77834675 S

CONTROL DATA CORPORATION

CONTROL DATA®
CARTRIDGE DISK DRIVE
MODEL 9427H

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

MAGNETIC PERIPHERALS INC.
a subsidiary of
CONTROL DATA CORPORATION

HARDWARE MAINTENANCE MANUAL

MAGNETIC PERIPHERALS INC.
a subsidiary of CONTROL DATA CORPORATION

ENGINEERING CHANGE ORDER

DATE APPROVED 78 OCT 16

DISTR A2-E08

DIV	ECO NUMBER	REV
PL	19889	A

PAGE 1 OF 8

OLD EQUIPMENT IDENTIFICATION NUMBER: 9427H

NEW EQUIPMENT IDENTIFICATION NUMBER:

MFG EFFECTIVITY: FW42- 78

REASON FOR CHANGE

Read/Write/Erase Assembly, 75296311 is being shipped in place of 75891100.

Read/Write/Erase Assembly, 75874201 is being shipped in place of 75880500.

CLASS OF CHANGE

CLASS I ☑ CLASS II ☐
RECORD CHANGE ONLY ☐

MISCELLANEOUS ITEMS	YES	NO
FCO REQUIRED		✓
PUBLICATIONS AFFECTED	✓	
SOFTWARE AFFECTED		✓
EQUIPMENT SPEC AFFECTED		✓
SPARE PARTS AFFECTED		✓
SAFETY AFFECTED (UL/CSA)		✓
TOOLING AFFECTED		✓
TEST EQUIPMENT		✓
ARTWORK AFFECTED		✓

REASON CATEGORY

1. ERROR CORRECTION ☐
2. DESIGN OR COST IMPROVEMENT ☑
3. SERV/MAINT IMPROVEMENT ☐
4. MFG/VENDOR COST IMPROVEMENT ☐
5. QUAL. WORKMANSHIP STANDARDS ☐
6. MARKETING REQUIREMENT ☐
7. INITIAL RELEASE ☐

CHARGE NUMBER

PART DISPOSITION CODES

1. USE AS IS
2. REWORK
3. RESIDUAL—RETAIN FOR OTHER USES
4. NOT APPLICABLE
5. INCORPORATE PER EFFECTIVITY
6. NO EFFECT—DOCUMENT CHANGE ONLY
7. SCRAP
8. SEE NOTE ON PAGE ____
9. INITIAL RELEASE

INTERCHANGEABILITY CODES

A NOT INTERCHANGEABLE
B INTERCHANGEABLE
C RECORD

DOCUMENTS AFFECTED / **PART DISPOSITION**

ITEM No.	ECO PAGE LOC	DOC TYPE	DWG SIZE	PART NUMBER	REVISION FROM	REVISION TO	INACTIVE	REPLACED BY	PART DESCRIPTION	INTER-CHANGE-ABILITY	NOT IN PROCESS	IN PROCESS: IN PRO-DUCTION	IN PROCESS: AT VENDOR	IN PROCESS: IN FINISH GOODS	IN STOCK: ON HAND	IN STOCK: SPARES
				NO DOCUMENT CHANGE - When Read/Write/Erase board, 75296311 or 75874201 is installed in the 9427H, the documentation provided in this ECO is to be used in place of the Read/Write/Erase board documentation ~~in section five of the field manual~~.												

DESCRIPTION OF CHANGE

NOTE: Include a copy of this ECO with each 9427H Field Service Manual.

*PART NUMBER LISTED FOR DISPOSITION ONLY

REPRO SERVICES DISPOSITION/EFFECTIVITY

- ☑ UPDATE SHELF STOCK: BLDG. OKH ☑ BLDG. OKM ☐ BLDG. OKA ☑
- ☐ INCLUDE THIS REVISION IN NEXT SCHEDULED PRINTING OF FSM.
- ☐ INCLUDE A COPY OF THIS ECO WITH EACH FSM(S)# ____
- ☐ REMOVE ECO(S) ____ FROM FSM(S) ____
- ☐ SEND: ☐ ___ COPY(S) ☐ ___ PMT'S OF # ____ REV. ___ TO: ____
- ☑ OTHER INFORMATION (SPECIFY) SEE Note
- ☑ EFFECTIVITY: FW 425 ☐ HOLD THIS CHANGE FOR UPDATE ECO TO FOLLOW.

PL — 19889

ORIGINATOR	ENGINEER			CHANGE REQUEST No.	EC ADMINISTRATOR
[signature] DATE 10/6/78	[signature] DATE 10-16-78				D Hughes DATE 10/16/78

A

MP250–4/77

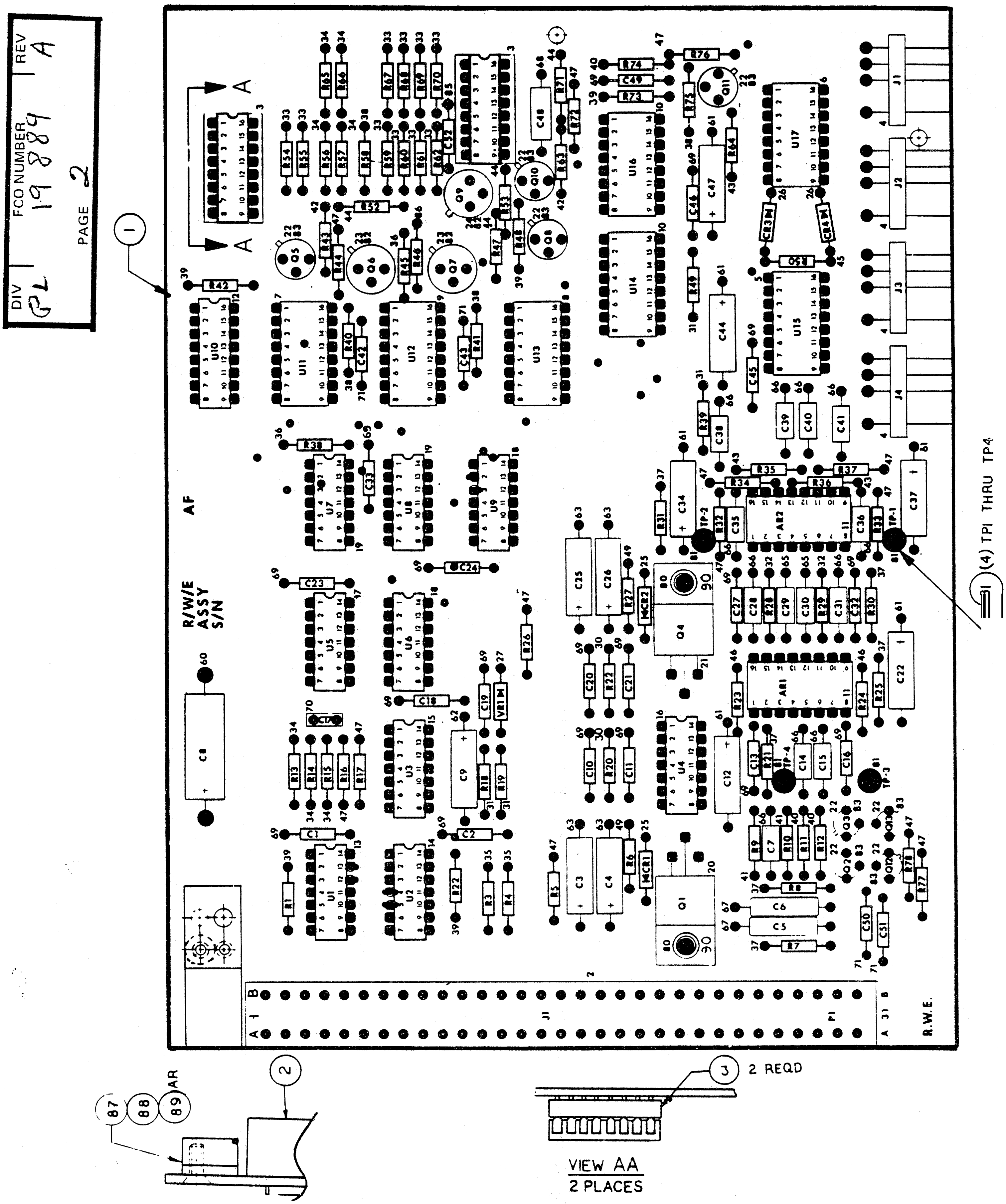


Figure 5-19. Read/Write/Erase Bd Asm (Sheet 1 of 7)

DIV	FCO NUMBER	PAGE	REV
PL	19889	3	4

ITEM NO.	IDENTIFICATION NUMBER	DRAWING TITLE
	75296311	Comp Bd Assy - R/W/E (2400 RPM)
	75874201	Comp Bd Assy - R/W/E (1500 RPM)
1	75296205	Board PC R/W/E
2	77836070	Conn-Card Mtd 62Sock
3	94260301	Socket 16 Pin
4	75772401	Connector Hdr
5	75300300	ID Read Matrix
6	75300400	ID Diode Matrix
7	75300500	ID Current Zone
8	75300600	ID R/W Fault
9	75300700	ID Write Switch
10	75300800	IC Head Select
11	75737600	ID Amplifier Amp 3
12	15158600	IC 74S112
13	88898200	IC 7410
14.	50252900	IC Rec2 CM
15	50251700	IC TTL4
16	15132600	IC Volt Regulator
17	50251800	TTL Quad
18	88924400	IC 7400
19	51701800	IC 7404
20	75752300	Transistor Power
21	75752400	Transistor
22	50210310	TSTR, SNPN, 15V NN3646
23	75722201	Transistor NPN
24	50211210	TSTR, SPNP, 60V NN3645
25	50241001	Diode Silicon
26	50241400	Diode Silicon
27	50240106	Volt Reg 3.3V IN746A
30	94360168	Res 1/4W 1% 51.1
31	94360216	Res 1/4W 1% 147
32	94360232	Res 1/4W 1% 215
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	94360380	Res 1/4W 1% 6.81K
*47	94360400	Res 1/4W 1% 10.0K

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

DIV PL
FCO NUMBER 19589
REV A
PAGE 4

ITEM NO.	IDENTIFICATION NUMBER	DRAWING TITLE
49	92512464	Resistor 3.3 Ohm 1/4
60	24504374	Cap 15V 20% 68UF
61	24504383	Cap 20V 20% 15UF
62	24504371	Cap 15V 20% 22UF
63	24504339	Cap 35V 20% 6.8UF
*65	92496121	Cap Non-Elect 680PF
*66	92496123	Cap Non-Elect 1000PF
67	92496127	Cap Film 200V .01MF
68	92496155	Cap Non-Elect 3300PF
69	92496227	Cap 100V 20% .01UF
70	94227218	Capacitor, Dipped MI
71	92496211	Cap Non-Elect 100PF
80	93640012	Stud-Self Clinching
81	92498021	Terminal, Swaged
82	94335900	Pad-Transistor Mtg
83	94335901	Pad-Transistor Mount
85	75800521	Cap 100V 10% 470
86	94360344	Res 1/4W 1% 2.87
87	83479701	Key, Inject, Mold
88	10125703	Scr Flat Hd
89	75312701	Adhesive, Epoxy
*90	92583002	Nut, Lock
*91	24500006	Resistor 4.3 Ohm 1/4

* - Differences in components on 75874201 Assembly are as follows:

43	94360360	Resistor 1/4W 1% 4.22K (R64)
47	94360400	Resistor 1/4W 1% 10K (R35 and R36)
65	92496123	Cap Non-Elect 1000PF (C29,30)
66	92496149	Cap Non-Elect 1500PF (C7,14,15,28, 31,38,39,40,41)
90	92496121	Cap Non-Elect 680PF (C35,36)
91	92583002	Nut, Lock
92	24500006	Resistor 4.3 Ohm 1/4 (R79,80)

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

DIV PL
FCO NUMBER 19889
REV A
PAGE 5

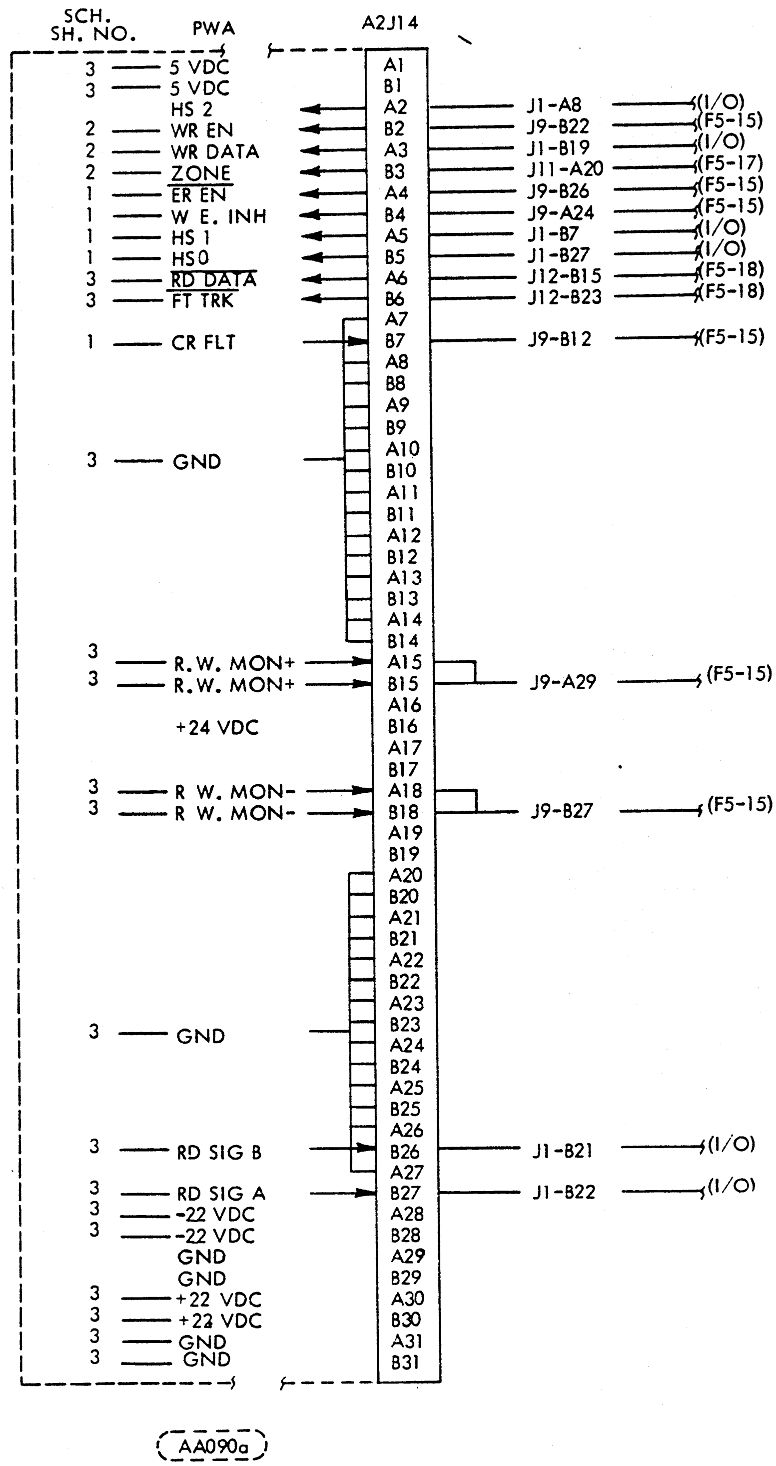


Figure 5-19. Read/Write/Erase Bd Asm (Sheet 4 of 7)

1

DIV PL | FCO NUMBER 19889 | PAGE 6 | REV A

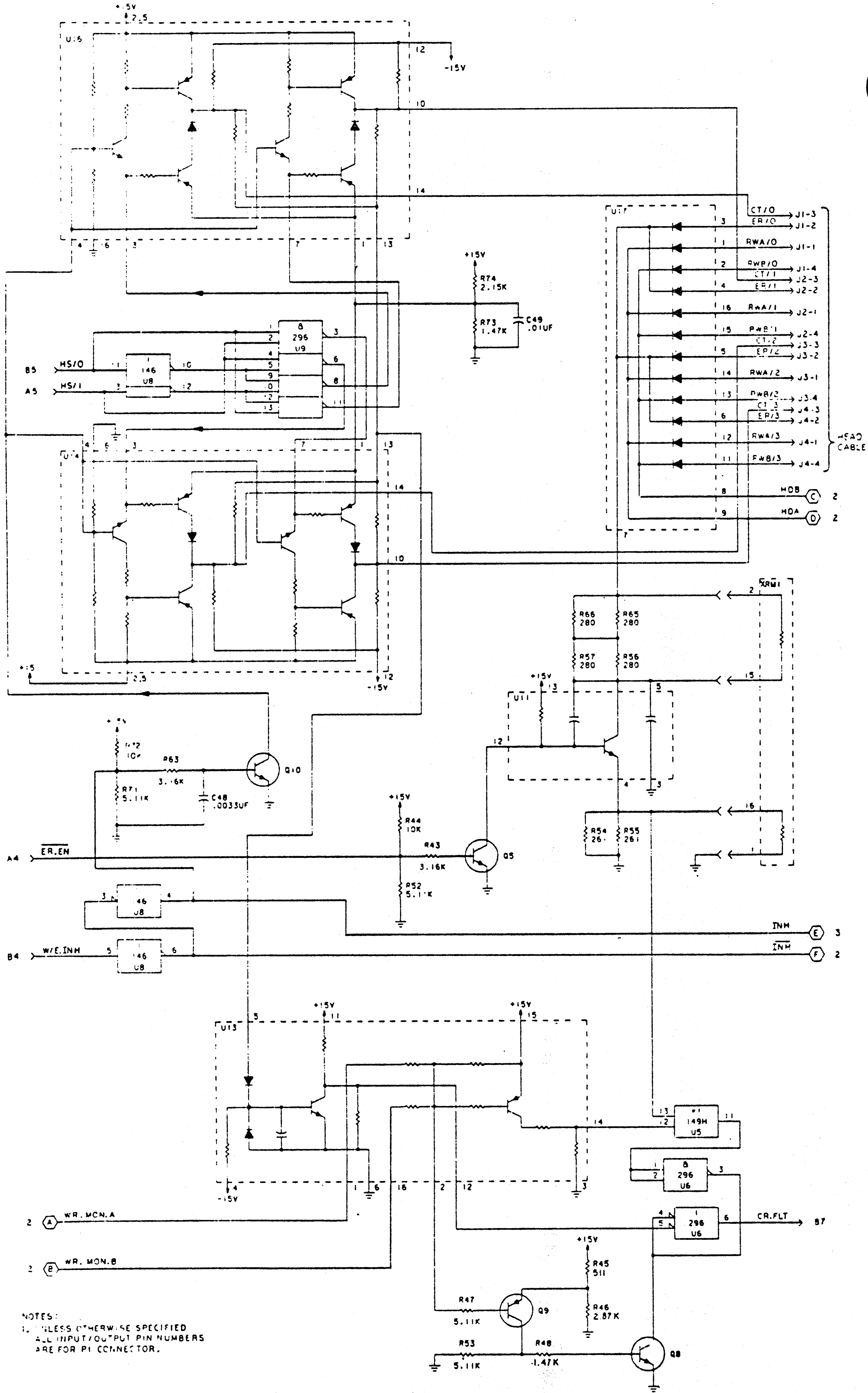


Figure 5-19. Read/Write/Erase Bd Asm (Sheet 5 of 7)

DIV PL

FCO NUMBER 19889

PAGE 7

2

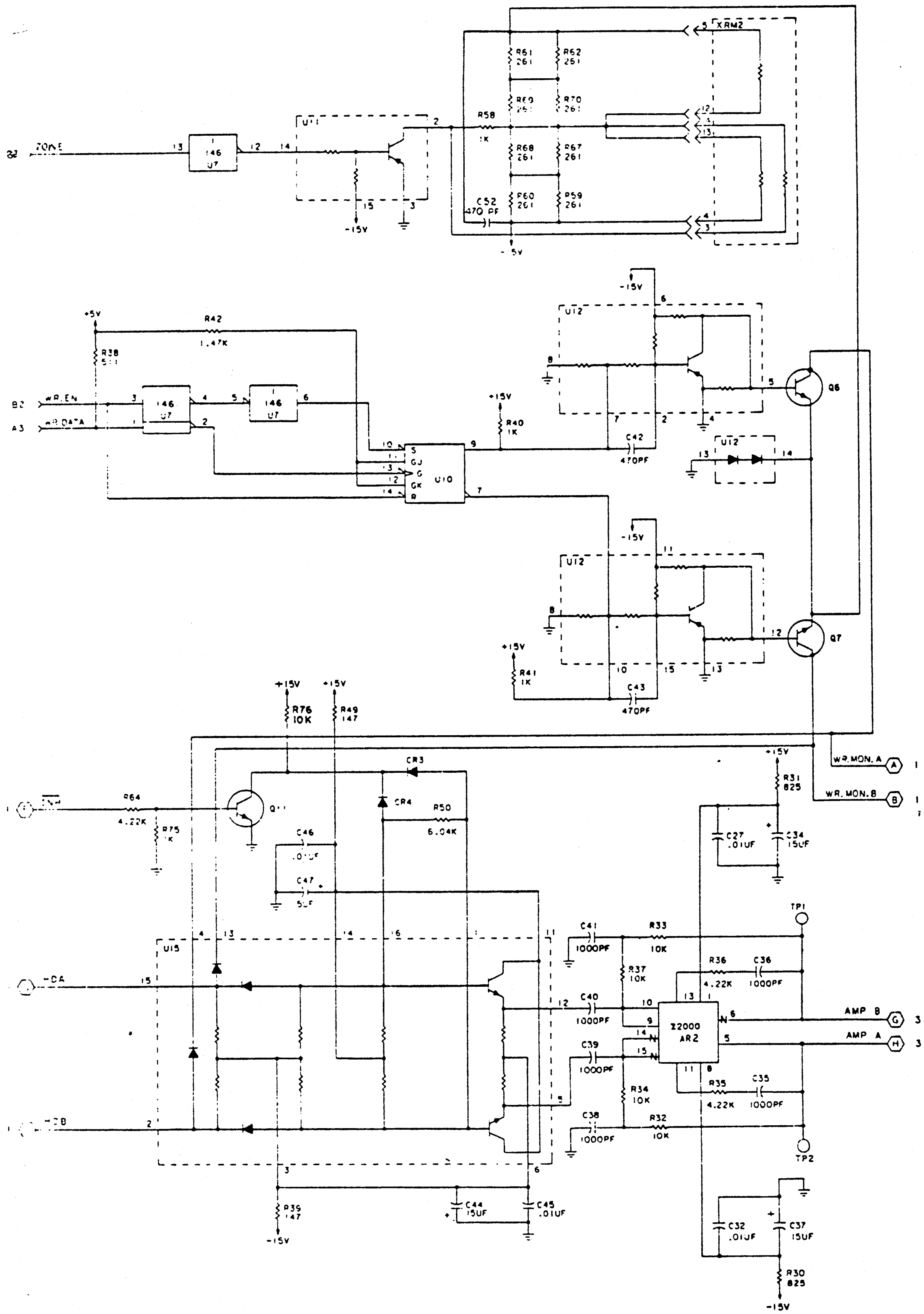


Figure 5-19. Read/Write/Erase Bd Asm (Sheet 6 of 7)

DIV	FCO NUMBER	REV
PL	19889	A
	PAGE 8F	

3

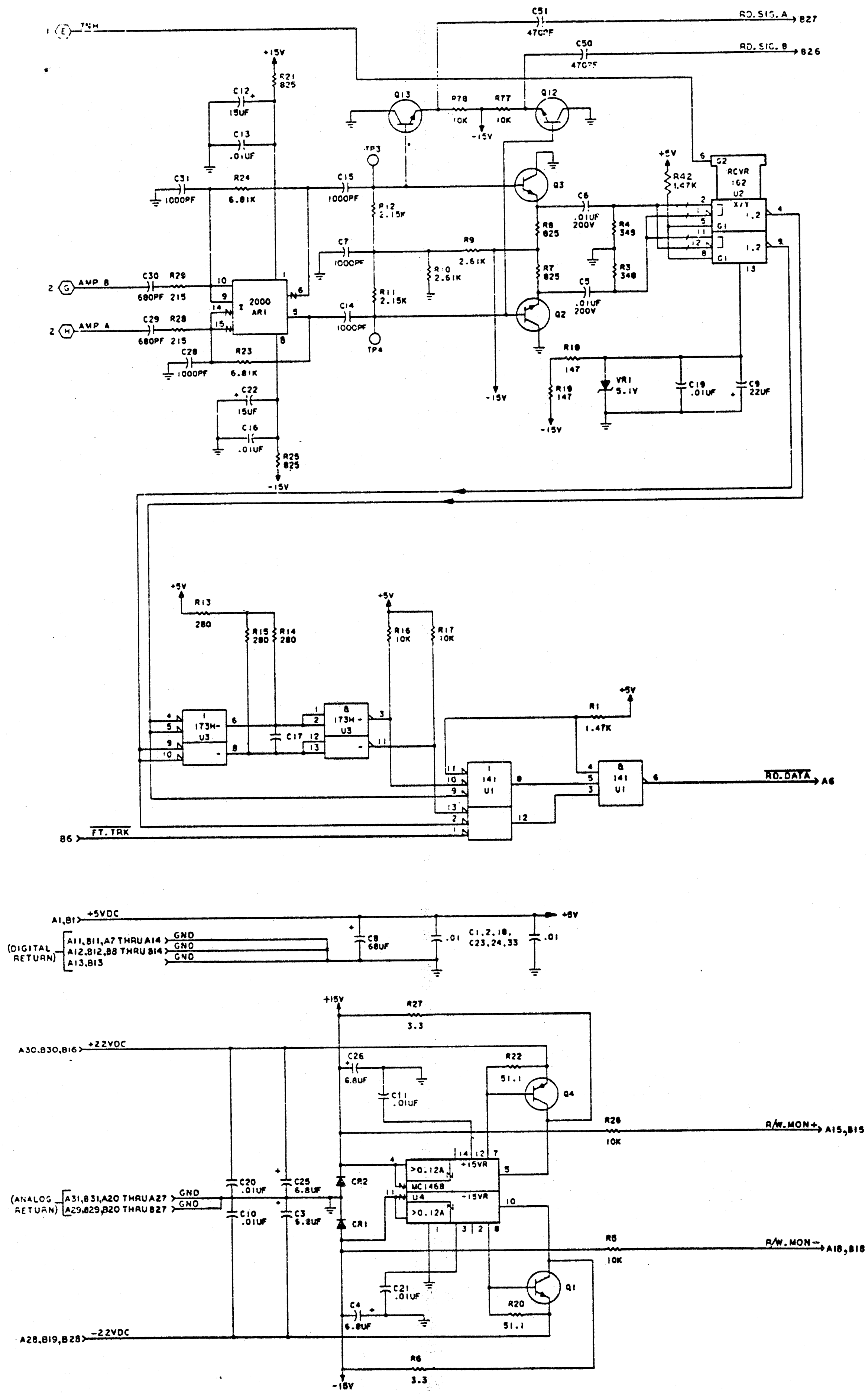


Figure 5-19. Read/Write/Erase Bd Asm (Sheet 7 of 7)

77834675

CONTROL DATA CORPORATION

CONTROL DATA®
CARTRIDGE DISK DRIVE
MODEL 9427H

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

MAGNETIC PERIPHERALS INC.
a subsidiary of
CONTROL DATA CORPORATION

HARDWARE MAINTENANCE MANUAL

REVISION RECORD

REV	DATE	TABLE OF CONTENTS SHEETS AFFECTED	MANUAL/SECTION REVISION STATUS 1	2	3	4	5	6	7	8	9	10	11	12	CHANGE AUTHORITY
J	3/28/78		B	A	C	A	H	F	B	H	A				PL19689
K	8/3/78	iii/iv, ix, xiii	B	A	C	A	H	G	B	H	A				PL19784
L	78 Sept 5 P Franklin	iii/iv, ix	B	A	C	A	J	H	B	J	A				PL19846
M	78 Oct 11 P Franklin	iii/iv	B	A	C	A	J	J	B	J	A				PL19880
N	'78 TC OCT 16	iii/iv	B	A	C	A	K	J	B	J	A				PL 19887
P	78 PF Dec 5	iii/iv, v/vi	B	A	D	A	L	K	B	J	A				PL 19930
R	79 TC JAN 16	iii/iv	C	A	D	A	M	K	B	J	A				PL 19969
S	79 PG July 11	iii/iv	C	A	D	A	N	K	B	J	B				PL 24129

Address comments concerning this manual to:

Technical Publications
Magnetic Peripherals Inc.
4000 Northwest 39th Expressway
Oklahoma City, Oklahoma 73112

or use the enclosed user comment sheet.

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 required detailed information about the Cartridge Disk Drive's operations.

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

Certain adjustments must be made under dynamic conditions. If the Field Test Exercisor 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 (77834675). 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:

	SECTION NUMBER/TITLE	PUBLICATION NUMBER
I	General Description	77830938
II	Operation	77830939
III	Installation & Checkout	77830940
IV	Theory of Operation	77834692
V	Diagrams	77834676
VI	Maintenance	77834677
VII	Maintenance Aids	77830944
VIII	Parts Manual	77830945
IX	Wire Lists	77834680

*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.

TABLE OF CONTENTS

SECTION | PAGE

I GENERAL

1.1 INTRODUCTION 1-1
1.2 PURPOSE AND USE OF EQUIPMENT 1-1
1.3 EQUIPMENT CONFIGURATION 1-2
1.3.1 Baseline Configuration 1-2
1.3.2 Options 1-2
1.3.3 Disk Features 1-2
1.3.4 Operational Characteristics 1-2

II OPERATION

2.1 INTRODUCTION 2-1
2.2 CONTROLS AND INDICATORS 2-1
2.3 OPERATING PRECAUTIONS 2-1
2.3.1 Power Up for On-Line Operation 2-6
2.3.2 Write Protect 2-7
2.3.3 Stop and Power Down 2-7
2.4 FAULT OPERATING INSTRUCTION 2-7
2.5 INPUT/OUTPUT LINES 2-8
2.6 DISK CARTRIDGE HANDLING AND STORAGE 2-8
2.7 DISK CARTRIDGE INSTALLATION 2-8
2.8 DISK CARTRIDGE REMOVAL 2-12
2.8.1 Normal Removal 2-12
2.9 POWER FAILURE OR EMERGENCY STOP REMOVAL 2-14

III INSTALLATION AND CHECKOUT

3.1 INTRODUCTION 3-1
3.2 UNPACKING 3-1
3.3 SPACE ALLOCATION 3-2
3.4 LEVELING AND ALIGNING BASE CABINET UNIT 3-2
3.5 INSTALLATION OF RACK MOUNT SYSTEM WITH GRANT SLIDES 3-2
3.6 INSTALLATION OF RACK MOUNT SYSTEM WITH ACCURIDE SLIDES 3-11
3.7 SECTOR OPTION CONVERSION PROCEDURE 3-13
3.8 HZ/RPM CONVERSION 3-16
3.9 CABLING AND CONNECTION 3-16
3.9.1 Input/Output Cables 3-16
3.9.2 Grounding Option 3-17
3.9.3 Power Cables 3-17
3.10 INPUT POWER REQUIREMENTS 3-17
3.11 ENVIRONMENT 3-21
3.12 OPTION SWITCHES 3-21
3.13 INITIAL CHECKOUT AND STARTUP PROCEDURE 3-21

TABLE OF CONTENTS (continued)

SECTION			PAGE
IV	THEORY OF OPERATION		
	4.1	INTRODUCTION	4-1
	4.1.1	Disk Drive	4-2
	4.1.2	Actuator	4-2
	4.1.3	Head/Arm Assemblies	4-2
	4.2	OPERATIONS	4-3
	4.2.1	Power Up/First Seek	4-3
	4.2.2	Operational Seek	4-3
	4.2.3	Return-To-Zero Seek (RTZS)	4-7
	4.2.4	Write/Erase Data	4-7
	4.2.5	Read Data	4-8
	4.3	SECTORING	4-10
	4.3.1	Fixed Disk	4-10
	4.3.2	Cartridge Disk	4-10
	4.3.3	Soft Sector	4-12
	4.4	FAULT DETECTION	4-12
	4.4.1	Damaging Faults	4-12
	4.4.2	Non-Damaging Faults	4-12
	4.5	WRITE PROTECTION	4-13
	4.6	HEAD LOADING	4-13
	4.7	HEAD RETRACT	4-13
	4.7.1	Normal Retract	4-14
	4.7.2	Emergency Retract	4-14
	4.8	CYLINDER LOCATING AND POSITIONING	4-14
	4.8.1	Cylinder Locations	4-14
	4.8.2	Cylinder Positioning	4-14
V	DIAGRAMS		
	5.1	INTRODUCTION	5-1
	5.2	INTRACABLING DIAGRAM	5-1
	5.3	CIRCUIT BOARD DOCUMENTATION	5-2
	5.3.1	Connection Diagrams	5-5
	5.3.2	Schematic Diagrams	5-5
	5.4	MAJOR ELECTRICAL DIAGRAMS	5-6
	5.5	LOGIC DIAGRAM SYMBOLOGY	5-7
	5.5.1	General Information	5-7
	5.5.2	General Signal Annotation	5-7
	5.5.3	Symbology	5-8
	5.5.4	Function Symbology	5-9
	5.5.5	Abreviations	5-10
	5.5.6	IC Index and Cross Reference	5-11
	5.5.7	Circuit Types and Waveforms	5-12
	5.5.8	IC Package Layout	5-19

TABLE of CONTENTS (continued)

SECTION			PAGE
VI	MAINTENANCE		
	6.1	INTRODUCTION	6-1
	6.2	MAINTENANCE TOOLS	6-1
	6.3	MAINTENANCE MATERIALS	6-1
	6.4	MAINTENANCE INDEX AND SCHEDULE	6-1
	6.5	PREVENTIVE MAINTENANCE PROCEDURES	6-3
	6.5.1	Control Panel Lamp Replacement	6-3
	6.5.2	Inspect and Clean Read/Write Heads	6-7
	6.5.3	Disk Cartridge Inspection and Cleaning	6-7
	6.5.4	Fixed Disk Inspection and Cleaning	6-8
	6.5.5	Absolute Filter R&R	6-8
	6.5.6	Pre-Filter Cleaning (Base Cabinet)	6-10
	6.5.7	Pre-Filter Cleaning (Rack Mt. Unit Only)	6-10
	6.5.8	Disk Brush Check and Replacement	6-11
	6.5.9	Inspect and Dry Magnetic Chuck	6-12
	6.6	CORRECTIVE MAINTENANCE PROCEDURES (R&R)	6-12
	6.6.1	Actuator Assembly R&R	6-12
	6.6.2	Head R&R	6-17
	6.6.3	EOT Assembly R&R	6-21
	6.6.4	Fixed Disk R&R	6-22
	6.6.5	Position Transducer Scale R&R	6-25
	6.6.6	Velocity Transducer R&R	6-28
	6.6.7	Velocity Transducer Magnet R&R	6-31
	6.6.8	Spindle Assembly R&R	6-33
	6.6.9	Cartridge Disk Index/Sector Trans. R&R	6-37
	6.6.10	Fixed Disk Index/Sector Trans. R&R	6-38
	6.6.11	Static Eliminator and Retainer Screw R&R	6-40
	6.6.12	Sector Ring R&R	6-40
	6.6.13	Cartridge On Switch R&R	6-41
	6.6.14	Disk Brush Assembly R&R	6-43
	6.6.15	Brush Motor R&R	6-46
	6.6.16	Spindle Drive Motor Assembly R&R	6-46
	6.6.17	Card Cage Printed Circuit Board R&R	6-47
	6.6.18	Power Supply R&R	6-49
	6.6.19	Piggyback Power Board R&R	6-50
	6.6.20	Card Cage/Mother Board R&R	6-52
	6.6.21	Blower Motor Assembly R&R (Base Cab.)	6-53
	6.6.22	Blower Motor Assemblv R&R	6-54
	6.6.23	Drive Motor and Belt R&R	6-55
	6.7	CHECK AND ADJUSTMENT PROCEDURES	6-55.1
	6.7.1	Temperature Stabilization Check and Adj.	6-55.1
	6.7.2	AGC Servo Preamplifier and Inductosyn C & A	6-55.1
	6.7.3	FEOT Check and Adjustment	6-63
	6.7.4	Head Alignment Check and Adjustment	6-64
	6.7.5	Head Skew and Index-to-Burst Period Check and Adj.	6-66
	6.7.6	Track Indicator Check and Adjustment	6-70
	6.7.7	Cartridge-On Switch Check and Adj.	6-71
	6.7.8	Static Eliminator Check	6-71
	6.7.9	Disk Brush Switch Check and Adj.	6-71
	6.7.10	Cartridge Index/Sector Trans. Check and Adj.	6-71
	6.7.11	Fixed Disk Index/Sector Transducer Check and Adjustment	6-72

TABLE of CONTENTS (continued)

SECTION			PAGE
VII	MAINTENANCE AIDS		
	7.1	GENERAL	7-1
	7.2	CIRCUIT BOARD DESCRIPTION	7-1
	7.3	CIRCUIT BOARD LOCATIONS	7-1
	7.4	TROUBLESHOOTING DIAGRAMS	7-2
	7.5	FLOW DIAGRAM REFERENCES	7-2
VIII	PARTS MANUAL		
	8.1	INTRODUCTION	8-1
	8.2	GENERAL INSTRUCTIONS	8-1
		8.2.1 Illustrations	8-1
		8.2.2 Parts Lists	8-1
		8.2.3 Assembly Locator	8-2
		8.2.4 Top Mechanical Assembly	8-2
		8.2.5 Module Assembly	8-2
		8.2.6 Notes	8-2
		8.2.7 Part Replacement	8-2
	8.3	PARTS LIST INSTRUCTIONS	8-3
		8.3.1 Illustration Parts List	8-3
		8.3.2 Top-Down Assembly/Component Parts List	8-3
		8.3.3 Cross Reference Index	8-3
		8.3.4 Sheet Number References	8-3
IX	WIRE LISTS		
	9.1	INTRODUCTION	9-1
	9.2	PRE AMP	9-1
	9.3	RECEIVER	9-2
	9.4	RETRACT	9-2
	9.5	RELAY	9-2
	9.6	CAPACITOR	9-3
	9.7	SWITCH BOARD	9-3
	9.8	DC SPINDLE	9-4
	9.9	AC SPINDLE	9-4
	9.10	DRIVE MOTOR AND CONNECTOR	9-4
	9.11	MOTOR CONTROL LOGIC	9-4
	9.12	AC BRAKE	9-5
	9.13	DC BRAKE	9-5
	9.14	BLOWER MOTOR	9-5
	9.15	POWER AND LOGIC #1	9-6
	9.16	POWER AND LOGIC	9-6
	9.17	POWER SUPPLY CHASSIS II	9-7

LIST OF ILLUSTRATIONS

FIGURE		PAGE
1-1	Model 9427 Cartridge Disk Drive (Cabinet Mount)	
1-2	Model 9427 Cartridge Disk Drive (Rack Mount)	
2-1	Controls and Indicators	2-2
2-2	Disk Cartridge Installation	2-13
3-1	Carriage Lock Pin Location	3-3
3-2	Base Cabinet Dimensions	3-4
3-3	Rack Mount Unit Overall Dimensions (Grant Slider Attached)	3-5
3-4	Side Rail Mounting	3-7
3-5	Rack Mount Slides Dimensions	3-8
3-6	Inner Slide Extension Front Mounting Bracket	3-9
3-7	Rear Mounting Bracket	3-9
3-8	Pivot Bracket and Latch Assembly	3-10
3-9	Right Side Rack Mount & Cable Fender	3-10
3-10	Rack Assembly Mounting	3-14
3-11	Sector Option Conversion	3-15
3-12	Daisy Chain Configuration	3-18
3-13	Simplified Intracabling Diagram	3-18
3-14	3M I/O Board Connector Terminal Assignments	3-19
3-15	Grounding Option	3-19
3-16	Voltage Adjustment Plug P12 and Adjustment Table	3-20
4-1	Model 9427H Block Diagram	4-4
4-2	Servo System Block Diagram	4-5
4-3	Seek Velocity Profile	4-6
4-4	Digital Phase - Lock Loop and Timing Diagram	4-9
4-5	Sector System Block Diagram	4-11
4-6	Counting Logic	4-15
4-7	Capacitively Coupled Linear Displacement Trans.	4-16
4-8	Position Transducer Signal	4-16

LIST of ILLUSTRATIONS (continued)

FIGURE		PAGE
5-1	Detailed Intracabling Diagram	5-3
5-2	Functionally Equivalent Symbols	5-7
5-3	Typical Integrated Circuit	5-12
5-4	Exclusive OR	5-12
5-5	Invert	5-12
5-6	AND-OR-INVERT	5-13
5-7	Positive NAND Negative NOR	5-14
5-8	Retriggerable, Resettable, Monostable Multivibrator (One Shot)	5-15
5-9	'JK' Type F/F	5-15
5-10	Adder	5-16
5-11	Quad 2 x 1 Multiplexer	5-17
5-12	'D' Type F/F	5-17
5-13	Bidirectional Analog Multiplexer	5-18
5-14	Decimal/Binary Up/Down Presettable Counter	5-19
5-15	Control Board Assembly	5-20
5-16	Sector Board Assembly	5-28
5-17	Servo Board Assembly	5-36
5-18	Data Recovery Board Asm	5-46
5-19	Read/Write/Erase Bd Asm	5-54
5-20	AGC Servo Preamp Bd Asm	5-62
5-21	Power Supply Bd No. 1	5-68
5-22	Power Supply Bd No. 2	5-74
5-23	Spindle Motor Brake Asm	5-80
5-24	Switch Bd Asm	5-84
5-25	AC-DC Without Dynamic Brake	5-88
5-26	AC-DC with Dynamic Brake	5-89
5-27	AC-DC without Brake and Filters	5-90
5-28	AC-DC without Dynamic Brake - with Filters	5-91
5-29	AC-DC with Brake and Filters	5-92
5-30	Base Plate Electronics	5-93

LIST of ILLUSTRATIONS (continued)

FIGURE		PAGE
6-1	Filter Mounting	6-9
6-2	Velocity Transducer Location	6-13
6-3	Actuator, Magnet and EOT Mounting	6-15
6-4	Module Location (Above Deck)	6-19
6-5	Actuator Assembly-Heads Installed	6-20
6-6	Head Removal and Replacement	6-20
6-7	Front Panel Removal	6-23
6-8	Fixed Disk Removal	6-24
6-9	Thermal Link R&R	6-27
6-10	Actuator Assembly	6-30
6-11	Module Locator (Below Deck)	6-36
6-12	Packlock and Brush Assemblies	6-44
6-13	Power Supply Assembly	6-51
6-14	Preamp Board Adjustment Location	6-58
6-15	Position Transducer Waveform	6-59
6-16a	One Track Seek Unbalanced	6-60
6-16b	One Track Seek Balanced	6-60
6-16c	Two Track Seek within Tolerance	6-60
6-17a	Forward Seek	6-61
6-17b	Reverse Seek	6-61
6-18	FEOT Waveforms	6-62
6-19	Head Alignment Waveform	6-67
6-20a	Index-to-Burst Period Waveforms	6.70.1
6-20b	Index-to-Burst Waveforms	6.70.2
6-21	Track Indicator	6.70.2
6-22	Index/Sector Transducer Adjustment	6-72
6-23	Fixed Disk Index/Sector Transducer Adjustment	6-72
7-1	Circuit Board Location	7-1
8-1	Assembly Locators	8-4
8-2	Top Mechanical Assembly	8-5
8-3	Module Assembly	8-6
8-4	Spindle Drive Assembly	8-7
8-5	Brake and Spindle Drive Assembly	8-8
8-6	Power Supply	8-9
8-7	Common Parts	8-11
8-8	Card Cage Assembly	8-14
8-9	Actuator with Detector Assembly	8-15
8-10	Actuator with Carriage and Coil Assemblies	8-16
8-11	Common Parts Sub Assemblies	8-17
8-12	Base Frame Assembly	8-19
8-13	Color Option Cabinet	8-20
8-14	Rack Mount Assembly	8-23
8-15	Installation Kit	8-24
8-16	Top Mechanical Assembly Options	8-25
8-17	Options	8-26
8-18	Power Input Assembly	8-27
8-19	Power Assembly (AC Option	8-28
8-20	Spare Parts Provisioning	8-29

LIST of TABLES

1-1	Operational Characteristics	1-3
2-1	Controls and Indicators	2-3
2-2	Input/Output Lines	2-9
3-1	Sector Option Conversion	3-15
5-1	Logic Symbology	5-9
5-2	Function Symbols	5-10
5-3	Integrated Circuit Index & Cross Reference	5-12
6-1	Maintenance Tools	6-2
6-2	Maintenance Materials	6-3
6-3	Maintenance Index and Schedule	6-4

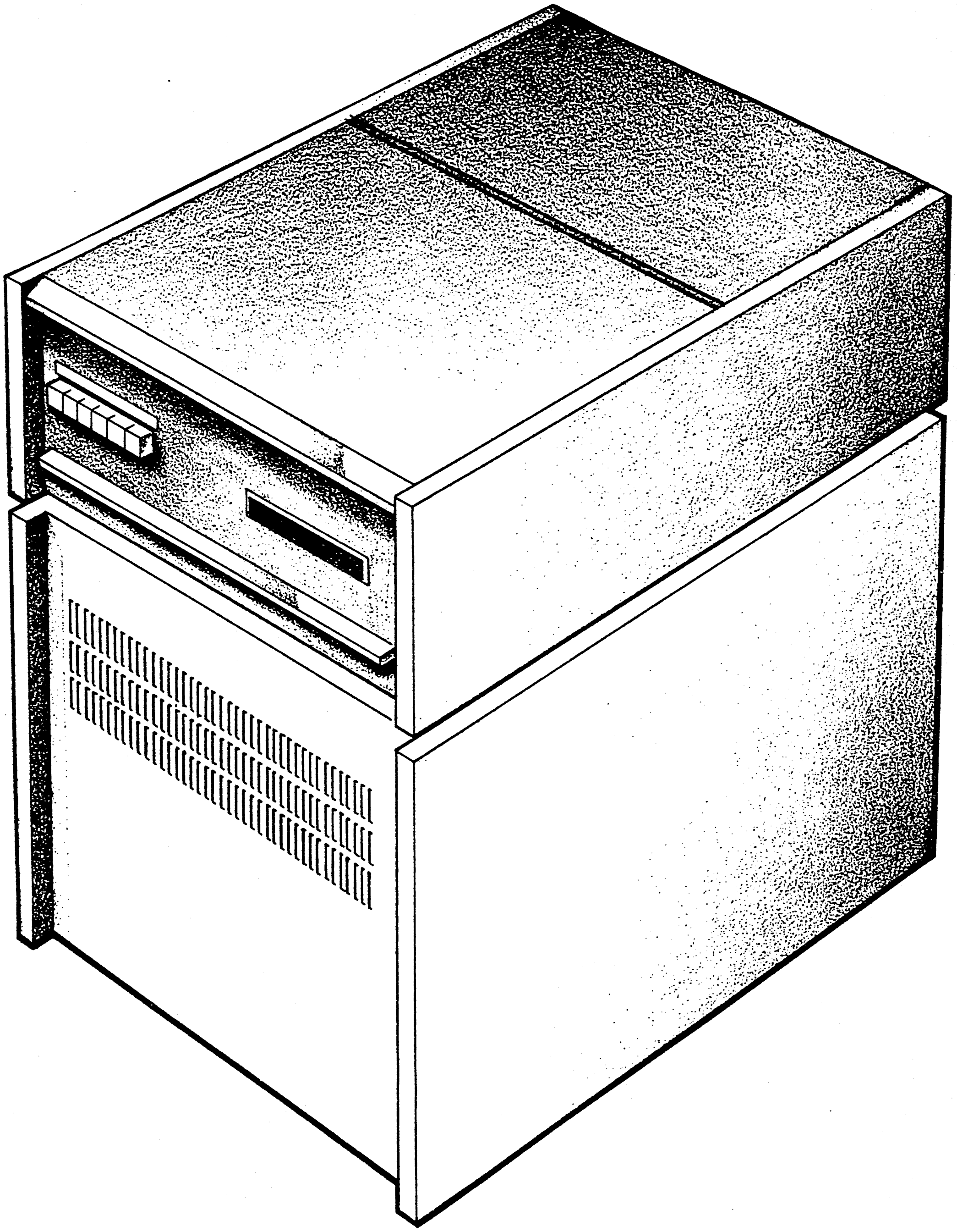


Figure 1-1. Model 9427 Cartridge Disk Drive (Cabinet Mount)

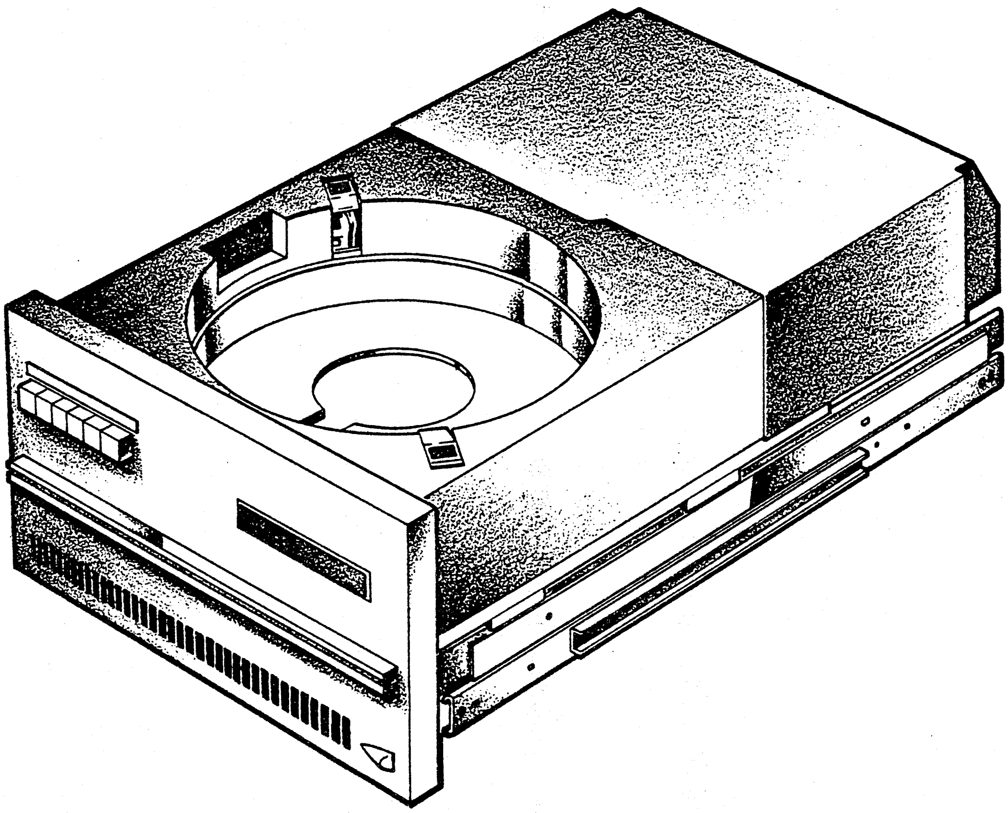


Figure 1-2 Model 9427 Cartridge Disk Drive (Rack Mount)

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 rack with 10 1/2 inch 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 employes 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 configuration
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 disk cartridge	2

Table 1-1. Operational Characteristics (continued)

Characteristics	Values
Disk surface diameter	14 inches
Recording diameters	Track 407 (inner), 9.067 in (230.3 mm) Track 0 (outer), 13.137 in (333.7 mm) nominal
Disk surface coating	Magnetic oxide
READ/WRITE HEADS	(Standard CDC ramp-loading straddle erase and pre-erase available)
PHYSICAL (RACK-MOUNTED UNIT)	
Panel height	10.31 in (261.9 mm) (mounts on 10.5 in (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 in (863.6 mm)
Width	18.5 in (469.9 mm)
Depth	29.75 in (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)	
Input Current	The following current readings are made at 50 Hz and nominal line voltage with accessor performing worst-case (maximum power) repeat seeks. Volts — Amps 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 Surge current during spindle start is 2.6 times the above value and lasts 5 seconds.
Power Factor	0.8
Power (Nominal)	310 watts, 1050 Btu/hr.
INPUT/OUTPUT CONNECTIONS	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.
ENVIRONMENTAL (Operating)	Temperature: 60 to 90°F with 12°F/hr maximum rate of change Humidity: 10 to 80% (no condensation) Altitude: Zero to 10,000 feet

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.

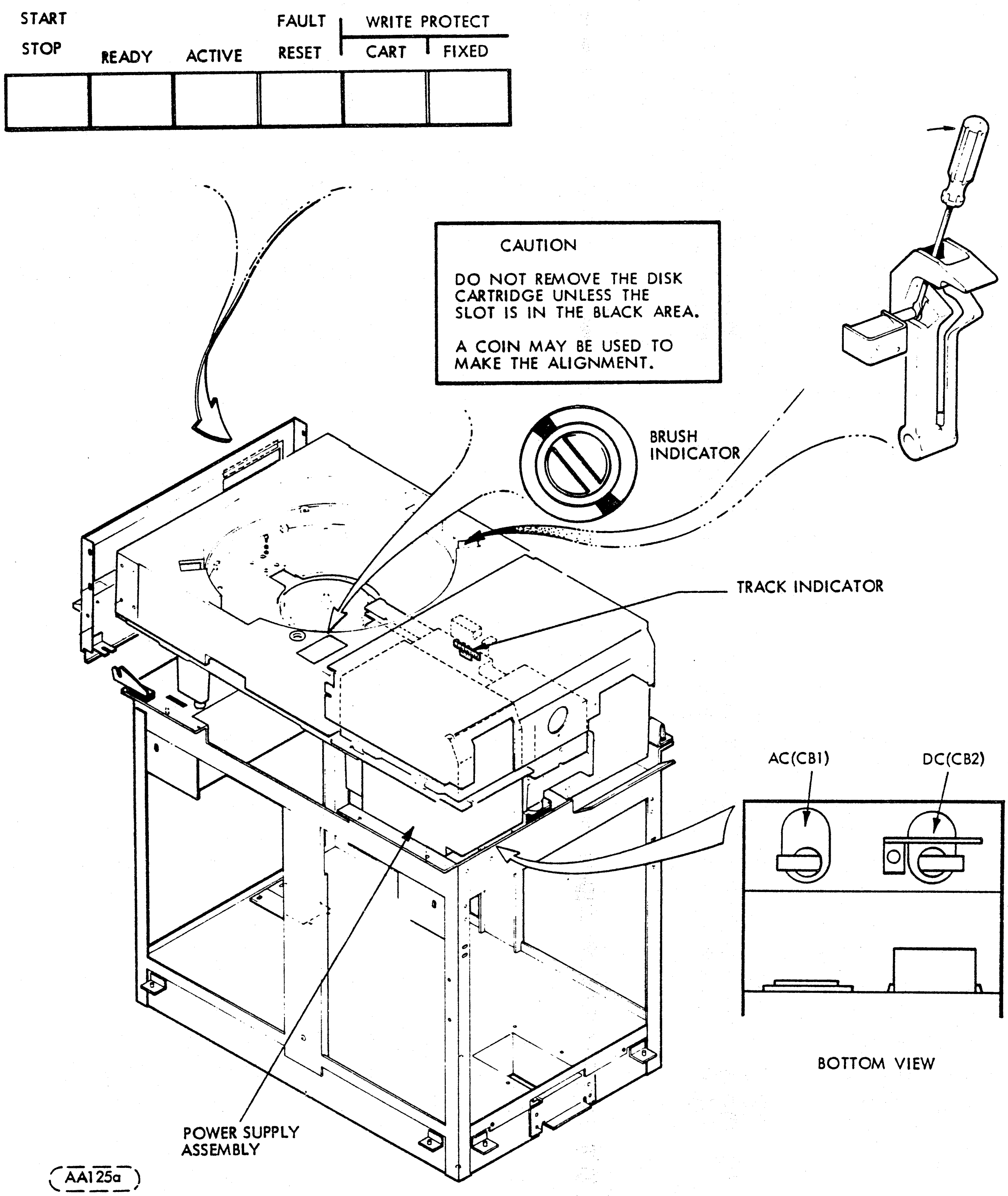


Figure 2-1. Controls And Indicators

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	Start switch energizes spindle motor and initiates the first seek mode provided the following conditions are met: 1. Circuit breakers are ON. 2. Disk cartridge cover properly installed. 3. Cartridge hold-down switches are closed. 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.) When the switch is depressed to stop machine, the indicator light remains illuminated until the disk rotation has stopped.

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

Control or Indicator	Function
	Control Panel
	The interlock solenoids energize at this time to permit access to the cartridge. NOTE 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.
READY indicator	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.
ACTIVE indicator	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.
FAULT indicator/switch	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.

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

Control or Indicator	Function
Control Panel	
FAULT indicator/switch (continued)	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.
W/PROT CART indicator/switch	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.
W/PROT FIXED indicator/switch	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.
Cartridge Receiver	
Brush indicator	Indicates the position of the brush motor. **CAUTION** Do not remove the disk cartridge unless the slot is in the black area. A coin may be used to make the alignment.
Carriage Assembly	
Track indicator	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.

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 Ooerating 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 Override)	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.
Sker (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	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: 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	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.
Wr Stat	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.
SA/0 - SA/5 (Sector Address)	Six lines that carry the sector address for the selected disk.
Density (optional)	When negative true, the unit is operating in a 200 tpi mode; when not, unit is operating in 100 tpi mode.

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.

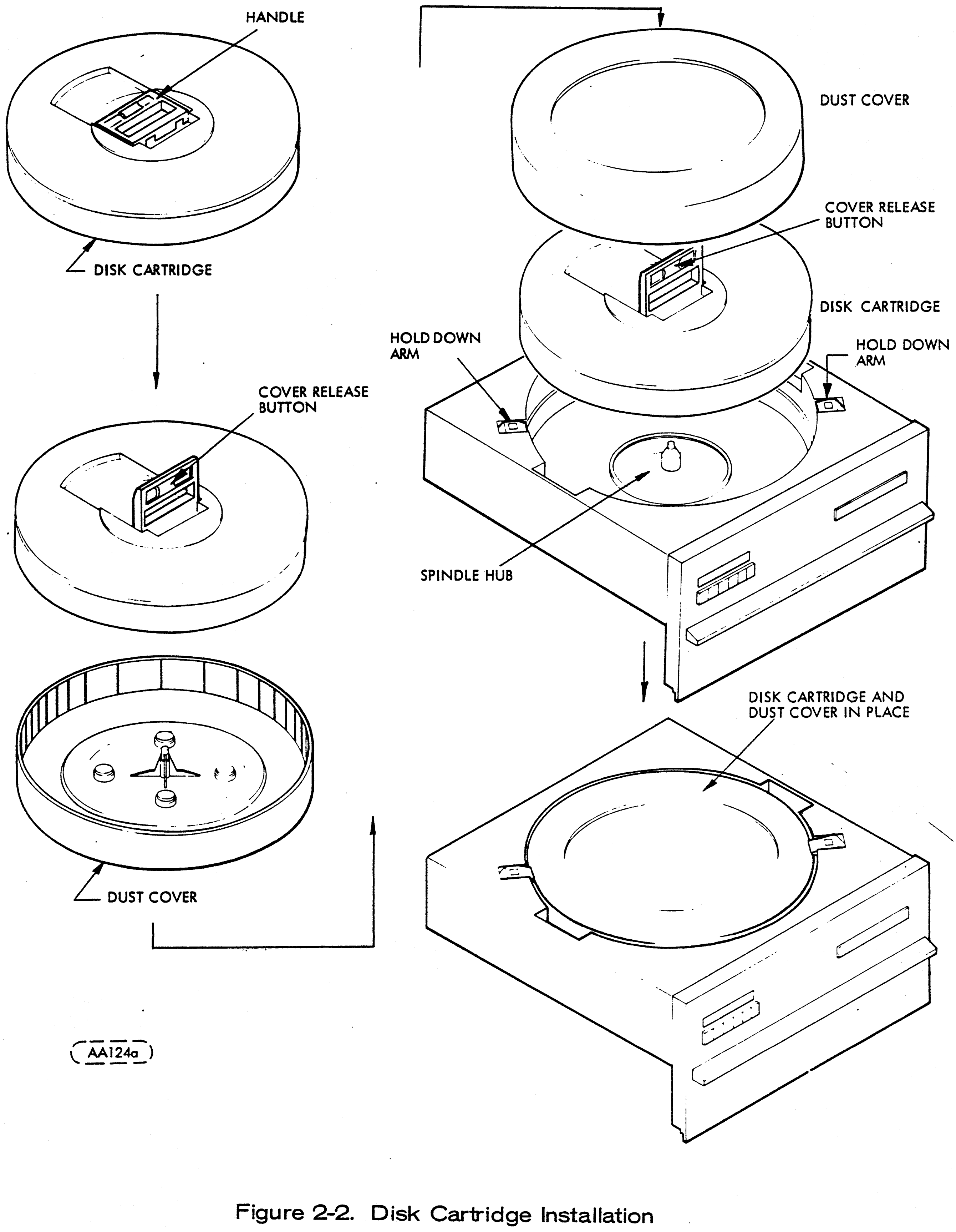


Figure 2-2. Disk Cartridge Installation

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 checkout 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 clams 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 determing 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 it's 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 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.

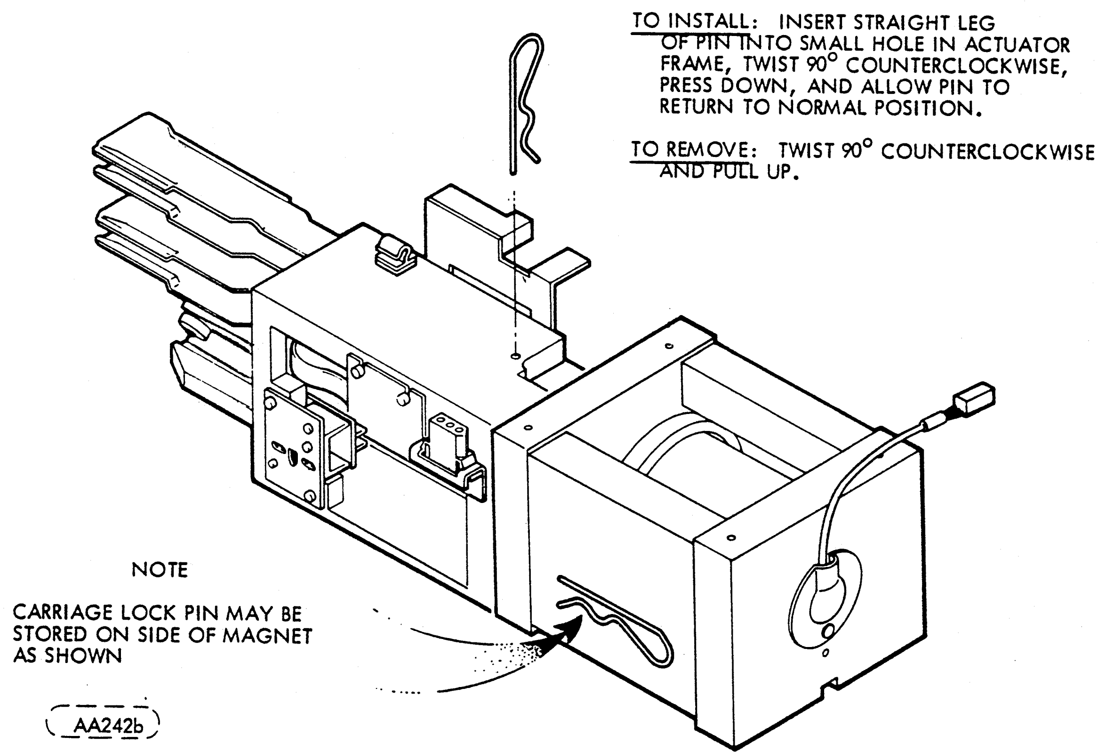


Figure 3-1. Carriage Lock Pin Location

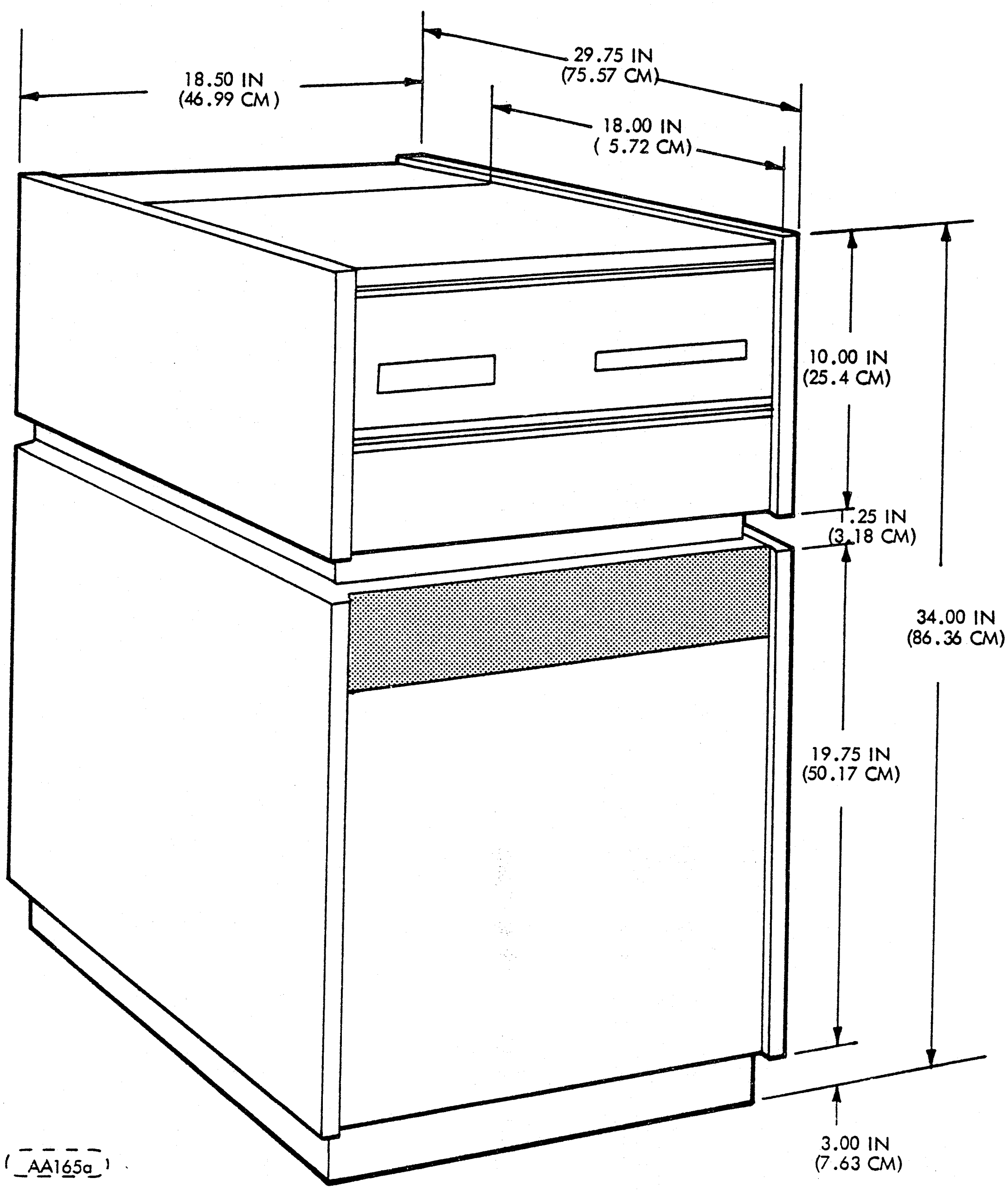


Figure 3-2. Base Cabinet Dimensions

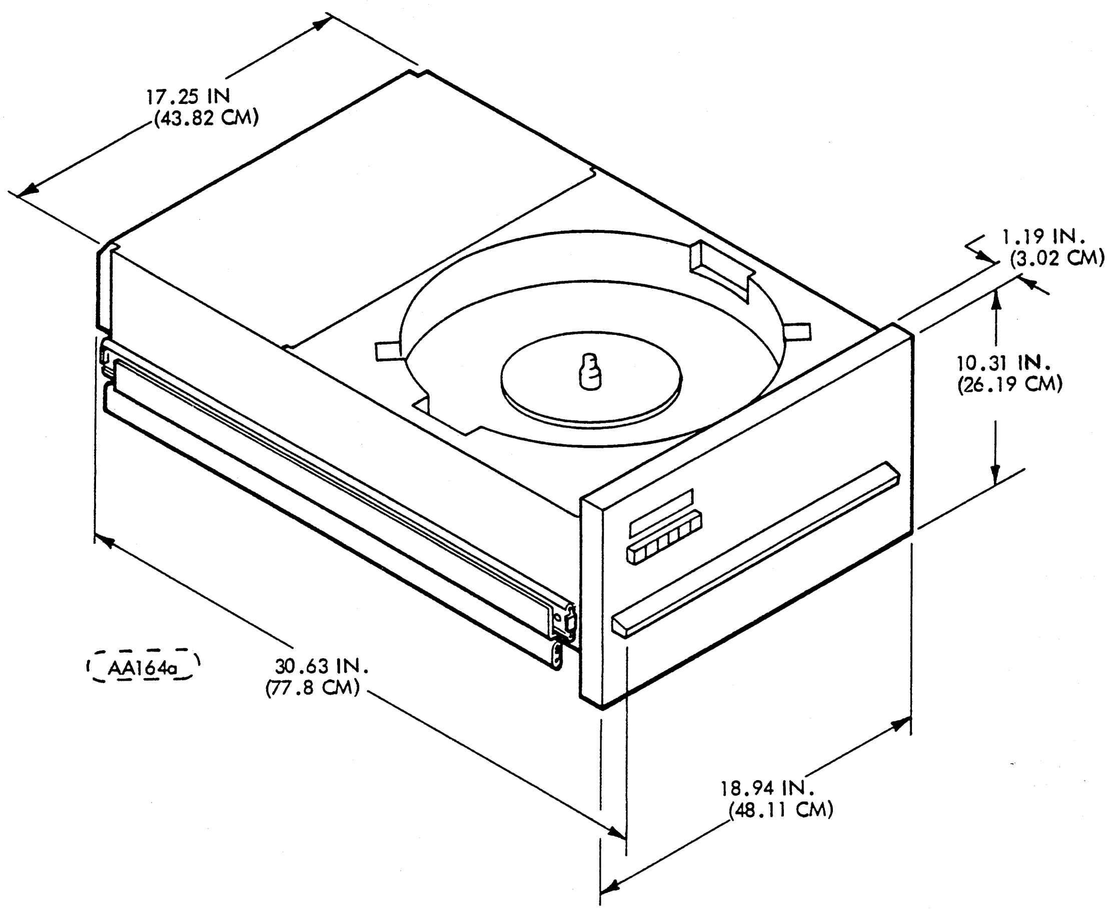


Figure 3-3. Rack Mount Unit Overall Dimensions (Grant Slider Attached)

3.5 -contd.

7. Adjust the width across the outsides of the slides to be 17.75 to 17.80 inches (45,09 to 45,21 centimeters). 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 (8 centimeters). 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 (15 centimeters). 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 76 centimeters), 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!.

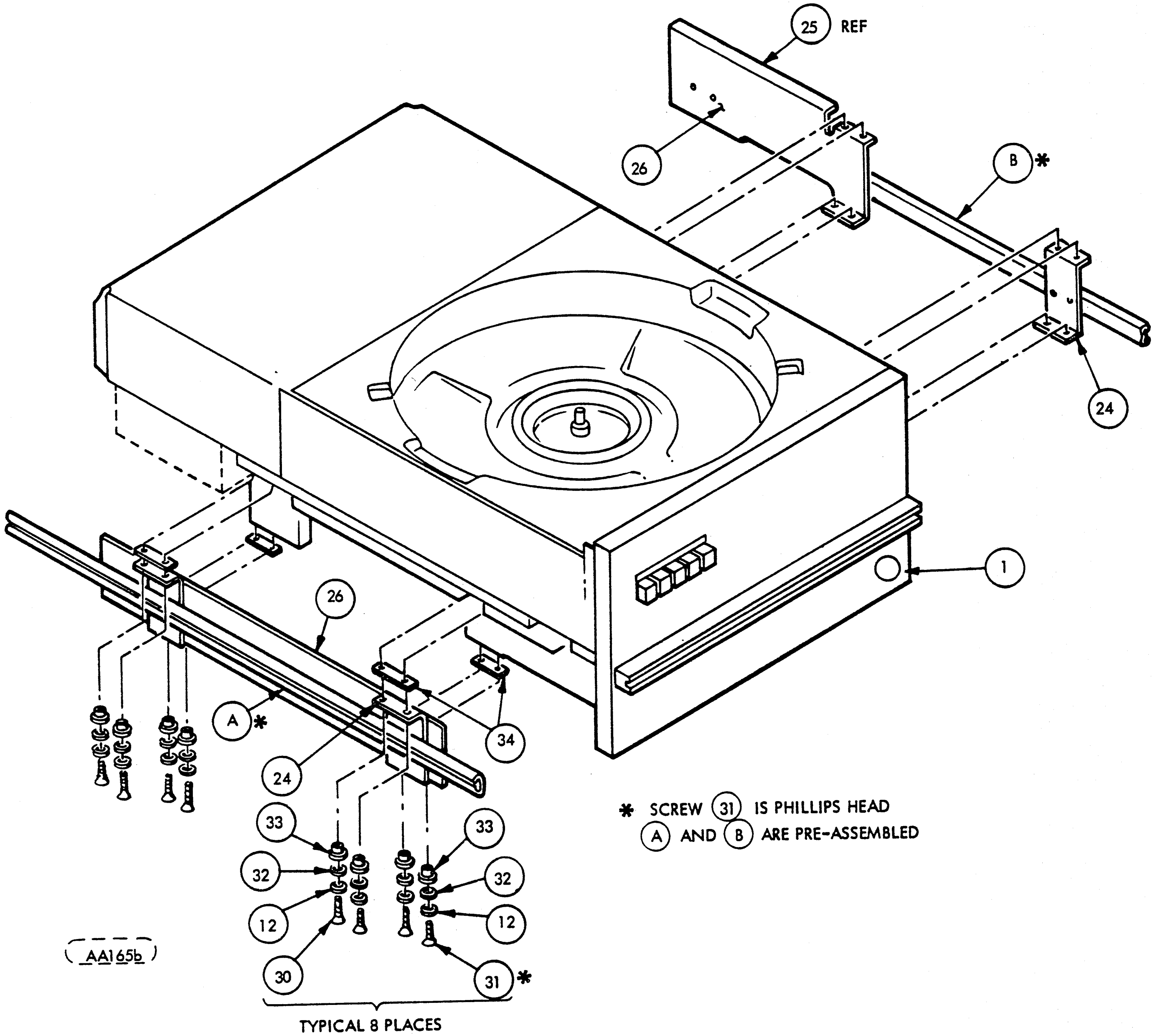
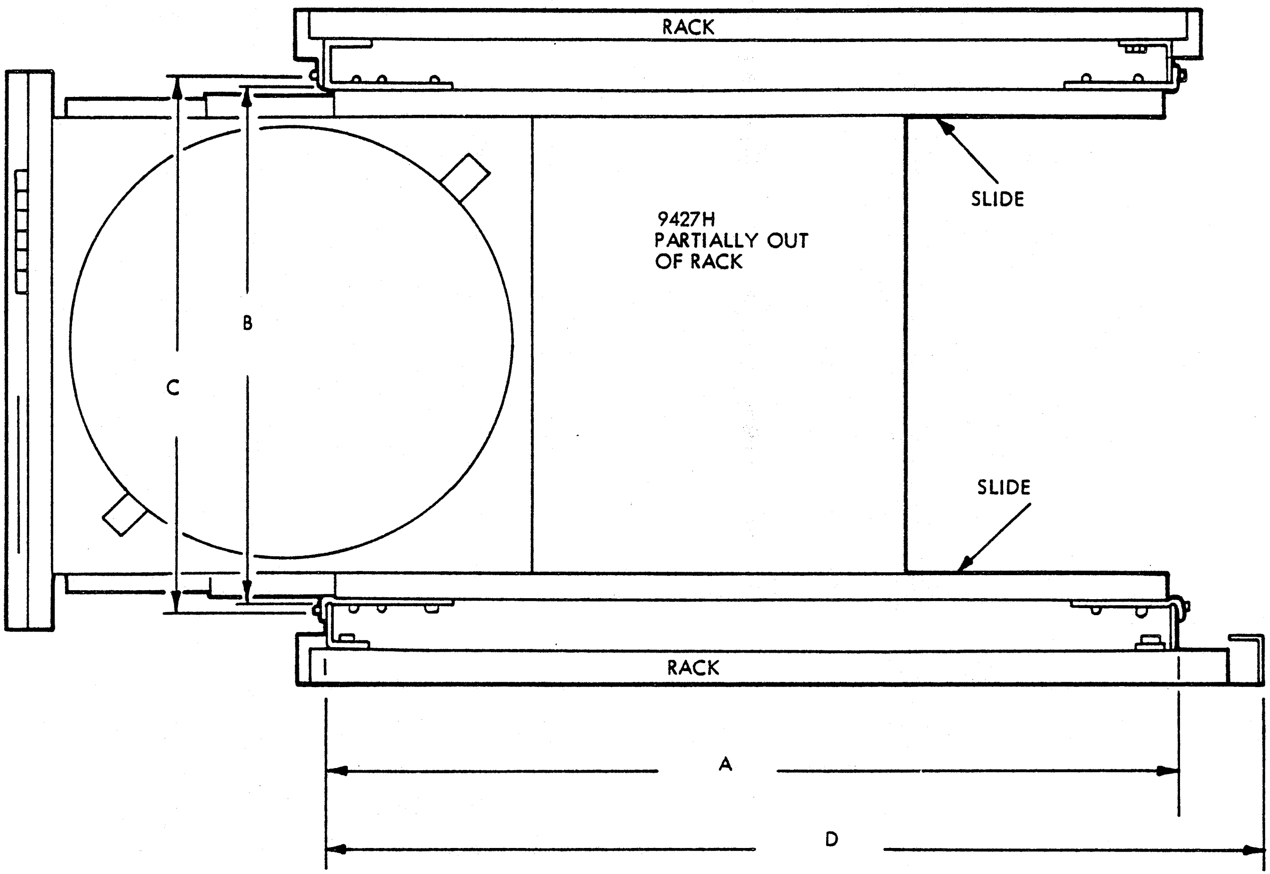


Figure 3-4. Side Rail Mounting



	GRANT SLIDES	ACCURIDE SLIDES
A. DISTANCE FROM FRONT MOUNTING RAILS TO REAR MOUNTING RAILS	28.50 - 29.00 IN. (72,39 - 73,66 CM)	21.25 - 22.12 OR 27.50 - 28.50 IN. (53,98 - 56,18 OR 69,85 - 72,39 CM)*
B. MINIMUM CLEARANCE BETWEEN MOUNTING RAILS (FRONT AND REAR)	17.75 IN. (45,09 CM)	17.625 IN. (44,77CM)
C. DISTANCE BETWEEN MOUNTING HOLES (FRONT AND REAR)	18.31 - 18.51 IN. (46,51 - 47,02 CM)	17.86 - 18.56 IN. (45,36 - 47,14 CM)
D. MINIMUM LENGTH OF CABINET FROM FRONT MOUNTING RAILS (CABLE AND CONNECTOR CLEARANCE)	30.10 IN. (76,45 CM)	30.10 IN. (76,45 CM)

*These limits may be increased by 1.00 IN. (2,54 CM) on the high ends, but the slide extension will be correspondingly reduced.

AA167a

Figure 3-5. Rack Mount Slides Dimensions

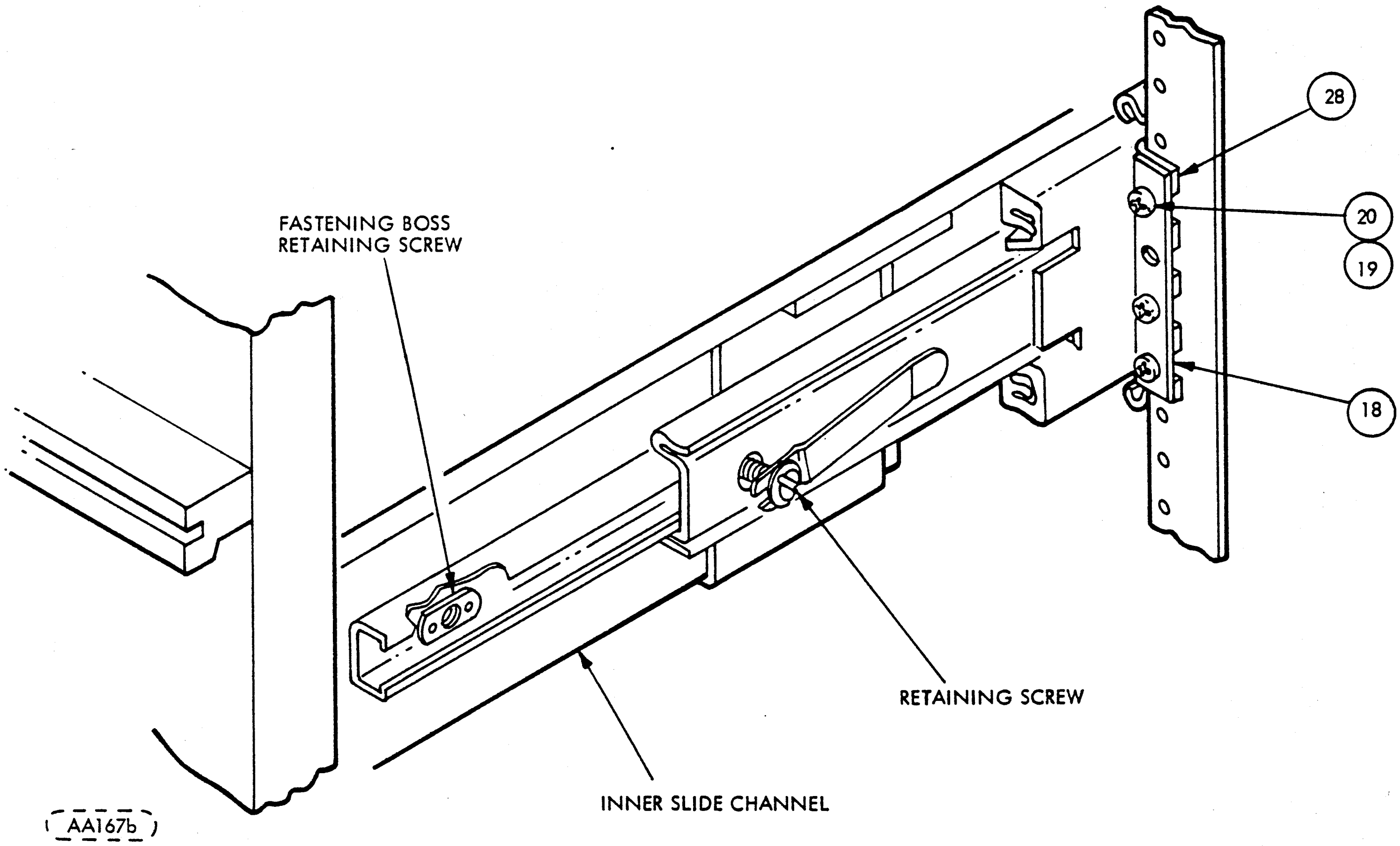


Figure 3-6. Inner Slide Extension Front Mounting Bracket

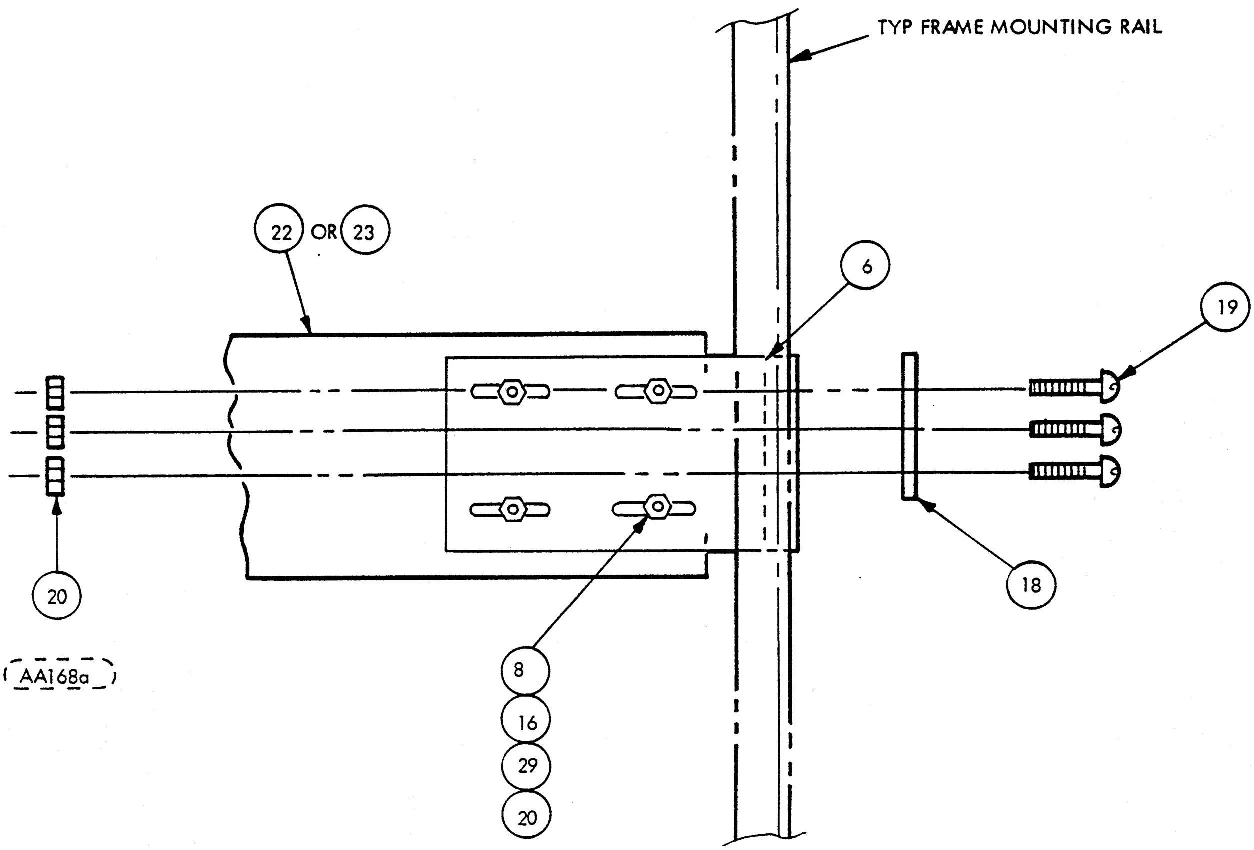


Figure 3-7. Rear Mounting Bracket

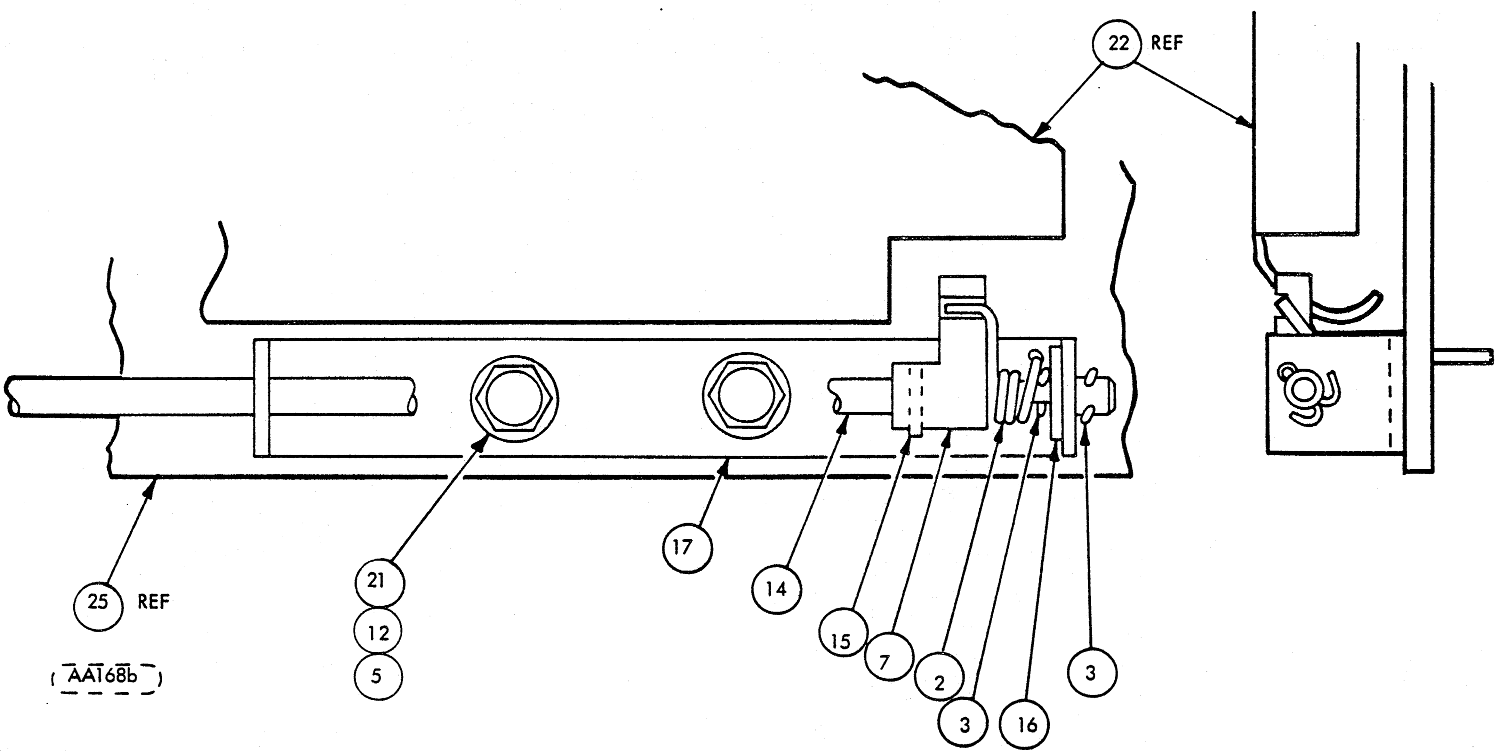


Figure 3-8. Pivot Bracket and Latch Assembly

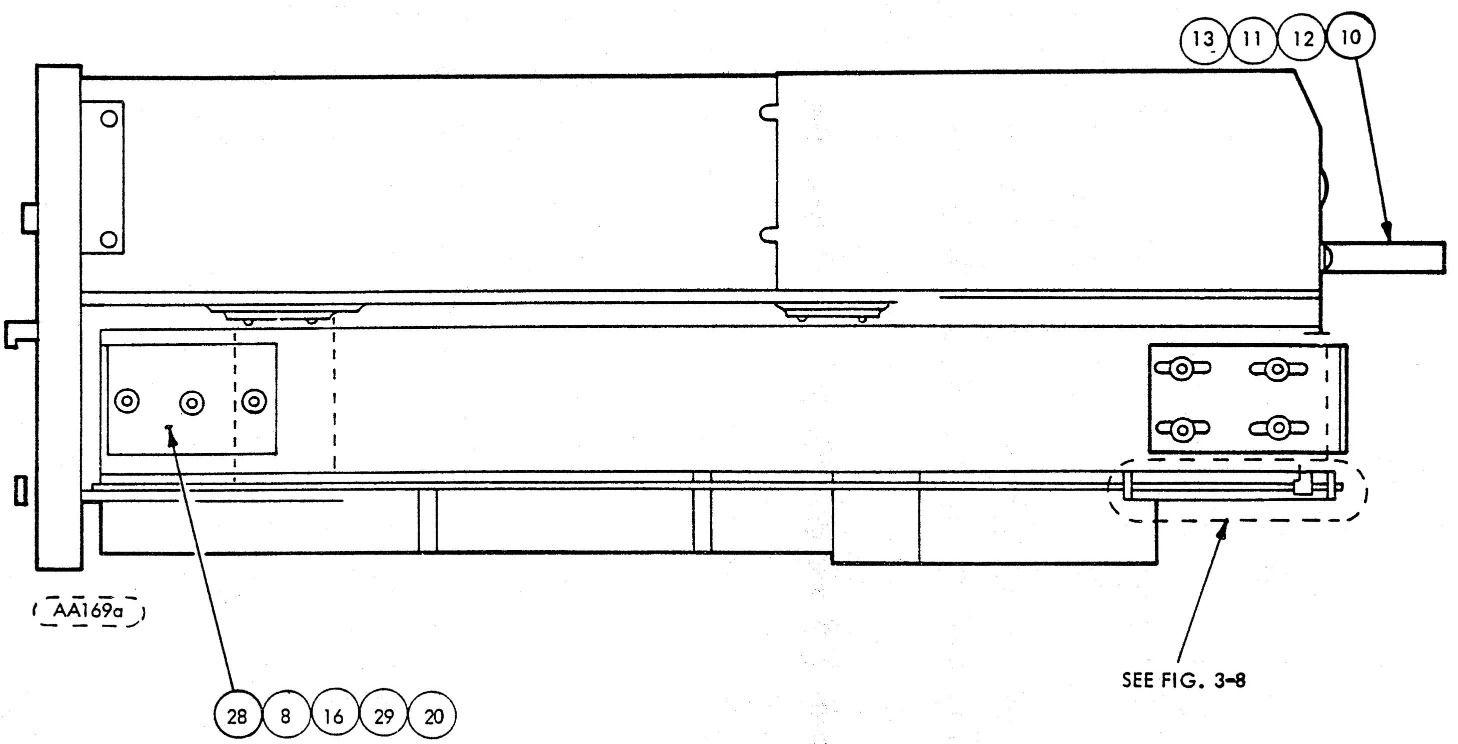


Figure 3-9. Right Side Rack Mount & Cable Fender

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 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 inch 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 (2,54 centimeters) 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 if 16.45 ± .030 inches. (41, 78 ±08 cm).

NOTE

The correct mounting hardware for the above step is twelve 10-32 x 5/8 inch 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 (74cm). The intermediate catch at 18 inches (46 centimeters) 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 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 pan head machine screw (4), No. 8 internal tooth lock washer (14), 8-32 x 1/4 inch 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 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 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. Remove lower electronics cover.
2. Loosen the sensor mount screw. (See Figure 3-11)
3. Lift rear of sensor mount and place the guide pin in the Sensor mount hold selected in Table 3-1.
4. Tighten the sensor mount screw.
5. Perform the Fixed Disk Index/Sector Transducer Check and Adjustment in the maintenance section 6.

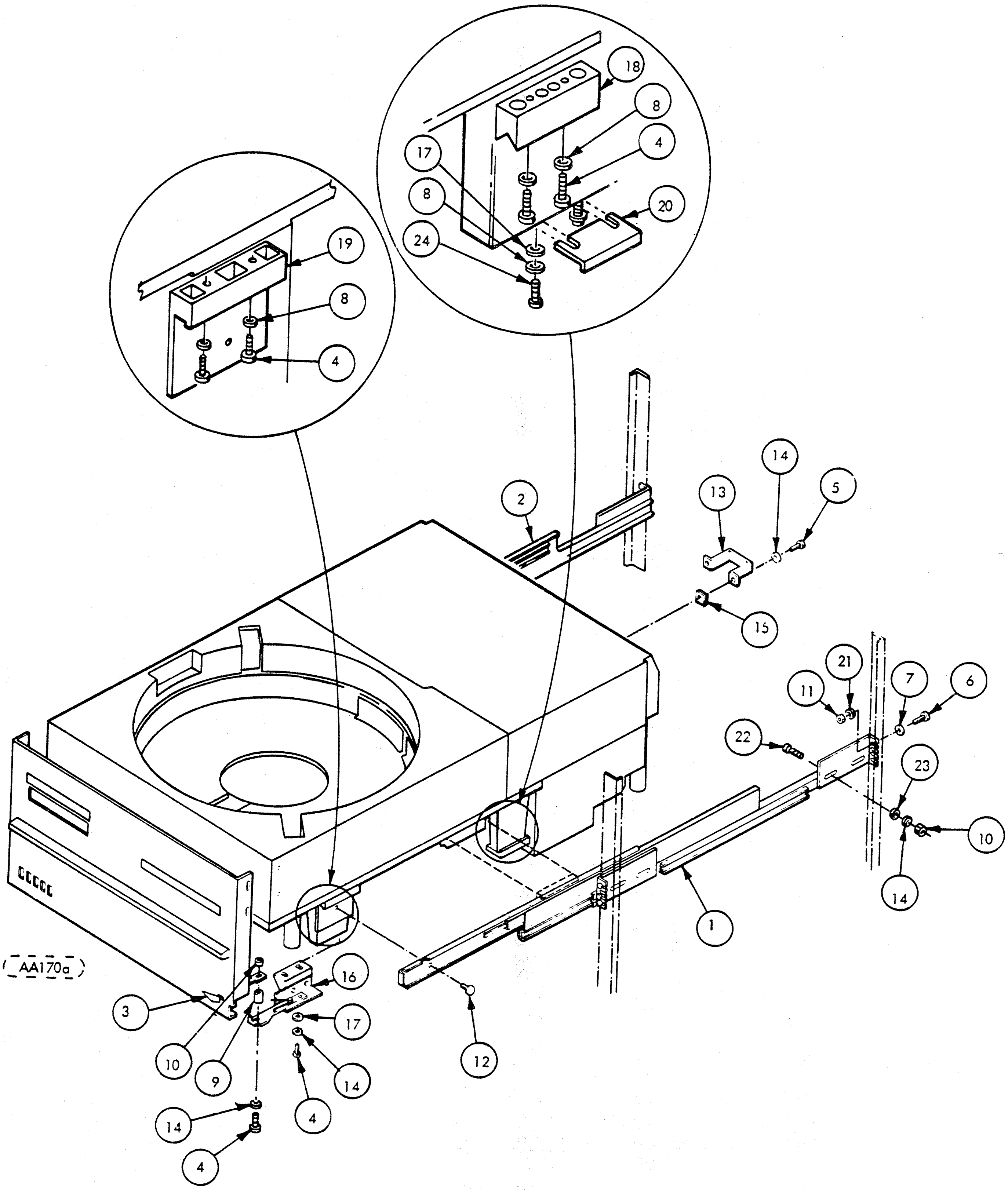


Figure 3-10. Rack Assembly Mounting

3.7 -contd.

6. Replace lower electronics cover.

Table 3-1. Sector Option Conversion

REQUIRED SECTOR (Switch setting for sector)	SENSOR MOUNT Hole #	RING 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 (8 ring)	7	56
72, 36, 18, 9 (8 ring)	8	72

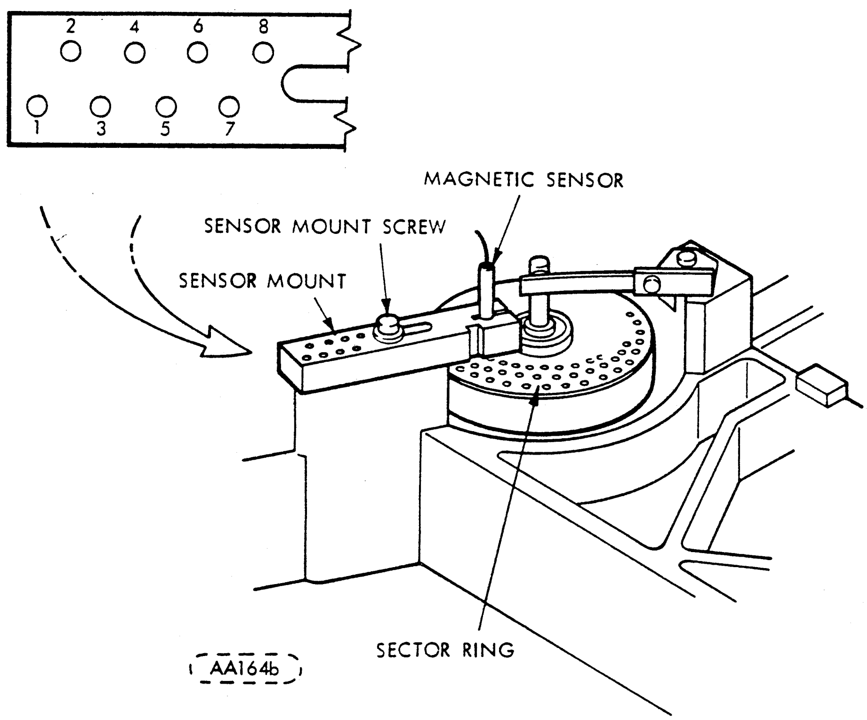


Figure 3-11. Sector Option Conversion

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

HZ	RPM	Pulley #	Pulley Dia.	Belt #	Belt Length
50	2400	77599701	2.881"	75722940	30.375"
60	2400	77599702	2.404"	75722930	29.625"
50	1500	77599703	1.761"	75722920	28.625"
60	1500	77599704	1.479"	75722910	28.125"

3.9 CABLING AND CONNECTION

Unit Intracabling

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

3.9.1 -contd.

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 120V, the CSA Certifications Marker must be removed from the equipment in order to comply with requirements of the Candian Standards Association.

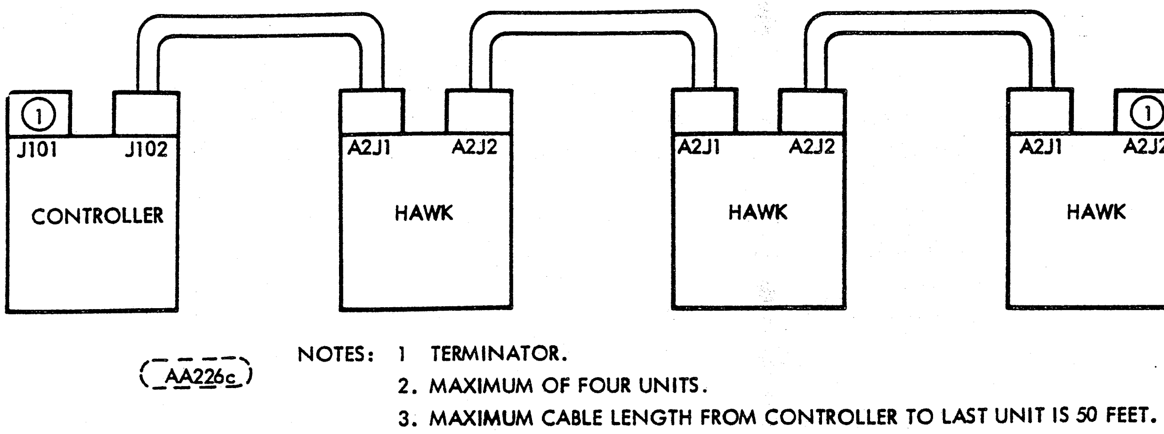


Figure 3-12 Daisy Chain Configuration

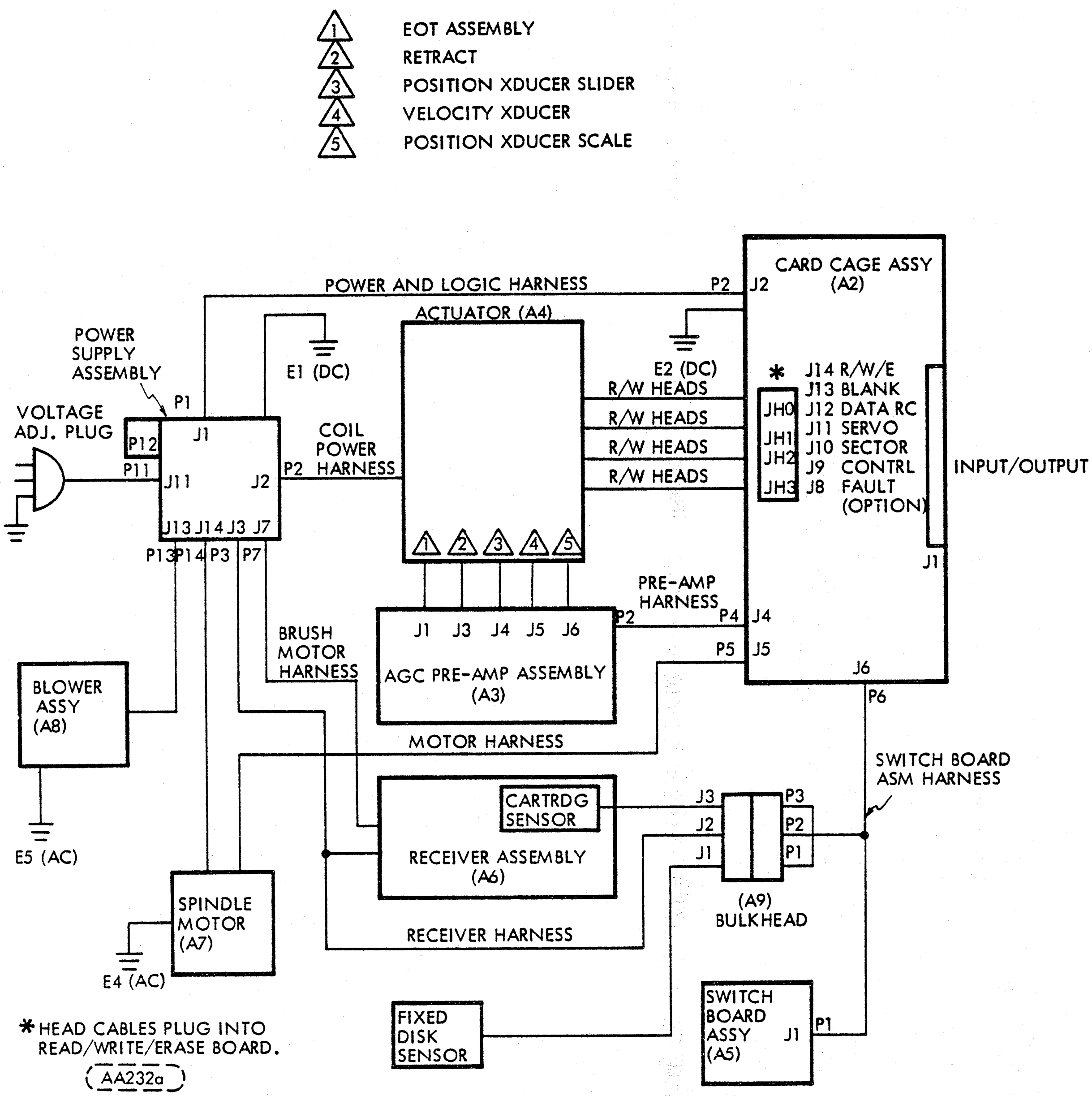


Figure 3-13. Simplified Intracabling Diagram

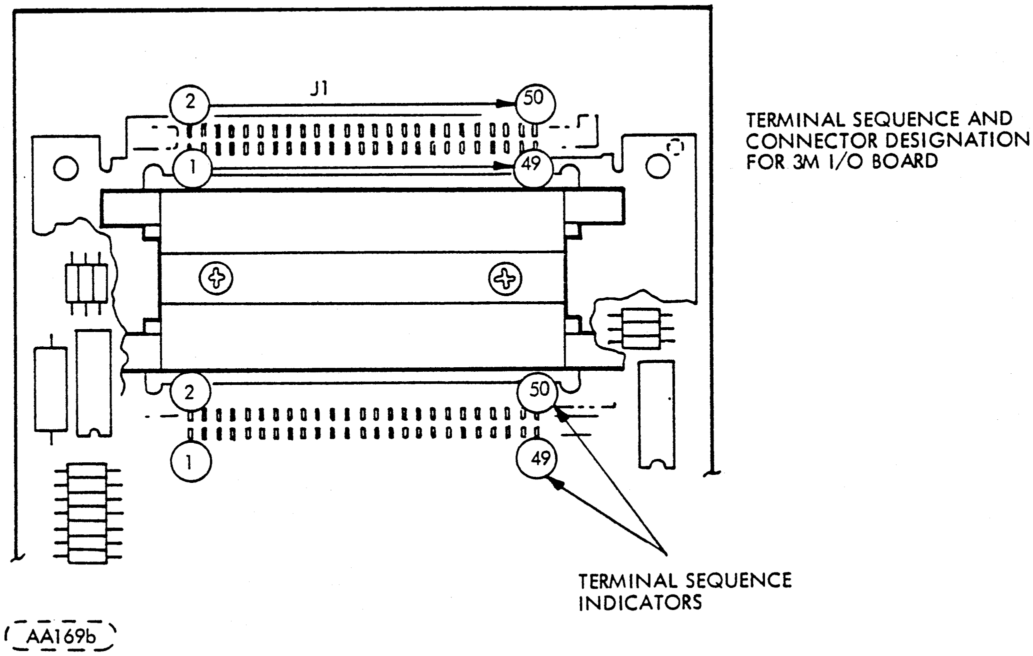


Figure 3-14. 3M I/O Board Connector Terminal Assignments

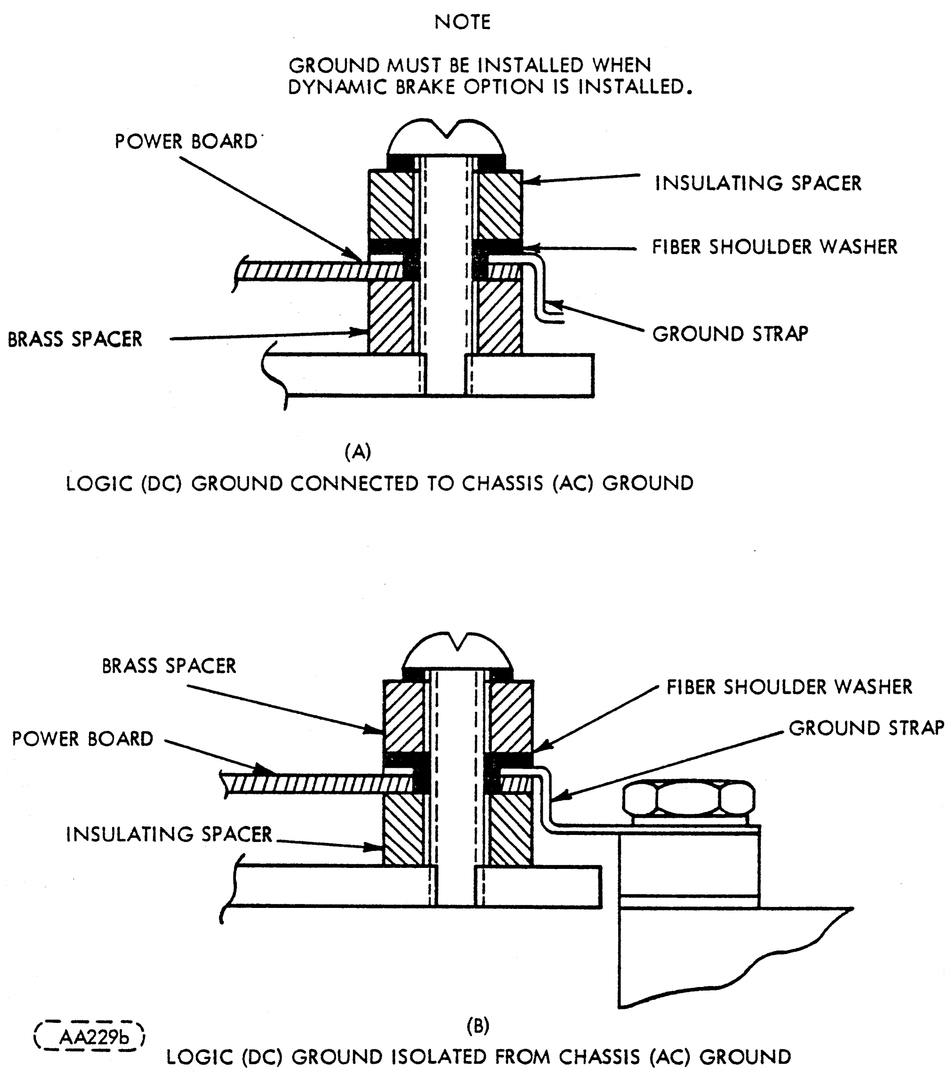
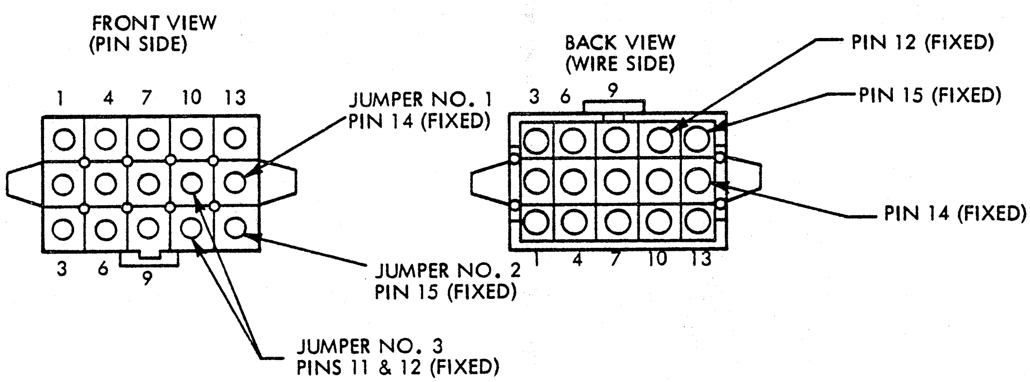


Figure 3-15. Grounding Option



NOTE

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

	JUMPER #1		JUMPER #2	
VOLTAGE	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 (12°F/hr maximum fluctuation) 10 to 80% relative humidity (provided there is no condensation)
Non-operating status	-30 to +150°F 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.

3.13 (Continued)

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:

```
RUN    (C.B.     U39 - 4)
 |       |        |    └──── Pin
 |       |        └───────── Component reference designa-
 |       |                   tion or connector pin.
 |       └────────────────── Circuit board abbreviation
 └────────────────────────── Signal term
```

Circuit board abbreviations used in this description are as follows:

- C.B. = Control Board
- S.C. = Sector Board
- D.R. = Data Recovery Board
- P.B. = Power Board
- S.B. = Servo Board
- R/W/E = Read/Write/Erase Board
- I.P. = Inductosyn Preamplifier 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 $\overline{\text{READY}}$ (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).

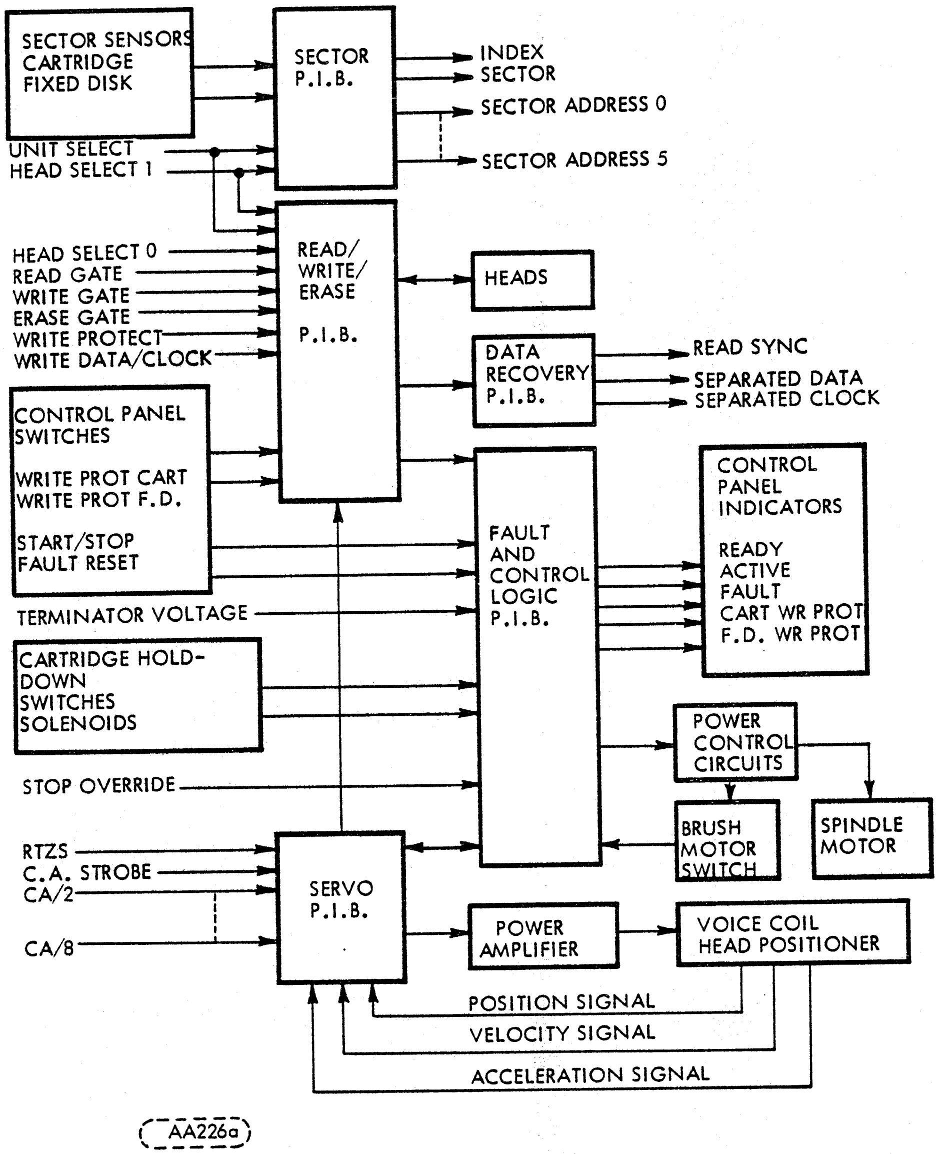


Figure 4-1. Model 9427H Block Diagram

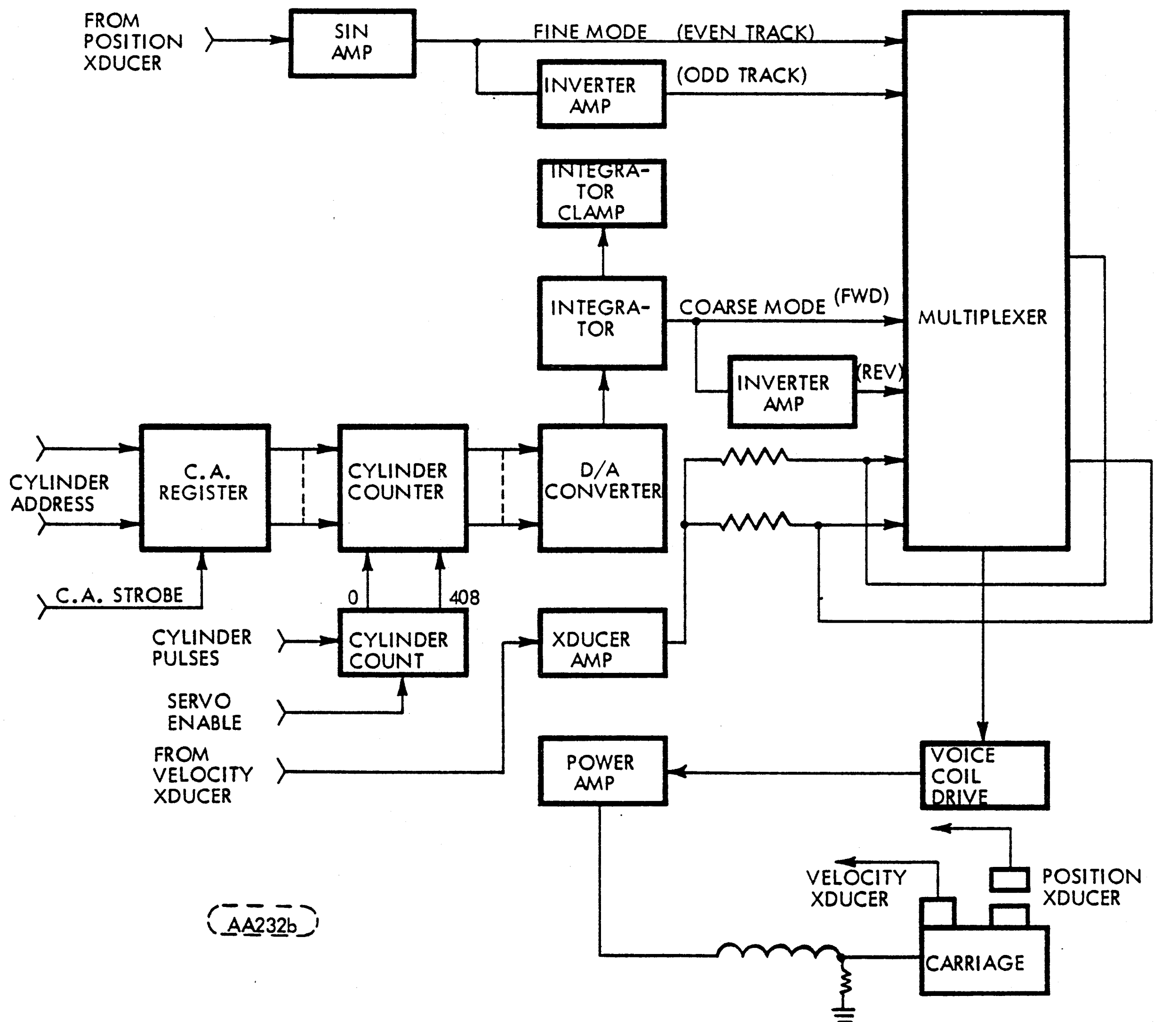


Figure 4-2. Servo System Block Diagram

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. $\overline{\text{SKER}}$ (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).

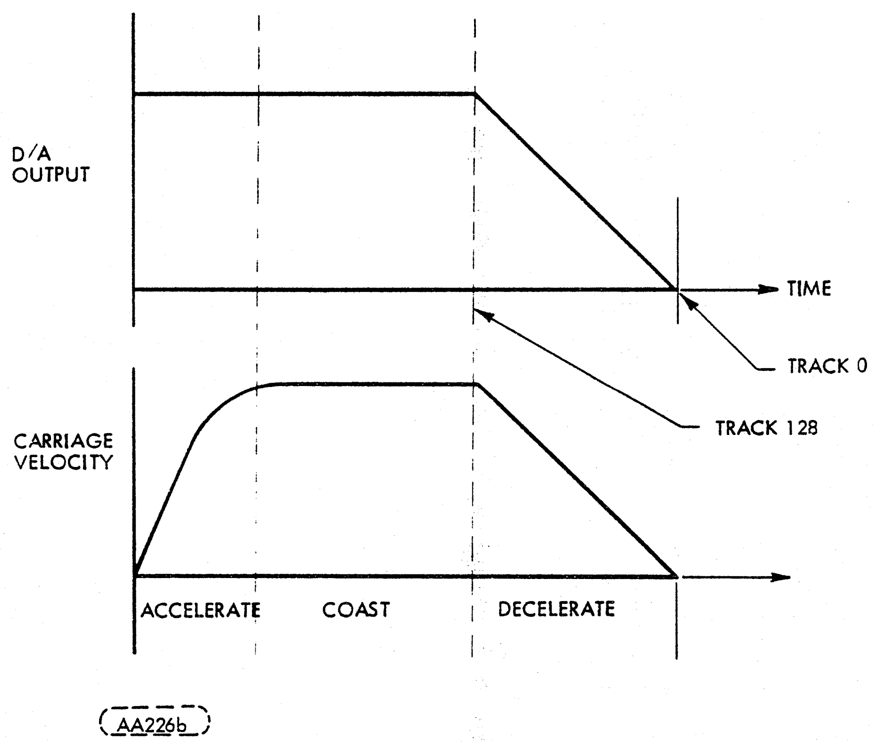


Figure 4-3. Seek Velocity Profile

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. 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 $\overline{\text{ER EN}}$ (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 simaltaneously 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.

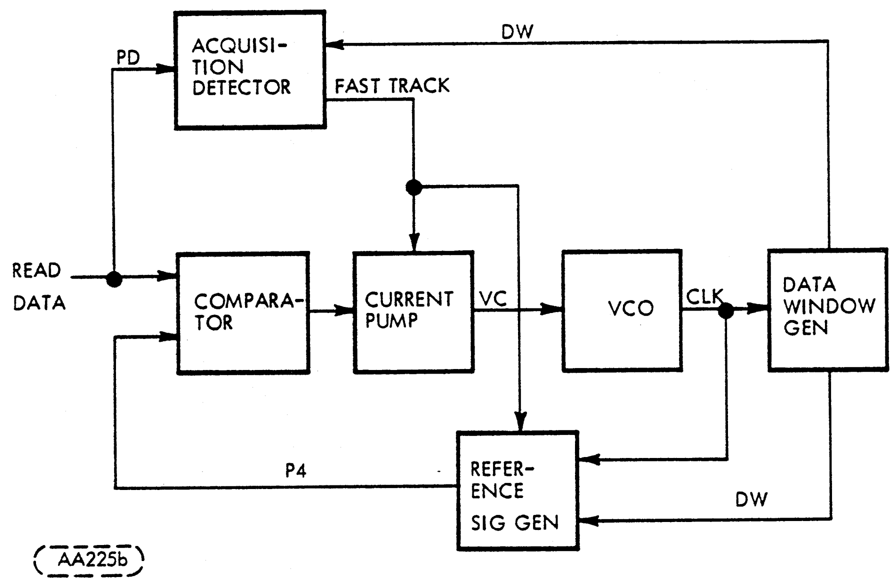
Initially, the comparator (D.R. U27) derives a phase error signal between the pulsed data (double frequency data) and the out-of-lock reference signal. This TTL signal is applied to the current pump (D.R. Q1, 2, 3, 10, 11, 12) where it is integrated to develop a dc level (Vc).

Vc 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, Vre, 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 (Vc) 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 Vc 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).



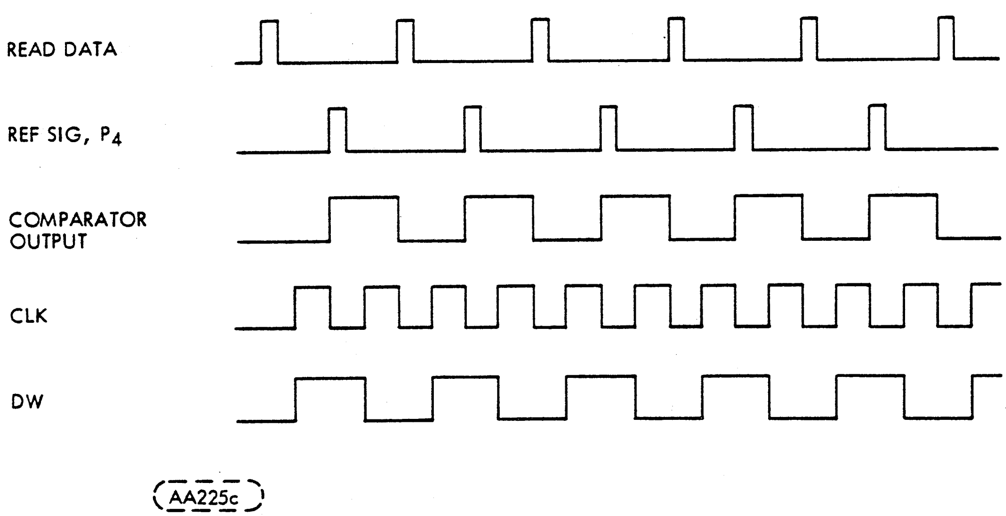


Figure 4-4. Digital Phase - Lock Loop And Timing Diagram

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 are 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 outputed 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.

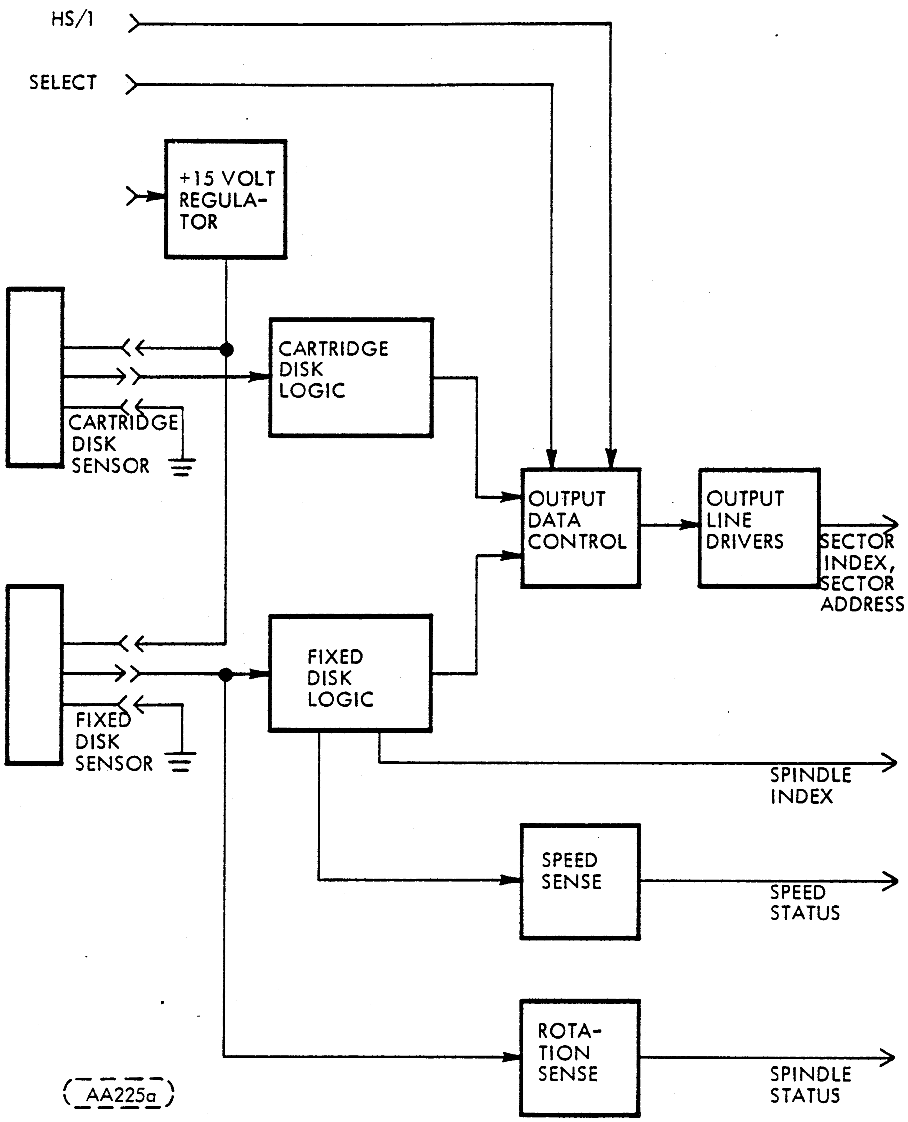


Figure 4-5. Sector System Block Diagram

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 failture 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 occurance of any non-transient voltage fault will set the emergency retract latch causes the disk drive to generate the term $\overline{\text{FAULT}}$ (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. When the carriage contacts the reverse stop microswitch, (A4SW1), REV STOP (P.A. J2-12) is generated. One-half second after the occurence 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 examing 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 posotive 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 strips of copper, spaced 0.005 inches 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.

4.8.2 -contd.

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 occuring every 0.005 inches (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.

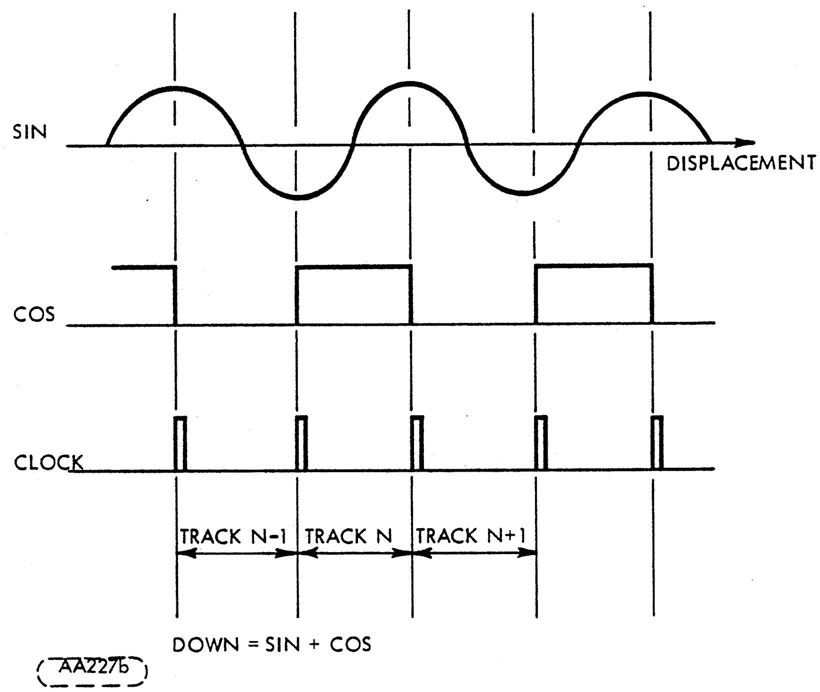


Figure 4-6. Counting Logic

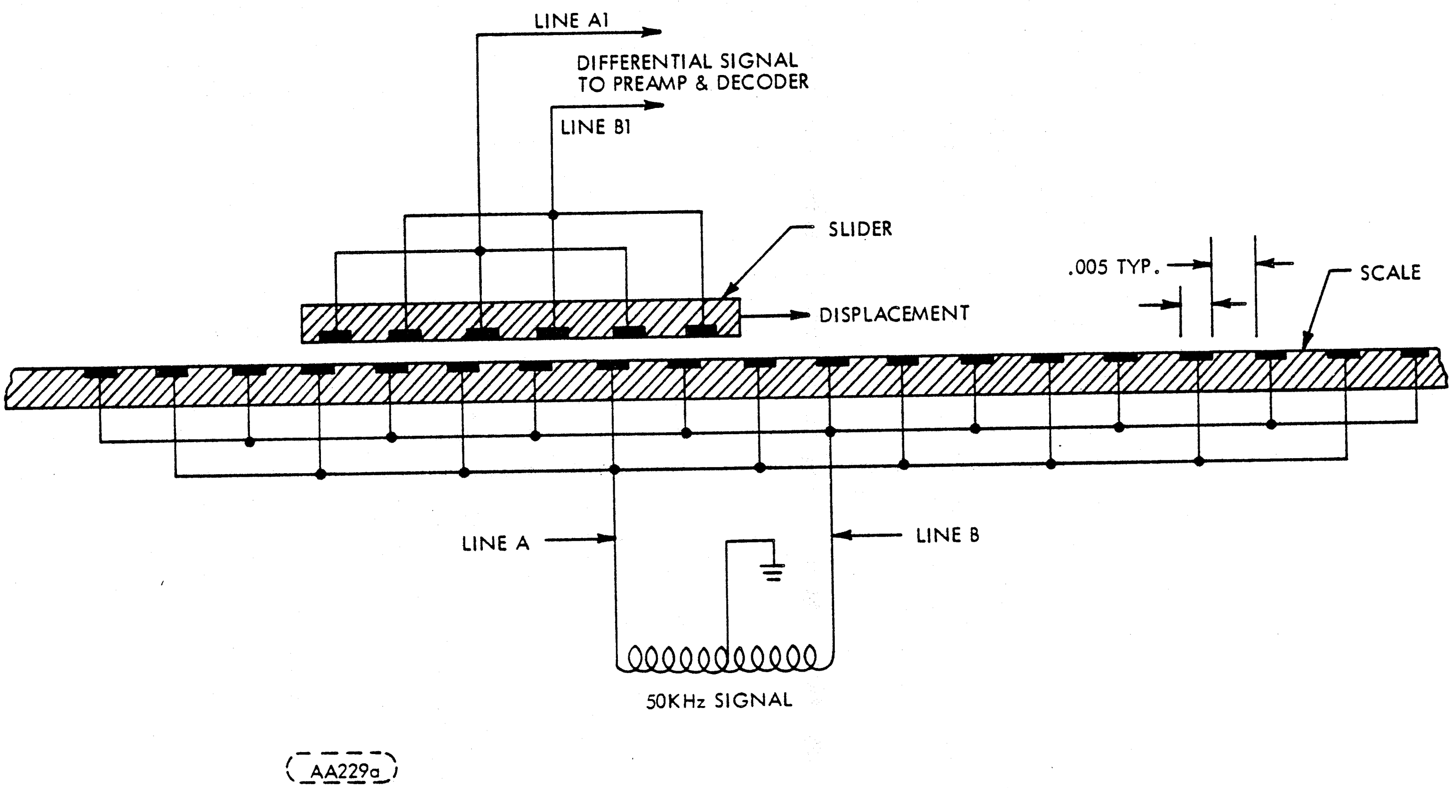


Figure 4-7. Capacitively Coupled Linear Displacement Transducer

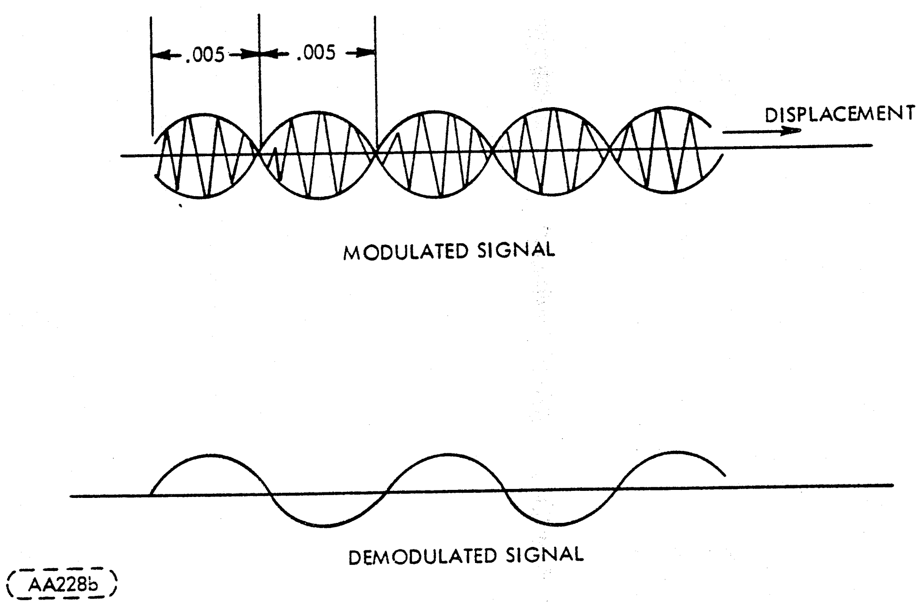


Figure 4-8. Position Transducer Signal

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.

CIRCUIT BOARD TITLE	BOARD IDENT. NO.	FIGURE NO.
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)

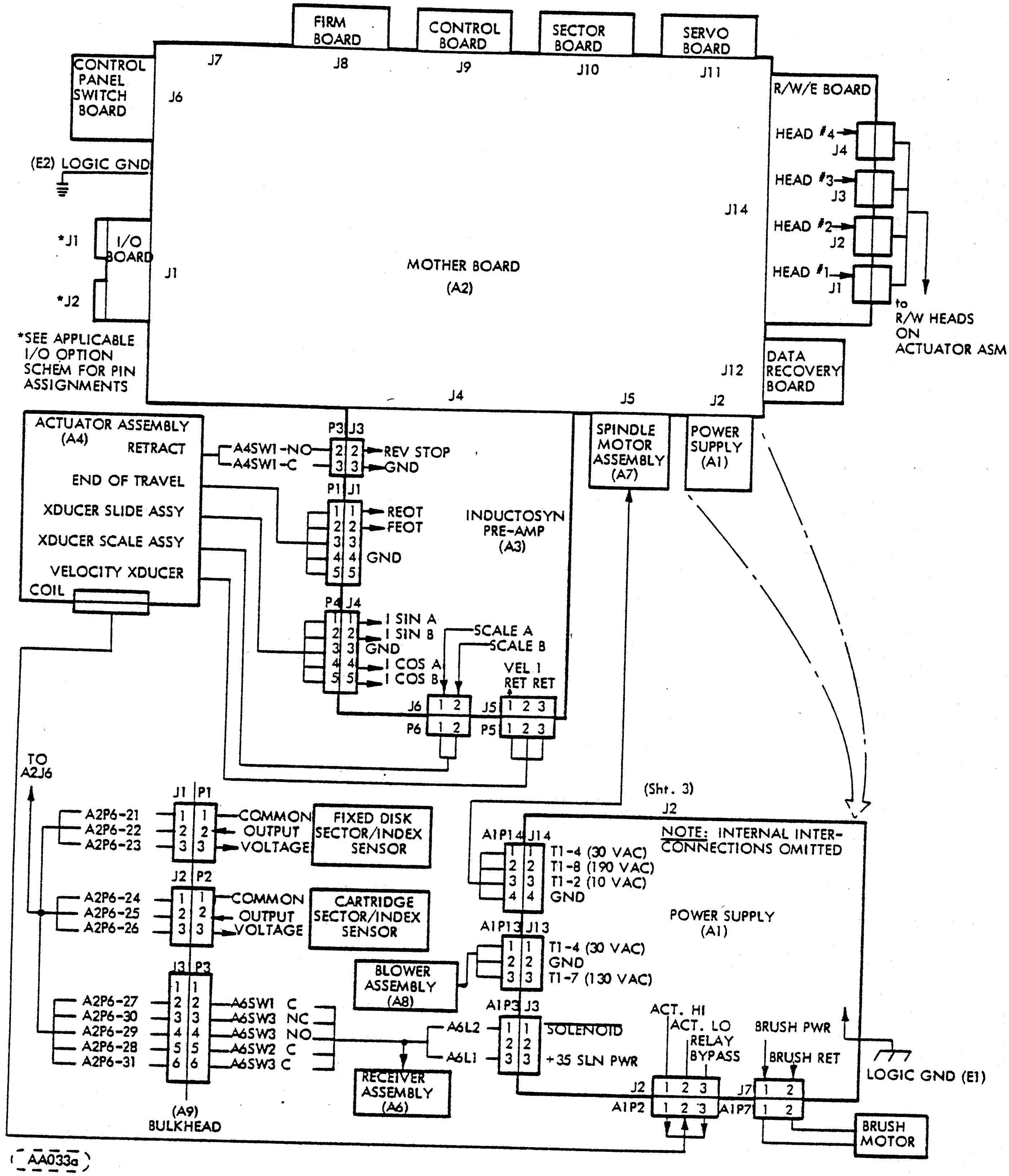


Figure 5-1. Detailed Intracabling Diagram (Sheet 1 of 2)

FIRM BOARD

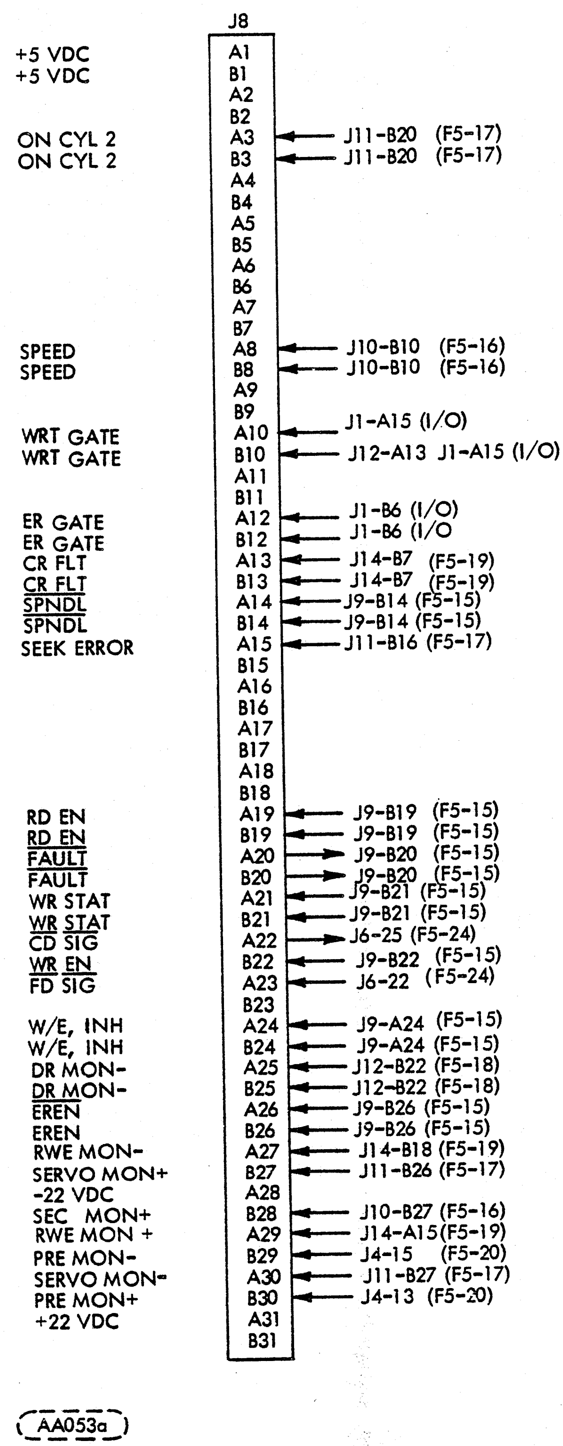
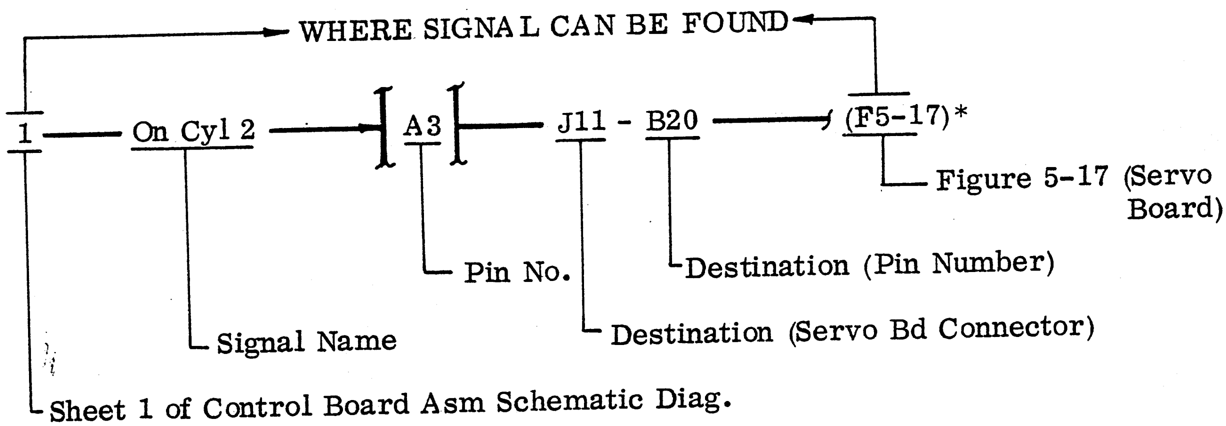


Figure 5-1. Detailed Intracabling Diagram (Sheet 1 of 2)

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 accompaning schematic diagrams 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:

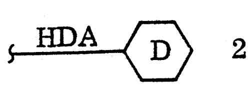
- Sheet to Sheet ON PAGE example:

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

Figure Title	Figure Number
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).

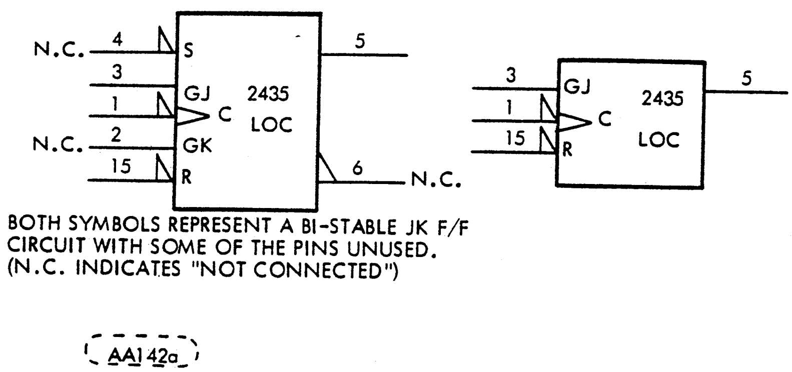
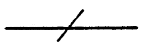
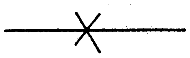
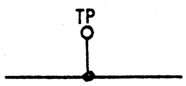
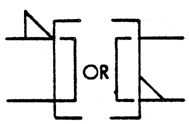
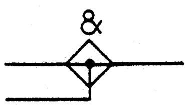
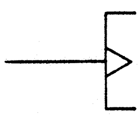
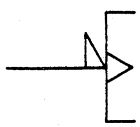
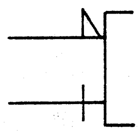
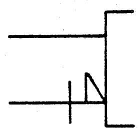
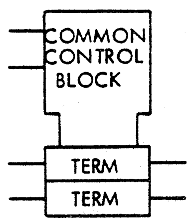
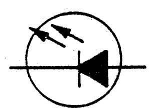
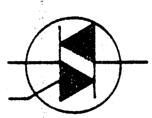


Figure 5-2. Functionally Equivalent Symbols

5.5.3 Symbology

Logic Symbols are as described in Table 5-1.

Table 5-1. Logic Symbology

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

AA142c

5.5.4 Function Symbology

Function symbols are as described in Table 5-2.

Table 5-2. Function Symbols

G	OSCILLATOR	X → Y	DECODER
▷	AMPLIFIER	# ↗ ∩	DIGITAL TO ANALOG CONVERTER
&	"AND" GATE	mVR	VOLTAGE REGULATOR OUTPUT VALUE "m"
1	"OR" GATE	MUX	MULTIPLEXER
=1	"EXCLUSIVE OR"	SR	SHIFT REGISTER
F ▷	FUNCTION GENERATOR	CNTR	COUNTER
X/Y OR X/Y	LEVEL CONVERSION	ALU	ARITHMETIC LOGIC UNIT
	SCHMITT TRIGGER	RCVR	RECEIVER
1	SINGLE SHOT		
Σ	SUMMING CIRCUIT		
>m <m	THRESHOLD (ANALOG OUTPUT) OR COMPARATOR (BINARY OUTPUT) PRODUCES A CHANGE IN THE OUTPUT SIGNAL WHEN INPUT EXCEEDS A PREDETERMINED LEVEL "m".		

AA1 42d

5.5.5 Abreviations

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	74S04	TTL HEX INVERTER
243S	15109400	74S112	TTL DUAL J-K FLIPFLOP
175S	1519700	74S74	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	74S00	TTL QUAD 2 INPUT NAND
141S	50254700	74S10	TTL TRIPLE 3 INPUT NAND
208S	50254900	74S20	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.

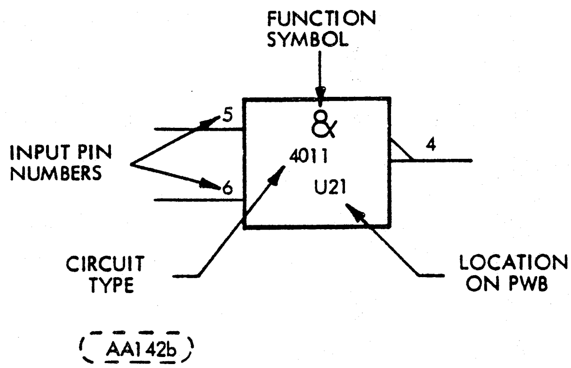


Figure 5-3. Typical Integrated Circuit

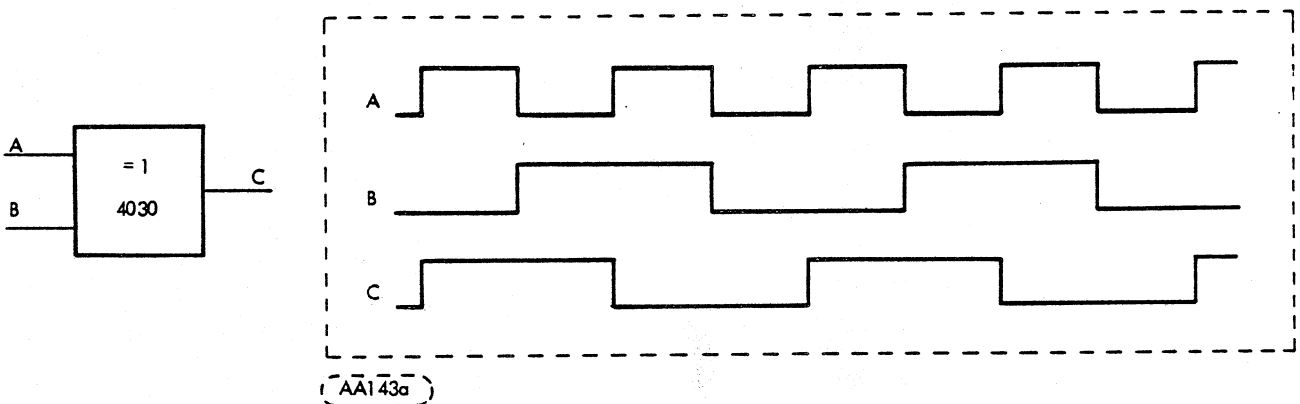


Figure 5-4. Exclusive OR

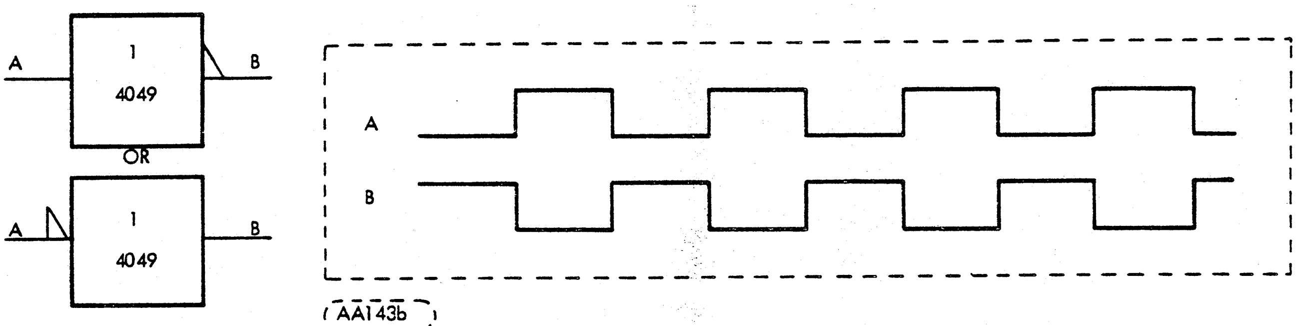


Figure 5-5. Invert

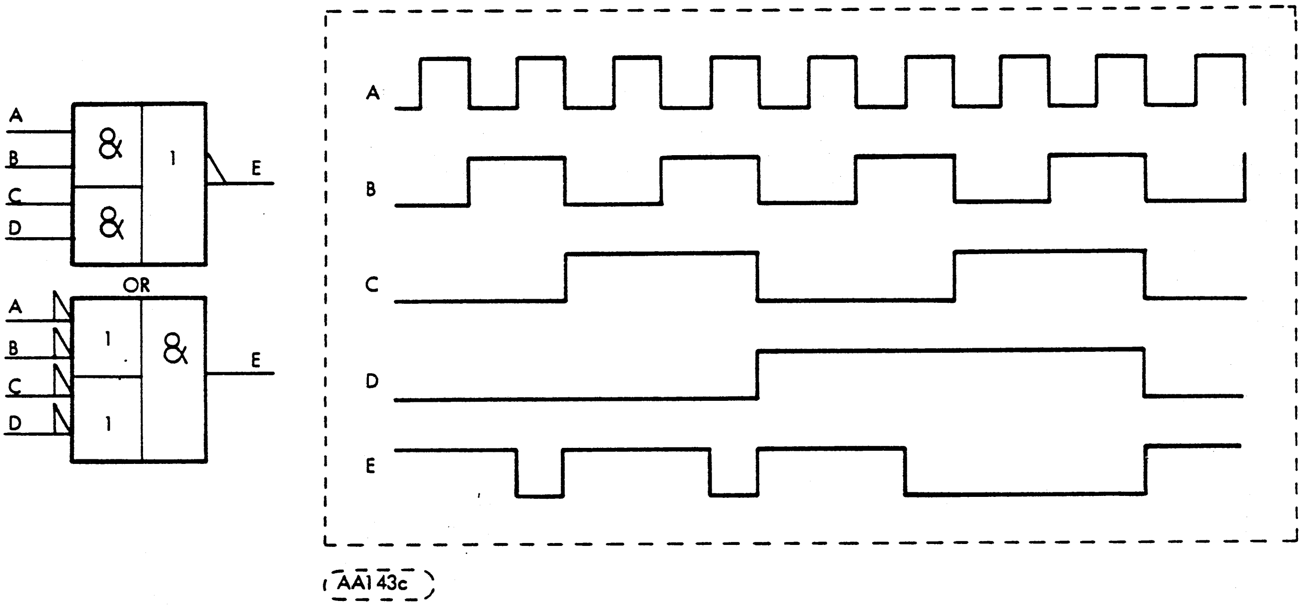


Figure 5-6. AND-OR-INVERT

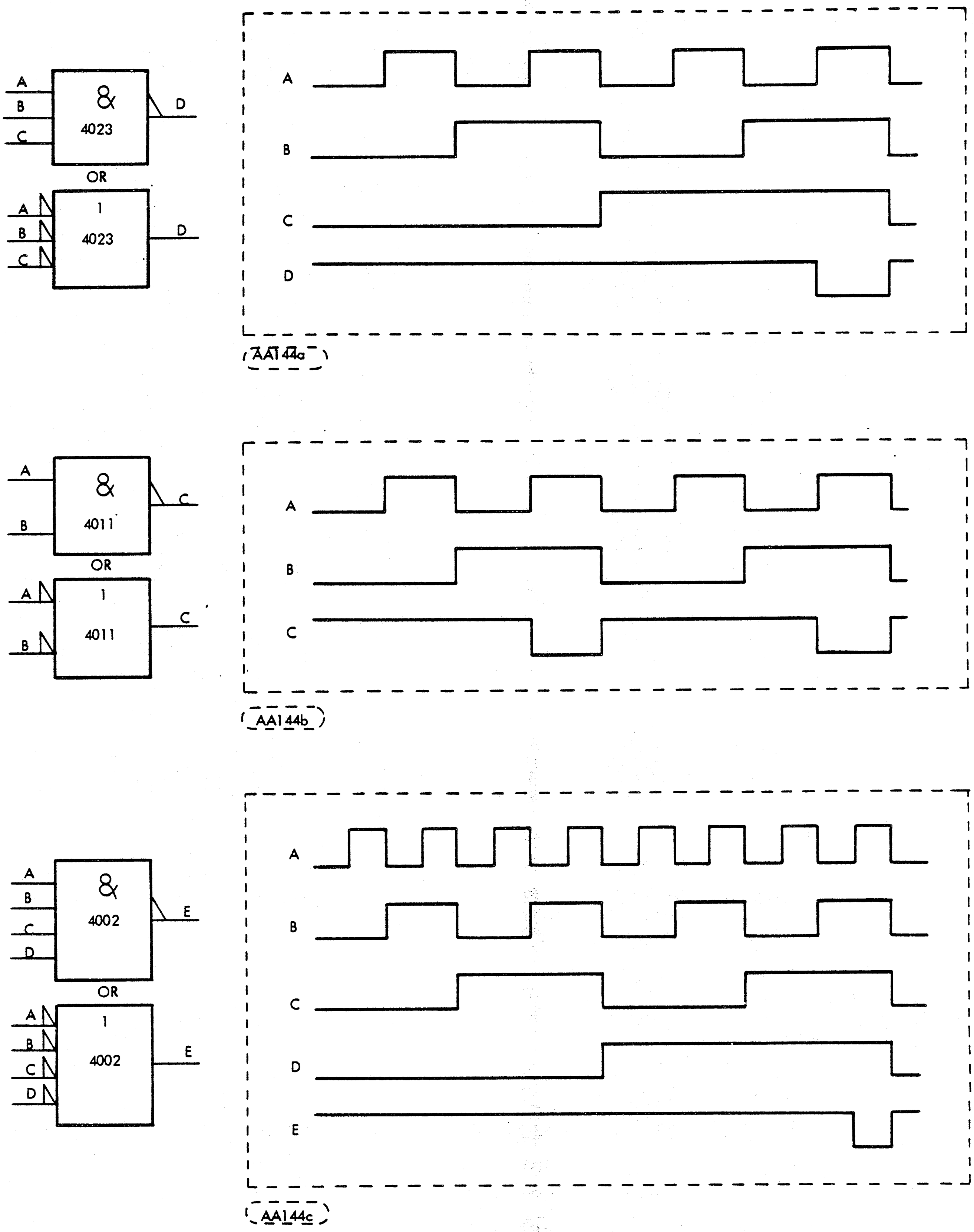


Figure 5-7. Positive NAND Negative NOR

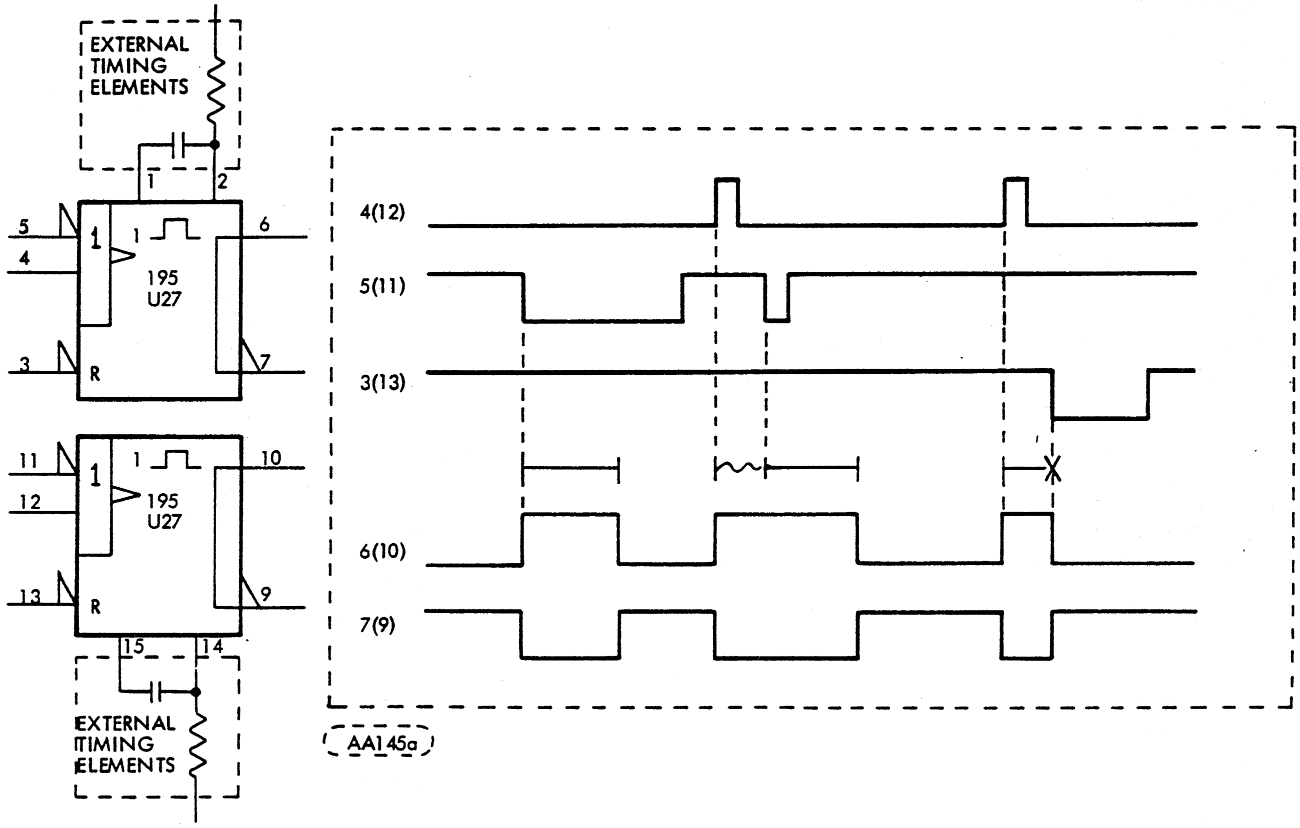


Figure 5-8. Retriggerable, Resettable, Monostable Multivibrator (One Shot)

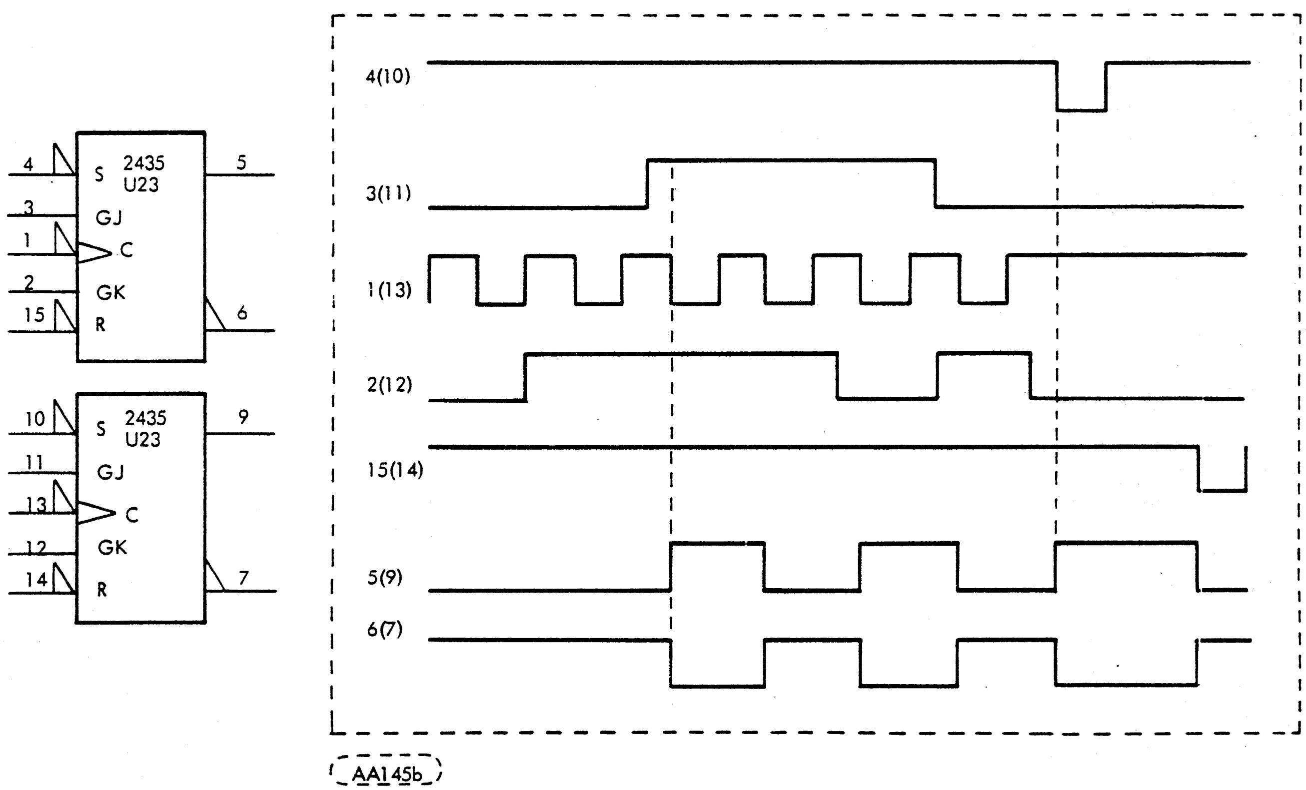
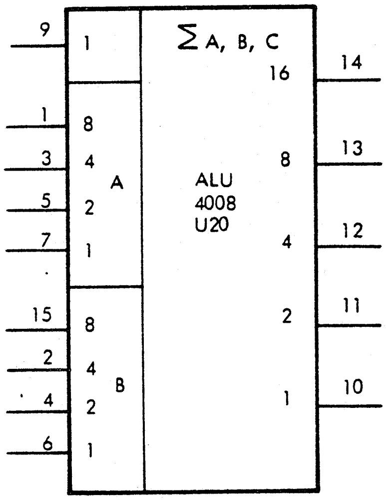


Figure 5-9. 'JK' Type F/F



TRUTH TABLE

INPUT				OUTPUT					
				9 = L, X = L			9 = H, X = H		
6/2	7/3	4/15	5/1	10/12	11/13	X/14	10/12	11/13	X/14
L	L	L	L	L	L	L	H	L	L
H	L	L	L	H	L	L	L	H	L
L	H	L	L	H	L	L	L	H	L
H	H	L	L	L	H	L	H	H	L
L	L	H	L	L	H	L	H	H	L
H	L	H	L	H	H	L	L	L	H
L	H	H	L	H	H	L	L	L	H
H	H	H	L	L	L	H	H	L	H
L	L	L	H	L	H	L	H	H	L
H	L	L	H	H	H	L	L	L	H
L	H	L	H	H	H	L	L	L	H
H	H	L	H	L	L	H	H	L	H
L	L	H	H	L	L	H	H	L	H
H	L	H	H	H	L	H	L	H	H
L	H	H	H	H	L	H	L	H	H
H	H	H	H	L	H	H	H	H	H

X = INTERNAL CARRY
L - LOW LOGIC LEVEL
H = HIGH LOGIC LEVEL

AA1 48a

Figure 5-10. Adder

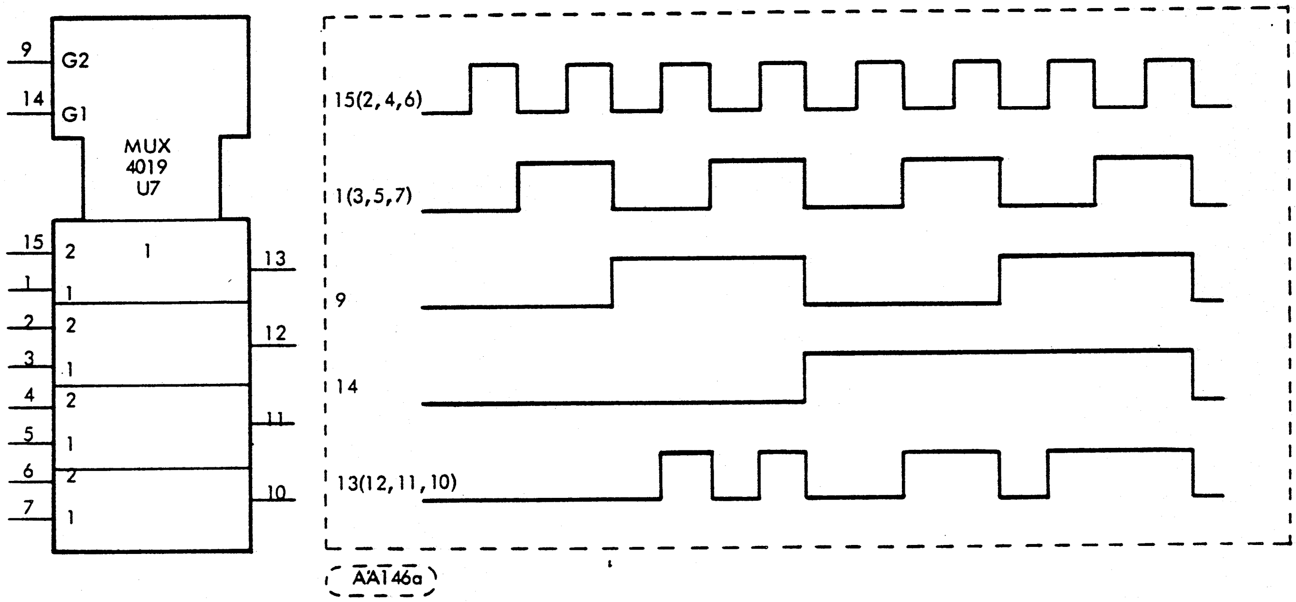


Figure 5-11. Quad 2 X 1 Multiplexer

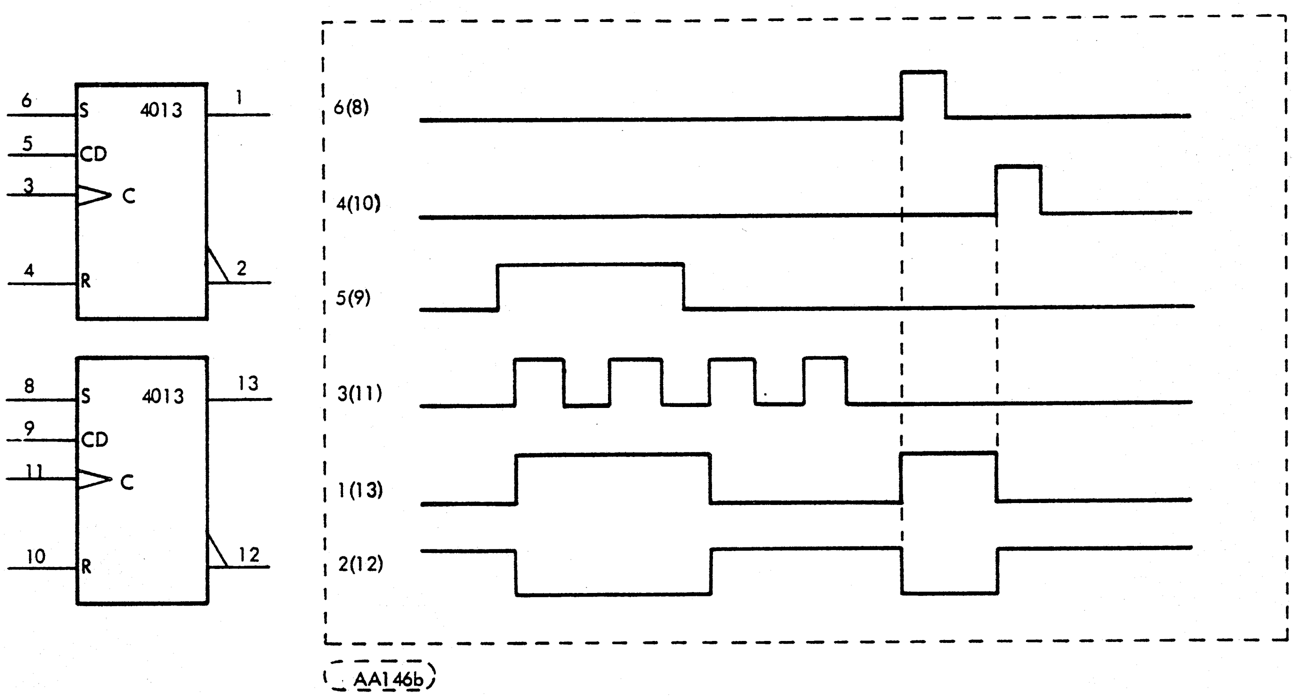
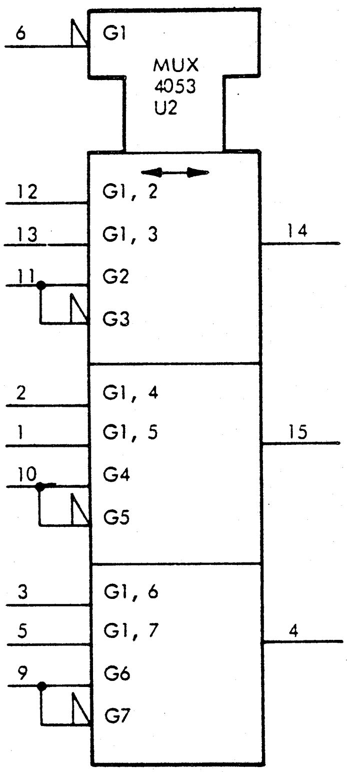
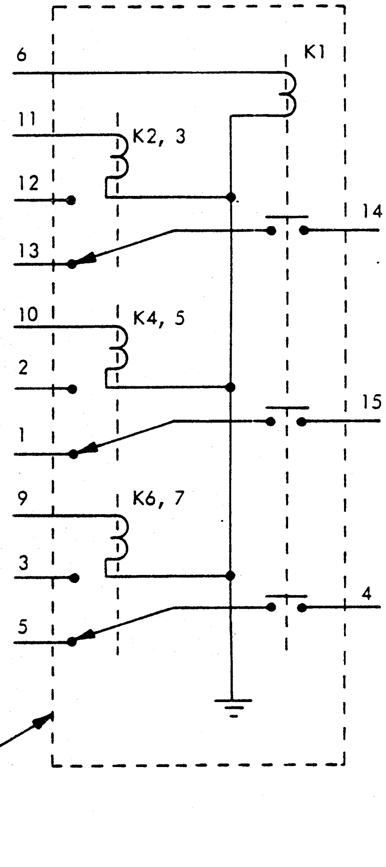


Figure 5-12. 'D' Type F/F



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



AA1 48b

Figure 5-13. Bidirectional Analog Multiplexer

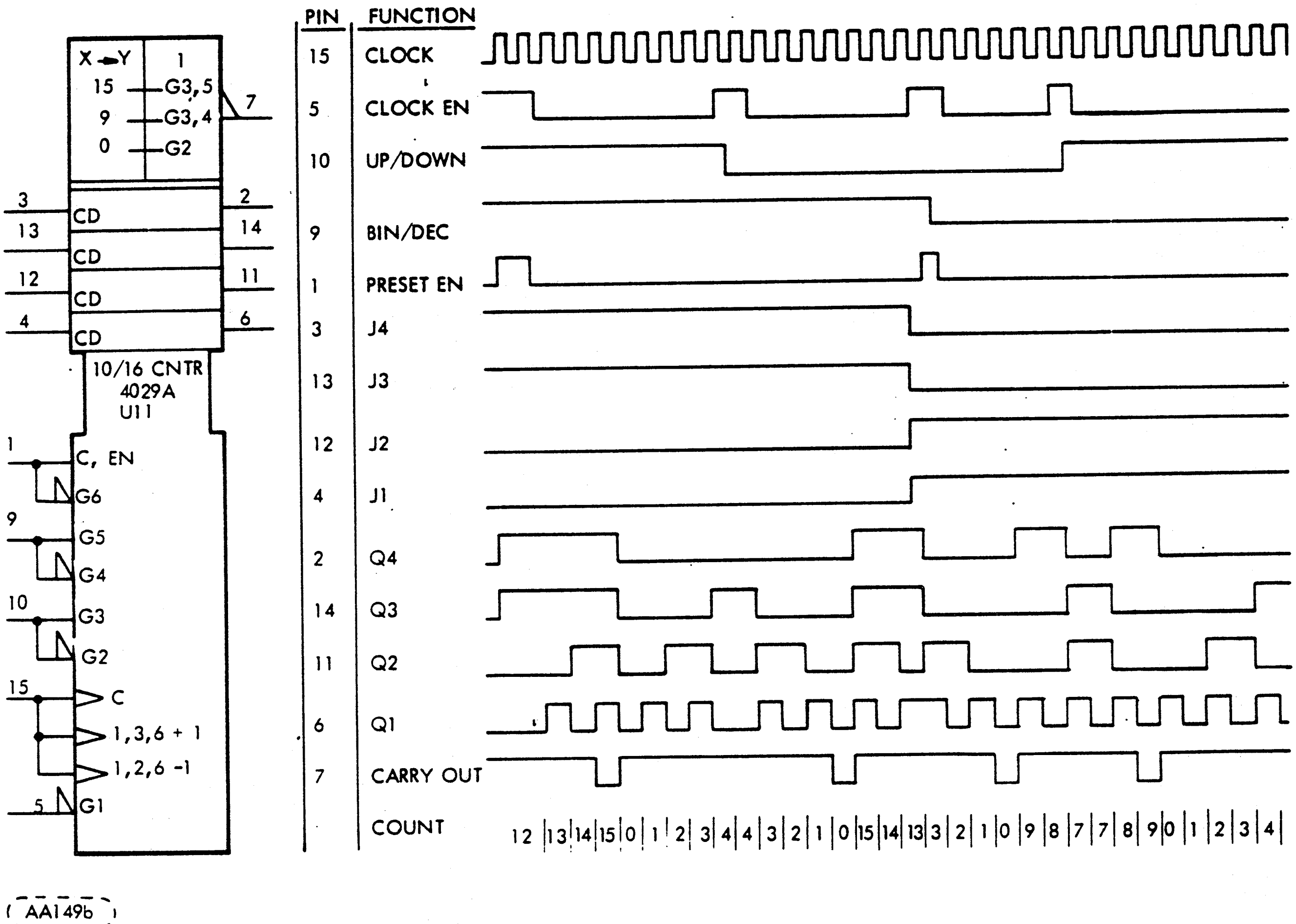
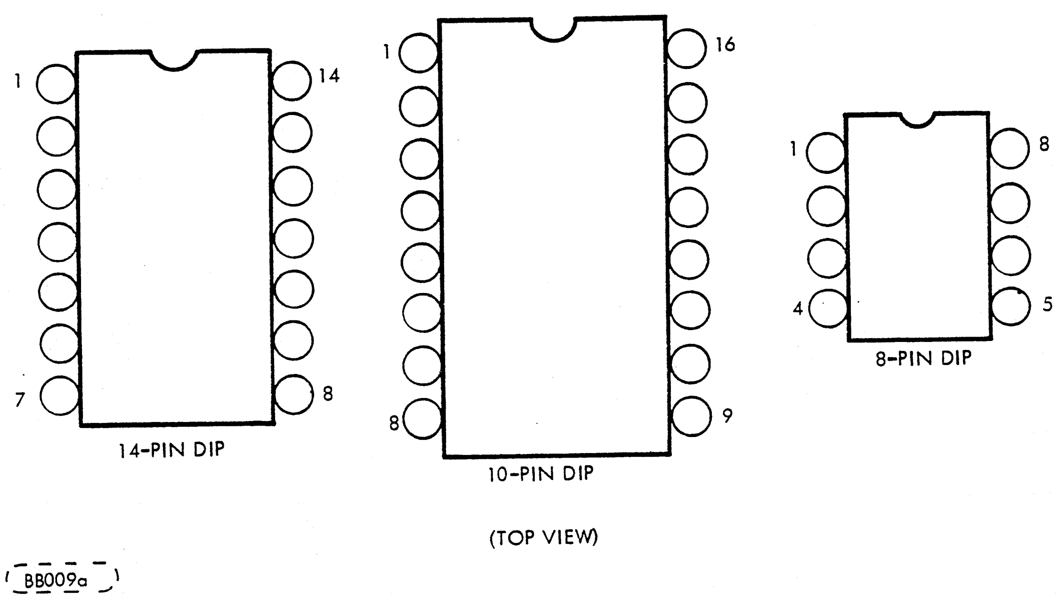


Figure 5-14. Decimal/Binary Up/Down Presettable Counter

5.5.8 IC Package Layout

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



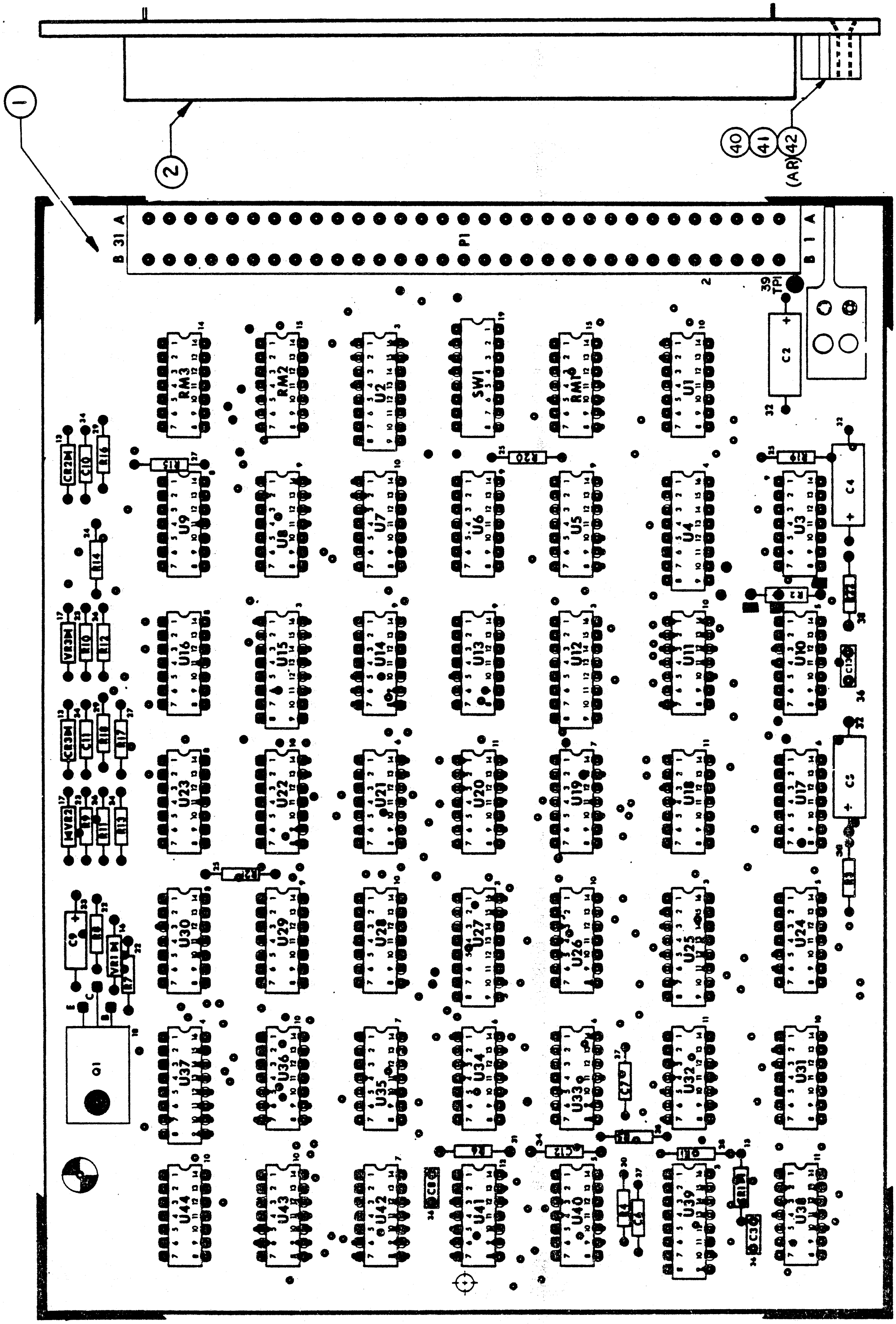


Figure 5-15. Control Board Assembly (Sheet 1 of 7)

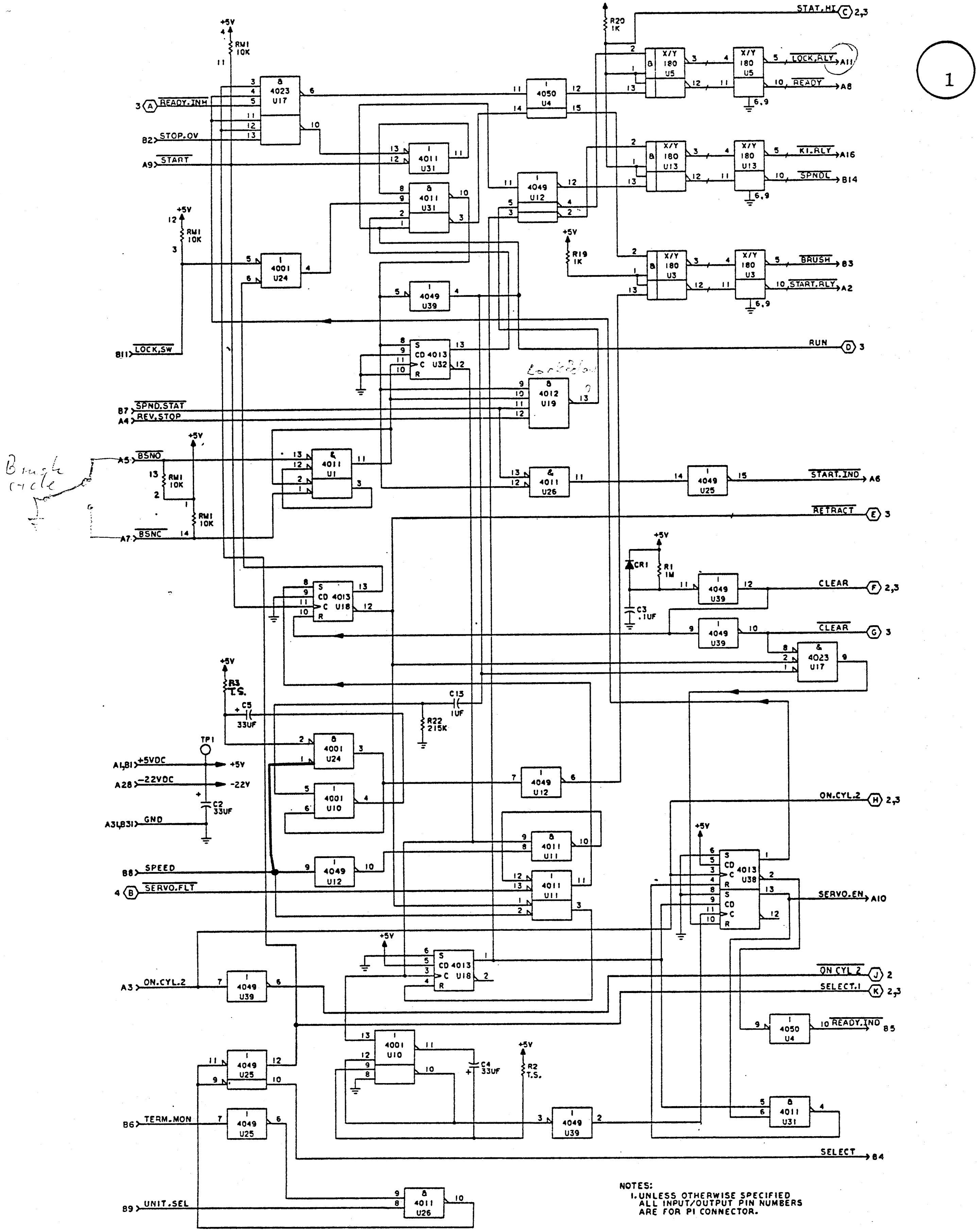
ITEM NO.	IDENTIFICATION NUMBER	DRAWING TITLE
	75297509	Comp Bd Assy Control
	75297508	Comp Bd Assy Control
2	77836070	PWB Socket Connector
3	15134700	Cmos 4049 Hex Invert
4	15134800	Cmos 4050 Hex Buffer
5	15135000	Cmos 4001 Quad 2 INP
6	15133700	Cmos 4023 Triple 3
7	15133300	Cmos 4015 Dual 4 INP
8	15126600	IC LM339
9	51768200	IC Dual
10	15133200	Cmos Quad 2 Input NA
11	15133400	Cmos 4013 D Type F/F
12	15134600	IC 4047 Cmos 1 Shot
13	51736700	Diode IN914A
14	75009901	Res Pac 2% 1.0K (13)
15	75009993	Res Pac 2% 10K (7)
16	50240107	Diode Zener
17	50240101	Volt Reg 9.1V IN751A
18	75752400	Transistor
19	83452205	Switch-8 Position
21	75738302	Rivet
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 Chm 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, Mol
41	10125703	Scr Flat Bd
42	75312701	Adhesive, Epoxy
43	92512000	Resistor Test Sel.
44	75732602	Pin-Wire Wrap
45	94357500	Resistor Test Sel

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

SCH SH.NO.	PWA	A2J9		
1	+5V	A1		
1	+5V	B1		
1	START RLY	A2	J5-5	(F5-23)
1	STOP OV	B2	J1-B28	(I/O)
1	ON CYL 2	A3	J11-B20	(F5-17)
1	BRUSH	B3	J2-2	(F5-21)
1	REV STOP	A4	J11-B11	(F5-17)
1	SELECT	B4	J11-B19,(F5-17), J10-B20	(F5-16)
1	BSNO	A5	J6-29	(F5-24)
1	READY IND	B5	J6-8	(F5-24)
1	START IND	A6	J6-12	(F5-24)
1	TERM MON	B6	J1-A3	(I/O)
1	BSNC	A7	J6-30	(F5-24)
1	SPNDL STAT	B7	J10-B12	(F5-16)
1	READY	A8	J10-B12	(F5-16)
1	SPEED	B8	J10-B10	(F5-16)
1	START	A9	J6-10	(F5-24)
1	UNIT SEL	B9	J1-B25	(I/O)
1	SERVO EN	A10	J11-B13	(I/O)
2	WRITE GATE	B10	J1-A15	(I/O)
1	LOCK RLY	A11	J3-1	(F5-30)
1	LOCK SW	B11	J6-28	(F5-24)
2	ERASE GATE	A12	J1-B6	(I/O)
2	CR FLT	B12	J14-B7	(F5-19)
3	SEEK ERROR	A13	J1-B8	(I/O)
2	ACTIVE IND	B13	J6-14	(F5-24)
3	SKER	A14	J11-B16	(F5-17)
1	SPNDL	B14	J5-3	(F5-23)
2	DFF:ZERO	A15	J11-A21	(F5-17)
3	STROBE	B15	J11-A2	(F5-17)
1	KT RLY	A16	J2-31,32	(F5-21)
3	INTERRUPT	B16	J1-B5	(I/O)
3	SEARCH	A17	J4-19	(F 5-20)
3	INV AD	B17	J11-A15	(F5-17)
3	OFFSET	A18	J1-A23	(I/O)
3	FLT RST	B18	J6-13	(F5-24)
2	READ GATE	A19	J1-B15	(I/O)
2	RD EN	B19	J12-B16	(F5-18)
2	HS 1	A20	J1-B7	(I/O)
3	FAULT	B20	J1-A20	(I/O)
3	RTZS	A21	J1-B26	(I/O)
2	WR STAT	B21	J1-B30	(I/O)
3	ON CYL	A22	J1-B9	(I/O)
2	WR EN	B22	J14-B2	(F5-19)
3	FAULT IND	A23	J6-16	(F5-24)
2	WR PROT	B23	J1-B23	(I/O)
2	W.E. INH	A24	J14-B4	(F5-19)
3	DENSITY	B24	J1-A20	(I/O)
2	CART PROT	A25	J6-5	(F5-24)
2	FIXED PROT	B25	J6-3	(F5-24)
4	DR MON-	A26	J12-B22	(F5-18)
2	ER EN	B26	J14-A4	(F5-19)
4	SERVO MON+	A27	J11-B26	(F5-17)
4	R/W MON-	B27	J14-B18	(F5-19)
1	-22V	A28		
4	SECT MON+	B28	J10-B27	(F5-16)
4	R/W MON+	A29	J14-B18	(F5-19)
4	PRE MON-	B29	J4-15	(F5-20)
4	SERVO MON-	A30	J11-B27	(F5-17)
4	PRE MON+	B30	J4-13	(F5-20)
1	GND	A31		
1	GND	B31		

AA092a

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



NOTES:
1. UNLESS OTHERWISE SPECIFIED ALL INPUT/OUTPUT PIN NUMBERS ARE FOR P1 CONNECTOR.

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

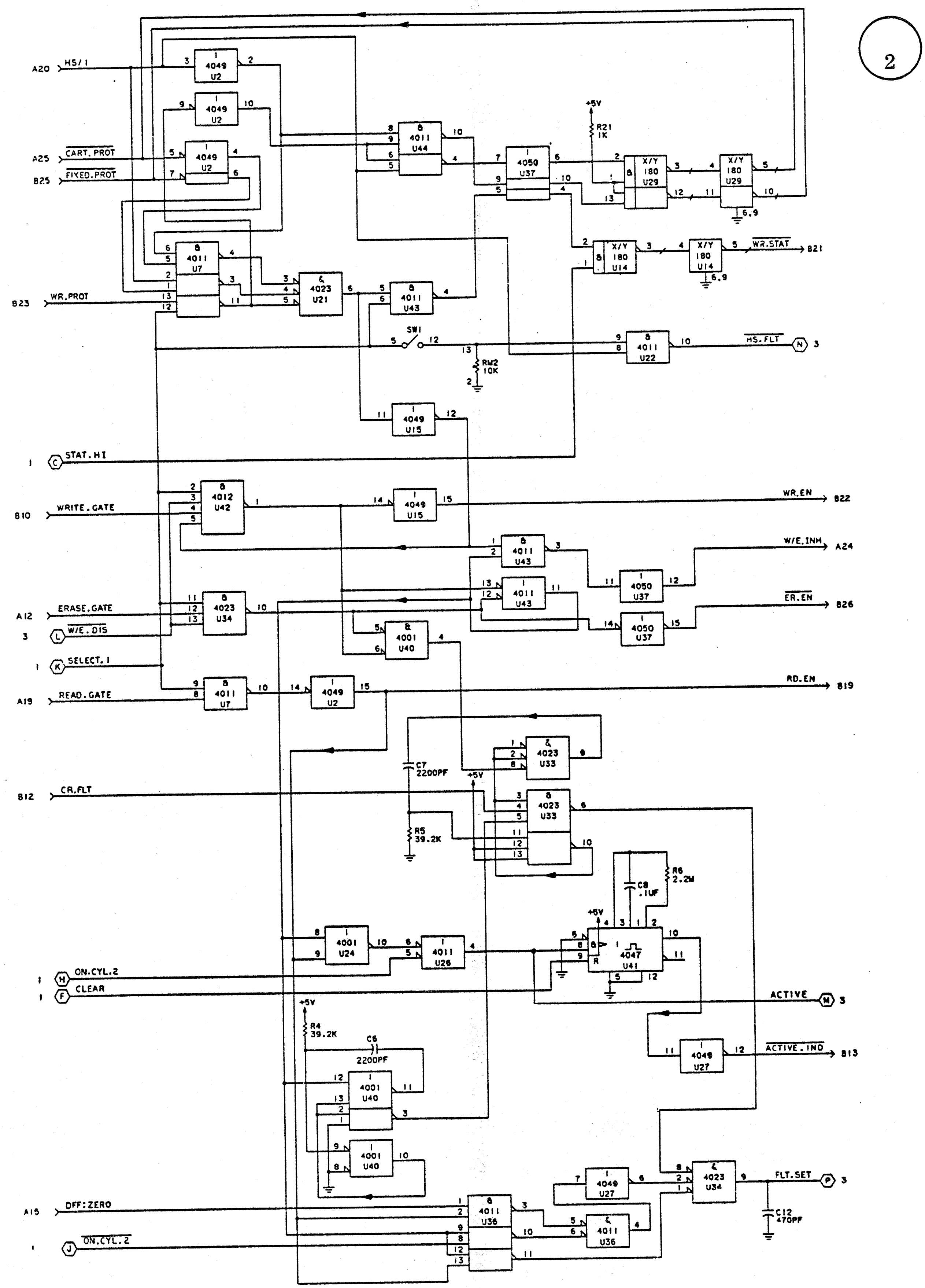


Figure 5-15. Control Board Assembly (Sheet 5 of 7)

3

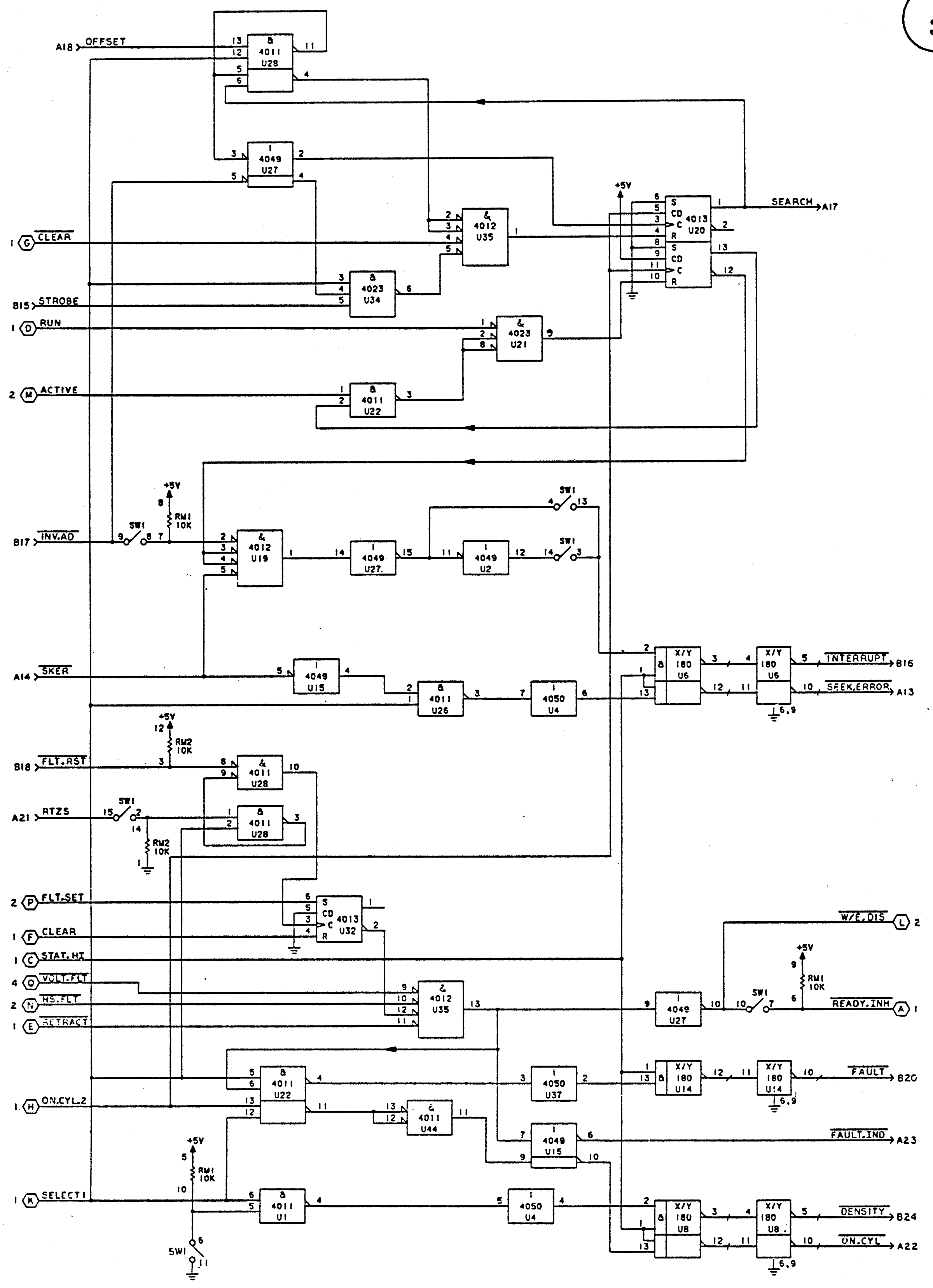


Figure 5-15. Control Board Assembly (Sheet 6 of 7)

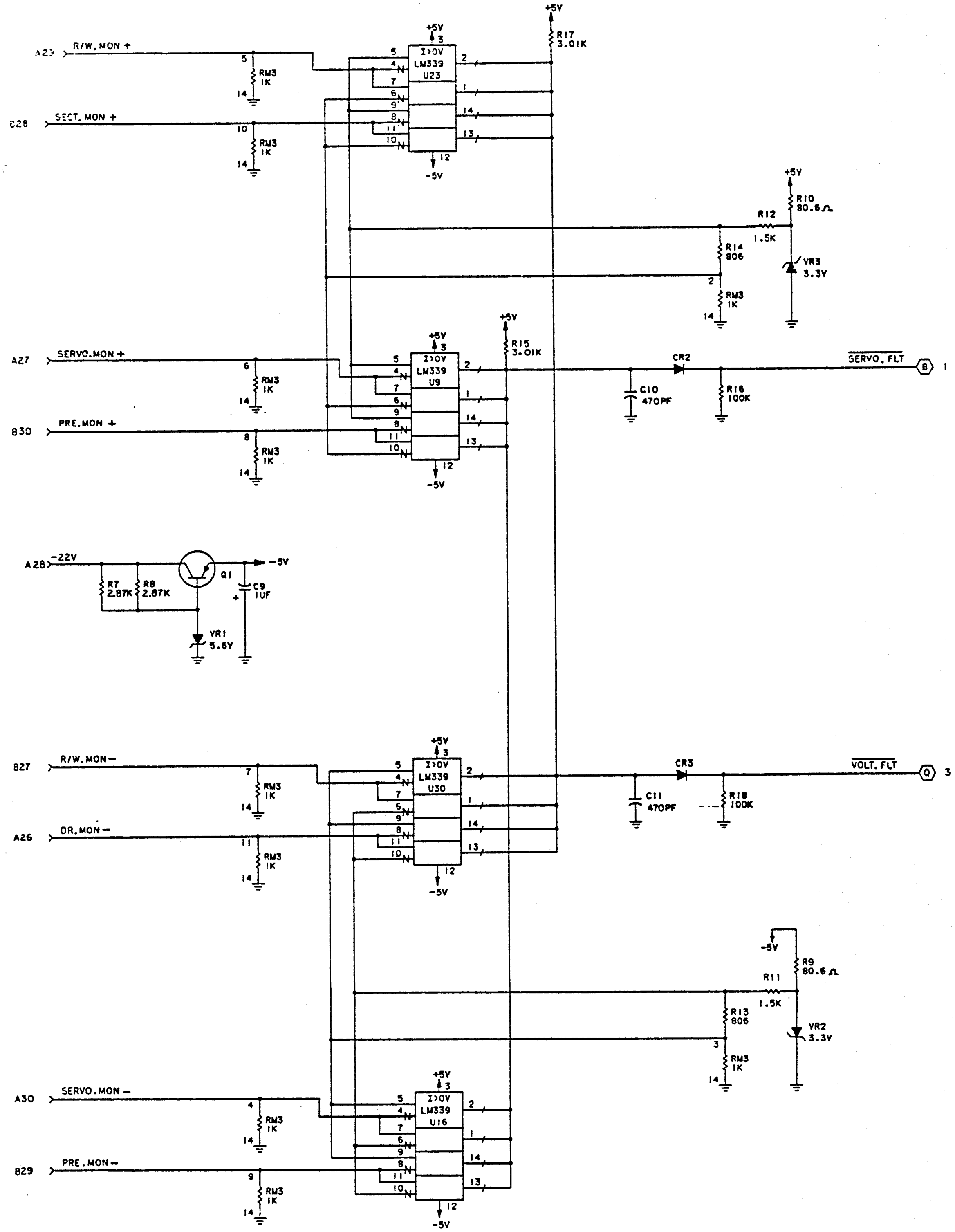


Figure 5-15. Control Board Assembly (Sheet 7 of 7)

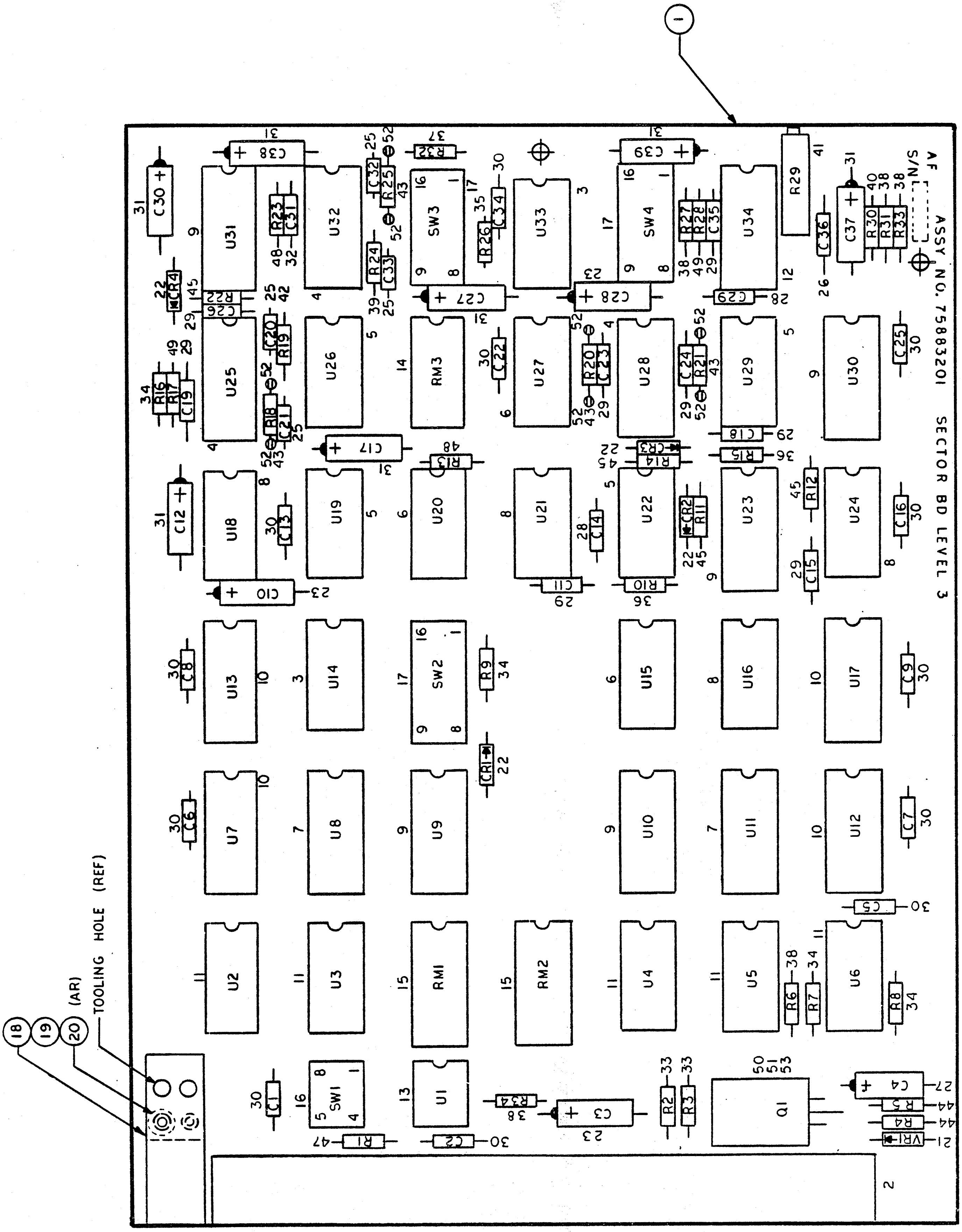


Figure 5-16. Sector Board Assembly (Sheet 1 of 8)

ITEM NO.	IDENTIFICATION NO.	DRAWING TITLE
	75883201-8	Comp. Bd. Assy - Sector
1	75883101-0	Power Sector Level 3
2	94243400-2	Conn-Card Mtd 62SOCK
3	15133800-1	CMOS 4024 7 Stage B/
4	15135400-8	CMOS 4528 Dual One S
5	15135000-6	CMOS 4001 Quad 2 Inp
6	15133400-0	CMOS 4013 D Type F/F
7	15133500-7	CMOS 4019 AND/OR Sel
8	15133200-4	CMOS Quad 2 Input NA
9	15134700-2	CMOS 4049 Hex Invert
10	15134100-5	CMOS 4029 Up/Down Co
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 IN914A
23	24504353-4	Cap 10V 20% 33UF
25	94227256-8	Cap MICA 2000 PF
26	75808533-6	Cap 100V 10% 4700
27	24504329-4	Cap 35V 20% 10 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	75808554-2	Cap 100V 10% 270,000
33	94360328-2	Res 1/4W 1% 1.96K
34	94360224-3	Res 1/4W 1% 178
35	94360534-5	Res 1/4W 1% 226K
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	77600513-4	Potentiometer 100K

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

ITEM NO.	IDENTIFICATION NO.	DRAWING TITLE
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	75732602-0	Pin-Wire Wrap
53	92583002-8	Nut Lock

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

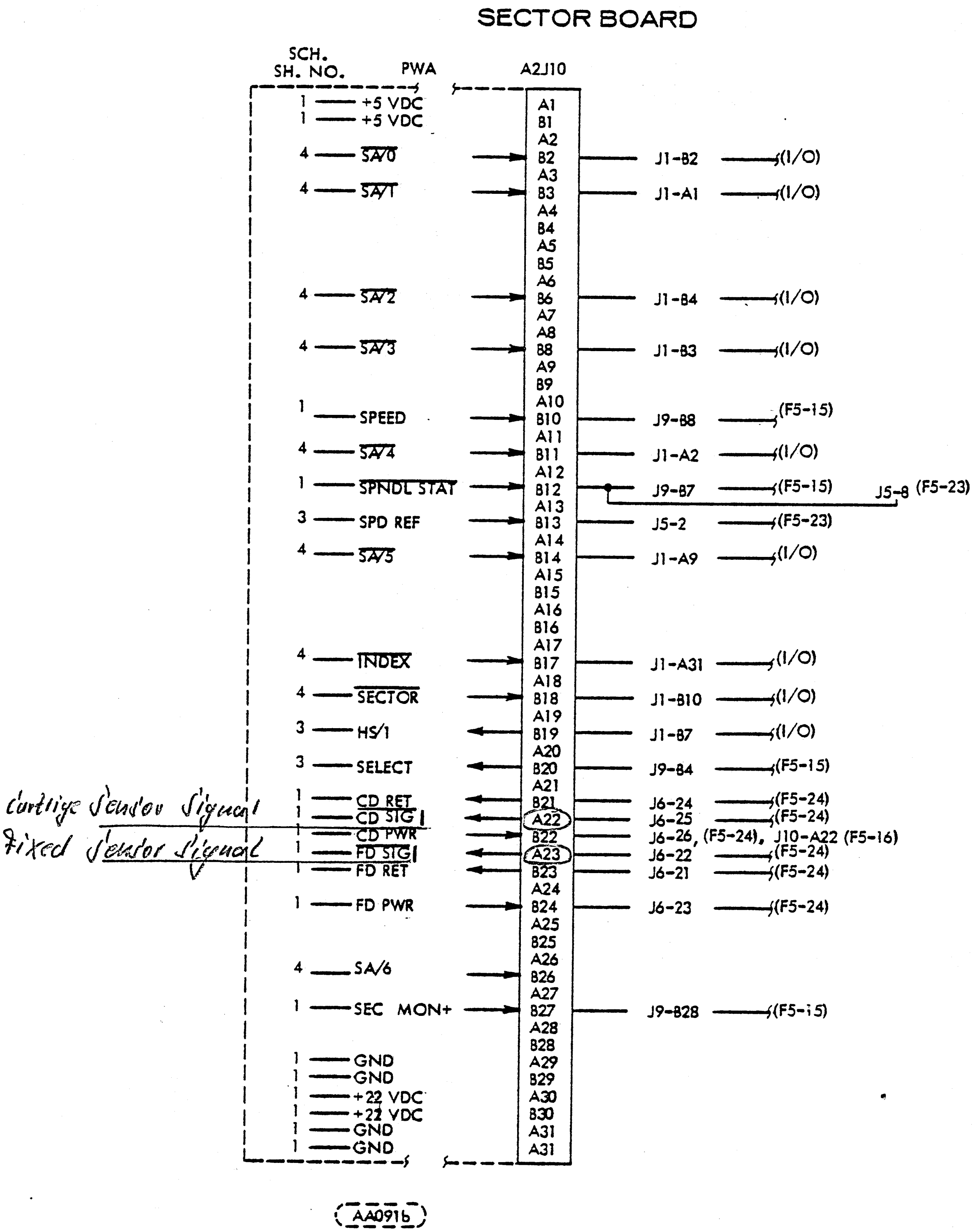


Figure 5-16. Sector Board Assembly (Sheet 4 of 8)

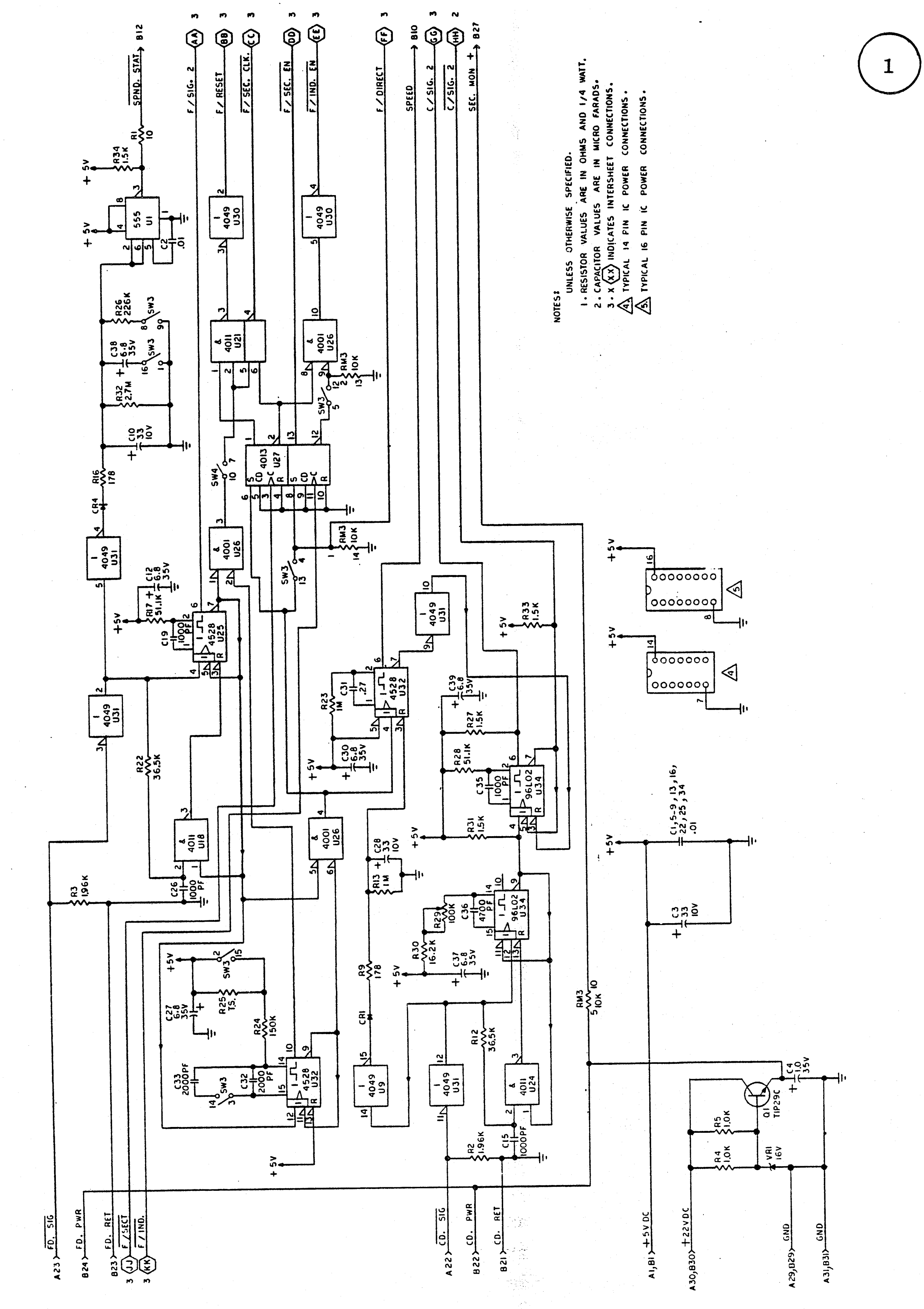


Figure 5-16. Sector Board Assembly (Sheet 5 of 8)

2

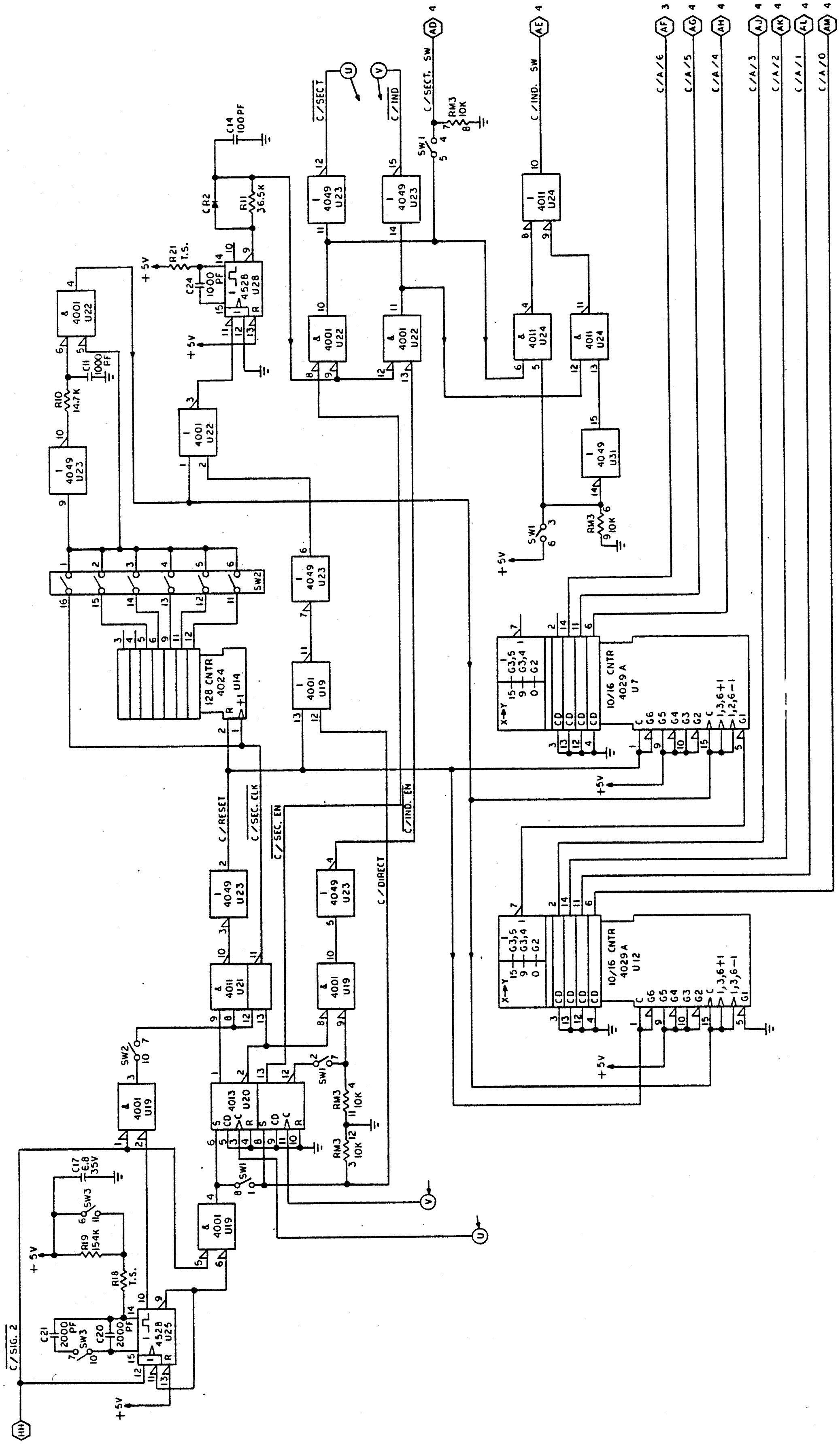


Figure 5-16. Sector Board Assembly (Sheet 6 of 8)

3

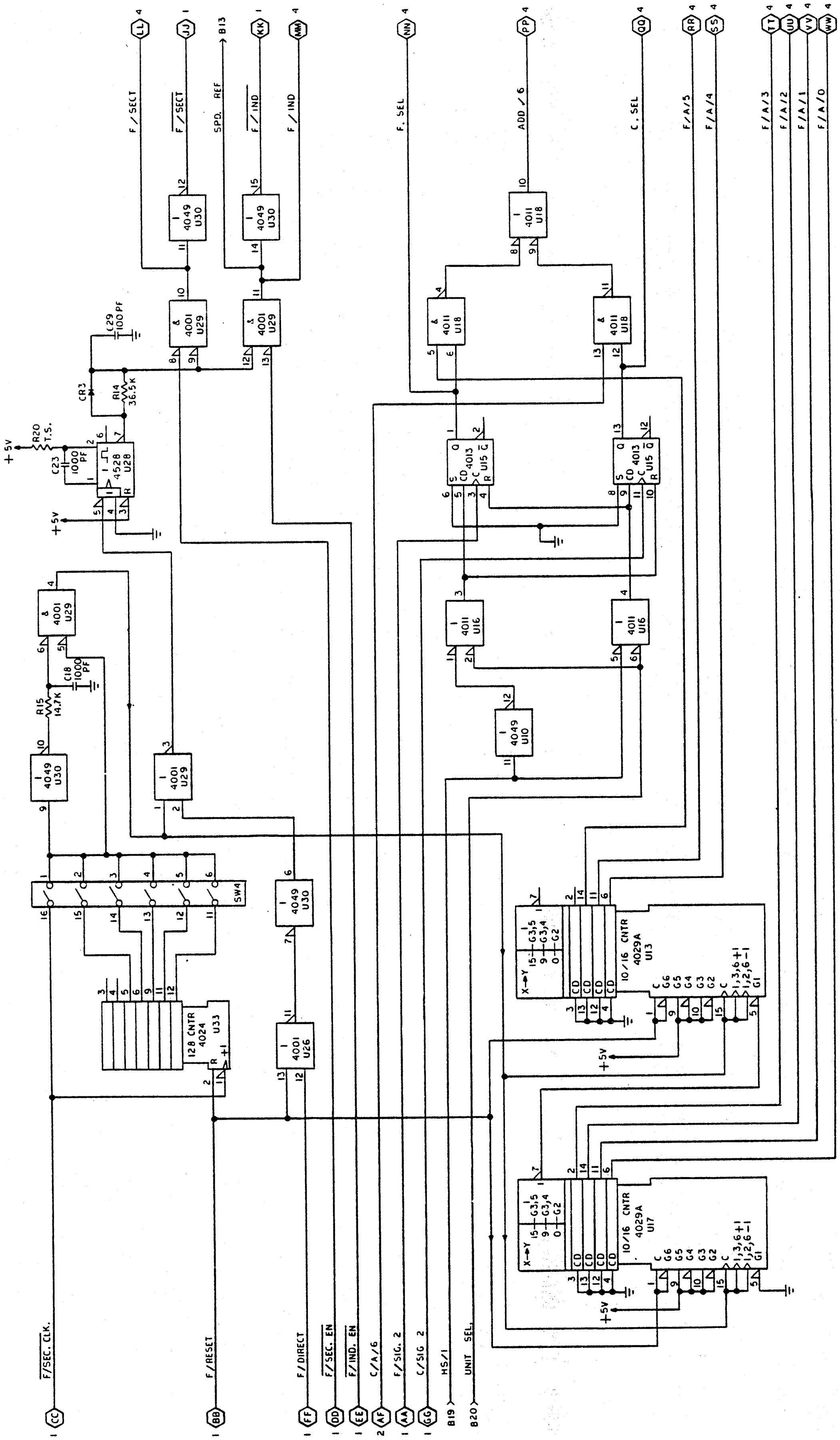


Figure 5-16. Sector Board Assembly (Sheet 7 of 8)

4

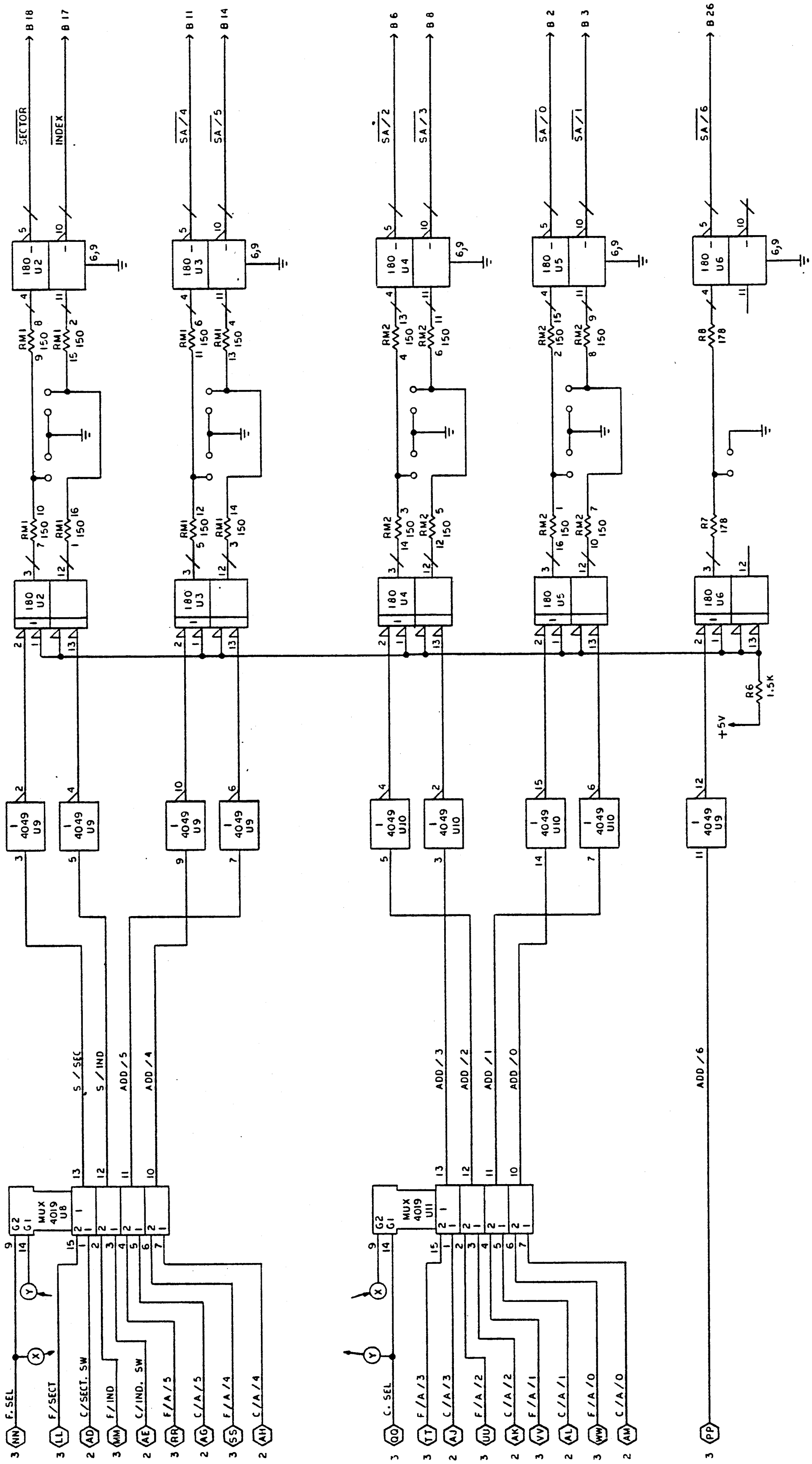


Figure 5-16. Sector Board Assembly (Sheet 8 of 8)

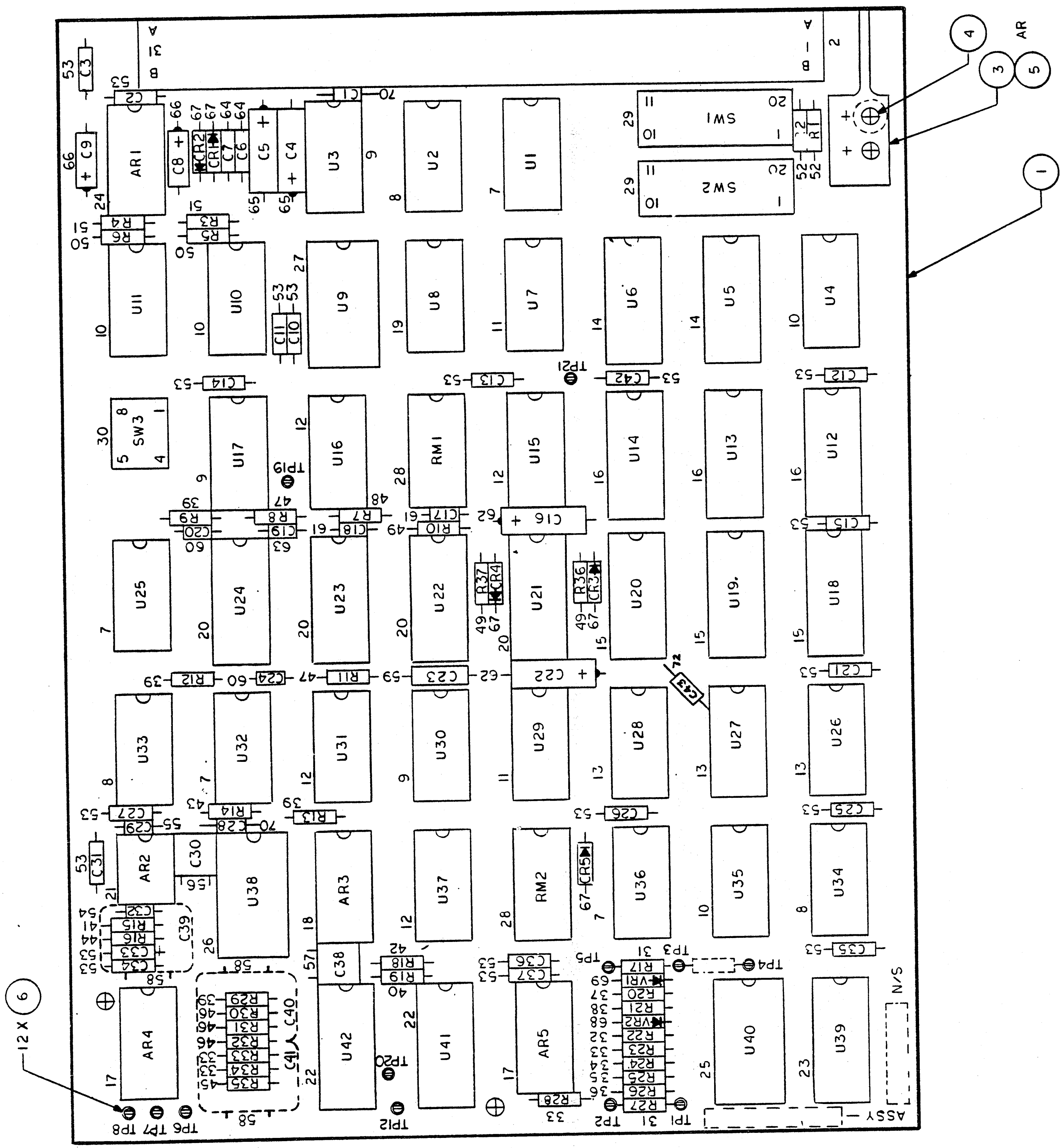


Figure 5-17. Servo Board Assembly (Sheet 1 of 10)

ITEM NO.	IDENTIFICATION NO.	DRAWING TITLE
	77831400-5	Component Bd. Assy - Servo
1	94243400-2	Conn-Card Mtd 62SOCK
3	83479901-7	Key, Inject Mold
4	10125702-0	Scr Flat Hd
5	75312701-8	Spec-Epoxy Adhesive
6	75732602-0	Pin-Wire Wrap
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	94360268-0	Res 1/4W 1% 511
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	Capacitor MICA 560PF
57	94227247-7	Capacitor MICA 750 P
58	94227257-6	Cap 500V 2% 2200
59	75808545-0	Cap 100V 10% 33,000
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 IN914A
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	94240425-2	Cap 50V 10% 270 PF

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

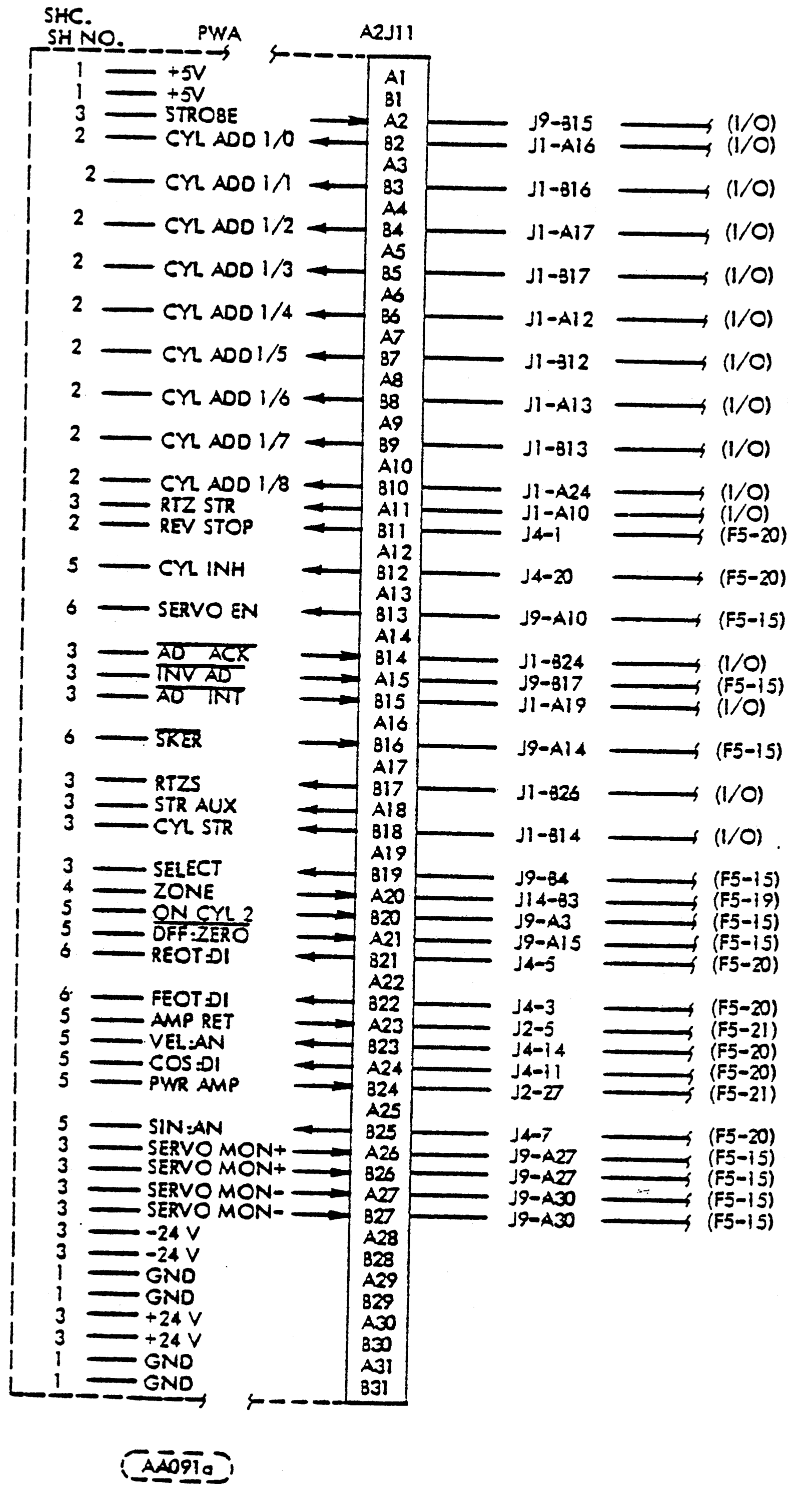
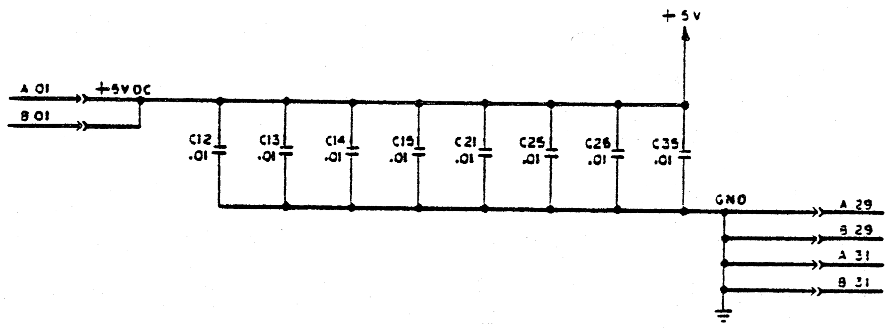
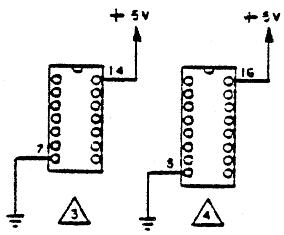


Figure 5-17. Servo Board Assembly (Sheet 4 of 10)

1





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)

2

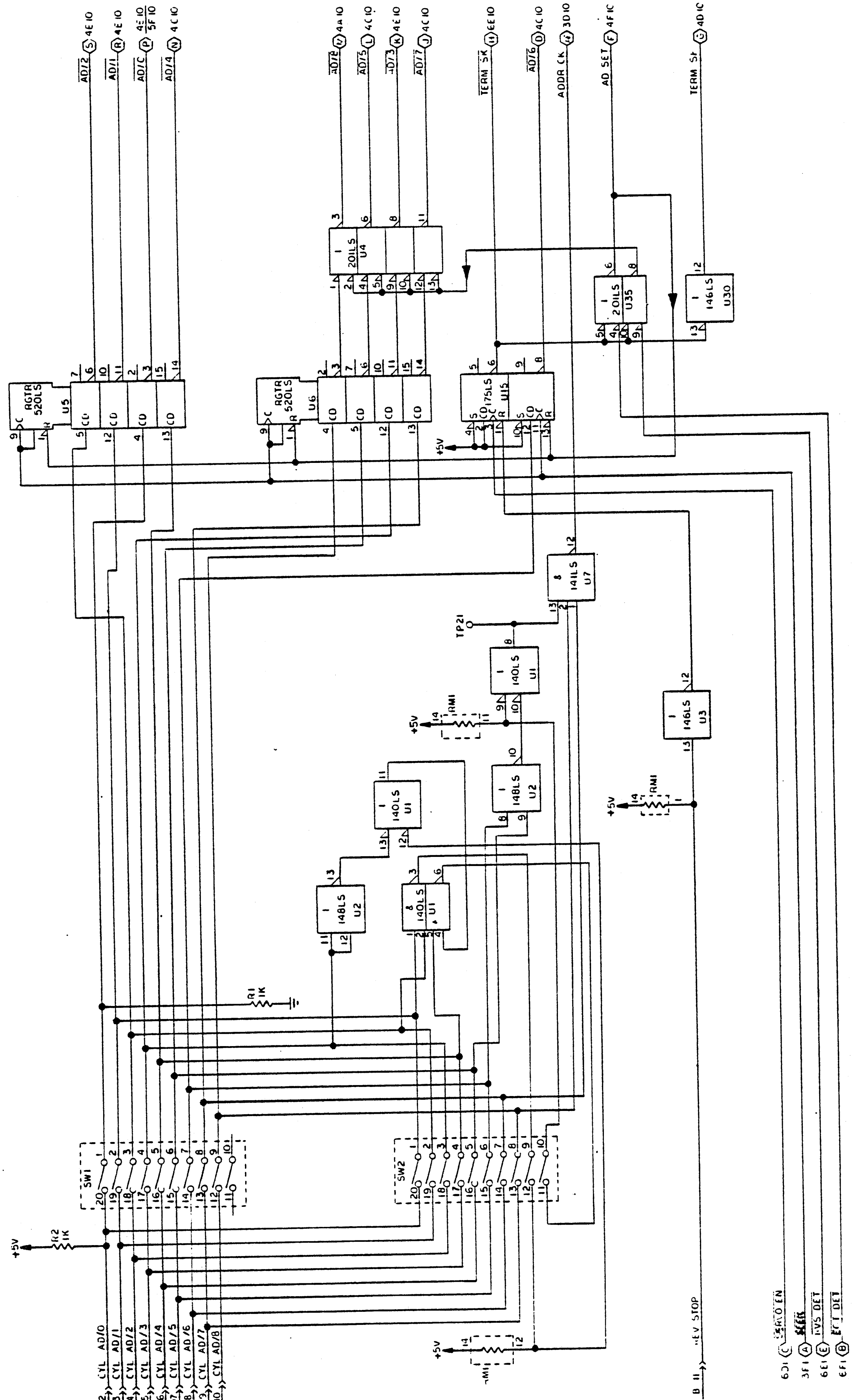


Figure 5-17. Servo Board Assembly (Sheet 6 of 10)

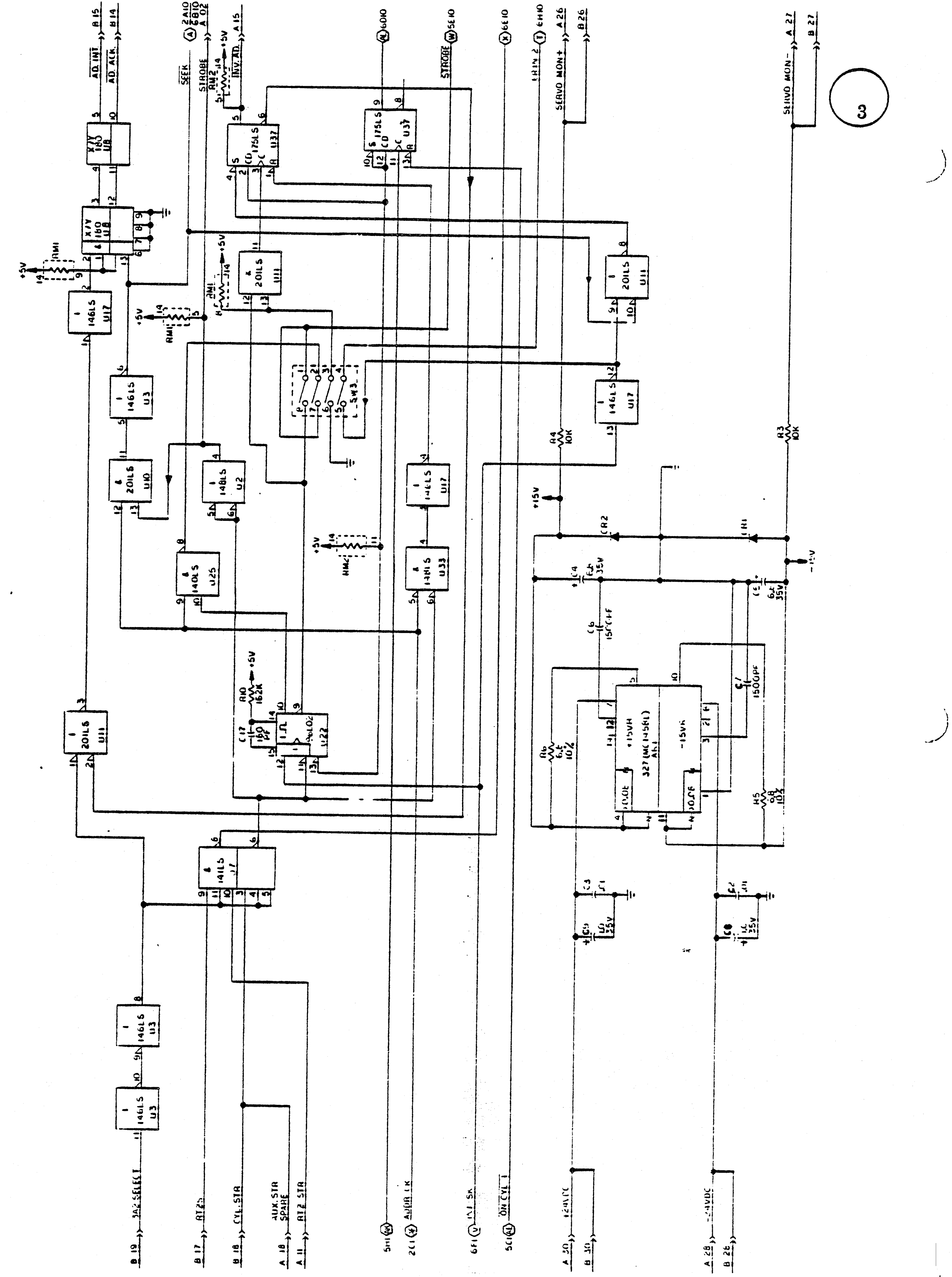


Figure 5-17. Servo Board Assembly (Sheet 7 of 10)

4

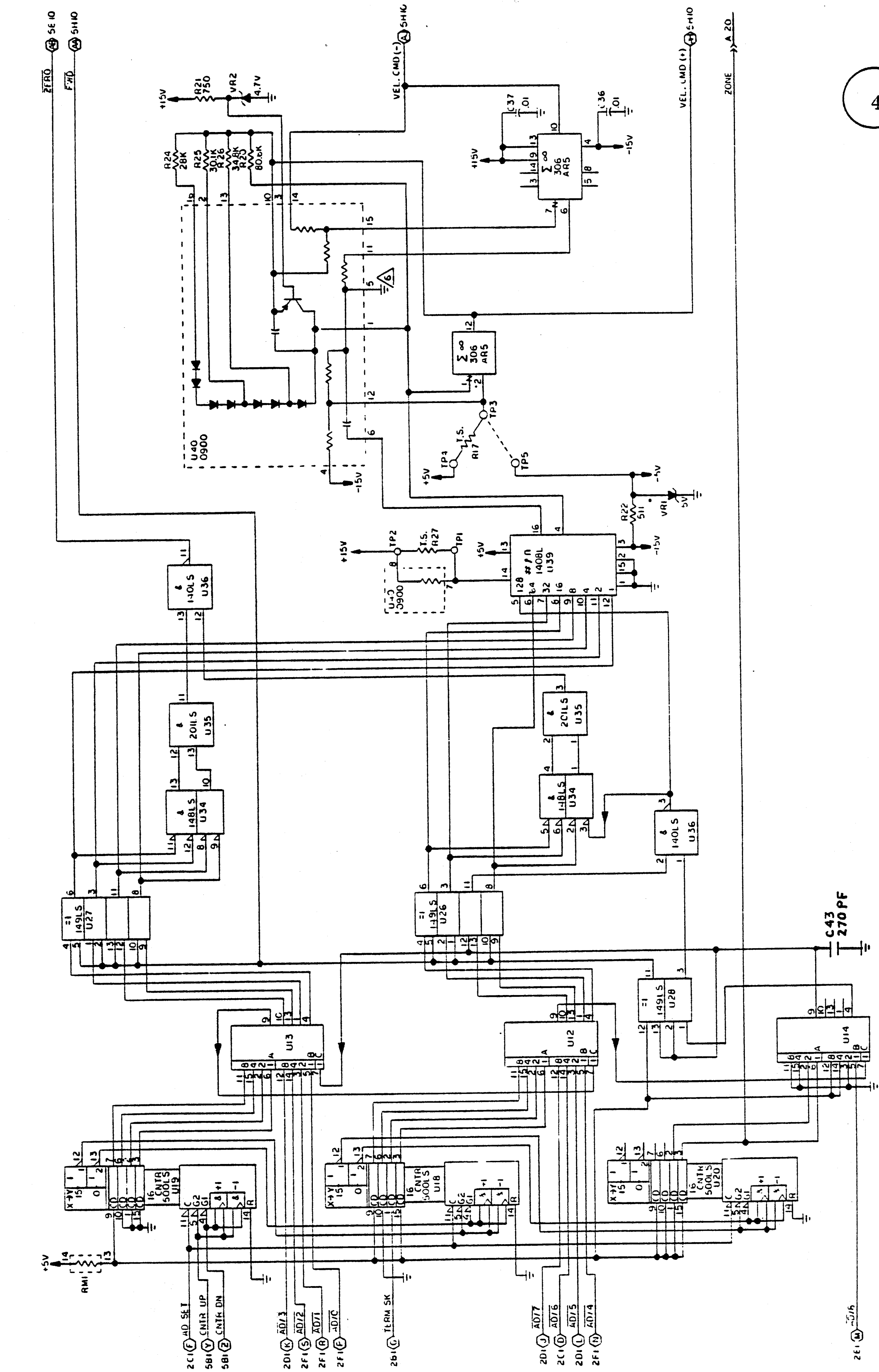


Figure 5-17. Servo Board Assembly (Sheet 8 of 10)

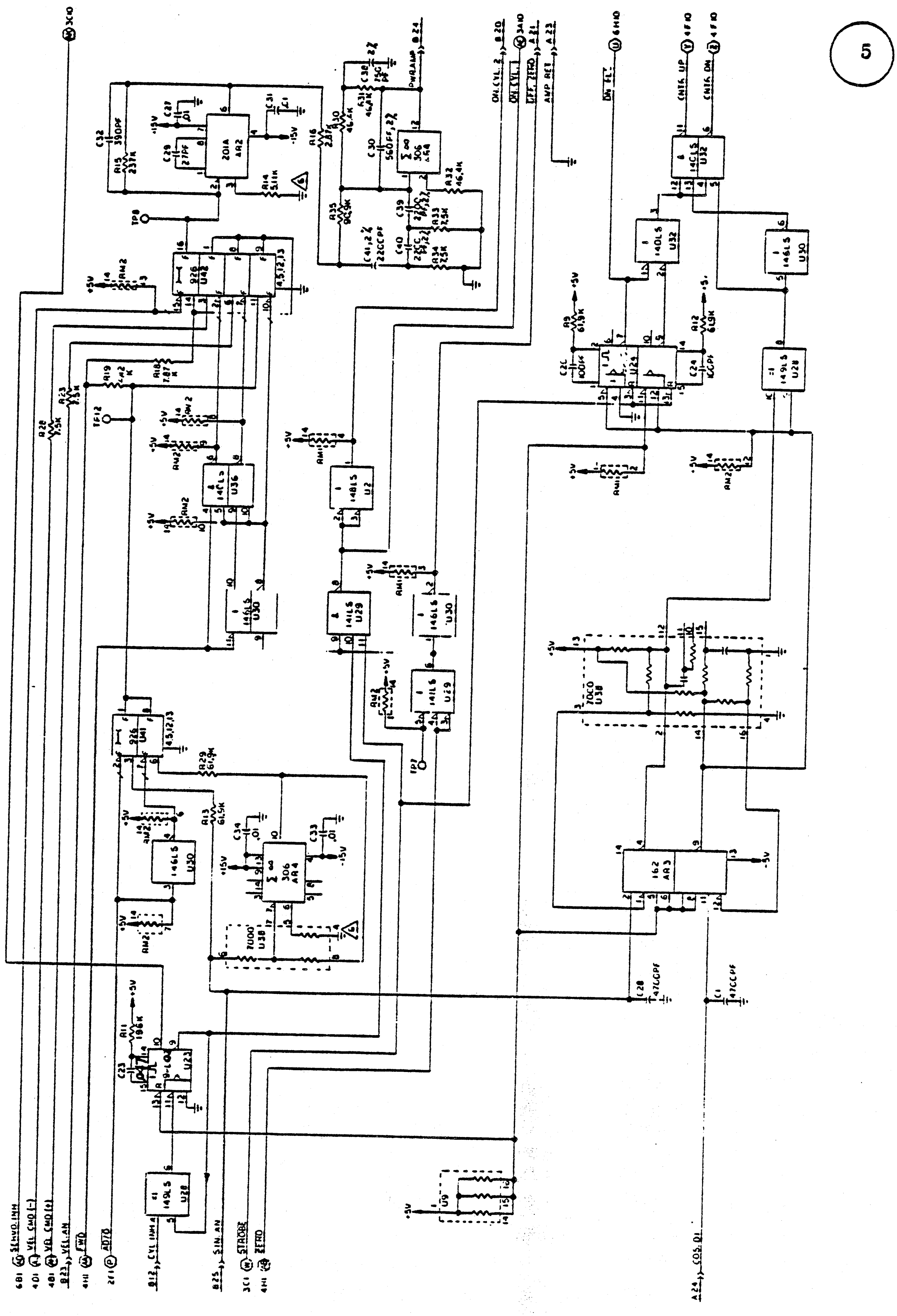


Figure 5-17. Servo Board Assembly (Sheet 9 of 10)

6

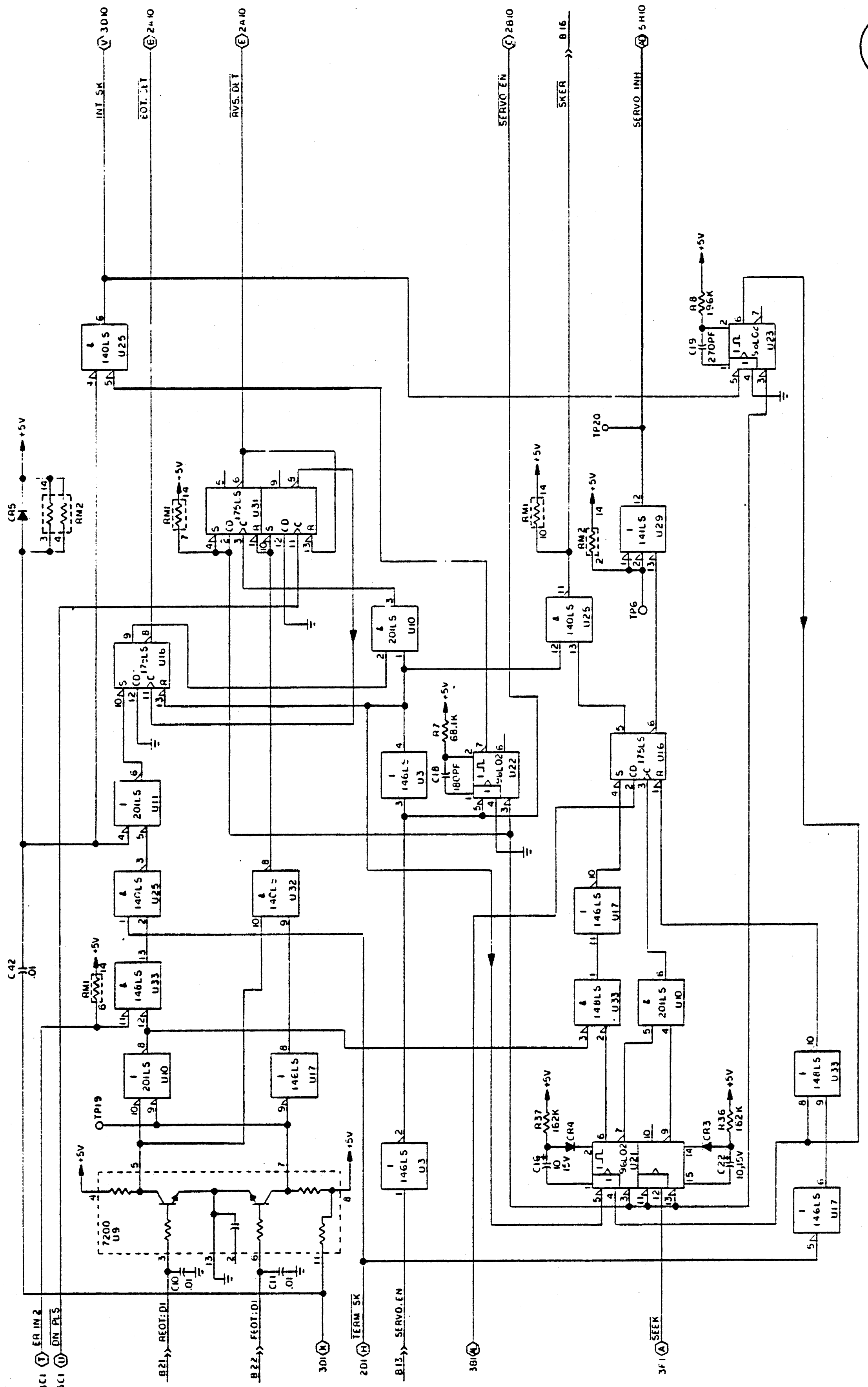


Figure 5-17. Servo Board Assembly (Sheet 10 of 10)

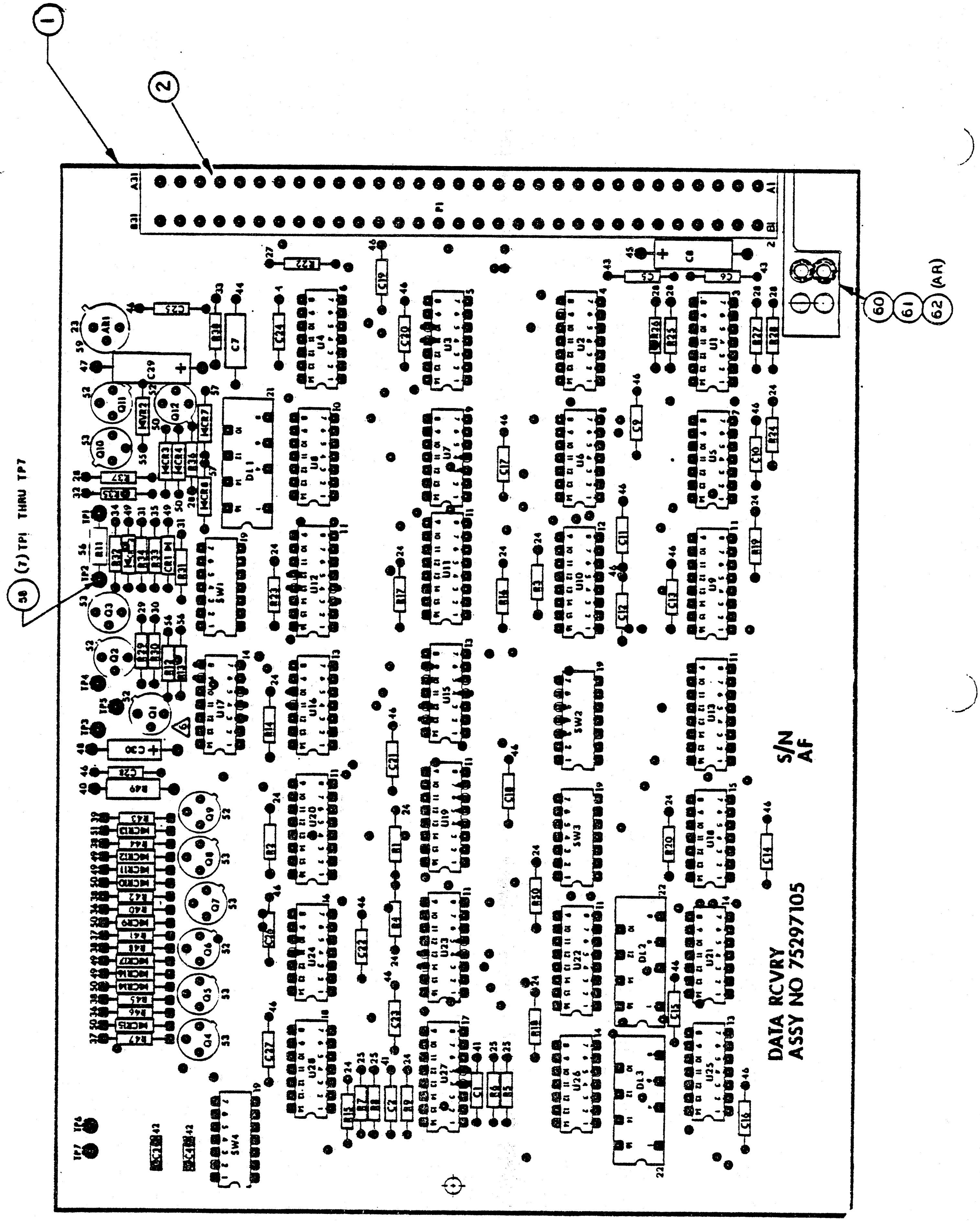


Figure 5-18. Data Recovery Board Asm (Sheet 1 of 7)

ITEM NO.	IDENTIFICATION NUMBER	DRAWING TITLE
	75297105	Comp Bd Assy - Data RE
1	75297005	Board PC Data-Recove
2	94243400	Conn-Card Mtd 62Sock
3	51768200	IC Dual
4	36187900	IC Type 7453 2-Input
5	15112700	IC Low Power Hex
6	00005070	IC 500 HM Dual
7	15112300	IC 74L00
8	15104800	IC 7474
9	36188700	IC CA 74H00 HS Quad
10	50254900	IC Dual 4
11	15109400	IC 74S112
12	00005060	IC 4-Bit Counter
13	50254600	IC TTL4
14	15109200	IC 74S04
15	15109700	IC Dual D Flip-Flop
16	50254700	IC Triple 3
17	15104300	IC 9602 Multi-Vibrat
18	36187100	IC 7404/9016
19	83452204	Switch
20	75300003	Switch Cover 7-Sect
21	83406502	Delay Line 100
22	83456501	Delay Line 50
23	15130400	Volt Regulator
24	94360300	Res 1/4W 1r 1.00K
25	94360430	Res 1/4W 1r 20.5K
27	94360335	Res 1/4W 1r 2.32K
28	94360224	Res 1/4W 1r 178
29	94360220	Res 1/4W 1r 162
30	94360359	Res 1/4W 1r 4.12K
31	94360232	Res 1/4W 1r 215
32	94360316	Res 1/4W 1r 1.47K
33	94360200	Res 1/4W 1r 100
34	94360257	Res 1/4W 1r 392
35	94360280	Res 1/4W 1r 681
36	94360168	Res 1/4W 1r 51.1
37	94360165	Res 1/4W 1r 47.5
38	94360264	Res 1/4W 1r 464
39	94360272	Res 1/4W 1r 562
40	24500131	Resistor 47 Ohm 1/2W
41	92496147	Cap Non-Elect 1200PF
42	94227236	Cap Mica 270 PF 2Pct
43	92496267	Cap Non El 220PF 200
44	92496393	Cap Non Electrolytic
45	24504353	Cap 10V 20r 33UF
46	92496227	Cap 100V 20r .01UF
47	24504339	Cap 35V 20r 6.8UF
48	24504329	Cap 35V 20r 1.0UF
49	51736700	Diode IN914A

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

ITEM NO.	IDENTIFICATION NUMBER	DRAWING TITLE
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	Adhesive, Epoxy

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

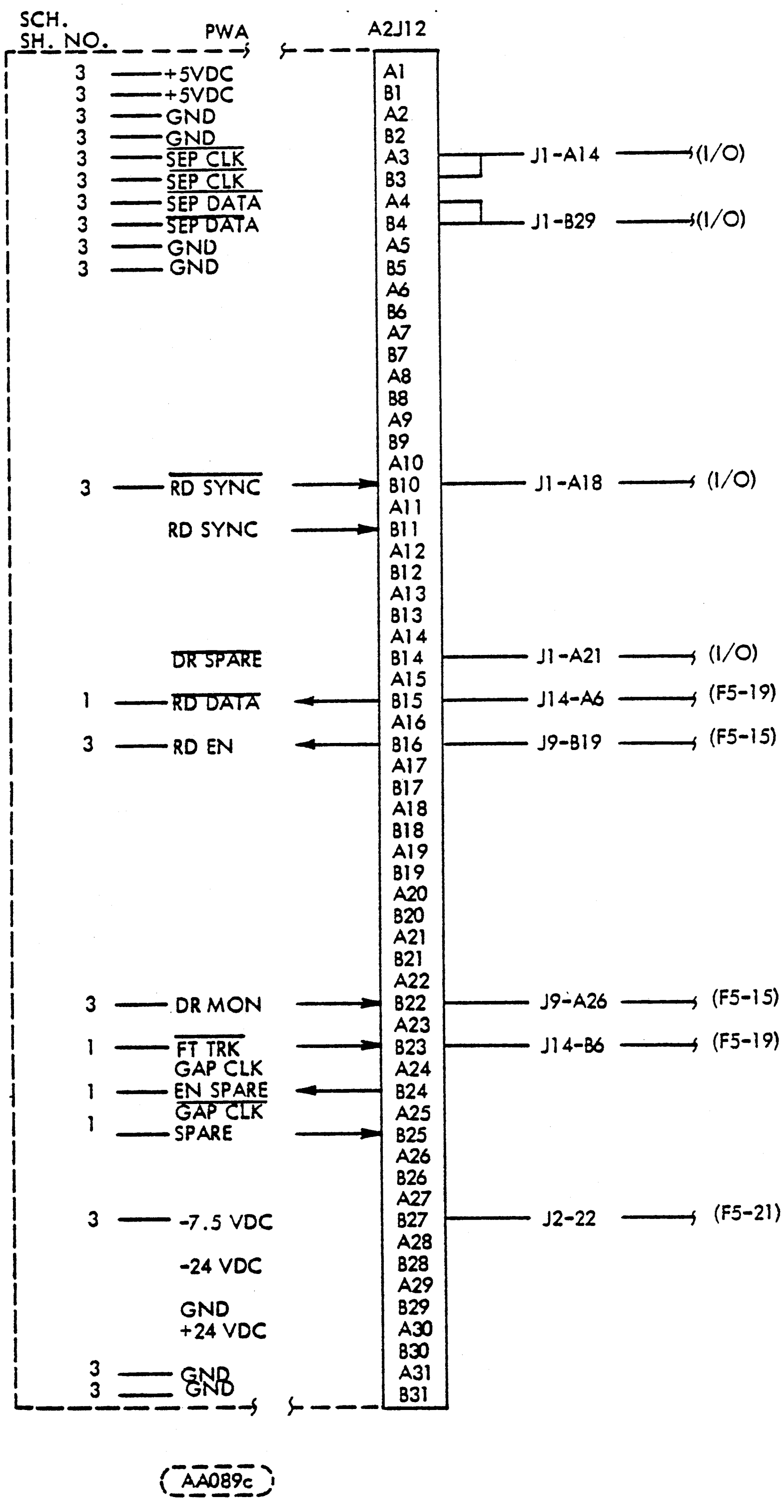
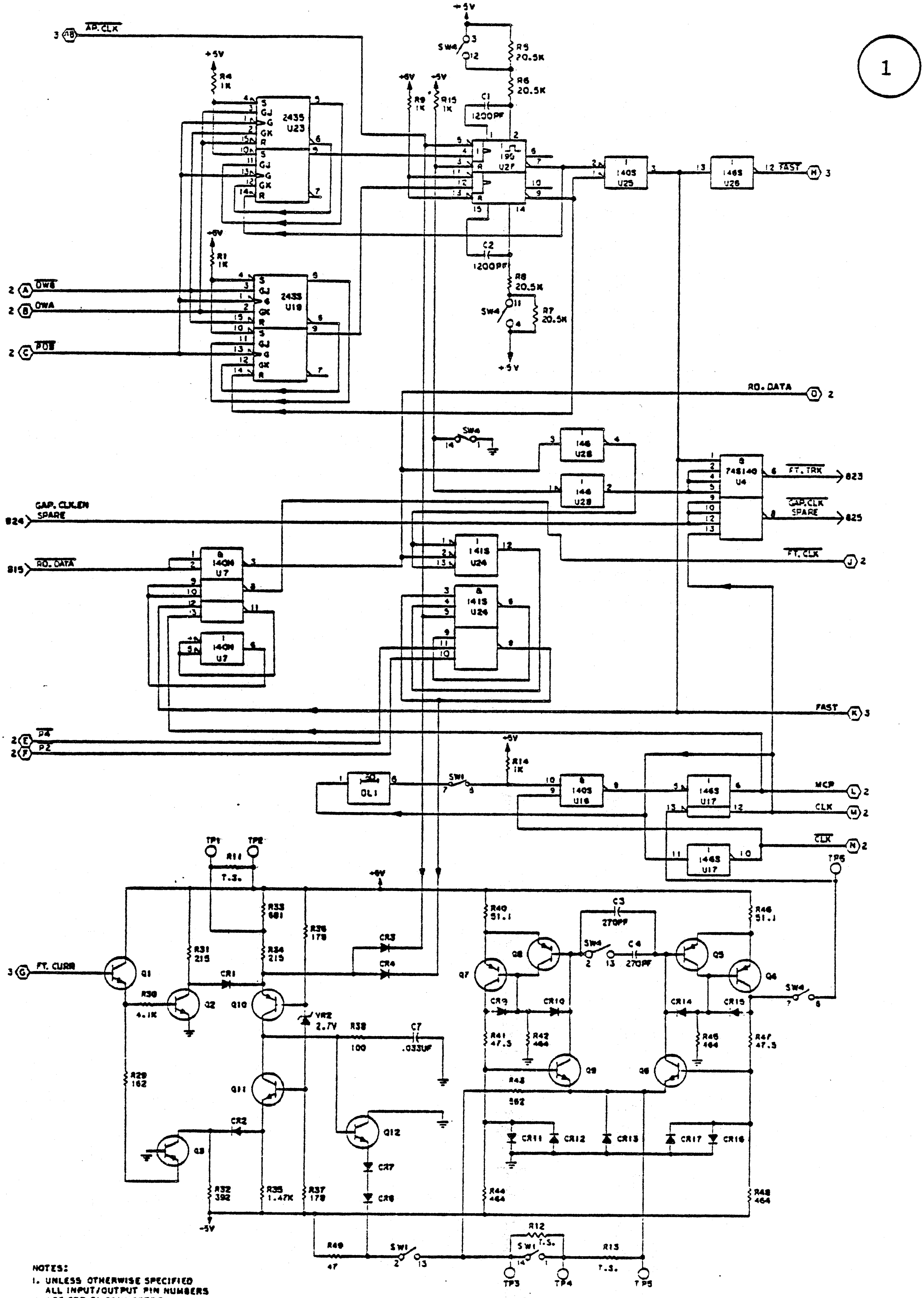


Figure 5-18. Data Recovery Board Asm (Sheet 4 of 7)



NOTES:
1. UNLESS OTHERWISE SPECIFIED ALL INPUT/OUTPUT PIN NUMBERS ARE FOR P1 CONNECTOR.

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

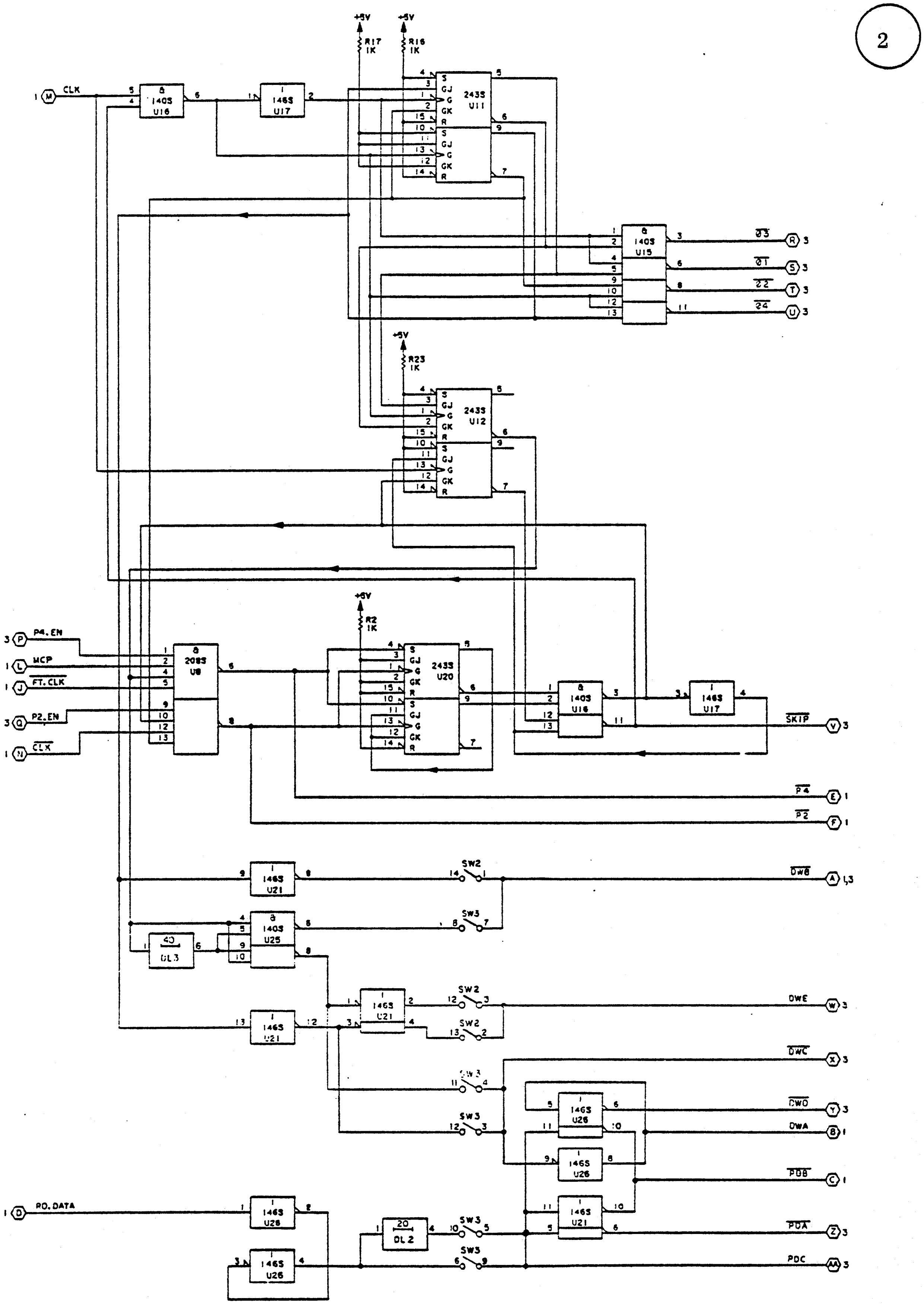


Figure 5-18. Data Recovery Board Asm (Sheet 6 of 7)

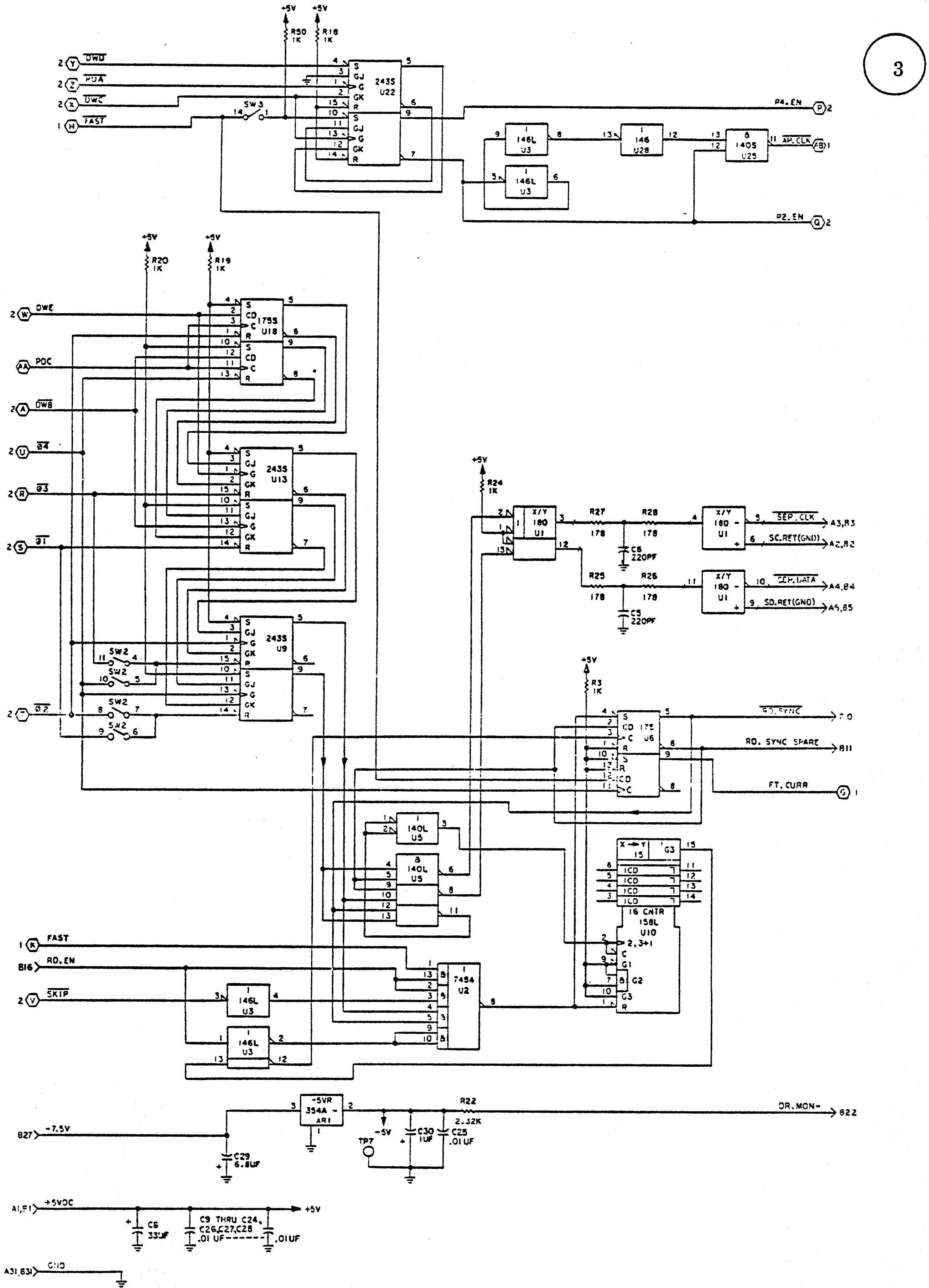
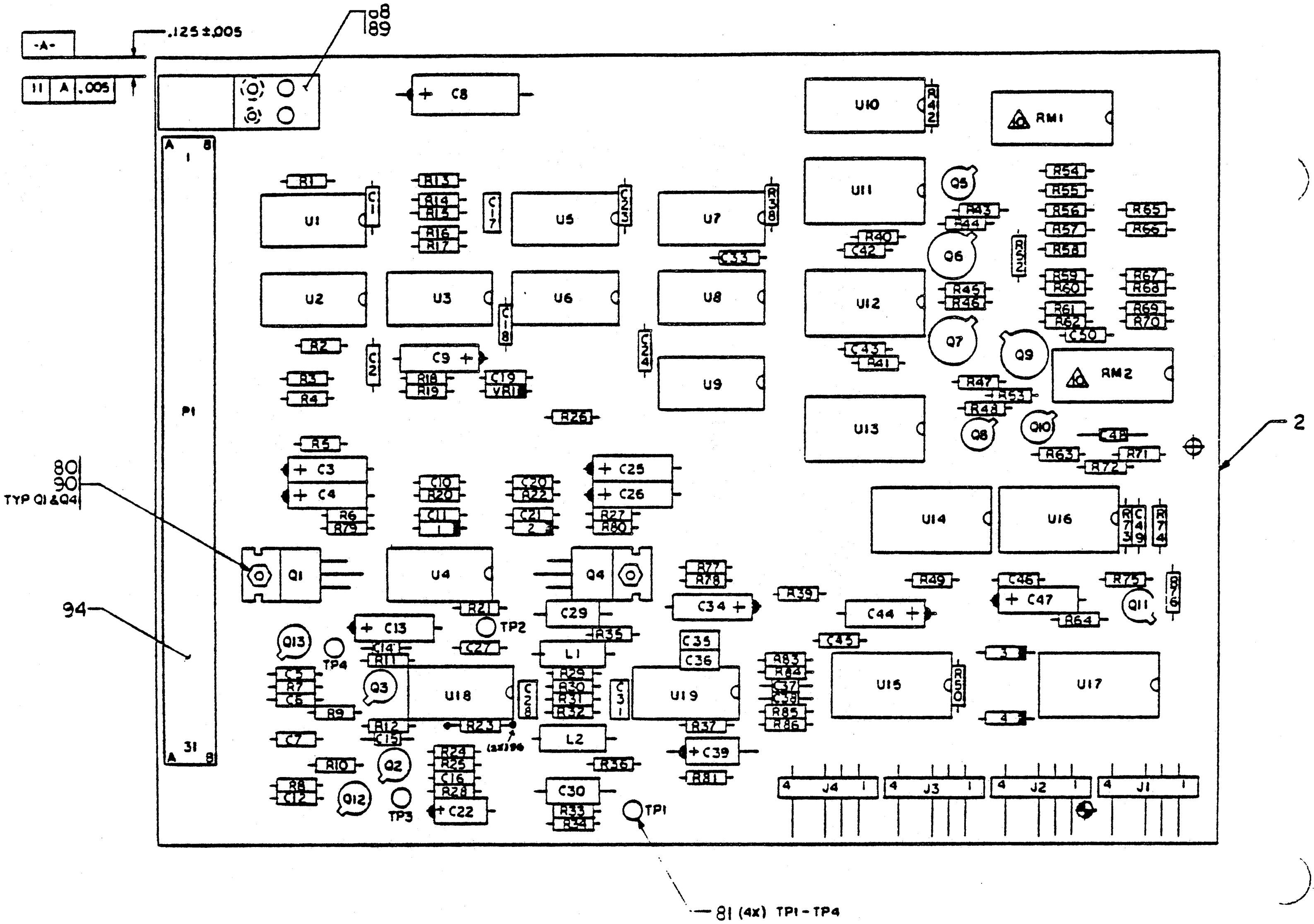


Figure 5-18. Data Recovery Board Asm (Sheet 7 of 7)



DIO	PL ITEM
CR1	25
CR2	25
CR3	26
CR4	26

REG	PL ITEM
VR1	27

CONN	PL ITEM
J1	93
J2	93
J3	93
J4	93
P1	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)

XX241a

ITEM NO.	IDENTIFICATION NUMBER	DRAWING TITLE
	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)

ITEM NO.	IDENTIFICATION NUMBER	DRAWING TITLE
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)

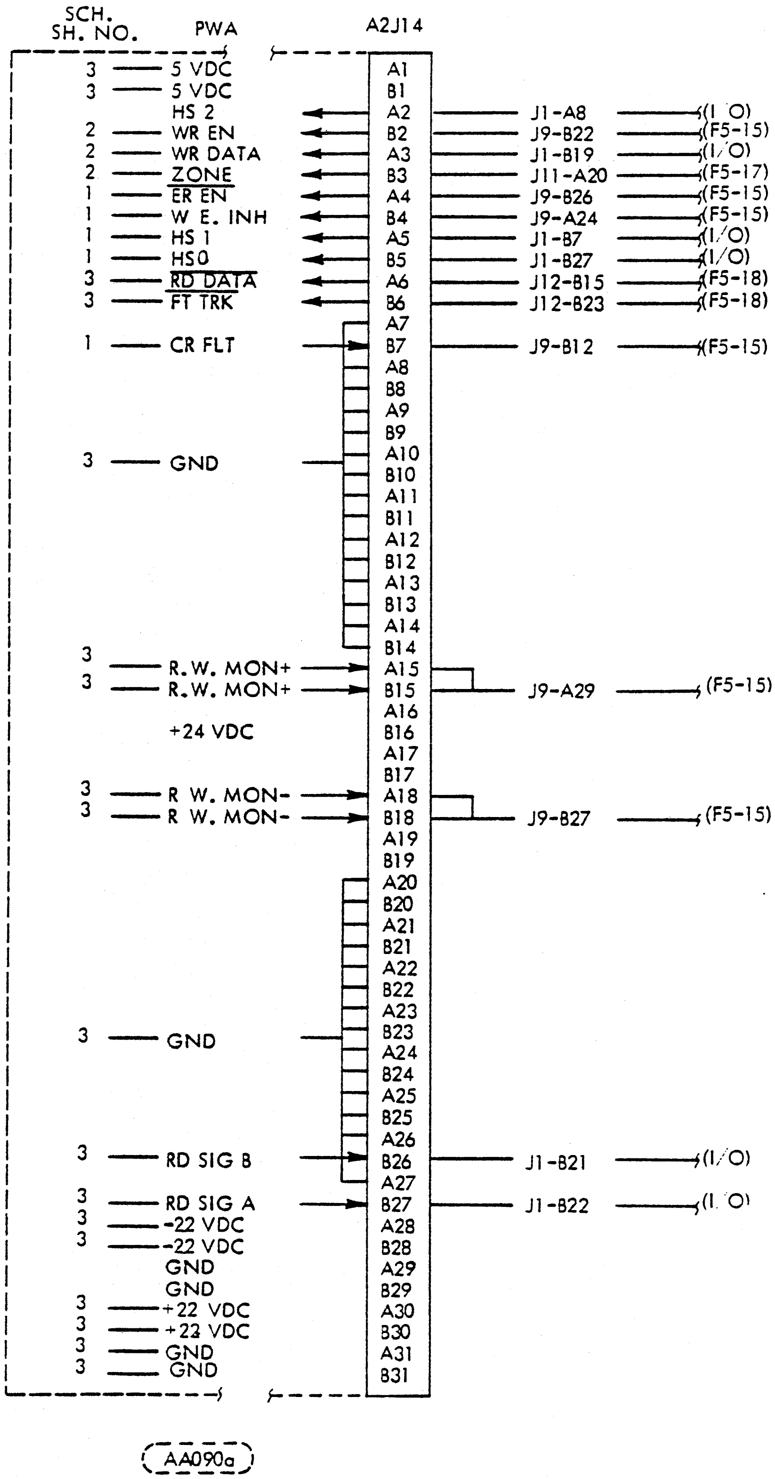


Figure 5-19. Read/Write/Erase Bd Asm (Sheet 4 of 7)

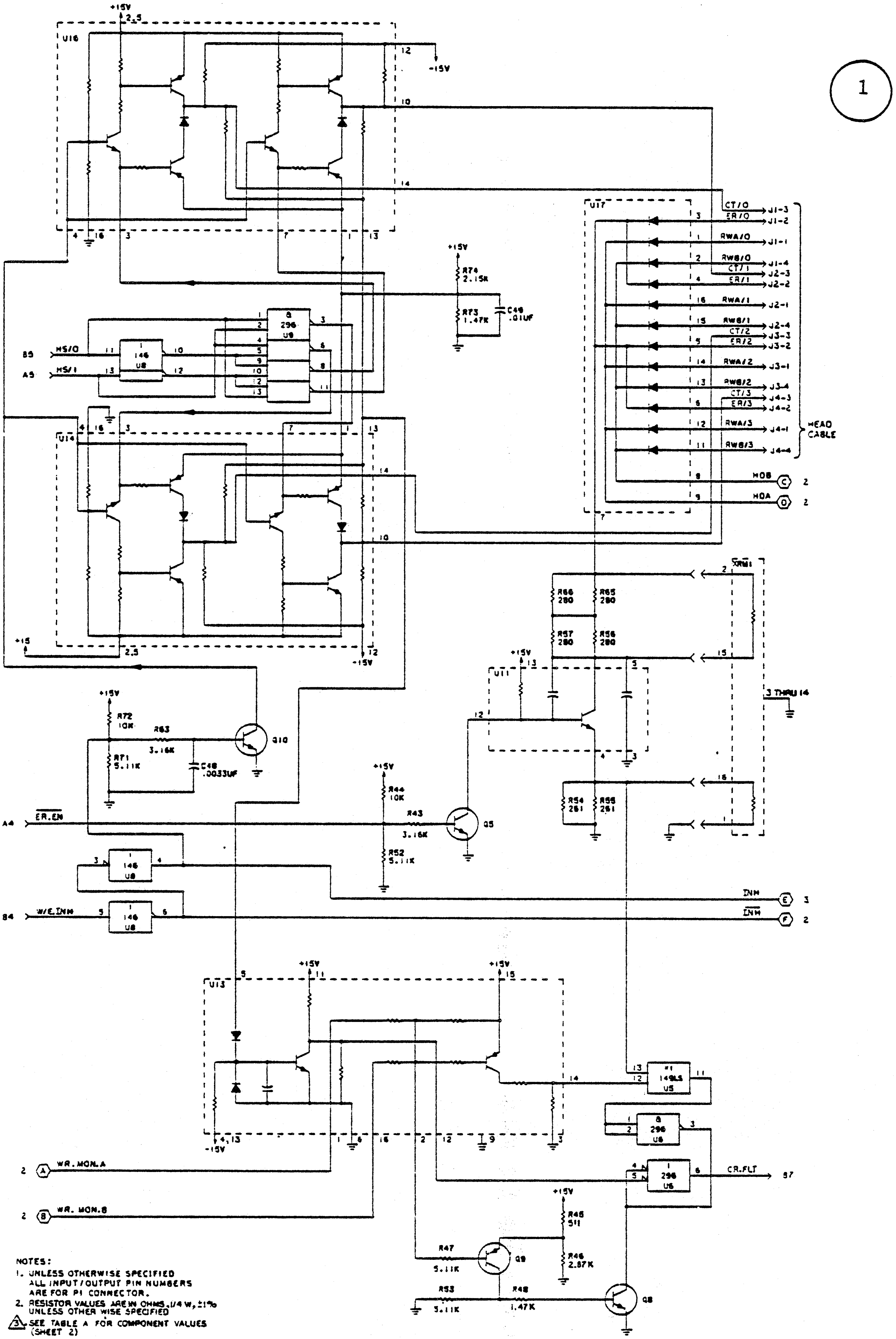


Figure 5-19. Read/Write/Erase Bd Asm (Sheet 5 of 7)

2

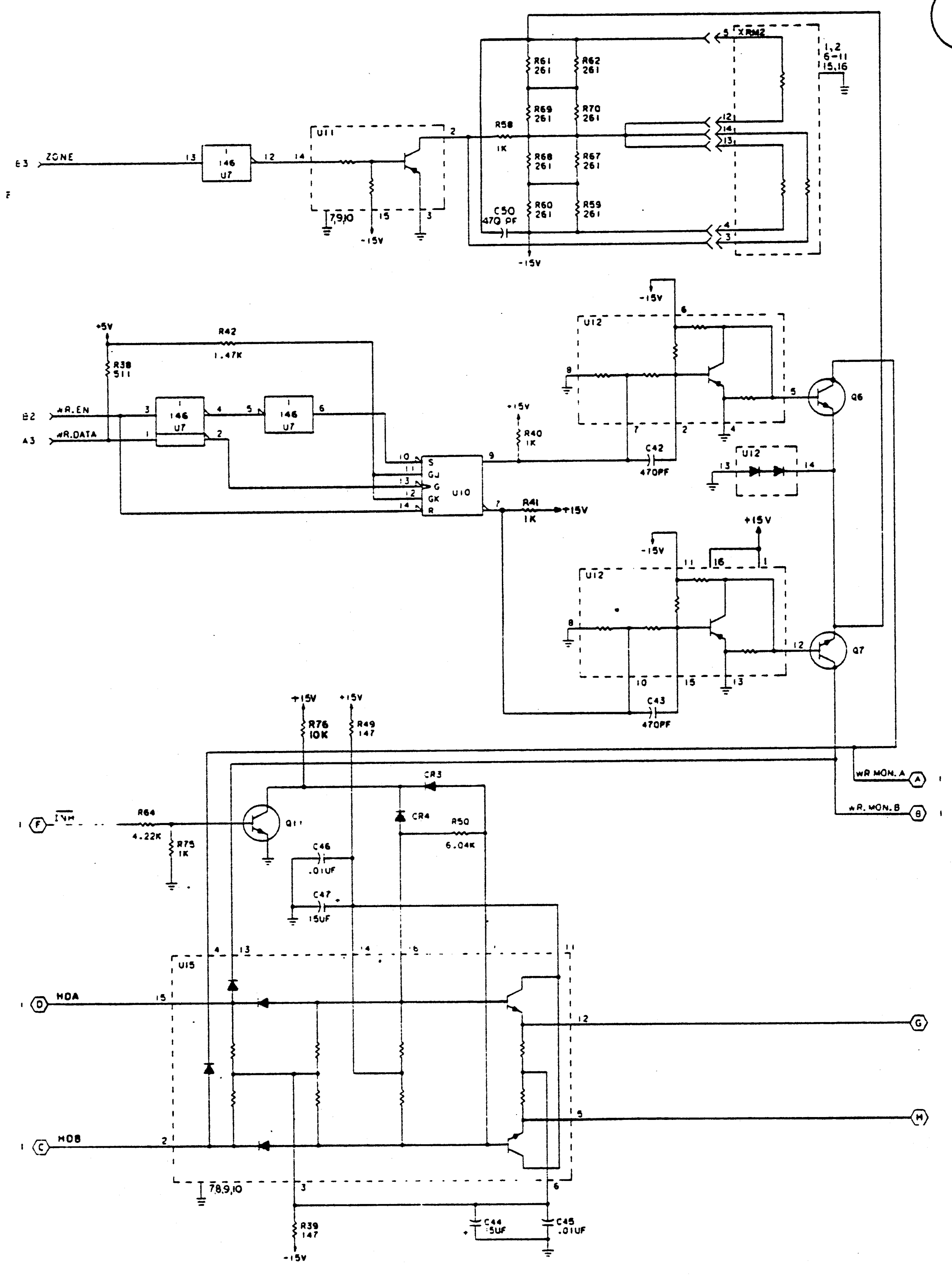


TABLE A (3)										
ASM. NO.	C38	C37	C35	L2	L1	C28	C31	C15	C14	R23
1500 75880500	5600pf	5600pf	820pf	15uh	15uh	430pf	150pf	5600pf	5600pf	T.S.
2400 75891100	3300pf	3300pf	—	10uh	10uh	270pf	100pf	3300pf	3300pf	T.S.

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

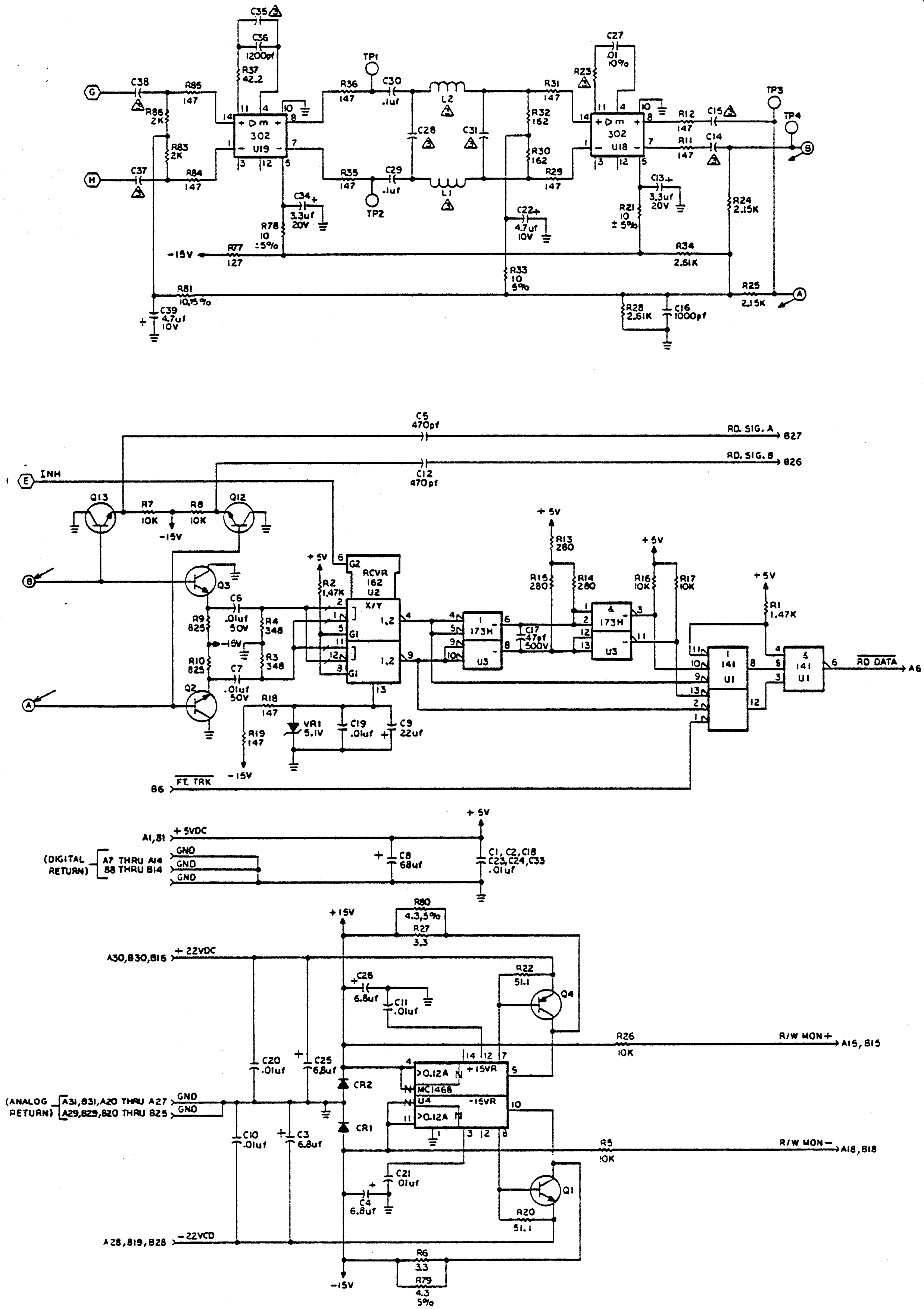


Figure 5-19. Read/Write/Erase Bd Asm (Sheet 7 of 7)

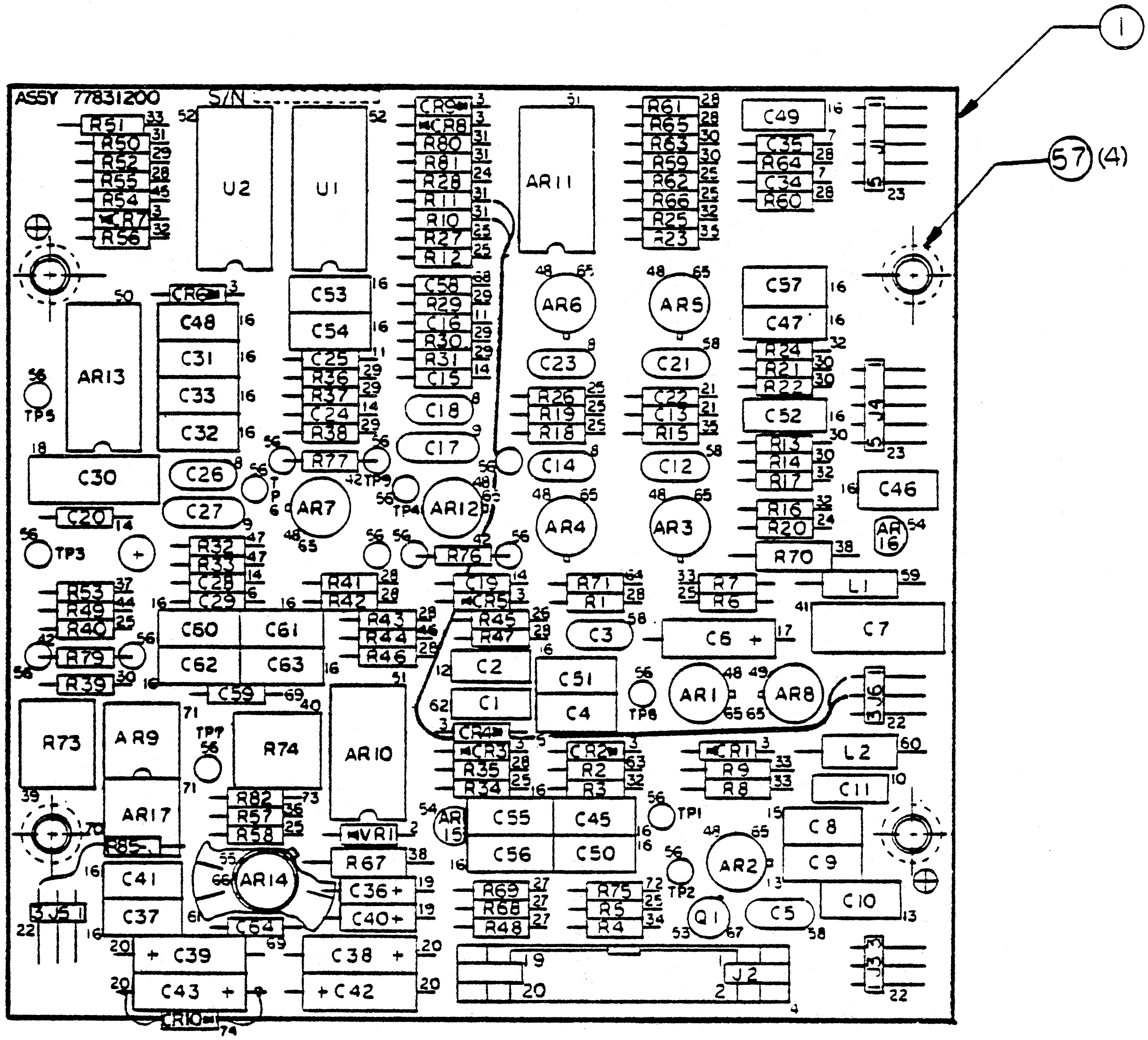


Figure 5-20. AGC Servo Preamp Bd Asm (Sheet 1 of 6)

ITEM NO.	IDENTIFICATION NO.	DRAWING TITLE
	77831200-9	Comp Bd Assy - AGC Servo Preamp
1	77831221-5	PC Bd, AGC Pre Amp
2	50240115-1	Diode Silicon
3	51736700-9	Diode IN914A
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 Preamp 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

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

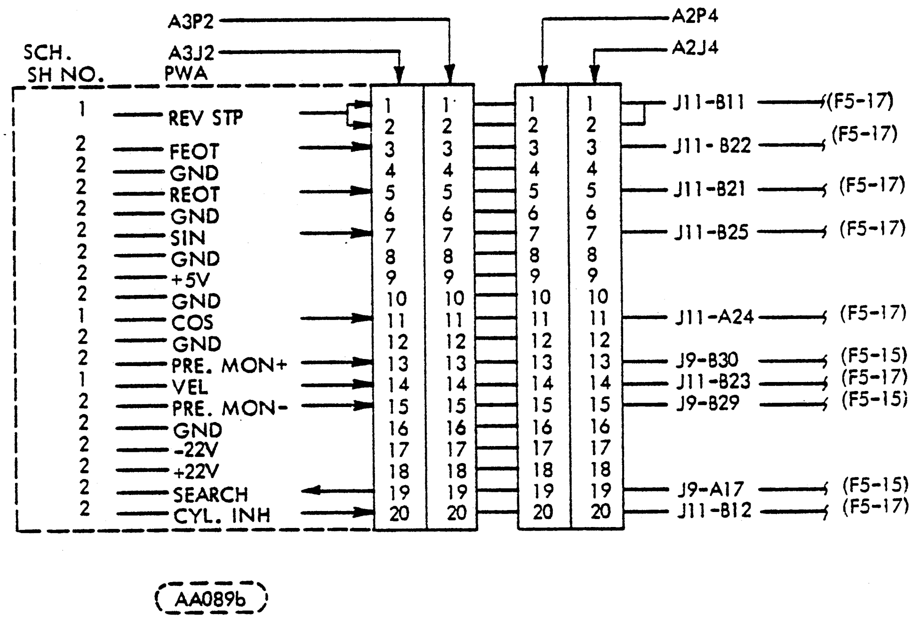


Figure 5-20. AGC Servo Preamp Bd Asm (Sheet 4 of 6)

1

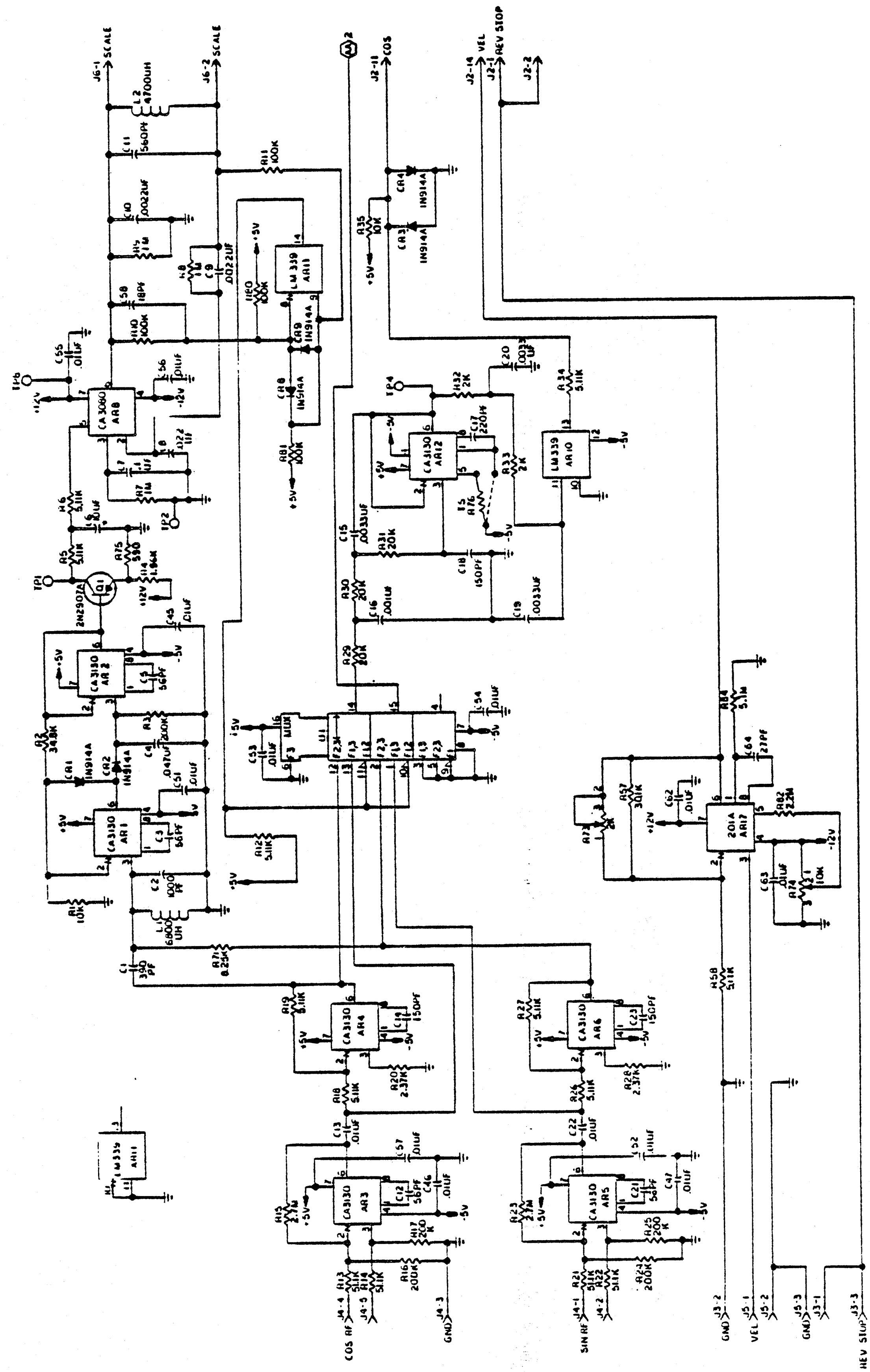


Figure 5-20. AGC Servo Preamp Bd Asm (Sheet 5 of 6)

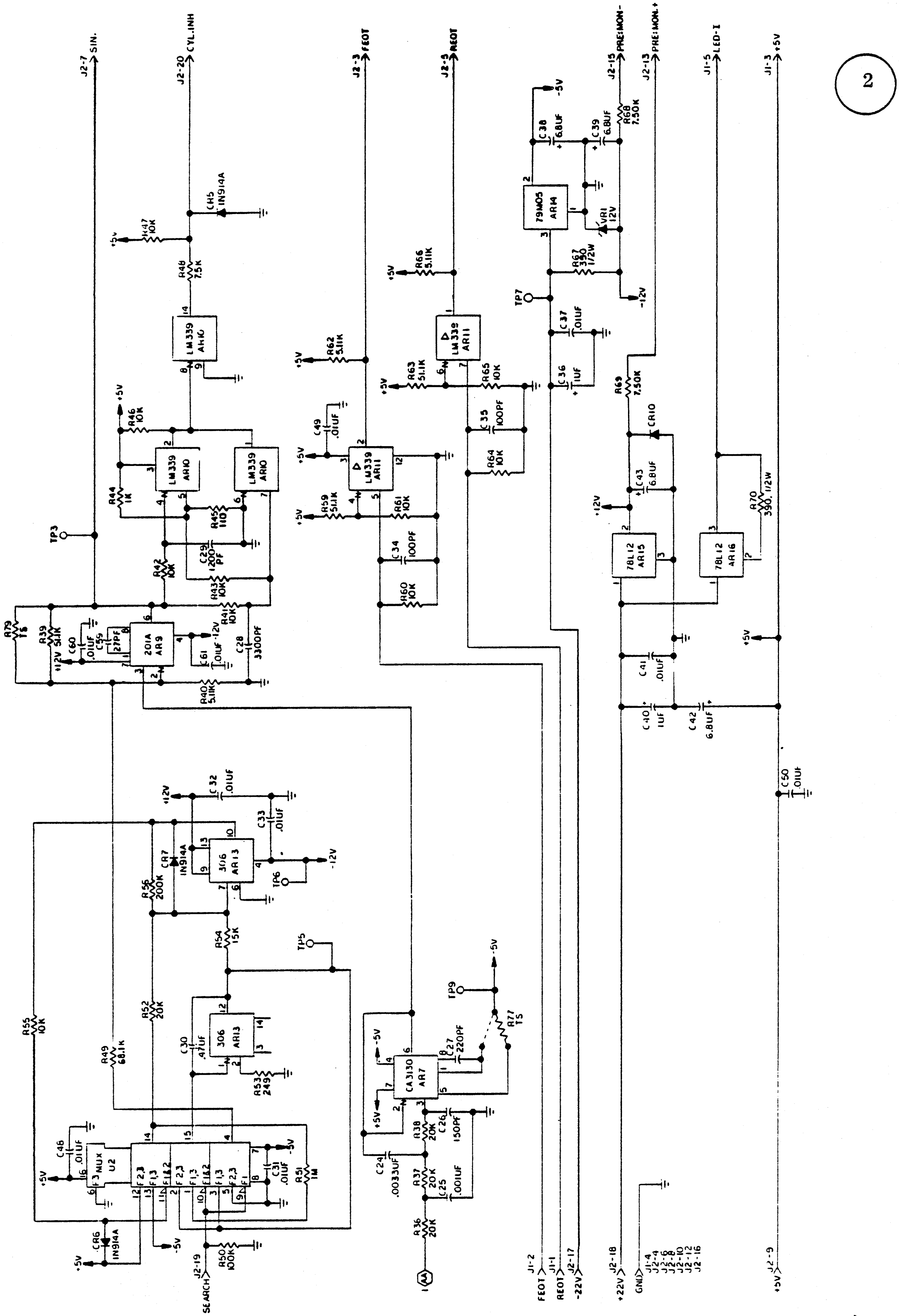
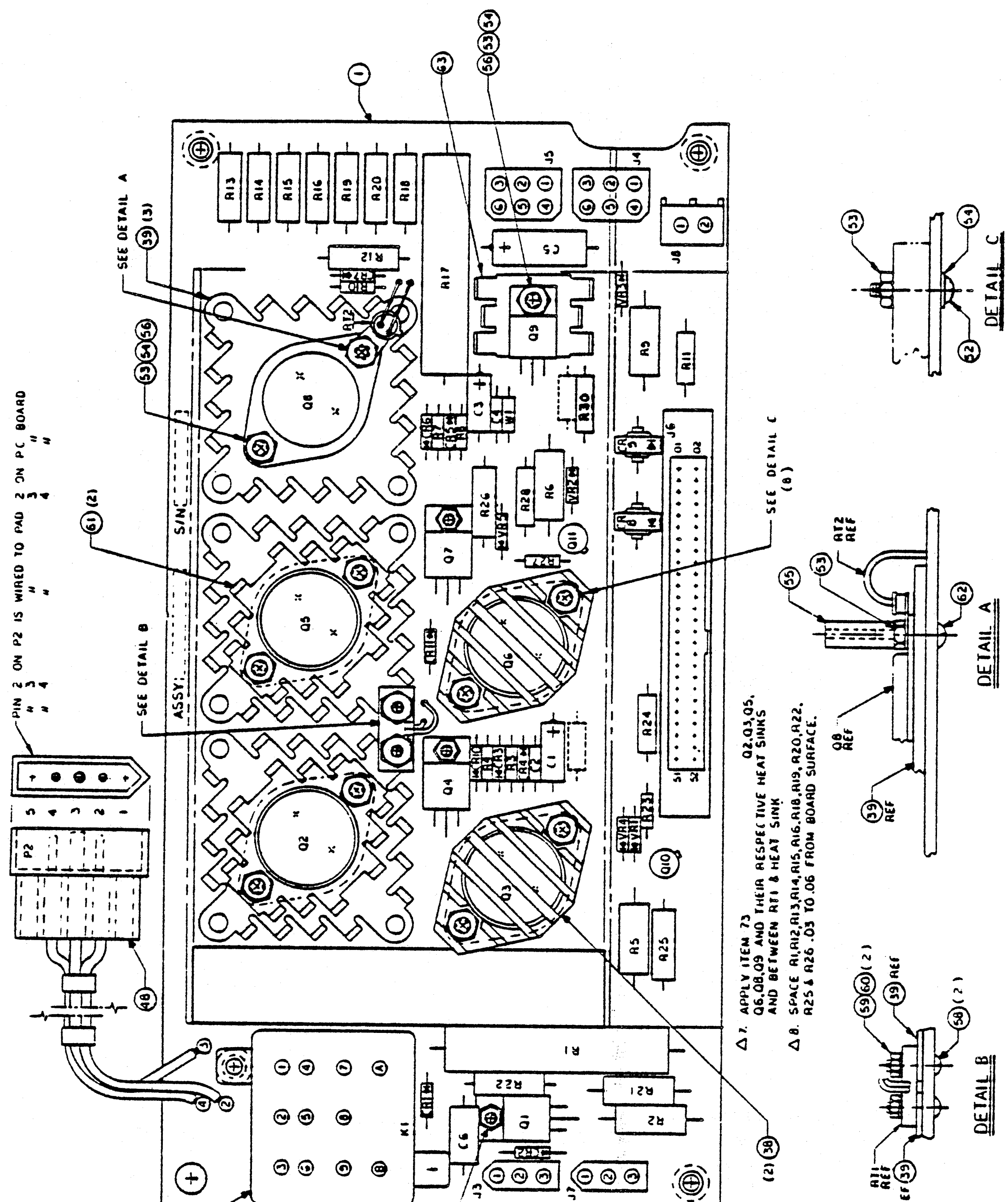


Figure 5-20. AGC Servo Preamp Bd Asm (Sheet 6 of 6)



	TSTR	ITEM
	Q1	4
Δ7	Q2	42
Δ7	Q3	75
	Q4	5
Δ7	Q5	43
Δ7	Q6	42
	Q7	76
Δ7	Q8	7
Δ7	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

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

RELAY	ITEM
K1	2

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

THMS	ITEM
RT1	30
RT2	13

	RES	ITEM
Δ8	R1	28
	R2	22
	R3	19
	R4	17
	R5	23
	R6	23
	R7	18
	R8	17
	R9	49
	R10	31
	R11	19
Δ8	R12	21
Δ8	R13	27
Δ8	R14	27
Δ8	R15	27
Δ8	R16	27
	R17	29
Δ8	R18	25
Δ8	R19	26
Δ8	R20	26
	R21	24
Δ8	R22	44
	R23	70
	R24	69
Δ8	R25	68
Δ8	R26	68
	R27	70
	R28	69

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

ITEM NO.	IDENTIFICATION NO.	DRAWING TITLE
	77830321-6	Comp. Bd. Assy Pwr #1
1	77830324-8	Pwr Sup #1
2	22940804-2	Relay
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 IN914A
11	50240920-4	Diode Zener
12	77832208-1	Diode Silicon
13	83465304-0	Therm Sensor Switch
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	Resistor
23	24507139-4	Res 1W 5% 390
24	24507170-9	Resistor 2K 1W
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 100W
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 52 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 Suppdy Bd No. 1 (Sheet 2 of 6)

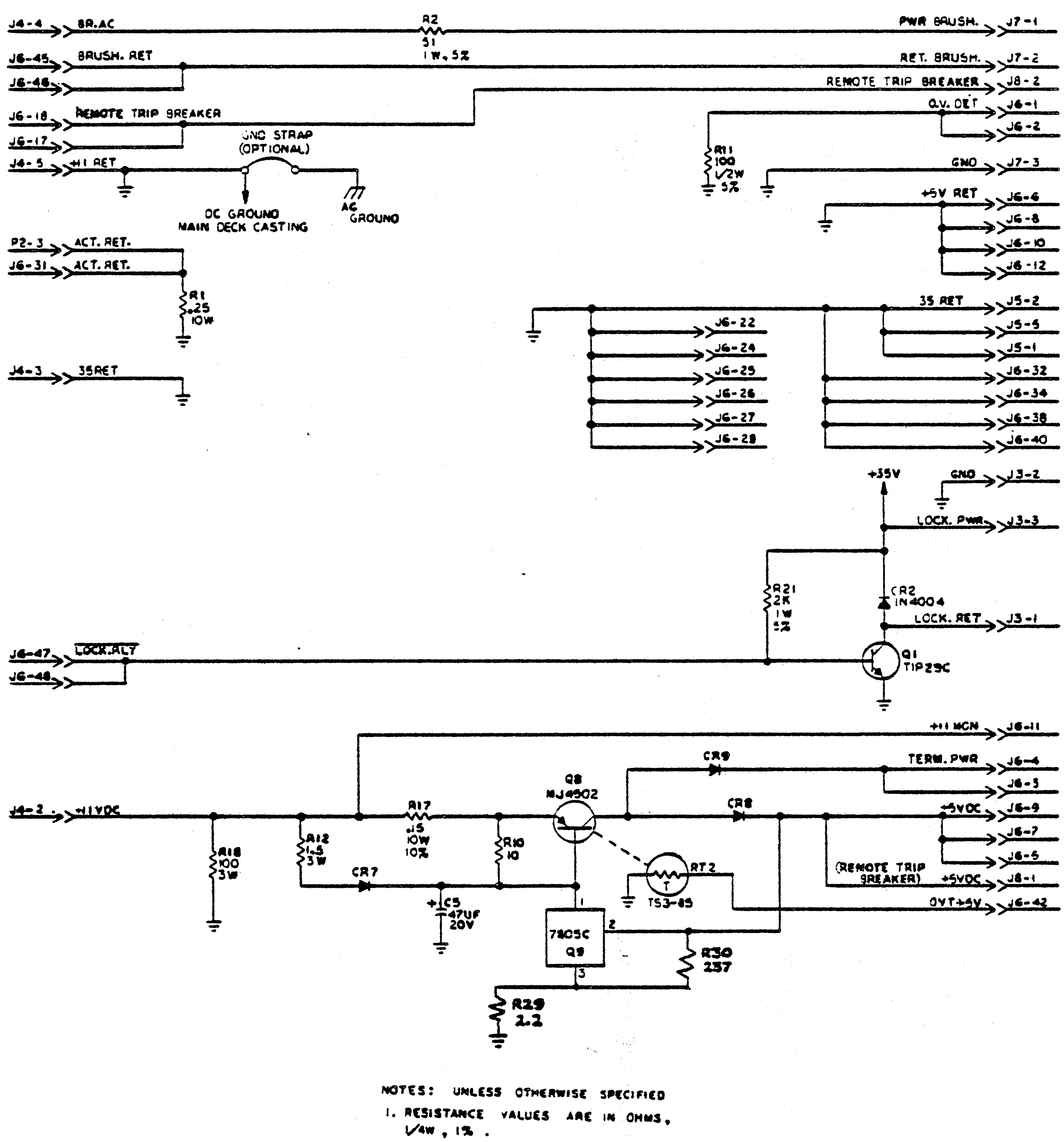
ITEM NO.	IDENTIFICATION NO.	DRAWING TITLE
53	95510026-8	Nut Hex Mach Screw
54	10126103-0	Wash Int Tooth LK #6
55	83475701-5	Std Off-Wind Tunnel
56	92743164-3	Screw SS Pan Hd 6-32
57	10125603-0	Washers Plain 4
58	92743088-4	Screw-Mach Hd SS 4-4
59	10126101-4	Wash Int Tooth Lock
60	10125103-1	Scr Nut-Hex 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
80	15164522-3	Res 1/4W 2.2Ω 5%

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



FS-22
FS-15

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

2

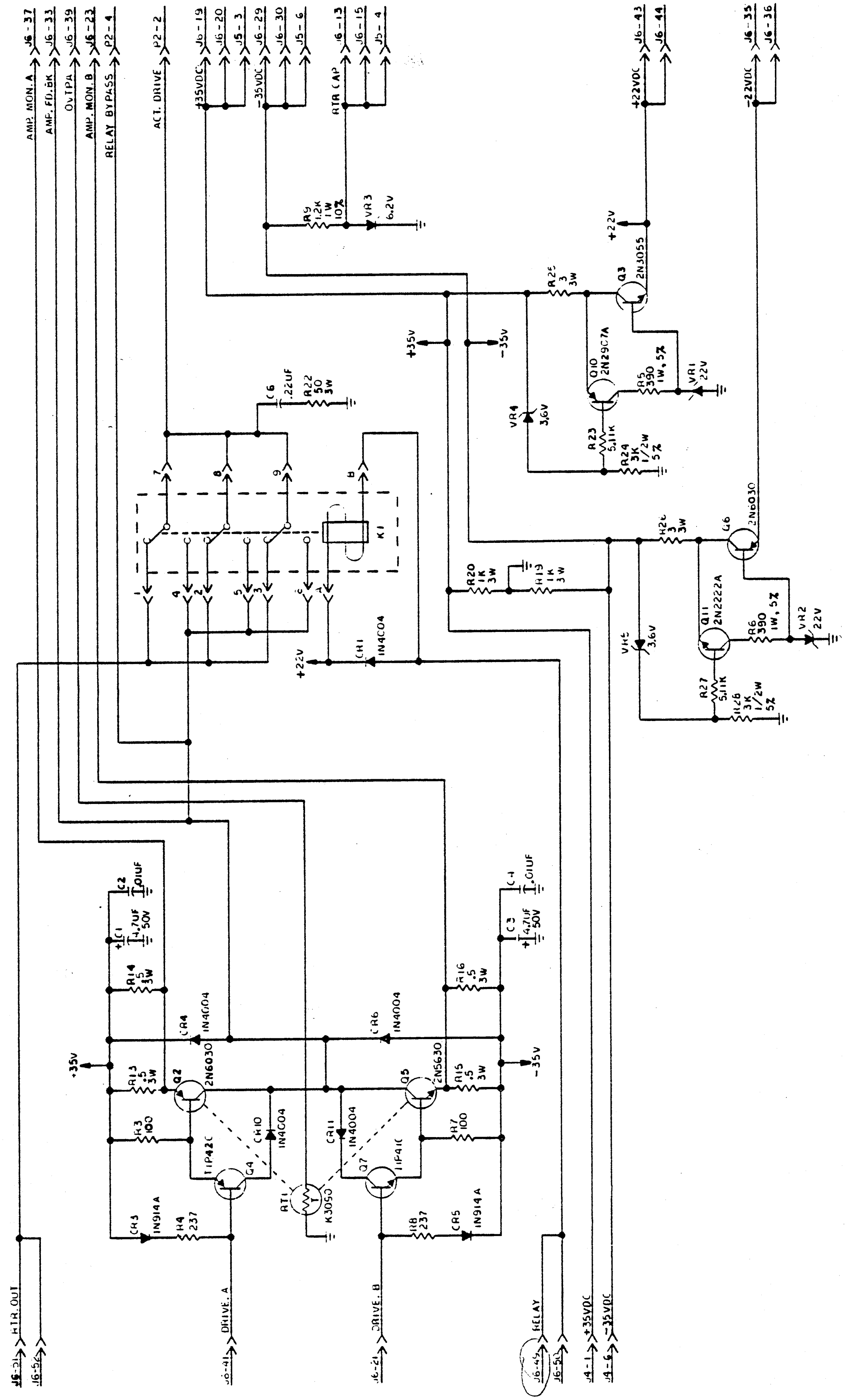


Figure 5-21. Power Supdy Bd No. 1 (Sheet 6 of 6)

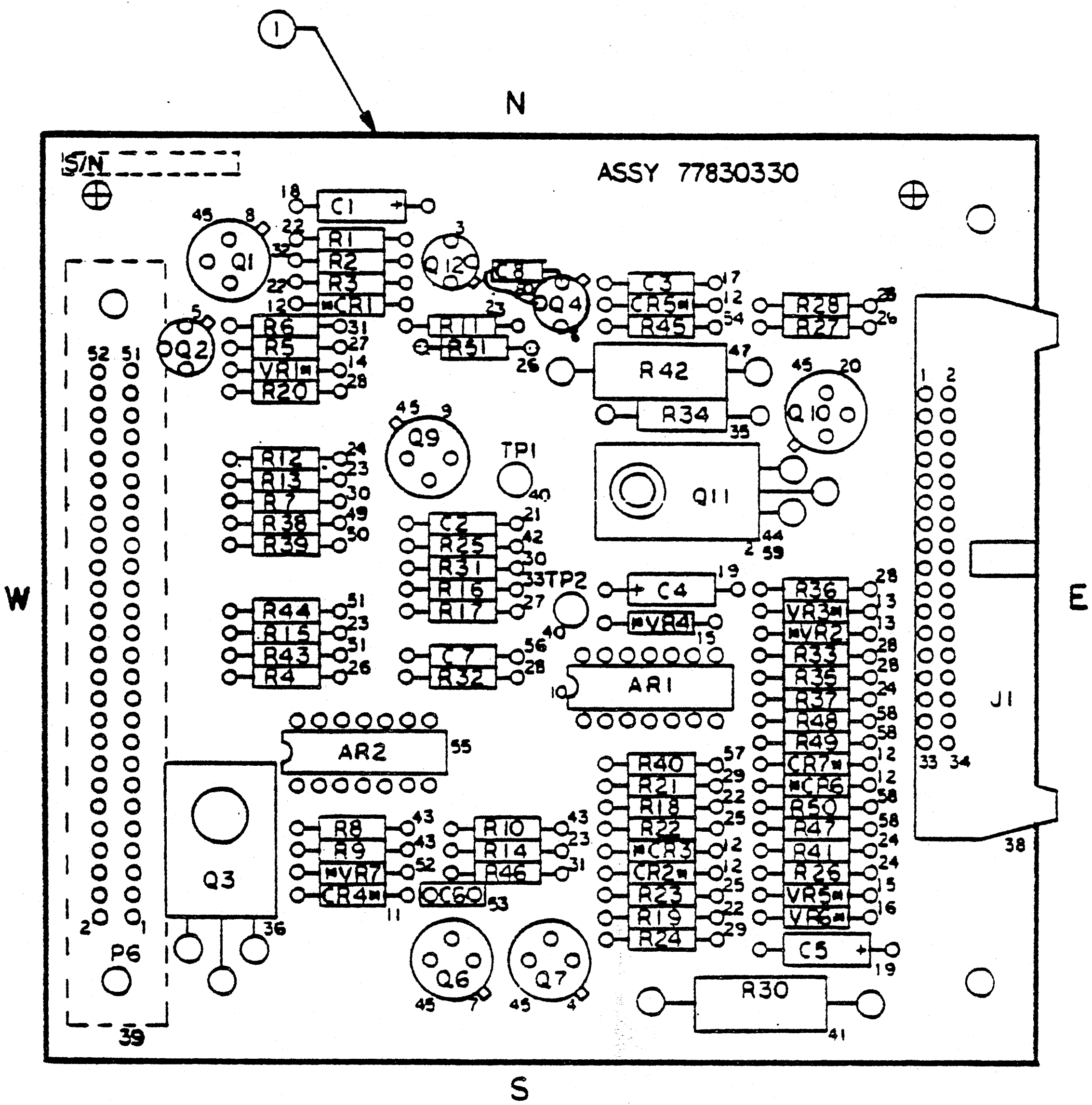


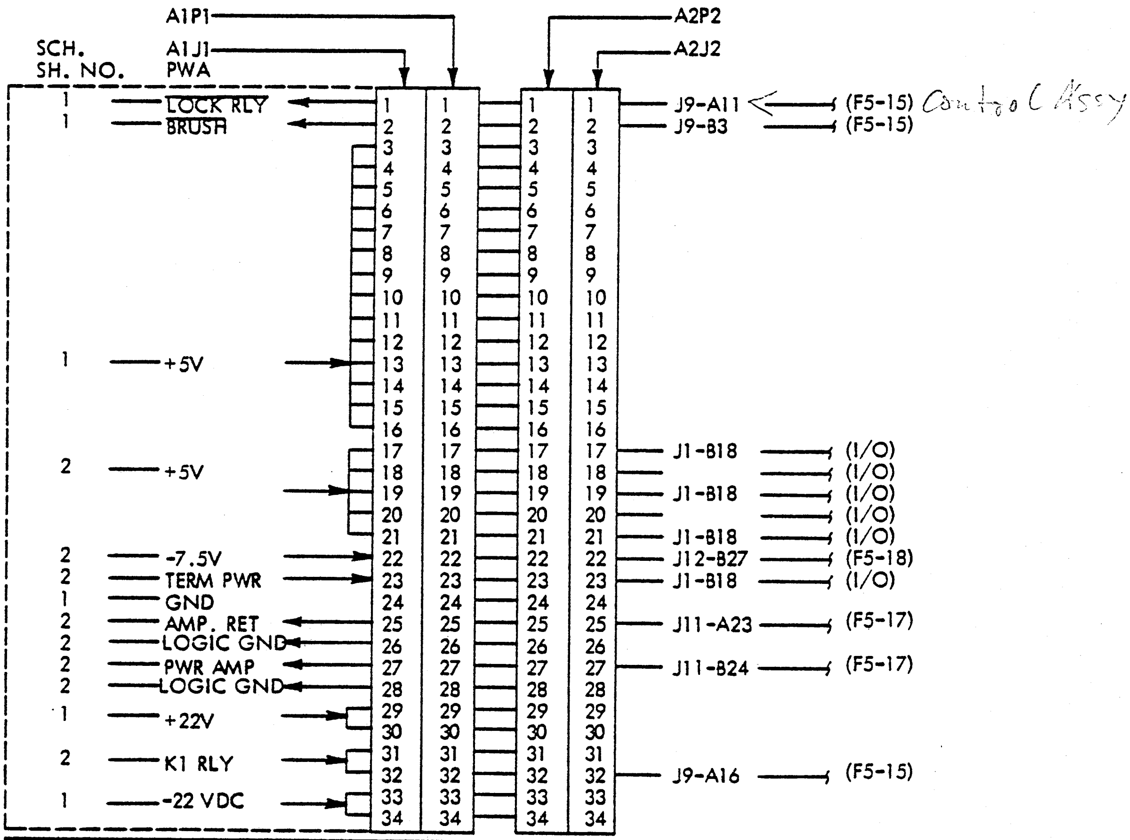
Figure 5-22. Power Supply Bd No. 2 (Sheet 1 of 6)

ITEM NO.	IDENTIFICATION NO.	DRAWING TITLE
	77830330-5	Comp. Bd Assy - Pwr Bd #2
1	77830333-9	PWB Pwr Sup #2
2	75752300-6	Transistor Power
3	50219900-3	Transistor-Unijuncti
4	95592700-9	Tstr Silicon PNP
5	75722200-5	Transistor NPN
6	16547200-2	Trans PNP 2N2907A
7	75722201-3	Transistor NPN
8	95327201-0	Silicon Triac
9	83464201-9	Triac
10	51812800-4	IC Dual
11	50241001-2	Diode Silicon
12	51736700-9	Diode IN914A
13	50240102-9	Diode-Zener 3.6V
14	50240109-4	Diode Silicon
15	50240117-7	Diode Zener
16	50240110-2	Diode Zener
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	3M Header Rt Angle P
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-Insulator
47	24507118-8	Resistor
49	94360400-9	Res 1/4W 1% 10.0K

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

ITEM NO.	IDENTIFICATION NO.	DRAWING TITLE
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% 10,000
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, 1.0 uF

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)

1

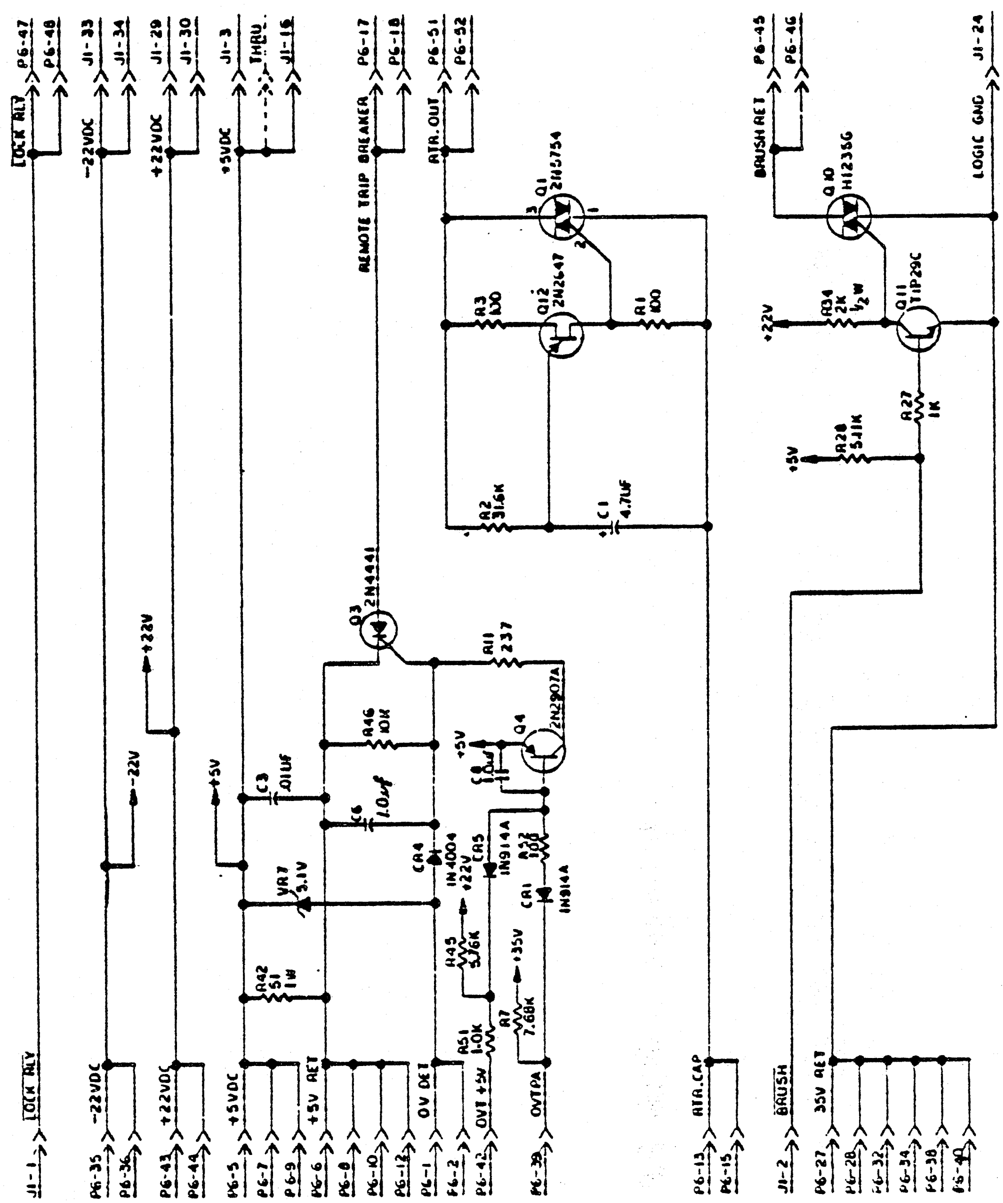


Figure 5-22. Power Supply Bd No. 2 (Sheet 5 of 6)

2

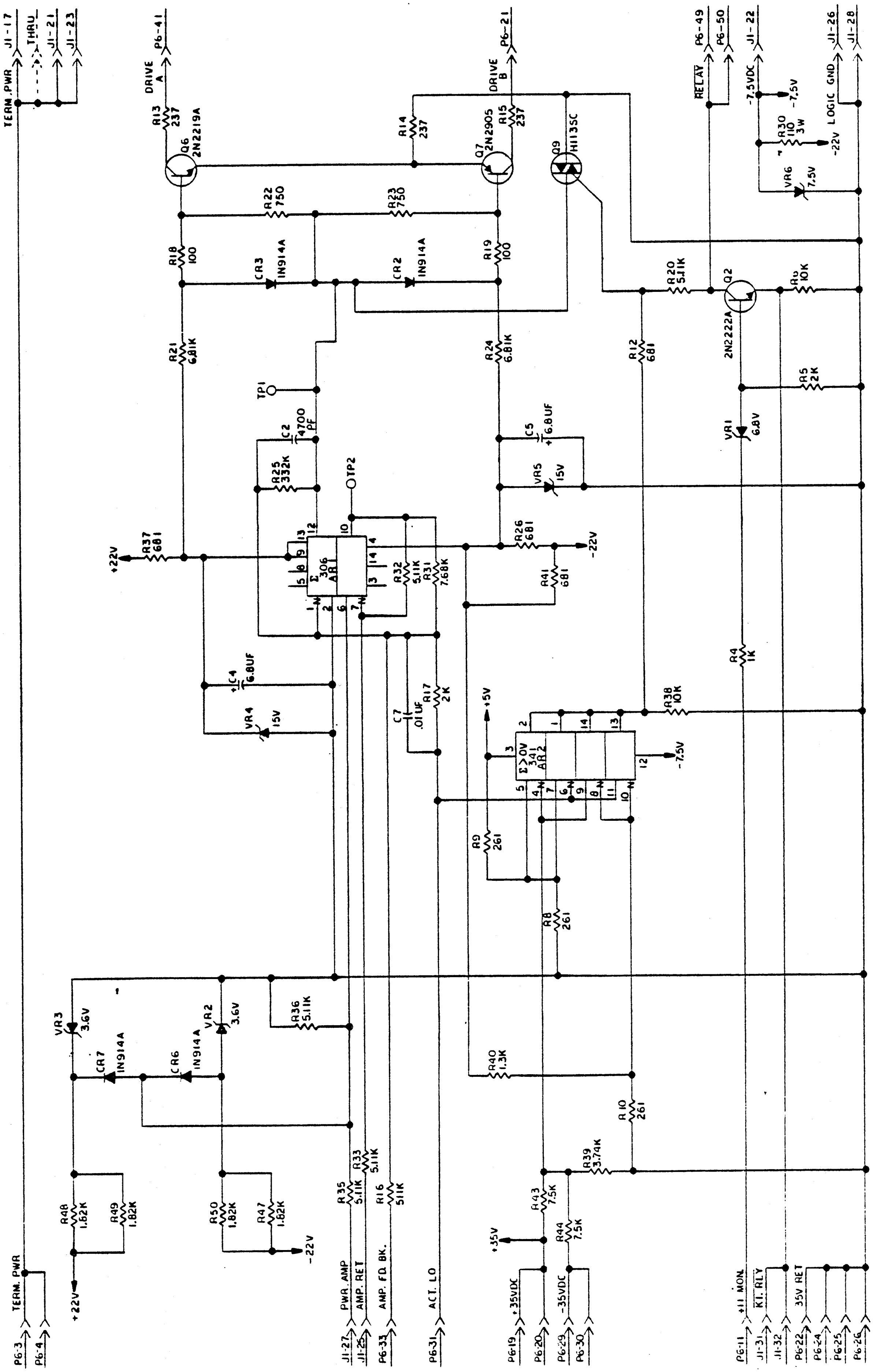


Figure 5-22. Power Supply Bd No. 2 (Sheet 6 of 6)

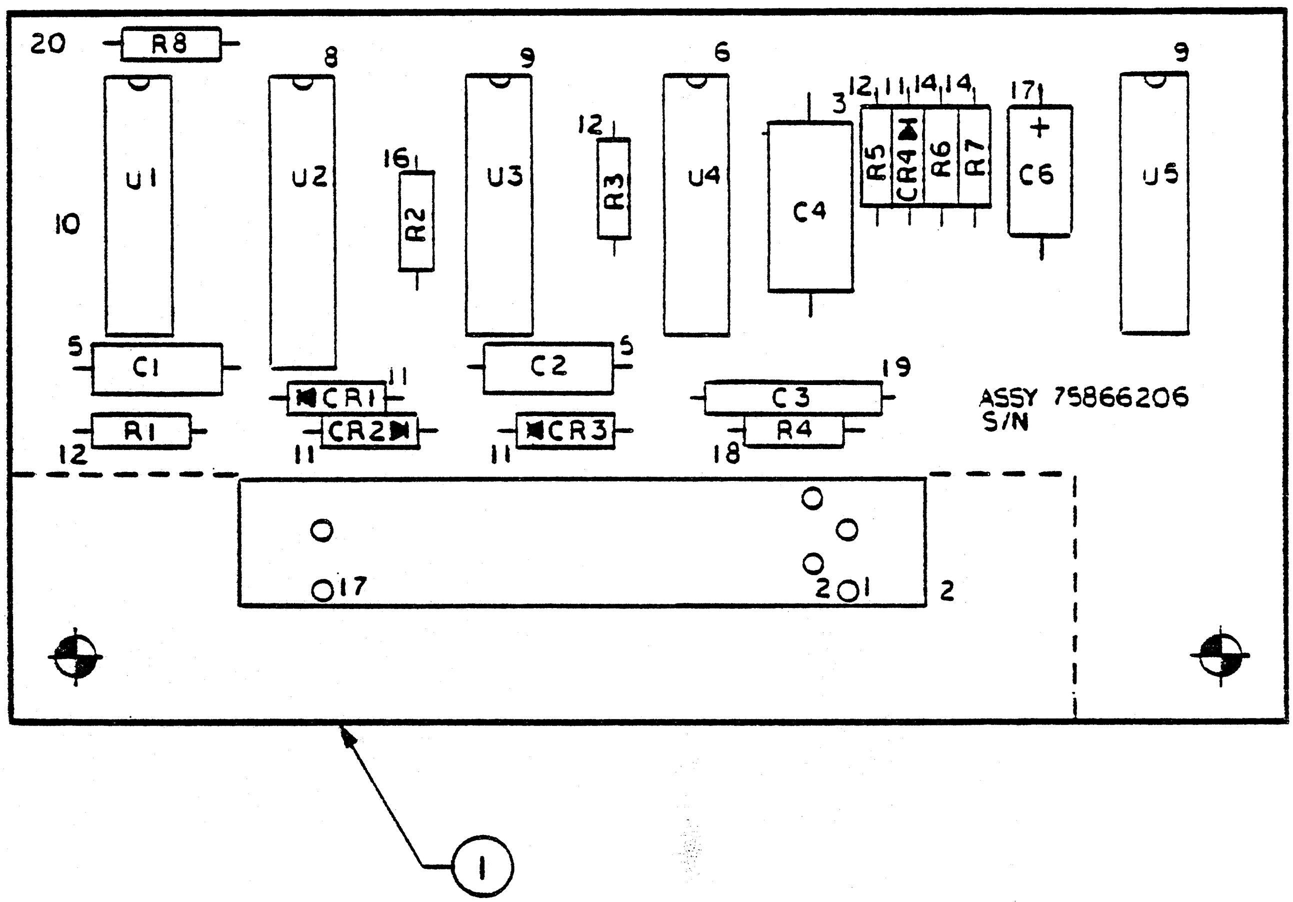


Figure 5-23. Spindle Motor Brake Asm (Sheet 1 of 4)

ITEM NO.	IDENTIFICATION NUMBER	DRAWING TITLE
	75866206	Comp Bd Assy, Spindle
1	75866105	Board P.C. - Brake
2	00005184	Connector PR017579
3	75808553	Cap 100V 10% .22UF
5	75808549	Cap 100V 10% .10UF
6	15133200	Cmos Quad 2 Input NA
8	15134700	Cmos 4049 Hex Invert
9	15135000	Cmos 4001 Quad 2 INP
10	51768200	IC Dual
11	51736700	Diode IN914A
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	Capacitor .22 MF 100
20	94360357	Res 1/4W 1% 3.92K

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

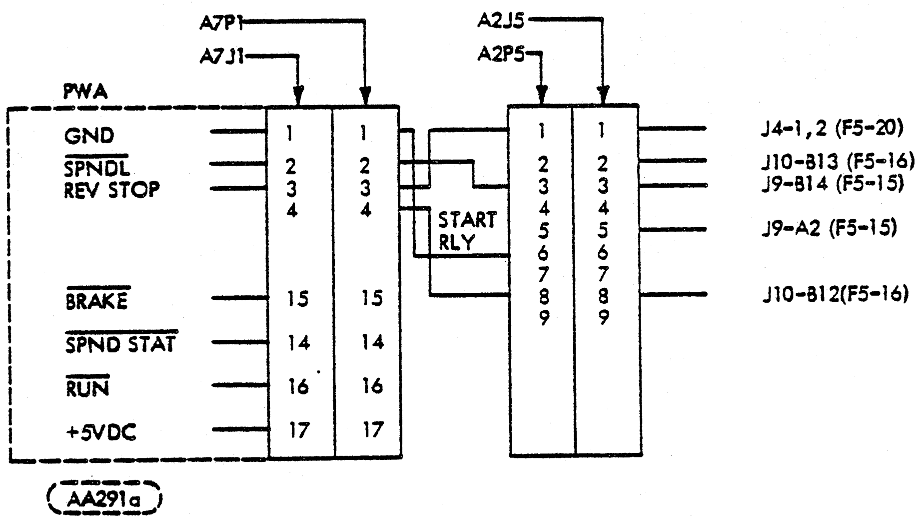


Figure 5-23. Spindle Motor Brake Asm (Sheet 3 of 4)

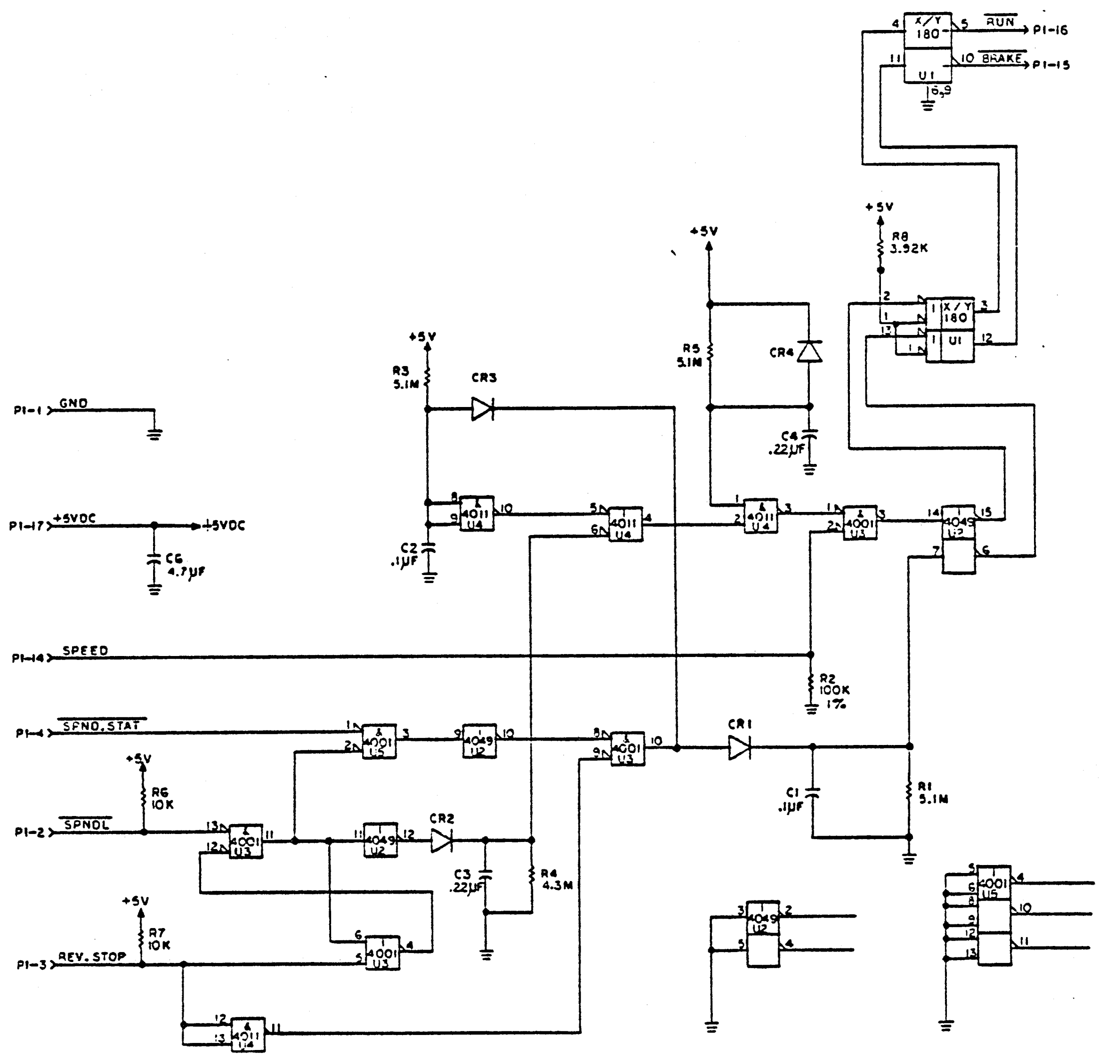


Figure 5-23. Spindle Motor Brake Asm (Sheet 4 of 4)

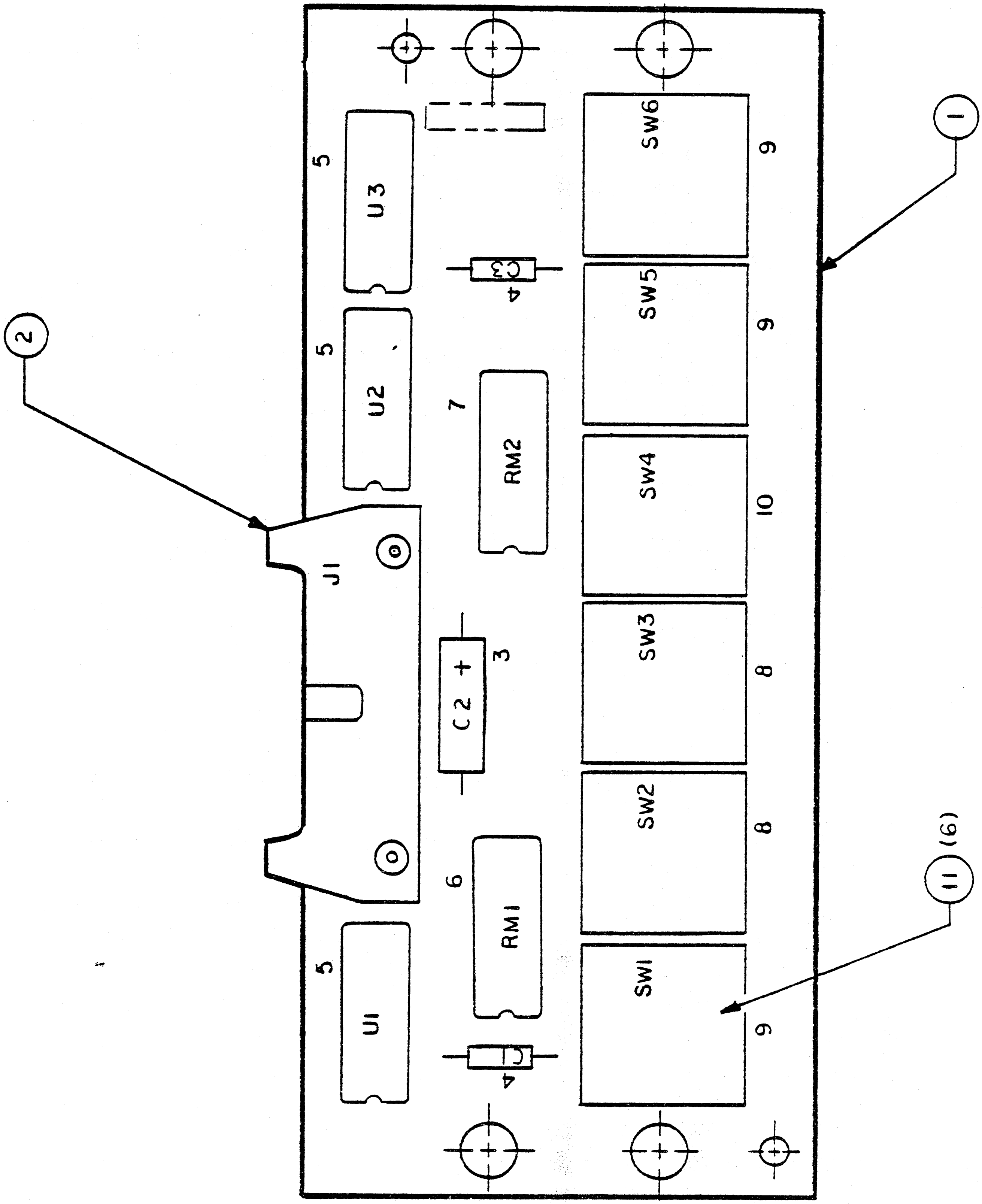


Figure 5-24. Switch Bd Asm (Sheet 1 of 4)

ITEM NO.	IDENTIFICATION NUMBER	DRAWING TITLE
	75299103	Component Board Assy - Switch
	75299102	Component Board Assy - Switch
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)

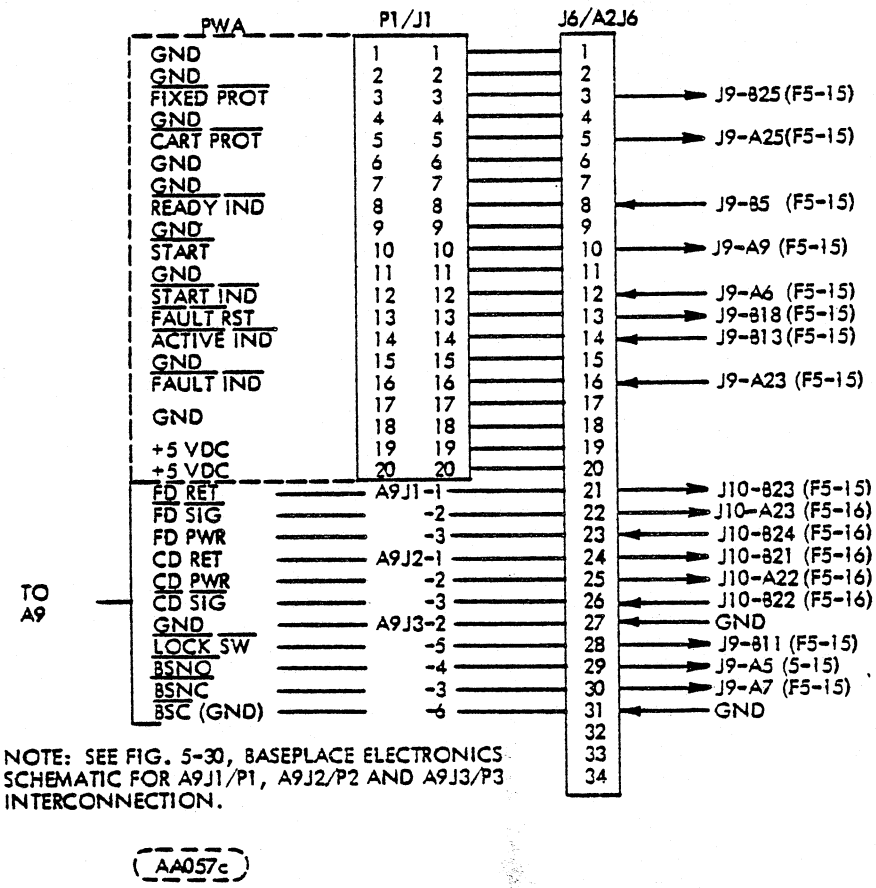


Figure 5-24. Switch Bd Asm (Sheet 3 of 4)

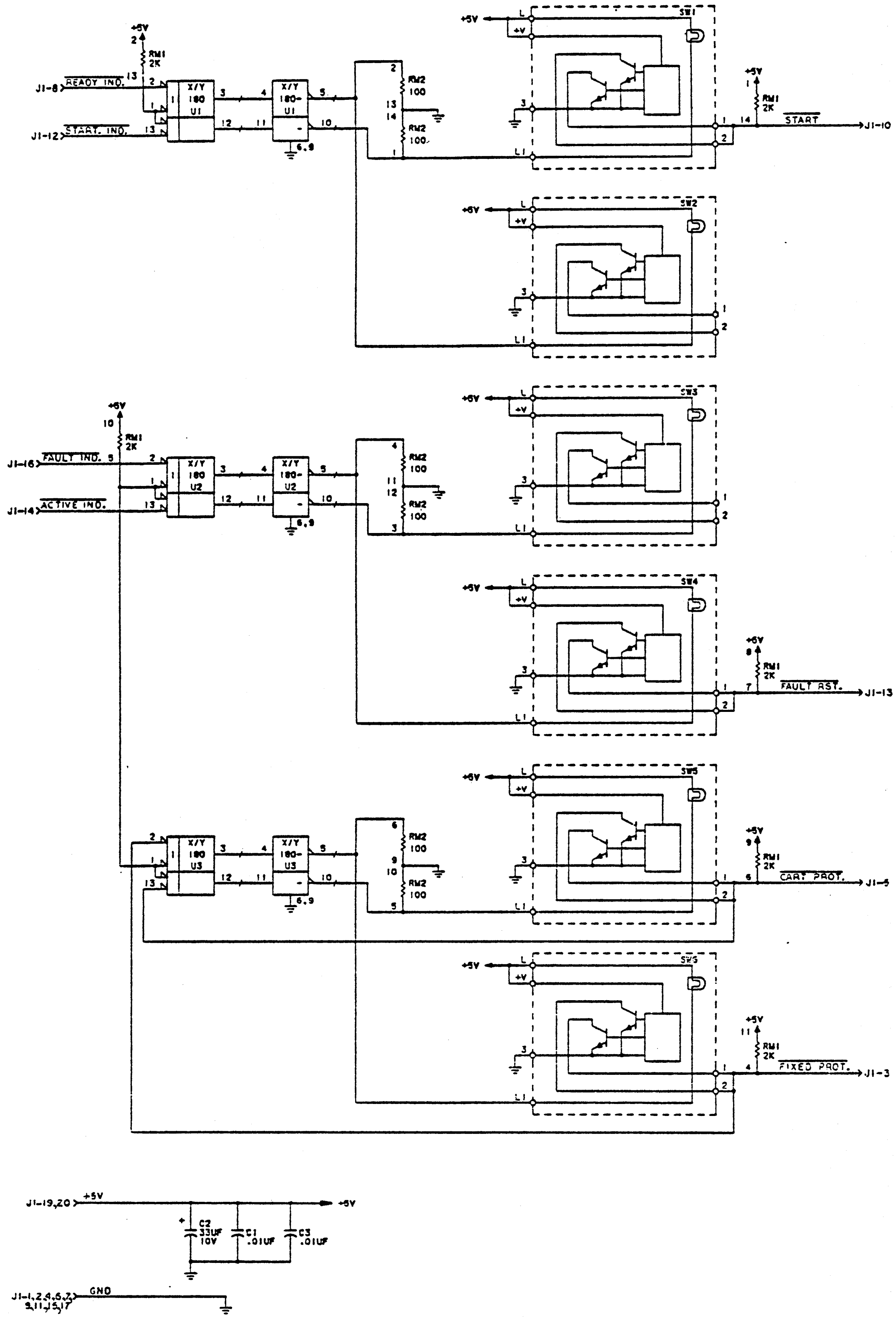


Figure 5-24. Switch Bd Asm (Sheet 4 of 4)

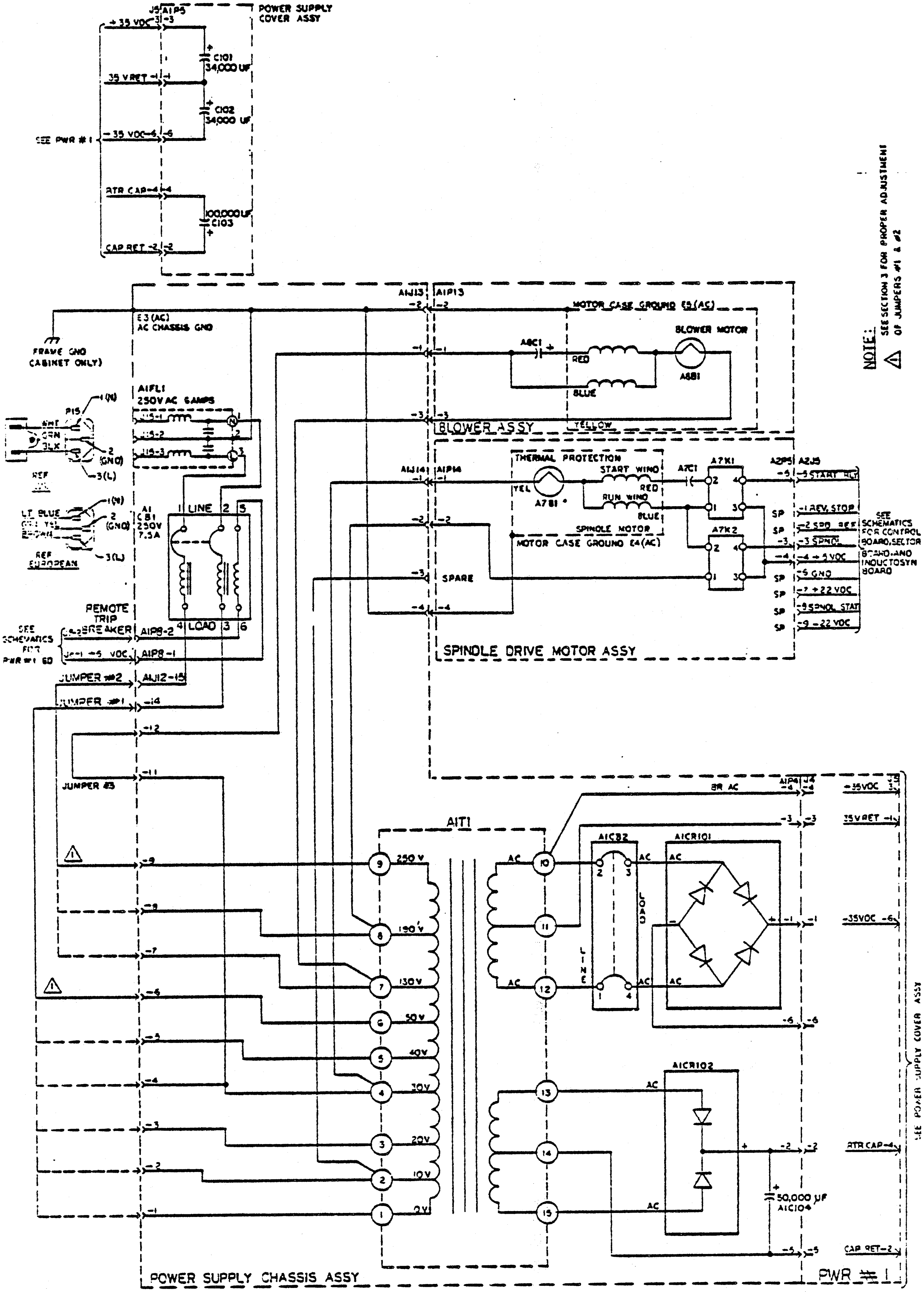


Figure 5-25. AC-DC Without Dynamic Brake

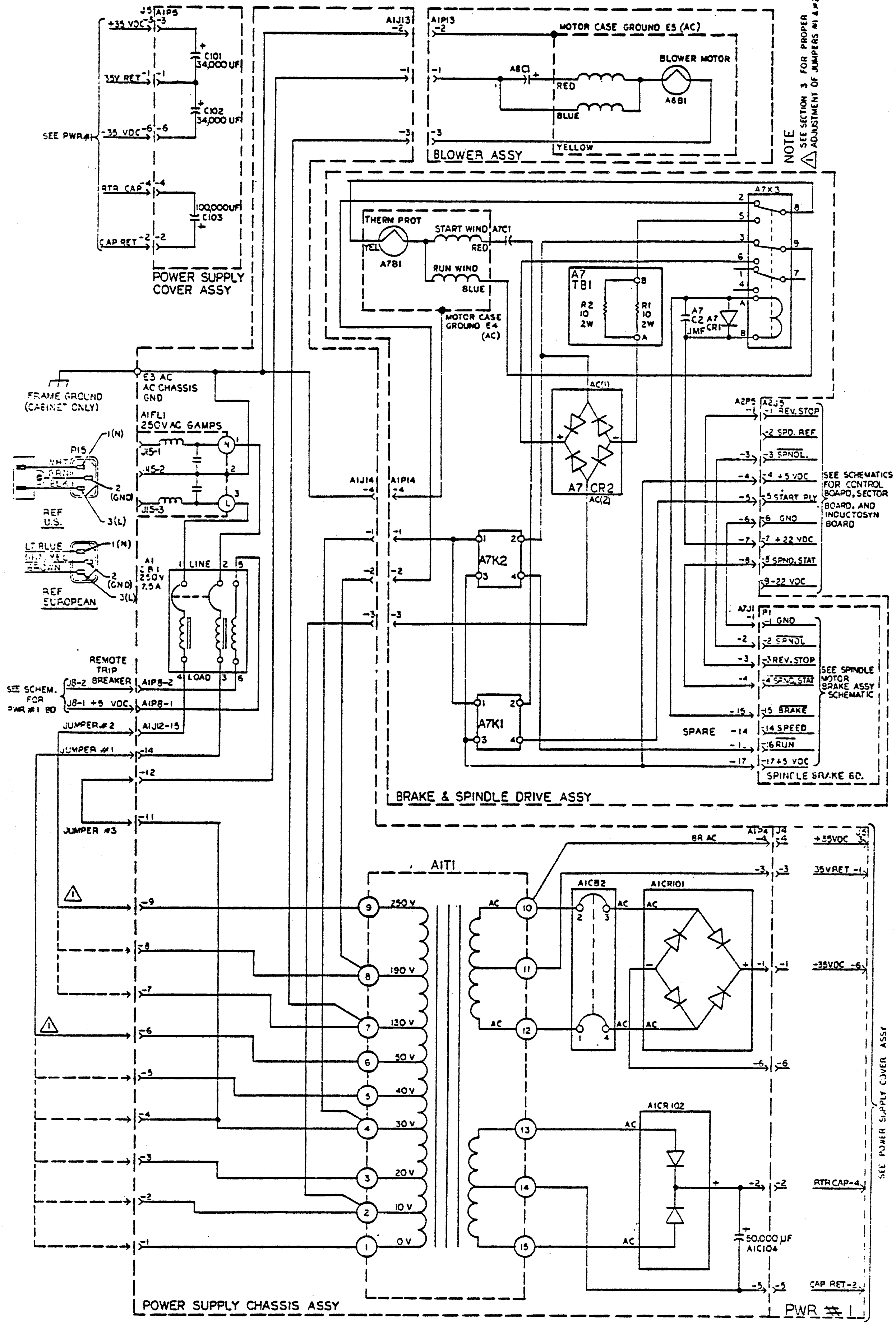


Figure 5-26. AC-DC With Dynamic Brake

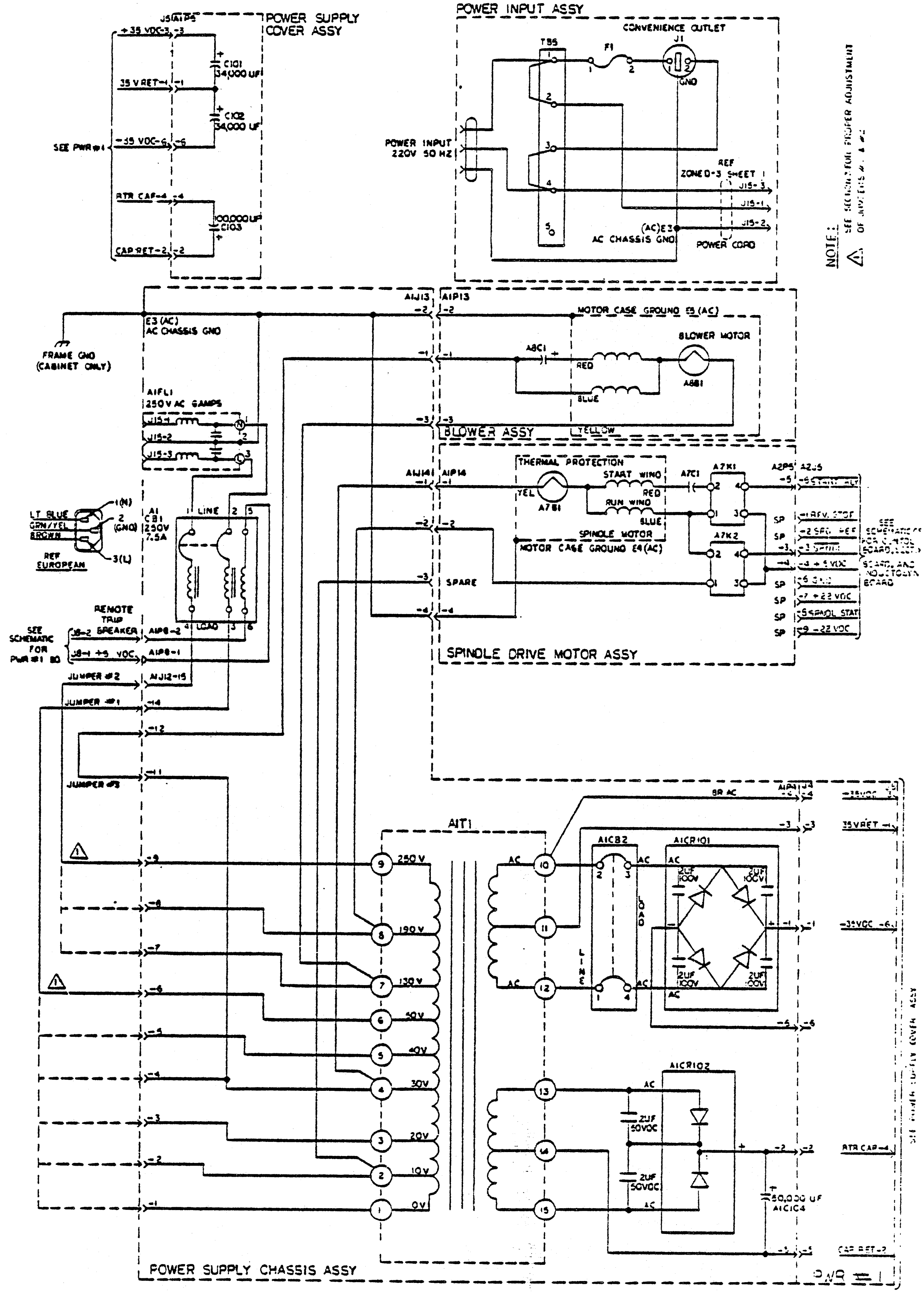
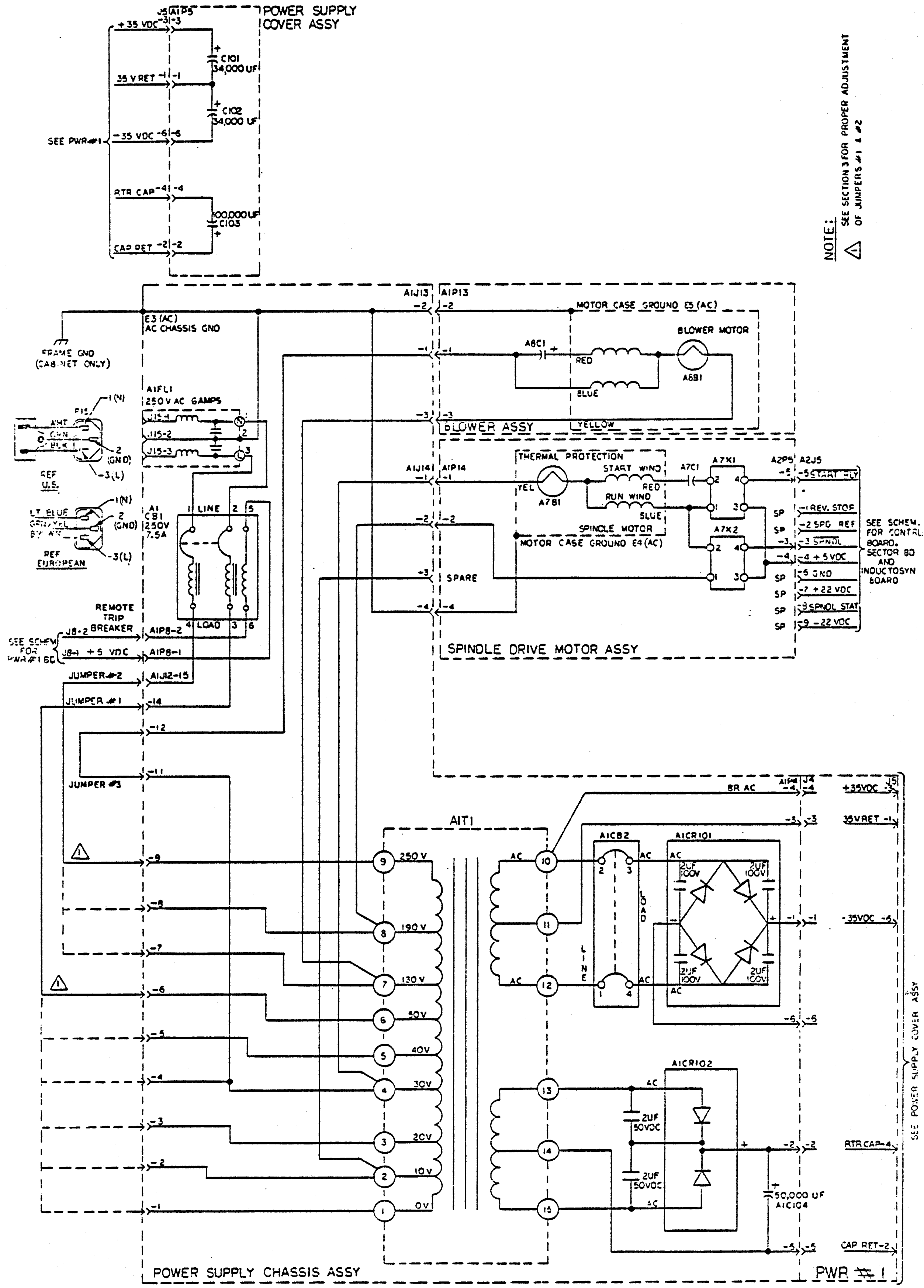


Figure 5-27. AC-DC Without Brake and With Filters and Power Input Assem.



NOTE:
△ SEE SECTION 3 FOR PROPER ADJUSTMENT OF JUMPERS #1 & #2

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

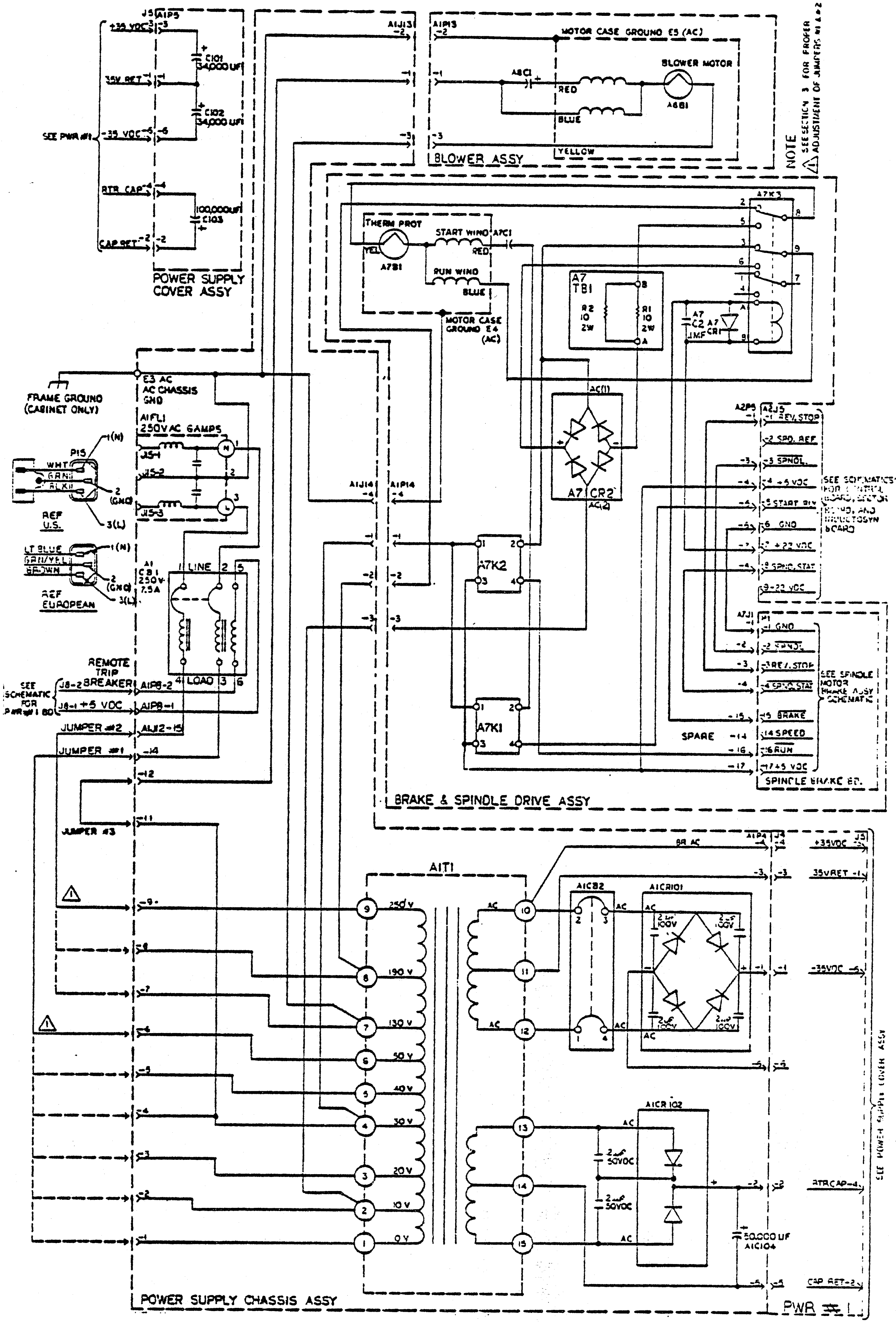


Figure 5-29. AC-DC With Brake and Filters

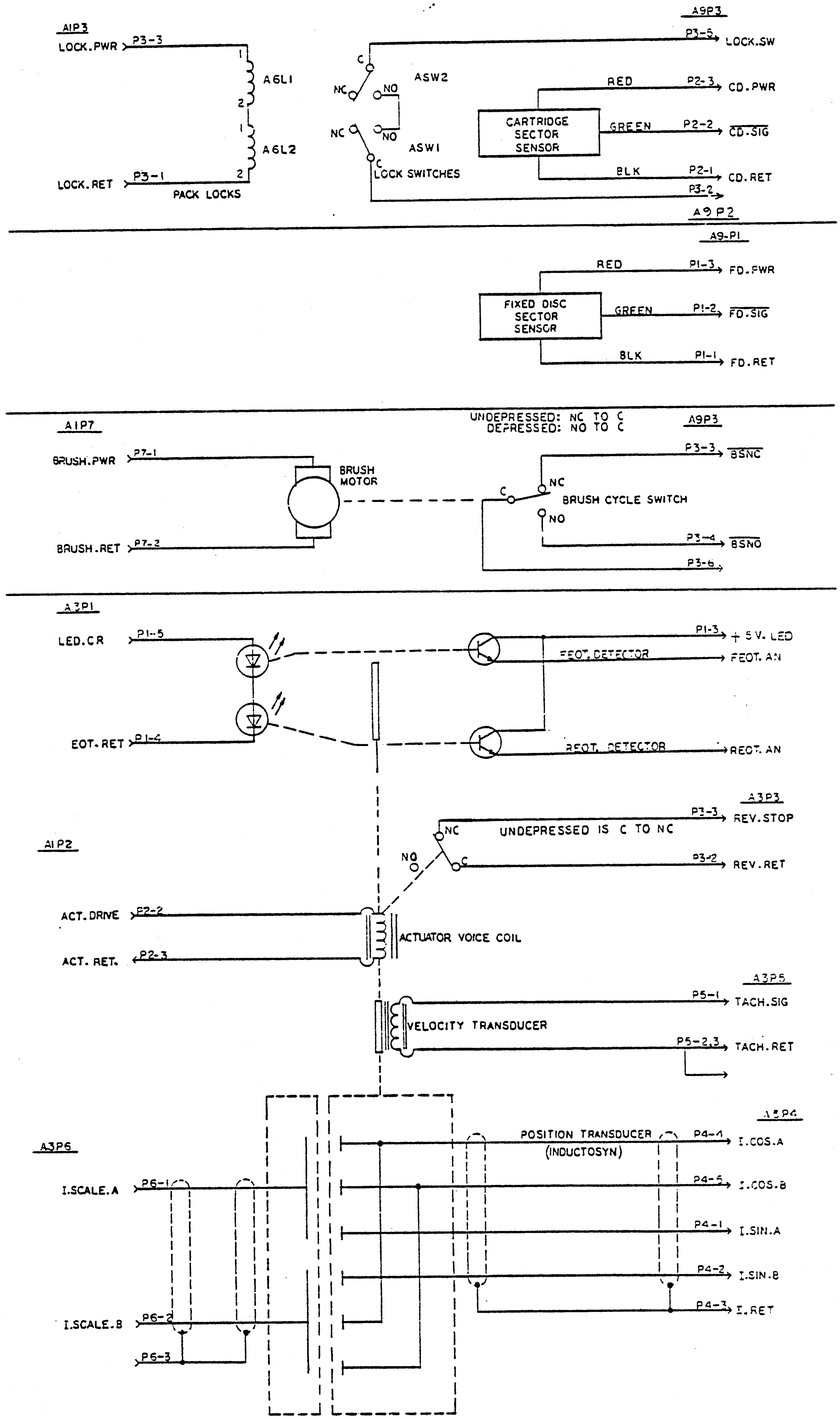


Figure 5-30. Baseplate Electronics

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 sevel 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:	83457801
Fault Board	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 95033502
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

6.4 -contd.

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 int he 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 pushbutton 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	Schedule
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)	
Title	Paragraph No.
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

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

CORRECTIVE MAINTENANCE	
CHECK AND ADJUSTMENT PROCEDURES (C & A)	
Title	Paragraph No.
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 ware, 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 cabinet skin from right-hand side of unit as viewed from the front (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.

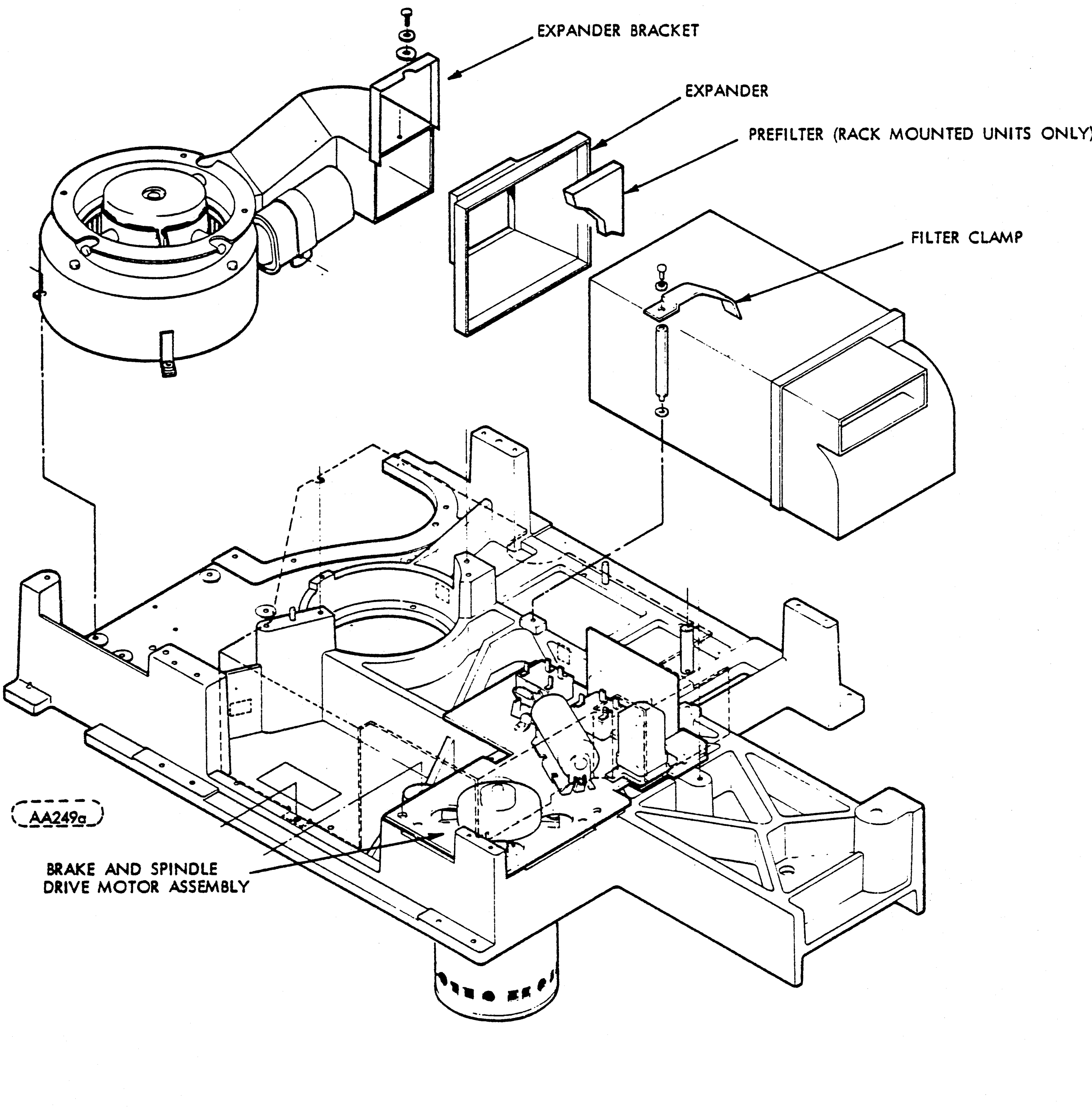


Figure 6-1. Filter Mounting

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.

6.5.7 -contd.

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.
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.

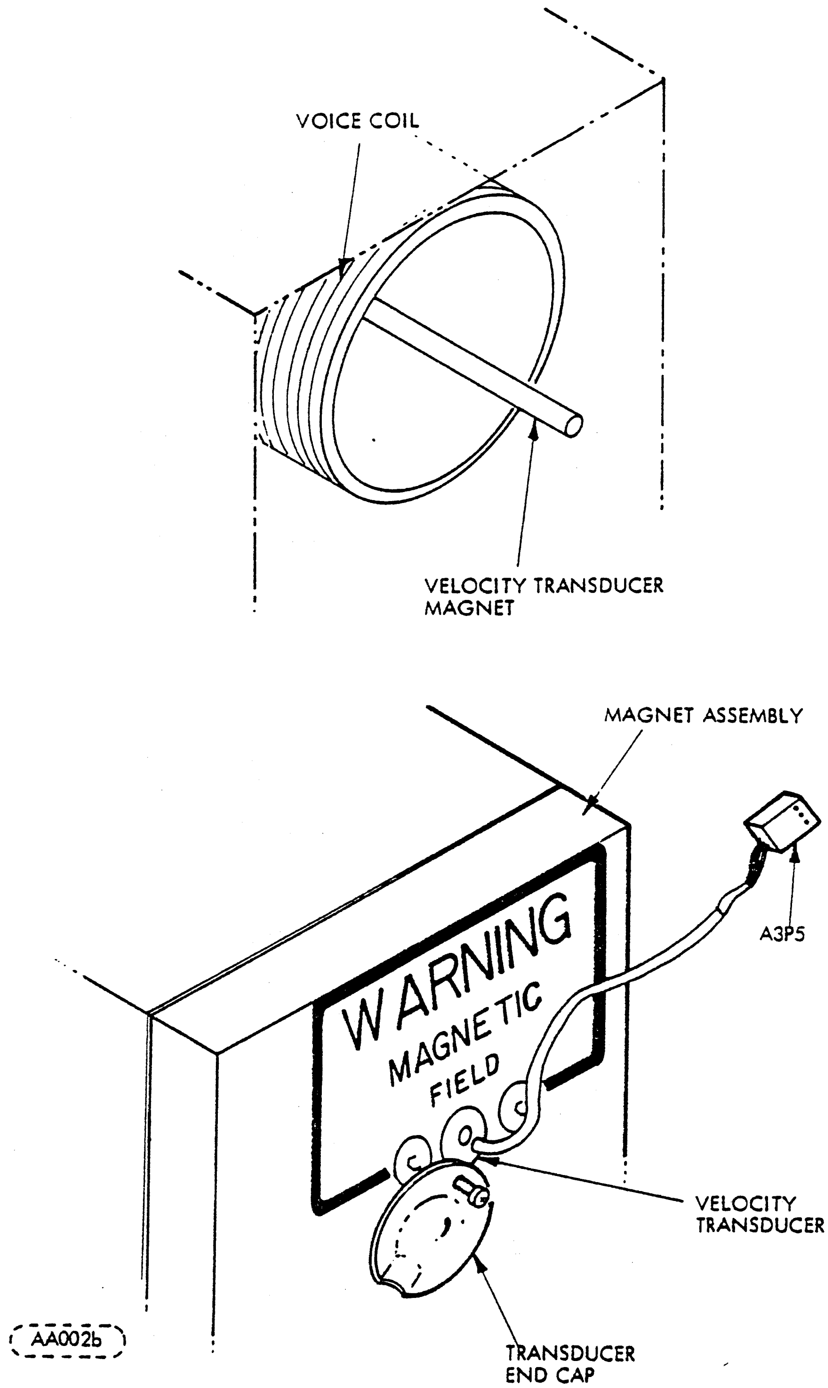


Figure 6-2 Velocity Transducer Location

6.6.1 -contd.

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 thick, 1/2 inch 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.

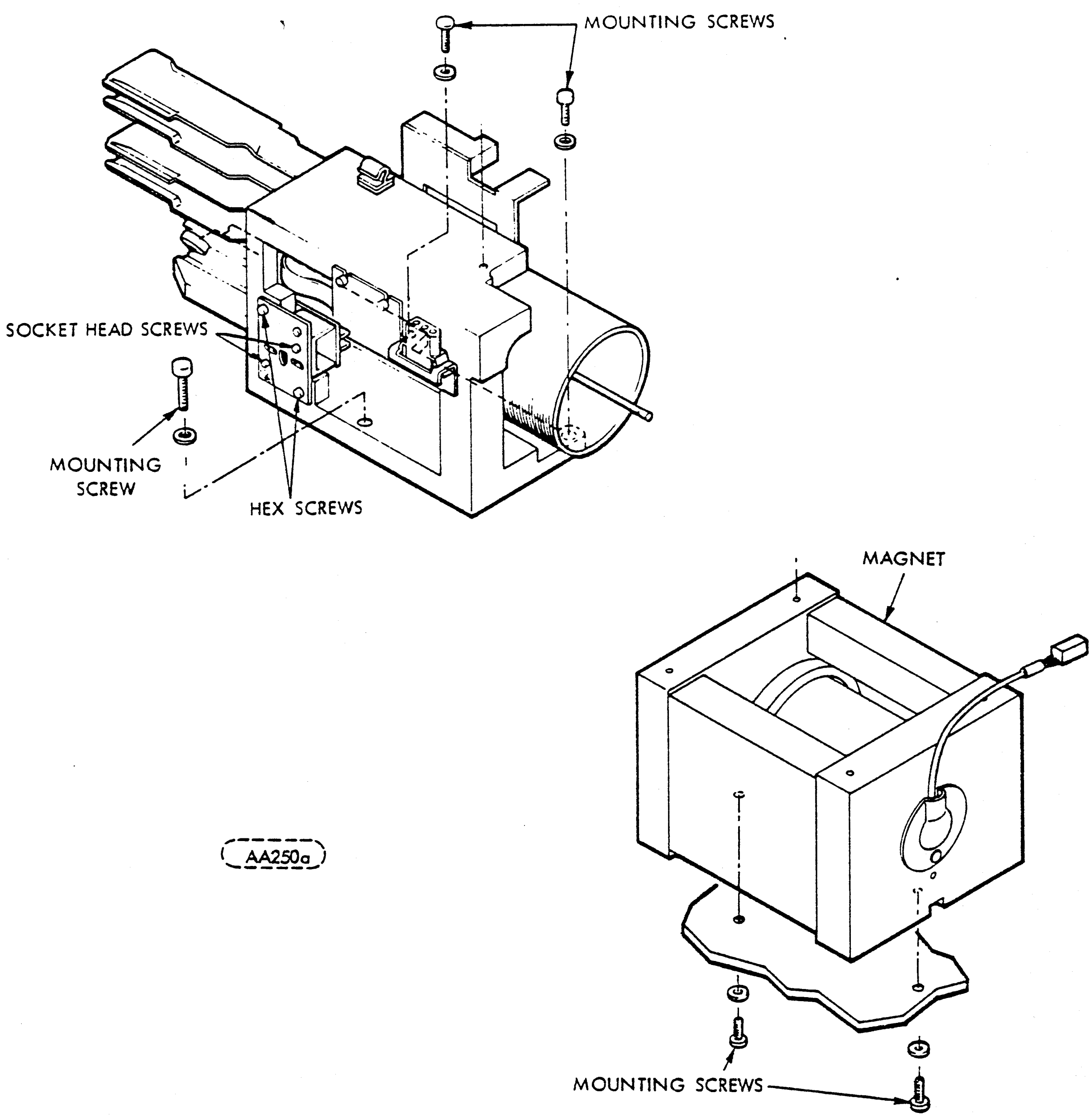


Figure 6-3. Actuator, Magnet and EOT Mounting

6.6.1 -contd.

• REPLACEMENT

1. To install new actuator assembly, align slot at front of actuator frame with accentric 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.

6.6.1 -contd.

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.

6.6.2 -contd.

- 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.

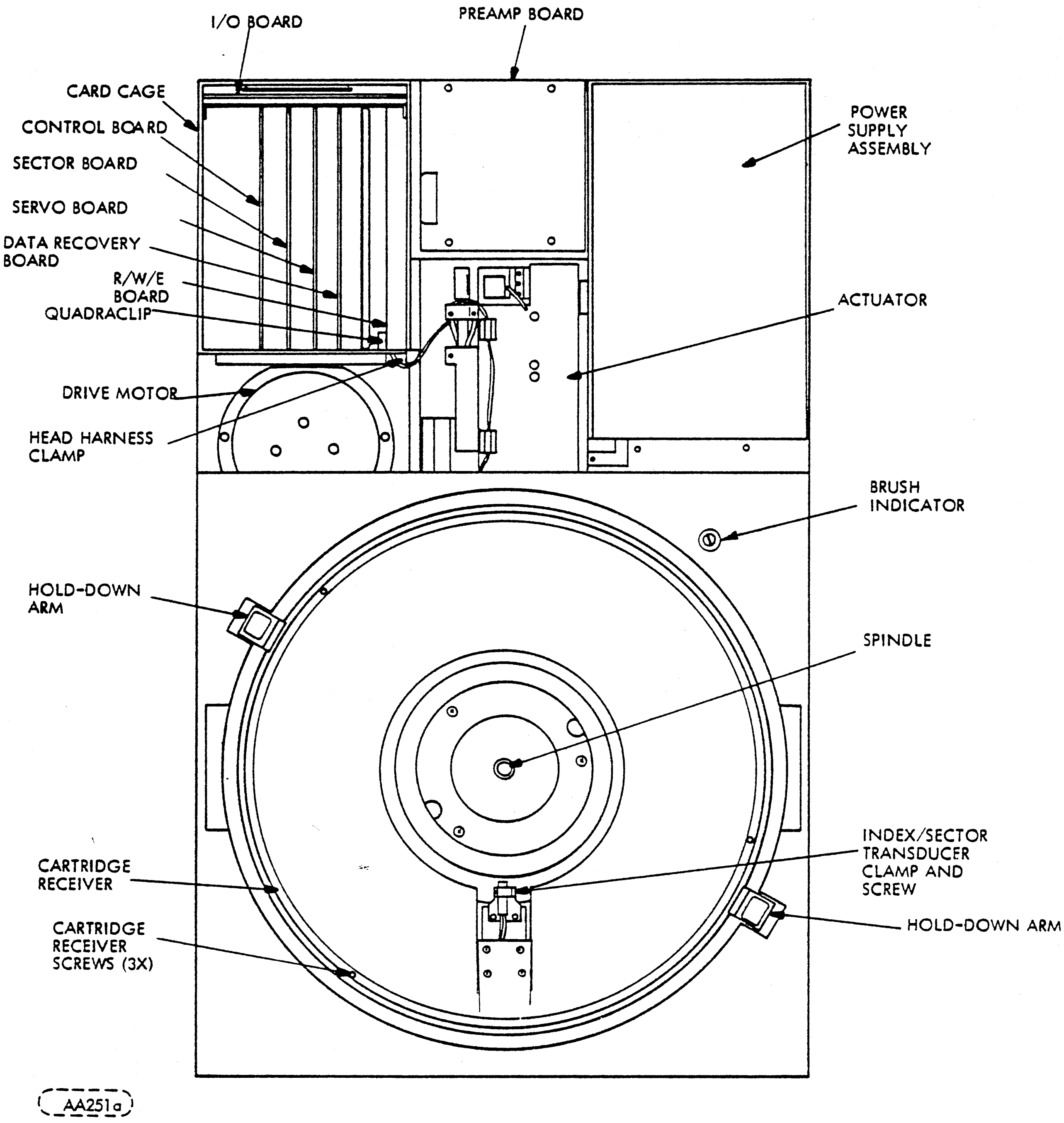


Figure 6-4. Module Location (Above Deck)

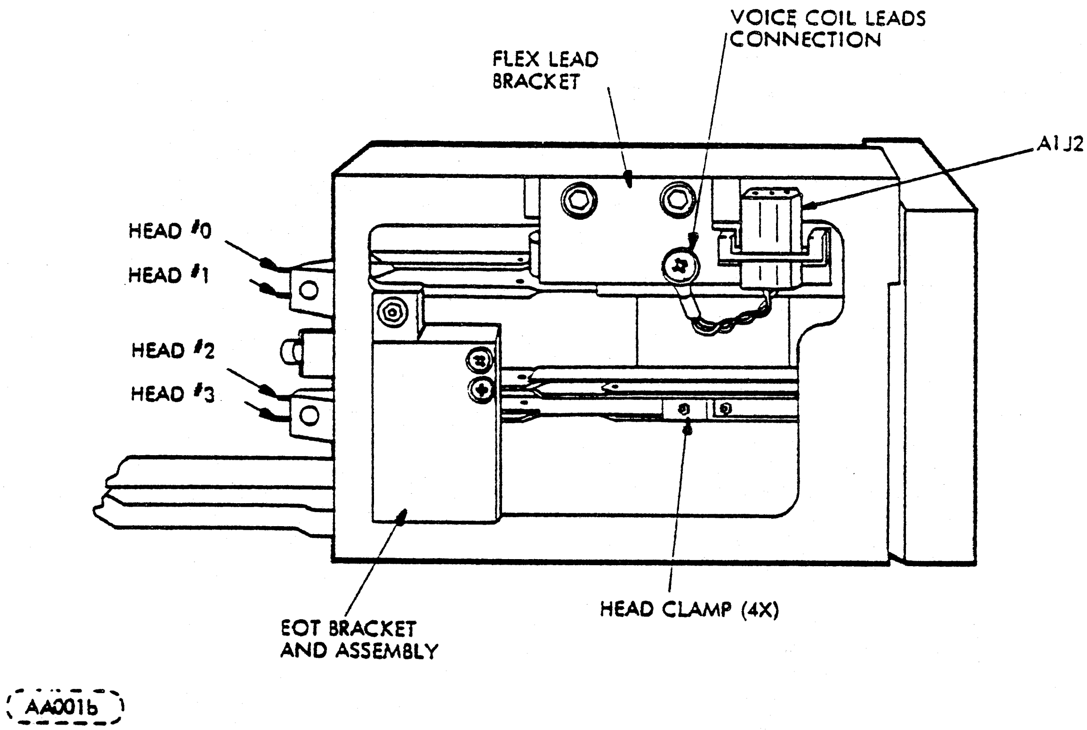


Figure 6-5. Actuator Assembly -Heads Installed

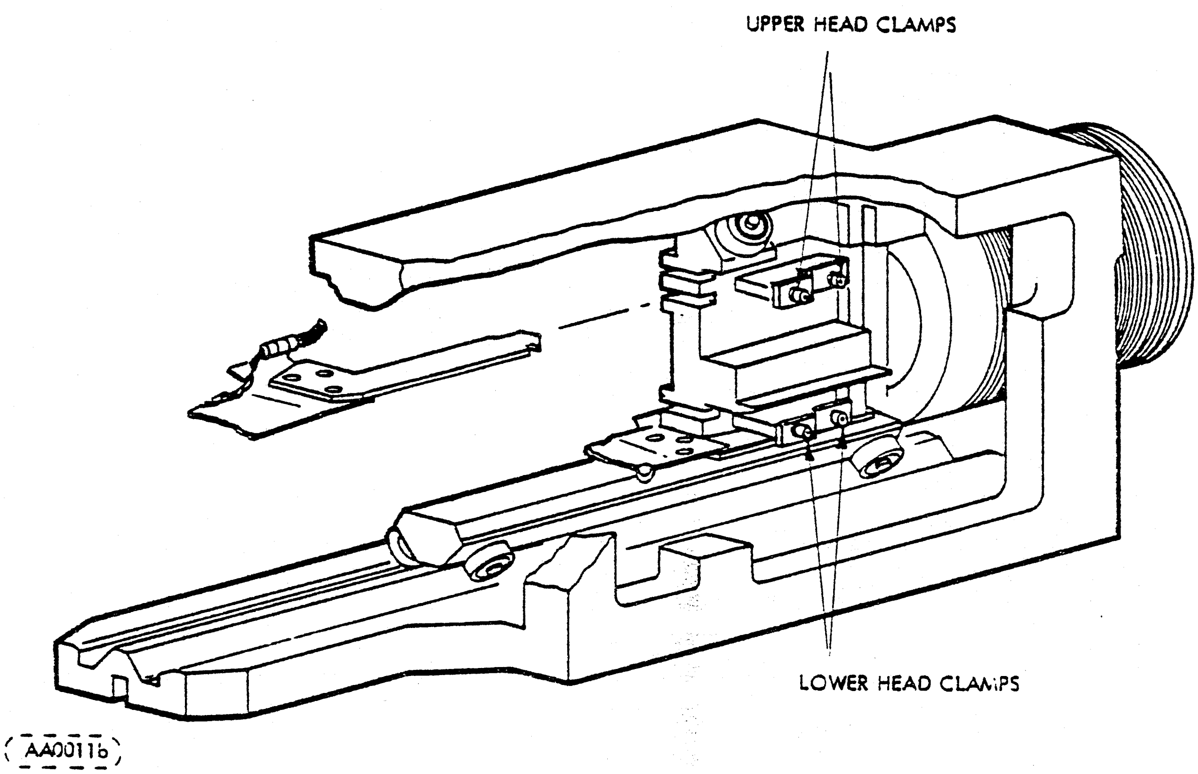


Figure 6-6. Head Removal and Replacement

6.6.2 -contd.

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). On rack mounted units with grant slides remove latch knob by turning it counterclockwise.

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

13. Remove fixed disk.

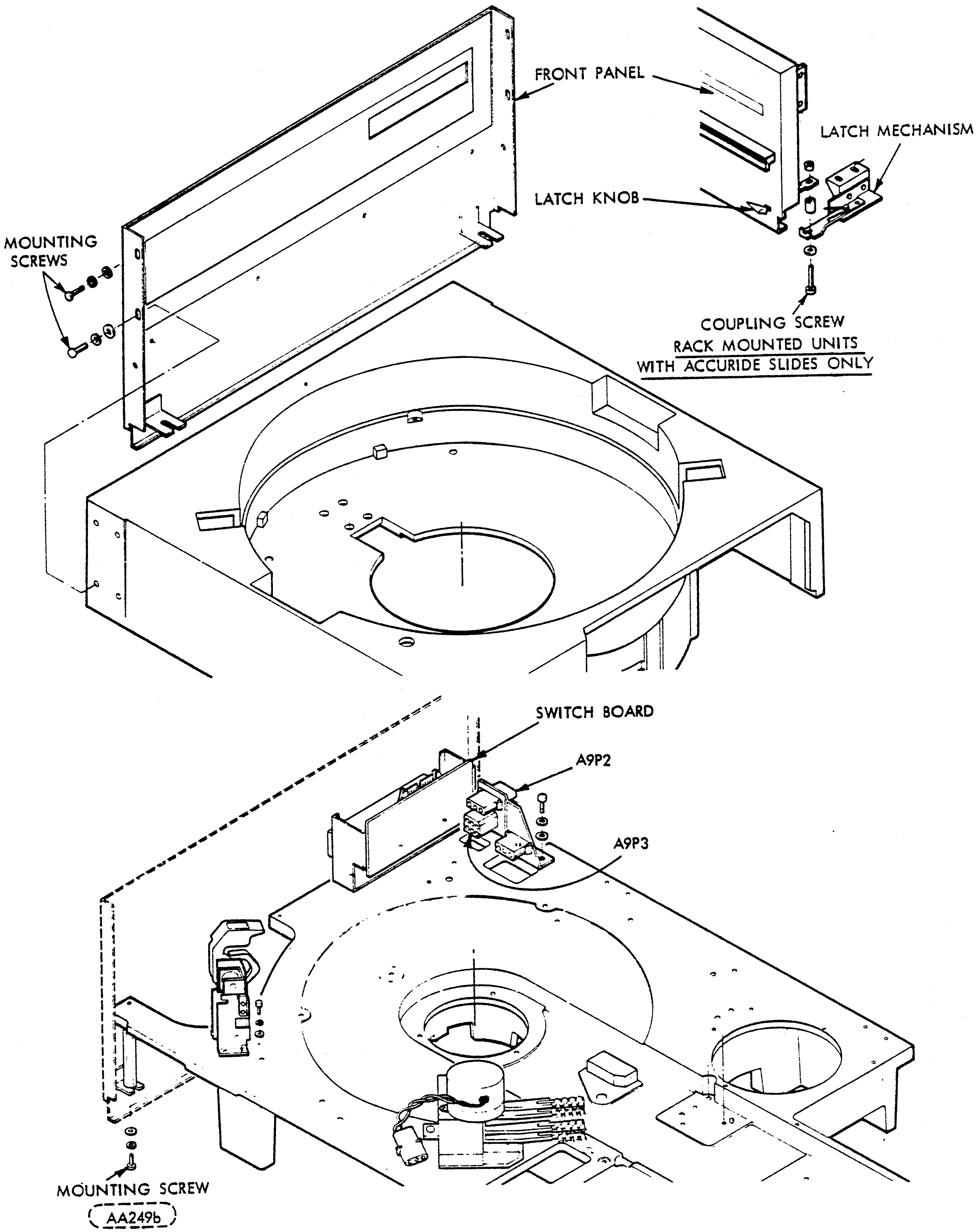


Figure 6-7. Front Panel Removal

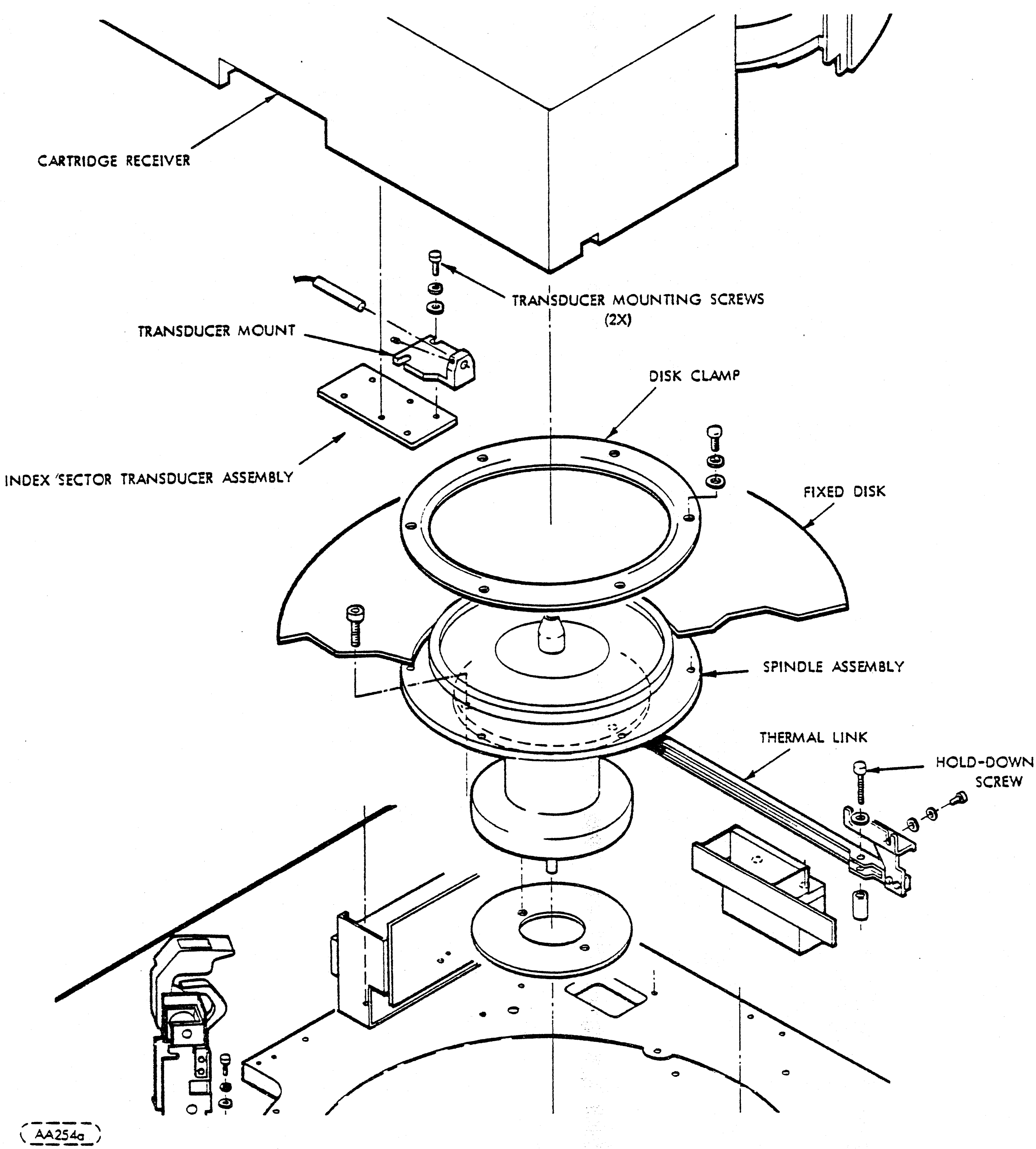


Figure 6-8. Fixed Disk Removal

6.6.4 -contd.

- 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.

5. Fasten cartridge receiver with three screws.

6. Install front panel and ground straps.

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). On rack mounted units with grant slides remove latch knob by turning it counterclockwise.

8. Disconnect ground straps from front panel (one on rack mounted units, two on base cabinet units).

6.6.5 -contd.

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 thrermal 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 sacle 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.

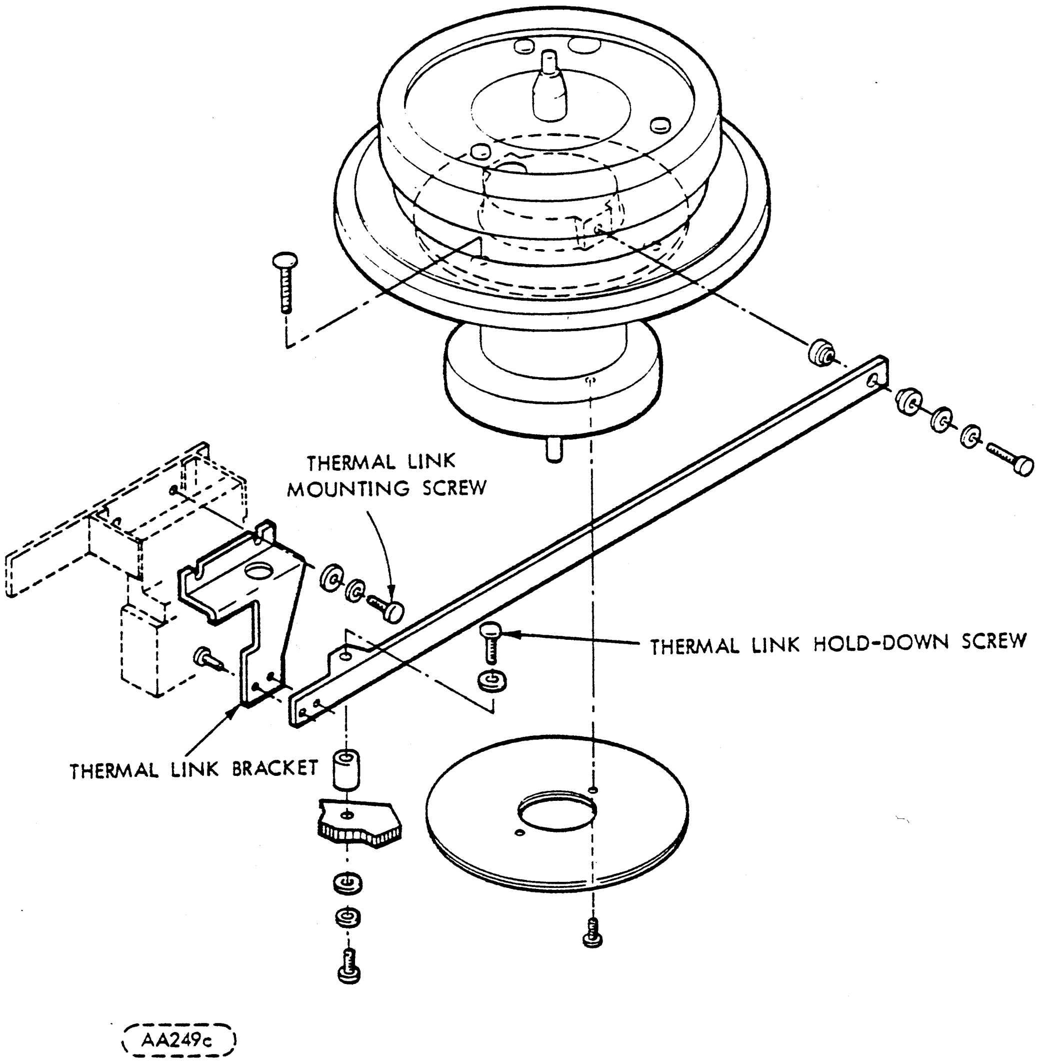


Figure 6-9. Thermal Link R & R

6.6.5 -contd.

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.
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.

6.6.6 -contd.

- 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.

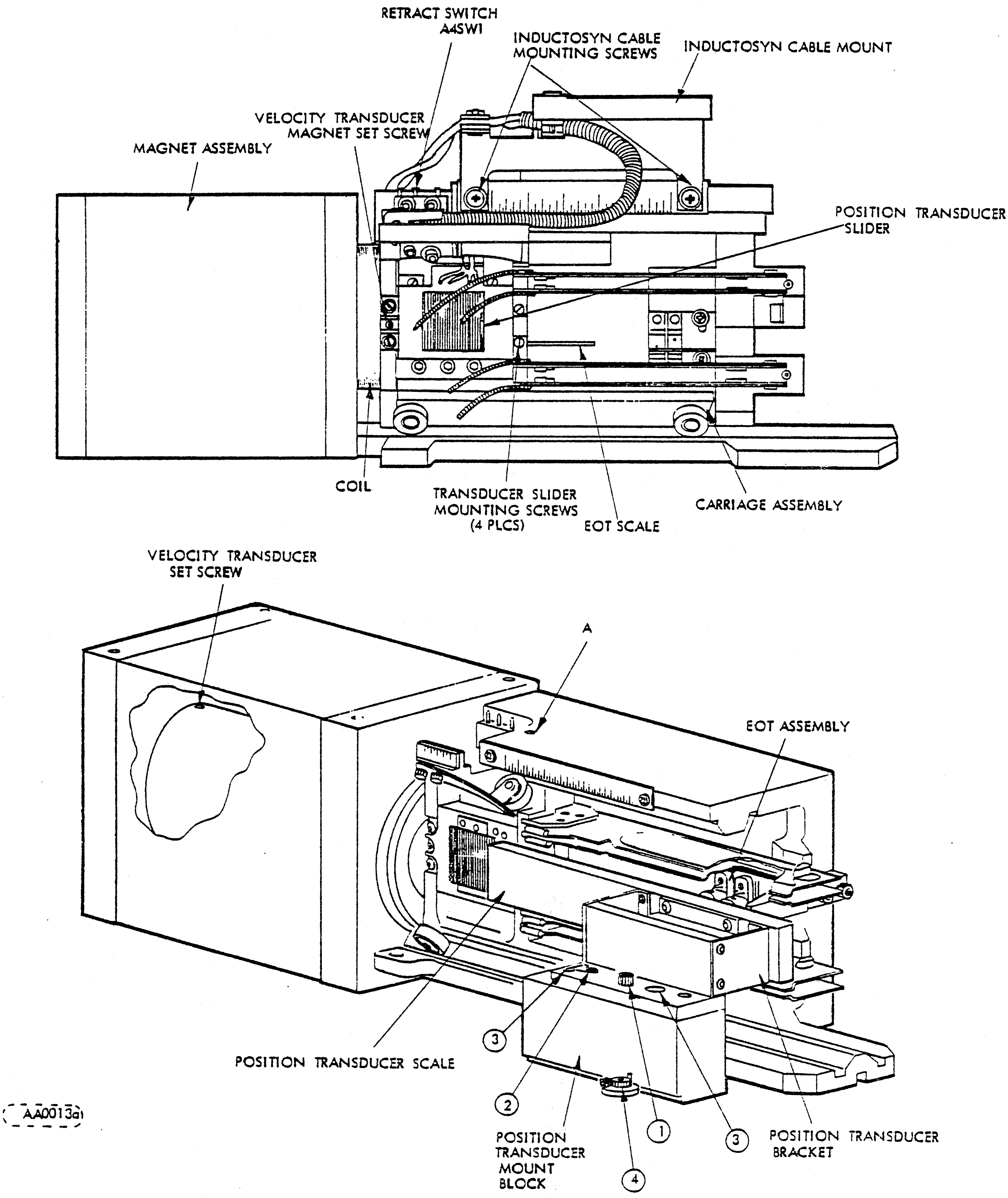


Figure 6-10. Actuator Assembly

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 (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.

6.6.7 -contd.

- 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.
10. Install disk cartridge.
11. Remove A1P2 fromthe 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.

6.6.7 -contd.

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). On rack mounted units with grant slides remove latch knob by turning it counterclockwise.

8. Disconnect ground straps fromf ront 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. Remove fixed disk clamp.

6.6.8 -contd.

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 skins 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.

6.6.8 -contd.

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 of defects. If disk is unacceptable, replace with new one.

12. Clean disk surface with lint-free fauze, 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.

16. Fasten cartridge receiver with three screws.

17. Install front panel and ground straps.

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.

6.6.8 -contd.

25. Perform Index to Burst Period Check and Adjustment procedure.

26. Install module bottom cover.

27. Install side skins (base cabinet only).

28. Install electronics cover.

29. Install top cover (base cabinet only).

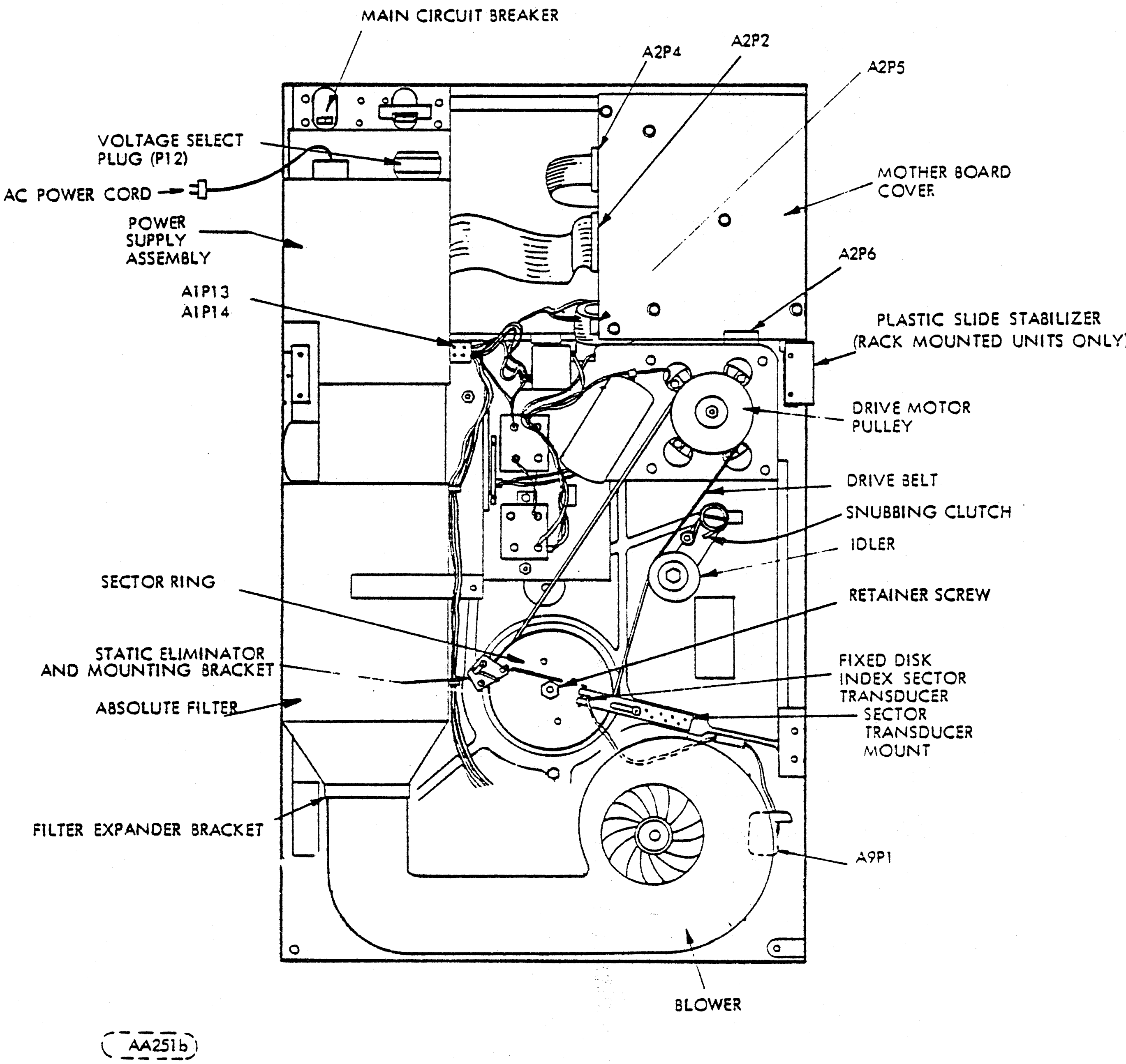


Figure 6-11. Module Locator (Below Deck)

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). On rack mounted units with grant slides remove latch knob by turning it counterclockwise.

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. 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.

6.6.9 -contd.

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.

4. Fasten cartridge receiver with three screws.
5. Install front panel and ground straps.
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 left-hand side skin (base cabinet only).
6. Remove module under cover.
7. On rack mounted units with accuride slides, remove coupling screw securing latch knob to latch mechanism (see Figure 6-7). On rack mounted units with grant slides remove latch button by turning it counterclockwise.
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 electronics cover.

6.6.10 -contd.

11. Remove thre 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.

5. Fasten cartridge receiver with three screws.

6. Install front panel and ground straps.

7. Install latch assembly or knob as required.

8. Install electronics cover.

9. Install module under cover.

10. Install cabinet side skin.

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 left-hand side skin (base cabinet only).
5. Remove module under 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".
4. Perform Static Eliminator Check procedure.
5. Install module under cover.
6. Install cabinet side skin.

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 left-hand side skin (base cabinet only), and remove module under 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 under cover.
8. Install cabinet side skin.

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). On rack mounted units with grant slides remove latch knob by turning it counterclockwise.
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.

6.6.13 -contd.

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.

10. Fasten cartridge receiver with three screws.

11. Install front panel and ground straps.

12. Install latch assembly or knob as required.

6.6.13 -contd.

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). On rack mounted units with grant slides remove latch knob by turning it counterclockwise.
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 apnel (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.

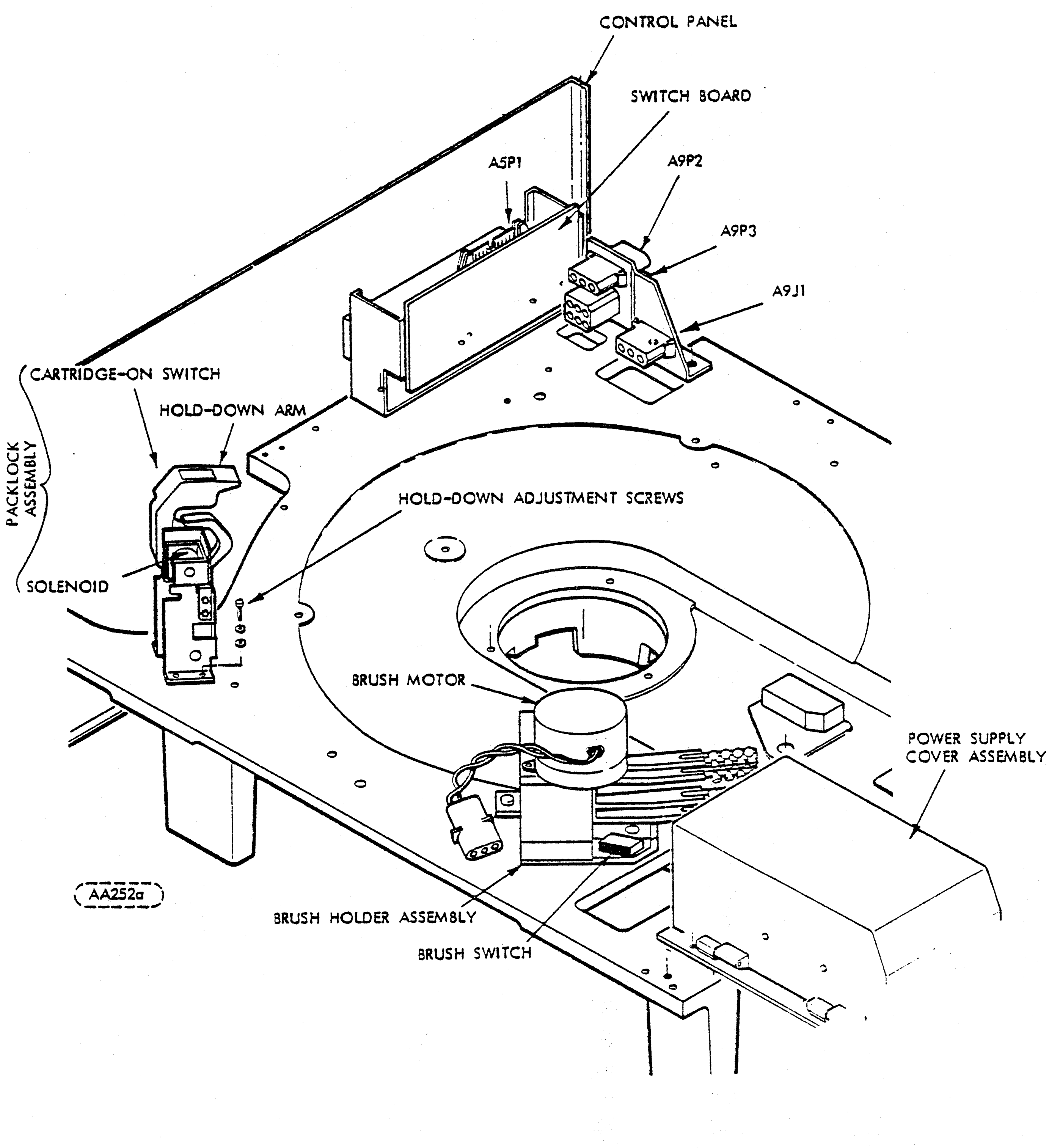


Figure 6-12. Packlock and Brush Assemblies

6.6.14 -contd.

- 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.

6. Fasten cartridge receiver with three screws.

7. Install front panel and ground straps.

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

Live voltages are present in the area of the drive motor even when main circuit breaker is off. Failure to disconnect or turn off main power source may result in injury to service personnel.

4. Remove both cabinet side skins (base cabinet only).

5. Remove module under 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 .031 ±.010 inches 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 under cover.

7. Install cabinet side skins.

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.

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. If the following circuit boards are removed, 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.

6.6.17 -contd.

9. Carefully install replacement board, insuring that all pins are engaged before completely installing board.

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. Open top cover (base cabinet only).

4. Remove electronics cover.

5. Open power supply cover assembly.

CAUTION

Live voltages are present in the area of the drive motor even when main circuit breaker is off. Failure to disconnect or turn off main power source may result in injury to service personnel.

6. Remove ac line cord from power source (see Figure 6-11).

7. Disconnect A1P5 and remove power supply 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.

6.6.18 -contd.

o 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. Remove electronics cover.
5. Open power supply cover assembly.

CAUTION

Live voltages are present in the area of the drive motor even when main circuit breaker is off. Failure to disconnect or turn off main power source may result in injury to service personnel.

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

6.6.19 -contd.

- REPLACEMENT

  1. Install new board assembly.

  2. Reverse removal procedure to complete installation.

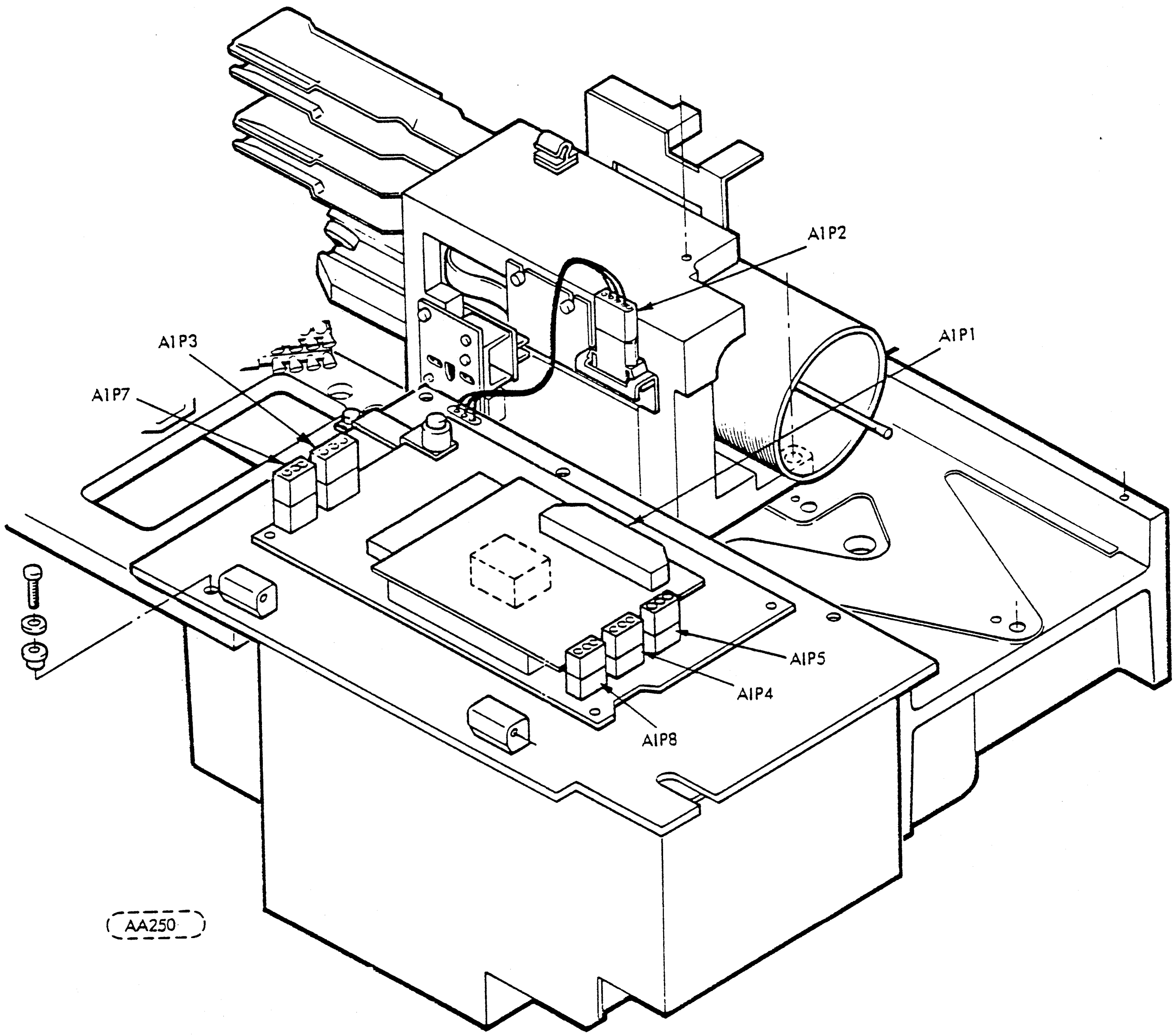


Figure 6-13. Power Supply Assembly

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

Live voltages are present near the underside of the card cage area. 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 cabinet skin (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.

6.6.20 -contd.

- 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. Connect unit to main power source.

12. 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 skins (base cabinet only).

5. Disconnect ground straps from front panel.

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).

6.6.21 -contd.

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).

6.6.22 -contd.

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.

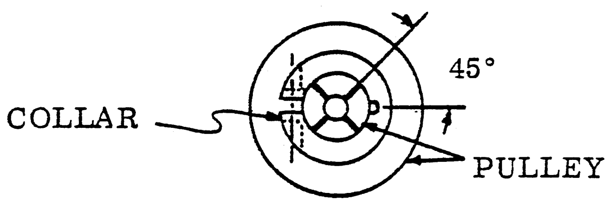
NOTE

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. Remove cabinet rear and side skins (cabinet only).
  2. Remove bottom module cover.
  3. Remove static eliminator and bracket from bottom of deck (See Figure 6-11).
  4. Remove mounting screw from fixed disk index sensor mount. Note orientation of dowel pin for sector option (see Figure 3-11).
  5. Loosen tension of idler pulley by pulling back on snubbing clutch spring and remove spindle drive belt. (Figure 6-11).
  6. Remove locking colar on drive motor pulley.
  7. Remove drive motor pulley.

- REPLACEMENT
  8. Install new drive motor pulley.



9. 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".
10. Install new drive belt making sure tension is removed from idler pulley by pulling back on snubbing clutch spring.
11. Replace fixed disk sensor mount.
12. Perform Fixed Disk Index/Sector Transducer Checks and Adjustment.
13. Replace static eliminator and bracket.
14. Perform Static Eliminator Check.
15. Install bottom module cover.
16. Install side skins and rear door (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 stabilizationprocess.

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 Tester 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.

6.7.2 -contd.

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 ±.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 ±.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. It 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.

6.7.2 -contd.

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 ±.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 ±.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.

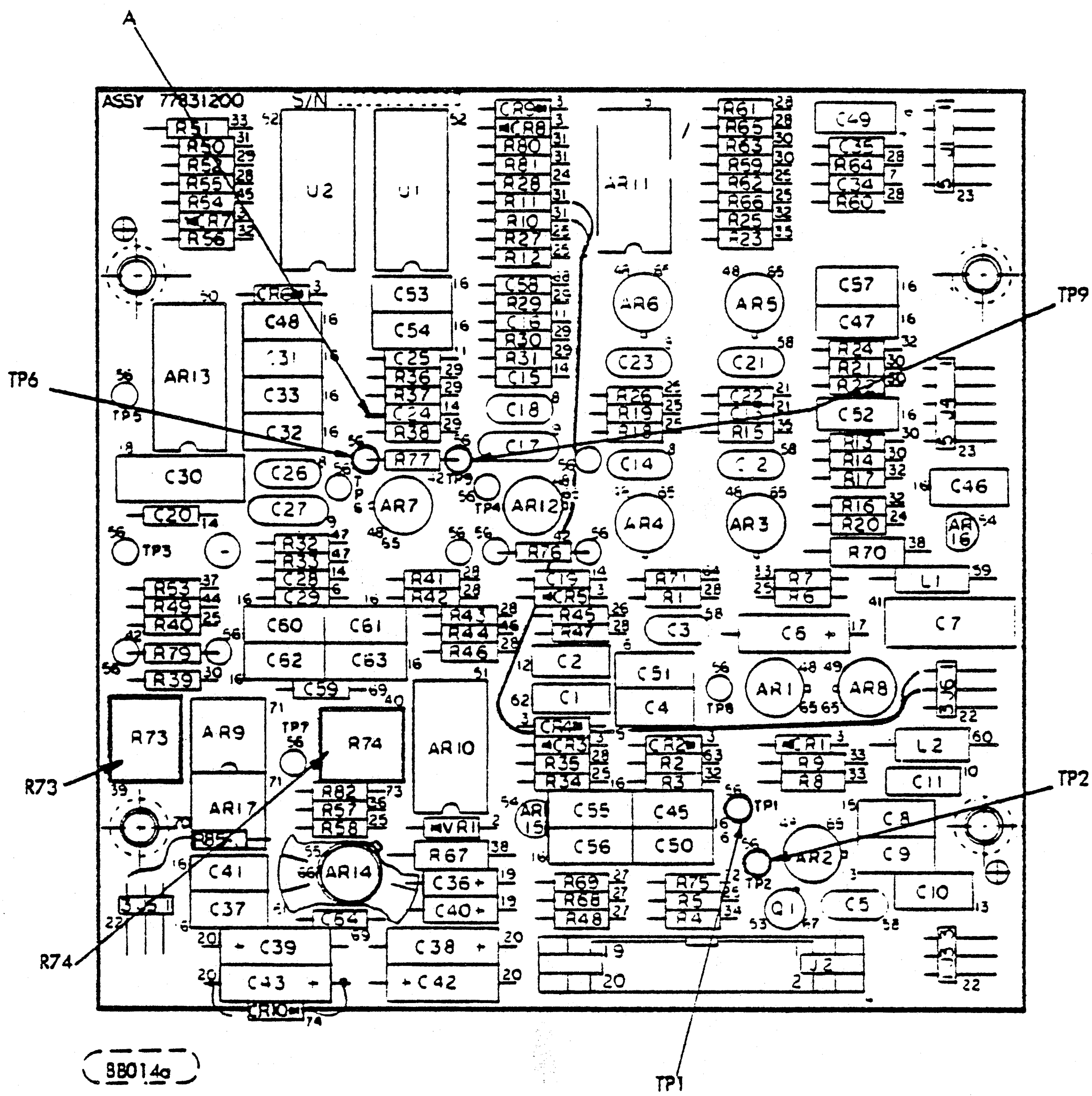


Figure 6-14. Preamp Board Adjustment Location

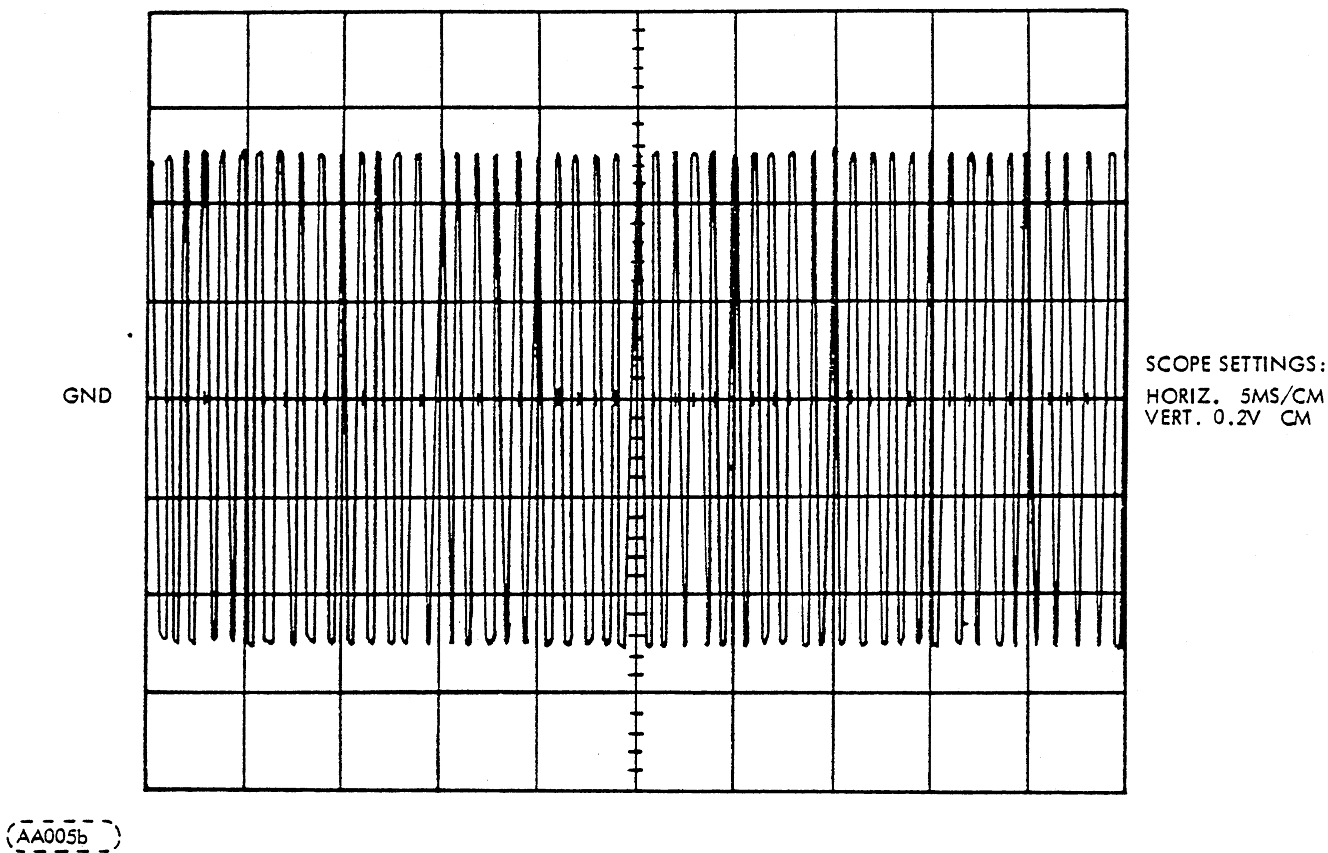


Figure 6-15. Position Transducer Waveform

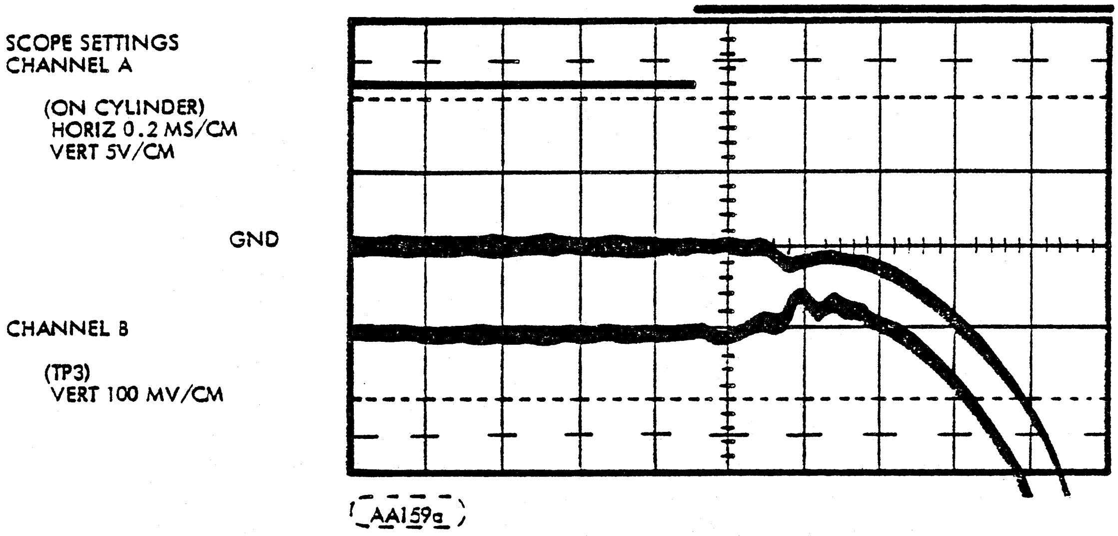


Figure 6-16a. OneTrack Seek Unbalanced

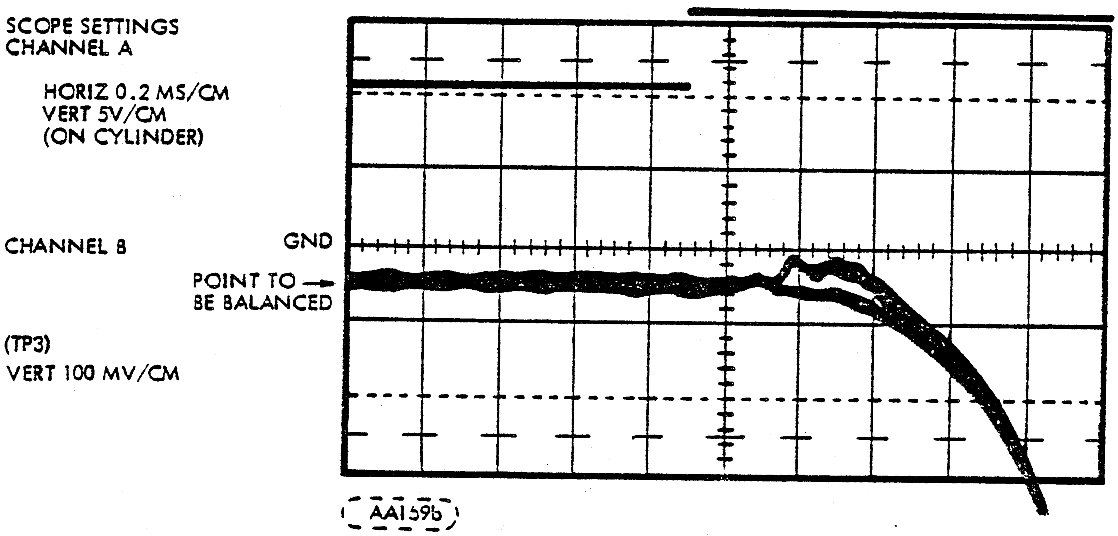


Figure 6-16b. One Track Seek Balanced

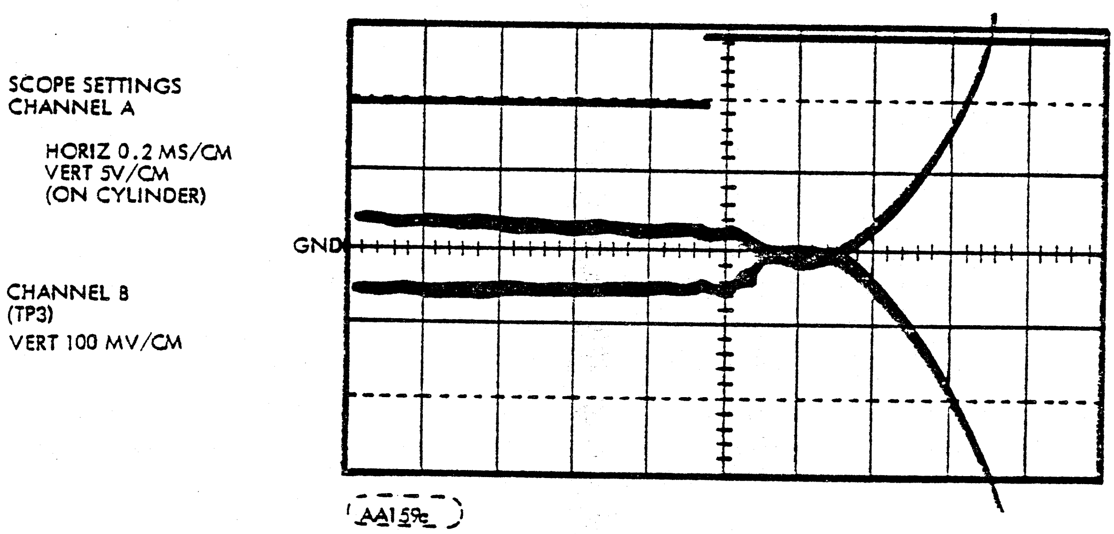
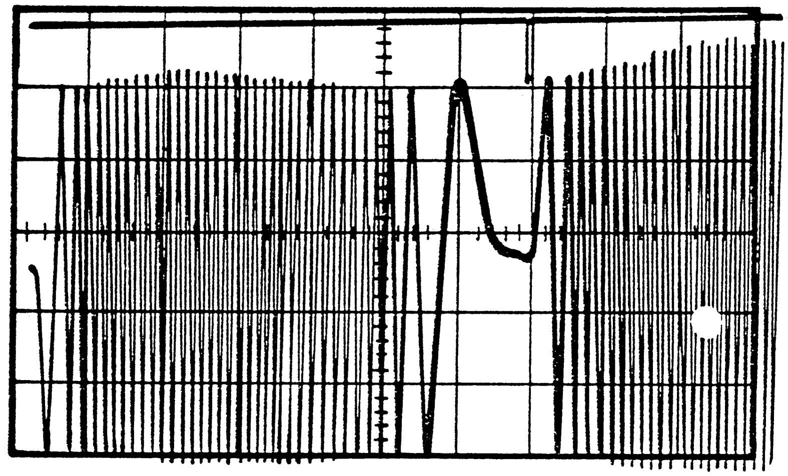


Figure 6-16c. Two Track Seek within Tolerance

SCOPE SETTINGS
CHANNEL A
ON CYLINDER

HORIZ 5MS/CM
VERT 5V/CM

CHANNEL B
TP3
VERT 1V/CM



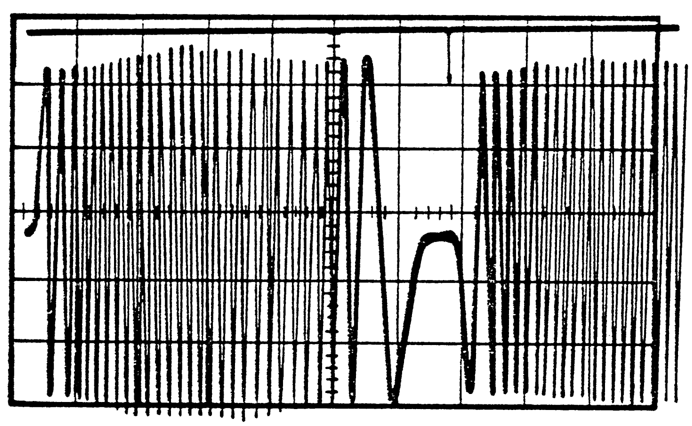
AA180a

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

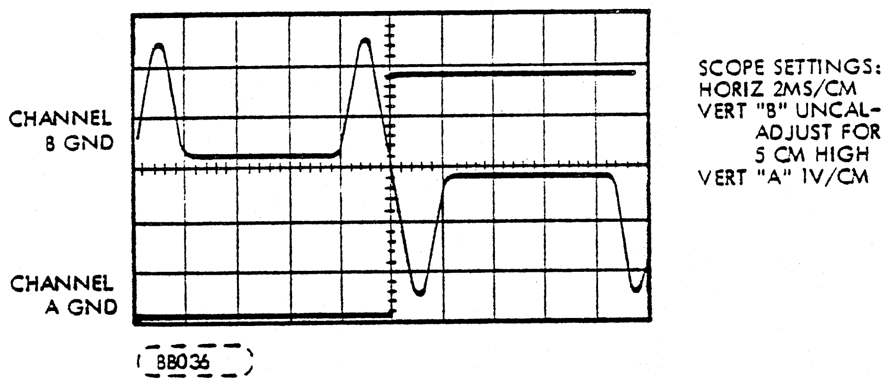


FIGURE 6-18a

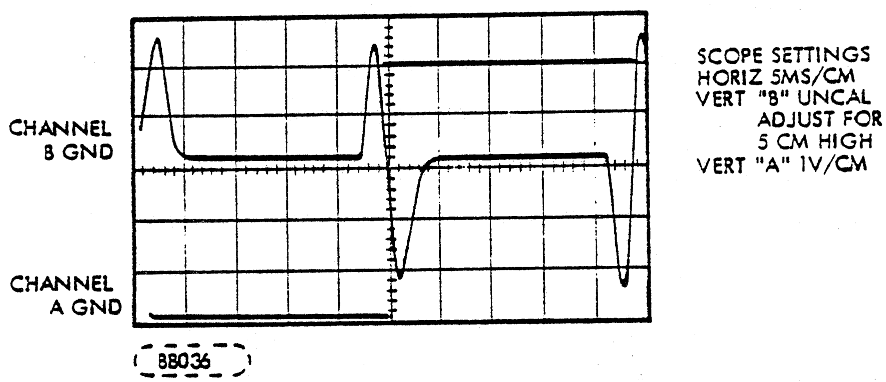


FIGURE 6-18b

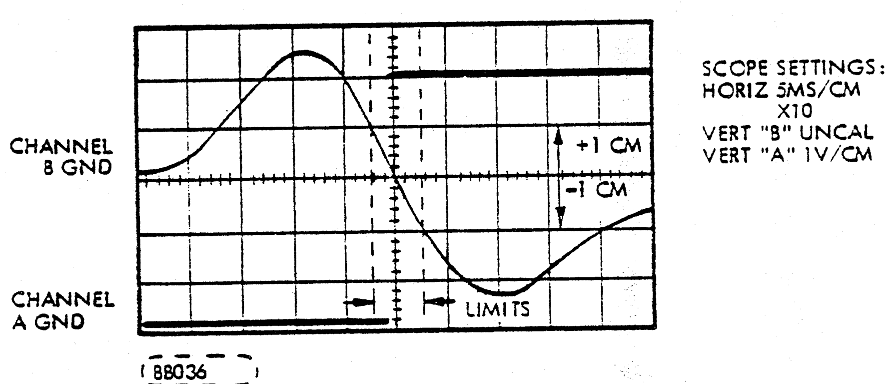


FIGURE 6-18c

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 are 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.

92_{16}

16. Select upper head of disk cartridge and command unit to seek to cyl 146_{10} (73_{10} for 100 TPI units). For units without OEM tester proceed to step 17. For other units proceed to step 19.

6.7.4 -contd.

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 msec/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 all three crossovers are displayed exactly within the 10-cm scope graticle, similar to Figure 19-B. 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-burst period check and adjustment. Otherwise continue procedure.

6.7.4 -contd.

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. Cose 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.

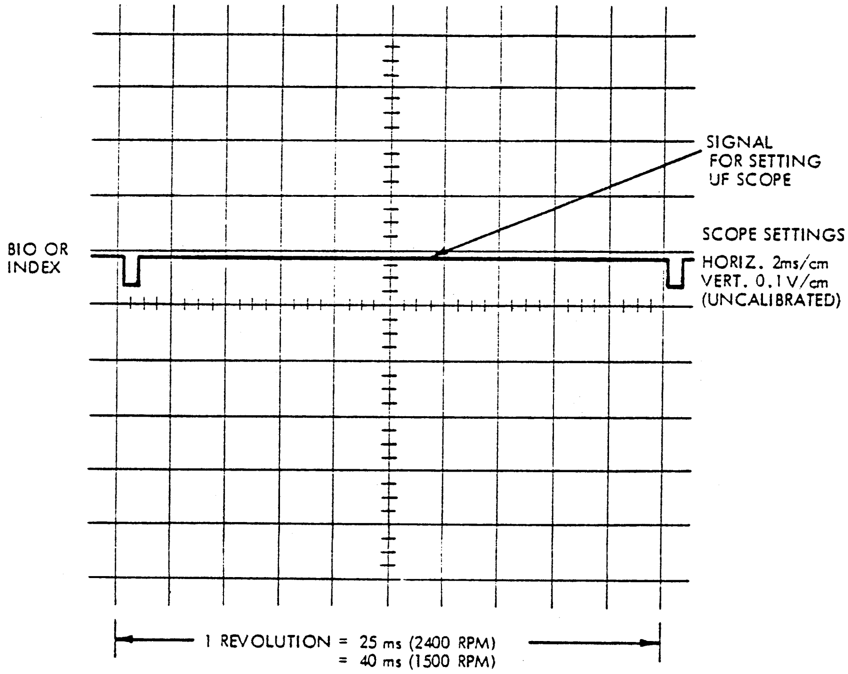


Figure 6-19a.

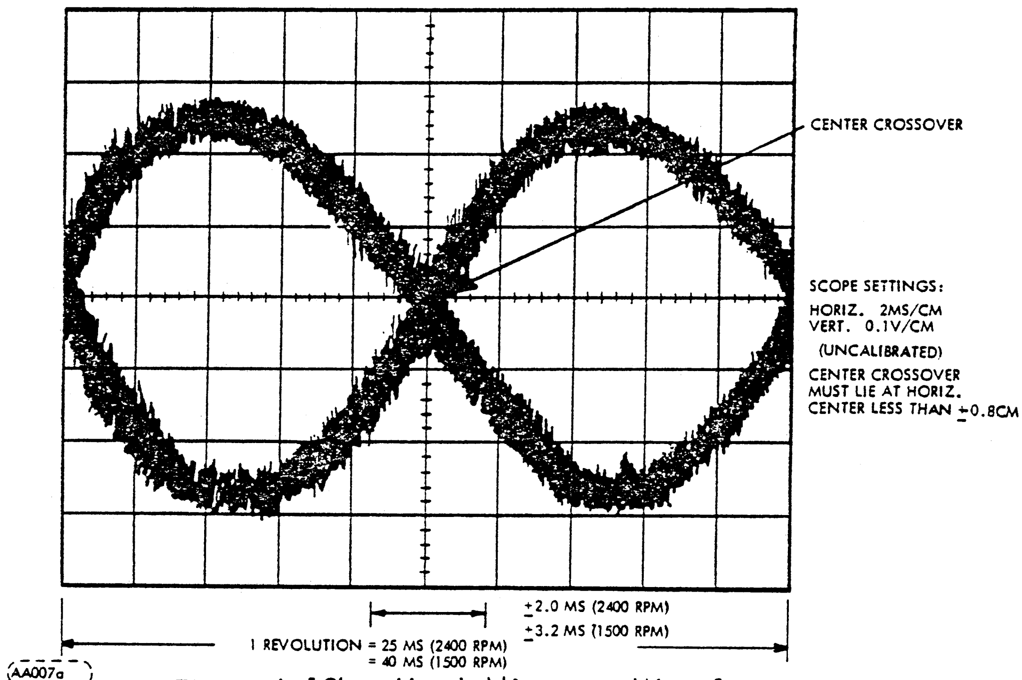


Figure 6-19b. Head Alignment Waveform

6.7.5 -contd.

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.

6.7.5 -contd.

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 10_{10} (5_{10} for 100 TPI units). For units without OEM tester proceed to step 17. For other units proceed to step 19.

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 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 µs per division for straddle-erase heads and 5 µs 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).

6.7.5 -contd.

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 µs maximum for straddle-erase heads (2400 RPM)
    4 µs maximum for straddle-erase heads (1500 RPM)
    4 µs 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 ±5 µs for pre-erase heads (2400 RPM)
    18.8 ±3 µs for straddle-erase heads (2400 RPM)
    30.0 ±5 µs 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 ±1 µs for pre-erase heads (2400 RPM)
    18.8 ±0.1 µs for straddle-erase heads (2400 RPM)
    30.0 ±0.5 µs 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.

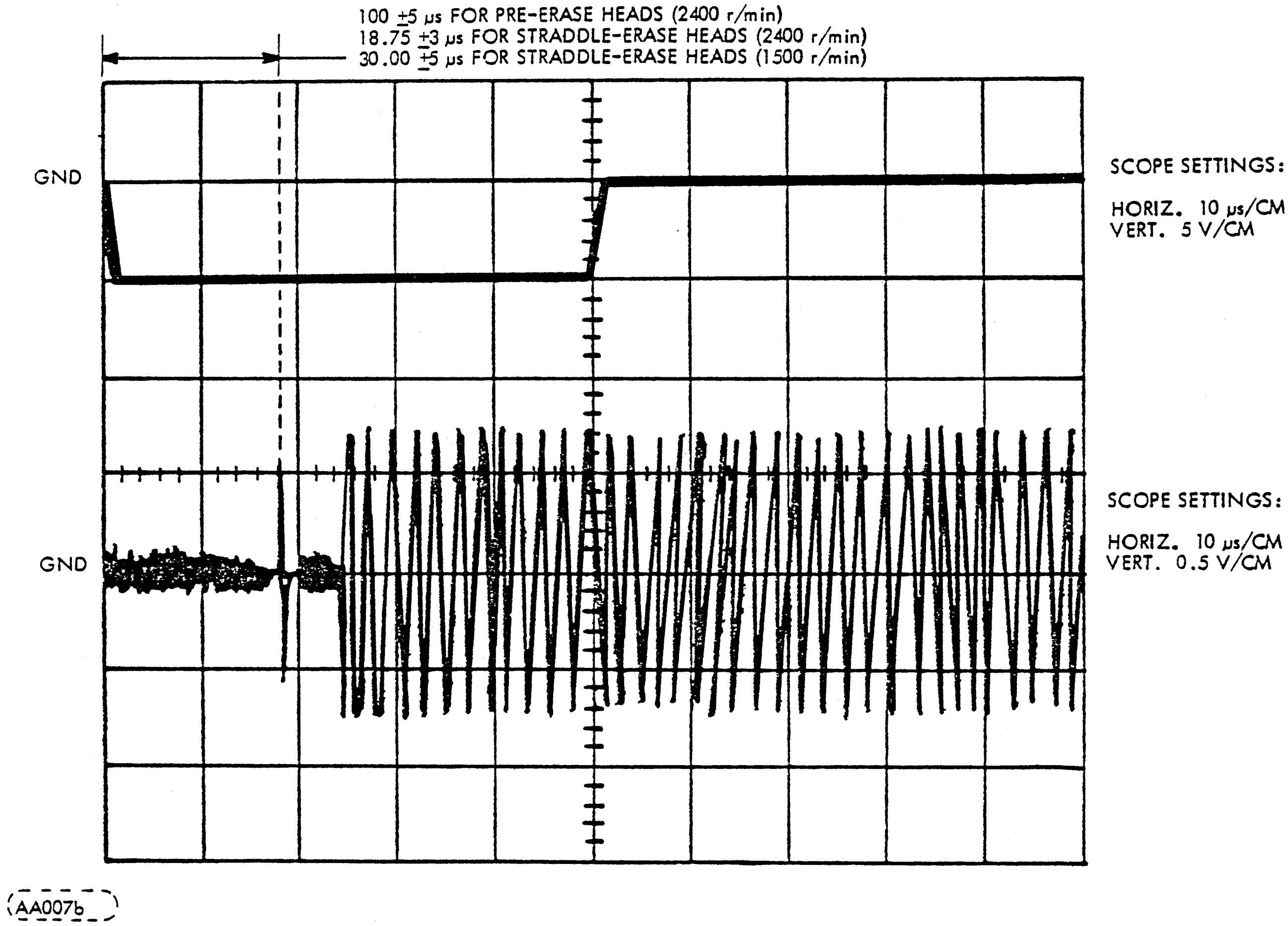
5. Depress START/STOP switch to START (in) and wait for unit to complete FIRST SEEK.

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.



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

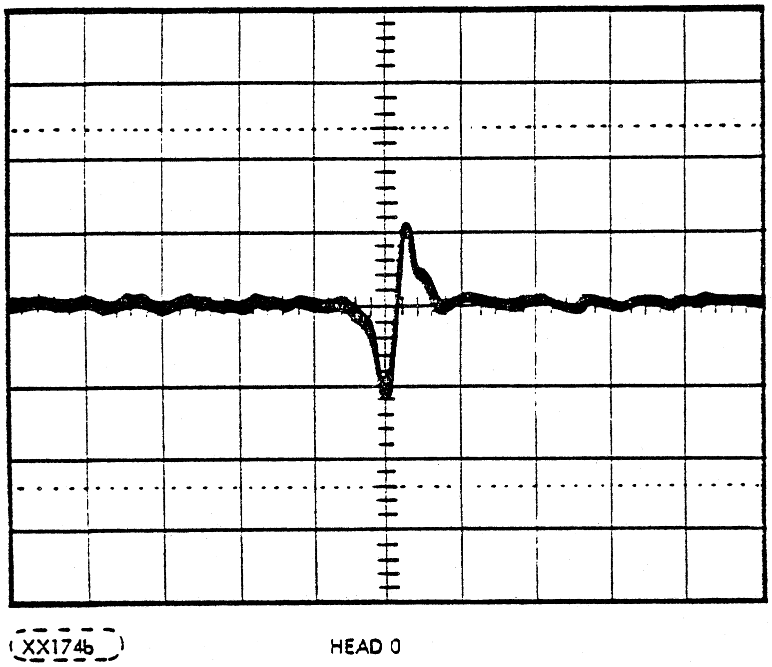


Figure 6-20b. Index-to-Burst Waveforms

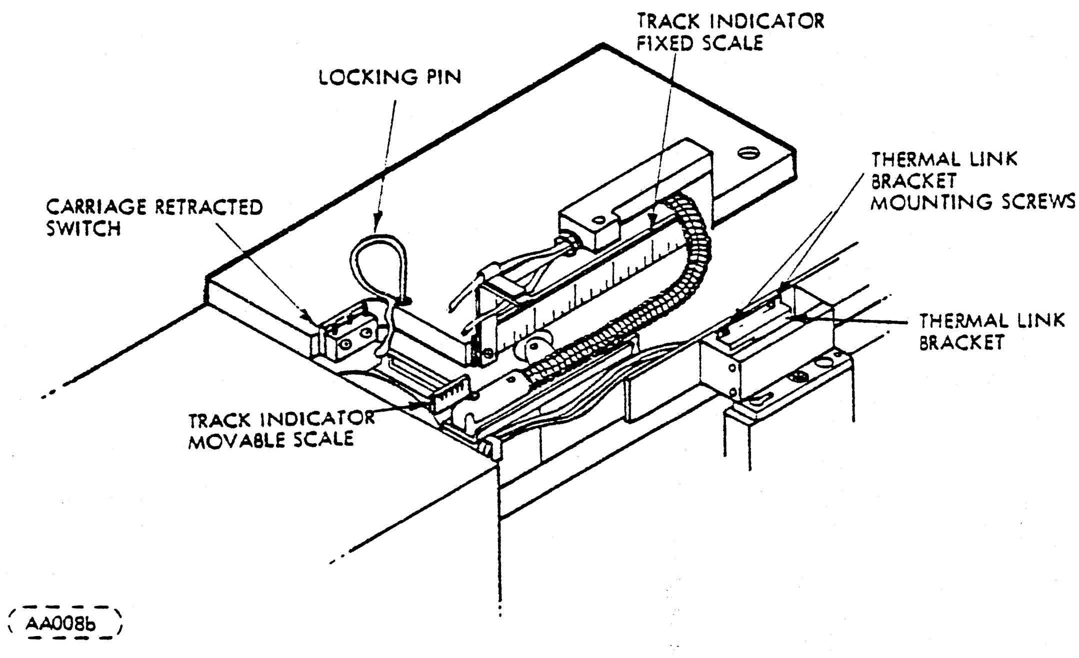


Figure 6-21. Track Indicator

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 for 2400 RPM units and $0.018 {+0.005 \atop -0.000}$ inch for 1500 RPM 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 $0.010 {+0.003 \atop -0.000}$ inch. 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.

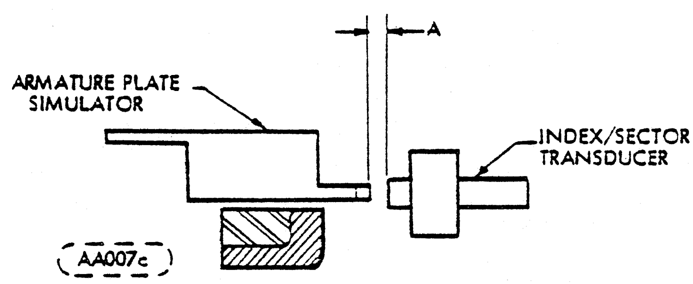


Figure 6-22. Index/Sector Transducer Adjustment

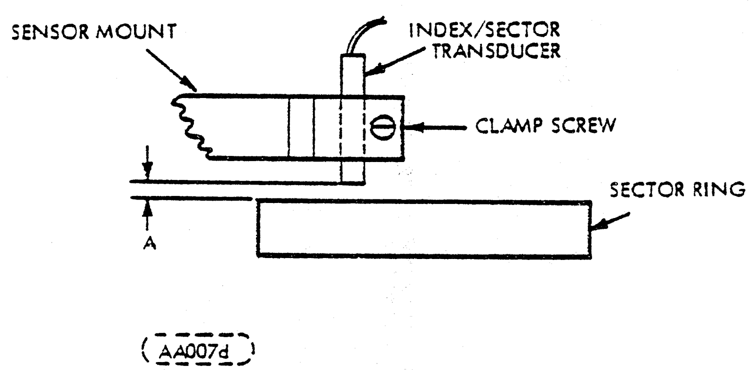


Figure 6-23. Fixed Disk Index/Sector Transducer Adjustment

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" x 8" and are plugged into the card cage assembly mother board. The Inductosyn Pre-amp board measures 5" x 8" and is mounted on top of the magnet assembly. The Power board measures 4 3/4" x 7 1/2" 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 seriew of diagrams illustrate the normal sequence of events when every thing is functioning properly. However, at certain intervals during the normal sequentual 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 sequentually page numbered in the upper right-hand corner of the page. When the diagram flow is interupted (3), the page location, where the flow will be continued is referenced in the Lower right-hand corner of the page.

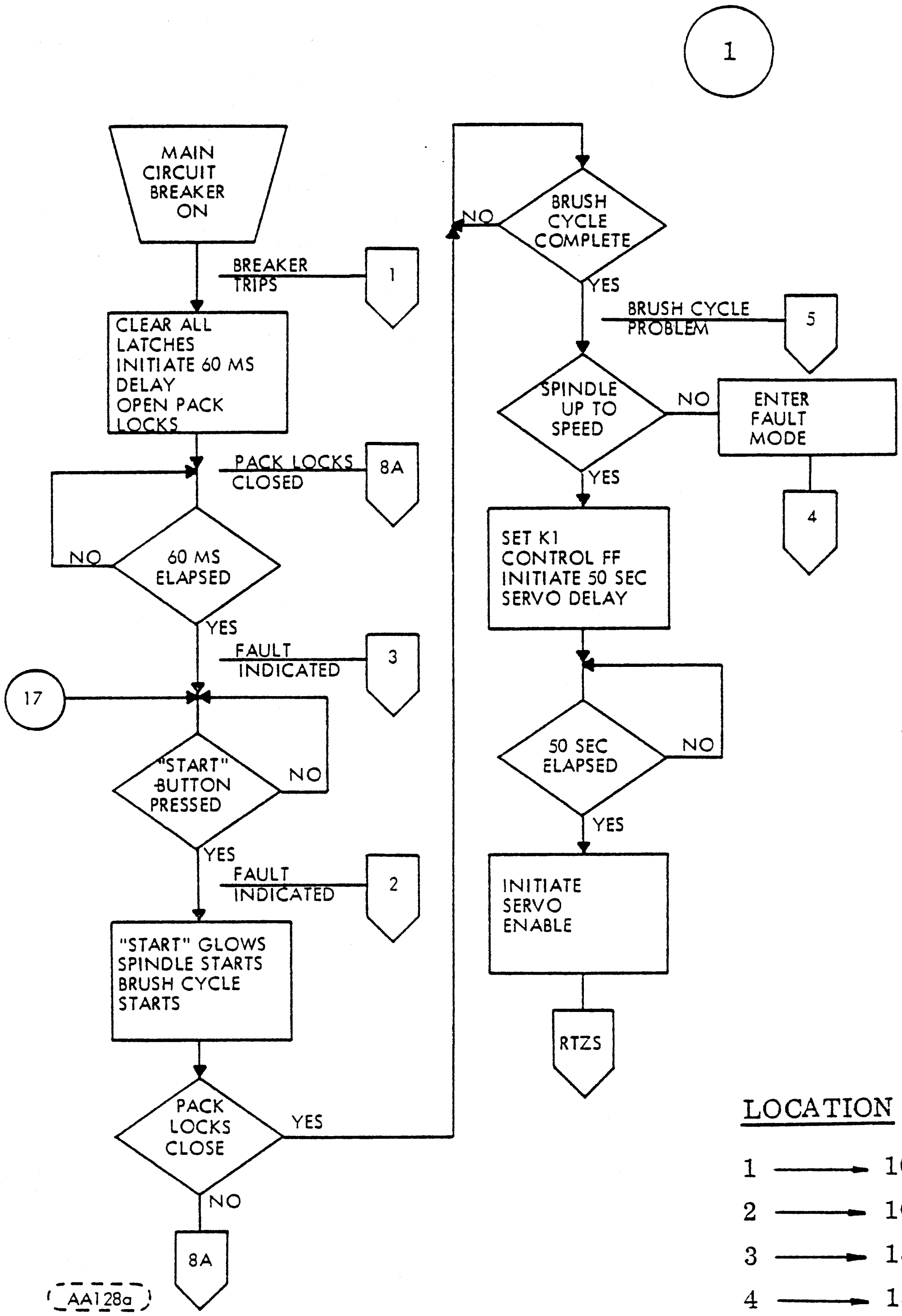
EXAMPLE:

3

Location

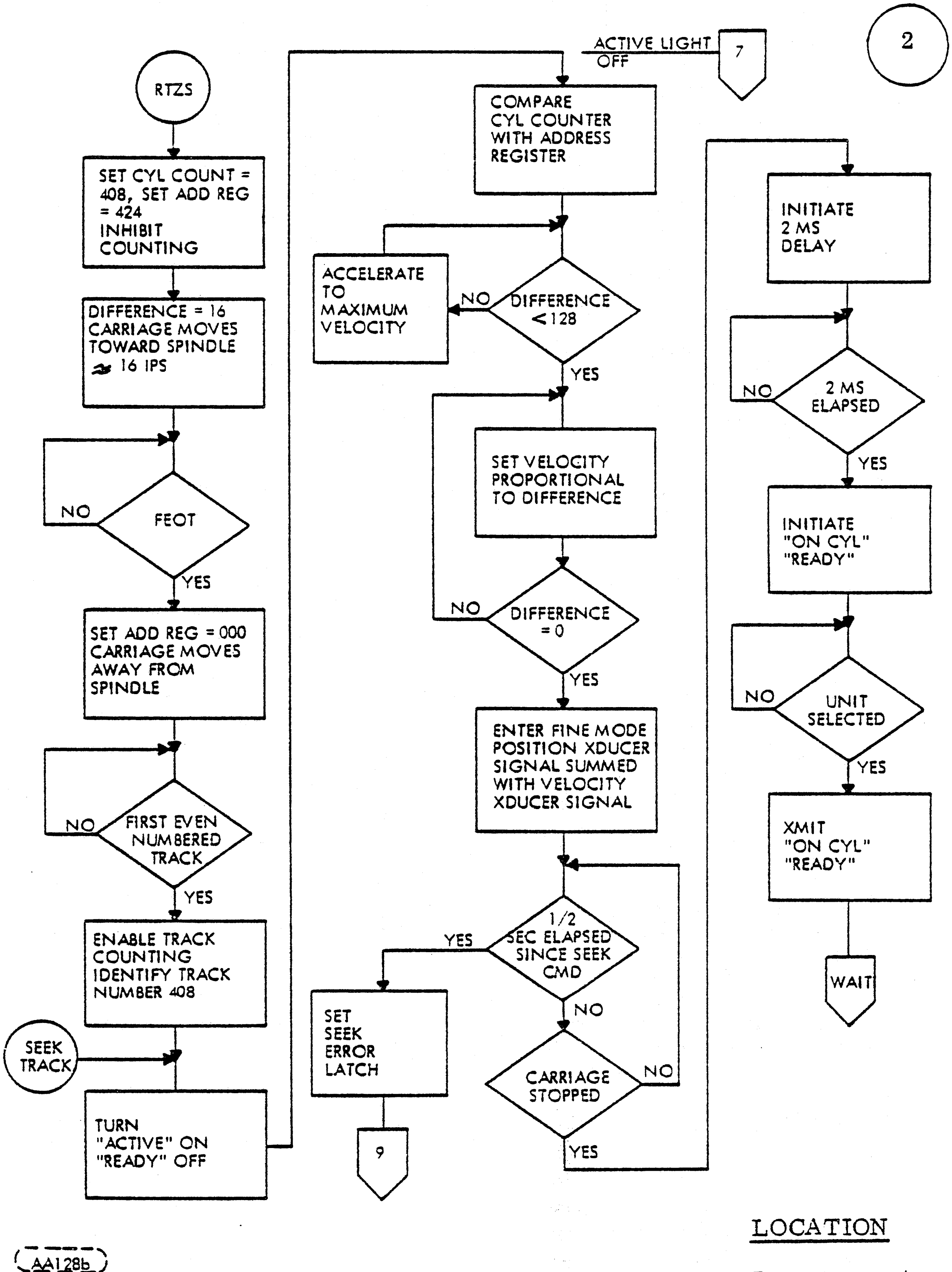
3 ⟶ 18

This indicates that the flow will continue on another page or a Fault has occurred, and on page 18 the flow will start at 3



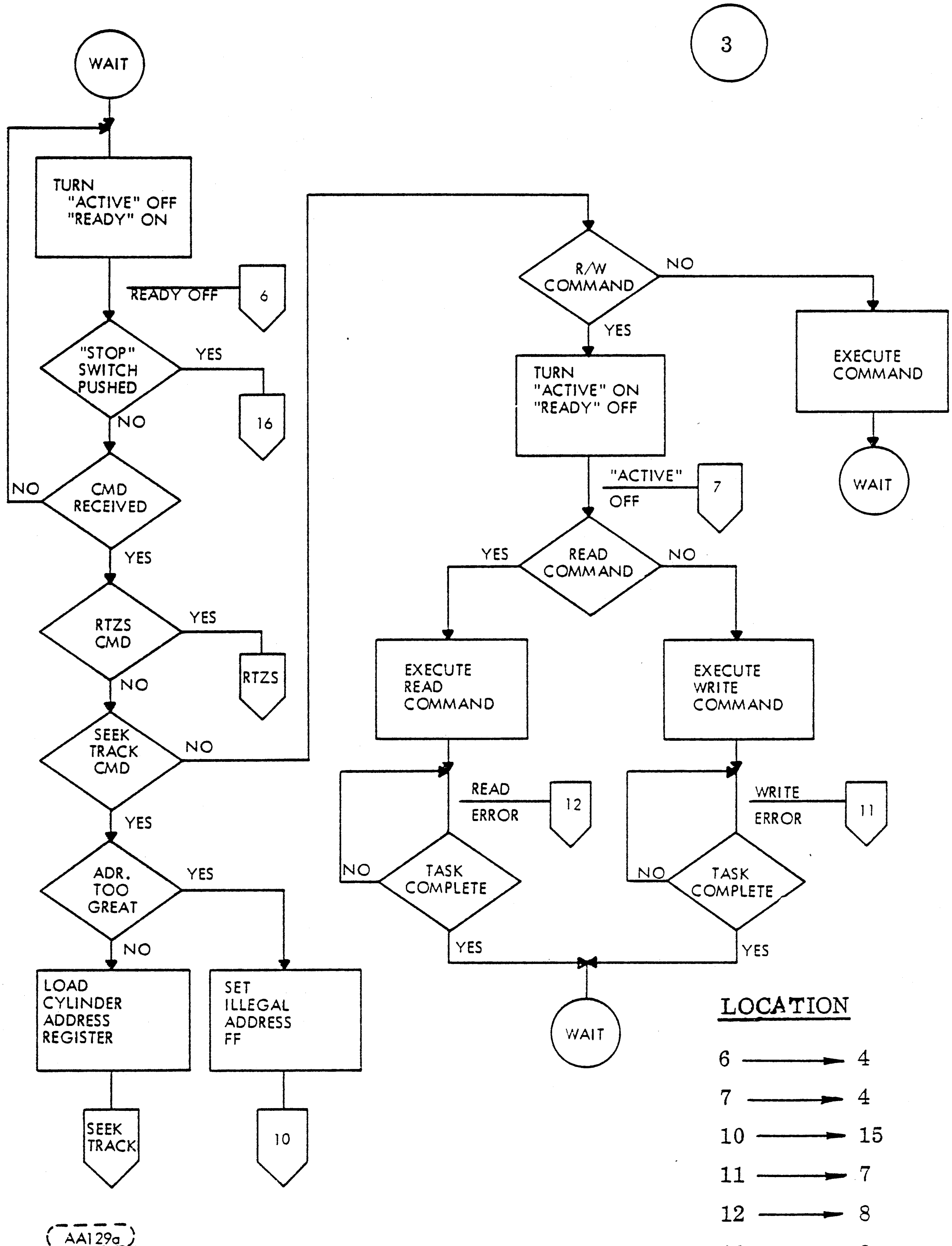
LOCATION

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



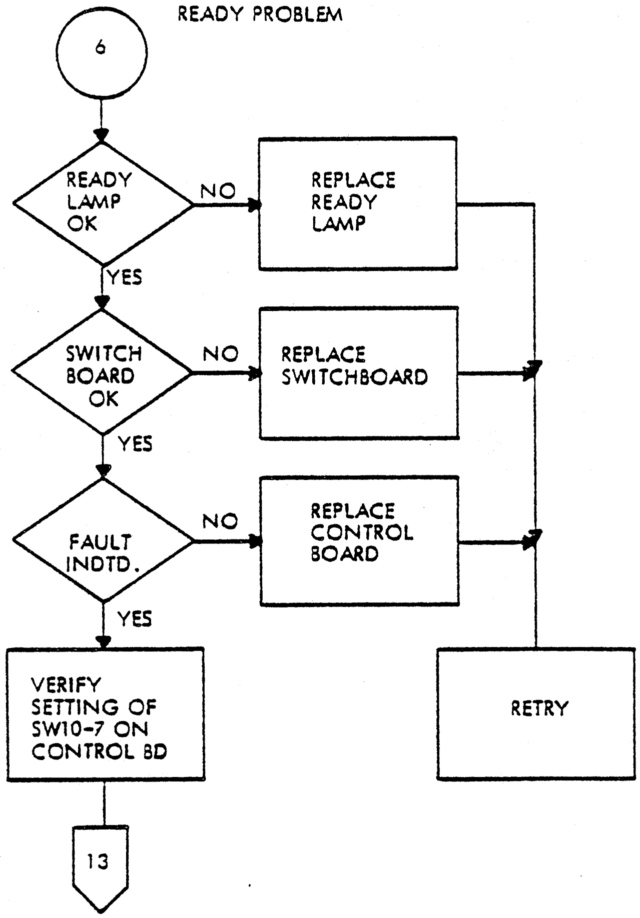
LOCATION

7 →	4
9 →	23
WAIT →	3

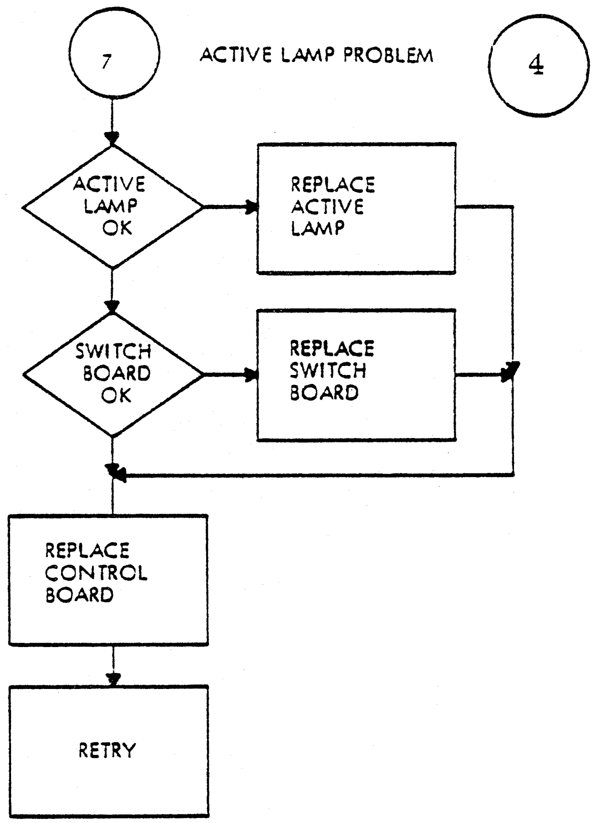


LOCATION

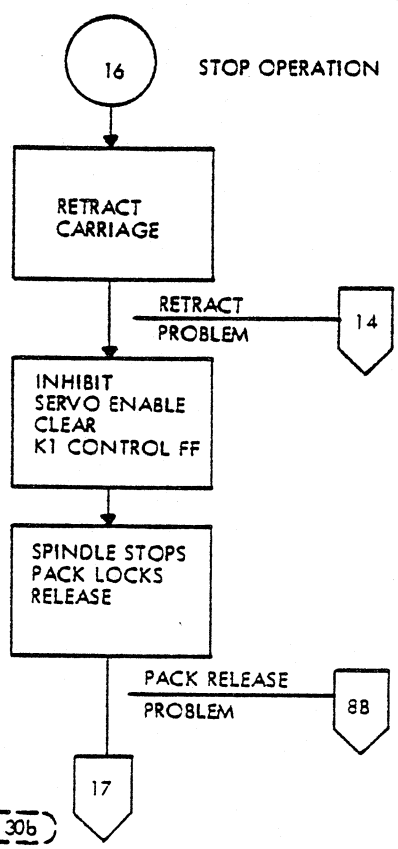
6 →	4
7 →	4
10 →	15
11 →	7
12 →	8
16 →	3
SEEK TRACK →	2
RTZS →	2



AA129b



AA129c



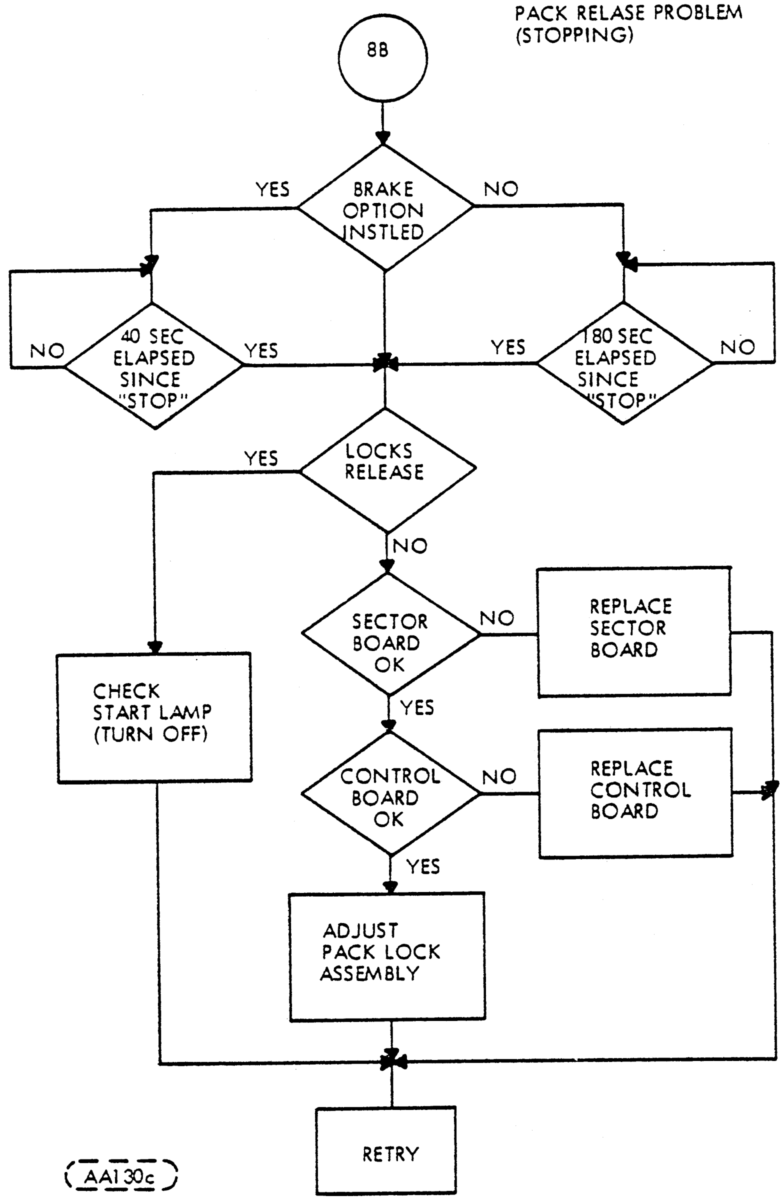
AA130b

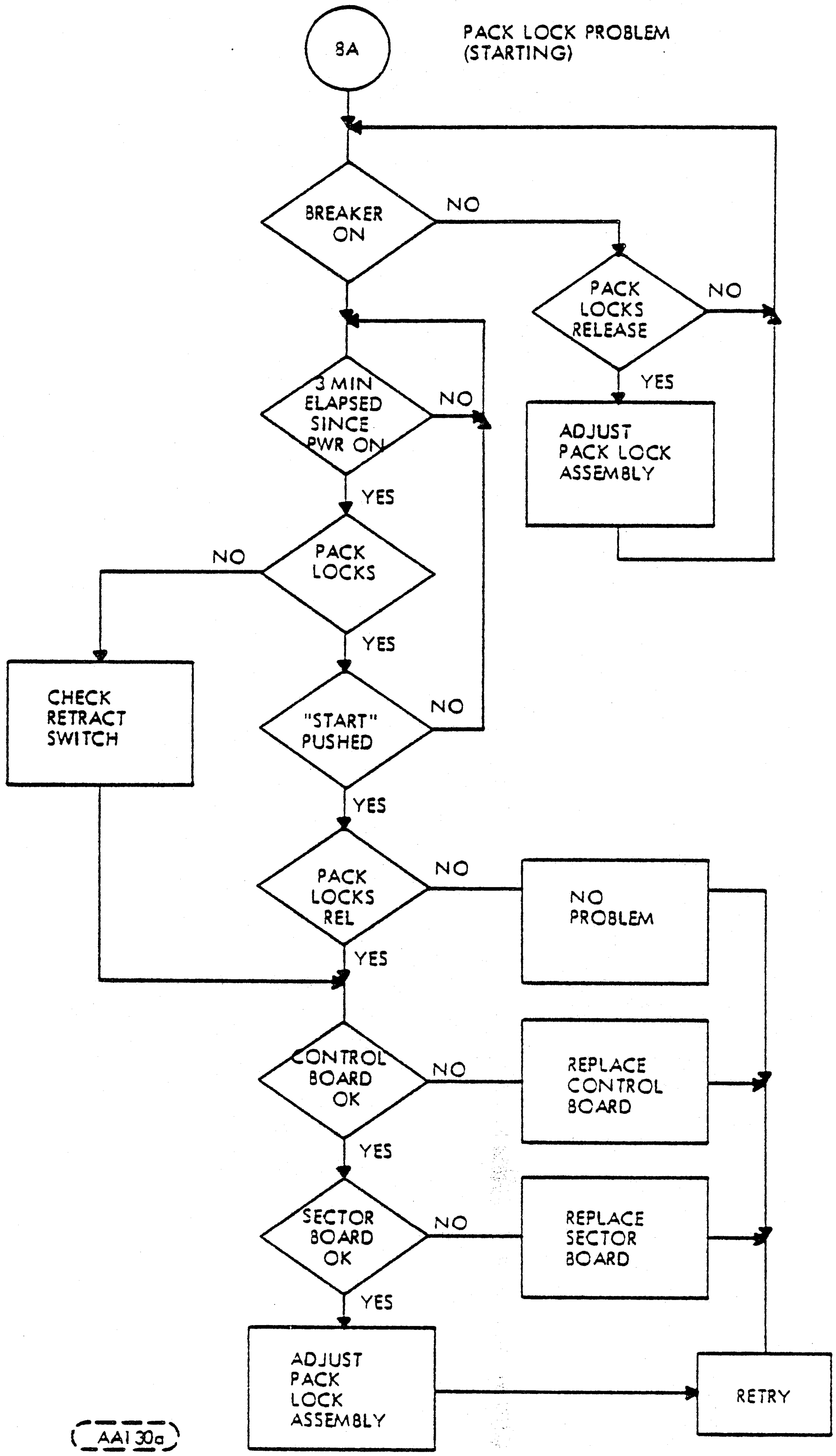
LOCATION

8B	→	5
13	→	19
14	→	17
17	→	1

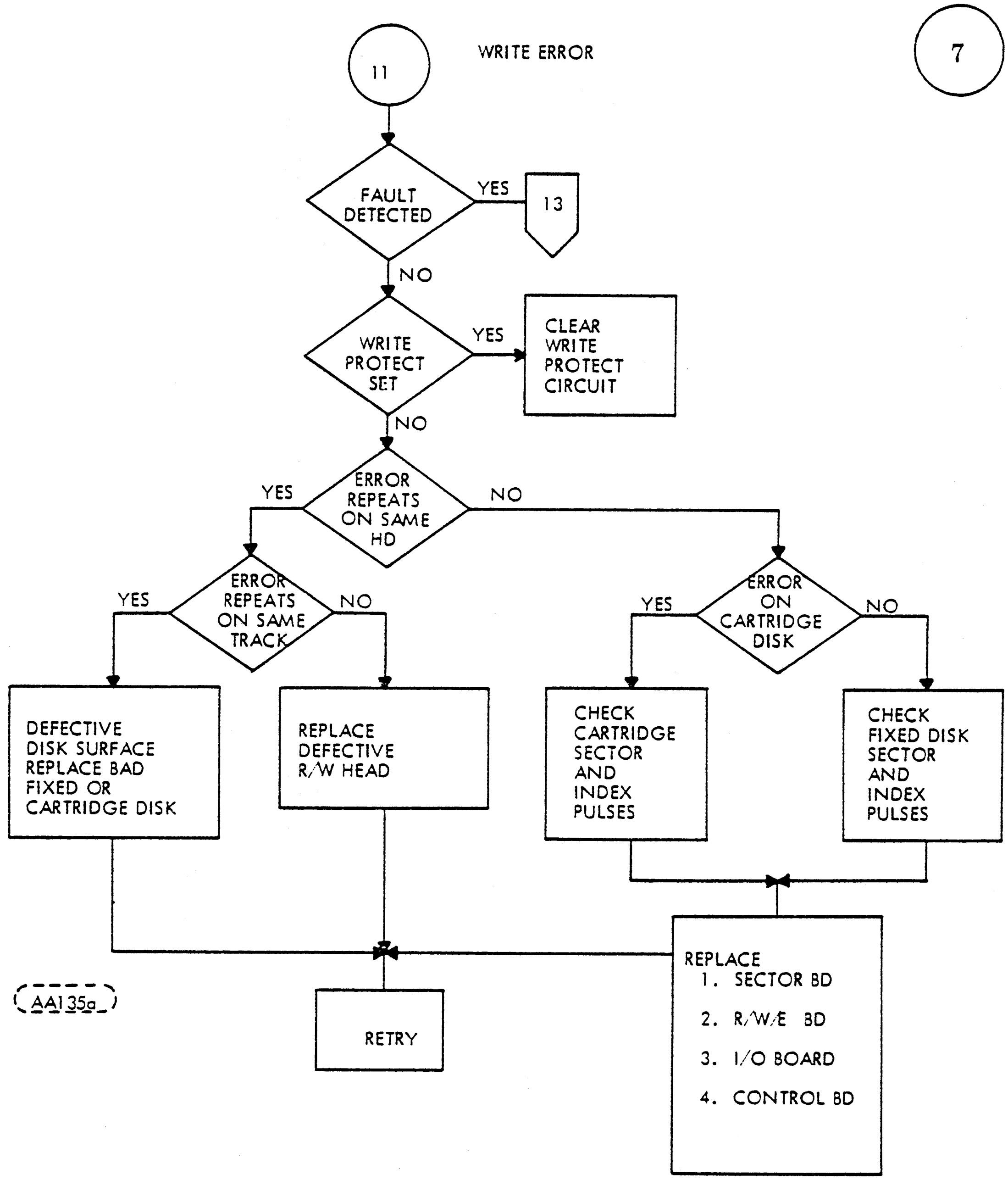
5

PACK RELASE PROBLEM
(STOPPING)



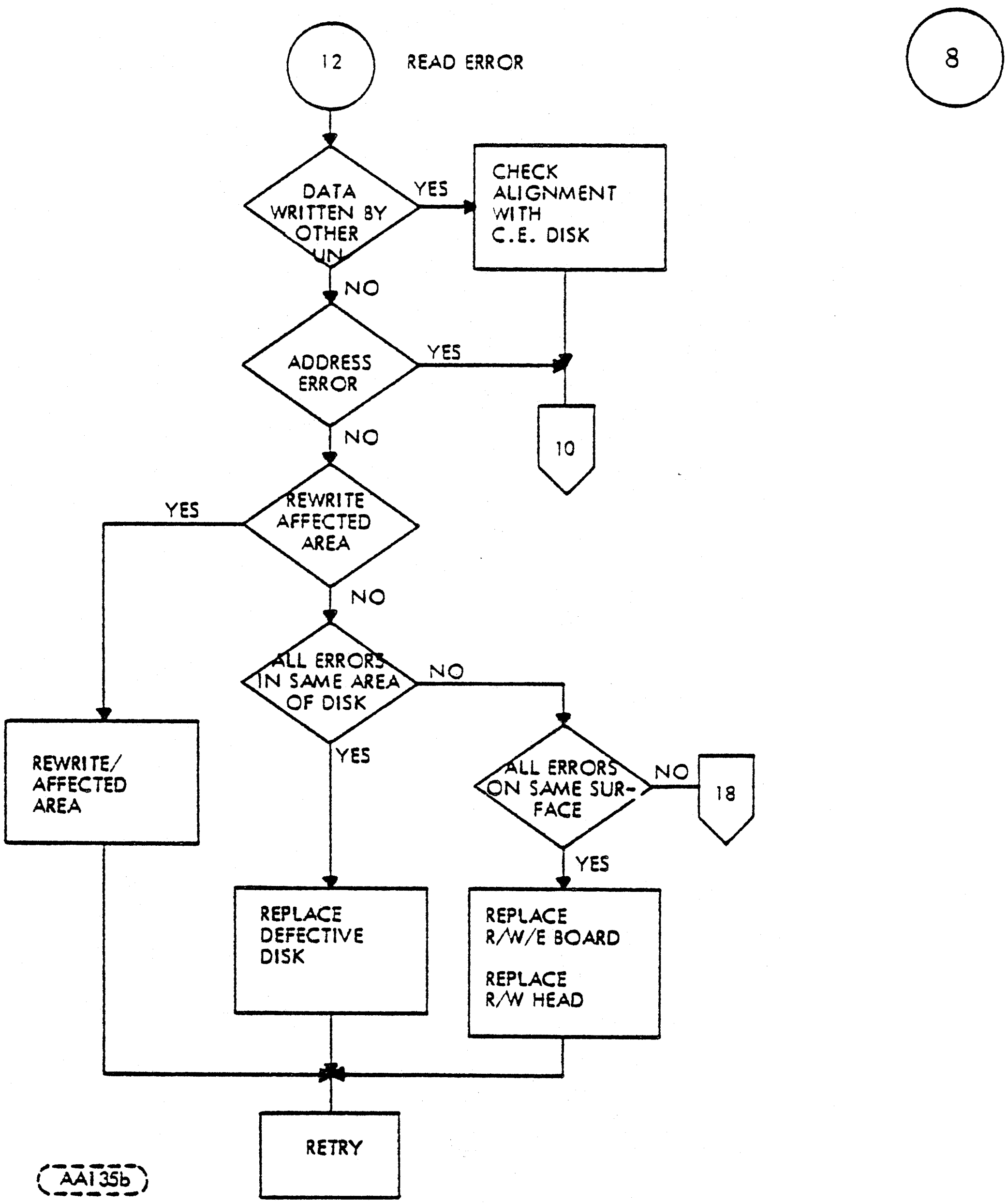

8A
PACK LOCK PROBLEM (STARTING)
BREAKER ON
NO
PACK LOCKS RELEASE
NO
YES
ADJUST PACK LOCK ASSEMBLY
3 MIN ELAPSED SINCE PWR ON
NO
YES
PACK LOCKS
NO
CHECK RETRACT SWITCH
YES
"START" PUSHED
NO
YES
PACK LOCKS REL
NO
NO PROBLEM
YES
CONTROL BOARD OK
NO
REPLACE CONTROL BOARD
YES
SECTOR BOARD OK
NO
REPLACE SECTOR BOARD
YES
ADJUST PACK LOCK ASSEMBLY
RETRY
AAI 30a

6



LOCATION

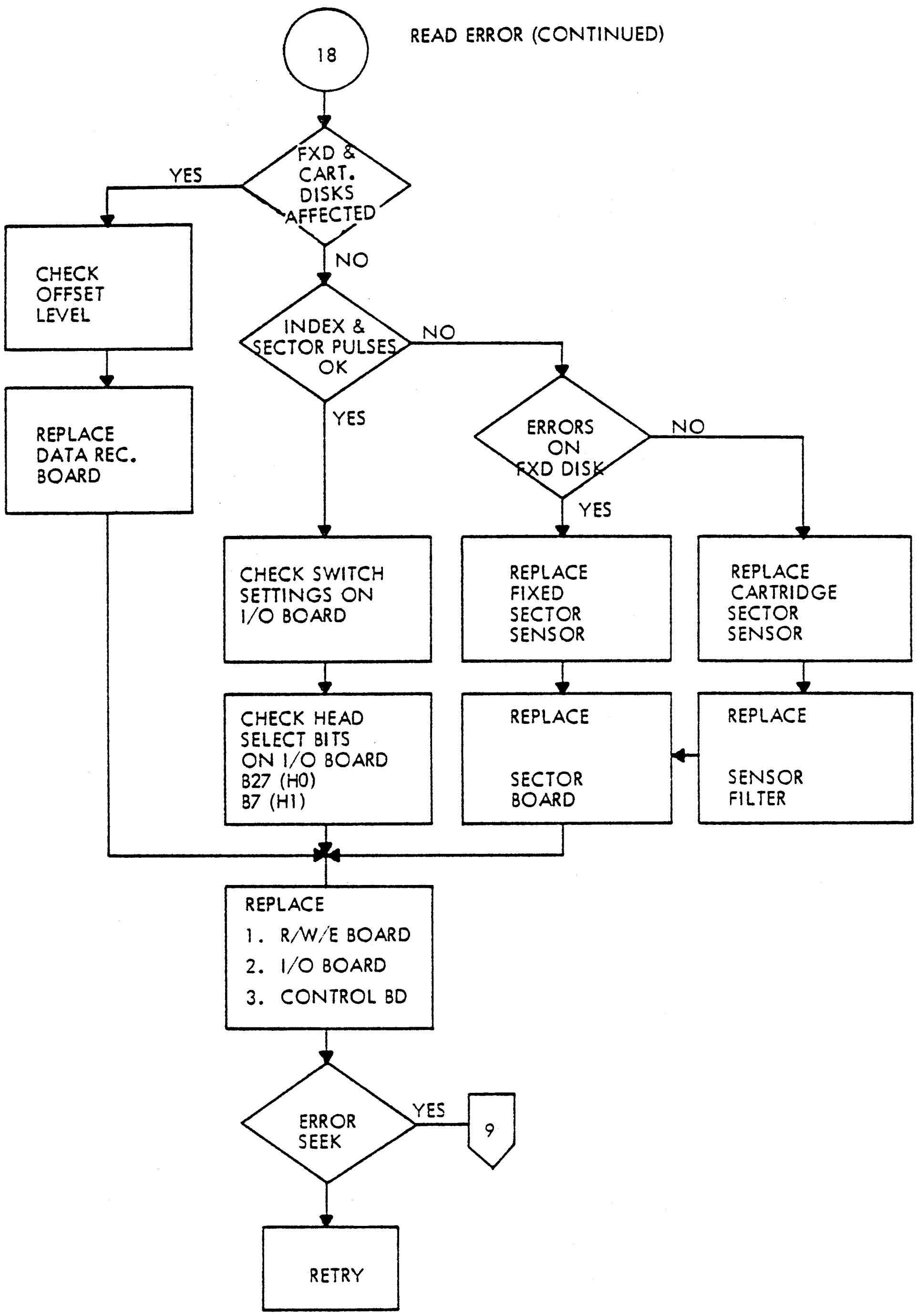
13 → 19



LOCATION

10 ⟶ 15

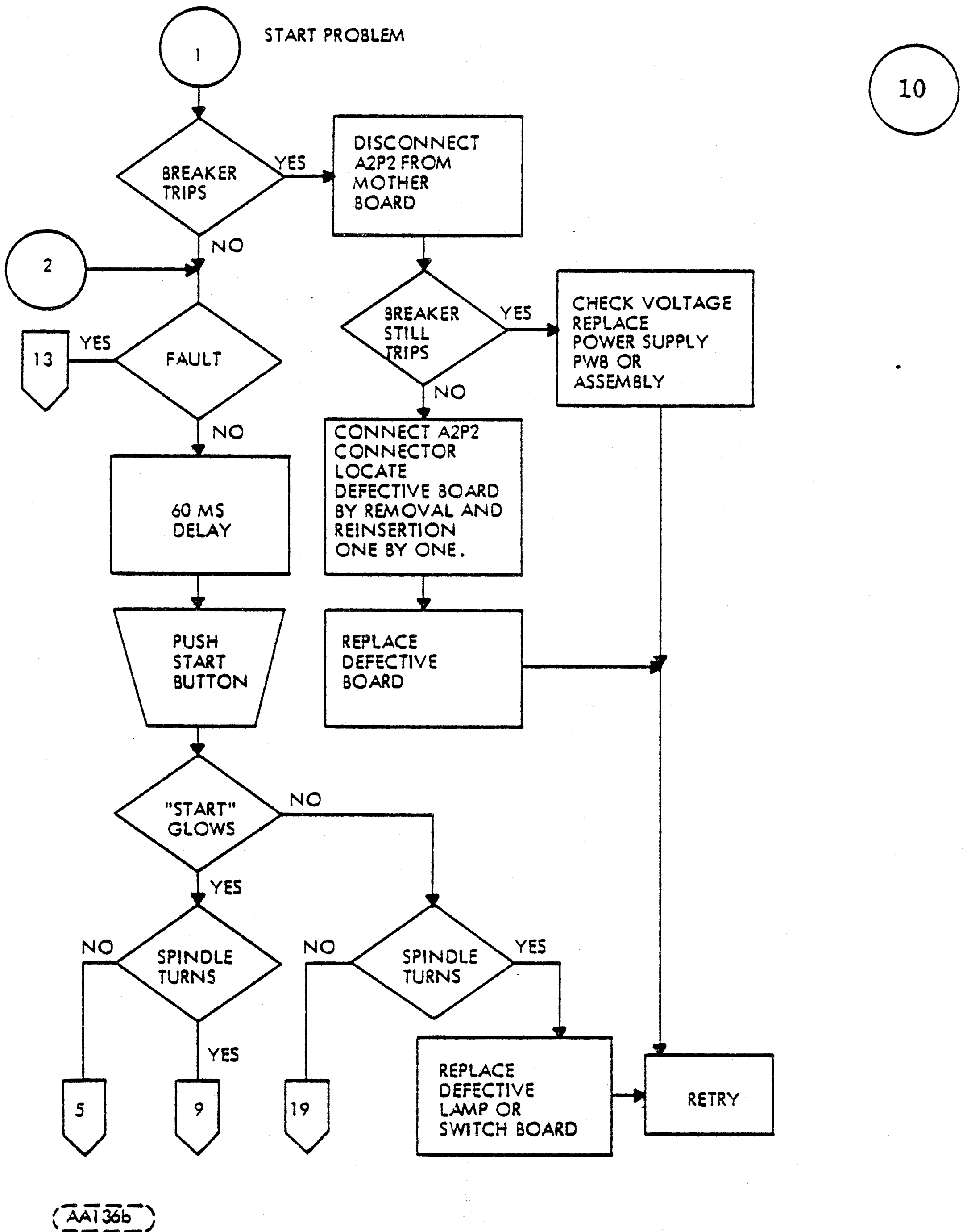
18 ⟶ 9



(AA136a)

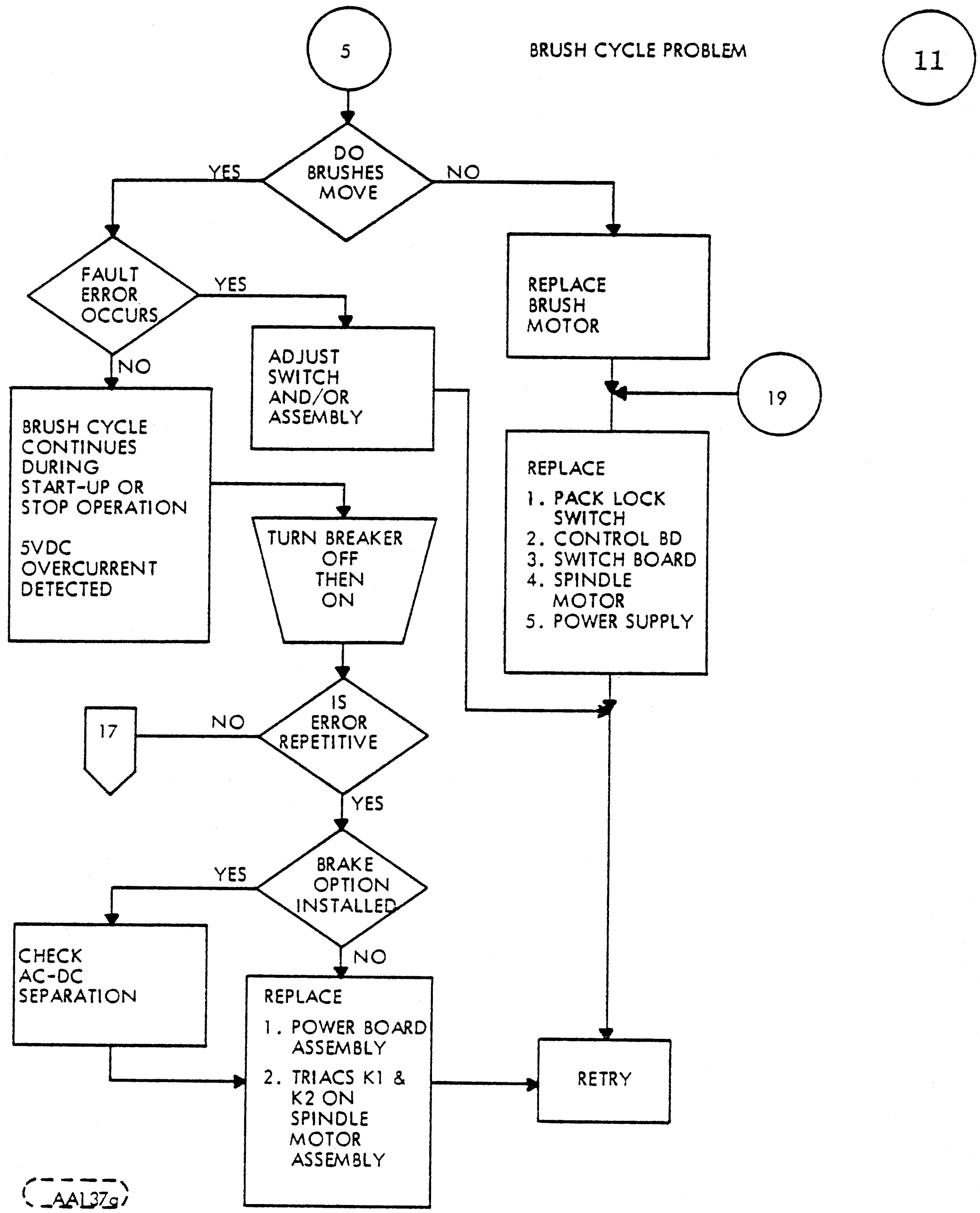
LOCATION

9 ⟶ 23



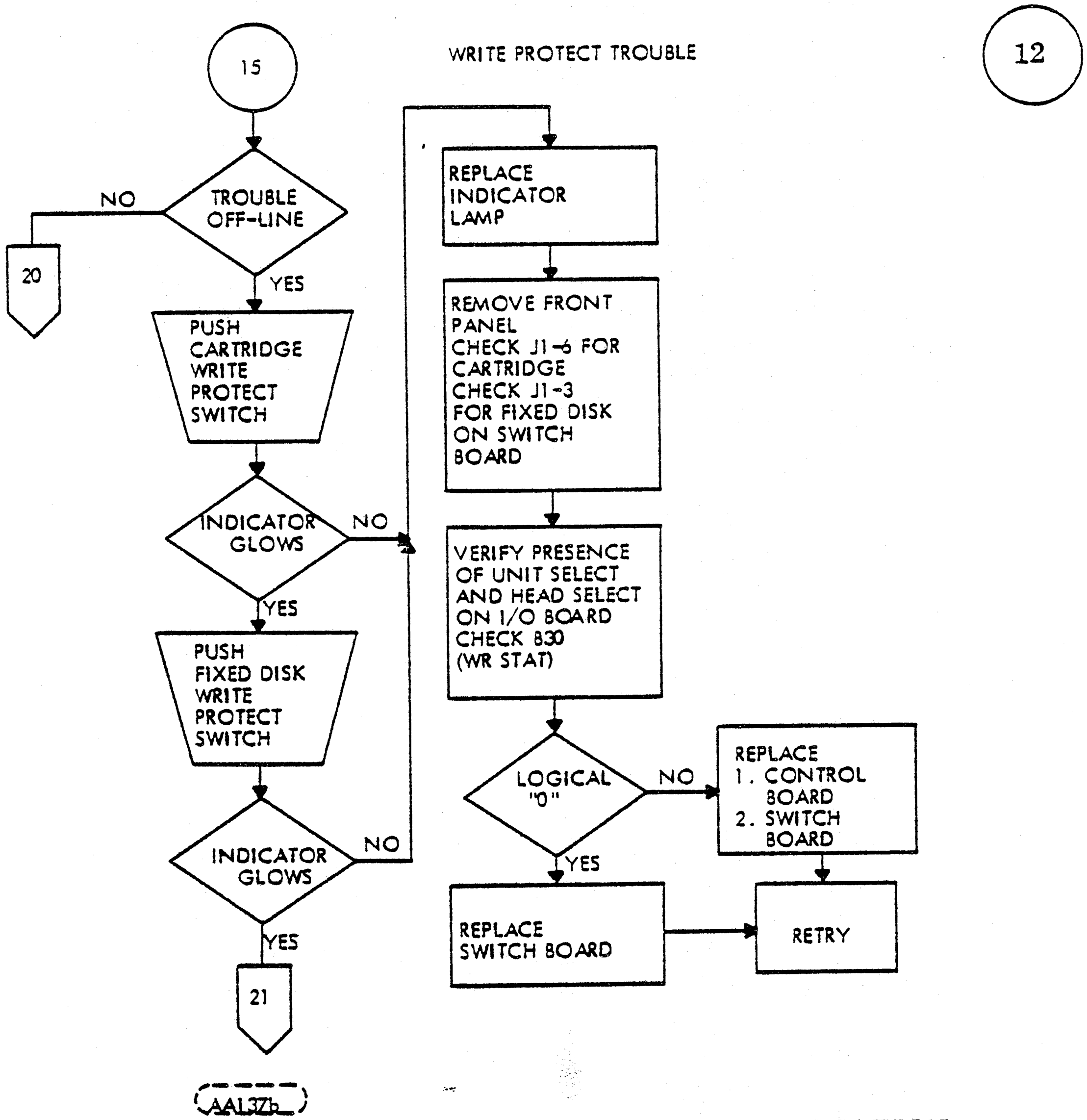
LOCATION

5 →	11
9 →	23
13 →	19
19 →	11



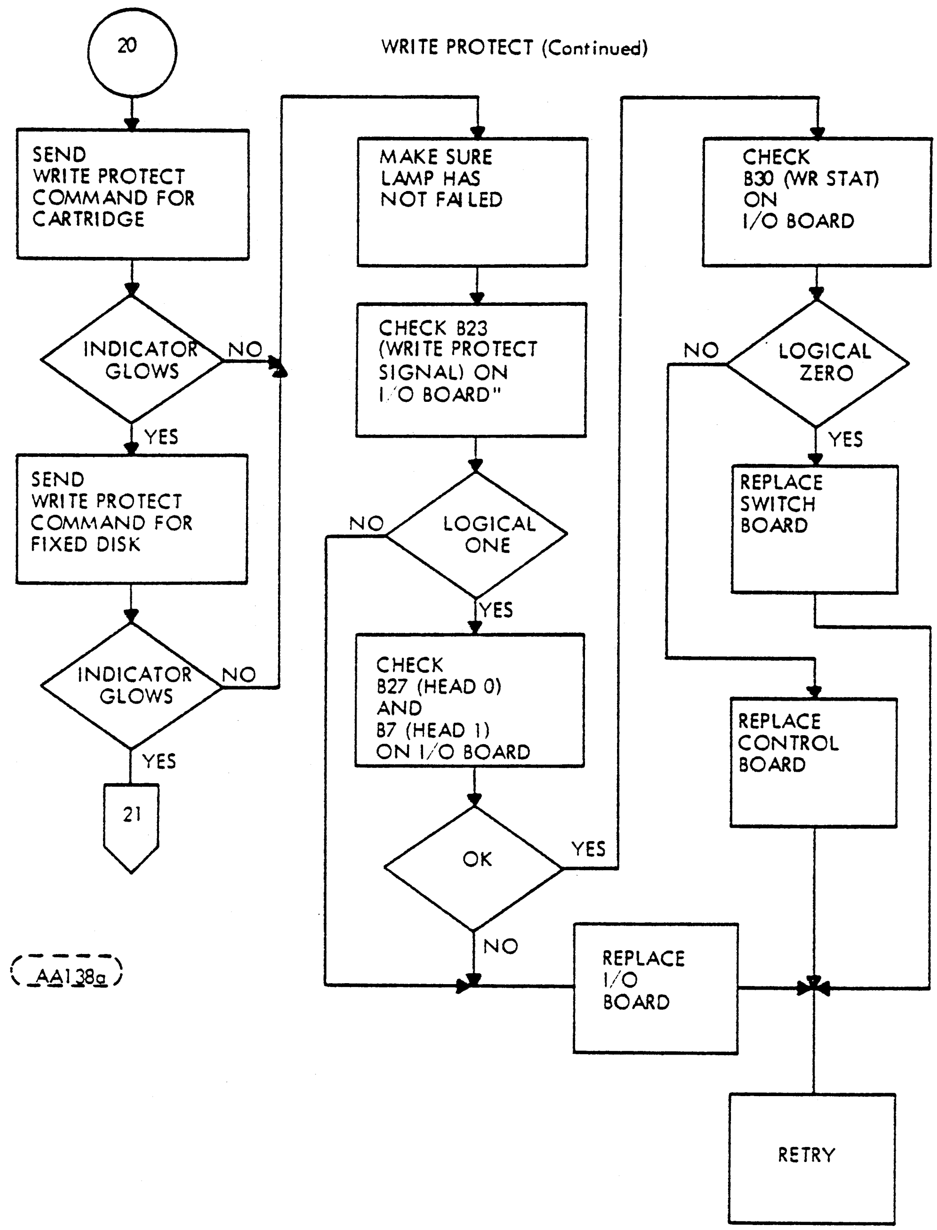
LOCATION

17 ——► 1



LOCATION

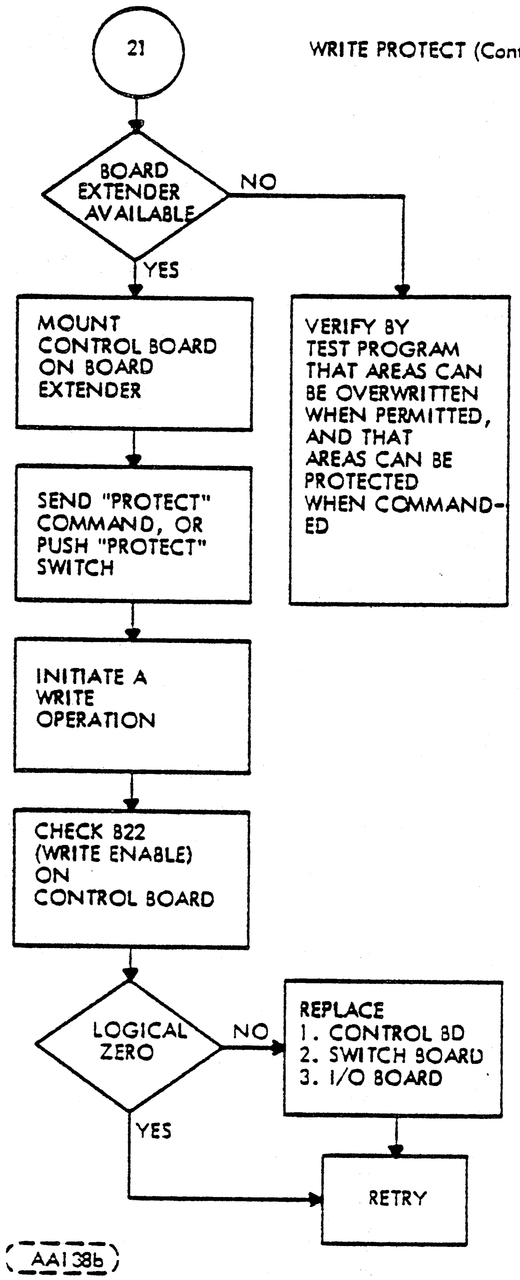
21 → 14

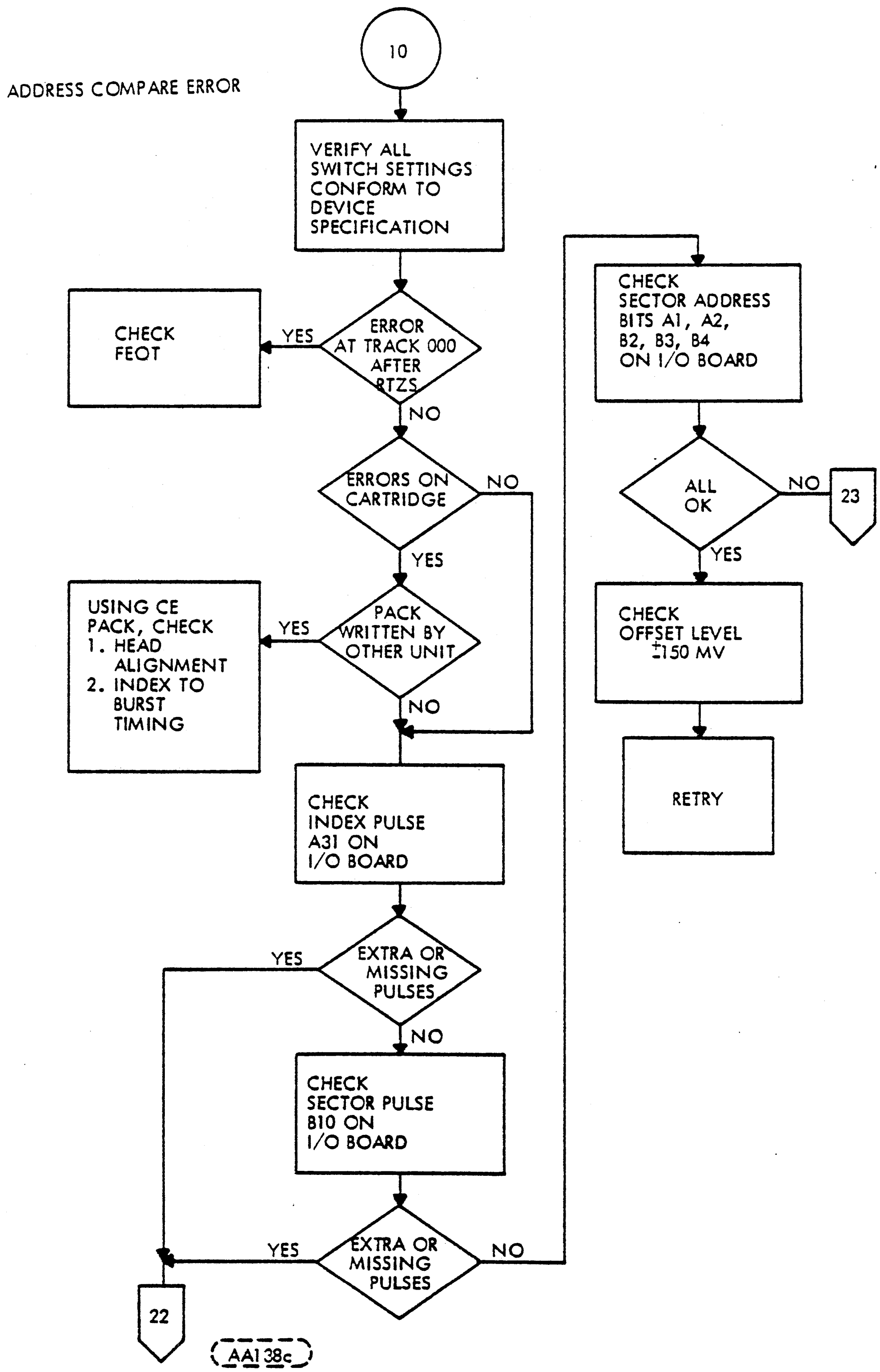


LOCATION

21 ——► 14

WRITE PROTECT (Continued)





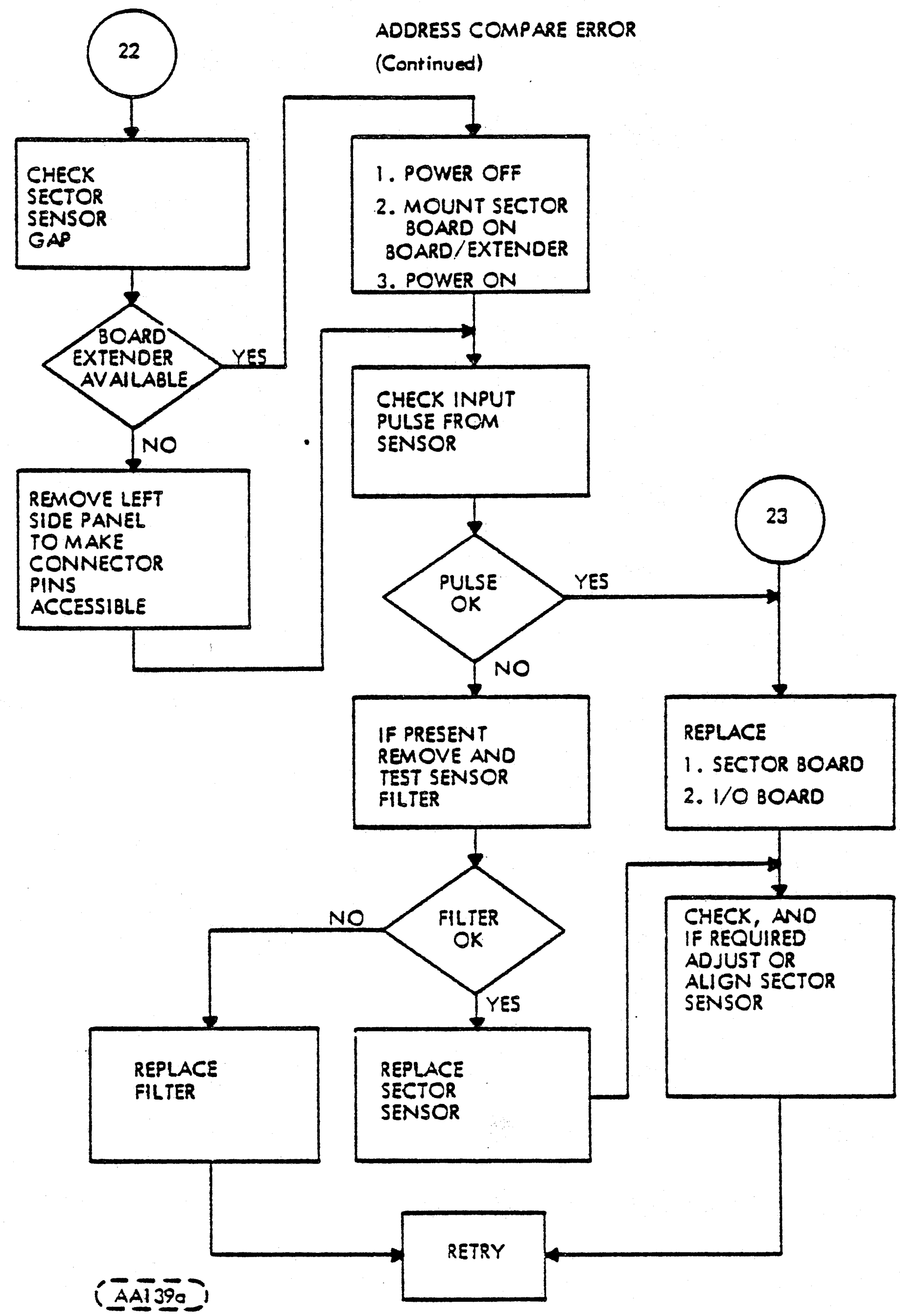
LOCATION

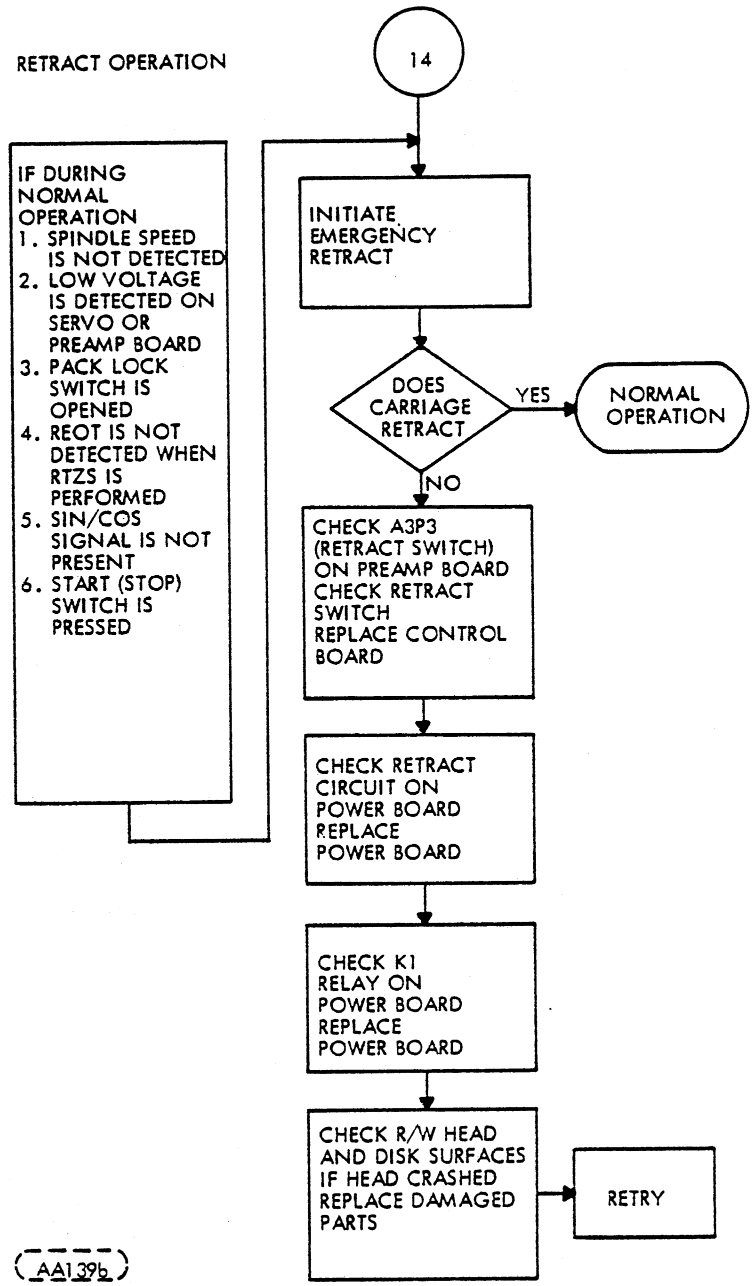
22 → 16

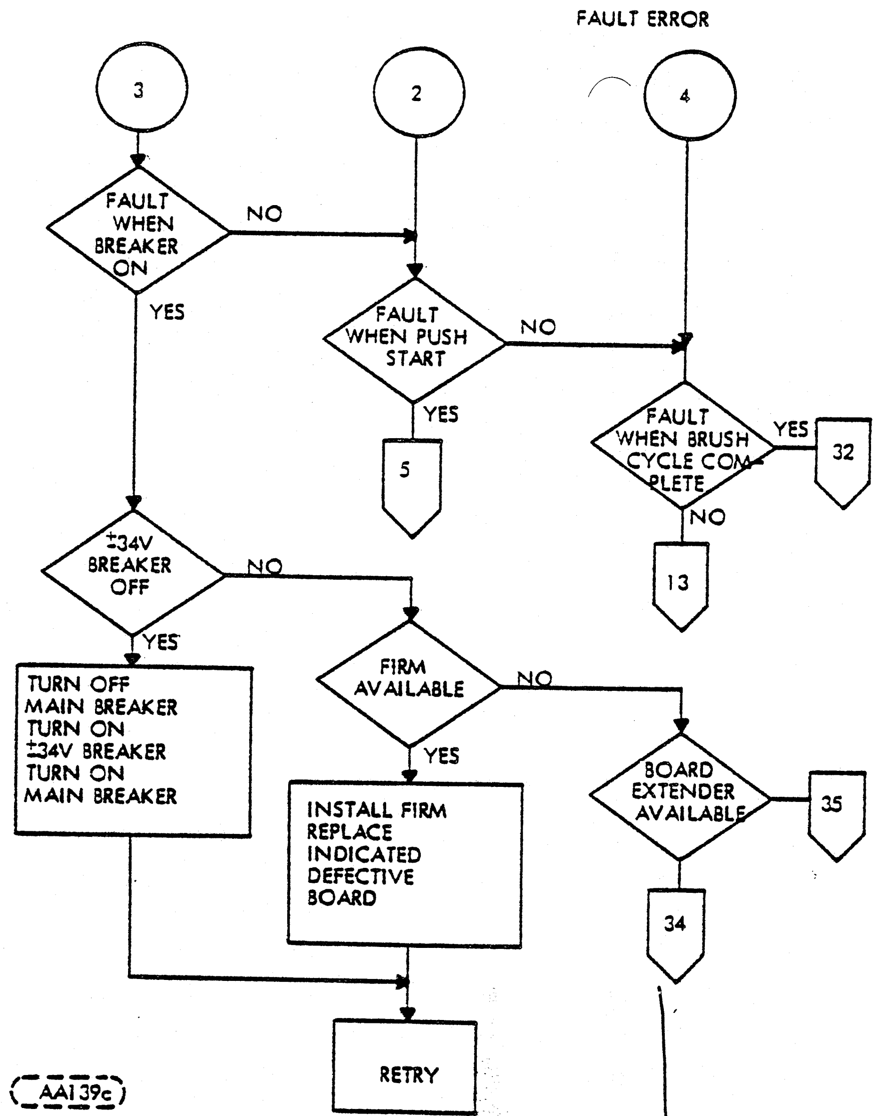
23 → 16

ADDRESS COMPARE ERROR
(Continued)

16




RETRACT OPERATION
14
IF DURING NORMAL OPERATION
1. SPINDLE SPEED IS NOT DETECTED
2. LOW VOLTAGE IS DETECTED ON SERVO OR PREAMP BOARD
3. PACK LOCK SWITCH IS OPENED
4. REOT IS NOT DETECTED WHEN RTZS IS PERFORMED
5. SIN/COS SIGNAL IS NOT PRESENT
6. START (STOP) SWITCH IS PRESSED
INITIATE EMERGENCY RETRACT
DOES CARRIAGE RETRACT
YES
NORMAL OPERATION
NO
CHECK A3P3 (RETRACT SWITCH) ON PREAMP BOARD
CHECK RETRACT SWITCH
REPLACE CONTROL BOARD
CHECK RETRACT CIRCUIT ON POWER BOARD
REPLACE POWER BOARD
CHECK K1 RELAY ON POWER BOARD
REPLACE POWER BOARD
CHECK R/W HEAD AND DISK SURFACES
IF HEAD CRASHED
REPLACE DAMAGED PARTS
RETRY
AA139b

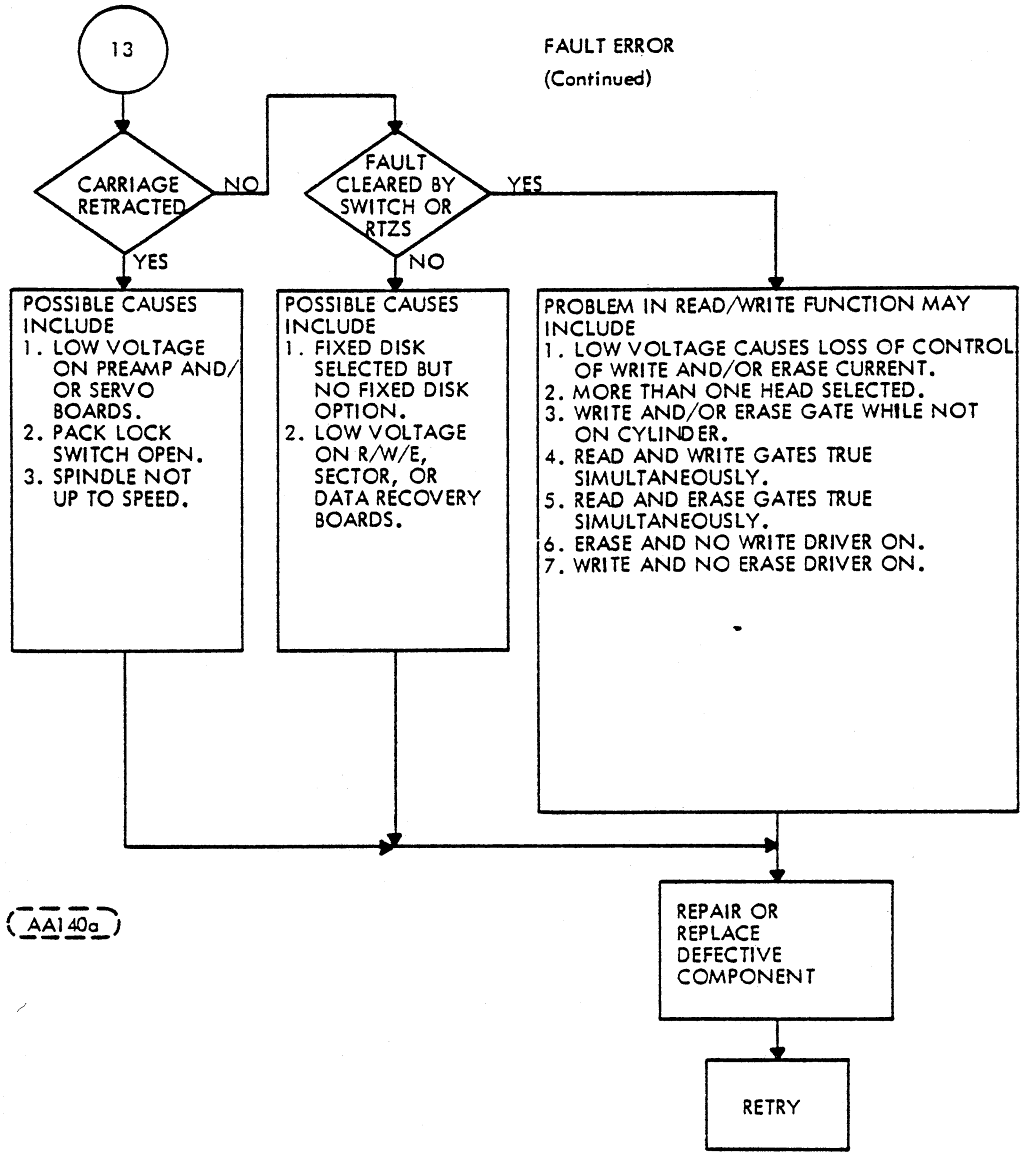


LOCATION

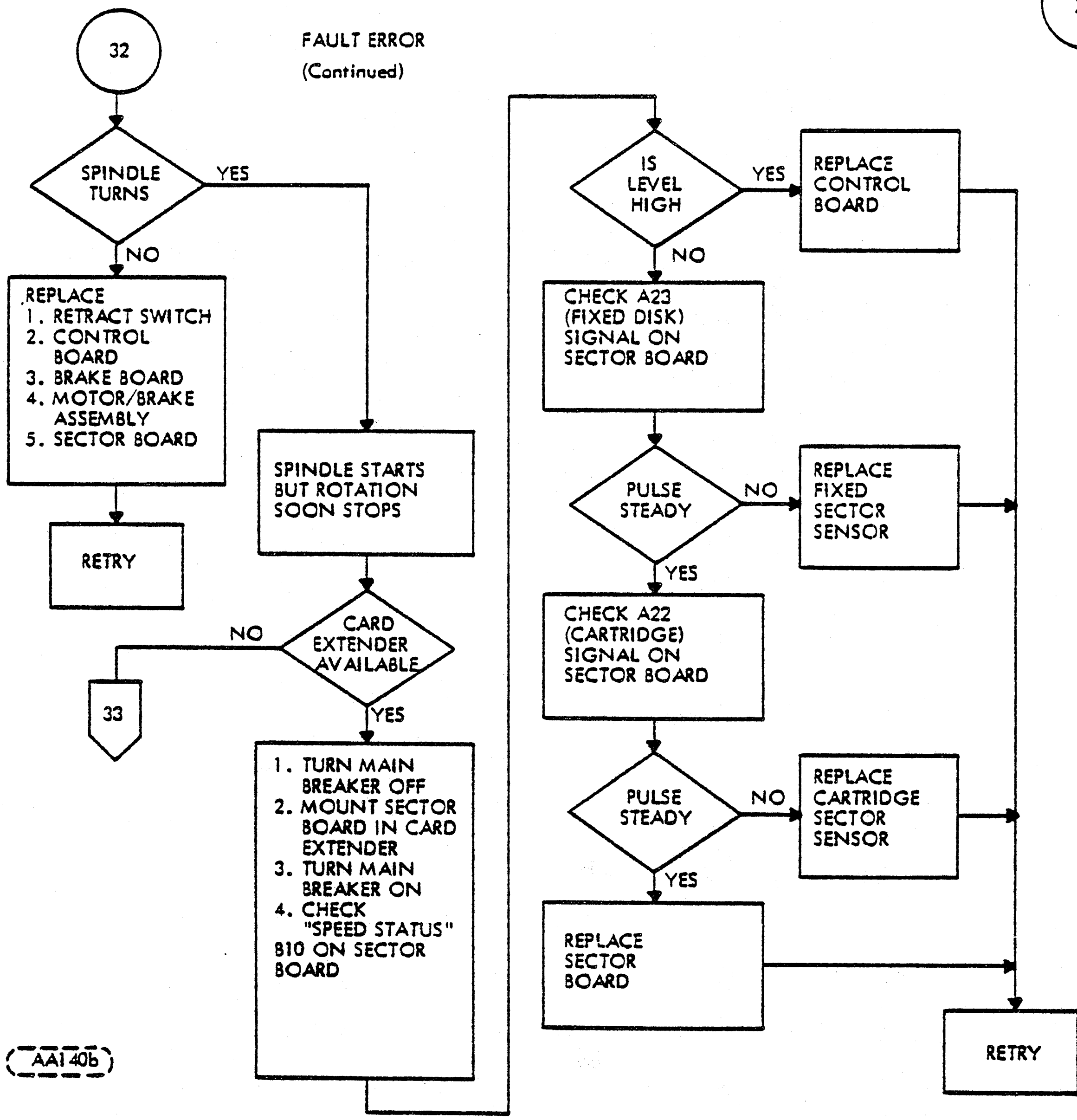
Circle		Sheet
5	→	11
13	→	19
32	→	20
34	→	21
35	→	22

FAULT ERROR

(Continued)

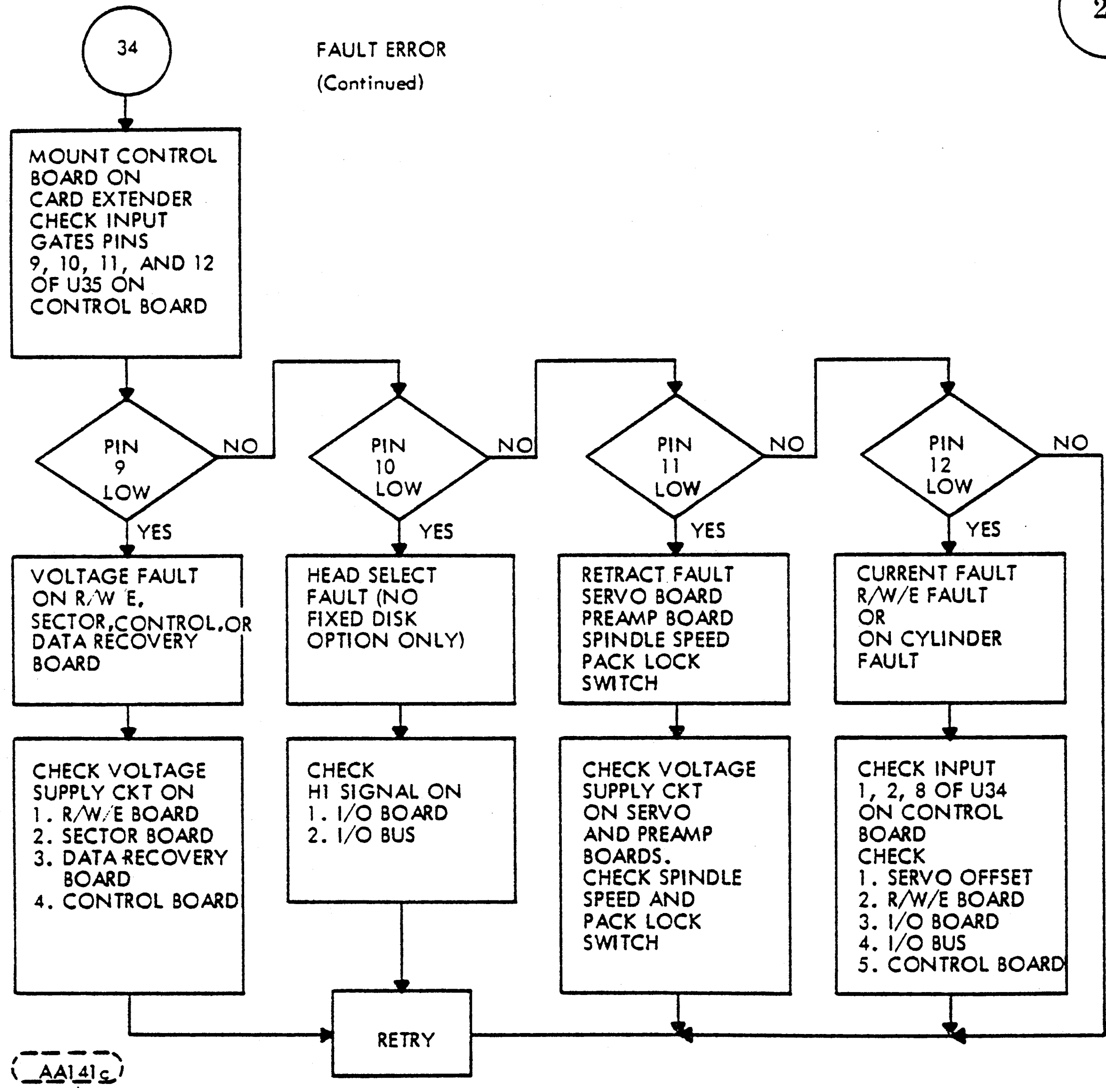


20



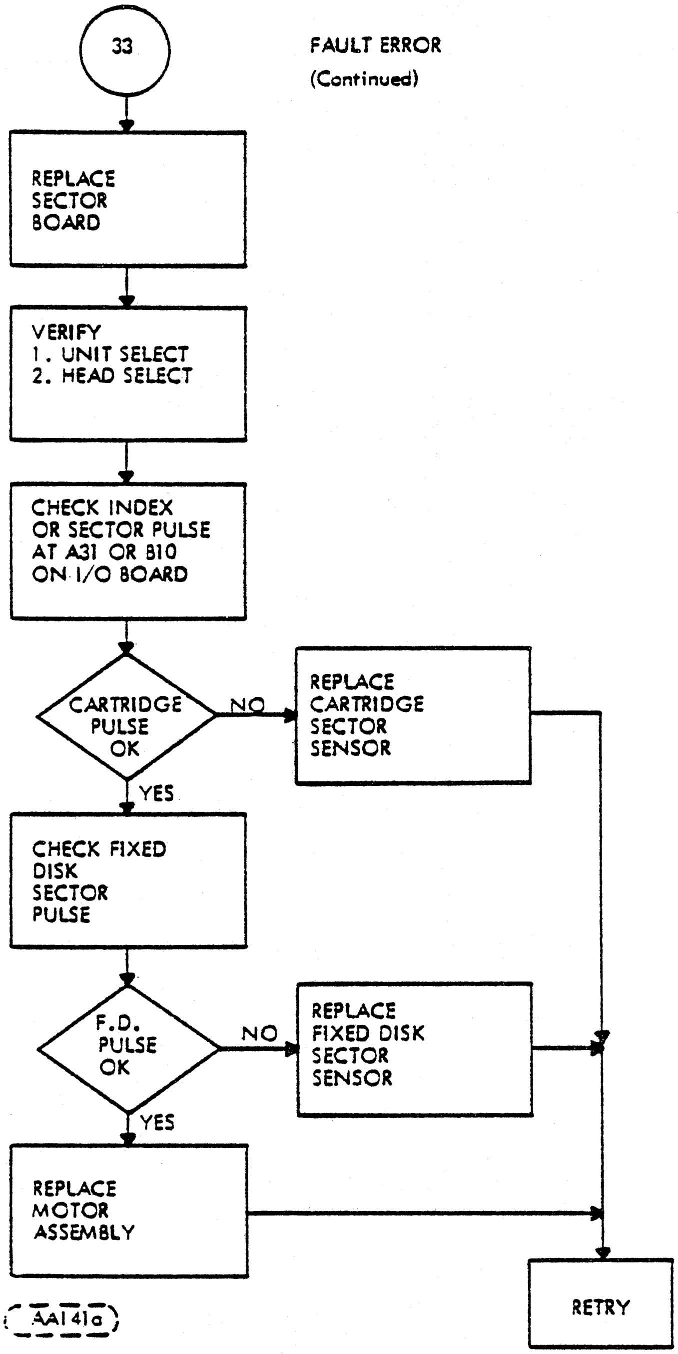
LOCATION

33 ——→ 22


34
FAULT ERROR
(Continued)
MOUNT CONTROL BOARD ON CARD EXTENDER CHECK INPUT GATES PINS 9, 10, 11, AND 12 OF U35 ON CONTROL BOARD
PIN 9 LOW
NO
YES
VOLTAGE FAULT ON R/W E, SECTOR,CONTROL,OR DATA RECOVERY BOARD
CHECK VOLTAGE SUPPLY CKT ON 1. R/W/E BOARD 2. SECTOR BOARD 3. DATA RECOVERY BOARD 4. CONTROL BOARD
PIN 10 LOW
NO
YES
HEAD SELECT FAULT (NO FIXED DISK OPTION ONLY)
CHECK H1 SIGNAL ON 1. I/O BOARD 2. I/O BUS
PIN 11 LOW
NO
YES
RETRACT FAULT SERVO BOARD PREAMP BOARD SPINDLE SPEED PACK LOCK SWITCH
CHECK VOLTAGE SUPPLY CKT ON SERVO AND PREAMP BOARDS. CHECK SPINDLE SPEED AND PACK LOCK SWITCH
PIN 12 LOW
NO
YES
CURRENT FAULT R/W/E FAULT OR ON CYLINDER FAULT
CHECK INPUT 1, 2, 8 OF U34 ON CONTROL BOARD CHECK 1. SERVO OFFSET 2. R/W/E BOARD 3. I/O BOARD 4. I/O BUS 5. CONTROL BOARD
RETRY
AA141c

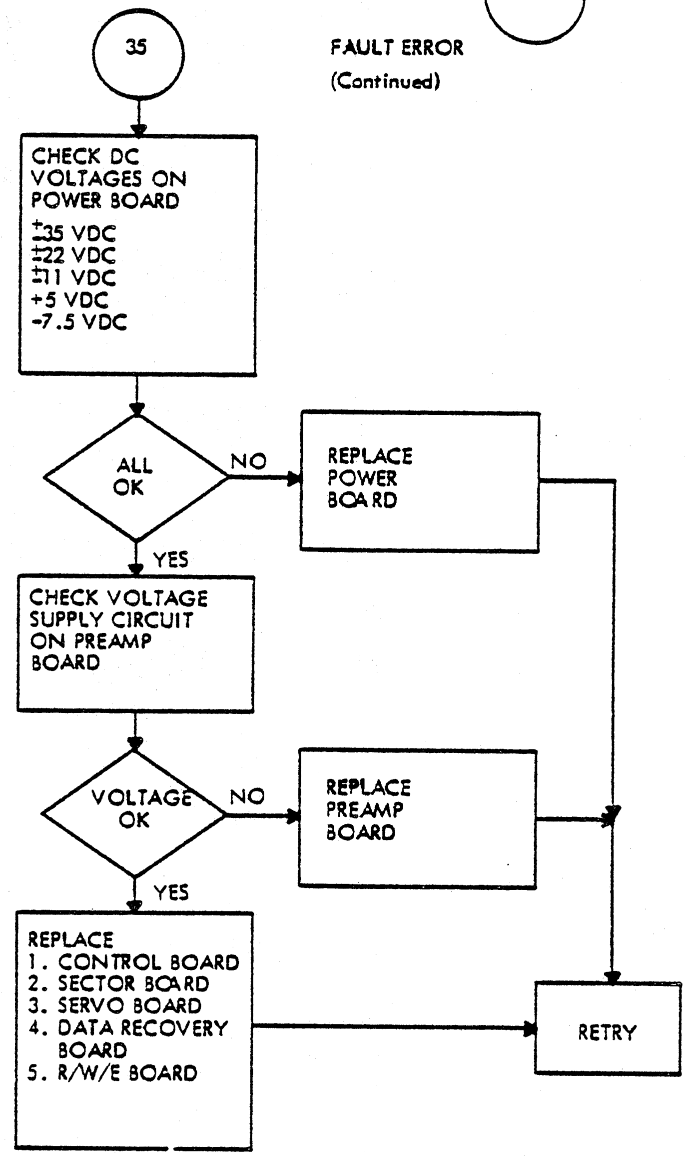
22

FAULT ERROR
(Continued)



AA141a

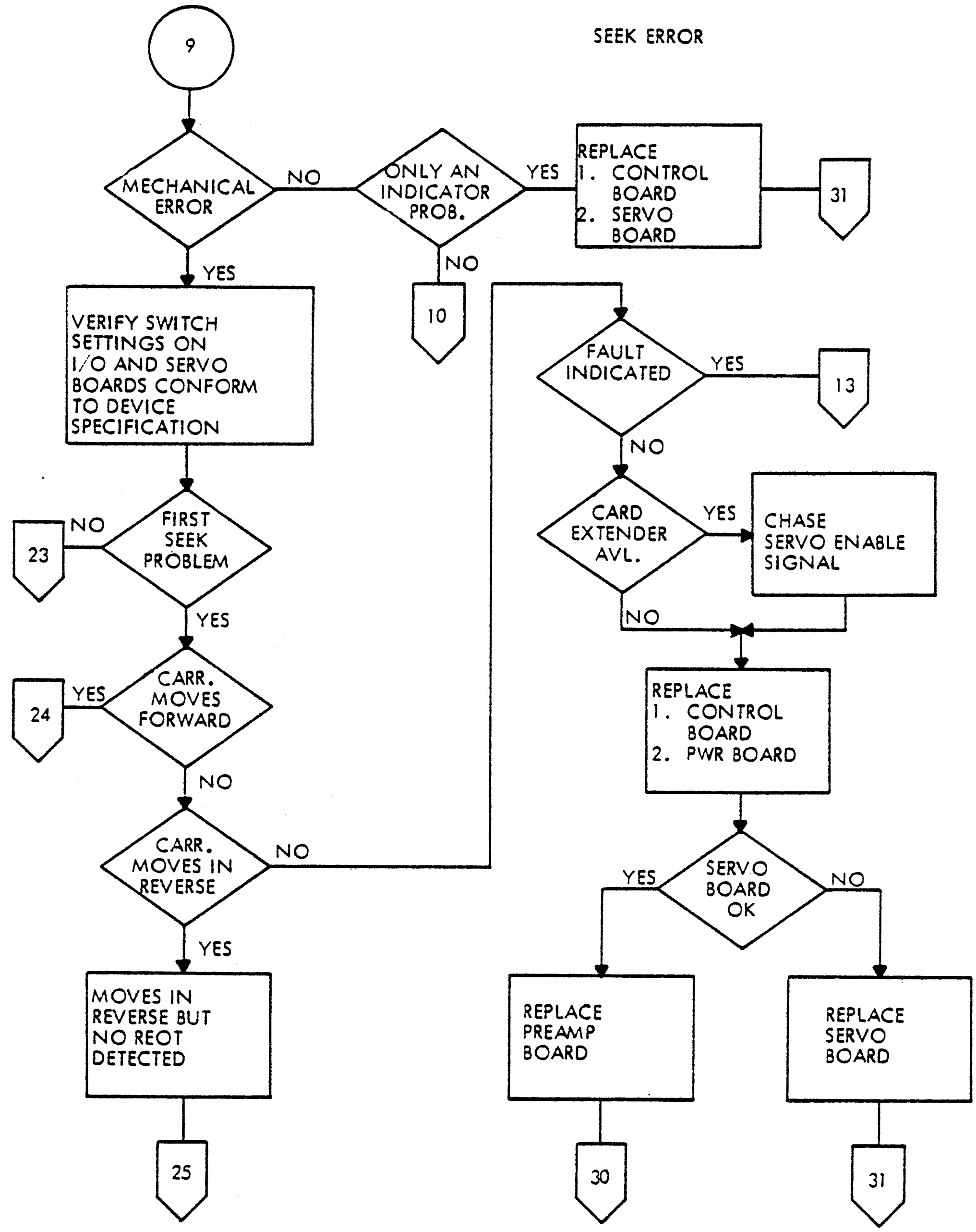
FAULT ERROR
(Continued)



AA141b

SEEK ERROR

23

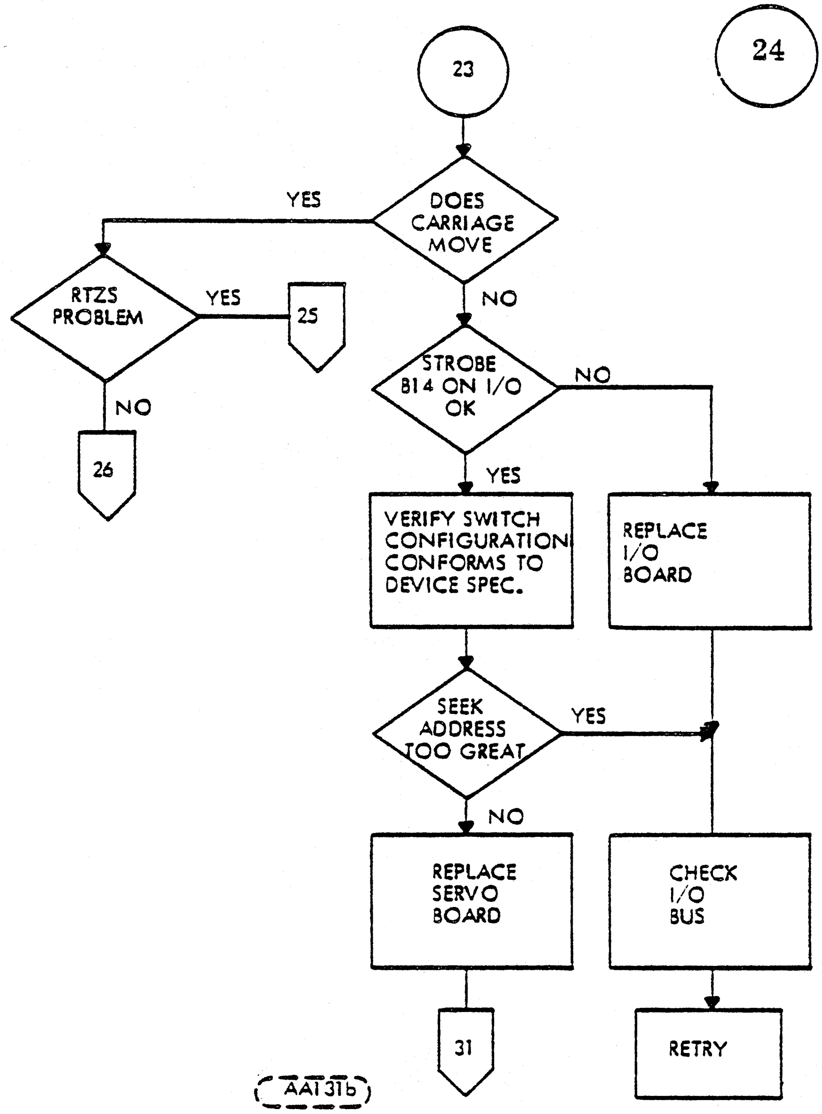


AA131a

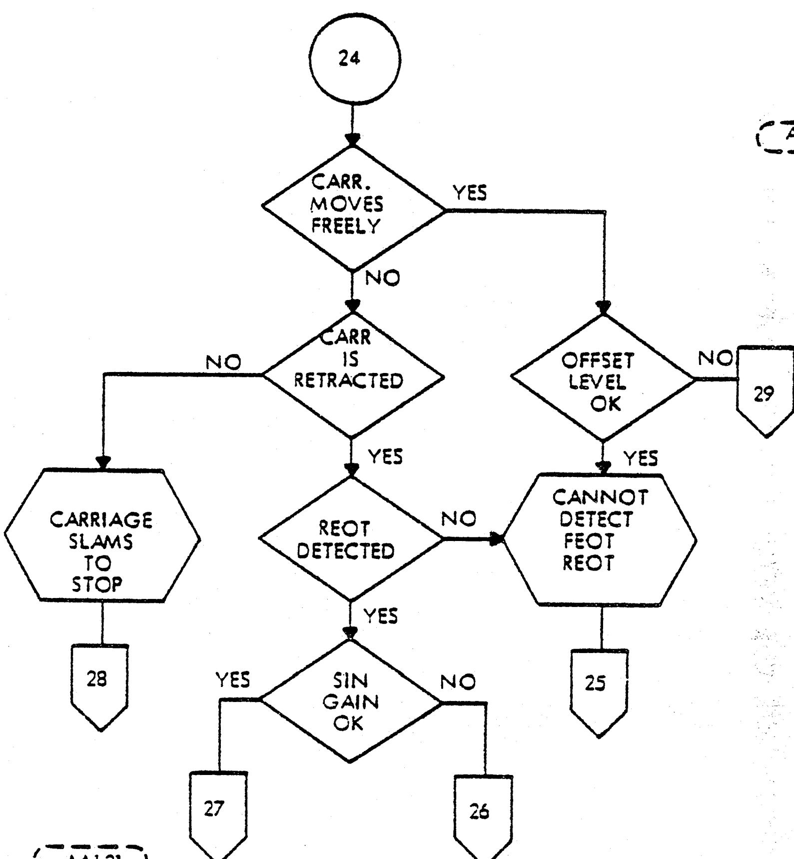
LOCATION

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

SEEK ERROR (CONTINUED)



AA131b



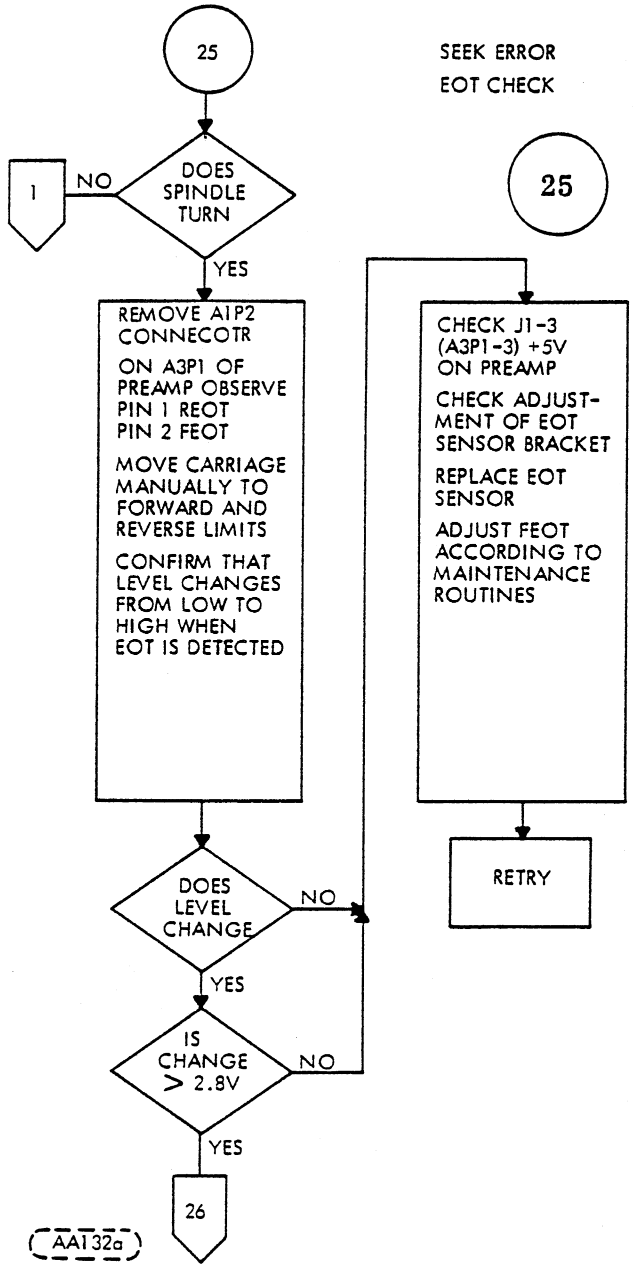
AA131c

LOCATION

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

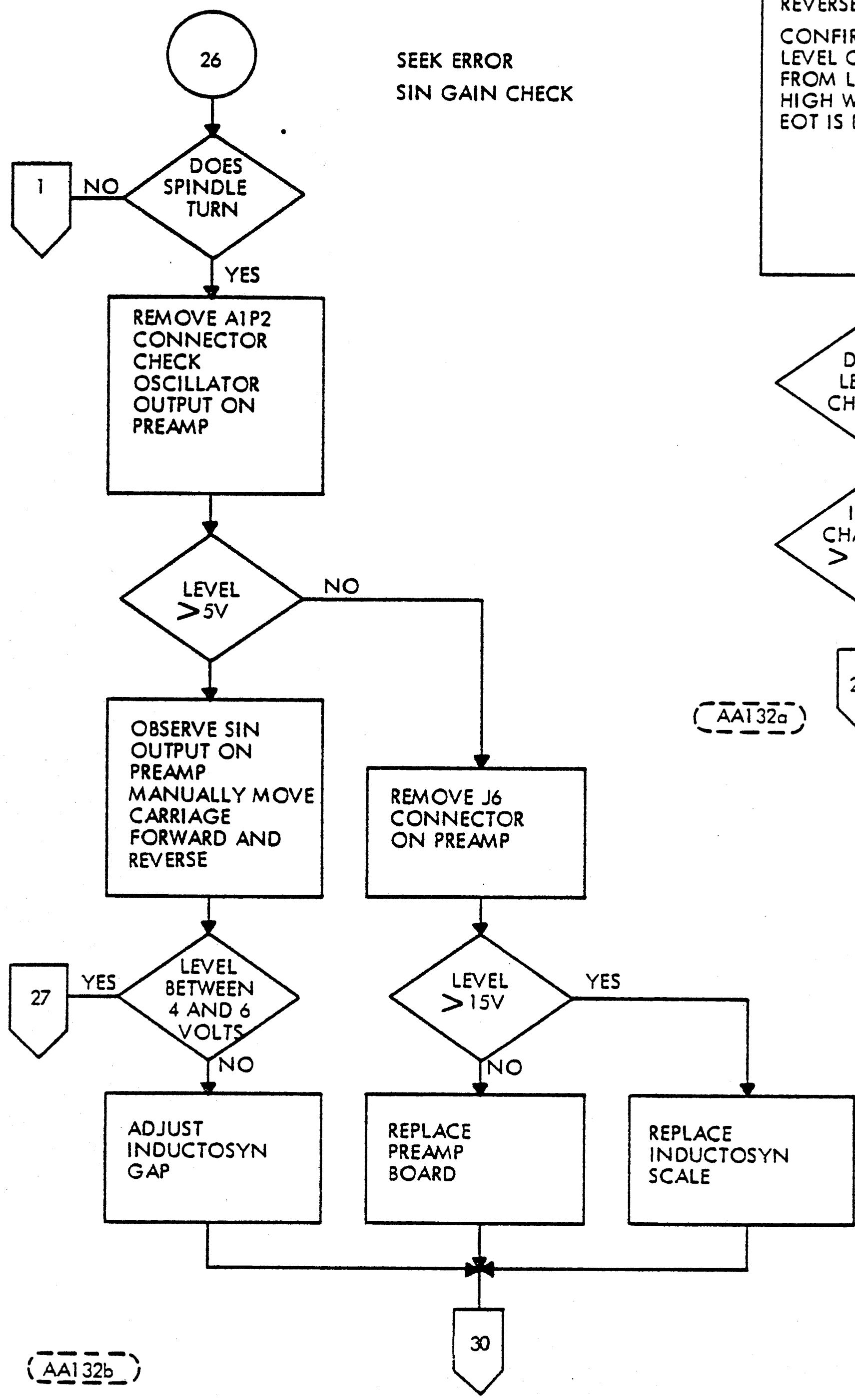
SEEK ERROR

EOT CHECK



SEEK ERROR

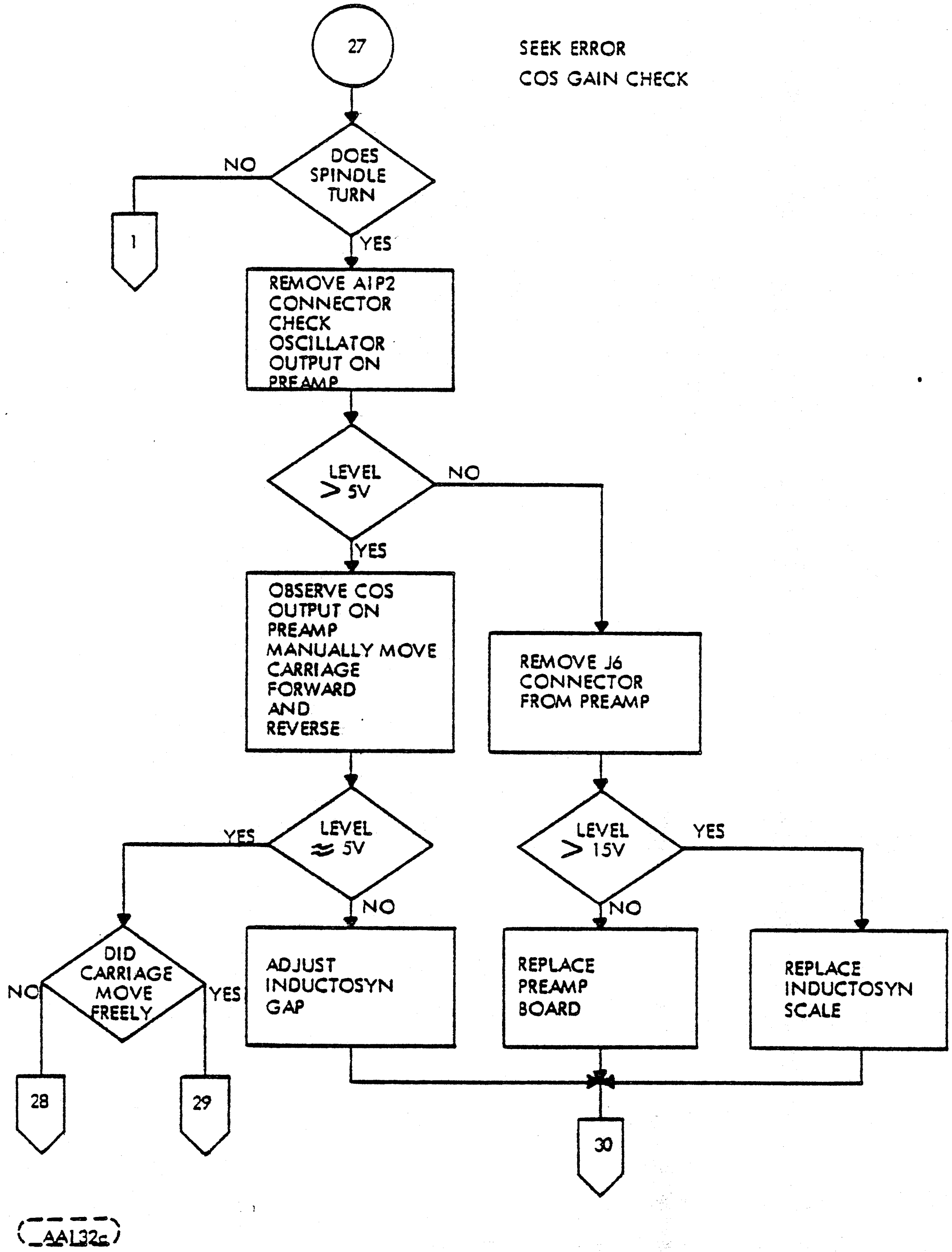
SIN GAIN CHECK



LOCATION

1	→	10
26	→	25
27	→	26
30	→	29

26

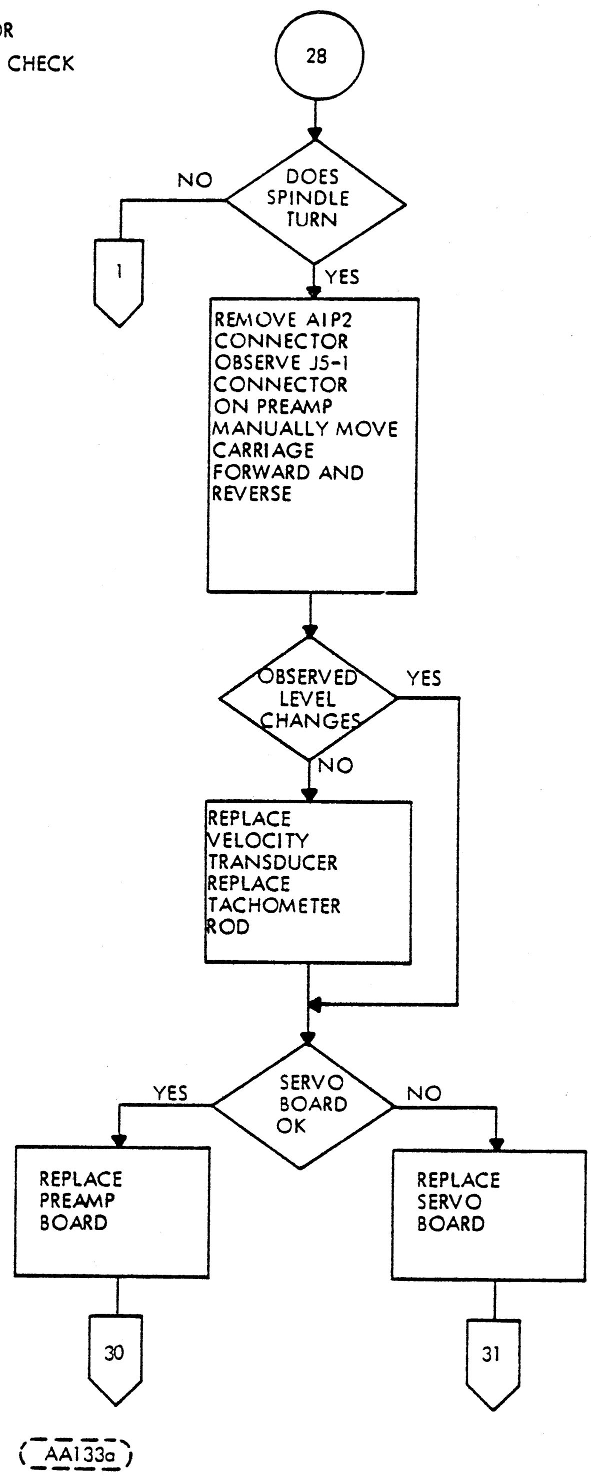


LOCATION

1 →	10
28 →	27
29 →	28
30 →	29

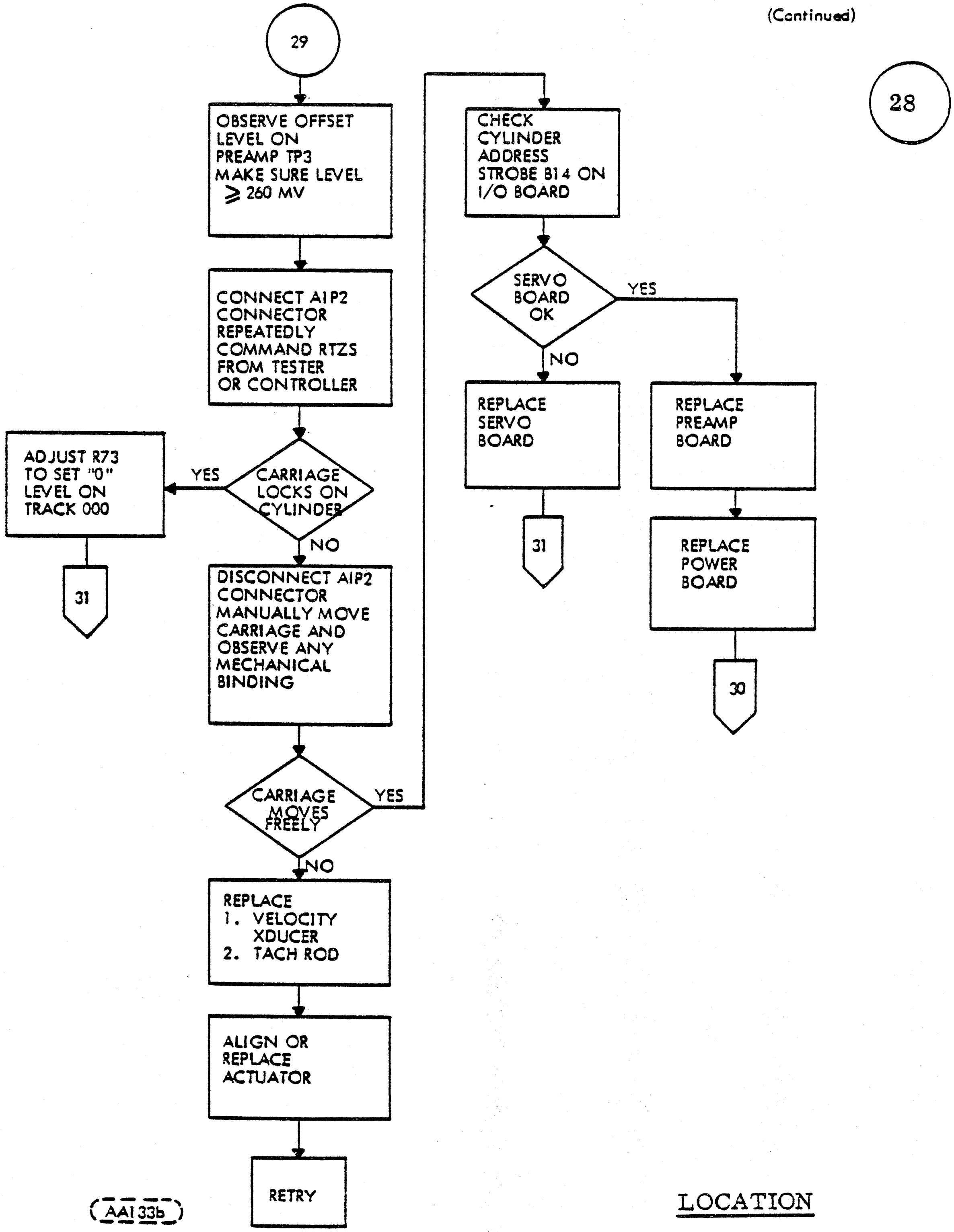
SEEK ERROR
VELOCITY CHECK

27



LOCATION

1 →	10
30 →	29
31 →	30

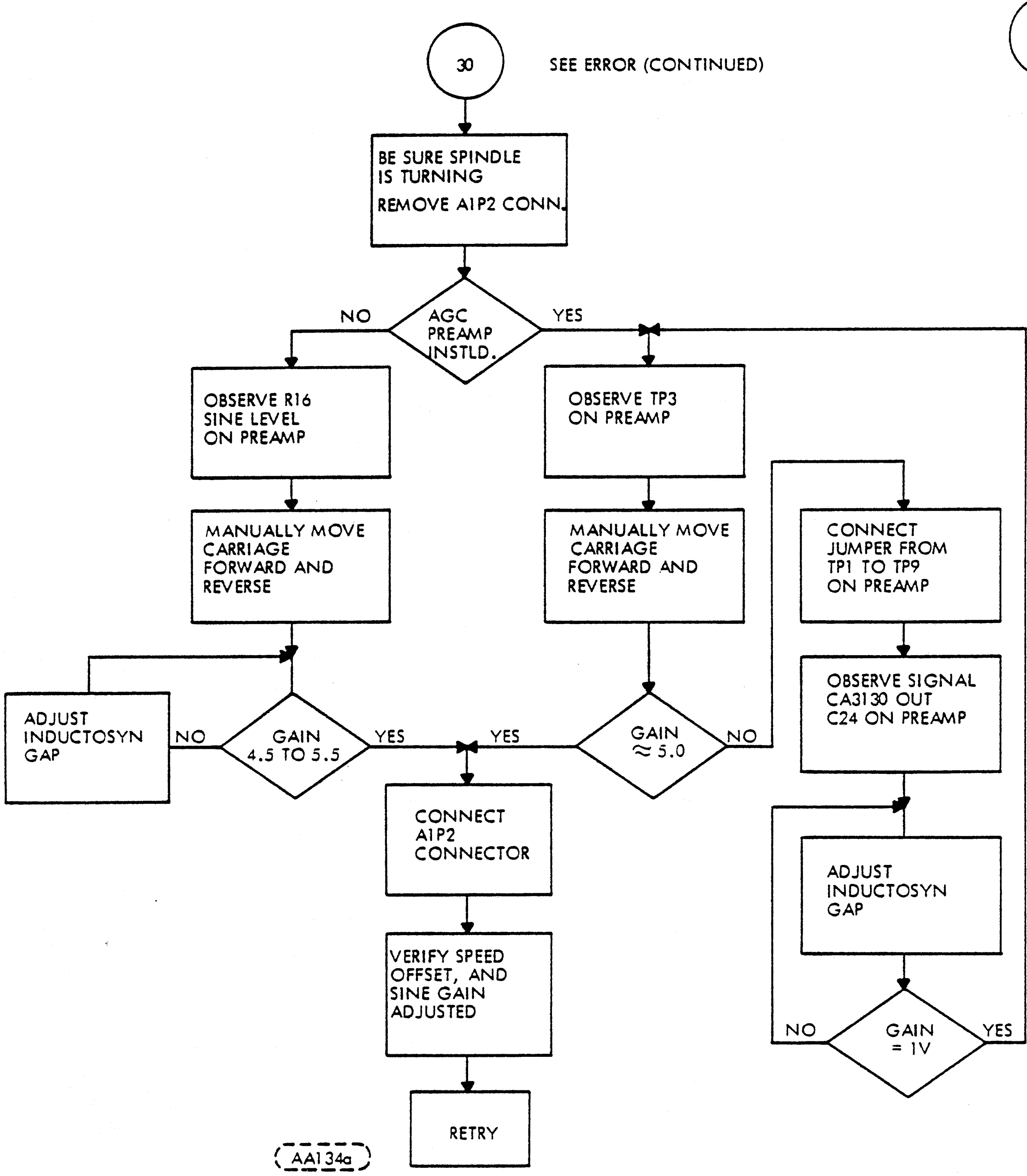


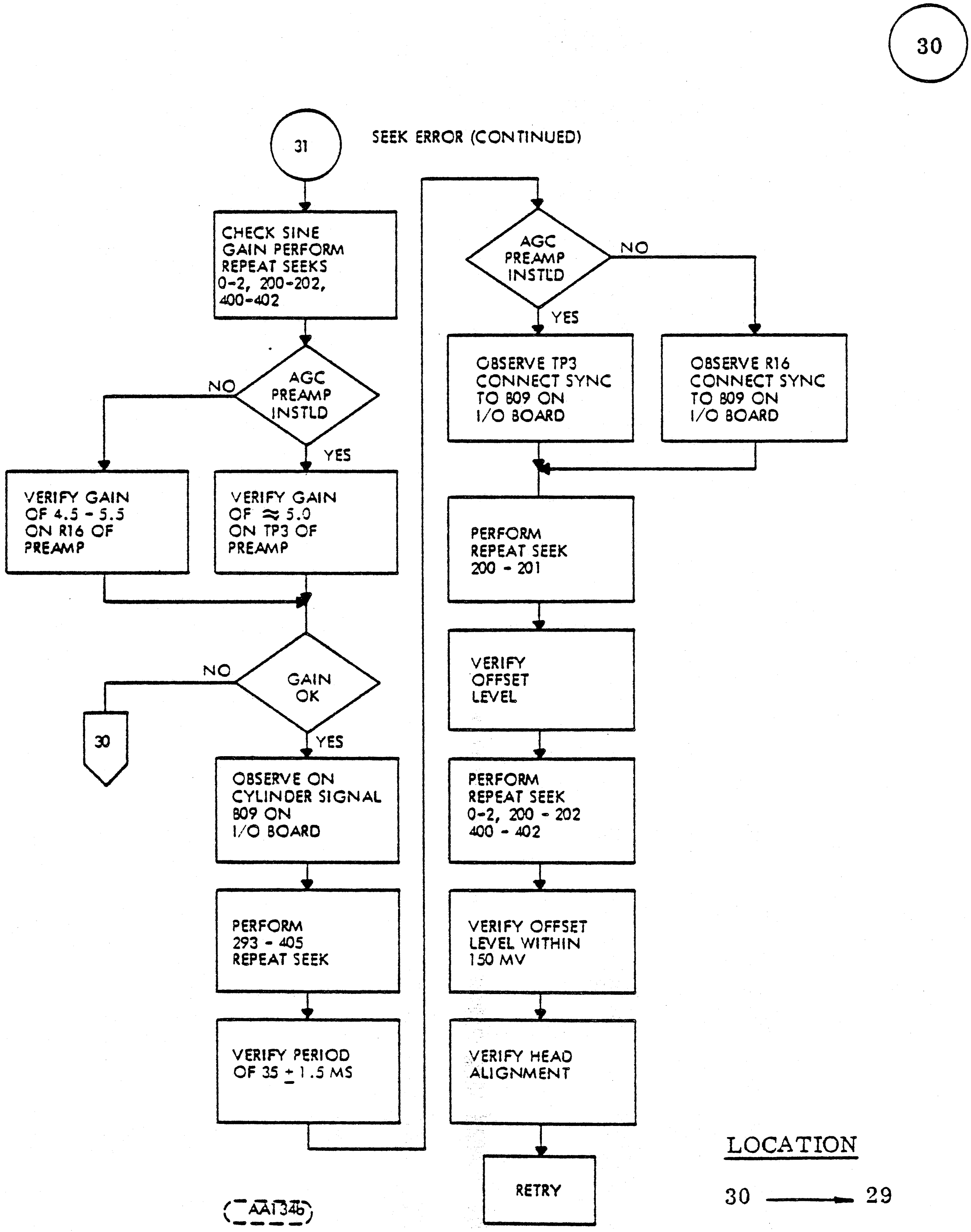
AAI 33b

LOCATION

30 ——→ 29

31 ——→ 30


30
SEE ERROR (CONTINUED)
BE SURE SPINDLE IS TURNING
REMOVE A1P2 CONN.
AGC PREAMP INSTLD.
NO
YES
OBSERVE R16 SINE LEVEL ON PREAMP
OBSERVE TP3 ON PREAMP
MANUALLY MOVE CARRIAGE FORWARD AND REVERSE
MANUALLY MOVE CARRIAGE FORWARD AND REVERSE
CONNECT JUMPER FROM TP1 TO TP9 ON PREAMP
ADJUST INDUCTOSYN GAP
NO
GAIN 4.5 TO 5.5
YES
YES
GAIN ≈ 5.0
NO
OBSERVE SIGNAL CA3130 OUT C24 ON PREAMP
CONNECT A1P2 CONNECTOR
ADJUST INDUCTOSYN GAP
VERIFY SPEED OFFSET, AND SINE GAIN ADJUSTED
NO
GAIN = 1V
YES
RETRY
AA134a


30
31
SEEK ERROR (CONTINUED)
CHECK SINE GAIN PERFORM REPEAT SEEKS 0-2, 200-202, 400-402
AGC PREAMP INSTLD
NO
YES
VERIFY GAIN OF 4.5 - 5.5 ON R16 OF PREAMP
VERIFY GAIN OF ≈ 5.0 ON TP3 OF PREAMP
GAIN OK
NO
30
YES
OBSERVE ON CYLINDER SIGNAL B09 ON I/O BOARD
PERFORM 293 - 405 REPEAT SEEK
VERIFY PERIOD OF 35 ± 1.5 MS
AGC PREAMP INSTLD
NO
YES
OBSERVE TP3 CONNECT SYNC TO B09 ON I/O BOARD
OBSERVE R16 CONNECT SYNC TO B09 ON I/O BOARD
PERFORM REPEAT SEEK 200 - 201
VERIFY OFFSET LEVEL
PERFORM REPEAT SEEK 0-2, 200 - 202 400 - 402
VERIFY OFFSET LEVEL WITHIN 150 MV
VERIFY HEAD ALIGNMENT
RETRY
AA1346
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 accompaning 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:

$\ast$ $\left\{ \begin{array}{l} \text{1. Device Serial Number} \\ \text{2. TMA\# (75741???)} \\ \text{3. Parts Data \# and Rev. Status (77830945-?)} \\ \text{4. Figure \#} \\ \text{5. Item \#} \\ \text{6. Part Identification \#} \\ \text{7. Part Description} \end{array} \right.$

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.

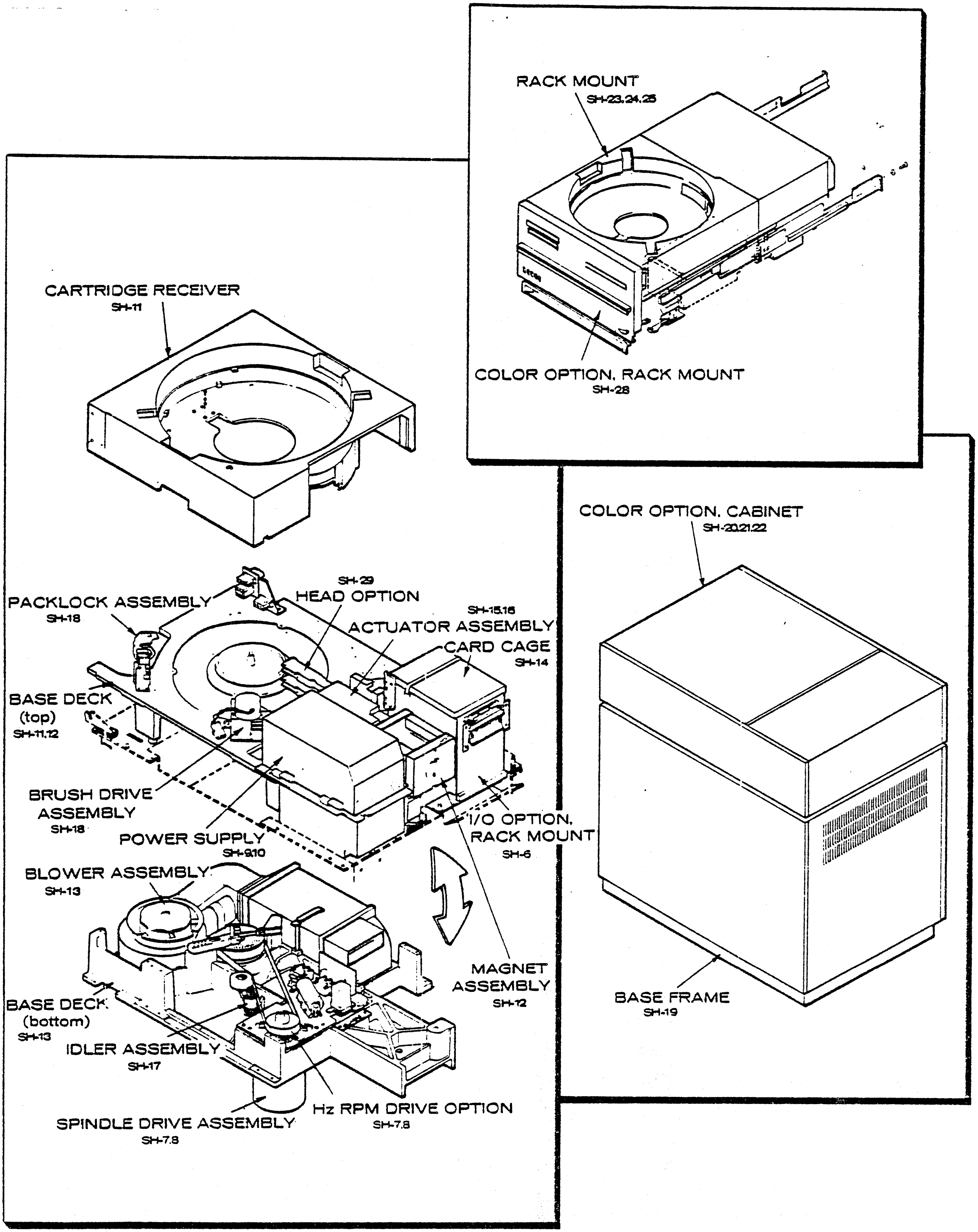
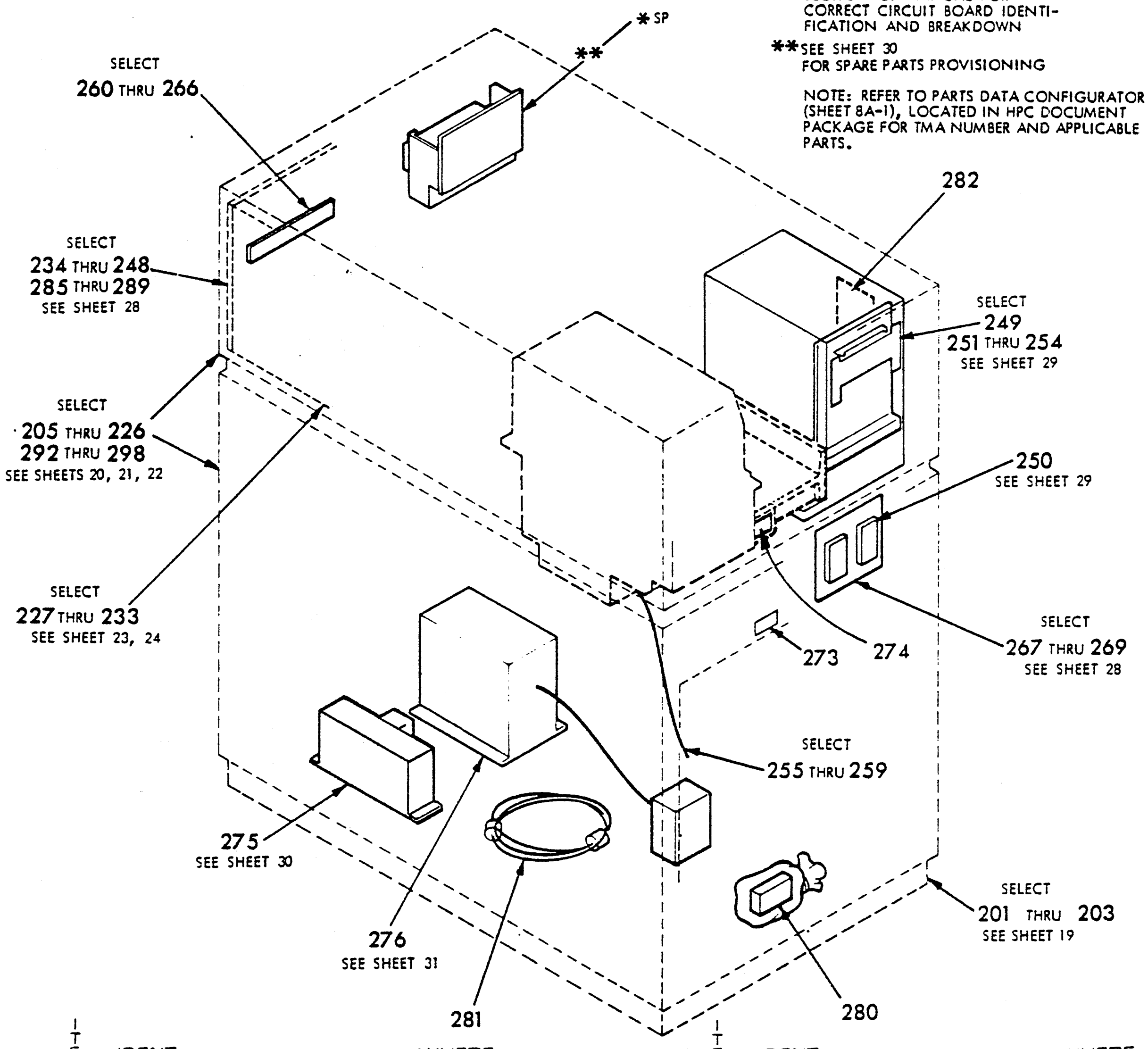


Figure 8-1. Assembly Locators

SECTION OF MANUAL FOR CORRECT CIRCUIT BOARD IDENTIFICATION AND BREAKDOWN

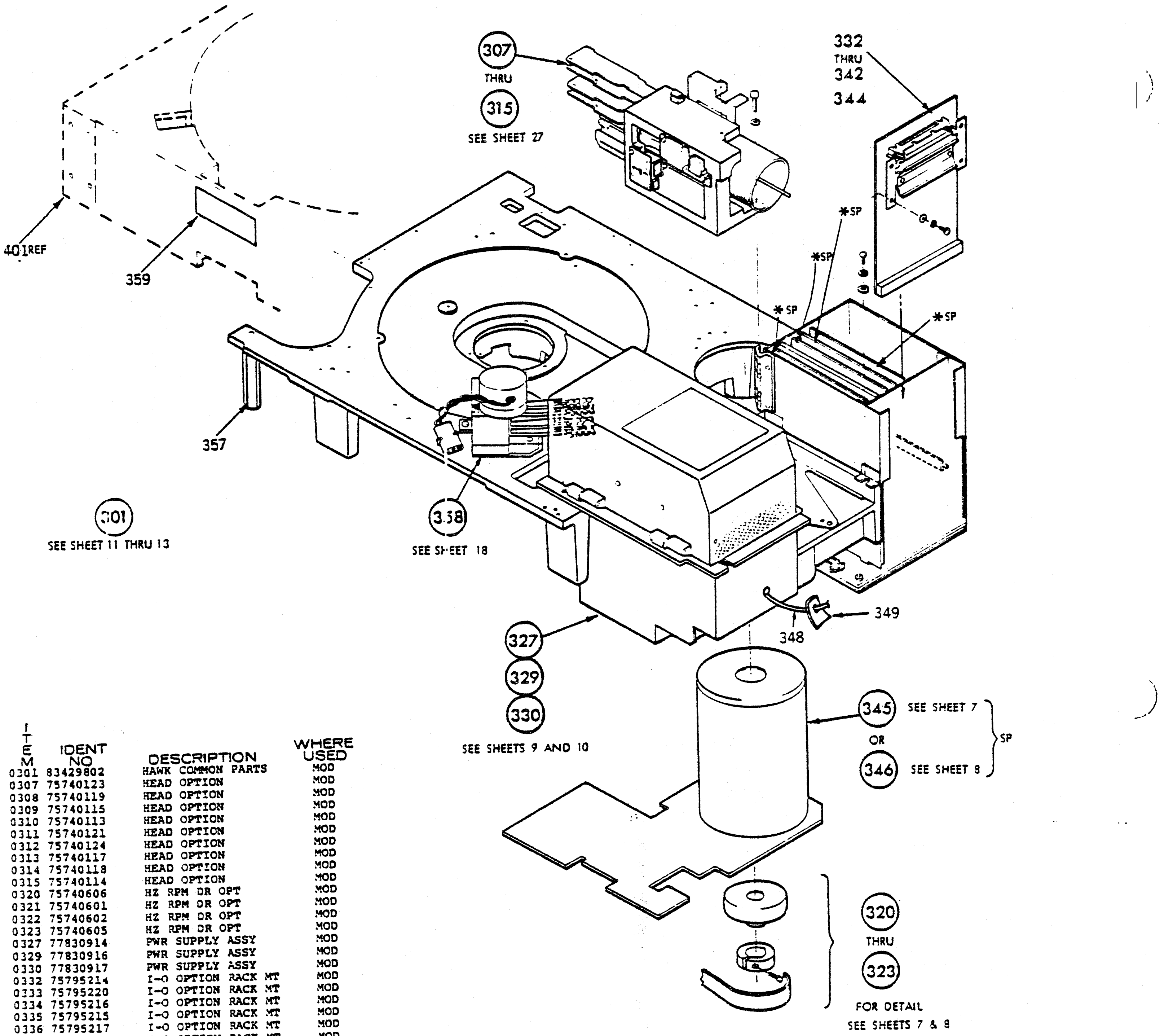
**SEE SHEET 30 FOR SPARE PARTS PROVISIONING

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
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
0218	83442422	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
0230	83443508	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
0244	83442512	COLOR OPT, RACK MT	TMA
0245	83442513	COLOR OPT, RACK MT	TMA
0246	83442514	COLOR OPT RACK MT	TMA
0247	83442515	COLOR OPT RACK MT	TMA
0248	83442516	COLOR OPT, RACK MT	TMA
0249	75305707	TERMINATOR	TMA
0250	46338701	TERMINATOR	TMA
0251	75305703	TERMINATOR	TMA
0252	75305704	TERMINATOR	TMA
0253	75305706	TERMINATOR	TMA
0254	75305705	TERMINATOR	TMA
0255	75778701	LINECORD	TMA
0256	75778703	LINECORD	TMA
0257	75778710	LINECORD	TMA
0258	75778721	LINE CORD	TMA
0259	75892986	LINECORD	TMA
0260	75758001	NAMEPLATE (ID)	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
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
0281	46337801	I-O CABLE ASSY 10FT	TMA
0282	94224651	LABEL - INFO	TMA
0285	83442517	COLOR OPT, RACK MT	TMA
0286	83442518	COLOR OPT, RACK MT	TMA
0287	83442519	COLOR OPT, RACK MT	TMA
0288	83442521	COLOR OPT RACK MT	TMA
0289	83442520	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

Figure 8-2. Top Mechanical Assembly

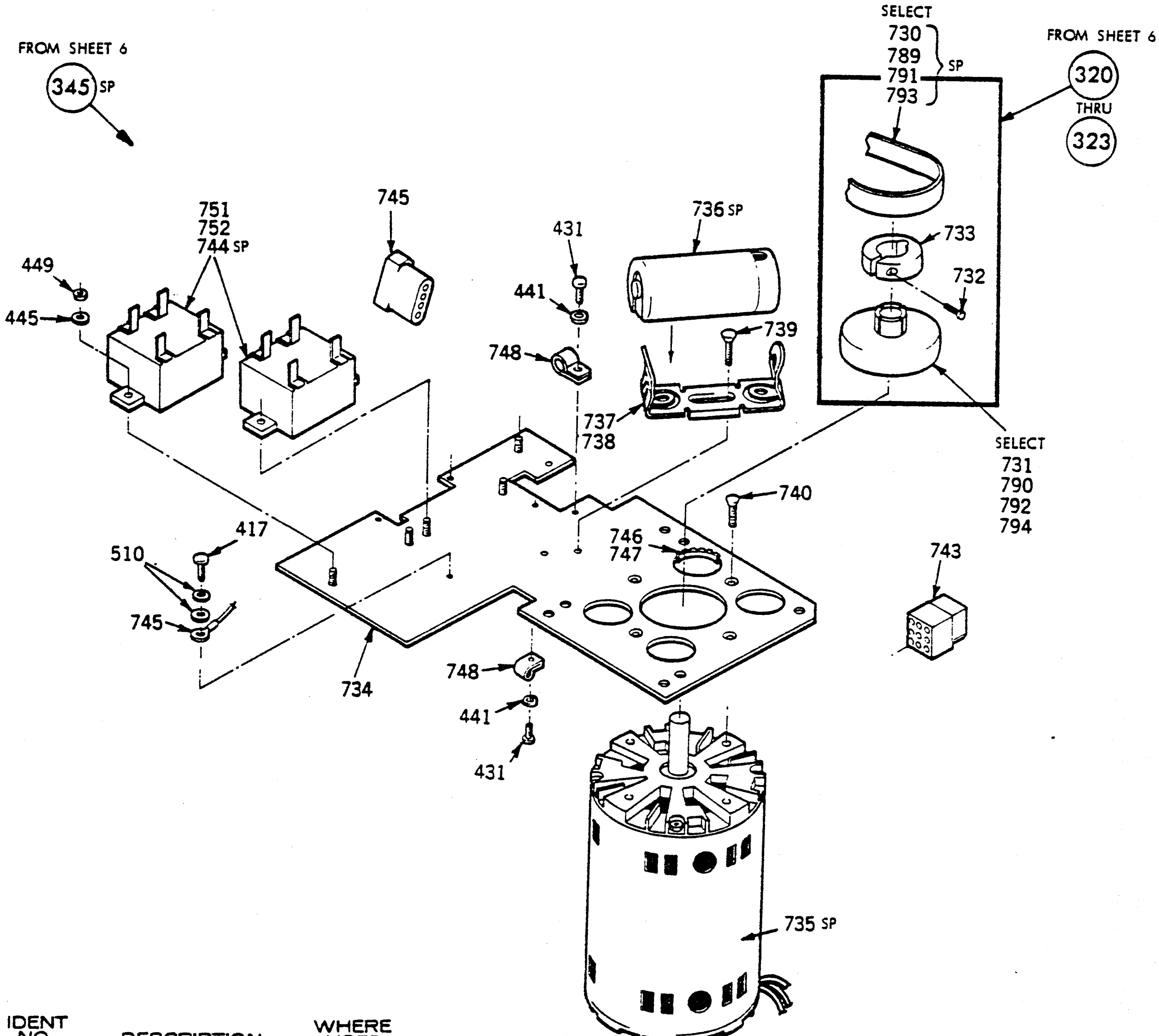


ITEM	IDENT NO	DESCRIPTION	WHERE USED
0301	83429802	HAWK COMMON PARTS	MOD
0307	75740123	HEAD OPTION	MOD
0308	75740119	HEAD OPTION	MOD
0309	75740115	HEAD OPTION	MOD
0310	75740113	HEAD OPTION	MOD
0311	75740121	HEAD OPTION	MOD
0312	75740124	HEAD OPTION	MOD
0313	75740117	HEAD OPTION	MOD
0314	75740118	HEAD 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	77830914	PWR SUPPLY ASSY	MOD
0329	77830916	PWR SUPPLY ASSY	MOD
0330	77830917	PWR SUPPLY ASSY	MOD
0332	75795214	I-O OPTION RACK MT	MOD
0333	75795220	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
0344	75795225	I-O OPTION RACK MT	MOD
0345	83444402	SPINDLE DRIVE ASSY	MOD
0346	83474906	BRAKE & SPINDLE DR	MOD
0348	75729017	CABLE JUMPER	MOD
0349	94238907	LABEL CAUTION	MOD
0357	83451200	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

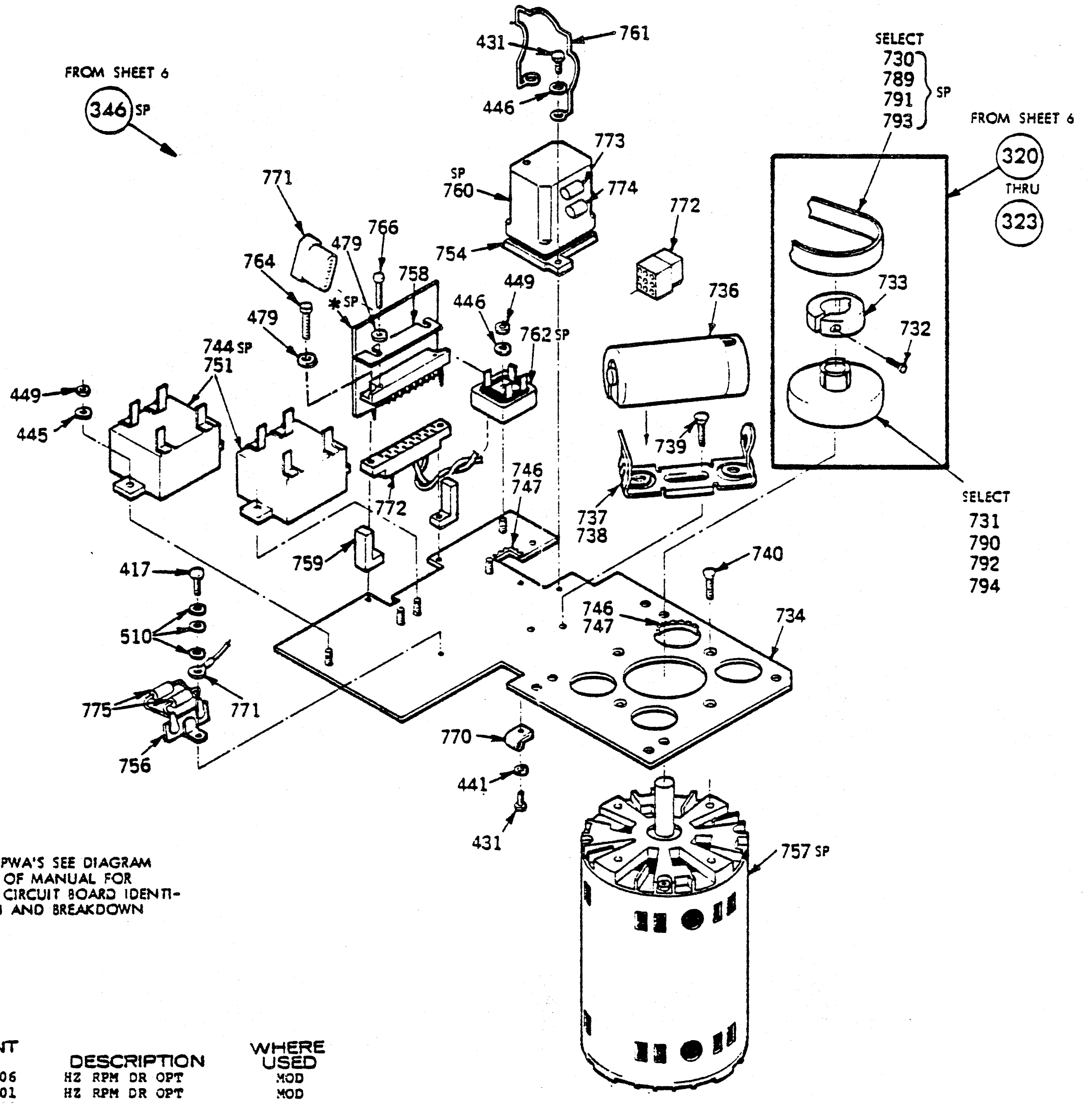
NOTE: REFER TO PARTS DATA CONFIGURATOR (SHEET 3A-2), LOCATED IN HPC DOCUMENT PACKAGE FOR MOD NUMBER AND APPLICABLE PARTS.

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	83444402	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	75885250	SW SOLID STATE 600V	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	POD, 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

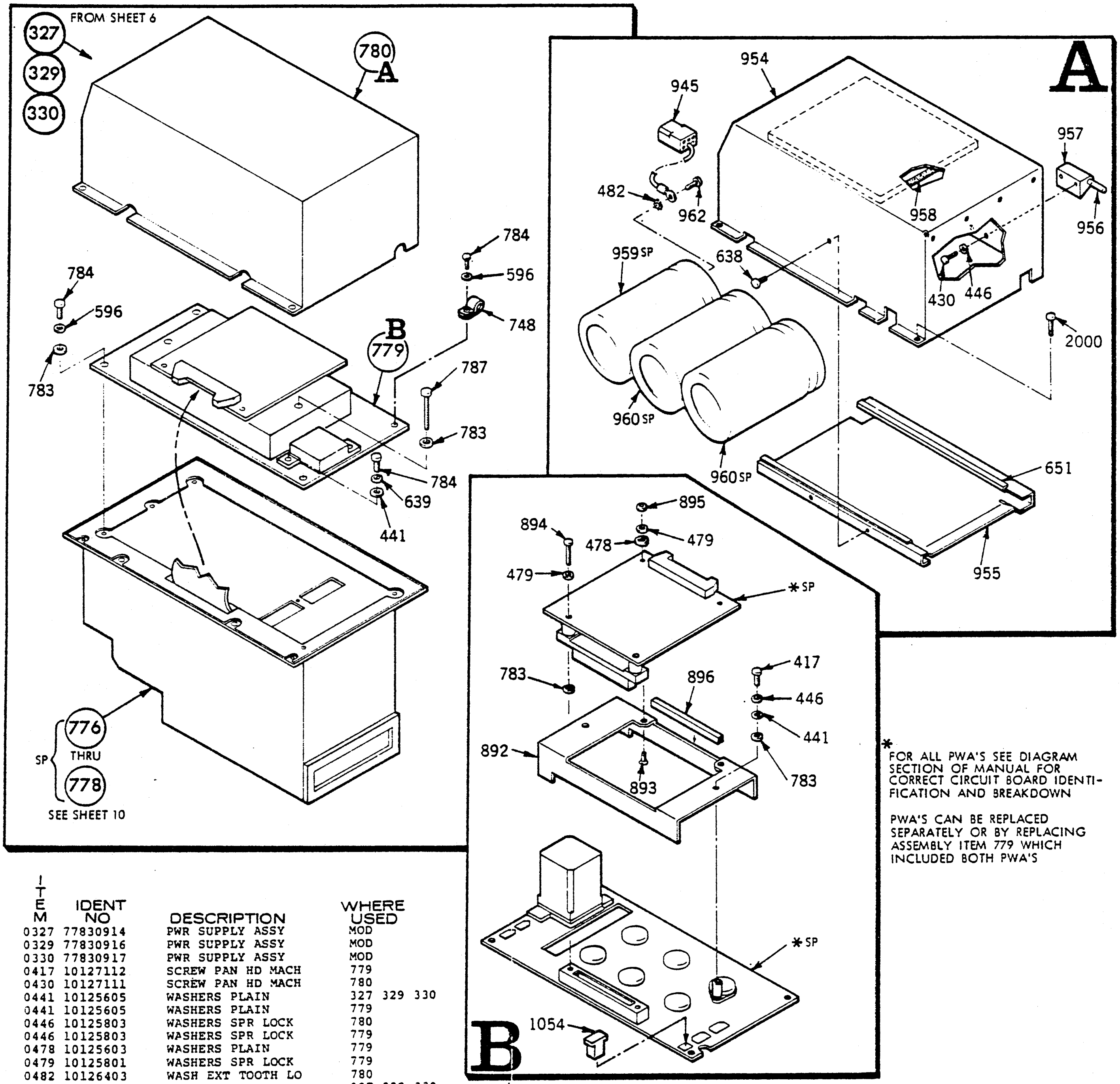


*FOR ALL PWA'S SEE DIAGRAM SECTION OF MANUAL FOR CORRECT CIRCUIT BOARD IDENTIFICATION AND BREAKDOWN

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	83474906	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	75885250	SW SOLID STATE 600V	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	22940804	RELAY	346
0761	22940903	SPRING-RETAINER SOCK	346

ITEM	IDENT NO	DESCRIPTION	WHERE USED
0762	95582004	RECT BRIDGE	346
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



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

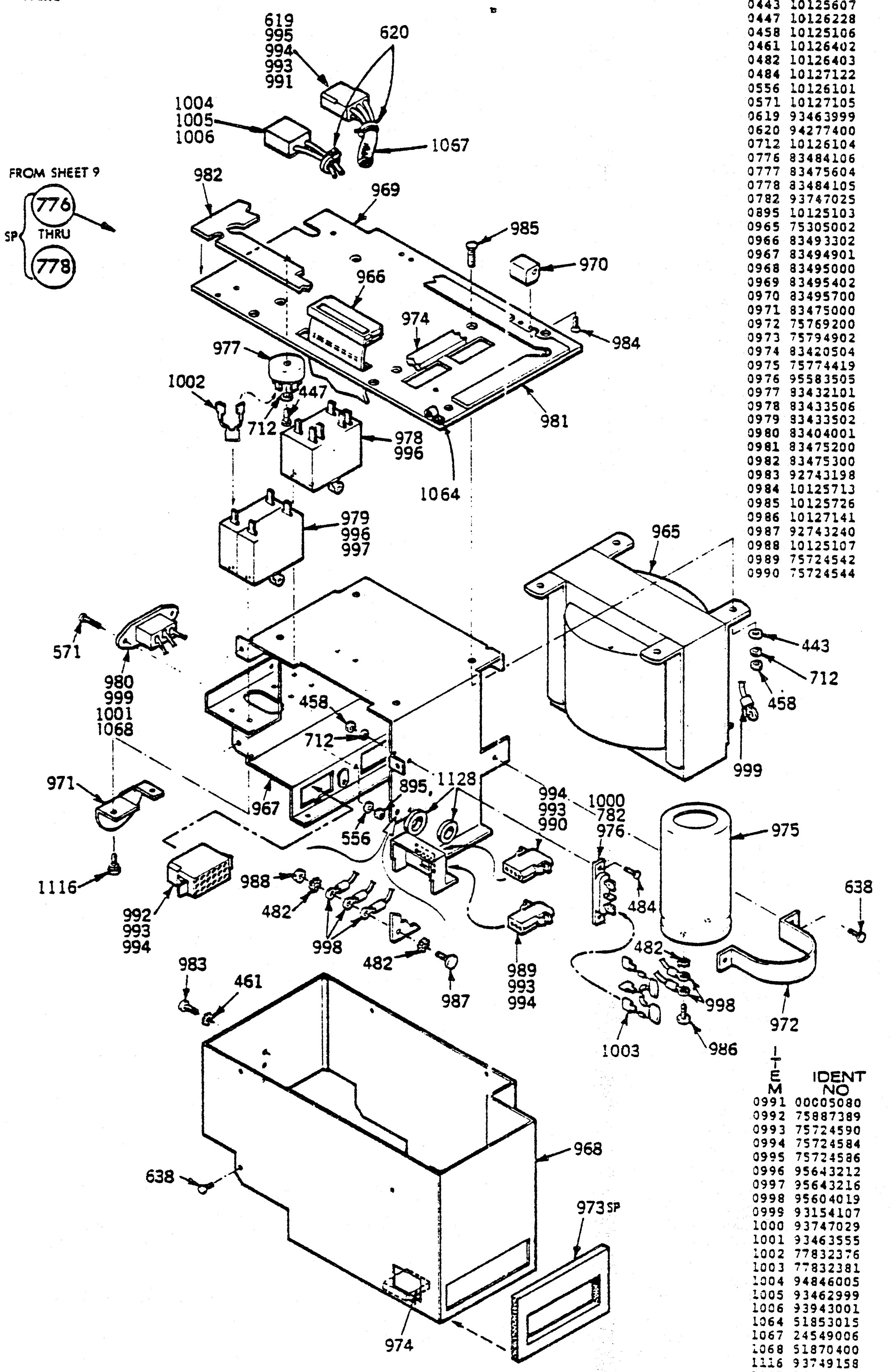
PWA'S CAN BE REPLACED SEPARATELY OR BY REPLACING ASSEMBLY ITEM 779 WHICH INCLUDED BOTH PWA'S

ITEM	IDENT NO	DESCRIPTION	WHERE USED
0327	77830914	PWR SUPPLY ASSY	MOD
0329	77830916	PWR SUPPLY ASSY	MOD
0330	77830917	PWR SUPPLY ASSY	MOD
0417	10127112	SCREW PAN HD MACH	779
0430	10127111	SCREW PAN HD MACH	780
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	83484106	POWER SUPPLY CHASSIS A	329
0777	83475604	PWR SPLY CHASSIS ASM	330
0778	83484105	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

ITEM	IDENT NO	DESCRIPTION	WHERE USED
0956	83495500	PIN HNG	780
0957	83495600	HNG CVR	780
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

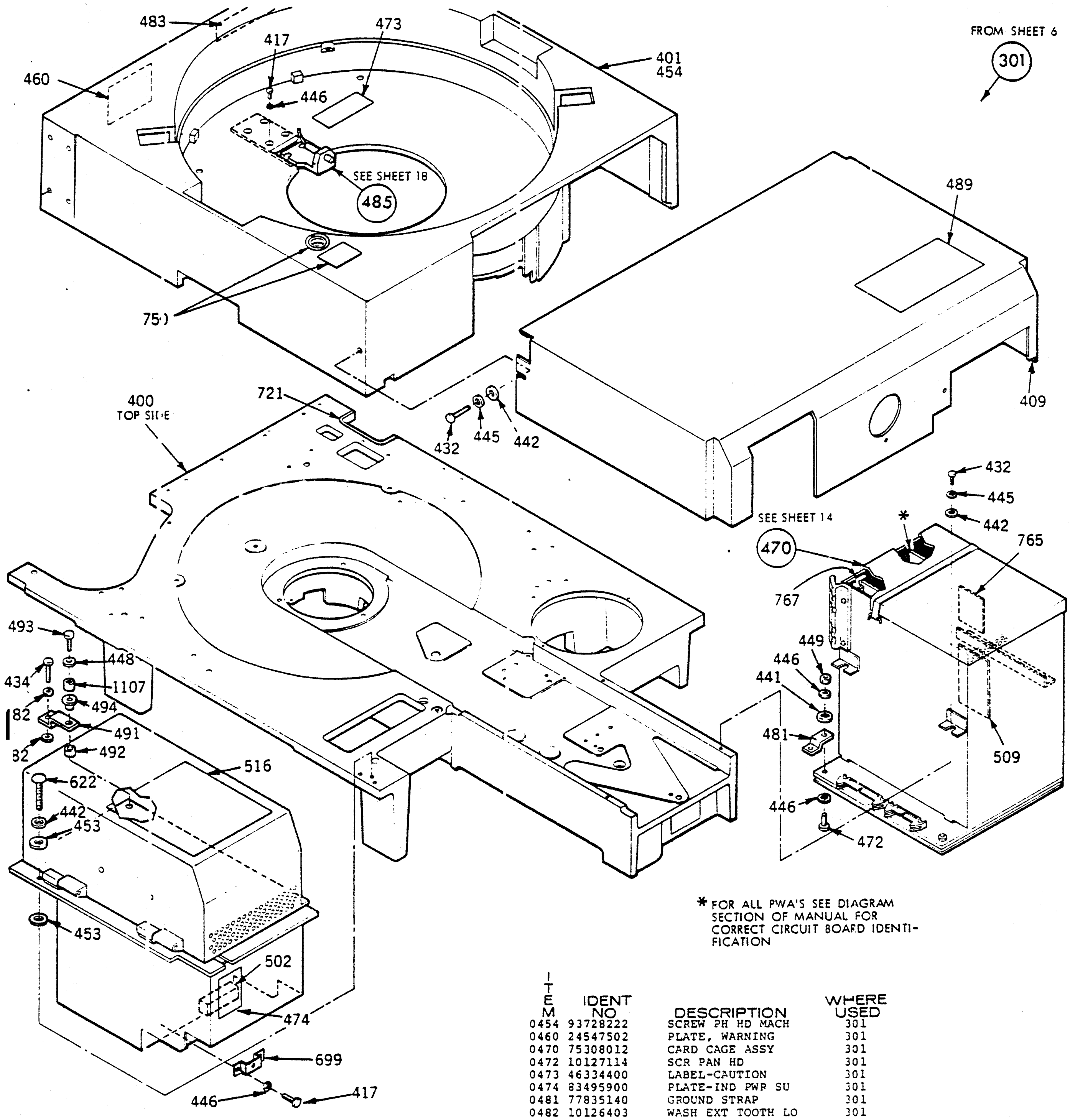
Figure 8-6. Power Supply (Sheet 1 of 2)

DISASSEMBLY NOT RECOMMENDED
HOWEVER, ITEMS 973, 978, 979, 1002
& 1003 ARE REPLACEABLE AS SEPARATE
PARTS



ITEM	IDENT NO	DESCRIPTION	WHERE USED
0443	10125607	WASHERS PLAIN	776-778
0447	10126228	SCR HEX SOC HD	776-
0458	10125106	NUT HEX MACH	776-
0461	10126402	WASH EXT TOOTH LO	776-
0482	10126403	WASH EXT TOOTH LO	776-
0484	10127122	SCREW PAN HD MACH	776-778
0556	10126101	WASH INT TOOTH LK	776-778
0571	10127105	SCREW PAN HD MACH	776-778
0619	93463999	WIRE 18 WHITE	776-778
0620	94277400	STRAP, CABLE TIE	776-778
0712	10126104	WASH INT TOOTH LK	776-778
0776	83484106	POWER SUPPLY CHASSIS A	329
0777	83475604	PWR SPLY CHASSIS ASM	330
0778	83484105	POWER SUPPLY CHASSIS A	327
0782	93747025	RECEPTACLE, SLIDE ON	776-778
0895	10125103	SCR NUT-HEX MACH	776-778
0965	75305002	TRANSFORMER-AUTO	776-778
0966	83493302	PWR LOGIC HARNESS	776-778
0967	83494901	CHASSIS-AC	776-778
0968	83495000	COVER-BOTTOM	776-778
0969	83495402	PLATE-CHASSIS	776-778
0970	83495700	HINGE-POWER SUPPLY	776-778
0971	83475000	PLATE	776-778
0972	75769200	CLAMP-CAPACITOR	776-778
0973	75794902	GASKET-SUPPLY DIVERT	776-778
0974	83420504	GASKET STRIP	776-778
0975	75774419	CAPACITOR	775-778
0976	95583505	RECTIFIER BLOCK	776-778
0977	83432101	BRIDGE, RECTIFIER	776-778
0978	83433506	CIRCUIT BREAKER	776-778
0979	83433502	CIRCUIT BREAKER	776-778
0980	83404001	FILTER	775-778
0981	83475200	GASKET-PWR SPLY	776-778
0982	83475300	GASKET	776-778
0983	92743198	SCREW PAN HD MACH	775-778
0984	10125713	SCREW	776-778
0985	10125726	SCREW	776-778
0986	10127141	SCR PH MACH	776-778
0987	92743240	SCREW PAN HD MACH	776-778
0988	10125107	SCR NUT-HEX MACH	776-778
0989	75724542	CONNECTOR-PANEL MTG	776-778
0990	75724544	CONNECTOR-PANEL MTG	776-778
0991	00005080	RECEPTACLE 6 PIN	776-778
0992	75887389	RECEPTACLE 15 PIN	776-778
0993	75724590	CONNECTOR-PANEL MTG	775-778
0994	75724584	CONNECTOR-PANEL MTG	776-778
0995	75724586	CONNECTOR-PANEL MTG	776-778
0996	95643212	CONNECTOR	776-778
0997	95643216	CONNECTOR	776-778
0998	95604019	TERMINAL, RING TONGUE	775-778
0999	93154107	TUBING, HEAT SHRINK	776-778
1000	93747029	RECEPTACLE, SLIDE ON	775-778
1001	93463555	WIRE-GRN	775-778
1002	77832376	CAP-LUG ASSY	776 777
1003	77832381	CAP-LUG ASSY	776 777
1004	94846005	CONNECTOR, 2 PIN	776 778
1005	93462999	WIRE WHT	776-778
1006	93943001	CONTACT, SOCKET	776-778
1064	51853015	CLAMP CABLE	776-778
1067	24549006	CBL WRAP	776-778
1068	51870400	AC PWR REC	777
1116	93749158	SCREW	776-
1127	17901501	SCREW THREAD FORM	775-
1128	95596600	BUSHING	776-

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



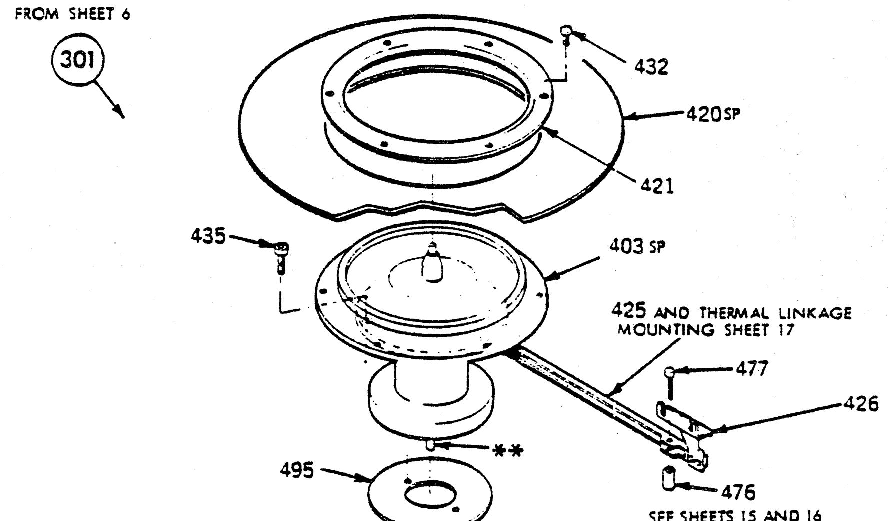
ITEM	IDENT NO	DESCRIPTION	WHERE USED
0301	83429802	HAWK COMMON PARTS	MOD
0400	83456501	BASE DECK-MACHINED	301
0401	83451403	CARTRIDGE REC	301
0409	77834644	COVER-ELECTRONICS	301
0417	10127112	SCREW PAN HD MACH	301
0432	10127121	SCREW PAN HD MACH	301
0434	10127123	SCREW PAN HD MACH	301
0441	10125605	WASHERS 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	92615006	WASHER-SHOULDER FIBE	301

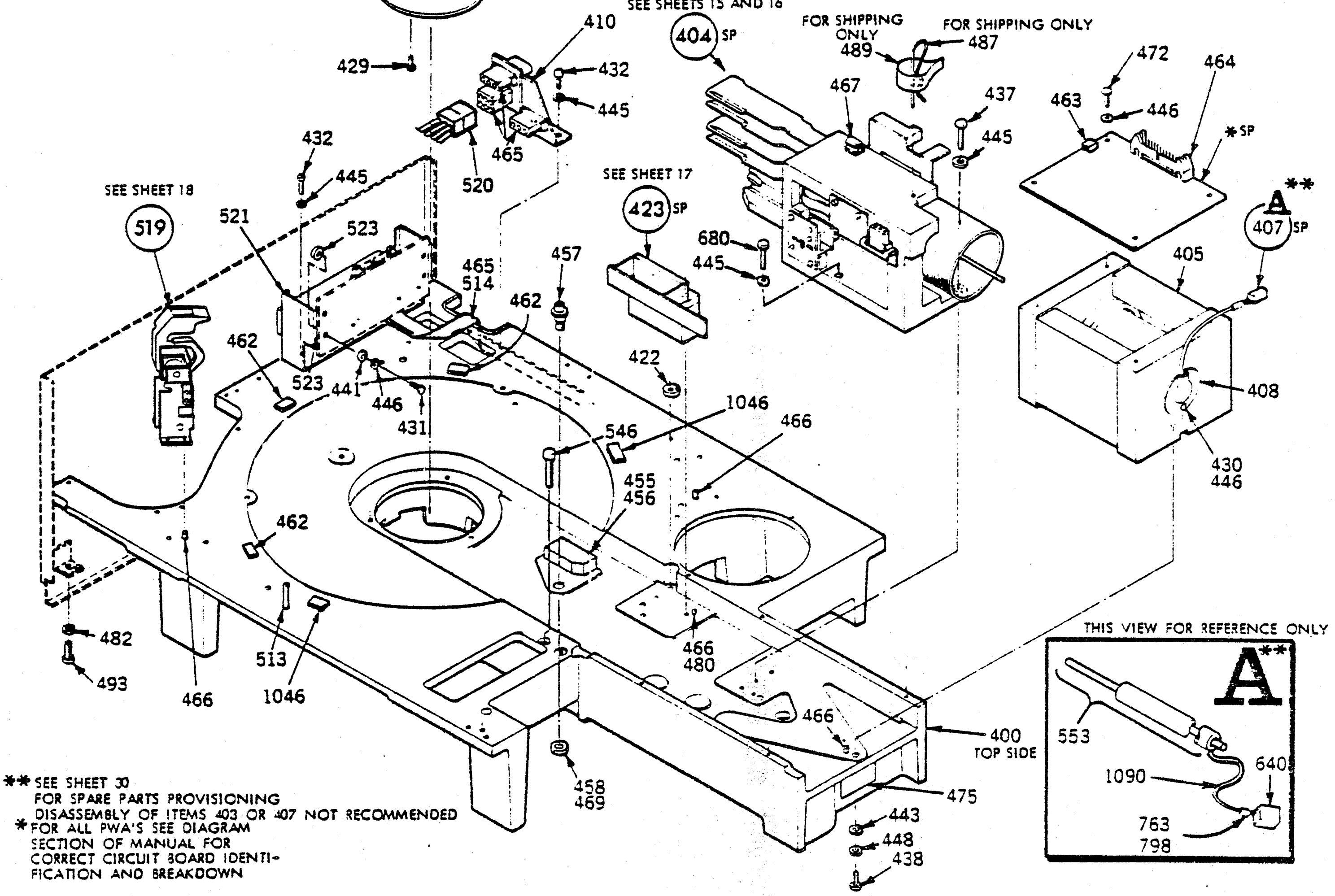
ITEM	IDENT NO	DESCRIPTION	WHERE USED
0454	93728222	SCREW PH HD MACH	301
0460	24547502	PLATE, WARNING	301
0470	75308012	CARD CAGE ASSY	301
0472	10127114	SCR PAN HD	301
0473	46334400	LABEL-CAUTION	301
0474	83495900	PLATE-IND PWR SU	301
0481	77835140	GROUND STRAP	301
0482	10126403	WASH EXT TOOTH LO	301
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)

I T E M	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	89293100	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
0426	75315801	BRACKET EXPAN	301
0429	93788082	SCREW SELF LOCKING 4	301
0430	10127111	SCREW PAN HD MACH	301

I T E M	IDENT NO	DESCRIPTION	WHERE USED
0431	10127113	SCREW PAN HD MACH	301
0432	10127121	SCREW PAN HD MACH	301
0435	10126255	SCR SOC HD	301
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
0477	10126215	SCREW CAP SOCKET	301
0480	12211011	LUBRIPLATE 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	83457901	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
0640	75293953	CONNECTOR HOUSING	407
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

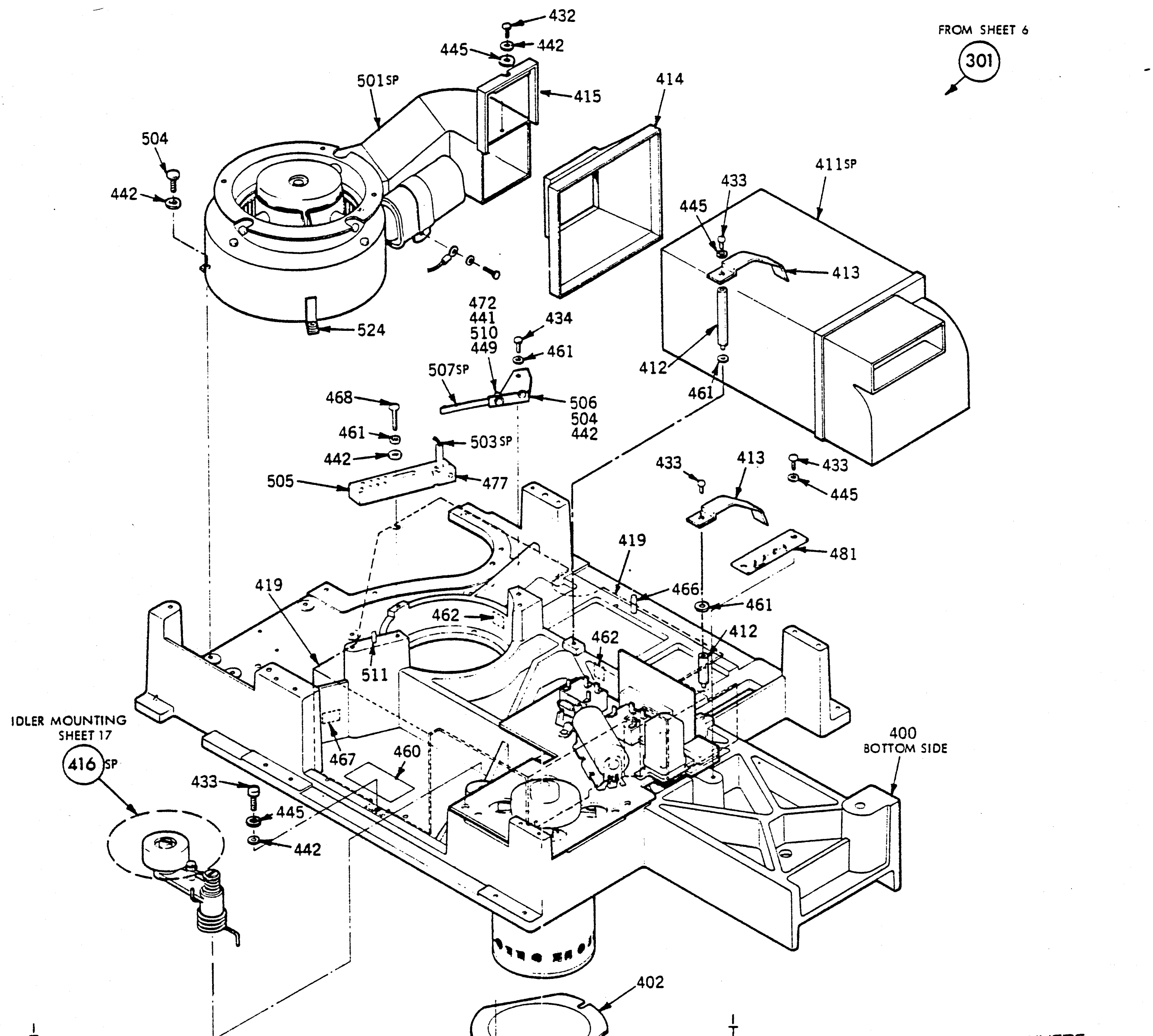


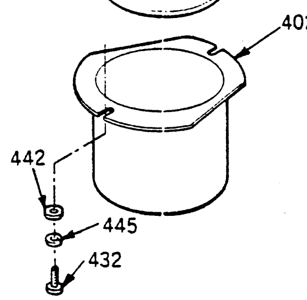


** SEE SHEET 30
FOR SPARE PARTS PROVISIONING
DISASSEMBLY OF ITEMS 403 OR 407 NOT RECOMMENDED

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

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

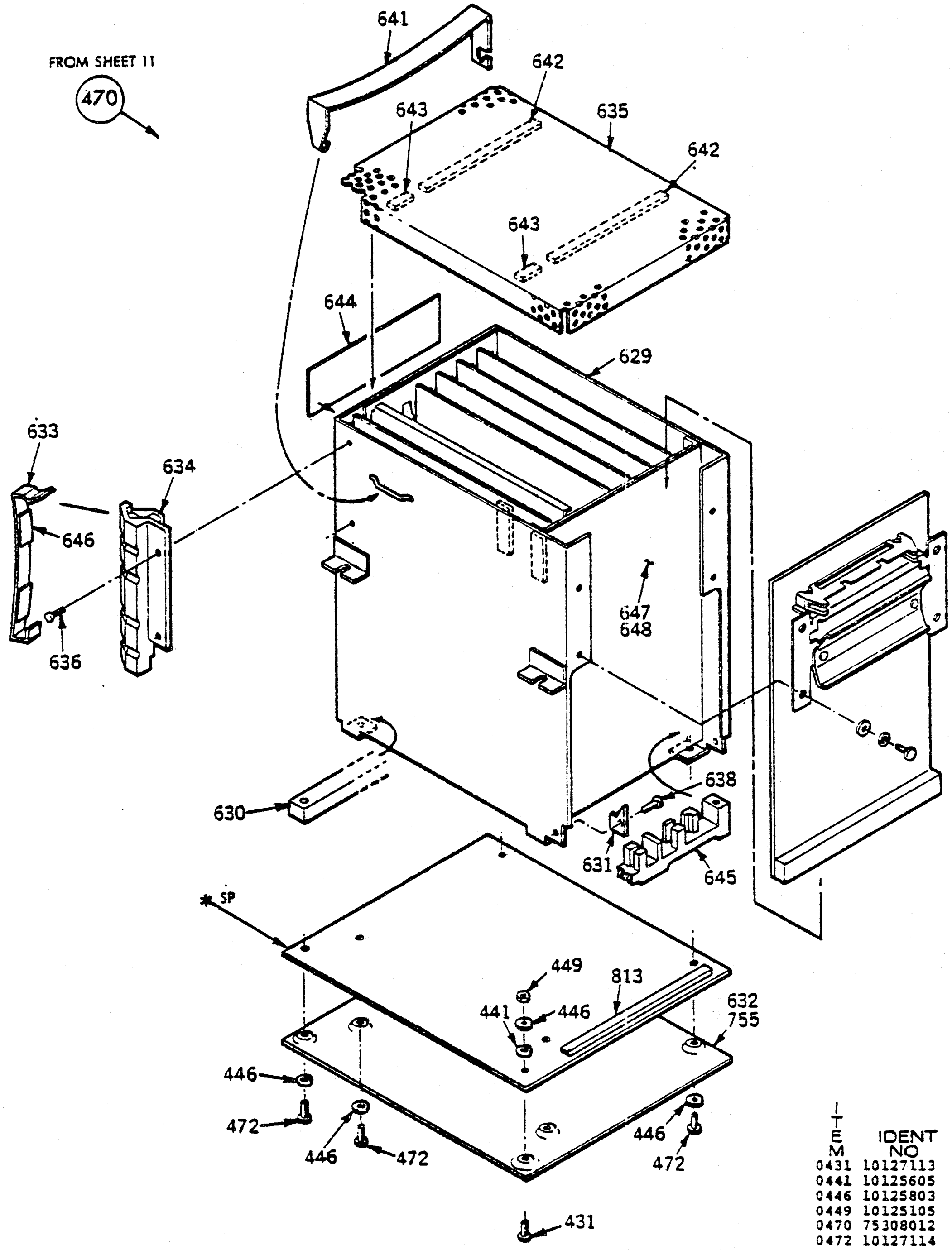




ITEM	IDENT NO	DESCRIPTION	WHERE USED
0301	83429802	HAWK COMMON PARTS	MOD
0400	83456501	BASE DECK-MACHINED	301
0402	75308800	CCVER MOTOR	301
0411	83437400	FILTER-AIR	301
0412	75749000	STANDOFF CLAMP	301
0413	75748903	CLAMP FILTER	301
0414	75308100	EXPANDER-BLOWER	301
0415	75749201	BPACKET-EXPANDER	301
0416	75793103	ICLER 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
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
0472	10127114	SCR PAN HD	301
0477	10126215	SCREW CAP SOC HD	301
0481	77835140	GROUND STRAP	301
0501	83457100	BLOWER ASSY	301

ITEM	IDENT NO	DESCRIPTION	WHERE USED
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

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

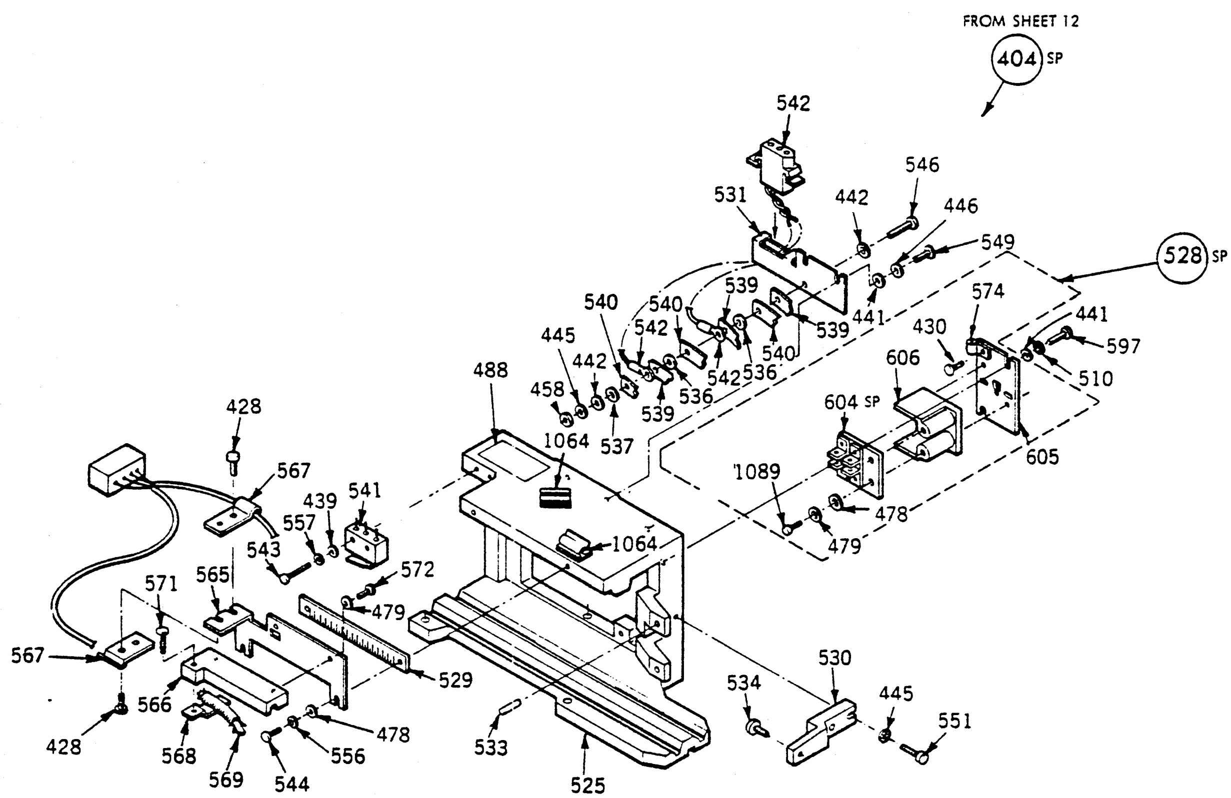


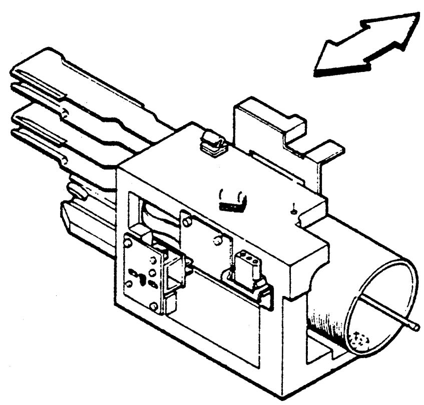
* FOR ALL PWA's SEE DIAGRAM SECTION OF MANUAL FOR CORRECT CIRCUIT BOARD IDENTIFICATION AND BREAKDOWN.

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.

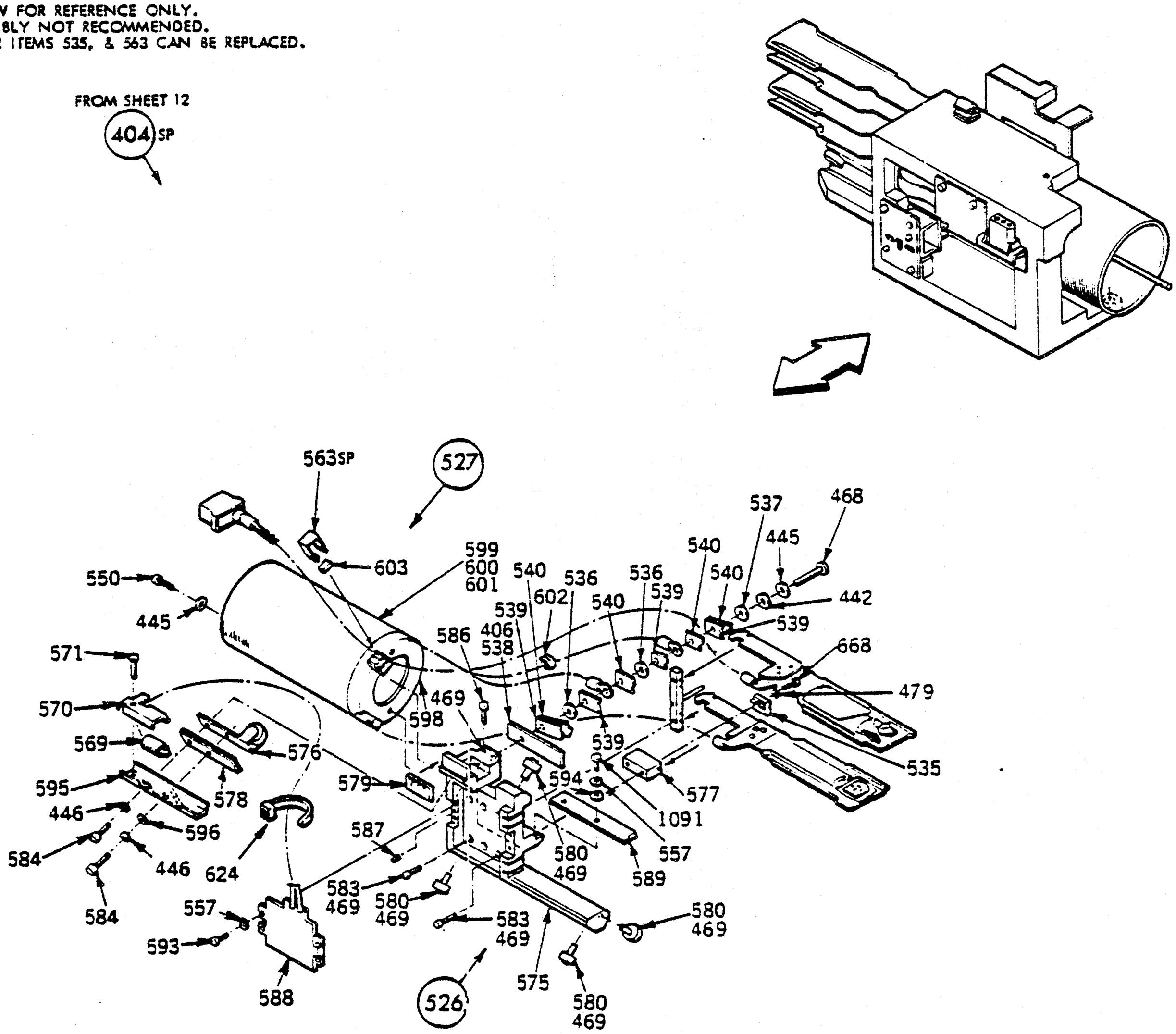




ITEM	IDENT NO	DESCRIPTION	WHERE USED
0404	75316008	ACTUATOR ASSY	301
0428	92815096	SCREW CAP SOC HD	404
0430	10127111	SCREW PAN HD MACH	528
0439	10125602	WASHERS PLAIN	404
0441	10125605	WASHERS PLAIN	404
0442	10125606	WASHERS PLAIN	404
0445	10125804	WASHERS SPR LOCK	404
0446	10125803	WASHERS SPR LOCK	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	75316103	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

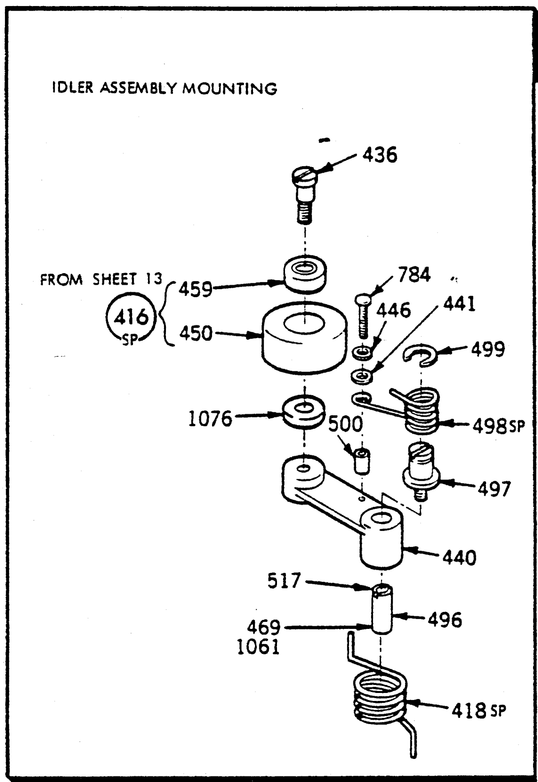
THIS VIEW FOR REFERENCE ONLY.
DISASSEMBLY NOT RECOMMENDED.
HOWEVER ITEMS 535, & 563 CAN BE REPLACED.

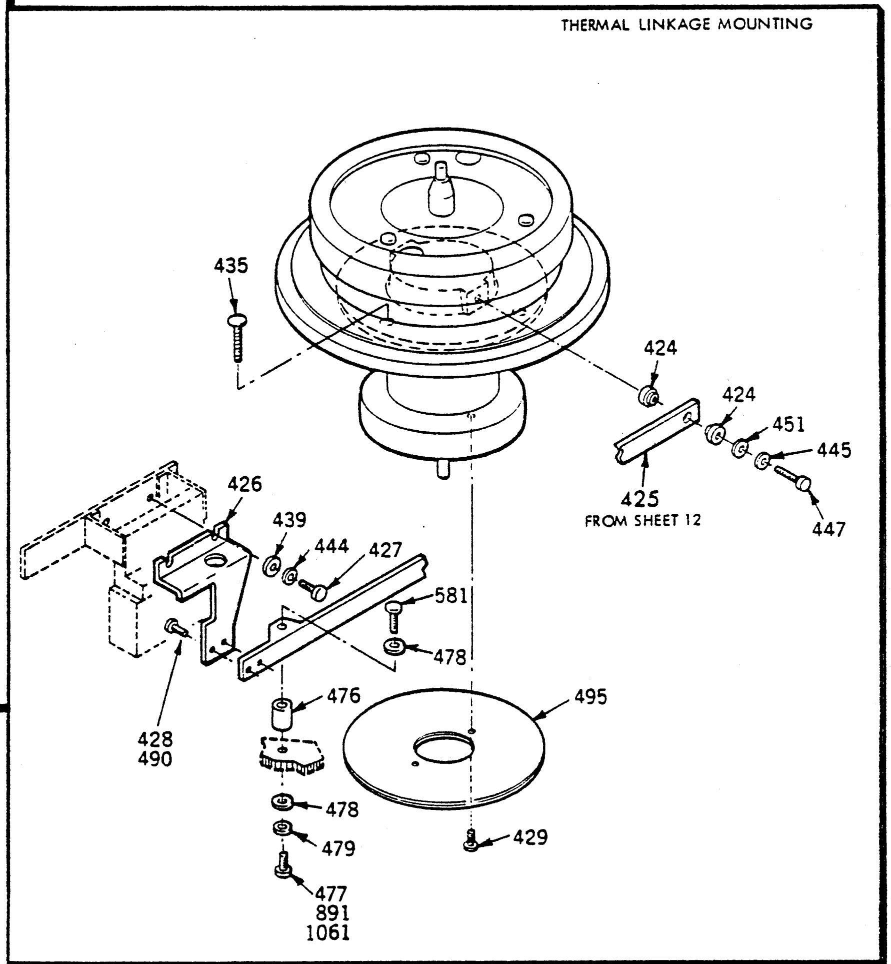


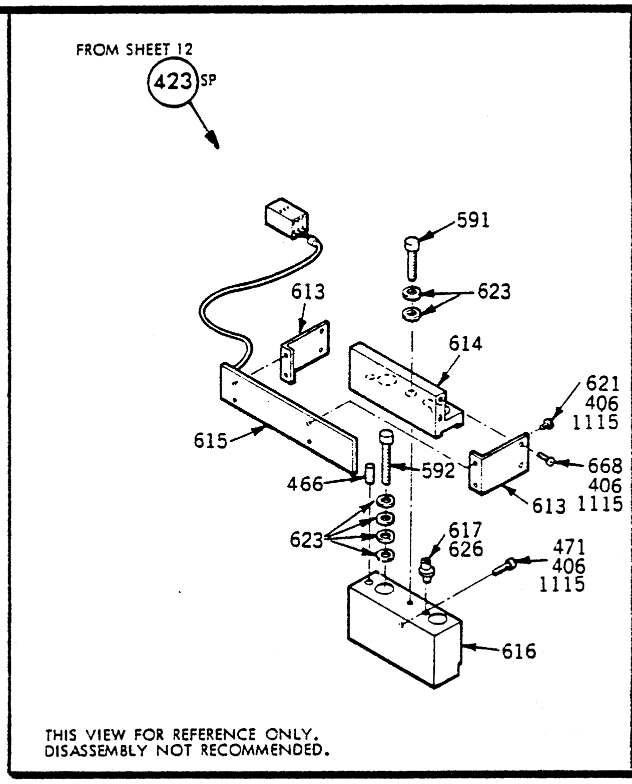
ITEM	IDENT NO	DESCRIPTION	WHERE USED
0404	75316008	ACTUATOR ASSY	301
0406	95125324	LOCTITE	404
0442	10125606	WASHERS PLAIN	404
0445	10125804	WASHERS SPR LOCK	404
0446	10125803	WASHERS SPR LOCK	526
0468	10127125	SCREW PAN HD MACH	404
0469	95125305	LOCTITE GRADE C	526
0469	95125305	LOCTITE GRADE C	404
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

ITEM	IDENT NO	DESCRIPTION	WHERE USED
0580	92054251	BALL BEARING	526
0583	92815097	SCREW CAP SOC HD	526
0584	10126219	SCR HEX SOC HD CAP	526
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

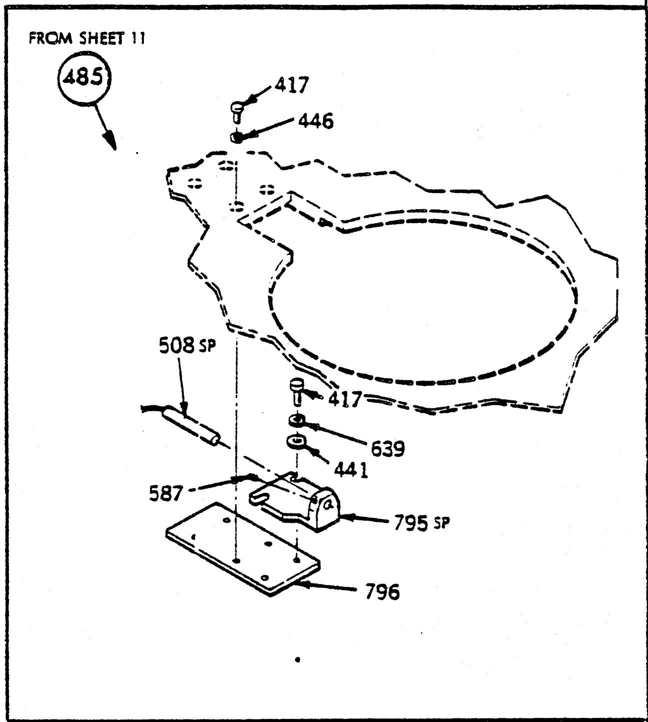


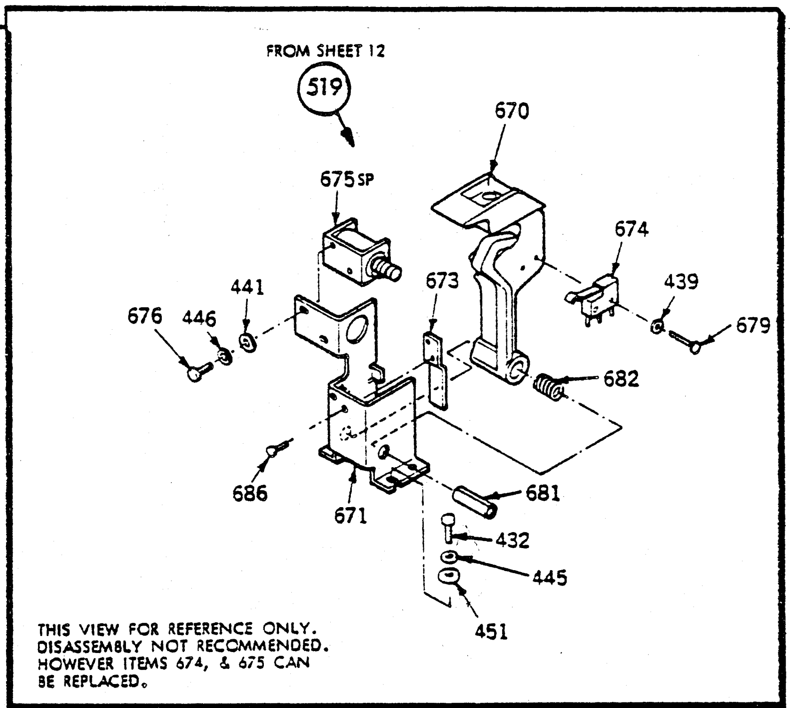


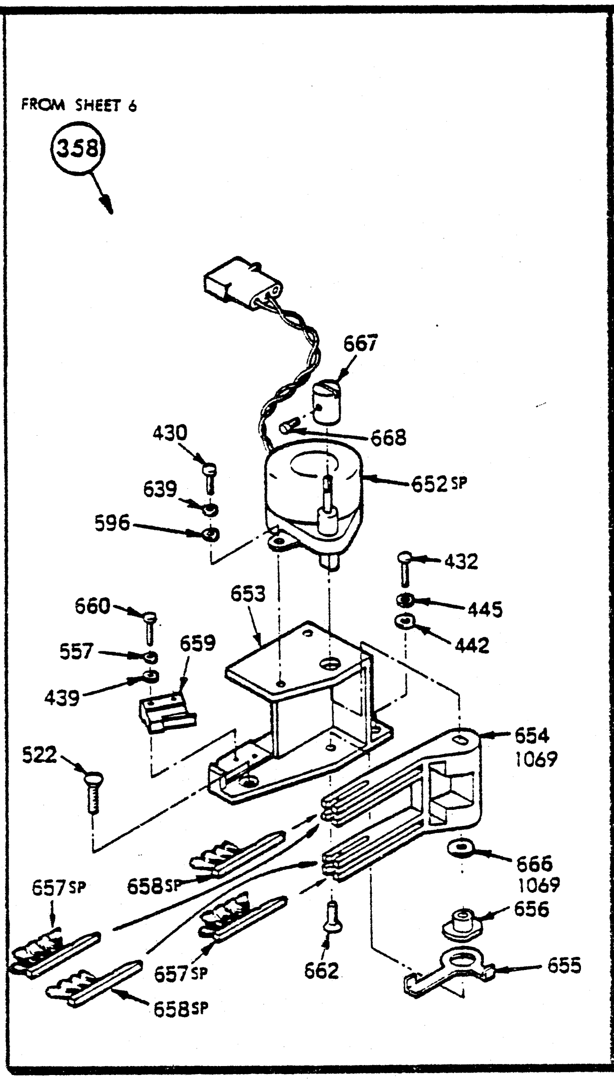


ITEM	IDENT NO	DESCRIPTION	WHERE USED
0406	95125324	LOCTITE	423
0416	75793103	IDLER ASSY	301
0418	75308502	SPRING IDLER	301
0423	75315405	TRANSDUCER SCALE ASM	301
0424	75276203	SPACER NYLON	301
0425	75797700	BAR EXPANSION MACHINE	301
0426	75315801	BRACKET EXPAN	301
0427	10126209	SCR-SOC HP CAP	301
0428	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
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 XDUCER ALIGNMENT	423
0621	92720042	SCREW BUTTON HD	423
0623	93651029	WASHER, BELLEVILLE	423
0626	95010890	GREASE-LUBRIPLATE	423
0668	10126212	SCR HEX SOC HD CAP	423
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)

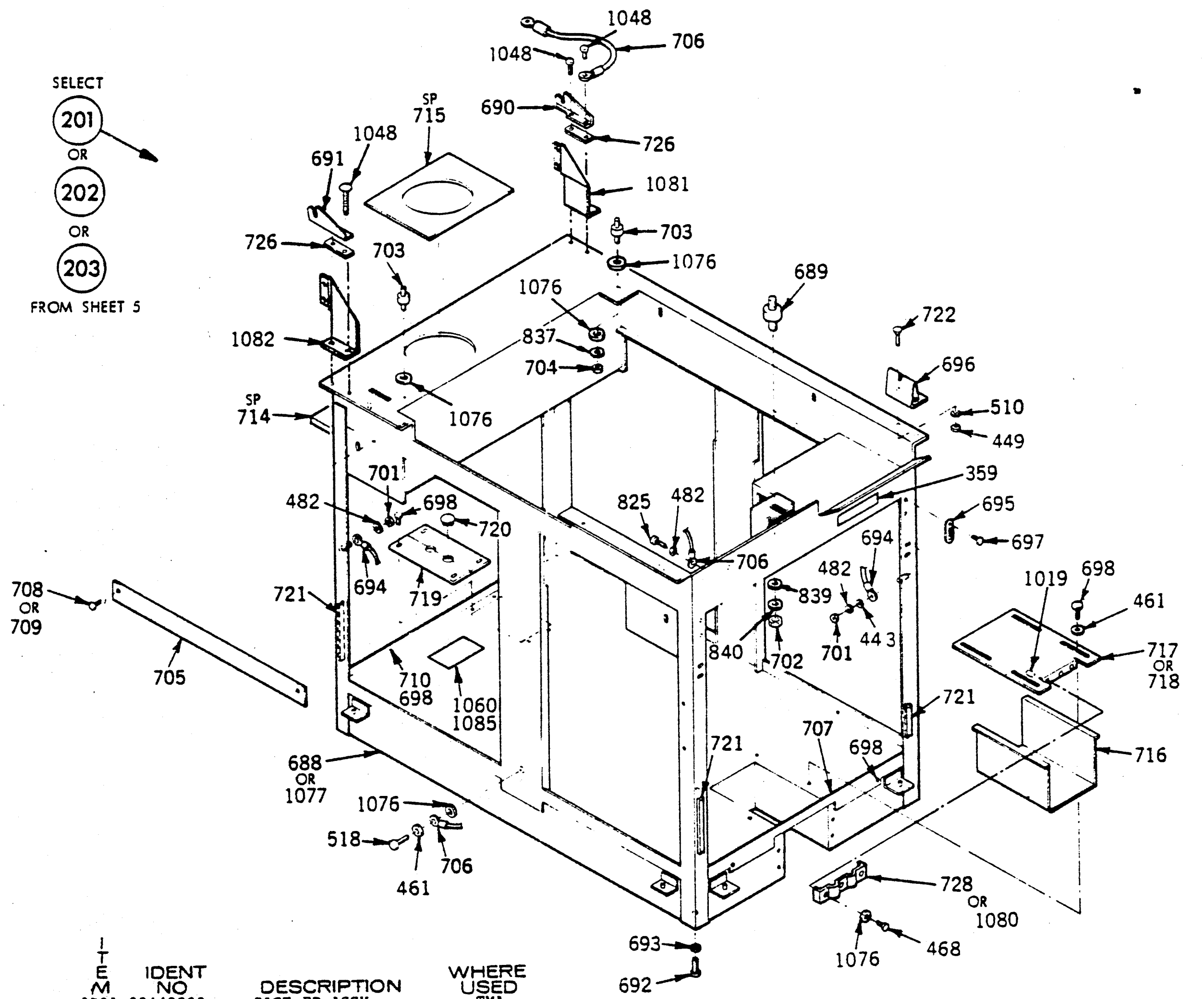






ITEM	IDENT NO	DESCRIPTION	WHERE USED
0358	83466001	BRUSH DRIVE ASSY	MOD
0417	10127112	SCREW PAN HD MACH	485
0430	10127111	SCREW PAN HD MACH	358
0432	10127121	SCREW PAN HD MACH	358
0432	10127121	SCREW PAN HD MACH	519
0439	10125602	WASHERS PLAIN	358
0439	10125602	WASHERS PLAIN	519
0441	10125605	WASHERS 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	83457901	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	8345720~~1~~3	ARM LOCK HOLDER	519
0671	83457302	PACK LOCK BRACKET	519
0673	77598701	SPRING ARM	519
0674	77598501	SWITCH SUBMINIATURE	519
0675	94357803	SOLENOID DC	519
0676	10127332	SCREW PAN 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

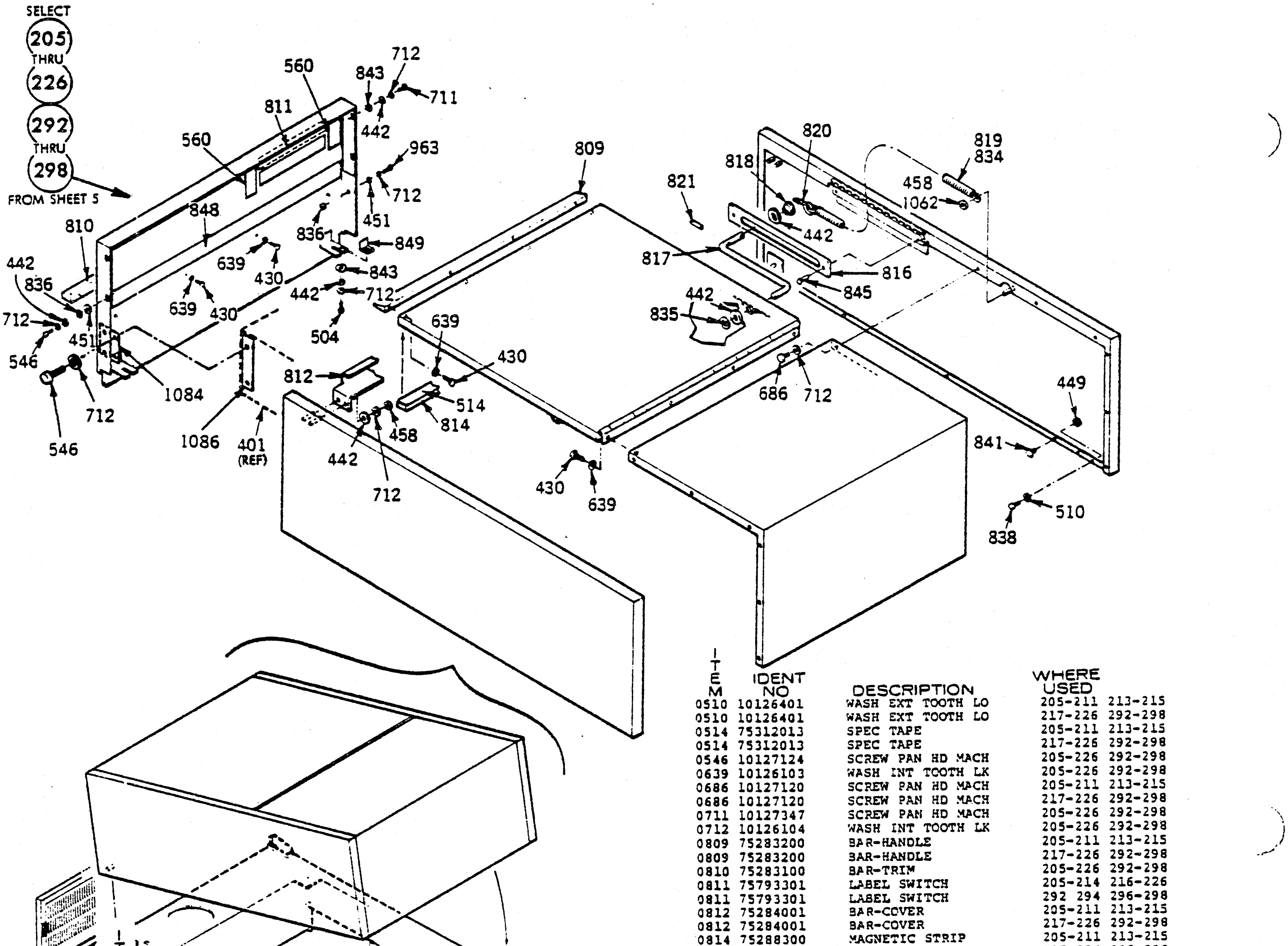
Figure 8-11. Common Parts Sub Assemblies (Sheet 2 of 2)



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

ITEM	IDENT NO	DESCRIPTION	WHERE USED
0837	10125806	SPRING LK WSHR	201-203
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

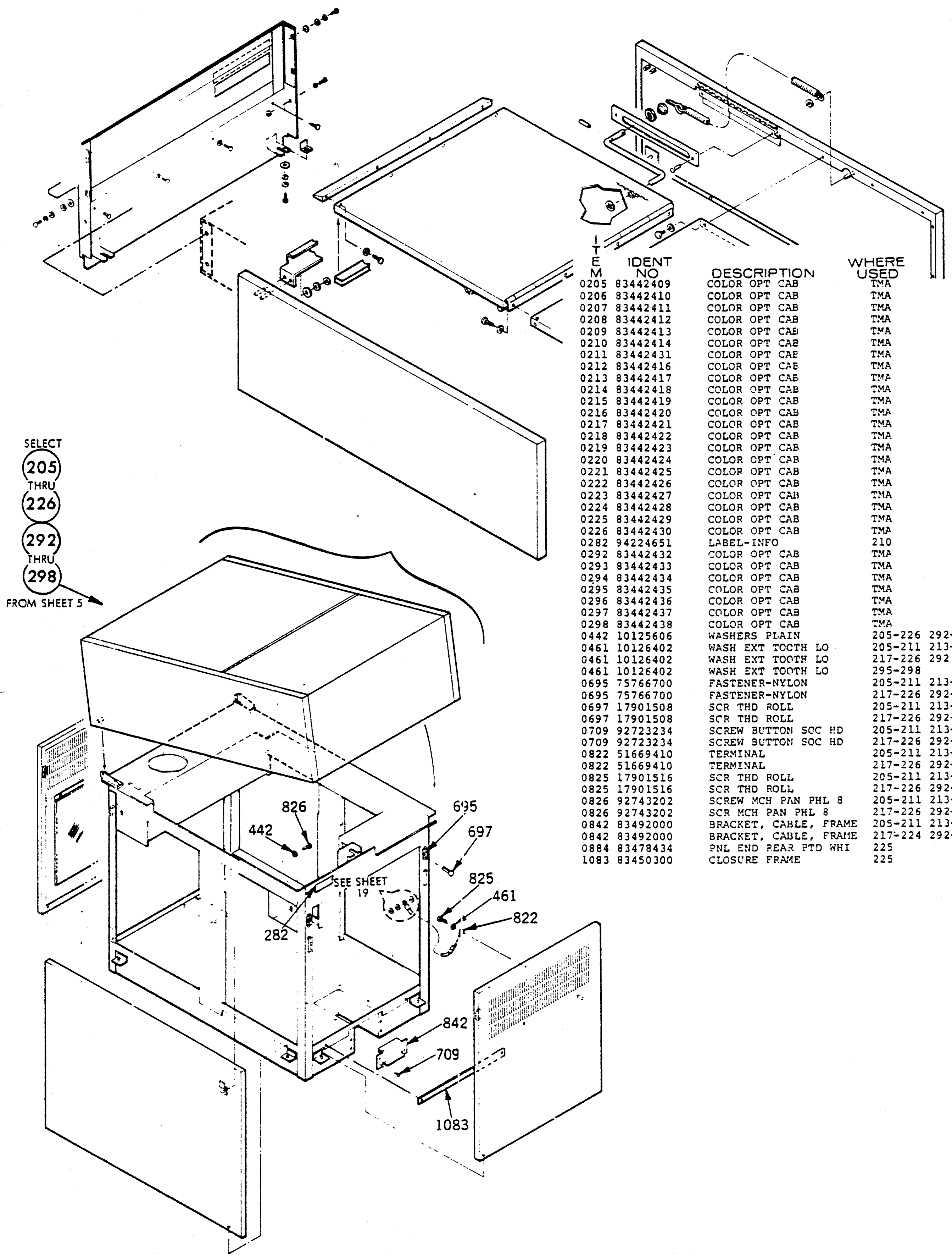
Figure 8-12. Base Frame Assembly



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
0218	83442422	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
0430	10127111	SCREW PAN HD MACH	205-226 292-298
0442	10125606	WASHERS PLAIN	205-226 292-298
0449	10125105	NUT HEX MACH	205-211 213-215
0449	10125105	NUT HEX MACH	217-226 292-298
0451	75806504	WASHER-REDUCED	205-226 292-298
0458	10125106	NUT HEX MACH	205-211 213-215
0458	10125106	NUT HEX MACH	217-226 292-298
0504	93115287	SCREW PAN	205-226 292-298

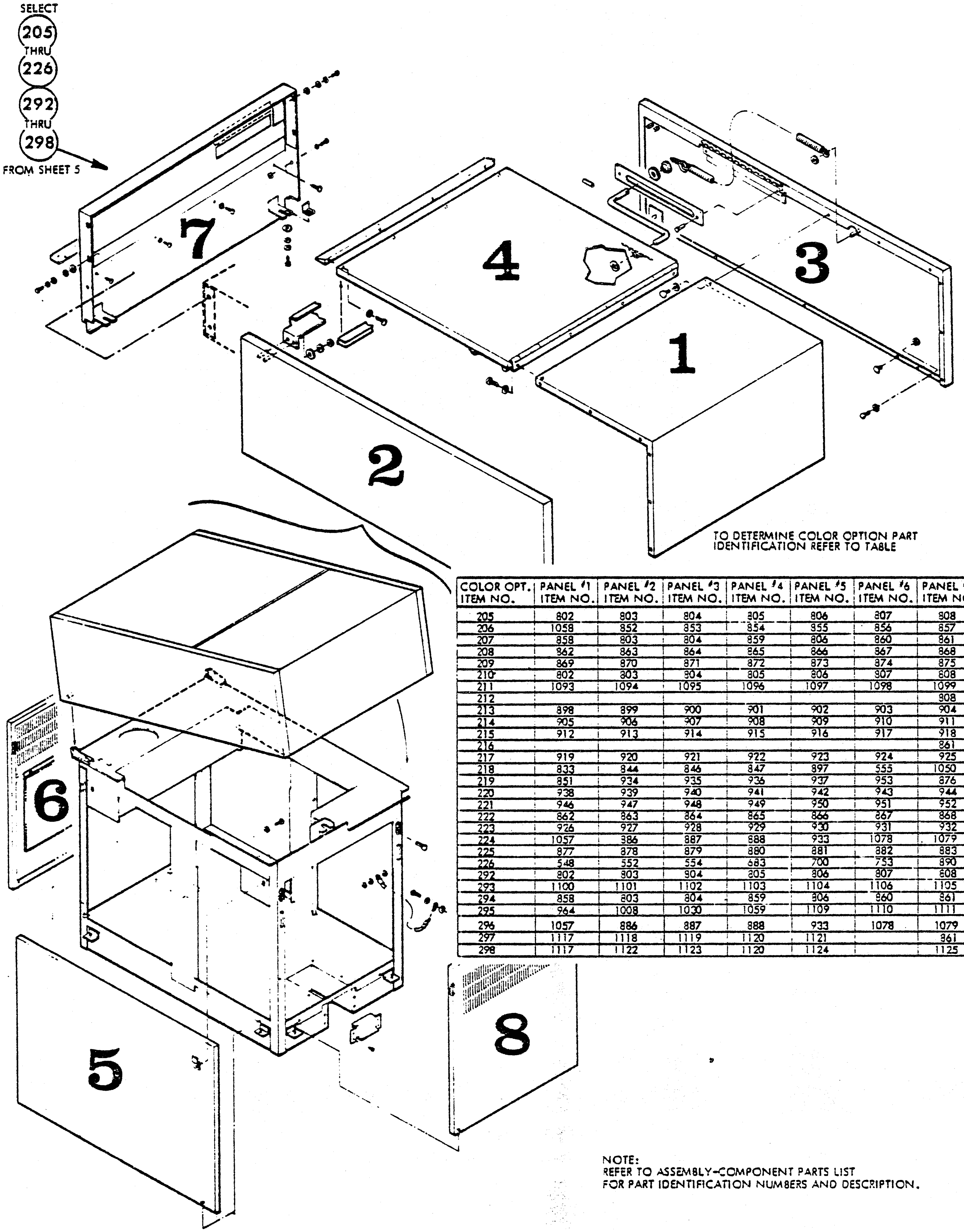
ITEM	IDENT NO	DESCRIPTION	WHERE USED
0510	10126401	WASH EXT TOOTH LO	205-211 213-215
0510	10126401	WASH EXT TOOTH LO	217-226 292-298
0514	75312013	SPEC TAPE	205-211 213-215
0514	75312013	SPEC TAPE	217-226 292-298
0546	10127124	SCREW PAN HD MACH	205-226 292-298
0639	10126103	WASH INT TOOTH LK	205-226 292-298
0686	10127120	SCREW PAN HD MACH	205-211 213-215
0686	10127120	SCREW PAN HD MACH	217-226 292-298
0711	10127347	SCREW PAN HD MACH	205-226 292-298
0712	10126104	WASH INT TOOTH LK	205-226 292-298
0809	75283200	BAR-HANDLE	205-211 213-215
0809	75283200	BAR-HANDLE	217-226 292-298
0810	75283100	BAR-TRIM	205-226 292-298
0811	75793301	LABEL SWITCH	205-214 216-226
0811	75793301	LABEL SWITCH	292 294 296-298
0812	75284001	BAR-COVER	205-211 213-215
0812	75284001	BAR-COVER	217-226 292-298
0814	75288300	MAGNETIC STRIP	205-211 213-215
0814	75288300	MAGNETIC STRIP	217-226 292-298
0816	75794101	SLIDE-LID	205-211 213-215
0816	75794101	SLIDE-LID	217-226 292-298
0817	75794204	ROD-SLIDE	205-211 213-215
0817	75794204	ROD-SLIDE	217-226 292-298
0818	75794001	SPACER-FLANGED	205-226 292-298
0819	75794700	SPRING-EXTENSION	205-211 213-215
0819	75794700	SPRING-EXTENSION	217-226 292-298
0820	92649009	PIN, COTTER	205-211 213-215
0820	92649009	PIN, COTTER	217-226 292-298
0821	93530007	PIN, ROLL HCS BLACK	205-211 213-215
0821	93530007	PIN, ROLL HCS BLACK	217-226 292-298
0834	24528646	SLEEVING-VINYL	205-211 213-215
0834	24528646	SLEEVING-VINYL	217-226 292-298
0835	93539004	FASTENER-PUSH ON	205-211 213-215
0835	93539004	FASTENER-PUSH ON	217-226 292-298
0836	83446400	BUMPER NYLON	205-226 292-298
0838	92743158	SCREW SS PAN HD	205-211 213-215
0838	92743158	SCREW SS PAN HD	217-226 292-298
0841	75774702	CLIP-PUSH IN	205-211 213-215
0841	75774702	CLIP-PUSH IN	217-226 292-298
0843	94347104	SHOULDER WASHER THER	205-226 292-298
0845	10125712	SCR FLAT HD	205-211 213-215
0845	10125712	SCR FLAT HD	217-226 292-298
0848	83451804	INSULATOR ADHESIVE	205-226 292-298
0849	83451805	INSULATOR ADHESIVE	205-222
0849	83451805	INSULATOR ADHESIVE	205-226 292-298
0849	83451805	INSULATOR ADHESIVE	294 295
0963	10127348	SCREW PAN HD	205-226 292-298
1062	95125301	LOCTITE	205-226 292-298
1084	75885150	NUT PLATE	225
1086	83451802	INSULATOR	205-211 213-226
1086	83451802	INSULATOR	293-298

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



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
0218	83442422	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
0442	10125606	WASHERS PLAIN	205-226 292-295
0461	10126402	WASH EXT TOOTH LO	205-211 213-215
0461	10126402	WASH EXT TOOTH LO	217-226 292
0461	10126402	WASH EXT TOOTH LO	295-298
0695	75766700	FASTENER-NYLON	205-211 213-215
0695	75766700	FASTENER-NYLON	217-226 292-298
0697	17901508	SCR THD ROLL	205-211 213-215
0697	17901508	SCR THD ROLL	217-226 292-298
0709	92723234	SCREW BUTTON SOC HD	205-211 213-215
0709	92723234	SCREW BUTTON SOC HD	217-226 292-298
0822	51669410	TERMINAL	205-211 213-215
0822	51669410	TERMINAL	217-226 292-298
0825	17901516	SCR THD ROLL	205-211 213-215
0825	17901516	SCR THD ROLL	217-226 292-298
0826	92743202	SCREW MCH PAN PHL 8	205-211 213-215
0826	92743202	SCR MCH PAN PHL 8	217-226 292-298
0842	83492000	BRACKET, CABLE, FRAME	205-211 213-215
0842	83492000	BRACKET, CABLE, FRAME	217-224 292-298
0884	83478434	PNL END REAR PTD WHI	225
1083	83450300	CLOSURE FRAME	225

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

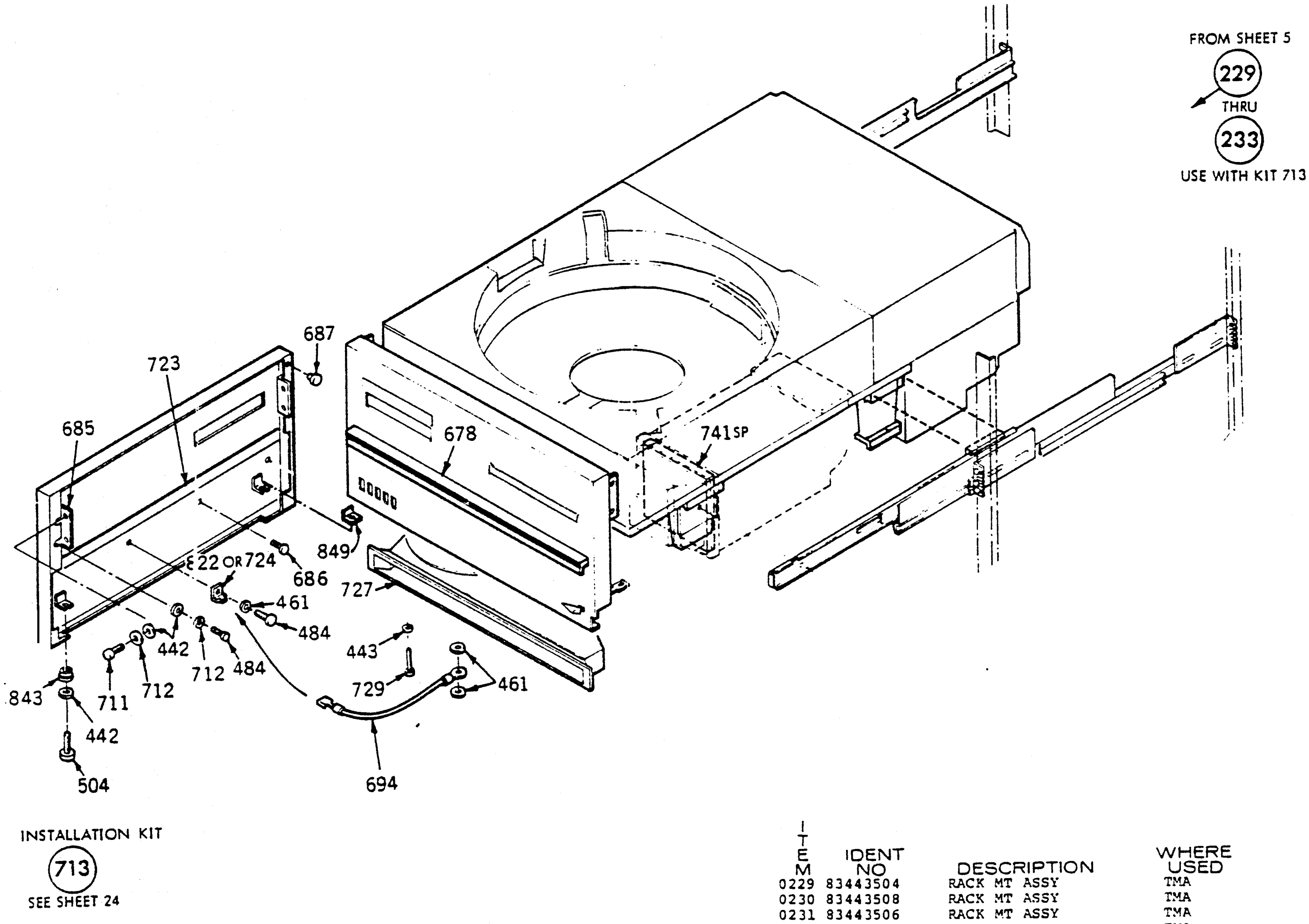


TO DETERMINE COLOR OPTION PART IDENTIFICATION REFER TO TABLE

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	
218	833	844	846	847	897	555	1050	1114
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	386	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	904	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		1125	

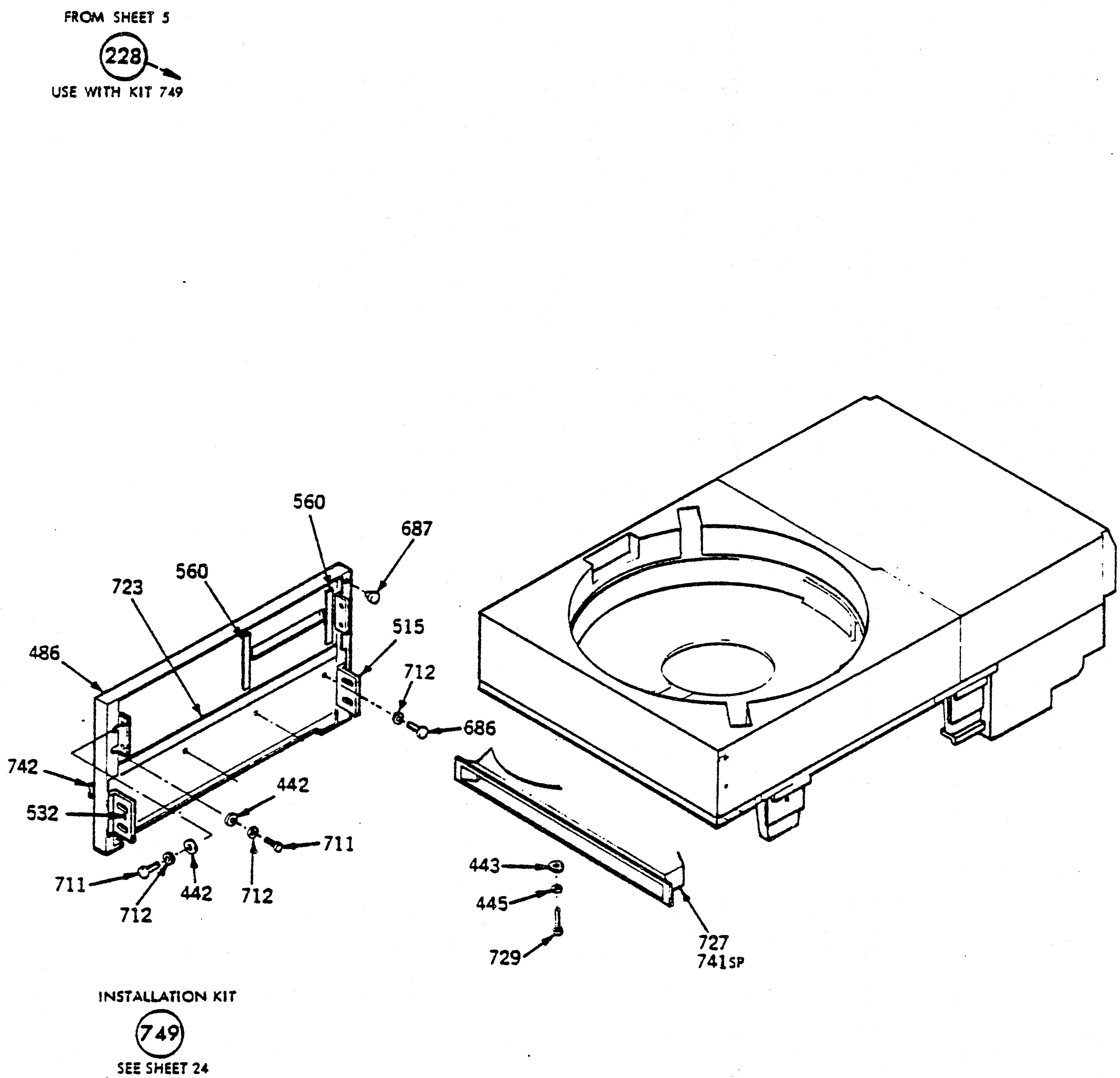
NOTE:
REFER TO ASSEMBLY-COMPONENT PARTS LIST FOR PART IDENTIFICATION NUMBERS AND DESCRIPTION.

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



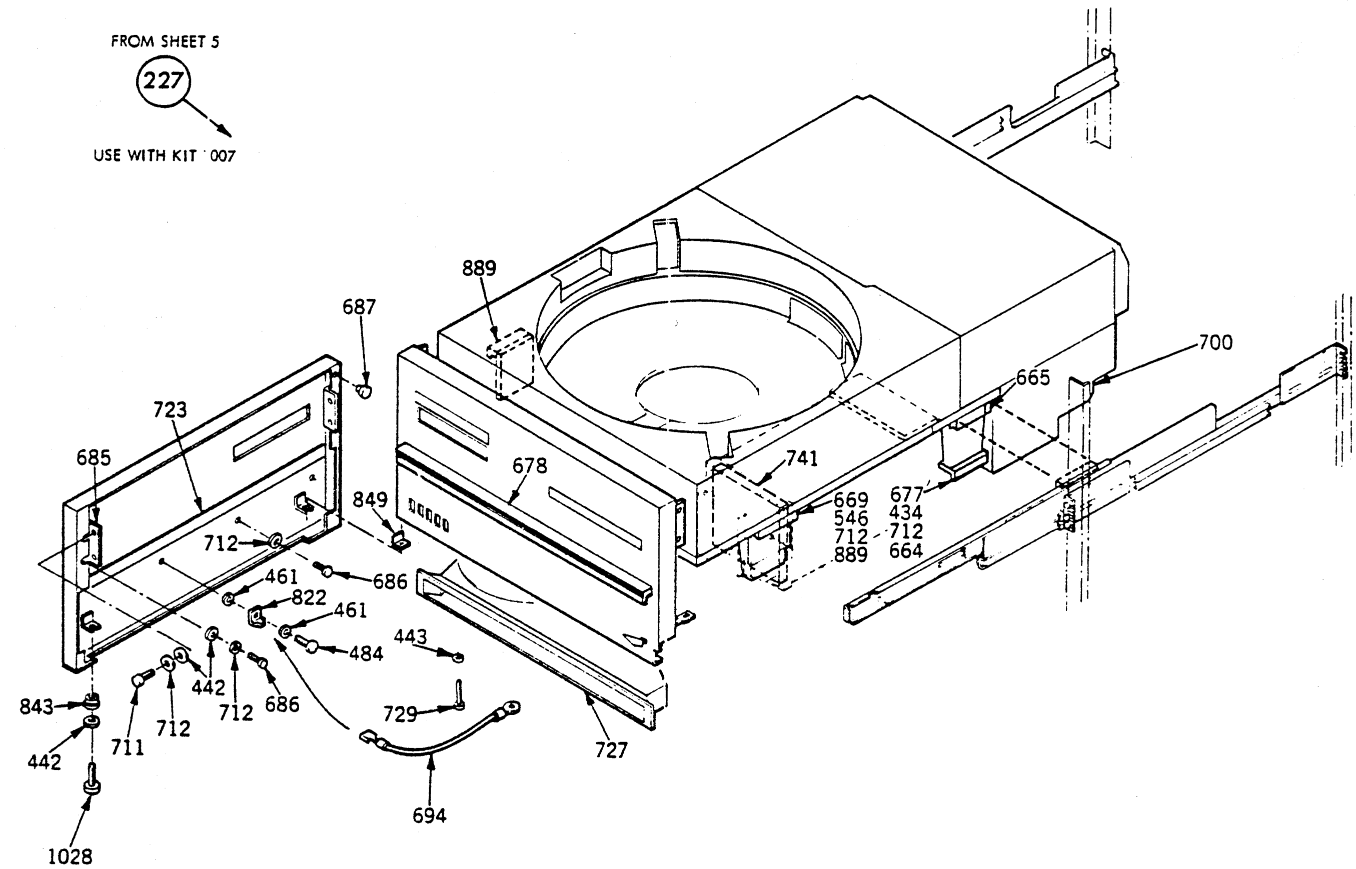
ITEM	IDENT NO	DESCRIPTION	WHERE USED
0229	83443504	RACK MT ASSY	TMA
0230	83443508	RACK MT ASSY	TMA
0231	83443506	RACK MT ASSY	TMA
0232	83443507	RACK MT ASSY	TMA
0233	83443509	RACK MT ASSY	TMA
0442	10125606	WASHERS PLAIN	229 230
0443	10125607	WASHERS PLAIN	229 230 233
0461	10126402	WASH EXT TOOTH LO	229-232
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	229-232
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	229 230 233
0729	10127128	PAN HD MACH SCR	229 230 233
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

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



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)



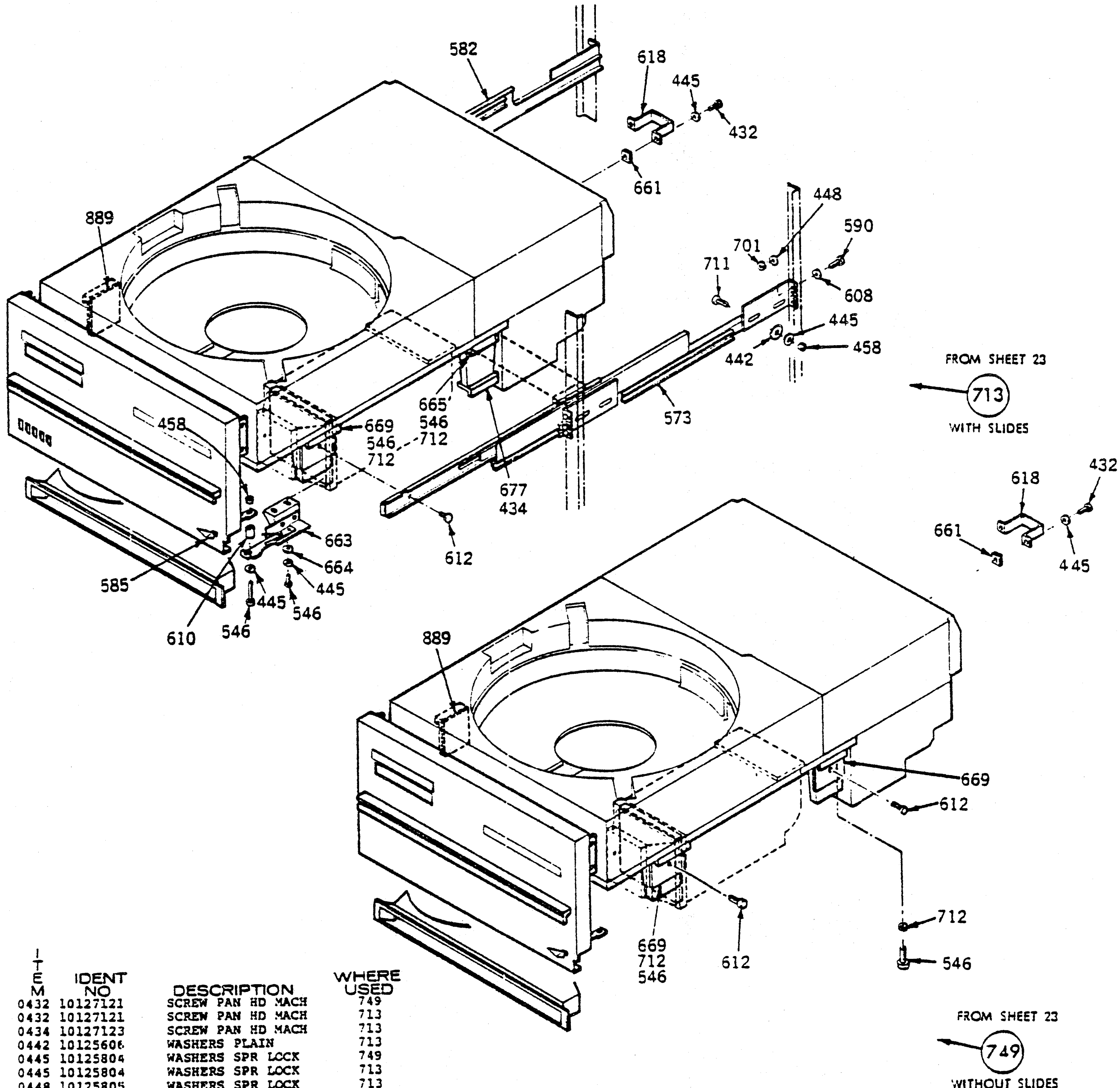
INSTALLATION KIT

1007

SEE SHEET 27

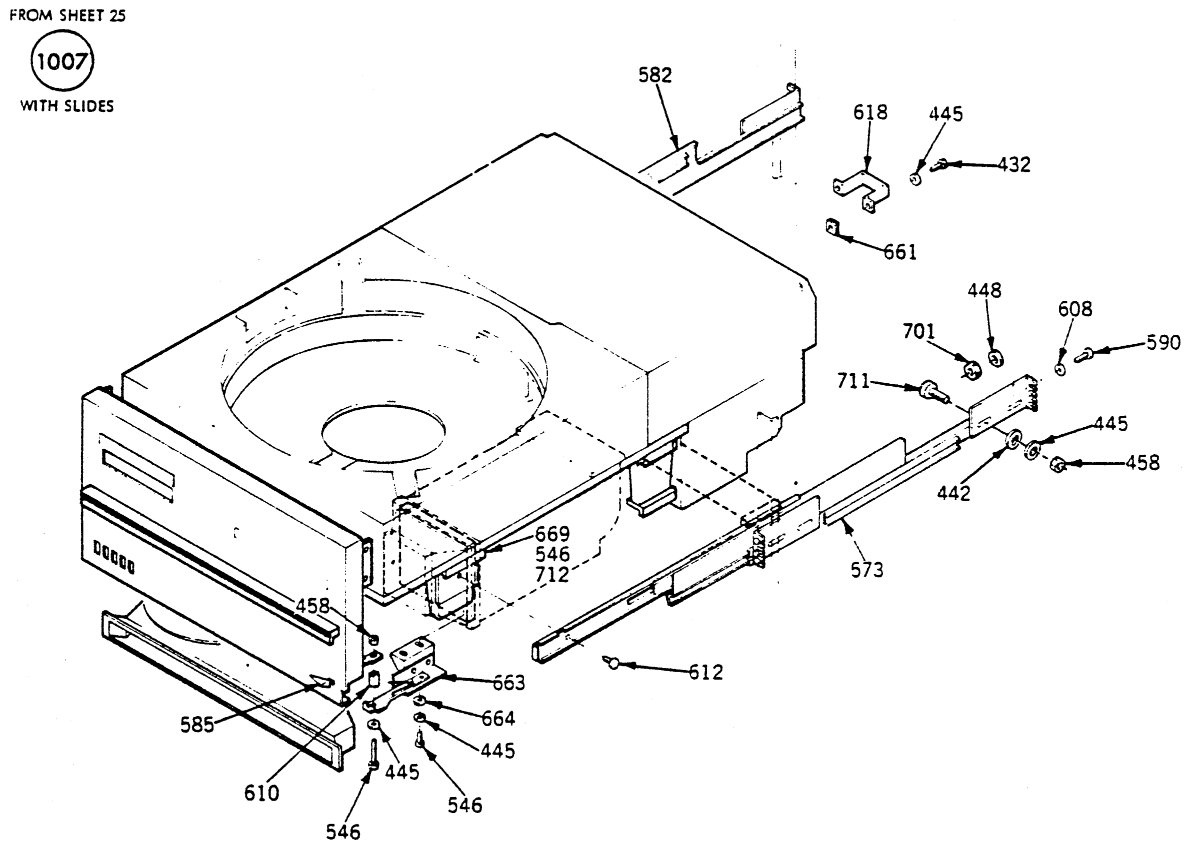
ITEM	IDENT NO	DESCRIPTION	WHERE USED
0227	83443510	RACK MOUNT ASSY	TMA
0434	10127123	SCREW PAN HD MACH	227
0442	10125606	WASHERS PLAIN	227
0443	10125607	WASHER PLAIN	227
0461	10126402	WASHERS EXT TOOTH LO	227
0484	10127122	SCREW PAN HD MACH	227
0546	10127124	SCREW PAN HD MACH	227
0664	93211008	WASHER	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	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
0727	83457001	AIR INTAKE	227
0729	10127128	PAN HEAD MACH SCREW	227
0741	77604000	PRE-FILTER-FILTER	227
0822	51669410	TERMINAL-TAB	227
0843	94347104	SHOULDER WASHER THER	227
0849	83451805	INSULATOR, ADH BACK	227
0889	77830705	INSULATOR	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)



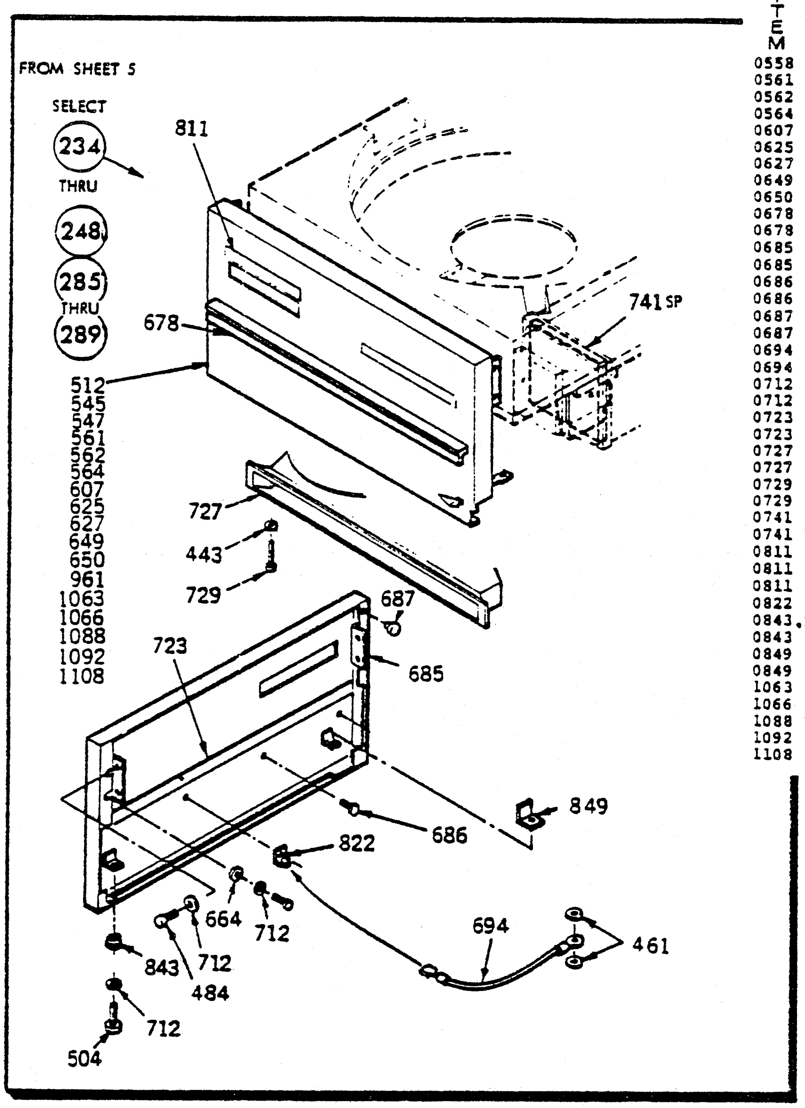
ITEM	IDENT NO	DESCRIPTION	WHERE USED
0432	10127121	SCREW PAN HD MACH	749
0432	10127121	SCREW PAN HD MACH	713
0434	10127123	SCREW PAN HD MACH	713
0442	10125606	WASHERS PLAIN	713
0445	10125804	WASHERS SPR LOCK	749
0445	10125804	WASHERS SPR LOCK	713
0448	10125805	WASHERS SPR LOCK	713
0458	10125106	NUT HEX 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)



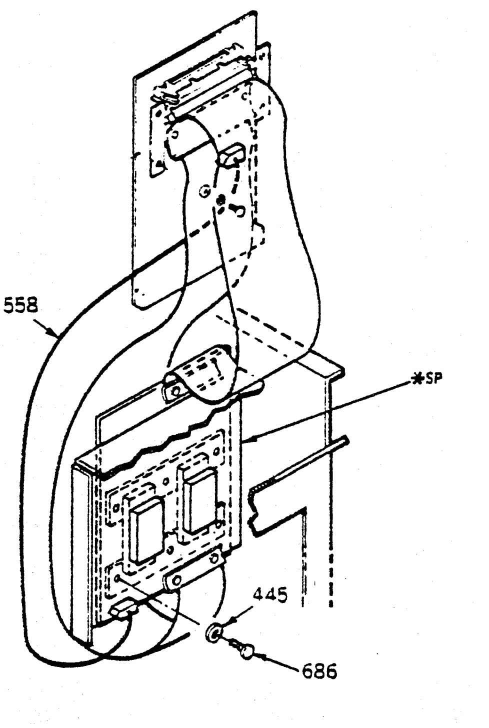
ITEM	IDENT NO	DESCRIPTION	WHERE USED
0432	10127121	SCREW PAN HD MACH	1007
0442	10125606	WASHERS PLAIN	1007
0445	10125804	WASHERS SPR LOCK	1007
0448	10125805	WASHERS SPR LOCK	1007
0458	10125106	NUT HEX MACH	1007
0546	10127124	SCREW PAN HD MACH	1007
0573	83478301	SLIDE ASSY RH	1007
0582	83478302	SLIDE 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-SPEED, 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)



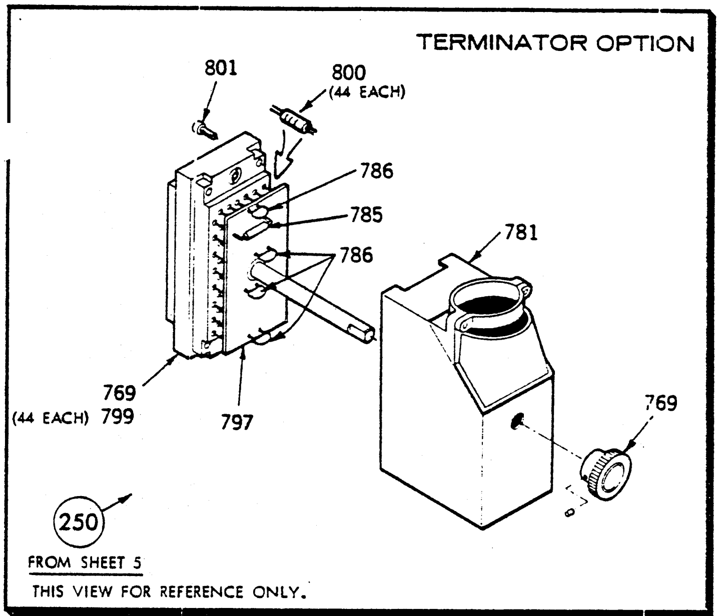
ITEM	IDENT NO	DESCRIPTION	WHERE USED
0234	83442501	COLOR OPT, RACK MT	TMA
0235	83442502	COLOR OPT, RACK MT	TMA
0236	83442503	COLOR OPT, RACK MT	TMA
0237	83442505	COLOR OPT, RACK MT	TMA
0238	83442506	COLOR OPT, RACK MT	TMA
0239	83442507	COLOR OPT, RACK MT	TMA
0240	83442508	COLOR OPT, RACK MT	TMA
0241	83442509	COLOR OPT, RACK MT	TMA
0242	83442510	COLOR OPT, RACK MT	TMA
0243	83442511	COLOR OPT, RACK MT	TMA
0244	83442512	COLOR OPT, RACK MT	TMA
0245	83442513	COLOR OPT, RACK MT	TMA
0246	83442514	COLOR OPT RACK MT	TMA
0247	83442515	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
0285	83442517	COLOR OPT RACK MT	TMA
0286	83442518	COLOR OPT, RACK MT	TMA
0287	83442519	COLOR OPT, RACK MT	TMA
0288	83442521	COLOR OPT RACK MT	TMA
0289	83442520	COLOR OPT RACK MT	TMA
0443	10125607	WASHERS PLAIN	237
0443	10125607	WASHERS PLAIN	243 247
0445	10125804	WASHERS SPR LOCK	267-269
0461	10126402	WASH EXT TOOTH LO	237
0461	10126402	WASH EXT TOOTH LO	243 247
0484	10127122	SCREW PAN HD MACH	237
0484	10127122	SCREW PAN HD MACH	243 247
0504	93115287	SCREW PAN	237 243 247
0512	83442175	FRONT PNAL RACK PAINT	287
0545	83442106	FRONT PNL RACK PAINT	235
0545	83442106	FRONT PNL RACK PAINT	243 247
0547	83442109	FRONT PNL RACK PAINT	236
0547	83442109	FRONT PNL RACK PAINT	237 247

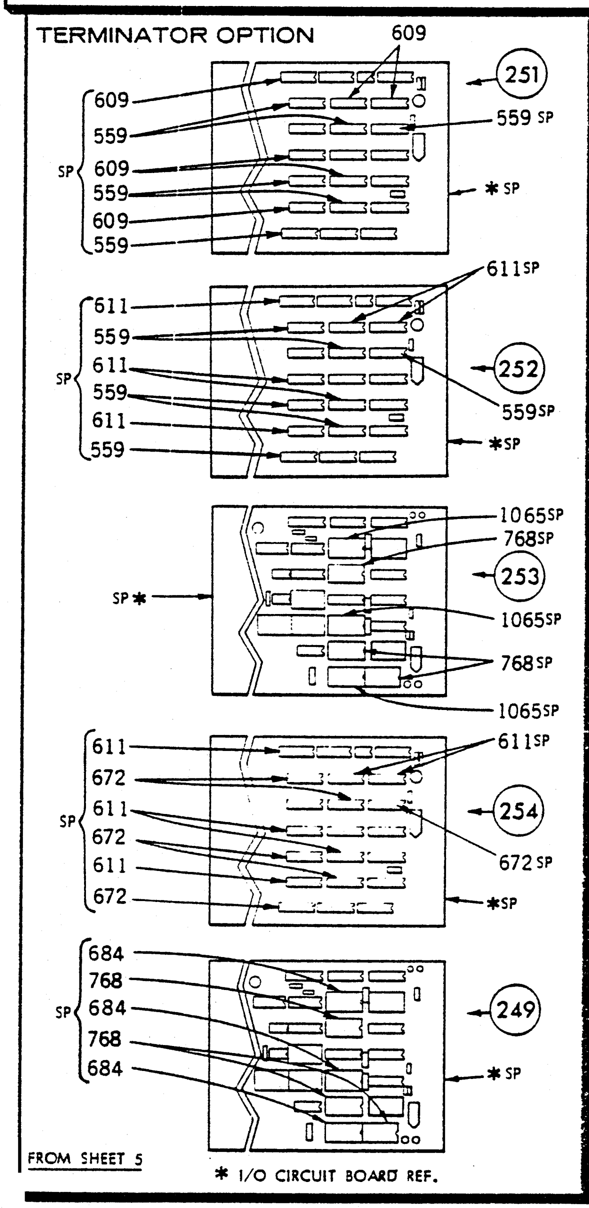
ITEM	IDENT NO	DESCRIPTION	WHERE USED
0558	83444701	JUMPER ASSY	267-269
0561	83442143	FRONT PNL RACK PAINT	240
0562	77834340	FRONT PNL RACK PAINT	245
0564	77834401	FRONT PNL RACK PAINT	244
0607	83442178	FRONT PNL RACK PAINT	289
0625	83466801	PNL CNTL RACK SLKSCN	238
0627	83442123	FRONT PNL RACK PAINT	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	257-269
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
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



* FOR PWA'S SEE HPC PACKAGE FOR CORRECT CIRCUIT BOARD IDENTIFICATION AND BREAK DOWN.

Figure 8-16. Top Mechanical Assembly Options





ITEM	IDENT NO	DESCRIPTION	WHERE USED
0249	75305707	TERMINATOR	TMA
0250	46338701	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
0769	94351001	RECEPTACLE	250
0781	94351002	COVER	250
0785	92427041	CAPACITOR 15 MF 20V	250
0786	51001119	CAP NON ELECT	250
0797	46336901	BLANK CARD	250
0799	94351005	CONTACT	250
0800	92512153	RESISTOR 1 W 100 OHM	250
0801	93728086	SCREW	250
0815	75037504	HEAD ASM (LOWER)	307 312 14
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 10 313 15
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

HEAD OPTION

FROM SHEET 6

307	308	309	310	311	312	313	314	315
815	827	829	829	824	815	1072	1072	829
823	828	830	1074	1070	823	1073	1073	1074
824	829	831	1075	1071	824	829	829	1075
					832		832	832

** REFER TO R/W/E BOARD LOCATED IN HPC DOCUMENT PACKAGE. (SHEET SS-7)

**824
829

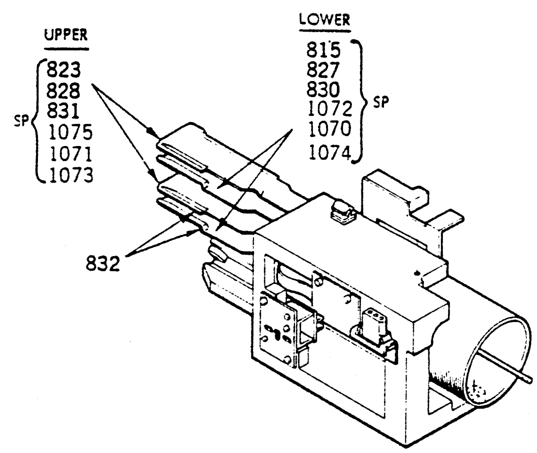
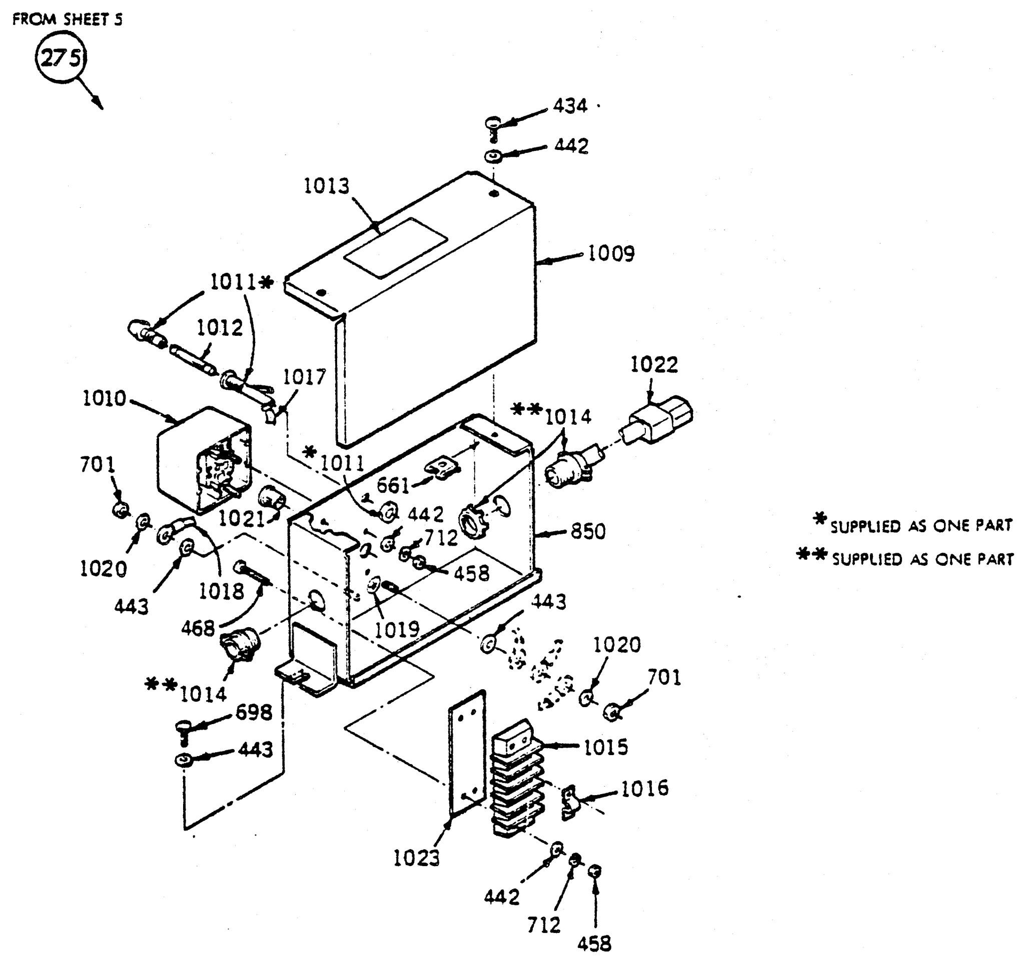
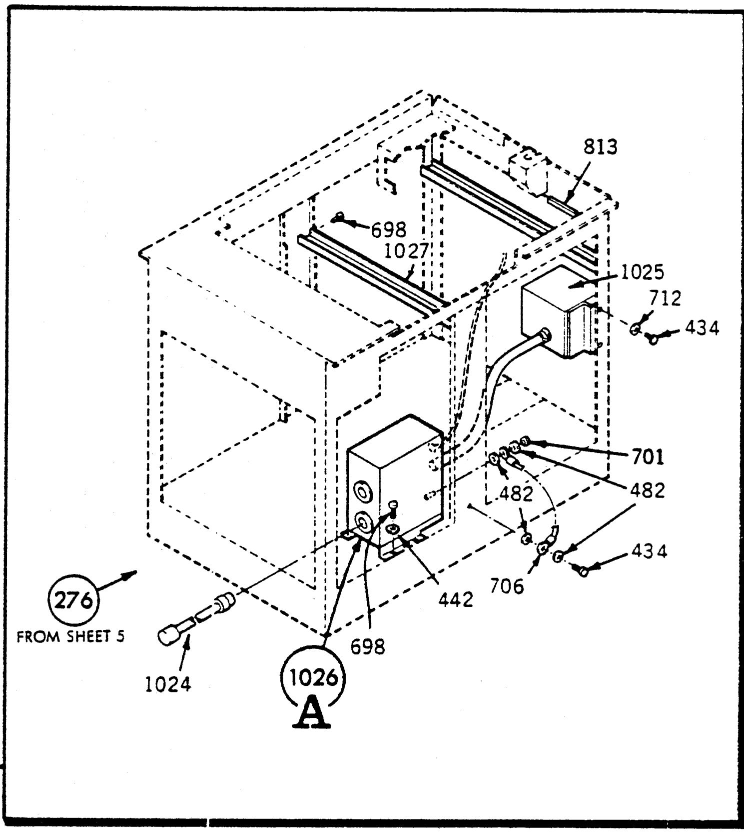


Figure 8-17. Options



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 QK 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	75730303	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-CONTLR 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

*SUPPLIED AS ONE PART

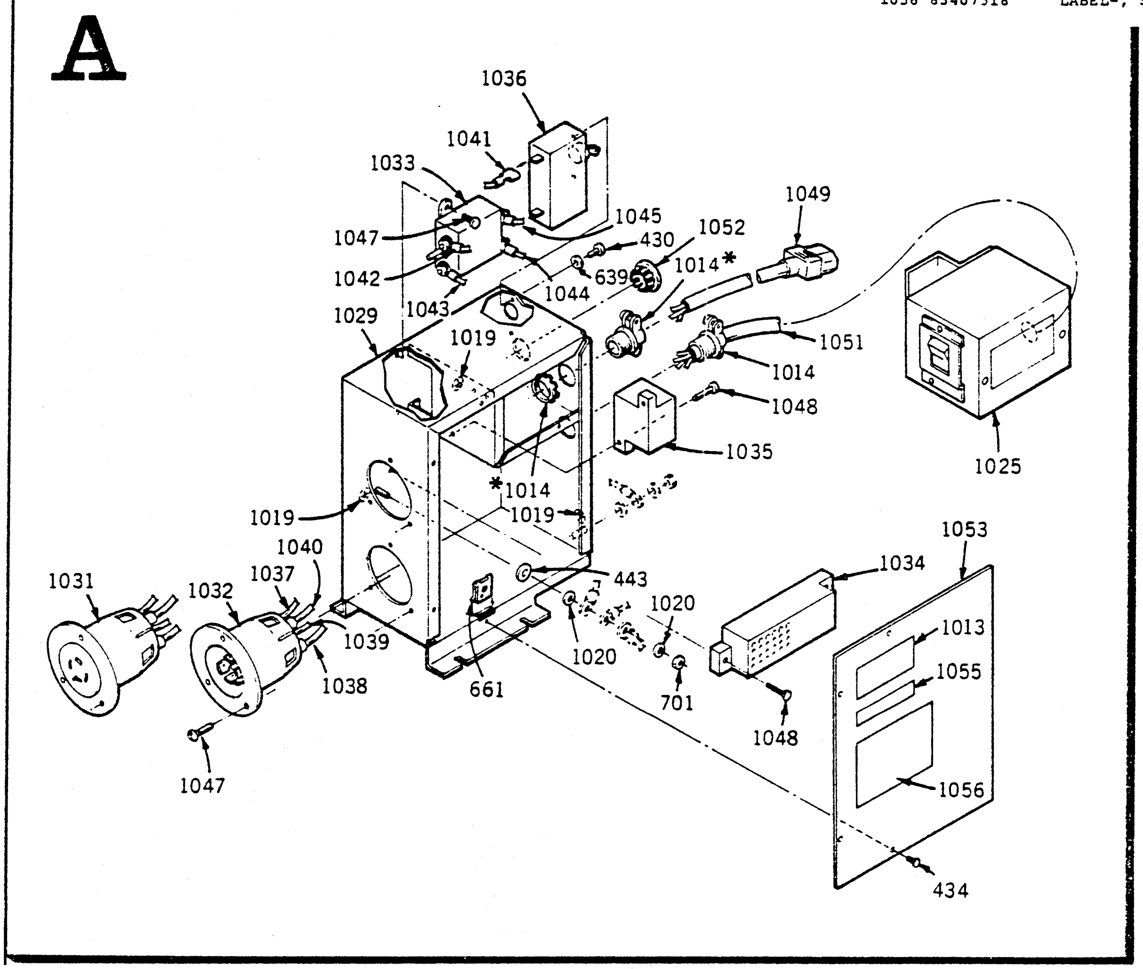


Figure 8-19. Power Assembly (AC Option)

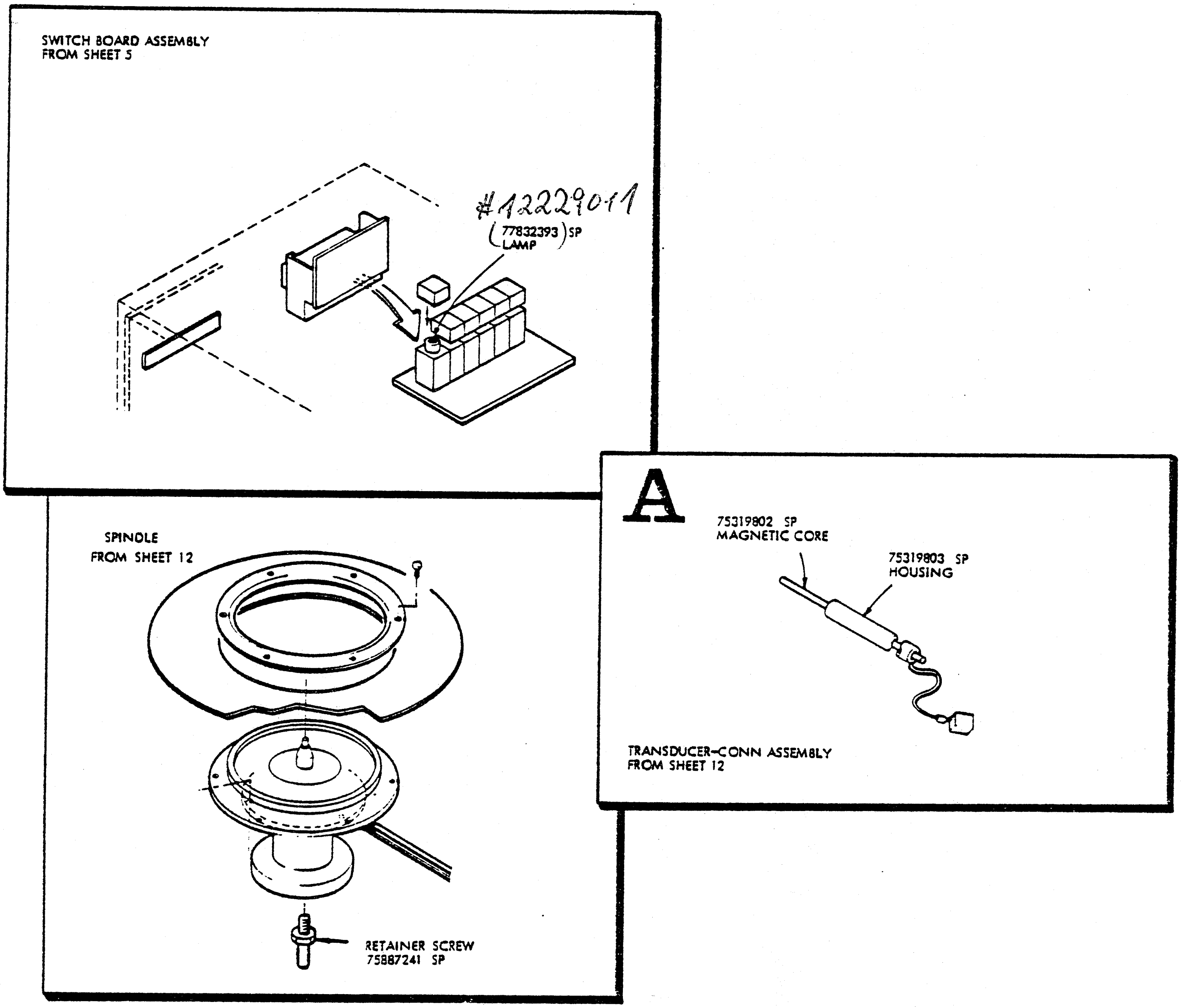


Figure 8-20. Spare Parts Provisioning

ITEM	IDENT NO	DESCRIPTION	WHERE USED	SH
0201	83442303	BASE FR ASSY	TMA	S5
0201	83442303	BASE FR ASSY	TMA	S19
0202	83442305	BASE FR ASSY	TMA	S5
0202	83442305	BASE FR ASSY	TMA	S19
0203	83442306	BASE FR ASSY	TMA	S5
0203	83442306	BASE FR ASSY	TMA	S19
0205	83442409	COLOR OPT CAB	TMA	S5
0205	83442409	COLOR OPT CAB	TMA	S20
0205	83442409	COLOR OPT CAB	TMA	S21
0205	83442409	COLOR OPT CAB	TMA	S22
0206	83442410	COLOR OPT CAB	TMA	S5
0206	83442410	COLOR OPT CAB	TMA	S20
0206	83442410	COLOR OPT CAB	TMA	S21
0206	83442410	COLOR OPT CAB	TMA	S22
0207	83442411	COLOR OPT CAB	TMA	S5
0207	83442411	COLOR OPT CAB	TMA	S20
0207	83442411	COLOR OPT CAB	TMA	S21
0207	83442411	COLOR OPT CAB	TMA	S22
0208	83442412	COLOR OPT CAB	TMA	S5
0208	83442412	COLOR OPT CAB	TMA	S20
0208	83442412	COLOR OPT CAB	TMA	S21
0208	83442412	COLOR OPT CAB	TMA	S22
0209	83442413	COLOR OPT CAB	TMA	S5
0209	83442413	COLOR OPT CAB	TMA	S20
0209	83442413	COLOR OPT CAB	TMA	S21
0209	83442413	COLOR OPT CAB	TMA	S22
0210	83442414	COLOR OPT CAB	TMA	S5
0210	83442414	COLOR OPT CAB	TMA	S20
0210	83442414	COLOR OPT CAB	TMA	S21
0210	83442414	COLOR OPT CAB	TMA	S22
0211	83442431	COLOR OPT CAB	TMA	S5
0211	83442431	COLOR OPT CAB	TMA	S20
0211	83442431	COLOR OPT CAB	TMA	S21
0211	83442431	COLOR OPT CAB	TMA	S22
0212	83442416	COLOR OPT CAB	TMA	S5
0212	83442416	COLOR OPT CAB	TMA	S20
0212	83442416	COLOR OPT CAB	TMA	S21
0212	83442416	COLOR OPT CAB	TMA	S22
0213	83442417	COLOR OPT CAB	TMA	S5
0213	83442417	COLOR OPT CAB	TMA	S20
0213	83442417	COLOR OPT CAB	TMA	S21
0213	83442417	COLOR OPT CAB	TMA	S22
0214	83442418	COLOR OPT CAB	TMA	S5
0214	83442418	COLOR OPT CAB	TMA	S20
0214	83442418	COLOR OPT CAB	TMA	S21
214	83442418	COLOR OPT CAB	TMA	S22
215	83442419	COLOR OPT CAB	TMA	S5
215	83442419	COLOR OPT CAB	TMA	S20
215	83442419	COLOR OPT CAB	TMA	S21
215	83442419	COLOR OPT CAB	TMA	S22
0216	83442420	COLOR OPT CAB	TMA	S5
0216	83442420	COLOR OPT CAB	TMA	S20
0216	83442420	COLOR OPT CAB	TMA	S21
0216	83442420	COLOR OPT CAB	TMA	S22
0217	83442421	COLOR OPT CAB	TMA	S5
0217	83442421	COLOR OPT CAB	TMA	S20
0217	83442421	COLOR OPT CAB	TMA	S21
0217	83442421	COLOR OPT CAB	TMA	S22
0218	83442422	COLOR OPT CAB	TMA	S5
0218	83442422	COLOR OPT CAB	TMA	S20
0218	83442422	COLOR OPT CAB	TMA	S21
0218	83442422	COLOR OPT CAB	TMA	S22
0219	83442423	COLOR OPT CAB	TMA	S5
0219	83442423	COLOR OPT CAB	TMA	S20
0219	83442423	COLOR OPT CAB	TMA	S21
0219	83442423	COLOR OPT CAB	TMA	S22
0220	83442424	COLOR OPT CAB	TMA	S5
0220	83442424	COLOR OPT CAB	TMA	S20
0220	83442424	COLOR OPT CAB	TMA	S21
0220	83442424	COLOR OPT CAB	TMA	S22
0221	83442425	COLOR OPT CAB	TMA	S5
0221	83442425	COLOR OPT CAB	TMA	S20
0221	83442425	COLOR OPT CAB	TMA	S21
0221	83442425	COLOR OPT CAB	TMA	S22
0222	83442426	COLOR OPT CAB	TMA	S5
0222	83442426	COLOR OPT CAB	TMA	S20
0222	83442426	COLOR OPT CAB	TMA	S21
0222	83442426	COLOR OPT CAB	TMA	S22
0223	83442427	COLOR OPT CAB	TMA	S5
0223	83442427	COLOR OPT CAB	TMA	S20
0223	83442427	COLOR OPT CAB	TMA	S21
0223	83442427	COLOR OPT CAB	TMA	S22
0224	83442428	COLOR OPT CAB	TMA	S5
0224	83442428	COLOR OPT CAB	TMA	S20
0224	83442428	COLOR OPT CAB	TMA	S22
0224	83442428	COLOR OPT CAB	TMA	S21
0225	83442429	COLOR OPT CAB	TMA	S5
0225	83442429	COLOR OPT CAB	TMA	S20
0225	83442429	COLOR OPT CAB	TMA	S21
0225	83442429	COLOR OPT CAB	TMA	S22
0226	83442430	COLOR OPT CAB	TMA	S5
0226	83442430	COLOR OPT CAB	TMA	S20
0226	83442430	COLOR OPT CAB	TMA	S21
0226	83442430	COLOR OPT CAB	TMA	S22
0227	83443510	RACK MOUNT ASSY	TMA	S5
227	83443510	RACK MOUNT ASSY	TMA	S25
228	75884907	RACK MT ASSY	TMA	S5
228	75884907	RACK MT ASSY	TMA	S24
229	83443504	RACK MT ASSY	TMA	S5
229	83443504	RACK MT ASSY	TMA	S23
0230	83443508	RACK MT ASSY	TMA	S5
0230	83443508	RACK MT ASSY	TMA	S23
0231	83443506	RACK MT ASSY	TMA	S5
0231	83443506	RACK MT ASSY	TMA	S23
0232	83443507	RACK MT ASSY	TMA	S5
0232	83443507	RACK MT ASSY	TMA	S23
0233	83443509	RACK MT ASSY	TMA	S5
0233	83443509	RACK MT ASSY	TMA	S23
0234	83442501	COLOR OPT, RACK MT	TMA	S5
0234	83442501	COLOR OPT, RACK MT	TMA	S28
0235	83442502	COLOR OPT, RACK MT	TMA	S5
0235	83442502	COLOR OPT, RACK MT	TMA	S28
0236	83442503	COLOR OPT, RACK MT	TMA	S5
0236	83442503	COLOR OPT, RACK MT	TMA	S28
0237	83442505	COLOR OPT, RACK MT	TMA	S5
0237	83442505	COLOR OPT, RACK MT	TMA	S28
0238	83442506	COLOR OPT, RACK MT	TMA	S5
0238	83442506	COLOR OPT, RACK MT	TMA	S28
0239	83442507	COLOR OPT, RACK MT	TMA	S5
0239	83442507	COLOR OPT, RACK MT	TMA	S28
0240	83442508	COLOR OPT, RACK MT	TMA	S5
0240	83442508	COLOR OPT, RACK MT	TMA	S28
0241	83442509	COLOR OPT, RACK MT	TMA	S5
0241	83442509	COLOR OPT, RACK MT	TMA	S28
0242	83442510	COLOR OPT, RACK MT	TMA	S5
0242	83442510	COLOR OPT, RACK MT	TMA	S28
0243	83442511	COLOR OPT, RACK MT	TMA	S5
0243	83442511	COLOR OPT, RACK MT	TMA	S28
0244	83442512	COLOR OPT, RACK MT	TMA	S5
0244	83442512	COLOR OPT, RACK MT	TMA	S28
0245	83442513	COLOR OPT, RACK MT	TMA	S5
0245	83442513	COLOR OPT, RACK MT	TMA	S28
0246	83442514	COLOR OPT RACK MT	TMA	S5
0246	83442514	COLOR OPT RACK MT	TMA	S28
0247	83442515	COLOR OPT RACK MT	TMA	S5
0247	83442515	COLOR OPT RACK MT	TMA	S28
0248	83442516	COLOR OPT, RACK MT	TMA	S5
0248	83442516	COLOR OPT RACK MT	TMA	S28
0249	75305707	TERMINATOR	TMA	S5
0249	75305707	TERMINATOR	TMA	S29
0250	46338701	TERMINATOR	TMA	S5
0250	46338701	TERMINATOR	TMA	S29
0251	75305703	TERMINATOR	TMA	S5
0251	75305703	TERMINATOR	TMA	S29
0252	75305704	TERMINATOR	TMA	S5
0252	75305704	TERMINATOR	TMA	S29
0253	75305706	TERMINATOR	TMA	S5
0253	75305706	TERMINATOR	TMA	S29
0254	75305705	TERMINATOR	TMA	S5
0254	75305705	TERMINATOR	TMA	S29
0255	75778701	LINECORD	TMA	S5
0256	75778705	LINECORD	TMA	S5
0257	75778710	LINECORD	TMA	S5
0258	75778721	LINE CORD	TMA	S5
0259	75892986	LINECORD	TMA	S5
0260	75758001	NAMEPLATE (ID)	TMA	S5
0261	75795401	NAMEPLATE (942-H)	TMA	S5
0262	75795402	NAMEPLATE (BLNK)	TMA	S5
0263	75795404	NAMEPLATE (ASSY)	TMA	S5
0264	75795405	NAMEPLATE (ASSY)	TMA	S5
0265	75795406	NAMEPLATE	TMA	S5
0266	75795408	NAMEPLATE	TMA	S5
0267	75795309	I-O OPT CAB	TMA	S5
0267	75795309	I-O OPT CAB	TMA	S28
0268	75795307	I-O OPT CAB	TMA	S5
0268	75795307	I-O OPT CAB	TMA	S28
0269	75795308	I-O OPT CAB	TMA	S5
0269	75795308	I-O OPT CAB	TMA	S28
0273	77830537	UL LABEL	TMA	S5
0274	77830538	LABEL - CSA	TMA	S5
0275	77599401	PWR ASSY (INPUT)	TMA	S5
0275	77599401	PWR ASSY (INPUT)	TMA	S30
0276	83492901	PWR ASSY (A.C. OPT)	TMA	S5
0276	83492901	PWR ASSY (A.C. OPT)	TMA	S31
0280	77603741	ELCO CONN OPT	TMA	S5
0281	46337801	I-O CABLE ASSY 10FT	TMA	S5
0282	94224651	LABEL - INFO	TMA	S5
0282	94224651	LABEL-INFO	210	S21
0285	83442517	COLOR OPT, RACK MT	TMA	S5
0285	83442517	COLOR OPT RACK MT	TMA	S28
0286	83442518	COLOR OPT, RACK MT	TMA	S5
0286	83442518	COLOR OPT, RACK MT	TMA	S28
0287	83442519	COLOR OPT, RACK MT	TMA	S5
0287	83442519	COLOR OPT, RACK MT	TMA	S28
0288	83442521	COLOR OPT RACK MT	TMA	S5
0288	83442521	COLOR OPT RACK MT	TMA	S28
0289	83442520	COLOR OPT RACK MT	TMA	S5
0289	83442520	COLOR OPT RACK MT	TMA	S28
0292	83442432	COLOR OPT CAB	TMA	S5
0292	83442432	COLOR OPT CAB	TMA	S20
0292	83442432	COLOR OPT CAB	TMA	S21
0292	83442432	COLOR OPT CAB	TMA	S22
0293	83442433	COLOR OPT CAB	TMA	S5
0293	83442433	COLOR OPT CAB	TMA	S20
0293	83442433	COLOR OPT CAB	TMA	S21
0293	83442433	COLOR OPT CAB	TMA	S22
0294	83442434	COLOR OPT CAB	TMA	S5
0294	83442434	COLOR OPT CAB	TMA	S20
0294	83442434	COLOR OPT CAB	TMA	S21
0294	83442434	COLOR OPT CAB	TMA	S22
0295	83442435	COLOR OPT CAB	TMA	S5
0295	83442435	COLOR OPT CAB	TMA	S20

ITEM	IDENT NO	DESCRIPTION	WHERE USED	SH
0295	83442435	COLOR OPT CAB	TMA	S21
0295	83442435	COLOR OPT CAB	TMA	S22
0296	83442436	COLOR OPT CAB	TMA	S5
0296	83442436	COLOR OPT CAB	TMA	S20
0296	83442436	COLOR OPT CAB	TMA	S21
0296	83442436	COLOR OPT CAB	TMA	S22
0297	83442437	COLOR OPT CAB	TMA	S5
0297	83442437	COLOR OPT CAB	TMA	S20
0297	83442437	COLOR OPT CAB	TMA	S21
0297	83442437	COLOR OPT CAB	TMA	S22
0298	83442438	COLOR OPT CAB	TMA	S5
0298	83442438	COLOR OPT CAB	TMA	S20
0298	83442438	COLOR OPT CAB	TMA	S21
0298	83442438	COLOR OPT CAB	TMA	S22
0301	83429802	HAWK COMMON PARTS	MOD	S6
0301	83429802	HAWK COMMON PARTS	MOD	S11
0301	83429802	HAWK COMMON PARTS	MOD	S12
0301	83429802	HAWK COMMON PARTS	MOD	S13
0307	75740123	HEAD OPTION	MOD	S29
0307	75740123	HEAD OPTION	MOD	S6
0308	75740119	HEAD OPTION	MOD	S29
0308	75740119	HEAD OPTION	MOD	S6
0309	75740115	HEAD OPTION	MOD	S29
0309	75740115	HEAD OPTION	MOD	S6
0310	75740113	HEAD OPTION	MOD	S29
0310	75740113	HEAD OPTION	MOD	S6
0311	75740121	HEAD OPTION	MOD	S29
0311	75740121	HEAD OPTION	MOD	S6
0312	75740124	HEAD OPTION	MOD	S29
0312	75740124	HEAD OPTION	MOD	S6
0313	75740117	HEAD OPTION	MOD	S29
0313	75740117	HEAD OPTION	MOD	S6
0314	75740118	HEAD OPTION	MOD	S29
0314	75740118	HEAD OPTION	MOD	S6
0315	75740114	HEAD OPTION	MOD	S29
0315	75740114	HEAD OPTION	MOD	S6
0320	75740606	HZ RPM DR OPT	MOD	S6
0320	75740606	HZ RPM DR OPT	MOD	S7
0320	75740606	HZ RPM DR OPT	MOD	S8
0321	75740601	HZ RPM DR OPT	MOD	S6
0321	75740601	HZ RPM DR OPT	MOD	S7
0321	75740601	HZ RPM DR OPT	MOD	S8
0322	75740602	HZ RPM DR OPT	MOD	S6
0322	75740602	HZ RPM DR OPT	MOD	S7
0322	75740602	HZ RPM DR OPT	MOD	S8
0323	75740605	HZ RPM DR OPT	MOD	S6
0323	75740605	HZ RPM DR OPT	MOD	S7
0323	75740605	HZ RPM DR OPT	MOD	S8
0327	77830914	PWR SUPPLY ASSY	MOD	S6
0327	77830914	PWR SUPPLY ASSY	MOD	S9
0329	77830916	PWR SUPPLY ASSY	MOD	S6
0329	77830916	PWR SUPPLY ASSY	MOD	S9
0330	77830917	PWR SUPPLY ASSY	MOD	S6
0330	77830917	PWR SUPPLY ASSY	MOD	S9
0332	75795214	I-O OPTION RACK MT	MOD	S6
0333	75795220	I-O OPTION RACK MT	MOD	S6
0334	75795216	I-O OPTION RACK MT	MOD	S6
0335	75795215	I-O OPTION RACK MT	MOD	S6
0336	75795217	I-O OPTION RACK MT	MOD	S6
0337	75795219	I-O OPTION RACK MT	MOD	S6
0338	75795218	I-O OPTION RACK MT	MOD	S6
0339	75795221	I-O OPTION RACK MT	MOD	S6
0340	75795223	I-O OPTION RACK MT	MOD	S6
0341	75795213	I-O OPTION RACK MT	MOD	S6
0342	75795222	I-O OPTION RACK MT	MOD	S6
0344	75795225	I-O OPTION RACK MT	MOD	S6
0345	83444402	SPINDLE DRIVE ASSY	MOD	S6
0345	83444402	SPINDLE DRIVE ASSY	MOD	S7
0346	83474906	BRAKE & SPINDLE DR	MOD	S6
0346	83474906	BRAKE & SPINDLE DR	MOD	S8
0348	75729017	CABLE JUMPER	MOD	S6
0349	94238907	LABEL CAUTION	MOD	S6
0357	83451200	STANDOFF	MOD	S6
0358	83466001	BRUSH DRIVE ASSY	MOD	S18
0358	83466001	BRUSH DRIVE ASSY	MOD	S6
0359	75886347	IDENT PLATE	MOD	S6
0359	75886347	IDENT PLATE	203	S19
0400	83456501	BASE DECK-MACHINED	301	S11
0400	83456501	BASE DECK-MACHINED	301	S12
0400	83456501	BASE DECK-MACHINED	301	S13
0401	83451403	CARTRIDGE REC	301	S11
0402	75308800	COVER MOTOR	301	S13
0403	75286701	SPINDLE	301	S12
0404	75316008	ACTUATOR ASSY	301	S12
0404	75316008	ACTUATOR ASSY	301	S15
0404	75316008	ACTUATOR ASSY	301	S16
0405	75319001	MAGNET ASSY	301	S12
0406	95125324	LOCTITE	423	S17
0406	95125324	LOCTITE	404	S16
0407	75317102	TRANSDUCER-CONN ASSY	301	S12
0408	46317900	CAP-TRANSDUCER END	301	S12
0409	77834644	COVER-ELECTRONICS	301	S11
0410	77598300	BRACKET-CONNECTOR	301	S12
0411	83437400	FILTER-AIR	301	S13
0412	75749000	STANDOFF CLAMP	301	S13
0413	75748903	CLAMP FILTER	301	S13
0414	75308100	EXPANDER-BLOWER	301	S13
0415	75749201	BRACKET-EXPANDER	301	S13
0416	75793103	IDLER ASSY	301	S13
0416	75793103	IDLER ASSY	301	S17
0417	10127112	SCREW PAN HD MACH	345	S7

ITEM	IDENT NO	DESCRIPTION	WHERE USED	SH
0417	10127112	SCREW PAN HD MACH	301	S1
0417	10127112	SCREW PAN HD MACH	485	S1
0417	10127112	SCREW PAN HD MACH	346	S8
0417	10127112	SCREW PAN HD MACH	779	S9
0418	75308502	SPRING IDLER	301	S17
0419	77830700	UNDER COVER ASSY	301	S13
0420	89293100	DISK FIXED, RECORDING	301	S12
0421	75288900	CLAMP - DISC	301	S12
0422	75797301	TRANSDUCER CAM ASSY	301	S12
0423	75315405	TRANSDUCER SCALE ASM	301	S12
0423	75315405	TRANSDUCER SCALE ASM	301	S17
0424	75276203	SPACER NYLON	301	S17
0425	75797700	BAR EXPANSION MACHINE	301	S17
0425	75797700	BAR EXPANSION MACHINE	301	S12
0426	75315801	BRACKET EXPAN	301	S12
0426	75315801	BRACKET EXPAN	301	S17
0427	10126209	SCR-SOC HP CAP	301	S17
0428	92815096	SCREW CAP SOC HD	301	S17
0428	92815096	SCREW CAP SOC HD	404	S15
0429	93788082	SCREW SELF LOCKING 4	301	S12
0429	93788082	SCREW SELF LOCKING 4	301	S17
0430	10127111	SCREW PAN HD MACH	301	S12
0430	10127111	SCREW PAN HD MACH	529	S15
0430	10127111	SCREW PAN HD MACH	358	S18
0430	10127111	SCREW PAN HD MACH	205-226 292-298	S20
0430	10127111	SCREW PAN HD MACH	1026	S31
0430	10127111	SCREW PAN HD MACH	780	S9
0431	10127113	SCREW PAN HD MACH	301	S12
0431	10127113	SCREW PAN HD MACH	470	S14
0431	10127113	SCREW PAN HD MACH	345	S7
0431	10127113	SCREW PAN HD MACH	346	S8
0432	10127121	SCREW PAN HD MACH	301	S11
0432	10127121	SCREW PAN HD MACH	301	S12
0432	10127121	SCREW PAN HD MACH	301	S13
0432	10127121	SCREW PAN HD MACH	358	S18
0432	10127121	SCREW PAN HD MACH	749	S26
0432	10127121	SCREW PAN HD MACH	713	S26
0432	10127121	SCREW PAN HD MACH	519	S18
0432	10127121	SCREW PAN HD MACH	1007	S27
0433	92742201	SCREW PAN HD MACH	301	S13
0434	10127123	SCREW PAN HD MACH	301	S11
0434	10127123	SCREW PAN HD MACH	713	S26
0434	10127123	SCR PAN HD MACH	276	S31
0434	10127123	SCR PAN HD MACH	1026	S31
0434	10127123	SCR PAN HD MACH	275	S30
0434	10127123	SCREW PAN HD MACH	301	S13
0434	10127123	SCREW PAN HD MACH	227	S25
0435	10126255	SCR SOC HD	301	S1
0435	10126255	SCR SOC HD	301	S1
0436	75792900	SCREW IDLER	301	S1
0437	92815197	SCREW CAP SOC HD	301	S1
0438	92815229	SCREW CAP SOC HD	301	S12
0439	10125602	WASHERS PLAIN	301	S17
0439	10125602	WASHERS PLAIN	404	S15
0439	10125602	WASHERS PLAIN	358	S18
0439	10125602	WASHERS PLAIN	519	S18
0440	75304501	ARM-IDLER MACHINED	301	S17
0441	10125605	WASHERS PLAIN	301	S11
0441	10125605	WASHERS PLAIN	301	S12
0441	10125605	WASHERS PLAIN	301	S17
0441	10125605	WASHERS PLAIN	404	S15
0441	10125605	WASHERS PLAIN	519	S18
0441	10125605	WASHERS PLAIN	301	S13
0441	10125605	WASHERS PLAIN	345	S7
0441	10125605	WASHERS PLAIN	346	S8
0441	10125605	WASHERS PLAIN	327 329 330	S9
0441	10125605	WASHERS PLAIN	779	S9
0441	10125605	WASHERS PLAIN	485	S18
0441	10125605	WASHERS PLAIN	470	S14
0442	10125606	WASHERS PLAIN	301	S11
0442	10125606	WASHERS PLAIN	301	S13
0442	10125606	WASHERS PLAIN	358	S18
0442	10125606	WASHERS PLAIN	404	S15
0442	10125606	WASHERS PLAIN	404	S16
0442	10125606	WASHERS PLAIN	205-226 292-298	S20
0442	10125606	WASHERS PLAIN	713	S26
0442	10125606	WASHERS PLAIN	276	S31
0442	10125606	WASHERS PLAIN	275	S30
0442	10125606	WASHERS PLAIN	229 230	S23
0442	10125606	WASHERS PLAIN 8	228	S24
0442	10125606	WASHERS PLAIN	205-226 292-295	S21
0442	10125606	WASHERS PLAIN	1007	S27
0442	10125606	WASHERS PLAIN	227	S25
0443	10125607	WASHERS PLAIN	301	S12
0443	10125607	WASHERS PLAIN	202 203	S19
0443	10125607	WASHERS PLAIN	237	S28
0443	10125607	WASHERS PLAIN	243 247	S28
0443	10125607	WASHERS PLAIN	229 230 233	S23
0443	10125607	WASHERS PLAIN	776-778	S10
0443	10125607	WASHERS PLAIN	275	S30
0443	10125607	WASHERS PLAIN	1026	S31
0443	10125607	WASHERS PLAIN 10	228	S24
0443	10125607	WASHER PLAIN	227	S25
0444	10125800	WASHERS SPR	301	S17
0445	10125804	WASHERS SPR LOCK	345	S7
0445	10125804	WASHERS SPR LOCK	346	S8
0445	10125804	WASHERS SPR LOCK	301	S1
0445	10125804	WASHERS SPR LOCK	301	S1
0445	10125804	WASHERS SPR LOCK	301	S1
0445	10125804	WASHERS SPR LOCK	301	S1
0445	10125804	WASHERS SPR LOCK	358	S18

ITEM	IDENT NO	DESCRIPTION	WHERE USED	SH
0445	10125804	WASHERS SPR LOCK	519	S19
0445	10125804	WASHERS SPR LOCK	404	S15
0445	10125804	WASHERS SPR LOCK	404	S16
0445	10125804	WASHERS SPR LOCK	749	S26
0445	10125804	WASHERS SPR LOCK	713	S26
0445	10125804	WASHERS SPR LOCK	267-269	S28
0445	10125804	WASHERS SPR LOCK	228	S24
0445	10125804	WASHERS SPR LOCK	1007	S27
0446	10125803	WASHERS SPR LOCK	301	S11
0446	10125803	WASHERS SPR LOCK	301	S12
0446	10125803	WASHERS SPR LOCK	301	S17
0446	10125803	WASHERS SPR LOCK	485	S18
0446	10125803	WASHERS SPR LOCK	526	S16
0446	10125803	WASHERS SPR LOCK	404	S15
0446	10125803	WASHERS SPR LOCK	470	S14
0446	10125803	WASHERS SPR LOCK	519	S18
0446	10125803	WASHERS SPR LOCK	346	S8
0446	10125803	WASHERS SPR LOCK	780	S9
0446	10125803	WASHERS SPR LOCK	779	S9
0447	10126228	SCR HEX SOC HD	301	S17
0447	10126228	SCR HEX SOC HD	776-778	S10
0448	10125805	WASHERS SPR LOCK	301	S11
0448	10125805	WASHERS SPR LOCK	301	S12
0448	10125805	WASHERS SPR LOCK	713	S26
0448	10125805	WASHERS SPR LOCK	1007	S27
0449	10125105	NUT HEX MACH	470	S14
0449	10125105	NUT HEX MACH	345	S7
0449	10125105	NUT HEX MACH	346	S8
0449	10125105	NUT HEX MACH	301	S11
0449	10125105	NUT HEX MACH	301	S13
0449	10125105	NUT HEX MACH	201-203	S19
0449	10125105	NUT HEX MACH	205-211 213-215	S20
0449	10125105	NUT HEX MACH	217-226 292-298	S20
0450	75792800	IDLER	416	S17
0451	75806504	WASHER-REDUCED	301	S17
0451	75806504	WASHER-REDUCED	205-226 292-298	S20
0451	75806504	WASHER REDUCED	519	S18
0453	92615006	WASHER-SHOULDER FIBE	301	S11
0454	93728222	SCREW PH HD MACH	301	S11
0455	75796902	DAMPER-OSCILLATION	301	S12
0456	75313921	ADHESIVE RUBBER BASE	301	S12
0457	75800400	PIN-ACTUATOR ALIGNMENT	301	S12
0458	10125106	NUT HEX MACH	301	S12
0458	10125106	NUT HEX MACH	404	S15
0458	10125106	NUT HEX MACH	205-211 213-215	S20
458	10125106	NUT HEX MACH	217-226 292-298	S20
458	10125106	NUT HEX MACH	713	S26
458	10125106	NUT HEX MACH	776-778	S10
458	10125106	NUT HEX MACH	275	S30
0458	10125106	NUT HEX MACH	1007	S27
0459	92054227	CR BEARING BALL	416	S17
0460	24547502	PLATE, WARNING	301	S11
0460	24547502	PLATE, WARNING	301	S13
0461	10126402	WASH EXT TOOTH LO	301	S13
0461	10126402	WASH EXT TOOTH LO	202 203	S19
0461	10126402	WASH EXT TOOTH LO	205-211 213-215	S21
0461	10126402	WASH EXT TOOTH LO	217-226 292	S21
0461	10126402	WASH EXT TOOTH LO	295-298	S21
0461	10126402	WASH EXT TOOTH LO	237	S28
0461	10126402	WASH EXT TOOTH LO	243 247	S28
0461	10126402	WASH EXT TOOTH LO	229-232	S23
0461	10126402	WASH EXT TOOTH LO	776-778	S10
0461	10126402	WASHERS EXT TOOTH LO	227	S25
0462	51853006	CLAMP, CABLE ADHESIVE	301	S13
0462	51853006	CLAMP, CABLE ADHESIVE	301	S12
0463	75800602	RETRACT HARNESS ASSY	301	S12
0464	75739501	PRE-AMP HARNESS ASSY	301	S12
0465	75739701	SWITCH BOARD HARNESS	301	S12
0466	92021004	PIN, DOWEL	301	S12
0466	92021004	PIN, DOWEL	301	S13
0466	92021004	PIN, DOWEL	423	S17
0467	51853005	CLAMP	301	S12
0467	51853005	CLAMP	301	S13
0468	10127125	SCREW PAN HD MACH	301	S13
0468	10127125	SCREW PAN HD MACH	404	S16
0468	10127125	SCREW PAN HD MACH	202 203	S19
0468	10127125	SCREW PAN HD MACH	275	S30
0469	95125305	LOCTITE GRADE C	526	S16
0469	95125305	LOCTITE GRADE C	301	S12
0469	95125305	LOCTITE GRADE C	301	S17
0469	95125305	LOCTITE GRADE C	404	S16
0470	75308012	CARD CAGE ASSY	301	S11
0470	75308012	CARD CAGE ASSY	301	S14
0471	92824097	SCREW CAP	423	S17
0472	10127114	SCR PAN HD	301	S12
0472	10127114	SCR PAN HD	301	S11
0472	10127114	SCR PAN HD	301	S13
0472	10127114	SCR PAN HD	470	S14
0473	46334400	LABEL-CAUTION	301	S11
0474	83495900	PLATE-IND PWR SU	301	S11
0475	77830539	IDENT PLATE-PRODUCT	301	S12
0476	75797100	STAND OFF	301	S12
0476	75797100	STAND OFF	301	S17
0477	10126215	SCREW CAP SOCKET	301	S12
77	10126215	SCREW CAP SOC HD	301	S13
78	10125603	WASHERS PLAIN	301	S17
78	10125603	WASHERS PLAIN	779	S9
78	10125603	WASHERS PLAIN	404	S15
78	10125603	WASHERS PLAIN	528	S15
0479	10125801	WASHERS SPR LOCK	301	S17
0479	10125801	WASHERS SPR LOCK	404	S15
0479	10125801	WASHERS SPR LOCK	404	S16
0479	10125801	WASHERS SPR LOCK	528	S15
0479	10125801	WASHERS SPR LOCK	346	S8
0479	10125801	WASHERS SPR LOCK	779	S9
0480	12211011	LUBRIPLATE 30-AA	301	S12
0481	77835140	GROUND STRAP	301	S11
0481	77835140	GROUND STRAP	301	S13
0482	10126403	WASH EXT TOOTH LO	301	S11
0482	10126403	WASH EXT TOOTH LO	301	S12
0482	10126403	WASH EXT TOOTH LO	201-203	S19
0482	10126403	WASH EXT TOOTH LO	776-778	S10
0482	10126403	WASH EXT TOOTH LO	276	S31
0482	10126403	WASH EXT TOOTH LO	780	S9
0483	75769100	LABEL-SWITCH	301	S11
0484	10127122	SCREW PAN HD MACH	237	S28
0484	10127122	SCREW PAN HD MACH	243 247	S28
0484	10127122	SCREW PAN HD MACH	229 231 232	S23
0484	10127122	SCREW PAN HD MACH	776-778	S10
0484	10127122	SCREW PAN HD MACH	227	S25
0485	83451602	MAGNETIC SENSOR ASSY	301	S11
0485	83451602	MAGNETIC SENSOR ASSY	301	S18
0486	75880261	FRONT PANEL	228	S24
0487	94655401	PIN, HITCH	301	S12
0488	83415603	LABEL	404	S15
0489	83415607	LABEL	301	S11
0489	83415607	LABEL	301	S12
0490	75312751	SPEC-EPOXY ADHESIVE	301	S17
0491	83451700	STRAP-GRND, PWR SPLY	301	S11
0492	95694202	SPACER-BRASS	301	S11
0493	10127146	SCREW PAN HD MACH	301	S11
0493	10127146	SCREW PAN HD MACH	301	S12
0494	92615012	WASHER-SHOULDER FIBE	301	S11
0495	83482400	SECTOR RING ASSY 8	301	S17
0495	83482400	SECTOR RING ASSY 8	301	S12
0496	83443101	STUD-STUB	301	S17
0497	83443200	STUD-SNUB	301	S17
0498	83443301	CLUTCH SNUBBING	301	S17
0499	92033011	RING-RETAINING	301	S17
0500	93109310	SPACER 1 OD =6	301	S17
0501	83457100	BLOWER ASSY	301	S13
0502	75802301	VOLTAGE ADJUST PLUG	301	S11
0503	75793803	SENSOR CABLE ASSY	301	S13
0504	93115287	SCREW PAN	301	S13
0504	93115287	SCREW SELF LK	229 231 232	S23
0504	93115287	SCREW PAN	205-226 292-298	S20
0504	93115287	SCREW PAN	237 243 247	S28
0505	83445800	MOUNT-SENSOR	301	S13
0506	83445900	BRACKET-STATIC GRND	301	S13
0507	40054700	SPRING STATIC GROUND	301	S13
0508	75793802	SENSOR CABLE ASSY	485	S18
0509	73669601	LABEL-CONFIG	301	S11
0510	10126401	WASH EXT TOOTH LO	301	S13
0510	10126401	WASH EXT TOOTH LO	345	S7
0510	10126401	WASH EXT TOOTH LO	404	S15
0510	10126401	WASH EXT TOOTH LO	346	S8
0510	10126401	WASH EXT TOOTH LO	205-211 213-215	S20
0510	10126401	WASH EXT TOOTH LO	217-226 292-298	S20
0510	10126401	WASH EXT TOOTH LO	201-203	S19
0511	92021001	PIN-DOWEL .125X.38	301	S13
0512	83442175	FRONT PNAL RACK PAINT	287	S28
0513	92021093	PIN-DOWEL	301	S12
0514	75312013	SPEC TAPE	205-211 213-215	S20
0514	75312013	SPEC TAPE	217-226 292-298	S20
0514	75312013	SPEC TAPE	301	S12
0515	75884887	BRKT ASSY L.H.	228	S24
0516	72959300	LABEL-FIELD CHANGE L	301	S11
0517	75886381	LUBRICANT	301	S17
0518	10125030	SCREW HEX HD	201-203	S19
0519	83457901	PACKLOCK ASSY	301	S12
0519	83457901	PACKLOCK ASSY	301	S18
0520	75739105	RECEIVER HARNESS ASSY	301	S12
0521	83450500	BRACKET-SWITCH BD	301	S12
0522	10125920	SCREW FL HD	301	S18
0523	92196031	NUT-SPEED	301	S12
0524	95649726	GROMMET-BLOWER MTG	301	S13
0525	75316103	FRAME-ACTUATOR MACH	404	S15
0526	83475501	CARRIAGE ASSY	404	S16
0527	75319603	COIL ASSY	404	S16
0528	83447302	DETECTOR ASSY-END TR	404	S15
0529	75317900	SCALE-VERNIER FIXED	404	S15
0530	75797400	BRACKET-BUMPER, CAST	404	S15
0531	75317501	STRIP-BACKUP ACTUATOR	404	S15
0532	75884902	BRKT ASSY R.H.	228	S24
0533	75317200	CAM-HEAD ARM	404	S15
0534	93623000	BUMPER, RUBBER	404	S15
0535	73228200	PLATE-ARM CLAMP	404	S16
0536	75296101	WASHER PHENOLIC	404	S15
0536	75296101	WASHER PHENOLIC	404	S16
0537	75296201	SPACER PHENOLIC	404	S15
0537	75296201	SPACER PHENOLIC	404	S16
0538	73555300	STRIP-BACKUP	404	S16
0539	75797500	LEAD-FLEX COIL PR	404	S15
0539	75797500	LEAD-FLEX COIL PR	404	S16
0540	73555101	INSULATOR-FLEX LEAD	404	S15
0540	73555101	INSULATOR-FLEX LEAD	404	S16
0541	92549007	SW SUBMINIATURE BASI	404	S15
0542	75800502	COIL POWER HARNESS	404	S15
0543	10127169	SCREW PAN HD MACH	404	S15
0544	10127104	SCREW PAN HD MACH	404	S15
0545	83442106	FRONT PNL RACK PAINT	235	S28
0545	83442106	FRONT PNL RACK PAINT	243 247	S28

ITEM	IDENT NO	DESCRIPTION	WHERE USED	SH
0546	10127124	SCREW PAN HD MACH	404	S15
0546	10127124	SCREW PAN HD MACH	205-226 292-298	S20
0546	10127124	SCREW PAN HD MACH	749	S26
0546	10127124	SCREW PAN HD MACH	713	S26
0546	10127124	SCREW PAN HD MACH	229 231 232	S23
0546	10127124	SCREW PAN HEAD MACH	301	S12
0546	10127124	SCREW PAN HD MACH	1007	S27
0546	10127124	SCREW PAN HD MACH	227	S25
0547	83442109	FRONT PNL RACK PAINT	236	S28
0547	83442109	FRONT PNL RACK PAINT	237 247	S28
0548	83425143	PNL TOP CVR REAR	226	S22
0549	92815160	SCREW CAP SOC HD	404	S15
0550	92815193	SCREW CAP SOC HD	404	S16
0551	92815195	SCREW CAP SOC HD	404	S15
0552	83443743	PNL TOP CVR RH	226	S22
0553	75319801	VELOCITY TRANSDUCER	407	S12
0554	83443843	PNL TOP CVR LH	226	S22
0555	83475831	PNL END FRONT BEIGE	218	S22
0556	10126101	WASH INT TOOTH LK	404	S15
0556	10126101	WASH INT TOOTH LK	776-778	S10
0557	10126100	WASH INT TOOTH LK	404	S15
0557	10126100	WASH INT TOOTH LK	404	S16
0557	10126100	WASH INT TOOTH LK	526	S16
0557	10126100	WASH INT TOOTH LK	358	S18
0558	83444701	JUMPER ASSY	267-269	S28
0559	75738604	RESISTOR MODULE 110	251 252	S29
0560	83451810	INSULATOR	228	S24
0561	83442143	FRONT PNL RACK PAINT	240	S28
0562	77834340	FRONT PNL RACK PAINT	245	S28
0563	83490600	CLIP-CLAMP	404	S16
0564	77834401	FRONT PNL RACK PAINT	244	S28
0565	83493900	BRACKET-CHANNEL	404	S15
0566	83493800	CHANNEL-UPPER	404	S15
0567	83494200	CLAMP-WIRE	404	S15
0568	83494001	CLAMP-SPIRAL GUIDE	404	S15
0569	83454400	STIFFNER	404	S15
0569	83454400	STIFFNER	404	S16
0570	83494500	CLAMP-CHANNEL	404	S16
0571	10127105	SCREW PAN HD MACH	404	S15
0571	10127105	SCREW PAN HD MACH	404	S16
0571	10127105	SCREW PAN HD MACH	776-778	S10
0572	10127102	SCREW PAN HD	404	S15
0573	83478301	SLIDE ASSY RH	713	S26
0573	83478301	SLIDE ASSY RH	1007	S27
0574	00863701	CLAMP CABLE	528	S15
0575	75316600	CARRIAGE ACTUATOR	526	S16
0576	73197400	SPR-BEARING ASSY	526	S16
0577	73584400	BASE-ARM CLAMP	526	S16
0578	73197000	SPRING BEARING	526	S16
0579	75317700	SCALE-VERNIER MOVING	526	S16
0580	92054251	BALL BEARING	526	S16
0581	93115168	SCR HEX SOC HD	301	S17
0582	83478302	SLIDE ASSY LH	713	S26
0582	83478302	SLIDE ASSY LH	1007	S27
0583	92815097	SCREW CAP SOC HD	526	S16
0584	10126219	SCR HEX SOC HD CAP	526	S16
0585	83443601	KNOB ASSY	713	S26
0585	83443601	KNOB ASSY	1007	S27
0586	93344096	SCREW NYLON	526	S16
0587	93071163	SCREW SET SOC HD	526	S16
0587	93071163	SCREW SET SOC HD	485	S18
0588	83475401	POS TRANSDUCER SL-CO	526	S16
0589	75314202	SCALE-END	526	S16
0590	10127144	SCREW PAN HD	713	S26
0590	10127144	SCREW PAN HD	1007	S27
0591	77617072	SCREW CAP	423	S17
0592	77617079	SCREW CAP	423	S17
0593	10127311	SCREW SLOTTED	526	S16
0594	75806501	WASHER-REDUCED O.D.	526	S16
0595	83494400	CHANNEL-MODULE	526	S16
0596	75806503	WASHER	526	S16
0596	75806503	WASHER	358	S18
0596	75806503	WASHER	327 329 330	S9
0597	10125015	SCR PAN HD	404	S15
0598	83441700	CAP-COIL MACHINED	527	S16
0599	94258205	WIRE-MAGNET	527	S16
0600	95280500	EPOXY, IMPREGNATING	527	S16
0601	75786000	INSULATION MAT	527	S16
0602	93355001	MARKER, WIRE NUMBER 1	527	S16
0603	75803502	STRIP-PRESSURE	527	S16
0604	77612607	OPTICAL SWITCH ASSY	528	S15
0605	83447401	PLATE-DETECTOR MTG	528	S15
0606	83447500	ADAPTER-HORIZ POS	528	S15
0607	83442178	FRONT PNL RACK PAINT	289	S28
0608	93211009	WASHER PLAIN 10	713	S26
0608	93211009	WASHER PLAIN 10	1007	S27
0609	75738610	RESISTOR MODULE 1K	251	S29
0610	93109322	SPACER	713	S26
0610	93109322	SPACER	1007	S27
0611	75738607	RESISTOR MODULE 330	252 254	S29
0612	10127346	SCR PH	713 749	S26
0612	10127346	SCREW	1007	S27
0613	75315501	SCALE-FLEX MOUNT	423	S17
0614	75315600	MOUNT-TRANSDUCER	423	S17
0615	75315901	POS TRANS SCALE	423	S17
0616	75797001	BASE TRANSDUCER MOUNT	423	S17
0617	75797200	PIN XDUCER ALIGNMENT	423	S17
0618	83436601	FENDER CABLE	749	S26
0618	83436601	FENDER CABLE	713	S26
0618	83436601	FENDER CABLE	1007	S27
0619	93463999	WIRE 18 WHITE	776-778	S10
0620	94277400	STRAP, CABLE TIE	776-778	[illegible]
0621	92720042	SCREW BUTTON HD	423	S17
0622	77610636	SCREW SELF LK	301	S11
0623	93651029	WASHER, BELLEVILLE	423	S17
0624	94277416	TIE WRAP	404	S16
0625	83466801	PNL CNTL RACK SLKSCN	238	S28
0626	95010890	GREASE-LUBRIPLATE	423	S17
0627	83442123	FRONT PNL RACK PAINT	239	S28
0629	75303204	CARD CAGE	470	S14
0630	75740002	STOP-CIRCUIT BOARD	470	S14
0631	75751801	GUIDE-CIRCUIT	470	S14
0632	75792601	COVER MOTHER	470	S14
0633	75799402	CLIP-HEAD CABLE, QUAL	470	S14
0634	83445400	GUIDE WIRE	470	S14
0635	75739900	COVER-CARD CAGE	470	S14
0636	95655501	SCREW SHEET METAL	470	S14
0638	95655500	SCREW SHEET METAL	470	S14
0639	10126103	WASH INT TOOTH LK	358	S18
0639	10126103	WASH INT TOOTH LK	327 329 330	S9
0639	10126103	WASH INT TOOTH LK	485	S18
0639	10126103	WASH INT TOOTH LK	205-226 292-298	S20
0639	10126103	WASH INT TOOTH LK	1026	S31
0640	75293953	CONNECTOR HOUSING	407	S12
0641	75803300	CLAMP-CAGE COVER	470	S14
0642	75803500	STRIP-CORK RUBBER	470	S14
0643	75803501	STRIP-CORK RUBBER	470	S14
0644	75802700	LABEL-CARD LOCATION	470	S14
0645	83479600	STOP-KEYED INJ MOLD	470	S14
0646	75803503	STRIP-PRESSURE	470	S14
0647	75803802	INSULATOR-FISHPAPER	470	S14
0648	75764700	ADHESIVE SPRAY	470	S14
0649	83442166	FRONT PNL RACK PAINT	241	S28
0650	83442154	FRONT PNL BCK PAINT	242	S28
0651	94862902	GROMMET STRIP	780	S9
0652	75740701	BRUSH MOTOR ASSY	358	S18
0653	83466100	BRUSH DRIVE MOUNT	358	S18
0654	83466200	BRUSH HOLDER	358	S18
0655	83466300	DELAY ARM	358	S18
0656	83466400	BRUSH HOLDER STUD	358	S18
0657	40024501	BRUSH, DISK	358	S18
0658	40024502	BRUSH, DISK	358	S18
0659	36159806	SWITCH-PIVOT LEVER	358	S18
0660	92742011	SCREW M-C PAN HD	358	S18
0661	92196007	NUT-SPEED	749	S26
0661	92196007	NUT-SPEED	713	S26
0661	92196007	NUT-SPEED	1026	[illegible]
0661	92196007	NUT-SPEED	275	[illegible]
0661	92196007	NUT-SPEED, TYPE	1007	[illegible]
0662	10125919	SCREW FLAT HD	358	[illegible]
0663	83479501	LATCH ASSY	713	[illegible]
0663	83479501	LATCH ASSY	1007	S27
0664	93211008	WASHER	713	S26
0664	93211008	WASHER	1007	S27
0664	93211008	WASHER	227	S25
0665	83484500	MOUNT-SLIDE	713	S26
0665	83484500	MOUNT-SLIDE	227	S25
0666	93529003	WASHER, SPRING WAVE	358	S18
0667	83467100	BRUSH INDICATOR	358	S18
0668	10126212	SCR HEX SOC HD CAP	358	S18
0668	10126212	SCR HEX SOC HD CAP	404	S16
0668	10126212	SCR HEX SOC HD CAP	423	S17
0669	83484602	MOUNT-SLIDE KEYED	749	S26
0669	83484602	MOUNT-SLIDE KEYED	713	S26
0669	83484602	MOUNT-SLIDE KEYED	1007	S27
0669	83484602	MOUNT-SLIDE KEYED	227	S25
0670	83457201	ARM LOCK MOLDER	519	S18
0671	83457302	PACK LOCK BRACKET	519	S18
0672	75738608	RESISTOR MODULE	254	S29
0673	77598701	SPRING ARM	519	S18
0674	77598501	SWITCH SUBMINIATURE	519	S18
0675	94357803	SOLENOID DC	519	S18
0676	10127332	SCREW PAN HD MACH	519	S18
0677	83485700	STABILIZER	713	S26
0677	83485700	STABILIZER	227	S25
0678	75284701	HANDLE PULL RACK	237	S28
0678	75284701	HANDLE-PULL RACK	243 247	S28
0678	75284701	HANDLE-PULL RACK	229 231 232	S23
0678	75284701	HANDLE-PULL RACK	227	S25
0679	18607916	SCREW THD CUTTING	519	S18
0680	77617079	SCREW CAP	301	S12
0681	93530436	ROLL PIN	519	S18
0682	75779867	SPRING	519	S18
0683	83425343	DOOR ACC	226	S22
0684	75738654	RESISTOR MODULE 220	249	S29
0685	83444200	ANGLE-FRT PANEL	237	S28
0685	83444200	ANGLE-FRT PANEL	243 247	S28
0685	83444200	ANGLE-FRT PANEL	229 231 232	S23
0685	83444200	ANGLE-FRT PNL	227	S25
0686	10127120	SCREW PAN HD MACH	267-269	S28
0686	10127120	SCREW PAN HD MACH	519	S18
0686	10127120	SCREW PAN HD MACH	205-211 213-215	S20
0686	10127120	SCREW PAN HD MACH	217-226 292-298	S20
0686	10127120	SCREW PAN HD MACH	237 243 247	S28
0686	10127120	SCREW PAN HD MACH	229 231 232	S23
0686	10127120	SCREW PAN HD MACH	228	[illegible]
0686	10127120	SCREW PAN HD MACH	227	[illegible]
0687	92172000	BUMPER RUBBER	237	[illegible]
0687	92172000	BUMPER RUBBER	243 247	[illegible]
0687	92172000	BUMPER RUBBER	229 231 232	[illegible]
0687	92172000	BUMPER, RUBBER	228	S2[illegible]
0687	92172000	BUMPER, RUBBER	227	S25

ITEM	IDENT NO	DESCRIPTION	WHERE USED	SH
0688	83445706	FRAME CABINET	201 202	S19
0689	75884516	SHOCK MOUNT-LORD	201-203	S19
0690	73469100	PIVOT-COVER	201-203	S19
0691	73469101	PIVOT-COVER	201-203	S19
0692	93697013	LEVELER	201-203	S19
0693	93006033	NUT JAM HEX	201-203	S19
0694	75730805	CABLE ASSY GROUND	201-203	S19
0694	75730805	CABLE ASSY GROUND	237	S28
0694	75730805	CABLE ASSY GROUND	243 247	S28
0694	75730805	CABLE ASSY GROUND	229-232	S23
0694	75730805	CABLE ASSY GROUND	227	S25
0695	75766700	FASTENER-NYLON	201-203	S19
0695	75766700	FASTENER-NYLON	205-211 213-215	S21
0695	75766700	FASTENER-NYLON	217-226 292-298	S21
0696	83444100	GROUND WIPER	201-203	S19
0697	17901508	SCR THD ROLL	201-203	S19
0697	17901508	SCR THD ROLL	205-211 213-215	S21
0697	17901508	SCR THD ROLL	217-226 292-298	S21
0698	93592200	SCR TPG HEX PNL	201-203	S19
0698	93592200	SCR TPG HEX PNL	276	S31
0698	93592200	SCR TPG HEX PNL	275	S30
0699	75306101	TETHER-LINE	301	S11
0700	83478643	PNL SIDE	226	S22
0700	94238905	LABEL, CAUTION	227	S25
0701	10125108	NUT HEX MACH	201-203	S19
0701	10125108	NUT HEX MACH	713	S26
0701	10125108	NUT HEX MACH	276 1026	S31
0701	10125108	NUT HEX MACH	275	S30
0701	10125108	NUT HEX MACH	1007	S27
0702	10125303	NUT HEXAGON	201-203	S19
0703	75884517	SHOCK MOUNT-LORD	201-203	S19
0704	10125301	NUT HEXAGON	201-203	S19
0705	83492800	PLATE-COVER	201-203	S19
0706	94281426	BR CABLE, GROUND	201-203	S19
0706	94281426	BR CABLE GROUND	276	S31
0707	83474601	FIRE-STOP, REAR	201-203	S19
0708	92742196	SCREW M-C PAN HD	201	S19
0709	92723234	SCREW BUTTON SOC HD	201-203	S19
0709	92723234	SCREW BUTTON SOC HD	205-211 213-215	S21
0709	92723234	SCREW BUTTON SOC HD	217-226 292-298	S21
0710	77831951	FIRE-STOP, FRONT	201-203	S19
0711	10127347	SCREW PAN HD MACH	713	S26
0711	10127347	SCREW PAN HD MACH	229	S23
0711	10127347	SCREW PAN HD MACH	228	S24
0711	10127347	SCREW PAN HD MACH	205-226 292-298	S20
0711	10127347	SCREW PAN HD MACH	1007	S27
0711	10127347	SCREW PAN HD MACH	227	S25
0712	10126104	WASH INT TOOTH LK	205-226 292-298	S20
0712	10126104	WASH INT TOOTH LK	749	S26
0712	10126104	WASH INT TOOTH LK	713	S26
0712	10126104	WASH INT TOOTH LK	237	S28
0712	10126104	WASH INT TOOTH LK	243 247	S28
0712	10126104	WASH INT TOOTH LK	229 231 232	S23
0712	10126104	WASH INT TOOTH LK	776-778	S10
0712	10126104	WASH INT TOOTH LK	276	S31
0712	10126104	WASH INT TOOTH LK	275	S30
0712	10126104	WASH INT TOOTH LOCK	228	S24
0712	10126104	WASHER INT TOOTH LOCK	1007	S27
0712	10126104	WASH INT TOOTH LOCK	227	S25
0713	83447805	INSTLN KIT-RACK MT	229 231	S26
0713	83447805	INSTLN KIT-RACK MT	229 231 233	S23
0714	75804800	AIR FILTER	201-203	S19
0715	77599600	GASKET BLOWER CAB	201-203	S19
0716	83478200	COVER	201-203	S19
0717	83478700	CLAMP	201	S19
0718	83478701	CLAMP	202 203	S19
0719	83494801	PLATE, AC CABLE	201-203	S19
0720	93522008	PLUG-SNAP BUTTON	201-203	S19
0721	83410562	GASKET STRIP PRESSURE	201-203	S19
0721	83410562	GASKET STRIP PRESSURE	301	S11
0722	92932206	SCR FLAT HD SST	201-203	S19
0723	83451806	INSULATOR ADHESIVE	237	S28
0723	83451806	INSULATOR ADHESIVE	243 247	S28
0723	83451806	INSULATOR ADHESIVE	229 231 232	S23
0723	83451806	INSULATOR, ADH BACK	228	S24
0723	83451806	INSULATOR, ADH BACK	227	S25
0724	51669404	TERMINAL	231	S23
0726	83444900	SHIM PLATE	201-203	S19
0727	83457001	AIR INTAKE	237	S28
0727	83457001	AIR INTAKE	243 247	S28
0727	83457001	AIR INTAKE	229 230 233	S23
0727	83457001	AIR INTAKE	228	S24
0727	83457001	AIR INTAKE	227	S25
0728	77832300	CLAMP	202	S19
0729	10127128	PAN HD MACH SCR	237	S28
0729	10127128	PAN HD MACH SCR	243 247	S28
0729	10127128	PAN HD MACH SCR	229 230 233	S23
0729	10127128	PAN HEAD MACH SCREW	228	S24
0729	10127128	PAN HEAD MACH SCREW	227	S25
0730	75722910	BELT-DRIVE NEOPRENE	323	S7
0730	75722910	BELT-DRIVE NEOPRENE	323	S8
0731	77599708	PULLEY-DRIVE MOTOR	323	S7
0731	77599708	PULLEY-DRIVE MOTOR	323	S8
0732	77617051	SCR CAP SOC	320-323	S7
0732	77617051	SCR CAP SOC	320-323	S8
0733	77599800	COLLAR-MOTOR PULLEY	320-323	S7
0733	77599800	COLLAR-MOTOR PULLEY	320-323	S8
0734	83485302	PLATE-DYNAMIC MOTOR	345	S7
0734	83485302	PLATE-DYNAMIC MOTOR	346	S8
0735	83456001	DRIVE MTR HARNESS AS	345	S7
0736	94255105	CAPACITOR-MOTOR AC 2	345	S7
0736	94255105	CAPACITOR-MOTOR AC 2	346	S8
0737	94260500	ACCESSORIES-CAPACITOR	345	S7
0737	94260500	ACCESSORIES-CAPACITOR	346	S8
0738	94260503	ACCESSORIES-CAPACITOR	345	S7
0738	94260503	ACCESSORIES-CAPACITOR	346	S8
0739	10125747	SCR FLAT HD	345	S7
0739	10125747	SCR FLAT HD	346	S8
0740	10125725	SCR FLAT HD	345	S7
0740	10125725	SCR FLAT HD	346	S8
0741	77604000	PRE-FILTER-FILTER	237	S28
0741	77604000	PRE-FILTER-FILTER	243 247	S28
0741	77604000	PRE-FILTER-FILTER	229-231 233	S23
0741	77604000	PRE-FILTER-FILTER	228	S24
0741	77604000	PRE-FILTER-FILTER	227	S25
0742	75284702	HANDLE-PULL RACK	228	S24
0743	83457401	DC SPINDLE HARN ASSY	345	S7
0744	75885250	SW SOLID STATE 600V	345	S7
0744	75885250	SW SOLID STATE 600V	346	S8
0745	83457601	AC SPINDLE HARN ASSY	345	S7
0746	00845503	GROMMET-CATERPILLAR	345	S7
0746	00845503	GROMMET-CATERPILLAR	346	S8
0747	75312701	ADHESIVE, EPOXY	345	S7
0747	75312701	ADHESIVE, EPOXY	346	S8
0748	92602002	CLAMP, CABLE-NYLON	345	S7
0748	92602002	CLAMP, CABLE-NYLON	327 329 330	S9
0749	83447806	INSTLN KIT-RACK MT	230	S26
0749	83447806	INSTLN KIT-RACK MT	228	S24
0750	77830734	LABEL-SWITCH	301	S11
0751	94309802	POD, TERMINAL INSULAT	345	S7
0751	94309802	POD, TERMINAL INSULAT	346	S8
0752	93154948	TUBING, SHRINKING	345	S7
0753	83475843	PNL END	226	S22
0754	22940902	RELAY SOCKET	346	S8
0755	83455800	INSULATOR MOTHER COV	470	S14
0756	36085800	TERMINAL STRIP-LUG T	346	S8
0757	83467401	BRAKE MOTOR ASSY	346	S8
0758	83474701	BAR-LOCKING	346	S8
0759	83474800	BLOCK-SPACER	346	S8
0760	22940804	RELAY	346	S8
0761	22940903	SPRING-RETAINER SOCK	346	S8
0762	95582004	RECT BRIDGE	346	S8
0763	94245602	CONTACT CRIMP INSERT	407	S12
0764	10127106	SCREW PAN HD MACH	346	S8
0765	77834781	WARNING LABEL	301	S11
0766	95655503	SCREW	346	S8
0767	83484400	QUADRACLIP	301	S11
0768	75738655	RESISTOR MODULE 330	249 253	S29
0769	94351001	RECEPTACLE	250	S29
0770	92602003	CLAMP, CABLE-NYLON	346	S8
0771	83467501	A.C. BRAKE HARNESS	346	S8
0772	83467701	D.C. BRAKE HARNESS	346	S8
0773	50241001	DIODE SILICON	346	S8
0774	75808549	CAP 100V 10R .10UF	346	S8
0775	92512142	RESISTOR	346	S8
0776	83484106	POWER SUPPLY CHASSIS A	329	S9
0776	83484106	POWER SUPPLY CHASSIS A	329	S10
0777	83475604	PWR SPLY CHASSIS ASM	330	S9
0777	83475604	PWR SPLY CHASSIS ASM	330	S10
0778	83484105	POWER SUPPLY CHASSIS A	327	S9
0778	83484105	POWER SUPPLY CHASSIS A	327	S10
0779	83475105	PWR BD ASM PIGGYBACK	327 329 330	S9
0780	83484002	COVER ASSY-PWR SPY 2	327 329 330	S9
0781	94351002	COVER	250	S29
0782	93747025	RECEPTACLE, SLIDE ON	776-778	S10
0783	92980003	WASHER, FIBRE	779	S9
0783	92980003	WASHER, FIBRE	327 329 330	S9
0784	10127115	SCREW PAN HD MACH	327 329 330	S9
0784	10127115	SCREW PAN HD	301	S17
0785	92427041	CAPACITOR 15 MF 20V	250	S29
0786	51001119	CAP NON ELECT	250	S29
0787	92742176	SCREW M-C PAN HD	327 329 330	S9
0789	75722930	BELT-DRIVE NEOPRENE	321	S7
0789	75722930	BELT-DRIVE NEOPRENE	321	S8
0790	77599706	PULLEY-DRIVE MOTOR	321	S7
0790	77599706	PULLEY-DRIVE MOTOR	321	S8
0791	75722940	BELT-DRIVE NEOPRENE	322	S7
0791	75722940	BELT-DRIVE NEOPRENE	322	S8
0792	77599705	PULLEY-DRIVE MOTOR	322	S7
0792	77599705	PULLEY-DRIVE MOTOR	322	S8
0793	75722920	BELT-DRIVE NEOPRENE	320	S7
0793	75722920	BELT-DRIVE NEOPRENE	320	S8
0794	77599707	PULLEY-DRIVE MOTOR	320	S7
0794	77599707	PULLEY-DRIVE MOTOR	320	S8
0795	83451104	UPPER SENSOR HOLDER	485	S18
0796	83450000	PLATE-SENSOR MTG	485	S18
0797	46336901	BLANK CARD	250	S29
0798	94337703	TUBING HEAT SPNK	407	S12
0799	94351005	CONTACT	250	S29
0800	92512153	RESISTOR 1 W 100 OHM	250	S29
0801	93728086	SCREW	250	S29
0802	83425106	PANEL-TOP COVER REAR	205 210 292	S22
0803	83443703	PNL TOP COVER RH PTD	205 207 210 292	S22
0804	83443803	PNL TOP CVR LH PTD	205 207 210 292	S22
0805	83425306	DOOR-ACCESS PAINTED	205 210 292	S22
0806	83478603	PNL SIDE PTD LT GRAY	205 207 210 292	S22
0807	83475806	PANEL END FRONT PTD	205 210 292 296	S22
0808	83425606	PANEL-CONTROL CAB PN	205 210 212 292	S22
0809	75283200	BAR-HANDLE	205-211 213-215	S20
0809	75283200	BAR-HANDLE	217-226 292-298	S20
0810	75283100	BAR-TRIM	205-226 292-298	S20
0811	75793301	LABEL SWITCH	205-214 216-226	S20

ASSEMBLY - COMPONENT PARTS LIST

ITEM	IDENT NO	DESCRIPTION	WHERE USED	SH
0811	75793301	LABEL SWITCH	292 294 296-298	S20
0811	75793301	LABEL SWITCH	234-237 239-245	S28
0811	75793301	LABEL SWITCH	247 248 295	S28
0811	75793301	LABEL SWITCH	287-289	S28
0812	75284001	BAR-COVER	205-211 213-215	S20
0812	75284001	BAR-COVER	217-226 292-298	S20
0813	75287700	GASKET - DOOR	276	S31
0813	75287700	GASKET	470	S14
0814	75288300	MAGNETIC STRIP	205-211 213-215	S20
0814	75288300	MAGNETIC STRIP	217-226 292-298	S20
0815	75037504	HEAD ASM (LOWER)	307 312 14	S29
0816	75794101	SLIDE-LID	205-211 213-215	S20
0816	75794101	SLIDE-LID	217-226 292-298	S20
0817	75794204	ROD-SLIDE	205-211 213-215	S20
0817	75794204	ROD-SLIDE	217-226 292-298	S20
0818	75794001	SPACER-FLANGED	205-226 292-298	S20
0819	75794700	SPRING-EXTENSION	205-211 213-215	S20
0819	75794700	SPRING-EXTENSION	217-226 292-298	S20
0820	92649009	PIN, COTTER	205-211 213-215	S20
0820	92649009	PIN, COTTER	217-226 292-298	S20
0821	93530007	PIN, ROLL HCS BLACK	205-211 213-215	S20
0821	93530007	PIN, ROLL HCS BLACK	217-226 292-298	S20
0822	51669410	TERMINAL	229	S23
0822	51669410	TERMINAL	205-211 213-215	S21
0822	51669410	TERMINAL	217-226 292-298	S21
0822	51669410	TERMINAL	237 247	S28
0822	51669410	TERMINAL-TAB	227	S25
0823	75037505	HEAD ASM (UPPER)	307 312	S29
0824	75300200	RESISTOR MODULE	307 311 312	S29
0825	17901516	SCR THD ROLL	205-211 213-215	S21
0825	17901516	SCR THD ROLL	217-226 292-298	S21
0825	17901516	SCR THD ROLL	202 203	S19
0826	92743202	SCREW MCH PAN PHL 8	205-211 213-215	S21
0826	92743202	SCR MCH PAN PHL 8	217-226 292-298	S21
0827	70590208	HEAD ASM (LOWER)	308	S29
0828	70590209	HEAD ASM (UPPER)	308	S29
0829	75300100	RESISTOR MODULE	308 10 313 15	S29
0830	70590306	HEAD ASM (LOWER)	309	S29
0831	70590307	HEAD ASM (UPPER)	309	S29
0832	73460700	CARRIAGE WEIGHT	312 314 315	S29
0833	83425130	PNL TOP CVR REAR BRN	218	S22
0834	24528646	SLEEVING-VINYL	205-211 213-215	S20
0834	24528646	SLEEVING-VINYL	217-226 292-298	S20
0835	93539004	FASTENER-PUSH ON	205-211 213-215	S20
0835	93539004	FASTENER-PUSH ON	217-226 292-298	S20
0836	83446400	BUMPER NYLON	205-226 292-298	S20
0837	10125806	SPRING LK WSHR	201-203	S19
0838	92743158	SCREW SS PAN HD	205-211 213-215	S20
0838	92743158	SCREW SS PAN HD	217-226 292-298	S20
0839	10125610	WSHR PLAIN	201-203	S19
0840	10125808	SPRING LK WSHR	201-203	S19
0841	75774702	CLIP-PUSH IN	205-211 213-215	S20
0841	75774702	CLIP-PUSH IN	217-226 292-298	S20
0842	83492000	BRACKET, CABLE, FRAME	205-211 213-215	S21
0842	83492000	BRACKET, CABLE, FRAME	217-224 292-298	S21
0843	94347104	SHOULDER WASHER THER	237	S28
0843	94347104	SHOULDER WASHER THER	243 247	S28
0843	94347104	SHOULDER WASHER THER	229 231 232	S23
0843	94347104	SHOULDER WASHER THER	205-226 292-298	S20
0843	94347104	SHOULDER WASHER THER	227	S25
0844	83443730	PNL TOP CVR RH BRN	218	S22
0845	10125712	SCR FLAT HD	205-211 213-215	S20
0845	10125712	SCR FLAT HD	217-226 292-298	S20
0846	83443830	PNL TOP CVR LH BRN	218	S22
0847	83425330	DOOR-ACCESS BRN	218	S22
0848	83451804	INSULATOR ADHESIVE	205-226 292-298	S20
0849	83451805	INSULATOR ADHESIVE	205-222	S20
0849	83451805	INSULATOR ADHESIVE	237	S28
0849	83451805	INSULATOR ADHESIVE	243 247	S28
0849	83451805	INSULATOR ADHESIVE	229 231 232	S23
0849	83451805	INSULATOR ADHESIVE	205-226 292-298	S20
0849	83451805	INSULATOR ADHESIVE	294 295	S20
0849	83451805	INSULATOR, ADH BACK	227	S25
0850	75730601	CHASSIS AC BOX 220V	275	S30
0851	83425162	PANEL-TOP COVER REAR	219	S22
0852	83443713	PNL TOP CVR RH PT GO	206	S22
0853	83443813	PNL TOP CVR LH PTD G	206	S22
0854	83425304	DOOR-ACCESS PAINTED	206 219	S22
0855	83478613	PNL SIDE PTD GOLD	206	S22
0856	83475813	PANEL END FRONT PTD	206	S22
0857	83425604	PANEL-CONTROL CAB PN	206	S22
0858	83425109	PANEL-TOP COVER REAR	207	S22
0859	83425309	DOOR-ACCESS PAINTED	207	S22
0860	83475809	PANEL END FRONT PTD	207 294	S22
0861	83425609	PANEL-CONTROL CAB PN	207 216 297	S22
0862	83425118	PANEL-TOP COVER REAR	208 222	S22
0863	83443717	PNL TOP CVR RH PT LT	208 222	S22
0864	83443817	PNL TOP CVR LH PTD L	208 222	S22
0865	83425318	DOOR-ACCESS LT BLUE	208 222	S22
0866	83478617	PNL SIDE PAINTED	208 222	S22
0867	83475818	PANEL END FRONT PTD	208 222	S22
0868	83425618	PANEL-CNTL CAB LT BL	208 222	S22
0869	83425126	PANEL-TOP COVER REAR	209	S22
0870	83443725	PNL TOP CVR RH PT BK	209	S22
0871	83443825	PNL TOP CVR LH PTD B	209	S22
0872	83425326	DOOR-ACCESS BLUE	209	S22
0873	83478625	PNL SIDE PAINTED	209	S22
0874	83475826	PANEL END FRONT BLUE	209	S22
0875	83425626	PANEL-CNTL CAB BLUE	209	S22
0876	83425662	PANEL-CONTROL CAB PT	219	S22
0877	83425134	PNL TOP COVER REAR P	211 225	S22
0878	83443727	PNL TOP CVR RH PT BR	211 225	
0879	83443827	PNL TOP CVR LH PT BR	211 225	[illegible]
0880	83425334	DOOR-ACCESS PTD WHIT	211 225	S22
0881	83478627	PNL SIDE PTD BR OLIV	211 225	S22
0882	83475834	PANEL END FT NCR PTD	211 225	S22
0883	83425635	PANEL-CNTL CAB PAINT	211 225	S22
0884	83478434	PNL END REAR PTD WHI	225	S21
0885	75311905	HOLDER JOB TICKET	225	S22
0886	83443768	PNL TOP CVR RH	222 224 296	S22
0887	83443868	PNL TOP CVR	224 296	S22
0888	83425367	DOOR ACC	224 296	S22
0889	77830705	INSULATOR	713	S26
0889	77830705	INSULATOR	749	S26
0889	77830705	INSULATOR	227	S25
0890	83425643	PNL CONTROL	226	S22
0891	95125322	LOCTITE	301	S17
0892	83495300	TUNNEL WIND	779	S9
0893	10125704	SCR FLT HD	779	S9
0894	10127108	SCR PN HD MACH	779	S9
0895	10125103	SCR NUT HEX MACH	779	S9
0895	10125103	SCR NUT-HEX MACH	776-778	S10
0896	94862901	GROMMET STRIP	779	S9
0897	83478630	PNL SIDE PTD BRN	218	S22
0898	83425144	PNL TOP COVER REAR C	213	S22
0899	83443705	PNL TOP CVR RH PT OR	213	S22
0900	83443805	PNL TOP CVR LH PTD O	213	S22
0901	83425344	DOOR-ACCESS CHAMOIS	213	S22
0902	83478605	PNL SIDE PTD ORANGE	213	S22
0903	83475844	PANEL END FT PT CHAM	213	S22
0904	83425644	PANEL-CNTL CAB PTD C	213	S22
0905	83425155	PNL TOP COVER REAR P	214	S22
0906	83443756	PNL TOP CVR RH PT WH	214	S22
0907	83443856	PNL TOP CVR LH PTD W	214	S22
0908	83425355	DOOR-ACCESS PTD BLK	214	S22
0909	83478655	PNL SIDE PTD BLACK	214	S22
0910	83475856	PNL END PTD WHITE	214	S22
0911	83425655	PNL CNTL CAB PTD BLK	214	S22
0912	83425148	PNL TOP COVER REAR S	215	S22
0913	83443748	PNL TOP CVR PTD SHEL	215	S22
0914	83443848	PNL TOP CVR PTD SH G	215	S22
0915	83425348	DOOR-ACCESS BLUE	215	S22
0916	83478648	PNL SIDE PTD SHELL G	215	S22
0917	83475848	PNL END-PNT SHEL GR	215	S22
0918	83466701	PNL CNTL-CAB SLKSCRN	215	S22
0919	83425136	PNL TOP COVER REAR T	217	S22
0920	83443737	PNL TOP CVR RH TEXTU	217	S22
0921	83443837	PNL TOP CVR LH TEXTU	217	
0922	83425336	DOOR-ACCESS TEX BLUE	217	
0923	83478637	PNL SIDE PTD TEX WHI	217	
0924	83475836	PANEL END FT TEX BL	217	
0925	83425636	PANEL-CNTL CAB TEX B	217	
0926	83425163	PNL TOP CVR REAR BRN	223	[illegible]
0927	83443763	PNL TOP CVR RH	223	S22
0928	83443863	PNL TOP CVR LH BROWN	223	S22
0929	83425363	DOOR-ACCESS BROWN	223	S22
0930	83478663	PNL SIDE PTD BROWN	223	S22
0931	83475864	PNL END FRONT BEIGE	223	S22
0932	83425664	PANEL-CNTL CAB BEIGE	223	S22
0933	83478668	PNL SIDE	224 296	S22
0934	83443753	PNL TOP CVR RH OFFWH	219	S22
0935	83443853	PNL TOP CVR LH PTD O	219	S22
0936	83425362	DOOR-ACCESS PAINTED	219	S22
0937	83478653	PNL SIDE PTD GOLD	219	S22
0938	83425137	PNL TOP CVR REAR WH	220	S22
0939	83443738	PNL TOP CVR RH PT BL	220	S22
0940	83443838	PNL TOP CVR LH PTD B	220	S22
0941	83425337	DOOR-ACCESS PTD WH	220	S22
0942	83478638	PNL SIDE PTD BLACK	220	S22
0943	83475837	PNL END PTD WHITE	220	S22
0944	83425637	PNL CNTL CAB PTD WH	220	S22
0945	75799001	CAP HARNESS	780	S9
0946	83425157	PNL TOP CVR REAR RED	221	S22
0947	83443758	PNL TOP CVR RH BL-GR	221	S22
0948	83443858	PNL TOP CVR LH BL-GR	221	S22
0949	83425357	DOOR-ACCESS PTD RED	221	S22
0950	83478658	PNL SIDE PTD BLACK	221	S22
0951	83475858	PNL END PTD WHITE	221	S22
0952	83425657	PNL CNTL CAB PTD RED	221	S22
0953	83475862	PANEL END FRONT BLAC	219	S22
0954	83495101	COVER PWR SPLY	780	S9
0955	83495200	BRKT	780	S9
0956	83495500	PIN HNG	780	S9
0957	83495600	HNG CVR	780	S9
0958	75798800	PAD CAPACITOR	780	S9
0959	75774406	CAPACITOR	780	S9
0960	75774466	CAPACITOR	780	S9
0962	10127378	SCR PN HD	780	S9
0963	10127348	SCREW PAN HD	205-226 292-298	S20
0964	83425176	PNL TOP CVR REAR	295	S22
0965	75305002	TRANSFORMER-AUTO	776-778	S10
0966	83493302	PWR LOGIC HARNESS	776-778	S10
0967	83494901	CHASSIS-AC	776-778	S10
0968	83495000	COVER-BOTTOM	776-778	S10
0969	83495402	PLATE-CHASSIS	776-778	S10
0970	83495700	HINGE-POWER SUPPLY	776-778	S10
0971	83475000	PLATE	776-778	
0972	75769200	CLAMP-CAPACITOR	776-778	
0973	75794902	GASKET-SUPPLY DIVERT	776-778	
0974	83420504	GASKET STRIP	776-778	
0975	75774419	CAPACITOR	776-778	
0976	95583505	RECTIFIER BLOCK	776-778	

ITEM	IDENT NO	DESCRIPTION	WHERE USED	SH
0977	83432101	BRIDGE, RECTIFIER	776-778	S10
0978	83433506	CIRCUIT BREAKER	776-778	S10
0979	83433502	CIRCUIT BREAKER	776-778	S10
0980	83404001	FILTER	776-778	S10
0981	83475200	GASKET-PWR SPLY	776-778	S10
0982	83475300	GASKET	776-778	S10
0983	92743198	SCREW PAN HD MACH	776-778	S10
0984	10125713	SCREW	776-778	S10
0985	10125726	SCREW	776-778	S10
0986	10127141	SCR PH MACH	776-778	S10
0987	92743240	SCREW PAN HD MACH	776-778	S10
0988	10125107	SCR NUT-HEX MACH	776-778	S10
0989	75724542	CONNECTOR-PANEL MTG	776-778	S10
0990	75724544	CONNECTOR-PANEL MTG	776-778	S10
0991	00005080	RECEPTACLE 6 PIN	776-778	S10
0992	75887389	RECEPTACLE 15 PIN	776-778	S10
0993	75724590	CONNECTOR-PANEL MTG	776-778	S10
0994	75724584	CONNECTOR-PANEL MTG	776-778	S10
0995	75724586	CONNECTOR-PANEL MTG	776-778	S10
0996	95643212	CONNECTOR	776-778	S10
0997	95643216	CONNECTOR	776-778	S10
0998	95604019	TERMINAL, RING TONGUE	776-778	S10
0999	93154107	TUBING, HEAT SHRINK	776-778	S10
1000	93747029	RECEPTACLE, SLIDE ON	776-778	S10
1001	93463555	WIRE-GRN	776-778	S10
1002	77832376	CAP-LUG ASSY	776 777	S10
1003	77832381	CAP-LUG ASSY	776 777	S10
1004	94846005	CONNECTOR, 2 PIN	776 778	S10
1005	93462999	WIRE WHT	776-778	S10
1006	93943001	CONTACT, SOCKET	776-778	S10
1007	83447807	INSTLN KIT - RACK MT	227	S27
1007	83447807	INSTLN KIT-RACK MT	227	S25
1008	83443777	PNL TOP CVR RH	295	S22
1009	75730701	CVR CHASSIS AC INP	275	S30
1010	75731001	CONVENIENCE OUTLET	275	S30
1011	92411002	FUSE HOLDER	275	S30
1012	92371016	FUSE QK ACTING 5 AMP	275	S30
1013	24547504	PLATE, WARNING	275	S30
1013	24547504	PLATE, WARNING	1026	S31
1014	92801001	CLAMP, CABLE	275	S30
1014	92801001	CLAMP, CABLE	1026	S31
1015	93041205	STRIP TERMINAL	275	S30
1016	93067003	JUMPER, BARRIER ST	275	S30
1017	75731104	CABLE-JUMPER BLACK	275	S30
1018	75730803	CABLE ASSY GRND	275	S30
1019	75731301	SYMBOL GRND (DECAL)	203	S19
1019	75731301	SYMBOL GRND (DECAL)	275	S30
1019	75731301	SYMBOL GRND (DECAL)	1026	S31
1020	10126105	WASH INT TOOTH LK	275	S30
1020	10126105	WASH INT TOOTH LK	1026	S31
1021	15012410	BUSHING SNAP IN	275	S30
1022	77599501	POWER CORD ASSY	275	S30
1023	93105305	MARKER STRIP	275	S30
1024	83415900	POWER CORD	276	S31
1025	83492701	AC SWCH BX ASSY NCR	276	S31
1026	83428901	AC DISTR BX COMMON	276	S31
1027	83442800	CHANNEL-CONTLR NCR	276	S31
1028	77610636	SCREW, MACH, SELF-LOCK	227	S25
1029	83428601	CHASSIS-AC DISTR BX	1026	S31
1030	83443877	PNL TOP CVR LH	295	S22
1031	94806900	RECEPTACLE FEMALE	1026	S31
1032	94807000	RECEPTACLE MALE	1026	S31
1033	62071530	FILTER RFI	1026	S31
1034	75726813	TERMINAL BLOCK	1026	S31
1035	75726812	TERMINAL BLOCK	1026	S31
1036	94241102	CKT BKR-OVERCURRENT	1026	S31
1037	75729011	CABLE-JUMPER GREEN	1026	S31
1038	75729007	CABLE-JUMPER BLACK	1026	S31
1039	75729003	CABLE-JUMPER WHITE	1026	S31
1040	75729001	CABLE-JUMPER YELLOW	1026	S31
1041	75729012	CABLE-JUMPER BLACK	1026	S31
1042	75729013	CABLE-JUMPER WHITE	1026	S31
1043	75729014	CABLE-JUMPER BLACK	1026	S31
1044	75729015	CABLE-JUMPER BLACK	1026	S31
1045	75729016	CABLE-JUMPER WHITE	1026	S31
1046	51853011	CLAMP CABLE ADHESIVE	301	S12
1047	17901515	SCR THD ROLL	1026	S31
1048	17901519	SCR THD ROLL PAN HD	1026	S31
1048	17901519	SCR THD ROLL PAN HD	201-203	S19
1049	83478002	LINECORD MODULE STD	1026	S31
1050	83425631	PNL CNTL CAB BEIGE	218	S22
1051	75752203	CABLE-CIRCUIT BRKR	1026	S31
1052	93522009	PLUG-SNAP BUTTON	1026	S31
1053	83428700	COVER-CHASSIS	1026	S31
1054	75884153	JUMPER PLUG	779	S9
1055	83407505	LABEL, SELF ADHERING	1026	S31
1056	83407518	LABEL-, SELF ADHERING	1026	S31
1057	83425168	PNL TOP CVR REAR	224 296	S22
1058	83425104	PNL TOP CVR REAR	206	S22
1059	83425376	DOOR ACCESS	295	S22
1060	77832955	LABEL, RATING	201 202	S19
1061	95125317	LOCTITE PRIMER	301	S17
1062	95125301	LOCTITE	205-226 292-298	S20
1063	83442165	FRT PNL RCK PNT	246	S28
1064	51853015	CLAMP CABLE	776-778	S10
1064	51853015	CLAMP CABLE	404	S15
1065	75738652	RESISTOR MODULE	253	S29
1066	83442104	FRONT PNL RACK PAINT	234	S28
1067	24549006	CBL WRAP	776-778	S10
1068	51870400	AC PWR REC	777	S10
1069	95016100	LUBRICANT	358	S18
1070	75037506	HEAD ASM (LOWER)	311	S29
1071	75037507	HEAD ASM (UPPER)	311	S29
1072	70590304	HEAD ASM (LOWER)	313 314	S29
1073	70590305	HEAD ASM (UPPER)	313 314	S29
1074	70590206	HEAD ASM (LOWER)	310 315	S29
1075	70590207	HEAD ASM (UPPER)	310 315	S29
1076	10125608	WASHER	201-203	S19
1076	10125608	WASHER	301	S17
1077	83445707	FRAME CABINET	203	S19
1078	83475868	PNL END FRT	224 296	S22
1079	83425667	PNL CONTROL CAB	224 296	S22
1080	77832301	CLAMP	203	S19
1081	75884875	GR FLEXIBLE	203	S19
1082	75884876	GR FLEXIBLE	203	S19
1083	83450300	CLOSURE FRAME	225	S21
1084	75885150	NUT PLATE	225	S20
1085	77836000	LABEL, RATING	203	S19
1086	83451802	INSULATOR	205-211 213-226	S20
1086	83451802	INSULATOR	293-298	S20
1088	83442136	FRONT PNL RACK PAINT	248	S28
1089	10126214	SCREW HEX	528	S15
1090	24548310	WIRE ELEC	407	S12
1091	10127310	SCREW SLOTTED	526	S16
1092	83442172	FRONT PNL RACK PAINT	285	S28
1093	83425171	PNL TOP CVR REAR	211	S22
1094	83443772	PNL TOP CVR RH	211	S22
1095	83443842	PNL TOP CVR LH	211	S22
1096	83425371	DOOR ACCESS	211	S22
1097	83478672	PNL SIDE PTD	211	S22
1098	83475871	PNL END FRONT	211	S22
1099	83425673	PNL CONTROL CAB	211	S22
1100	83425170	PNL TOP CVR REAR	293	S22
1101	83443769	PNL TOP CVR RH	293	S22
1102	83443869	PNL TOP CVR LH	293	S22
1103	83425370	DOOR ACCESS PTD	293	S22
1104	83478669	PNL SIDE PTD LT GRAY	293	S22
1105	83425674	PNL CONTROL CAB	293	S22
1106	83475869	END PNL PTD	293	S22
1107	95694206	SPACER	301	S11
1108	83442170	FRONT PNL RACK PAINT	286	S28
1109	83478677	PNL SIDE PTD	295	S22
1110	83475876	PNL END FRONT	295	S22
1111	83425676	PANEL CNTL CAB	295	S22
1113	83475863	PNL END FRONT	223	S22
1114	83475860	PNL END FRONT	218	S22
1115	95125311	LOCTITE PRIMER	423	S17
1116	93749158	SCREW	776-778	S10
1117	83425184	PANEL TOP CVR REAR	297 298	S22
1118	83443784	PANEL TOP CVR RH	297	S22
1119	83443884	PANEL TOP CVR LH	297	S22
1120	83425384	DOOR ACCESS	297 298	S22
1121	83478606	PANEL SIDE	297	S22
1122	83443786	PANEL TOP CVR RH	298	S22
1123	83443886	PANEL TOP CVR LH	298	S22
1124	83478686	PANEL SIDE	298	S22
1125	83425685	PANEL CONTROL CAB	298	S22
1126	83475886	PANEL END FRONT	298	S22
1127	17901501	SCREW THREAD FORM	780	S9
1127	17901501	SCREW THREAD FORM	776-778	S10
1128	95596600	BUSHING	776-778	S10
2000	75887326	SCREW CAPTIVE	780	S9

CROSS REFERENCE INDEX

ITEM	IDENT NO	SH
0991	00005080	S10
0746	00845503	S7
0746	00845503	S8
0574	00863701	S15
0597	10125015	S15
0518	10125030	S19
0895	10125103	S9
0895	10125103	S10
0449	10125105	S14
0449	10125105	S7
0449	10125105	S8
0449	10125105	S11
0449	10125105	S13
0449	10125105	S19
0449	10125105	S20
0449	10125105	S20
0458	10125106	S12
0458	10125106	S15
0458	10125106	S20
0458	10125106	S20
0458	10125106	S26
0458	10125106	S10
0458	10125106	S30
0458	10125106	S27
0988	10125107	S10
0701	10125108	S19
0701	10125108	S26
0701	10125108	S31
0701	10125108	S30
0701	10125108	S27
0704	10125301	S19
0702	10125303	S19
0439	10125602	S17
0439	10125602	S15
0439	10125602	S18
0439	10125602	S19
0478	10125603	S17
0478	10125603	S9
0478	10125603	S15
0478	10125603	S15
0441	10125605	S11
0441	10125605	S12
0441	10125605	S17
0441	10125605	S15
0441	10125605	S18
0441	10125605	S13
0441	10125605	S7
0441	10125605	S8
0441	10125605	S9
0441	10125605	S9
0441	10125605	S18
0441	10125605	S14
0442	10125606	S11
0442	10125606	S13
0442	10125606	S18
0442	10125606	S15
0442	10125606	S16
0442	10125606	S20
0442	10125606	S26
0442	10125606	S31
0442	10125606	S30
0442	10125606	S23
0442	10125606	S24
0442	10125606	S21
0442	10125606	S27
0442	10125606	S25
0443	10125607	S12
0443	10125607	S19
0443	10125607	S28
0443	10125607	S28
0443	10125607	S23
0443	10125607	S10
0443	10125607	S30
0443	10125607	S31
0443	10125607	S24
0443	10125607	S25
1076	10125608	S19
1076	10125608	S17
0839	10125610	S19
0893	10125704	S9
0845	10125712	S20
0845	10125712	S20
0984	10125713	S10
0740	10125725	S7
0740	10125725	S8
0985	10125726	S10
0739	10125747	S7
0739	10125747	S8
0444	10125800	S17
0479	10125801	S17
0479	10125801	S15
0479	10125801	S16
0479	10125801	S15
0479	10125801	S8
0479	10125801	S9
0446	10125803	S11
0446	10125803	S12
0446	10125803	S17
0446	10125803	S18
0446	10125803	S16
0446	10125803	S15
0446	10125803	S14
0446	10125803	S18
0446	10125803	S8
0446	10125803	S9
0446	10125803	S9
0445	10125804	S7
0445	10125804	S8
0445	10125804	S11
0445	10125804	S12
0445	10125804	S13
0445	10125804	S17
0445	10125804	S18
0445	10125804	S19
0445	10125804	S15
0445	10125804	S16
0445	10125804	S26
0445	10125804	S26
0445	10125804	S28
0445	10125804	S24
0445	10125804	S27
0448	10125805	S11
0448	10125805	S12
0448	10125805	S26
0448	10125805	S27
0837	10125806	S19
0840	10125808	S19
0662	10125919	S18
0522	10125920	S18
0557	10126100	S15
0557	10126100	S16
0557	10126100	S16
0557	10126100	S18
0556	10126101	S15
0556	10126101	S10
0639	10126103	S18
0639	10126103	S9
0639	10126103	S18
0639	10126103	S20
0639	10126103	S31
0712	10126104	S20
0712	10126104	S26
0712	10126104	S26
0712	10126104	S28
0712	10126104	S28
0712	10126104	S23
0712	10126104	S10
0712	10126104	S31
0712	10126104	S30
0712	10126104	S24
0712	10126104	S27
0712	10126104	S25
1020	10126105	S30
1020	10126105	S31
0427	10126209	S17
0668	10126212	S18
0668	10126212	S16
0668	10126212	S17
1089	10126214	S15
0477	10126215	S12
0477	10126215	S13
0584	10126219	S16
0447	10126228	S17
0447	10126228	S10
0435	10126255	S12
0435	10126255	S17
0510	10126401	S13
0510	10126401	S7
0510	10126401	S15
0510	10126401	S8
0510	10126401	S20
0510	10126401	S20
0510	10126401	S19
0461	10126402	S13
0461	10126402	S19
0461	10126402	S21
0461	10126402	S21
0461	10126402	S21
0461	10126402	S28
0461	10126402	S28
0461	10126402	S23
0461	10126402	S10
0461	10126402	S25
0482	10126403	S11
0482	10126403	S12
0482	10126403	S19
0482	10126403	S10
0482	10126403	S31
0482	10126403	S9
0572	10127102	S15
0544	10127104	S15
0571	10127105	S15
0571	10127105	S16
0571	10127105	S10
0764	10127106	S8
0894	10127108	S9
0430	10127111	S12
0430	10127111	S15
0430	10127111	S18
0430	10127111	S20
0430	10127111	S31
0430	10127111	S9
0417	10127112	S7
0417	10127112	S11
0417	10127112	S18
0417	10127112	S8
0417	10127112	S9
0431	10127113	S12
0431	10127113	S14
0431	10127113	S7
0431	10127113	S8
0472	10127114	S12
0472	10127114	S11
0472	10127114	S13
0472	10127114	S14
0784	10127115	S9
0784	10127115	S17
0686	10127120	S28
0686	10127120	S18
0686	10127120	S20
0686	10127120	S20
0686	10127120	S28
0686	10127120	S23
0686	10127120	S24
0686	10127120	S25
0432	10127121	S11
0432	10127121	S12
0432	10127121	S13
0432	10127121	S18
0432	10127121	S26
0432	10127121	S26
0432	10127121	S18
0432	10127121	S27
0484	10127122	S28
0484	10127122	S28
0484	10127122	S23
0484	10127122	S10
0484	10127122	S25
0434	10127123	S11
0434	10127123	S26
0434	10127123	S31
0434	10127123	S31
0434	10127123	S30
0434	10127123	S13
0434	10127123	S25
0546	10127124	S15
0546	10127124	S20
0546	10127124	S26
0546	10127124	S26
0546	10127124	S23
0546	10127124	S12
0546	10127124	S27
0546	10127124	S25
0468	10127125	S13
0468	10127125	S16
0468	10127125	S19
0468	10127125	S30
0729	10127128	S28
0729	10127128	S28
0729	10127128	S23
0729	10127128	S24
0729	10127128	S25
0986	10127141	S10
0590	10127144	S26
0590	10127144	S27
0493	10127146	S11
0493	10127146	S12
0543	10127169	S15
1091	10127310	S16
0593	10127311	S16
0676	10127332	S18
0612	10127346	S26
0612	10127346	S27
0711	10127347	S26
0711	10127347	S23
0711	10127347	S24
0711	10127347	S20
0711	10127347	S27
0711	10127347	S25
0963	10127348	S20
0962	10127378	S9
0480	12211011	S12
1021	15012410	S30
1127	17901501	S9
1127	17901501	S10
0697	17901508	S19
0697	17901508	S21
0697	17901508	S21
1047	17901515	S31
0825	17901516	S21
0825	17901516	S21
0825	17901516	S19
1048	17901519	S31
1048	17901519	S19
0679	18607916	S18
0760	22940804	S8
0754	22940902	S8
0761	22940903	S8
0834	24528646	S20
0834	24528646	S20
0460	24547502	S11
0460	24547502	S13
1013	24547504	S30
1013	24547504	S31
1090	24548310	S12
1067	24549006	S10
0756	36085800	S8
0659	36159806	S18
0657	40024501	S18
0658	40024502	S18
0507	40054700	S13
0408	46317900	S12
0473	46334400	S11
0797	46336901	S29
0281	46337801	S5
0250	46338701	S5
0250	46338701	S29
0773	50241001	S8
0786	51001119	S29
0724	51669404	S23
0822	51669410	S23
0822	51669410	S21
0822	51669410	S21
0822	51669410	S28
0822	51669410	S25
0467	51853005	S12
0467	51853005	S13
0462	51853006	S13
0462	51853006	S12
1046	51853011	S12
1064	51853015	S10
1064	51853015	S15
1068	51870400	S10
1033	62071530	S31
1074	70590206	S29
1075	70590207	S29
0827	70590208	S29
0828	70590209	S29
1072	70590304	S29
1073	70590305	S29
0830	70590306	S29
0831	70590307	S29
0516	72959300	S11
0578	73197000	S16
0576	73197400	S16
0535	73228200	S16
0832	73460700	S29
0690	73469100	S19
0691	73469101	S19
0540	73555101	S15
0540	73555101	S16
0538	73555300	S16
0577	73584400	S16
0509	73669601	S11
0815	75037504	S29
0823	75037505	S29
1070	75037506	S29
1071	75037507	S29
0424	75276203	S17
0810	75283100	S20
0809	75283200	S20
0809	75283200	S20
0812	75284001	S20
0812	75284001	S20
0678	75284701	S28
0678	75284701	S28
0678	75284701	S23
0678	75284701	S25
0742	75284702	S24
0403	75286701	S12
0813	75287700	S31
0813	75287700	S14
0814	75288300	S20
0814	75288300	S20
0421	75288900	S12
0640	75293953	S12
0536	75296101	S15
0536	75296101	S16
0537	75296201	S15
0537	75296201	S16
0829	75300100	S29
0824	75300200	S29
0629	75303204	S14
0440	75304501	S17
0965	75305002	S10
0251	75305703	S5
0251	75305703	S29
0252	75305704	S5
0252	75305704	S29
0254	75305705	S5
0254	75305705	S29
0253	75305706	S5
0253	75305706	S29
0249	75305707	S5
0249	75305707	S29
0699	75306101	S11
0470	75308012	S11
0470	75308012	S14
0414	75308100	S13
0418	75308502	S17
0402	75308800	S13
0885	75311905	S22
0514	75312013	S20
0514	75312013	S20

ITEM	IDENT NO	SH
0514	75312013	S12
0747	75312701	S7
0747	75312701	S8
0490	75312751	S17
0456	75313921	S12
0589	75314202	S16
0423	75315405	S12
0423	75315405	S17
0613	75315501	S17
0614	75315600	S17
0426	75315801	S12
0426	75315801	S17
0615	75315901	S17
0404	75316008	S12
0404	75316008	S15
0404	75316008	S16
0525	75316103	S15
0575	75316600	S16
0407	75317102	S12
0533	75317200	S15
0531	75317501	S15
0579	75317700	S16
0529	75317900	S15
0405	75319001	S12
0527	75319603	S16
0553	75319801	S12
0730	75722910	S7
0730	75722910	S8
0793	75722920	S7
0793	75722920	S8
0789	75722930	S7
0789	75722930	S8
0791	75722940	S7
0791	75722940	S8
0989	75724542	S10
0990	75724544	S10
0994	75724584	S10
0995	75724586	S10
0993	75724590	S10
1035	75726812	S31
1034	75726813	S31
1040	75729001	S31
1039	75729003	S31
1038	75729007	S31
1037	75729011	S31
1041	75729012	S31
1042	75729013	S31
1043	75729014	S31
1044	75729015	S31
1045	75729016	S31
0348	75729017	S6
0850	75730601	S30
1009	75730701	S30
1018	75730803	S30
0694	75730805	S19
0694	75730805	S28
0694	75730805	S28
0694	75730805	S23
0694	75730805	S25
1010	75731001	S30
1017	75731104	S30
1019	75731301	S19
1019	75731301	S30
1019	75731301	S31
0559	75738604	S29
0611	75738607	S29
0672	75738608	S29
0609	75738610	S29
1065	75738652	S29
0684	75738654	S29
0768	75738655	S29
0520	75739105	S12
0464	75739501	S12
0465	75739701	S12
0635	75739900	S14
0630	75740002	S14
0310	75740113	S29
0310	75740113	S6
0315	75740114	S29
0315	75740114	S6
0309	75740115	S29
0309	75740115	S6
0313	75740117	S29
0313	75740117	S6
0314	75740118	S29
0314	75740118	S6
0308	75740119	S29
0308	75740119	S6
0311	75740121	S29
0311	75740121	S6
0307	75740123	S29
0307	75740123	S6
0312	75740124	S29
0312	75740124	S6
0321	75740601	S6
0321	75740601	S7
0321	75740601	S8
0322	75740602	S6
0322	75740602	S7
0322	75740602	S8
0323	75740605	S6

ITEM	IDENT NO	SH
0323	75740605	S7
0323	75740605	S8
0320	75740606	S6
0320	75740606	S7
0320	75740606	S8
0652	75740701	S18
0413	75748903	S13
0412	75749000	S13
0415	75749201	S13
0631	75751801	S14
1051	75752203	S31
0260	75758001	S5
0648	75764700	S14
0695	75766700	S19
0695	75766700	S21
0695	75766700	S21
0483	75769100	S11
0972	75769200	S10
0959	75774406	S9
0975	75774419	S10
0960	75774466	S9
0841	75774702	S20
0841	75774702	S20
0255	75778701	S5
0256	75778705	S5
0257	75778710	S5
0258	75778721	S5
0682	75779867	S18
0601	75786000	S16
0632	75792601	S14
0450	75792800	S17
0436	75792900	S17
0416	75793103	S13
0416	75793103	S17
0811	75793301	S20
0811	75793301	S20
0811	75793301	S28
0811	75793301	S28
0811	75793301	S28
0508	75793802	S18
0503	75793803	S13
0818	75794001	S20
0816	75794101	S20
0816	75794101	S20
0817	75794204	S20
0817	75794204	S20
0819	75794700	S20
0819	75794700	S20
0973	75794902	S10
0341	75795213	S6
0332	75795214	S6
0335	75795215	S6
0334	75795216	S6
0336	75795217	S6
0338	75795218	S6
0337	75795219	S6
0333	75795220	S6
0339	75795221	S6
0342	75795222	S6
0340	75795223	S6
0344	75795225	S6
0268	75795307	S5
0268	75795307	S28
0269	75795308	S5
0269	75795308	S28
0267	75795309	S5
0267	75795309	S28
0261	75795401	S5
0262	75795402	S5
0263	75795404	S5
0264	75795405	S5
0265	75795406	S5
0266	75795408	S5
0455	75796902	S12
0616	75797001	S17
0476	75797100	S12
0476	75797100	S17
0617	75797200	S17
0422	75797301	S12
0530	75797400	S15
0539	75797500	S15
0539	75797500	S16
0425	75797700	S17
0425	75797700	S12
0958	75798800	S9
0945	75799001	S9
0633	75799402	S14
0457	75800400	S12
0542	75800502	S15
0463	75800602	S12
0502	75802301	S11
0644	75802700	S14
0641	75803300	S14
0642	75803500	S14
0643	75803501	S14
0603	75803502	S16
0646	75803503	S14
0647	75803802	S14
0714	75804800	S19
0594	75806501	S16
0596	75806503	S16

ITEM	IDENT NO	SH
0596	75806503	S18
0596	75806503	S9
0451	75806504	S17
0451	75806504	S20
0451	75806504	S18
0774	75808549	S8
0486	75880261	S24
1054	75884153	S9
0689	75884516	S19
0703	75884517	S19
1081	75884875	S19
1082	75884876	S19
0515	75884887	S24
0532	75884902	S24
0228	75884907	S5
0228	75884907	S24
1084	75885150	S20
0744	75885250	S7
0744	75885250	S8
0359	75886347	S6
0359	75886347	S19
0517	75886381	S17
2000	75887326	S9
0992	75887389	S10
0259	75892986	S5
0410	77598300	S12
0674	77598501	S18
0673	77598701	S18
0275	77599401	S5
0275	77599401	S30
1022	77599501	S30
0715	77599600	S19
0792	77599705	S7
0792	77599705	S8
0790	77599706	S7
0790	77599706	S8
0794	77599707	S7
0794	77599707	S8
0731	77599708	S7
0731	77599708	S8
0733	77599800	S7
0733	77599800	S8
0280	77603741	S5
0741	77604000	S28
0741	77604000	S28
0741	77604000	S23
0741	77604000	S24
0741	77604000	S25
0622	77610636	S11
1028	77610636	S25
0604	77612607	S15
0732	77617051	S7
0732	77617051	S8
0591	77617072	S17
0592	77617079	S17
0680	77617079	S12
0273	77830537	S5
0274	77830538	S5
0475	77830539	S12
0419	77830700	S13
0889	77830705	S26
0889	77830705	S26
0889	77830705	S25
0750	77830734	S11
0327	77830914	S6
0327	77830914	S9
0329	77830916	S6
0329	77830916	S9
0330	77830917	S6
0330	77830917	S9
0710	77831951	S19
0728	77832300	S19
1080	77832301	S19
1002	77832376	S10
1003	77832381	S10
1060	77832955	S19
0562	77834340	S28
0564	77834401	S28
0409	77834644	S11
0765	77834781	S11
0481	77835140	S11
0481	77835140	S13
1085	77836000	S19
0980	83404001	S10
1055	83407505	S31
1056	83407518	S31
0721	83410562	S19
0721	83410562	S11
0488	83415603	S15
0489	83415607	S11
0489	83415607	S12
1024	83415900	S31
0974	83420504	S10
1058	83425104	S22
0802	83425106	S22
0858	83425109	S22
0862	83425118	S22
0869	83425126	S22
0833	83425130	S22
0877	83425134	S22
0919	83425136	S22

ITEM	IDENT NO	SH
0938	83425137	S22
0548	83425143	S22
0898	83425144	S22
0912	83425148	S22
0905	83425155	S22
0946	83425157	S22
0851	83425162	S22
0926	83425163	S22
1057	83425168	S22
1100	83425170	S22
1093	83425171	S22
0964	83425176	S22
1117	83425184	S22
0854	83425304	S22
0805	83425306	S22
0859	83425309	S22
0865	83425318	S22
0872	83425326	S22
0847	83425330	S22
0880	83425334	S22
0922	83425336	S22
0941	83425337	S22
0683	83425343	S22
0901	83425344	S22
0915	83425348	S22
0908	83425355	S22
0949	83425357	S22
0936	83425362	S22
0929	83425363	S22
0888	83425367	S22
1103	83425370	S22
1096	83425371	S22
1059	83425376	S22
1120	83425384	S22
0857	83425604	S22
0808	83425606	S22
0861	83425609	S22
0868	83425618	S22
0875	83425626	S22
1050	83425631	S22
0883	83425635	S22
0925	83425636	S22
0944	83425637	S22
0890	83425643	S22
0904	83425644	S22
0911	83425655	S22
0952	83425657	S22
0876	83425662	S22
0932	83425664	S22
1079	83425667	S22
1099	83425673	S22
1105	83425674	S22
1111	83425676	S22
1125	83425685	S22
1029	83428601	S31
1053	83428700	S31
1026	83428901	S31
0301	83429802	S6
0301	83429802	S11
0301	83429802	S12
0301	83429802	S13
0977	83432101	S10
0979	83433502	S10
0978	83433506	S10
0618	83436601	S26
0618	83436601	S26
0618	83436601	S27
0411	83437400	S13
0598	83441700	S16
1066	83442104	S28
0545	83442106	S28
0545	83442106	S28
0547	83442109	S28
0547	83442109	S28
0627	83442123	S28
1088	83442136	S28
0561	83442143	S28
0650	83442154	S28
1063	83442165	S28
0649	83442166	S28
1108	83442170	S28
1092	83442172	S28
0512	83442175	S28
0607	83442178	S28
0201	83442303	S5
0201	83442303	S19
0202	83442305	S5
0202	83442305	S19
0203	83442306	S5
0203	83442306	S19
0205	83442409	S5
0205	83442409	S20
0205	83442409	S21
0205	83442409	S22
0206	83442410	S5
0206	83442410	S20
0206	83442410	S21
0206	83442410	S22
0207	83442411	S5
0207	83442411	S20
0207	83442411	S21

ITEM	IDENT NO	SH
0207	83442411	S22
0208	83442412	S5
0208	83442412	S20
0208	83442412	S21
0208	83442412	S22
0209	83442413	S5
0209	83442413	S20
0209	83442413	S21
0209	83442413	S22
0210	83442414	S5
0210	83442414	S20
0210	83442414	S21
0210	83442414	S22
0212	83442416	S5
0212	83442416	S20
0212	83442416	S21
0212	83442416	S22
0213	83442417	S5
0213	83442417	S20
0213	83442417	S21
0213	83442417	S22
0214	83442418	S5
0214	83442418	S20
0214	83442418	S21
0214	83442418	S22
0215	83442419	S5
0215	83442419	S20
0215	83442419	S21
0215	83442419	S22
0216	83442420	S5
0216	83442420	S20
0216	83442420	S21
0216	83442420	S22
0217	83442421	S5
0217	83442421	S20
0217	83442421	S21
0217	83442421	S22
0218	83442422	S5
0218	83442422	S20
0218	83442422	S21
0218	83442422	S22
0219	83442423	S5
0219	83442423	S20
0219	83442423	S21
0219	83442423	S22
0220	83442424	S5
0220	83442424	S20
0220	83442424	S21
0220	83442424	S22
0221	83442425	S5
0221	83442425	S20
0221	83442425	S21
0221	83442425	S22
0222	83442426	S5
0222	83442426	S20
0222	83442426	S21
0222	83442426	S22
0223	83442427	S5
0223	83442427	S20
0223	83442427	S21
0223	83442427	S22
0224	83442428	S5
0224	83442428	S20
0224	83442428	S22
0224	83442428	S21
0225	83442429	S5
0225	83442429	S20
0225	83442429	S21
0225	83442429	S22
0226	83442430	S5
0226	83442430	S20
0226	83442430	S21
0226	83442430	S22
0211	83442431	S5
0211	83442431	S20
0211	83442431	S21
0211	83442431	S22
0292	83442432	S5
0292	83442432	S20
0292	83442432	S21
0292	83442432	S22
0293	83442433	S5
0293	83442433	S20
0293	83442433	S21
0293	83442433	S22
0294	83442434	S5
0294	83442434	S20
0294	83442434	S21
0294	83442434	S22
0295	83442435	S5
0295	83442435	S20
0295	83442435	S21
0295	83442435	S22
0296	83442436	S5
0296	83442436	S20
0296	83442436	S21
0296	83442436	S22
0297	83442437	S5
0297	83442437	S20
0297	83442437	S21
0297	83442437	S22
0298	83442438	S5
0298	83442438	S20
0298	83442438	S21
0298	83442438	S22
0234	83442501	S5
0234	83442501	S28
0235	83442502	S5
0235	83442502	S28
0236	83442503	S5
0236	83442503	S28
0237	83442505	S5
0237	83442505	S28
0238	83442506	S5
0238	83442506	S28
0239	83442507	S5
0239	83442507	S28
0240	83442508	S5
0240	83442508	S28
0241	83442509	S5
0241	83442509	S28
0242	83442510	S5
0242	83442510	S28
0243	83442511	S5
0243	83442511	S28
0244	83442512	S5
0244	83442512	S28
0245	83442513	S5
0245	83442513	S28
0246	83442514	S5
0246	83442514	S28
0247	83442515	S5
0247	83442515	S28
0248	83442516	S5
0248	83442516	S28
0285	83442517	S5
0285	83442517	S28
0286	83442518	S5
0286	83442518	S28
0287	83442519	S5
0287	83442519	S28
0289	83442520	S5
0289	83442520	S28
0288	83442521	S5
0288	83442521	S28
1027	83442800	S31
0496	83443101	S17
0497	83443200	S17
0498	83443301	S17
0229	83443504	S5
0229	83443504	S23
0231	83443506	S5
0231	83443506	S23
0232	83443507	S5
0232	83443507	S23
0230	83443508	S5
0230	83443508	S23
0233	83443509	S5
0233	83443509	S23
0227	83443510	S5
0227	83443510	S25
0585	83443601	S26
0585	83443601	S27
0803	83443703	S22
0899	83443705	S22
0852	83443713	S22
0863	83443717	S22
0870	83443725	S22
0878	83443727	S22
0844	83443730	S22
0920	83443737	S22
0939	83443738	S22
0552	83443743	S22
0913	83443748	S22
0934	83443753	S22
0906	83443756	S22
0947	83443758	S22
0927	83443763	S22
0886	83443768	S22
1101	83443769	S22
1094	83443772	S22
1008	83443777	S22
1118	83443784	S22
1122	83443786	S22
0804	83443803	S22
0900	83443805	S22
0853	83443813	S22
0864	83443817	S22
0871	83443825	S22
0879	83443827	S22
0846	83443830	S22
0921	83443837	S22
0940	83443838	S22
1095	83443842	S22
0554	83443843	S22
0914	83443848	S22
0935	83443853	S22
0907	83443856	S22
0948	83443858	S22
0923	83443863	S22
0887	83443868	S22
1102	83443869	S22
1030	83443877	S22
1119	83443884	S22
1123	83443886	S22
0696	83444100	S19
0685	83444200	S28
0685	83444200	S28
0685	83444200	S23
0685	83444200	S25
0345	83444402	S6
0345	83444402	S7
0558	83444701	S28
0726	83444900	S19
0634	83445400	S14
0688	83445706	S19
1077	83445707	S19
0505	83445800	S13
0506	83445900	S13
0836	83446400	S20
0528	83447302	S15
0605	83447401	S15
0606	83447500	S15
0713	83447805	S26
0713	83447805	S23
0749	83447806	S26
0749	83447806	S24
1007	83447807	S27
1007	83447807	S25
0796	83450000	S18
1083	83450300	S21
0521	83450500	S12
0795	83451104	S18
0357	83451200	S6
0401	83451403	S11
0485	83451602	S11
0485	83451602	S18
0491	83451700	S11
1086	83451802	S20
1086	83451802	S20
0848	83451804	S20
0849	83451805	S20
0849	83451805	S28
0849	83451805	S28
0849	83451805	S23
0849	83451805	S20
0849	83451805	S20
0849	83451805	S25
0723	83451806	S28
0723	83451806	S28
0723	83451806	S23
0723	83451806	S24
0723	83451806	S25
0560	83451810	S24
0569	83454400	S15
0569	83454400	S16
0755	83455800	S14
0735	83456001	S7
0400	83456501	S11
0400	83456501	S12
0400	83456501	S13
0727	83457001	S28
0727	83457001	S28
0727	83457001	S23
0727	83457001	S24
0727	83457001	S25
0501	83457100	S13
0670	83457201	S18
0671	83457302	S18
0743	83457401	S7
0745	83457601	S7
0519	83457901	S12
0519	83457901	S18
0358	83466001	S18
0358	83466001	S6
0653	83466100	S18
0654	83466200	S18
0655	83466300	S18
0656	83466400	S18
0918	83466701	S22
0625	83466801	S28
0667	83467100	S18
0757	83467401	S8
0771	83467501	S8
0772	83467701	S8
0707	83474601	S19
0758	83474701	S8
0759	83474800	S8
0346	83474906	S6
0346	83474906	S8
0971	83475000	S10
0779	83475105	S9
0981	83475200	S10
0982	83475300	S10
0588	83475401	S16
0526	83475501	S16
0777	83475604	S9
0777	83475604	S10
0807	83475806	S22
0860	83475809	S22
0856	83475813	S22
0867	83475818	S22
0874	83475826	S22
0555	83475831	S2
0882	83475834	S22
0924	83475836	S22
0943	83475837	S22
0753	83475843	S22
0903	83475844	S22
0917	83475848	S22
0910	83475856	S22
0951	83475858	S22
1114	83475860	S22
0953	83475862	S22
1113	83475863	S22
0931	83475864	S22
1078	83475868	S22
1106	83475869	S22
1098	83475871	S22
1110	83475876	S22
1126	83475886	S22
1049	83478002	S31
0716	83478200	S19
0573	83478301	S26
0573	83478301	S27
0582	83478302	S26
0582	83478302	S27
0884	83478434	S21
0806	83478603	S22
0902	83478605	S22
1121	83478606	S22
0855	83478613	S22
0866	83478617	S22
0873	83478625	S22
0881	83478627	S22
0897	83478630	S22
0923	83478637	S22
0942	83478638	S22
0700	83478643	S22
0916	83478648	S22
0937	83478653	S22
0909	83478655	S22
0950	83478658	S22
0930	83478663	S22
0933	83478668	S22
1104	83478669	S22
1097	83478672	S22
1109	83478677	S22
1124	83478686	S22
0717	83478700	S1
0718	83478701	S1
0663	83479501	S2
0663	83479501	S2
0645	83479600	S14
0495	83482400	S17
0495	83482400	S12
0780	83484002	S9
0778	83484105	S9
0778	83484105	S10
0776	83484106	S9
0776	83484106	S10
0767	83484400	S11
0665	83484500	S26
0665	83484500	S25
0669	83484602	S26
0669	83484602	S26
0669	83484602	S27
0669	83484602	S25
0734	83485302	S7
0734	83485302	S8
0677	83485700	S26
0677	83485700	S25
0563	83490600	S16
0842	83492000	S21
0842	83492000	S21
1025	83492701	S31
0705	83492800	S19
0276	83492901	S5
0276	83492901	S31
0966	83493302	S10
0566	83493800	S15
0565	83493900	S15
0568	83494001	S15
0567	83494200	S15
0595	83494400	S16
0570	83494500	S16
0719	83494801	S19
0967	83494901	S10
0968	83495000	S10
0954	83495101	S9
0955	83495200	S9
0892	83495300	S9
0969	83495402	S10
0956	83495500	S9
0957	83495600	S9
0970	83495700	S10
0474	83495900	S11
0420	89293100	S12
0511	92021001	S1
0466	92021004	S1
0466	92021004	S1
0466	92021004	S1
0513	92021093	S12
0499	92033011	S17

ITEM	IDENT NO	SH
0459	92054227	S17
0580	92054251	S16
0687	92172000	S28
0687	92172000	S28
0687	92172000	S23
0687	92172000	S24
0687	92172000	S25
0661	92196007	S26
0661	92196007	S26
0661	92196007	S31
0661	92196007	S30
0661	92196007	S27
0523	92196031	S12
1012	92371016	S30
1011	92411002	S30
0785	92427041	S29
0775	92512142	S8
0800	92512153	S29
0541	92549007	S15
0748	92602002	S7
0748	92602002	S9
0770	92602003	S8
0453	92615006	S11
0494	92615012	S11
0820	92649009	S20
0820	92649009	S20
0621	92720042	S17
0709	92723234	S19
0709	92723234	S21
0709	92723234	S21
0660	92742011	S18
0787	92742176	S9
0708	92742196	S19
0433	92742201	S13
0838	92743158	S20
0838	92743158	S20
0983	92743198	S10
0826	92743202	S21
0826	92743202	S21
0987	92743240	S10
1014	92801001	S30
1014	92801001	S31
0428	92815096	S17
0428	92815096	S15
0583	92815097	S16
0549	92815160	S15
0550	92815193	S16
0551	92815195	S15
0437	92815197	S12
0438	92815229	S12
0471	92824097	S17
0722	92932206	S19
0783	92980003	S9
0783	92980003	S9
0693	93006033	S19
1015	93041205	S30
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	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
1005	93462999	S10
1001	93463555	S10
0619	93463999	S10
0720	93522008	S19
1052	93522009	S31
0666	93529003	S18
0821	93530007	S20
0821	93530007	S20
0681	93530436	S18
0835	93539004	S20
0835	93539004	S20
0698	93592200	S19
0698	93592200	S31
0698	93592200	S30
0534	93623000	S15
0623	93651029	S17
0692	93697013	S19
0801	93728086	S29
0454	93728222	S11
0782	93747025	S10
1000	93747029	S10
1116	93749158	S10
0429	93788082	S12
0429	93788082	S17

ITEM	IDENT NO	SH
1006	93943001	S10
0282	94224651	S5
0282	94224651	S21
0700	94238905	S25
0349	94238907	S6
1036	94241102	S31
0763	94245602	S12
0736	94255105	S7
0736	94255105	S8
0599	94258205	S16
0737	94260500	S7
0737	94260500	S8
0738	94260503	S7
0738	94260503	S8
0620	94277400	S10
0624	94277416	S16
0706	94281426	S19
0706	94281426	S31
0751	94309802	S7
0751	94309802	S8
0798	94337703	S12
0843	94347104	S28
0843	94347104	S28
0843	94347104	S23
0843	94347104	S20
0843	94347104	S25
0769	94351001	S29
0781	94351002	S29
0799	94351005	S29
0675	94357803	S18
0487	94655401	S12
1031	94806900	S31
1032	94807000	S31
1004	94846005	S10
0896	94862901	S9
0651	94862902	S9
0626	95010890	S17
1069	95016100	S18
1062	95125301	S20
0469	95125305	S16
0469	95125305	S12
0469	95125305	S17
0469	95125305	S16
1115	95125311	S17
1061	95125317	S17
0891	95125322	S17
0406	95125324	S17
0406	95125324	S16
0600	95280500	S16
0762	95582004	S8
0976	95583505	S10
1128	95596600	S10
0998	95604019	S10
0996	95643212	S10
0997	95643216	S10
0524	95649726	S13
0638	95655500	S14
0636	95655501	S14
0766	95655503	S8
0492	95694202	S11
1107	95694206	S11

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

Wire Color	Origin	Destination	Approximate Length Inches	Remarks
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	11	

9.3 RECEIVER.

Wire Color	Origin	Destination	Approximate Length Inches	Remarks
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	
White	A1P3-2	-	-	Not Used

9.4 RETRACT

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

*Twisted Pair

9.5 RELAY

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

9.6 CAPACITOR

Wire Color	Origin	Destination	Approximate Length Inches	Remarks
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

Wire Color	Origin	Destination	Approximate Length Inches	Remarks
Red	A2P6-1	A5P1-1	36	Switch Board
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		Switch Board
	-21	A9J1-1		Lower Sensor
	-22	A9J1-2		Lower Sensor
	-23	A9J1-3		Lower Sensor
	-24	A9J2-1		Upper Sensor
	-25	A9J2-2		Upper Sensor
	-26	A9J2-3		Upper Sensor
	-27	A9J3-2		Receiver Harness
	-28	A9J3-5		Receiver Harness
	-29	A9J3-4		Receiver Harness
	-30	A9J3-3		Receiver Harness
	-31	A9J3-6		Receiver Harness
	-32			Not Used
	-33			Not Used
	A2P6-34		36	Not Used

9.8 DC SPINDLE

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

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	
	A1P14-3			Spare
Green	A1P14-4	E4 (AC)	5 1/2	Mot Plate - GND
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	
	A2P5-7			Not Used
	A2P5-9			Not Used
White	A7K2-3	A7K1-3	4 1/4	

9.12 AC BRAKE

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

9.13 DC BRAKE

Wire Color	Origin	Destination	Approximate Length (Inch)	Remarks
White	A2P5-1	A7J1-3	8.8	
	A2P5-3	A7J1-2	8.8	
	A2P5-4	A7K1-3	14.5	Same Terminal
	A7K2-3	A7K1-3	3.8	Same Terminal
	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

Wire Color	Origin	Destination	Approximate Length (Inch)	Remarks
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	One One Lug
Black	A8B1-4	Splice	3 1/2	One One Lug
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

Wire Color	Origin	Destination	Approximate Length (Inch)	Remarks
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

Wire Color	Origin	Destination	Approximate Length (Inch)	Remarks
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		
	-14	-14		
	-15	-15		
	-16	-16		
	-17	-17		
	-18	-18		
	-19	-19		
	-20	-20		
	-21	-21		
	-22	-22		
	-23	-23		
	-24	-24		
	-25	-25		
	-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	A1P4-4	15	
W/Brown	-11	A1P4-3	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-(+)	A1P4-1	7 1/4	
	A1CR101-(-)	A1P4-6	6 3/4	
	A1CR102-(+)	A1C104-(+)	6 1/2	
	A1J12-12	A1J13-1	11	
	A1C104-(+)	A1P4-2	18 1/4	
White	A1C104-(-)	A1P4-5	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	

USER COMMENTS

TECHNICAL PUBLICATIONS FILE REFERENCE

Date ______

FROM:

Name ______

Address ______

City ______

State ______ Zip Code ______

Area Code ______ Phone ______

NOTE:

This form is not intended to be used as an order blank. Control Data Corporation welcomes your evalaution of this publication. Please indicate any errors, suggested additions or deletions, or general comments below.

Business-related questions are to be directed to your Local Sales Office.

Equipment Identification ______ Part Number ______ Serial No. ______

Document: (Title/Number/Revision) ______

COMMENTS:

NO POSTAGE REQUIRED IF MAILED IN THE UNITED STATES

(Fold, staple, and mail.)

STAPLE

STAPLE

FOLD

FOLD

FIRST CLASS
Permit Number 1332
OKLAHOMA CITY,
OKLAHOMA

BUSINESS REPLY MAIL
No Postage Stamp Necessary If Mailed in the United States

POSTAGE WILL BE PAID BY

MAGNETIC PERIPHERALS INC.
P.O. BOX 12313
OKLAHOMA CITY, OKLAHOMA 73157

Attention Technical Publications, OKM250

FOLD

FOLD

CUT ALONG

83449086

CONTROL DATA
CORPORATION

CONTROL DATA®
CARTRIDGE DISK DRIVE
9427H

DEVICE SPECIFICATIONS
& SWITCH SELECTIONS
I/O BOARD DOCUMENTATION

MAGNETIC PERIPHERALS INC.
a subsidiary of
CONTROL DATA CORPORATION

HPC—HARDWARE MAINTENANCE MANUAL DOCUMENT PACKAGE

DEVICE SPECIFICATIONS AND SWITCH SELECTIONS

1.0 SCOPE

This document defines the unique mechanical/electrical requirements and switch adjustment selections for the HAWK Disk Storage Drive Hardware Product Configurator (HPC) number 83448086 .

Immediately following the Device Specification Summary, Paragraph 2.0, are the switch selection adjustments for the following Printed Circuit Boards:

Board Title	Sheet
Control Board	5
Data Recovery Board	6
Read/Write/Erase Board	7
Sector Board	8
Servo Board	9
I/O Board	10

2.0 DEVICE SPECIFICATION SUMMARY

The following is a summary of customer selected items. This configuration has been prepared to meet the requirements of the HPC specified in paragraph 1.0.

Indicates Selection

1. Input Voltage

   120 Volts, 4.6 Amps

2. Sectoring

   Numer of Sectors Req. 29
   Ring Adj. #1 29 Holes
   Switch Adj. ÷ 1
   Hard Sec. ☒
   Soft Sec. ☐

3. Mounting

   Rack ☐
   Cabinet ☒

4. Terminator

   110/1K ☒
   110/330 ☐
   220/330 ☐
   External ☐
   None ☐

5. RPM

   2400 ☒
   1500 ☐

6. Heads

   200 TPI ☒
   100 TPI ☐

   Pre-Erase ☒
   Straddle Erase ☐

   Fixed Disk ☒
   No Fixed Disk ☐

7. Frequency

   50 Hz ☒
   60 Hz ☒

8. Spindle Drive

   With Dynamic Brake ☒
   Without Dynamic Brake ☐

9. Controller Interface

   STD ☒
   Other ☐

10. I/O Connector

    Elco ☒
    (50 Pin STD.) 3M ☐
    (40 Pin Star) 3M ☐
    Winchester ☐
    AMP ☐

2.0 -contd.

11. Max Track

- 405 ☒
- 407 ☐
- 202 ☐
- 203 ☐

12. Terminator Power

- Unit ☐
- Controller ☒

13. Index Angle

- 5°30' ☒
- 3°10' ☐

14. Index Timing

- Multi-Sector & Index at Ø ☒
- Single Sector or Index prior to Ø ☐

15. Address Acknowledge

- Level ☐
- Pulse ☒

16. Track Offset ☐

Write Protect ☒

17. On Cyl True W/Seek Error ☒

On Cyl Independent of Seek Error ☐

18. Head & Disk Select

- Numbered Top Down ☒
- Numbered Bottom Up ☒

19. Unit Select

- Daisy Chain ☒
- Star ☐

20. TPI

- 100 ☒
- 200 ☒

21. Head Select Bit 4 ☐

Density Status ☒

22. Logical Address Interlock

- Ored with Seek Error ☒
- Independent of Seek Error ☐

23. Stop Override ☐

24. Invalid Cyl. Address Interrupt ☒

25. Active Interrupt

- Low ☒
- High ☐

2.0 -contd.

26. Drop Ready with Fault ☐

Ready Stays True with Fault ☒

27. RTZS Resets Fault ☒

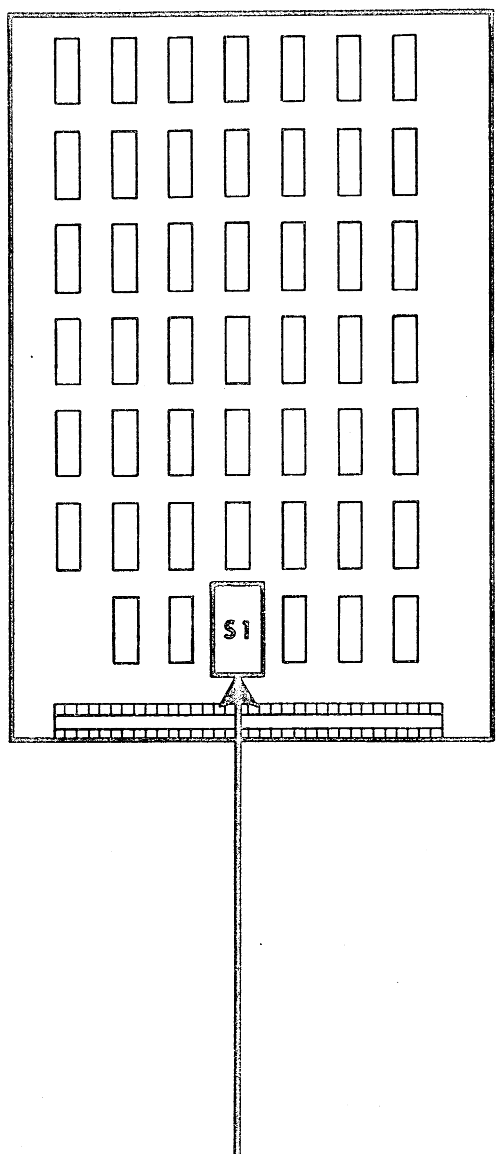
RTZS Doesn't Reset Fault ☐

28. On Cylinder goes false during Strobe for Seek to Current Cylinder but not for Illegal Address ☐

On Cylinder goes false during Strobe for Illegal Address and Seek to Current Address ☒

CONTROL BOARD

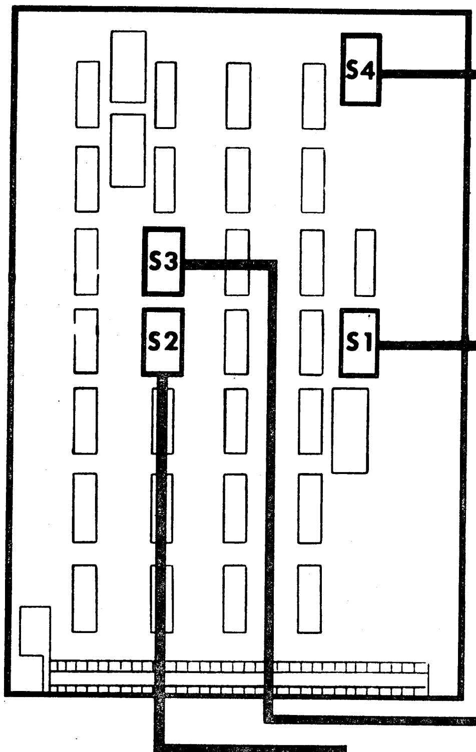
X INDICATES SWITCH POSITION



	ON	S1	OFF	
INVALID CYL. ADD. INTERRUPT	X	8		
DROP READY WITH FAULT		7	X	READY STAYS TRUE DURING FAULT CONDITION
(DENSITY STATUS) 100 TPI	X	6		200 TPI
NO FIXED DISC		5	X	FIXED DISC
ACTIVE LOW INTERRUPT	X	4		ACTIVE HIGH INTERRUPT
ACTIVE HIGH INTERRUPT		3	X	ACTIVE LOW INTERRUPT
R.T.Z.S. RESETS FAULT	X	2		R.T.Z.S. DOESN'T RESET FAULT
SPARE		1	X	SPARE

DATA RECOVERY BOARD

☒ INDICATES SWITCH POSITION



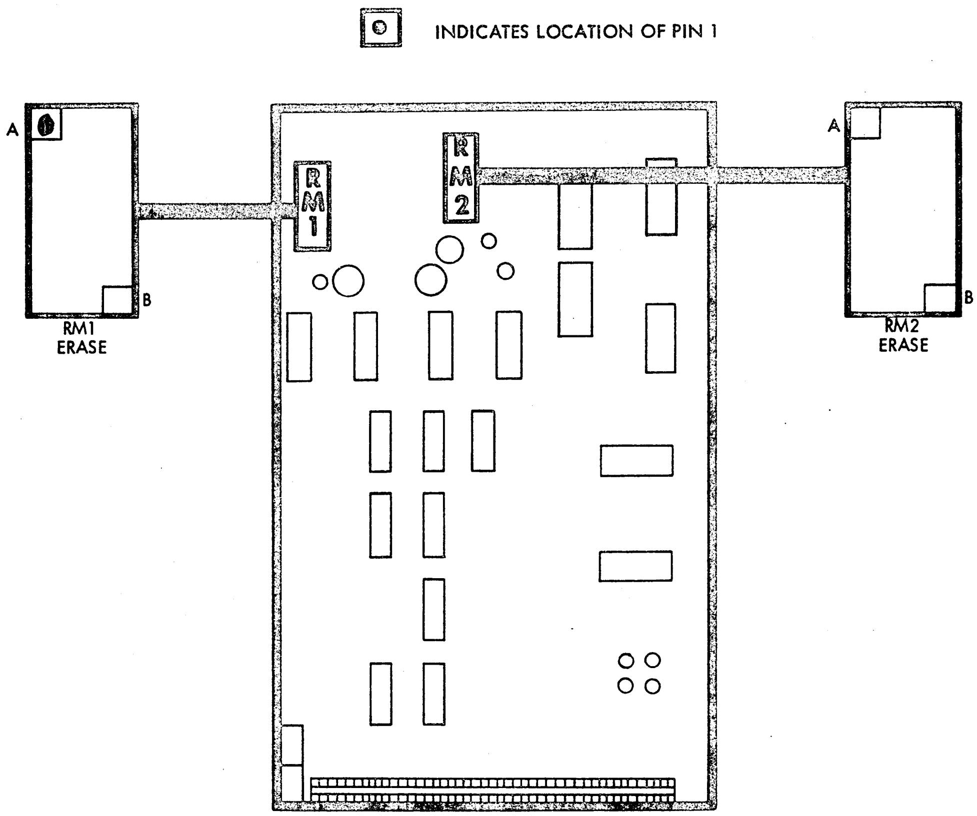
	OFF	S4	ON	
HARD SECTOR	X	1		SOFT SECTOR
2400 RPM	X	2		1500 RPM
1500 RPM		3	X	2400 RPM
1500 RPM		4	X	2400 RPM
SPARE	X	5		SPARE
SPARE	X	6		SPARE
TEST		7	X	ON FOR ALL CONFIGURATIONS

	OFF	S1	ON	
2400 RPM	X	1		1500 RPM
TEST		2	X	ON FOR ALL CONFIGURATIONS
SPARE	X	3		SPARE
SPARE	X	4		SPARE
SPARE	X	5		SPARE
SPARE	X	6		SPARE
SOFT SECTOR		7	X	HARD SECTOR

	OFF	S2	ON	
HARD SECTOR	X	1		SOFT SECTOR
HARD SECTOR	X	2		SOFT SECTOR
SOFT SECTOR		3	X	HARD SECTOR
1/2 CELL DATA	X	4		1/4 CELL DATA
1/4 CELL DATA		5	X	1/2 CELL DATA
1/2 CELL CLOCK	X	6		1/4 CELL CLOCK
1/4 CELL CLOCK		7	X	1/2 CELL CLOCK

	OFF	S3	ON	
TEST		1	X	ON FOR ALL CONFIGURATIONS
SPARE	X	2		SPARE
HARD SECTOR	X	3		SOFT SECTOR
SOFT SECTOR		4	X	HARD SECTOR
SOFT SECTOR		5	X	HARD SECTOR
HARD SECTOR	X	6		SOFT SECTOR
SOFT SECTOR		7	X	HARD SECTOR

R/W/E BOARD

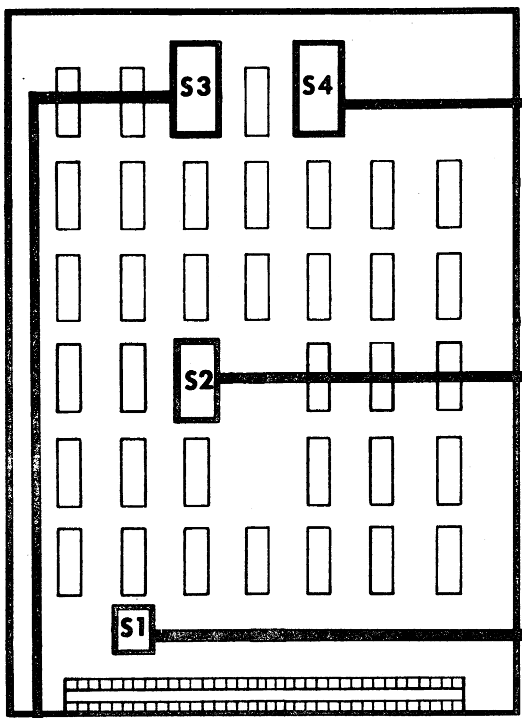


	DESCRIPTION				RM1—(ERASE)		RM2—(WRITE)	
*	TP1	ERASE TYPE	RPM	FIXED DISK	MOD. TYPE	PIN 1	MOD. TYPE	PIN 1
	100	PRE-ERASE	2400	YES	75300100	B	75300100	A
	100	PRE-ERASE	2400	NO	75300100	B	75300100	A
	100	STRADDLE ERASE	1500	YES	NONE		75300100	A
	100	STRADDLE ERASE	1500	NO	NONE		75300100	A
	100	STRADDLE ERASE	2400	YES	NONE		75300100	A
	100	STRADDLE ERASE	2400	NO	NONE		75300100	A
X	200	PRE-ERASE	2400	YES	75300100	A	NONE	
	200	PRE-ERASE	2400	NO	75300100	A	NONE	
	200	STRADDLE ERASE	1500	YES	75300200	B	75300200	A
	200	STRADDLE ERASE	1500	NO	75300200	B	75300200	A
	200	STRADDLE ERASE	2400	YES	75300200	B	75300200	A
	200	STRADDLE ERASE	2400	NO	75300200	B	75300200	A

*RESISTOR MODULE USED INDICATED BY (X).

SECTOR BOARD - SYNCHRONOUS SECTOR COUNTER

☒ INDICATES SWITCH POSITION



ONLY ONE SWITCH FROM THIS GROUP CAN BE ON.

OFF	S4	ON	
	1	X	÷ 1 FIXED
X	2		÷ 32 FIXED
X	3		÷ 16 FIXED
X	4		÷ 8 FIXED
X	5		÷ 4 FIXED
X	6		÷ 2 FIXED
	7	X	X 1 FIXED
X	8		X 2 FIXED

ONLY ONE SWITCH FROM THIS GROUP CAN BE ON.

OFF	S2	ON	
	1	X	÷ 1 CART
X	2		÷ 32 CART
X	3		÷ 16 CART
X	4		÷ 8 CART
X	5		÷ 4 CART
X	6		÷ 2 CART
	7	X	X 1 CART
X	8		X 2 CART

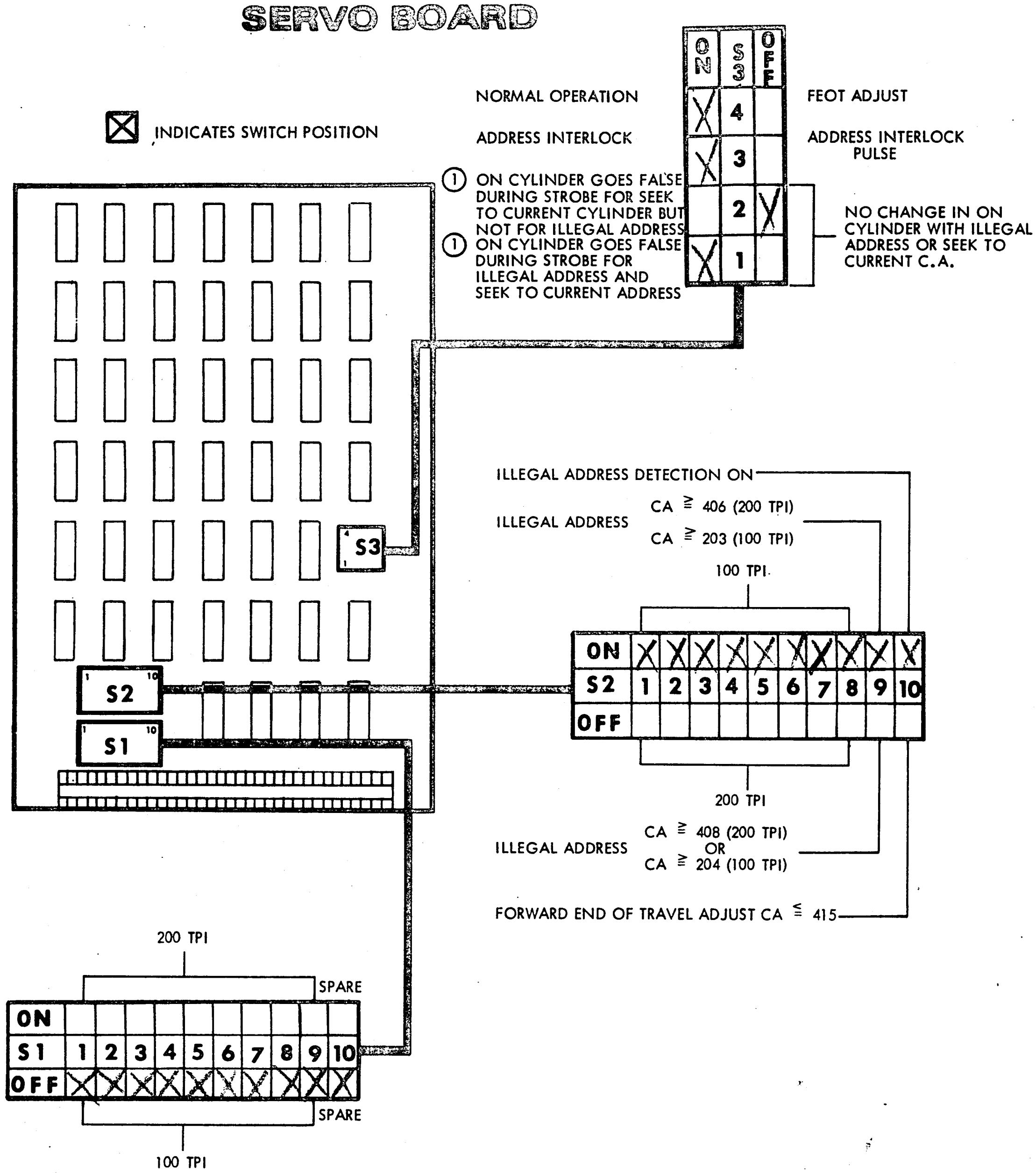
	OFF	S3	ON	
DYNAMIC BRAKE	X	1		NO DYNAMIC BRAKE
FUTURE FIXED INDEX 2400 RPM	X	2		FUTURE FIXED INDEX
	X	3		1500 RPM
FIXED INDEX TIMING △1	X	4		FIXED INDEX TIMING △2
FIXED INDEX TIMING △1	X	5		FIXED INDEX TIMING △2
INDEX ANGLE 5°30'	X	6		INDEX ANGLE 3°10'
2400 RPM	X	7		1500 RPM
NO DYNAMIC BRAKE		8	X	DYNAMIC BRAKE

△1 INDEX TIMING MULTI SECTOR, INDEX AT SECTOR Ø DELAYED INDEX

△2 INDEX TIMING SINGLE SECTOR OR INDEX PRIOR TO SECTOR Ø DIRECT FIXED INDEX

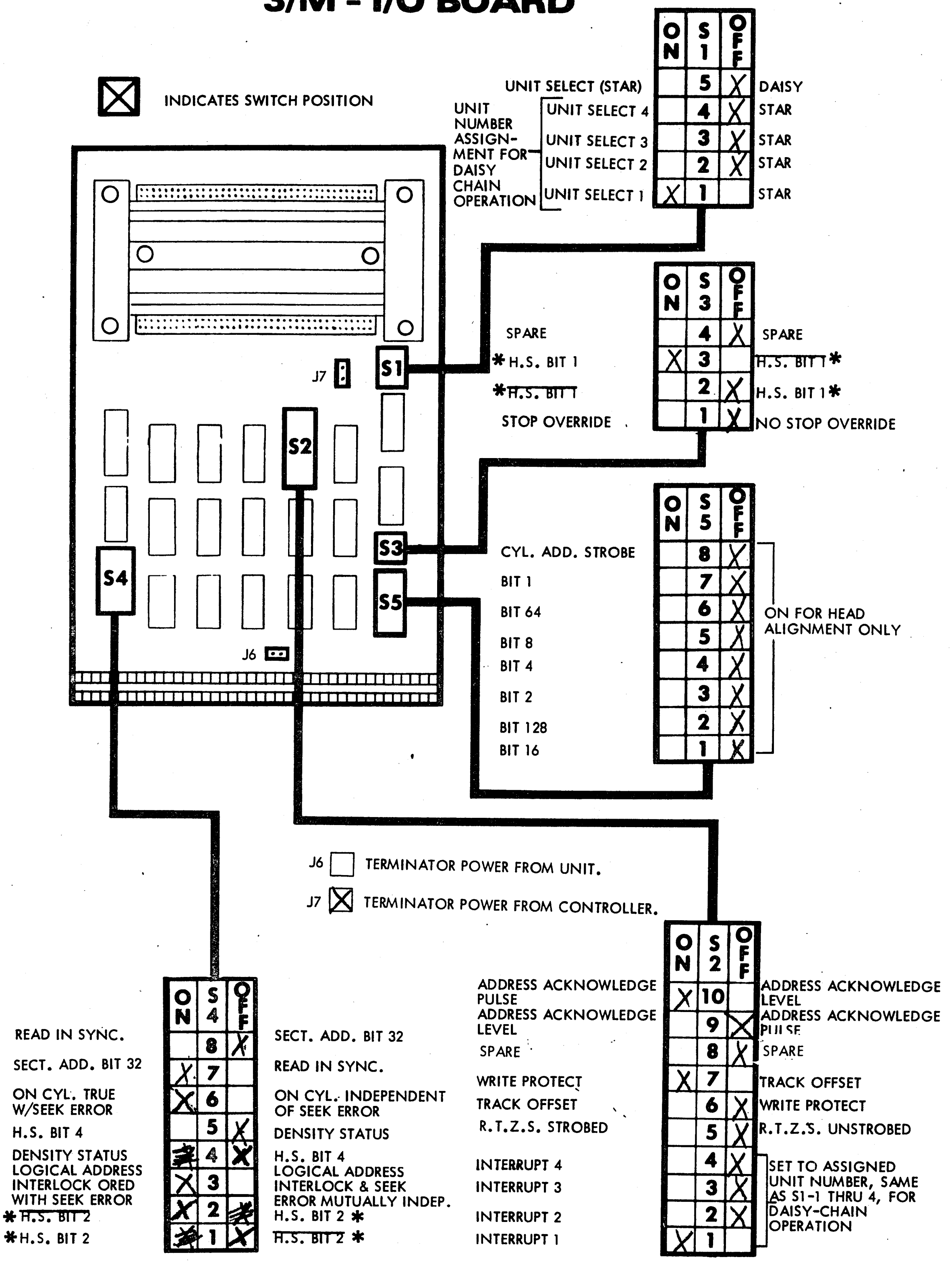
	OFF	S1	ON	
INDEX TIMING △1	X	1		INDEX TIMING △2
INDEX TIMING △1	X	2		INDEX TIMING △2
HARD SECTOR	X	3		SOFT SECTOR
SOFT SECTOR		4	X	HARD SECTOR

SERVO BOARD



1 SW3-1 & SW3-2 MUST NOT BE ON AT THE SAME TIME, HOWEVER, THEY CAN BE OFF AT THE SAME TIME.

3/M - I/O BOARD



* 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.

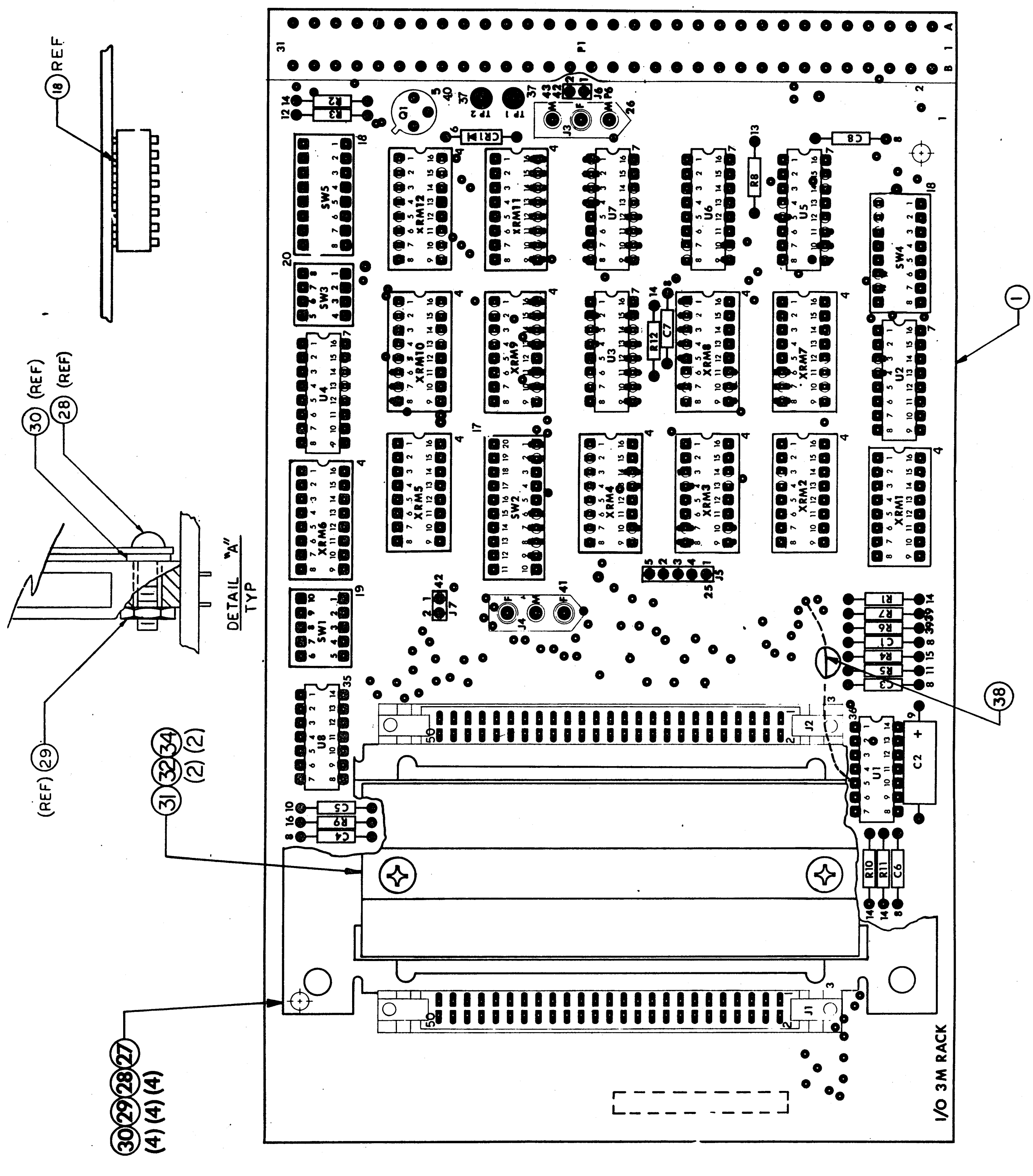
**S3-2 MUST BE OFF IF S1-5 IS ON.

VA
DIAGRAMS
(I/O PACKAGE)

SCOPE

This publication, when used with the HAWK 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.

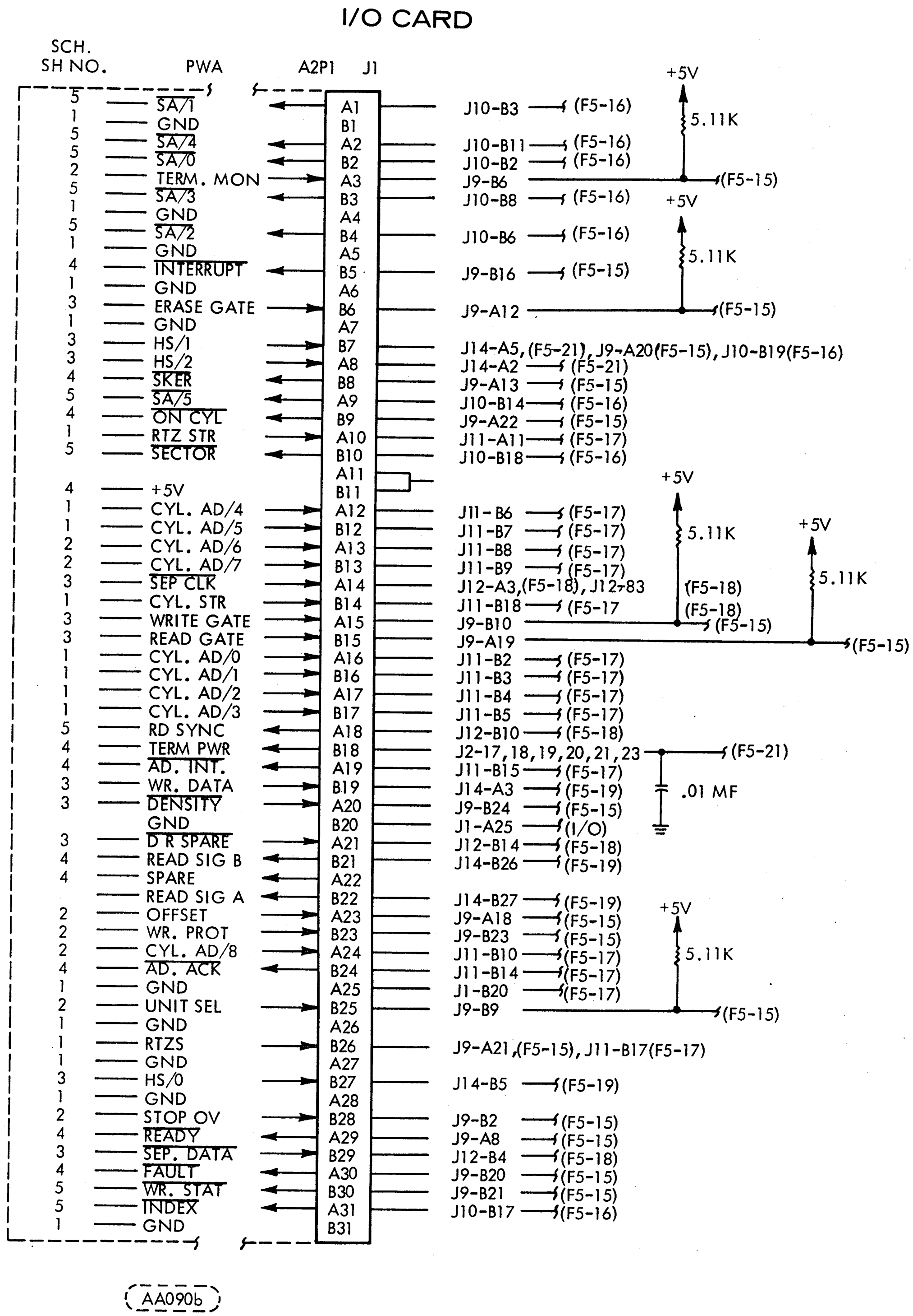
- Sheet 5A-2 Circuit Board Assembly (75858205)
- Sheet 5A-4 Interconnection Diagram
- Sheet 5A-5 Schematic (75858205)



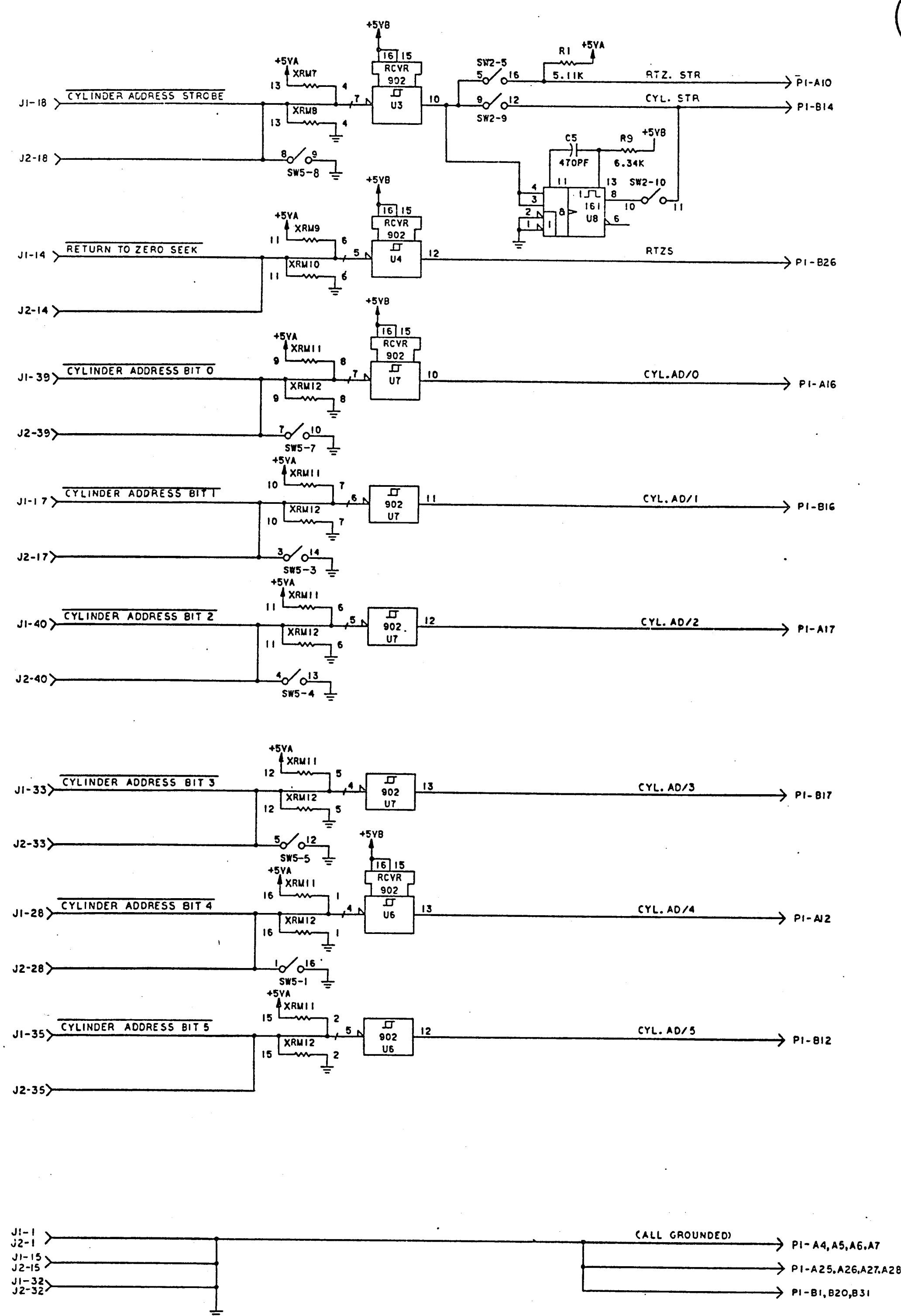
Circuit Board Assembly

ITEM NO.	IDENTIFICATION NUMBER	DRAWING TITLE
	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

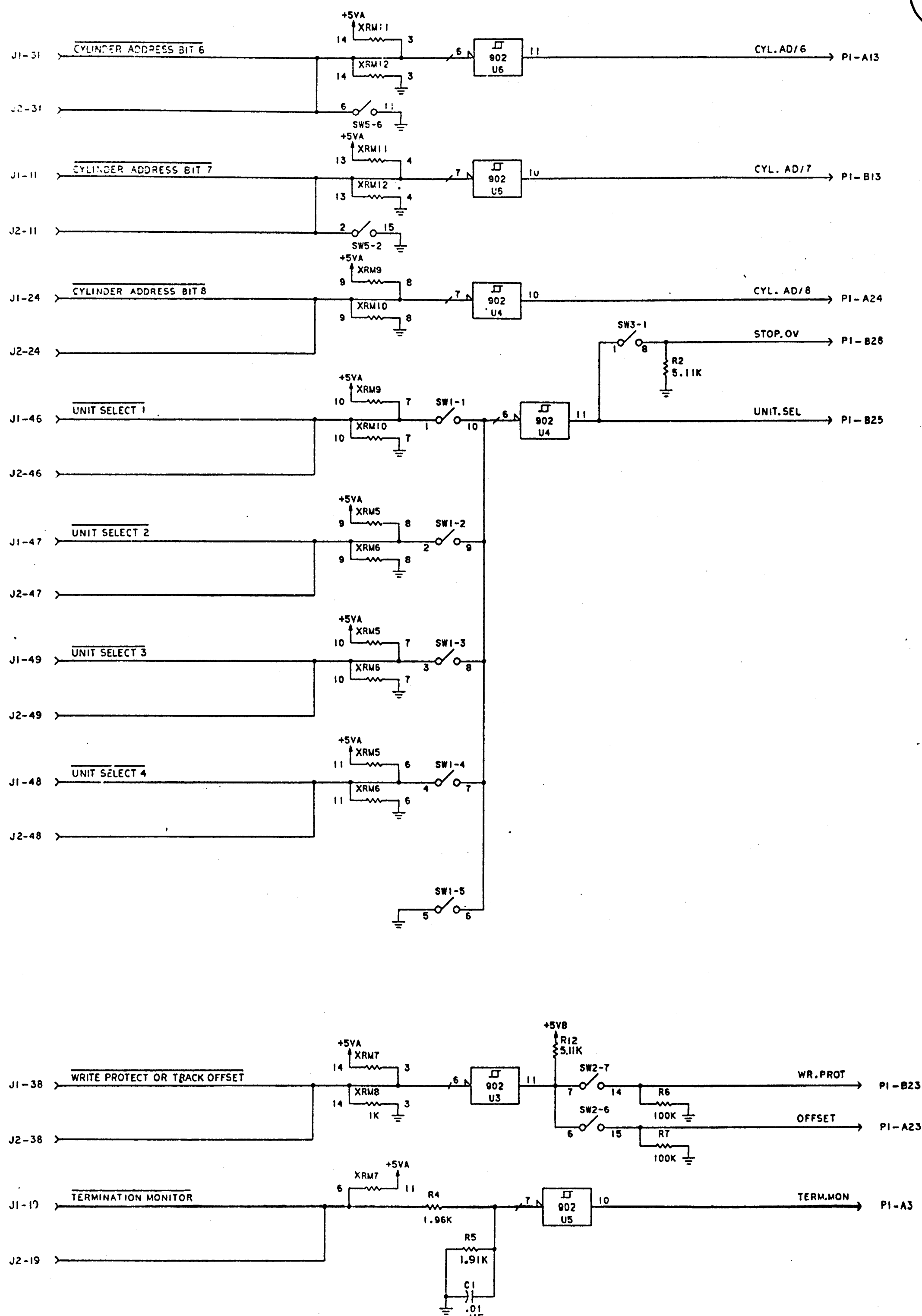


Interconnection Diagram

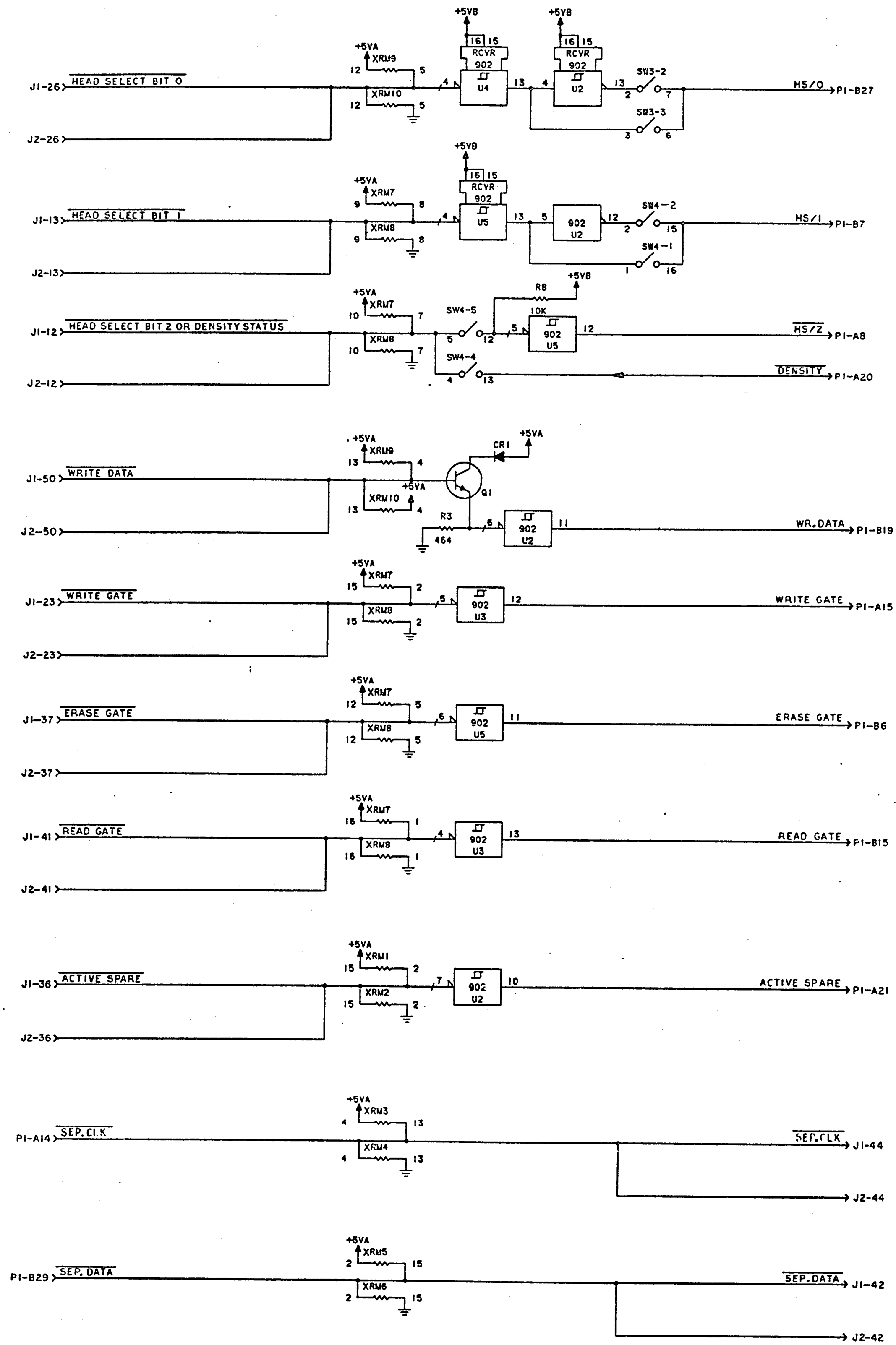

CYLINDER ADDRESS STROBE
RETURN TO ZERO SEEK
CYLINDER ADDRESS BIT 0
CYLINDER ADDRESS BIT 1
CYLINDER ADDRESS BIT 2
CYLINDER ADDRESS BIT 3
CYLINDER ADDRESS BIT 4
CYLINDER ADDRESS BIT 5
RTZ. STR
CYL. STR
RTZS
CYL.AD/0
CYL. AD/1
CYL. AD/2
CYL. AD/3
CYL. AD/4
CYL. AD/5
(ALL GROUNDED)
P1-A10
P1-B14
P1-B26
P1-A16
P1-B16
P1-A17
P1-B17
P1-A12
P1-B12
P1-A4,A5,A6,A7
P1-A25,A26,A27,A28
P1-B1,B20,B31

Schematic

2

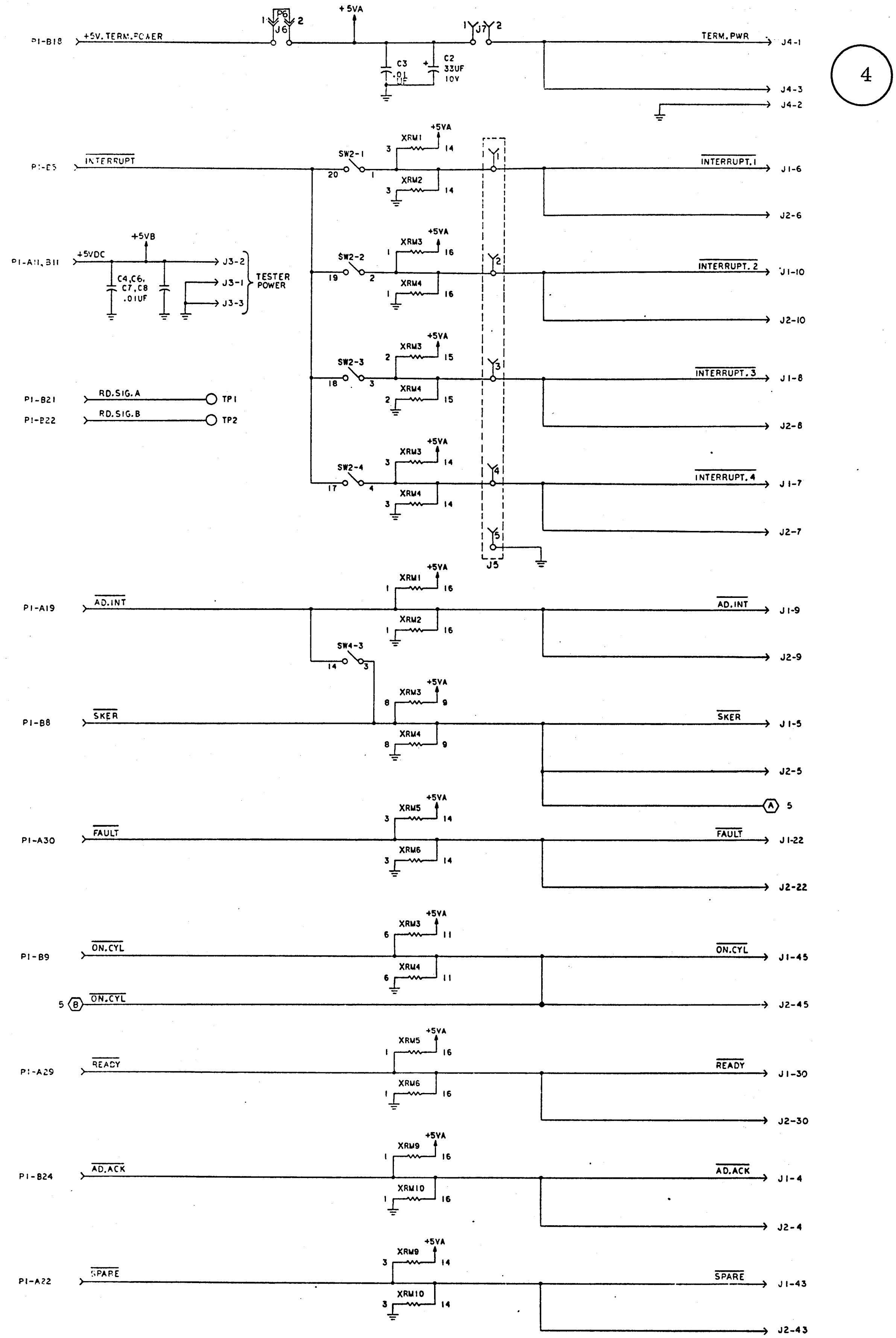

J1-31
J2-31
CYLINDER ADDRESS BIT 6
CYL. AD/6
P1-A13
J1-11
J2-11
CYLINDER ADDRESS BIT 7
CYL. AD/7
P1-B13
J1-24
J2-24
CYLINDER ADDRESS BIT 8
CYL. AD/8
P1-A24
STOP. OV
P1-B28
R2
5.11K
J1-46
J2-46
UNIT SELECT 1
UNIT. SEL
P1-B25
J1-47
J2-47
UNIT SELECT 2
J1-49
J2-49
UNIT SELECT 3
J1-48
J2-48
UNIT SELECT 4
J1-38
J2-38
WRITE PROTECT OR TRACK OFFSET
WR. PROT
P1-B23
OFFSET
P1-A23
J1-19
J2-19
TERMINATION MONITOR
TERM. MON
P1-A3
R4
1.96K
R5
1.91K
C1
.01 UF
R12
5.11K
R6
100K
R7
100K

Schematic

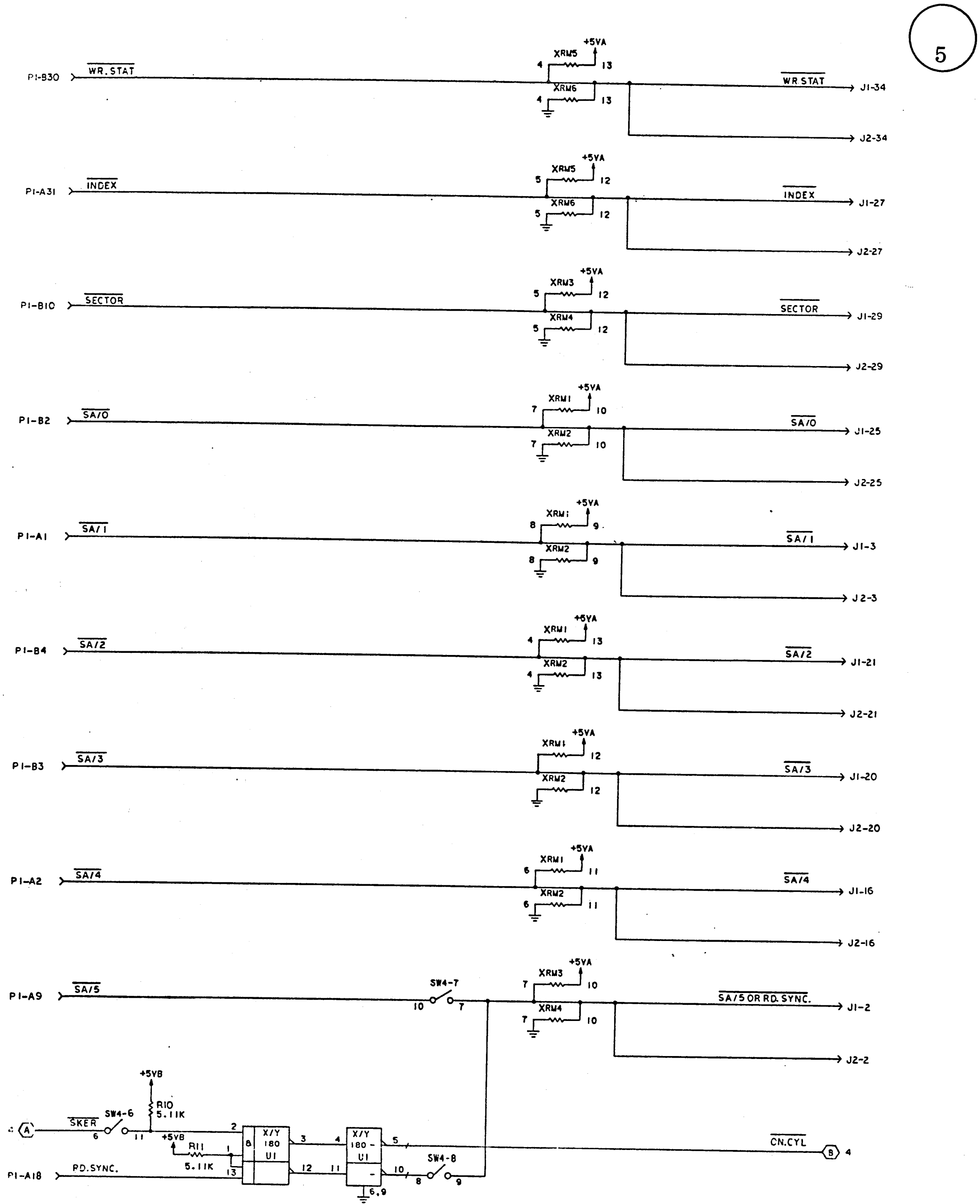


J1-26 HEAD SELECT BIT 0
J2-26
HS/0 P1-B27
J1-13 HEAD SELECT BIT 1
J2-13
HS/1 P1-B7
J1-12 HEAD SELECT BIT 2 OR DENSITY STATUS
J2-12
HS/2 P1-A8
DENSITY P1-A20
J1-50 WRITE DATA
J2-50
WR.DATA P1-B19
J1-23 WRITE GATE
J2-23
WRITE GATE P1-A15
J1-37 ERASE GATE
J2-37
ERASE GATE P1-B6
J1-41 READ GATE
J2-41
READ GATE P1-B15
J1-36 ACTIVE SPARE
J2-36
ACTIVE SPARE P1-A21
P1-A14 SEP.CLK
SEP.CLK J1-44
J2-44
P1-B29 SEP.DATA
SEP.DATA J1-42
J2-42

Schematic


4
P1-B18
+5V.TERM.POWER
P6
J6
+5VA
C3 .01 UF
C2 33UF 10V
J7
TERM.PWR
J4-1
J4-3
J4-2
P1-B5
INTERRUPT
SW2-1
XRM1
XRM2
INTERRUPT.1
J1-6
J2-6
P1-A11,B11
+5VDC
+5VB
C4,C6, C7,C8 .01UF
J3-2
J3-1
J3-3
TESTER POWER
SW2-2
XRM3
XRM4
INTERRUPT.2
J1-10
J2-10
SW2-3
INTERRUPT.3
J1-8
J2-8
P1-B21
RD.SIG.A
TP1
P1-B22
RD.SIG.B
TP2
SW2-4
INTERRUPT.4
J1-7
J2-7
J5
P1-A19
AD.INT
J1-9
J2-9
SW4-3
P1-B8
SKER
J1-5
J2-5
5
XRM5
XRM6
P1-A30
FAULT
J1-22
J2-22
P1-B9
ON.CYL
J1-45
J2-45
P1-A29
READY
J1-30
J2-30
XRM9
XRM10
P1-B24
AD.ACK
J1-4
J2-4
P1-A22
SPARE
J1-43
J2-43

Schematic


5
P1-B30
WR.STAT
+5VA
XRM5
XRM6
4
13
WR STAT
J1-34
J2-34
P1-A31
INDEX
INDEX
J1-27
J2-27
P1-B10
SECTOR
SECTOR
J1-29
J2-29
P1-B2
SA/0
SA/0
J1-25
J2-25
P1-A1
SA/1
SA/1
J1-3
J2-3
P1-B4
SA/2
SA/2
J1-21
J2-21
P1-B3
SA/3
SA/3
J1-20
J2-20
P1-A2
SA/4
SA/4
J1-16
J2-16
P1-A9
SA/5
SW4-7
XRM3
XRM4
SA/5 OR RD. SYNC.
J1-2
J2-2
+5VB
R10
5.11K
SKER
SW4-6
R11
5.11K
X/Y
180
U1
SW4-8
CN.CYL
P1-A18
PD.SYNC.

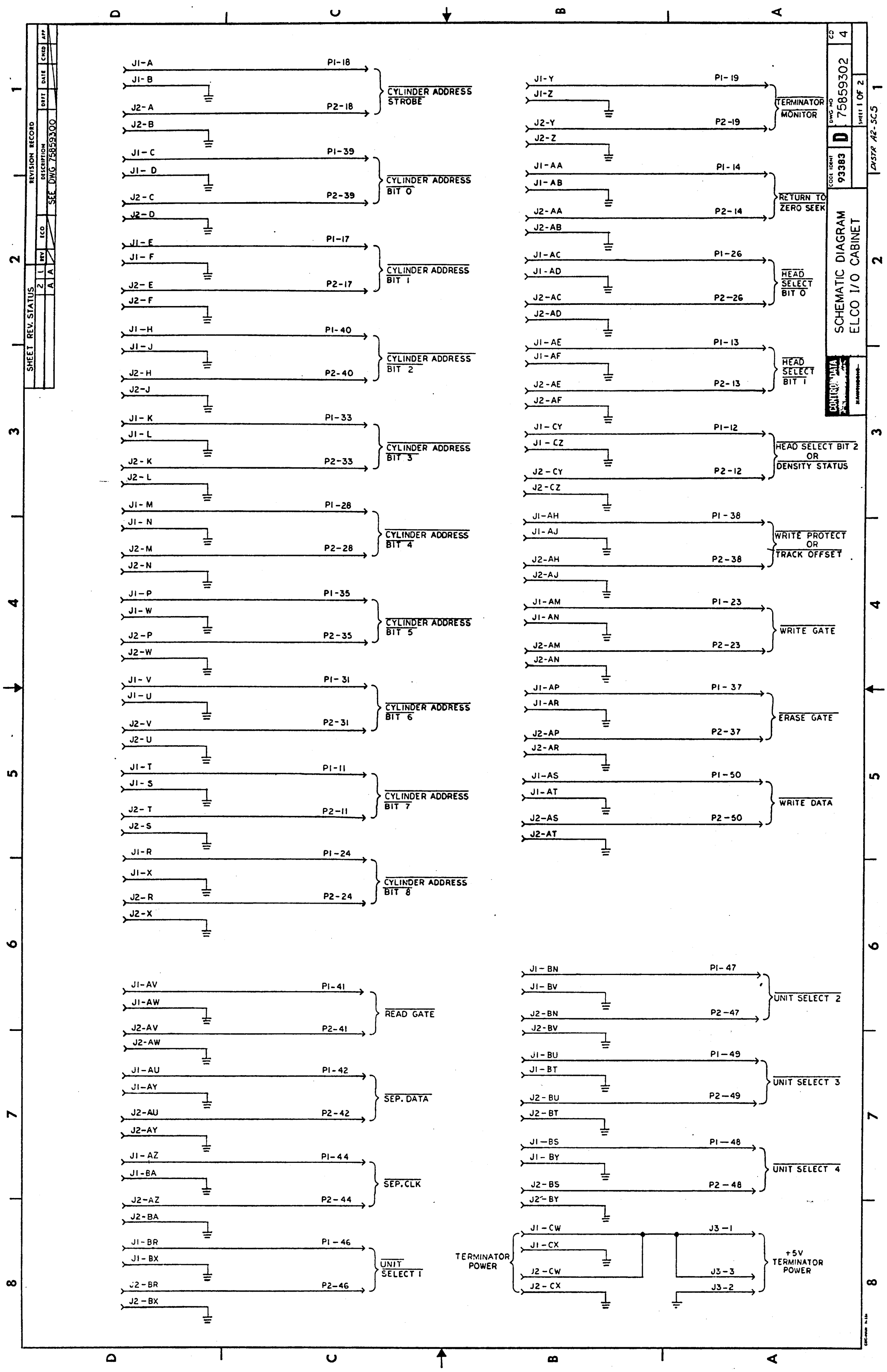
Schematic

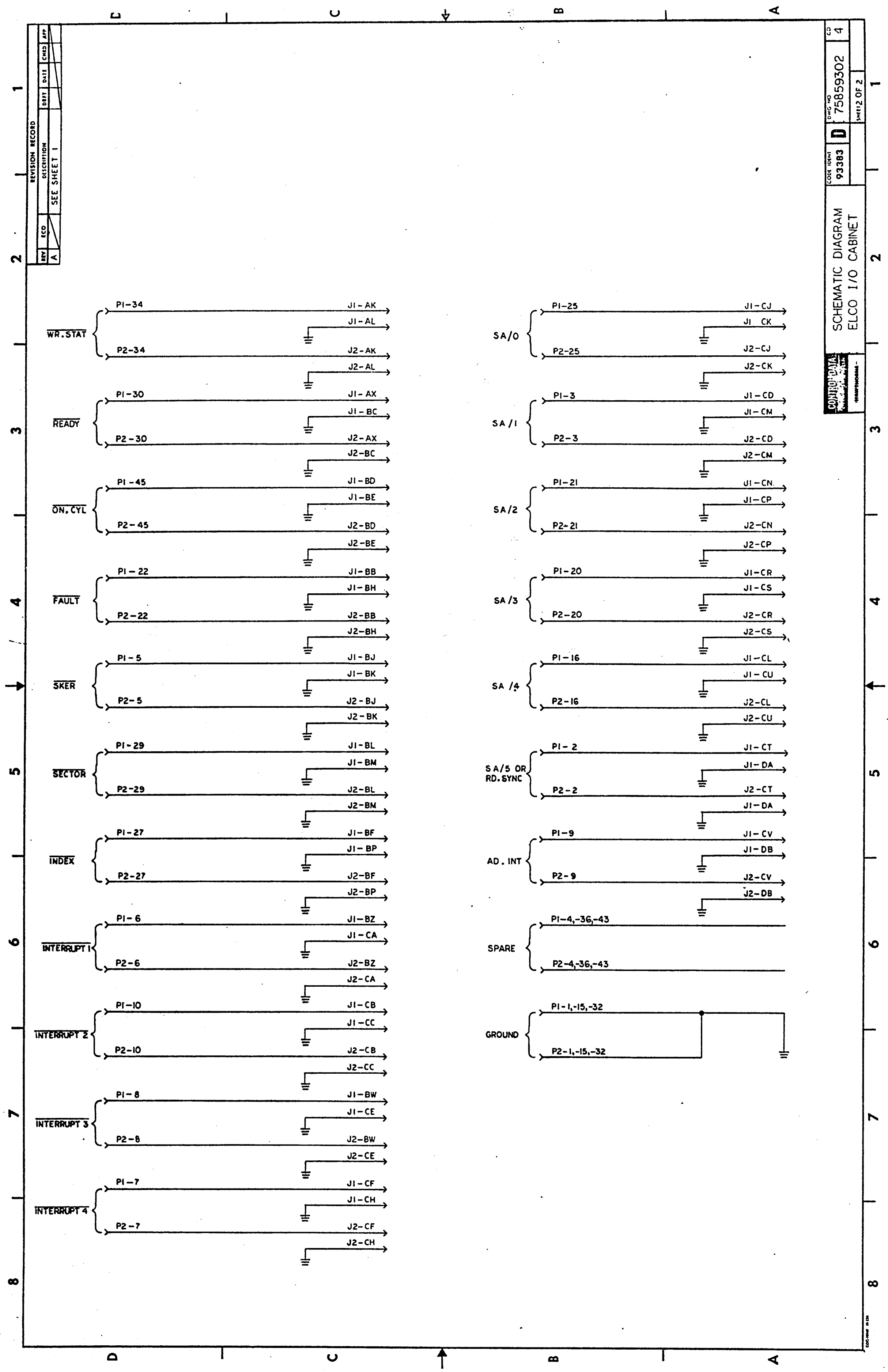
VA
DIAGRAMS
(I/O PACKAGE)

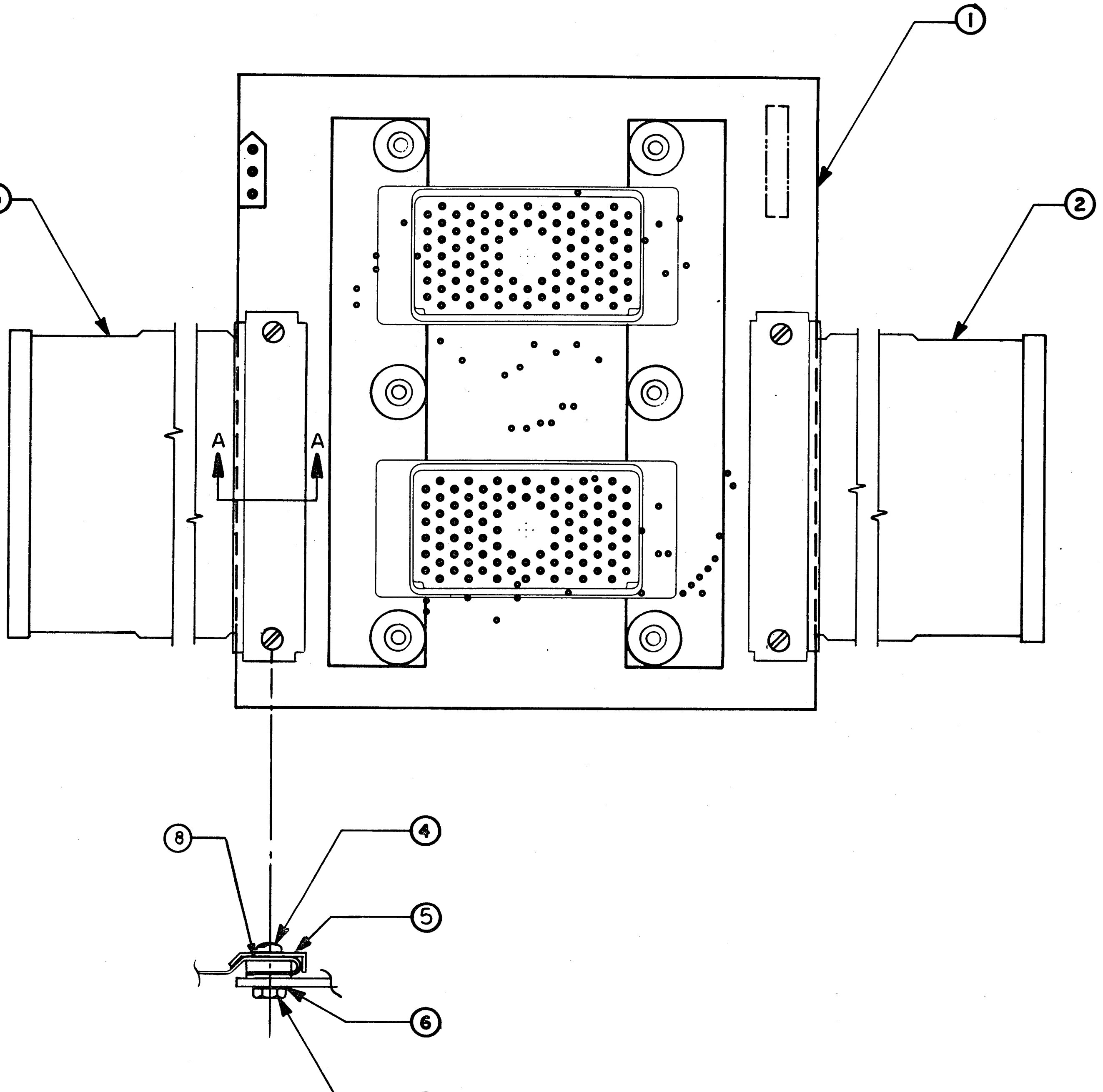
SCOPE

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

Schematic Diagram	75859302	Sheet 5A-2
Assembly Drawing and PL	75859203	Sheet 5A-4


SCHEMATIC DIAGRAM
ELCO I/O CABINET
75859302
93383
D
SHEET 1 OF 2
DISTR A2-SC5
CONTROL DATA
REVISION RECORD
SHEET REV. STATUS
SEE DWG 75859300
J1-A P1-18 J1-B J2-A P2-18 J2-B CYLINDER ADDRESS STROBE
J1-C P1-39 J1-D J2-C P2-39 J2-D CYLINDER ADDRESS BIT 0
J1-E P1-17 J1-F J2-E P2-17 J2-F CYLINDER ADDRESS BIT 1
J1-H P1-40 J1-J J2-H P2-40 J2-J CYLINDER ADDRESS BIT 2
J1-K P1-33 J1-L J2-K P2-33 J2-L CYLINDER ADDRESS BIT 3
J1-M P1-28 J1-N J2-M P2-28 J2-N CYLINDER ADDRESS BIT 4
J1-P P1-35 J1-W J2-P P2-35 J2-W CYLINDER ADDRESS BIT 5
J1-V P1-31 J1-U J2-V P2-31 J2-U CYLINDER ADDRESS BIT 6
J1-T P1-11 J1-S J2-T P2-11 J2-S CYLINDER ADDRESS BIT 7
J1-R P1-24 J1-X J2-R P2-24 J2-X CYLINDER ADDRESS BIT 8
J1-AV P1-41 J1-AW J2-AV P2-41 J2-AW READ GATE
J1-AU P1-42 J1-AY J2-AU P2-42 J2-AY SEP. DATA
J1-AZ P1-44 J1-BA J2-AZ P2-44 J2-BA SEP. CLK
J1-BR P1-46 J1-BX J2-BR P2-46 J2-BX UNIT SELECT 1
J1-Y P1-19 J1-Z J2-Y P2-19 J2-Z TERMINATOR MONITOR
J1-AA P1-14 J1-AB J2-AA P2-14 J2-AB RETURN TO ZERO SEEK
J1-AC P1-26 J1-AD J2-AC P2-26 J2-AD HEAD SELECT BIT 0
J1-AE P1-13 J1-AF J2-AE P2-13 J2-AF HEAD SELECT BIT 1
J1-CY P1-12 J1-CZ J2-CY P2-12 J2-CZ HEAD SELECT BIT 2 OR DENSITY STATUS
J1-AH P1-38 J1-AJ J2-AH P2-38 J2-AJ WRITE PROTECT OR TRACK OFFSET
J1-AM P1-23 J1-AN J2-AM P2-23 J2-AN WRITE GATE
J1-AP P1-37 J1-AR J2-AP P2-37 J2-AR ERASE GATE
J1-AS P1-50 J1-AT J2-AS P2-50 J2-AT WRITE DATA
J1-BN P1-47 J1-BV J2-BN P2-47 J2-BV UNIT SELECT 2
J1-BU P1-49 J1-BT J2-BU P2-49 J2-BT UNIT SELECT 3
J1-BS P1-48 J1-BY J2-BS P2-48 J2-BY UNIT SELECT 4
TERMINATOR POWER J1-CW J1-CX J2-CW J2-CX J3-1 J3-3 J3-2 +5V TERMINATOR POWER


SCHEMATIC DIAGRAM
ELCO I/O CABINET
93383
D
75859302
4
SHEET 2 OF 2
CONTROL DATA
REVISION RECORD
A
SEE SHEET 1
WR.STAT
P1-34 J1-AK
J1-AL
P2-34 J2-AK
J2-AL
READY
P1-30 J1-AX
J1-BC
P2-30 J2-AX
J2-BC
ON.CYL
P1-45 J1-BD
J1-BE
P2-45 J2-BD
J2-BE
FAULT
P1-22 J1-BB
J1-BH
P2-22 J2-BB
J2-BH
SKER
P1-5 J1-BJ
J1-BK
P2-5 J2-BJ
J2-BK
SECTOR
P1-29 J1-BL
J1-BM
P2-29 J2-BL
J2-BM
INDEX
P1-27 J1-BF
J1-BP
P2-27 J2-BF
J2-BP
INTERRUPT 1
P1-6 J1-BZ
J1-CA
P2-6 J2-BZ
J2-CA
INTERRUPT 2
P1-10 J1-CB
J1-CC
P2-10 J2-CB
J2-CC
INTERRUPT 3
P1-8 J1-BW
J1-CE
P2-8 J2-BW
J2-CE
INTERRUPT 4
P1-7 J1-CF
J1-CH
P2-7 J2-CF
J2-CH
SA/0
P1-25 J1-CJ
J1 CK
P2-25 J2-CJ
J2-CK
SA/1
P1-3 J1-CD
J1-CM
P2-3 J2-CD
J2-CM
SA/2
P1-21 J1-CN
J1-CP
P2-21 J2-CN
J2-CP
SA/3
P1-20 J1-CR
J1-CS
P2-20 J2-CR
J2-CS
SA/4
P1-16 J1-CL
J1-CU
P2-16 J2-CL
J2-CU
SA/5 OR RD.SYNC
P1-2 J1-CT
J1-DA
P2-2 J2-CT
J1-DA
AD. INT
P1-9 J1-CV
J1-DB
P2-9 J2-CV
J2-DB
SPARE
P1-4,-36,-43
P2-4,-36,-43
GROUND
P1-1,-15,-32
P2-1,-15,-32



ELCO I/O CABINET CIRCUIT BOARD ASSEMBLY

ITEM NO.	IDENTIFICATION NUMBER	DRAWING TITLE
	75859203	Comp Bd Assy-Elco I/O
1	83446102	Comp Bd Sub Assy-FLC
2	83444305	Cable Assy-I/O Cab
3	83444306	Cable Assy-I/O Cab 2
4	10127105	Screw Pan Hd Mach
5	77598600	Clamp-Cable
6	10126400	Washers Ext Tooth Lk
7	10125103	Scr Nut-Hex Mach 4-4
8	75342013	Spec Tape

ELCO I/O CABINET CIRCUIT BOARD ASSEMBLY

VIII - A
PARTS
DATA
CONFIGURATOR

SCOPE

This attachment, when used with Section 8 of the Model 9427H Hardware Maintenance Manual, physically describes the equipment which this document package is designed to support. It may be desirable to insert this sheet in front of Section 8.

INSTRUCTIONS

The tables below consists of a horizontal listing by item number of the parts illustrated in Figures 8-2 and 8-3. The X's and 0's below the dashed (-) line determines applicability of each item. X = Part Used. 0 = Part Not Used. Refer to the parts lists in Figures 8-2 and 8-3 for part numbers and descriptions.

- TOP MECHANICAL ASSEMBLY

The following Table must be used with Figure 8-2 Top Mechanical Assembly (TMA). It identifies the TMA number (first three digits); applicable parts and assemblies and; the Module Assembly (Mod Asm) used on the TMA (last two digits). Row #1 lists items 201 through 250, Row #2 lists items 251 through 300.

RØW	**********	***PART***	***ITEM***	**NUMBER**	**********	
#	2222222222	2222222222	2222222222	2222222222	2222222222	MA
1	0000000001	1111111112	2222222223	3333333334	4444444445	ØS
TMA	1234567890	1234567890	1234567890	1234567890	1234567890	DM
---	----------	----------	----------	----------	----------	--
086	X0000X0000	0000000000	0000000000	0000000000	000000000X	26

RØW	**********	***PART***	***ITEM***	**NUMBER**	**********	
#	2222222222	2222222222	2222222222	2222222222	2222222223	MA
2	5555555556	6666666667	7777777778	8888888889	9999999990	ØS
TMA	1234567890	1234567890	1234567890	1234567890	1234567890	DM
---	----------	----------	----------	----------	----------	--
086	0000X00000	000X000X00	00XX000X00	X000000000	0000000000	26

- MODULE ASSEMBLY

The following table must be used with Figure 8-3 Module Assembly (Mod Asm). It identifies the MOD ASM number referenced in the TMA Table and the applicable parts and assemblies.

```
         ****************PART ********ITEM******** NUMBER**************
         33333333333333333333 33333333333333333333 33333333333333333333
 MØDULE  00000000011111111112 22222222233333333334 44444444455555555556
ASSEMBLY 12345678901234567890 12345678901234567890 12345678901234567890
-------- -------------------- -------------------- --------------------
83429726 X0X0000X000000000000 X00000X0000X00000000 00000X000X00X00X0000
```