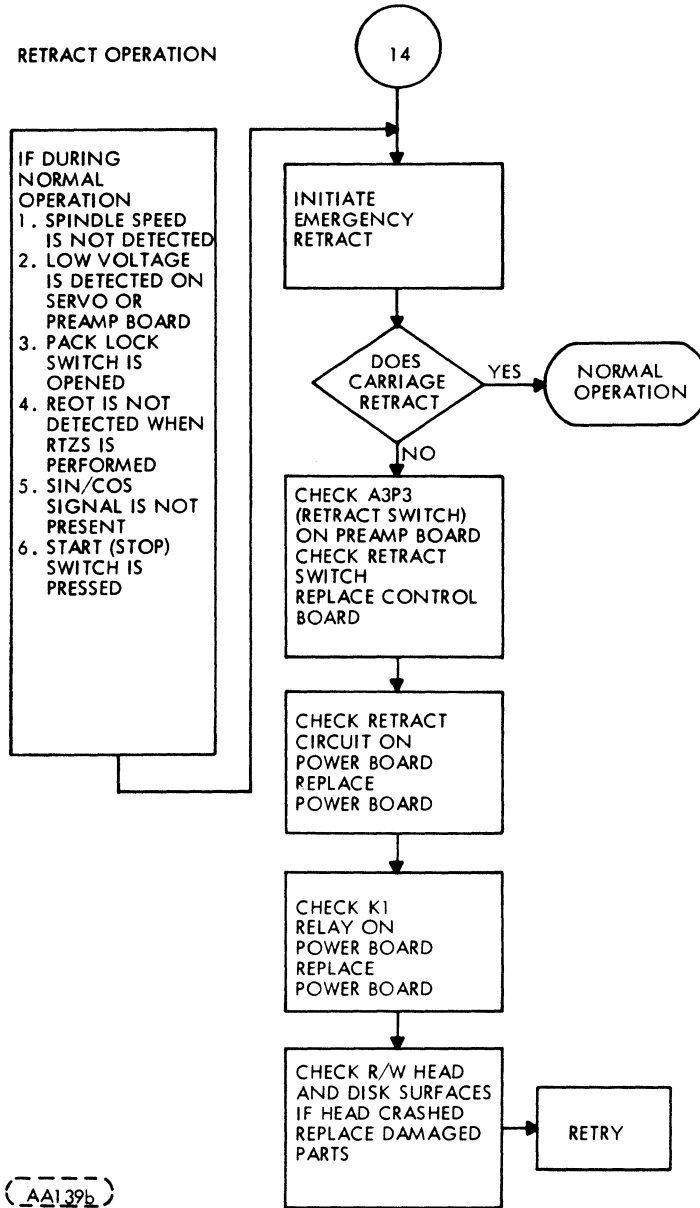
LOCATION

22 ———→ 16

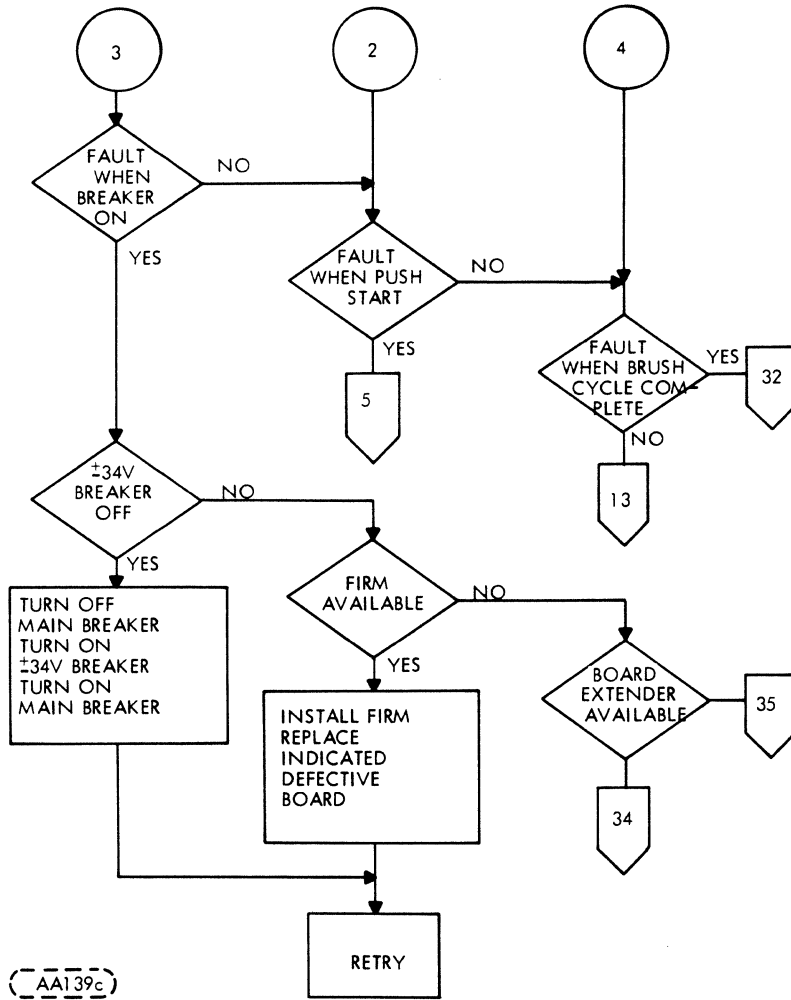
23 ———→ 16



RETRACT OPERATION

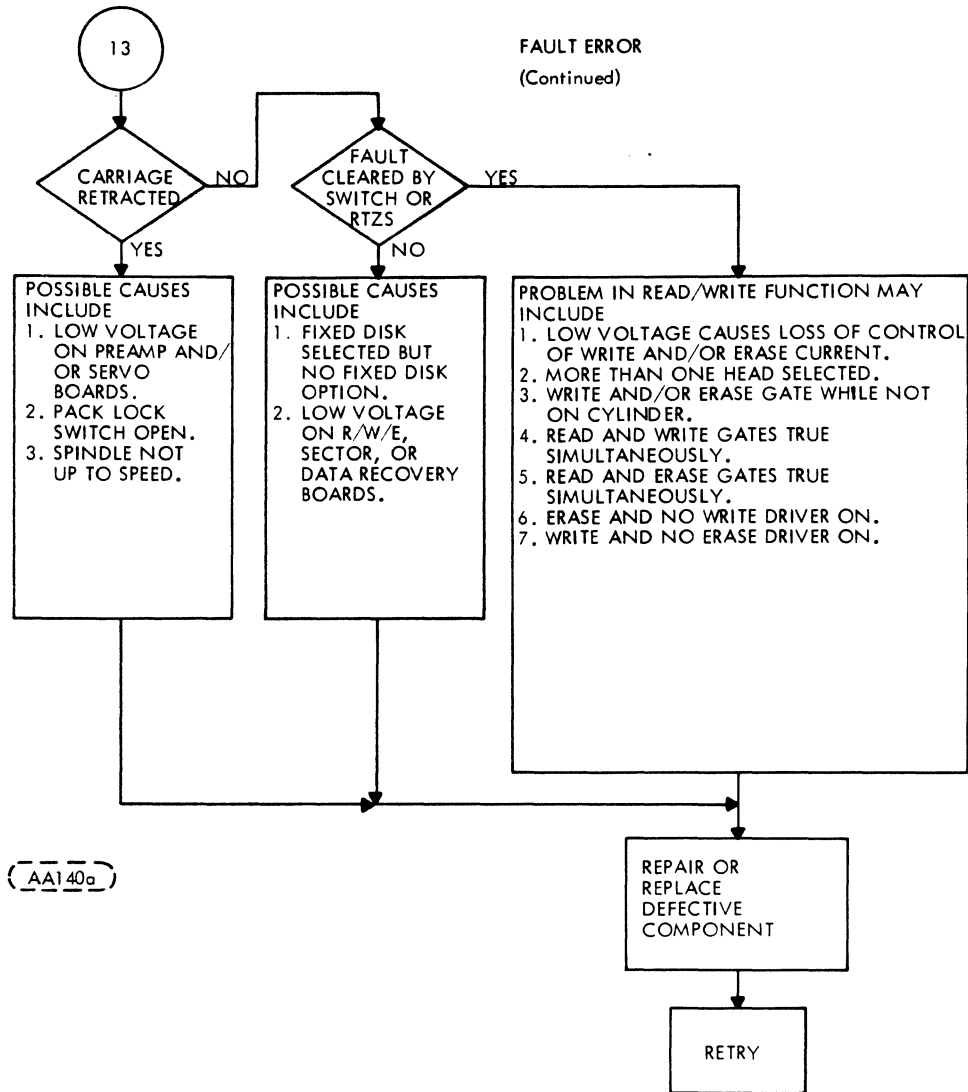


FAULT ERROR

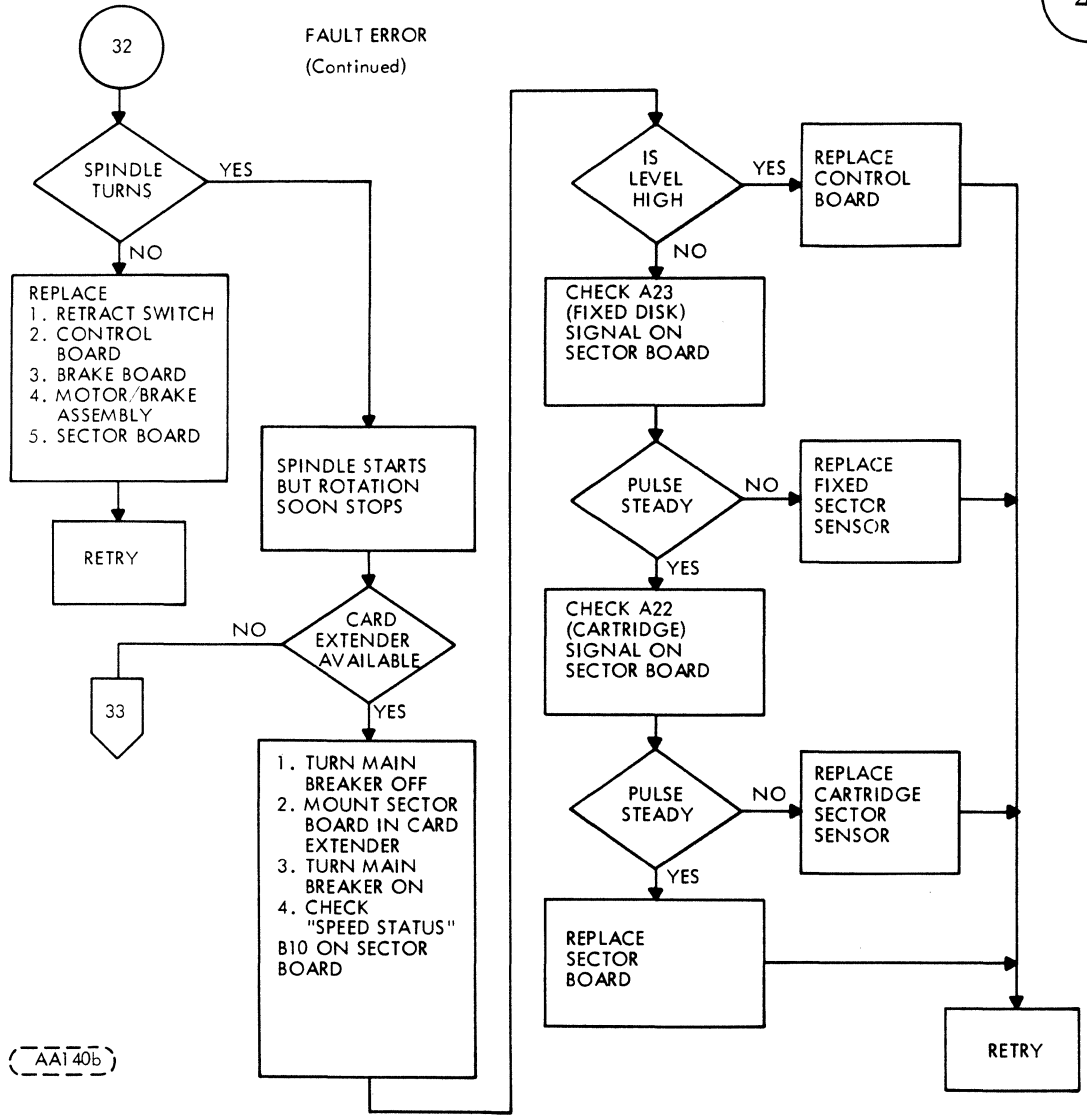


LOCATION

- 5 → 11
- 13 → 19
- 32 → 20
- 34 → 21
- 35 → 22



FAULT ERROR
(Continued)

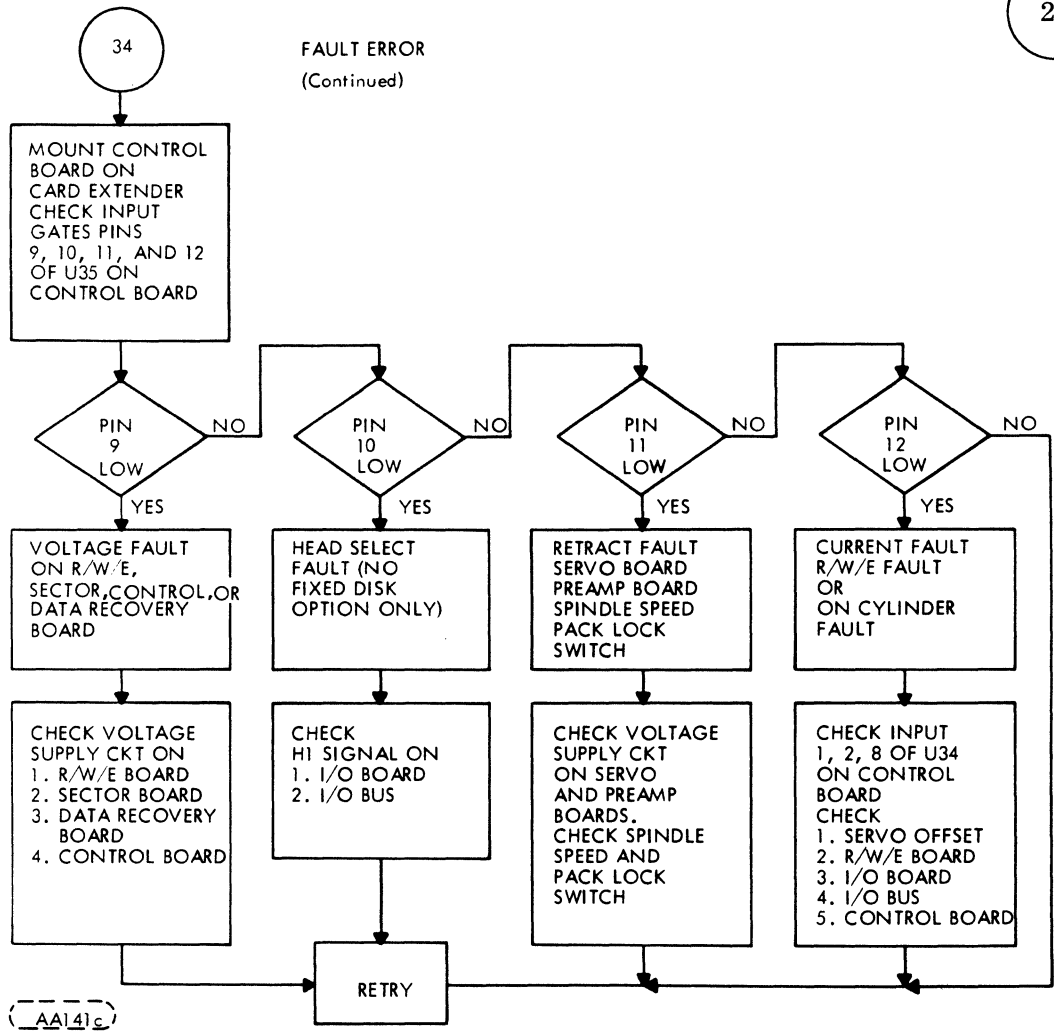


(AA1405)

LOCATION

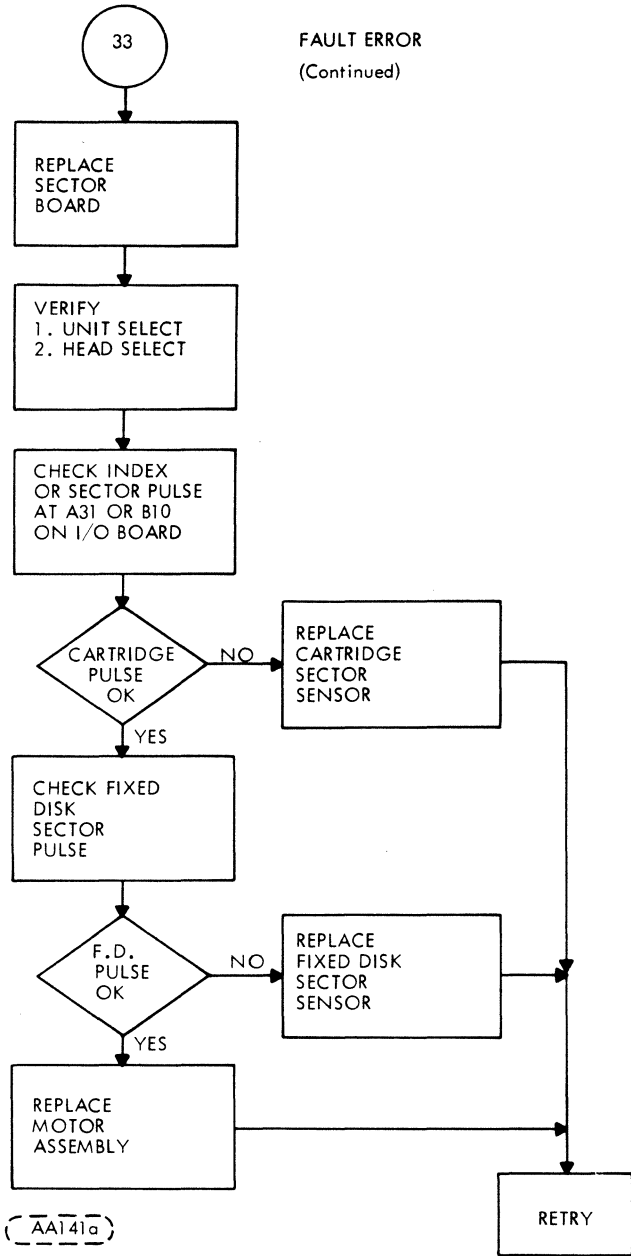
33 ———> 22

FAULT ERROR
(Continued)

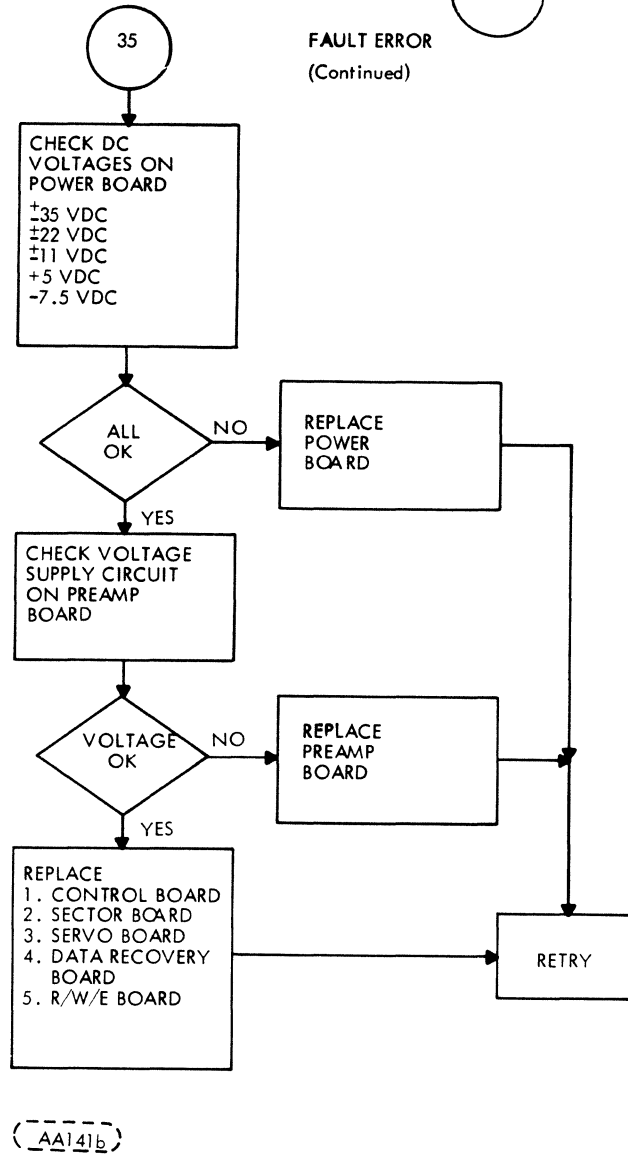


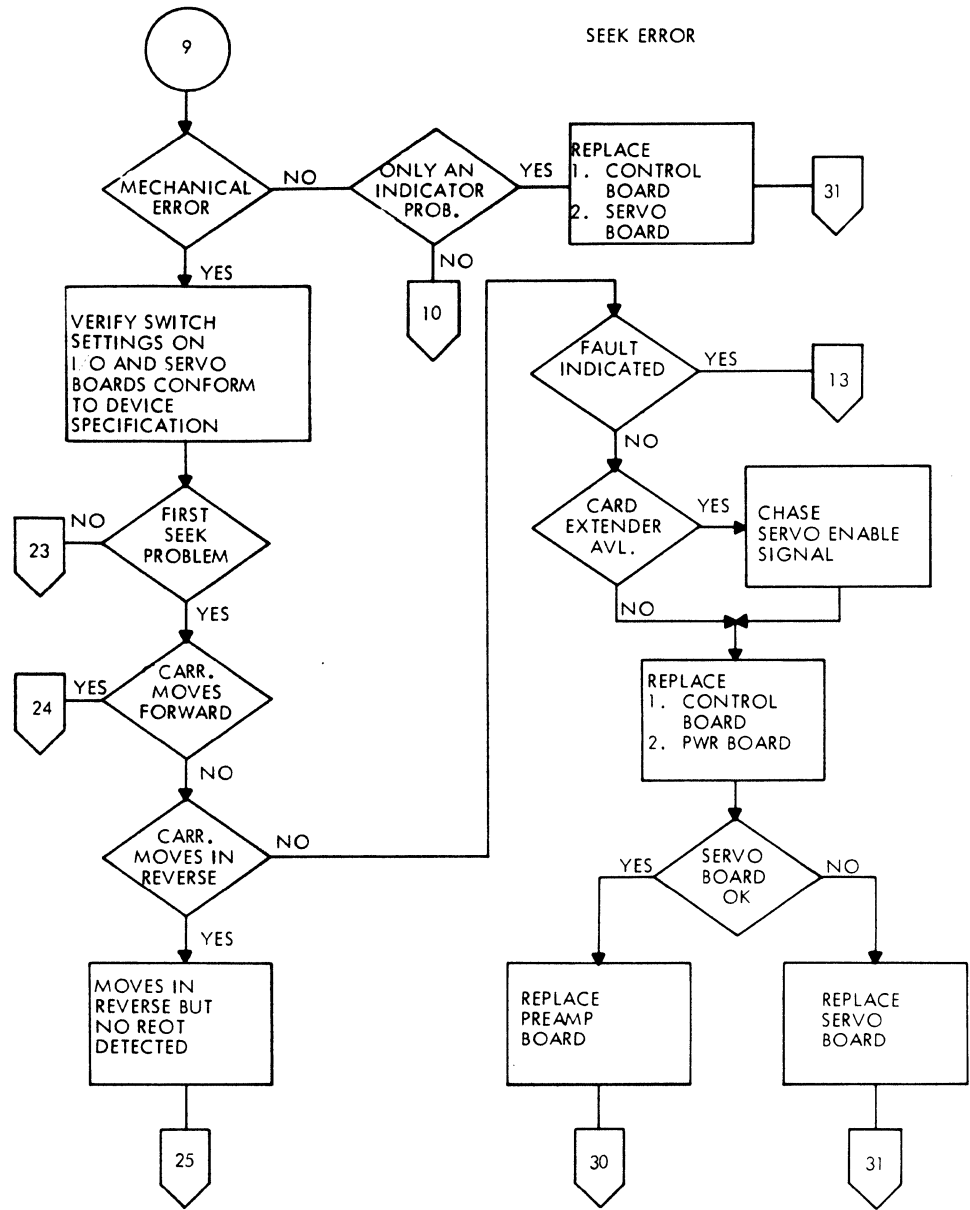
AA141c

FAULT ERROR
(Continued)



FAULT ERROR
(Continued)





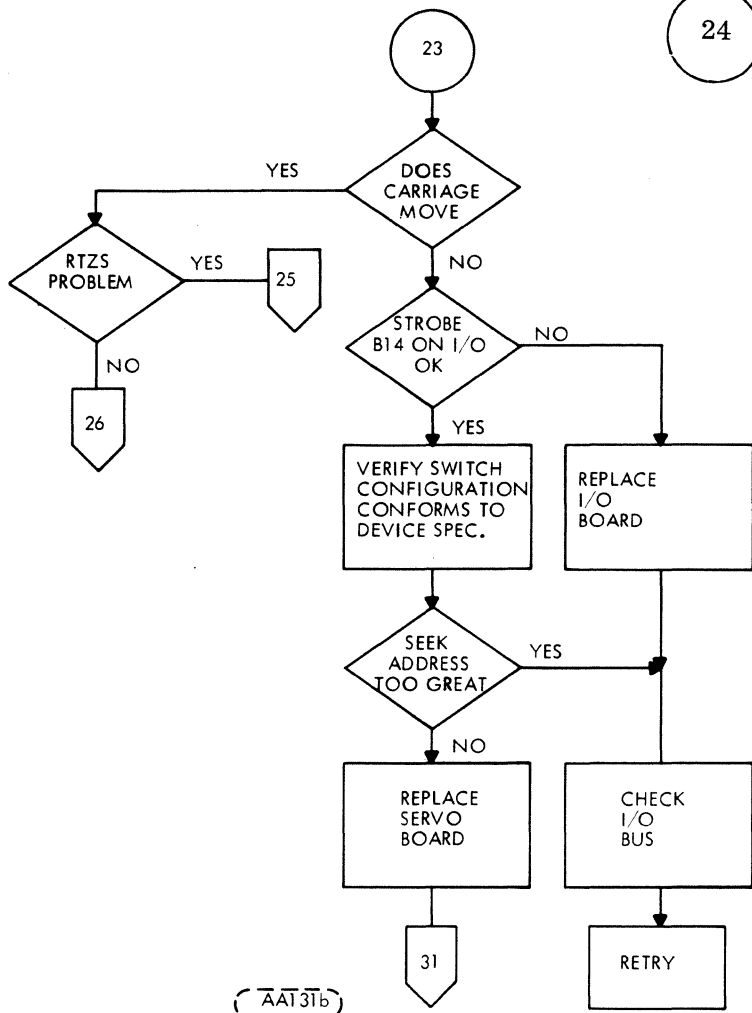
AA131a

LOCATION

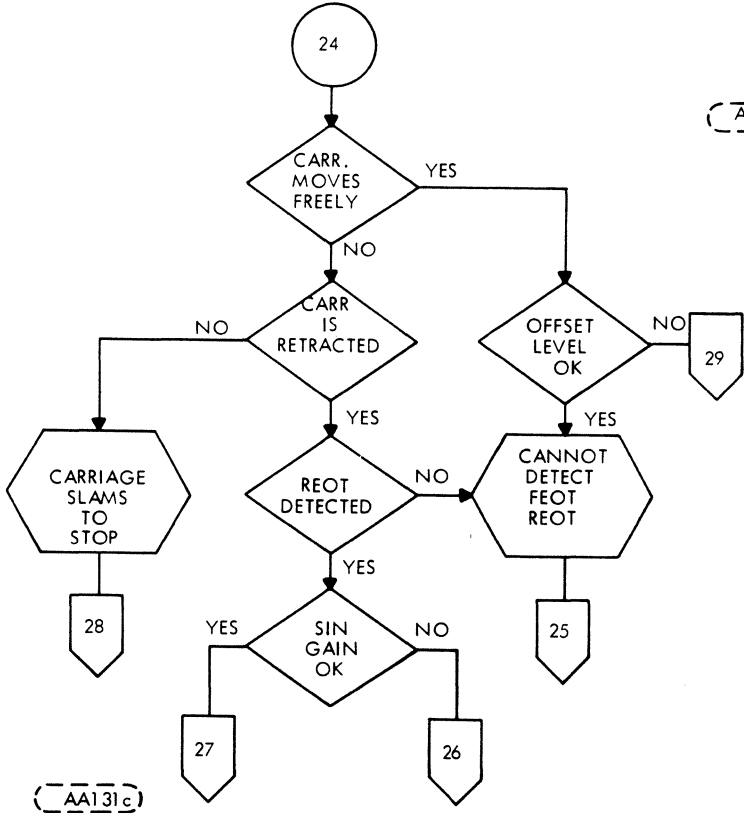
- 10 → 15
- 13 → 19
- 23 → 24
- 24 → 24
- 25 → 25
- 30 → 29
- 31 → 30

SEEK ERROR (CONTINUED)

24



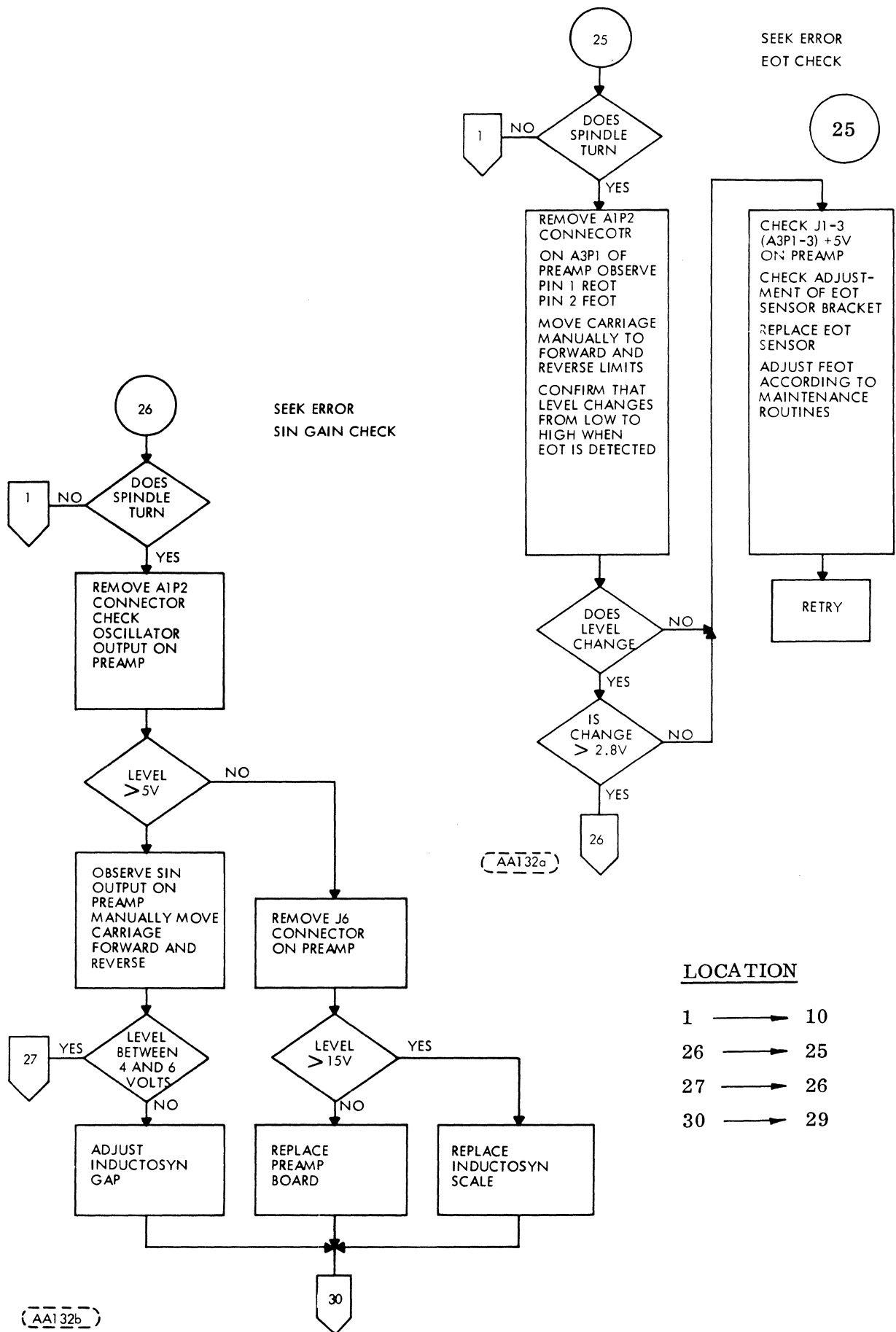
AA131b



AA131c

LOCATION

- 25 → 25
- 26 → 25
- 27 → 26
- 28 → 27
- 29 → 28
- 31 → 30

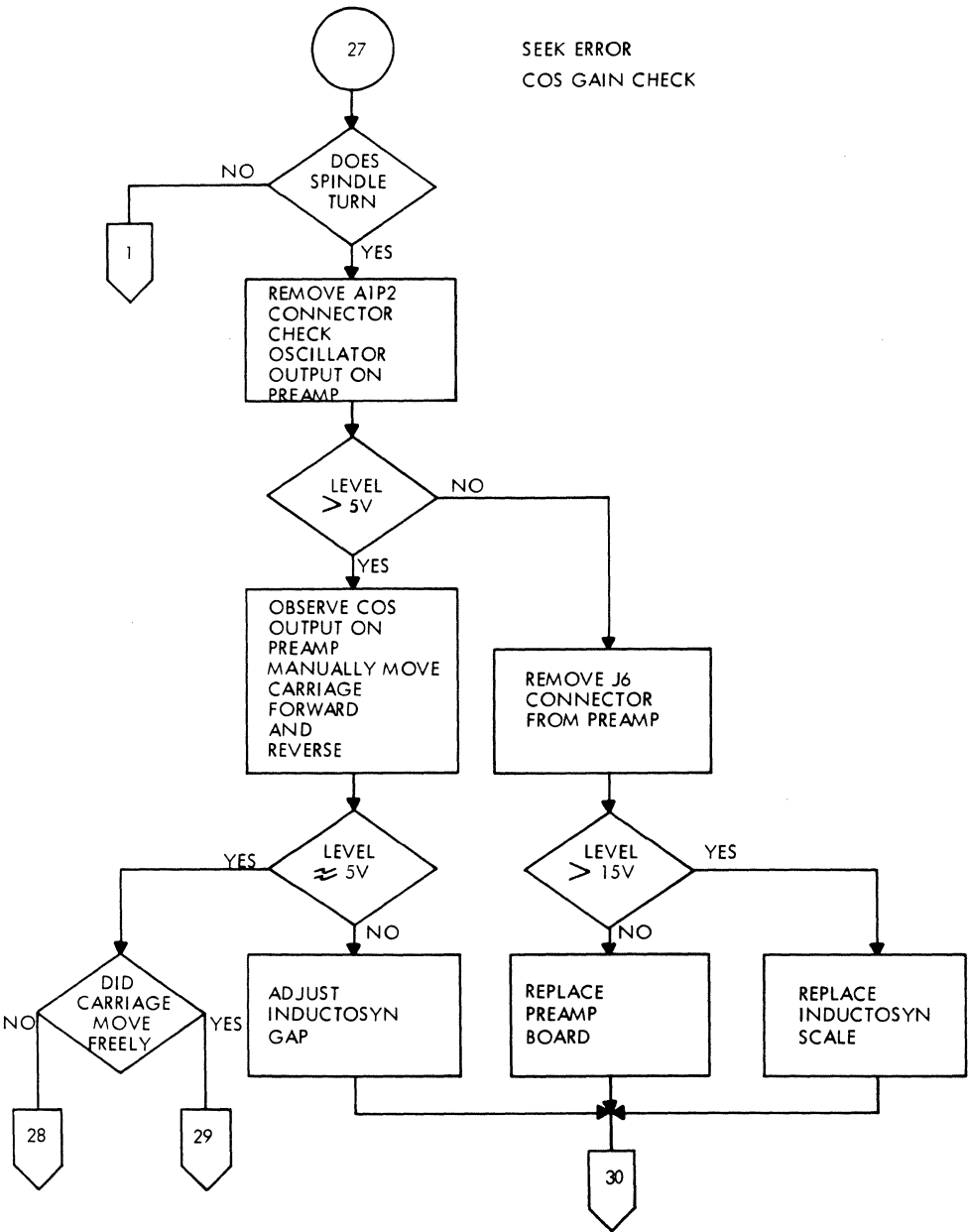


(AA132b)

LOCATION

- 1 → 10
- 26 → 25
- 27 → 26
- 30 → 29

SEEK ERROR
COS GAIN CHECK



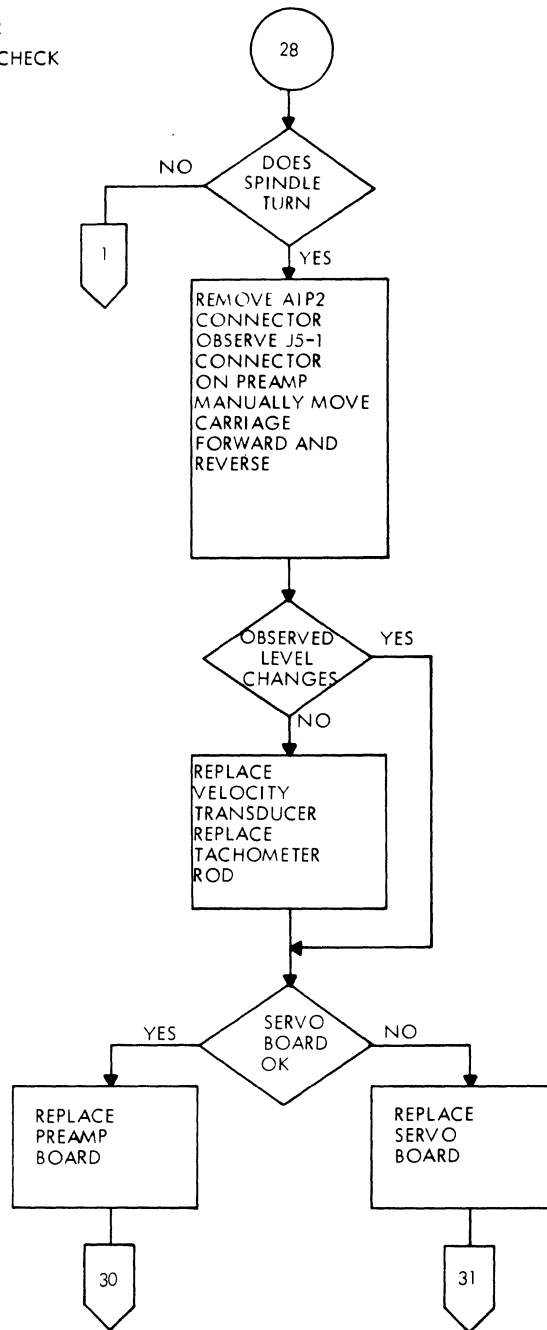
(AA132c)

LOCATION

- 1 —————> 10
- 28 —————> 27
- 29 —————> 28
- 30 —————> 29

SEEK ERROR
VELOCITY CHECK

27



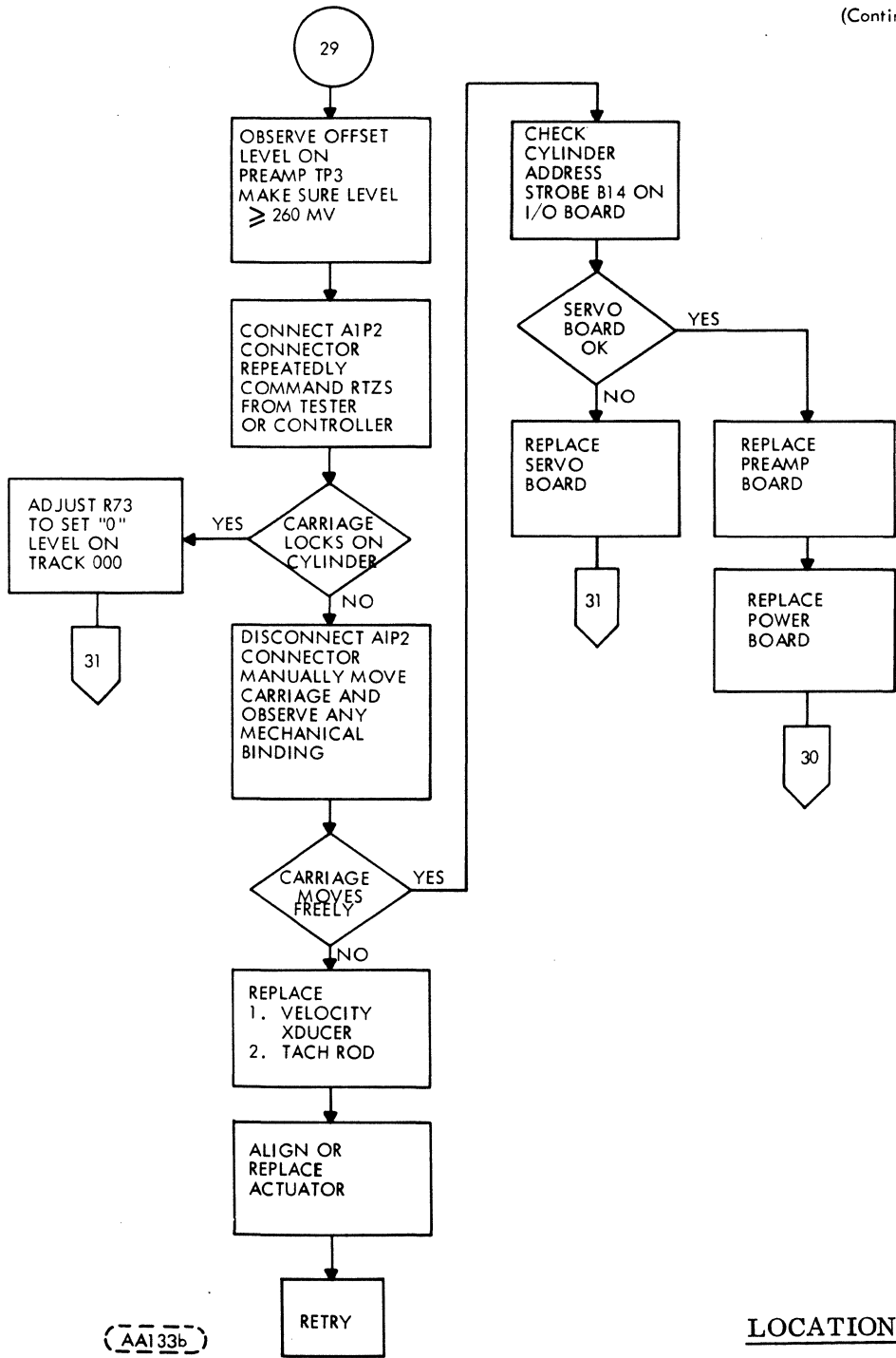
(AA133a)

LOCATION

- 1 —→ 10
- 30 —→ 29
- 31 —→ 30

SEEK ERROR
(Continued)

28

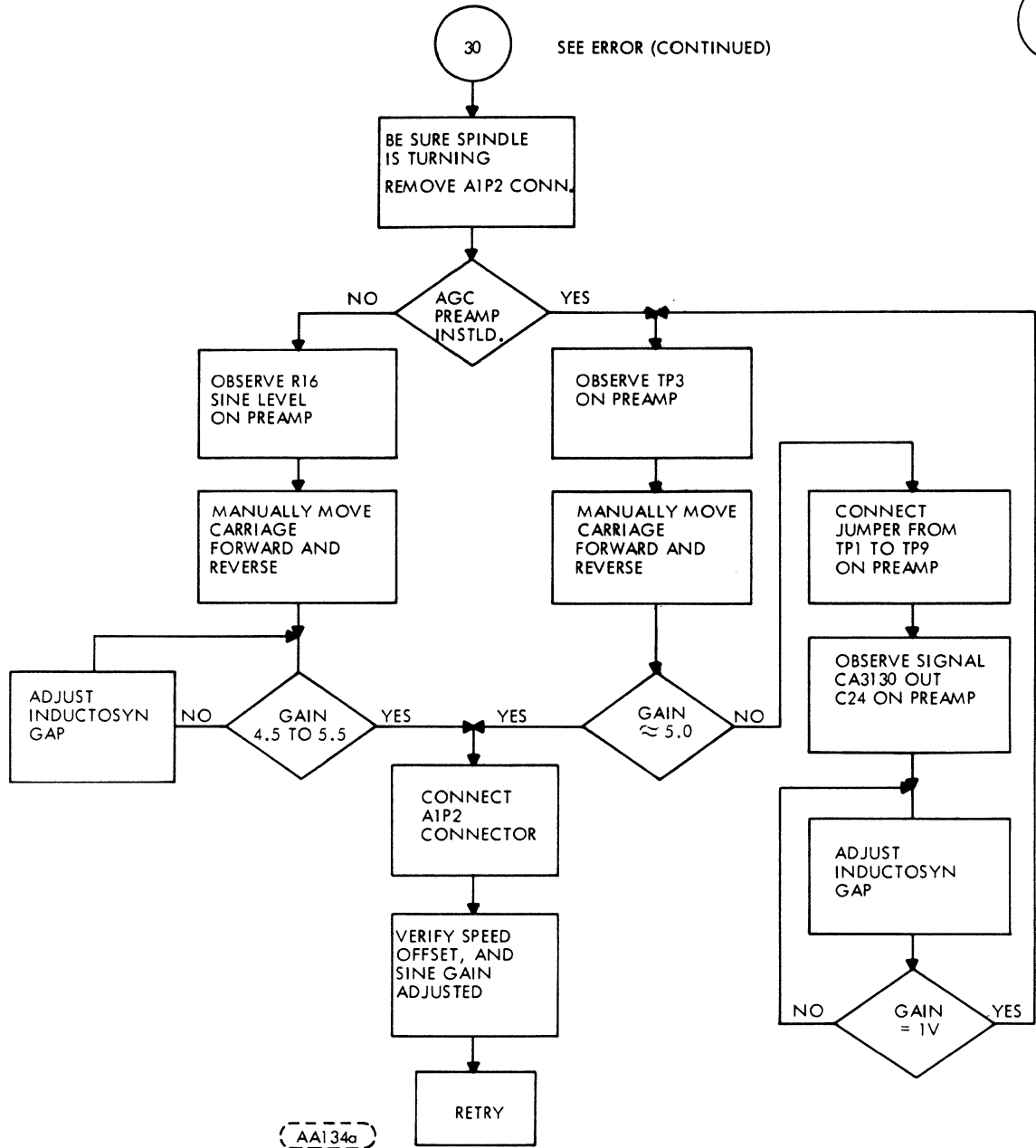


(AA133b)

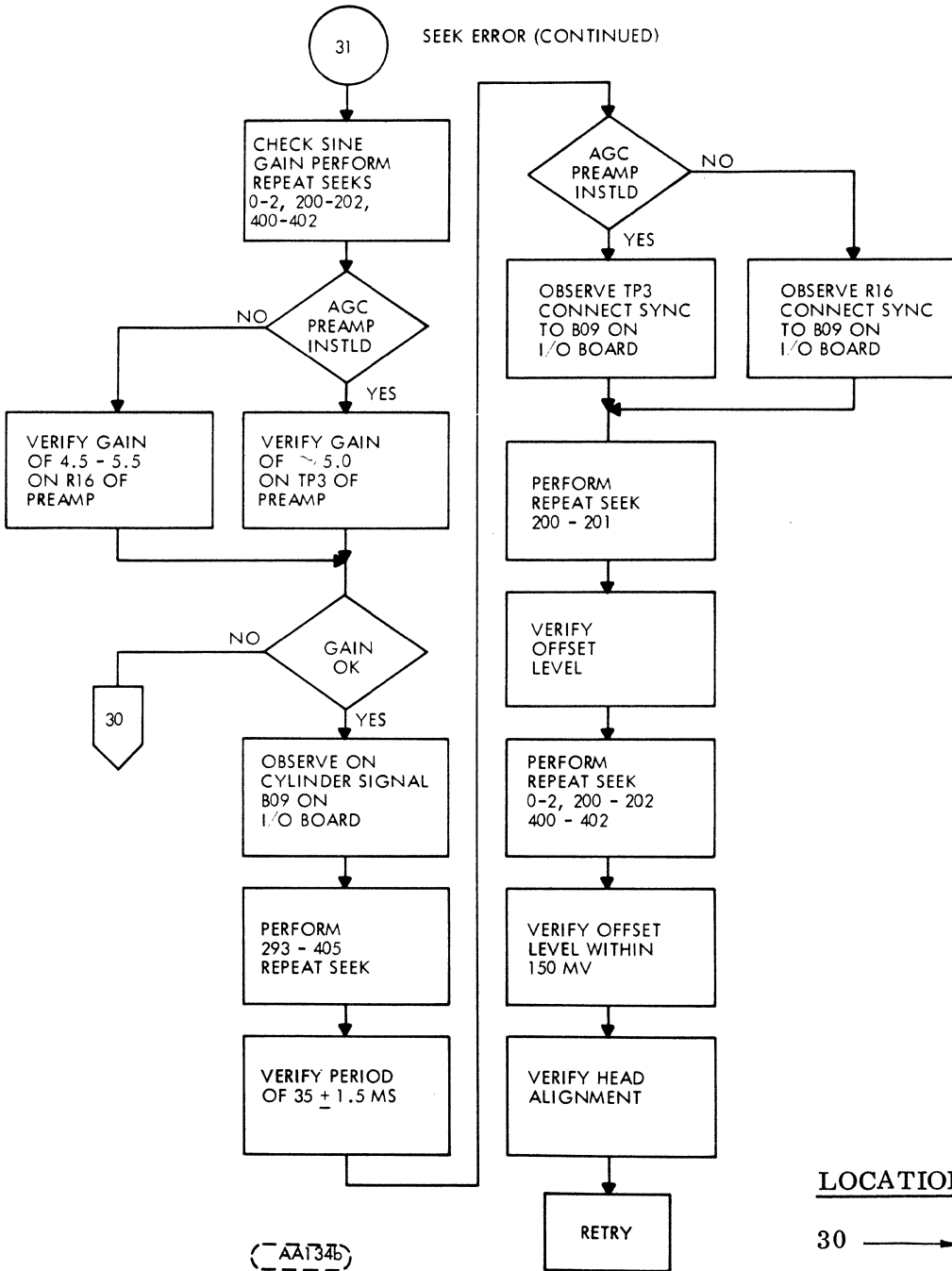
LOCATION

- 30 → 29
- 31 → 30

SEE ERROR (CONTINUED)



SEEK ERROR (CONTINUED)



AA134b

LOCATION

30 → 29

VIII PARTS MANUAL

8.1 INTRODUCTION

This section contains an illustrated parts breakdown that details the different variations of the Model 9427H Disk Storage Drive. In general, parts are in disassembly sequence but do not necessarily indicate the maximum recommended disassembly of parts in the field.

8.2 GENERAL INSTRUCTIONS

8.2.1 ILLUSTRATIONS

Item numbers within a circle ① indicate an assembly (group of parts). Item numbers without a circle, 1, indicate a single part; a group of parts that are pinned or press fitted together; or a group of parts which is normally replaced as an assembly.

8.2.2 PARTS LISTS

In addition to the accompanying parts list on each illustration, two additional Parts Lists are available; the Top-Down Assembly/Component Parts List and the Cross Reference Index. Instruction for the use of all parts lists in paragraph 8.3.

8.2.3 ASSEMBLY LOCATOR

Figure 8-1 depicts and identifies the major assemblies within the device and references, by sheet number, where each assembly is broken down.

8.2.4 TOP MECHANICAL ASSEMBLY

The content of all 9427H variations are depicted and listed in Figure 8-2. To determine the Top Mechanical Assembly (TMA) and applicable parts and assemblies, refer to the Hardware Product Configurator document package (Parts Data Configurator) located in front of the manual. Instructions for its use are included. The TMA number referenced in the Parts Data configuration table represents the last three digits in TMA number 75741???.

NOTE

It may be desirable to insert the Parts Data Configurator in front of this section.

8.2.5 MODULE ASSEMBLY

The Content of each Module Assembly configuration is depicted and listed in Figure 8-3. Refer to the Parts Data Configurator for Module Assembly part number and applicable parts.

8.2.6 NOTES

Special instructions clarifying parts breakdown, replacement, references, unique parts usage, etc, are included on each sheet, as required, throughout this section.

8.2.7 PART REPLACEMENT

When ordering replacement parts for the 9427H, the inclusion of the following information for each part ordered will ensure positive identification:

- * { 1. Device Serial Number
- 2. TMA# (75741???)
- 3. Parts Data # and Rev. Status (77830945-?)
- 4. Figure #
- 5. Item #
- 6. Part Identification #
- 7. Part Description

8.3 PARTS LIST INSTRUCTIONS

8.3.1 ILLUSTRATION PARTS LIST

The parts list for each illustration is an extract from the Master Top-Down Assembly/Component Parts List, and contains only the parts depicted.

*Before ordering replacement parts refer to paragraph 8.4.

8.3.2 TOP-DOWN ASSEMBLY/COMPONENT PARTS LIST

- Starts at TMA level and lists all parts in Item Number sequence.
- Correlates Item numbers with part Identification numbers and the Description of each.
- Identifies where each part is used (where used column) within the device by listing the item number(s) of the next higher assembly.

NOTE

Where used data for figures 8-2 and 8-3 are labeled TMA and MOD respectively. Refer to Parts Data Configuration for correct application of parts (ref paragraphs 8.2.4 and 8.2.5).

- Defines the location of each part by listing the sheet number(s) where depicted. (Refer to sheet 29)

NOTE

The same part may be used in any number of assemblies or sheet locations.

8.3.3 CROSS REFERENCE INDEX

- Lists all parts in numeric sequence (by Identification Number).
- In conjunction with the referenced sheet number (third column) and illustrations defines the physical location of each item identified (Refer to sheet 35)

8.3.4 SHEET NUMBER REFERENCES

Sheet number reference on Parts Lists and Illustrations refers to sheet locations in this section. Example: Sheet reference 3 represents sheet 8-3, sheet 4 represents sheet 8-4, etc.

8.4 SPARE PARTS (SP)

This Illustrated Parts Breakdown is complete to the extent that all parts and assemblies are depicted and identified. Replacement part availability depends on the materials and provisioning operation of the supplier.

To assist the service representative in selecting replacement parts with minimum requisitioning lead times, engineering recommended spare parts which reflect the intended service level of the device are identified with the letters SP adjacent to the item number on the face of each illustration. Replaceable non-spared items will require longer requisitioning lead times.

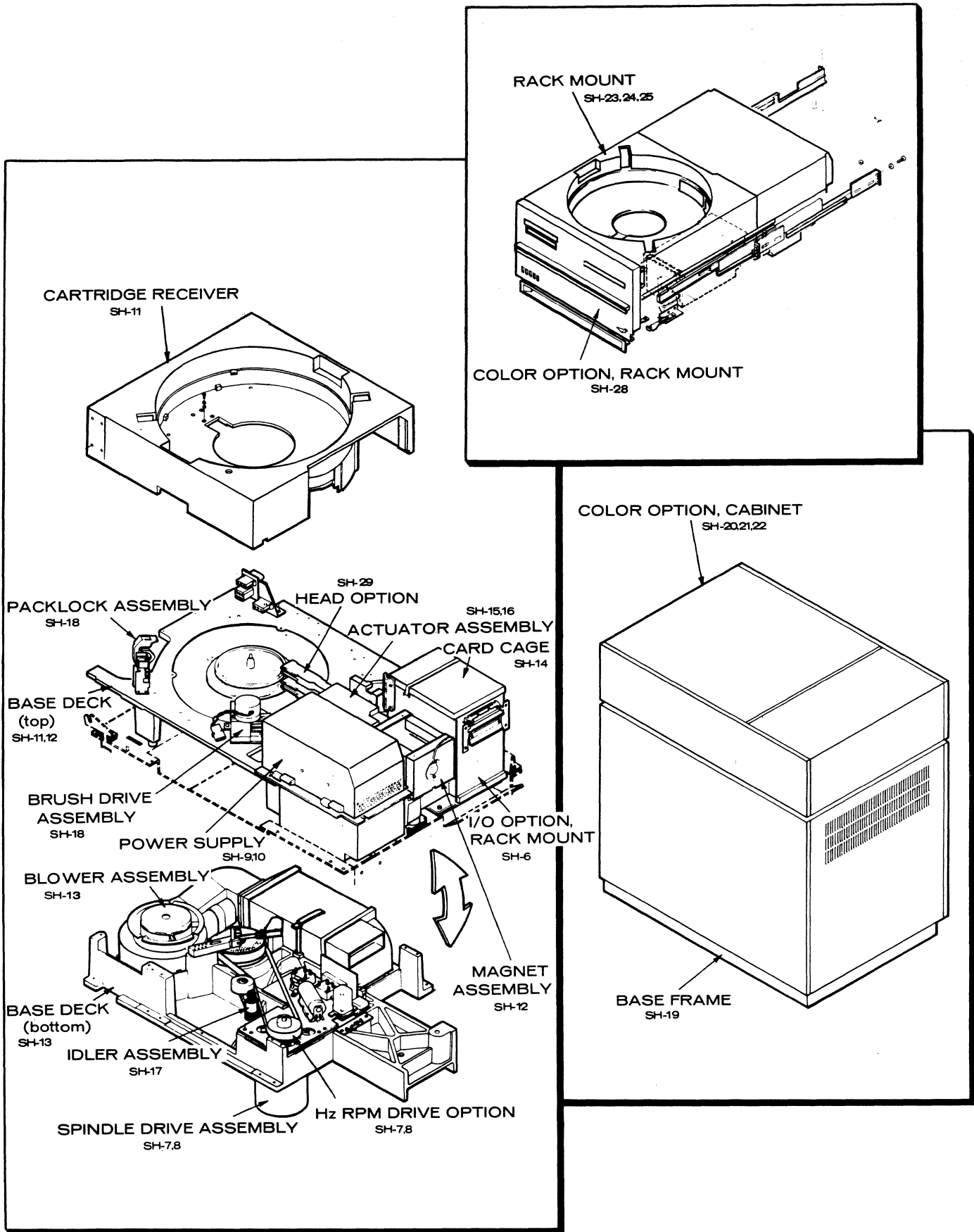
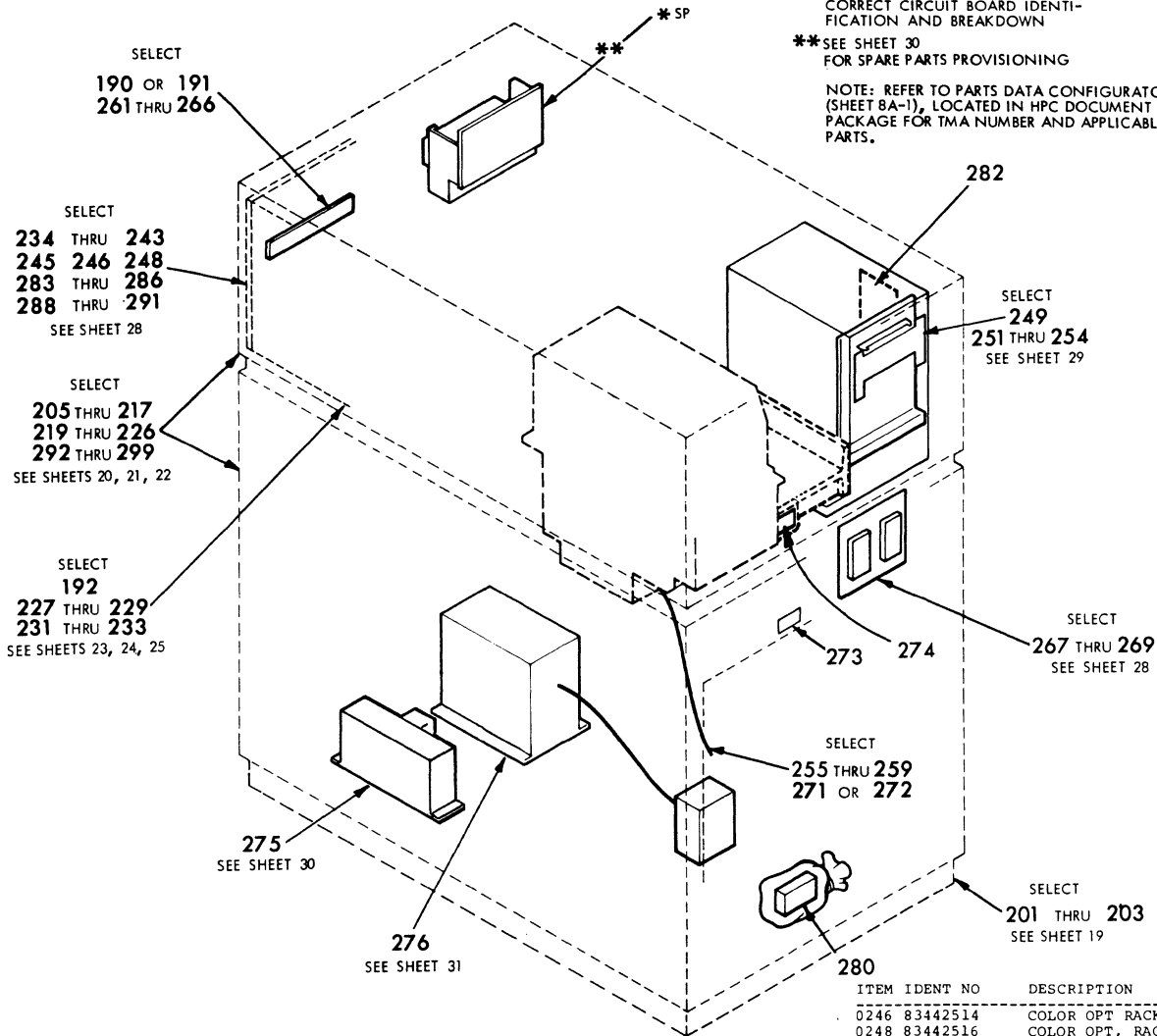


Figure 8-1. Assembly Locators

*FOR ALL PWA'S SEE DIAGRAM SECTION OF MANUAL FOR CORRECT CIRCUIT BOARD IDENTIFICATION AND BREAKDOWN
 **SEE SHEET 30 FOR SPARE PARTS PROVISIONING

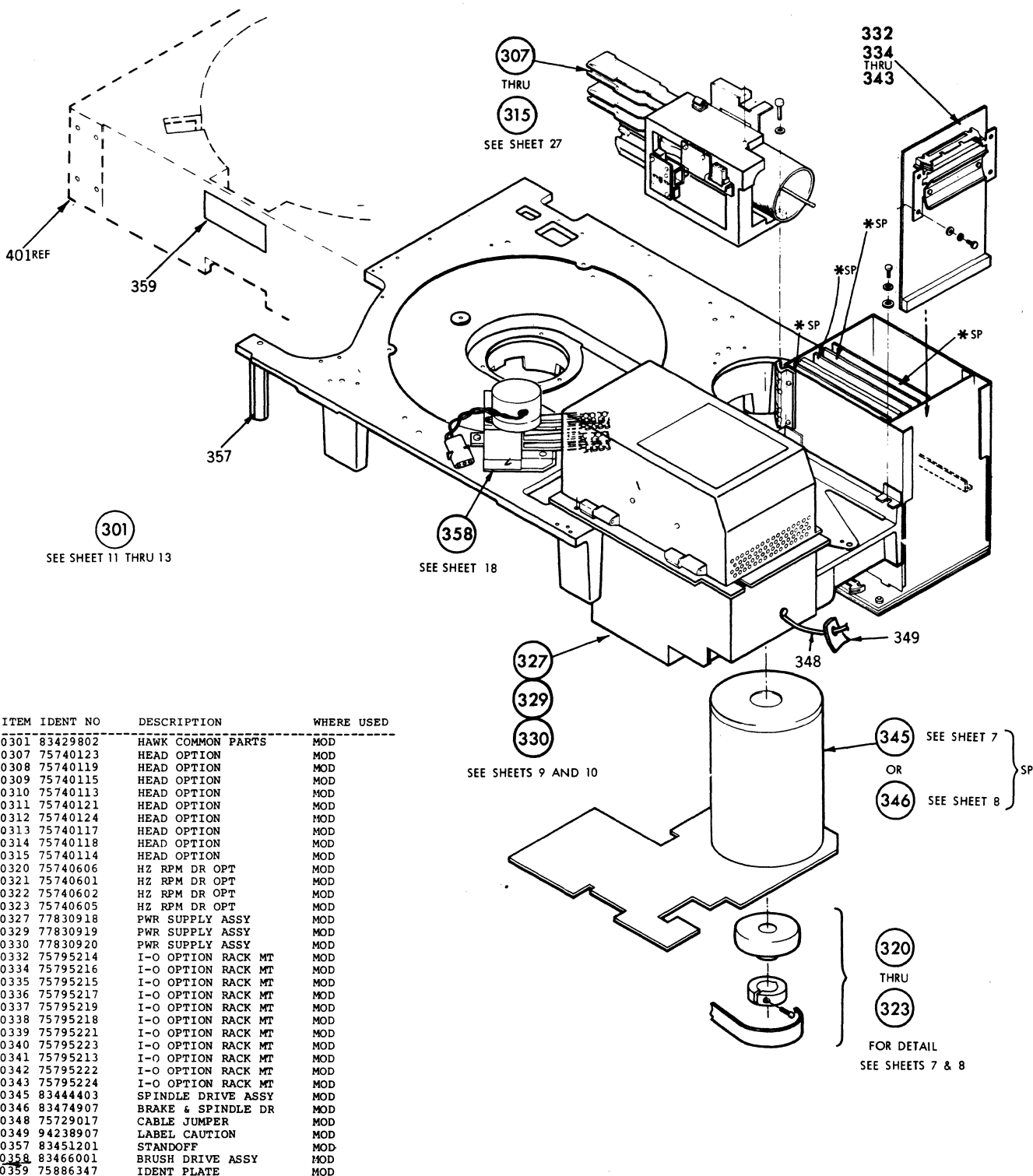
NOTE: REFER TO PARTS DATA CONFIGURATOR (SHEET 8A-1), LOCATED IN HPC DOCUMENT PACKAGE FOR TMA NUMBER AND APPLICABLE PARTS.



ITEM	IDENT NO	DESCRIPTION	WHERE USED
0190	75890915	NAMEPLATE	TMA
0191	77611483	NAMEPLATE	TMA
0192	83443511	RACK MT ASSY	TMA
0201	83442303	BASE FR ASSY	TMA
0202	83442305	BASE FR ASSY	TMA
0203	83442306	BASE FR ASSY	TMA
0205	83442409	COLOR OPT CAB	TMA
0206	83442410	COLOR OPT CAB	TMA
0207	83442411	COLOR OPT CAB	TMA
0208	83442412	COLOR OPT CAB	TMA
0209	83442413	COLOR OPT CAB	TMA
0210	83442414	COLOR OPT CAB	TMA
0211	83442431	COLOR OPT CAB	TMA
0212	83442416	COLOR OPT CAB	TMA
0213	83442417	COLOR OPT CAB	TMA
0214	83442418	COLOR OPT CAB	TMA
0215	83442419	COLOR OPT CAB	TMA
0216	83442420	COLOR OPT CAB	TMA
0217	83442421	COLOR OPT CAB	TMA
0219	83442423	COLOR OPT CAB	TMA
0220	83442424	COLOR OPT CAB	TMA
0221	83442425	COLOR OPT CAB	TMA
0222	83442426	COLOR OPT CAB	TMA
0223	83442427	COLOR OPT CAB	TMA
0224	83442428	COLOR OPT CAB	TMA
0225	83442429	COLOR OPT CAB	TMA
0226	83442430	COLOR OPT CAB	TMA
0227	83443510	RACK MOUNT ASSY	TMA
0228	75884907	RACK MT ASSY	TMA
0229	83443504	RACK MT ASSY	TMA
0231	83443506	RACK MT ASSY	TMA
0232	83443507	RACK MT ASSY	TMA
0233	83443509	RACK MT ASSY	TMA
0234	83442501	COLOR OPT, RACK MT	TMA
0235	83442502	COLOR OPT, RACK MT	TMA
0236	83442503	COLOR OPT, RACK MT	TMA
0237	83442505	COLOR OPT, RACK MT	TMA
0238	83442506	COLOR OPT, RACK MT	TMA
0239	83442507	COLOR OPT, RACK MT	TMA
0240	83442508	COLOR OPT, RACK MT	TMA
0241	83442509	COLOR OPT, RACK MT	TMA
0242	83442510	COLOR OPT, RACK MT	TMA
0243	83442511	COLOR OPT, RACK MT	TMA
0245	83442513	COLOR OPT, RACK MT	TMA

ITEM	IDENT NO	DESCRIPTION	WHERE USED
0246	83442514	COLOR OPT RACK MT	TMA
0248	83442516	COLOR OPT, RACK MT	TMA
0249	75305707	TERMINATOR	TMA
0251	75305703	TERMINATOR	TMA
0252	75305704	TERMINATOR	TMA
0253	75305706	TERMINATOR	TMA
0254	75305705	TERMINATOR	TMA
0255	75778701	LINECORD	TMA
0256	75778705	LINECORD	TMA
0257	75778710	LINECORD	TMA
0258	75778721	LINECORD	TMA
0259	75892986	LINECORD	TMA
0261	75795401	NAMEPLATE (942-H)	TMA
0262	75795402	NAMEPLATE (BLNK)	TMA
0263	75795404	NAMEPLATE (ASSY)	TMA
0264	75795405	NAMEPLATE (ASSY)	TMA
0265	75795406	NAMEPLATE	TMA
0266	75795408	NAMEPLATE	TMA
0267	75795309	I-O OPT CAB	TMA
0268	75795307	I-O OPT CAB	TMA
0269	75795308	I-O OPT CAB	TMA
0271	75897971	POWER CORD	TMA
0272	75778724	LINECORD	TMA
0273	77830537	UL LABEL	TMA
0274	77830538	LABEL - CSA	TMA
0275	77599401	PWR ASSY (INPUT)	TMA
0276	83492901	PWR ASSY (A.C. OPT)	TMA
0280	77603741	ELCO CONN OPT	TMA
0282	94224651	LABEL - INFO	TMA
0283	83442525	COLOR OPT RACK MT	TMA
0284	83442524	COLOR OPT RACK MT	TMA
0285	83442517	COLOR OPT, RACK MT	TMA
0286	83442518	COLOR OPT, RACK MT	TMA
0288	83442521	COLOR OPT RACK MT	TMA
0289	83442520	COLOR OPT RACK MT	TMA
0290	83442522	COLOR OPT RACK MT	TMA
0291	83442523	COLOR OPT RACK MT	TMA
0292	83442432	COLOR OPT CAB	TMA
0293	83442433	COLOR OPT CAB	TMA
0294	83442434	COLOR OPT CAB	TMA
0295	83442435	COLOR OPT CAB	TMA
0296	83442436	COLOR OPT CAB	TMA
0297	83442437	COLOR OPT CAB	TMA
0298	83442438	COLOR OPT CAB	TMA
0299	83442439	COLOR OPT CAB	TMA

Figure 8-2. Top Mechanical Assembly

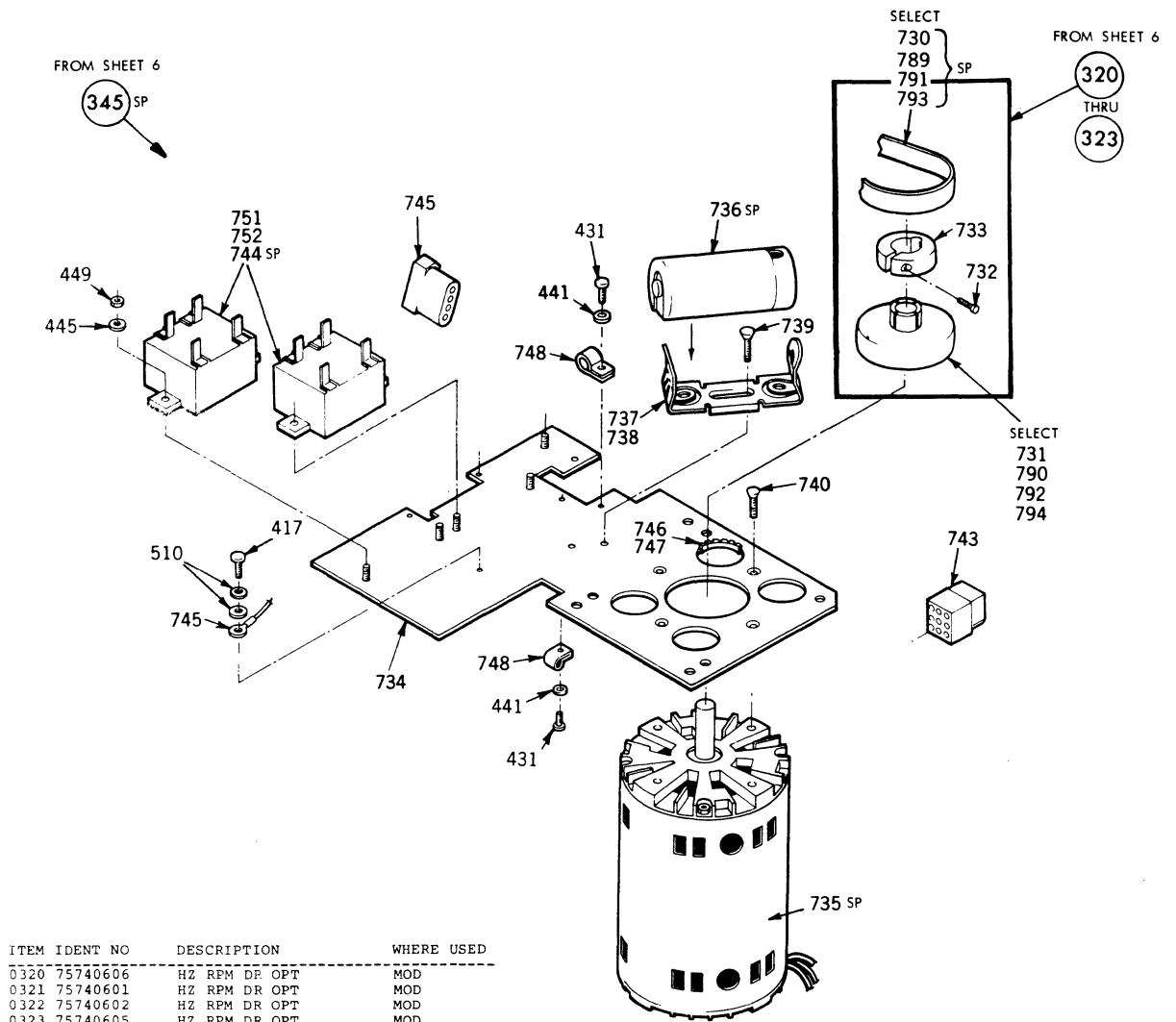


ITEM IDENT NO	DESCRIPTION	WHERE USED
0301 83429802	HAWK COMMON PARTS	MOD
0307 75740123	HEAD OPTION	MOD
0308 75740119	HEAD OPTION	MOD
0309 75740115	HEAD OPTION	MOD
0310 75740113	HEAD OPTION	MOD
0311 75740121	HEAD OPTION	MOD
0312 75740124	HEAD OPTION	MOD
0313 75740117	HEAD OPTION	MOD
0314 75740118	HEAD OPTION	MOD
0315 75740114	HEAD OPTION	MOD
0320 75740606	HZ RPM DR OPT	MOD
0321 75740601	HZ RPM DR OPT	MOD
0322 75740602	HZ RPM DR OPT	MOD
0323 75740605	HZ RPM DR OPT	MOD
0327 77830918	PWR SUPPLY ASSY	MOD
0329 77830919	PWR SUPPLY ASSY	MOD
0330 77830920	PWR SUPPLY ASSY	MOD
0332 75795214	I-O OPTION RACK MT	MOD
0334 75795216	I-O OPTION RACK MT	MOD
0335 75795215	I-O OPTION RACK MT	MOD
0336 75795217	I-O OPTION RACK MT	MOD
0337 75795219	I-O OPTION RACK MT	MOD
0338 75795218	I-O OPTION RACK MT	MOD
0339 75795221	I-O OPTION RACK MT	MOD
0340 75795223	I-O OPTION RACK MT	MOD
0341 75795213	I-O OPTION RACK MT	MOD
0342 75795222	I-O OPTION RACK MT	MOD
0343 75795224	I-O OPTION RACK MT	MOD
0345 83444403	SPINDLE DRIVE ASSY	MOD
0346 83474907	BRAKE & SPINDLE DR	MOD
0348 75729017	CABLE JUMPER	MOD
0349 94238907	LABEL CAUTION	MOD
0357 83451201	STANDOFF	MOD
0358 83466001	BRUSH DRIVE ASSY	MOD
0359 75886347	IDENT PLATE	MOD

* FOR ALL PWA'S SEE DIAGRAM SECTION OF MANUAL FOR CORRECT CIRCUIT BOARD IDENTIFICATION AND BREAKDOWN

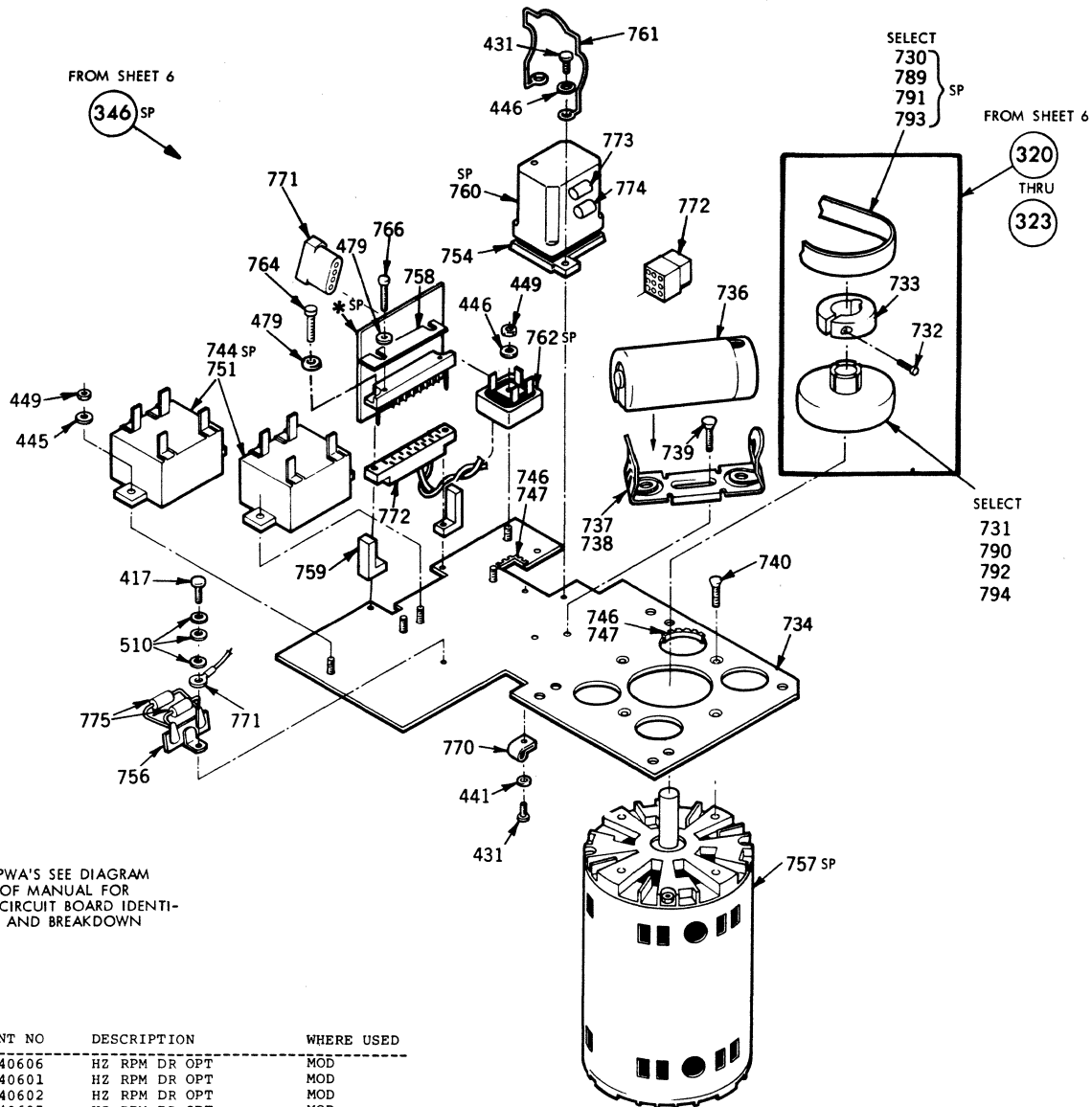
NOTE: REFER TO PARTS DATA CONFIGURATOR (SHEET 8A-2), LOCATED IN HPC DOCUMENT PACKAGE FOR MOD NUMBER AND APPLICABLE PARTS.

Figure 8-3. Module Assembly



ITEM	IDENT NO	DESCRIPTION	WHERE USED
0320	75740606	HZ RPM DR OPT	MOD
0321	75740601	HZ RPM DR OPT	MOD
0322	75740602	HZ RPM DR OPT	MOD
0323	75740605	HZ RPM DR OPT	MOD
0345	83444403	SPINDLE DRIVE ASSY	MOD
0417	10127112	SCREW PAN HD MACH	345
0431	10127113	SCREW PAN HD MACH	345
0441	10125605	WASHERS PLAIN	345
0445	10125804	WASHERS SPR LOCK	345
0449	10125105	NUT HEX MACH	345
0510	10126401	WASH EXT TOOTH LO	345
0730	75722910	BELT-DRIVE NEOPRENE	323
0731	77599708	PULLEY-DRIVE MOTOR	323
0732	77617051	SCR CAP SOC	320-323
0733	77599800	COLLAR-MOTOR PULLEY	320-323
0734	83485302	PLATE-DYNAMIC MOTOR	345
0735	83456001	DRIVE MTR HARNESS AS	345
0736	94255105	CAPACITOR-MOTOR AC 2	345
0737	94260500	ACCESSORIES-CAPACITOR	345
0738	94260503	ACCESSORIES-CAPACITOR	345
0739	10125747	SCR FLAT HD	345
0740	10125725	SCR FLAT HD	345
0743	83457401	DC SPINDLE HARN ASSY	345
0744	77612676	SW SOLID STATE	345
0745	83457601	AC SPINDLE HARN ASSY	345
0746	00845503	GROMMET-CATERPILLAR	345
0747	75312701	ADHESIVE, EPOXY	345
0748	92602002	CLAMP, CABLE-NYLON	345
0751	94309802	PCB, TERMINAL INSULAT	345
0752	93154948	TUBING, SHRINKING	345
0789	75722930	BELT-DRIVE NEOPRENE	321
0790	77599706	PULLEY-DRIVE MOTOR	321
0791	75722940	BELT-DRIVE NEOPRENE	322
0792	77599705	PULLEY-DRIVE MOTOR	322
0793	75722920	BELT-DRIVE NEOPRENE	320
0794	77599707	PULLEY-DRIVE MOTOR	320

Figure 8-4. Spindle Drive Assembly

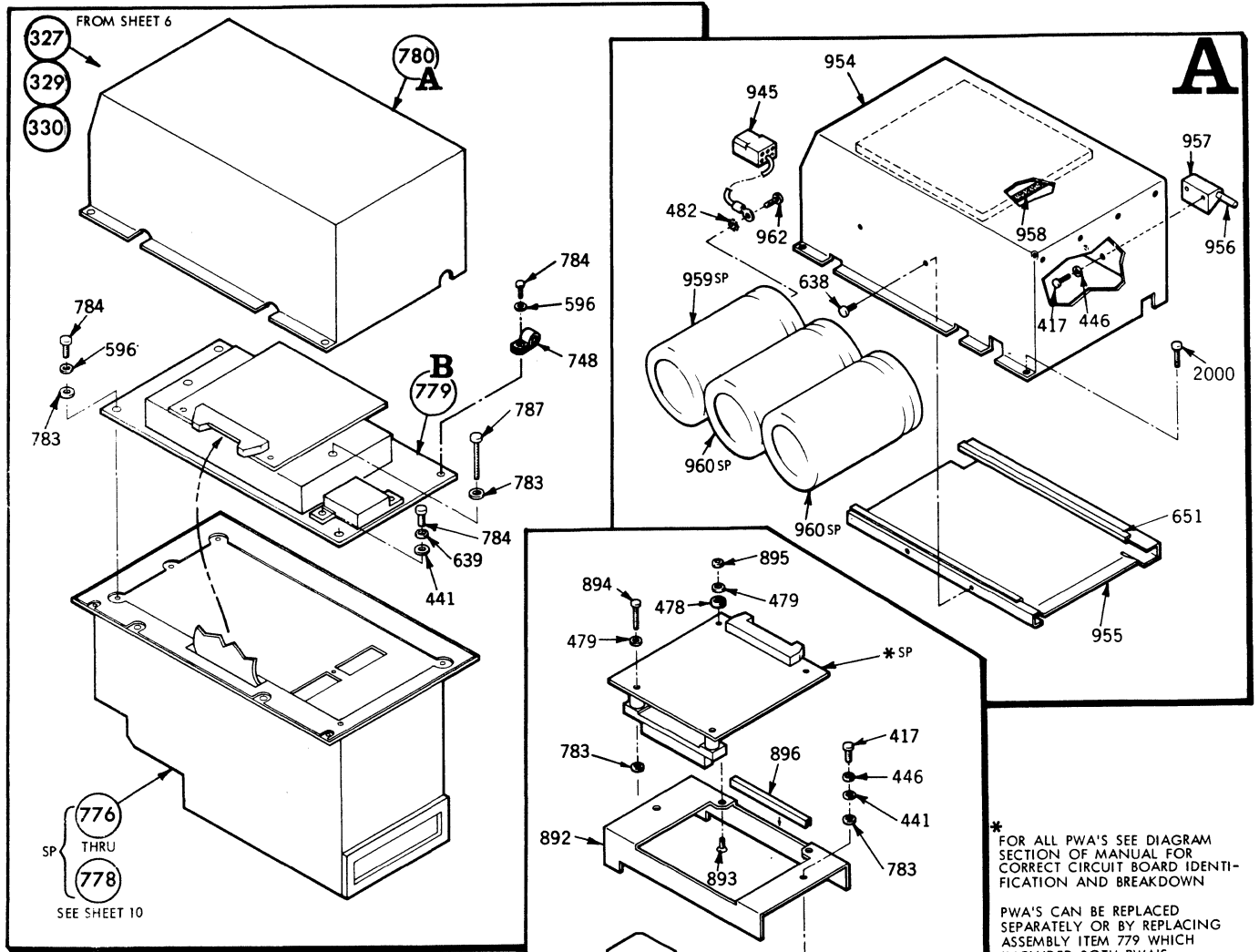


* FOR ALL PWA'S SEE DIAGRAM SECTION OF MANUAL FOR CORRECT CIRCUIT BOARD IDENTIFICATION AND BREAKDOWN

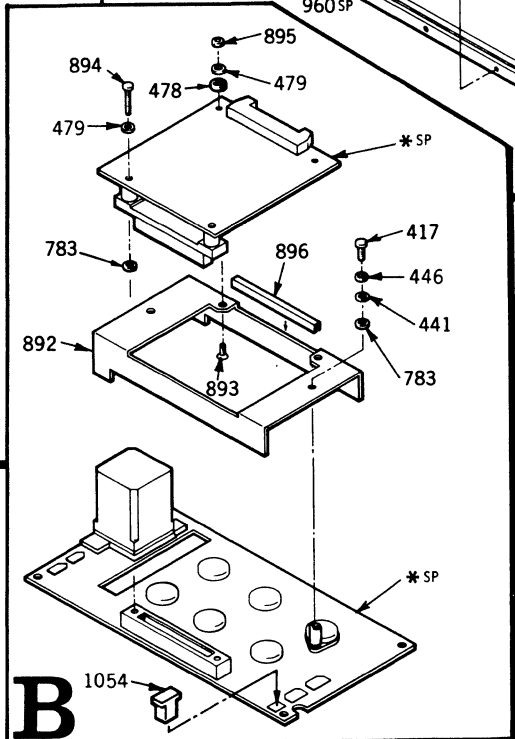
ITEM IDENT NO	DESCRIPTION	WHERE USED
0320 75740606	HZ RPM DR OPT	MOD
0321 75740601	HZ RPM DR OPT	MOD
0322 75740602	HZ RPM DR OPT	MOD
0323 75740605	HZ RPM DR OPT	MOD
0346 83474907	BRAKE & SPINDLE DR	MOD
0417 10127112	SCREW PAN HD MACH	346
0431 10127113	SCREW PAN HD MACH	346
0441 10125605	WASHERS PLAIN	346
0445 10125804	WASHERS SPR LOCK	346
0446 10125803	WASHERS SPR LOCK	346
0449 10125105	NUT HEX MACH	346
0479 10125801	WASHERS SPR LOCK	346
0510 10126401	WASH EXT TOOTH LO	346
0730 75722910	BELT-DRIVE NEOPRENE	323
0731 77599708	PULLEY-DRIVE MOTOR	323
0732 77617051	SCR CAP SOC	320-323
0733 77599800	COLLAR-MOTOR PULLEY	320-323
0734 83485302	PLATE-DYNAMIC MOTOR	346
0736 94255105	CAPACITOR-MOTOR AC 2	346
0737 94260500	ACCESSORIES-CAPACITOR	346
0738 94260503	ACCESSORIES-CAPACITOR	346
0739 10125747	SCR FLAT HD	346
0740 10125725	SCR FLAT HD	346
0744 77612676	SW SOLID STATE	346
0746 00845503	GROMMET-CATERPILLAR	346
0747 75312701	ADHESIVE, EPOXY	346
0751 94309802	POD, TERMINAL INSULAT	346
0754 22940902	RELAY SOCKET	346
0756 36085800	TERMINAL STRIP-LUG T	346
0757 83467401	BRAKE MOTOR ASSY	346
0758 83474701	BAR-LOCKING	346
0759 83474800	BLOCK-SPACER	346
0760 77612660	RELAY	346
0761 22940903	SPRING-RETAINER SOCK	346
0762 95582004	RECT BRIDGE	346

ITEM IDENT NO	DESCRIPTION	WHERE USED
0764 10127106	SCREW PAN HD MACH	346
0766 95655503	SCREW	346
0770 92602003	CLAMP, CABLE-NYLON	346
0771 83467501	A.C. BRAKE HARNESS	346
0772 83467701	D.C. BRAKE HARNESS	346
0773 50241001	DIODE SILICON	346
0774 75808549	CAP 100V 10R .10UF	346
0775 92512142	RESISTOR	346
0789 75722930	BELT-DRIVE NEOPRENE	321
0790 77599706	PULLEY-DRIVE MOTOR	321
0791 75722940	BELT-DRIVE NEOPRENE	322
0792 77599705	PULLEY-DRIVE MOTOR	322
0793 75722920	BELT-DRIVE NEOPRENE	320
0794 77599707	PULLEY-DRIVE MOTOR	320

Figure 8-5. Brake and Spindle Drive Assembly



ITEM IDENT NO	DESCRIPTION	WHERE USED
0327 77830918	PWR SUPPLY ASSY	MOD
0329 77830919	PWR SUPPLY ASSY	MOD
0330 77830920	PWR SUPPLY ASSY	MOD
0417 10127112	SCREW PAN HD MACH	780
0417 10127112	SCREW PAN HD MACH	779
0441 10125605	WASHERS PLAIN	327 329 330
0441 10125605	WASHERS PLAIN	779
0446 10125803	WASHERS SPR LOCK	780
0446 10125803	WASHERS SPR LOCK	779
0478 10125603	WASHERS PLAIN	779
0479 10125801	WASHERS SPR LOCK	779
0482 10126403	WASH EXT TOOTH LO	780
0596 75806503	WASHER	327 329 330
0639 10126103	WASH INT TOOTH LK	327 329 330
0651 94862902	GROMMET STRIP	780
0748 92602002	CLAMP, CABLE-NYLON	327 329 330
0776 83484108	POWER SUPPLY CHASSIS A	329
0777 83475605	PWR SPLY CHASSIS ASM	330
0778 83484107	POWER SUPPLY CHASSIS A	327
0779 83475105	PWR BD ASM PIGGYBACK	327-329 330
0780 83484002	COVER ASSY-PWR SPY 2	327, 329 330
0783 92980003	WASHER, FIBRE	779
0783 92980003	WASHER, FIBRE	327 329 330
0784 10127115	SCREW PAN HD MACH	327 329 330
0787 92742176	SCREW M-C PAN HD	327 329 330
0892 83495300	TUNNEL WIND	779
0893 10125704	SCR FLT HD	779
0894 10127108	SCR PN HD MACH	779
0895 10125103	SCR NUT HEX MACH	779
0896 94862901	GROMMET STRIP	779
0945 75799001	CAP HARNESS	780
0954 83495101	COVER PWR SPLY	780
0955 83495200	BRKT	780
0956 83495500	PIN HNG	780
0957 83495600	HNG CVR	780

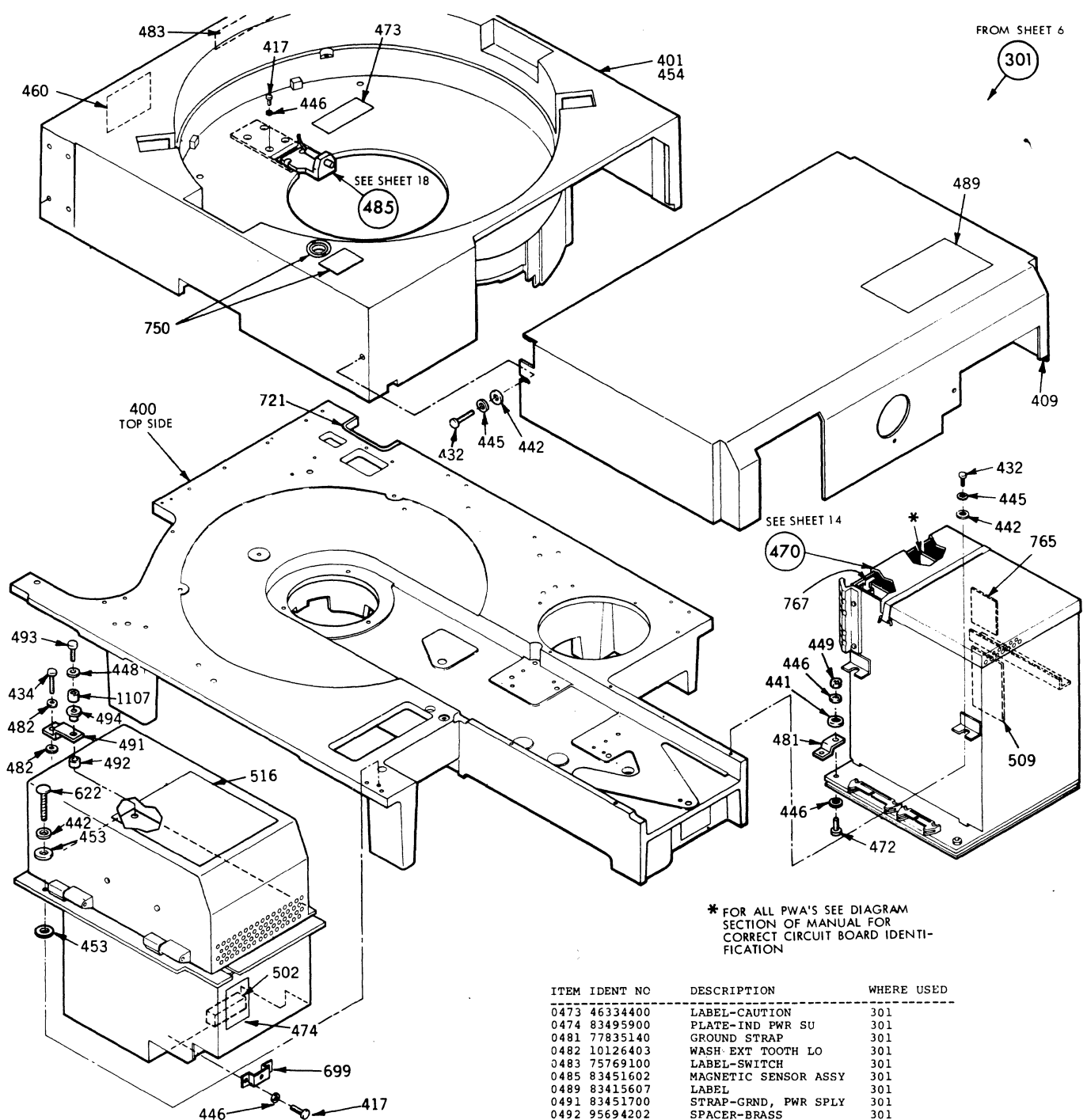


ITEM IDENT NO	DESCRIPTION	WHERE USED
0958 75798800	PAD CAPACITOR	780
0959 75774406	CAPACITOR	780
0960 75774466	CAPACITOR	780
0962 10127378	SCR PN HD	780
1054 75884153	JUMPER PLUG	779
1127 17901501	SCREW THREAD FORM	780
2000 75887326	SCREW CAPTIVE	780

* FOR ALL PWA'S SEE DIAGRAM SECTION OF MANUAL FOR CORRECT CIRCUIT BOARD IDENTIFICATION AND BREAKDOWN

PWA'S CAN BE REPLACED SEPARATELY OR BY REPLACING ASSEMBLY ITEM 779 WHICH INCLUDED BOTH PWA'S

Figure 8-6. Power Supply (Sheet 1 of 2)



ITEM IDENT NO	DESCRIPTION	WHERE USED
0301 83429802	HAWK COMMON PARTS	MOD
0400 83456501	BASE DECK-MACHINED	301
0401 83451403	CARTRIDGE REC	301
0409 77834644	COVER-ELECTRONICS	301
0417 10127112	SCREW PAN HD MACH	301
0432 10127121	SCREW PAN HD MACH	301
0434 10127123	SCREW PAN HD MACH	301
0441 10125605	WASHERS PLAIN	301
0442 10125606	WASHERS PLAIN	301
0445 10125804	WASHERS SPR LOCK	301
0446 10125803	WASHERS SPR LOCK	301
0448 10125805	WASHERS SPR LOCK	301
0449 10125105	NUT HEX MACH	301
0453 51568605	WASHER	301
0454 93728222	SCREW PH HD MACH	301
0460 24547502	PLATE, WARNING	301
0470 75308012	CARD CAGE ASSY	301
0472 10127114	SCR PAN HD	301

ITEM IDENT NO	DESCRIPTION	WHERE USED
0473 46334400	LABEL-CAUTION	301
0474 83495900	PLATE-IND PWR SU	301
0481 77835140	GROUND STRAP	301
0482 10126403	WASH EXT TOOTH LO	301
0483 75769100	LABEL-SWITCH	301
0485 83451602	MAGNETIC SENSOR ASSY	301
0489 83415607	LABEL	301
0491 83451700	STRAP-GRND, PWR SPLY	301
0492 95694202	SPACER-BRASS	301
0493 10127146	SCREW PAN HD MACH	301
0494 92615012	WASHER-SHOULDER FIBE	301
0502 75802301	VOLTAGE ADJUST PLUG	301
0509 73669601	LABEL-CONFIG	301
0516 72959300	LABEL-FIELD CHANGE L	301
0622 77610636	SCREW SELF LK	301
0699 75306101	TETHER-LINE	301
0721 83410562	GASKET STRIP PRESSURE	301
0750 77830734	LABEL-SWITCH	301
0765 77834781	WARNING LABEL	301
0767 83484400	QUADRACLIP	301
1107 95694206	SPACER	301

Figure 8-7. Common Parts (Sheet 1 of 3)

ITEM IDENT NO	DESCRIPTION	WHERE USED
0301 83429802	HAWK COMMON PARTS	MOD
0400 83456501	BASE DECK-MACHINED	301
0403 75286701	SPINDLE	301
0404 75316008	ACTUATOR ASSY	301
0405 75319001	MAGNET ASSY	301
0407 75317102	TRANSDUCER-CONN ASSY	301
0408 46317900	CAP-TRANSDUCER END	301
0410 77598300	BRACKET-CONNECTOR	301
0420 76190640	DISK FIXED, RECORDING	301
0421 75288900	CLAMP - DISC	301
0422 75797301	TRANSDUCER CAM ASSY	301
0423 75315405	TRANSDUCER SCALE ASM	301
0425 75797700	BAR EXPANSION MACHINE	301
0429 93788082	SCREW SELF LOCKING 4	301
0430 10127111	SCREW PAN HD MACH	301
0431 10127113	SCREW PAN HD MACH	301
0432 10127121	SCREW PAN HD MACH	301
0435 10126255	SCR SOC HD	301

ITEM IDENT NO	DESCRIPTION	WHERE USED
0437 92815197	SCREW CAP SOC HD	301
0438 92815229	SCREW CAP SOC HD	301
0441 10125605	WASHERS PLAIN	301
0443 10125607	WASHERS PLAIN	301
0445 10125804	WASHERS SPR LOCK	301
0446 10125803	WASHERS SPR LOCK	301
0448 10125805	WASHERS SPR LOCK	301
0455 75796902	DAMPER-OSCILLATION	301
0456 75313921	ADHESIVE RUBBER BASE	301
0457 75800400	PIN-ACTUATOR ALIGNMENT	301
0458 10125106	NUT HEX MACH	301
0462 51853006	CLAMP, CABLE ADHESIVE	301
0463 75800602	RETRACT HARNESS ASSY	301
0464 75739501	PRE-AMP HARNESS ASSY	301
0465 75739701	SWITCH BOARD HARNESS	301
0466 92021004	PIN, DOWEL	301
0467 51853005	CLAMP	301
0469 95125305	LOCTITE GRADE C	301
0472 10127114	SCR PAN HD	301
0475 77830539	IDENT PLATE-PRODUCT	301
0476 75797100	STAND OFF	301
0480 12211011	LUBRIPATE 30-AA	301
0482 10126403	WASH EXT TOOTH LO	301
0487 94655401	PIN, HITCH	301
0489 83415607	LABEL	301
0493 10127146	SCREW PAN HD MACH	301
0495 83482400	SECTOR RING ASSY 8	301
0513 92021093	PIN-DOWEL	301
0514 75312013	SPEC TAPE	301
0519 83457902	PACKLOCK ASSY	301
0520 75739105	RECEIVER HARNESS ASSY	301
0521 83450500	BRACKET-SWITCH BD	301
0523 92196031	NUT-SPEED	301
0546 10127124	SCREW PAN HEAD MACH	301
0553 75319801	VELOCITY TRANSDUCER	407
0628 77832201	COMP BRKT	301
0637 77832202	BRACKET	301
0640 75293953	CONNECTOR HOUSING	407
0668 10126212	SCR HEX SOC HD CAP	301
0680 77617079	SCREW CAP	301
0763 94245602	CONTACT CRIMP INSERT	407
0798 94337703	TUBING HEAT SRNK	407
1046 51853011	CLAMP CABLE ADHESIVE	301
1090 24548310	WIRE ELEC	407

FROM SHEET 6

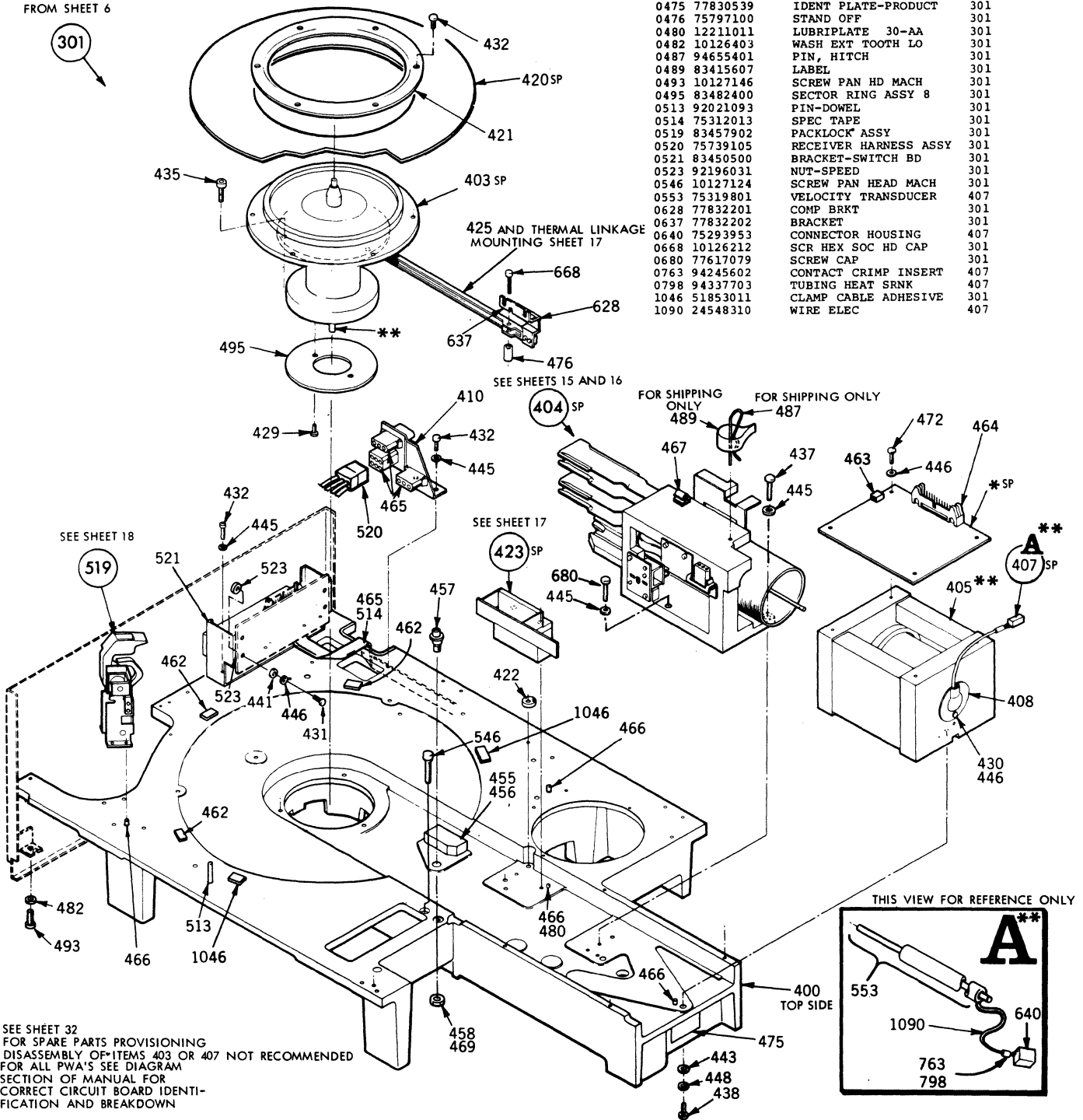
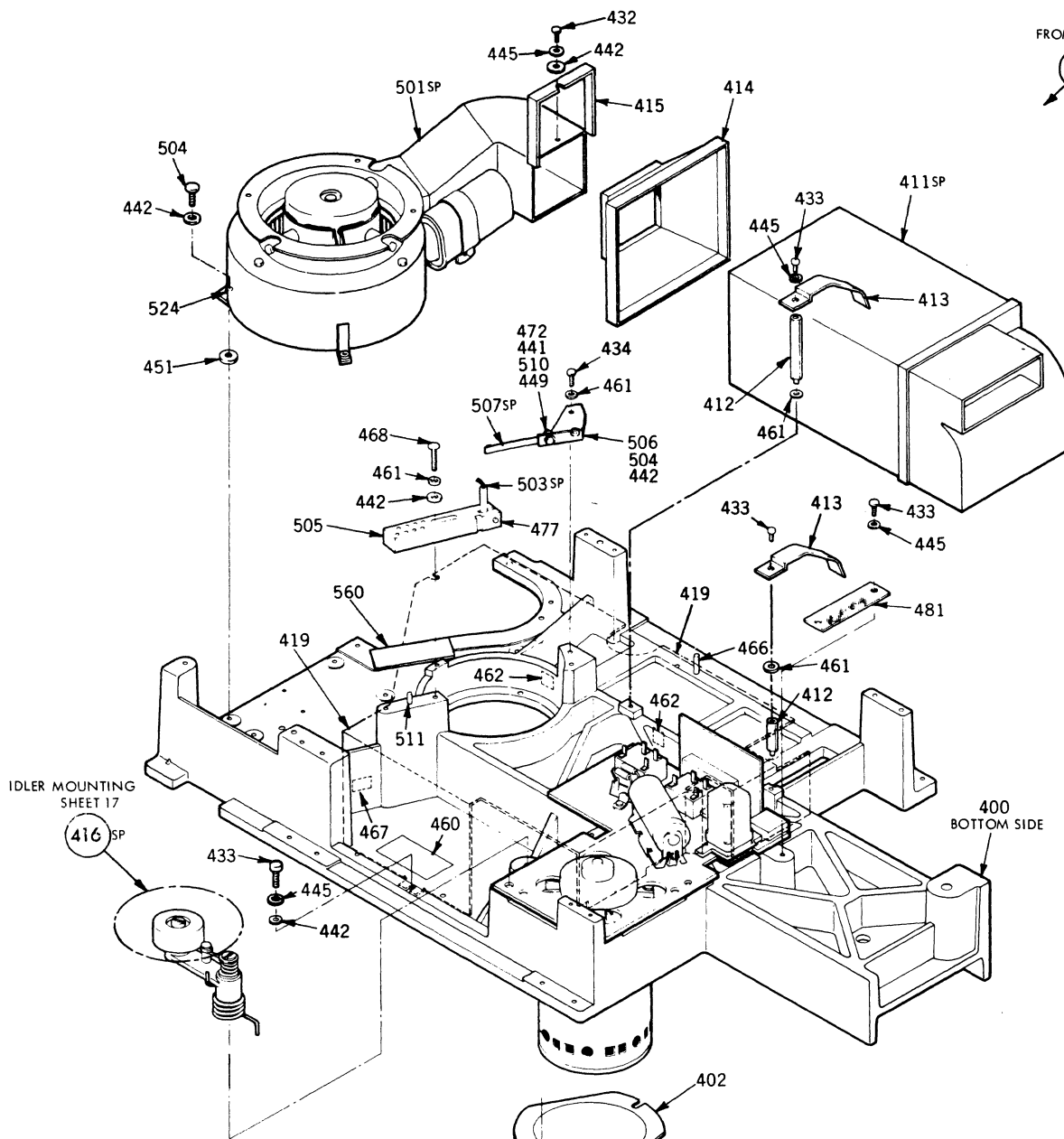
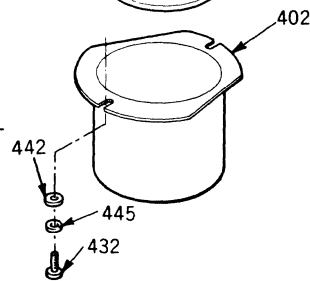


Figure 8-7. Common Parts (Sheet 2 of 3)



ITEM IDENT NO	DESCRIPTION	WHERE USED	
0301	83429802	HAWK COMMON PARTS	MOD
0400	83456501	BASE DECK-MACHINED	301
0402	75308800	COVER MOTOR	301
0411	83437400	FILTER-AIR	301
0412	75749000	STANDOFF CLAMP	301
0413	75748903	CLAMP FILTER	301
0414	75308100	EXPANDER-BLOWER	301
0415	75749201	BRACKET-EXPANDER	301
0416	75793103	IDLER ASSY	301
0419	77830700	UNDER COVER ASSY	301
0432	10127121	SCREW PAN HD MACH	301
0433	92742201	SCREW PAN HD MACH	301
0434	10127123	SCREW PAN HD MACH	301
0441	10125605	WASHERS PLAIN	301
0442	10125606	WASHERS PLAIN	301
0445	10125804	WASHERS SPR LOCK	301
0449	10125105	NUT HEX MACH	301
0451	75806504	WASHER-REDUCED	301
0460	24547502	PLATE, WARNING	301
0461	10126402	WASH EXT TOOTH LO	301
0462	51853006	CLAMP, CABLE ADHESIVE	301
0466	92021004	PIN, DOWEL	301
0467	51853005	CLAMP	301
0468	10127125	SCREW PAN HD MACH	301

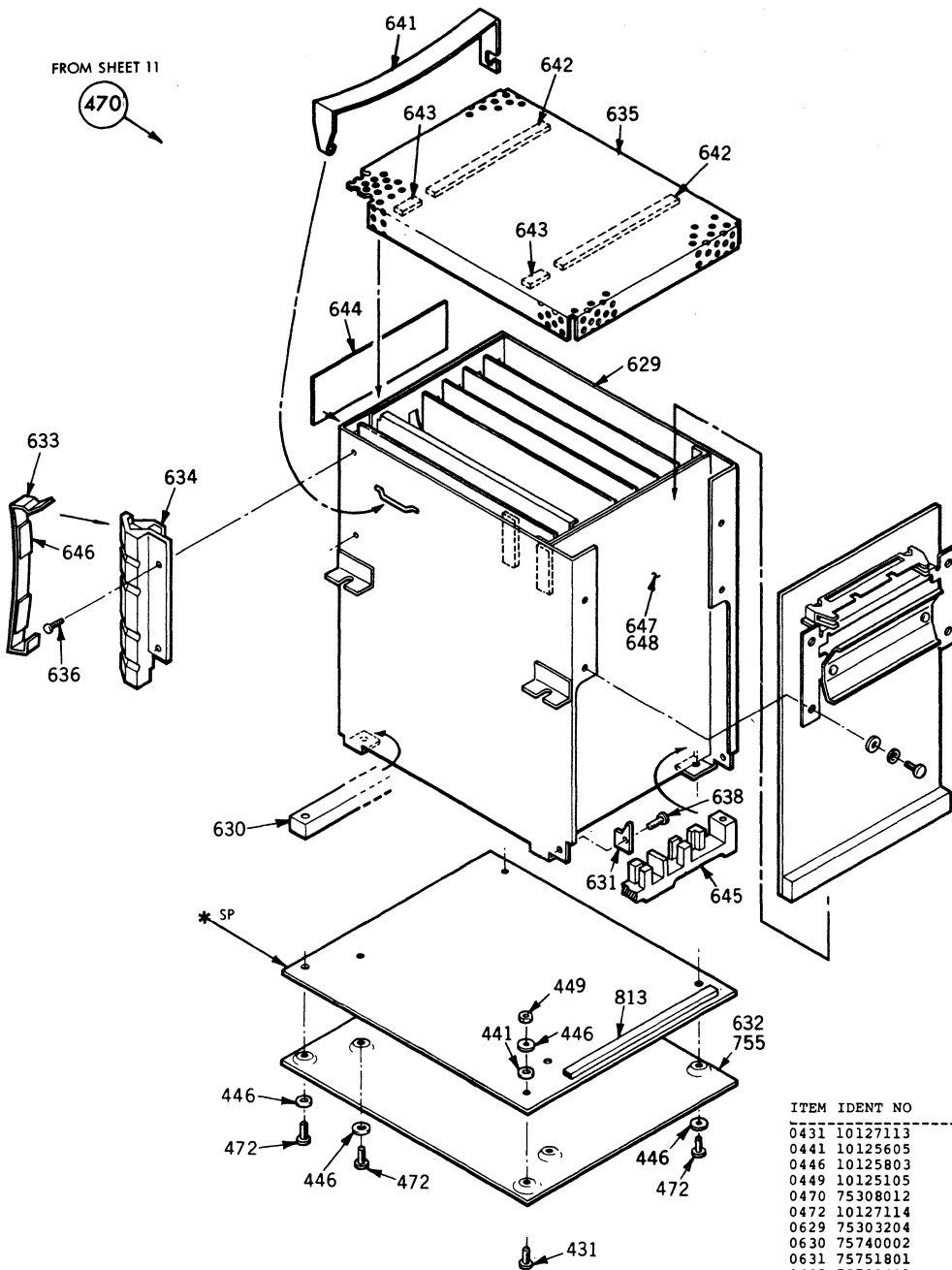


ITEM IDENT NO	DESCRIPTION	WHERE USED	
0472	10127114	SCR PAN HD	301
0477	10126215	SCREW CAP SOC HD	301
0481	77835140	GROUND STRAP	301
0501	83457101	BLOWER ASSY	301
0503	75793803	SENSOR CABLE ASSY	301
0504	93115287	SCREW PAN	301
0505	83445800	MOUNT-SENSOR	301
0506	83445900	BRACKET-STATIC GRND	301
0507	40054700	SPRING STATIC GROUND	301
0510	10126401	WASH EXT TOOTH LO	301
0511	92021001	PIN-DOWEL .125X.38	301
0524	95649726	GROMMET-BLOWER MTG	301
0560	83451810	INSULATOR	301

Figure 8-7. Common Parts (Sheet 3 of 3)

FROM SHEET 11

470



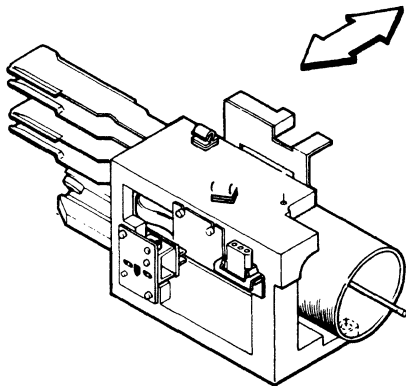
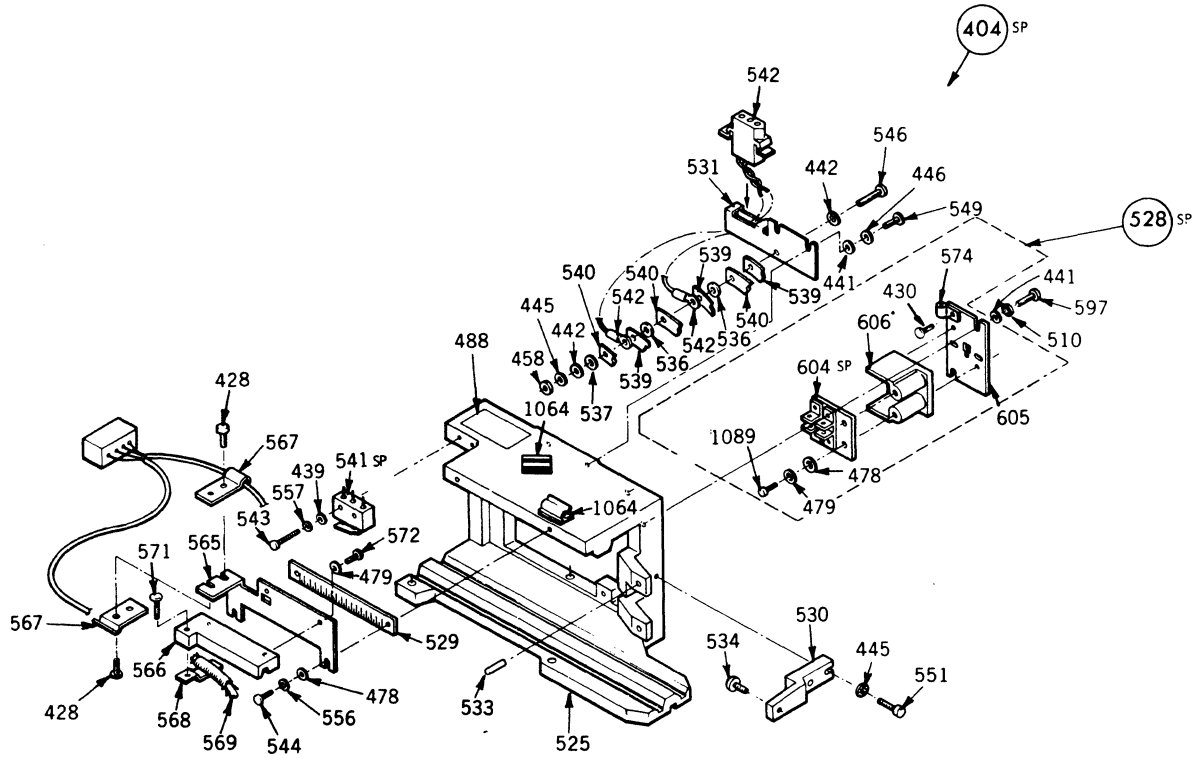
* FOR ALL PWA'S SEE DIAGRAM SECTION OF MANUAL FOR CORRECT CIRCUIT BOARD IDENTIFICATION AND BREAKDOWN.

ITEM IDENT NO	DESCRIPTION	WHERE USED
0431 10127113	SCREW PAN HD MACH	470
0441 10125605	WASHERS PLAIN	470
0446 10125803	WASHERS SPR LOCK	470
0449 10125105	NUT HEX MACH	470
0470 75308012	CARD CAGE ASSY	301
0472 10127114	SCR PAN HD	470
0629 75303204	CARD CAGE	470
0630 75740002	STOP-CIRCUIT BOARD	470
0631 75751801	GUIDE-CIRCUIT	470
0632 75792601	COVER MOTHER	470
0633 75799402	CLIP-HEAD CABLE, QUAL	470
0634 83445400	GUIDE WIRE	470
0635 75739900	COVER-CARD CAGE	470
0636 95655501	SCREW SHEET METAL	470
0638 95655500	SCREW SHEET METAL	470
0641 75803300	CLAMP-CAGE COVER	470
0642 75803500	STRIP-CORK RUBBER	470
0643 75803501	STRIP-CORK RUBBER	470
0644 75802700	LABEL-CARD LOCATION	470
0645 83479600	STOP-KEYED INJ MOLD	470
0646 75803503	STRIP-PRESSURE	470
0647 75803802	INSULATOR-FISHPAPER	470
0648 75764700	ADHESIVE SPRAY	470
0755 83455800	INSULATOR MOTHER COV	470
0813 75287700	GASKET	470

Figure 8-8. Card Cage Assembly

THIS VIEW FOR REFERENCE ONLY.
DISASSEMBLY NOT RECOMMENDED.
HOWEVER ITEMS 528, 530, & 541
CAN BE REPLACED.

FROM SHEET 12



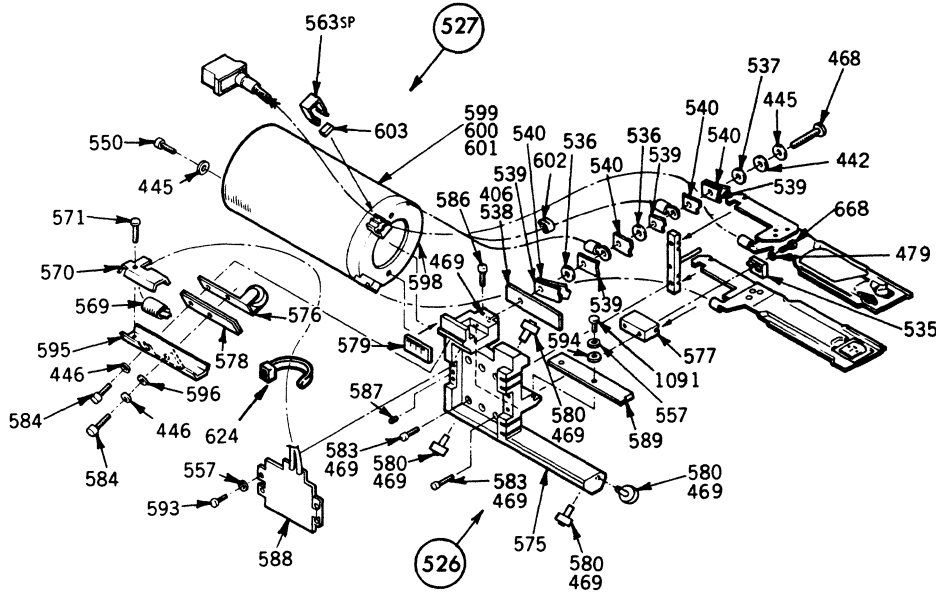
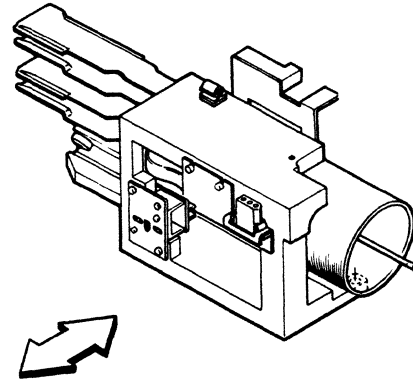
ITEM	IDENT NO	DESCRIPTION	WHERE USED
0404	75316008	ACTUATOR ASSY	301
0428	92815096	SCREW CAP SOC HD	404
0430	10127111	SCREW PAN HD MACH	528
0439	10125602	WASHERS PLAIN	404
0441	10125605	WASHERS PLAIN	404
0442	10125606	WASHERS PLAIN	404
0445	10125804	WASHERS SPR LOCK	404
0446	10125803	WASHERS SPR LOCK	404
0458	10125106	NUT HEX MACH	404
0478	10125603	WASHERS PLAIN	404
0478	10125603	WASHERS PLAIN	528
0479	10125801	WASHERS SPR LOCK	404
0479	10125801	WASHERS SPR LOCK	528
0488	83415603	LABEL	404
0510	10126401	WASH EXT TOOTH LO	404
0525	75316104	FRAME-ACTUATOR MACH	404
0528	83447302	DETECTOR ASSY-END TR	404
0529	75317900	SCALE-VERNIER FIXED	404
0530	75797400	BRACKET-BUMPER, CAST	404
0531	75317501	STRIP-BACKUP ACTUATOR	404
0533	75317200	CAM-HEAD ARM	404
0534	93623000	BUMPER, RUBBER	404
0536	75296101	WASHER PHENOLIC	404
0537	75296201	SPACER PHENOLIC	404
0539	75797500	LEAD-FLEX COIL PR	404
0540	73555101	INSULATOR-FLEX LEAD	404
0541	92549007	SW SUBMINIATURE BASI	404
0542	75800502	COIL POWER HARNESS	404
0543	10127169	SCREW PAN HD MACH	404
0544	10127104	SCREW PAN HD MACH	404
0546	10127124	SCREW PAN HD MACH	404
0549	92815160	SCREW CAP SOC HD	404
0551	92815195	SCREW CAP SOC HD	404
0556	10126101	WASH INT TOOTH LK	404
0557	10126100	WASH INT TOOTH LK	404
0565	83493900	BRACKET-CHANNEL	404
0566	83493800	CHANNEL-UPPER	404
0567	83494200	CLAMP-WIRE	404
0568	83494001	CLAMP-SPIRAL GUIDE	404
0569	83454400	STIFFNER	404
0571	10127105	SCREW PAN HD MACH	404
0572	10127102	SCREW PAN HD	404
0574	00863701	CLAMP CABLE	528
0597	10125015	SCR PAN HD	404
0604	77612607	OPTICAL SWITCH ASSY	528
0605	83447401	PLATE-DETECTOR MTG	528
0606	83447500	ADAPTER-HORIZ POS	528
1064	51853015	CLAMP CABLE	404
1089	10126214	SCREW HEX	528

Figure 8-9. Actuator with Detector Assembly

THIS VIEW FOR REFERENCE ONLY.
DISASSEMBLY NOT RECOMMENDED.
HOWEVER ITEMS 535, & 563 CAN BE REPLACED.

FROM SHEET 12

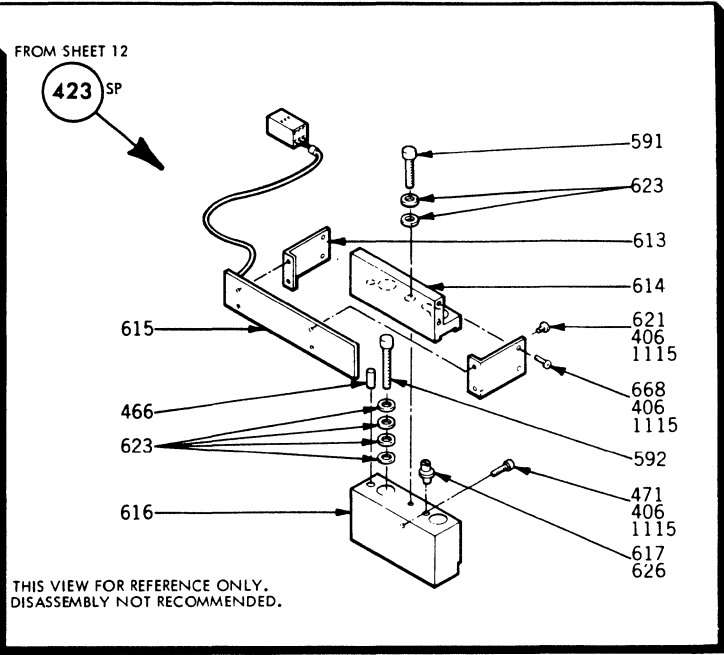
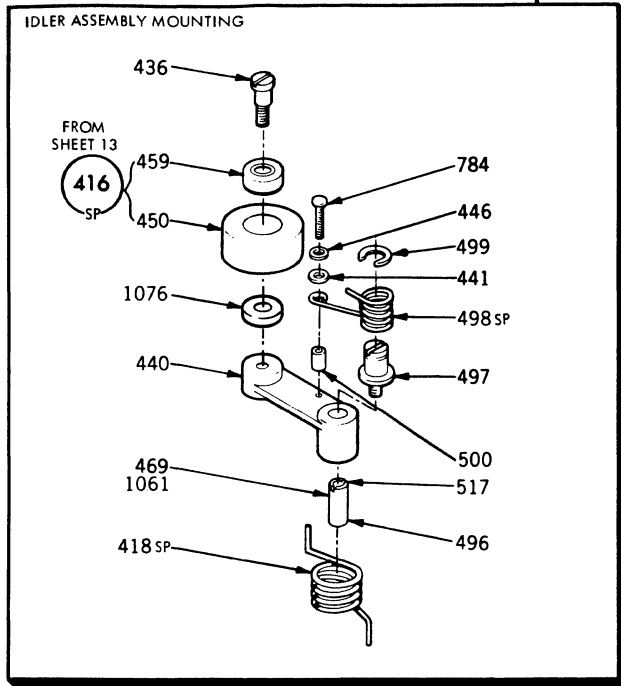
404 SP



ITEM IDENT NO	DESCRIPTION	WHERE USED
0404 75316008	ACTUATOR ASSY	301
0406 95125324	LOCTITE	404
0442 10125606	WASHERS PLAIN	404
0445 10125804	WASHERS SPR LOCK	404
0446 10125803	WASHERS SPR LOCK	526
0468 10127125	SCREW PAN HD MACH	404
0469 95125305	LOCTITE GRADE C	526
0469 95125305	LOCTITE GRADE C	404
0479 10125801	WASHERS SPR LOCK	404
0526 83475501	CARRIAGE ASSY	404
0527 75319603	COIL ASSY	404
0535 73228200	PLATE-ARM CLAMP	404
0536 75296101	WASHER PHENOLIC	404
0537 75296201	SPACER PHENOLIC	404
0538 73555300	STRIP-BACKUP	404
0539 75797500	LEAD-FLEX COIL PR	404
0540 73555101	INSULATOR-FLEX LEAD	404
0550 92815193	SCREW CAP SOC HD	404
0557 10126100	WASH INT TOOTH LK	404
0557 10126100	WASH INT TOOTH LK	526
0563 83490600	CLIP-CLAMP	404
0569 83454400	STIFFNER	404
0570 83494500	CLAMP-CHANNEL	404
0571 10127105	SCREW PAN HD MACH	404
0575 75316600	CARRIAGE ACTUATOR	526
0576 73197400	SPR-BEARING ASSY	526
0577 73584400	BASE-ARM CLAMP	526
0578 73197000	SPRING BEARING	526
0579 75317700	SCALE-VERNIER MOVING	526
0580 92054251	BALL BEARING	526
0583 92815097	SCREW CAP SOC HD	526
0584 10126219	SCR HEX SOC HD CAP	526

ITEM IDENT NO	DESCRIPTION	WHERE USED
0586 93344096	SCREW NYLON	526
0587 93071163	SCREW SET SOC HD	526
0588 83475401	POS TRANSDUCER SL-CO	526
0589 75314202	SCALE-END	526
0593 10127311	SCREW SLOTTED	526
0594 75806501	WASHER-REDUCED O.D.	526
0595 83494400	CHANNEL-MODILE	526
0596 75806503	WASHER	526
0598 83441700	CAP-COIL MACHINED	527
0599 94258205	WIRE-MAGNET	527
0600 95280500	EPOXY, IMPREGNATING	527
0601 75786000	INSULATION MAT	527
0602 93355001	MARKER, WIRE NUMBER 1	527
0603 75803502	STRIP-PRESSURE	527
0624 94277416	TIE WRAP	404
0668 10126212	SCR HEX SOC HD CAP	404
1091 10127310	SCREW SLOTTED	526

Figure 8-10. Actuator with Carriage and Coil Assemblies



ITEM IDENT NO	DESCRIPTION	WHERE USED
0406 95125324	LOCTITE	423
0416 75793103	IDLER ASSY	301
0418 75308503	SPRING IDLER	301
0423 75315405	TRANSDUCER SCALE ASM	301
0424 75276203	SPACER NYLON	301
0425 75797700	BAR EXPANSION MACHINE	301
0427 10126209	SCR-SOC HP CAP	301
0428 92815096	SCREW CAP SOC HD	301
0429 93788082	SCREW SELF LOCKING 4	301
0435 10126255	SCR SOC HD	301
0436 75792900	SCREW IDLER	301
0439 10125602	WASHERS PLAIN	301
0440 75304501	ARM-IDLER MACHINED	301
0441 10125605	WASHERS PLAIN	301
0444 10125800	WASHERS SPR	301
0445 10125804	WASHERS SPR LOCK	301
0446 10125803	WASHERS SPR LOCK	301
0447 10126228	SCR HEX SOC HD	301
0450 75792800	IDLER	416
0451 75806504	WASHER-REDUCED	301
0459 92054227	CR BEARING BALL	416
0466 92021004	PIN, DOWEL	423
0469 95125305	LOCTITE GRADE C	301
0471 92824097	SCREW CAP	423
0476 75797100	STAND OFF	301
0477 10126215	SCREW CAP SOC HD	301
0478 10125603	WASHERS PLAIN	301
0479 10125801	WASHERS SPR LOCK	301
0490 75312751	SPEC-EPOXY ADHESIVE	301
0495 83482400	SECTOR RING ASSY 8	301
0496 83443101	STUD-STUB	301
0497 83443200	STUD-SNUB	301
0498 83443301	CLUTCH SNUBBING	301
0499 92033011	RING-RETAINING	301
0500 93109310	SPACER 1 OD =6	301
0517 75886381	LUBRICANT	301
0581 93115168	SCR HEX SOC HD	301
0591 77617072	SCREW CAP	423
0592 77617079	SCREW CAP	423
0613 75315501	SCALE-FLEX MOUNT	423
0614 75315600	MOUNT-TRANSDUCER	423
0615 75315901	POS TRANS SCALE	423
0616 75797001	BASE TRANSDUCER MOUNT	423
0617 75797200	PIN XDCER ALIGNMENT	423
0621 92720042	SCREW BUTTON HD	423
0623 93651029	WASHER, BELLEVILLE	423
0626 95010890	GREASE-LUBRIPLATE	423
0628 77832201	COMP BRKT	301
0637 77832202	BRACKET	301
0668 10126212	SCR HEX SOC HD CAP	423
0668 10126212	SCR HEX SOC HD CAP	301
0784 10127115	SCREW PAN HD	301
0891 95125322	LOCTITE	301
1061 95125317	LOCTITE PRIMER	301
1076 10125608	WASHER	301
1115 95125311	LOCTITE PRIMER	423

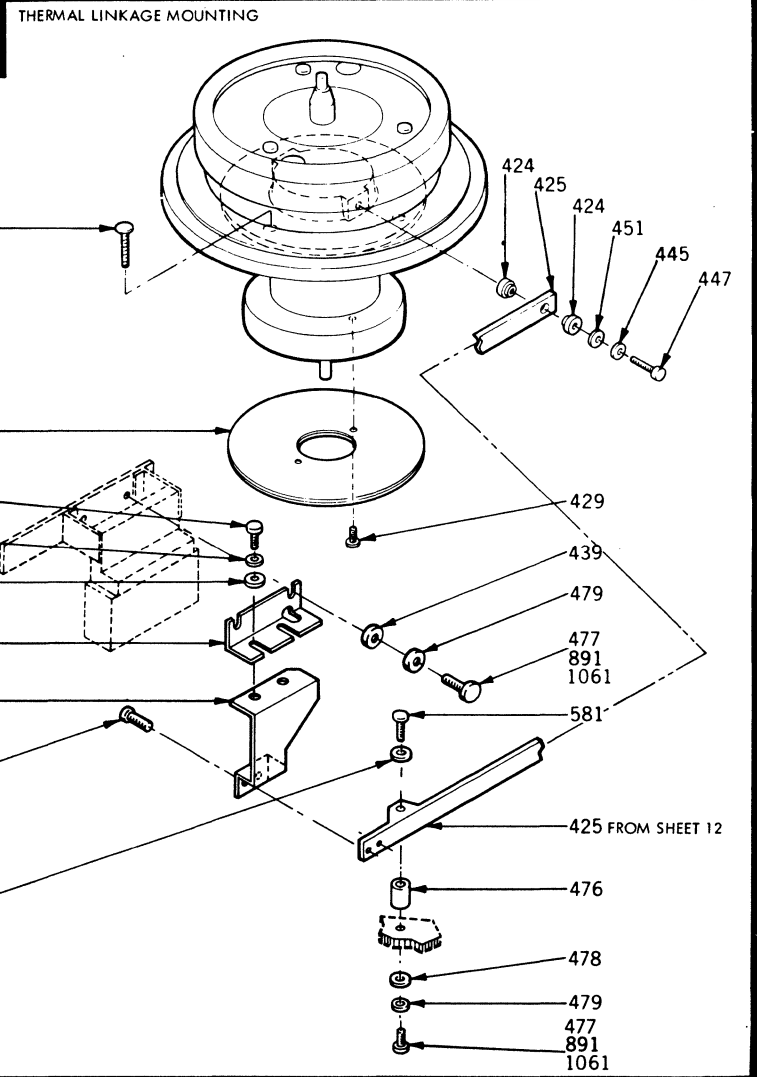
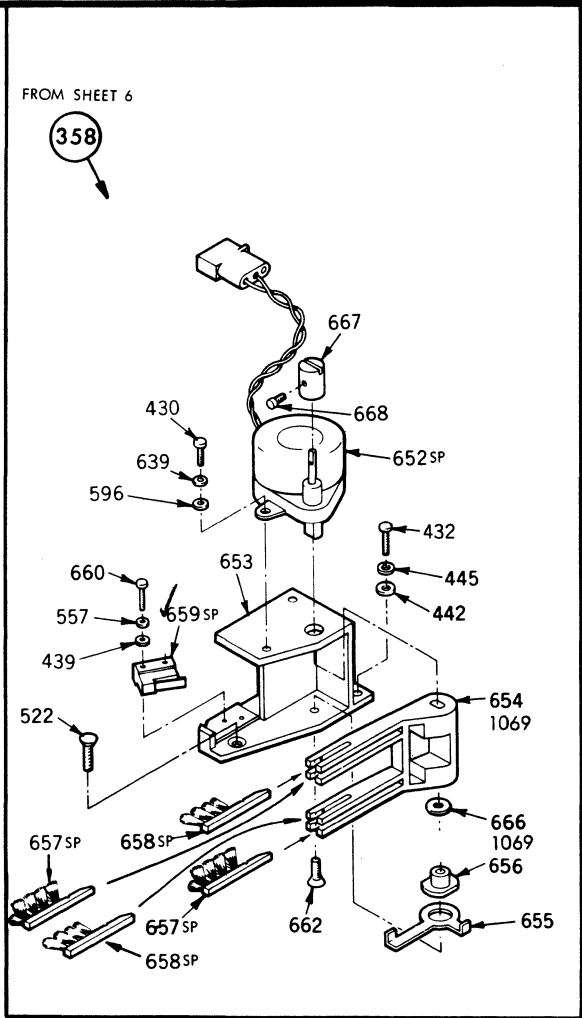
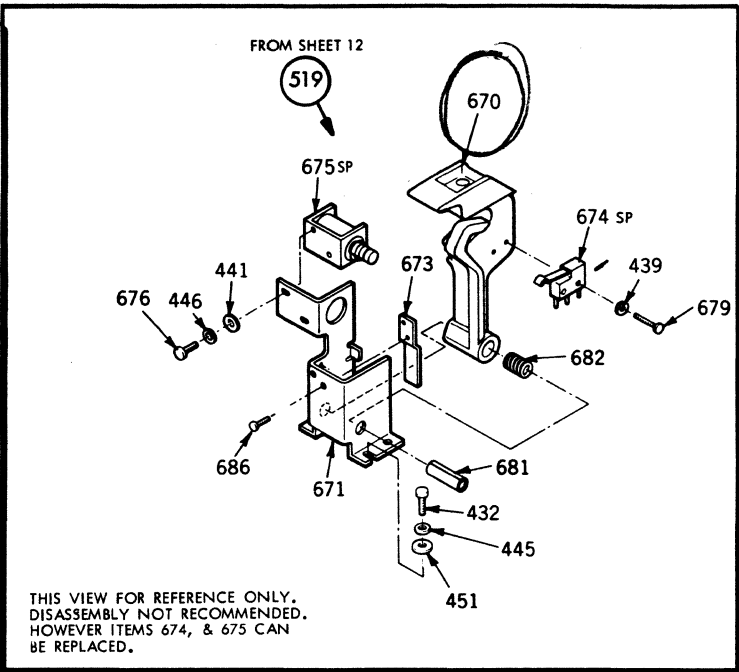
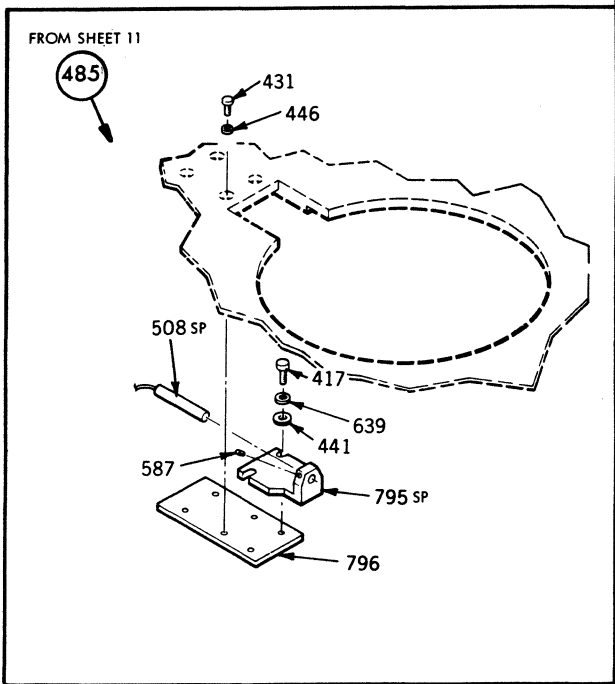


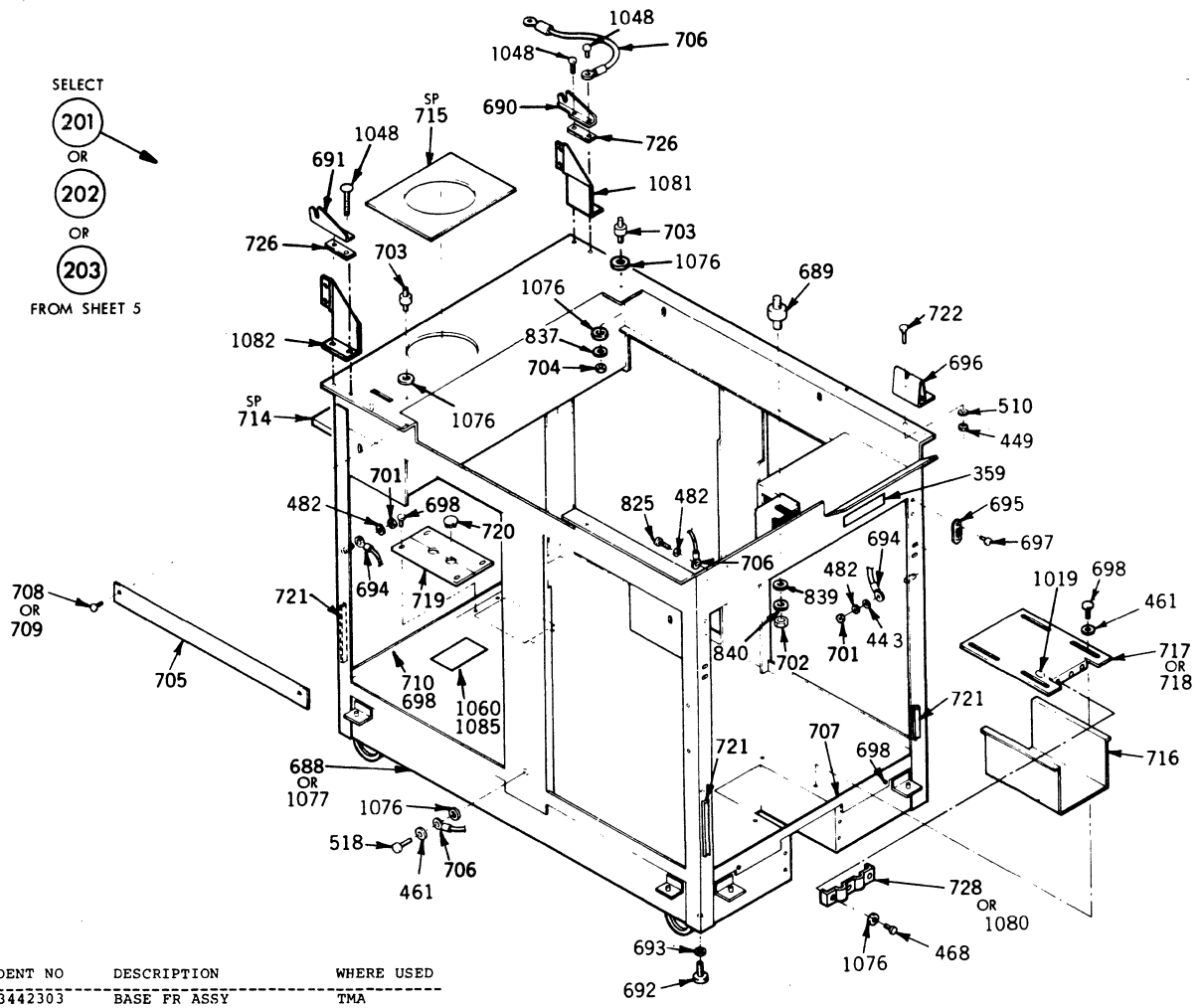
Figure 8-11. Common Parts Sub Assemblies (Sheet 1 of 2)



ITEM	IDENT NO	DESCRIPTION	WHERE USED
0358	83466001	BRUSH DRIVE ASSY	MOD
0417	10127112	SCREW PAN HD MACH	485
0430	10127111	SCREW PAN HD MACH	358
0431	10127113	SCREW PAN HD MACH	485
0432	10127121	SCREW PAN HD MACH	358
0432	10127121	SCREW PAN HD MACH	519
0439	10125602	WASHERS PLAIN	358
0439	10125602	WASHERS PLAIN	519
0441	10125605	WASHERS PLAIN	519
0441	10125605	WASHERS PLAIN	485
0442	10125606	WASHERS PLAIN	358
0445	10125804	WASHERS SPR LOCK	358
0446	10125803	WASHERS SPR LOCK	485
0446	10125803	WASHERS SPR LOCK	519
0451	75806504	WASHER REDUCED	519
0485	83451602	MAGNETIC SENSOR ASSY	301
0508	75793802	SENSOR CABLE ASSY	485
0519	83457902	PACKLOCK ASSY	301
0522	10125920	SCREW FL HD	301
0557	10126100	WASH INT TOOTH LK	358
0587	93071163	SCREW SET SOC HD	485
0596	75806503	WASHER	358
0639	10126103	WASH INT TOOTH LK	358
0639	10126103	WASH INT TOOTH LK	485
0652	75740701	BRUSH MOTOR ASSY	358
0653	83466100	BRUSH DRIVE MOUNT	358
0654	83466200	BRUSH HOLDER	358
0655	83466300	DELAY ARM	358
0656	83466400	BRUSH HOLDER STUD	358
0657	40024501	BRUSH, DISK	358
0658	40024502	BRUSH, DISK	358
0659	36159806	SWITCH-PIVOT LEVER	358
0660	92742011	SCREW M-C PAN HD	358
0662	10125919	SCREW FLAT HD	358
0666	93529003	WASHER, SPRING WAVE	358
0667	83467100	BRUSH INDICATOR	358
0668	10126212	SCR HEX SOC HD CAP	358
0670	83457201	ARM LOCK MOLDER	519
0671	83457302	PACK LOCK BRACKET	519
0673	77598701	SPRING ARM	519
0674	77598501	SWITCH SUBMINIATURE	519
0675	94357804	SOLENOID DC	519
0676	10127332	SCREW QAN HD MACH	519
0679	18607916	SCREW THD CUTTING	519
0681	93530436	ROLL PIN	519
0682	75779867	SPRING	519
0686	10127120	SCREW PAN HD MACH	519
0795	83451104	UPPER SENSOR HOLDER	485
0796	83450000	PLATE-SENSOR MTG	485
1069	95016100	LUBRICANT	358

203 L18
5.60

Figure 8-11. Common Parts Sub Assemblies (Sheet 2 of 2)



ITEM IDENT NO	DESCRIPTION	WHERE USED
0201 83442303	BASE FR ASSY	TMA
0202 83442305	BASE FR ASSY	TMA
0203 83442306	BASE FR ASSY	TMA
0359 75886347	IDENT PLATE	203
0443 10125607	WASHERS PLAIN	202 203
0445 10125804	WASHERS SPR LOCK	519
0449 10125105	NUT HEX MACH	201-203
0461 10126402	WASH EXT TOOTH LO	202 203
0468 10127125	SCREW PAN HD MACH	202 203
0482 10126403	WASH EXT TOOTH LO	201-203
0510 10126401	WASH EXT TOOTH LO	201-203
0518 10125030	SCREW HEX HD	201-203
0688 83445706	FRAME CABINET	201 202
0689 75884516	SHOCK MOUNT-LORD	201-203
0690 73469100	PIVOT-COVER	201-203
0691 73469101	PIVOT-COVER	201-203
0692 93697013	LEVELER	201-203
0693 93006033	NUT JAM HEX	201-203
0694 75730805	CABLE ASSY GROUND	201-203
0695 75766700	FASTENER-NYLON	201-203
0696 83444100	GROUND WIPER	201-203
0697 17901508	SCR THD ROLL	201-203
0698 93592200	SCR TPG HEX PNL	201-203
0701 10125108	NUT HEX MACH	201-203
0702 10125303	NUT HEXAGON	201-203
0703 75884517	SHOCK MOUNT-LORD	201-203
0704 10125301	NUT HEXAGON	201-203
0705 83492800	PLATE-COVER	201-203
0706 94281426	BR CABLE, GROUND	201-203
0707 83474601	FIRE-STOP, REAR	201-203
0708 92742196	SCREW M-C PAN HD	201
0709 92723234	SCREW BUTTON SOC HD	201-203
0710 77831951	FIRE-STOP, FRONT	201-203
0714 75804800	AIR FILTER	201-203
0715 77599600	GASKET BLOWER CAB	201-203
0716 83478200	COVER	201-203
0717 83478700	CLAMP	201
0718 83478701	CLAMP	202 203
0719 83494801	PLATE, AC CABLE	201-203
0720 93522008	PLUG-SNAP BUTTON	201-203
0721 83410562	GASKET STRIP PRESSURE	201-203
0722 92932206	SCR FLAT HD SST	201-203
0726 83444900	SHIM PLATE	201-203
0728 77832300	CLAMP	202
0825 17901516	SCR THD ROLL	202 203
0837 10125806	SPRING LK WSHR	201-203

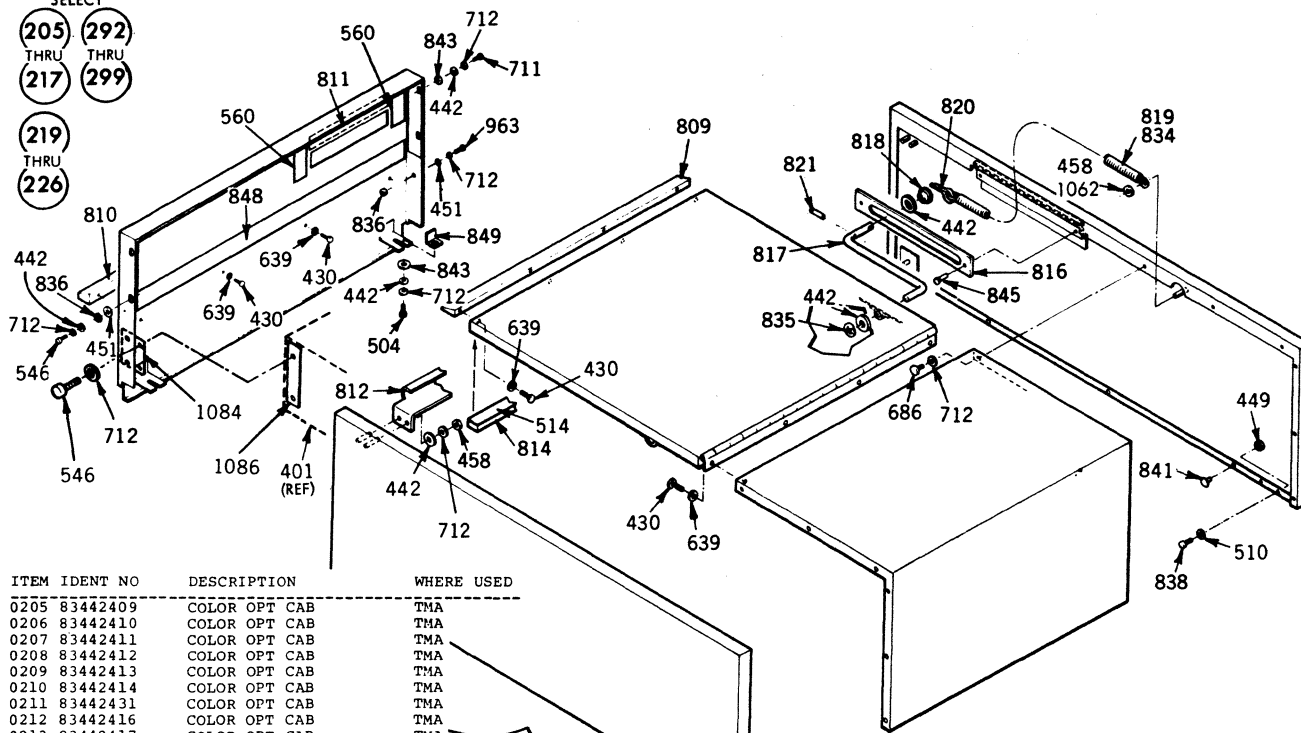
ITEM IDENT NO	DESCRIPTION	WHERE USED
0839 10125610	WSHR PLAIN	201-203
0840 10125808	SPRING LK WSHR	201-203
1019 75731301	SYMBOL GRND (DECAL)	203
1048 17901519	SCR THD ROLL PAN HD	201-203
1060 77832955	LABEL, RATING	201 202
1076 10125608	WASHER	201-203
1077 83445707	FRAME CABINET	203
1080 77832301	CLAMP	203
1081 75884875	GR FLEXIBLE	203
1082 75884876	GR FLEXIBLE	203
1085 77836000	LABEL, RATING	203

Figure 8-12. Base Frame Assembly

FROM SHEET 5
SELECT

(205 THRU 217) (292 THRU 299)

(219 THRU 226)



ITEM	IDENT NO	DESCRIPTION	WHERE USED
0205	83442409	COLOR OPT CAB	TMA
0206	83442410	COLOR OPT CAB	TMA
0207	83442411	COLOR OPT CAB	TMA
0208	83442412	COLOR OPT CAB	TMA
0209	83442413	COLOR OPT CAB	TMA
0210	83442414	COLOR OPT CAB	TMA
0211	83442431	COLOR OPT CAB	TMA
0212	83442416	COLOR OPT CAB	TMA
0213	83442417	COLOR OPT CAB	TMA
0214	83442418	COLOR OPT CAB	TMA
0215	83442419	COLOR OPT CAB	TMA
0216	83442420	COLOR OPT CAB	TMA
0217	83442421	COLOR OPT CAB	TMA
0219	83442423	COLOR OPT CAB	TMA
0220	83442424	COLOR OPT CAB	TMA
0221	83442425	COLOR OPT CAB	TMA
0222	83442426	COLOR OPT CAB	TMA
0223	83442427	COLOR OPT CAB	TMA
0224	83442428	COLOR OPT CAB	TMA
0225	83442429	COLOR OPT CAB	TMA
0226	83442430	COLOR OPT CAB	TMA
0292	83442432	COLOR OPT CAB	TMA
0293	83442433	COLOR OPT CAB	TMA
0294	83442434	COLOR OPT CAB	TMA
0295	83442435	COLOR OPT CAB	TMA
0296	83442436	COLOR OPT CAB	TMA
0297	83442437	COLOR OPT CAB	TMA
0298	83442438	COLOR OPT CAB	TMA
0299	83442439	COLOR OPT CAB	TMA
0430	10127111	SCREW PAN HD MACH	205-217 219-226
0430	10127111	SCREW PAN HD MACH	292-299
0442	10125606	WASHERS PLAIN	205-217 219-226
0442	10125606	WASHERS PLAIN	292-299
0449	10125105	NUT HEX MACH	205-211 213-215
0449	10125105	NUT HEX MACH	217
0449	10125105	NUT HEX MACH	219-226 292-299
0451	75806504	WASHER-REDUCED	205-217 219-226
0451	75806504	WASHER-REDUCED	292-299
0458	10125106	NUT HEX MACH	205-211 213-215
0458	10125106	NUT HEX MACH	217
0458	10125106	NUT HEX MACH	219-226 292-299
0504	93115287	SCREW PAN	205-217 219-226
0504	93115287	SCREW PAN	292-299
0510	10126401	WASH EXT TOOTH LO	205-211 213-215
0510	10126401	WASH EXT TOOTH LO	217
0510	10126401	WASH EXT TOOTH LO	219-226 292-299
0514	75312013	SPEC TAPE	205-211 213-215
0514	75312013	SPEC TAPE	217
0514	75312013	SPEC TAPE	219-226 292-299
0546	10127124	SCREW PAN HD MACH	205-217 219-226
0546	10127124	SCREW PAN HD MACH	292-299
0639	10126103	WASH INT TOOTH LK	205-217 219-226
0639	10126103	WASH INT TOOTH LK	292-299
0686	10127120	SCREW PAN HD MACH	205-211 213-215
0686	10127120	SCREW PAN HD MACH	217 219-226
0686	10127120	SCREW PAN HD MACH	292-299
0711	10127347	SCREW PAN HD MACH	205-217 219-226
0711	10127347	SCREW PAN HD MACH	292-299
0712	10126104	WASH INT TOOTH LK	205-217 219-226
0712	10126104	WASH INT TOOTH LK	292-299
0809	75283200	BAR-HANDLE	205-211 213-215
0809	75283200	BAR-HANDLE	217 219-226
0809	75283200	BAR-HANDLE	292-299
0810	75283100	BAR-TRIM	205 219-226
0810	75283100	BAR-TRIM	292-299
0811	75793301	LABEL SWITCH	205-214 216 217
0811	75793301	LABEL SWITCH	219-226
0811	75793301	LABEL SWITCH	292 294 296-299

ITEM	IDENT NO	DESCRIPTION	WHERE USED
0812	75284001	BAR-COVER	205-211 213-215
0812	75284001	BAR-COVER	217 219-226
0812	75284001	BAR-COVER	292-299
0814	75288300	MAGNETIC STRIP	205-211 213-215
0814	75288300	MAGNETIC STRIP	217 219-226
0814	75288300	MAGNETIC STRIP	292-299
0816	75794101	SLIDE-LID	205-211 213-215
0816	75794101	SLIDE-LID	217 219-226
0816	75794101	SLIDE-LID	292-299
0817	75794204	ROD-SLIDE	205-211 213-215
0817	75794204	ROD-SLIDE	217 219-226
0817	75794204	ROD-SLIDE	292-299
0818	75794001	SPACER-FLANGED	205-217 219-226
0818	75794001	SPACER-FLANGED	292-299
0819	75794700	SPRING-EXTENSION	205-211 213-215
0819	75794700	SPRING-EXTENSION	217 219-226
0819	75794700	SPRING-EXTENSION	292-299
0820	92649009	PIN, COTTER	205-211 213-215
0820	92649009	PIN, COTTER	217 219-226
0820	92649009	PIN, COTTER	292-299
0821	93530007	PIN, ROLL HCS BLACK	205-211 213-215
0821	93530007	PIN, ROLL HCS BLACK	217 219-226
0821	93530007	PIN, ROLL HCS BLACK	292-299
0834	24528646	SLEEVE-VINYL	205-211 213-215
0834	24528646	SLEEVE-VINYL	217 219-226
0834	24528646	SLEEVE-VINYL	292-299
0835	93539004	FASTENER-PUSH ON	205-211 213-215
0835	93539004	FASTENER-PUSH ON	217 219-226
0835	93539004	FASTENER-PUSH ON	292-299
0836	83446400	BUMPER NYLON	205-217 219-226
0836	83446400	BUMPER NYLON	292-299
0838	92743158	SCREW SS PAN HD	205-211 213-215
0838	92743158	SCREW SS PAN HD	217 219-226
0838	92743158	SCREW SS PAN HD	292-299
0841	75774702	CLIP-PUSH IN	205-211 213-215
0841	75774702	CLIP-PUSH IN	217 219-226
0841	75774702	CLIP-PUSH IN	292-299
0843	94347104	SHOULDER WASHER THER	205-217 219-226
0843	94347104	SHOULDER WASHER THER	292-299
0845	10125712	SCR FLAT HD	205-211 213-215
0845	10125712	SCR FLAT HD	217 219-226
0845	10125712	SCR FLAT HD	292-299
0848	83451804	INSULATOR ADHESIVE	205-217 219-226
0848	83451804	INSULATOR ADHESIVE	292-299
0849	83451805	INSULATOR ADHESIVE	205-217 219-226
0849	83451805	INSULATOR ADHESIVE	292-299
0963	10127348	SCREW PAN HD	205-217 219-226
0963	10127348	SCREW PAN HD	292-299
1062	95125301	LOCTITE	205-217 219-226
1062	95125301	LOCTITE	292-299
1084	75885150	NUT PLATE	225
1086	83451802	INSULATOR	205-211 213-217
1086	83451802	INSULATOR	219-226 293-299

Figure 8-13. Color Option Cabinet (Sheet 1 of 3)

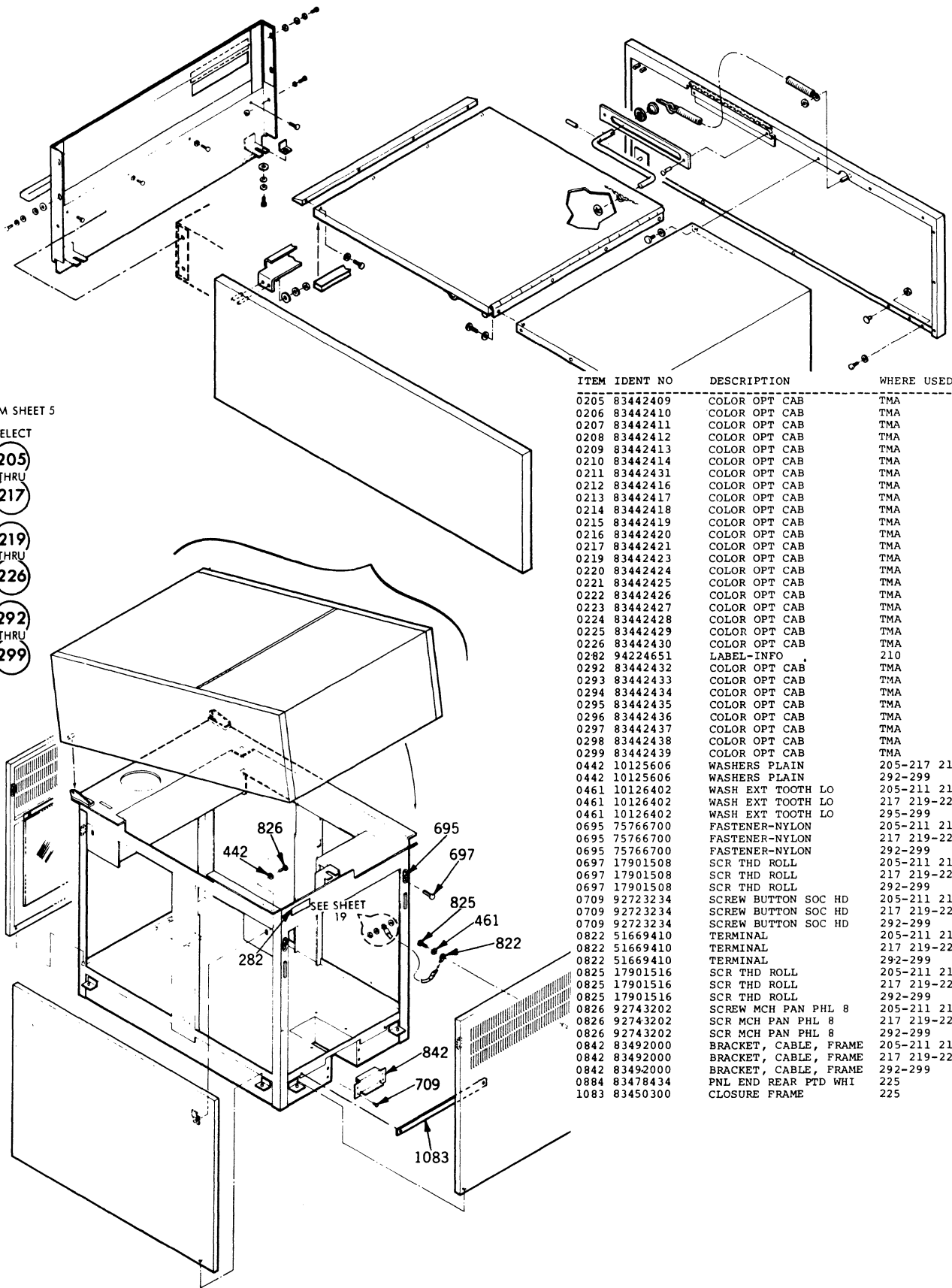
FROM SHEET 5

SELECT

(205)
THRU
(217)

(219)
THRU
(226)

(292)
THRU
(299)



ITEM	IDENT NO	DESCRIPTION	WHERE USED
0205	83442409	COLOR OPT CAB	TMA
0206	83442410	COLOR OPT CAB	TMA
0207	83442411	COLOR OPT CAB	TMA
0208	83442412	COLOR OPT CAB	TMA
0209	83442413	COLOR OPT CAB	TMA
0210	83442414	COLOR OPT CAB	TMA
0211	83442431	COLOR OPT CAB	TMA
0212	83442416	COLOR OPT CAB	TMA
0213	83442417	COLOR OPT CAB	TMA
0214	83442418	COLOR OPT CAB	TMA
0215	83442419	COLOR OPT CAB	TMA
0216	83442420	COLOR OPT CAB	TMA
0217	83442421	COLOR OPT CAB	TMA
0219	83442423	COLOR OPT CAB	TMA
0220	83442424	COLOR OPT CAB	TMA
0221	83442425	COLOR OPT CAB	TMA
0222	83442426	COLOR OPT CAB	TMA
0223	83442427	COLOR OPT CAB	TMA
0224	83442428	COLOR OPT CAB	TMA
0225	83442429	COLOR OPT CAB	TMA
0226	83442430	COLOR OPT CAB	TMA
0282	94224651	LABEL-INFO	210
0292	83442432	COLOR OPT CAB	TMA
0293	83442433	COLOR OPT CAB	TMA
0294	83442434	COLOR OPT CAB	TMA
0295	83442435	COLOR OPT CAB	TMA
0296	83442436	COLOR OPT CAB	TMA
0297	83442437	COLOR OPT CAB	TMA
0298	83442438	COLOR OPT CAB	TMA
0299	83442439	COLOR OPT CAB	TMA
0442	10125606	WASHERS PLAIN	205-217 219-226
0442	10125606	WASHERS PLAIN	292-299
0461	10126402	WASH EXT TOOTH LO	205-211 213-215
0461	10126402	WASH EXT TOOTH LO	217 219-226 292
0461	10126402	WASH EXT TOOTH LO	295-299
0695	75766700	FASTENER-NYLON	205-211 213-215
0695	75766700	FASTENER-NYLON	217 219-226
0695	75766700	FASTENER-NYLON	292-299
0697	17901508	SCR THD ROLL	205-211 213-215
0697	17901508	SCR THD ROLL	217 219-226
0697	17901508	SCR THD ROLL	292-299
0709	92723234	SCREW BUTTON SOC HD	205-211 213-215
0709	92723234	SCREW BUTTON SOC HD	217 219-226
0709	92723234	SCREW BUTTON SOC HD	292-299
0822	51669410	TERMINAL	205-211 213-215
0822	51669410	TERMINAL	217 219-226
0822	51669410	TERMINAL	292-299
0825	17901516	SCR THD ROLL	205-211 213-215
0825	17901516	SCR THD ROLL	217 219-226
0825	17901516	SCR THD ROLL	292-299
0826	92743202	SCREW MCH PAN PHL 8	205-211 213-215
0826	92743202	SCREW MCH PAN PHL 8	217 219-226
0826	92743202	SCREW MCH PAN PHL 8	292-299
0842	83492000	BRACKET, CABLE, FRAME	205-211 213-215
0842	83492000	BRACKET, CABLE, FRAME	217 219-224
0842	83492000	BRACKET, CABLE, FRAME	292-299
0884	83478434	PNL END REAR PTD WHI	225
1083	83450300	CLOSURE FRAME	225

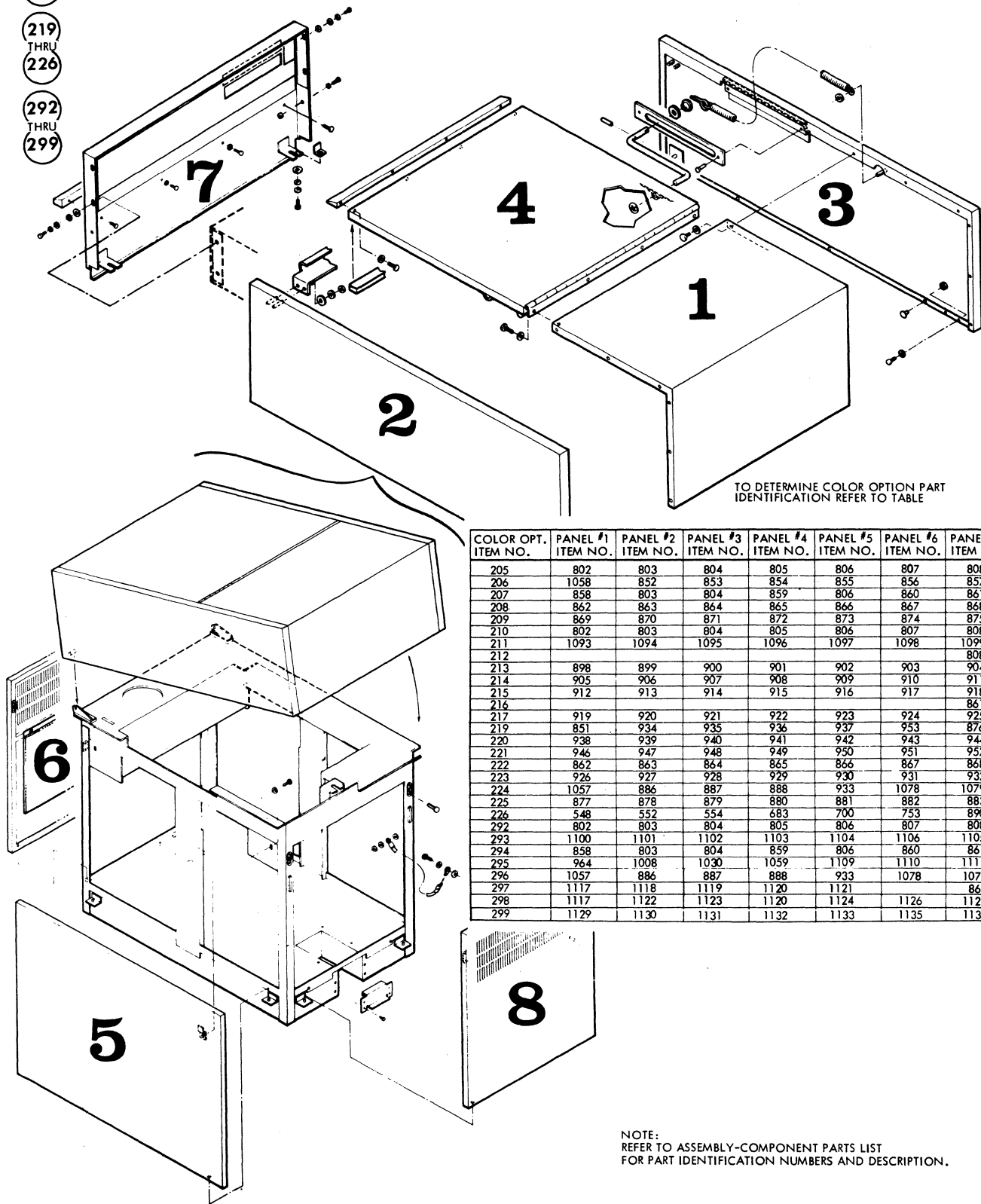
Figure 8-13. Color Option Cabinet (Sheet 2 of 3)

SELECT

205
THRU
217

219
THRU
226

292
THRU
299



TO DETERMINE COLOR OPTION PART IDENTIFICATION REFER TO TABLE

COLOR OPT. ITEM NO.	PANEL #1 ITEM NO.	PANEL #2 ITEM NO.	PANEL #3 ITEM NO.	PANEL #4 ITEM NO.	PANEL #5 ITEM NO.	PANEL #6 ITEM NO.	PANEL #7 ITEM NO.	PANEL #8 ITEM NO.
205	802	803	804	805	806	807	808	
206	1058	852	853	854	855	856	857	
207	858	803	804	859	806	860	861	
208	862	863	864	865	866	867	868	
209	869	870	871	872	873	874	875	
210	802	803	804	805	806	807	808	
211	1093	1094	1095	1096	1097	1098	1099	
212							808	
213	898	899	900	901	902	903	904	
214	905	906	907	908	909	910	911	
215	912	913	914	915	916	917	918	
216							861	
217	919	920	921	922	923	924	925	
219	851	934	935	936	937	953	876	
220	938	939	940	941	942	943	944	
221	946	947	948	949	950	951	952	
222	862	863	864	865	866	867	868	
223	926	927	928	929	930	931	932	1113
224	1057	886	887	888	933	1078	1079	
225	877	878	879	880	881	882	883	884
226	548	552	554	683	700	753	890	
292	802	803	804	805	806	807	808	
293	1100	1101	1102	1103	1104	1106	1105	
294	858	803	804	859	806	860	861	
295	964	1008	1030	1059	1109	1110	1111	
296	1057	886	887	888	933	1078	1079	
297	1117	1118	1119	1120	1121		861	
298	1117	1122	1123	1120	1124	1126	1125	
299	1129	1130	1131	1132	1133	1135	1134	

NOTE:
REFER TO ASSEMBLY-COMPONENT PARTS LIST
FOR PART IDENTIFICATION NUMBERS AND DESCRIPTION.

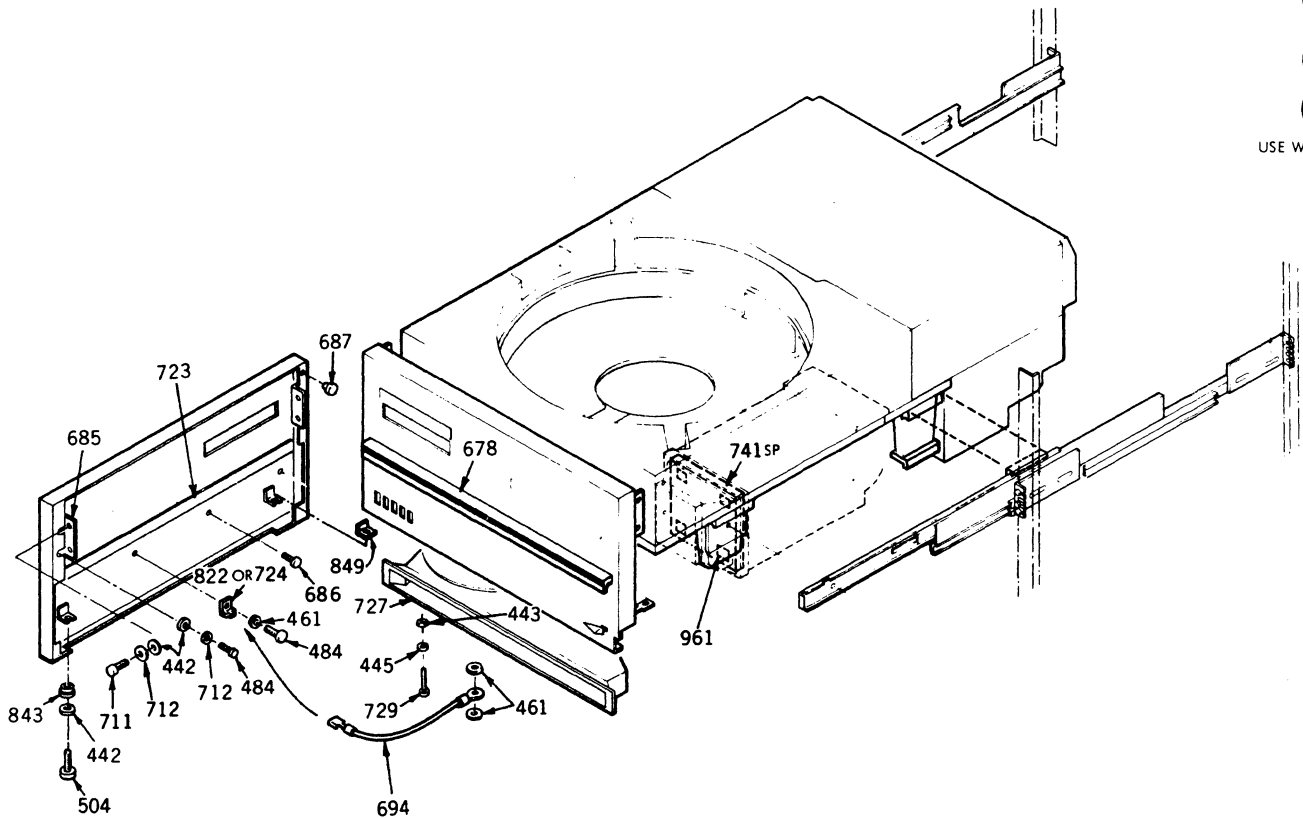
Figure 8-13. Color Option Cabinet (Sheet 3 of 3)

229

231
THRU

233

USE WITH KIT 713



INSTALLATION KIT

713

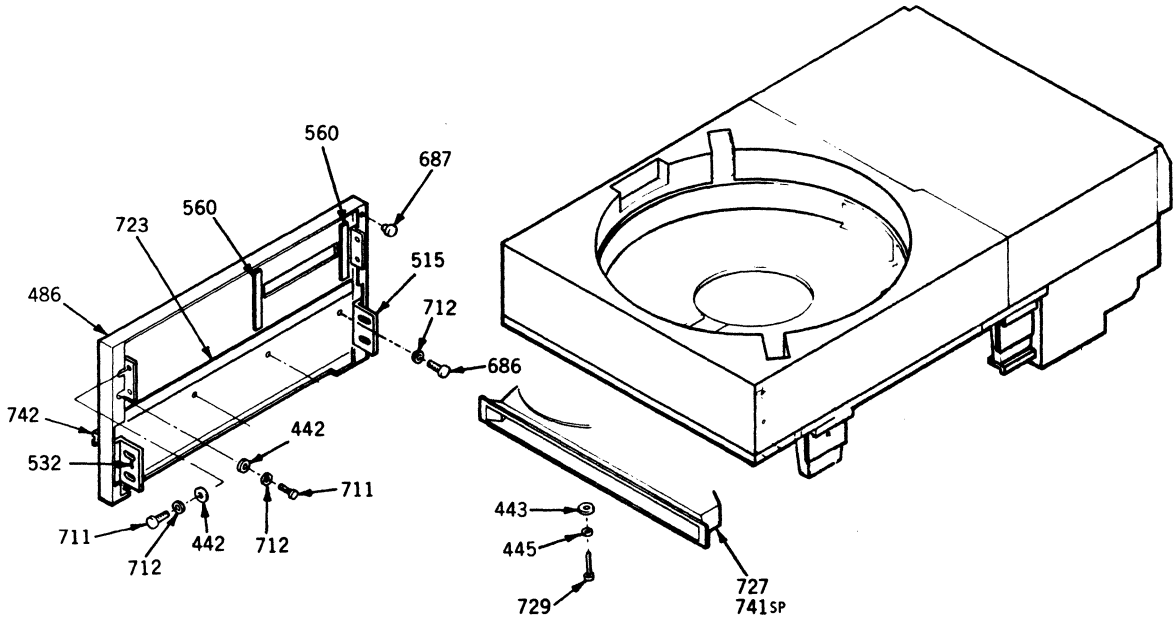
SEE SHEET 24

ITEM IDENT NO	DESCRIPTION	WHERE USED
0229 83443504	RACK MT ASSY	TMA
0231 83443506	RACK MT ASSY	TMA
0232 83443507	RACK MT ASSY	TMA
0233 83443509	RACK MT ASSY	TMA
0442 10125606	WASHERS PLAIN	229
0443 10125607	WASHERS PLAIN	229 233
0445 10125804	WASHERS SPR LOCK	229 231-233
0461 10126402	WASH EXT TOOTH LO	229 231-232
0484 10127122	SCREW PAN HD MACH	229 231 232
0504 93115287	SCREW SELF LK	229 231 232
0546 10127124	SCREW PAN HD MACH	229 231 232
0678 75284701	HANDLE-PULL RACK	229 231 232
0685 83444200	ANGLE-FRT PANEL	229 231 232
0686 10127120	SCREW PAN HD MACH	229 231 232
0687 92172000	BUMPER RUBBER	229 231 232
0694 75730805	CABLE ASSY GROUND	229 231 232
0711 10127347	SCREW PAN HD MACH	229
0712 10126104	WASH INT TOOTH LK	229 231 232
0713 83447805	INSTLN KIT-RACK MT	229 231 233
0723 83451806	INSULATOR ADHESIVE	229 231 232
0724 51669404	TERMINAL	231
0727 83457001	AIR INTAKE	229 233
0729 10127128	PAN HD MACH SCR	229 233
0741 77604000	PRE-FILTER-FILTER	229 231 233
0822 51669410	TERMINAL	229
0843 94347104	SHOULDER WASHER THER	229 231 232
0849 83451805	INSULATOR ADHESIVE	229 231 232
0961 77611443	CEMENT	229 231-233

Figure 8-14. Rack Mount Assembly (Sheet 1 of 3)

228

USE WITH KIT 749



INSTALLATION KIT

749

SEE SHEET 24

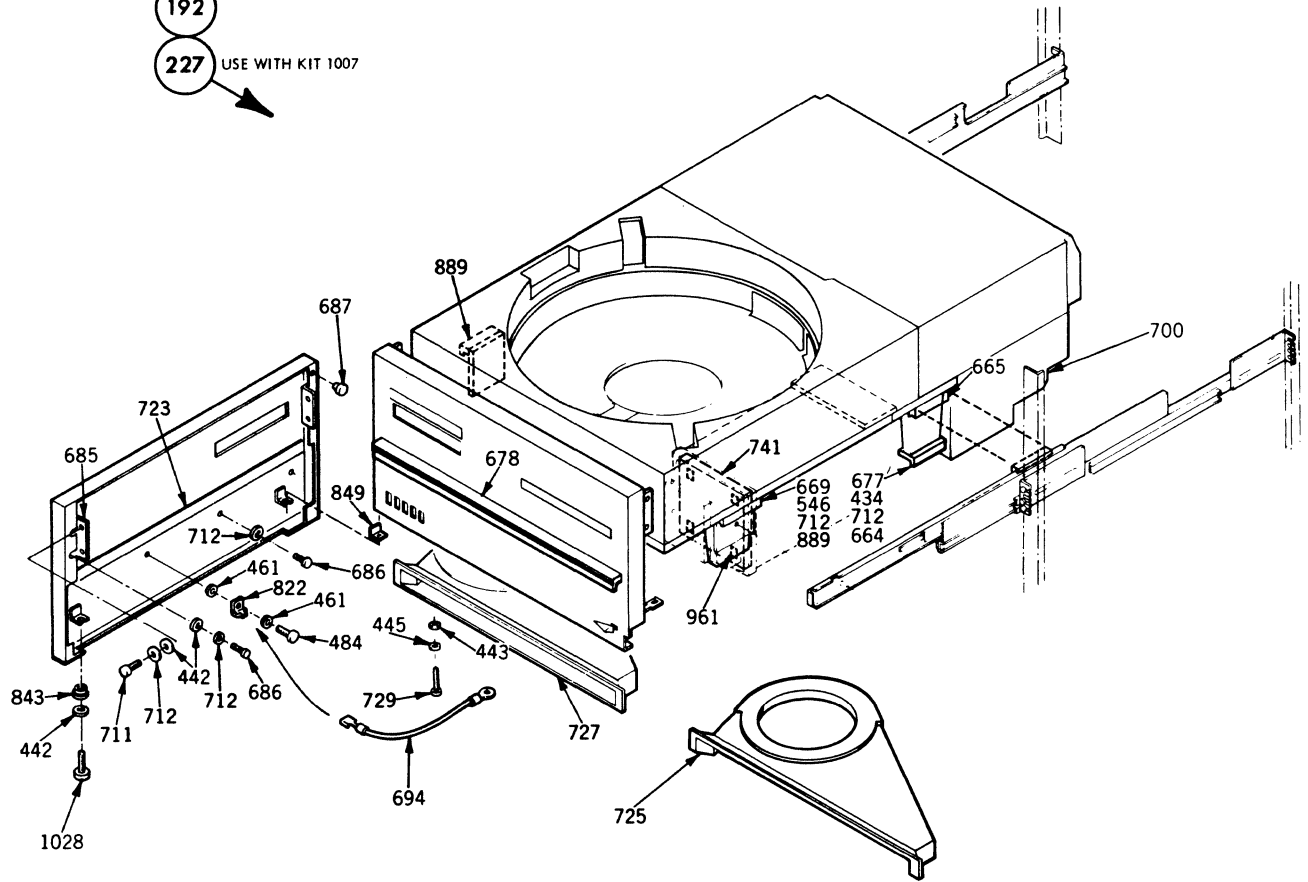
ITEM IDENT NO	DESCRIPTION	WHERE USED
0228 75884907	RACK MT ASSY	TMA
0442 10125606	WASHERS PLAIN 8	228
0443 10125607	WASHERS PLAIN 10	228
0445 10125804	WASHERS SPR LOCK	228
0486 75880261	FRONT PANEL	228
0515 75884887	BRKT ASSY L.H.	228
0532 75884902	BRKT ASSY R.H.	228
0560 83451810	INSULATOR	228
0686 10127120	SCREW PAN HD MACH	228
0687 92172000	BUMPER, RUBBER	228
0711 10127347	SCREW PAN HD MACH	228
0712 10126104	WASH INT TOOTH LOCK	228
0723 83451806	INSULATOR, ADH BACK	228
0727 83457001	AIR INTAKE	228
0729 10127128	PAN HEAD MACH SCREW	228
0741 77604000	PRE-FILTER-FILTER	228
0742 75284702	HANDLE-PULL RACK	228
0749 83447806	INSTLN KIT-RACK MT	228

Figure 8-14. Rack Mount Assembly (Sheet 2 of 3)

FROM SHEET 5

192

227 USE WITH KIT 1007



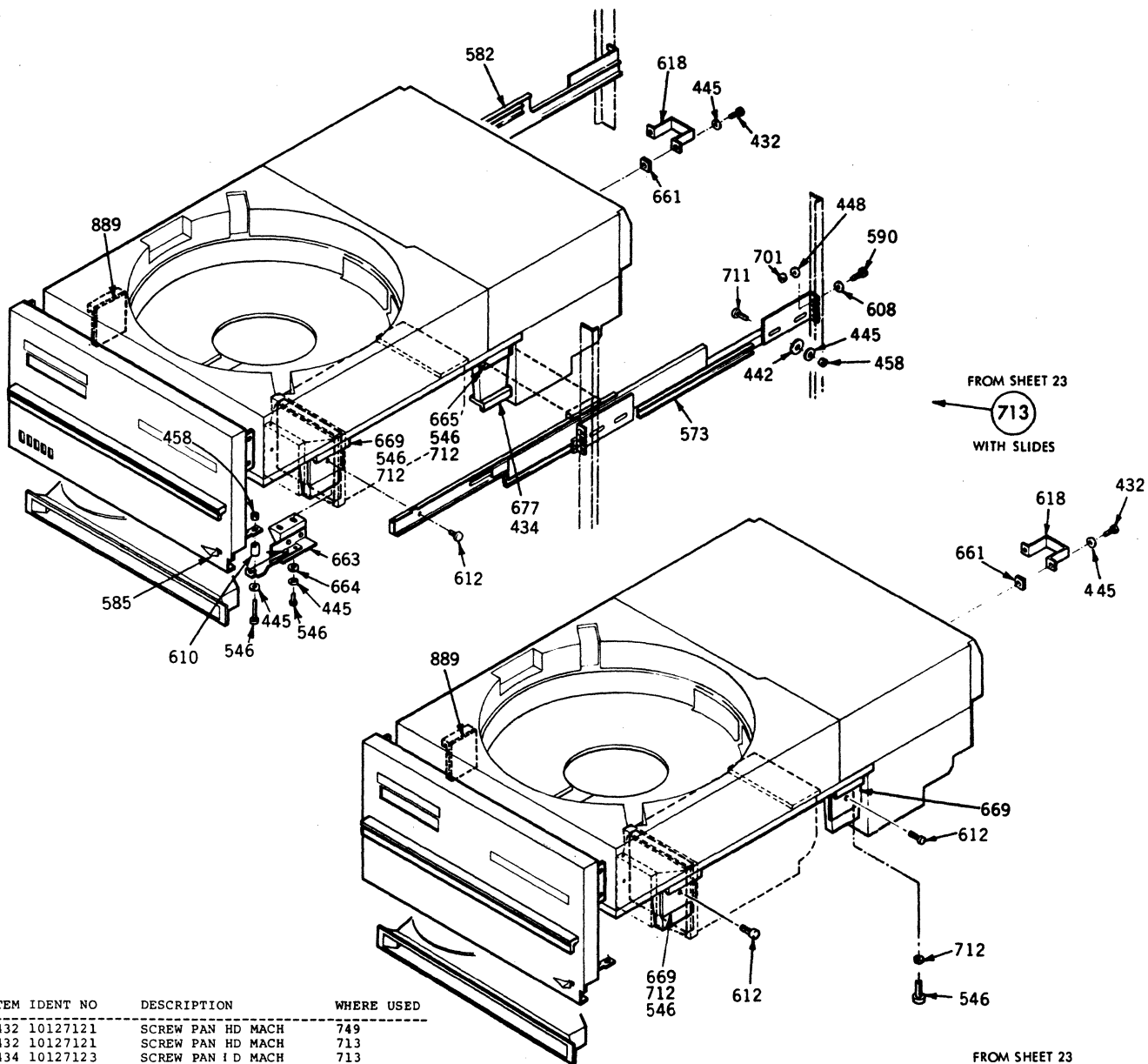
INSTALLATION KIT

1007

SEE SHEET 27

ITEM IDENT NO	DESCRIPTION	WHERE USED
0192 83443511	RACK MT ASSY	TMA
0227 83443510	RACK MOUNT ASSY	TMA
0434 10127123	SCREW PAN HD MACH	227
0442 10125606	WASHERS PLAIN	192 227
0443 10125607	WASHER PLAIN	227
0445 10125804	WASHERS SPR LOCK	227
0461 10126402	WASH EXT TOOTH LO	192 227
0484 10127122	SCREW PAN HD MACH	227
0546 10127124	SCREW PAN HD MACH	227
0664 93211008	WASHER	227
0665 83484500	MOUNT-SLIDE	227
0669 83484602	MOUNT-SLIDE KEYED	227
0677 83485700	STABILIZER	227
0678 75284701	HANDLE-PULL RACK	227
0685 83444200	ANGLE-FRT PNL	227
0686 10127120	SCREW PAN HD MACH	227
0687 92172000	BUMPER, RUBBER	227
0694 75730805	CABLE ASSY GROUND	192 227
0700 94238905	LABEL, CAUTION	227
0711 10127347	SCREW PAN HD MACH	227
0712 10126104	WASH INT TOOTH LOCK	227
0723 83451806	INSULATOR, ADH BACK	227
0725 83456900	AIR INTAKE	192
0727 83457001	AIR INTAKE	227
0729 10127128	PAN HEAD MACH SCREW	192 227
0741 77604000	PRE-FILTER-FILTER	192 227
0822 51669410	TERMINAL-TAB	227
0843 94347104	SHOULDER WASHER THER	227
0849 83451805	INSULATOR, ADH BACK	227
0889 77830705	INSULATOR	227
0961 77611443	CEMENT	192 227
1007 83447807	INSTLN KIT-RACK MT	227
1028 77610636	SCREW, MACH, SELF-LOCK	227

Figure 8-14. Rack Mount Assembly (Sheet 3 of 3)



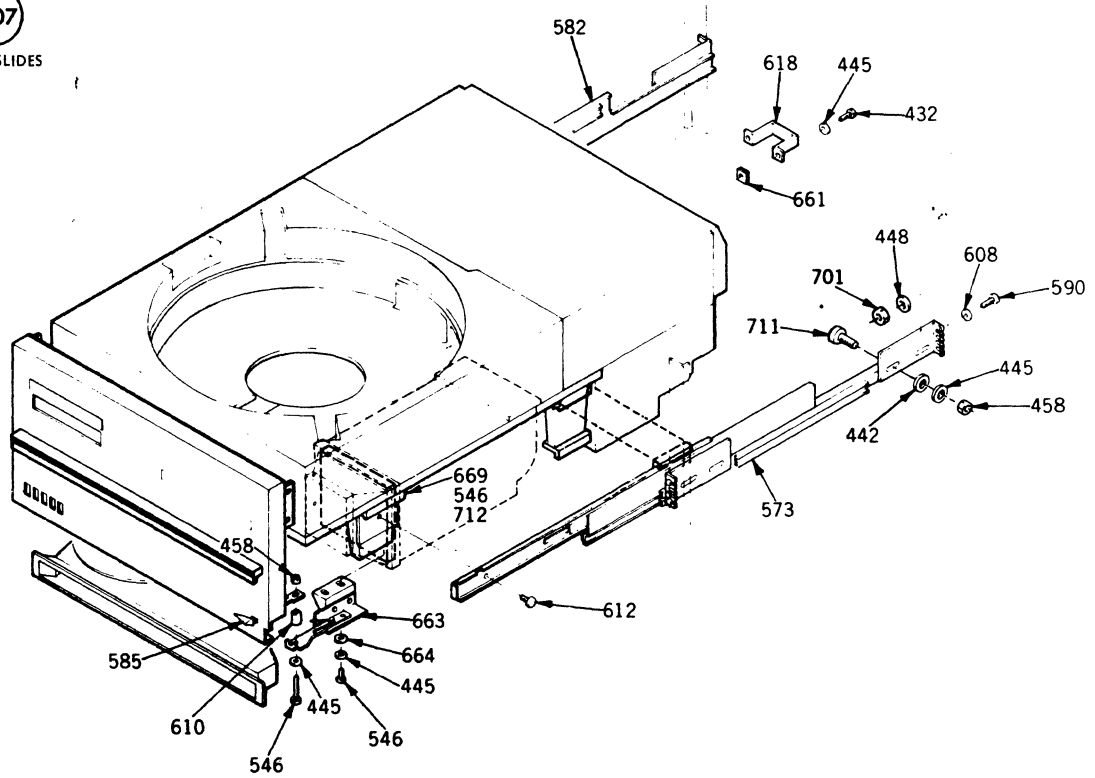
ITEM	IDENT NO	DESCRIPTION	WHERE USED
0432	10127121	SCREW PAN HD MACH	749
0432	10127121	SCREW PAN HD MACH	713
0434	10127123	SCREW PAN I D MACH	713
0442	10125606	WASHERS PLAIN	713
0445	10125804	WASHERS SPR LOCK	749
0445	10125804	WASHERS SPR LOCK	713
0448	10125805	WASHERS SPR LOCK	713
0458	10125106	NUT HEX MACH	713
0546	10127124	SCREW PAN HD MACH	749
0546	10127124	SCREW PAN HD MACH	713
0573	83478301	SLIDE ASSY RH	713
0582	83478302	SLIDE ASSY LH	713
0585	83443601	KNOB ASSY	713
0590	10127144	SCREW PAN HD	713
0608	93211009	WASHER PLAIN 10	713
0610	93109322	SPACER	713
0612	10127346	SCR PH	713 749
0618	83436601	FENDER CABLE	749
0618	83436601	FENDER CABLE	713
0661	92196007	NUT-SPEED	749
0661	92196007	NUT-SPEED	713
0663	83479501	LATCH ASSY	713
0664	93211008	WASHER	713
0665	83484500	MOUNT-SLIDE	713
0669	83484602	MOUNT-SLIDE KEYED	749
0669	83484602	MOUNT-SLIDE KEYED	713
0677	83485700	STABILIZER	713
0701	10125108	NUT HEX MACH	713
0711	10127347	SCREW PAN HD MACH	713
0712	10126104	WASH INT TOOTH LK	749
0712	10126104	WASH INT TOOTH LK	713
0713	83447805	INSTLN KIT-RACK MT	229 231
0749	83447806	INSTLN KIT-RACK MT	230
0889	77830705	INSULATOR	713
0889	77830705	INSULATOR	749

Figure 8-15. Installation Kit (Sheet 1 of 2)

FROM SHEET 25

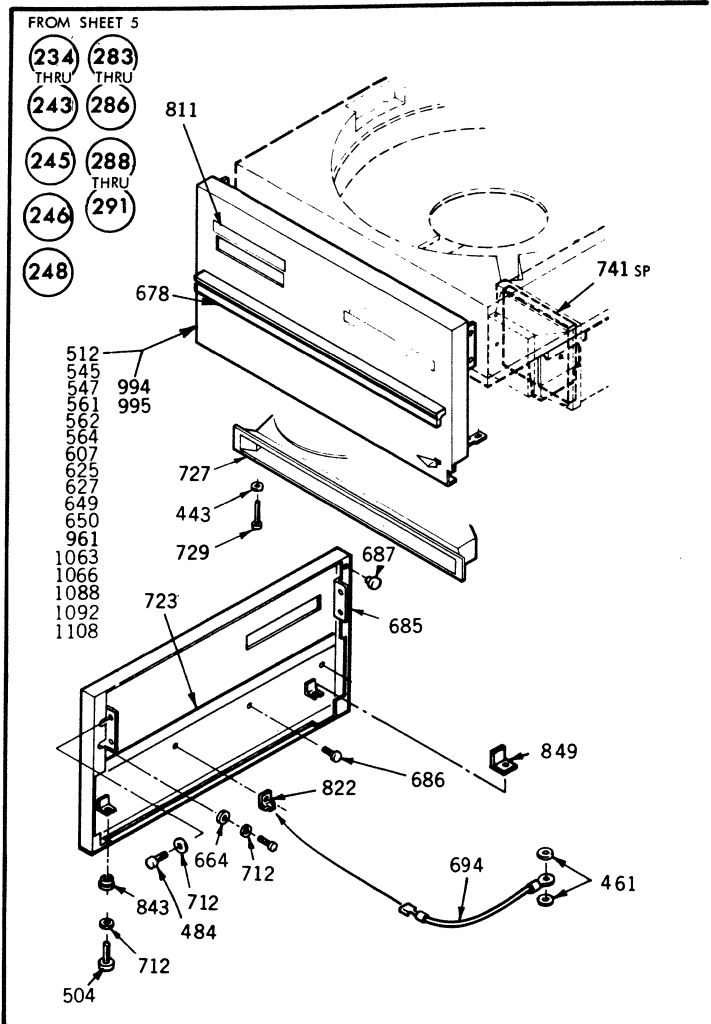
1007

WITH SLIDES



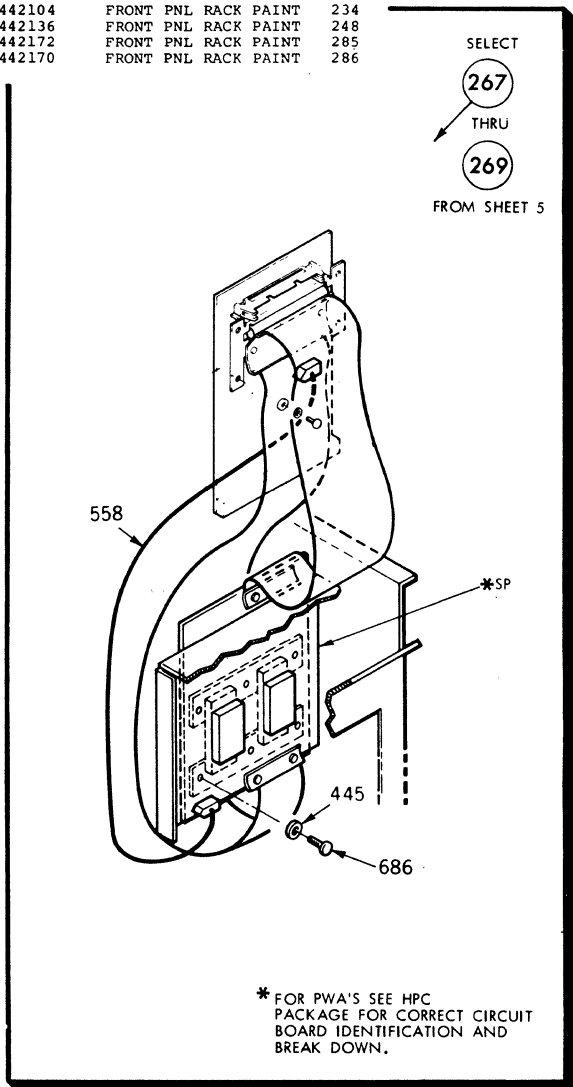
ITEM IDENT NO	DESCRIPTION	WHERE USED
0432 10127121	SCREW PAN HD MACH	1007
0442 10125606	WASHERS PLAIN	1007
0445 10125804	WASHERS SPR LOCK	1007
0448 10125805	WASHERS SPR LOCK	1007
0458 10125106	NUT HEX MACH	1007
0546 10127124	SCREW PAN HD MACH	1007
0573 83478301	SLIDE ASSY RH	1007
0582 83478302	SLIDE ASSY LH	1007
0585 83443601	KNOB ASSY	1007
0590 10127144	SCREW PAN HD	1007
0608 93211009	WASHER PLAIN 10	1007
0610 93109322	SPACER	1007
0612 10127346	SCREW	1007
0618 83436601	FENDER CABLE	1007
0661 92196007	NUT-SPFED, TYPE	1007
0663 83479501	LATCH ASSY	1007
0664 93211008	WASHER	1007
0669 83484602	MOUNT-SLIDE KEYED	1007
0701 10125108	NUT HEX MACH	1007
0711 10127347	SCREW PAN HD MACH	1007
0712 10126104	WASHER INT TOOTH LOCK	1007
1007 83447807	INSTLN KIT - RACK MT	227

Figure 8-15. Installation Kit (Sheet 2 of 2)



ITEM IDENT NO	DESCRIPTION	WHERE USED
0607	83442178	FRONT PNL RACK PAINT 289
0625	83466801	PNL CNTL RACK SLKSCN 238
0627	83442123	FRONT PNL RACK PAINT 239
0649	83442166	FRONT PNL RACK PAINT 241
0650	83442154	FRONT PNL BCK PAINT 242
0678	75284701	HANDLE PULL RACK 237
0678	75284701	HANDLE-PULL RACK 243 247
0685	83444200	ANGLE-FRT PANEL 237
0685	83444200	ANGLE-FRT PANEL 243 247
0686	10127120	SCREW PAN HD MACH 267-269
0686	10127120	SCREW PAN HD MACH 237 243 247
0687	92172000	BUMPER RUBBER 237
0687	92172000	BUMPER RUBBER 243 247
0694	75730805	CABLE ASSY GROUND 237
0694	75730805	CABLE ASSY GROUND 243 247
0712	10126104	WASH INT TOOTH LK 237
0712	10126104	WASH INT TOOTH LK 243 247
0723	83451806	INSULATOR ADHESIVE 237
0723	83451806	INSULATOR ADHESIVE 243 247
0727	83457001	AIR INTAKE 237
0727	83457001	AIR INTAKE 243 247
0729	10127128	PAN HD MACH SCR 237
0729	10127128	PAN HD MACH SCR 243 247
0741	77604000	PRE-FILTER-FILTER 237
0741	77604000	PRE-FILTER-FILTER 243 247
0811	75793301	LABEL SWITCH 234-237 239-245
0811	75793301	LABEL SWITCH 247 248 285
0811	75793301	LABEL SWITCH 287-289
0822	51669410	TERMINAL 237 247
0843	94347104	SHOULDER WASHER THER 237
0843	94347104	SHOULDER WASHER THER 243 247
0849	83451805	INSULATOR ADHESIVE 237
0849	83451805	INSULATOR ADHESIVE 243 247
0994	83442197	FRONT PNL RACK PAINT 283
0995	83442198	FRONT PNL RACK PAINT 284
1063	83442165	FRT PNL RCK PNT 246
1066	83442104	FRONT PNL RACK PAINT 234
1088	83442136	FRONT PNL RACK PAINT 248
1092	83442172	FRONT PNL RACK PAINT 285
1108	83442170	FRONT PNL RACK PAINT 286

ITEM IDENT NO	DESCRIPTION	WHERE USED
0234	83442501	COLOR OPT, RACK MT TMA
0235	83442502	COLOR OPT, RACK MT TMA
0236	83442503	COLOR OPT, RACK MT TMA
0237	83442505	COLOR OPT, RACK MT TMA
0238	83442506	COLOR OPT, RACK MT TMA
0239	83442507	COLOR OPT, RACK MT TMA
0240	83442508	COLOR OPT, RACK MT TMA
0241	83442509	COLOR OPT, RACK MT TMA
0242	83442510	COLOR OPT, RACK MT TMA
0243	83442511	COLOR OPT, RACK MT TMA
0245	83442513	COLOR OPT, RACK MT TMA
0246	83442514	COLOR OPT RACK MT TMA
0248	83442516	COLOR OPT RACK MT TMA
0267	75795309	I-O OPT CAB TMA
0268	75795307	I-O OPT CAB TMA
0269	75795308	I-O OPT CAB TMA
0283	83442525	COLOR OPT RACK MT TMA
0284	83442524	COLOR OPT RACK MT TMA
0285	83442517	COLOR OPT RACK MT TMA
0286	83442518	COLOR OPT, RACK MT TMA
0288	83442521	COLOR OPT RACK MT TMA
0289	83442520	COLOR OPT RACK MT TMA
0290	83442522	COLOR OPT RACK MT TMA
0291	83442523	COLOR OPT RACK MT TMA
0443	10125607	WASHERS PLAIN 237 243
0445	10125804	WASHERS SPR LOCK 267-269
0461	10126402	WASH EXT TOOTH LO 237 243
0484	10127122	SCREW PAN HD MACH 237 243
0504	93115287	SCREW PAN 237 243
0545	83442106	FRONT PNL RACK PAINT 235 243
0547	83442109	FRONT PNL RACK 236 237 291
0558	83444701	JUMPER ASSY 267-269
0561	83442143	FRONT PNL RACK PAINT 240
0562	77834340	FRONT PNL RACK PAINT 245
0564	77834401	FRONT PNL RACK PAINT 244



SELECT
267
THRU
269
FROM SHEET 5

Figure 8-16. Top Mechanical Assembly Options

ITEM IDENT NO	DESCRIPTION	WHERE USED
0249	75305707	TERMINATOR TMA
0251	75305703	TERMINATOR TMA
0252	75305704	TERMINATOR TMA
0253	75305706	TERMINATOR TMA
0254	75305705	TERMINATOR TMA
0307	75740123	HEAD OPTION MOD
0308	75740119	HEAD OPTION MOD
0309	75740115	HEAD OPTION MOD
0310	75740113	HEAD OPTION MOD
0311	75740121	HEAD OPTION MOD
0312	75740124	HEAD OPTION MOD
0313	75740117	HEAD OPTION MOD
0314	75740118	HEAD OPTION MOD
0315	75740114	HEAD OPTION MOD
0559	75738604	RESISTOR MODULE 110 251 252
0609	75738610	RESISTOR MODULE 1K 251
0611	75738607	RESISTOR MODULE 330 252 254
0672	75738608	RESISTOR MODULE 254
0684	75738654	RESISTOR MODULE 220 249
0768	75738655	RESISTOR MODULE 330 249 253
0815	75037504	HEAD ASM (LOWER) 307 312 314
0823	75037505	HEAD ASM (UPPER) 307 312
0824	75300200	RESISTOR MODULE 307 311 312
0827	70590208	HEAD ASM (LOWER) 308
0828	70590209	HEAD ASM (UPPER) 308
0829	75300100	RESISTOR MODULE 308 310 313 315
0830	70590306	HEAD ASM (LOWER) 309
0831	70590307	HEAD ASM (UPPER) 309
0832	73460700	CARRIAGE WEIGHT 312 314 315
1065	75738652	RESISTOR MODULE 253
1070	75037506	HEAD ASM (LOWER) 311
1071	75037507	HEAD ASM (UPPER) 311
1072	70590304	HEAD ASM (LOWER) 313 314
1073	70590305	HEAD ASM (UPPER) 313 314
1074	70590206	HEAD ASM (LOWER) 310 315
1075	70590207	HEAD ASM (UPPER) 310 315

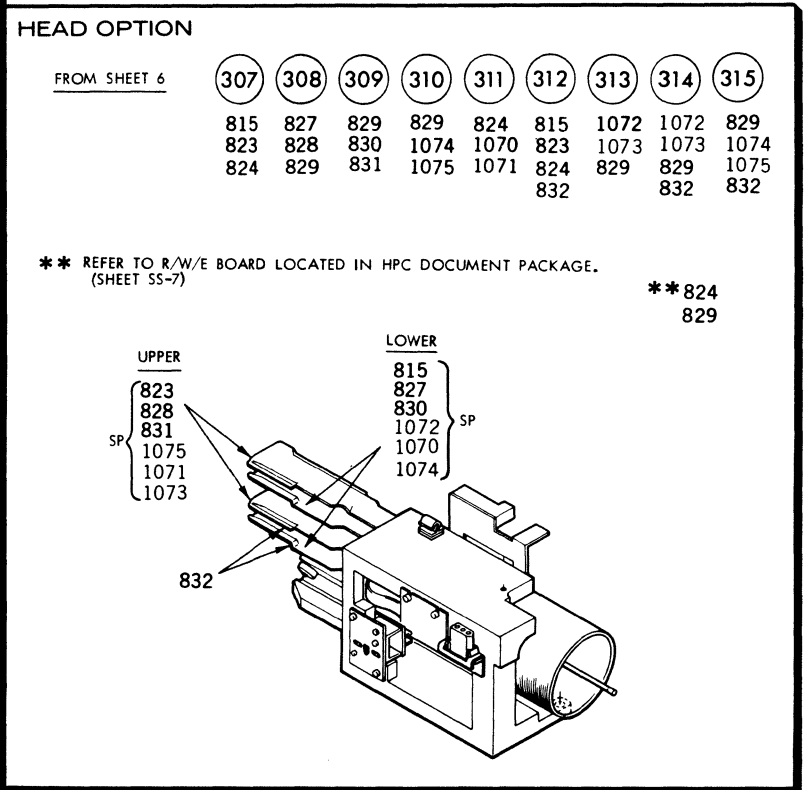
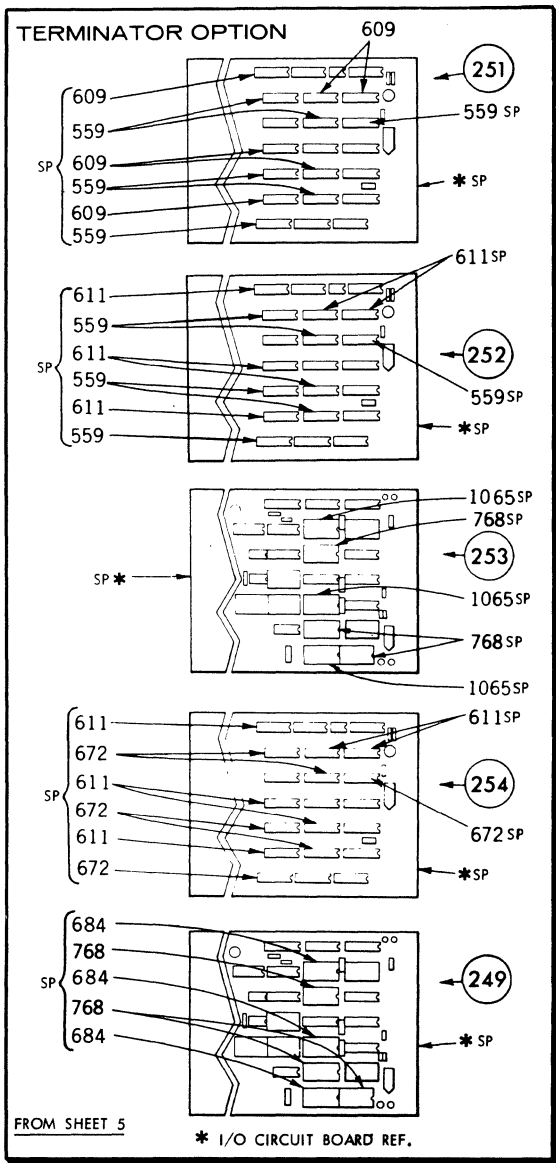
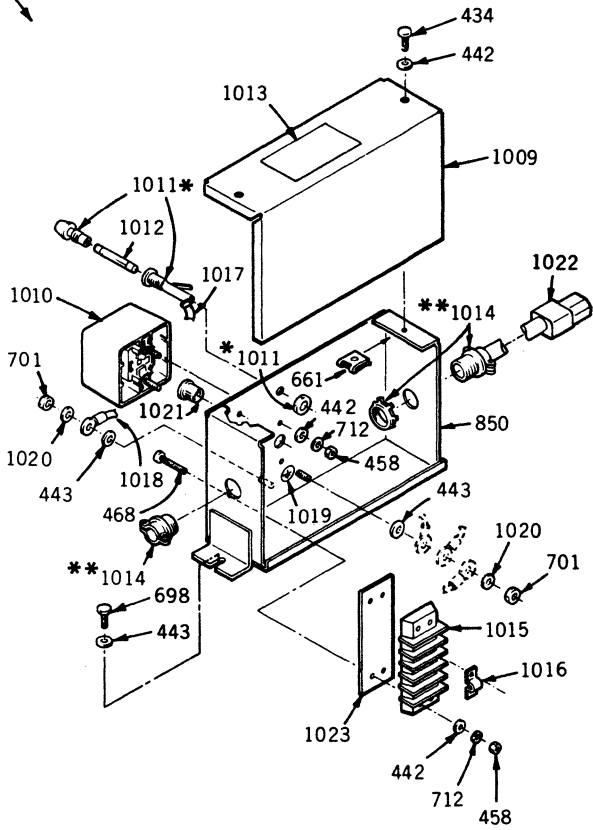


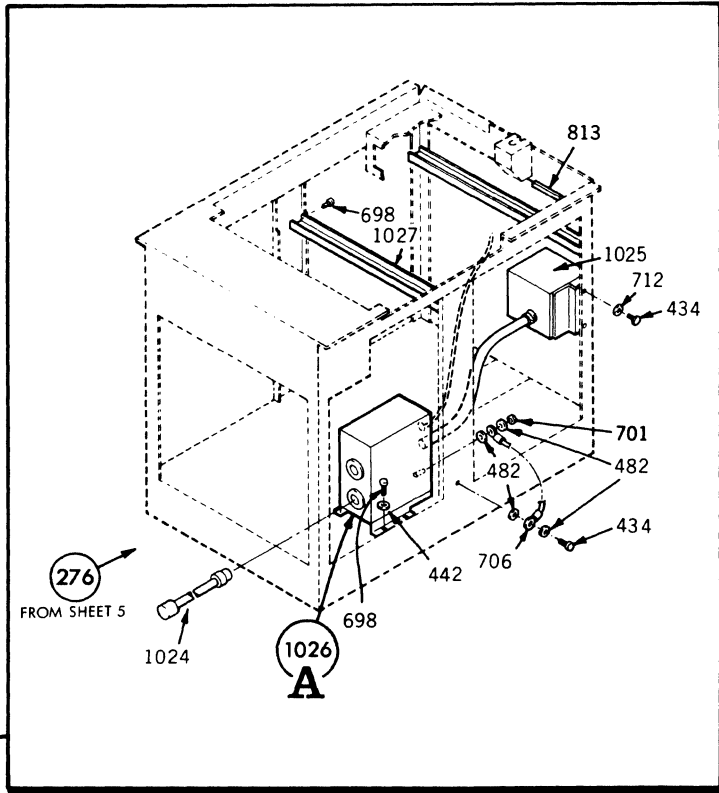
Figure 8-17. Options



* SUPPLIED AS ONE PART
 ** SUPPLIED AS ONE PART

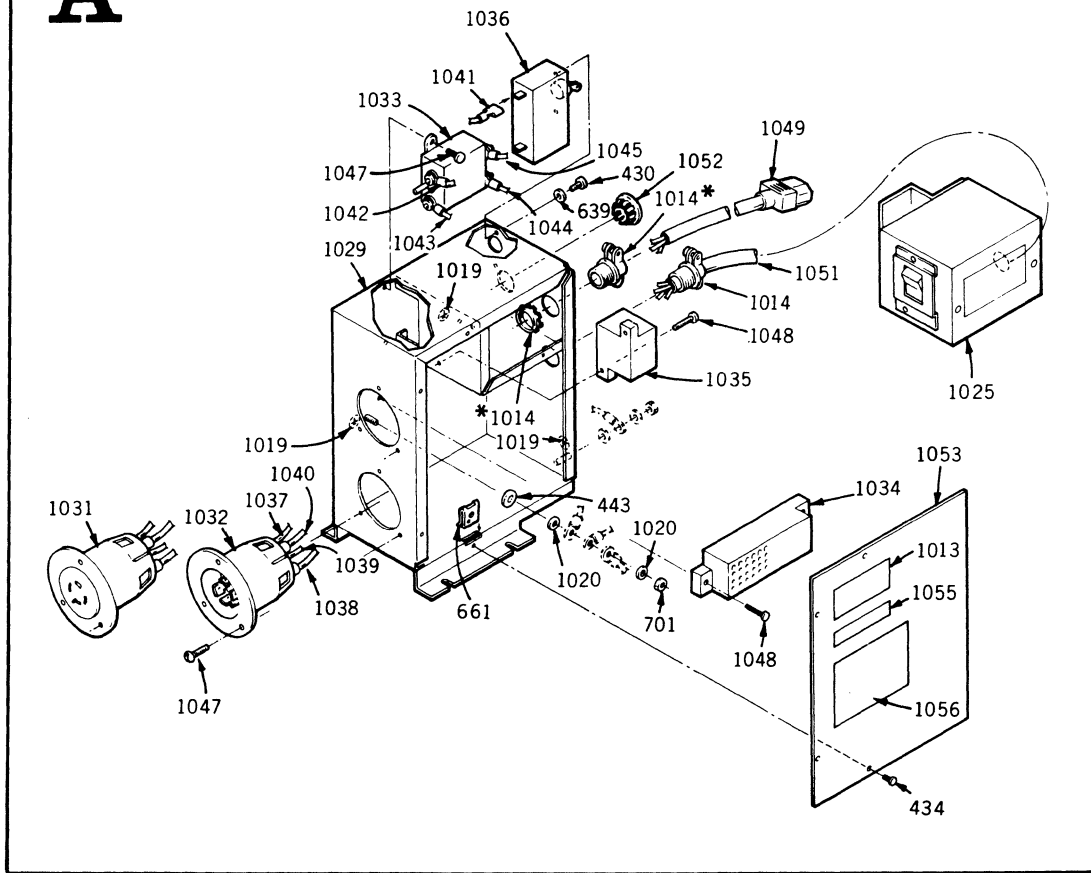
ITEM IDENT NO	DESCRIPTION	WHERE USED
0275 77599401	PWR ASSY (INPUT)	TMA
0434 10127123	SCR PAN HD MACH	275
0442 10125606	WASHERS PLAIN	275
0443 10125607	WASHERS PLAIN	275
0458 10125106	NUT HEX MACH	275
0468 10127125	SCREW PAN HD MACH	275
0661 92196007	NUT-SPEED	275
0698 93592200	SCR TPG HEX PNL	275
0701 10125108	NUT HEX MACH	275
0712 10126104	WASH INT TOOTH LK	275
0850 75730601	CHASSIS AC BOX 220V	275
1009 75730701	CVR CHASSIS AC INP	275
1010 75731001	CONVENIENCE OUTLET	275
1011 92411002	FUSE HOLDER	275
1012 92371016	FUSE OK ACTING 5 AMP	275
1013 24547504	PLATE, WARNING	275
1014 92801001	CLAMP, CABLE	275
1015 93041205	STRIP TERMINAL	275
1016 93067003	JUMPER, BARRIER ST	275
1017 75731104	CABLE-JUMPER BLACK	275
1018 75730803	CABLE ASSY GRND	275
1019 75731301	SYMBOL GRND (DECAL)	275
1020 10126105	WASH INT TOOTH LK	275
1021 15012410	BUSHING SNAP IN	275
1022 77599501	POWER CORD ASSY	275
1023 93105305	MARKER STRIP	275

Figure 8-18. Power Input Assembly



ITEM	IDENT NO	DESCRIPTION	WHERE USED
0276	83492901	PWR ASSY (A.C. OPT)	TMA
0430	10127111	SCREW PAN HD MACH	1026
0434	10127123	SCR PAN HD MACH	276
0434	10127123	SCR PAN HD MACH	1026
0442	10125606	WASHERS PLAIN	276
0443	10125607	WASHERS PLAIN	1026
0482	10126403	WASH EXT TOOTH LO	276
0639	10126103	WASH INT TOOTH LK	1026
0661	92196007	NUT-SPEED	1026
0698	93592200	SCR TPG HEX PNL	276
0701	10125108	NUT HEX MACH	276 1026
0706	94281426	BR CABLE GROUND	276
0712	10126104	WASH INT TOOTH LK	276
0813	75287700	GASKET - DOOR	276
1013	24547504	PLATE, WARNING	1026
1014	92801001	CLAMP, CABLE	1026
1019	75731301	SYMBOL GRND (DECAL)	1026
1020	10126105	WASH INT TOOTH LK	1026
1024	83415900	POWER CORD	276
1025	83492701	AC SWCH BX ASSY NCR	276
1026	83428901	AC DISTR BX COMMON	276
1027	83442800	CHANNEL-CONTRL NCR	276
1029	83428601	CHASSIS-AC DISTR BX	1026
1031	94806900	RECEPTACLE FEMALE	1026
1032	94807000	RECEPTACLE MALE	1026
1033	62071530	FILTER RFI	1026
1034	75726813	TERMINAL BLOCK	1026
1035	75726812	TERMINAL BLOCK	1026
1036	94241102	CKT BKR-OVERCURRENT	1026
1037	75729011	CABLE-JUMPER GREEN	1026
1038	75729007	CABLE-JUMPER BLACK	1026
1039	75729003	CABLE-JUMPER WHITE	1026
1040	75729001	CABLE-JUMPER YELLOW	1026
1041	75729012	CABLE-JUMPER BLACK	1026
1042	75729013	CABLE-JUMPER WHITE	1026
1043	75729014	CABLE-JUMPER BLACK	1026
1044	75729015	CABLE-JUMPER BLACK	1026
1045	75729016	CABLE-JUMPER WHITE	1026
1047	17901515	SCR THD ROLL	1026
1048	17901519	SCR THD ROLL PAN HD	1026
1049	83478002	LINECORD MODULE STD	1026
1051	75752203	CABLE-CIRCUIT BRKR	1026
1052	93522009	PLUG-SNAP BUTTON	1026
1053	83428700	COVER-CHASSIS	1026
1055	83407505	LABEL, SELF ADHERING	1026
1056	83407518	LABEL-, SELF ADHERING	1026

A



* SUPPLIED AS ONE PART

Figure 8-19. Power Assembly (AC Option)

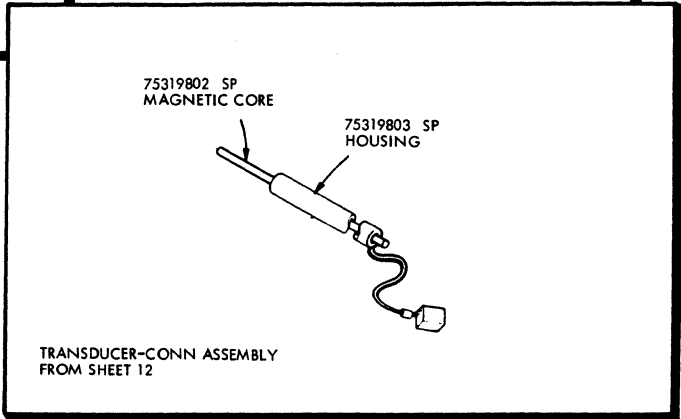
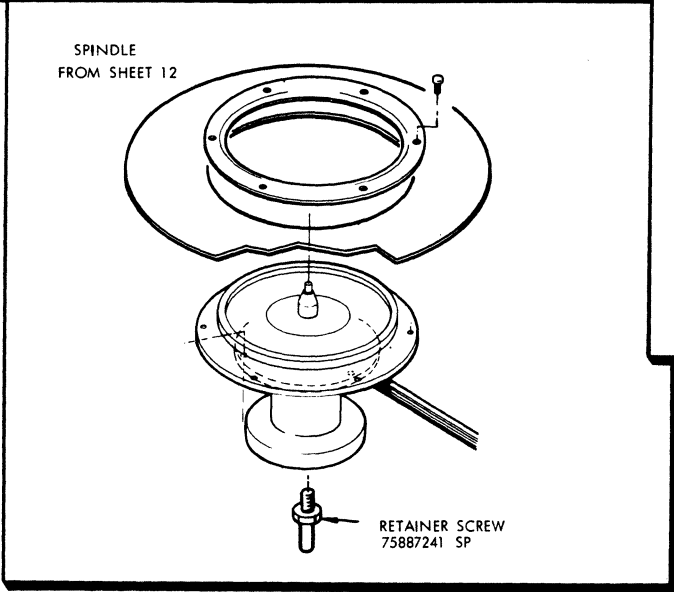
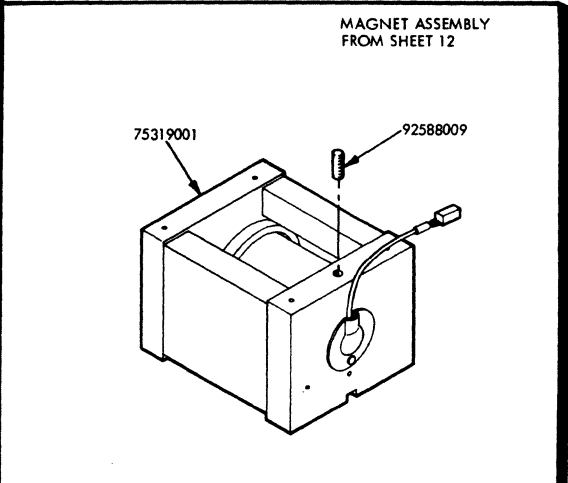
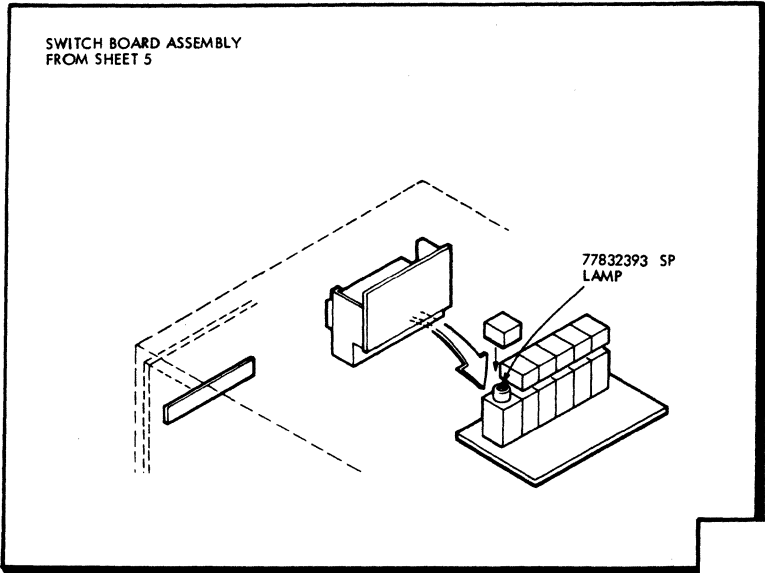


Figure 8-20. Spare Parts Provisioning

ASSEMBLY - COMPONENT PARTS LIST

ITEM	IDENT NO	DESCRIPTION	WHERE USED	SHEET	ITEM	IDENT NO	DESCRIPTION	WHERE USED	SHEET
0190	75890915	NAMEPLATE	TMA	S5	0233	83443509	RACK MT ASSY	TMA	S5
0191	77611483	NAMEPLATE	TMA	S5	0233	83443509	RACK MT ASSY	TMA	S23
0192	83443511	RACK MT ASSY	TMA	S5	0234	83442501	COLOR OPT, RACK MT	TMA	S5
0192	83443511	RACK MT ASSY	TMA	S25	0234	83442501	COLOR OPT, RACK MT	TMA	S28
0201	83442303	BASE FR ASSY	TMA	S5	0235	83442502	COLOR OPT, RACK MT	TMA	S5
0201	83442303	BASE FR ASSY	TMA	S19	0235	83442502	COLOR OPT, RACK MT	TMA	S28
0202	83442305	BASE FR ASSY	TMA	S5	0236	83442503	COLOR OPT, RACK MT	TMA	S5
0202	83442305	BASE FR ASSY	TMA	S19	0236	83442503	COLOR OPT, RACK MT	TMA	S28
0203	83442306	BASE FR ASSY	TMA	S5	0237	83442505	COLOR OPT, RACK MT	TMA	S5
0203	83442306	BASE FR ASSY	TMA	S19	0237	83442505	COLOR OPT, RACK MT	TMA	S28
0205	83442409	COLOR OPT CAB	TMA	S5	0238	83442506	COLOR OPT, RACK MT	TMA	S5
0205	83442409	COLOR OPT CAB	TMA	S20	0238	83442506	COLOR OPT, RACK MT	TMA	S28
0205	83442409	COLOR OPT CAB	TMA	S21	0239	83442507	COLOR OPT, RACK MT	TMA	S5
0205	83442409	COLOR OPT CAB	TMA	S22	0239	83442507	COLOR OPT, RACK MT	TMA	S28
0206	83442410	COLOR OPT CAB	TMA	S5	0240	83442508	COLOR OPT, RACK MT	TMA	S5
0206	83442410	COLOR OPT CAB	TMA	S20	0240	83442508	COLOR OPT, RACK MT	TMA	S28
0206	83442410	COLOR OPT CAB	TMA	S21	0241	83442509	COLOR OPT, RACK MT	TMA	S5
0206	83442410	COLOR OPT CAB	TMA	S22	0241	83442509	COLOR OPT, RACK MT	TMA	S28
0207	83442411	COLOR OPT CAB	TMA	S5	0242	83442510	COLOR OPT, RACK MT	TMA	S5
0207	83442411	COLOR OPT CAB	TMA	S20	0242	83442510	COLOR OPT, RACK MT	TMA	S28
0207	83442411	COLOR OPT CAB	TMA	S21	0243	83442511	COLOR OPT, RACK MT	TMA	S5
0207	83442411	COLOR OPT CAB	TMA	S22	0243	83442511	COLOR OPT, RACK MT	TMA	S28
0208	83442412	COLOR OPT CAB	TMA	S5	0245	83442513	COLOR OPT, RACK MT	TMA	S5
0208	83442412	COLOR OPT CAB	TMA	S20	0245	83442513	COLOR OPT, RACK MT	TMA	S28
0208	83442412	COLOR OPT CAB	TMA	S21	0246	83442514	COLOR OPT RACK MT	TMA	S5
0208	83442412	COLOR OPT CAB	TMA	S22	0246	83442514	COLOR OPT RACK MT	TMA	S28
0209	83442413	COLOR OPT CAB	TMA	S5	0248	83442516	COLOR OPT, RACK MT	TMA	S5
0209	83442413	COLOR OPT CAB	TMA	S20	0248	83442516	COLOR OPT, RACK MT	TMA	S28
0209	83442413	COLOR OPT CAB	TMA	S21	0249	75305707	TERMINATOR	TMA	S5
0209	83442413	COLOR OPT CAB	TMA	S22	0249	75305707	TERMINATOR	TMA	S29
0210	83442414	COLOR OPT CAB	TMA	S5	0251	75305703	TERMINATOR	TMA	S5
0210	83442414	COLOR OPT CAB	TMA	S20	0251	75305703	TERMINATOR	TMA	S29
0210	83442414	COLOR OPT CAB	TMA	S21	0252	75305704	TERMINATOR	TMA	S5
0210	83442414	COLOR OPT CAB	TMA	S22	0252	75305704	TERMINATOR	TMA	S29
0211	83442431	COLOR OPT CAB	TMA	S	0253	75305706	TERMINATOR	TMA	S5
0211	83442431	COLOR OPT CAB	TMA	S20	0253	75305706	TERMINATOR	TMA	S29
0211	83442431	COLOR OPT CAB	TMA	S21	0254	75305705	TERMINATOR	TMA	S5
0211	83442431	COLOR OPT CAB	TMA	S22	0254	75305705	TERMINATOR	TMA	S29
0212	83442416	COLOR OPT CAB	TMA	S5	0255	75778701	LINECORD	TMA	S5
0212	83442416	COLOR OPT CAB	TMA	S20	0256	75778705	LINECORD	TMA	S5
0212	83442416	COLOR OPT CAB	TMA	S21	0257	75778710	LINECORD	TMA	S5
0212	83442416	COLOR OPT CAB	TMA	S22	0258	75778721	LINECORD	TMA	S5
0213	83442417	COLOR OPT CAB	TMA	S5	0259	75892986	LINECORD	TMA	S5
0213	83442417	COLOR OPT CAB	TMA	S20	0261	75795401	NAMEPLATE (942-H)	TMA	S5
0213	83442417	COLOR OPT CAB	TMA	S21	0262	75795402	NAMEPLATE (BLNK)	TMA	S5
0213	83442417	COLOR OPT CAB	TMA	S22	0263	75795404	NAMEPLATE (ASSY)	TMA	S5
0214	83442418	COLOR OPT CAB	TMA	S5	0264	75795405	NAMEPLATE (ASSY)	TMA	S5
0214	83442418	COLOR OPT CAB	TMA	S20	0265	75795406	NAMEPLATE	TMA	S5
0214	83442418	COLOR OPT CAB	TMA	S21	0266	75795408	NAMEPLATE	TMA	S5
0214	83442418	COLOR OPT CAB	TMA	S22	0267	75795309	I-O OPT CAB	TMA	S5
0215	83442419	COLOR OPT CAB	TMA	S5	0267	75795309	I-O OPT CAB	TMA	S28
0215	83442419	COLOR OPT CAB	TMA	S20	0268	75795307	I-O OPT CAB	TMA	S5
0215	83442419	COLOR OPT CAB	TMA	S21	0268	75795307	I-O OPT CAB	TMA	S28
0215	83442419	COLOR OPT CAB	TMA	S22	0269	75795308	I-O OPT CAB	TMA	S5
0216	83442420	COLOR OPT CAB	TMA	S5	0269	75795308	I-O OPT CAB	TMA	S28
0216	83442420	COLOR OPT CAB	TMA	S20	0271	75897971	POWER CORD	TMA	S5
0216	83442420	COLOR OPT CAB	TMA	S21	0272	75778724	LINECORD	TMA	S5
0216	83442420	COLOR OPT CAB	TMA	S22	0273	77830537	UL LABEL	TMA	S5
0217	83442421	COLOR OPT CAB	TMA	S5	0274	77830538	LABEL - CSA	TMA	S5
0217	83442421	COLOR OPT CAB	TMA	S20	0275	77599401	PWR ASSY (INPUT)	TMA	S5
0217	83442421	COLOR OPT CAB	TMA	S21	0275	77599401	PWR ASSY (INPUT)	TMA	S30
0217	83442421	COLOR OPT CAB	TMA	S22	0276	83492901	PWR ASSY (A.C. OPT)	TMA	S5
0219	83442423	COLOR OPT CAB	TMA	S5	0276	83492901	PWR ASSY (A.C. OPT)	TMA	S31
0219	83442423	COLOR OPT CAB	TMA	S20	0280	77603741	ELCO CONN OPT	TMA	S5
0219	83442423	COLOR OPT CAB	TMA	S21	0282	94224651	LABEL - INFO	TMA	S5
0219	83442423	COLOR OPT CAB	TMA	S22	0282	94224651	LABEL-INFO	TMA	S21
0220	83442424	COLOR OPT CAB	TMA	S5	0283	83442525	COLOR OPT RACK MT	TMA	S5
0220	83442424	COLOR OPT CAB	TMA	S20	0283	83442525	COLOR OPT RACK MT	TMA	S28
0220	83442424	COLOR OPT CAB	TMA	S21	0284	83442524	COLOR OPT RACK MT	TMA	S5
0220	83442424	COLOR OPT CAB	TMA	S22	0284	83442524	COLOR OPT RACK MT	TMA	S28
0221	83442425	COLOR OPT CAB	TMA	S5	0285	83442517	COLOR OPT, RACK MT	TMA	S5
0221	83442425	COLOR OPT CAB	TMA	S20	0285	83442517	COLOR OPT, RACK MT	TMA	S28
0221	83442425	COLOR OPT CAB	TMA	S21	0286	83442518	COLOR OPT, RACK MT	TMA	S5
0221	83442425	COLOR OPT CAB	TMA	S22	0286	83442518	COLOR OPT, RACK MT	TMA	S28
0222	83442426	COLOR OPT CAB	TMA	S5	0288	83442521	COLOR OPT RACK MT	TMA	S5
0222	83442426	COLOR OPT CAB	TMA	S20	0288	83442521	COLOR OPT RACK MT	TMA	S28
0222	83442426	COLOR OPT CAB	TMA	S21	0289	83442520	COLOR OPT RACK MT	TMA	S5
0222	83442426	COLOR OPT CAB	TMA	S22	0289	83442520	COLOR OPT RACK MT	TMA	S28
0223	83442427	COLOR OPT CAB	TMA	S5	0290	83442522	COLOR OPT RACK MT	TMA	S5
0223	83442427	COLOR OPT CAB	TMA	S20	0290	83442522	COLOR OPT RACK MT	TMA	S28
0223	83442427	COLOR OPT CAB	TMA	S21	0291	83442523	COLOR OPT RACK MT	TMA	S5
0223	83442427	COLOR OPT CAB	TMA	S22	0291	83442523	COLOR OPT RACK MT	TMA	S28
0224	83442428	COLOR OPT CAB	TMA	S5	0292	83442432	COLOR OPT CAB	TMA	S5
0224	83442428	COLOR OPT CAB	TMA	S20	0292	83442432	COLOR OPT CAB	TMA	S20
0224	83442428	COLOR OPT CAB	TMA	S21	0292	83442432	COLOR OPT CAB	TMA	S21
0224	83442428	COLOR OPT CAB	TMA	S22	0292	83442432	COLOR OPT CAB	TMA	S22
0225	83442429	COLOR OPT CAB	TMA	S5	0293	83442433	COLOR OPT CAB	TMA	S5
0225	83442429	COLOR OPT CAB	TMA	S20	0293	83442433	COLOR OPT CAB	TMA	S20
0225	83442429	COLOR OPT CAB	TMA	S21	0293	83442433	COLOR OPT CAB	TMA	S21
0225	83442429	COLOR OPT CAB	TMA	S22	0293	83442433	COLOR OPT CAB	TMA	S22
0226	83442430	COLOR OPT CAB	TMA	S5	0294	83442434	COLOR OPT CAB	TMA	S5
0226	83442430	COLOR OPT CAB	TMA	S20	0294	83442434	COLOR OPT CAB	TMA	S20
0226	83442430	COLOR OPT CAB	TMA	S21	0294	83442434	COLOR OPT CAB	TMA	S21
0226	83442430	COLOR OPT CAB	TMA	S22	0294	83442434	COLOR OPT CAB	TMA	S22
0227	83443510	RACK MOUNT ASSY	TMA	S5	0295	83442435	COLOR OPT CAB	TMA	S5
0227	83443510	RACK MOUNT ASSY	TMA	S25	0295	83442435	COLOR OPT CAB	TMA	S20
0228	75884907	RACK MT ASSY	TMA	S5	0295	83442435	COLOR OPT CAB	TMA	S21
0228	75884907	RACK MT ASSY	TMA	S24	0295	83442435	COLOR OPT CAB	TMA	S22
0229	83443504	RACK MT ASSY	TMA	S5	0296	83442436	COLOR OPT CAB	TMA	S5
0229	83443504	RACK MT ASSY	TMA	S23	0296	83442436	COLOR OPT CAB	TMA	S20
0231	83443506	RACK MT ASSY	TMA	S5	0296	83442436	COLOR OPT CAB	TMA	S21
0231	83443506	RACK MT ASSY	TMA	S23	0296	83442436	COLOR OPT CAB	TMA	S22
0232	83443507	RACK MT ASSY	TMA	S5	0297	83442437	COLOR OPT CAB	TMA	S5
0232	83443507	RACK MT ASSY	TMA	S23	0297	83442437	COLOR OPT CAB	TMA	S20

ASSEMBLY - COMPONENT PARTS LIST

ITEM	IDENT NO	DESCRIPTION	WHERE USED	SHEET	ITEM	IDENT NO	DESCRIPTION	WHERE USED	SHEET
0297	83442437	COLOR OPT CAB	TMA	S21	0421	75288900	CLAMP - DISC	301	S12
0297	83442437	COLOR OPT CAB	TMA	S22	0422	75797301	TRANSDUCER CAM ASSY	301	S12
0298	83442438	COLOR OPT CAB	TMA	S5	0423	75315405	TRANSDUCER SCALE ASM	301	S12
0298	83442438	COLOR OPT CAB	TMA	S21	0423	75315405	TRANSDUCER SCALE ASM	301	S17
0298	83442438	COLOR OPT CAB	TMA	S22	0424	75276203	SPACER NYLON	301	S17
0298	83442438	COLOR OPT CAB	TMA	S22	0425	75797700	BAR EXPANSION MACHINE	301	S17
0299	83442439	COLOR OPT CAB	TMA	S5	0425	75797700	BAR EXPANSION MACHINE	301	S12
0299	83442439	COLOR OPT CAB	TMA	S20	0427	10126209	SCR-SOC HP CAP	301	S17
0299	83442439	COLOR OPT CAB	TMA	S21	0428	92815096	SCREW CAP SOC HD	301	S17
0299	83442439	COLOR OPT CAB	TMA	S22	0428	92815096	SCREW CAP SOC HD	404	S15
0299	83442439	COLOR OPT CAB	TMA	S6	0429	93788082	SCREW SELF LOCKING 4	301	S12
0301	83429802	HAWK COMMON PARTS	MOD	S6	0429	93788082	SCREW SELF LOCKING 4	301	S17
0301	83429802	HAWK COMMON PARTS	MOD	S11	0430	10127111	SCREW PAN HD MACH	301	S12
0301	83429802	HAWK COMMON PARTS	MOD	S12	0430	10127111	SCREW PAN HD MACH	528	S15
0301	83429802	HAWK COMMON PARTS	MOD	S13	0430	10127111	SCREW PAN HD MACH	358	S18
0307	75740123	HEAD OPTION	MOD	S29	0430	10127111	SCREW PAN HD MACH	205-217 219-226	S20
0307	75740123	HEAD OPTION	MOD	S6	0430	10127111	SCREW PAN HD MACH	292-299	S20
0308	75740119	HEAD OPTION	MOD	S6	0430	10127111	SCREW PAN HD MACH	1026	S31
0308	75740119	HEAD OPTION	MOD	S29	0431	10127113	SCREW PAN HD MACH	301	S12
0309	75740115	HEAD OPTION	MOD	S6	0431	10127113	SCREW PAN HD MACH	470	S14
0309	75740115	HEAD OPTION	MOD	S29	0431	10127113	SCREW PAN HD MACH	345	S7
0310	75740113	HEAD OPTION	MOD	S6	0431	10127113	SCREW PAN HD MACH	346	S8
0310	75740113	HEAD OPTION	MOD	S29	0431	10127113	SCREW PAN HD MACH	485	S18
0311	75740121	HEAD OPTION	MOD	S6	0432	10127121	SCREW PAN HD MACH	301	S11
0311	75740121	HEAD OPTION	MOD	S29	0432	10127121	SCREW PAN HD MACH	301	S12
0312	75740124	HEAD OPTION	MOD	S6	0432	10127121	SCREW PAN HD MACH	301	S13
0312	75740124	HEAD OPTION	MOD	S29	0432	10127121	SCREW PAN HD MACH	358	S18
0313	75740117	HEAD OPTION	MOD	S6	0432	10127121	SCREW PAN HD MACH	749	S26
0313	75740117	HEAD OPTION	MOD	S29	0432	10127121	SCREW PAN HD MACH	713	S26
0314	75740118	HEAD OPTION	MOD	S6	0432	10127121	SCREW PAN HD MACH	519	S18
0314	75740118	HEAD OPTION	MOD	S29	0432	10127121	SCREW PAN HD MACH	1007	S27
0315	75740114	HEAD OPTION	MOD	S6	0433	92742201	SCREW PAN HD MACH	301	S13
0315	75740114	HEAD OPTION	MOD	S29	0434	10127123	SCREW PAN HD MACH	301	S11
0320	75740606	HZ RPM DR OPT	MOD	S6	0434	10127123	SCREW PAN HD MACH	713	S26
0320	75740606	HZ RPM DR OPT	MOD	S7	0434	10127123	SCR PAN HD MACH	276	S31
0320	75740606	HZ RPM DR OPT	MOD	S8	0434	10127123	SCR PAN HD MACH	1026	S30
0321	75740601	HZ RPM DR OPT	MOD	S6	0434	10127123	SCR PAN HD MACH	275	S13
0321	75740601	HZ RPM DR OPT	MOD	S7	0434	10127123	SCR PAN HD MACH	301	S25
0321	75740601	HZ RPM DR OPT	MOD	S8	0434	10127123	SCR SOC HD	301	S12
0322	75740602	HZ RPM DR OPT	MOD	S6	0435	10126255	SCR SOC HD	301	S17
0322	75740602	HZ RPM DR OPT	MOD	S7	0436	75792900	SCREW IDLER	301	S12
0322	75740602	HZ RPM DR OPT	MOD	S8	0437	92815197	SCREW CAP SOC HD	301	S12
0323	75740605	HZ RPM DR OPT	MOD	S6	0438	92815229	SCREW CAP SOC HD	301	S17
0323	75740605	HZ RPM DR OPT	MOD	S7	0439	10125602	WASHERS PLAIN	404	S15
0323	75740605	HZ RPM DR OPT	MOD	S8	0439	10125602	WASHERS PLAIN	358	S18
0327	77830918	PWR SUPPLY ASSY	MOD	S9	0439	10125602	WASHERS PLAIN	519	S18
0327	77830918	PWR SUPPLY ASSY	MOD	S6	0440	75304501	ARM-IDLER MACHINED	301	S17
0327	77830918	PWR SUPPLY ASSY	MOD	S7	0441	10125605	WASHERS PLAIN	301	S11
0329	77830919	PWR SUPPLY ASSY	MOD	S8	0441	10125605	WASHERS PLAIN	301	S12
0329	77830919	PWR SUPPLY ASSY	MOD	S9	0441	10125605	WASHERS PLAIN	301	S17
0330	77830920	PWR SUPPLY ASSY	MOD	S6	0441	10125605	WASHERS PLAIN	404	S15
0330	77830920	PWR SUPPLY ASSY	MOD	S7	0441	10125605	WASHERS PLAIN	519	S18
0332	75795214	I-O OPTION RACK MT	MOD	S6	0441	10125605	WASHERS PLAIN	301	S13
0334	75795216	I-O OPTION RACK MT	MOD	S6	0441	10125605	WASHERS PLAIN	345	S7
0335	75795215	I-O OPTION RACK MT	MOD	S6	0441	10125605	WASHERS PLAIN	346	S8
0336	75795217	I-O OPTION RACK MT	MOD	S6	0441	10125605	WASHERS PLAIN	327 329 330	S9
0337	75795219	I-O OPTION RACK MT	MOD	S6	0441	10125605	WASHERS PLAIN	779	S9
0338	75795218	I-O OPTION RACK MT	MOD	S6	0441	10125605	WASHERS PLAIN	485	S18
0339	75795221	I-O OPTION RACK MT	MOD	S6	0441	10125605	WASHERS PLAIN	470	S14
0340	75795223	I-O OPTION RACK MT	MOD	S6	0442	10125606	WASHERS PLAIN	301	S11
0341	75795213	I-O OPTION RACK MT	MOD	S6	0442	10125606	WASHERS PLAIN	301	S13
0342	75795222	I-O OPTION RACK MT	MOD	S6	0442	10125606	WASHERS PLAIN	358	S18
0343	75795224	I-O OPTION RACK MT	MOD	S6	0442	10125606	WASHERS PLAIN	404	S15
0345	83444403	SPINDLE DRIVE ASSY	MOD	S7	0442	10125606	WASHERS PLAIN	404	S16
0345	83444403	SPINDLE DRIVE ASSY	MOD	S6	0442	10125606	WASHERS PLAIN	205-217 219-226	S21
0346	83474907	BRAKE & SPINDLE DR	MOD	S6	0442	10125606	WASHERS PLAIN	292-299	S21
0346	83474907	BRAKE & SPINDLE DR	MOD	S8	0442	10125606	WASHERS PLAIN	1007	S27
0348	75729907	CABLE JUMPER	MOD	S6	0442	10125606	WASHERS PLAIN	192 227	S25
0349	94238917	LABEL CAUTION	MOD	S6	0443	10125607	WASHERS PLAIN	301	S12
0357	83451201	STANDOFF	MOD	S6	0443	10125607	WASHERS PLAIN	202 203	S19
0358	83466001	BRUSH DRIVE ASSY	MOD	S18	0443	10125607	WASHERS PLAIN	237 243	S28
0358	83466001	BRUSH DRIVE ASSY	MOD	S6	0443	10125607	WASHERS PLAIN	229 233	S23
0359	75886347	IDENT PLATE	MOD	S6	0443	10125607	WASHERS PLAIN	776-778	S10
0359	75886347	IDENT PLATE	MOD	S19	0443	10125607	WASHERS PLAIN	275	S30
0400	83456501	BASE DECK-MACHINED	301	S11	0443	10125607	WASHERS PLAIN	1026	S31
0400	83456501	BASE DECK-MACHINED	301	S12	0443	10125607	WASHERS PLAIN	228	S24
0400	83456501	BASE DECK-MACHINED	301	S13	0443	10125607	WASHERS PLAIN	205-217 219-226	S21
0401	83451403	CARTRIDGE REC	301	S11	0444	10125800	WASHERS SPR	301	S17
0402	75308800	COVER MOTOR	301	S13	0445	10125804	WASHERS SPR LOCK	345	S7
0403	75286701	SPINDLE	301	S12	0445	10125804	WASHERS SPR LOCK	346	S8
0404	75316008	ACTUATOR ASSY	301	S12	0445	10125804	WASHERS SPR LOCK	301	S11
0404	75316008	ACTUATOR ASSY	301	S15	0445	10125804	WASHERS SPR LOCK	301	S12
0404	75316008	ACTUATOR ASSY	301	S16	0445	10125804	WASHERS SPR LOCK	301	S13
0405	75319001	MAGNET ASSY	301	S12	0445	10125804	WASHERS SPR LOCK	301	S17
0406	95125324	LOCTITE	423	S17	0445	10125804	WASHERS SPR LOCK	358	S18
0406	95125324	LOCTITE	404	S16	0445	10125804	WASHERS SPR LOCK	519	S19
0407	75317102	TRANSDUCER-CONN ASSY	301	S12	0445	10125804	WASHERS SPR LOCK	404	S15
0408	46317900	CAP-TRANSDUCER END	301	S12	0445	10125804	WASHERS SPR LOCK	404	S16
0409	77834644	COVER-ELECTRONICS	301	S11	0445	10125804	WASHERS SPR LOCK	749	S26
0410	77598300	BRACKET-CONNECTOR	301	S12	0445	10125804	WASHERS SPR LOCK	713	S26
0411	83437400	FILTER-AIR	301	S13	0445	10125804	WASHERS SPR LOCK	267-269	S28
0412	75749000	STANDOFF CLAMP	301	S13	0445	10125804	WASHERS SPR LOCK	228	S24
0413	75748903	CLAMP FILTER	301	S13	0445	10125804	WASHERS SPR LOCK	1007	S27
0414	75308100	EXPANDER-BLOWER	301	S13	0445	10125804	WASHERS SPR LOCK	229 231-233	S23
0415	75749201	BRACKET-EXPANDER	301	S13	0445	10125804	WASHERS SPR LOCK	227	S25
0416	75793103	IDLER ASSY	301	S13	0445	10125804	WASHERS SPR LOCK		
0416	75793103	IDLER ASSY	301	S17	0445	10125804	WASHERS SPR LOCK		
0417	10127112	SCREW PAN HD MACH	345	S7	0445	10125804	WASHERS SPR LOCK		
0417	10127112	SCREW PAN HD MACH	780	S9	0445	10125804	WASHERS SPR LOCK		
0417	10127112	SCREW PAN HD MACH	301	S11	0445	10125804	WASHERS SPR LOCK		
0417	10127112	SCREW PAN HD MACH	485	S18	0445	10125804	WASHERS SPR LOCK		
0417	10127112	SCREW PAN HD MACH	346	S8	0445	10125804	WASHERS SPR LOCK		
0417	10127112	SCREW PAN HD MACH	779	S9	0445	10125804	WASHERS SPR LOCK		
0418	75308503	SPRING IDLER	301	S17	0445	10125804	WASHERS SPR LOCK		
0419	77830700	UNDER COVER ASSY	301	S13	0445	10125804	WASHERS SPR LOCK		
0420	76190640	DISK FIXED, RECORDING	301	S12	0445	10125804	WASHERS SPR LOCK		

ASSEMBLY - COMPONENT PARTS LIST

ITEM	IDENT NO	DESCRIPTION	WHERE USED	SHEET	ITEM	IDENT NO	DESCRIPTION	WHERE USED	SHEET
0446	10125803	WASHERS SPR LOCK	301	S11	0482	10126403	WASH EXT TOOTH LO	301	S11
0446	10125803	WASHERS SPR LOCK	301	S12	0482	10126403	WASH EXT TOOTH LO	301	S12
0446	10125803	WASHERS SPR LOCK	301	S17	0482	10126403	WASH EXT TOOTH LO	201-203	S19
0446	10125803	WASHERS SPR LOCK	485	S18	0482	10126403	WASH EXT TOOTH LO	776-778	S10
0446	10125803	WASHERS SPR LOCK	526	S16	0482	10126403	WASH EXT TOOTH LO	276	S31
0446	10125803	WASHERS SPR LOCK	404	S15	0482	10126403	WASH EXT TOOTH LO	780	S9
0446	10125803	WASHERS SPR LOCK	470	S14	0483	75769100	LABEL-SWITCH	301	S11
0446	10125803	WASHERS SPR LOCK	519	S18	0484	10127122	SCREW PAN HD MACH	237 243	S28
0446	10125803	WASHERS SPR LOCK	346	S8	0484	10127122	SCREW PAN HD MACH	229 231 232	S23
0446	10125803	WASHERS SPR LOCK	780	S9	0484	10127122	SCREW PAN HD MACH	776-778	S10
0446	10125803	WASHERS SPR LOCK	779	S9	0484	10127122	SCREW PAN HD MACH	227	S25
0447	10126228	SCR HEX SOC HD	301	S17	0485	83451602	MAGNETIC SENSOR ASSY	301	S11
0447	10126228	SCR HEX SOC HD	776-778	S10	0485	83451602	MAGNETIC SENSOR ASSY	301	S18
0448	10125805	WASHERS SPR LOCK	301	S11	0486	75880261	FRONT PANEL	228	S24
0448	10125805	WASHERS SPR LOCK	301	S12	0487	94655401	PIN, HITCH	301	S12
0448	10125805	WASHERS SPR LOCK	713	S26	0488	83415603	LABEL	404	S15
0448	10125805	WASHERS SPR LOCK	1007	S27	0489	83415607	LABEL	301	S11
0449	10125105	NUT HEX MACH	470	S14	0489	83415607	LABEL	301	S12
0449	10125105	NUT HEX MACH	345	S7	0490	75312751	SPEC-EPOXY ADHESIVE	301	S17
0449	10125105	NUT HEX MACH	346	S8	0491	83451700	STRAP-GRND, PWR SPLY	301	S11
0449	10125105	NUT HEX MACH	301	S11	0492	95694202	SPACER-BRASS	301	S11
0449	10125105	NUT HEX MACH	301	S13	0493	10127146	SCREW PAN HD MACH	301	S11
0449	10125105	NUT HEX MACH	201-203	S19	0493	10127146	SCREW PAN HD MACH	301	S12
0449	10125105	NUT HEX MACH	205-211 213-215	S20	0494	92615012	WASHER-SHOULDER FIBE	301	S11
0449	10125105	NUT HEX MACH	217	S20	0495	83482400	SECTOR RING ASSY 8	301	S17
0449	10125105	NUT HEX MACH	219-226 292-299	S20	0495	83482400	SECTOR RING ASSY 8	301	S12
0450	75792800	IDLER	416	S17	0496	83443101	STUD-STUB	301	S17
0451	75806504	WASHER-REDUCED	301	S13	0497	83443200	STUD-SNUB	301	S17
0451	75806504	WASHER-REDUCED	301	S17	0498	83443301	CLUTCH SNUBBING	301	S17
0451	75806504	WASHER-REDUCED	205-217 219-226	S20	0499	92033011	RING-RETAINING	301	S17
0451	75806504	WASHER-REDUCED	292-299	S20	0500	93109310	SPACER 1 OD =6	301	S17
0451	75806504	WASHER REDUCED	519	S18	0501	83451701	BLOWER ASSY	301	S13
0452	95643248	TERM INSULATOR	776-778	S10	0502	75802301	VOLTAGE ADJUST PLUG	301	S11
0453	51568605	WASHER	301	S11	0503	75793803	SENSOR CABLE ASSY	301	S13
0454	93728222	SCREW PH HD MACH	301	S11	0504	93115287	SCREW PAN	301	S13
0455	75796902	DAMPER-OSCILLATION	301	S12	0504	93115287	SCREW SELF LK	229 231 232	S23
0456	75313921	ADHESIVE RUBBER BASE	301	S12	0504	93115287	SCREW PAN	205-217 219-226	S20
0457	75800400	PIN-ACTUATOR ALIGNMENT	301	S12	0504	93115287	SCREW PAN	292-299	S20
0458	10125106	NUT HEX MACH	301	S12	0504	93115287	SCREW PAN	237 243	S28
0458	10125106	NUT HEX MACH	404	S15	0505	83445800	MOUNT-SENSOR	301	S13
0458	10125106	NUT HEX MACH	205-211 213-215	S20	0506	83445900	BRACKET-STATIC GRND	301	S13
0458	10125106	NUT HEX MACH	217	S20	0507	40054700	SPRING STATIC GROUND	301	S13
0458	10125106	NUT HEX MACH	219-226 292-299	S20	0508	75793802	SENSOR CABLE ASSY	485	S18
0458	10125106	NUT HEX MACH	713	S26	0509	73669601	LABEL-CONFIG	301	S11
0458	10125106	NUT HEX MACH	776-778	S10	0510	10126401	WASH EXT TOOTH LO	301	S13
0458	10125106	NUT HEX MACH	275	S30	0510	10126401	WASH EXT TOOTH LO	345	S7
0458	10125106	NUT HEX MACH	1007	S27	0510	10126401	WASH EXT TOOTH LO	404	S15
0459	92054227	CR BEARING BALL	416	S17	0510	10126401	WASH EXT TOOTH LO	346	S8
0460	24547502	PLATE, WARNING	301	S11	0510	10126401	WASH EXT TOOTH LO	205-211 213-215	S20
0460	24547502	PLATE, WARNING	301	S13	0510	10126401	WASH EXT TOOTH LO	217	S20
0461	10126402	WASH EXT TOOTH LO	301	S13	0510	10126401	WASH EXT TOOTH LO	219-226 292-299	S20
0461	10126402	WASH EXT TOOTH LO	202 203	S19	0510	10126401	WASH EXT TOOTH LO	201-203	S19
0461	10126402	WASH EXT TOOTH LO	205-211 213-215	S21	0511	92021001	PIN-DOWEL .125X.38	301	S13
0461	10126402	WASH EXT TOOTH LO	217 219-226 292	S21	0513	92021093	PIN-DOWEL	301	S12
0461	10126402	WASH EXT TOOTH LO	295-299	S21	0514	75312013	SPEC TAPE	205-211 213-215	S20
0461	10126402	WASH EXT TOOTH LO	237 243	S28	0514	75312013	SPEC TAPE	217	S20
0461	10126402	WASH EXT TOOTH LO	229 231-232	S23	0514	75312013	SPEC TAPE	219-226 292-299	S20
0461	10126402	WASH EXT TOOTH LO	776-778	S10	0514	75312013	SPEC TAPE	301	S12
0461	10126402	WASH EXT TOOTH LO	192 227	S25	0515	75884887	BRKT ASSY L.H.	228	S24
0462	51853006	CLAMP, CABLE ADHESIVE	301	S13	0516	72959300	LABEL-FIELD CHANGE L	301	S11
0462	51853006	CLAMP, CABLE ADHESIVE	301	S12	0517	75886381	LUBRICANT	301	S17
0463	75800602	RETRACT HARNESS ASSY	301	S12	0518	10125030	SCREW HEX HD	201-203	S19
0464	75739501	PRE-AMP HARNESS ASSY	301	S12	0519	83457902	PACKLOCK ASSY	301	S12
0465	75739701	SWITCH BOARD HARNESS	301	S12	0519	83457902	PACKLOCK ASSY	301	S18
0466	92021004	PIN, DOWEL	301	S12	0520	75739105	RECEIVER HARNESS ASSY	301	S12
0466	92021004	PIN, DOWEL	301	S13	0521	83450500	BRACKET-SWITCH BD	301	S12
0466	92021004	PIN, DOWEL	423	S17	0522	10125920	SCREW FL HD	301	S18
0467	51853005	CLAMP	301	S12	0523	92196031	NUT-SPEED	205-217	S12
0467	51853005	CLAMP	301	S13	0524	95649726	GROMMET-BLOWER MTG	301	S13
0468	10127125	SCREW PAN HD MACH	301	S13	0525	75316104	FRAME-ACTUATOR MACH	404	S15
0468	10127125	SCREW PAN HD MACH	404	S16	0526	83475501	CARRIAGE ASSY	404	S16
0468	10127125	SCREW PAN HD MACH	202 203	S19	0527	75319603	COIL ASSY	404	S16
0468	10127125	SCREW PAN HD MACH	275	S30	0528	83447302	DETECTOR ASSY-END TR	404	S15
0469	95125305	LOCTITE GRADE C	526	S16	0529	75317900	SCALE-VERNIER FIXED	404	S15
0469	95125305	LOCTITE GRADE C	301	S12	0530	75797400	BRACKET-BUMPER, CAST	404	S15
0469	95125305	LOCTITE GRADE C	301	S17	0531	75817501	STRIP-BACKUP ACTUATOR	404	S15
0469	95125305	LOCTITE GRADE C	404	S16	0532	75884902	BRKT ASSY R.H.	228	S24
0470	75308012	CARD CAGE ASSY	301	S11	0533	75317200	CAM-HEAD ARM	404	S15
0470	75308012	CARD CAGE ASSY	301	S14	0534	93623000	BUMPER, RUBBER	404	S15
0471	92824097	SCREW CAP	423	S17	0535	73228200	PLATE-ARM CLAMP	404	S16
0472	10127114	SCR PAN HD	301	S12	0536	75296101	WASHER PHENOLIC	404	S15
0472	10127114	SCR PAN HD	301	S11	0536	75296101	WASHER PHENOLIC	404	S16
0472	10127114	SCR PAN HD	301	S13	0537	75296201	SPACER PHENOLIC	404	S15
0472	10127114	SCR PAN HD	470	S14	0537	75296201	SPACER PHENOLIC	404	S16
0473	46334400	LABEL-CAUTION	301	S11	0538	73555300	STRIP-BACKUP	404	S16
0474	83495900	PLATE-IND PWR SU	301	S11	0539	75797500	LEAD-FLEX COIL PR	404	S15
0475	77830539	IDENT PLATE-PRODUCT	301	S12	0539	75797500	LEAD-FLEX COIL PR	404	S16
0476	75797100	STAND OFF	301	S12	0540	73555101	INSULATOR-FLEX LEAD	404	S15
0476	75797100	STAND OFF	301	S17	0540	73555101	INSULATOR-FLEX LEAD	404	S16
0477	10126215	SCREW CAP SOC HD	301	S13	0541	92549007	SW SUBMINIATURE BAST	404	S15
0477	10126215	SCREW CAP SOC HD	301	S17	0542	75800502	COIL POWER HARNESS	404	S15
0478	10125603	WASHERS PLAIN	301	S17	0543	10127169	SCREW PAN HD MACH	404	S15
0478	10125603	WASHERS PLAIN	779	S9	0544	10127104	SCREW PAN HD MACH	404	S15
0478	10125603	WASHERS PLAIN	404	S15	0545	83442106	FRONT PNL RACK PAINT	235 243	S28
0478	10125603	WASHERS PLAIN	528	S15	0546	10127124	SCREW PAN HD MACH	404	S15
0479	10125801	WASHERS SPR LOCK	301	S17	0546	10127124	SCREW PAN HD MACH	205-217 219-226	S20
0479	10125801	WASHERS SPR LOCK	404	S15	0546	10127124	SCREW PAN HD MACH	292-299	S20
0479	10125801	WASHERS SPR LOCK	404	S16	0546	10127124	SCREW PAN HD MACH	749	S26
0479	10125801	WASHERS SPR LOCK	404	S15	0546	10127124	SCREW PAN HD MACH	713	S26
0479	10125801	WASHERS SPR LOCK	528	S15	0546	10127124	SCREW PAN HD MACH	229 231 232	S23
0479	10125801	WASHERS SPR LOCK	346	S8	0546	10127124	SCREW PAN HD MACH	301	S12
0479	10125801	WASHERS SPR LOCK	779	S9	0546	10127124	SCREW PAN HD MACH	1007	S27
0480	12211011	LUBRPLATE 30-AA	301	S12	0546	10127124	SCREW PAN HD MACH	227	S25
0481	77835140	GROUND STRAP	301	S11	0546	10127124	SCREW PAN HD MACH	236 237 291	S28
0481	77835140	GROUND STRAP	301	S13	0547	83442109	FRONT PNL RACK		

ASSEMBLY - COMPONENT PARTS LIST

ITEM IDENT NO	DESCRIPTION	WHERE USED	SHEET	ITEM IDENT NO	DESCRIPTION	WHERE USED	SHEET
0548 83425143	PNL TOP CVR REAR	226	S22	0632 75792601	COVER MOTHER	470	S14
0549 92815160	SCREW CAP SOC HD	404	S15	0633 75799402	CLIP-HEAD CABLE, QUAL	470	S14
0550 92815193	SCREW CAP SOC HD	404	S16	0634 83445400	GUIDE WIRE	470	S14
0551 92815195	SCREW CAP SOC HD	404	S19	0635 75739900	COVER-CARD CAGE	470	S14
0552 83443743	PNL TOP CVR RH	226	S22	0636 95655501	SCREW SHEET METAL	470	S14
0553 75319801	VELOCITY TRANSDUCER	407	S12	0637 77832202	BRACKET	301	S12
0554 83443843	PNL TOP CVR LH	226	S22	0637 77832202	BRACKET	301	S17
0556 10126101	WASH INT TOOTH LK	404	S15	0638 95655500	SCREW SHEET METAL	470	S14
0556 10126101	WASH INT TOOTH LK	776-778	S10	0639 10126103	WASH INT TOOTH LK	358	S18
0557 10126100	WASH INT TOOTH LK	404	S15	0639 10126103	WASH INT TOOTH LK	327 329 330	S9
0557 10126100	WASH INT TOOTH LK	404	S16	0639 10126103	WASH INT TOOTH LK	485	S18
0557 10126100	WASH INT TOOTH LK	526	S16	0639 10126103	WASH INT TOOTH LK	205-217 219-226	S20
0557 10126100	WASH INT TOOTH LK	358	S18	0639 10126103	WASH INT TOOTH LK	292-299	S20
0558 83444701	JUMPER ASSY	267-269	S28	0639 10126103	WASH INT TOOTH LK	1026	S31
0559 75738604	RESISTOR MODULE 110	251 252	S29	0640 75293953	CONNECTOR HOUSING	407	S12
0560 83451810	INSULATOR	301	S13	0641 75803300	CLAMP-CAGE COVER	470	S14
0560 83451810	INSULATOR	228	S24	0642 75803500	STRIP-CORK RUBBER	470	S14
0561 83442143	FRONT PNL RACK PAINT	240	S28	0643 75803501	STRIP-CORK RUBBER	470	S14
0562 77834340	FRONT PNL RACK PAINT	245	S28	0644 75802700	LABEL-CARD LOCATION	470	S14
0563 83490600	CLIP-CLAMP	404	S16	0645 83479600	STOP-KEYED INJ MOLD	470	S14
0564 77834401	FRONT PNL RACK PAINT	244	S28	0646 75803503	STRIP-PRESSURE	470	S14
0565 83493900	BRACKET-CHANNEL	404	S15	0647 75803802	INSULATOR-FISHPAPER	470	S14
0566 83493800	CHANNEL-UPPER	404	S15	0648 75764700	ADHESIVE SPRAY	470	S14
0567 83494200	CLAMP-WIRE	404	S15	0649 83442166	FRONT PNL RACK PAINT	241	S28
0568 83494001	CLAMP-SPIRAL GUIDE	404	S15	0650 83442154	FRONT PNL BCK PAINT	242	S28
0569 83454400	STIFFNER	404	S15	0651 94862902	GROMMET STRIP	780	S9
0569 83454400	STIFFNER	404	S16	0652 75740701	BRUSH MOTOR ASSY	358	S18
0570 83494500	CLAMP-CHANNEL	404	S16	0653 83466100	BRUSH DRIVE MOUNT	358	S18
0571 10127105	SCREW PAN HD MACH	404	S15	0654 83466200	BRUSH HOLDER	358	S18
0571 10127105	SCREW PAN HD MACH	404	S16	0655 83466300	DELAY ARM	358	S18
0571 10127105	SCREW PAN HD MACH	776-778	S10	0656 83466400	BRUSH HOLDER STUD	358	S18
0572 10127102	SCREW PAN HD	404	S15	0657 40024501	BRUSH, DISK	358	S18
0573 83478301	SLIDE ASSY RH	713	S26	0658 40024502	BRUSH, DISK	358	S18
0573 83478301	SLIDE ASSY RH	1007	S27	0659 36159806	SWITCH-PIVOT LEVER	358	S18
0574 00863701	CLAMP CABLE	528	S15	0660 92742011	SCREW M-C PAN HD	358	S18
0575 75316600	CARRIAGE ACTUATOR	526	S16	0661 92196007	NUT-SPEED	749	S26
0576 73197400	SPR-BEARING ASSY	526	S16	0661 92196007	NUT-SPEED	713	S26
0577 73584400	BASE-ARM CLAMP	526	S16	0661 92196007	NUT-SPEED	1026	S31
0578 73197000	SPRING BEARING	526	S16	0661 92196007	NUT-SPEED	275	S30
0579 75317700	SCALE-VERNIER MOVING	526	S16	0661 92196007	NUT-SPEED, TYPE	1007	S27
0580 92054251	BALL BEARING	526	S16	0662 10125919	SCREW FLAT HD	358	S18
0581 93115168	SCR HEX SOC HD	301	S17	0663 83479501	LATCH ASSY	713	S26
0582 83478302	SLIDE ASSY LH	713	S26	0663 83479501	LATCH ASSY	1007	S27
0582 83478302	SLIDE ASSY LH	1007	S27	0664 93211008	WASHER	713	S26
0583 92815097	SCREW CAP SOC HD	526	S16	0664 93211008	WASHER	1007	S27
0584 10126219	SCR HEX SOC HD CAP	526	S16	0664 93211008	WASHER	227	S25
0585 83443601	KNOB ASSY	713	S26	0665 83484500	MOUNT-SLIDE	713	S26
0585 83443601	KNOB ASSY	1007	S27	0665 83484500	MOUNT-SLIDE	227	S25
0586 93344096	SCREW NYLON	526	S16	0666 93529003	WASHER, SPRING WAVE	358	S18
0587 93071163	SCREW SET SOC HD	526	S16	0667 83467100	BRUSH INDICATOR	358	S18
0587 93071163	SCREW SET SOC HD	485	S18	0668 10126212	SCR HEX SOC HD CAP	358	S18
0588 83475401	POS TRANSDUCER SL-CO	526	S16	0668 10126212	SCR HEX SOC HD CAP	404	S16
0589 75314202	SCALE-BND	526	S16	0668 10126212	SCR HEX SOC HD CAP	423	S17
0590 10127144	SCREW PAN HD	713	S26	0668 10126212	SCR HEX SOC HD CAP	301	S12
0590 10127144	SCREW PAN HD	1007	S27	0668 10126212	SCR HEX SOC HD CAP	301	S17
0591 77617072	SCREW CAP	423	S17	0669 83484602	MOUNT-SLIDE KEYED	749	S26
0592 77617079	SCREW CAP	423	S17	0669 83484602	MOUNT-SLIDE KEYED	713	S26
0593 10127311	SCREW SLOTTED	526	S16	0669 83484602	MOUNT-SLIDE KEYED	1007	S27
0594 75806501	WASHER-REDUCED O.D.	526	S16	0669 83484602	MOUNT-SLIDE KEYED	227	S25
0595 83494400	CHANNEL-MODILE	526	S16	0670 83457201	ARM LOCK MOLDER	519	S18
0596 75806503	WASHER	526	S16	0671 83457302	PACK LOCK BRACKET	519	S18
0596 75806503	WASHER	358	S18	0672 75738608	RESISTOR MODULE	254	S29
0596 75806503	WASHER	327 329 330	S9	0673 75798701	SPRING ARM	519	S18
0597 10125015	SCR PAN HD	404	S15	0674 75798501	SWITCH SUBMINIATURE	519	S18
0598 83441700	CAP-COIL MACHINED	527	S16	0675 94357804	SOLENOID DC	519	S18
0599 94258205	WIRE-MAGNET	527	S16	0676 10127332	SCREW PAN HD MACH	519	S18
0600 95280500	EPOXY, IMPREGNATING	527	S16	0677 83485700	STABILIZER	713	S26
0601 75786000	INSULATION MAT	527	S16	0677 83485700	STABILIZER	227	S25
0602 93355001	MARKER, WIRE NUMBER 1	527	S16	0678 75284711	HANDLE PULL RACK	237	S28
0603 75803502	STRIP-PRESSURE	527	S16	0678 75284701	HANDLE-PULL RACK	243 247	S28
0604 77612607	OPTICAL SWITCH ASSY	528	S15	0678 75284701	HANDLE-PULL RACK	229 231 232	S23
0605 83447401	PLATE-DETECTOR MTG	528	S15	0678 75284701	HANDLE-PULL RACK	227	S25
0606 83447500	ADAPTER-HORIZ POS	528	S15	0679 18607916	SCREW THD CUTTING	519	S18
0607 83442178	FRONT PNL RACK PAINT	289	S28	0680 77617079	SCREW CAP	301	S12
0608 93211009	WASHER PLAIN 10	713	S26	0681 93530436	ROLL PIN	519	S18
0608 93211009	WASHER PLAIN 10	1007	S27	0682 75779867	SPRING	519	S18
0609 75738610	RESISTOR MODULE 1K	251	S29	0683 83425343	DOOR ACC	226	S22
0610 93109322	SPACER	713	S26	0684 75738654	RESISTOR MODULE 220	249	S29
0610 93109322	SPACER	1007	S27	0685 83444200	ANGLE-FRT PANEL	237	S28
0611 75738607	RESISTOR MODULE 330	252 254	S29	0685 83444200	ANGLE-FRT PANEL	243 247	S28
0612 10127346	SCR PH	713 749	S26	0685 83444200	ANGLE-FRT PANEL	229 231 232	S23
0612 10127346	SCREW	1007	S27	0685 83444200	ANGLE-FRT PNL	227	S25
0613 75315501	SCALE-FLEX MOUNT	423	S17	0686 10127120	SCREW PAN HD MACH	267-269	S28
0614 75315600	MOUNT-TRANSDUCER	423	S17	0686 10127120	SCREW PAN HD MACH	519	S18
0615 75315901	POS TRANS SCALE	423	S17	0686 10127120	SCREW PAN HD MACH	205-211 213-215	S20
0616 75797001	BASE TRANSDUCER MOUNT	423	S17	0686 10127120	SCREW PAN HD MACH	217 219-226	S20
0617 75797200	PIN XDCER ALIGNMENT	423	S17	0686 10127120	SCREW PAN HD MACH	292-299	S20
0618 83436601	FENDER CABLE	749	S26	0686 10127120	SCREW PAN HD MACH	237 243 247	S28
0618 83436601	FENDER CABLE	713	S26	0686 10127120	SCREW PAN HD MACH	229 231 232	S23
0618 83436601	FENDER CABLE	1007	S27	0686 10127120	SCREW PAN HD MACH	228	S24
0619 15003309	WIRE 18 WHITE	776-778	S10	0686 10127120	SCREW PAN HD MACH	227	S25
0620 94277400	STRAP, CABLE TIE	776-778	S10	0687 92172000	BUMPER RUBBER	237	S28
0621 92720042	SCREW BUTTON HD	423	S17	0687 92172000	BUMPER RUBBER	243 247	S28
0622 77610636	SCREW SELF LK	301	S11	0687 92172000	BUMPER RUBBER	229 231 232	S23
0623 93651029	WASHER, BELLEVILLE	423	S17	0687 92172000	BUMPER, RUBBER	228	S24
0624 94277416	TIE WRAP	404	S16	0687 92172000	BUMPER, RUBBER	227	S25
0625 83466801	PNL CNTL RACK SLKSCN	238	S28	0688 83445706	FRAME CABINET	201 202	S19
0626 95010890	GREASE-LUBRIPLATE	423	S17	0689 75884516	SHOCK MOUNT-LORD	201-203	S19
0627 83442123	FRONT PNL RACK PAINT	239	S28	0690 73469100	PIVOT-COVER	201-203	S19
0628 77832201	COMP BRKT	301	S12	0691 73469101	PIVOT-COVER	201-203	S19
0628 77832201	COMP BRKT	301	S17	0692 93697013	LEVELER	201-203	S19
0629 75303204	CARD CAGE	470	S14	0693 93006033	NUT JAM HEX	201-203	S19
0630 75740002	STOP-CIRCUIT BOARD	470	S14	0694 75730805	CABLE ASSY GROUND	201-203	S19
0631 75751801	GUIDE-CIRCUIT	470	S14	0694 75730805	CABLE ASSY GROUND	237	S28

ASSEMBLY - COMPONENT PARTS LIST

ITEM	IDENT NO	DESCRIPTION	WHERE USED	SHEET	ITEM	IDENT NO	DESCRIPTION	WHERE USED	SHEET
0694	75730805	CABLE ASSY GROUND	243 247	S28	0739	10125747	SCR FLAT HD	345	S7
0694	75730805	CABLE ASSY GROUND	229 231 232	S23	0739	10125747	SCR FLAT HD	346	S8
0694	75730805	CABLE ASSY GROUND	192 227	S25	0740	10125725	SCR FLAT HD	345	S7
0695	75766700	FASTENER-NYLON	201-203	S19	0740	10125725	SCR FLAT HD	346	S8
0695	75766700	FASTENER-NYLON	205-211 213-215	S21	0741	77604000	PRE-FILTER-FILTER	237	S28
0695	75766700	FASTENER-NYLON	217 219-226	S21	0741	77604000	PRE-FILTER-FILTER	243 247	S28
0695	75766700	FASTENER-NYLON	292-299	S21	0741	77604000	PRE-FILTER-FILTER	229 231 233	S23
0696	83444100	GROUND WIPER	201-203	S19	0741	77604000	PRE-FILTER-FILTER	228	S24
0697	17901508	SCR THD ROLL	201-203	S19	0741	77604000	PRE-FILTER-FILTER	192 227	S25
0697	17901508	SCR THD ROLL	205-211 213-215	S21	0742	75284702	HANDLE-PULL RACK	228	S24
0697	17901508	SCR THD ROLL	217 219-226	S21	0743	83457401	DC SPINDLE HARN ASSY	345	S7
0697	17901508	SCR THD ROLL	292-299	S21	0744	77612676	SW SOLID STATE	345	S7
0698	93592200	SCR TPG HEX PNL	201-203	S19	0744	77612676	SW SOLID STATE	346	S8
0698	93592200	SCR TPG HEX PNL	276	S31	0745	83457601	AC SPINDLE HARN ASSY	345	S7
0698	93592200	SCR TPG HEX PNL	275	S30	0746	00845503	GROMMET-CATERPILLAR	345	S7
0699	75306101	TETHER-LINE	301	S11	0746	00845503	GROMMET-CATERPILLAR	346	S8
0700	83478643	PNL SIDE	226	S22	0747	75312701	ADHESIVE, EPOXY	345	S7
0700	94238905	LABEL, CAUTION	227	S25	0747	75312701	ADHESIVE, EPOXY	346	S8
0701	10125108	NUT HEX MACH	201-203	S19	0748	92602002	CLAMP, CABLE-NYLON	345	S7
0701	10125108	NUT HEX MACH	713	S26	0748	92602002	CLAMP, CABLE-NYLON	327 329 330	S9
0701	10125108	NUT HEX MACH	276 1026	S31	0749	83447806	INSTLN KIT-RACK MT	230	S26
0701	10125108	NUT HEX MACH	275	S30	0749	83447806	INSTLN KIT-RACK MT	228	S24
0701	10125108	NUT HEX MACH	1007	S27	0750	77830734	LABEL-SWITCH	301	S11
0702	10125303	NUT HEXAGON	201-203	S19	0751	94309802	POD, TERMINAL INSULAT	345	S7
0703	75884517	SHOCK MOUNT-LORD	201-203	S19	0751	94309802	POD, TERMINAL INSULAT	346	S8
0704	10125301	NUT HEXAGON	201-203	S19	0752	93154948	TUBING, SHRINKING	345	S7
0705	83492800	PLATE-COVER	201-203	S19	0753	83475843	PNL END	226	S22
0706	94281426	BR CABLE, GROUND	201-203	S19	0754	22940902	RELAY SOCKET	346	S8
0706	94281426	BR CABLE GROUND	276	S31	0755	83455800	INSULATOR MOTHER COV	470	S14
0707	83474601	FIRE-STOP, REAR	201-203	S19	0756	36085800	TERMINAL STRIP-LUG T	346	S8
0708	92742196	SCREW MACH PAN HD	201	S19	0757	83467401	BRAKE MOTOR ASSY	346	S8
0709	92723234	SCREW BUTTON SOC HD	201-203	S19	0758	83474701	BAR-LOCKING	346	S8
0709	92723234	SCREW BUTTON SOC HD	205-211 213-215	S21	0759	83474800	BLOCK-SPACER	346	S8
0709	92723234	SCREW BUTTON SOC HD	217 219-226	S21	0760	77612660	RELAY	346	S8
0709	92723234	SCREW BUTTON SOC HD	292-299	S21	0761	22940903	SPRING-RETAINER SOCK	346	S8
0710	77831951	FIRE-STOP, FRONT	201-203	S19	0762	95582004	RECT BRIDGE	346	S8
0711	10127347	SCREW PAN HD MACH	713	S26	0763	94245602	CONTACT CRIMP INSERT	407	S12
0711	10127347	SCREW PAN HD MACH	229	S23	0764	10127106	SCREW PAN HD MACH	346	S8
0711	10127347	SCREW PAN HD MACH	228	S24	0765	77834781	WARNING LABEL	301	S11
0711	10127347	SCREW PAN HD MACH	205-217 219-226	S20	0766	95655503	SCREW	346	S8
0711	10127347	SCREW PAN HD MACH	292-299	S20	0767	83484400	QUADRACLIP	301	S11
0711	10127347	SCREW PAN HD MACH	1007	S27	0768	75738655	RESISTOR MODULE 330	249 253	S29
0711	10127347	SCREW PAN HD MACH	227	S25	0770	92602003	CLAMP, CABLE-NYLON	346	S8
0712	10126104	WASH INT TOOTH LK	205-217 219-226	S20	0771	83467501	A.C. BRAKE HARNESS	346	S8
0712	10126104	WASH INT TOOTH LK	292-299	S20	0772	83467701	D.C. BRAKE HARNESS	346	S8
0712	10126104	WASH INT TOOTH LK	749	S26	0773	50241001	DIODE SILICON	346	S8
0712	10126104	WASH INT TOOTH LK	713	S26	0774	75808549	CAP 100V 10R .10UF	346	S8
0712	10126104	WASH INT TOOTH LK	237	S28	0775	92512142	RESISTOR	346	S8
0712	10126104	WASH INT TOOTH LK	243 247	S28	0776	83484108	POWER SUPPLY CHASSIS A	329	S9
0712	10126104	WASH INT TOOTH LK	229 231 232	S23	0776	83484108	POWER SUPPLY CHASSIS A	329	S10
0712	10126104	WASH INT TOOTH LK	776-778	S10	0777	83475605	PWR 3 PLY CHASSIS ASM	330	S9
0712	10126104	WASH INT TOOTH LK	276	S31	0777	83475605	PWR SPLY CHASSIS ASM	330	S10
0712	10126104	WASH INT TOOTH LK	275	S30	0778	83484107	POWER SUPPLY CHASSIS A	327	S9
0712	10126104	WASH INT TOOTH LOCK	228	S24	0778	83484107	POWER SUPPLY CHASSIS A	327	S10
0712	10126104	WASHER INT TOOTH LOCK	1007	S27	0779	83475105	PWR BD ASM PIGGYBACK	327 329 330	S9
0712	10126104	WASH INT TOOTH LOCK	227	S25	0780	83484002	COVER ASSY-PWR SPY 2	327 329 330	S9
0713	83447805	INSTLN KIT-RACK MT	229 231	S26	0782	93747025	RECEPTACLE, SLIDE ON	776-778	S10
0713	83447805	INSTLN KIT-RACK MT	229 231 233	S23	0783	92980003	WASHER, FIBRE	779	S9
0714	75804800	AIR FLTRER	201-203	S19	0783	92980003	WASHER, FIBRE	327 329 330	S9
0715	77599600	GASKET BLOWER CAB	201-203	S19	0784	10127115	SCREW PAN HD MACH	327 329 330	S9
0716	83478200	COVER	201-203	S19	0784	10127115	SCREW PAN HD	301	S17
0717	85478700	CLAMP	201	S19	0787	92742176	SCREW M-C PAN HD	327 329 330	S9
0718	83478701	CLAMP	202 203	S19	0789	75722930	BELT-DRIVE NEOPRENE	321	S7
0719	83494801	PLATE, AC CABLE	201-203	S19	0789	75722930	BELT-DRIVE NEOPRENE	321	S8
0720	93522008	PLUG-SNAP BUTTON	201-203	S19	0790	77599706	PULLEY-DRIVE MOTOR	321	S7
0721	83410562	GASKET STRIP PRESSURE	201-203	S19	0790	77599706	PULLEY-DRIVE MOTOR	321	S8
0721	83410562	GASKET STRIP PRESSURE	301	S11	0791	75722940	BELT-DRIVE NEOPRENE	322	S8
0722	92932206	SCR FLAT HD SST	201-203	S19	0791	75722940	BELT-DRIVE NEOPRENE	322	S8
0723	83451806	INSULATOR ADHESIVE	237	S28	0792	77599705	PULLEY-DRIVE MOTOR	322	S7
0723	83451806	INSULATOR ADHESIVE	243 247	S28	0792	77599705	PULLEY-DRIVE MOTOR	322	S8
0723	83451806	INSULATOR ADHESIVE	229 231 232	S23	0793	75722920	BELT-DRIVE NEOPRENE	320	S7
0723	83451806	INSULATOR, ADH BACK	228	S24	0793	75722920	BELT-DRIVE NEOPRENE	320	S8
0723	83451806	INSULATOR, ADH BACK.	227	S25	0794	77599707	PULLEY-DRIVE MOTOR	320	S7
0724	51669404	TERMINAL	231	S23	0794	77599707	PULLEY-DRIVE MOTOR	320	S8
0725	83456900	AIR INTAKE	192	S25	0795	83451104	UPPER SENSOR HOLDER	485	S18
0726	83444900	SHIM PLATE	201-203	S19	0796	83450000	PLATE-SENSOR MTG	485	S18
0727	83457001	AIR INTAKE	237	S28	0798	94337703	TUBING HEAT SRNK	407	S12
0727	83457001	AIR INTAKE	243 247	S28	0602	83425106	PANEL-TOP COVER REAR	205 210 292	S22
0727	83457001	AIR INTAKE	229 233	S23	0603	83443703	PNL TOP COVER RH PTD	205 207 210 292	S22
0727	83457001	AIR INTAKE	228	S24	0604	83443803	PNL TOP CVR LH PTD	205 207 210 292	S22
0727	83457001	AIR INTAKE	227	S25	0605	83425306	DOOR-ACCESS PAINTED	205 210 292	S22
0728	77832300	CLAMP	202	S19	0606	83478603	PNL SIDE PTD LT GRAY	205 207 210 292	S22
0729	10127128	PAN HD MACH SCR	237	S28	0607	83475806	PANEL END FRONT PTD	205 210 292 296	S22
0729	10127128	PAN HD MACH SCR	243 247	S28	0608	83425606	PANEL-CONTROL CAB PN	205 210 212 292	S22
0729	10127128	PAN HD MACH SCR	229 233	S23	0609	75283200	BAR-HANDLE	205-211 213-215	S20
0729	10127128	PAN HEAD MACH SCREW	228	S24	0609	75283200	BAR-HANDLE	217 219-226	S20
0729	10127128	PAN HEAD MACH SCREW	192 227	S25	0609	75283200	BAR-HANDLE	292-299	S20
0730	75722910	BELT-DRIVE NEOPRENE	323	S7	0610	75283100	BAR-TRIM	205 219-226	S20
0730	75722910	BELT-DRIVE NEOPRENE	323	S8	0610	75283100	BAR-TRIM	292-299	S20
0731	77599708	PULLEY-DRIVE MOTOR	323	S7	0611	75793301	LABEL SWITCH	205-214 216 217	S20
0731	77599708	PULLEY-DRIVE MOTOR	323	S8	0611	75793301	LABEL SWITCH	219-226	S20
0732	77617051	SCR CAP SOC	320-323	S7	0611	75793301	LABEL SWITCH	292 294 296-299	S20
0732	77617051	SCR CAP SOC	320-323	S8	0611	75793301	LABEL SWITCH	234-237 239-245	S28
0733	77599800	COLLAR-MOTOR PULLEY	320-323	S7	0611	75793301	LABEL SWITCH	247 248 285	S28
0733	77599800	COLLAR-MOTOR PULLEY	320-323	S8	0611	75793301	LABEL SWITCH	287-289	S28
0734	83485302	PLATE-DYNAMIC MOTOR	345	S7	0612	75284001	BAR-COVER	205-211 213-215	S20
0734	83485302	PLATE-DYNAMIC MOTOR	346	S8	0612	75284001	BAR-COVER	217 219-226	S20
0735	83456001	DRIVE MTR HARNESS AS	345	S7	0612	75284001	BAR-COVER	292-299	S20
0736	94255105	CAPACITOR-MOTOR AC 2	345	S7	0613	75287700	GASKET - DOOR	276	S31
0736	94255105	CAPACITOR-MOTOR AC 2	346	S8	0613	75287700	GASKET	470	S14
0737	94260500	ACCESSORIES-CAPACITOR	345	S7	0614	75288300	MAGNETIC STRIP	205-211 213-215	S20
0737	94260500	ACCESSORIES-CAPACITOR	346	S8	0614	75288300	MAGNETIC STRIP	217 219-226	S20
0738	94260503	ACCESSORIES-CAPACITOR	345	S7	0614	75288300	MAGNETIC STRIP	292-299	S20
0738	94260503	ACCESSORIES-CAPACITOR	346	S8	0615	75037504	HEAD ASM (LOWER)	307 312 314	S29

ASSEMBLY - COMPONENT PARTS LIST

ITEM	IDENT NO	DESCRIPTION	WHERE USED	SHEET	ITEM	IDENT NO	DESCRIPTION	WHERE USED	SHEET
0816	75794101	SLIDE-LID	205-211 213-215	S20	0879	83443827	PNL TOP CVR LH PT BR	211 225	S22
0816	75794101	SLIDE-LID	217 219-226	S20	0880	83425334	DOOR-ACCESS PTD WHITE	211 225	S22
0816	75794101	SLIDE-LID	292-299	S20	0881	83478627	PNL SIDE PTD BR OLIV	211 225	S22
0817	75794204	ROD-SLIDE	205-211 213-215	S20	0882	83475834	PANEL END FT NCR PTD	211 225	S22
0817	75794204	ROD-SLIDE	217 219-226	S20	0883	83425635	PANEL-CNTL CAB PAINT	211 225	S22
0817	75794204	ROD-SLIDE	292-299	S20	0884	83478434	PNL END REAR PTD WHI	225	S21
0818	75794001	SPACER-FLANGED	205-217 219-226	S20	0885	75311905	HOLDER JOB TICKET	225	S22
0818	75794001	SPACER-FLANGED	292-299	S20	0886	83443768	PNL TOP CVR RH	222 224 296	S22
0819	75794700	SPRING-EXTENSION	205-211 213-215	S20	0887	83443868	PNL TOP CVR	224 296	S22
0819	75794700	SPRING-EXTENSION	217 219-226	S20	0888	83425367	DOOR ACC	224 296	S22
0819	75794700	SPRING-EXTENSION	292-299	S20	0889	77830705	INSULATOR	713	S26
0820	92649009	PIN, COTTER	205-211 213-215	S20	0889	77830705	INSULATOR	749	S26
0820	92649009	PIN, COTTER	217 219-226	S20	0889	77830705	INSULATOR	227	S25
0820	92649009	PIN, COTTER	292-299	S20	0890	83425643	PNL CONTROL	226	S22
0821	93530007	PIN, ROLL HCS BLACK	205-211 213-215	S20	0891	95125322	LOCTITE	301	S17
0821	93530007	PIN, ROLL HCS BLACK	217 219-226	S20	0892	83495300	TUNNEL WIND	779	S9
0821	93530007	PIN, ROLL HCS BLACK	292-299	S20	0893	10125704	SCR FLT HD	779	S9
0822	51669410	TERMINAL	229	S23	0894	10127108	SCR PN HD MACH	779	S9
0822	51669410	TERMINAL	205-211 213-215	S21	0895	10125103	SCR NUT HEX MACH	779	S9
0822	51669410	TERMINAL	217 219-226	S21	0895	10125103	SCR NUT-HEX MACH	776-778	S10
0822	51669410	TERMINAL	292-299	S21	0896	94862901	GROMMET STRIP	779	S9
0822	51669410	TERMINAL	237 247	S28	0898	83425144	PNL TOP COVER REAR C	213	S22
0822	51669410	TERMINAL-TAB	227	S25	0899	83443705	PNL TOP CVR RH PT OR	213	S22
0823	75037505	HEAD ASM (UPPER)	307 312	S29	0900	83443805	PNL TOP CVR LH PTD O	213	S22
0824	75300200	RESISTOR MODULE	307 311 312	S29	0901	83425344	DOOR-ACCESS CHAMOIS	213	S22
0825	17901516	SCR THD ROLL	205-211 213-215	S21	0902	83478605	PNL SIDE PTD ORANGE	213	S22
0825	17901516	SCR THD ROLL	217 219-226	S21	0903	83475844	PANEL END FT PT CHAM	213	S22
0825	17901516	SCR THD ROLL	292-299	S21	0904	83425644	PANEL-CNTL CAB PTD C	213	S22
0825	17901516	SCR THD ROLL	202 203	S19	0905	83425155	PNL TOP COVER REAR P	214	S22
0826	92743202	SCR MCH PAN PHL 8	205-211 213-215	S21	0906	83443756	PNL TOP CVR RH PT WH	214	S22
0826	92743202	SCR MCH PAN PHL 8	217 219-226	S21	0907	83443856	PNL TOP CVR LH PTD W	214	S22
0826	92743202	SCR MCH PAN PHL 8	292-299	S21	0908	83425355	DOOR-ACCESS PTD BLK	214	S22
0827	70590208	HEAD ASM (LOWER)	308	S29	0909	83478655	PNL SIDE PTD BLACK	214	S22
0828	70590209	HEAD ASM (UPPER)	308	S29	0910	83475856	PNL END PTD WHITE	214	S22
0829	75300100	RESISTOR MODULE	308 310 313 315	S29	0911	83425655	PNL CNTL CAB PTD BLK	214	S22
0830	70590306	HEAD ASM (LOWER)	309	S29	0912	83425148	PNL TOP COVER REAR S	215	S22
0831	70590307	HEAD ASM (UPPER)	309	S29	0913	83443748	PNL TOP CVR PTD SHEL	215	S22
0832	73460700	CARRIAGE WEIGHT	312 314 315	S29	0914	83443848	PNL TOP CVR PTD SH G	215	S22
0834	24528646	SLEEVING-VINYL	205-211 213-215	S20	0915	83425348	DOOR-ACCESS BLUE	215	S22
0834	24528646	SLEEVING-VINYL	217 219-226	S20	0916	83478648	PNL SIDE PTD SHELL G	215	S22
0834	24528646	SLEEVING-VINYL	292-299	S20	0917	83475848	PNL END-PNT SHEL GR	215	S22
0835	93539004	FASTENER-PUSH ON	205-211 213-215	S20	0918	83466701	PNL CNTL-CAB SLKSCRN	215	S22
0835	93539004	FASTENER-PUSH ON	217 219-226	S20	0919	83425136	PNL TOP COVER REAR T	217	S22
0835	93539004	FASTENER-PUSH ON	292-299	S20	0920	83443737	PNL TOP CVR RH TEXTU	217	S22
0836	83446400	BUMPER NYLON	205-217 219-226	S20	0921	83443837	PNL TOP CVR LH TEXTU	217	S22
0836	83446400	BUMPER NYLON	292-299	S20	0922	83425336	DOOR-ACCESS TEX BLUE	217	S22
0837	10125806	SPRING LK WSHR	201-203	S19	0923	83478637	PNL SIDE PTD TEX WHI	217	S22
0838	92743158	SCREW SS PAN HD	205-211 213-215	S20	0924	83475836	PANEL END FT TEX BL	217	S22
0838	92743158	SCREW SS PAN HD	217 219-226	S20	0925	83425636	PANEL-CNTL CAB TEX B	217	S22
0838	92743158	SCREW SS PAN HD	292-299	S20	0926	83425163	PNL TOP CVR REAR BRN	223	S22
0839	10125808	WSHR PLAIN	201-203	S19	0927	83443763	PNL TOP CVR RH	223	S22
0840	10125808	SPRING LK WSHR	201-203	S19	0928	83443863	PNL TOP CVR LH BROWN	223	S22
0841	75774702	CLIP-PUSH IN	205-211 213-215	S20	0929	83425363	DOOR-ACCESS BROWN	223	S22
0841	75774702	CLIP-PUSH IN	217 219-226	S20	0930	83478663	PNL SIDE PTD BROWN	223	S22
0841	75774702	CLIP-PUSH IN	292-299	S20	0931	83425864	PNL END FRONT BEIGE	223	S22
0842	83492000	BRACKET, CABLE, FRAME	205-211 213-215	S21	0932	83425664	PANEL-CNTL CAB BEIGE	223	S22
0842	83492000	BRACKET, CABLE, FRAME	217 219-224	S21	0933	83478668	PNL SIDE	224 296	S22
0842	83492000	BRACKET, CABLE, FRAME	292-299	S21	0934	83443753	PNL TOP CVR RH OFFWH	219	S22
0843	94347104	SHOULDER WASHER THER	237	S28	0935	83443853	PNL TOP CVR LH PTD O	219	S22
0843	94347104	SHOULDER WASHER THER	243 247	S28	0936	83425362	DOOR-ACCESS PAINTED	219	S22
0843	94347104	SHOULDER WASHER THER	229 231 232	S23	0937	83478653	PNL SIDE PTD GOLD	219	S22
0843	94347104	SHOULDER WASHER THER	205-217 219-226	S20	0938	83425137	PNL TOP CVR REAR WH	220	S22
0843	94347104	SHOULDER WASHER THER	292-299	S20	0939	83443738	PNL TOP CVR RH PT BL	220	S22
0843	94347104	SHOULDER WASHER THER	227	S25	0940	83443838	PNL TOP CVR LH PTD B	220	S22
0845	10125712	SCR FLAT HD	205-211 213-215	S20	0941	83425337	DOOR-ACCESS PTD WH	220	S22
0845	10125712	SCR FLAT HD	217 219-226	S20	0942	83478638	PNL SIDE PTD BLACK	220	S22
0845	10125712	SCR FLAT HD	292-299	S20	0943	83475837	PNL END PTD WHITE	220	S22
0848	83451804	INSULATOR ADHESIVE	205-217 219-226	S20	0944	83425637	PNL CNTL CAB PTD WH	220	S22
0848	83451804	INSULATOR ADHESIVE	292-299	S20	0945	75799001	CAP HARNESS	780	S9
0849	83451805	INSULATOR ADHESIVE	237	S28	0946	83425157	PNL TOP CVR REAR RED	221	S22
0849	83451805	INSULATOR ADHESIVE	243 247	S28	0947	83443758	PNL TOP CVR RH BL-GR	221	S22
0849	83451805	INSULATOR ADHESIVE	229 231 232	S23	0948	83443858	PNL TOP CVR LH BL-GR	221	S22
0849	83451805	INSULATOR ADHESIVE	205-217 219-226	S20	0949	83425357	DOOR-ACCESS PTD RED	221	S22
0849	83451805	INSULATOR ADHESIVE	292-299	S20	0950	83478658	PNL SIDE PTD BLACK	221	S22
0849	83451805	INSULATOR, ADH BACK	227	S25	0951	83475858	PNL END PTD WHITE	221	S22
0850	75730601	CHASSIS AC BOX 220V	275	S30	0952	83425657	PNL CNTL CAB PTD RED	221	S22
0851	83425162	PANEL-TOP COVER REAR	219	S22	0953	83475862	PANEL END FRONT BLAC	219	S22
0852	83443713	PNL TOP CVR RH PT G	206	S22	0954	83495101	COVER PWR SPLY	780	S9
0853	83443813	PNL TOP CVR LH PTD G	206	S22	0955	83495200	BRKT	780	S9
0854	83425304	DOOR-ACCESS PAINTED	206 219	S22	0956	83495500	PIN HNG	780	S9
0855	83478613	PNL SIDE PTD GOLD	206	S22	0957	83495600	HNG CVR	780	S9
0856	83475813	PANEL END FRONT PTD	206	S22	0958	75798800	PAD CAPACITOR	780	S9
0857	83425604	PANEL-CONTROL CAB PN	206	S22	0959	75774406	CAPACITOR	780	S9
0858	83425109	PANEL-TOP COVER REAR	207	S22	0960	75774466	CAPACITOR	780	S9
0859	83425309	DOOR-ACCESS PAINTED	207	S22	0961	77611443	CEMENT	229 231-233	S23
0860	83475809	PANEL END FRONT PTD	207 294	S22	0961	77611443	CEMENT	192 227	S25
0861	83425609	PANEL-CONTROL CAB PN	207 216 297	S22	0962	10127378	SCR PN HD	780	S9
0862	83425118	PANEL-TOP COVER REAR	208 222	S22	0963	10127348	SCREW PAN HD	205-217 219-226	S20
0863	83443717	PNL TOP CVR RH PT LT	208 222	S22	0963	10127348	SCREW PAN HD	292-299	S20
0864	83443817	PNL TOP CVR LH PTD L	208 222	S22	0964	83425176	PNL TOP CVR REAR	295	S22
0865	83425318	DOOR-ACCESS LT BLUE	208 222	S22	0965	70107900	TRANSFORMER-AUTO	776-778	S10
0866	83478617	PNL SIDE PAINTED	208 222	S22	0966	83493302	PWR LOGIC HARNESS	776-778	S10
0867	83475818	PANEL END FRONT PTD	208 222	S22	0967	83494901	CHASSIS-AC	776-778	S10
0868	83425618	PANEL-CNTL CAB LT BL	208 222	S22	0968	83495000	COVER-BOTTOM	776-778	S10
0869	83425126	PANEL-TOP COVER REAR	209	S22	0969	83495402	PLATE-CHASSIS	776-778	S10
0870	83443725	PNL TOP CVR RH PT BK	209	S22	0970	83495700	HINGE-POWER SUPPLY	776-778	S10
0871	83443825	PNL TOP CVR LH PTD B	209	S22	0971	83475000	PLATE	776-778	S10
0872	83425326	DOOR-ACCESS BLUE	209	S22	0972	75769200	CLAMP-CAPACITOR	776-778	S10
0873	83478625	PNL SIDE PAINTED	209	S22	0973	75794902	GASKET-SUPPLY DIVERT	776-778	S10
0874	83475826	PANEL END FRONT BLUE	209	S22	0974	83420504	GASKET STRIP	776-778	S10
0875	83425626	PANEL-CNTL CAB BLUE	209	S22	0975	75774419	CAPACITOR	776-778	S10
0876	83425662	PANEL-CONTROL CAB PT	219	S22	0976	95583505	RECTIFIER BLOCK	776-778	S10
0877	83425134	PNL TOP COVER REAR P	211 225	S22	0977	83432101	BRIDGE, RECTIFIER	776-778	S10
0878	83443727	PNL TOP CVR RH PT BR	211 225	S22	0978	83433506	CIRCUIT BREAKER	776-778	S10

ASSEMBLY - COMPONENT PARTS LIST

ITEM IDENT NO	DESCRIPTION	WHERE USED	SHEET	ITEM IDENT NO	DESCRIPTION	WHERE USED	SHEET		
0979	83433502	CIRCUIT BREAKER	776-778	S10	1076	10125608	WASHER	201-203	S19
0980	83404001	FILTER	776-778	S10	1076	10125608	WASHER	301	S17
0981	83475200	GASKET-PWR SPLY	776-778	S10	1077	83445707	FRAME CABINET	203	S19
0982	83475300	GASKET	776-778	S10	1078	83475868	PNL END FRT	224 296	S22
0983	92743198	SCREW PAN HD MACH	776-778	S10	1079	83425667	PNL CONTROL CAB	224 296	S22
0984	10125713	SCREW	776-778	S10	1080	77832301	CLAMP	203	S19
0985	10125726	SCREW	776-778	S10	1081	75884875	GR FLEXIBLE	203	S19
0986	10127141	SCR PH MACH	776-778	S10	1082	75884876	GR FLEXIBLE	203	S19
0987	92743240	SCREW PAN HD MACH	776-778	S10	1083	83450300	CLOSURE FRAME	225	S21
0988	10125107	SCR NUT-HEX MACH	776-778	S10	1084	75885150	NUT PLATE	225	S20
0989	75724542	CONNECTOR-PANEL MTG	776-778	S10	1085	77836000	LABEL, RATING	203	S19
0990	75724544	CONNECTOR-PANEL MTG	776-778	S10	1086	83451802	INSULATOR	205-211 213-217	S20
0991	00005080	RECEPTACLE 6 PIN	776-778	S10	1086	83451802	INSULATOR	219-226 293-299	S20
0992	75887389	RECEPTACLE 15 PIN	776-778	S10	1088	83442136	FRONT PNL RACK PAINT	248	S28
0993	75724590	CONNECTOR-PANEL MTG	776-778	S10	1089	10126214	SCREW HEX	528	S15
0994	83442197	FRONT PNL RACK PAINT	0283	S28	1090	24548310	WIRE ELEC	407	S12
0995	83442198	FRONT PNL RACK PAINT	0284	S28	1091	10127310	SCREW SLOTTED	526	S16
0996	95643212	CONNECTOR	776-778	S10	1092	83442172	FRONT PNL RACK PAINT	285	S28
0998	95604019	TERMINAL, RING TONGUE	776-778	S10	1093	83425171	PNL TOP CVR REAR	211	S22
0999	93154107	TUBING, HEAT SHRINK	776-778	S10	1094	83443772	PNL TOP CVR RH	211	S22
1000	93747029	RECEPTACLE, SLIDE ON	776-778	S10	1095	83443842	PNL TOP CVR LH	211	S22
1001	15003305	WIRE-GRN	776-778	S10	1096	83425371	DOOR ACCESS	211	S22
1002	77830595	CAP 100V	776 777	S10	1097	83478672	PNL SIDE PTD	211	S22
1003	77830583	CAP 50V	776 777	S10	1098	83475871	PNL END FRONT	211	S22
1004	94846005	CONNECTOR, 2 PIN	776 778	S10	1099	83425673	PNL CONTROL CAB	211	S22
1005	15003409	WIRE WHT	776-778	S10	1100	83425170	PNL TOP CVR REAR	293	S22
1006	93943001	CONTACT, SOCKET	776-778	S10	1101	83443769	PNL TOP CVR RH	293	S22
1007	83447807	INSTLN KIT - RACK MT	227	S27	1102	83443869	PNL TOP CVR LH	293	S22
1007	83447807	INSTLN KIT-RACK MT	227	S27	1103	83425370	DOOR ACCESS PTD	293	S22
1008	83443777	PNL TOP CVR RH	295	S22	1104	83478669	PNL SIDE PTD LT GRAY	293	S22
1009	75730701	CVR CHASSIS AC INP	275	S20	1105	83425674	PNL CONTROL CAB	293	S22
1010	75731001	CONVENIENCE OUTLET	275	S30	1106	83475869	END PNL PTD	293	S22
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1012	92371016	FUSE QK ACTING 5 AMP	275	S30	1108	83442170	FRONT PNL RACK PAINT	286	S28
1013	24547504	PLATE, WARNING	275	S30	1109	83478677	PNL SIDE PTD	295	S22
1013	24547504	PLATE, WARNING	1026	S31	1110	83475876	PNL END FRONT	295	S22
1014	92801001	CLAMP, CABLE	275	S31	1111	83425676	PANEL CNTL CAB	295	S22
1014	92801001	CLAMP, CABLE	1026	S31	1113	83475863	PNL END FRONT	223	S22
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1016	93067003	JUMPER, BARRIER ST	275	S30	1116	93749158	SCREW	776-778	S10
1017	75731104	CABLE-JUMPER BLACK	275	S30	1117	83425184	PANEL TOP CVR REAR	297 298	S22
1018	75730803	CABLE ASSY GRND	275	S30	1118	83443784	PANEL TOP CVR RH	297	S22
1019	75731301	SYMBOL GRND (DECAL)	203	S19	1119	83443884	PANEL TOP CVR LH	297	S22
1019	75731301	SYMBOL GRND (DECAL)	275	S30	1120	83425384	DOOR ACCESS	297 298	S22
1019	75731301	SYMBOL GRND (DECAL)	1026	S31	1121	83478606	PANEL SIDE	297	S22
1020	10126105	WASH INT TOOTH LK	275	S30	1122	83443786	PANEL TOP CVR RH	298	S22
1020	10126105	WASH INT TOOTH LK	1026	S31	1123	83443886	PANEL TOP CVR LH	298	S22
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1022	77599501	POWER CORD ASSY	275	S30	1125	83425685	PANEL CONTROL CAB	298	S22
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1025	83492701	AC SWCH BX ASSY NCR	276	S31	1127	17901501	SCREW THREAD FORM	776-778	S10
1026	83428901	*AC DISTR BX COMMON	276	S31	1128	95596600	BUSHING	776-778	S10
1027	83442800	CHANNEL-CONTRL NCR	276	S31	1129	83425198	PANEL TOP CVR REAR	299	S22
1028	77610636	SCREW, MACH, SELF-LOCK	227	S25	1130	83443798	PANEL TOP CVR RH	299	S22
1029	83428601	CHASSIS-AC DISTR BX	1026	S31	1131	83443898	PANEL TOP CVR LH	299	S22
1030	83443877	PNL TOP CVR LH	295	S22	1132	83425399	DOOR ACCESS	299	S22
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1032	94807000	RECEPTACLE MALE	1026	S31	1134	83425698	PANEL CONTROL CAB	299	S22
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0551 92815195	S15	0998 95604019	S10				
0437 92815197	S12	0996 95643212	S10				
0438 92815229	S12	0452 95643248	S10				
0471 92824097	S17	0524 95649726	S13				
0722 92932206	S19	0638 95655500	S14				
0783 92980003	S9	0636 95655501	S14				
0783 92980003	S9	0766 95655503	S8				
0693 93006033	S19	0492 95694202	S11				
1015 93041205	S30	1107 95694206	S11				
1016 93067003	S30						
0587 93071163	S16						
0587 93071163	S18						
1023 93105305	S30						
0500 93109310	S17						
0610 93109322	S26						
0610 93109322	S27						
0581 93115168	S17						
0504 93115287	S13						
0504 93115287	S23						
0504 93115287	S20						
0504 93115287	S20						
0504 93115287	S28						
0999 93154107	S10						
0752 93154948	S7						
0664 93211008	S26						
0664 93211008	S27						
0664 93211008	S25						
0608 93211009	S26						
0608 93211009	S27						
0586 93344096	S16						
0602 93355001	S16						
0720 93522008	S19						
1052 93522009	S31						
0666 93529003	S18						
0821 93530007	S20						
0821 93530007	S20						
0821 93530007	S20						
0681 93530436	S18						
0835 93539004	S20						
0835 93539004	S20						
0835 93539004	S20						
0698 93592200	S19						
0698 93592200	S31						
0698 93592200	S30						
0534 93623000	S15						
0623 93651029	S17						
0692 93697013	S19						
0454 93728222	S11						
0782 93747025	S10						
1000 93747029	S10						
1116 93749158	S10						
0429 93788082	S12						

IX WIRE LISTS

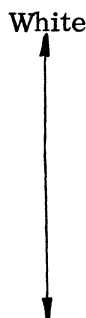
9.1 INTRODUCTION

The following paragraphs contain the Harness Assembly wire lists for the Disk Cartridge Drive Model 9427H.

9.2 PRE AMP

<u>Wire Color</u>	<u>Origin</u>	<u>Destination</u>	<u>Approximate Length Inches</u>	<u>Remarks</u>
Red	A2P4-1	A3P2-1	11	
Gray	-2	-2	↑	
	-3	-3		
	-4	-4		
	-5	-5		
	-6	-6		
	-7	-7		
	-8	-8		
	-9	-9		
	-10	-10		
	-11	-11		
	-12	-12		
	-13	-13		
	-14	-14		
	-15	-15		
	-16	-16		
	-17	-17		
	-18	-18		
	-19	-19		
	Gray	A2P4-20		A3P2-20

9.3 RECEIVER

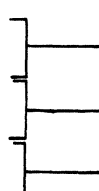
<u>Wire Color</u>	<u>Origin</u>	<u>Destination</u>	<u>Approximate Length Inches</u>	<u>Remarks</u>
White  White	A9P3-6	A6SW-3	27 3/4	Closed
	A9P3-5	A6SW-2	18 1/2	Closed
	A9P3-4	A6SW-3	28	Normally Open
	A9P3-3	A6SW-3	28 1/4	Normally Closed
	A9P3-2	A6SW-1	24 1/4	Closed
	A9P3-1	-	-	Not Used
	A6SW1	A6SW-2	34 1/4	Normally Open
	A6L1	A6L2	31 1/2	
	A1P3-1	A6L2	25 1/2	
	A1P3-3	A6L1	49 3/4	
	A1P3-2	-	-	Not Used

9.4 RETRACT

<u>Wire Color</u>	<u>Origin</u>	<u>Destination</u>	<u>Approximate Length Inches</u>	<u>*Remarks</u>
White	A3P3-3	A4SW1	6	Normally Open
White	A3P3-2	A4SW1	6	Closed

*Twisted Pair

9.5 RELAY

<u>Wire Color</u>	<u>Origin</u>	<u>Destination</u>	<u>Approximate Length Inches</u>	<u>Remarks</u>
Red	A1K1-9	A1P9-1	6	Solder
Orange	A1K1-6	A1P9-2		
Violet	A1K1-3	A1P9-3	6	
Brown	A1K1-A	A1P9-4		
Black	A1K1-B	A1P9-5	1	Cath End to A1K1-B
	A1K1-B	A1K1-A	1	
	A1K1-1	A1K1-2	1	
	A1K1-2	A1K1-3	1	
	A1K1-4	A1K1-5	1	
	A1K1-5	A1K1-6	1	
	A1K1-7	A1K1-8	1	
	A1K1-8	A1K1-9	1	Same Conductor

9.6 CAPACITOR

<u>Wire Color</u>	<u>Origin</u>	<u>Destination</u>	<u>Approximate Length Inches</u>	<u>Remarks</u>
White ↑ ↓	A1C101-(+)	A1P5-4	13 1/2	
	A1C101-(-)	A1C102-(+)	2 3/4	
	A1C102-(+)	A1P5-6	10 3/4	
	A1C102-(-)	A1P5-1	10 3/4	
	A1C103-(+)	A1P5-5	8	
	A1C103-(-)	A1P5-3	8	

9.7 SWITCH BOARD

<u>Wire Color</u>	<u>Origin</u>	<u>Destination</u>	<u>Approximate Length Inches</u>	<u>Remarks</u>
Red	A2P6-1	A5P1-1	36 ↑ ↓	Switch Board ↑ ↓ Switch Board Lower Sensor Lower Sensor Lower Sensor Upper Sensor Upper Sensor Upper Sensor Receiver Harness Receiver Harness Receiver Harness Receiver Harness Not Used Not Used Not Used
Gray	A2P6-2	A5P1-2		
	-3	-3		
	-4	-4		
	-5	-5		
	-6	-6		
	-7	-7		
	-8	-8		
	-9	-9		
	-10	-10		
	-11	-11		
	-12	-12		
	-13	-13		
	-14	-14		
	-15	-15		
	-16	-16		
	-17	-17		
	-18	-18		
	-19	-19		
	-20	A5P1-20		
	-21	A9J1-1		
	-22	A9J1-2		
	-23	A9J1-3		
	-24	A9J2-1		
	-25	A9J2-2		
	-26	A9J2-3		
	-27	A9J3-2		
	-28	A9J3-5		
	-29	A9J3-4		
	-30	A9J3-3		
	-31	A9J3-6		
	-32			
	-33			
	A2P6-34			

9.8 DC SPINDLE

Wire Color	Origin	Destination	Approximate Length (Inch)	Remarks
White ↑ ↓	A2P5-3	A7K2-4	13.5	} Not Used
	A2P5-4	A7K1-3	10.7	
	A7K1-3	A7K2-3	5.0	
	A2P5-5	A7K1-4	11.4	
	A2P5-6			
	A2P5-7			
	A2P5-8			
	A2P5-1			

9.9 AC SPINDLE

Wire Color	Origin	Destination	Approximate Length (Inch)	Remarks
White	A1P14-2	A7K2-1	9.5	
Green	A1P1-4	E4AC (GND)	10.0	
White	A7K1-2	A7C1-TOP	7.5	
White	A7K1-1	A7K2-2	5.3	

9.10 DRIVE MOTOR AND CONNECTOR

Wire Color	Origin	Destination	Approximate Length (Inch)	Remarks
Red	A7B1	A7C1-B	10 1/2	
Blue	A7B1	A7K2-2	10 1/2	
Yellow	A7B1	A1P14-1	14 1/2	
White	A1P14-2	A7K2-1	6	Spare Mot Plate - GND
	A1P14-3			
Green	A1P14-4	E4 (AC)	5 1/2	
White	A7K1-1	A7K2-2	4	
White	A7C1-T	A7K1-2	6 1/2	

9.11 MOTOR CONTROL LOGIC

Wire Color	Origin	Destination	Approximate Length (Inch)	Remarks
	A2P5-1			Not Used
	A2P5-2			Not Used
White	A2P5-3	A7K2-4	5	
White	A2P5-4	A7K2-3	5 3/4	
White	A2P5-5	A7K1-4	6 1/2	Not Used
	A2P5-7			
	A2P5-9			Not Used
White	A7K2-3	A7K1-3	4 1/4	

9.12 AC BRAKE

<u>Wire Color</u>	<u>Origin</u>	<u>Destination</u>	<u>Approximate Length (Inch)</u>	<u>Remarks</u>
White ↑ ↓	A7TB1-A	A7CR2-NG	9.0	
	A7K3-6	A7CR2-PS	7.0	
	A7K3-3	A7CR2-AC1	6.5	} —
	A7K2-2	A7CR2-AC1	8.3	
	A7TB1-B	A7K3-5	10.0	
	A7K1-2	A7C1-TOP	6.5	
	A1P14-1	A7K1-1	7.0	} —
	A7K2-1	A7K1-1	4.5	
	A1P14-2	A7K3-2	8.0	
	A1P14-3	A7CR2-AC2	5.0	
	A1P14-4	E4 (AC GND)	10.2	

9.13 DC BRAKE

<u>Wire Color</u>	<u>Origin</u>	<u>Destination</u>	<u>Approximate Length (Inch)</u>	<u>Remarks</u>
White ↑ ↓	A2P5-1	A7J1-3	8.8	
	A2P5-3	A7J1-2	8.8	
	A2P5-4	A7K1-3	14.5	} —
	A7K2-3	A7K1-3	3.8	
	A7K2-3	A7J1-17	4.3	
	A2P5-5	A7K1-4	13.5	
	A2P5-6	A7J1-1	8.8	
	A2P5-7	A7K3-B	6.5	
	A2P5-8	A7J1-4	8.8	
	A7J1-15	A7K3-A	6.5	
	A7J1-16	A7K2-4	5.3	

9.14 BLOWER MOTOR

<u>Wire Color</u>	<u>Origin</u>	<u>Destination</u>	<u>Approximate Length (Inch)</u>	<u>Remarks</u>
Red	A8B1-1	A8C1 +	2 1/2	Term - Red Dot
Blue	A8B1-2	A8C1	2 3/4	Term - Unmarked
Yellow	A8B1-3	Splice	3 1/2	} —
Black	A8B1-4	Splice	3 1/2	
White	A1P13-1	A8C1	33	Term - Unmarked
Green	A1P13-2	E5 (AC)	34 1/2	GND
White	A1P13-3	Splice	29 1/2	Lug-Open End

9.15 POWER AND LOGIC #1

<u>Wire Color</u>	<u>Origin</u>	<u>Destination</u>	<u>Approximate Length (Inch)</u>	<u>Remarks</u>
White	A1P6-1	A2P2-1	12	
White	A1P6-2	A2P2-2	12	
White	A1P6-3	A2P2-3	12	
White	A1P6-4	A2P2-4	12	
White	A1P6-5	A2P2-5	12	

9.16 POWER AND LOGIC

<u>Wire Color</u>	<u>Origin</u>	<u>Destination</u>	<u>Approximate Length (Inch)</u>	<u>Remarks</u>
Red (Stripe)	A1P1-1	A2P2-1	12	
Gray	-2	-2		
	-3	-3		
	-4	-4		
	-5	-5		
	-6	-6		
	-7	-7		
	-8	-8		
	-9	-9		
	-10	-10		
	-11	-11		
	-12	-12		
	-13	-13		
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	-15	-15		
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	-26	-26		
	-27	-27		
	-28	-28		
	-29	-29		
	-30	-30		
	-31	-31		
	-32	-32		
	-33	-33		
	A1P1-34	A2P2-34		

9.17 POWER SUPPLY CHASSIS II

Wire Color	Origin	Destination	Approximate Length (Inch)	Remarks
Brown	A1T1-1	A1J12-1	9	
Red	A1T1-2	A1J12-2	8 1/2	
Red	A1T1-2	A1J14-3	10	
Orange	↑ -3	A1J12-3	8	
Yellow	-4	A1J12-4	7 3/4	
Yellow	-4	A1J12-11	6 1/2	
Yellow	-4	A1J14-1	7 1/2	
Green	-5	A1J12-5	7 1/2	
Blue	-6	A1J12-6	7	
Violet	-7	A1J12-7	6	
Violet	-7	A1J13-3	6	
Gray	-8	A1J12-8	6 1/2	
Gray	-8	A1J14-2	5 3/4	
White	-9	A1J12-9	7 3/4	
White	-9	Not Used	7	Not Used
W/Black	-10	A1CB2-2	10	
W/Black	-10	A1P4-3	15	
W/Brown	-11	A1P4-4	14	
W/Red	-12	A1CB2-1	10	
W/Orange	-13	A1CR102-AC	3 1/2	
W/Yellow	↓ -14	A1C104-(-)	6	
W/Green	A1T1-15	A1CR102-AC	5 1/2	
White	A1CB1-3	A1J12-14	13 1/2	
	A1CB1-4	A1J12-15	14 1/2	
	A1CR101-AC	A1CB2-3	4	
	A1CR101-AC	A1CB2-4	4 1/2	
	A1CR101-(+)	A1P4-6	7 1/4	
	A1CR102-(+)	A1P4-1	6 3/4	
	A1CR102-(+)	A1C104-(+)	6 1/2	
	A1J12-12	A1J13-1	11	
	A1C104-(+)	A1P4-5	18 1/4	
White	A1C104-(-)	A1P4-2	18	
Green	A1J13-2	E3 (AC)	6	
Green	A1J14-4	E3 (AC)	6	
Green	J1FL1-2	E3 (AC)	9	
White	A1FL1-3	A1CB1-1	12	
White	A1FL1-1	A1CB1-2	11	
White	A1FL1-3	A1C105	2 5/8	
White	A1FL1-1	A1C105	4	
White	A1CB1-5	A1P8-1	6	
White	A1CB1-6	A1P8-2	6	

STAPLE

STAPLE

FOLD

FOLD

BUSINESS REPLY MAIL
 No Postage Stamp Necessary If Mailed In The United States

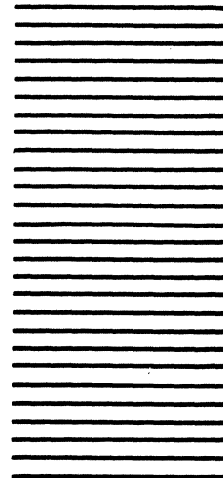
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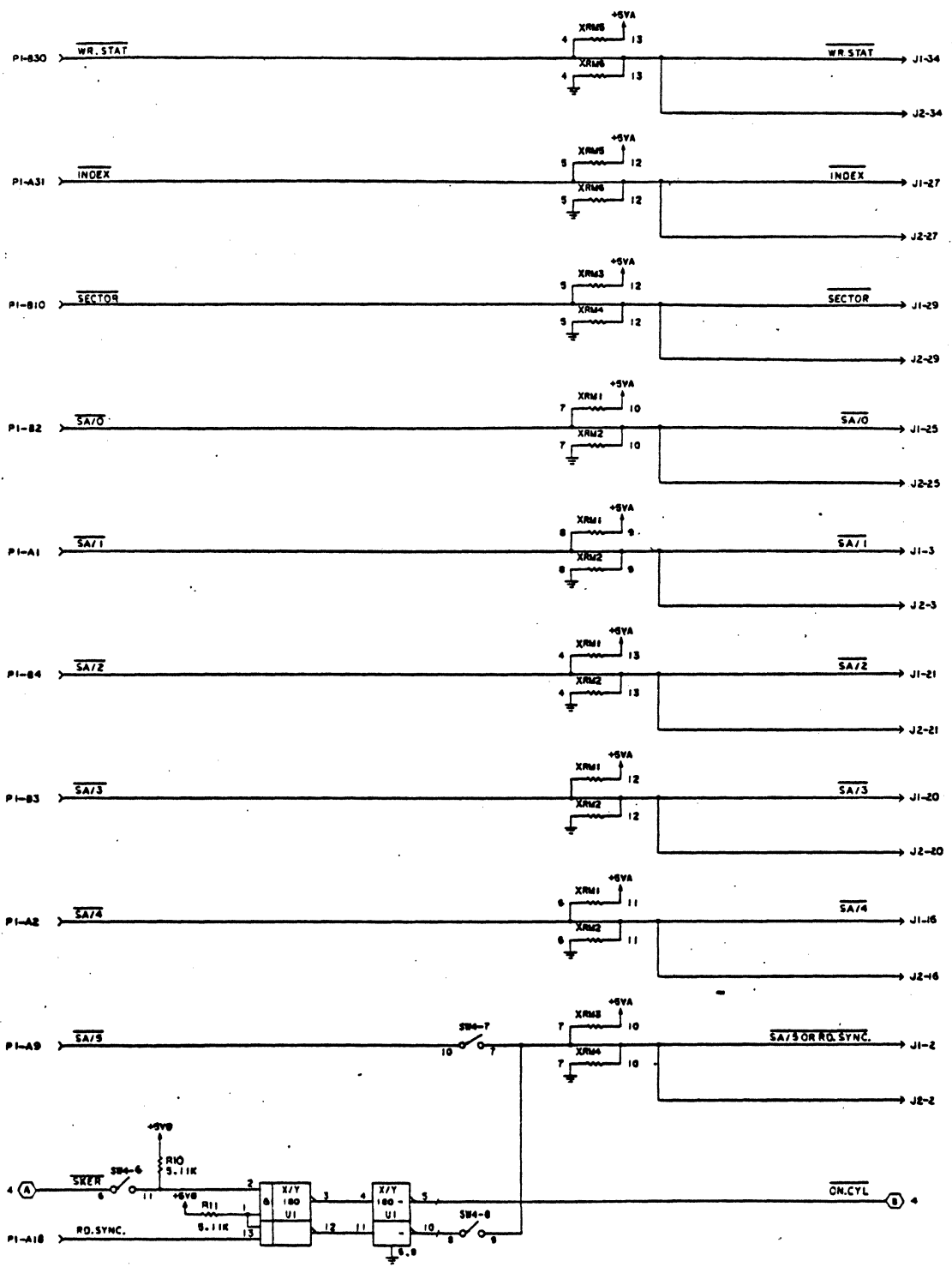
 9427H
 PARTS DATA CONFIGURATOR

SCOPE

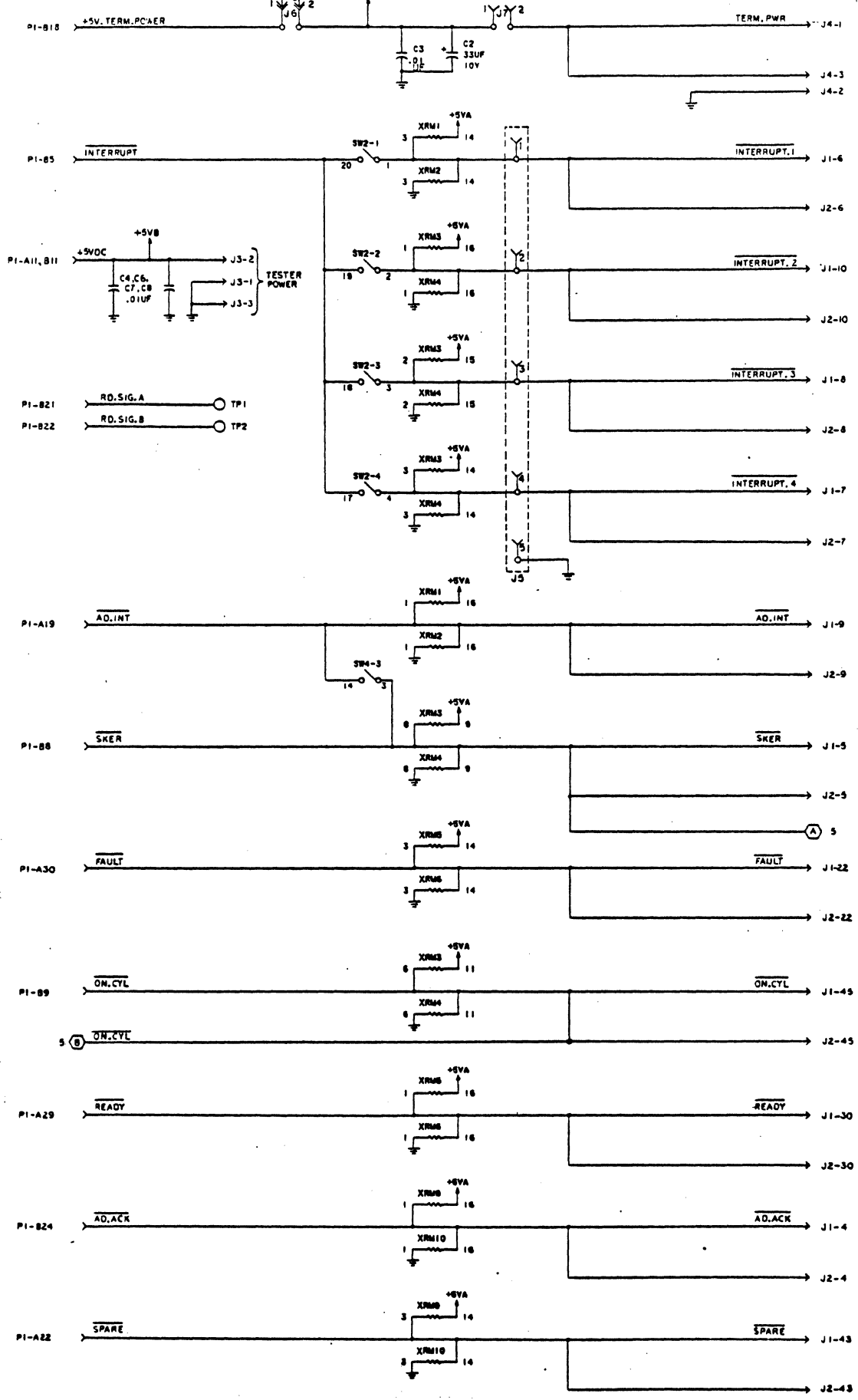
This document defines the unique mechanical requirements for the Model 9427H Disk Storage Drive Top Mechanical Assembly (TMA) number 75741216.

When used with Section 8 of the Hardware Maintenance Manual, the table below physically describes the above TMA based on customer selected items. This table must be used with Figures 8-2 and 8-3 of Section 8. It is recommended that this document be inserted in an appropriate location within the Section.

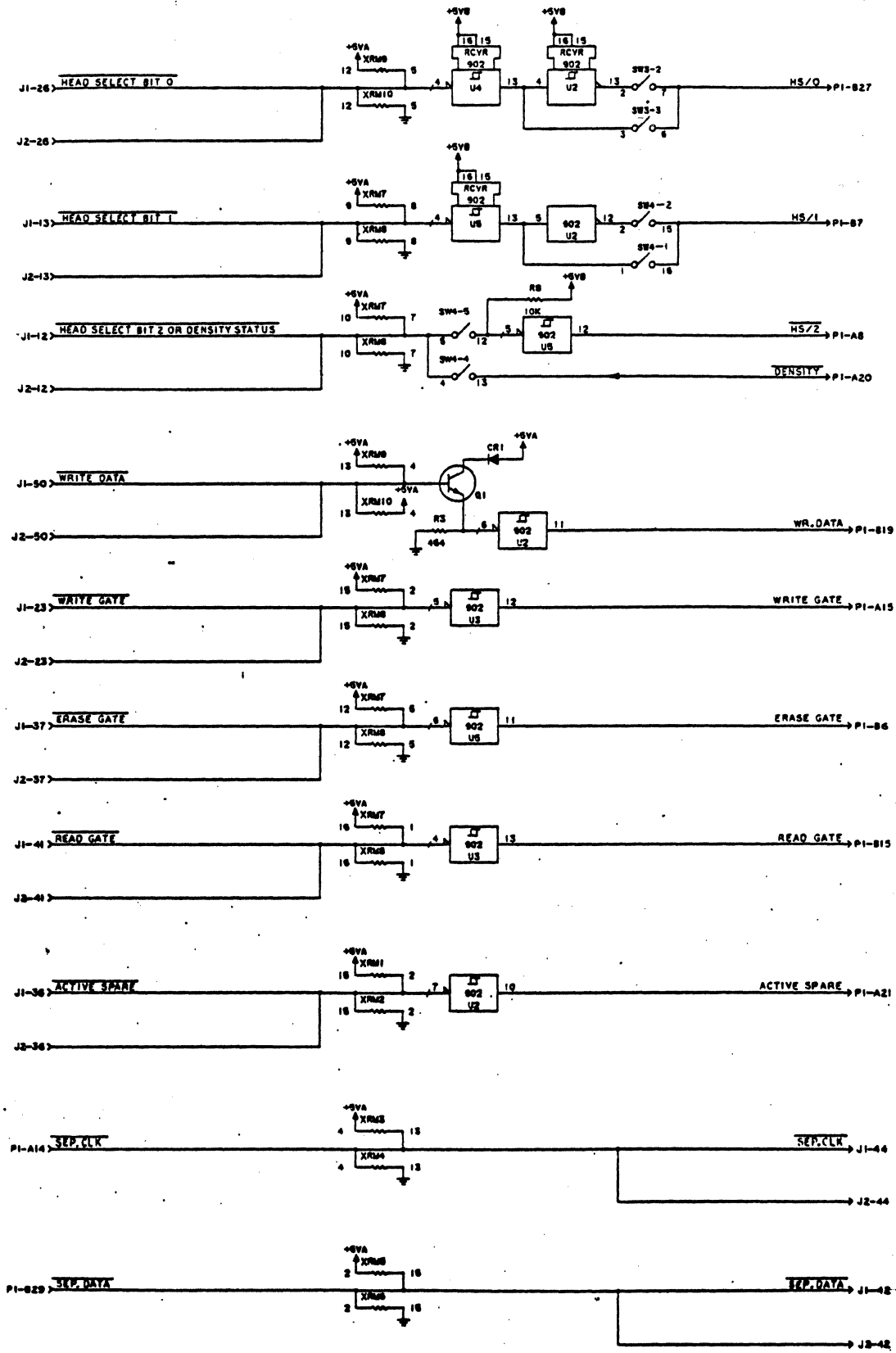
ITEM IDENT NO	DESCRIPTION	REMARKS
75741216	TOP MECHANICAL ASSEMBLY	FIG 8-2
0232 83443507	RACK MT ASSY	FIG 8-2
0236 83442503	COLOR OPT, RACK MT	FIG 8-2
0254 75305705	TERMINATOR	FIG 8-2
0255 75778701	LINECORD	FIG 8-2
0261 75795401	NAMEPLATE (942-H)	FIG 8-2
83429713	MODULE ASSEMBLY	FIG 8-3
0301 83429802	HAWK COMMON PARTS	FIG 8-3
0307 75740123	HEAD OPTION	FIG 8-3
0321 75740601	HZ RPM DR OPT	FIG 8-3
0327 77830918	PWR SUPPLY ASSY	FIG 8-3
0332 75795214	I-O OPTION RACK MT	FIG 8-3
0346 83474907	BRAKE & SPINDLE DR	FIG 8-3
0357 83451201	STANDOFF	FIG 8-3
0358 83466001	BRUSH DRIVE ASSY	FIG 8-3



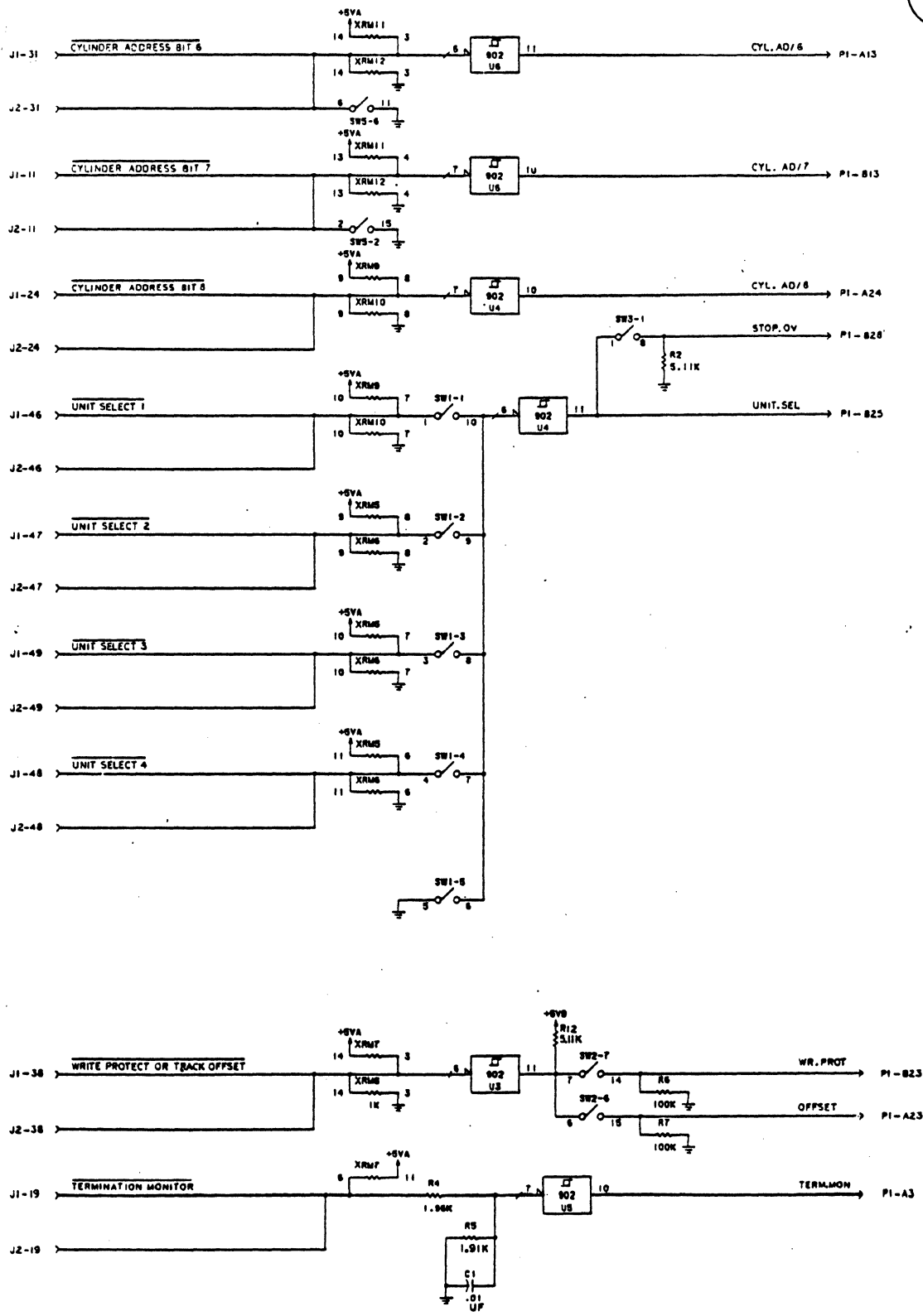
Schematic



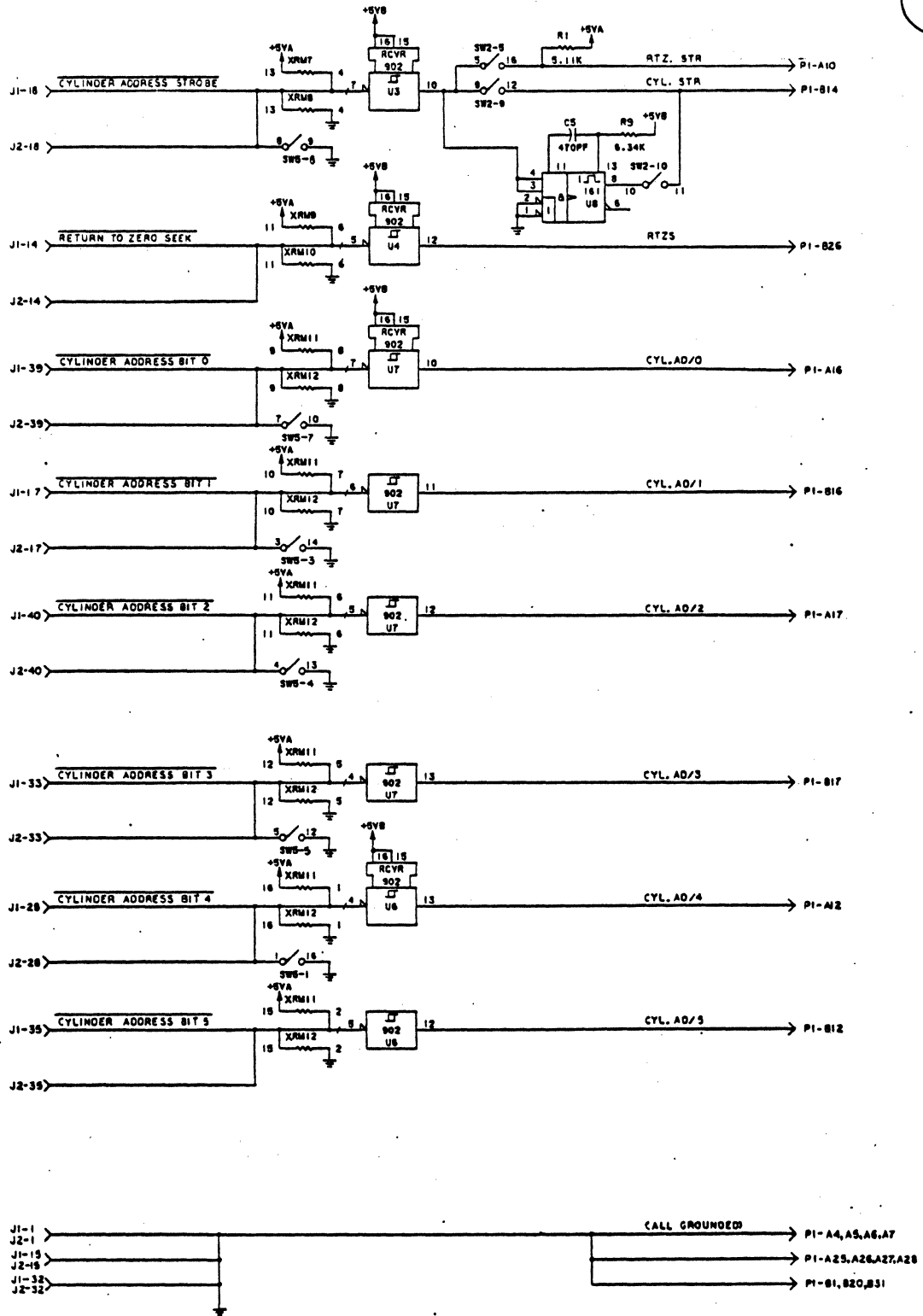
Schematic



Schematic

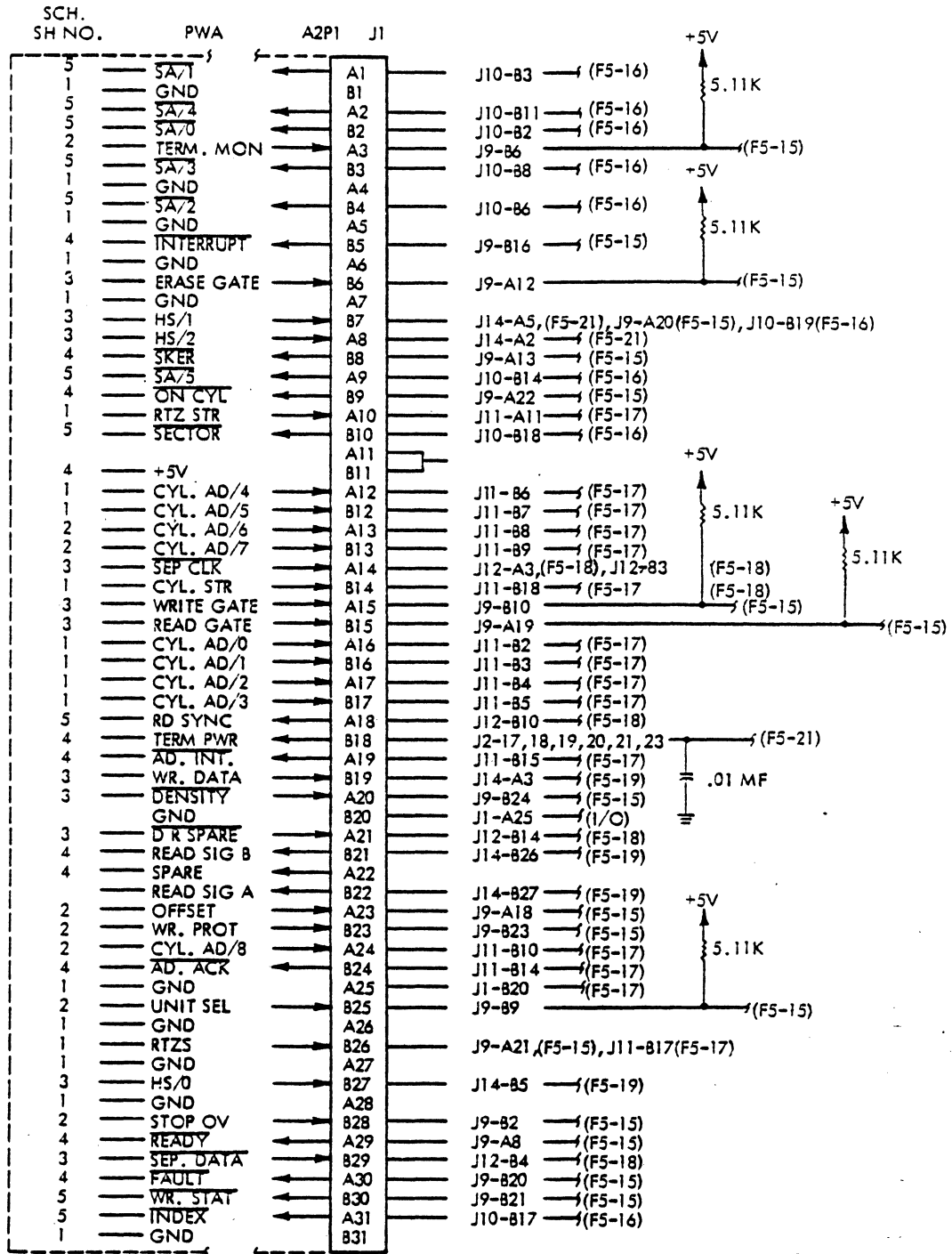


Schematic



Schematic

I/O CARD

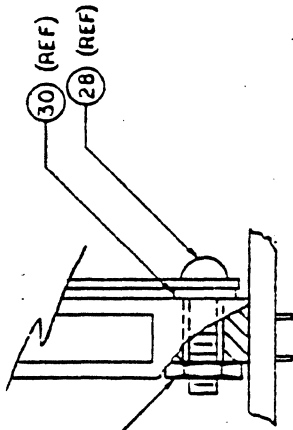
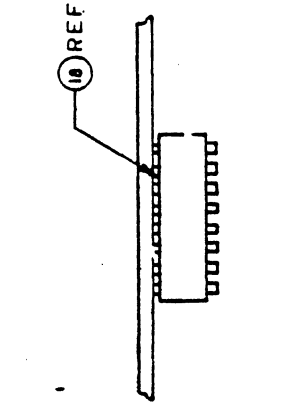


AA0906

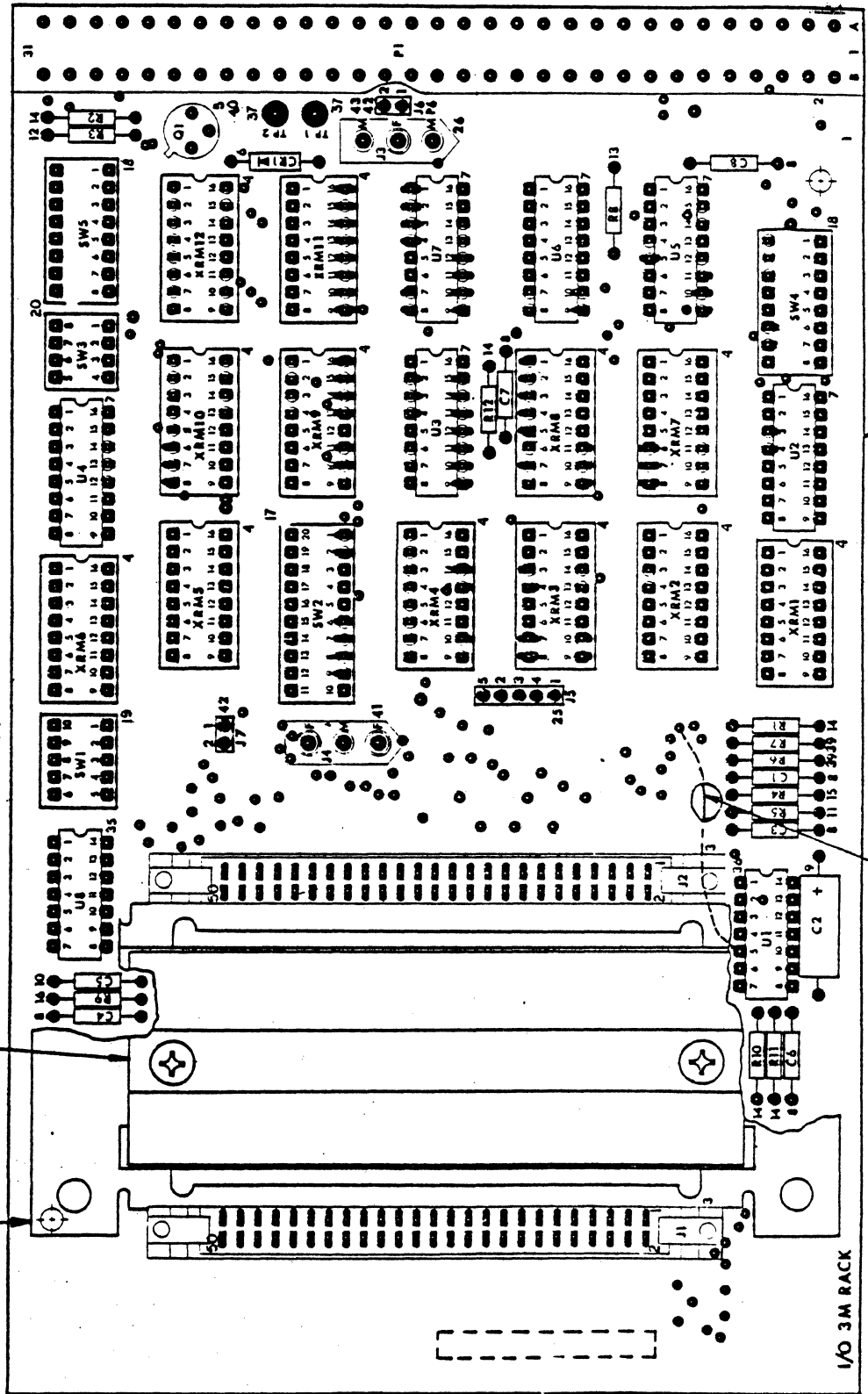
Interconnection Diagram

<u>ITEM NO.</u>	<u>IDENTIFICATION NUMBER</u>	<u>DRAWING TITLE</u>
	75858205	Comp Bd Assy - 3M I/O
1	75858104	Board P.C. - 3M I/O Rack
2	94243400	Conn - Card Mtd 62Sock
3	94359514	Connector 3M
4	94260301	Socket 16 Pin
5	75722201	Transistor NPN
6	50241001	Diode Silicon
7	50234500	IC Rec2
8	92496227	Cap 100V 20%, .01UF
9	24504353	Cap 10V 20% 33UF
10	75808521	Cap 100V 10% 470
11	94360467	Res 1/4W 1% 49.1K
12	94360264	Res 1/4W 1% 464
13	94360400	Res 1/4W 1% 10.0K
14	94360368	Res 1/4W 1% 5.11K
15	94360328	Res 1/4W 1% 1.96K
16	94360377	Res 1/4W 1% 6.34K
17	83452207	Switch - 10 Position
18	83452205	Switch - 8 Position
19	83452202	Switch - 5 Position
20	83452201	Switch - 4 Position
21	75300006	Switch Cover 10-Sect
22	75300004	Switch Cover 8-Sect
23	75300001	Switch Cover 5 - Sect
24	75300000	Switch Cover 4-Sect
25	76379303	Header-Straight 5 PI
26	75808403	Conn Wafer 3-Pin
27	75751902	Plate MMM Facade
28	92742011	Screw M/C Pan Hd 7/1
29	10125102	Scr Nut-Hex Mach 2-5
30	10126100	Wash Int Tooth Lock
31	75768001	Clamp Cable
32	75768100	Bar Locking
33	75768200	Bar Nut
34	92742164	Screw M/C Pan Hd 1/2
35	51718600	IC ITL Adnr MV-A
36	51768200	IC Dual
37	92498021	Terminal, Swaged
38	94625999	Wire 22 Ga Sol-Tef W
39	94360500	Res 1/4W 1% 100K
40	94335900	Pad-Transistor Mtg
41	75808406	Conn Molex F-M-F
42	76379300	Header-Straight 2 PI
43	83433002	Shunt Assembly

Circuit Board Assembly



DETAIL "A"
TYP



I/O 3M RACK

Circuit Board Assembly

VA
DIAGRAMS
(I/O PACKAGE)

SCOPE

This publication, when used with the 9427K Product Manual makes the manual unique to a specific equipment configuration. The following data pertains to the 3M I/O Rack printed circuit board and is to be used as part of Section 5 of the manual.

- Sheet 5A-2 Circuit Board Assembly (75858205)
- Sheet 5A-4 Interconnection Diagram
- Sheet 5A-5 Schematic (75858205)

 DEVICE SPECIFICATIONS
 AND SWITCH SELECTIONS

SCOPE

This document defines the unique mechanical/electrical requirements and switch adjustment selections for the 9427H Disk Storage Drive Hardware Product Configurator (HPC) number 83448281.

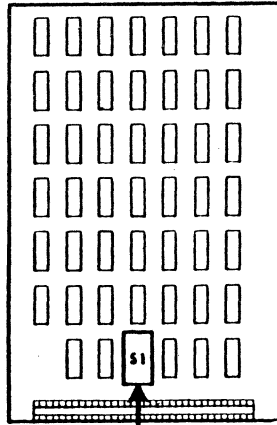
The following is a summary of customer selected items. This configuration has been prepared to meet the requirements of the HPC specified above. Immediately following the summary are the Printed Circuit Board switch selections.

 DEVICE SPECIFICATION SUMMARY

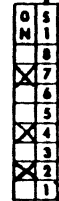
INPUT VOLTAGE:	110 Volts, 5.0 Amps
SECTORING (HARD):	12 Sectors, Mt Hole #3, divided by 4
MOUNTING:	Rack
TERMINATOR:	220-330 Ohms
REVOLUTIONS PER MINUTE:	2400
HEADS:	200 Tracks Per Inch
HEADS:	Straddle Erase
HEADS:	Fixed Disk
FREQUENCY:	60 Hz
SPINDLE DRIVE:	With Dynamic Brake
CONTROLLER INTERFACE:	Non-Standard
I-O CONNECTOR:	3M (50 Pin Standard)
MAXIMUM TRACK:	407
TERMINATOR POWER:	Unit
INDEX ANGLE:	5 degrees 30 minutes
INDEX TIMING:	Single Sector or Index prior to '0' degrees
ADDRESS ACKNOWLEDGE:	Pulse
HEAD & DISK SELECT:	Numbered Bottom Up
UNIT SELECT:	Daisy Chain
DRIVE TRACKS PER INCH:	200
LOGICAL ADDR INTERLOCK:	Independent of Seek Error
ACTIVE INTERRUPT:	Low
FEATURE:	Write Protect
FEATURE:	ON Cyl Independent of Seek Error
FEATURE:	Density Status
FEATURE:	Stop Override
FEATURE:	Drop Ready with Fault
FEATURE:	RTZS Resets Fault
FEATURE:	ON Cyl goes false during strobe for
:	Illegal Addr and Seek to current Addr.

INDICATES SWITCH POSITION

CONTROL BOARD

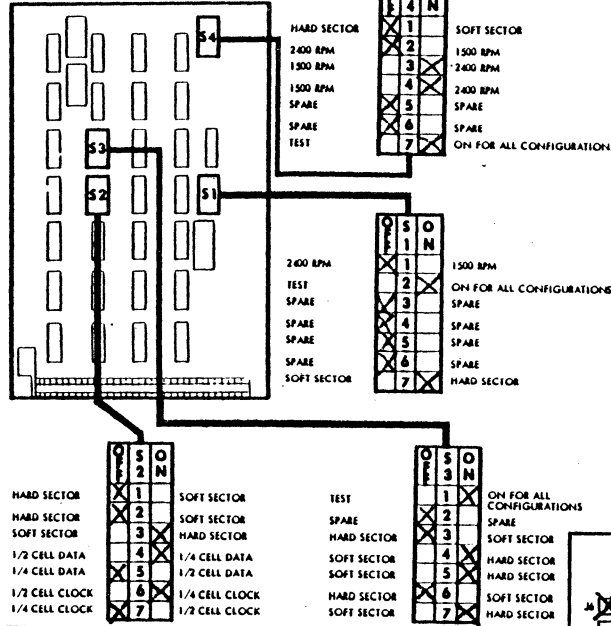


INVALID CYL. ADD. INTERRUPT
DROP READY WITH FAULT (DENSITY STATUS) 100 TPI
NO FIXED DISC
ACTIVE LOW INTERRUPT
ACTIVE HIGH INTERRUPT
R.T.Z.S. RESETS FAULT
SPARE



READY STAYS TRUE DURING FAULT CONDITION 200 TPI
FIXED DISC
ACTIVE HIGH INTERRUPT
ACTIVE LOW INTERRUPT
R.T.Z.S. DOESN'T RESET FAULT
SPARE

DATA RECOVERY BOARD



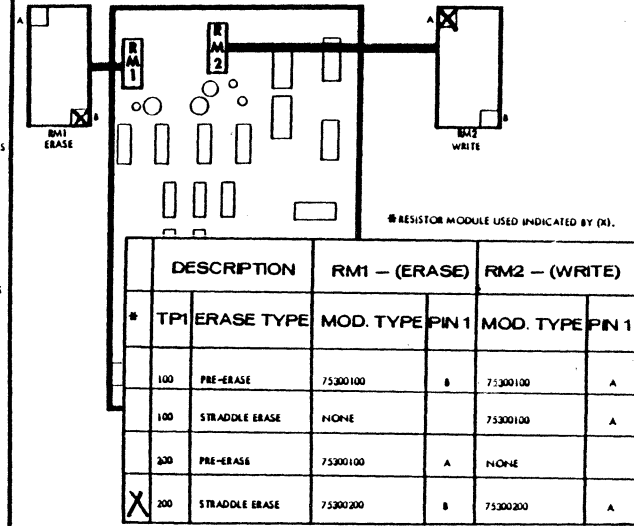
HARD SECTOR
SOFT SECTOR
1/2 CELL DATA
1/2 CELL CLOCK

SOFT SECTOR
HARD SECTOR
1/4 CELL DATA
1/4 CELL CLOCK

TEST
SPARE
HARD SECTOR
SOFT SECTOR
HARD SECTOR
SOFT SECTOR

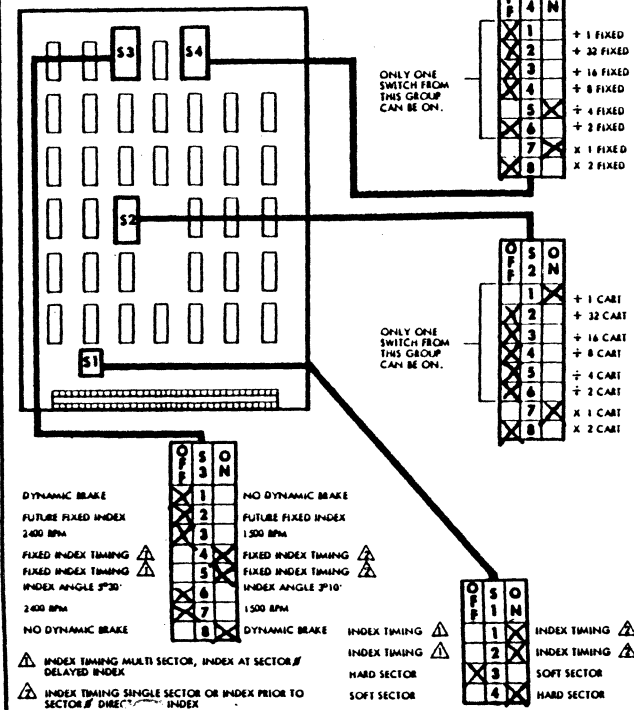
ON FOR ALL CONFIGURATIONS
SPARE
SOFT SECTOR
HARD SECTOR
HARD SECTOR
HARD SECTOR

R/W/E BOARD



* TPI	DESCRIPTION	RM1 - (ERASE)		RM2 - (WRITE)	
		MOD. TYPE	PIN 1	MOD. TYPE	PIN 1
100	PRE-ERASE	75300100	B	75300100	A
100	STRADDLE ERASE	NONE		75300100	A
200	PRE-ERASE	75300100	A	NONE	
X 200	STRADDLE ERASE	75300200	B	75300200	A

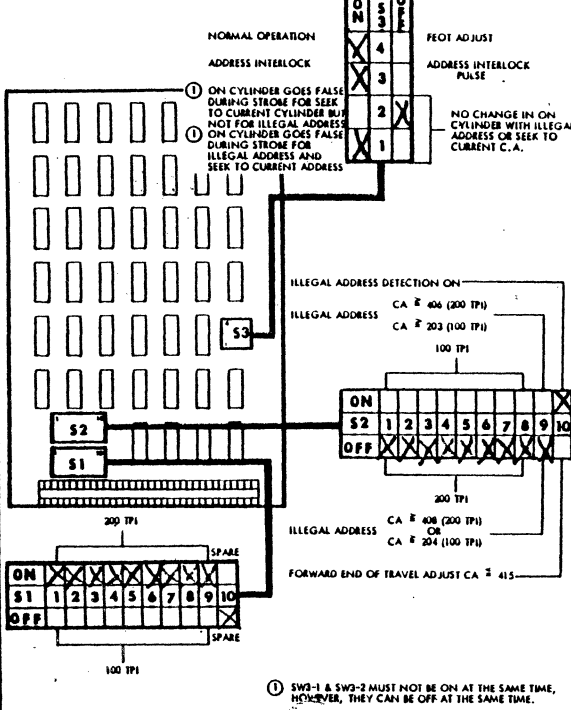
SECTOR BOARD - SYNCHRONOUS SECTOR COUNTER



DYNAMIC BRAKE
FUTURE FIXED INDEX 2400 RPM
FIXED INDEX TIMING
INDEX ANGLE 3°30'
NO DYNAMIC BRAKE
FUTURE FIXED INDEX 1500 RPM
FIXED INDEX TIMING
INDEX ANGLE 3°10'
NO DYNAMIC BRAKE
DYNAMIC BRAKE
INDEX TIMING
HARD SECTOR
SOFT SECTOR

ONLY ONE SWITCH FROM THIS GROUP CAN BE ON.
ONLY ONE SWITCH FROM THIS GROUP CAN BE ON.
INDEX TIMING
HARD SECTOR
SOFT SECTOR

SERVO BOARD

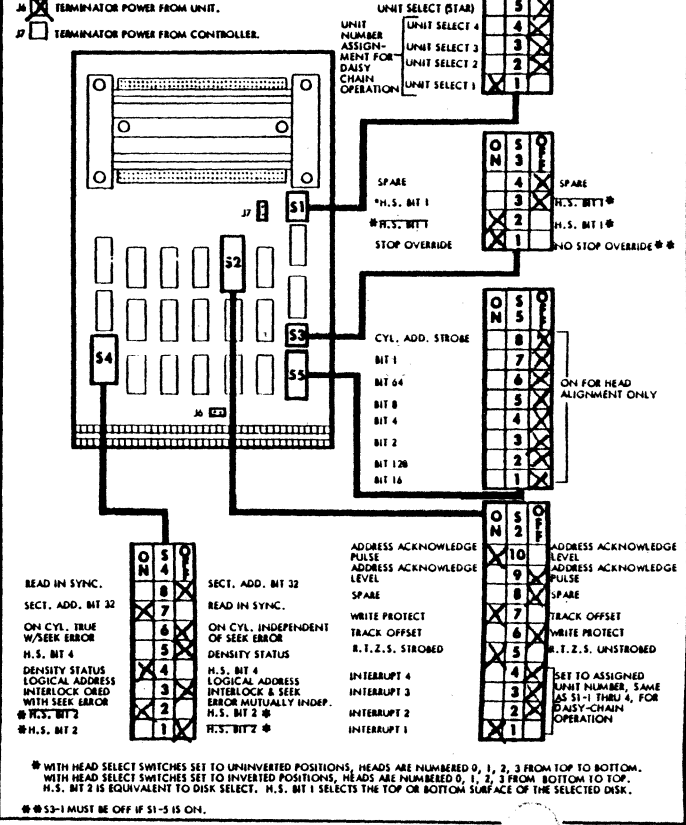


NORMAL OPERATION
ADDRESS INTERLOCK
ON CYLINDER GOES FALSE DURING STROKE FOR SEEK TO CURRENT CYLINDER BUT NOT FOR ILLEGAL ADDRESS ON CYLINDER GOES FALSE DURING STROKE FOR ILLEGAL ADDRESS AND SEEK TO CURRENT ADDRESS

FEET ADJUST
ADDRESS INTERLOCK PULSE
NO CHANGE IN ON CYLINDER WITH ILLEGAL ADDRESS OR SEEK TO CURRENT C.A.

ILLEGAL ADDRESS DETECTION ON
ILLEGAL ADDRESS CA # 406 (200 TPI)
CA # 203 (100 TPI)
100 TPI
ILLEGAL ADDRESS CA # 408 (200 TPI) OR CA # 204 (100 TPI)
FORWARD END OF TRAVEL ADJUST CA # 415

3/M - I/O BOARD



TERMINATOR POWER FROM UNIT.
TERMINATOR POWER FROM CONTROLLER.

UNIT SELECT (STAR)
UNIT SELECT 4
UNIT SELECT 3
UNIT SELECT 2
UNIT SELECT 1

READ IN SYNC.
SECT. ADD. BIT 32
ON CYL. TRUE W/SEEK ERROR
H.S. BIT 4
DENSITY STATUS
LOGICAL ADDRESS INTERLOCK & SEEK ERROR MUTUALLY INDEP.
H.S. BIT 2

SECT. ADD. BIT 32
READ IN SYNC.
ON CYL. INDEPENDENT OF SEEK ERROR
DENSITY STATUS
H.S. BIT 4
LOGICAL ADDRESS INTERLOCK & SEEK ERROR MUTUALLY INDEP.
H.S. BIT 2

ADDRESS ACKNOWLEDGE PULSE
ADDRESS ACKNOWLEDGE LEVEL
SPARE
WRITE PROTECT TRACK OFFSET
R.T.Z.S. STORED
INTERRUPT 4
INTERRUPT 3
INTERRUPT 2
INTERRUPT 1

* WITH HEAD SELECT SWITCHES SET TO UNINVERTED POSITIONS, HEADS ARE NUMBERED 0, 1, 2, 3 FROM TOP TO BOTTOM. WITH HEAD SELECT SWITCHES SET TO INVERTED POSITIONS, HEADS ARE NUMBERED 0, 1, 2, 3 FROM BOTTOM TO TOP. H.S. BIT 2 IS EQUIVALENT TO DISK SELECT. H.S. BIT 1 SELECTS THE TOP OR BOTTOM SURFACE OF THE SELECTED DISK.
** S1-1 MUST BE OFF IF S1-5 IS ON.

83448281
CNFG-003

HARDWARE PRODUCT CONFIGURATOR
DOCUMENT PACKAGE AND
MANUAL TO EQUIPMENT LEVEL
CORRELATION

SCOPE

The documentation provided in this package supplements the Model 9427H Hardware Maintenance Manual and makes it unique to the equipment described below. This documentation package, when referenced, should be identified by the Hardware Product Configurator (HPC) number, and the title 'HPC Document Package', i.e., 83448281 HPC Document Package.

EQUIPMENT

HPC NUMBER	83448281
TOP MECHANICAL ASSEMBLY	75741216

PACKAGE CONTENTS

DEVICE SPEC AND SWITCH SELECTION	83449281
I-O DIAGRAM PACKAGE (RACK)	77834702
PARTS DATA CONFIGURATOR	75741216

OTHER INFORMATION

HARDWARE MAINTENANCE MANUAL (OEM)	77614950
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