

RM03 DISK DRIVE MAINTENANCE PRINT SET

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PREFACE

This manual contains maintenance information applicable to the BK5B5G, BK5B5H, BK5C1C and BK5C1D Storage Module Drives (SMDs).

This manual provides the logic and wiring information relating to the SMDs. The manual assumes that the reader is already trained in the use of normal mechanical and electric repair equipment. In addition, the manual assumes that the reader has a working knowledge of the use and interpretation of logic.

Information in this manual is divided into two sections:

Section 1 - Diagrams

Section 2 - Wire Lists

Other manuals, also applicable to the SMDs covered in this manual, are as follows:

Publication
Number

Title

83322660

Hardware Maintenance Manual
Volume 1 - Installation and
Checkout, Maintenance, Parts
Data.

83322690

Hardware Reference Manual -
General Description, Opera-
tion, Theory of Operation,
Key to Logic.

83322670

Logic Cards Manual - General
Theory, Logic Symbology, Data
Sheets.

A guide for the Disk Drive Operator, publi-
cation number 83323770, is also available.
The guide maybe ordered through Literature
Distribution Services at the following ad-
dress:

Control Data Corporation
Literature Distribution
Services
308 North Dale St.
St. Paul, MN 55103

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ABBREVIATIONS

ABR	Absolute Reserve	MULT	Multiple
ABV	Above	NC	No Connection
ADDR	Address	NEG	Negative
ADRS	Address	NO	Number
AGC	Automatic Gain Control	NOM	Nominal
AM	Address Mark	NORM	Normal
AMPL	Amplifier	NRM	Normal
BLK	Black	NRZ	Nonreturn To Zero
BLW	Below	PC PT	Piece Part
CAR	Cylinder Address Register	PLO	Phase Lock Oscillator
CH	Channel	PN	Part Number
CHAN	Channel	POS	Positive
CNTLGL	Centrifugal	PWR	Power
CNTR	Counter	RCVRS	Receivers
COMP	Compensation	RD	Read
CONFIG	Configuration	RDY	Ready
CONT	Continued	REC	Receiver
CR REF	Cross Reference	REF	Reference
CYL	Cylinder	REG	Register
D/A	Digital To Analog	REV	Reverse
DCDR	Decoder	RGTR	Register
DIFF	Difference	RTM	Reserve Timer
DLY	Delay	RTZ	Return To Zero
DRVR	Driver	S&IOBC	Sector and Index On B Cable
DSBL	Disable	S/C	Series Code
ECL	Emitter Coupled Logic	SEC	Second
ECO	Engineering Change Order	SEL	Select
EMER	Emergency	SEQ	Sequence
EN	Enable	SER	Servo
EOT	End Of Travel	SH	Sheet
EQUIP	Equipment	SOL	Solenoid
EQUIV	Equivalent	SR	Servo
FCO	Field Change Order	SW	Switch
FF	Flip Flop	T	Track
FIG	Figure	TBS	To Be Supplied
FLT	Fault	TLA	Top Level Assembly
FREQ	Frequency	TP	Test Point
FTU	Field Test Unit	TRK	Track
FWD	Forward	TTL	Transistor Transistor Logic
GND	Ground	UNREG	Unregulated
HD	Head	VCO	Voltage Controlled Oscillator
I/O	Input-Output	W+R	Write Or Read
INTLK	Interlock	W·R	Write and Read
LD	Load	W/	With
MAINT	Maintenance	W/O	Without
MAX	Maximum	WRT	Write
MB	Megabvte	WT	White
MFM	Modified Frequency Modulation	XDUCER	Transducer
MK	Mark	XMTR	Transmitter

SECTION 1

DIAGRAMS

INTRODUCTION

Section 1 is divided into three areas: diagram conventions, physical descriptions, and diagrams. The discussion on diagram conventions describes the elements included in the logic, and how to use the logic. The discussion on physical description identifies the functional elements on the drive and references them to the appropriate diagrams. The logic diagrams show how the drive functions.

DIAGRAM CONVENTIONS

The conventions used in the logic diagrams are:

- Symbolology
- Abbreviations
- Logic Levels
- Signal Names
- Intersheet References
- Diagram Cover Sheets

An explanation of each of the above is included in the following paragraphs.

SYMBOLOLOGY

The logic diagrams consist of MIL STD 806-B/C symbols for each of the microcircuit elements that make up the various logic networks in the drive. When discrete components are used to implement a function (or portion thereof) for which no microcircuit exists, the components (resistors, transistors, etc.) are shown in the diagrams.

Typically, a logic symbol contains three kinds of information:

1. Function (name)
2. CDC element identifier
3. Physical location code

The function name is usually omitted from distinctive shaped symbols (AND, OR, XOR, inverter, etc.). The function and the element identifier serve to define the element

type. Refer to the Logic Cards manual for a detailed description of the functions and identifiers associated with each microcircuit. The following discussion defines physical location codes. Refer to figure 1-1 to assist in understanding the discussion on physical location codes.

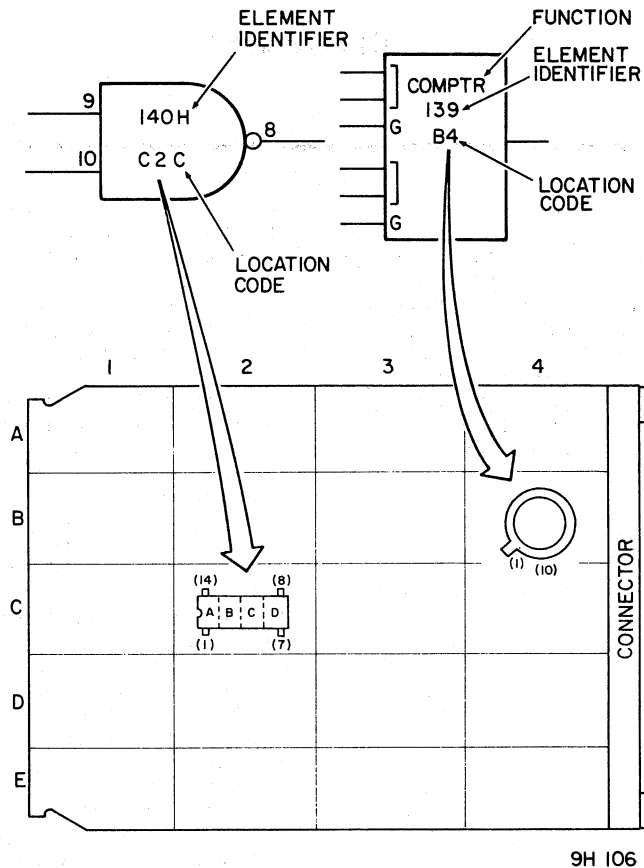
The physical location code is in the form of a two digit or a three digit code. The first two digits indicate the location of the microcircuit in relation to its position on the card. Each plug-in logic module, or printed-circuit card, has implicit locations for 20 microcircuit elements. The exact location of microcircuit can be found as follows: with the component side of the card up and the card connector to the right, form an imaginary grid on the card. Divide the card into five equal rows (using horizontal lines), and four equal columns (using vertical lines). Label the five rows A through E on the left hand side of the card, and number the columns 1 through 4 on the top of the card. To find a microcircuit location, intersect the rows and the columns as indicated by the physical location code. As shown in figure 1-1, the element at location B4 can be located by intersecting row B with column 4. When an entire element is not devoted to a single function, a third character may appear in the location code. A third character serves to distinguish the intended gate (or section) from others on the same chip.

ABBREVIATIONS

Abbreviations are used in the logic diagram when it is impractical or impossible to use complete nomenclature on logic diagrams. Standard abbreviations from ANSI Y1.1 were used when possible. Refer to the list of abbreviations included in the front matter for definitions of all abbreviations used in the manual.

LOGIC LEVELS

Two types of logic are used in the drives covered by this manual: TTL logic, and ECL logic. Logic voltage levels for both types are given in the table 1-1. Different circuit configurations, temperatures, and so on may result in legitimate readings that fall outside of the typical range. Such readings, however, should be suspect only in the event of trouble.



9H 106

Figure 1-1. Identifying Element Locations on a Logic Module

SIGNAL NAMES

All input-output signals are labeled to reflect their particular function. If an output signal has no connection, and therefore no function, it will be labeled "NC" to indicate no connection. The polarity of a signal is identified by a plus or minus sign before the signal name. A plus sign before a signal name indicates that the signal is active when the logic level is high, or in a logical 1's state. A minus sign before a signal name indicates that the signal is active when the logic level is low, or in a logical 0's state. Refer to the discussion on logic levels.

INTERSHEET REFERENCES

There are 27 sets of logic preceded by a functional introduction. The key to understanding how each set relates to another is in identifying three basic components. Each set contains cross-reference numbers, physical location codes, and pin numbers (see figure 1-2). The cross-reference number is

a three digit, two part number. The first part (first two digits) indicates which set is being referenced. The second part (third digit) indicates which page of the set is being referenced. For example, in reference number 131, the first two digits indicate that set 13 is being referenced. The third

TABLE 1-1. LOGIC VOLTAGE LEVELS

Logical State	Nominal Voltage	Typical Range
TTL "1"	+3 V	+2.5 V to +4.0 V *
TTL "0"	0 V	0 V to +0.9 V
ECL "1"	-0.9 V	-0.61 V to -0.97 V
ECL "0"	-1.8 V	-1.52 V to -2.38 V

* Measuring a TTL open collector voltage may result in a reading that is close to the actual power supply voltage.

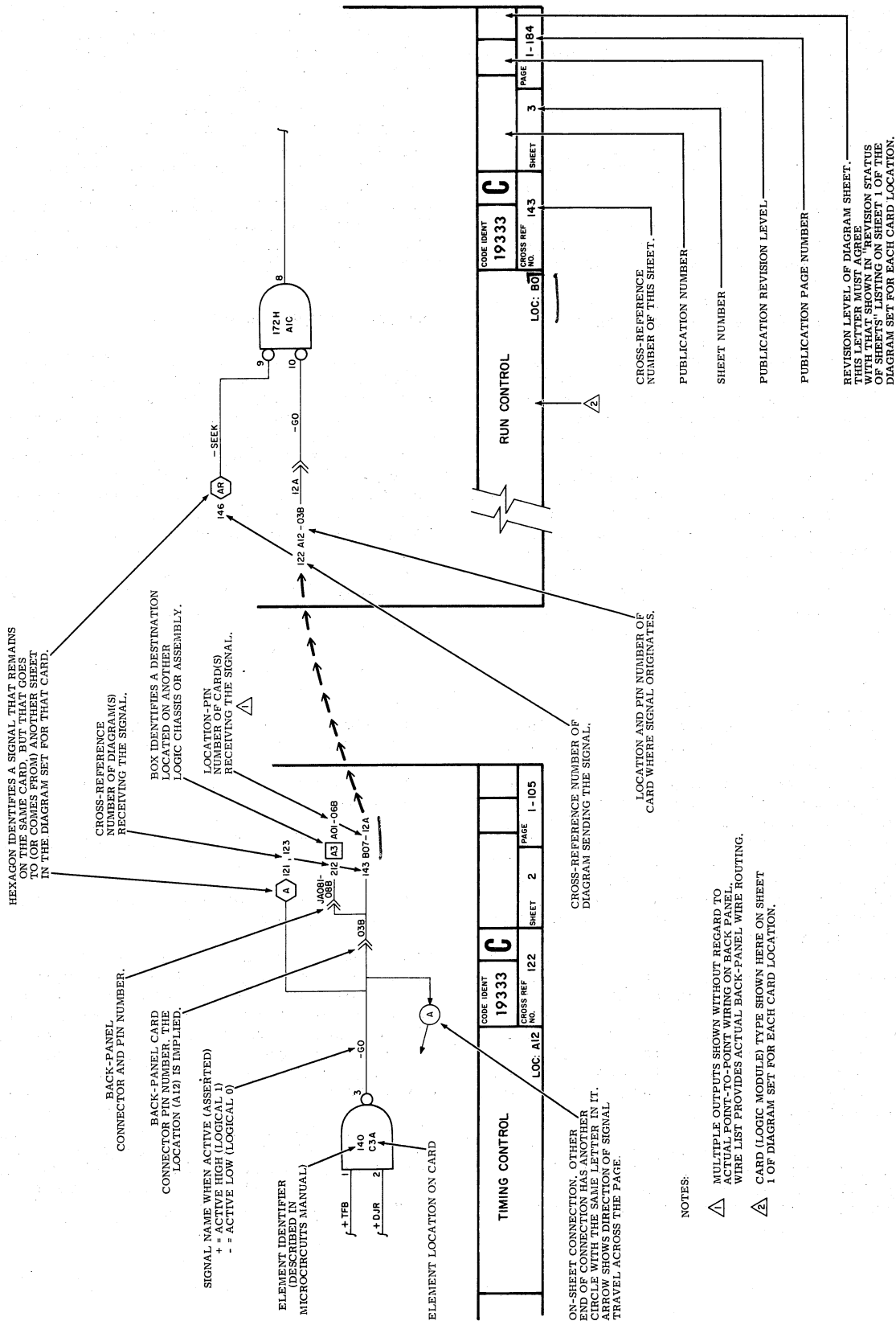


Figure 1-2. Intersheet Referencing

digit indicates that page 1 of set 13 is being referenced. Cross-reference numbers are also used within the logic, so that logic can be traced from one logic set to another. A cross-reference number on the output of a logic signal indicates that the logical sequence continues in the logic set identified by the cross-reference number. Typically, other identifying information, such as the physical location code, or the pin number will follow the cross-reference number on the logic. A cross-reference number on the input of a signal indicates the origin of the signal. Where a logic signal does not leave the logic, but is continued on some other sheet of the same set, the cross-reference number of the destination sheet will be shown. In such cases, the cross-reference number will be preceded by a hexagon. The hexagon will be identified with a letter to indicate a specific location on the destination sheet. Where a logical sequence cannot be shown in series and it does not leave the logic sheet, "line of sight" arrows are used to indicate the origin and destination of the sequence. The end of a logical sequence will be shown with a line of sight arrow pointing away from a small circle identified with a letter. A second circle, identified with the same letter, will have a line of sight arrow pointing in the same direction as the first. The second arrow indicates where the logical sequence continues.

The physical location code is an alpha-numerical code, such as A2A05, that identifies the relationship between the logic sets and their location on the drive. All physical location codes are represented in the logic. However, several miscellaneous codes that do not warrant their own logic set are shown in a related logic set. For example, A3L2 (shown on cross-reference sheet 072) is not shown in the A3 logic set. A3L2 is shown with A2 logic, since A2 is more closely related. Refer to the table and figure on physical location codes to locate particular physical location codes.

The pin numbers used in the logic are for identifying logic signals at their respective input-output locations. Pin numbers are identified by a three character number, such as 14A. The tagging information on all input-output signals should reflect a reference number, a physical location code, and a pin number, respectively.

Logic set 34X contains the cabling information for all inter-chassis logic signals on logic sets 01X through 33X. Inter-chassis connections are designated by a small square

identified with a location code, such as A3. An inter-chassis designator used at the output of a logic signal indicates that the signal leaves the assembly shown, and continues on the assembly indicated by the indicator. An inter-chassis designator at the input of the logic signal indicates that the signal originated on the assembly shown by the designator. When it becomes necessary to view the cabling in its entirety, refer to logic set 34X. Logic set 34X shows only the various cables and connectors as used in the drive. All logic chassis backpanel wiring is shown in the wirelist.

DIAGRAM COVER SHEETS

The diagram cover sheet is the first sheet of a logic set. Power and ground connections, revision status, card type information, and a list of unused circuit elements are found on the cover sheet. Power enters the drive from the Drive Power Plug (Pl on reference sheet 302), is rectified (refer to reference sheets 31X, 32X, and 33X), and then distributed to the backpanel fastons. The backpanel then distributes power to the logic cards. The cover sheets show which pins receive that power. All power connections show the point of origin for the power source except those that are most common. The most common power connections are:

- -20V faston, which feeds pin 2B on cards A01-A09
- +20V faston, which feeds pin 33B on cards A01-A09
- -5V faston, which feeds pin 1B on all cards
- +5V faston, which feeds pin 34B on all cards
- GND faston, which feeds pins 1A and 34A on all cards

The revision of each logic sheet within the logic set is shown in the upper left-hand corner of the cover sheet. The upper right-hand corner of the sheet contains a record of the changes made to the logic set. The latest revision letter shown in the revision record should always match the letter of the cover sheet.

The cover sheet also shows the card type which appears in the title block below the card name. Refer to figure 1-2 for an explanation of all pertinent information shown in the title block.

PHYSICAL DESCRIPTION

The physical arrangement of the drive is described on figures 1-3 through 1-5, and table 1-2. Figure 1-3 separates the drive into three sections. Each section and its assemblies and components have been assigned a physical location code. All physical location codes shown on figure 1-3 are listed in

table 1-2. Table 1-2 identifies the physical location code by title, and refers to the logic set in which the code is shown. The drive backpanel is shown on figure 1-4. The view shown is the wired side of the backpanel. The relative position of the backpanel, and all other card assemblies in the drive, is shown on the chassis (see figure 1-5).

TABLE 1-2. PHYSICAL LOCATION CODES

PHYSICAL LOCATION CODE	TITLE	CROSS REFERENCE NUMBERS
A1	Base Assembly (AC Power System)	302
ALA01	Plus and Minus 42V Supply and Emergency Retract	31X
ALA02	Plus and Minus, Plus and Minus 12V Supplies	32X
ALA03	Plus and Minus 5V Supply	33X
ALBM1	Blower Motor	302
AlC1	Servo Capacitor (+)	312
AlC2	Servo Capacitor (-)	312
AlC5	Blower Motor Start Capacitor	302
AlC8	Transformer Tuning Capacitor	302
AlCB1	AC Power Circuit Breaker	302
AlCB2	Power Supply Circuit Breaker	302
AlFL1	Line Filter	302
AlK1	Run Triac	302
AlK2	Emergency Retract Relay	312
AlM1	Elapsed Time Meter	302
AlS4	Deck Interlock Switch	302
AlT1	AC Power Transformer	302
AlTB1	Terminal Board	302
AlTB2	Terminal Board (50 Hz S/C 31 & Abv) (60 Hz S/C 34 & Abv)	302
AlJ1A	Power Supply Connector	31X-33X
AlJ1B	Power Supply Connector	31X-33X
AlJ100	Power Supply Connector	31X-33X
AlP1	AC Power Connector	302
A2	Logic Chassis	--

Table continued on next page

TABLE 1-2. PHYSICAL LOCATION CODES (Contd)

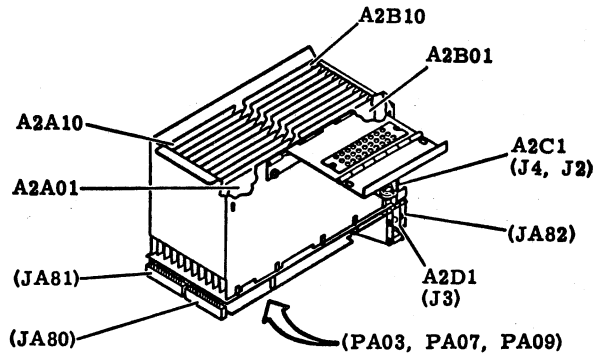
PHYSICAL LOCATION CODE	TITLE	CROSS REFERENCE NUMBERS
A2A01	Write Clock (806 kHz)	01X
A2A02	FTU/Head Alignment Card Slot	02X
A2A03	Fine Servo Decoder	03X
A2A04	Fault Card	04X
A2A05	Data Latch	05X
A2A06	Read PLO	06X
A2A07	D/A Function Generator	07X
A2A08	Access Control NO 2	08X
A2A09	Switching Mode Control	09X
A2A10	Interlocks and Speed Detector	10X
A2B01	Transmitters and Receivers Head Address Register	11X
A2B02	Receivers	12X
A2B03		13X
A2B04		14X
A2B05		15X
A2B06	Difference Generator Controls	16X
A2B07	NRZ to Compensated MFM	17X
A2B08	Access Control and Index/Sector Decode	18X
A2B09	Access Control NO 1	19X
A2B10		20X
A2C1		21X
A2C2		22X
A2D1	I/O	23X
		24X
A3	Deck Assembly	--
A3A01	Control Panel	25X
A3A02	Head Select and Read Amplifier	26X
A3A03	Writer	27X
A3A04	Power Amplifier	28X
A3A05	Track Servo Preamplifier	29X
A3C6	Drive Motor Capacitor	302
A3DM1	Drive Motor	302

Table continued on next page

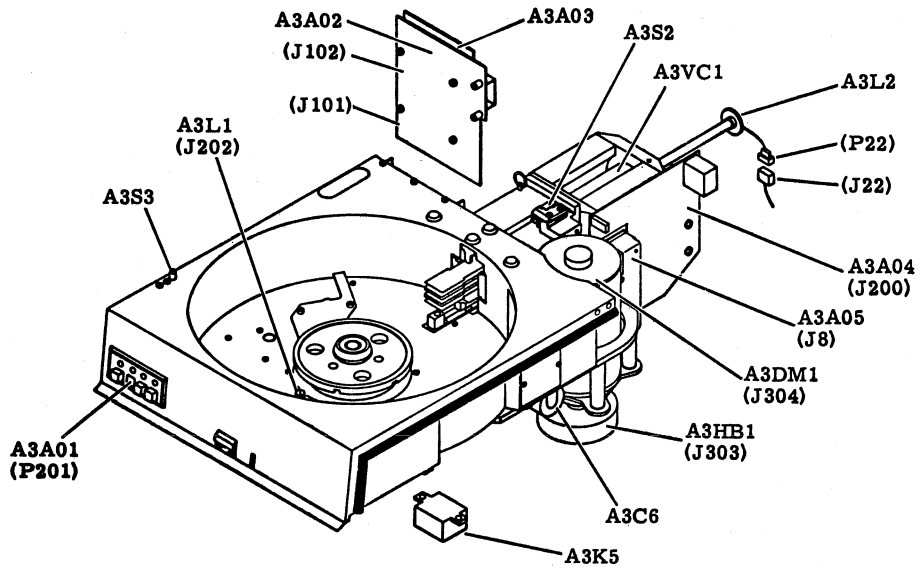
TABLE 1-2. PHYSICAL LOCATION CODES (Contd)

PHYSICAL LOCATION CODE	TITLE	CROSS REFERENCE NUMBERS
A3HB1	Hysteresis Brake	302
A3K5	Start Triac	302
A3L1	Speed Transducer	103
A3L2	Velocity Transducer	072
A3L3	Pack Cover Solenoid (Optional)	102
A3S2	Heads Loaded Switch	302
A3S3	Pack Cover Switch	252
A3VC1	Voice Coil	312

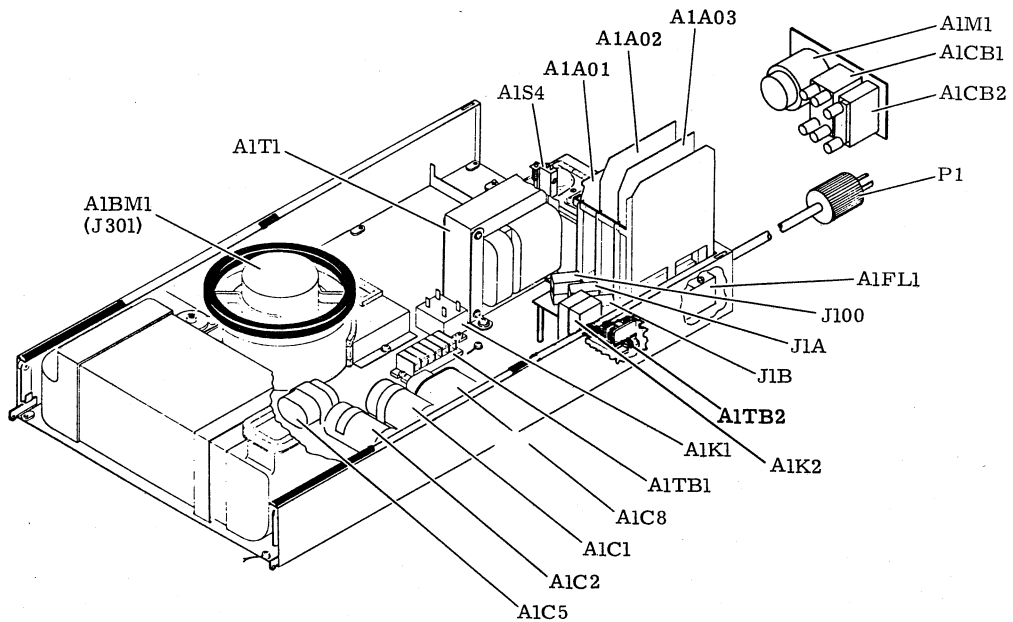
A2



A3

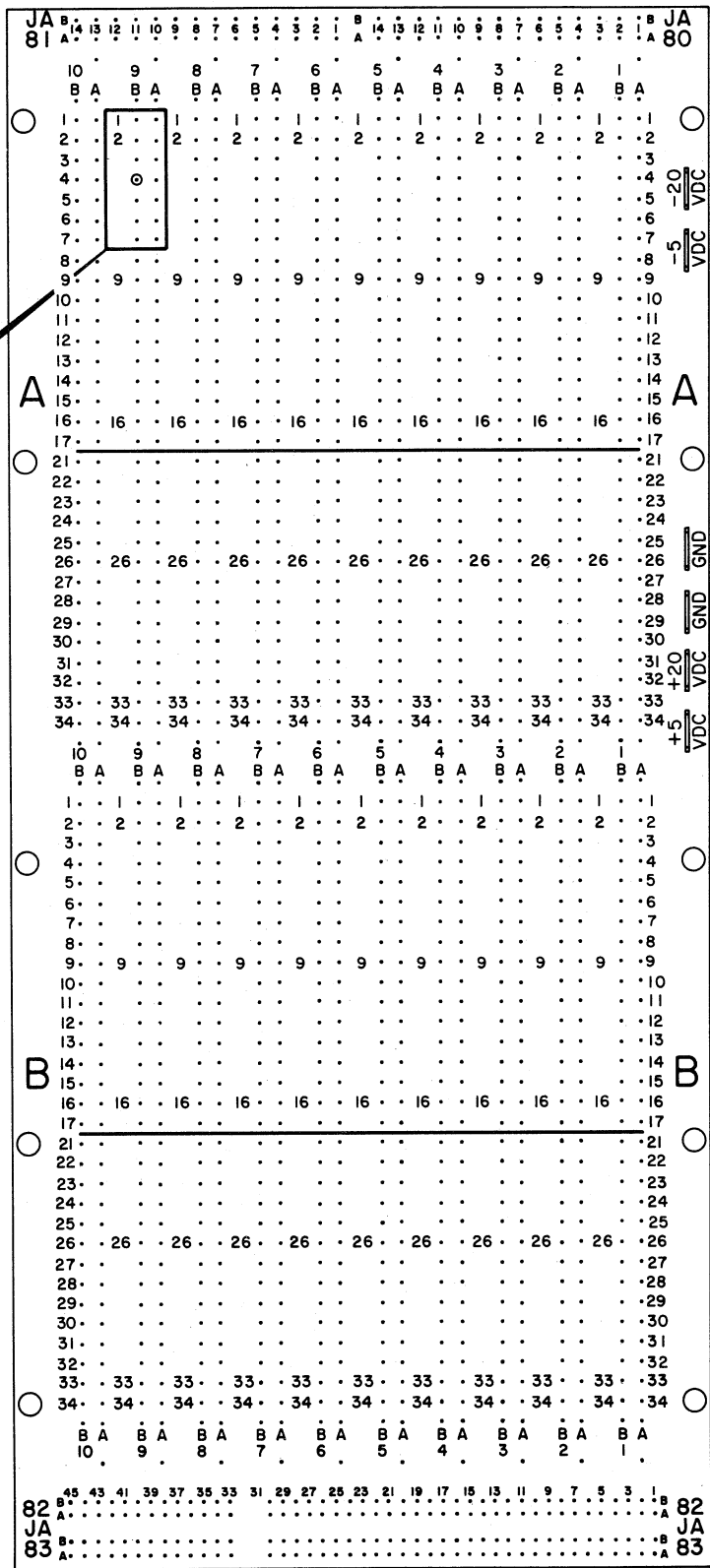
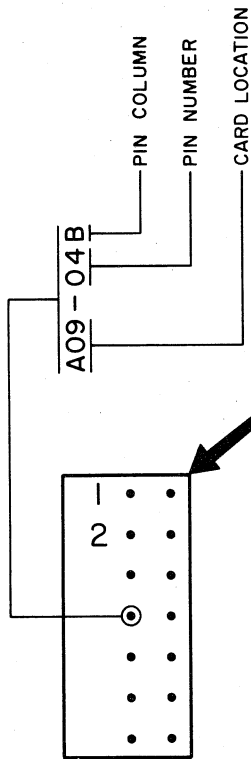


A1



9H120D

Figure 1-3. Physical Location Codes

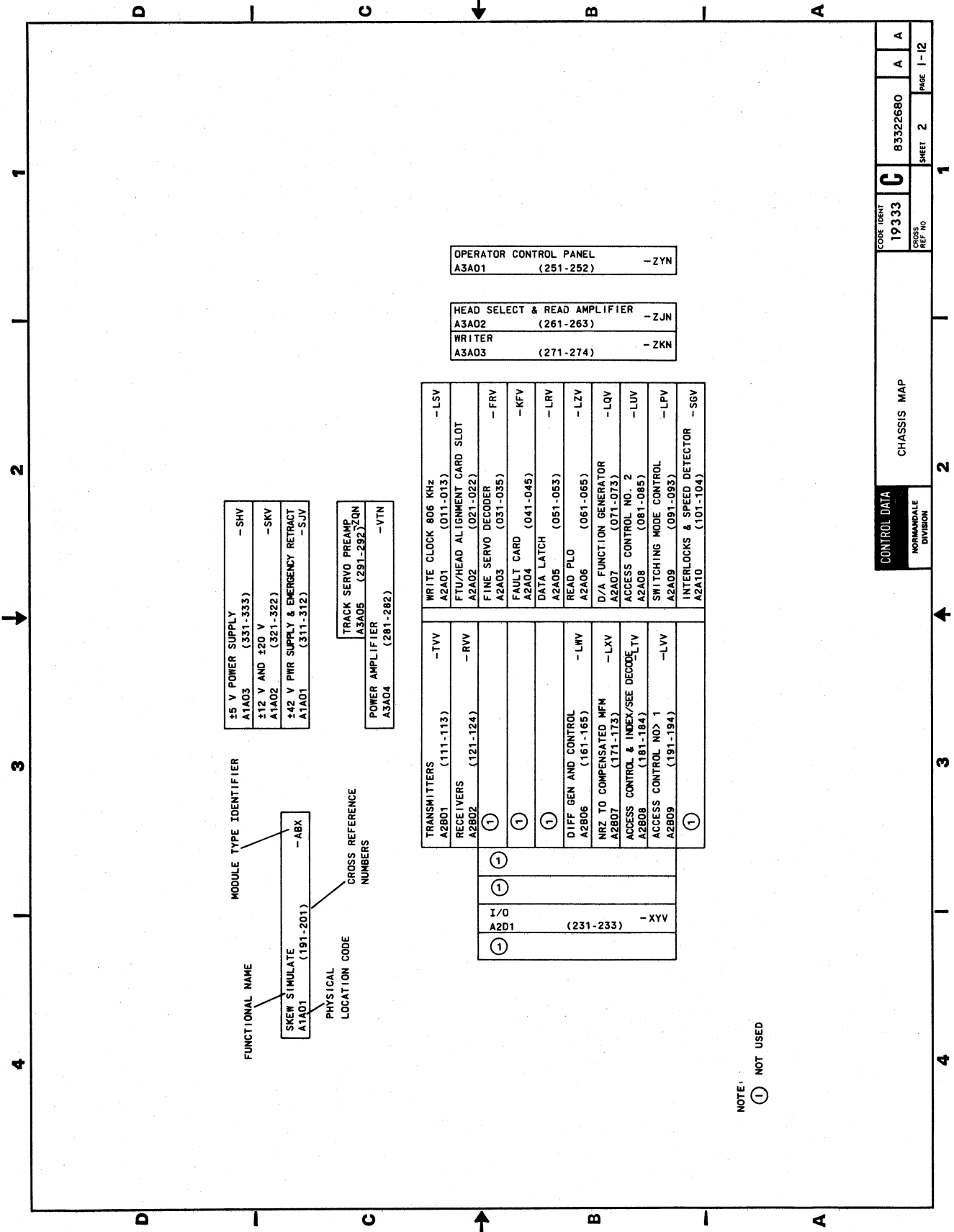


9H29A

VIEWED FROM WIREWRAP SIDE

Figure 1-4. Backpanel Layout

LOGIC DIAGRAM SETS



MODULE TYPE IDENTIFIER	
\$5 V POWER SUPPLY A1A03 (331-333)	-SHV
\$12 V AND \$20 V A1A02 (321-322)	-SKV
\$42 V PMR SUPPLY & EMERGENCY RETRACT A1A01 (311-312)	-SJV

FUNCTIONAL NAME	PHYSICAL LOCATION CODE	CROSS REFERENCE NUMBERS
SKEW SIMULATE A1A01	(191-201)	-ABX

TRACK SERVO PREAMP	
A3A05 (291-292)	-ZQN
POWER AMPLIFIER	
A3A04 (281-282)	-VTN

TRANSMITTERS A2B01 (111-113)	-TVV	WRITE CLOCK 806 KHZ A2A01 (011-013)	-LSV
RECEIVERS A2B02 (121-124)	-RVV	FTU/HEAD ALIGNMENT CARD SLOT A2A02 (021-022)	
①	①	FINE SERVO DECODER A2A03 (031-035)	-FRV
①	①	FAULT CARD A2A04 (041-045)	-KFV
①	①	DATA LATCH A2A05 (051-053)	-LRV
DIFF GEN AND CONTROL A2B06 (161-165)	-LWV	READ FLO A2A06 (061-065)	-LZV
NRZ TO COMPENSATED MFM A2B07 (171-173)	-LXV	D/A FUNCTION GENERATOR A2A07 (071-073)	-LQV
ACCESS CONTROL & INDEX/SEE DECODE A2B08 (181-184)	-LYV	ACCESS CONTROL NO. 2 A2A08 (081-085)	-LUV
ACCESS CONTROL NO> 1 A2B09 (191-194)	-LVV	SWITCHING MODE CONTROL A2A09 (091-093)	-LPV
①	①	INTERLOCKS & SPEED DETECTOR A2A10 (101-104)	-SGV
I/O A2D1 (231-233)	-XYV		

OPERATOR CONTROL PANEL	
A3A01 (251-252)	-ZYN

HEAD SELECT & READ AMPLIFIER	
A3A02 (261-263)	-ZJN
WRITER	
A3A03 (271-274)	-ZKN

NOTE:
① NOT USED

CONTROL DATA	CODE IDENT	83322680	A	A
	19333	C	A	A
NORMANVILLE DIVISION	CSRS REF NO	SHEET 2	PAGE 1-12	

CHASSIS MAP

1 2 3 4

REVISION STATUS OF SHEETS

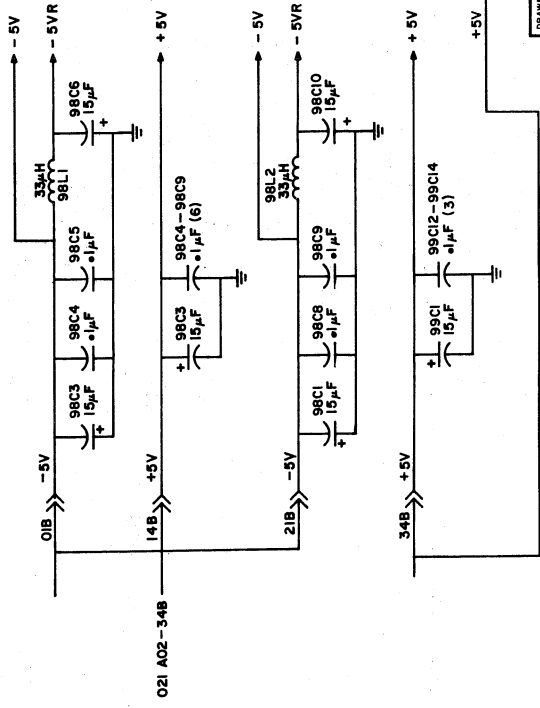
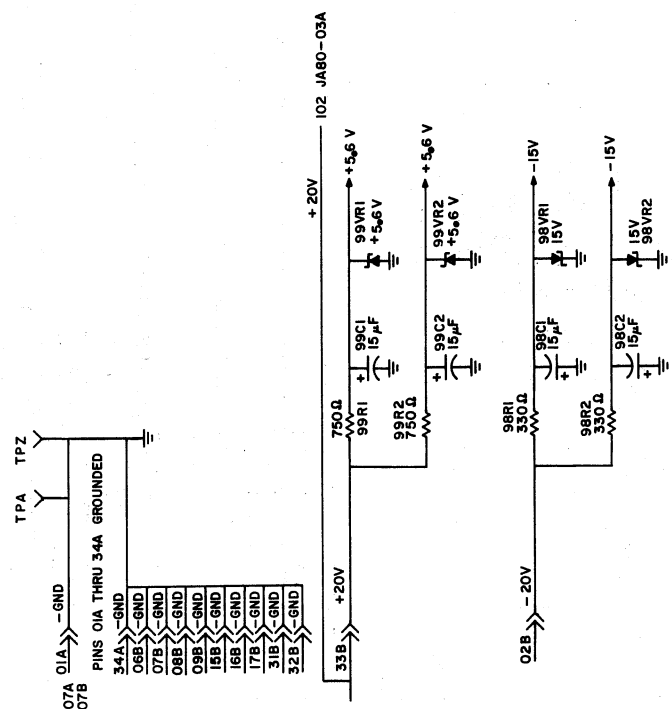
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A	A	A																		
B	A	A																		
C	C	C																		
D	D	C																		

REVISIONS

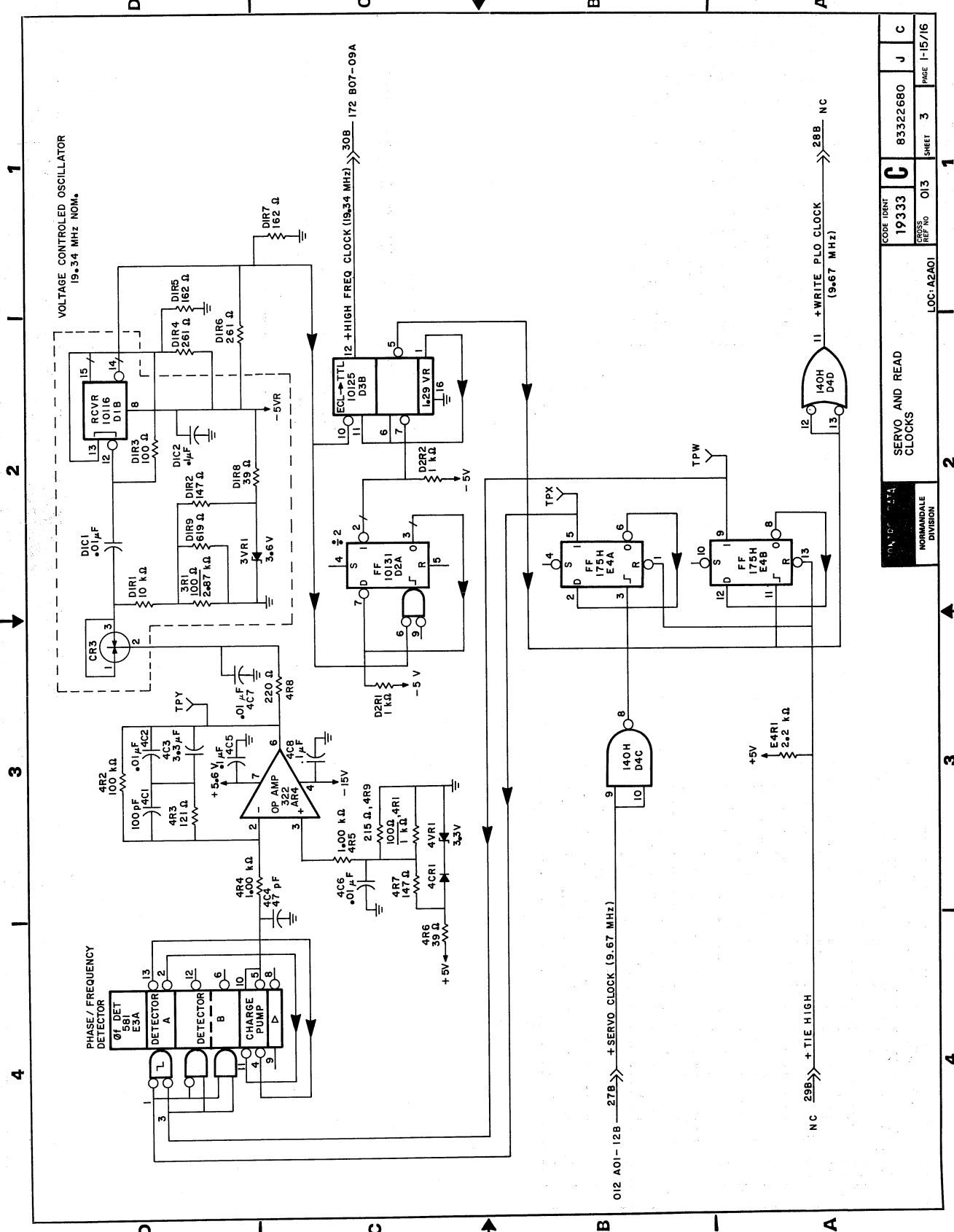
REV	ECO	RELEASED	DESCRIPTION	DRFT.	DATE	CHK'D
A	PRE23000					
B	PRE60080		DELETE CAPACITORS	CB	10/27/60	
C	PRE60090		CHG RES AND DIODES			
D	PRE601250		REDESIGN MFRV			

UNUSED LOGIC ELEMENTS

TYPE	LOCATION	OUTPUT PIN (S)
10131	C2	14, 15
10131	B2	14, 15, 15
10116	D1	6, 7, 6, 7
10125	D3	4, 13
140H	D4	4, 6



DRAWN	4/15	3-2-77	CONTROL DATA	WRITE CLOCK 806 KHZ TO 9.67 MHZ DIAGRAMS	CODE 18R11	83322680	J	D
CHECKED					19333			
ENGINEER								
APPROVED								
				LOC A2A01	CROSS REF NO	O11	SHEET	1 OF 3
				DIVISION				PAGE
								1-13



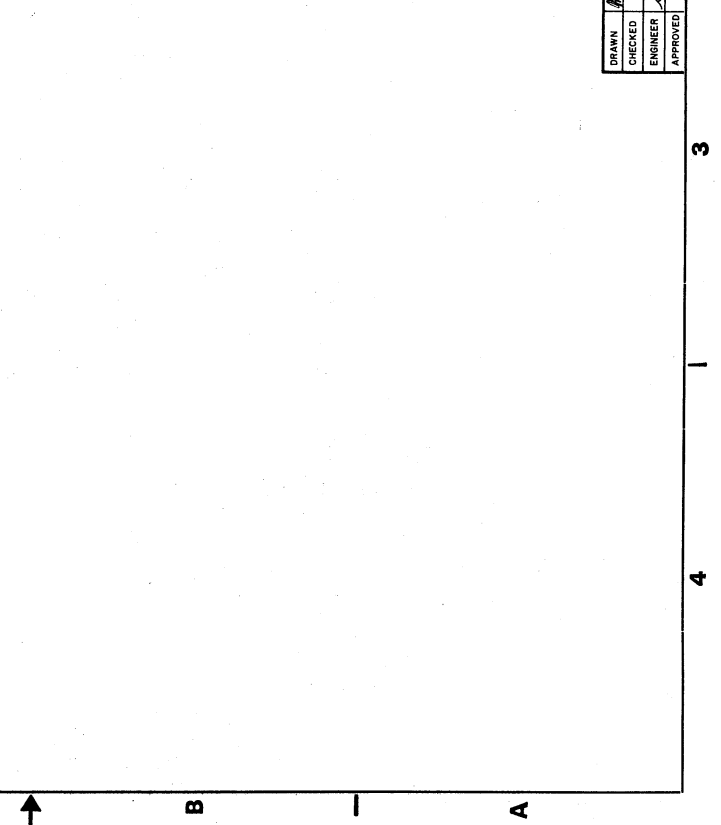
FORM NO. 7-74	LOC: A2A01	SHEET 3	PAGE 1-15/16
NORMANDALE DIVISION	SERVO AND READ CLOCKS	83322680	J C
CODE IDENT 19333	REF NO 013		

4 3 2 1

REVISION STATUS OF SHEETS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
A	A																		
B	B																		

REV.	ECO.	RELEASED	DESCRIPTION	DWGT.	DATE	CHK'D
A		PRE2000				
B		PRE2000	UPDATE SCHEMATICS	CB	2-B-EC	



DRAWN	AP/	3-14-77	DATA
CHECKED	AP/	1/17/77	
ENGINEER	AP/	1/17/77	
APPROVED			

NORMANDALE DIVISION

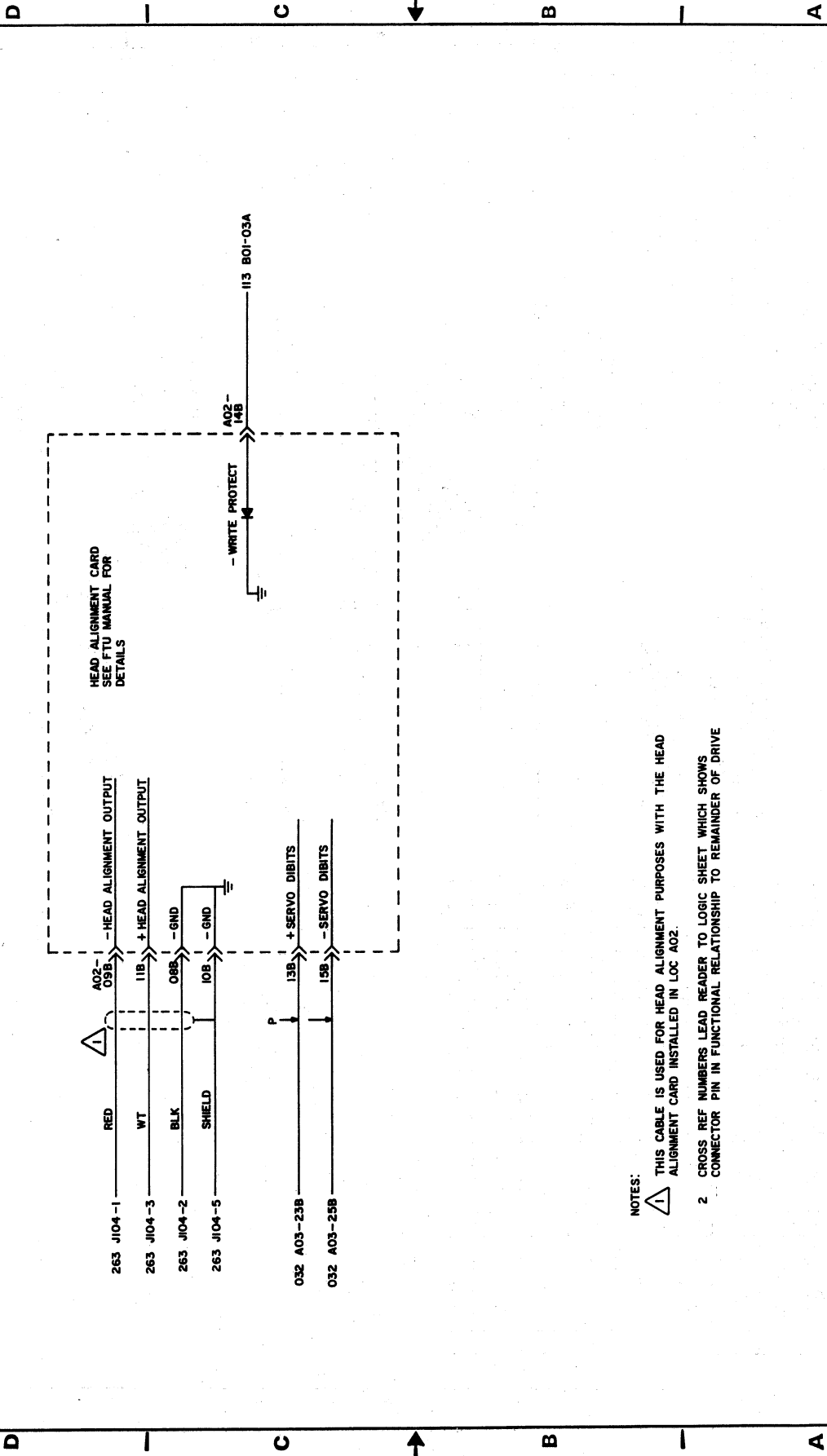
FTU/HEAD ALIGNMENT CARD
SLOT WIRING DIAGRAMS

LOC-A2A02

CODE IDENT	19333	83322680	6	B
CROSS REF NO				
SHEET	021	1 of 2		
PAIR				1-17

4 3 2 1 REF 83215702

4 3 2 1



- NOTES:
- 1 THIS CABLE IS USED FOR HEAD ALIGNMENT PURPOSES WITH THE HEAD ALIGNMENT CARD INSTALLED IN LOC A02.
 - 2 CROSS REF NUMBERS LEAD READER TO LOGIC SHEET WHICH SHOWS CONNECTOR PIN IN FUNCTIONAL RELATIONSHIP TO REMAINDER OF DRIVE

CORE IDENT		CORE IDENT		CORE IDENT	
19333		C		83322680	
REF. NO.		O22		PAGE 1 - 18	
SHEET 2		SHEET 2		PAGE 1 - 18	
FTU/HEAD ALIGNMENT CARD SLOT				LOC: A2A02	
NORMANDALE DIVISION					

4 3 2 1

4 3 2 1

REVISION STATUS OF SHEETS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
A	A	A	A																	
B	A	B	A																	
C	A	B	C																	
D	A	B	D																	
E	E	E	E	E																

REVISIONS

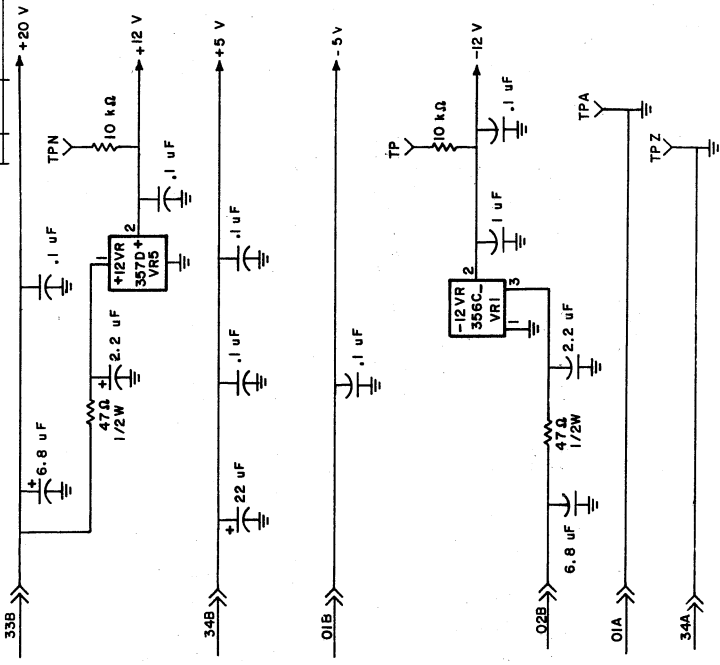
REV	ECO	DESCRIPTION	DRFT	DATE	CHK'D
A	PE23000	RELEASED-CREATED FROM 83214803, REV E	MA	2-13-74	J
B	PE25593	3218 TO 370	CB	10-15-79	J
C	PE25944	CHG IC FAMILIES	TH	2-4-79	J
D	PE25986	CHG RES VALUES	TH	2-4-79	J
E	PE60129	HFRV COST REDUCTION	CB	5-6-80	J

UNUSED LOGIC ELEMENTS

ELEMENTS	LOCATION	OUTPUT PINS (S)
324	D2	1
339	D5	7

UNUSED DIODE PACKS

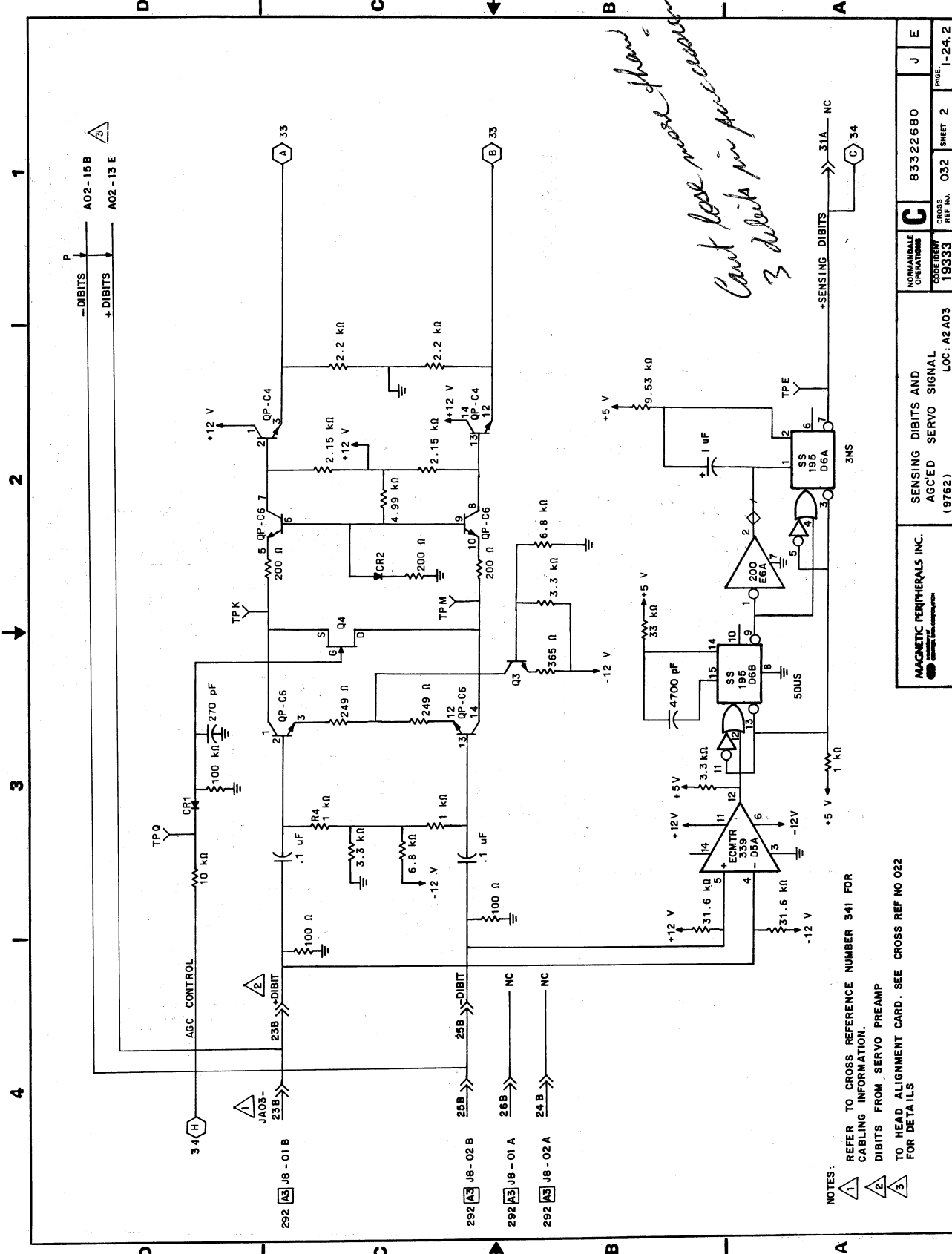
LOCATION	PINS
B3	5,6,7,8,9,10,11,12



APPLICABLE TO HFRV REV P & ABV

DRAWN	M. ANDERSON	8-17-74	1	CODE IDENT	19333	C	83322680	J	E
CHECKED				CROSS REF					
ENGINEER				LOC	A2A03				
APPROVED				TYPE	HFRV				
				DIVISION					
				SHEET	1	OF 5	1-24.1		

REF: 83215703



Can't lose in some cases show 3 details in per circuit

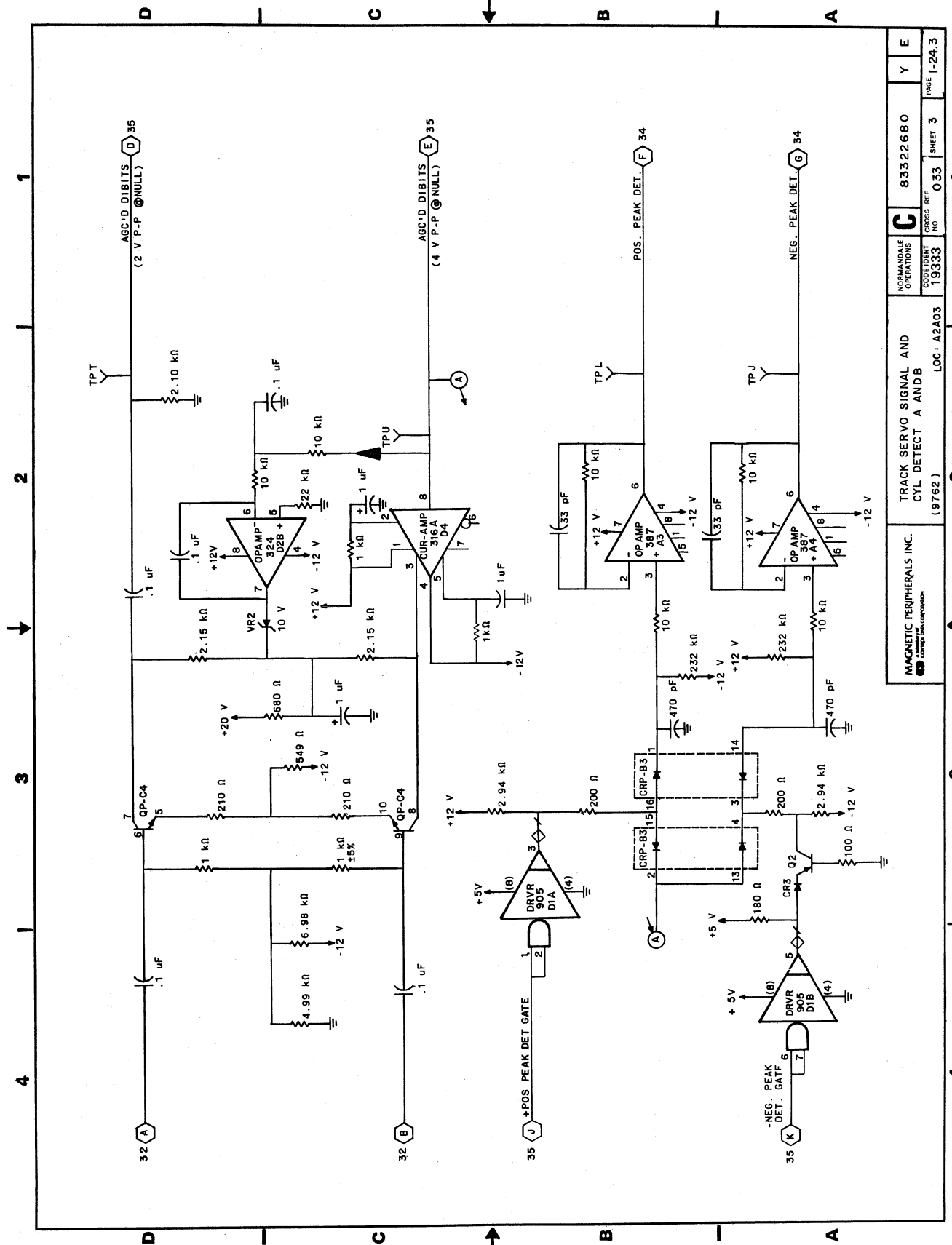
4 3 2 1

A02-15B
A02-13E

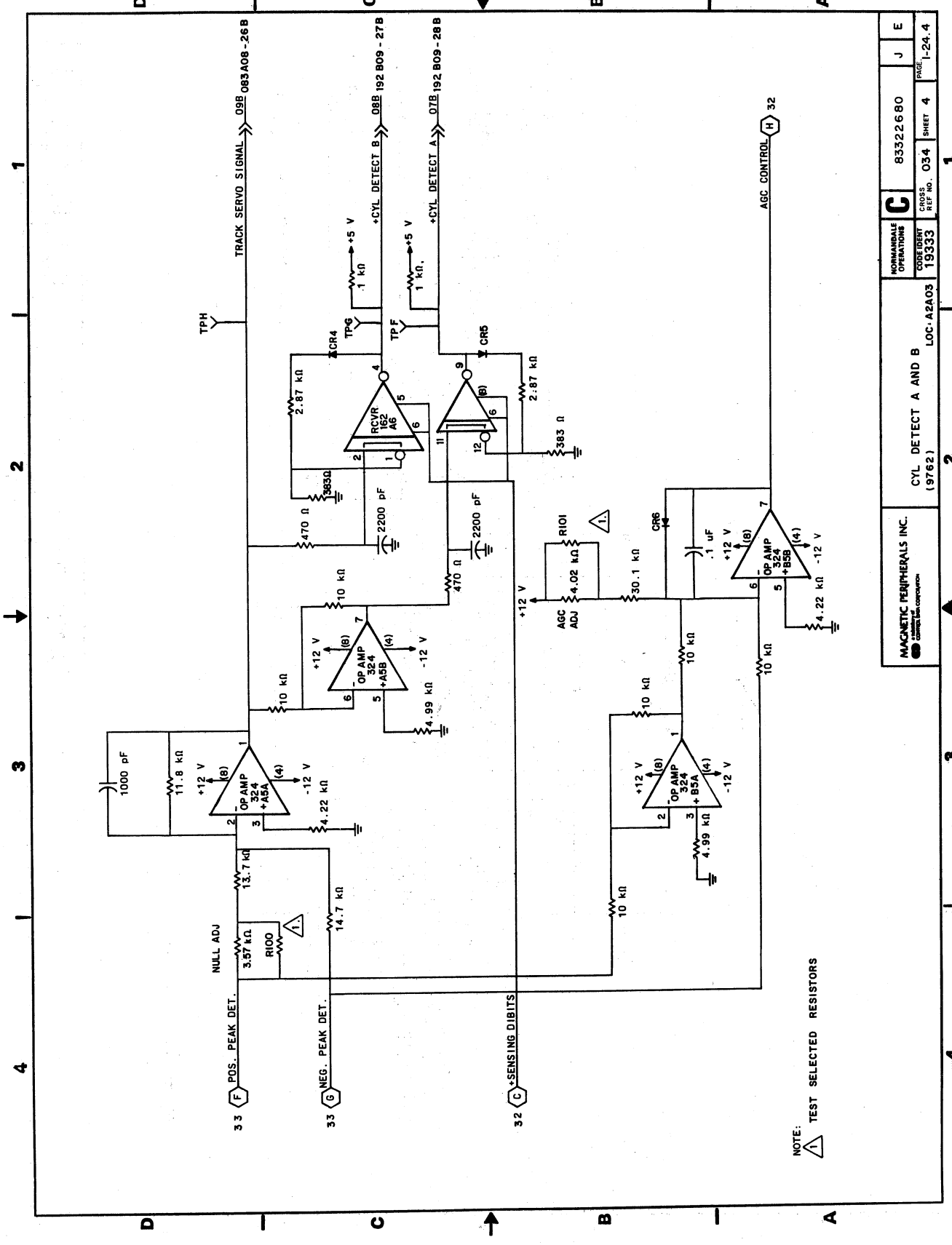
1 2 3 4

- NOTES:
- 1 REFER TO CROSS REFERENCE NUMBER 341 FOR CABLING INFORMATION.
 - 2 DIBITS FROM SERVO PREAMP
 - 3 TO HEAD ALIGNMENT CARD. SEE CROSS REF NO 022 FOR DETAILS

MACMETIC PERIPHERALS INC.		SENSING DIBITS AND AGCED SERVO SIGNAL (9762)		83322680		J E	
NONMANDALAY OPERATIONS		CODE IDENT 19333		CROSS REF NO. 032		SHEET 2	
LOC: A2A03		PAGE: 1-24.2					



MAGNETIC PERIPHERALS INC. COMMERCIAL CORPORATION		TRACK SERVO SIGNAL AND CYL. DETECT A AND B		83322680		Y		E	
NORMANVILLE OPERATIONS		CODE IDENT 19333		CROSS REF NO 033		SHEET 3		PAGE 1-24-3	
(9762)		LOC. A2A03							



NOTE: TEST SELECTED RESISTORS

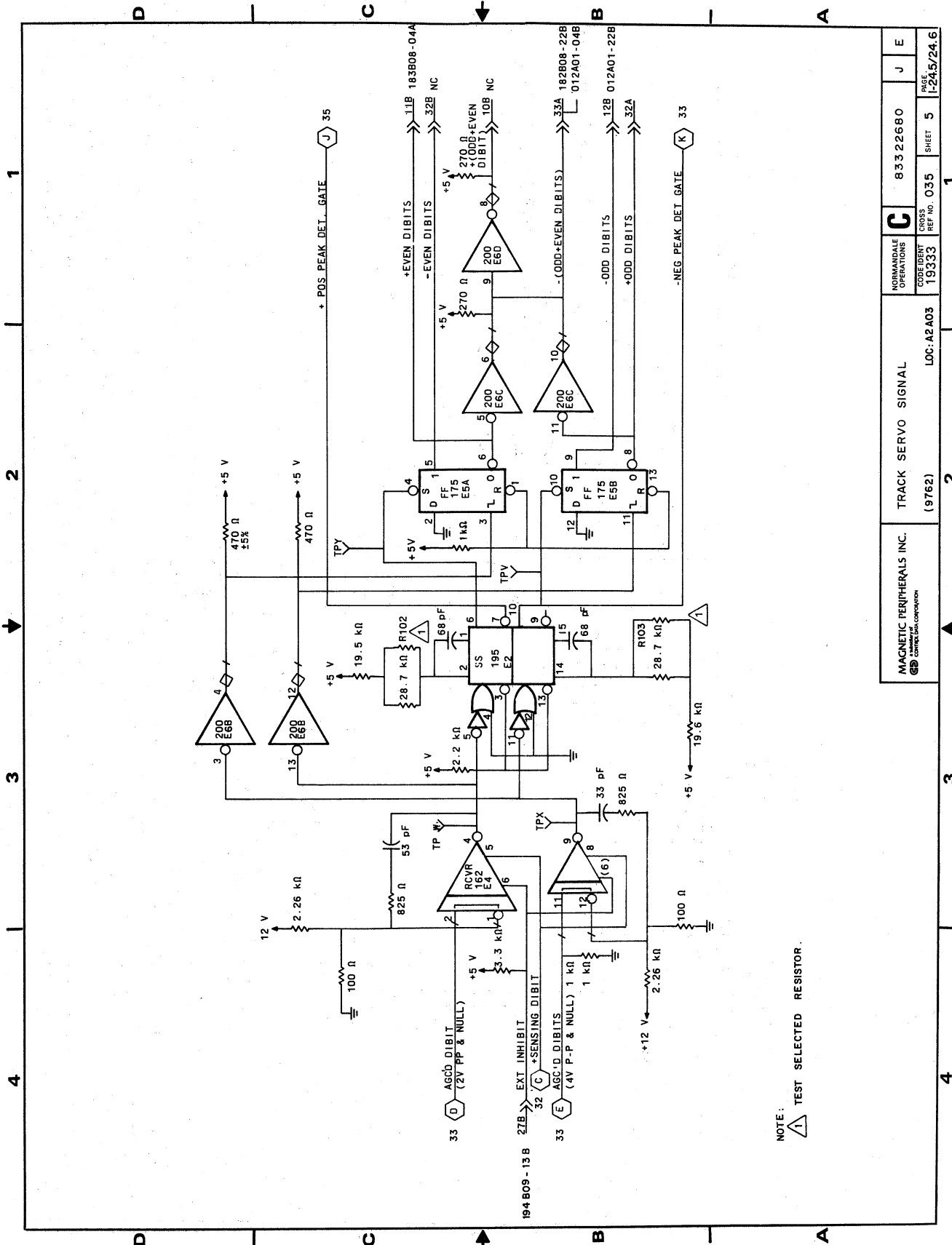
4 3 2 1


D C B A

MAGNETIC PERIPHERALS INC.		CYL DETECT A AND B (9762)		83322680	
CORPORATION		LOC. A2A03		SHEET 4	
NORMAL OPERATIONS		CODE 19333		PAGE 1-24.4	

1 2 3 4

D C B A



NOTE:  TEST SELECTED RESISTOR.

1 2 3 4

D C B A

MAGNETIC PERIPHERALS INC. A DIVISION OF IBM CORPORATION		TRACK SERVO SIGNAL (9762)		C 83322680		J E	
NORMANDALE OPERATIONS		LOC: A2 A03		CONSISTENT 19333		PAGE 5	
				REF. NO. 035		SHEET 5	
				1-245/24.6			

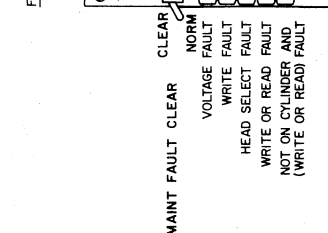
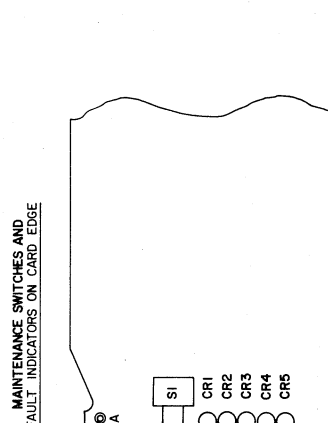
1 2 3 4

REV.	ECO.	RELEASED	DESCRIPTION	DWGT.	DATE	CHK'D
A	PE23000	DIAGRAM		A A D	B 25/78	
B		CORRECTION				

REVISION STATUS OF SHEETS																			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
A	A	A	A	A	A														
B	A	A	A	A															

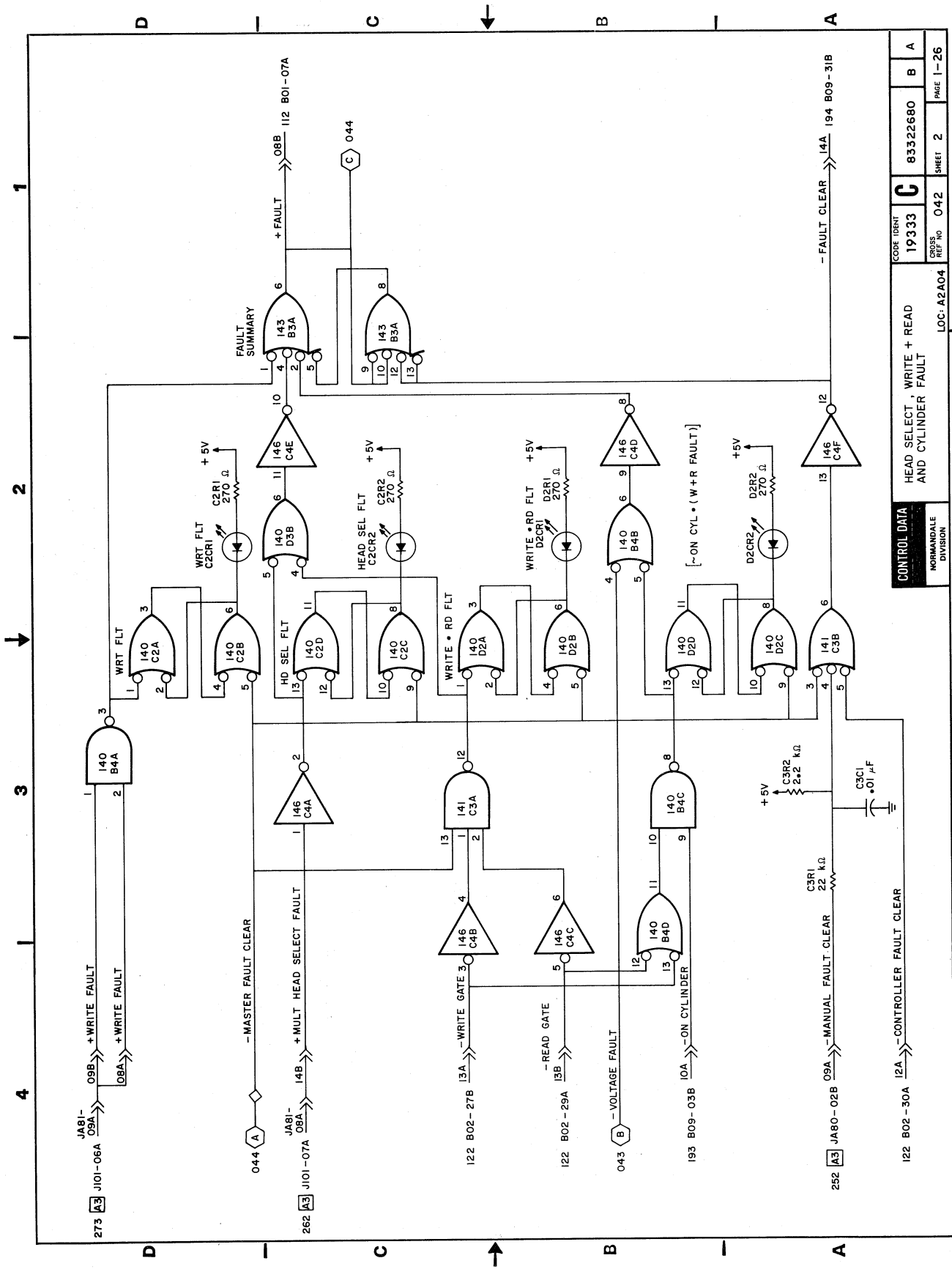
UNUSED LOGIC ELEMENTS

TYPE	LOCATION	OUTPUT PIN(S)
175H	C1	5, 6
4049	E2	10, 12
200	B2	6

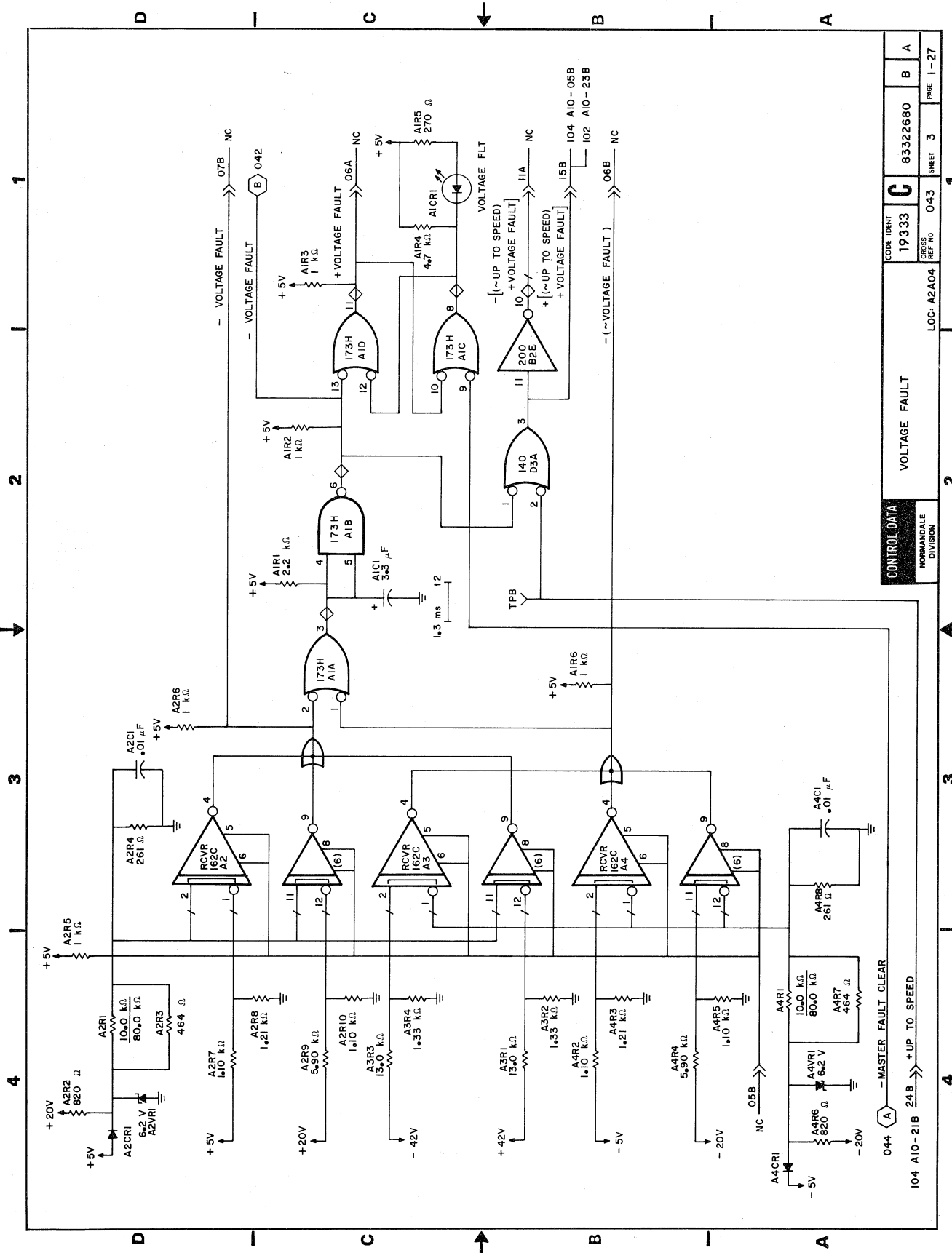


DRAWN	C. BARKER	3-4-77	CONTROL DATA	FAULT CARD DIAGRAMS	CODE IDENT	83322680	E	B
CHECKED	S. G. BARKER		NONMANDALAY DIVISION	TYPE: EKFV	CROSS REF	041	SHEET	1 of 5
ENGINEER					LOC: A2A04		PAGE	1-25
APPROVED								REF 83215704

1 2 3 4



CONTROL DATA		CODE IDENT	PAGE	
HEAD SELECT, WRITE + READ AND CYLINDER FAULT		19333	83322680	A
NORMANDALE DIVISION		CROSS REF NO. 042	SHEET 2	1-26
LOC: A2A04				



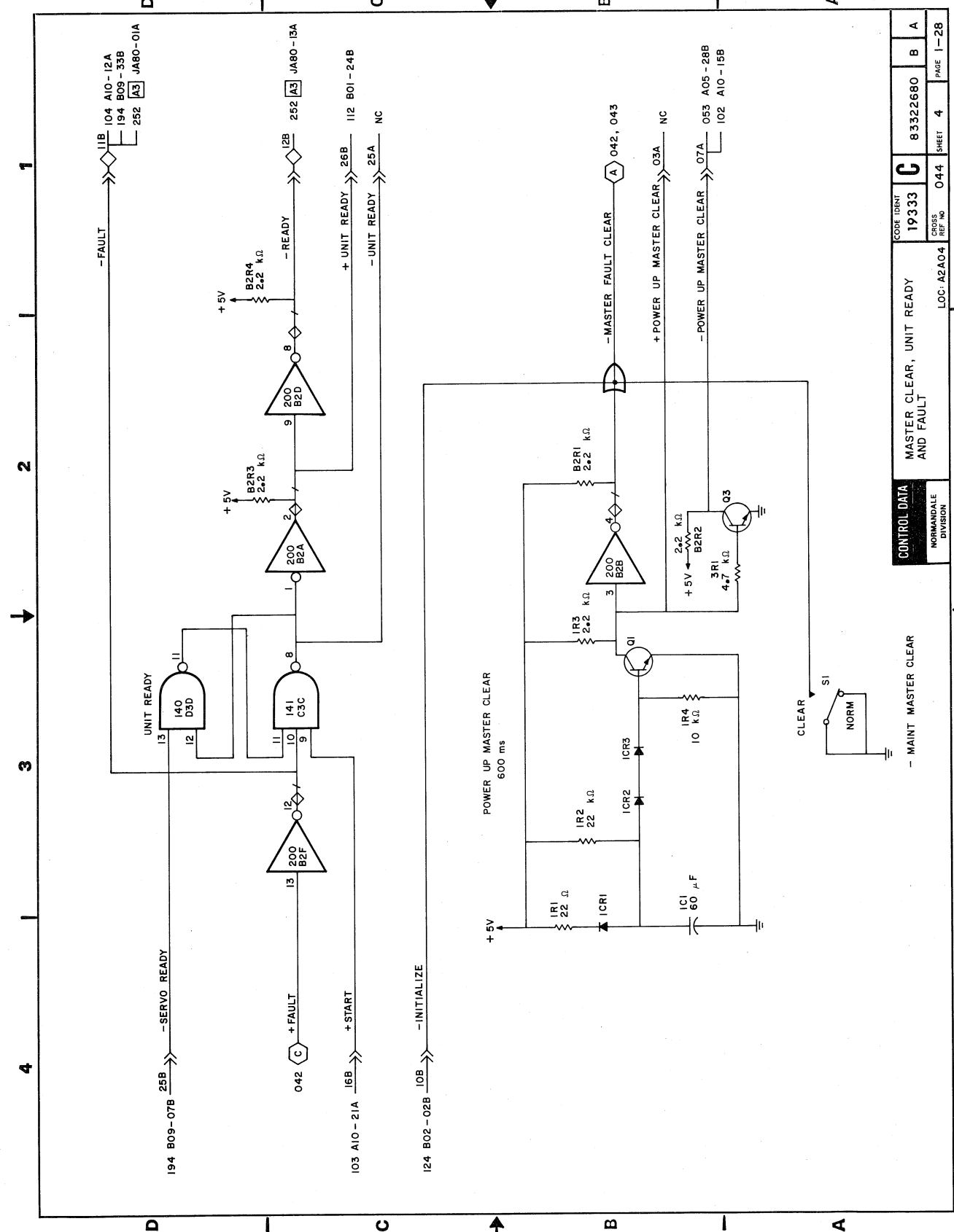
CONTROL DATA		CODE IDENT	83322680	B	A
NORMANDALE DIVISION		19333	LOC: A2A04	SHEET 3	PAGE 1-27
		CERES REF NOS	043		

VOLTAGE FAULT

104 A10-21B 24B +UP TO SPEED

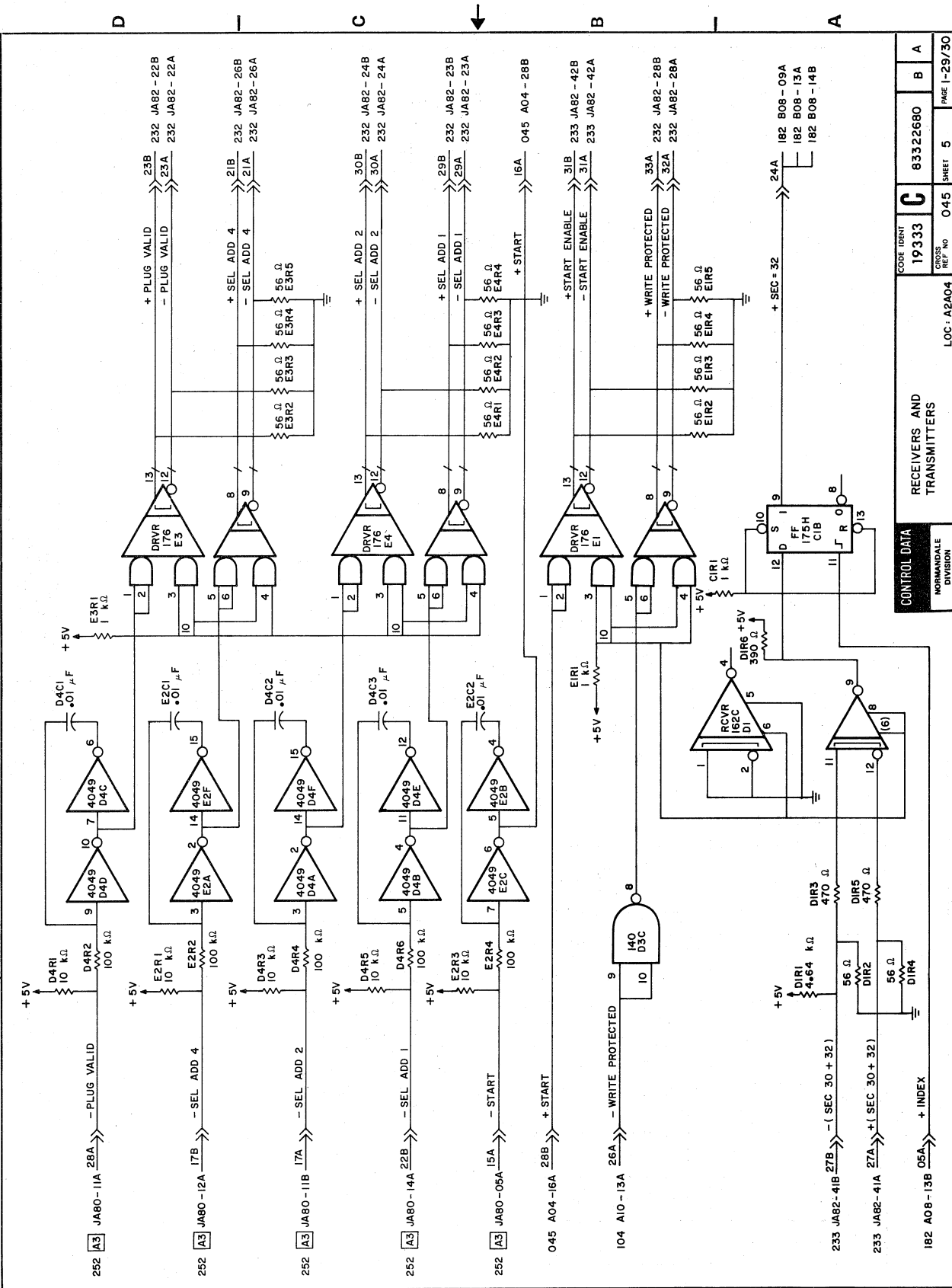
104 A10-05B 104 A10-23B

044 (A) - MASTER FAULT CLEAR



CONTROL DATA		CODE IDENT	83322680	A
MASTER CLEAR, UNIT READY AND FAULT		19333		B
NORMANVILLE DIVISION		SERIES REF. NO.	044	SHEET 4
LOC: A2A04				PAGE 1-28

1 2 3 4



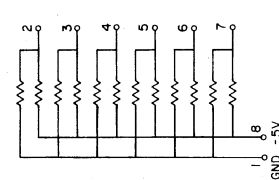
CONTROL DATA		CODE IDENT	19333	C	83322680	B	A
NORMANDALE DIVISION		CROSS REF NO	045	SHEET	5	PAGE 1-29/30	
RECEIVERS AND TRANSMITTERS		LOC. A2A04					

232 JA82-228
232 JA82-22A
232 JA82-26B
232 JA82-26A
232 JA82-24B
232 JA82-24A
232 JA82-23B
232 JA82-23A
045 A04-28B
233 JA82-42B
233 JA82-42A
232 JA82-28B
232 JA82-28A
182 B08-09A
182 B08-13A
182 B08-14B

REVISION STATUS OF SHEETS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
A	A	A																		
B	A	B																		

NOTES: TYPICAL CONFIGURATION FOR TERMINATORS AT-C2A, AT-C2B AND AT-B4A AS FOLLOWS



UNUSED LOGIC ELEMENTS

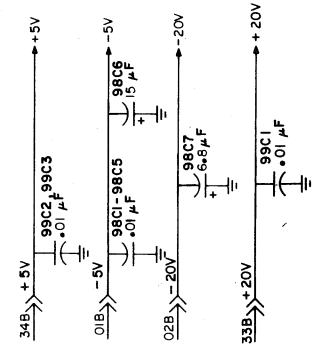
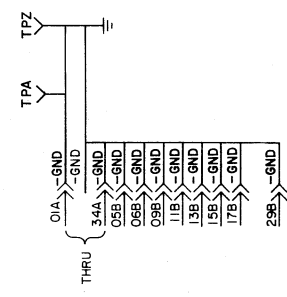
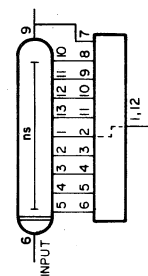
TYPE	LOCATION	OUTPUT PIN(S)
145	A1	9,10
164S	D2	8,9
10104	A3	2
10102	B2	9,15,14
10125	B3	14,15
1031	B2	2,4,6,8
200	E2	

REVISIONS

REV	ECO.	RELEASED	DESCRIPTION	DWPT.	DATE	CHK'D
A	PE43000			GR	4-4-79	
B	PE48918		CHG DELAY ON CARD	GR		

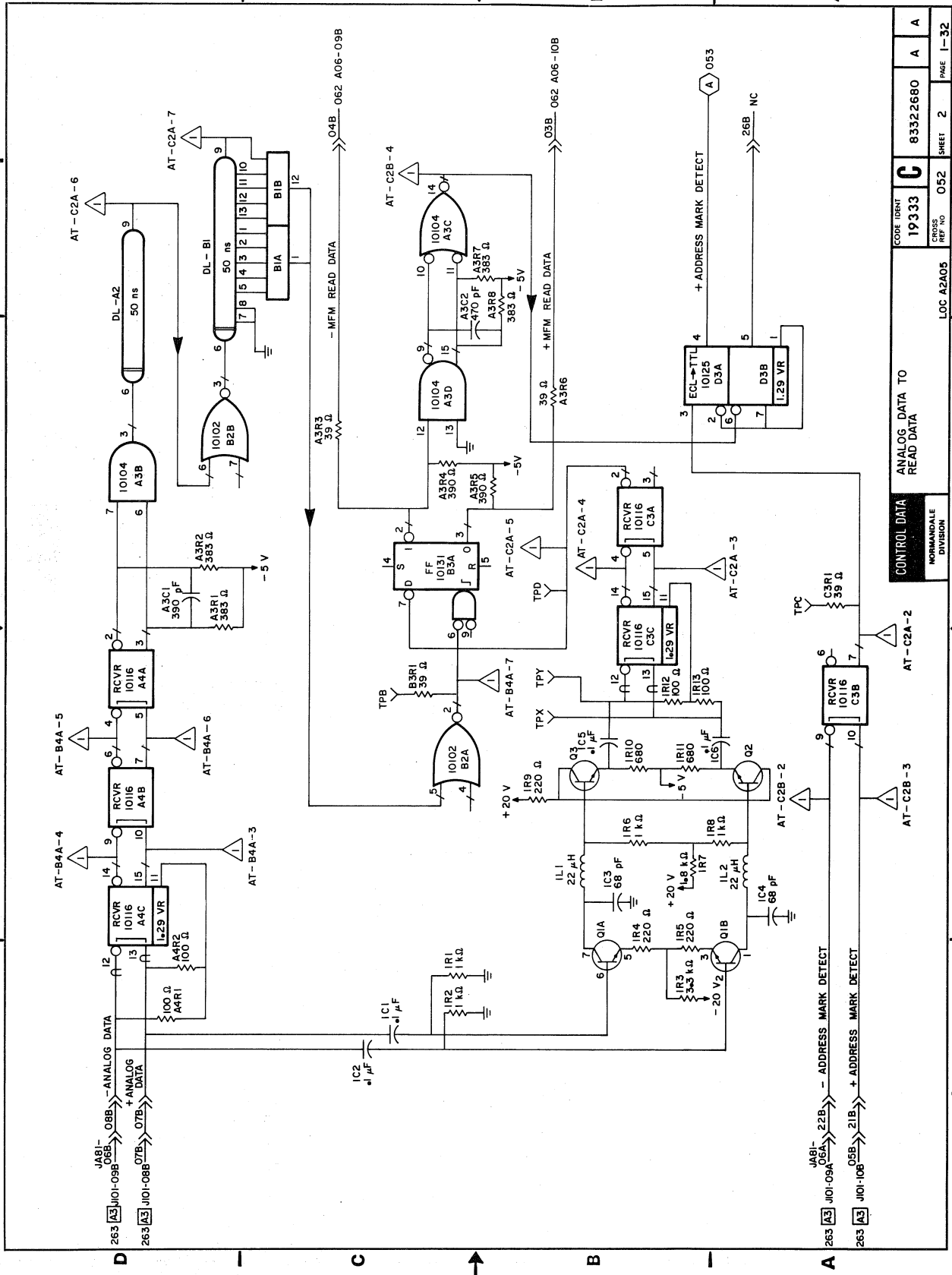
2. DELAY LINES ARE CONNECTED TO JUMPER BLOCK AS SHOWN IN DIAGRAM BELOW. ACTUAL DELAYS ARE SELECTED DURING MANUFACTURING. THIS DIAGRAM SHOWS TYPICAL CONNECTIONS. DELAY TIME FOR EACH DELAY LINE PIN RELATIVE TO PIN 6 INPUT IS SHOWN IN CHART BELOW.

PIN	DELAY TIMES (NS)
5	5
4	10
3	15
2	20
1	25
13	30
12	35
11	40
10	45
9	50
8	55
7	60
6	65
1,12	70
1,11	75
1,10	80
1,9	85
1,8	90
1,7	95
1,6	100

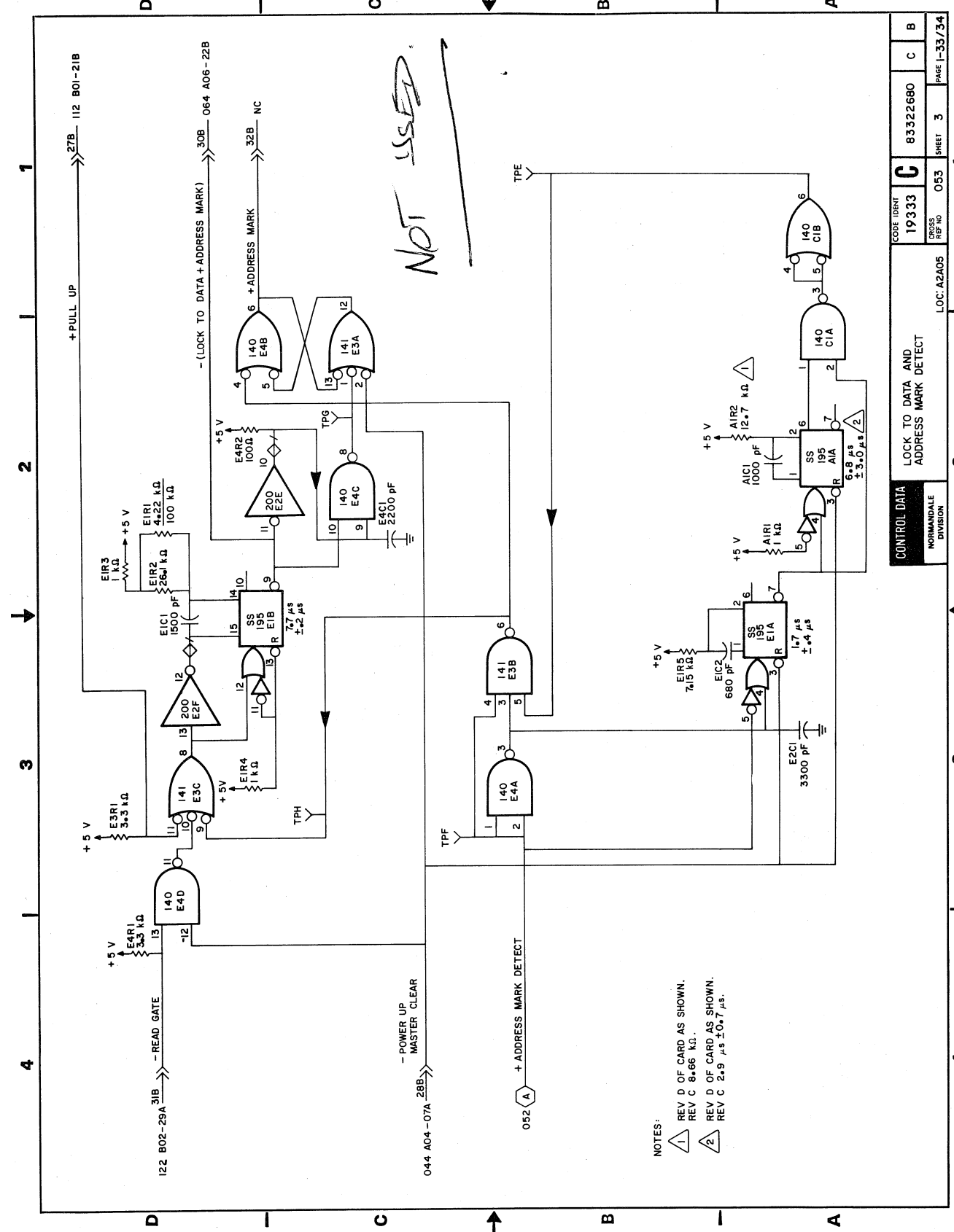


1 2 3 4

DRAWN M ANDERSON 3-4-77	CONTROL DATA NON-MANUFACTURING DIVISION	DATA LATCH DIAGRAMS	CODE IDENT 19333
CHECKED ENGINEER APPROVED		TYPE: HLRY	LOC: A2A05
			SHEET 1 OF 3
			83322680
			REF 83215705



CONTROL DATA		ANALOG DATA TO READ DATA	
NORMANDALE DIVISION		LOC A2A05	
CODE TRNT	19333	CROSS REF NO	052
SHEET	2	PAGE	1-32



NOTES:
 1 REV D OF CARD AS SHOWN.
 REV C 8.66 kΩ.
 2 REV D OF CARD AS SHOWN.
 REV C 2.9 μs ±0.7 μs.

CONTROL DATA		CODE IDENT	C	C	B
NORMANDELE DIVISION		19333	83322680		
LOC: A2A05		CROSS REF NO	O53	SHEET	3
		PAGE 1-33/34			

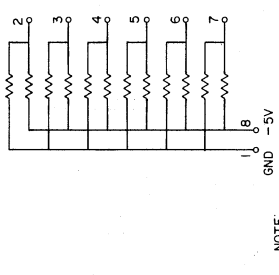
LOCK TO DATA AND ADDRESS MARK DETECT

1 2 3 4

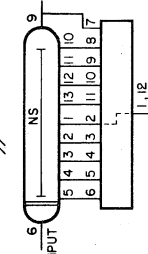
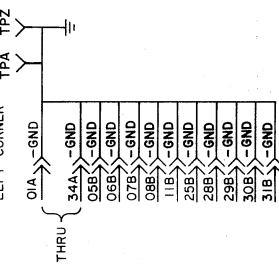
REV	ECO	RELEASED	DESCRIPTION	DRFT	DATE	CHK'D
A	PE23000	PER23004	CONNECT DIAGRAMS	CB	2-8-66	
B	PE23000	PER23004	CONNECT DIAGRAMS	CB	2-8-66	
C	PE23000	PER23004	CONNECT DIAGRAMS	CB	2-8-66	
D	PE23000	PER23004	CONNECT DIAGRAMS	CB	2-8-66	

REVISION STATUS OF SHEETS																			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D

NOTES:
 1. TYPICAL CONFIGURATION FOR TERMINATORS AT A3, ATB2, ATB3, ATB4, ATC3, ATD4, ATE2 AS FOLLOWS



NOTE:
 1. SEE LOWER LEFT CORNER

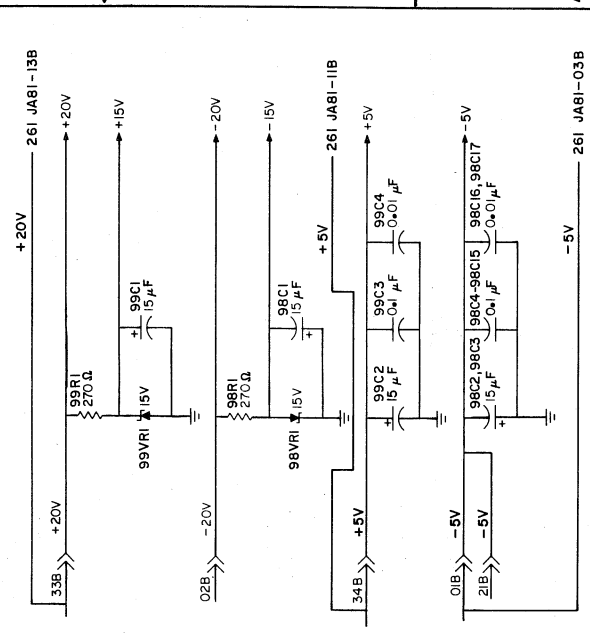


PIN	DELAY TIMES (NS)
5	5
4	10
3	15
2	20
1	25
13	30
12	35
11	40
10	45
9	50

UNUSED LOGIC ELEMENTS:

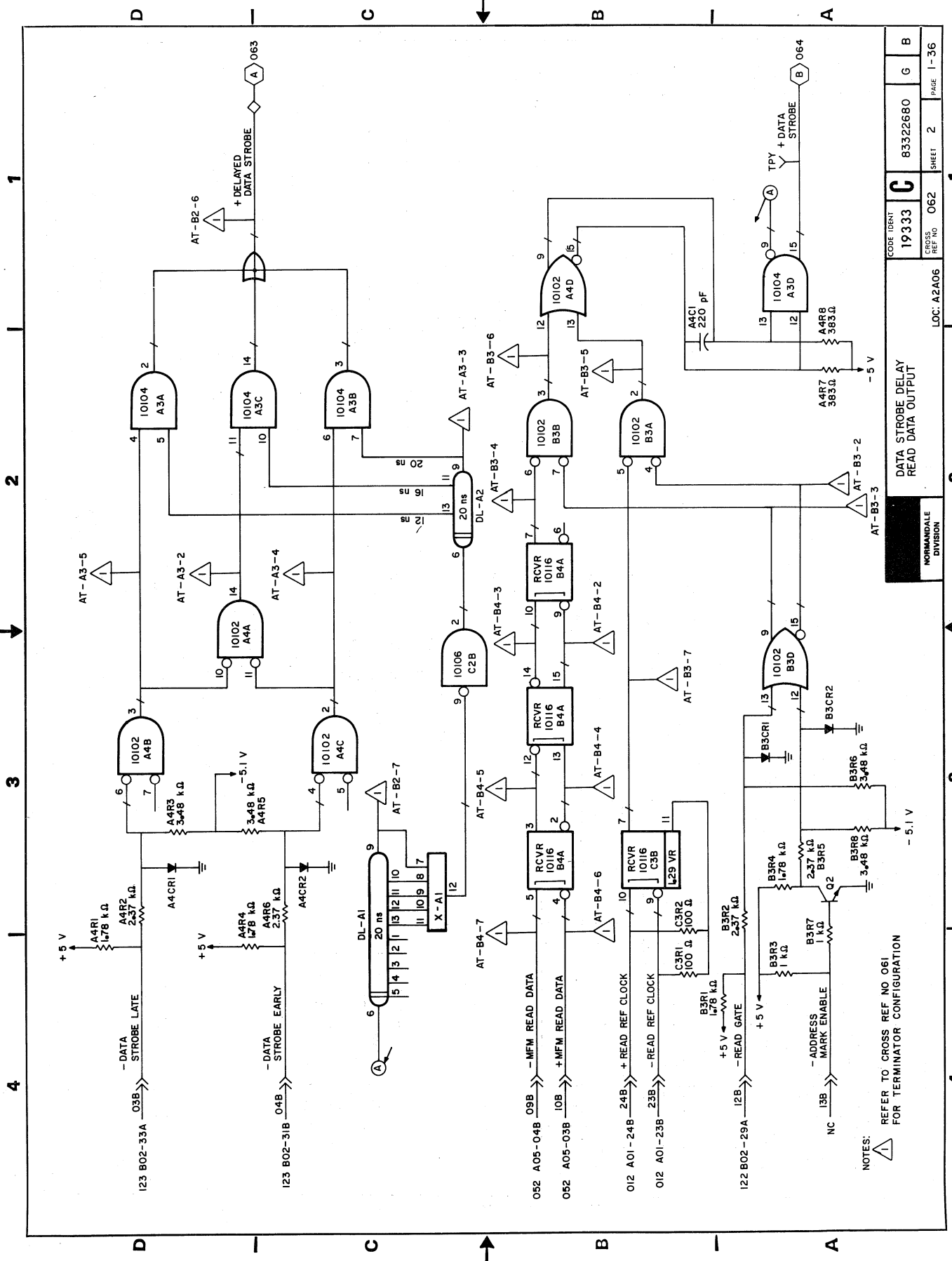
TYPE	LOCATION	OUTPUT PIN (S)
O1B1	E4	2, 3
O1B6	E1	14, 15
O1B9	C3	2, 15, 14, 15
O1E5	D4	4, 5

2. DELAY LINES ARE CONNECTED TO JUMPER BLOCK AS SHOWN IN DIAGRAM BELOW. ACTUAL DELAYS ARE SELECTED DURING MANUFACTURING. THIS DIAGRAM SHOWS TYPICAL CONNECTIONS. DELAY TIME FOR EACH DELAY LINE PIN RELATIVE TO PIN 6 INPUT IS SHOWN IN CHART BELOW.



CODE WORK	19333	83322680	J	C
CROSS REF NO	061	SHEET 1 OF 5	PRICE	1-35
LOC	A2A06	TYPE	BLZV	
DRAWN	MANDESSON	DATE	3-4-77	CONTROL DATA
CHECKED		ENGINEER		NORMAN DALE
APPROVED		DIVISION		
READ PLO DIAGRAMS				

1 REF 83215706

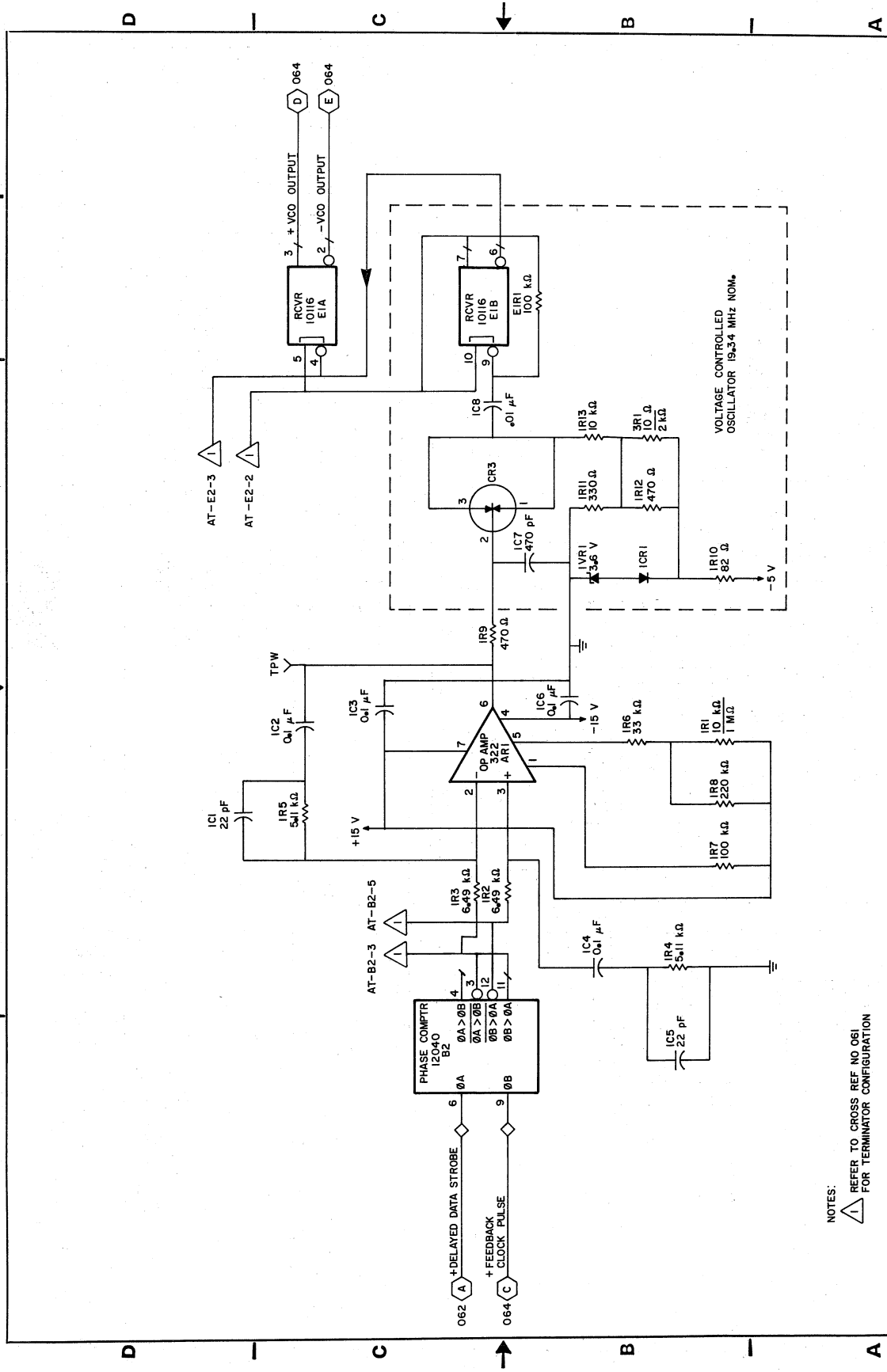


NOTES:

1 REFER TO CROSS REF NO 061 FOR TERMINATOR CONFIGURATION

MORNINGDALE DIVISION		LOC: A2A06	REF NO: 062	SHEET 2	PAGE 1-36
DATA STROBE DELAY READ DATA OUTPUT		19333	83322680	G	B
CODE ISBN		19333	83322680	G	B

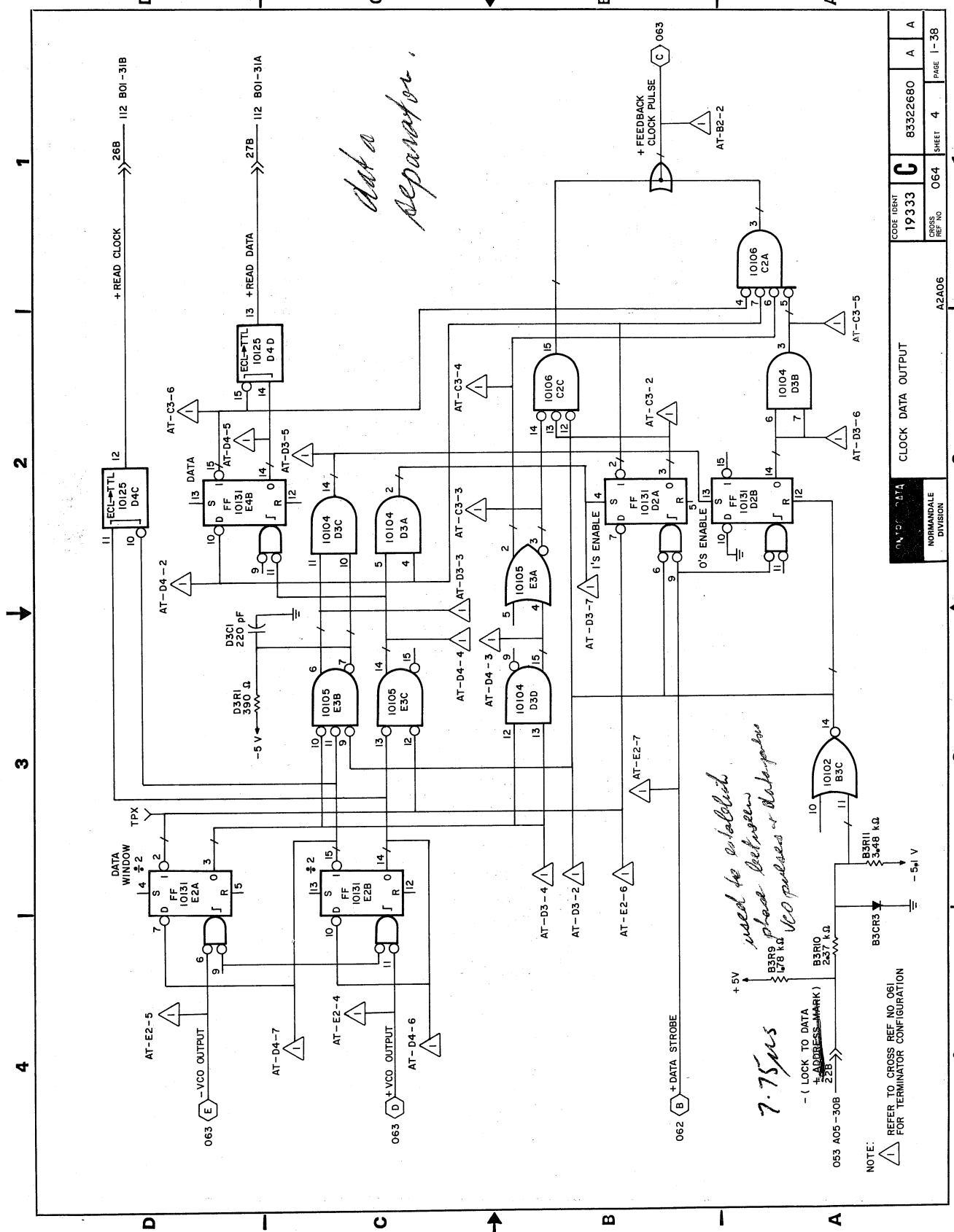
1 2 3 4



NOTES:
 1 REFER TO CROSS REF. NO. 061 FOR TERMINATOR CONFIGURATION

VCO OUTPUT		CODE IDENT	83322680	J	C
		19333			
		REF ID	063	SHEET	3
		LOC: A2A06			PAGE 1-37
NORMANDALE DIVISION					

1 2 3 4



data separator

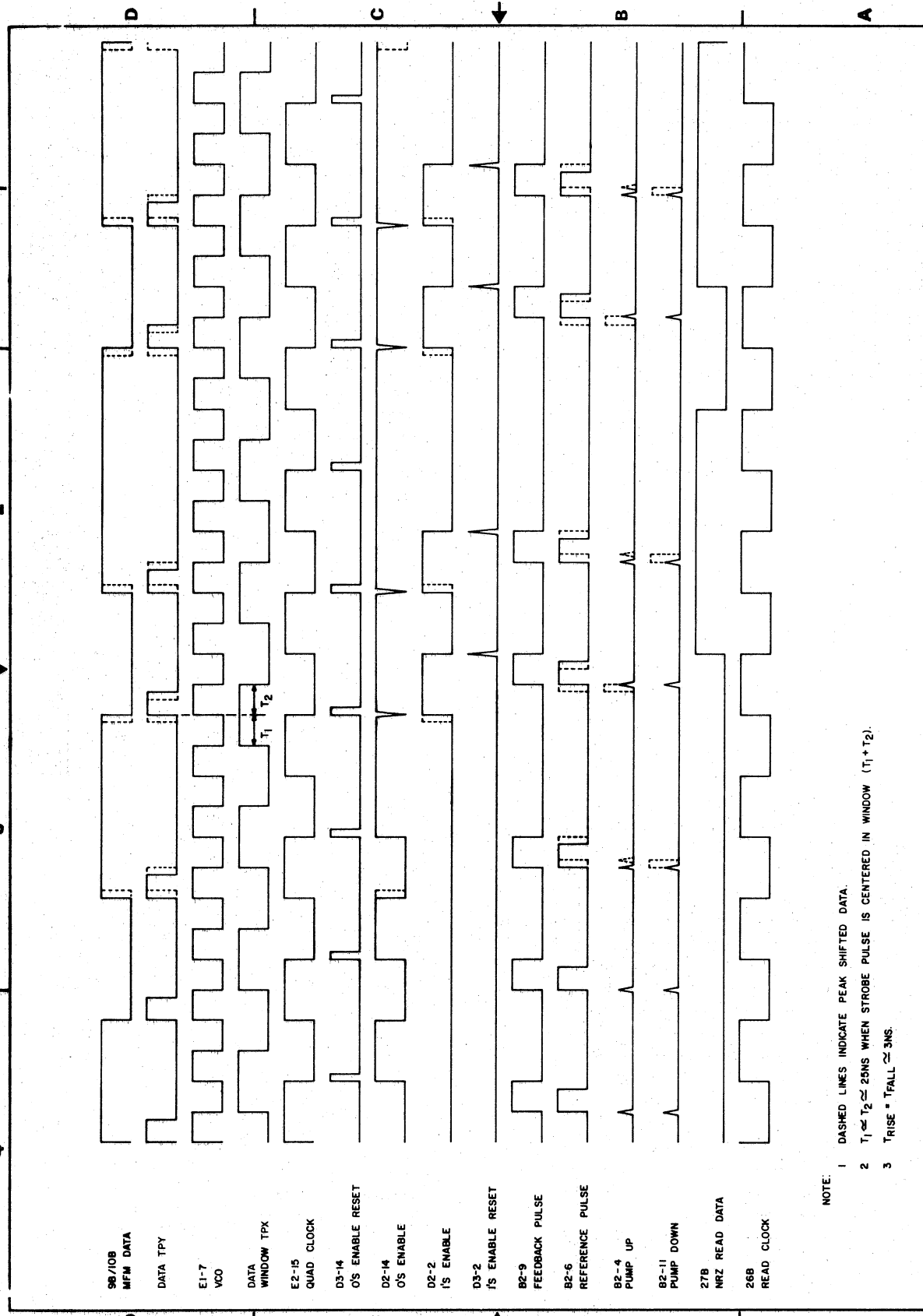
used to inhibit 7.75µs

CODE IDENT		19333	C		83322680	A	A
CROSS REF NO		064	064		SHEET	4	PAGE 1-38
DIVISION		NORMANDALE		A2A06			

CLOCK DATA OUTPUT

NOTE: REFER TO CROSS REF NO. 061 FOR TERMINATOR CONFIGURATION

0 6 4 3 2 1

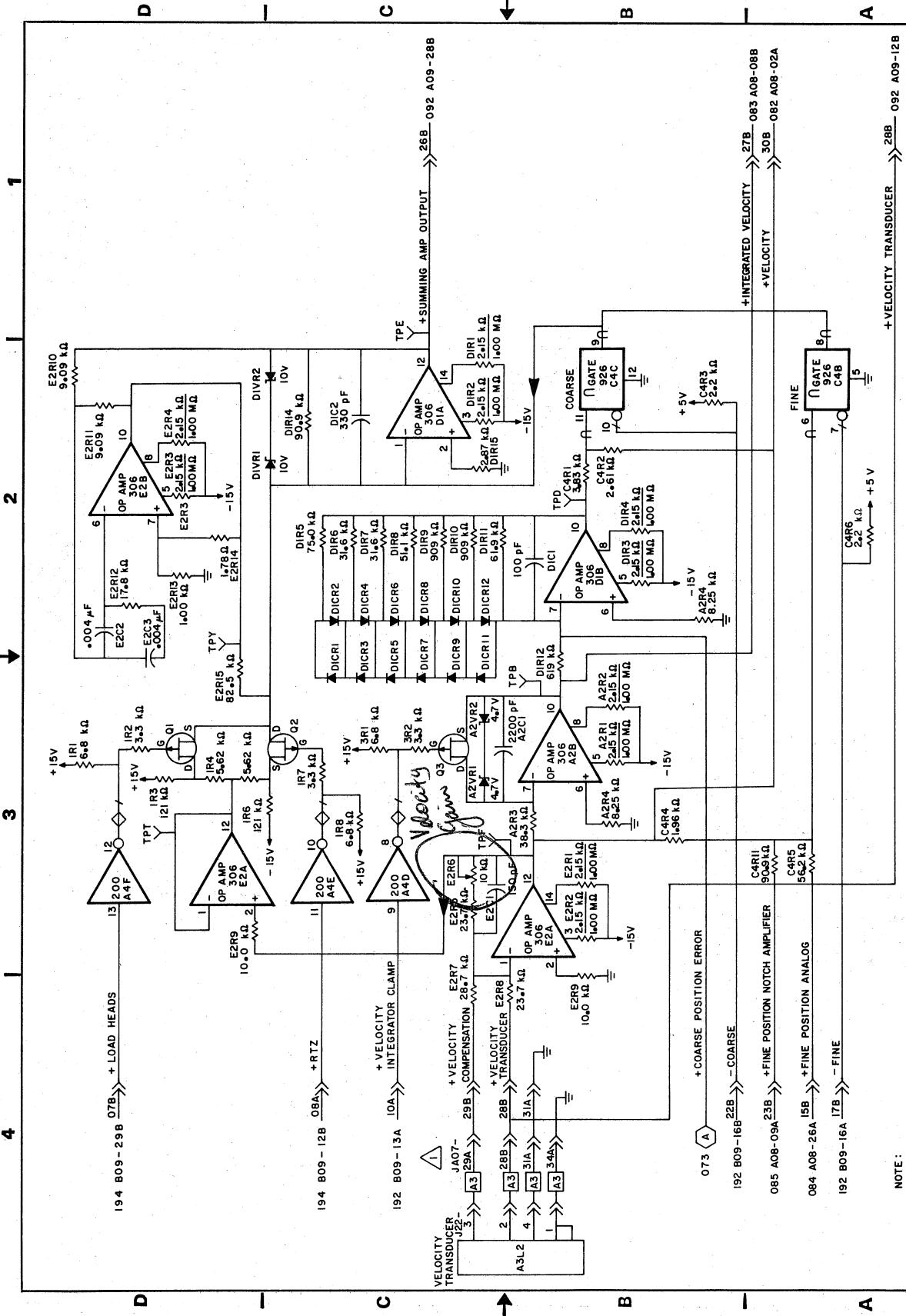


5B/IOB MFM DATA
 DATA TPY
 E1-7 VCO
 DATA WINDOW TPX
 E2-15 QUAD CLOCK
 D3-14 O'S ENABLE RESET
 D2-14 O'S ENABLE
 D2-2 I'S ENABLE
 D3-2 I'S ENABLE RESET
 B2-9 FEEDBACK PULSE
 B2-6 REFERENCE PULSE
 B2-4 PUMP UP
 B2-11 PUMP DOWN
 27B NRZ READ DATA
 26B READ CLOCK

NOTE:
 1 DASHED LINES INDICATE PEAK SHIFTED DATA.
 2 $T_1 \approx T_2 \approx 25\text{NS}$ WHEN STROBE PULSE IS CENTERED IN WINDOW ($T_1 + T_2$).
 3 $T_{\text{RISE}} + T_{\text{FALL}} \approx 3\text{NS}$.

CONTROL DATA		READ PLO TIMING DIAGRAM		CODE IDENT	83322680	A	A
NORMANDALE DIVISION		LOC. A2A06		19333	C		
				CROSS REF. NO.	065	SHEET	5
				PAGE I-39/40			

4 3 2 1



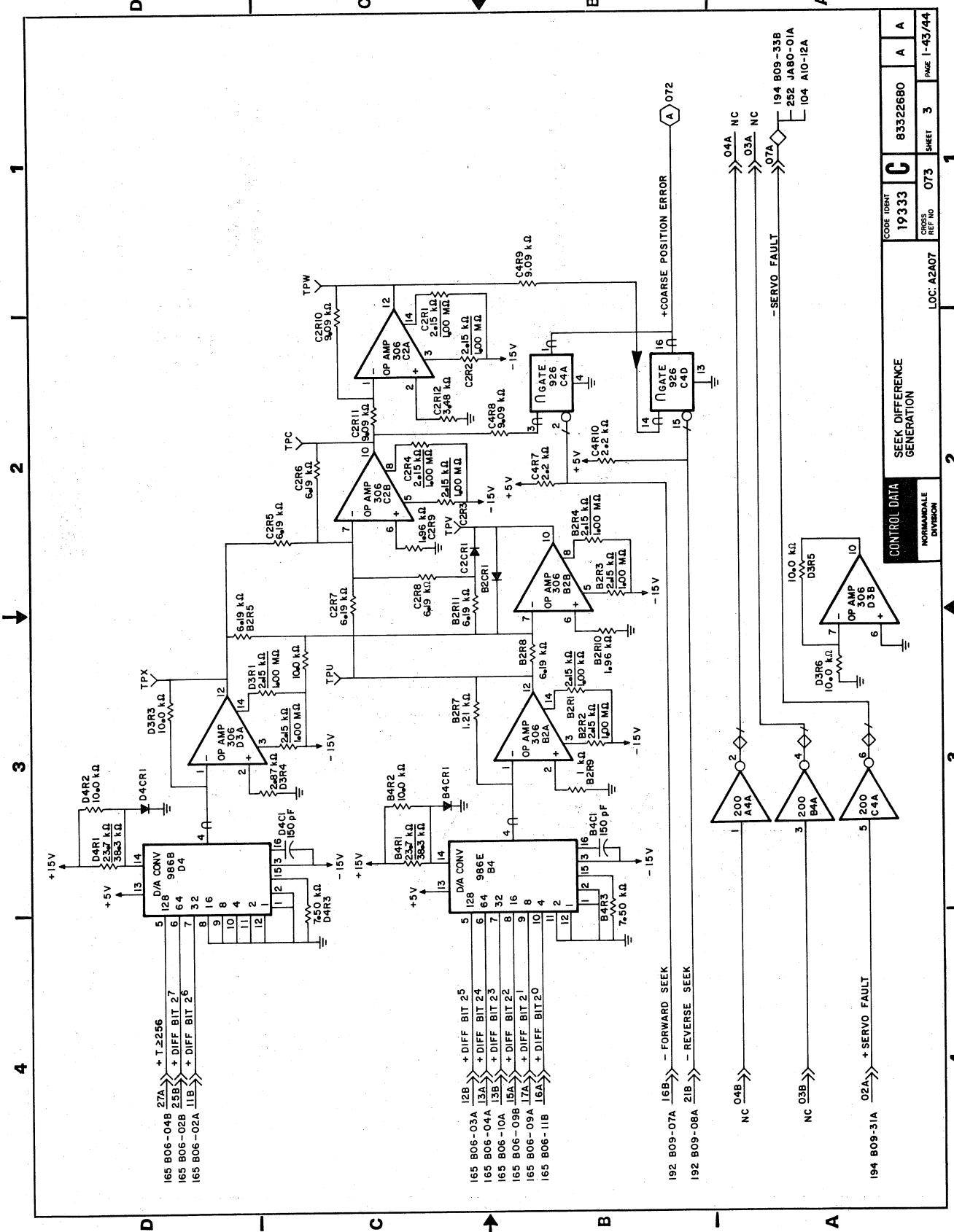
NOTE: REFER TO CROSS REFERENCE NUMBER 341 FOR CABLING INFORMATION.

CONTROL DATA		SUMMING AMP OUTPUT AND VELOCITY	
CODE IDENT	19333	CROSS REF NO	072
LOC: A2A07	83322680	SHEET	2
NORMANDALE DIVISION		PAGE	1-42

194 809-298 078 + LOAD HEADS
 194 809-128 08A +RTZ
 192 809-13A 10A + VELOCITY INTEGRATOR CLAMP
 192 809-29B 29B + VELOCITY COMPENSATION 28.7 kΩ
 192 809-28B 28B + VELOCITY TRANSDUCER E2R6 23.7 kΩ
 192 809-31A 31A + COARSE POSITION ERROR
 192 809-16B 22B - COARSE
 085 A08-09A 23B + FINE POSITION NOTCH AMPLIFIER
 084 A08-26A 15B + FINE POSITION ANALOG
 192 809-16A 17B - FINE
 26B 092 A09-28B + SUMMING AMP OUTPUT
 27B 083 A08-08B + INTEGRATED VELOCITY
 30B 082 A08-02A + VELOCITY
 28B 092 A09-12B + VELOCITY TRANSDUCER

1 2 3 4

1 2 3 4



165 B06-04B 27A >> + I-2256
 165 B06-02B 23B >> + DIFF BIT 27
 165 B06-02A 11B >> + DIFF BIT 26

165 B06-03A 12B >> + DIFF BIT 25
 165 B06-04A 13A >> + DIFF BIT 24
 165 B06-10A 13B >> + DIFF BIT 23
 165 B06-09B 15A >> + DIFF BIT 22
 165 B06-09A 17A >> + DIFF BIT 21
 165 B06-11B 16A >> + DIFF BIT 20

192 B09-07A 15B >> - FORWARD SEEK
 192 B09-08A 21B >> - REVERSE SEEK

NC 04B >>>
 NC 03B >>>

194 B09-31A 02A >>> + SERVO FAULT

04A NC >>>
 03A NC >>>
 07A >>> - SERVO FAULT

194 B09-33B >>> -252 JAB0-01A
 104 A10-12A >>>

CONTROL DATA		CODE 18BY	83322680	A
SEEK DIFFERENCE GENERATION		19333		A
NORMANDALE DIVISION		REF NO	073	SHEET 3
LOC. A2A07				PAGE 1-43/44

4 3 2 1

REVISION STATUS OF SHEETS

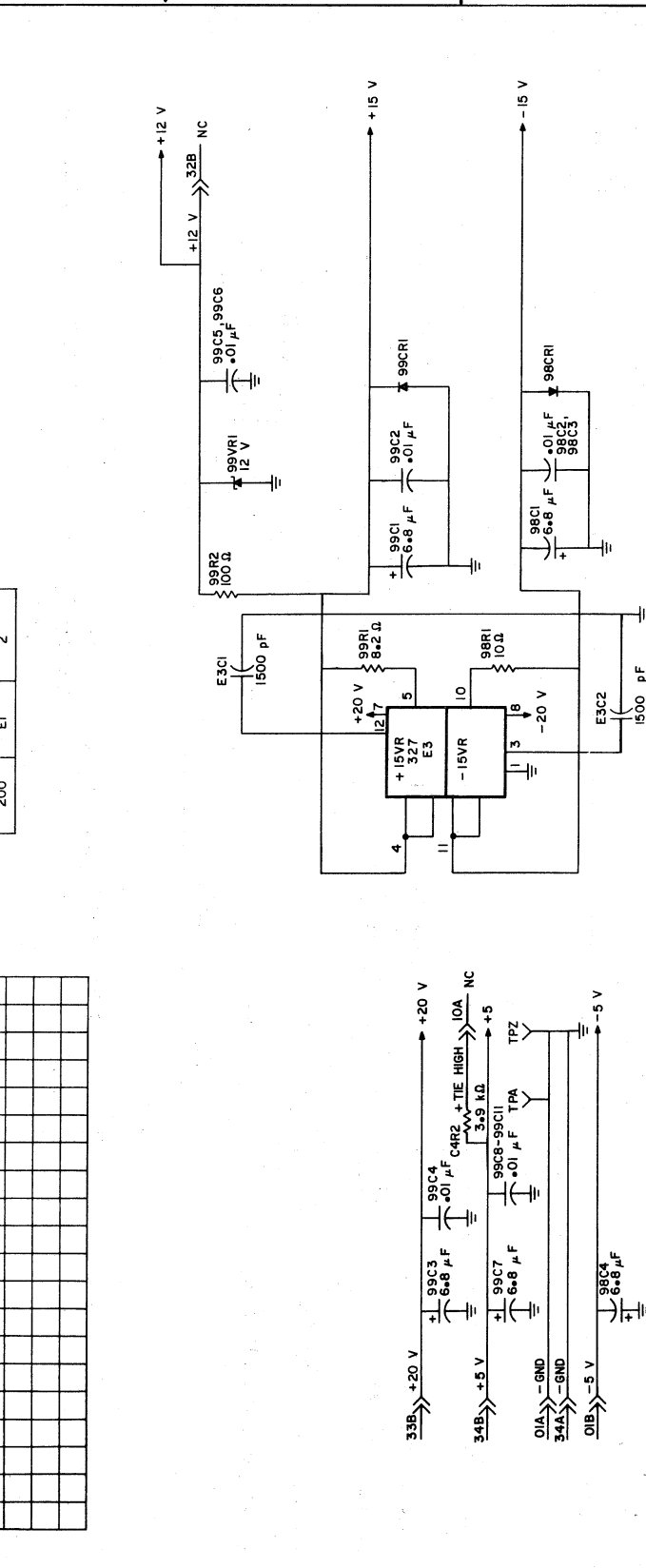
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
A	A	A	A																	

REVISIONS

REV	ECO.	DESCRIPTION	DRFT	DATE	CHK'D
A	PEZ355	RELEASED			

UNUSED LOGIC ELEMENT

TYPE	LOCATION	OUTPUT PIN (S)
200	E1	2



CONTROL DATA

DRAWN: [Signature] CHECKED: [Signature] ENGINEER: [Signature] APPROVED: [Signature]

19333 C 83322680 A A

ACCESS CONTROL NO. 2 DIAGRAMS

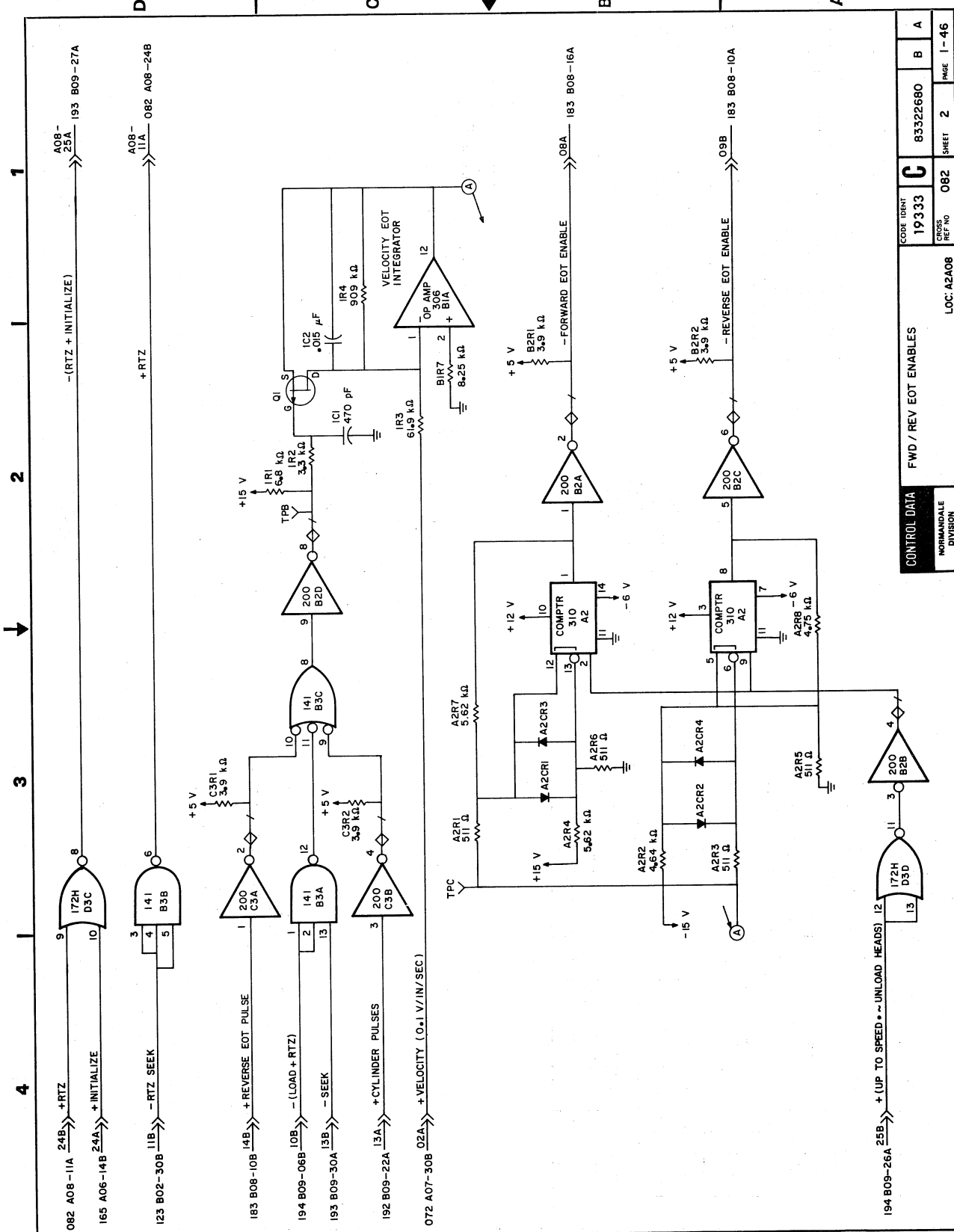
LOC. A2A08

TYPE: ELUV

SHEET 1 of 5

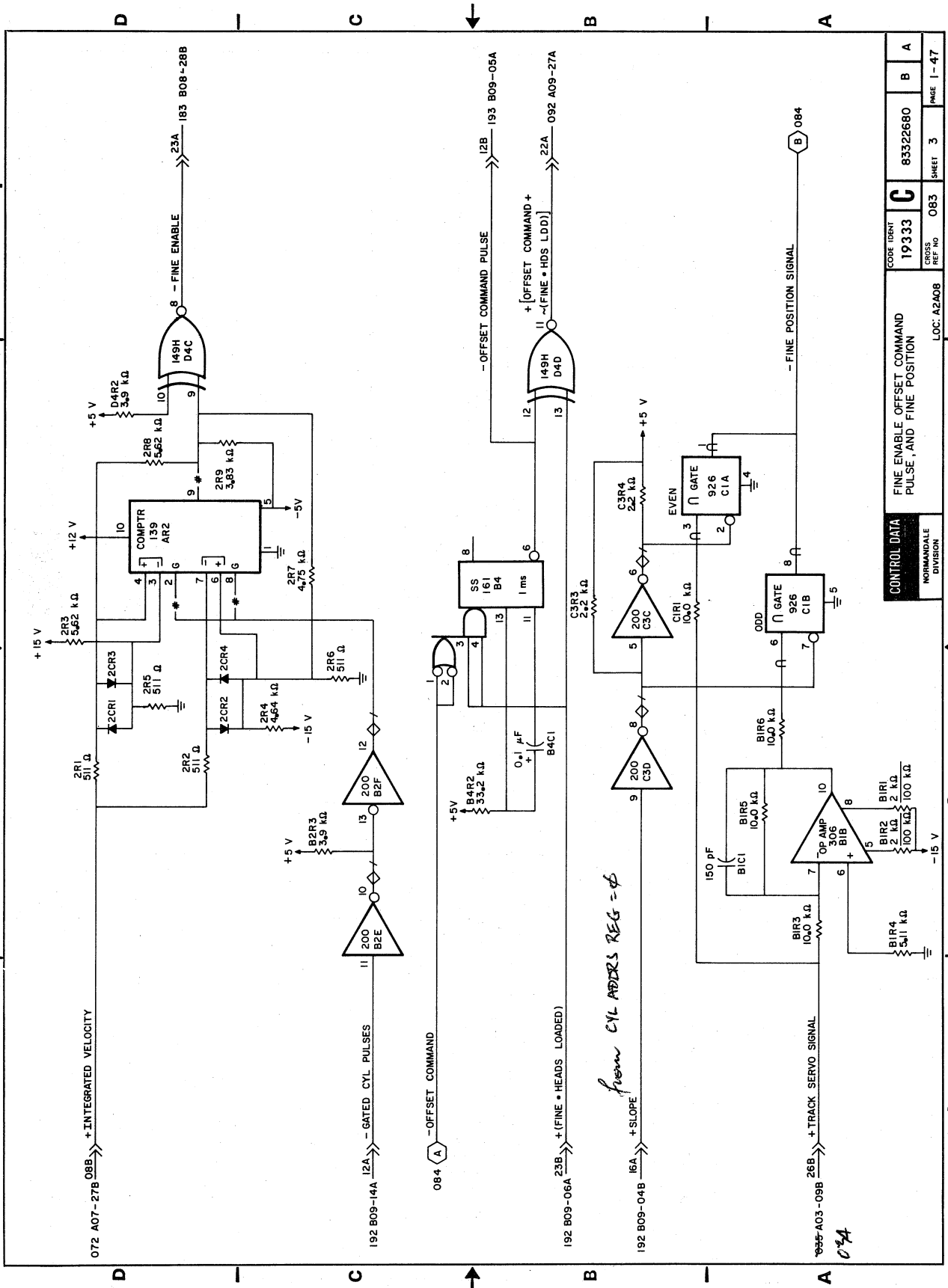
PAGE I-45

REF 83215708



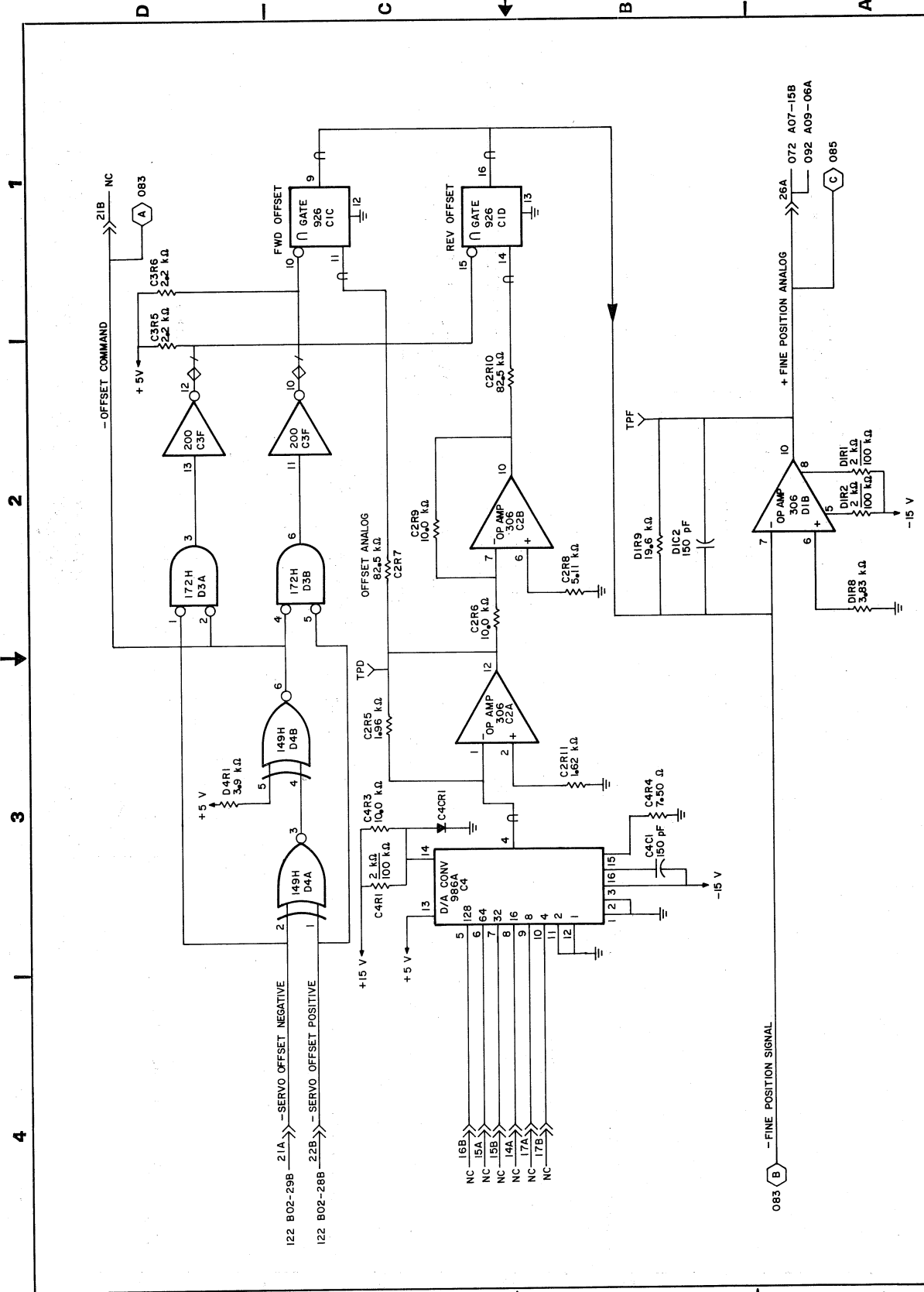
CONTROL DATA		FWD / REV EOT ENABLES		CODE 188RT	19333	C	83322680	B	A
NORMANDALE DIVISION		LOC. A2A08		CROSS REF. NO.	082	SHEET	2	PAGE	1-46

4 3 2 1

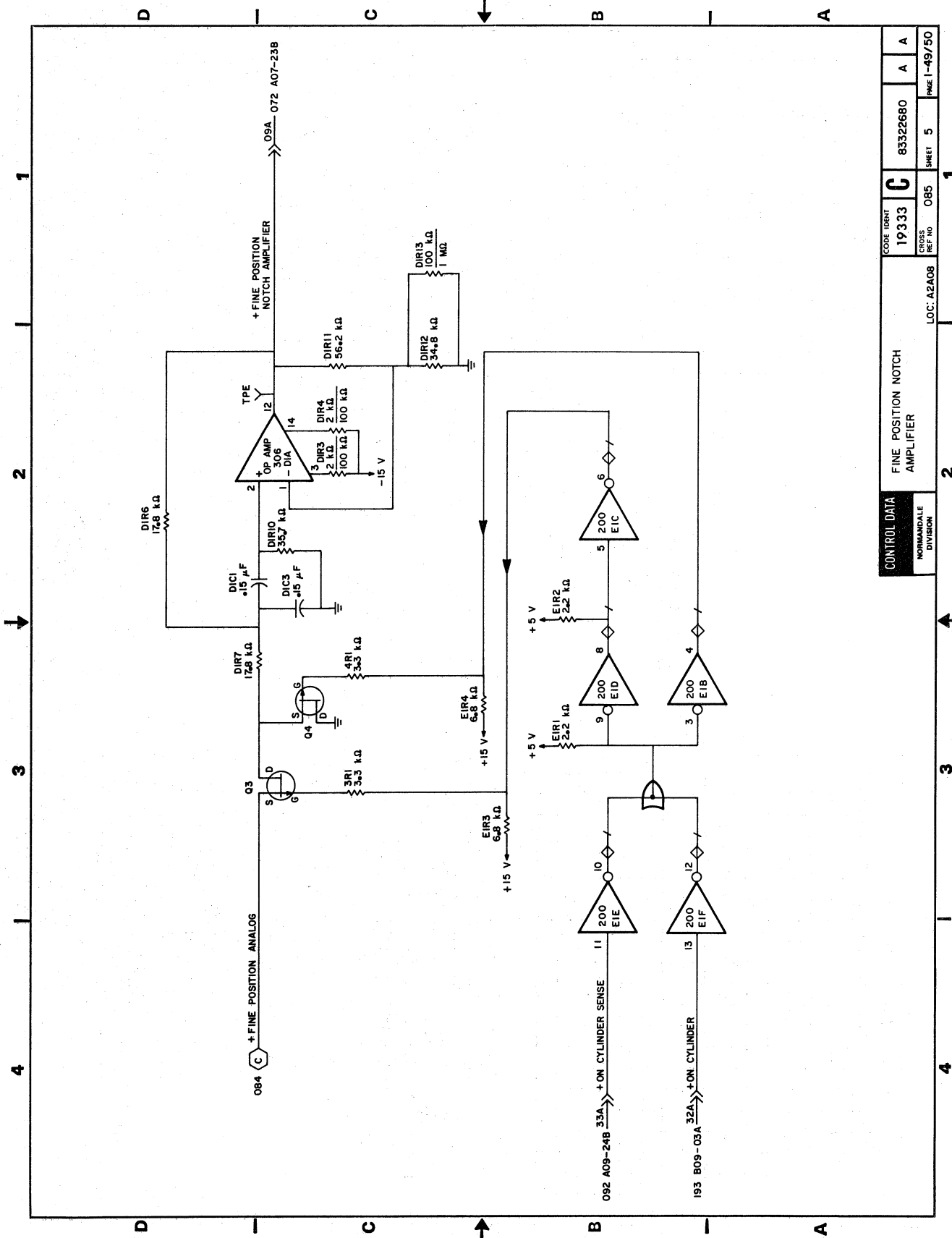


CONTROL DATA		CODE ISBN	PAGE	
FINE ENABLE OFFSET COMMAND PULSE, AND FINE POSITION		19333	C	3
NORMANDALE DIVISION		ISSUES REF NO	O83	SHEET 3
		LOC: A2408	B	1-47

084



CONTROL DATA		OFFSET COMMAND AND FINE POSITION ANALOG		LOC A2A08		CRVS REF NO 084		SHEET 4		PAGE 1-48	
NORMANDALE DIVISION		CODE IDENT 19333		83322680		A		A		A	



CONTROL DATA		FINE POSITION NOTCH AMPLIFIER		LOC: A2A08	
NORMANDALE DIVISION					
CODE IDENT	19333	CROSS REF NO	085	SHEET	5
83322680	A	A	A	PAGE 1-49/50	

1 2 3 4

REVISION STATUS OF SHEETS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
A	A	A																		

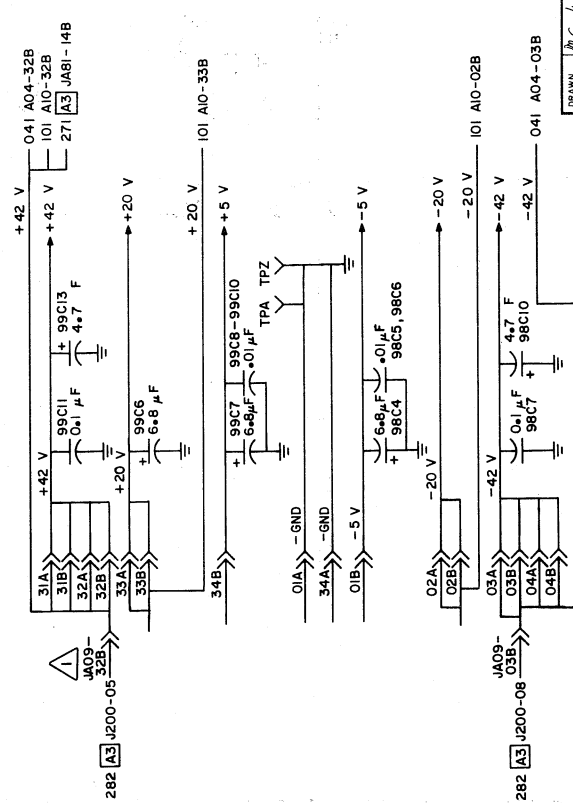
REVISIONS

REV.	ECO.	DESCRIPTION	DRFT.	DATE	CHK'D
A	PR23000	RELEASED			

UNUSED LOGIC ELEMENTS

TYPE	LOCATION	OUTPUT PIN (S)
140	D2	3,6
200	E1	6,12
306	A1	12

NOTE:
 ⚠ REFER TO CROSS REFERENCE NUMBER 341 FOR CABLING INFORMATION



CONTROL DATA

3-6-77

SWITCHING MODE CONTROL DIAGRAMS

TYPE: FLPV

LOC: A2A09

CROSS REF: 091

SHEET 1 OF 3

83322680

CODE IDENT: 19333

83322680

1 REF 83215709

DRAWN: [Signature]

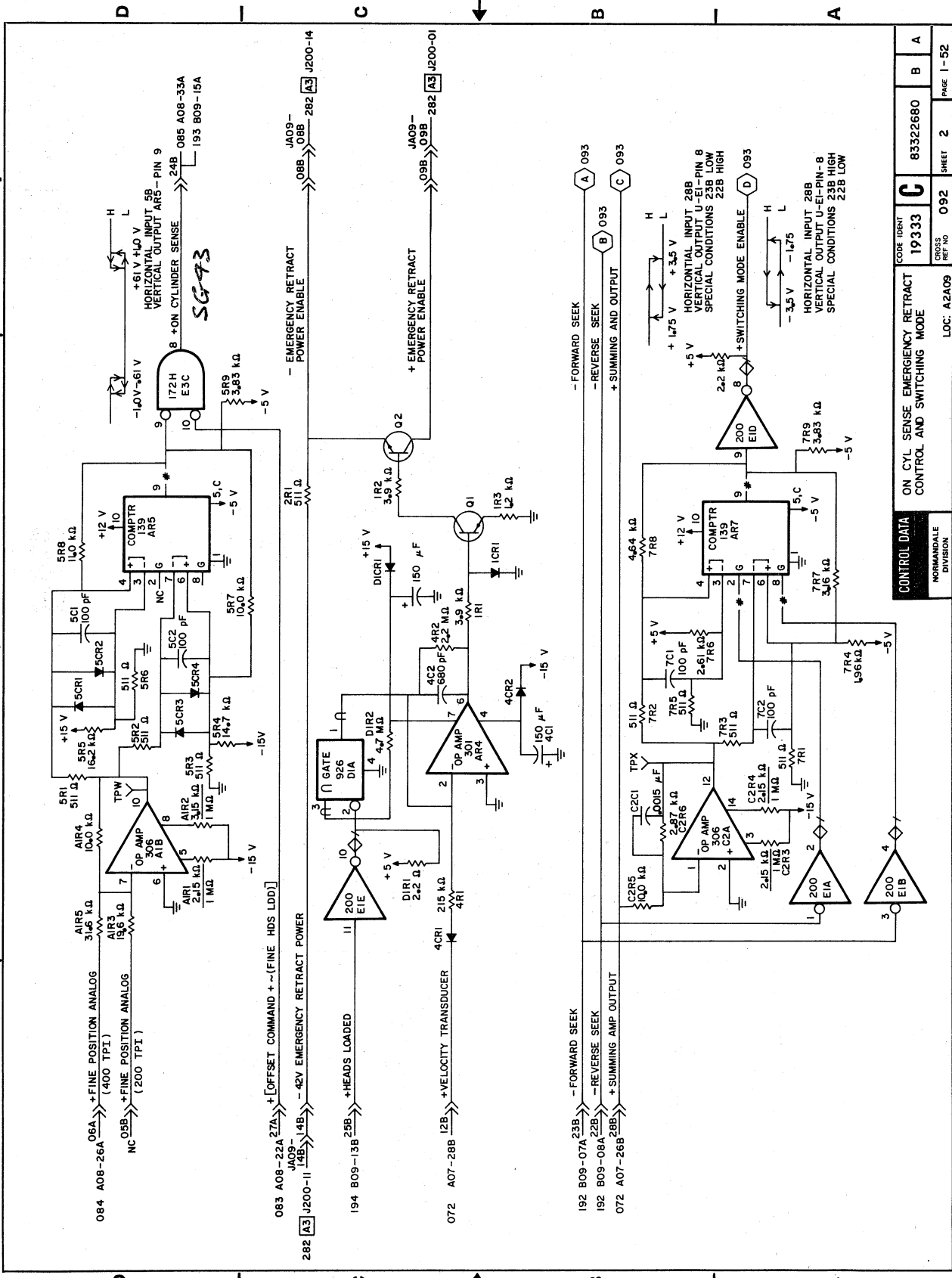
CHECKED: [Signature]

ENGINEER: [Signature]

APPROVED: [Signature]

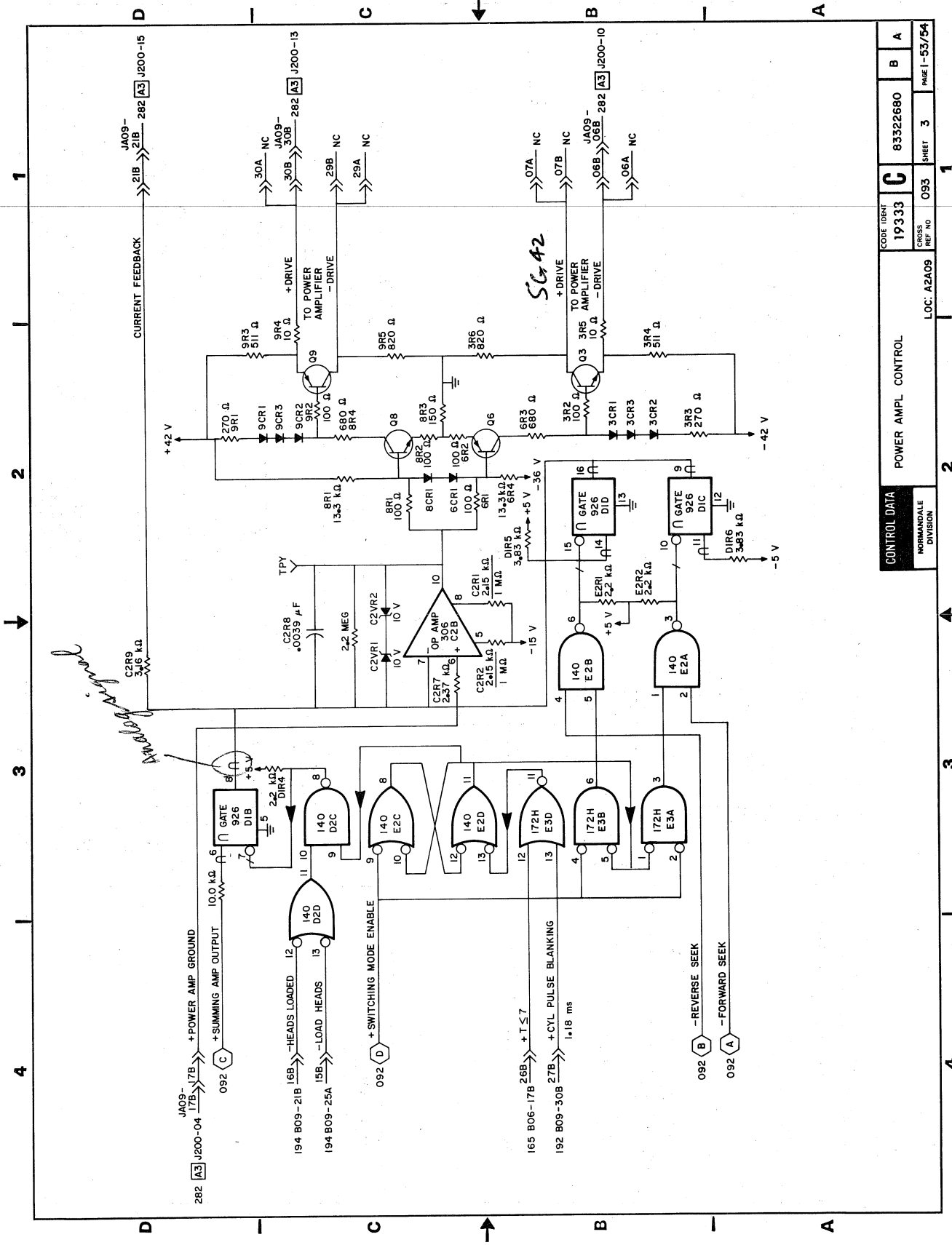
NORMANDALE DIVISION

4 3 2 1



CONTROL DATA		ON CYL SENSE EMERGENCY RETRACT CONTROL AND SWITCHING MODE	
NORMANDALE DIVISION		LOC. A2A09	
CODE ISBN	19333	83322680	A
REF. NO.	092	SHEET	2
PAGE		1-52	

4 3 2 1



CONTROL DATA		POWER AMPL CONTROL	
CODE IDENT	19333	83322680	B A
CROSS REF NO	093	SHEET 3	PAGE 1-53/54
LOC: A2A09			

4 3 2 1

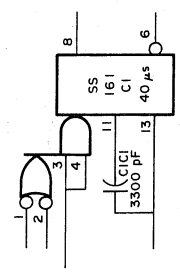
REVISION STATUS OF SHEETS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
A	A	A	A																	
B	A	A	B																	
C	C	C	C																	
D	C	D	D																	
E	C	E	D																	
F	F	F	F																	

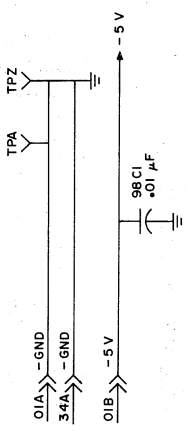
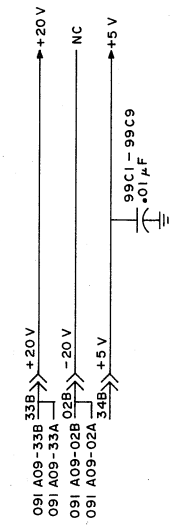
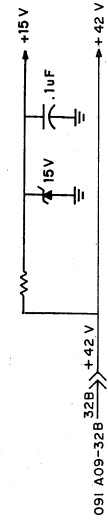
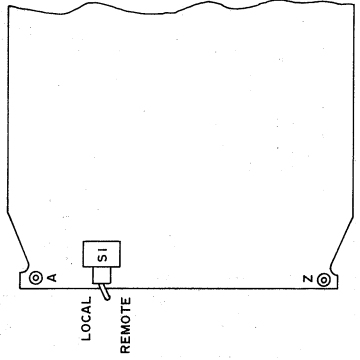
REVISIONS

REV	ECO	DESCRIPTION	DRFT	JAT	DATE
A	PE23000	RELEASED			2-8-80
B	PE48961	CHANGE ONE SHOT VALUES	CB		
C	PE55411	CHANGE PC BOARD			
D	PE55865	UPDATE SCHEMATICS			
E	PE55928	CHG RES. VALUES	MF		7-8-80
F	PE60413	CHG SPEED DETECT. CRT	TH		11-03-80

NOTE:
 1 REV. K AND BELOW AS SHOWN BELOW. SEE CROSS REF NUMBER 104 FOR REV. L AND ABOVE.



LOCAL / REMOTE SWITCH ON CARD EDGE



APPLICABLE TO ASGV REV S & ABV

INTERLOCKS AND SPEED DETECTOR DIAGRAMS

DRAWN	CHECKED	ENGINEER	APPROVED

MAGNETIC PERIPHERALS INC. COMMERCIAL CORPORATION

7-9-77

19333

LOC: A2A10

TYPE: ASGV

101

1 OF 4

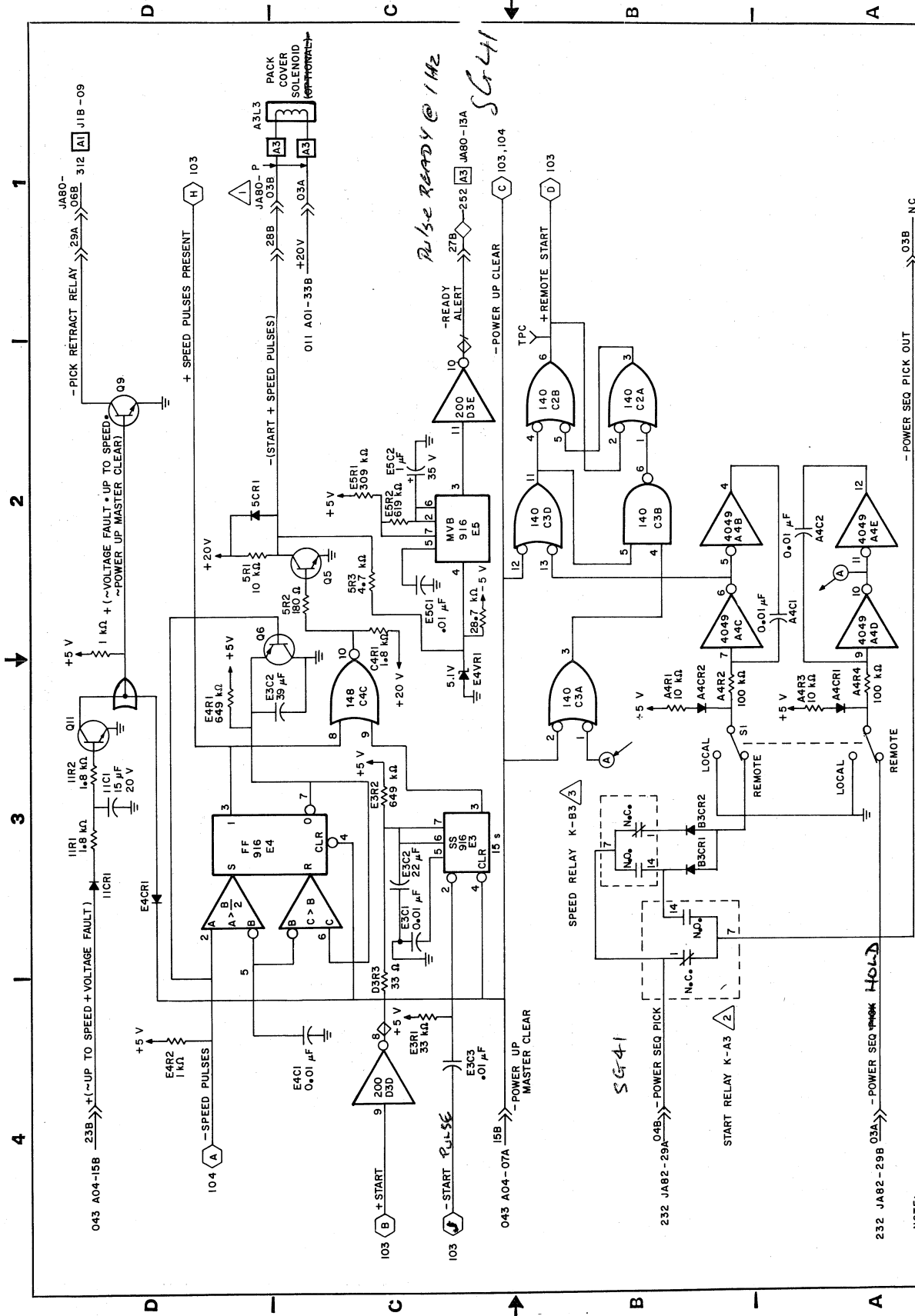
SHEET

83322680

1-58.1

REF 83215710

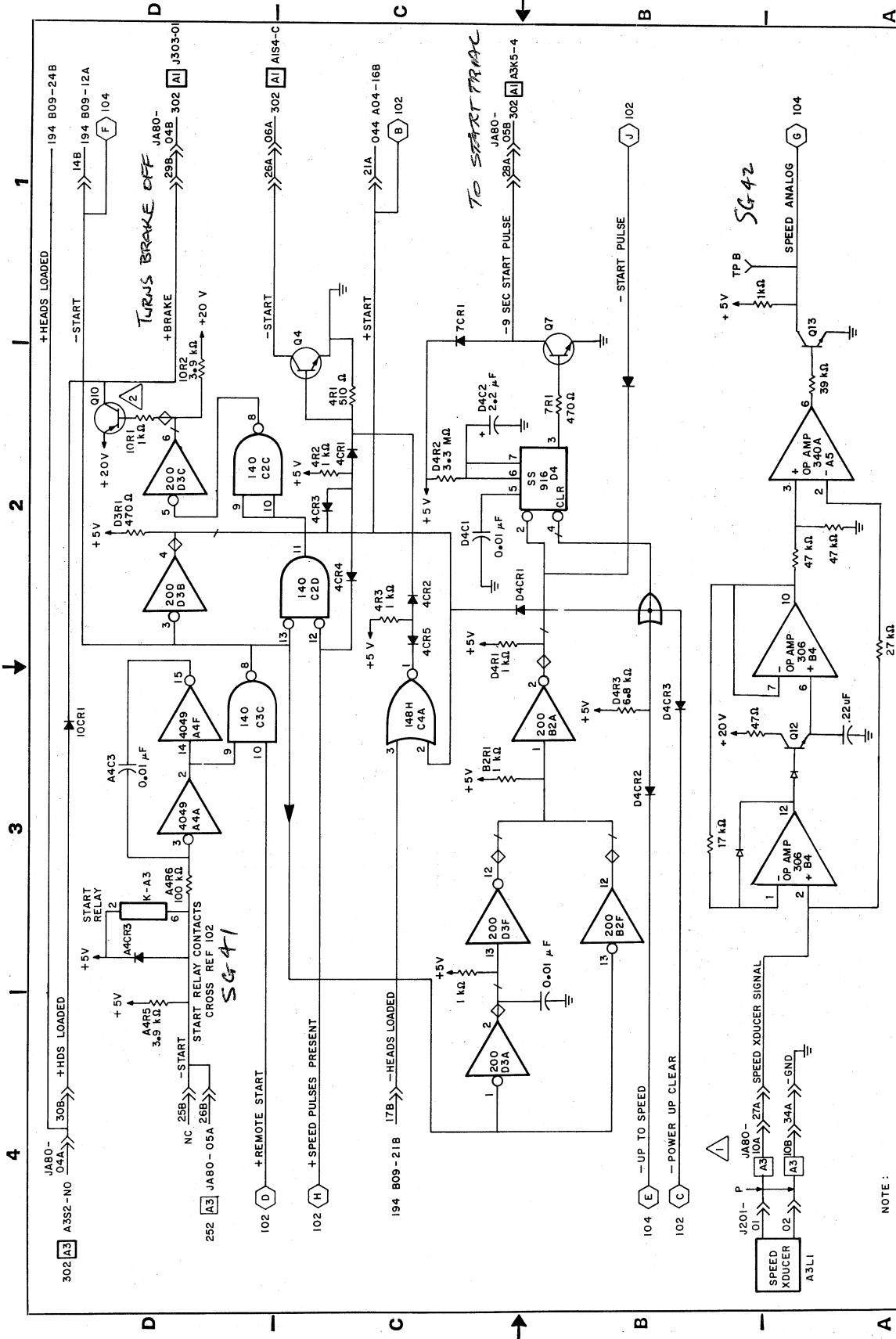
D C B A



103	+ START	103	- START	104	- SPEED PULSES	103	+ SPEED PULSES PRESENT	102	- POWER SEQ PICK OUT
103	+ START	103	- START	104	- SPEED PULSES	103	+ SPEED PULSES PRESENT	102	- POWER SEQ PICK OUT
103	+ START	103	- START	104	- SPEED PULSES	103	+ SPEED PULSES PRESENT	102	- POWER SEQ PICK OUT
103	+ START	103	- START	104	- SPEED PULSES	103	+ SPEED PULSES PRESENT	102	- POWER SEQ PICK OUT

NOTE:

- 1 REFER TO CROSS REFERENCE NUMBER 341 FOR CABLING INFORMATION.
- 2 START RELAY COIL SHOWN ON CROSS REFERENCE NUMBER 103.
- 3 SPEED RELAY COIL SHOWN ON CROSS REFERENCE NUMBER 104.



NOTE:

- 1 REFER TO CROSS REFERENCE NUMBER 341 FOR CABLING INFORMATION.
- 2 REV L B ARV AS SHOWN REV K B BLW IOR1-2-2 kΩ

START, BRAKING CONTROL

LOC: A2A10

CODE IDENT 19333

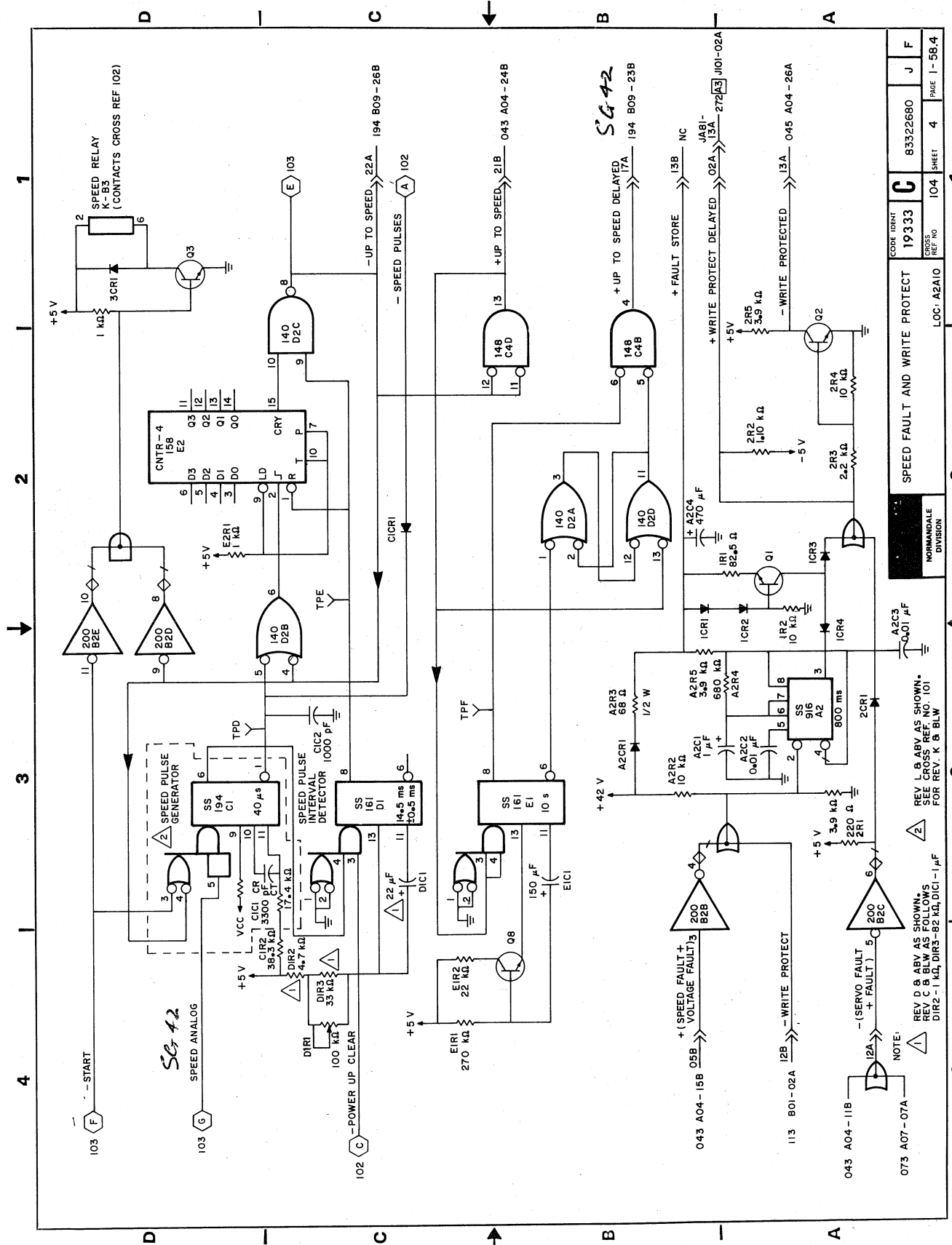
QTS REF NO 103

SHEET 3

PAGE 1-58.3

83322680

J F



SPEED FAULT AND WRITE PROTECT		CODE IDENT	83322680	J	F
		19333	C		
		LOC: A2A10	104	SHEET	4
				PAGE	1-58-4

NORMANDALE DIVISION

REV L & ABV AS SHOWN.
REV C & BLW AS FOLLOWS
DIR2 - 1 kΩ, DIR3 - 82 kΩ, DIC1 - 1 μF

NOTE:
REV D & ABV AS SHOWN.
REV C & BLW AS FOLLOWS
DIR2 - 1 kΩ, DIR3 - 82 kΩ, DIC1 - 1 μF

SG 42

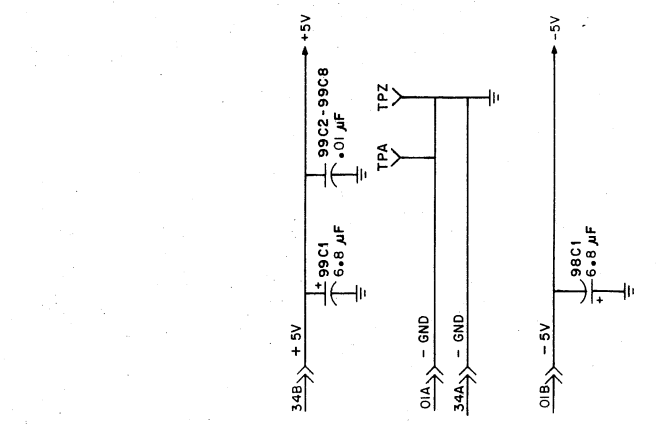
SG 42

4 3 2 1

REVISION STATUS OF SHEETS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
A	A																		
B	A	B																	

REV	ECO	RELEASED	DESCRIPTION	DRFT	DATE	CHK'D
8	PE2360	RELEASED				
7	PE2360	UPDATE	SCHEMATICS	CB	3-8-80	



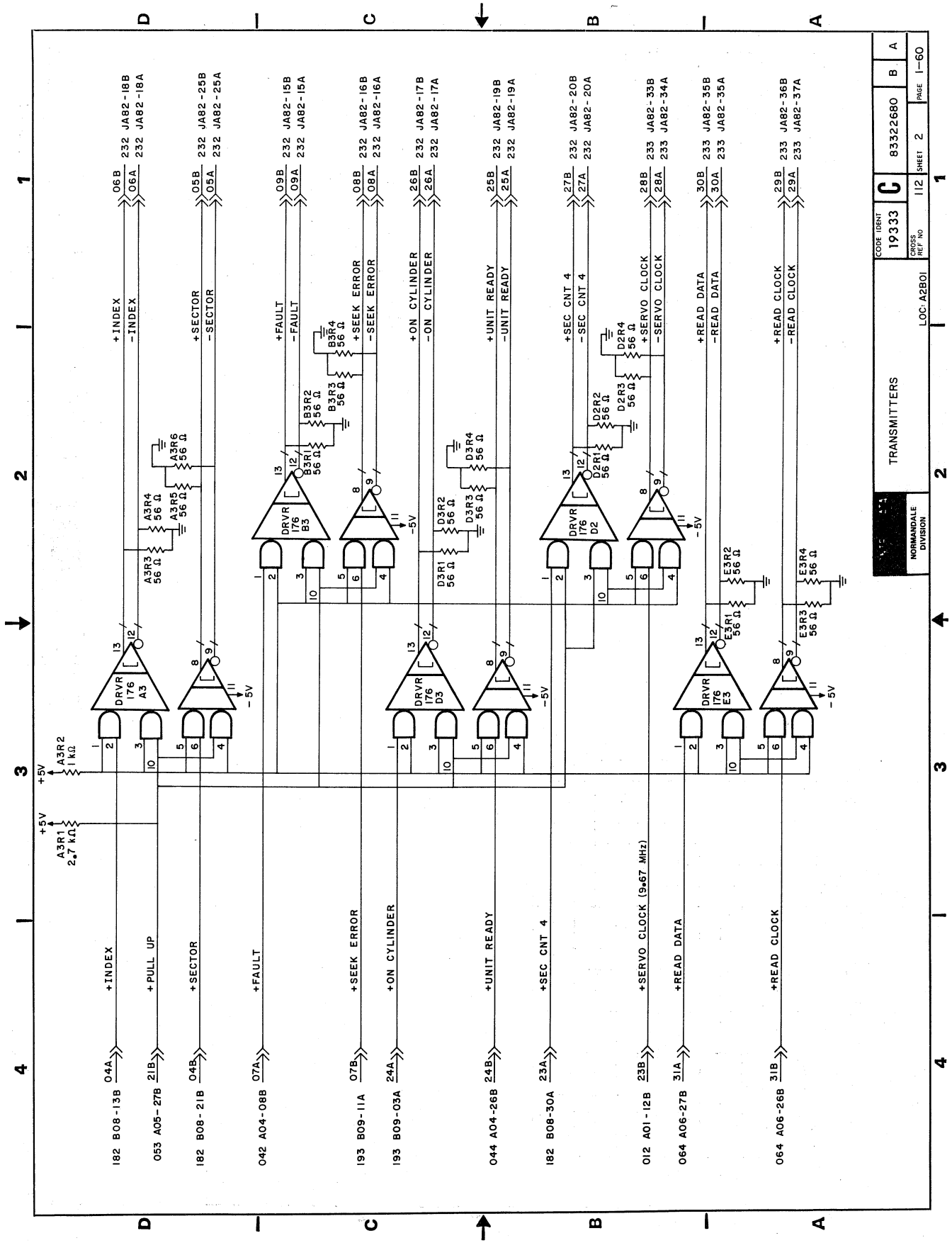
DRAWN	3/2/77	3/2/77	3/2/77
CHECKED			
ENGINEER			
APPROVED			

NORMANDALE DIVISION

TRANSMITTERS AND RECEIVERS - HEAD ADDRESS REGISTER DIAGRAMS
TYPE: JTV

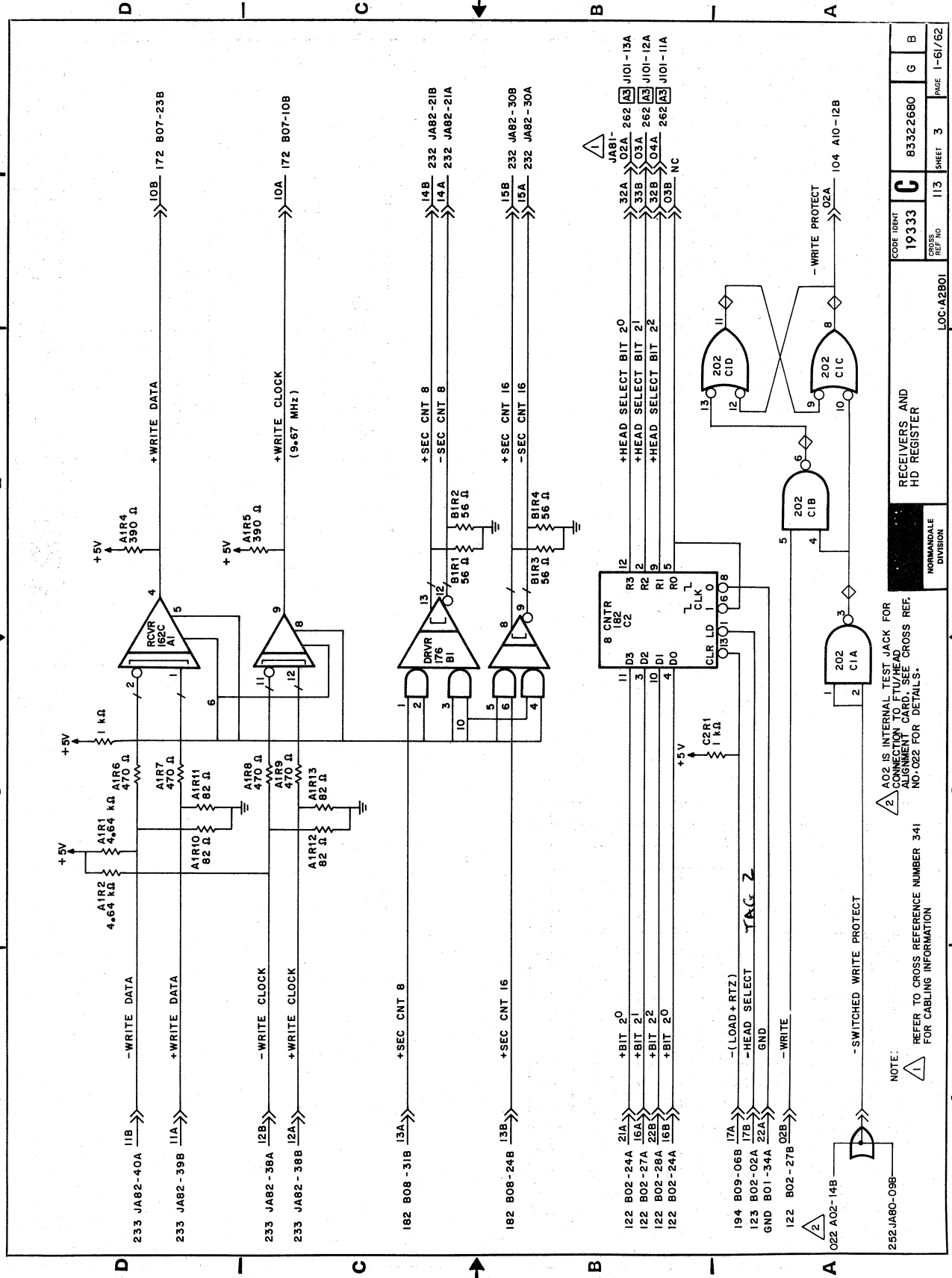
CODE IDENT	83322680	H	B
CROSS REF NO	19333	C	
CROSS REF SHEET	1 of 3		
LOC	A2B01		
REF	83215711		

1 2 3 4



NORMANVILLE DIVISION		TRANSMITTERS	
CODE ISBNIT	19333	C	83322680
CROSS REF NO	112	SHEET 2	PAGE 1-60
LOC: A2B01			

4 3 2 1



CODE IDENT	19333	C	G	B
CROSS REF NO	113	SHEET	3	PAGE
LOC-A2B01		1-61/62		

RECEIVERS AND HD REGISTER

NORMANDALE DIVISION

NOTE:
 (1) REFER TO CROSS REFERENCE NUMBER 341 FOR CABLING INFORMATION
 (2) AO2 IS INTERNAL TEST JACK FOR CONNECTION TO F1U/HEAD ALIGNMENT CARD. SEE CROSS REF. NO.022 FOR DETAILS.

252-JA80-098

102 A02-14B

1 2 3 4

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REVISION STATUS OF SHEETS

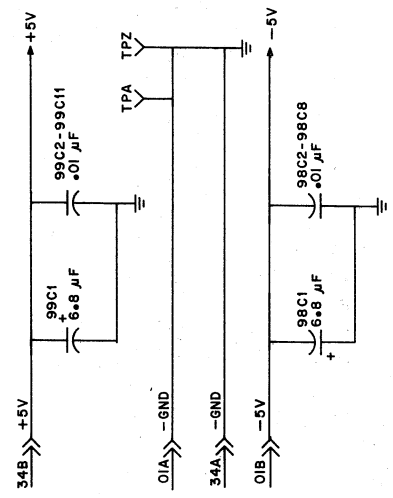
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A	A	A	A																	
B	A	B	A																	

REVISIONS

REV.	ECO.	RELEASED	DESCRIPTION	DWGT.	DATE	CHK'D
A	PE23000	TECHNICAL	CHG	CB	10/2/90	
B						

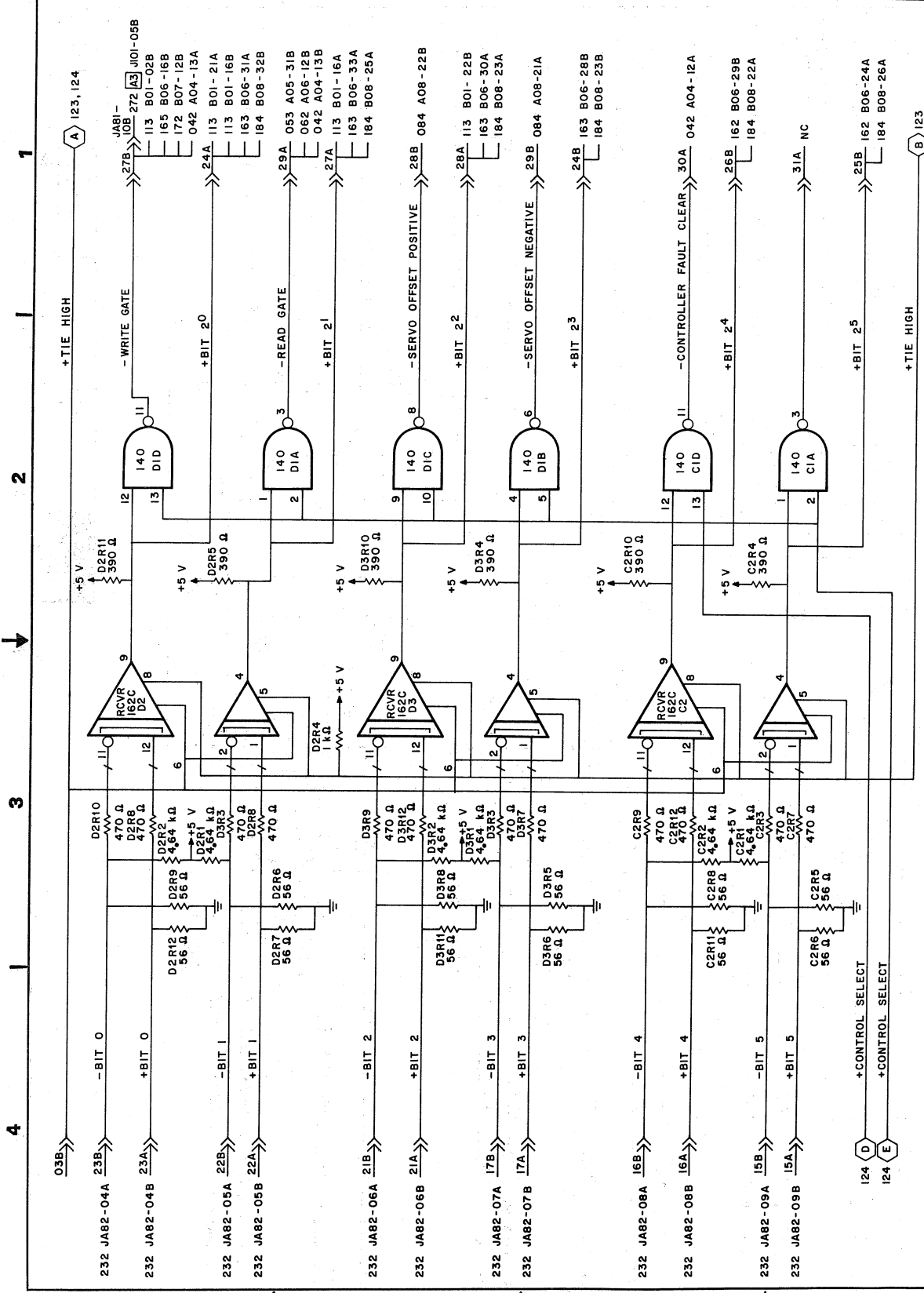
UNUSED LOGIC ELEMENTS

ELEMENT TYPE	LOCATION	OUTPUT PIN(S)
173H	B1B	6
230LS	A1A	12

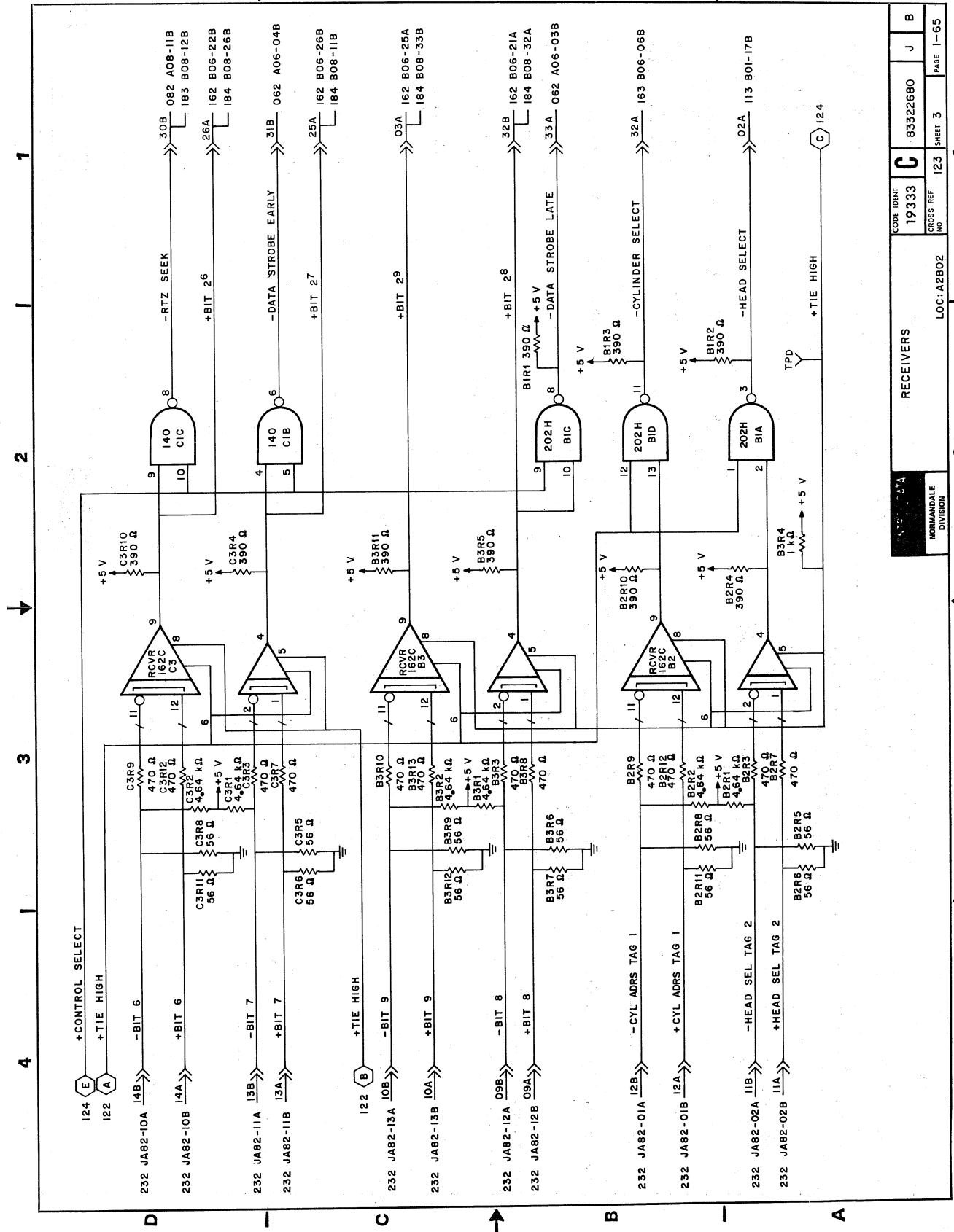


DRAWN	Checked	3/9/77	CONTROL: DATA	COE IDENT	19333	C	83322680	J	B
CHECKED				CROSS REF					
ENGINEER			NORMANDALE	LOC: A2B02					
APPROVED			DIVISION	TYPE: HRV	121				
				SHEET	1	OF	4	FACE	I-63
				REF	83215712				

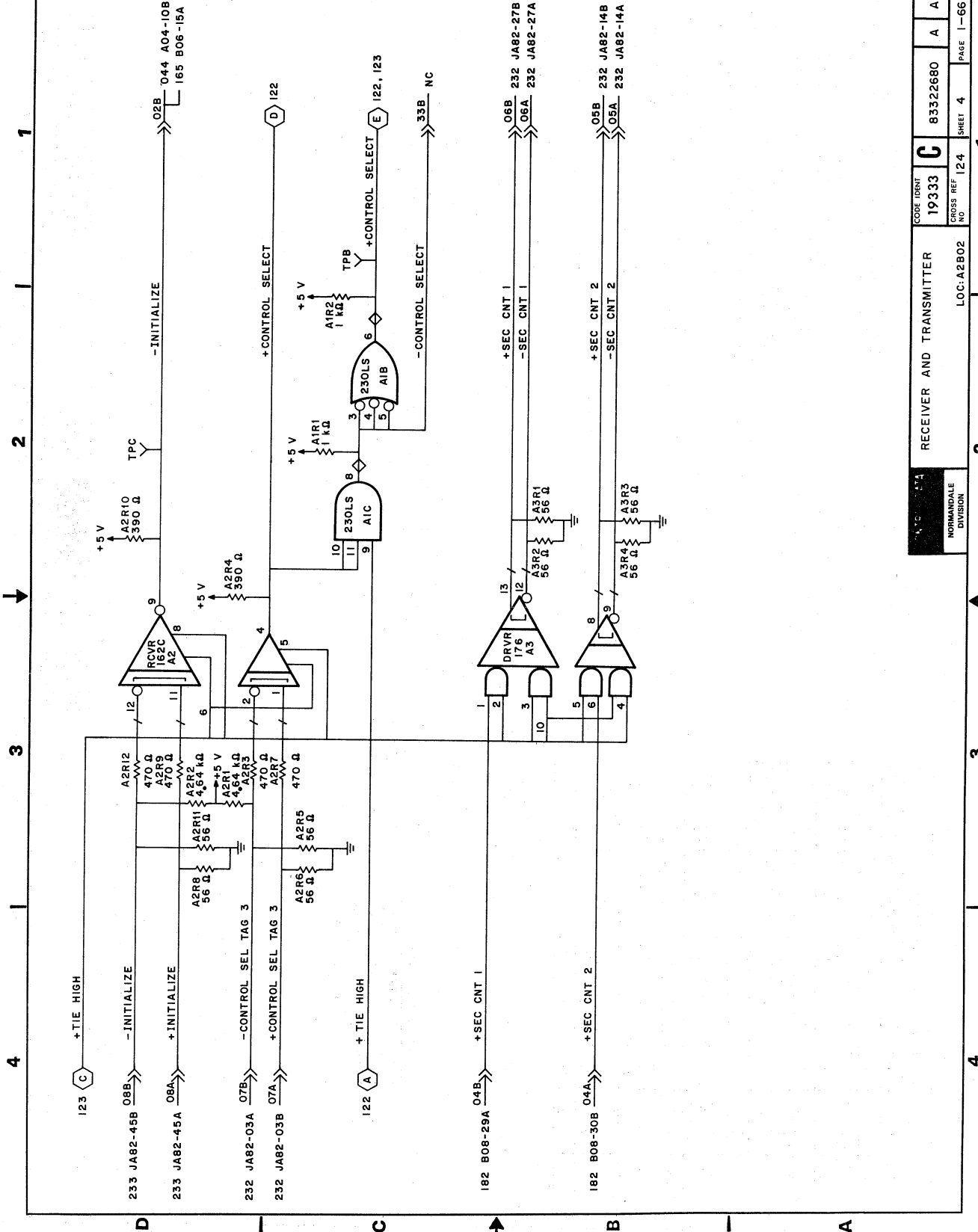
4 3 2 1



RECEIVERS		CODE IDENT 19333	8332680	A
NORMANVILLE DIVISION		CROSS REF NO 122	SHEET 2	PAGE 1-64
LOC: A2B02				



RECEIVERS		CODE IDENT	83322680	J	B
NORMANDALE DIVISION		19333	C	PAGE 1-65	
LOC: A2B02		CROSS REF NO	123	SHEET	3



RECEIVER AND TRANSMITTER		LOC: A2B02	
NORMANDALE DIVISION			
CODE IDENT	19333	CROSS REF NO	124
85322680	C	SHEET 4	1
A	A	PAGE	1-66

4 3 2 1

REVISION STATUS OF SHEETS

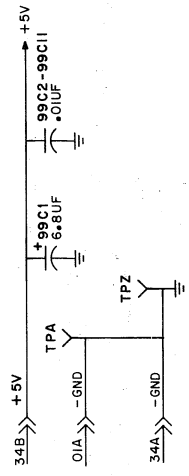
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A	A	A	A	A															
B	A	A	B	B															

REVISIONS

REV	ECO	RELEASED	DESCRIPTION	DRFT.	DATE	CHK'D
A	RESO					
B	TEST	7/3	CHANGE IC FAMILIES	CB	10/2/90	

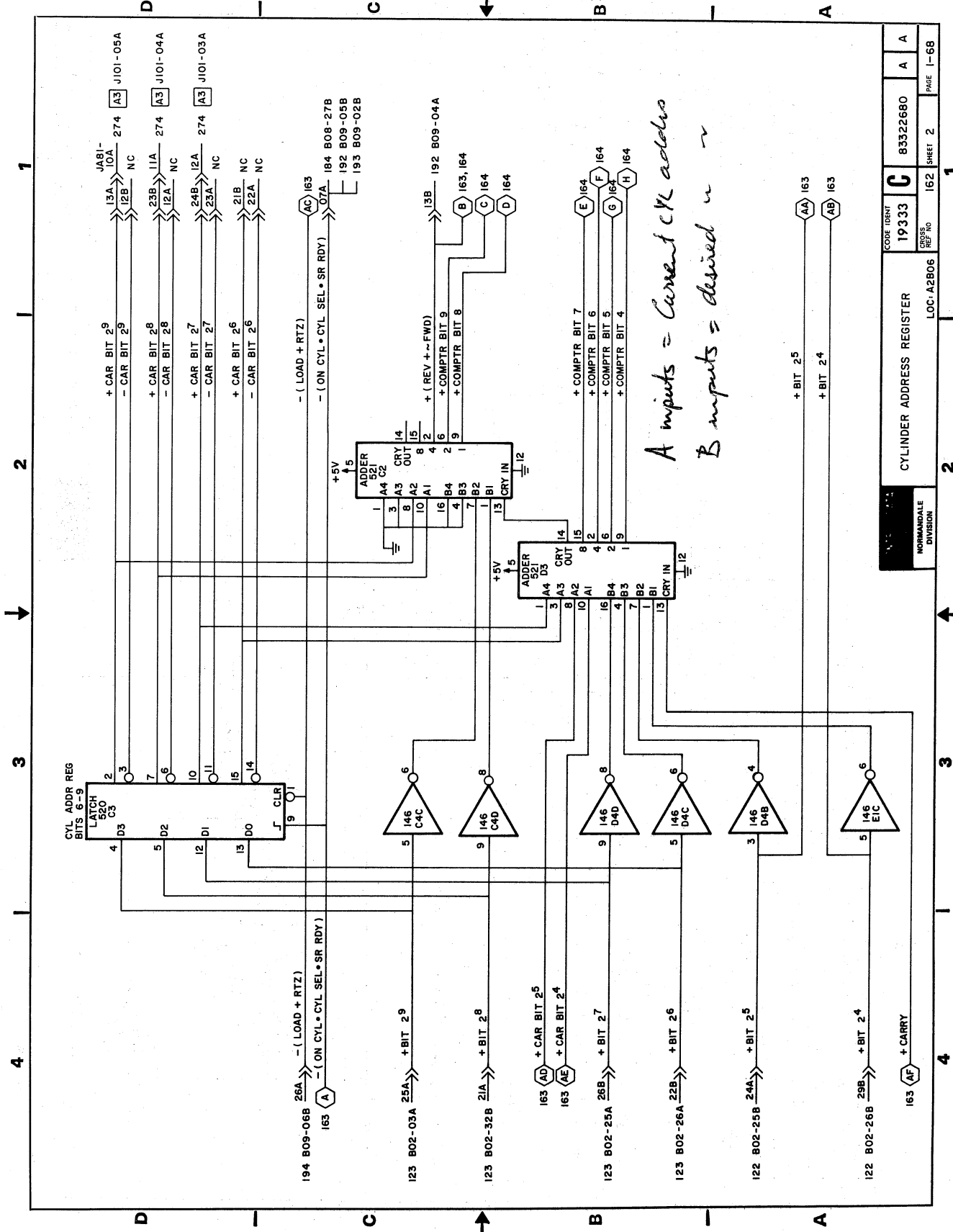
UNUSED LOGIC ELEMENTS

ELEMENT TYPE	LOCATION	OUTPUT PIN(S)
200	A1	8,10,12
140	B4	6



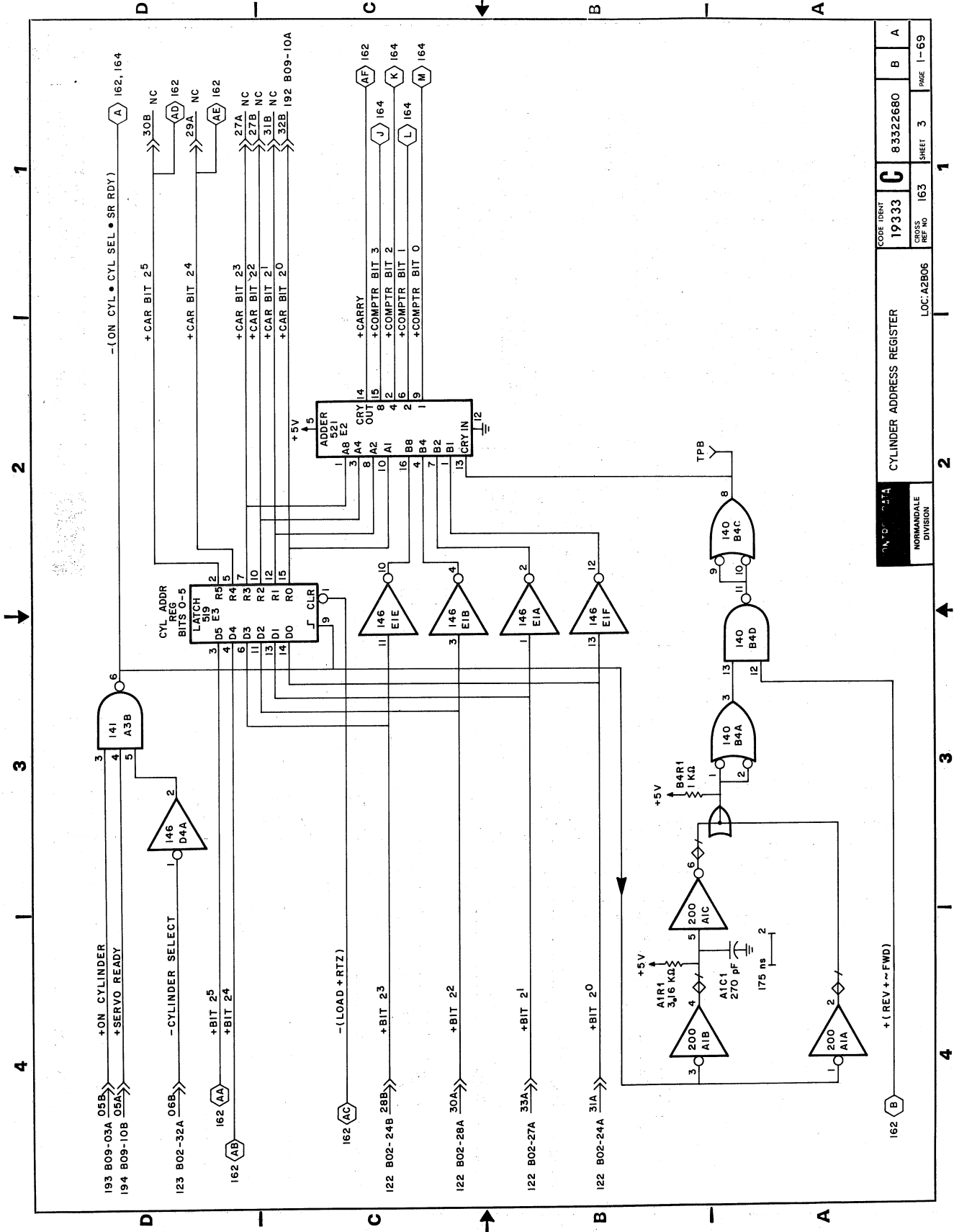
DRAWN	Checked	3/17/77	CODE IDBNT	C	8332680	J	B
CHECKED	ENGINEER	3/17/77	19333				
APPROVED			CROSS REF	161	SHEET 1 of 5	FACE	1-67
NORMAN DALE DIVISION			LOC: A2B06				

4 3 2 1

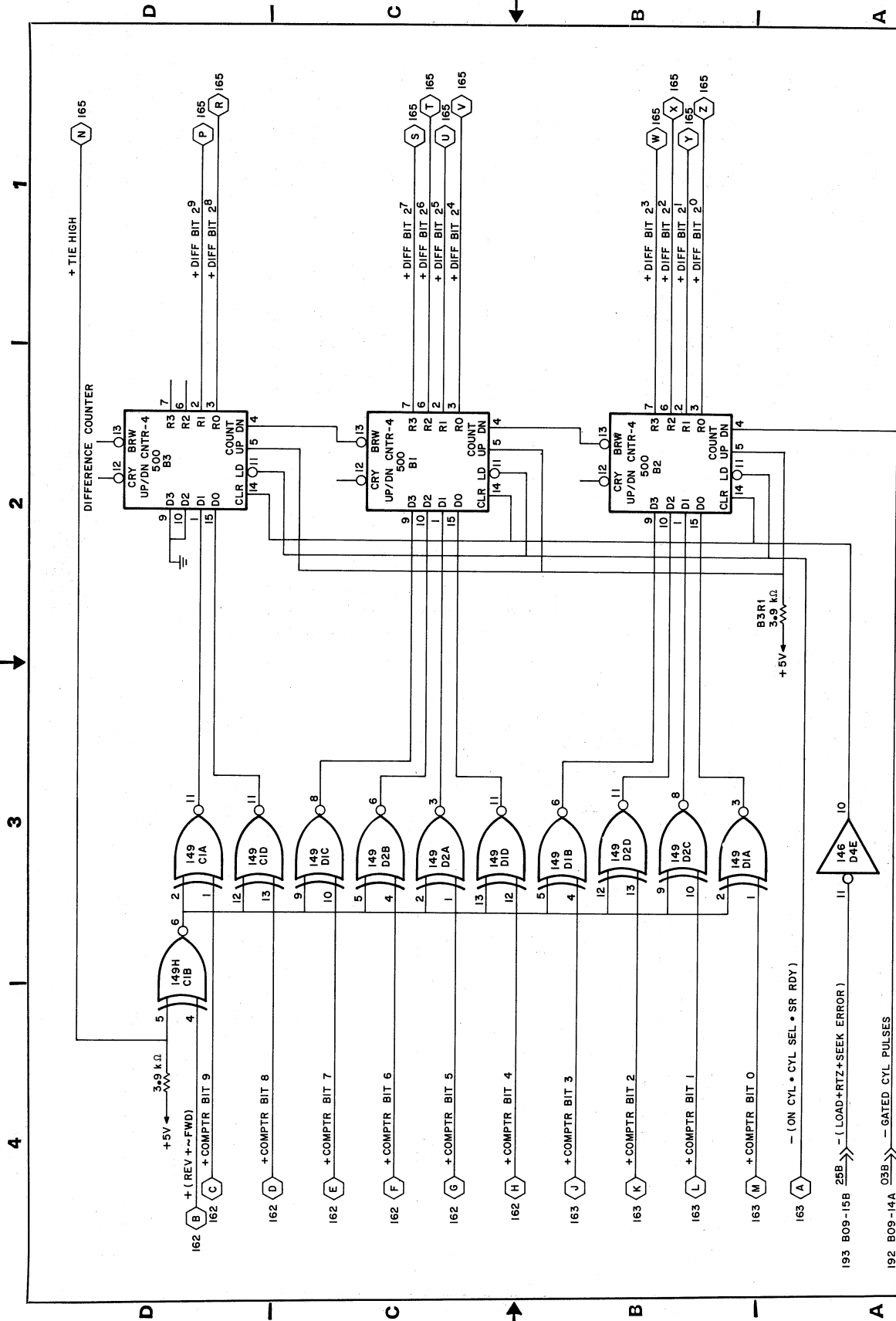


A inputs = Current CLK address
 B inputs = desired CLK address

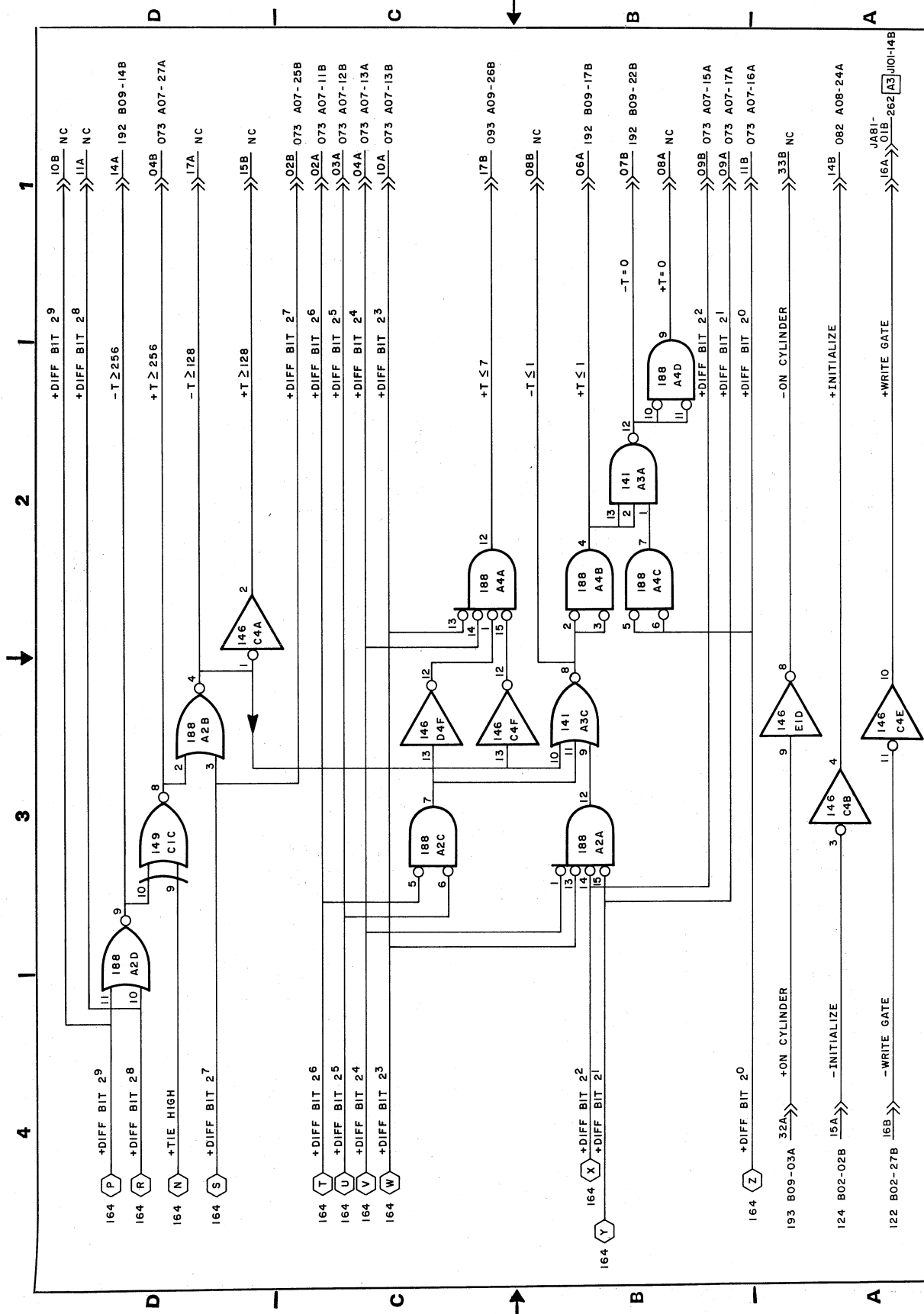
NORMANDALE DIVISION		CYLINDER ADDRESS REGISTER		CODE IDENT	83322680	A	A
				19333			
				CROSS REF NO	162	SHEET 2	PAGE 1-68
				LOC: A2B06			



CODE (PART)	19333	C	83322680	B	A
REV'S	REF NO	163	SHEET	3	PAGE 1-69
CYLINDER ADDRESS REGISTER			LOC. A2B06		
NORMAN DALE DIVISION					



CONTR. DATA	DIFFERENCE COUNTER GENERATION	LOC: A2B06	SHEET 4	1
19333	83322680	J	B	
164	164	164	164	164
DIFFERENCE COUNTER GENERATION		PAGE 1-70		



CONTRACT DATA		DIFFERENCE COUNTER		LOC. A2B05	
NORMANDALE DIVISION		DIFFERENCE COUNTER		165	
CODE 10BRT	19333	C	83322680	J	B
CROSS SECTION	165	SHEET	5	PAGE	1-71/72

CONTRACT DATA		DIFFERENCE COUNTER		LOC. A2B05	
NORMANDALE DIVISION		DIFFERENCE COUNTER		165	
CODE 10BRT	19333	C	83322680	J	B
CROSS SECTION	165	SHEET	5	PAGE	1-71/72

1 2 3 4

REVISION STATUS OF SHEETS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
A	A																			

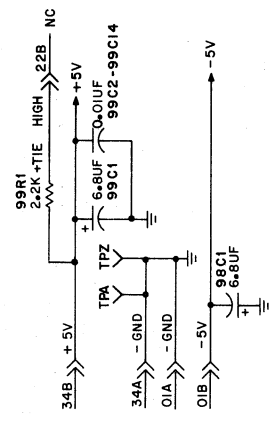
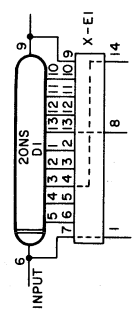
REVISIONS

REV.	ECO.	DESCRIPTION	DRFT.	DATE	CHK'D
A	PE23000	RELEASED			

NOTE:

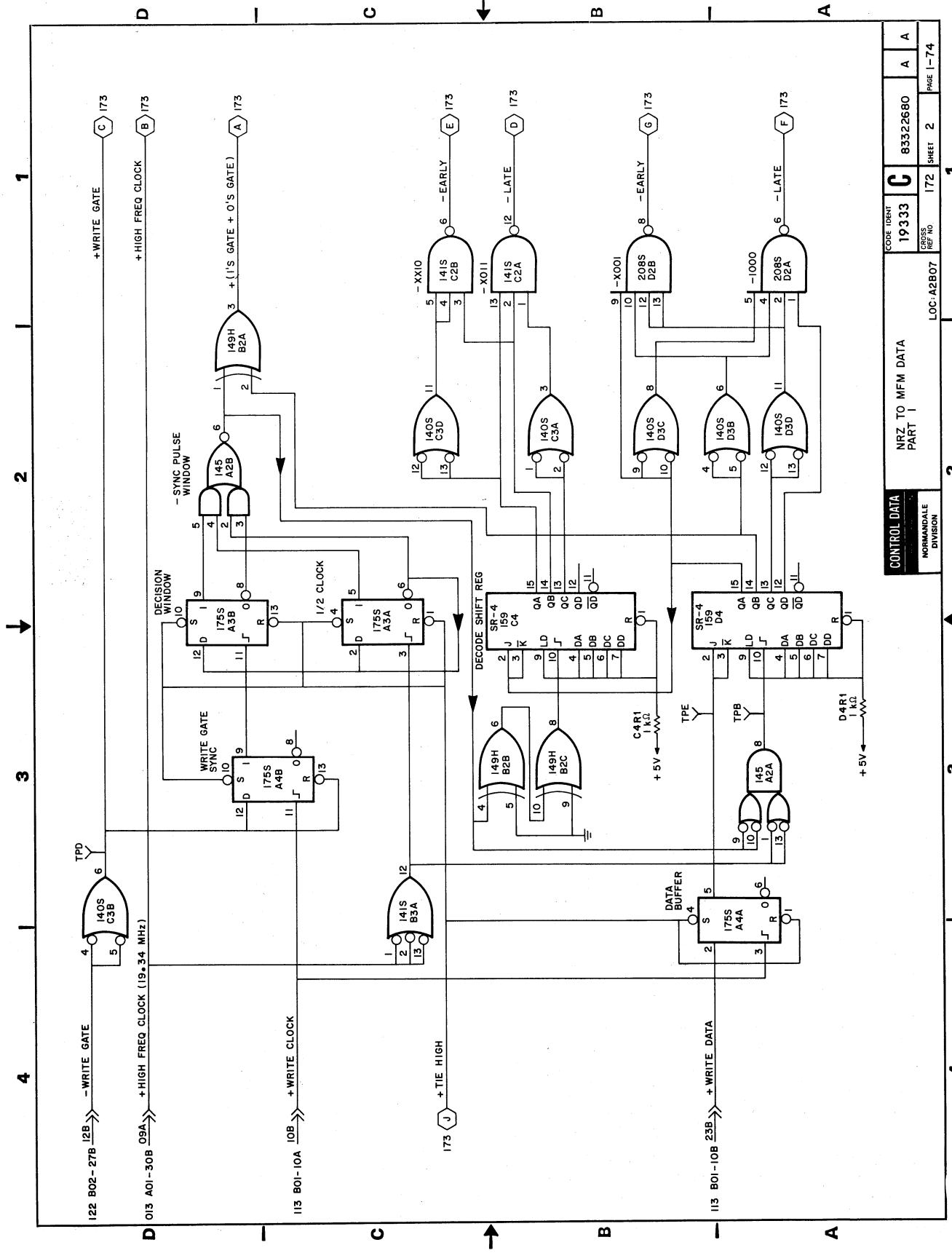
- DELAY LINES ARE CONNECTED TO JUMPER BLOCK AS SHOWN IN DIAGRAM AT THE RIGHT. ACTUAL DELAYS ARE SELECTED DURING MANUFACTURING. THIS DIAGRAM SHOWS TYPICAL CONNECTIONS. DELAY TIME FOR EACH DELAY LINE PIN RELATIVE TO PIN 6 INPUT IS SHOWN IN CHART TO THE RIGHT.

PIN	ZONS DELAY
5	2 NS
4	4 NS
3	6 NS
2	8 NS
1	10 NS
13	12 NS
12	14 NS
11	16 NS
10	18 NS
9	20 NS

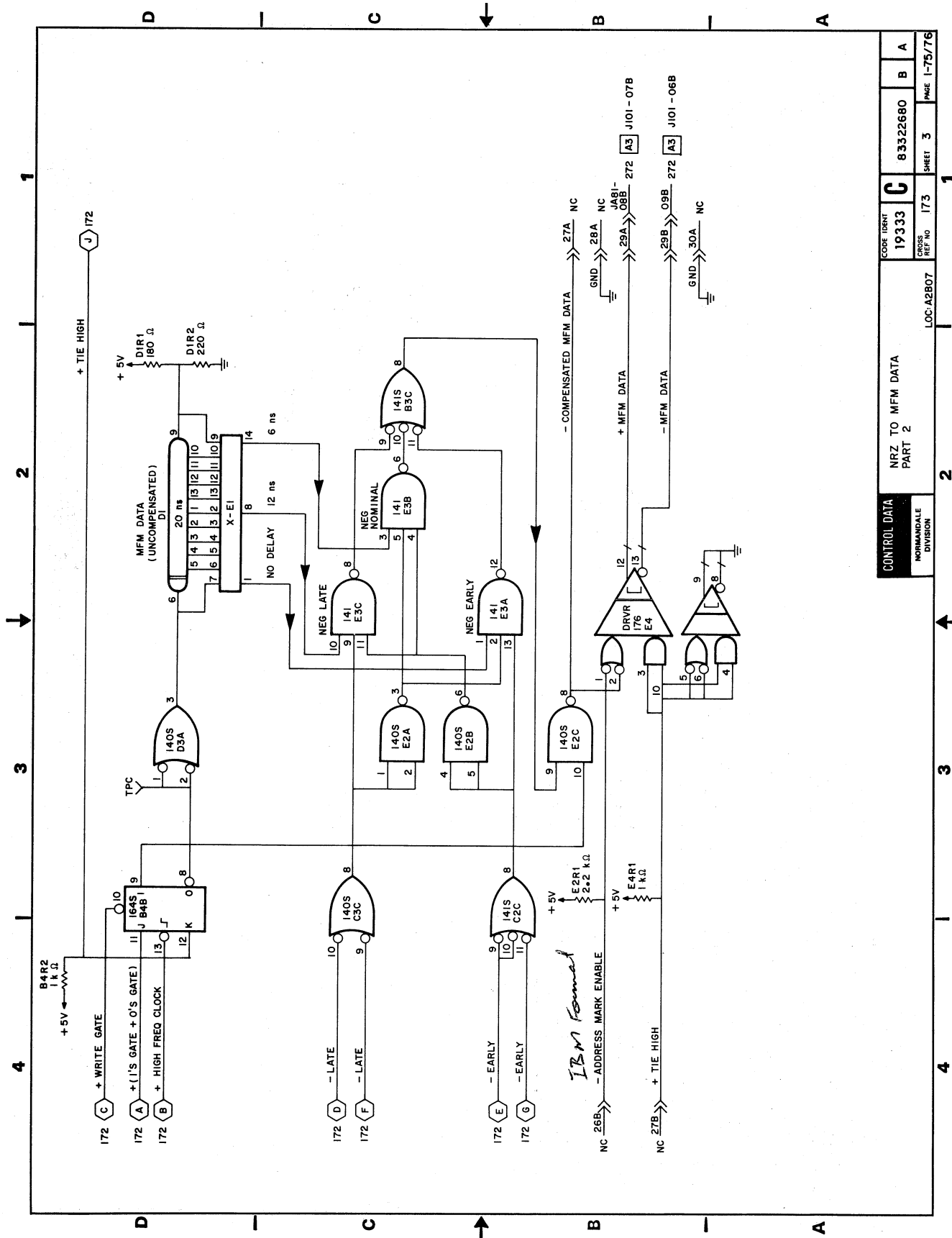


DRAWN	G. KAHNKE	3-3-72	CONTROL DATA	NRZ TO COMPENSATED MFM	LOC: A2B07	CODE IDENT	19333	C	83322680	A	A
CHECKED			INFORMATIONAL DIVISION	DIAGRAMS		CROSS REF NO	171	SHEET	1 OF 3	1-73	
ENGINEER				TYPE: ELXY							
APPROVED											

1 2 3 4



CONTROL DATA		CODE IDENT	83322680	A
NRZ TO MFM DATA		19333		A
PART 1		CROSS REF NO	172	SHEET 2
NORMANDALE DIVISION		LOC: A2B07		PAGE 1-74



CONTROL DATA		NRZ TO MFM DATA		CODE 18RRT		83322680		1-75/76	
PART 2		PART 2		19333		C		A	
NORMAN DALE DIVISION		LOC-A2807		CROSS REF NO 173		SHEET 3		PAGE 1-75/76	

4 3 2 1

REVISION STATUS OF SHEETS

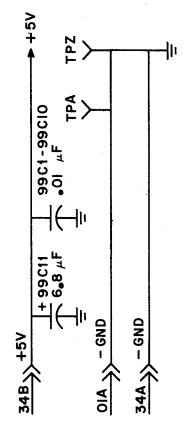
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A	A	A	A																	
B	B	B	B																	
C	C	C	C																	

REVISIONS

REV.	EDD.	RELEASED	DESCRIPTION	DWTR.	DATE	CHK'D
A	PRE2000					
B	PRE2000		REPLACE CHIP	LS	10/2/90	
C	PRE2000		REDESIGN RFRV	CB	10/2/90	

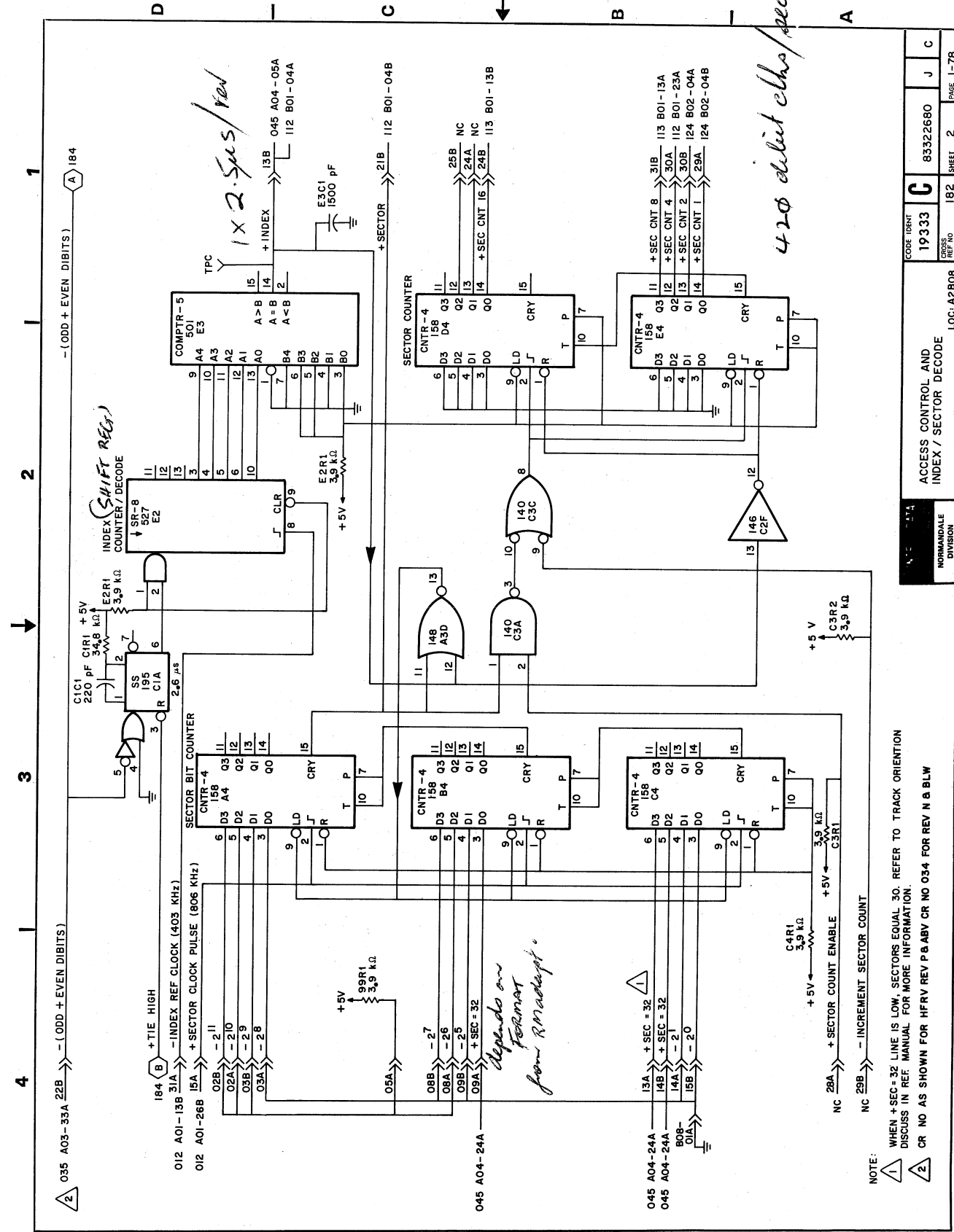
UNUSED LOGIC ELEMENTS

TYPE	LOCATION	OUTPUT PIN(S)
I46	C2C	6
I40	D1C	8
I40	E1	6, 8



DRAWN	C. RABIAE	5.3.77	CONTROL DATA	CODE IDENT	C	83322680	J	C
CHECKED			ACCESS CONTROL AND INDEX /	19333				
ENGINEER	A. W. ...	11/17/77	SECTOR DECODE	CROSS REF	181	SHEET 1 OF 4	PAGE 1-77	
APPROVED			DIAGRAMS	LOC-A2B08				
			TYPE: ELTV					REF 83216715

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CODE UNIT	19333	83322680	J	C
CROSS REF NO	192	SHEET 2	PAGE 1-78	
ACCESS CONTROL AND INDEX / SECTOR DECODE		LOC: A2B08		
NORMANDALE DIVISION				

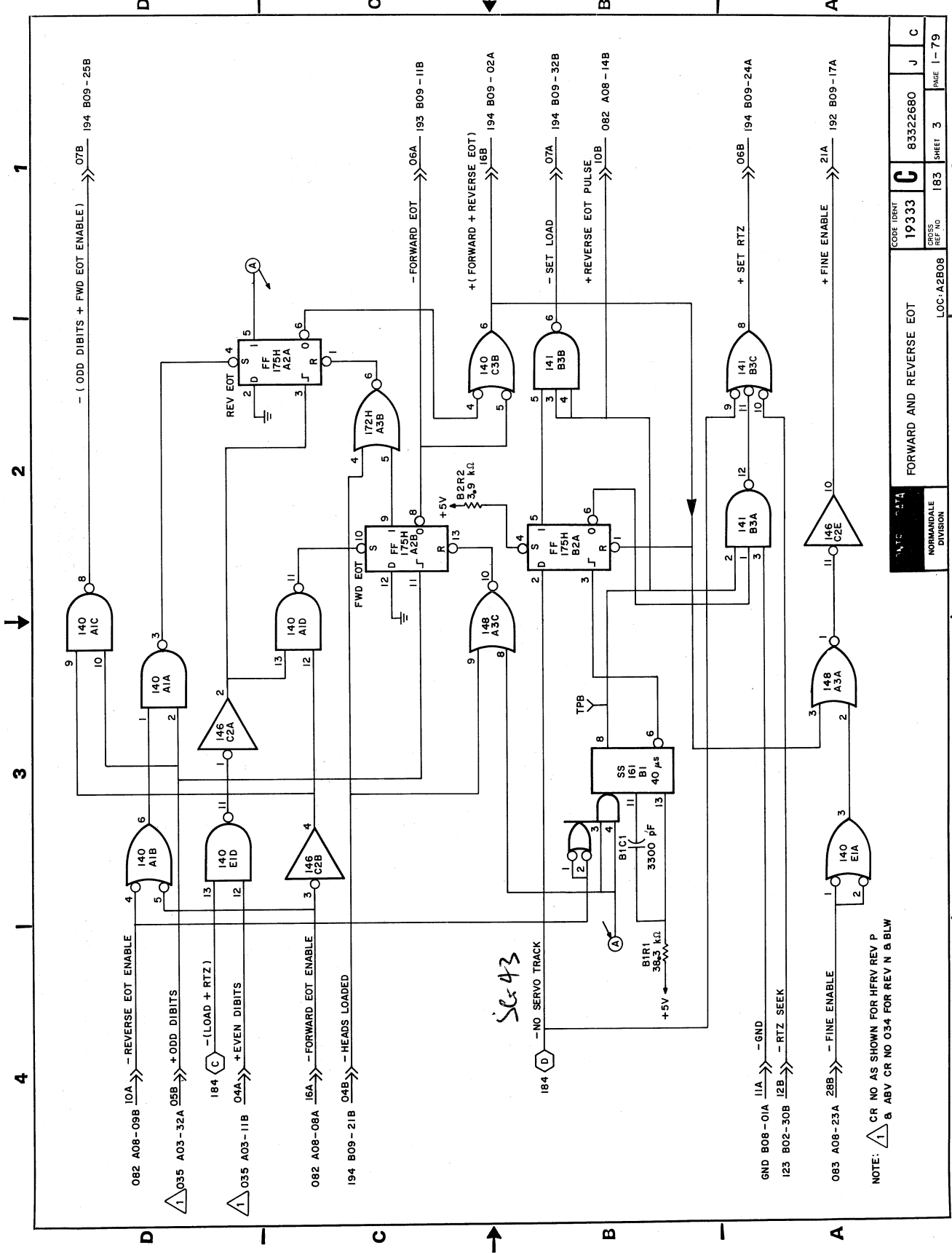
NOTE:
 1. WHEN +SEC=32 LINE IS LOW, SECTORS EQUAL 30. REFER TO TRACK ORIENTATION DISCUSS IN REF MANUAL FOR MORE INFORMATION.
 2. CR NO AS SHOWN FOR HFRV REV P8 ABV CR NO 034 FOR REV N & BLW

sec 3-52 TECH MAN

420 direct chs / sector

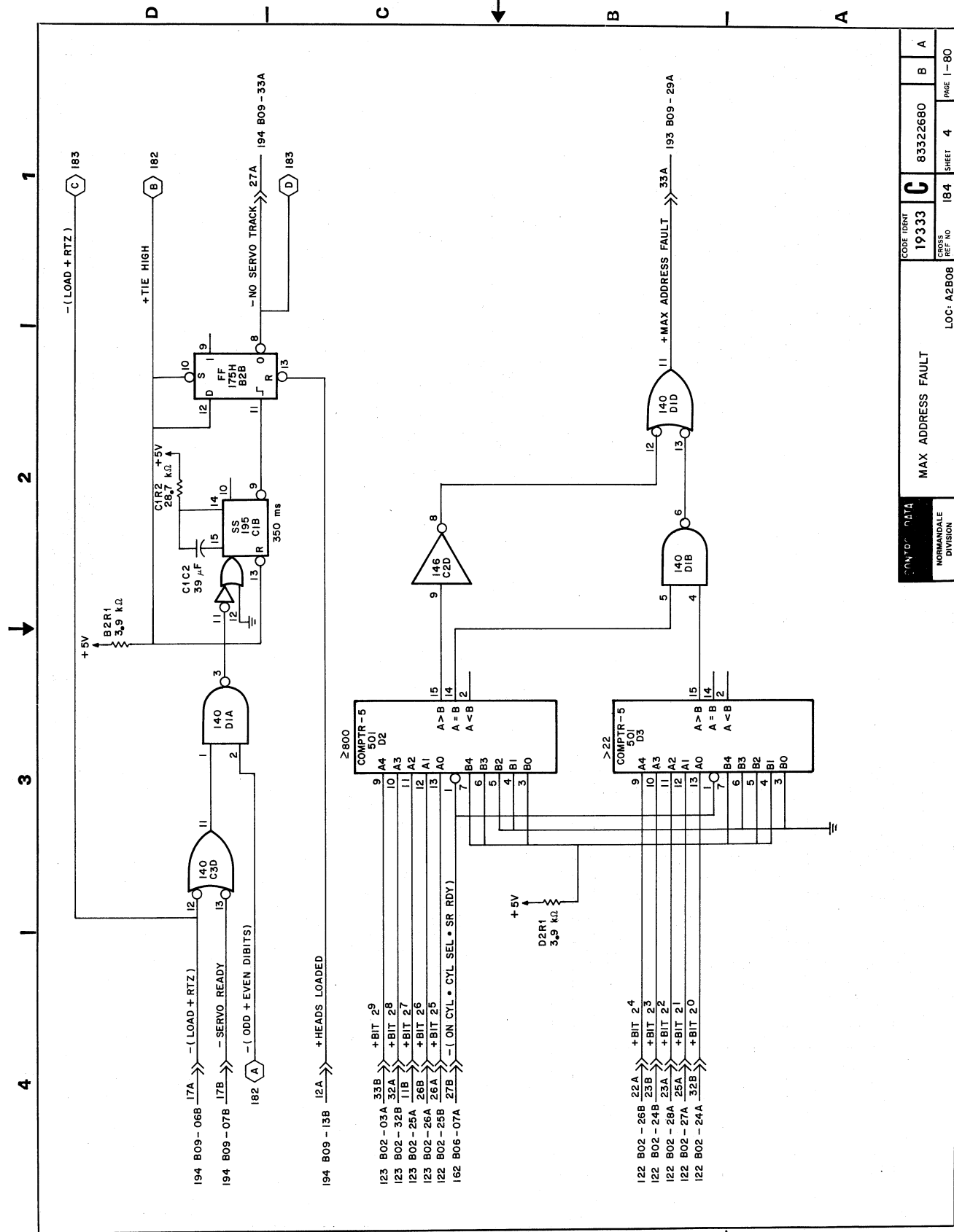
1 X 2.5us / Rev

Depends on format from RmAdapt.



NOTE DATA		CODE IDENT	19333		G		83322680		J		C	
NORMANDEALE DIVISION		CROSS REF NO	193		SHEET		3		PAGE		1-79	
LOC: A2B08												

NOTE: 1. CR NO AS SHOWN FOR HFRV REV P
 2. ABV CR NO 034 FOR REV N & BLW



4 3 2 1

REVISION STATUS OF SHEETS

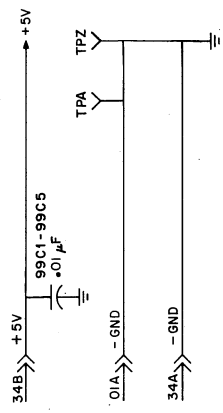
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A	A	A	A																	
B	A	A	B																	

REVISIONS

REV.	ECC.	RELEASED	DESCRIPTION	DRFT.	DATE	CHK'D
A	PRE23000	RELEASED		CB	10-2-80	
B	PRE20090	REDESIGN	IFRV			

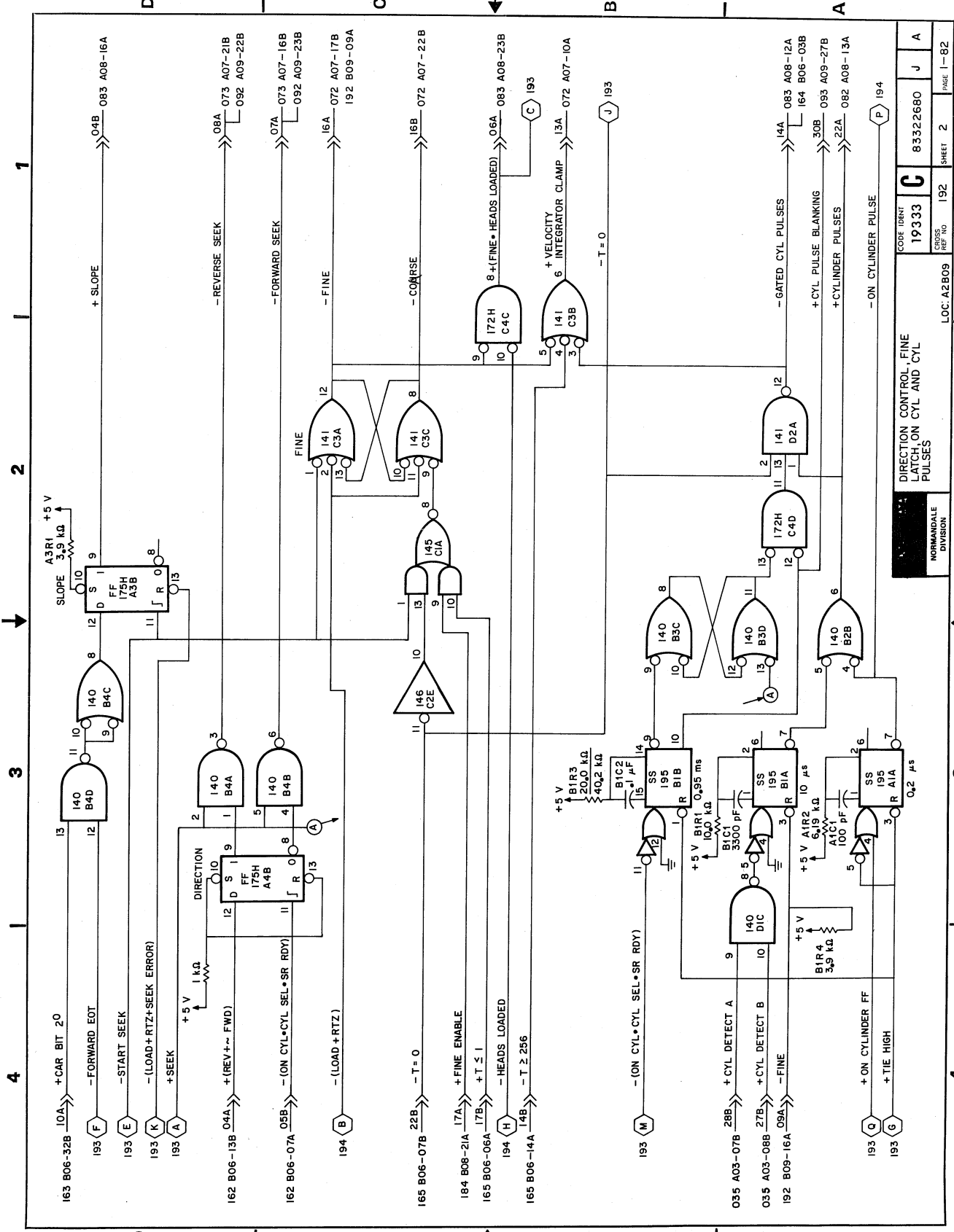
UNUSED LOGIC ELEMENT

ELEMENT TYPE	LOCATION	OUTPUT PINS(S)
172H	D3C	8



DRAWN	C. BABINE	5-9-77	CONTROL DATA	CODE IDENT	C	83322680	J	B
CHECKED				19333				
ENGINEER								
APPROVED								
			NORMANDALE DIVISION	CROSS REF NO	191	SHEET 1 OF 4	PAGE	1-81
			LOC-A2B09	TYPE: MLVV				REF 83215716

4 3 2 1



163 B06-32B 10A >>> +CAR BIT 2⁰

193 (F) >>> -FORWARD EOT

193 (E) >>> -START SEEK

193 (K) >>> -(LOAD+RTZ+SEEK ERROR)

193 (A) >>> +SEEK

162 B06-13B 04A >>> + (REV+~ FWD)

162 B06-07A 05B >>> -(ON CYL*CYL SEL*SR RDY)

194 (B) >>> -(LOAD+RTZ)

165 B06-07B 22B >>> -T=0

184 B06-21A 17A >>> + FINE ENABLE

165 B06-06A 17B >>> +T ≤ 1

194 (H) >>> -HEADS LOADED

165 B06-14A 14B >>> -T ≥ 256

193 (M) >>> -(ON CYL*CYL SEL*SR RDY)

035 A03-07B 28B >>> +CYL DETECT A

035 A03-08B 27B >>> +CYL DETECT B

192 B09-16A 09A >>> -FINE

193 (Q) >>> +ON CYLINDER FF

193 (G) >>> +TIE HIGH

193 (J) >>> -T=0

083 A08-12A >>> -GATED CYL PULSES

164 B06-03B >>> +CYL PULSE BLANKING

093 A09-27B >>> +CYLINDER PULSES

082 A08-13A >>> -ON CYLINDER PULSE

193 (P) >>> +SLOPE

083 A08-16A >>> +SLOPE

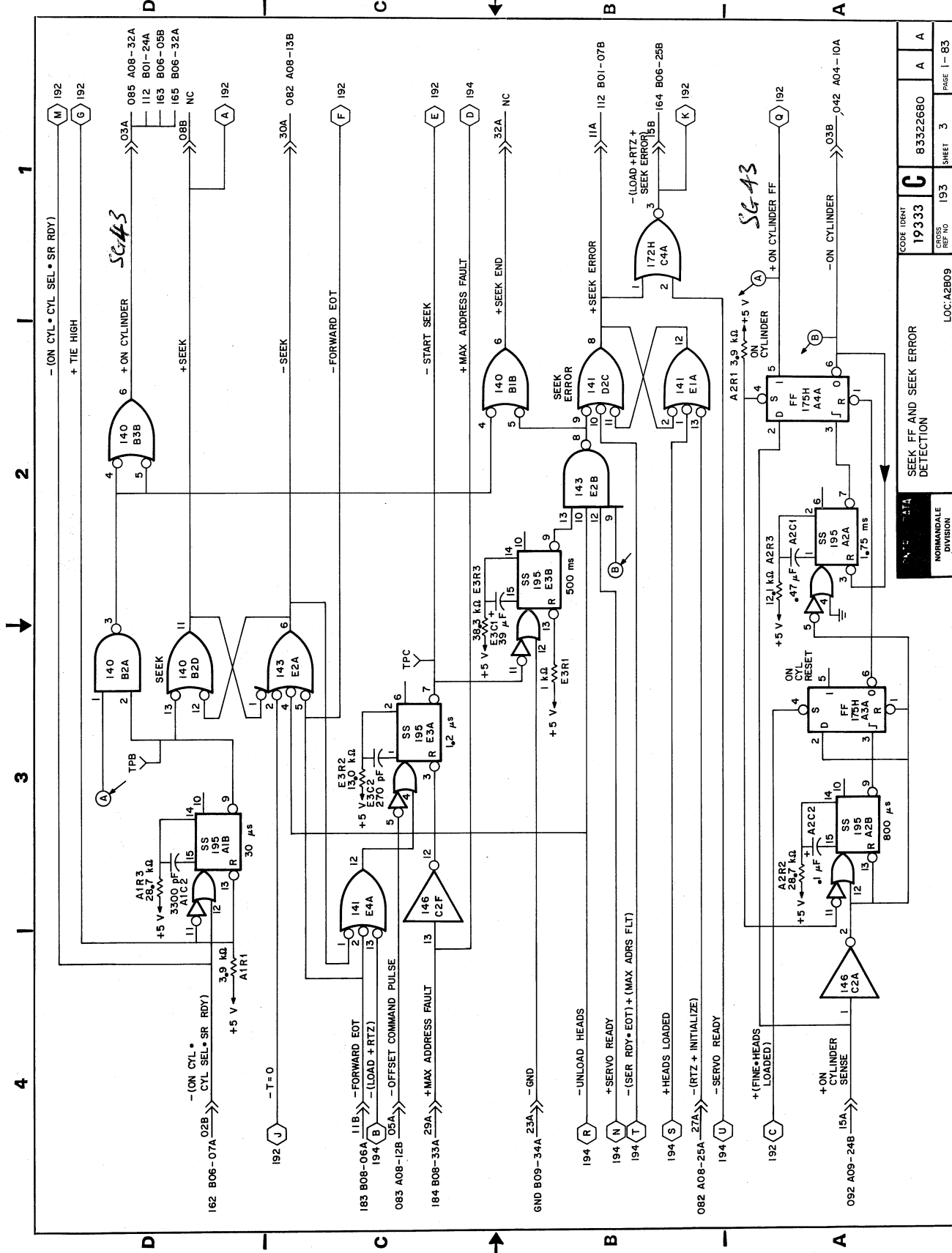
083 A08-23B >>> -REVERSE SEEK

083 A08-23B >>> -FORWARD SEEK

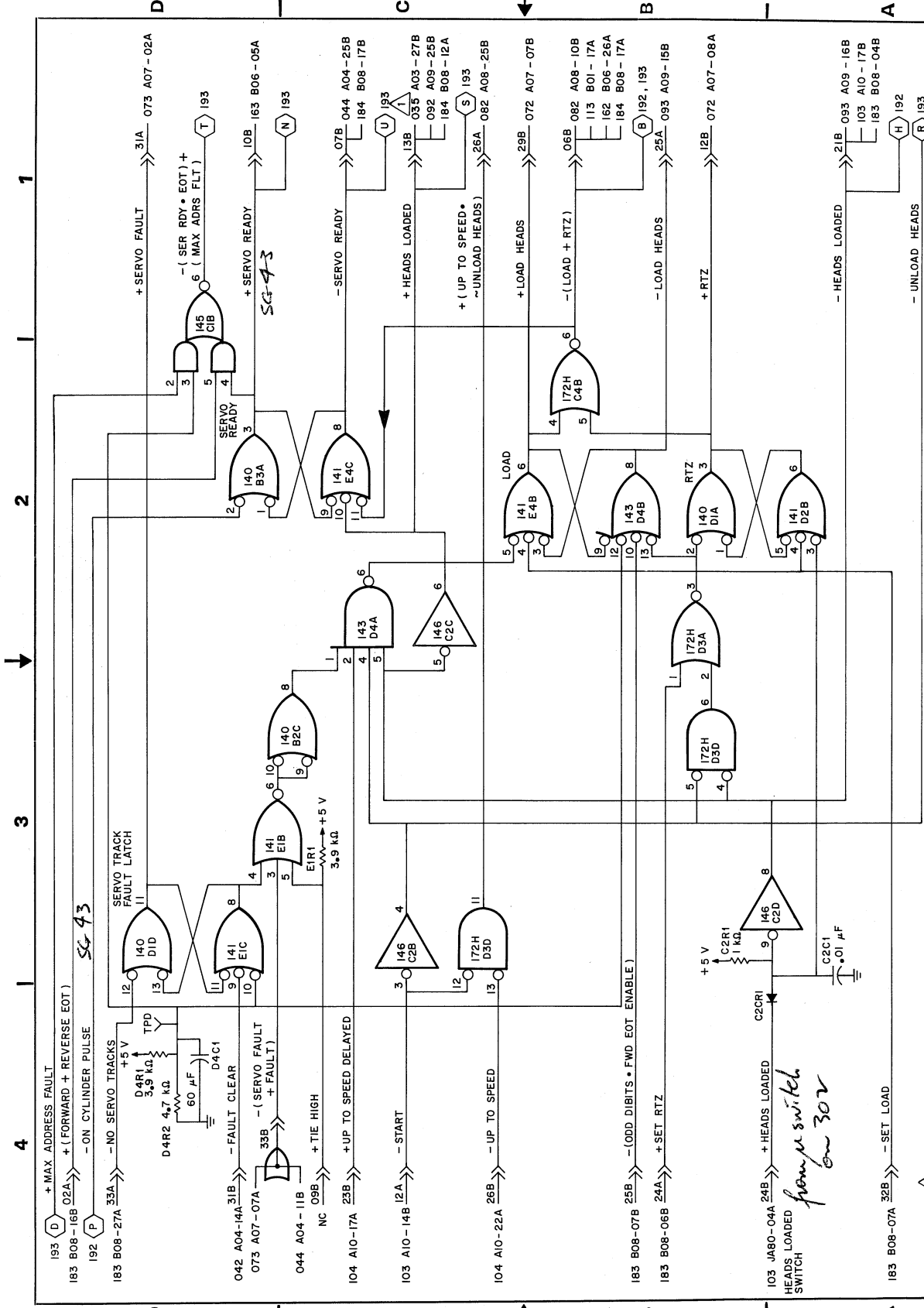
168 >>> -FINE

168 >>> -COARSE

NORANDA DIVISION	LOC: A2B09	192	SHEET 2	1
DIRECTION CONTROL, FINE LATCH, ON CYL AND CYL PULSES		CODE IDENT	83322680	J A
		19333		
		192		
		C		



SEEK FF AND SEEK ERROR DETECTION			CODE IDENT	A	
			19333	83322680	
NORMANVILLE DIVISION			TRANS REF NO	193	SHEET 3
LOC: A2B09			PAGE 1-83		



NOTE: 1 CR NO AS SHOWN FOR HFRV REV P & BV
 CR NO 034 FOR REV N & BLW

from p. switch on 302

4 3 2 1

(A CABLE INPUTS)

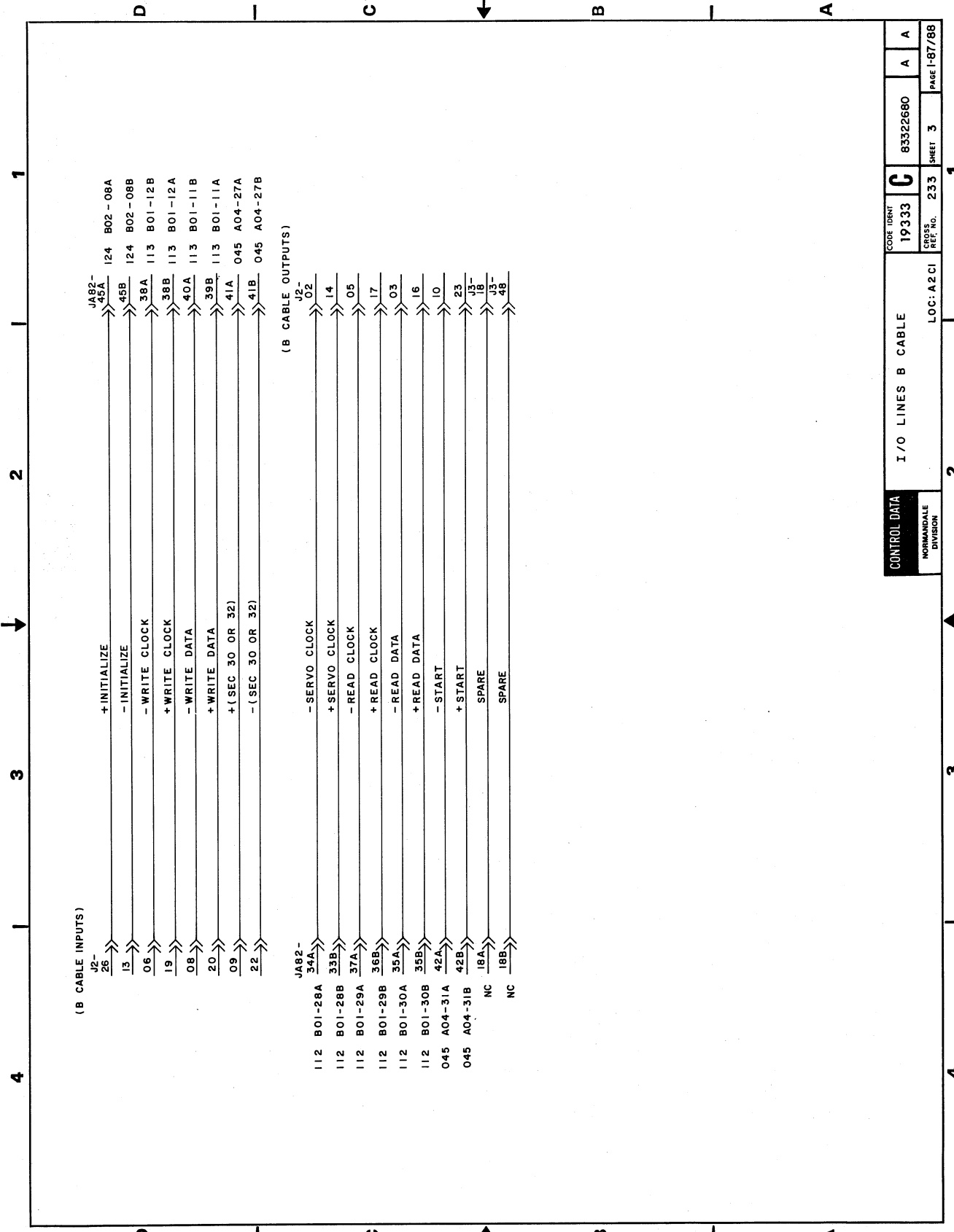
- J3- JAB2- 01 01A >>> - CYL ADRS TAG 1
- 31 01B >>> + CYL ADRS TAG 1
- 02 02A >>> - HEAD SEL TAG 2
- 32 02B >>> + HEAD SEL TAG 2
- 03 03A >>> - CONTROL SEL TAG 3
- 33 03B >>> + CONTROL SEL TAG 3
- 04 04A >>> - BIT 0
- 34 04B >>> + BIT 0
- 05 05A >>> - BIT 1
- 35 05B >>> + BIT 1
- 06 06A >>> - BIT 2
- 36 06B >>> + BIT 2
- 07 07A >>> - BIT 3
- 37 07B >>> + BIT 3
- 08 08A >>> - BIT 4
- 38 08B >>> + BIT 4
- 09 09A >>> - BIT 5
- 39 09B >>> + BIT 5
- 10 10A >>> - BIT 6
- 40 10B >>> + BIT 6
- 11 11A >>> - BIT 7
- 41 11B >>> + BIT 7
- 12 12A >>> - BIT 8
- 42 12B >>> + BIT 8
- 13 13A >>> - BIT 9
- 43 13B >>> + BIT 9
- 25 29A >>> - POWER SEQ PICK
- 59 29B >>> - POWER SEQ PICK

(A CABLE OUTPUTS)

- 112 B01-09A >>> - FAULT
- 112 B01-09B >>> + FAULT
- 112 B01-08A >>> - SEEK ERROR
- 112 B01-08B >>> + SEEK ERROR
- 112 B01-26A >>> - ON CYLINDER
- 112 B01-26B >>> + ON CYLINDER
- 112 B01-25A >>> - UNIT READY
- 112 B01-25B >>> + UNIT READY
- 112 B01-06A >>> - INDEX
- 112 B01-06B >>> + INDEX
- 112 B01-05A >>> - SECTOR
- 112 B01-05B >>> + SECTOR
- 045 A04-23A >>> - PLUG VALID
- 045 A04-23B >>> + PLUG VALID
- 045 A04-32A >>> - WRITE PROTECTED
- 045 A04-32A >>> + WRITE PROTECTED
- 045 A04-29A >>> - SEL_ADD 1
- 045 A04-29B >>> + SEL_ADD 1
- 045 A04-30A >>> - SEL_ADD 2
- 045 A04-30B >>> + SEL_ADD 2
- 045 A04-21A >>> - SEL_ADD 4
- 045 A04-21B >>> + SEL_ADD 4
- 124 B02-06A >>> - SEC_CNT 1
- 124 B02-06B >>> + SEC_CNT 1
- 124 B02-05A >>> - SEC_CNT 2
- 124 B02-05B >>> + SEC_CNT 2
- 112 B01-27A >>> - SEC_CNT 4
- 112 B01-27B >>> + SEC_CNT 4
- 113 B01-14A >>> - SEC_CNT 8
- 113 B01-14B >>> + SEC_CNT 8
- 113 B01-15A >>> - SEC_CNT 16
- 113 B01-15B >>> + SEC_CNT 16

1 2 3 4

I/O LINES A CABLE		CODE IRRRT 19333	83322680	B	A
NORMANDALE DIVISION		CROSS REF. NO. 232	SHEET 2	PAGE 1-86	
LOC: A2C1					



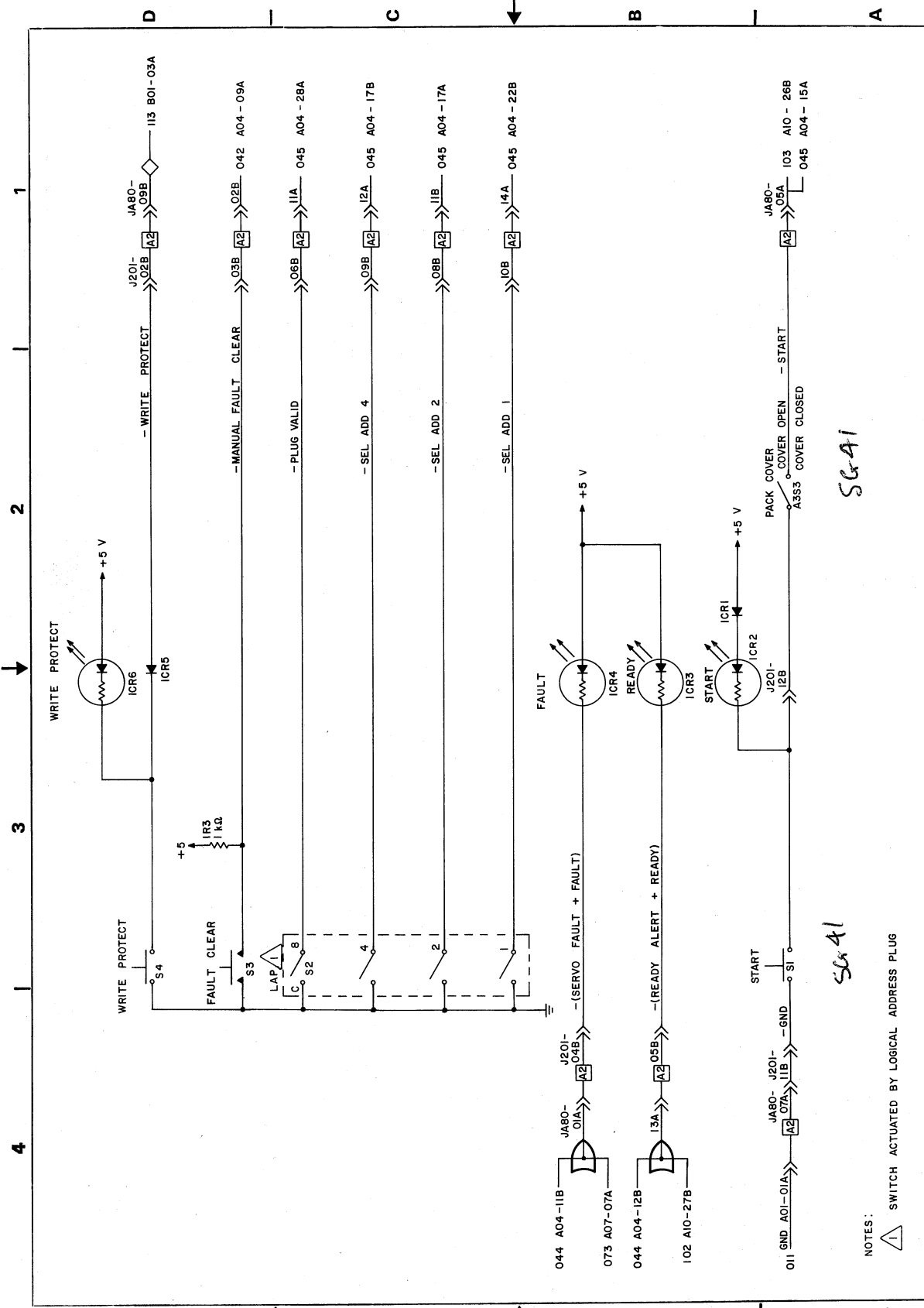
(B CABLE INPUTS)

J2-26	>>>	+ INITIALIZE	J482-45A	>>>	124	B02-08A
13	>>>	- INITIALIZE	45B	>>>	124	B02-08B
06	>>>	- WRITE CLOCK	38A	>>>	113	B01-12B
19	>>>	+ WRITE CLOCK	38B	>>>	113	B01-12A
08	>>>	- WRITE DATA	40A	>>>	113	B01-11B
20	>>>	+ WRITE DATA	39B	>>>	113	B01-11A
09	>>>	+ (SEC 30 OR 32)	41A	>>>	045	A04-27A
22	>>>	- (SEC 30 OR 32)	41B	>>>	045	A04-27B

(B CABLE OUTPUTS)

J482-34A	>>>	- SERVO CLOCK	J2-02	>>>
112 B01-28A	>>>	+ SERVO CLOCK	14	>>>
112 B01-28B	>>>	- READ CLOCK	05	>>>
112 B01-29A	>>>	+ READ CLOCK	17	>>>
112 B01-29B	>>>	- READ DATA	03	>>>
112 B01-30A	>>>	+ READ DATA	16	>>>
112 B01-30B	>>>	- START	10	>>>
045 A04-31A	>>>	+ START	23	>>>
045 A04-31B	>>>	SPARE	J3-18	>>>
NC	>>>	SPARE	J3-48	>>>
18B	>>>			>>>

CONTROL DATA NORMANDALE DIVISION	I/O LINES B CABLE		CODE IDENT C	83322680	A	A
	LOC: A2C1		19333	SHEET 3	233	PAGE 1-87/88



CONTROL DATA		CODE IDENT	PAGE	
NORMANDALE DIVISION		19333	83322680	G B
FAULT CLEAR AND LAP SWITCHES, FAULT AND READY INDICATORS		CROSS REF. NO. 252	SHEET 2	1-90
LOC. A3A01				

NOTES:
 SWITCH ACTUATED BY LOGICAL ADDRESS PLUG

SG41

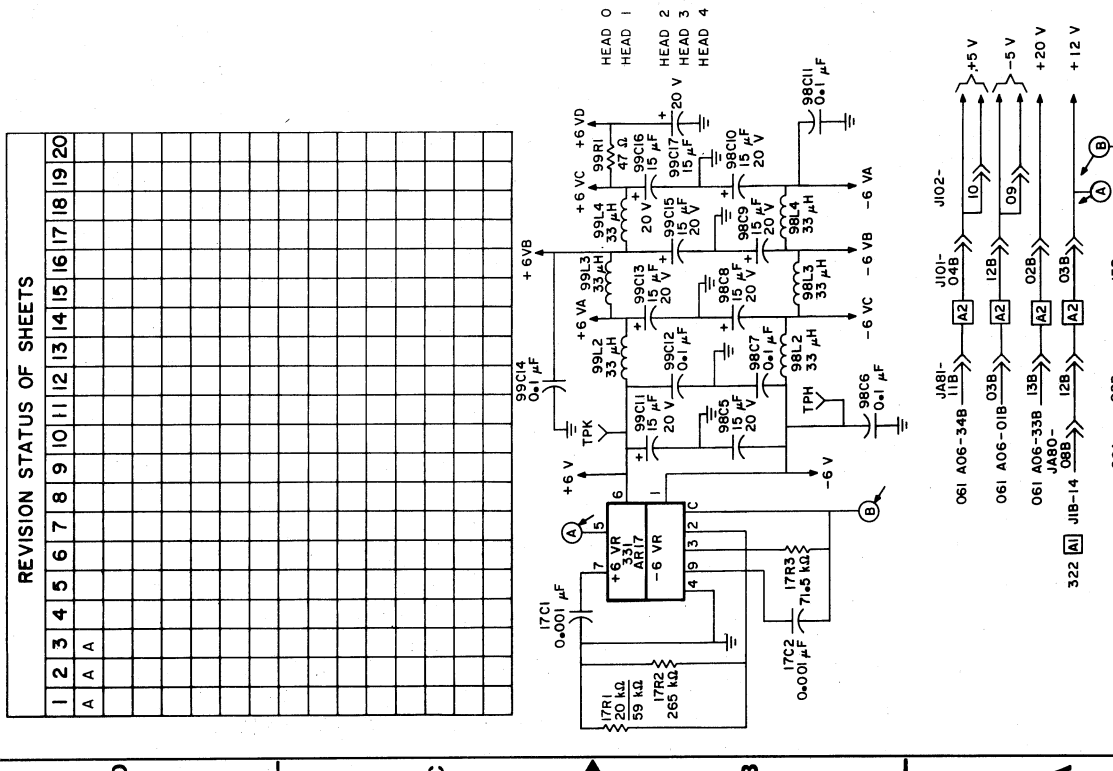
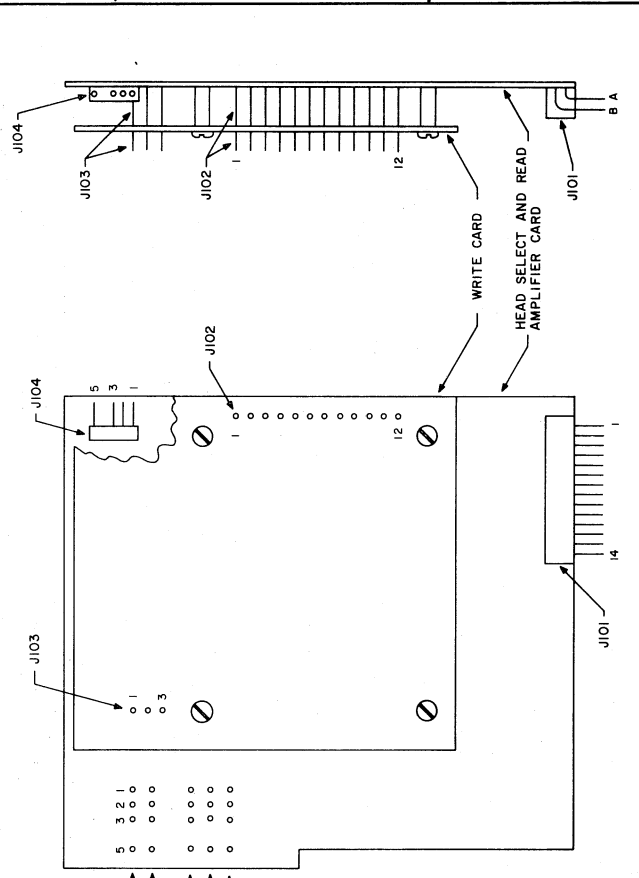
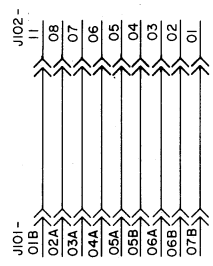
SG41

REVISION STATUS OF SHEETS

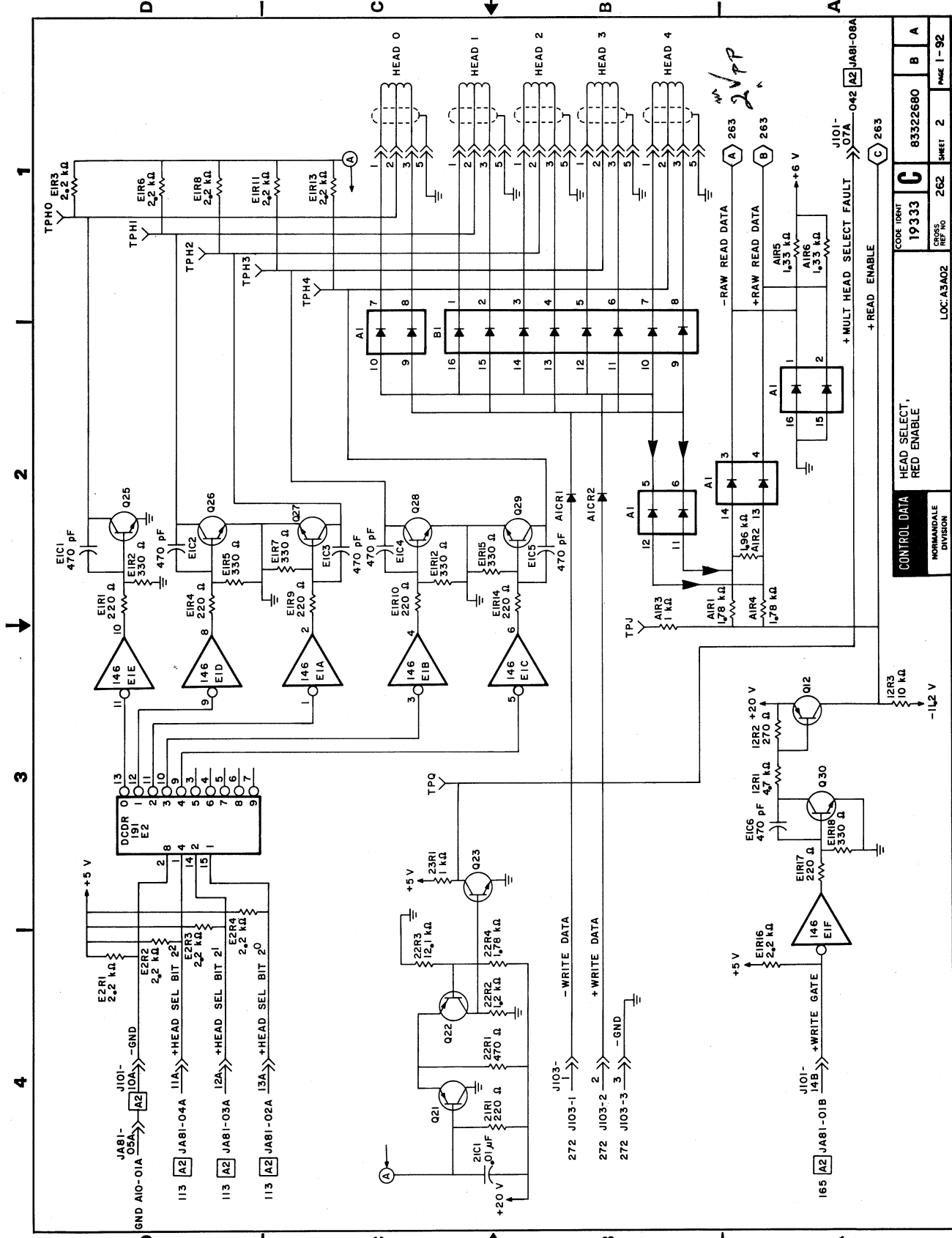
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A	A																			

REVISIONS

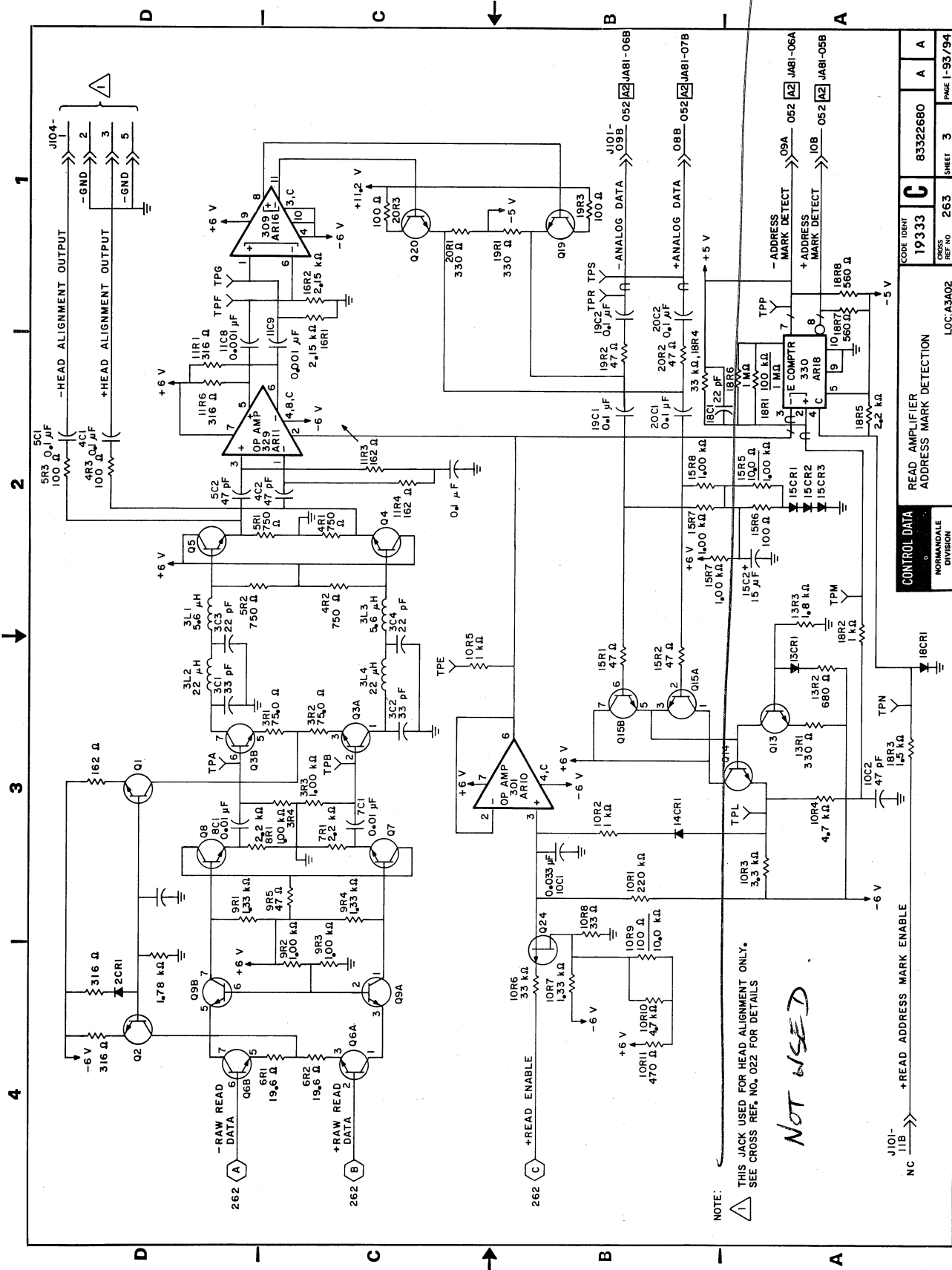
REV	ECO	RELEASED	DESCRIPTION	DWFT	DATE	CHK'D
A	PE23000					



DRN	CHKD	ENGR	APPR
CONTROL DATA			
NORMANVILLE DIVISION			
CORE IDENT 19333		LOC: A3A02	
CROSS REF 261		SHEET 1 of 3	
83322680		PAGE 1-91	
HEAD SELECT AND READ AMPLIFIER DIAGRAMS TYPE: NZJN			



CONTROL DATA		HEAD SELECT, RED ENABLE	
CODE IDENT	19333	C	83522680
CROSS REF NO	262	SHEET	2
LOC: A3A02			
			PAGE 1-92



NOTE:
 ⚠ THIS JACK USED FOR HEAD ALIGNMENT ONLY.
 SEE CROSS REF. NO. 022 FOR DETAILS.

NOT USED

LOC. A3A02	LOC. A3A02	LOC. A3A02	LOC. A3A02
READ AMPLIFIER	READ AMPLIFIER	READ AMPLIFIER	READ AMPLIFIER
ADDRESS MARK DETECTION	ADDRESS MARK DETECTION	ADDRESS MARK DETECTION	ADDRESS MARK DETECTION
CONTROL DATA	CONTROL DATA	CONTROL DATA	CONTROL DATA
MOORE/DALE	MOORE/DALE	MOORE/DALE	MOORE/DALE
DIVISION	DIVISION	DIVISION	DIVISION
CROSS REF. NO. 19333	CROSS REF. NO. 19333	CROSS REF. NO. 19333	CROSS REF. NO. 19333
CODE IDENT 83322680	CODE IDENT 83322680	CODE IDENT 83322680	CODE IDENT 83322680
SHEET 3	SHEET 3	SHEET 3	SHEET 3
PAGE 1-93/94	PAGE 1-93/94	PAGE 1-93/94	PAGE 1-93/94

J101-1/1B NC → +READ ADDRESS MARK ENABLE

1 2 3 4

REVISION STATUS OF SHEETS

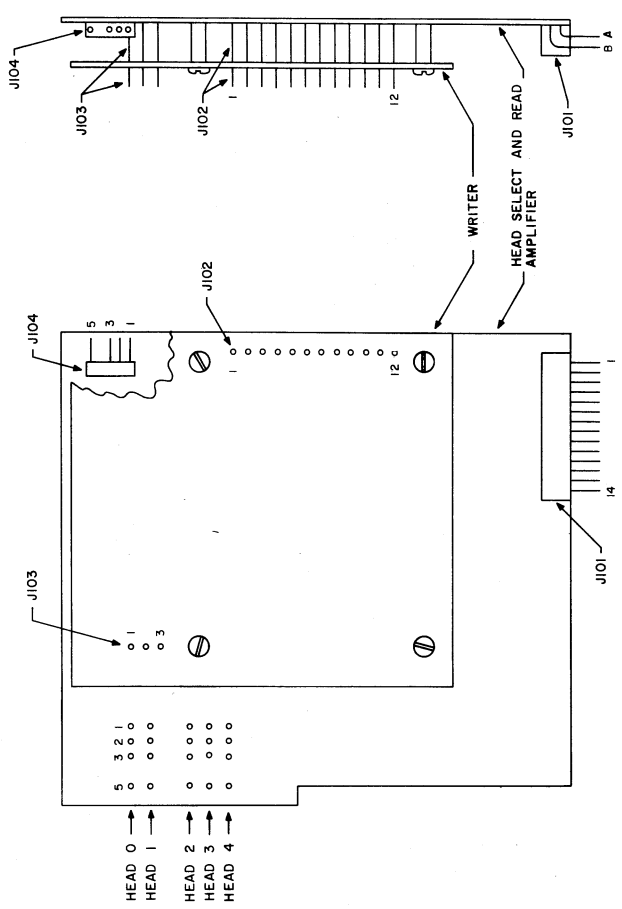
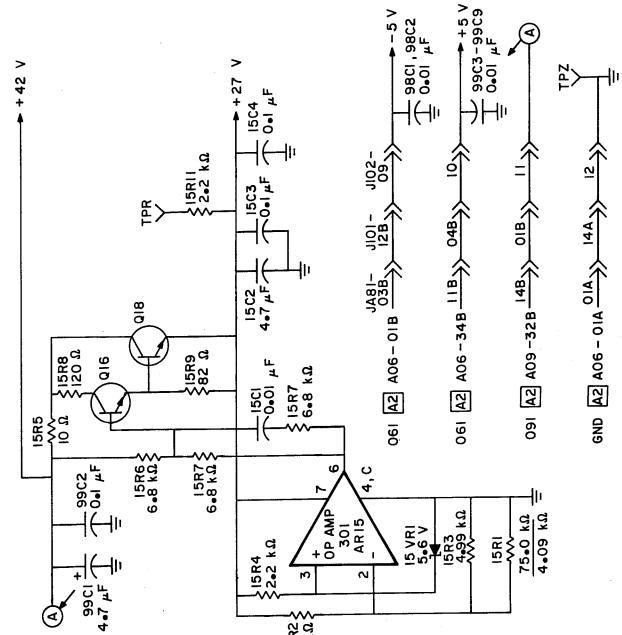
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D

REVISIONS

REV.	ECO.	RELEASED	DESCRIPTION	DRFT.	DATE	CHK'D
A	FE23000	RELEASED		A.A.O.	8-25-78	
B	FE53933	DIAGRAM CORRECTION		MF	7-9-80	
C	FE57173	CHG. IC FAMILIES		CB	10-27-80	
D	FE59593	DIAGRAM CORRECTION				

UNUSED LOGIC ELEMENTS

TYPE	LOCATION	OUTPUT PIN (S)
200	D3	12
140	C4	3



WRITER DIAGRAMS

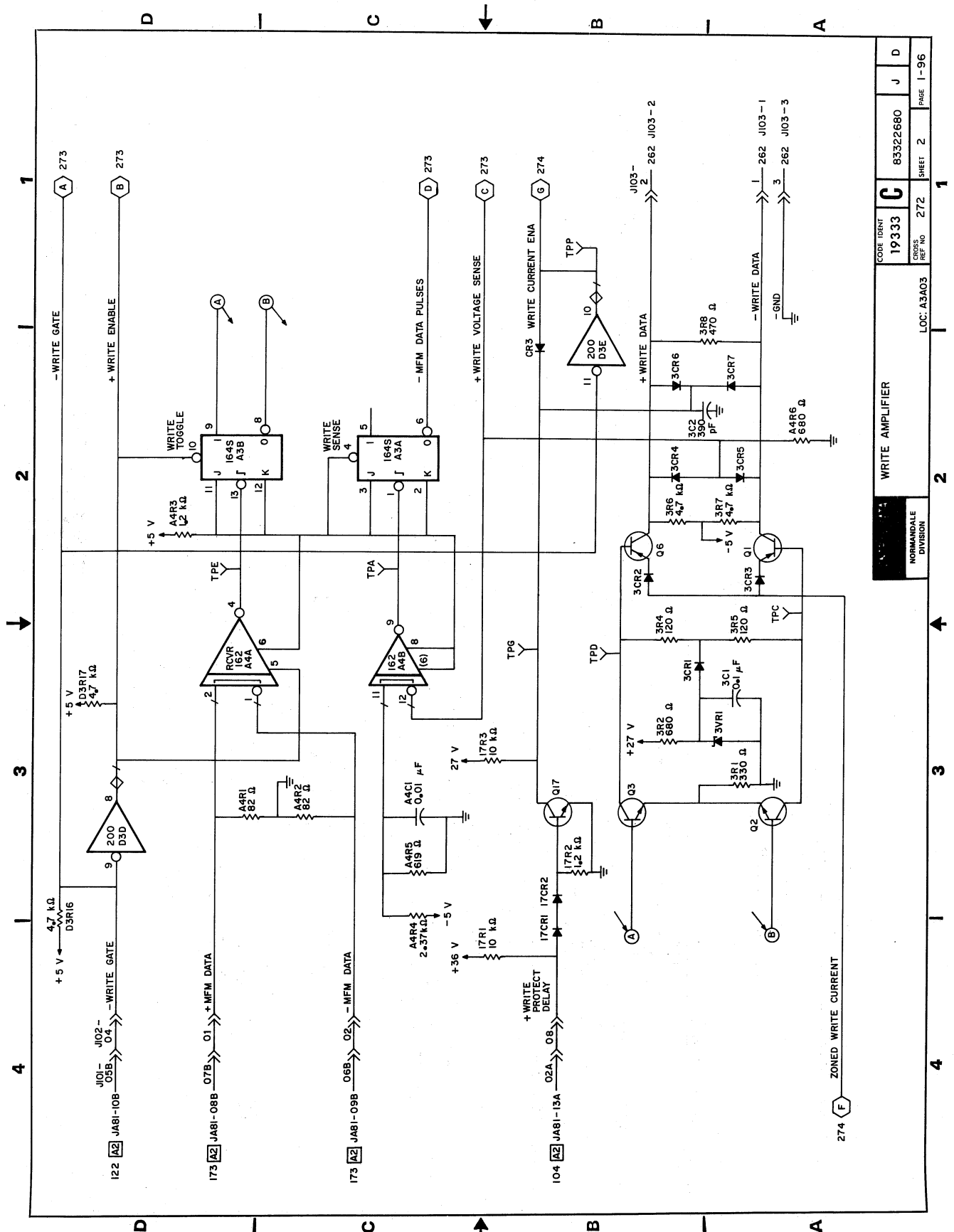
TYPE: EZKN

DRAWN	3-12Z	LOC A3A03	1
CHECKED			
ENGINEER			
APPROVED			

NORMANDALE DIVISION

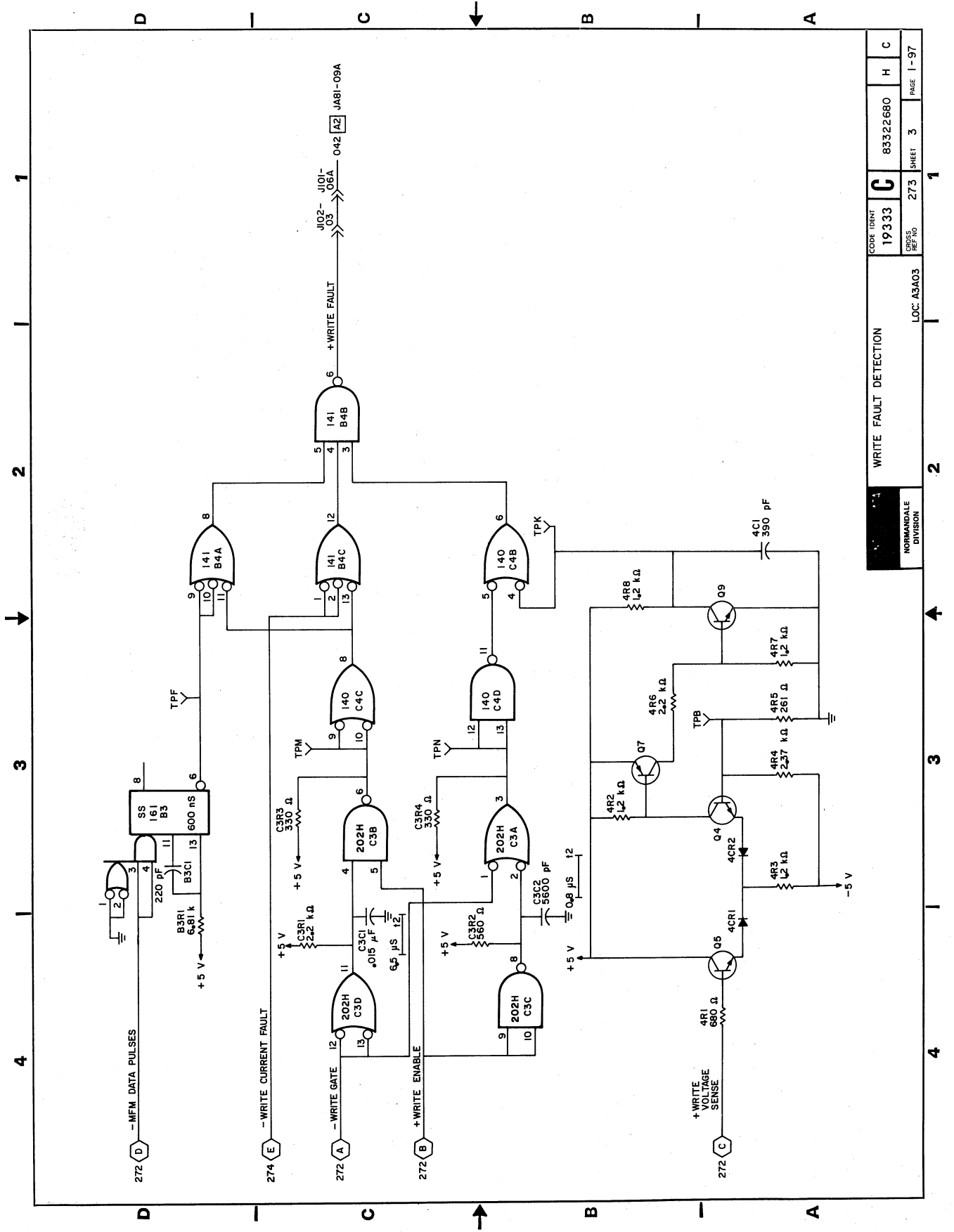
CODE 19333	83322680	J	D
CROSS REF NO 271	SHEET 1 of 4	PAGE	1-95

1 REF 83218720

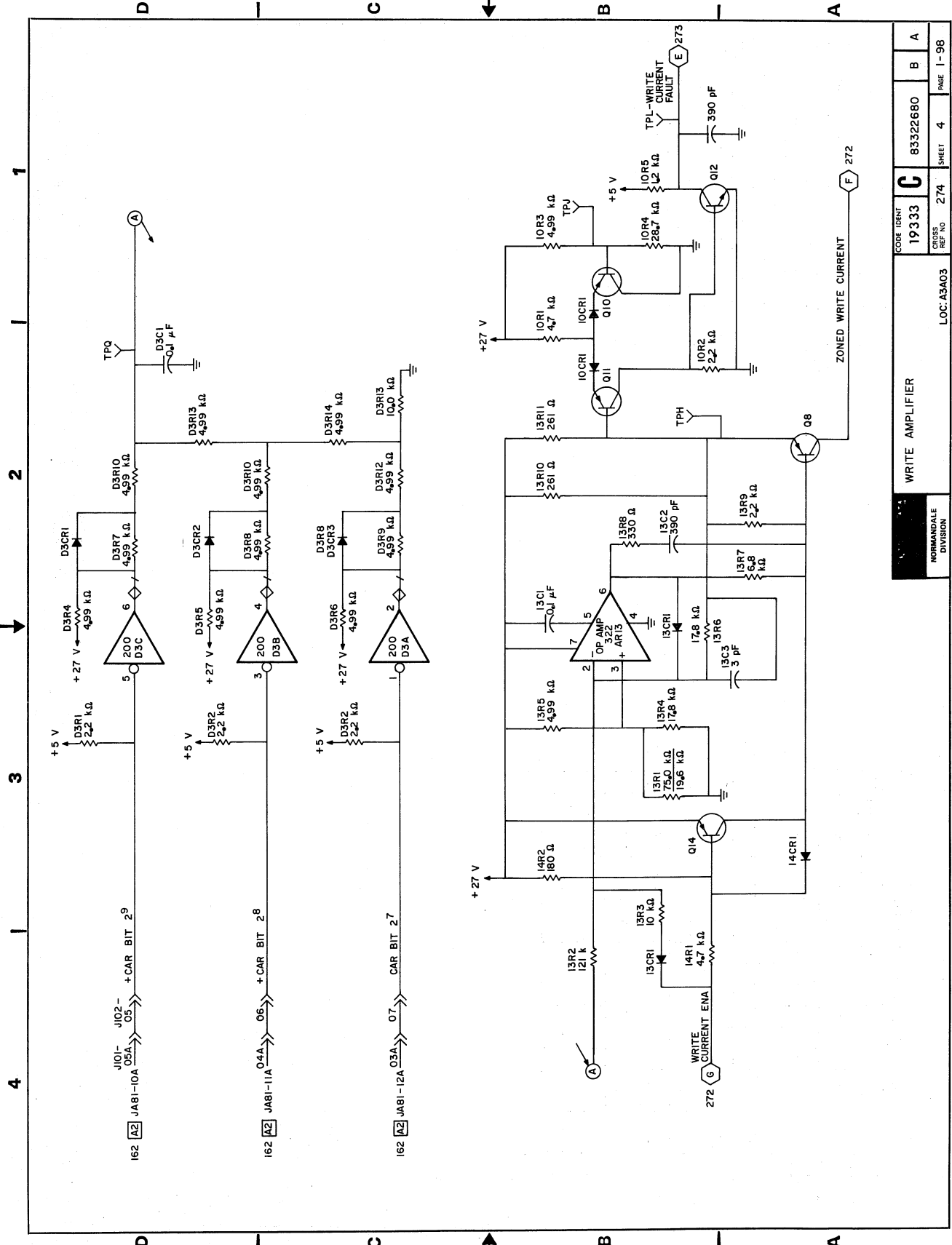


WRITE AMPLIFIER		CODE IDENT	83322680	J	D
NORMANDALE DIVISION		19333	C	C	J
LOC: A3A03		CROSS. REF. NO	272	SHEET	2
PAGE		1-96			

274 (F) ZONED WRITE CURRENT

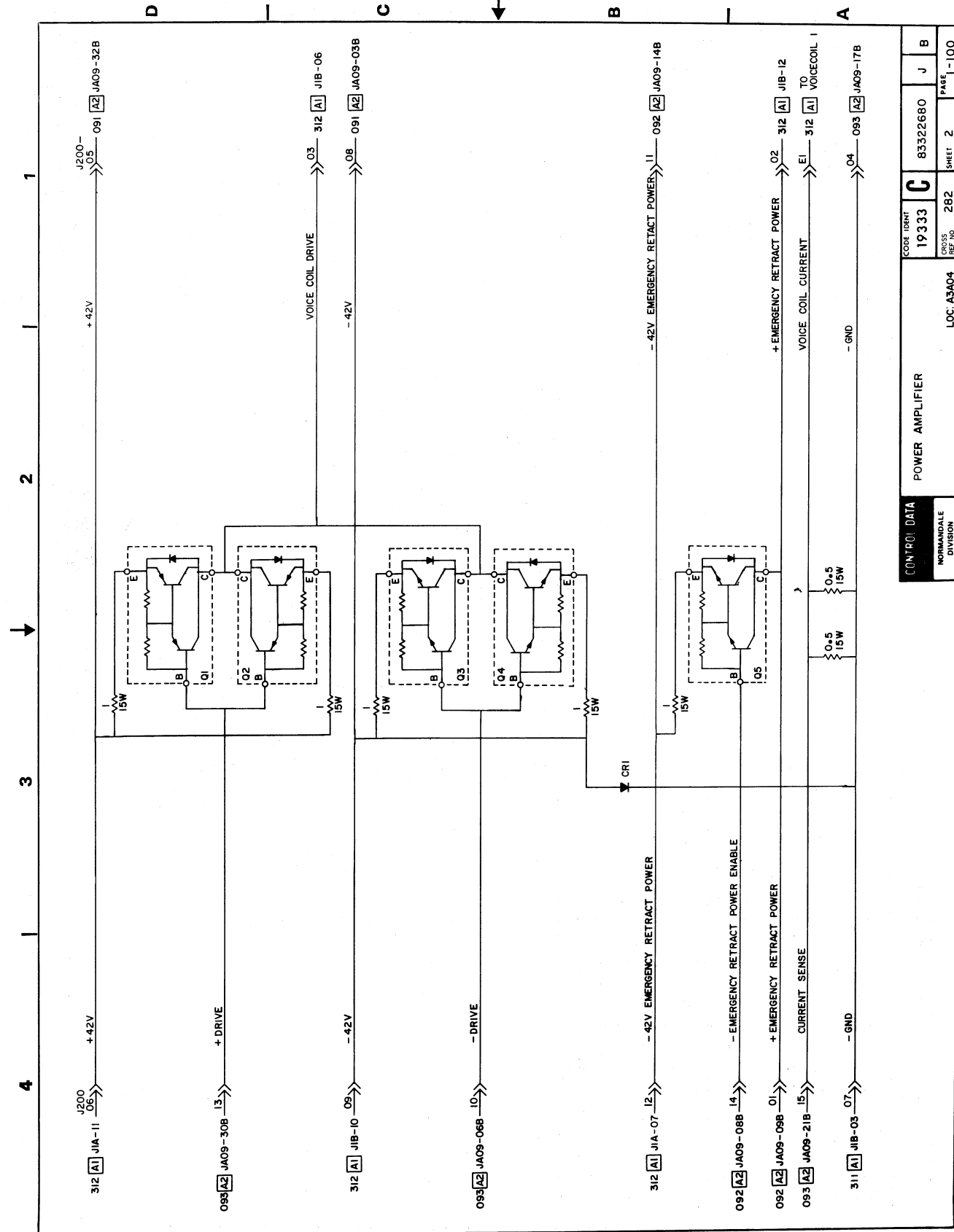


WRITE FAULT DETECTION		LOC. A3A03	273	3	1-97
CODE IDENT	19333	83322680	H	C	
REF ID					
NORMANDALE DIVISION					

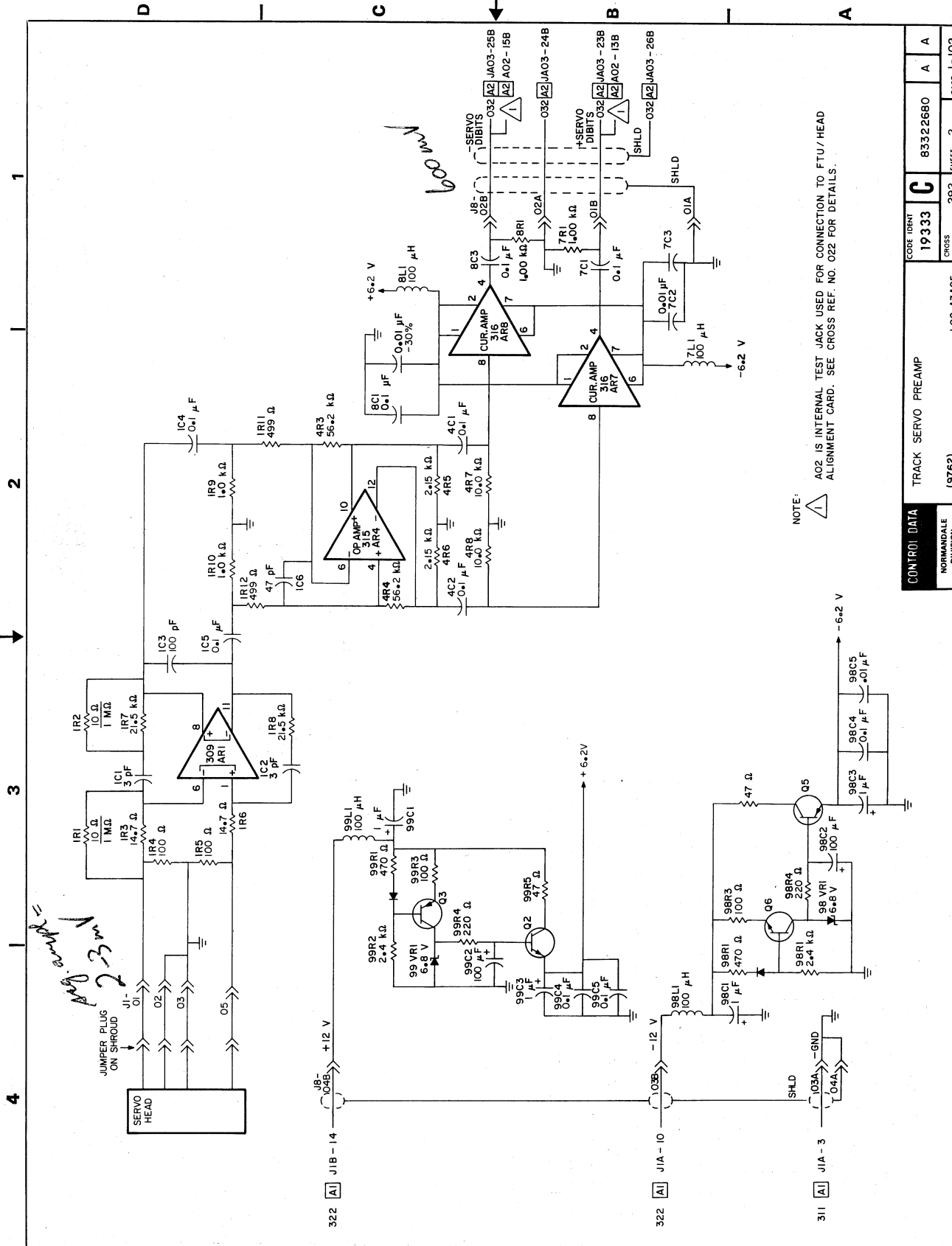


162	A2	JAB1-10A	05A	+CAR BIT 29
162	A2	JAB1-11A	06A	+CAR BIT 28
162	A2	JAB1-12A	07A	+CAR BIT 27

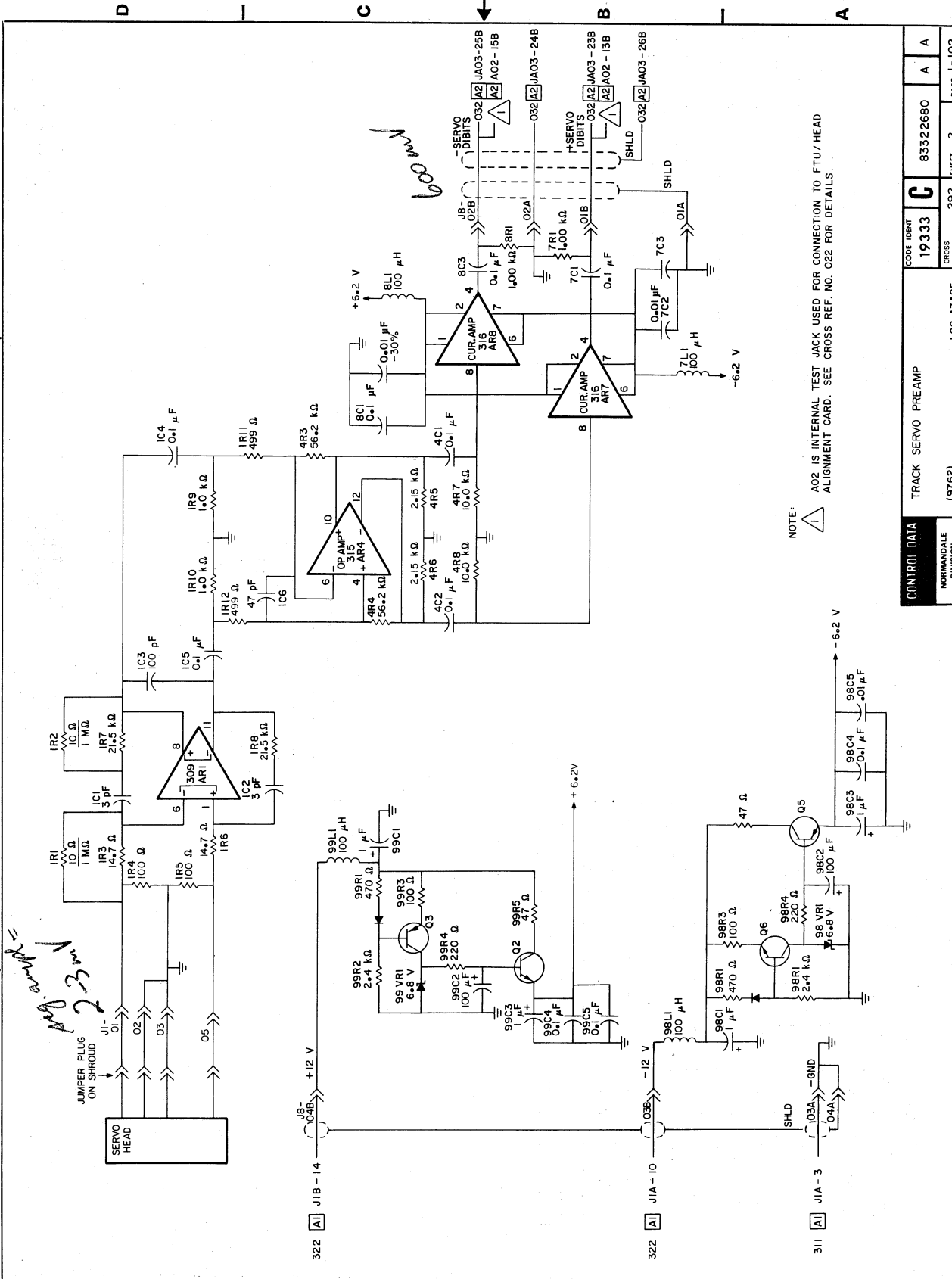
WRITE AMPLIFIER		LOC: A3A03	CODE IDENT	19333	C	83322680	B	A
NORMANDALE DIVISION			CROSS REF NO	274	SHEET	4	PAGE	1-98



CONTROL DATA		POWER AMPLIFIER	
CODE IDENT	19333	83322680	J B
PROCESS REF NO	282	SHEET 2	PAGE 1-100
NORMANDALE DIVISION		LOC. A3A04	

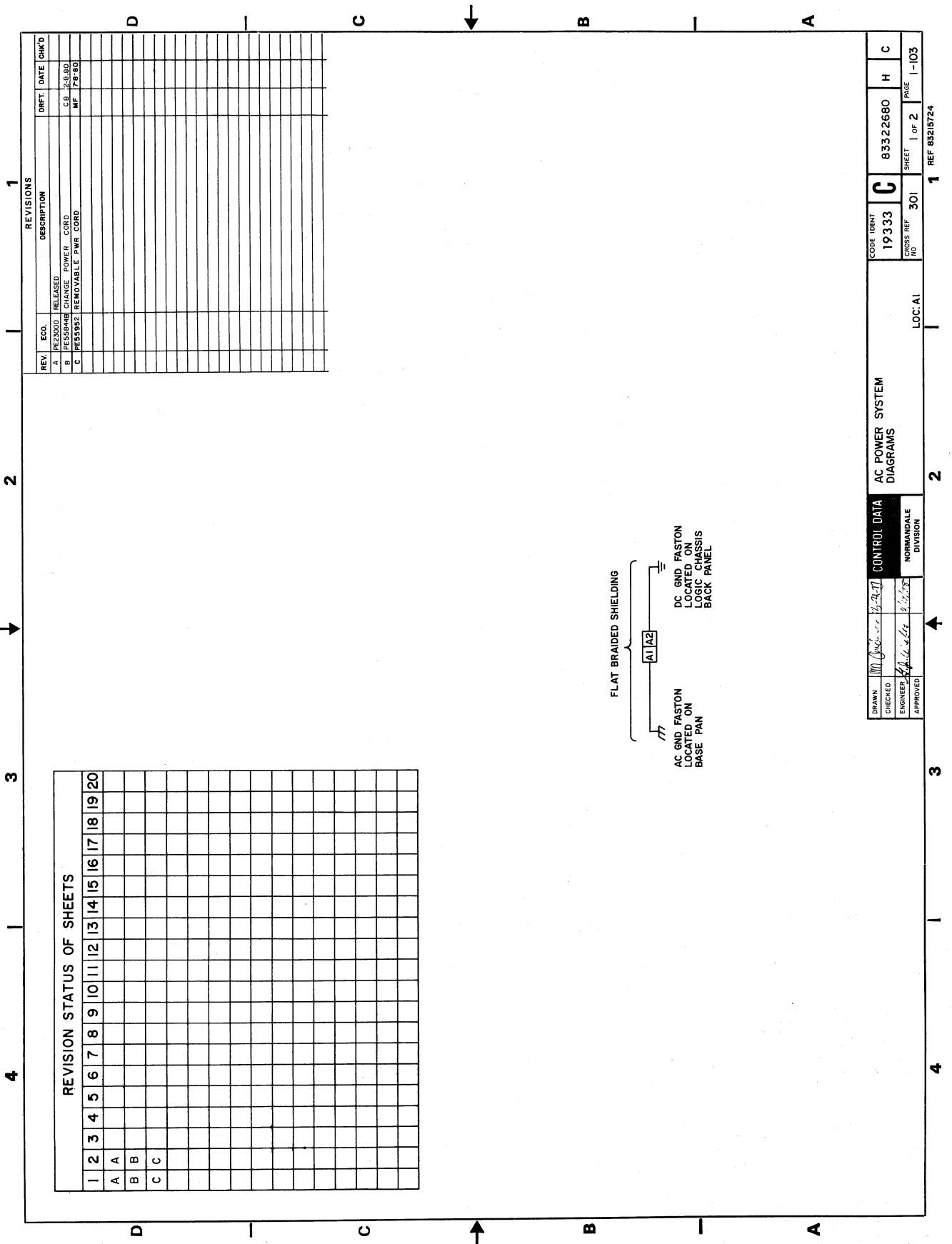


4 3 2 1



4 3 2 1

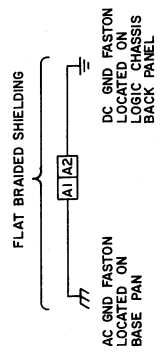
CONTROL DATA	TRACK SERVO PREAMP	CODE IDENT	19333	C	83322680	A	A
NORMANDALE DIVISION	(9762)	CROSS REF. NO.	292	SHEET	2	PAGE	1-102
LOC-A3A05							



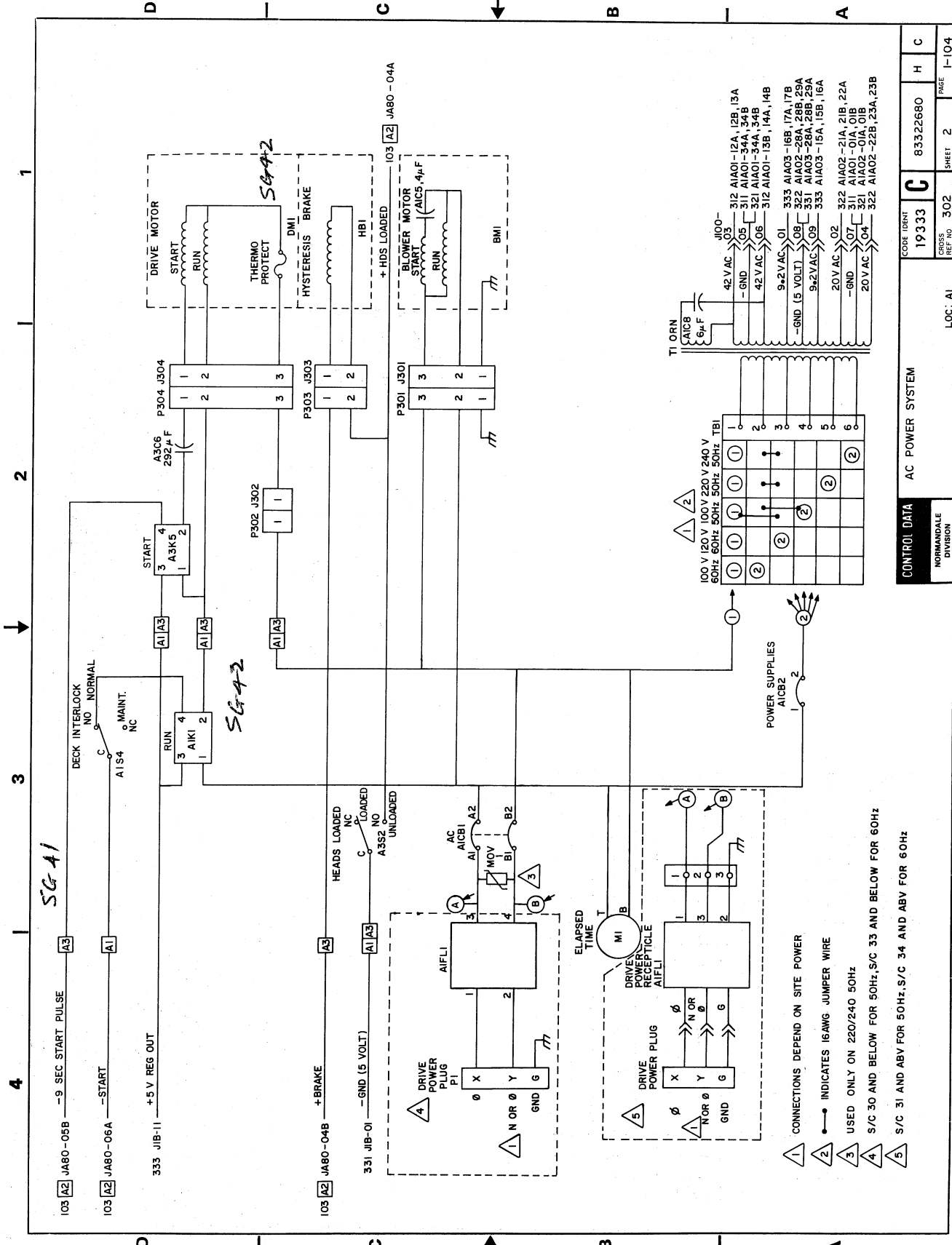
REVISION STATUS OF SHEETS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
A	A																		
B	B																		
C	C																		

REV.	ECO.	RELEASED	DESCRIPTION	DFTY	DATE	CHKD.
A	PE23000	RELEASED		CB	2-6-80	
B	PE55848	CHANGE	POWER CORD	MF	7-8-90	
C	PE55952	REMOVABLE	PWR CORD			



DRWN	CHKD	ENGR	APPR	CONTROL DATA	LOC: A1	CODE IDENT	85322680	C	H	C
				NORMANDALE DIVISION		19333	301	SHEET 1 OF 2	1-103	
						CROSS REF NO				
						REF				



SG-41

SG-42

- 1 CONNECTIONS DEPEND ON SITE POWER.
- 2 INDICATES 16AWG JUMPER WIRE
- 3 USED ONLY ON 250/240 50Hz
- 4 S/C 30 AND BELOW FOR 50Hz, S/C 33 AND BELOW FOR 60Hz
- 5 S/C 31 AND ABOVE FOR 50Hz, S/C 34 AND ABOVE FOR 60Hz

CONTROL DATA		AC POWER SYSTEM	
CODE IDENT	19333	CROSS REF NO	302
NORMANDEALE DIVISION	LOC. A1	SHEET	2
		83322680	I-104

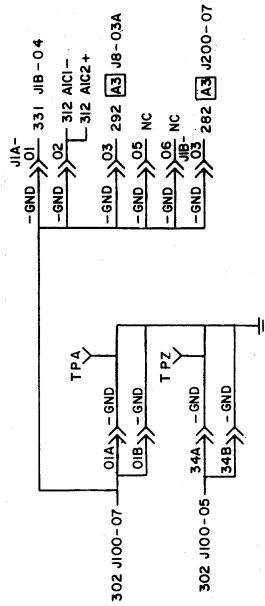
REVISION STATUS OF SHEETS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
A	A																			
B	B																			
C	C																			

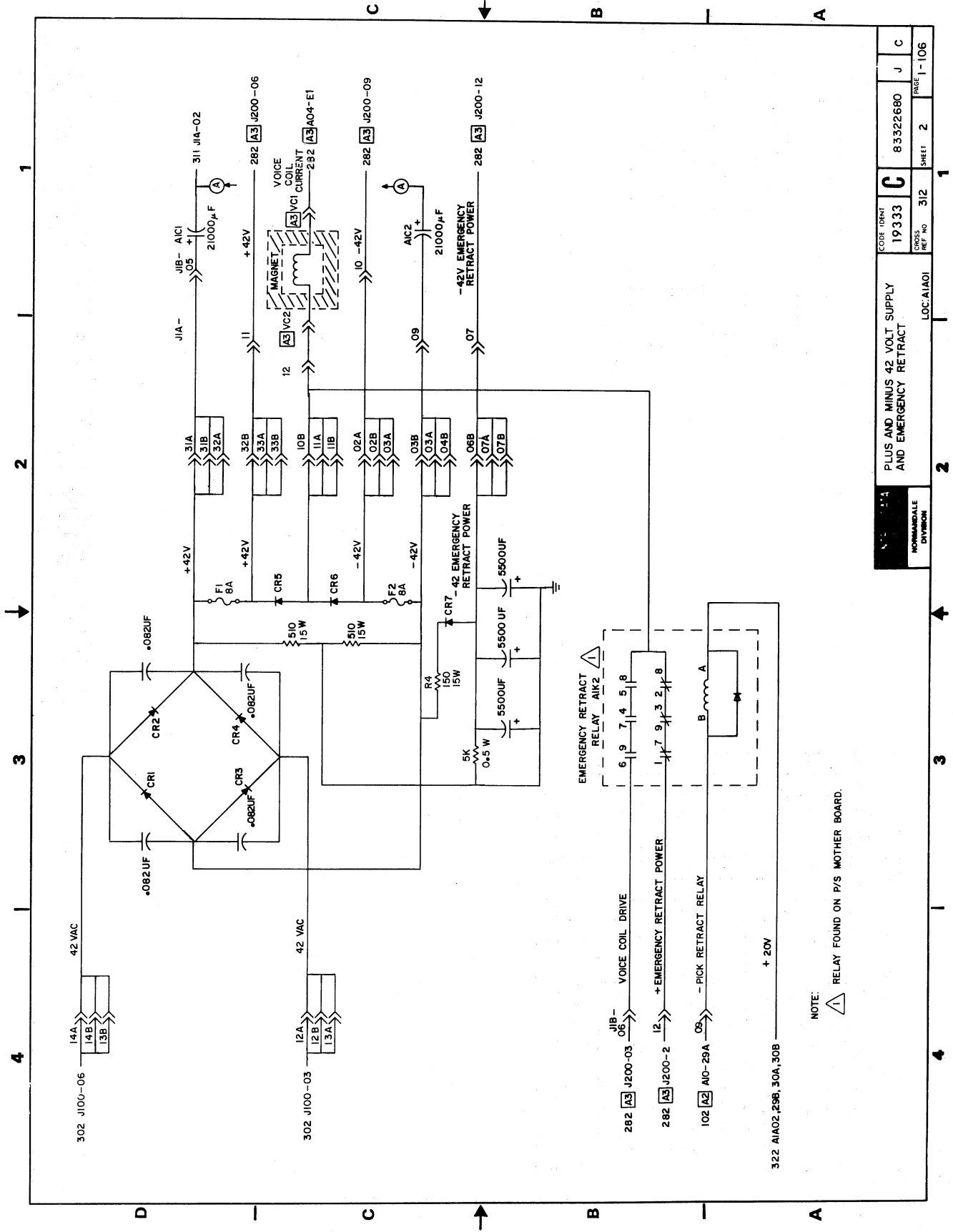
REV	ECO	REL	DATE	DRFT	CHK'D
A	1	1	1/1/71	CB	1/1/71
B	1	1	1/1/71	CB	1/1/71
C	1	1	1/1/71	CB	1/1/71

REVISIONS

REV	ECO	REL	DATE	DRFT	CHK'D
A	1	1	1/1/71	CB	1/1/71
B	1	1	1/1/71	CB	1/1/71
C	1	1	1/1/71	CB	1/1/71



DRAWN	G. RABIN	10-1-71	19333	83322680	J	C
CHECKED						
ENGINEER						
APPROVED						
NONMARRIABLE DIVISION			LOC: AIAOI	SHEET: 1 OF 2	PAIR: I-105	
±42V POWER SUPPLY AND EMERGENCY RETRACT DIAGRAMS			TYPE: ASLV	REF: 83215725		



NOTE: RELAY FOUND ON P/S MOTHER BOARD.

PLUS AND MINUS 42 VOLT SUPPLY AND EMERGENCY RETRACT		C		J C	
CROSS REF NO	19333	CORE IDENT	8332680	SHEET	2
LOC: AIAOI				PAGE	1-106
NORMANVILLE DIVISION					

4 3 2 1

REV	ECO	RELEASED	DESCRIPTION	DRFT	DATE	CHK'D
A	FE 231000	RELEASED				JK

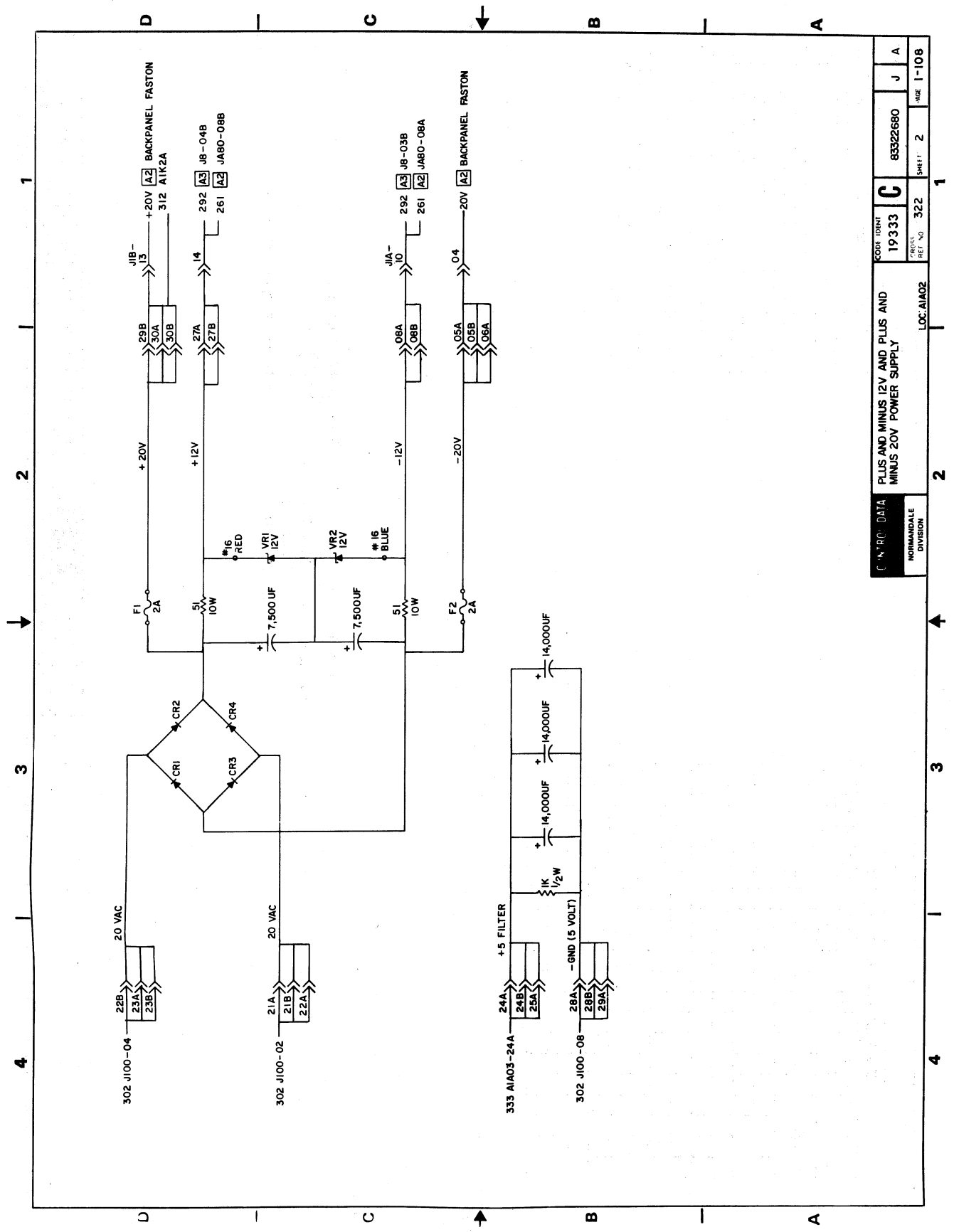
REV	NO	DATE	BY	CHK'D	DESCRIPTION															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
A	A																			

302 J100-07
OIA -GND
OIB -GND

302 J100-05
34A -GND
34B -GND

DRWN: G. Rabide	CHECKED: G. Rabide	ENGINEER: G. Rabide	APPROVED: G. Rabide
DATE: 11-11-77	DATE: 11-11-77	DATE: 11-11-77	DATE: 11-11-77
NORMANDALE DIVISION		LOC: A1A02	CROSS REF: 321
CORE IDENT: 19333		SHEET: 1 OF 2	PAGE: 1-107
CORE IDENT: C		SHEET: 1 OF 2	PAGE: 1-107
PLUS AND MINUS 12V AND PLUS AND MINUS 20V DIAGRAMS			TYPE: 5SKV
REF: 8322680			REF: 83215726

D B A



PART DATA		PLUS AND MINUS 12V AND PLUS AND MINUS 20V POWER SUPPLY		LOC: A1A02	
CODE IDENT	19333	CODE IDENT	C	85522680	J A
REF NO	322	REF NO	322	SHEET	2
				AGE 1-10B	

1 2 3 4

A B C D

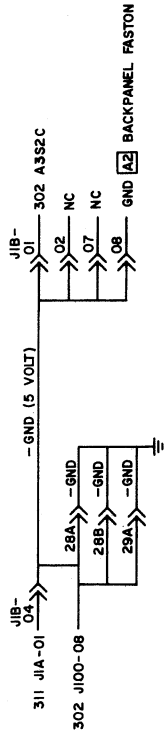
4 3 2 1

REVISION STATUS OF SHEETS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
A	A	A																		
B	A	A																		
C	A	C																		

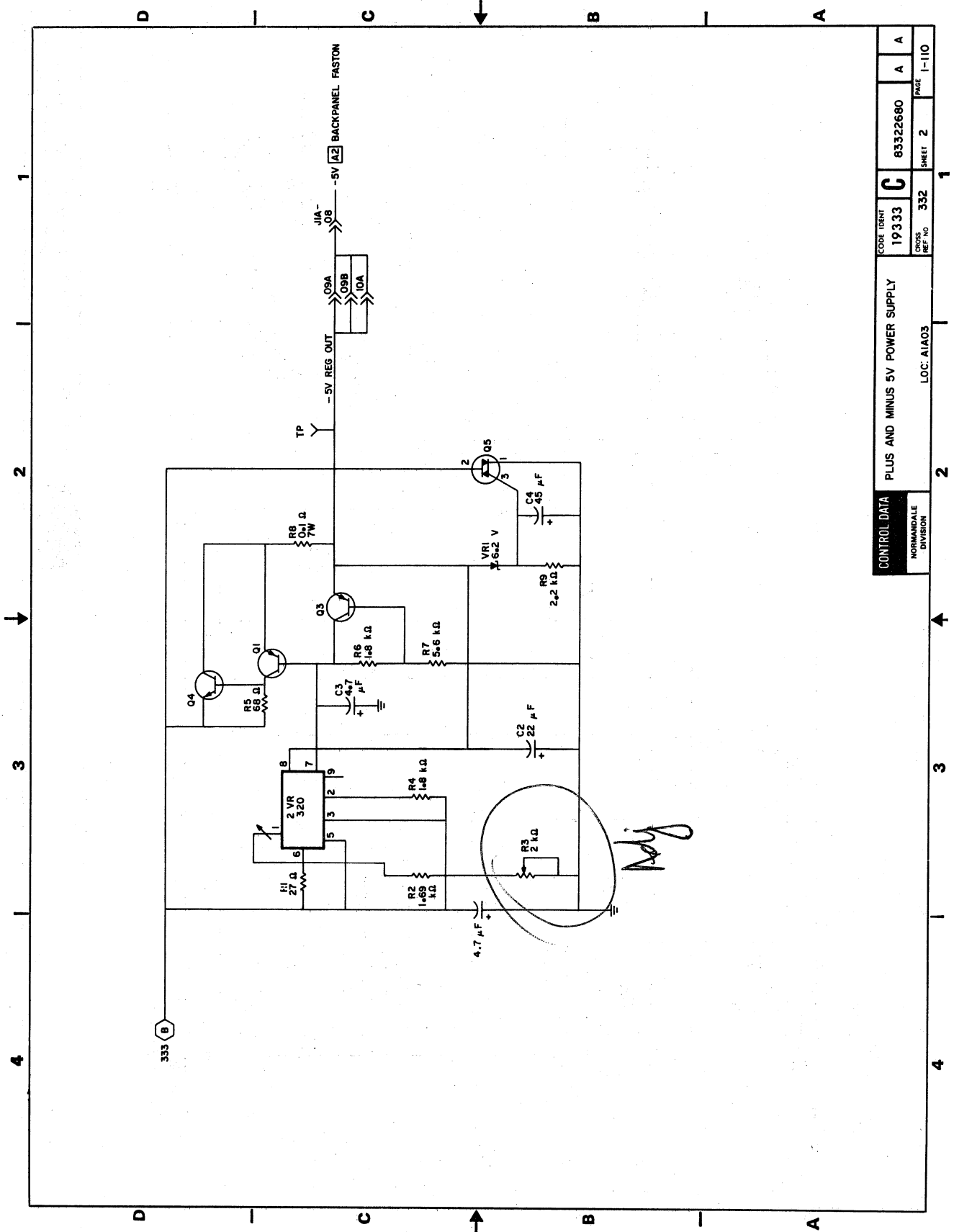
REVISIONS

REV.	ECO.	RELEASE	DESCRIPTION	QWY.	DATE	CHK'D
A	RE23000	RELEASE		OR	4-4-78	
B	RE55098	CHG FLURE ON CARD		A.A.O	8-25-78	
C		TECHNICAL CONNECTION				

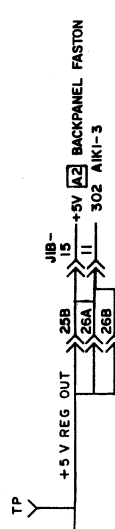
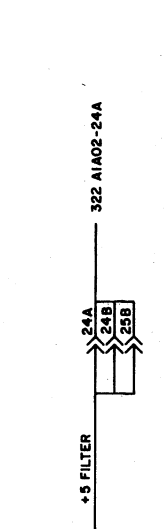
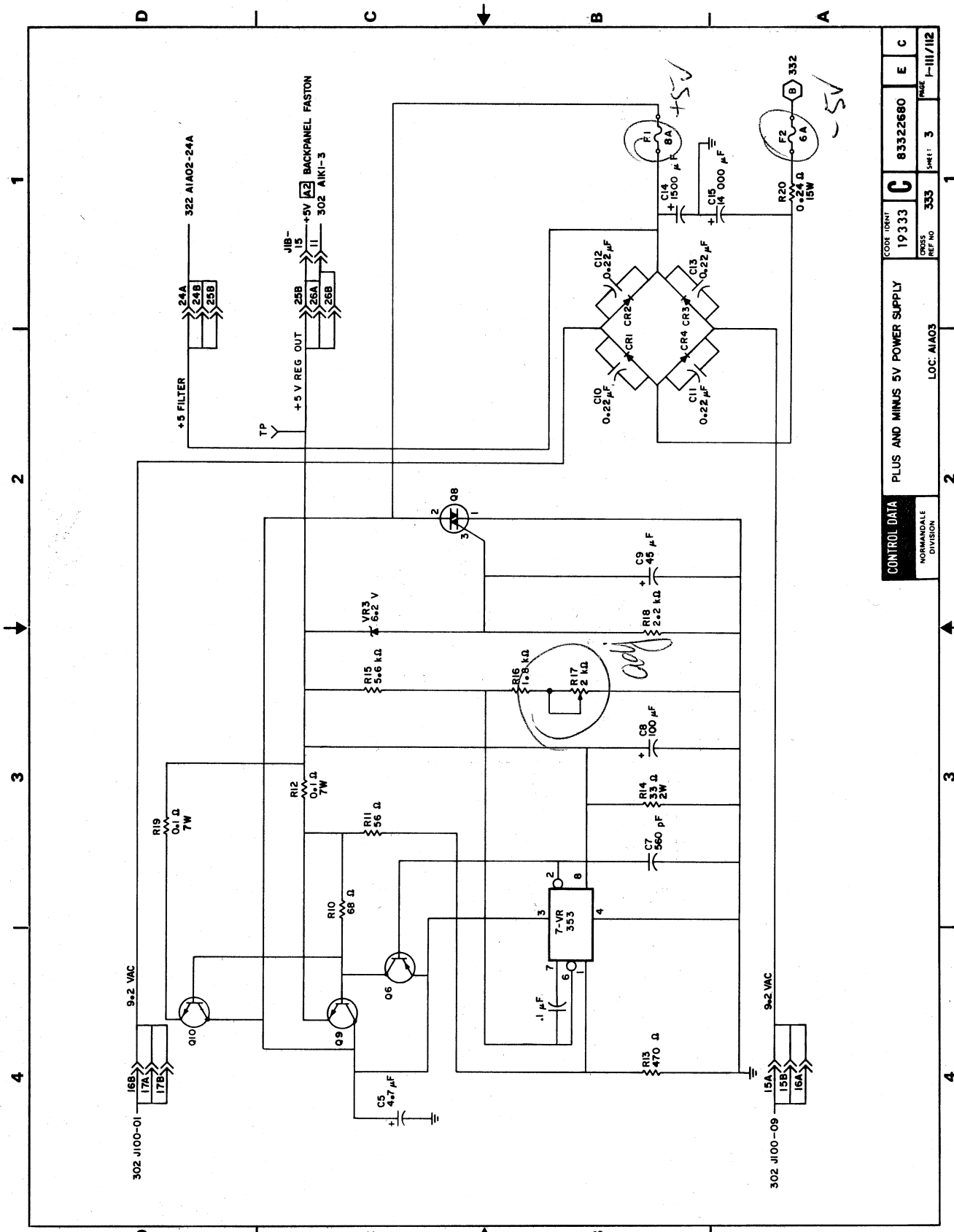


DRWN	3-21-77	CONTROL DATA	CODE IDENT	19333	83322680	E	C
CHECKED			CROSS REF NO	351			
ENGINEER			LOC: AIA03				
APPROVED			TYPE: BSHV				
			SHEET	1 of 3	PAGE	1-109	
			REF	83214003			

A B C D



CONTROL DATA		PLUS AND MINUS 5V POWER SUPPLY		CODE 198RT	19333	C	83322680	A	A
NORMANDALE DIVISION		LOC. A1A03		GROUP	332	SHEET	2	PAGE	1-110



CONTROL DATA				LOC: AIA03	1
PLUS AND MINUS 5V POWER SUPPLY					
FORM 19333	C	83322680	E	C	
REF NO: 333	SHEET: 3	PRICE: 1-III/112			

4 3 2 1

D C B A

4 3 2 1

REVISION STATUS OF SHEETS

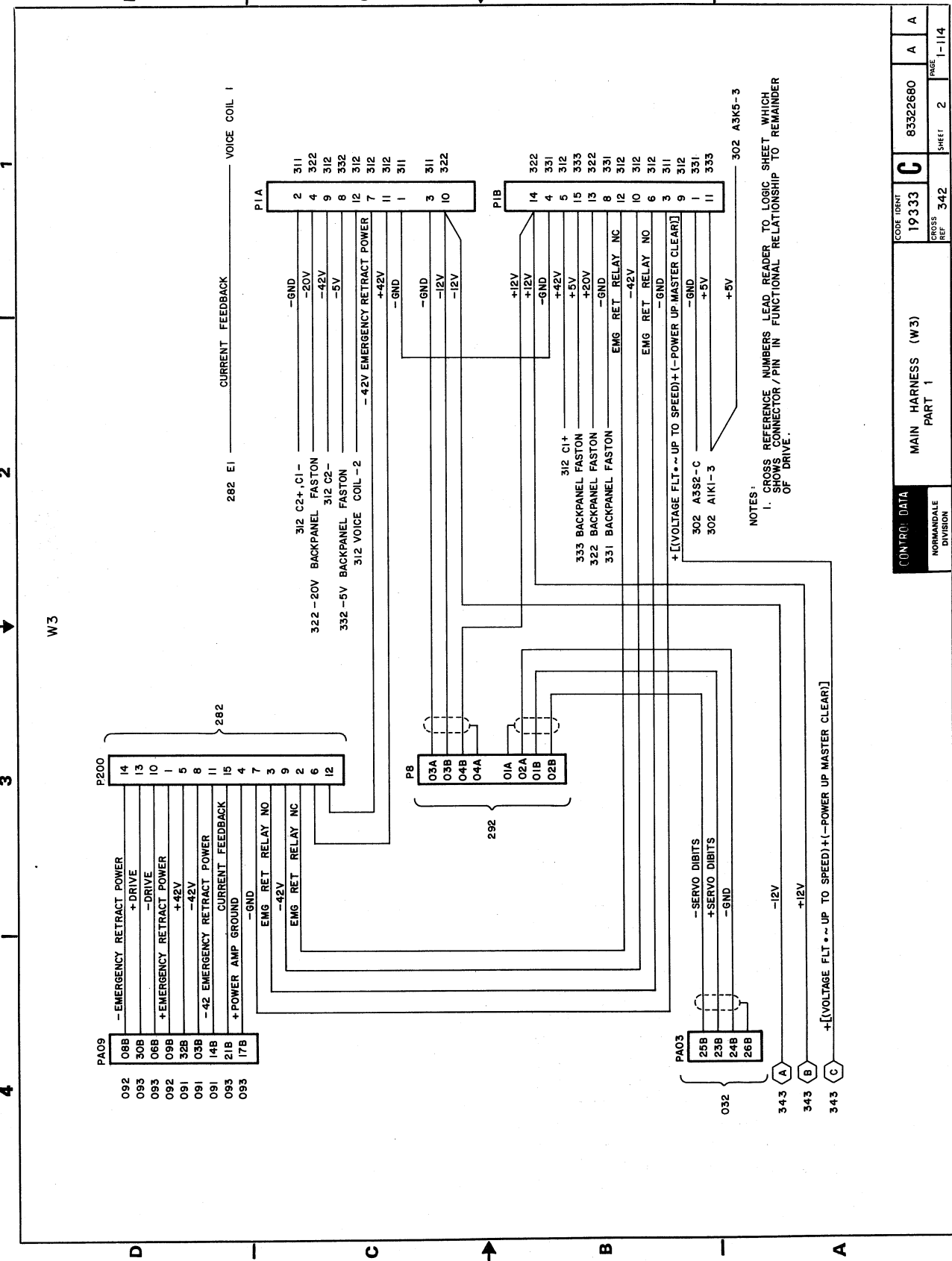
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
A	A	A	A																
B	A	B	A																

REV.	ECO.	DESCRIPTION		DRFT.	DATE	CHK'D
		RELEASED	CORRECTION			
A	PE23000			CB	2-8-80	
B	PE55085					

NOTE:
 ALL OF W1 HARNESS ASSY AND W11 B W12 CABLE ASSYS
 ARE SHOWN ON CROSS REF 302 AND NOT REPEATED ON
 THIS DIAGRAM SET.

DRAWN	3-31-72	DATA	19333	83322680	G	B
CHECKED						
ENGINEER						
APPROVED						
NORMAN DALE DIVISION			HARNESSES DIAGRAMS		83322680	
W2, W3, W4			341		G B	
			SHEET 4		PAGE 1-113	
			OF 4		REF 85215722	

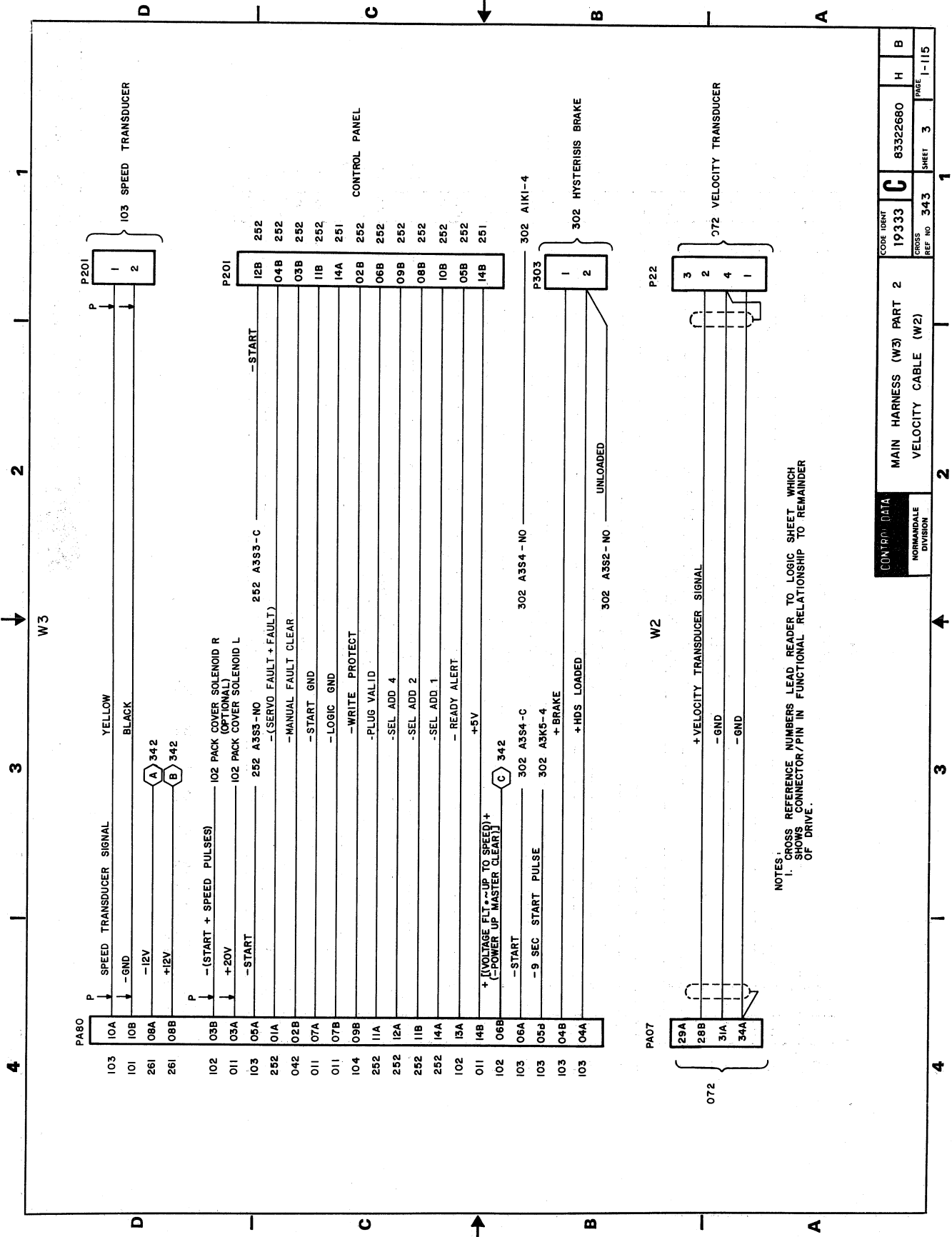
A B C D A B C D



W3

NOTES:
 1. CROSS REFERENCE NUMBERS LEAD READER TO LOGIC SHEET WHICH SHOWS CONNECTOR / PIN IN FUNCTIONAL RELATIONSHIP TO REMAINDER OF DRIVE.

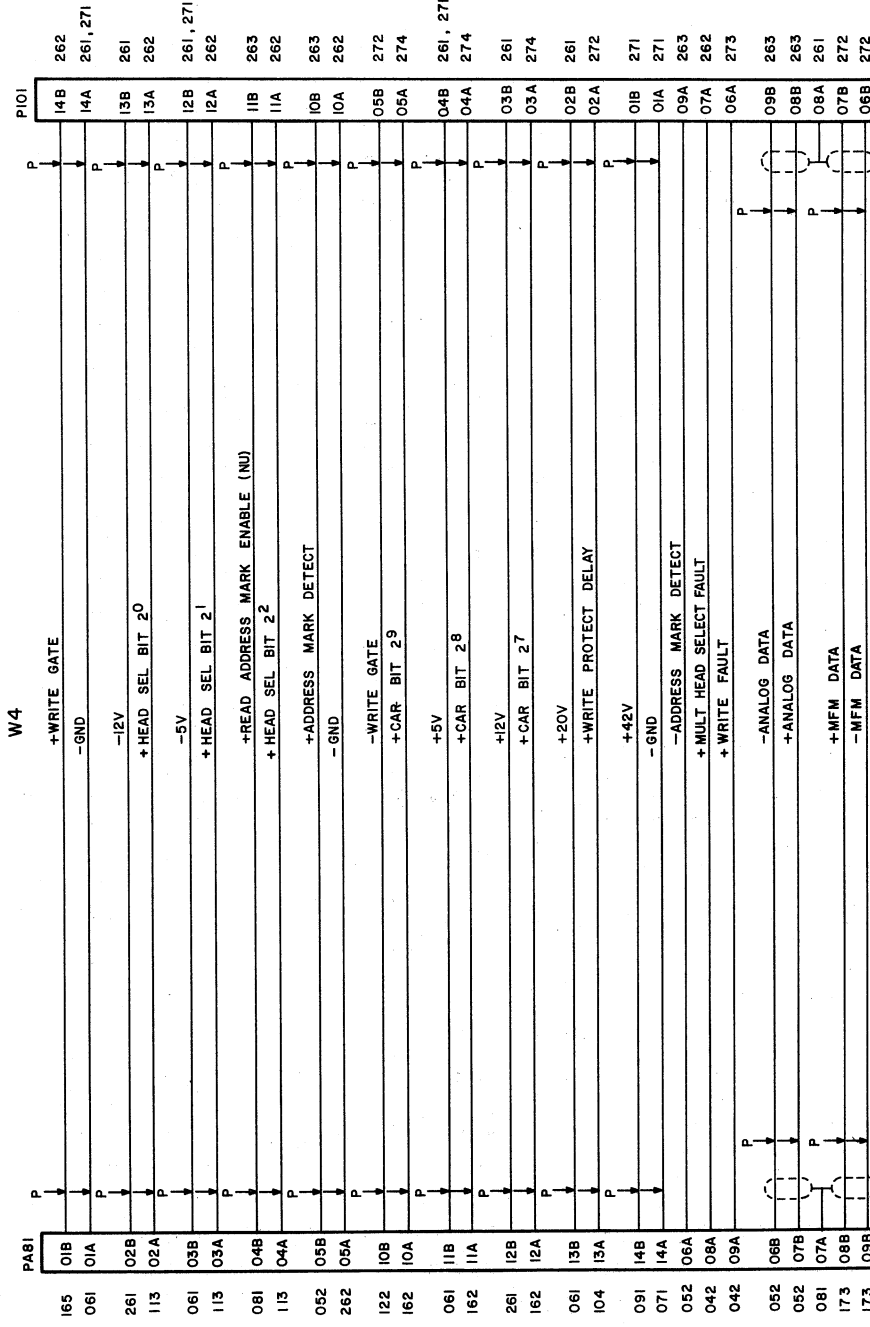
CONTROL DATA		MAIN HARNESS (W3)		CODE IDENT		83322680		A A	
NORMANDALE DIVISION		PART 1		19333		C		A A	
				GROSS PCT 342		SHEET 2		PAGE 1-114	



NOTES
 1. CROSS REFERENCE NUMBERS LEAD READER TO LOGIC SHEET WHICH SHOWS CONNECTOR/PIN IN FUNCTIONAL RELATIONSHIP TO REMAINDER OF DRIVE.

CONTROL DATA	MAIN HARNESS (W3) PART 2	CODE IDENT 19333	83322680	H	B
NORMANDALE DIVISION	VELOCITY CABLE (W2)	CROSS REF NO 343	SHEET 3	1-115	

4 3 2 1



NOTES:
 1. CROSS REFERENCE NUMBERS LEAD READER TO LOGIC SHEET WHICH SHOWS CONNECTOR/PIN IN FUNCTIONAL RELATIONSHIP TO REMAINDER OF DRIVE.

CONTROL DATA		CODE IDENT	83322680	A	A
NORMANDEALE DIVISION		19333			
READ WRITE CABLE (W4)		CROSS REF NO.	344	SHEET	4
					1-116

4 3 2 1

SECTION 2

WIRE LISTS

INTRODUCTION

Section 2 contains the wiring for the backpanels. The first part of section 2 explains how to use the list and identifies the columns shown on the lists. Only the wiring for the backpanel is shown on the wire lists. All other wiring is shown on the cabling diagrams.

READING WIRE LISTS

Wire lists show the origin, destination, and Z level of all wirewrap connections on the logic chassis backpanel. The wires are listed in order of card location and pin number. The lowest numbered card location and pin number are listed first and the highest numbered card location and pin number are listed last. The wire list is a double ended list. This means that all wires will be listed twice: first as the origin, then as the destination. Following is an explanation of all the columns used on the wire list (refer to figure 2-1).

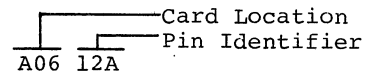
SIGNAL NAME OR NUMBER IDENTIFICATION

The signal name or number identification column is the first column on the wire list. The number shown in this column is for factory use only.

ORIGIN/DESTINATION

The origin column identifies the card location and pin number on which the wire begins. The destination column identifies the opposite end of the wire. Both columns contain a six character number that identifies the exact location of the wire. The first three characters represent the card location. The second three characters represent the pin number on which the wire is attached. Following is a typical example of the number that appears in the Origin/Destination column.

Example:



TITLE		WIREWRAP LIST		WL	DOCUMENT NO.	SHEET NO.	REV.
					LOGIC W/W	1 of 12	A
SIGNAL NAME OR NUMBER IDENTIFICATION	ORIGIN	DESTINATION	Z LEVEL	NOTES			
102111	A0101B	A0102A	1	<p>Z LEVEL 2 Z LEVEL 1</p>			
102111	A0102A	A0101B	1				
100108	A0102B	A1708A	1				
100211	A0103A	A0231A	1				
100206	A0230A	A1712A	1				
100205	A0230B	A0612B	1				
100203	A0231A	A1326B	2				
100211	A0231A	A0103A	1				

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Figure 2-1. Example of Logic Wirewrap List

Z LEVEL

The Z level refers to the position of the wire located on the pin. There are two Z levels on all pins (refer to figure 2-1). Z level 1 identifies the wirewrap connection closer to the surface of the wirewrap panel. Z level 2 identifies the wirewrap connection farthest from the surface of the wirewrap panel. All pins may contain two wires. However, if the pin contains only one wire,

that wire will be connected on Z level 1. The same Z level is maintained at both ends of all wirewrap connections.

NOTES

The notes column is the last column on the wire list. Signal names, history, or other pertinent information is shown in the notes column.

TITLE		WL		DOCUMENT NO.	SHEET NO.	REV.
Logic Wirewrap				77568131	1 of 15	AC
SIGNAL NAME OR NUMBER IDENTIFICATION	ORIGIN	DESTI- NATION	Z LEVEL	NOTES		
100416	A0101A	JA8007A	1			
100416	A0101A	JA8007B	2			
300023	A0101B	A0121B	1			
100305	A0104B	A0333A	1			
100101	A0112B	A0221A	1			
100101	A0112B	A0127B	2			
100105	A0113B	B0831A	1			
300022	A0114B	A0234B	1			
300023	A0121B	A0101B	1			
100304	A0122B	A0312B	1			
100103	A0123B	A0623B	1			
100102	A0124B	A0624B	1			
100104	A0126B	B0815A	1			
100101	A0127B	A0112B	2			
100107	A0130B	B0709A	1			
101020	A0133B	JA8003A	1			
100417	A0134B	JA8014B	1			
100309	A0213B	A0323B	1			
100409	A0214B	B0103A	2			
100409	A0214B	A1012B	2			
100308	A0215B	A0325B	1			
300024	A0216B	A0231A	2			
200621	A0217A	B0633B	1			
100101	A0221A	B0123B	2			
100101	A0221A	A0112B	1			
300024	A0222B	A0234A	2			
200221	A0223A	B0117B	1			
200217	A0223B	B0203A	1			
200217	A0223B	B0625A	2			
200208	A0224A	B0224B	2			
200218	A0224B	B0232B	1			
200206	A0225A	B0122B	1			
200204	A0225B	B0116A	1			
200216	A0226A	B0225A	2			
200202	A0226B	B0631A	1			
200214	A0227A	B0226A	2			
200210	A0228A	B0226B	2			
100406	A0228B	A0426B	2			
200212	A0229A	B0225B	2			
200915	A0230B	B0107B	1			
300024	A0231A	A0234A	1			
300024	A0231A	A0216B	2			
200220	A0232A	B0232A	2			
300024	A0234A	A0231A	1			
300024	A0234A	A0222B	2			
300022	A0234B	A0114B	1			
100301	A0307B	B0928B	1			
100302	A0308B	B0927B	1			
100303	A0309B	A0826B	1			
100307	A0311B	B0804A	1			
100304	A0312B	A0122B	1			

TITLE		WL	DOCUMENT NO.	SHEET NO.	REV.
Logic Wirewrap			77568131	2	AC
SIGNAL NAME OR NUMBER IDENTIFICATION	ORIGIN	DESTI- NATION	Z LEVEL	NOTES	
100309	A0323B	A0213B	1		
100308	A0325B	A0215B	1		
200926	A0327B	B0913B	2		
100306	A0332A	B0805B	1		
100305	A0333A	A0104B	1		
100305	A0333A	B0822B	2		
100418	A0403B	A0903B	1		
200802	A0405A	B0104A	2		
100403	A0407A	A1015B	2		
100403	A0407A	A0528B	1		
300007	A0408A	A0409B	2		
100401	A0408B	B0107A	1		
100410	A0409A	JA8002B	1		
300007	A0409B	A0408A	2		
300007	A0409B	JA8109A	1		
200904	A0410A	B0903B	1		
200222	A0410B	B0202B	2		
100404	A0411B	A0707A	1		
100404	A0411B	JA8001A	2		
200209	A0412A	B0230A	1		
100405	A0412B	A1027B	2		
100405	A0412B	JA8013A	1		
200201	A0413A	JA8110B	1		
200201	A0413A	B0227B	2		
200203	A0413B	A0531B	2		
200203	A0413B	B0229A	1		
100402	A0414A	B0931B	1		
300001	A0414B	JA8108A	1		
200914	A0415A	JA8005A	2		
100407	A0415B	A1023B	1		
200914	A0416A	A0428B	1		
101010	A0416B	A1021A	1		
100414	A0417A	JA8011B	1		
100413	A0417B	JA8012A	1		
100419	A0421A	JA8226A	1		
100420	A0421B	JA8226B	1		
100415	A0422B	JA8014A	1		
100421	A0423A	JA8222A	1		
100422	A0423B	JA8222B	1		
200814	A0424A	B0809A	1		
101002	A0424B	A1021B	1		
200919	A0425B	B0817B	2		
300025	A0426A	A1013A	2		
100406	A0426B	B0124B	1		
100406	A0426B	A0228B	2		
100423	A0427A	JA8241A	1		
100424	A0427B	JA8241B	1		
100412	A0428A	JA8011A	1		
200914	A0428B	A0416A	1		
100425	A0429A	JA8223A	1		
100426	A0429B	JA8223B	1		
100427	A0430A	JA8224A	1		

TITLE Logic Wirewrap			WL	DOCUMENT NO. 77568131	SHEET NO. 3	REV. AC
SIGNAL NAME OR NUMBER IDENTIFICATION	ORIGIN	DESTI- NATION	Z LEVEL	NOTES		
100428	A0430B	JA8224B	1			
100429	A0431A	JA8242A	1			
100430	A0431B	JA8242B	1			
100432	A0432A	JA8228A	1			
100417	A0432B	A0932B	1			
100432	A0433A	JA8228B	1			
200222	A0501A	A0524B	1			
100502	A0503B	A0610B	1			
100501	A0504B	A0609B	1			
300003	A0507B	JA8107B	1			
300002	A0508B	JA8106B	1			
300004	A0521B	JA8105B	1			
300005	A0522B	JA8106A	1			
200222	A0524B	A0501A	1			
200211	A0527B	B0121B	1			
100403	A0528B	A0407A	1			
100503	A0530B	A0622B	1			
200203	A0531B	A0612B	1			
200203	A0531B	A0413B	2			
300013	A0601A	JA8101A	1			
300019	A0601B	JA8103B	1			
200219	A0603B	B0233A	1			
200215	A0604B	B0231B	1			
100501	A0609B	A0504B	1			
100502	A0610B	A0503B	1			
200203	A0612B	A0531B	1			
100503	A0622B	A0530B	1			
100103	A0623B	A0123B	1			
100102	A0624B	A0124B	1			
200325	A0626B	B0131B	1			
100601	A0627B	B0131A	1			
300021	A0633B	JA8113B	1			
300020	A0634B	JA8111B	1			
300014	A0701A	JA8114A	1			
200918	A0702A	B0931A	1			
100404	A0707A	A0411B	1			
100404	A0707A	B0933B	2			
200922	A0707B	B0929B	1			
200923	A0708A	B0912B	1			
200911	A0710A	B0913A	1			
200610	A0711B	B0602A	1			
200612	A0712B	B0603A	1			
200613	A0713A	B0604A	1			
200616	A0713B	B0610A	1			
200617	A0715A	B0609B	1			
100809	A0715B	A0826A	2			
200619	A0716A	B0611B	1			
200902	A0716B	A0923B	2			
200618	A0717A	B0609A	1			
200907	A0717B	B0916A	1			
200901	A0721B	A0922B	2			
200905	A0722B	B0916B	1			

TITLE		WL	DOCUMENT NO.	SHEET NO.	REV.
Logic Wirewrap			77568131	4	AC
SIGNAL NAME OR NUMBER IDENTIFICATION	ORIGIN	DESTI- NATION	Z LEVEL	NOTES	
100808	A0723B	A0809A	1		
200611	A0725B	B0602B	1		
100701	A0726B	A0928B	1		
200608	A0727A	B0604B	1		
100703	A0727B	A0808B	1		
100902	A0728B	A0912B	1		
100702	A0730B	A0802A	1		
300015	A0801A	JA8107A	1		
100702	A0802A	A0730B	1		
100801	A0808A	B0816A	1		
100703	A0808B	A0727B	1		
100808	A0809A	A0723B	1		
100802	A0809B	B0810A	1		
200924	A0810B	B0906B	2		
200924	A0810B	B0117A	1		
100804	A0811A	A0824B	2		
300804	A0811B	B0230B	2		
200908	A0812A	B0914A	2		
100807	A0812B	B0905A	1		
200910	A0813A	B0922A	1		
200913	A0813B	B0930A	1		
200804	A0814B	B0810B	1		
200903	A0816A	B0904B	1		
200207	A0821A	B0229B	1		
100306	A0822A	A0927A	1		
200205	A0822B	B0228B	1		
100805	A0823A	B0828B	1		
200906	A0823B	B0906A	1		
200211	A0824A	B0614B	1		
100804	A0824B	A0811A	2		
100803	A0825A	B0927A	1		
200925	A0825B	B0926A	1		
100809	A0826A	A0906A	1		
100809	A0826A	A0715B	2		
100303	A0826B	A0309B	1		
200912	A0832A	B0903A	2		
100901	A0833A	A0924B	1		
101011	A0902A	A1002B	2		
101011	A0902B	A1002B	1		
100418	A0903A	A0903B	2		
100418	A0903A	A0904A	1		
100418	A0903B	A0903A	2		
100418	A0903B	A0403B	1		
100418	A0904A	A0903A	1		
100418	A0904A	A0904B	2		
100418	A0904B	A0904A	2		
100809	A0906A	A0826A	1		
100902	A0912B	A0728B	1		
200922	A0915B	B0925A	1		
200926	A0916B	A1017B	1		
200921	A0916B	B0921B	2		
200901	A0922B	B0908A	1		

TITLE		WL	DOCUMENT NO.	SHEET NO.	REV.
Logic Wirewrap			77568131	5	AC
SIGNAL NAME OR NUMBER IDENTIFICATION	ORIGIN	DESTI- NATION	Z LEVEL	NOTES	
200901	A0922B	A0721B	2		
200902	A0923B	B0907A	1		
200902	A0923B	A0716B	2		
100901	A0924B	B0915A	2		
100901	A0924B	A0833A	1		
200926	A0925B	B0812A	2		
200926	A0925B	B0913B	1		
200609	A0926B	B0617B	1		
100806	A0927A	A0822A	1		
200909	A0927B	B0930B	1		
100701	A0928B	A0726B	1		
300018	A0931A	A0932A	1		
300018	A0931A	A0931B	2		
300018	A0931B	A0931A	2		
300018	A0932A	A1032B	2		
300018	A0932A	A0931A	1		
100417	A0932B	A0432B	1		
300018	A0932B	JA8114B	2		
101012	A0933A	A1033B	2		
101012	A0933B	A1033B	1		
300006	A1001A	JA8105A	1		
101005	A1002A	JA8113A	1		
101011	A1002B	A0902A	2		
101011	A1002B	A0902B	1		
101009	A1003A	JA8229B	1		
101007	A1004B	JA8229A	1		
100407	A1005B	A1023B	2		
100404	A1012A	JA8001A	1		
100409	A1012B	B0102A	1		
100409	A1012B	A0214B	2		
100409	A1012B	JA8009B	1		
300025	A1013A	A0426A	2		
101004	A1014B	B0912A	1		
100403	A1015B	A0407A	2		
101003	A1017A	B0923B	1		
200926	A1017B	A0916B	1		
101010	A1021A	A0416B	1		
101002	A1021B	A0424B	1		
101001	A1022A	B0926B	1		
100407	A1023B	A0415B	1		
100407	A1023B	A1005B	2		
101015	A1026A	JA8006A	1		
100408	A1026B	JA8005A	1		
101018	A1027A	JA8010A	1		
100405	A1027B	A0412B	2		
101013	A1028A	JA8005B	1		
101017	A1028B	JA8003B	1		
101014	A1029A	JA8006B	1		
101016	A1029B	JA8004B	1		
200810	A1030B	JA8004A	2		
300018	A1032B	A0932A	2		
300018	A1032B	JA8114B	1		

TITLE Logic Wirewrap			WL	DOCUMENT NO. 77568131	SHEET NO. 6	REV. AC
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SIGNAL NAME OR NUMBER IDENTIFICATION	ORIGIN	DESTI- NATION	Z LEVEL	NOTES
101012	A1033B	A0933A	2	
101012	A1033B	A0933B	1	
101019	A1034A	JA8010B	1	
100409	B0102A	A1012B	1	
100409	B0102B	B0712B	1	
100409	B0103A	A0214B	2	
100409	B0103A	JA8009B	1	
200802	B0104A	A0405A	2	
200802	B0104A	B0813B	1	
200801	B0104B	B0821B	1	
200114	B0105A	JA8225A	1	
200113	B0105B	JA8225B	1	
200112	B0106A	JA8218A	1	
200111	B0106B	JA8218B	1	
100401	B0107A	A0408B	1	
200915	B0107B	B0911A	2	
200915	B0107B	A0230B	1	
200118	B0108A	JA8216A	1	
200117	B0108B	JA8216B	1	
200116	B0109A	JA8215A	1	
200115	B0109B	JA8215B	1	
200102	B0110A	B0710B	1	
200101	B0110B	B0723B	1	
200132	B0111A	JA8239B	1	
200131	B0111B	JA8240A	1	
200134	B0112A	JA8238B	1	
200133	B0112B	JA8238A	1	
200814	B0113A	B0831B	1	
200818	B0113B	B0824B	1	
200140	B0114A	JA8221A	1	
200139	B0114B	JA8221B	1	
200141	B0115A	JA8230A	1	
200142	B0115B	JA8230B	1	
200204	B0116A	A0225B	1	
200204	B0116A	B0227A	2	
200202	B0116B	B0121A	2	
200202	B0116B	B0832B	1	
200924	B0117A	A0810B	1	
200221	B0117B	B0202A	2	
200221	B0117B	A0223A	1	
200202	B0121A	B0224A	1	
200202	B0121A	B0116B	2	
200211	B0121B	A0527B	1	
200110	B0122A	B0134A	1	
200206	B0122B	B0228A	2	
200206	B0122B	A0225A	1	
200815	B0123A	B0830A	1	
100101	B0123B	A0221A	2	
200912	B0124A	B0605B	2	
200912	B0124A	B0632A	1	
100406	B0124B	A0426B	1	
200122	B0125A	JA8219A	1	

TITLE Logic Wirewrap		WL	DOCUMENT NO. 77568131	SHEET NO. 7	REV. AC
SIGNAL NAME OR NUMBER IDENTIFICATION	ORIGIN	DESTI- NATION	Z LEVEL	NOTES	
200121	R0125B	JA8219B	1		
200120	B0126A	JA8217A	1		
200119	B0126B	JA8217B	1		
200124	B0127A	JA8220A	1		
200123	B0127B	JA8220B	1		
200126	B0128A	JA8234A	1		
200125	B0128B	JA8233B	1		
200130	B0129A	JA8237A	1		
200129	B0129B	JA8236B	1		
200128	B0130A	JA8235A	1		
200127	B0130B	JA8235B	1		
100601	B0131A	A0627B	1		
200325	B0131B	A0626B	1		
200105	B0132A	JA8102A	1		
200107	B0132B	JA8104A	1		
200106	B0133B	JA8103A	1		
200110	B0134A	B0122A	1		
300012	B0134A	JA8201B	2		
200221	B0202A	B0117B	2		
100404	B0202B	B0615A	1		
200222	B0202B	A0410B	2		
200217	B0203A	A0223B	1		
200258	B0203B	B0722B	1		
200816	B0204A	B0830B	1		
200817	B0204B	B0829A	1		
200261	B0205A	JA8214A	1		
200262	B0205B	JA8214B	1		
200261	B0206A	JA8227A	1		
200264	B0206B	JA8227B	1		
200253	B0207A	JA8203B	1		
200252	B0207B	JA8203A	1		
200259	B0208A	JA8245A	1		
200260	B0208B	JA8245B	1		
200245	B0209A	JA8212B	1		
200244	B0209B	JA8212A	1		
200243	B0210A	JA8213B	1		
200242	B0210B	JA8213A	1		
200249	B0211A	JA8202B	1		
200248	B0211B	JA8202A	1		
200247	B0212A	JA8201B	1		
200246	B0212B	JA8201A	1		
200241	B0213A	JA8211B	1		
200240	B0213B	JA8211A	1		
200239	B0214A	JA8210B	1		
200238	B0214B	JA8210A	1		
200237	B0215A	JA8209B	1		
200236	B0215B	JA8209A	1		
200235	B0216A	JA8208B	1		
200234	B0216B	JA8208A	1		
200233	B0217A	JA8207B	1		
200232	B0217B	JA8207A	1		
200231	B0221A	JA8206B	1		

TITLE Logic Wirewrap		WL	DOCUMENT NO. 77568131	SHEET NO. 8	REV. AC
SIGNAL NAME OR NUMBER IDENTIFICATION	ORIGIN	DESTI- NATION	Z LEVEL	NOTES	
200230	B0221B	JA8206A	1		
200229	B0222A	JA8205B	1		
200228	B0222B	JA8205A	1		
200227	B0223A	JA8204B	1		
200226	B0223B	JA8204A	1		
200202	B0224A	B0121A	1		
200208	B0224B	A0224A	2		
200208	B0224B	B0628B	1		
200216	B0225A	B0626B	1		
200216	B0225A	A0226A	2		
200212	B0225B	B0624A	1		
200212	B0225B	A0229A	2		
200214	B0226A	A0227A	2		
200214	B0226A	B0622B	1		
200210	B0226B	A0228A	2		
200210	B0226B	B0629B	1		
200204	B0227A	B0116A	2		
200204	B0227A	B0633A	1		
200201	B0227B	B0616B	1		
200201	B0227B	A0413A	2		
200206	B0228A	B0630A	1		
200206	B0228A	B0122B	2		
200205	B0228B	A0822B	1		
200203	B0229A	A0413B	1		
200207	B0229B	A0821A	1		
200209	B0230A	A0412A	1		
200213	B0230B	B0812B	1		
300804	B0230B	A0811B	2		
200215	B0231B	A0604B	1		
200220	B0232A	A0232A	2		
200220	B0232A	B0606B	1		
200218	B0232B	A0224B	1		
200218	B0232B	B0621A	2		
200219	B0233A	A0603B	1		
200223	B0233B	B0502A	1		
300012	B0334A	JA8234B	1		
300012	B0334A	JA8240B	2		
300012	B0434A	JA8239A	1		
300012	B0434A	JA8243A	2		
200223	B0502A	B0233B	1		
300012	B0534A	JA8236A	2		
300012	B0534A	JA8233A	1		
200610	B0602A	A0711B	1		
200611	B0602B	A0725B	1		
200612	B0603A	A0712B	1		
200908	B0603B	B0914A	1		
200613	B0604A	A0713A	1		
200608	B0604B	A0727A	1		
200920	B0605A	B0910B	1		
200912	B0605B	B0903A	1		
200912	B0605B	B0124A	2		
200614	B0606A	B0917B	1		

TITLE		WL		DOCUMENT NO.	SHEET NO.	REV.
Logic Wirewrap				77568131	9	AC
SIGNAL NAME OR NUMBER IDENTIFICATION	ORIGIN	DESTI- NATION	Z LEVEL	NOTES		
200220	B0606B	B0232A	1			
200606	B0607A	B0827B	1			
200615	B0607B	B0922B	1			
200618	B0609A	A0717A	1			
200617	B0609B	A0715A	1			
200616	B0610A	A0713B	1			
200619	B0611B	A0716A	1			
200601	B0613A	JA8110A	1			
200604	B0613B	B0904A	1			
200607	B0614A	B0914B	1			
200211	B0614B	A0824A	1			
100404	B0615A	B0202B	1			
200620	B0616A	JA8101B	1			
200201	B0616B	B0712B	2			
200201	B0616B	B0227B	1			
200609	B0617B	A0926B	1			
200218	B0621A	B0232B	2			
200218	B0621A	B0832A	1			
200214	B0622B	B0826B	2			
200214	B0622B	B0226A	1			
200602	B0623B	JA8111A	1			
200212	B0624A	B0826A	2			
200212	B0624A	B0225B	1			
200603	B0624B	JA8112A	1			
200217	B0625A	B0833B	1			
200217	B0625A	A0223B	2			
200916	B0625B	B0915B	1			
200924	B0626A	B0817A	2			
200216	B0626B	B0811B	2			
200216	B0626B	B0225A	1			
200208	B0628B	B0224B	1			
200208	B0628B	B0823B	2			
200210	B0629B	B0226B	1			
200210	B0629B	B0822A	2			
200206	B0630A	B0228A	1			
200206	B0630A	B0823A	2			
200202	B0631A	B0832B	2			
200202	B0631A	A0226B	1			
200912	B0632A	B0124A	1			
200605	B0632B	B0910A	1			
200204	B0633A	B0227A	1			
200204	B0633A	B0825A	2			
200621	B0633B	A0217A	1			
200704	B0701A	B0707B	1			
200704	B0707B	B0701A	1			
100107	B0709A	A0130B	1			
200102	B0710B	B0110A	1			
100409	B0712B	B0102B	1			
200201	B0712B	B0616B	2			
200258	B0722B	B0203B	1			
200101	B0723B	B0110B	1			
200701	B0729A	JA8108B	1			

TITLE		WL	DOCUMENT NO.	SHEET NO.	REV.
Logic Wirewrap			77568131	10	AC
SIGNAL NAME OR NUMBER IDENTIFICATION	ORIGIN	DESTI- NATION	Z LEVEL	NOTES	
200702	B0729B	JA8109B	1		
200705	B0732A	JA8104B	2		
200705	B0732B	B0734A	1		
200705	B0734A	B0732B	1		
200812	B0801A	B0811A	1		
200819	B0801A	B0815B	2		
200820	B0802A	B0802B	2		
200820	B0802A	B0803B	1		
200820	B0802B	B0802A	2		
200820	B0803A	B0808B	2		
200820	B0803B	B0802A	1		
200820	B0803B	B0808A	2		
100307	B0804A	A0311B	1		
200921	B0804B	B0921B	1		
200820	B0805A	B0808A	1		
100306	B0805B	A0332A	1		
200807	B0806A	B0911B	1		
200808	B0806B	B0924A	1		
200805	B0807A	B0932B	1		
200810	B0807B	B0925B	1		
200820	B0808A	B0803B	2		
200820	B0808A	B0805A	1		
200820	B0808B	B0803A	2		
200819	B0808B	B0809B	1		
200814	B0809A	A0424A	1		
200814	B0809A	B0813A	2		
200819	B0809B	B0808B	1		
200819	B0809B	B0814A	2		
100802	B0810A	A0809B	1		
200804	B0810B	A0814B	1		
200812	B0811A	B0801A	1		
200216	B0811B	B0626B	2		
200926	B0812A	A0925B	2		
200213	B0812B	B0230B	1		
200814	B0813A	B0809A	2		
200814	B0813A	B0814B	1		
200802	B0813B	B0104A	1		
200819	B0814A	B0809B	2		
200819	B0814A	B0815B	1		
200814	B0814B	B0813A	1		
100104	B0815A	A0126B	1		
200815	B0815B	B0801A	2		
200819	B0815B	B0814A	1		
100801	B0816A	A0808A	1		
200806	B0816B	B0902A	1		
200924	B0817A	B0906B	1		
200924	B0817A	B0626A	2		
200919	B0817B	A0425B	2		
200919	B0817B	B0907B	1		
200809	B0821A	B0917A	1		
200801	B0821B	B0104B	1		
200210	B0822A	B0629B	2		

TITLE Logic Wirewrap	WL	DOCUMENT NO. 77568131	SHEET NO. 11	REV. AC
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SIGNAL NAME OR NUMBER IDENTIFICATION	ORIGIN	DESTI- NATION	Z LEVEL	NOTES
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100305	B0822B	A0333A	2	
200206	B0823A	B0630A	2	
200208	B0823B	B0628B	2	
200818	B0824B	B0113B	1	
200204	B0825A	B0633A	2	
200212	B0826A	B0624A	2	
200214	B0826B	B0622B	2	
200803	B0827A	B0933A	1	
200606	B0827B	B0902B	2	
200606	B0827B	B0607A	1	
100805	B0828B	A0823A	1	
200817	B0829A	B0204B	1	
200815	B0830A	B0123A	1	
200816	B0830B	B0204A	1	
100105	B0831A	A0113B	1	
200814	B0831B	B0113A	1	
200218	B0832A	B0621A	1	
200202	B0832B	B0631A	2	
200202	B0832B	B0116B	1	
200811	B0833A	B0929A	1	
200217	B0833B	B0625A	1	
300012	B0834A	JA8244B	1	
200806	B0902A	B0816B	1	
200606	B0902B	B0905B	1	
200606	B0902B	B0827B	2	
200912	B0903A	A0832A	2	
200912	B0903A	B0605B	1	
200904	B0903B	A0410A	1	
200604	B0904A	B0613B	1	
200903	B0904B	A0816A	1	
100807	B0905A	A0812B	1	
200606	B0905B	B0902B	1	
200906	B0906A	A0823B	1	
200924	B0906B	B0817A	1	
200924	B0906B	A0810B	2	
200902	B0907A	A0923B	1	
200919	B0907B	B0817B	1	
200901	B0908A	A0922B	1	
200907	B0909A	B0916A	2	
200605	B0910A	B0632B	1	
200920	B0910B	B0605A	1	
200915	B0911A	B0107B	2	
200807	B0911B	B0806A	1	
101004	B0912A	A1014B	1	
200923	B0912B	A0708A	1	
200911	B0913A	A0710A	1	
200926	B0913B	A0327B	2	
200926	B0913B	A0925B	1	
200908	B0914A	B0603B	1	
200908	B0914A	A0812A	2	
200607	B0914B	B0614A	1	
100901	B0915A	A0924B	2	

TITLE		WL	DOCUMENT NO.	SHEET NO.	REV.
Logic Wirewrap			77568131	12	AC
SIGNAL NAME OR NUMBER IDENTIFICATION	ORIGIN	DESTI- NATION	Z LEVEL	NOTES	
200916	R0915B	B0625B	1		
200907	B0916A	A0717B	1		
200907	R0916A	B0909A	2		
200905	B0916B	A0722B	1		
200809	B0917A	B0821A	1		
200614	B0917B	B0606A	1		
200921	R0921B	A0916B	2		
200921	B0921B	B0804B	1		
200910	R0922A	A0813A	1		
200615	R0922B	B0607B	1		
200917	R0923A	B0934A	1		
101003	B0923B	A1017A	1		
200808	B0924A	B0806B	1		
200927	R0924B	JA8004A	1		
200922	B0925A	A0915B	1		
200810	R0925B	B0807B	1		
200925	R0926A	A0825B	1		
101001	R0926B	A1022A	1		
100803	R0927A	A0825A	1		
100302	B0927B	A0308B	1		
100301	B0928B	A0307B	1		
200811	R0929A	B0833A	1		
200922	B0929B	A0707B	1		
200913	R0930A	A0813B	1		
200909	B0930B	A0927B	1		
200918	R0931A	A0702A	1		
100402	B0931B	A0414A	1		
200805	B0932B	B0807A	1		
200803	R0933A	B0827A	1		
100404	B0933B	A0707A	2		
200917	B0934A	B0923A	1		
100404	JA8001A	A1012A	1		
100404	JA8001A	A0411B	2		
100410	JA8002B	A0409A	1		
101020	JA8003A	A0133B	1		
101017	JA8003B	A1028B	1		
200810	JA8004A	A1030B	2		
200927	JA8004A	B0924B	1		
101016	JA8004B	A1029B	1		
100408	JA8005A	A1026B	1		
200914	JA8005A	A0415A	2		
101013	JA8005B	A1028A	1		
101015	JA8006A	A1026A	1		
101014	JA8006B	A1029A	1		
100416	JA8007A	A0101A	1		
100416	JA8007B	A0101A	2		
300016	JA8008A	JA8102B	1		
300017	JA8008B	JA8112B	1		
100409	JA8009B	B0103A	1		
100409	JA8009B	A1012B	1		
101018	JA8010A	A1027A	1		
101019	JA8010B	A1034A	1		

TITLE Logic Wirewrap		WL	DOCUMENT NO. 77568131	SHEET NO. 13	REV. AC
SIGNAL NAME OR NUMBER IDENTIFICATION	ORIGIN	DESTI- NATION	Z LEVEL	NOTES	
100412	JA8011A	A0428A	1		
100414	JA8011B	A0417A	1		
100413	JA8012A	A0417B	1		
100405	JA8013A	A0412B	1		
100415	JA8014A	A0422B	1		
100417	JA8014B	A0134B	1		
300013	JA8101A	A0601A	1		
200620	JA8101B	B0616A	1		
200105	JA8102A	B0132A	1		
300016	JA8102B	JA8008A	1		
200106	JA8103A	B0133B	1		
300019	JA8103B	A0601B	1		
200107	JA8104A	B0132B	1		
200705	JA8104B	B0732A	2		
300006	JA8105A	A1001A	1		
300004	JA8105B	A0521B	1		
300005	JA8106A	A0522B	1		
300002	JA8106B	A0508B	1		
300015	JA8107A	A0801A	1		
300003	JA8107B	A0507B	1		
300001	JA8108A	A0414B	1		
200701	JA8108B	B0729A	1		
300007	JA8109A	A0409B	1		
200702	JA8109B	B0729B	1		
200601	JA8110A	B0613A	1		
200201	JA8110B	A0413A	1		
200602	JA8111A	B0623B	1		
300020	JA8111B	A0634B	1		
200603	JA8112A	B0624B	1		
300017	JA8112B	JA8008B	1		
101005	JA8113A	A1002A	1		
300021	JA8113B	A0633B	1		
300014	JA8114A	A0701A	1		
300018	JA8114B	A0932B	2		
300018	JA8114B	A1032B	1		
200246	JA8201A	B0212B	1		
200247	JA8201B	B0212A	1		
300012	JA8201B	B0134A	2		
200248	JA8202A	B0211B	1		
200249	JA8202B	B0211A	1		
200252	JA8203A	B0207B	1		
200253	JA8203B	B0207A	1		
200226	JA8204A	B0223B	1		
200227	JA8204B	B0223A	1		
200228	JA8205A	B0222B	1		
200229	JA8205B	B0222A	1		
200230	JA8206A	B0221B	1		
200231	JA8206B	B0221A	1		
200232	JA8207A	B0217B	1		
200233	JA8207B	B0217A	1		
200234	JA8208A	B0216B	1		
200235	JA8208B	B0216A	1		

TITLE		WL	DOCUMENT NO.	SHEET NO.	REV.
Logic Wirewrap			77568131	14	AC
SIGNAL NAME OR NUMBER IDENTIFICATION	ORIGIN	DESTI- NATION	Z LEVEL	NOTES	
200236	JA8209A	B0215B	1		
200237	JA8209B	B0215A	1		
200238	JA8210A	B0214B	1		
200239	JA8210B	B0214A	1		
200240	JA8211A	B0213B	1		
200241	JA8211B	B0213A	1		
200244	JA8212A	B0209B	1		
200245	JA8212B	B0209A	1		
200242	JA8213A	B0210B	1		
200243	JA8213B	B0210A	1		
200261	JA8214A	B0205A	1		
200262	JA8214B	B0205B	1		
200116	JA8215A	B0109A	1		
200115	JA8215B	B0109B	1		
200118	JA8216A	B0108A	1		
200117	JA8216B	B0108B	1		
200120	JA8217A	B0126A	1		
200119	JA8217B	B0126B	1		
200112	JA8218A	B0106A	1		
200111	JA8218B	B0106B	1		
200122	JA8219A	B0125A	1		
200121	JA8219B	B0125B	1		
200124	JA8220A	B0127A	1		
200123	JA8220B	B0127B	1		
200140	JA8221A	B0114A	1		
200139	JA8221B	B0114B	1		
100421	JA8222A	A0423A	1		
100422	JA8222B	A0423B	1		
100425	JA8223A	A0429A	1		
100426	JA8223B	A0429B	1		
100427	JA8224A	A0430A	1		
100428	JA8224B	A0430B	1		
200114	JA8225A	B0105A	1		
200113	JA8225B	B0105B	1		
100419	JA8226A	A0421A	1		
100420	JA8226B	A0421B	1		
200261	JA8227A	B0206A	1		
200264	JA8227B	B0206B	1		
100432	JA8228A	A0432A	1		
100432	JA8228B	A0433A	1		
101007	JA8229A	A1004B	1		
101009	JA8229B	A1003A	1		
200141	JA8230A	B0115A	1		
200142	JA8230B	B0115B	1		
300012	JA8233A	B0534A	1		
200125	JA8233B	B0128B	1		
200126	JA8234A	B0128A	1		
300012	JA8234B	B0334A	1		
200128	JA8235A	B0130A	1		
200127	JA8235B	B0130B	1		
300012	JA8236A	B0534A	2		
200129	JA8236B	B0129B	1		

TITLE		WL	DOCUMENT NO.	SHEET NO.	REV.
Logic Wirewrap			77568131	15	AC
SIGNAL NAME OR NUMBER IDENTIFICATION	ORIGIN	DESTI- NATION	Z LEVEL	NOTES	
200130	JA8237A	B0129A	1		
200133	JA8238A	B0112B	1		
200134	JA8238B	B0112A	1		
300012	JA8239A	B0434A	1		
200132	JA8239B	B0111A	1		
200131	JA8240A	B0111B	1		
300012	JA8240B	B0334A	2		
100423	JA8241A	A0427A	1		
100424	JA8241B	A0427B	1		
100429	JA8242A	A0431A	1		
100430	JA8242B	A0431B	1		
300012	JA8243A	B0434A	2		
300012	JA8244B	B0834A	1		
200259	JA8245A	B0208A	1		
200260	JA8245B	B0208B	1		

There is no Section 3

SECTION 4
COMPONENT LAYOUTS,
SMD LOGIC CARDS

The diagrams in this section show the physical placement of the components on each of the logic cards in the SMD. For purposes of this discussion, ICs and transistors are called major components, whereas the resistors, diodes and capacitors associated with those major components are called discrete components. The component identifiers match those shown in the logic diagram set for that card.

MAJOR-COMPONENT IDENTIFICATION

Dual-in-line IC packages (DIPs) are identified by their coordinate grid locations, A1 through E4, as defined in the diagrams section of volume 2 of the SMD hardware maintenance manual. Other major components, including transistors and non-DIP ICs, are identified by a number (which has no location significance), preceded by a mnemonic code such as Q (transistor), AR (amplifier), and so on.

In this scheme, the number in the major component identifier is unique. That is, the non-grid-oriented (non-DIP) major components on a card may be labelled

Q1, Q2, AR3, Q4, AR5, etc.,

but not

Q1, Q2, AR3, Q3...

since the number 3 would be used twice, and that is not allowed in this scheme.

DISCRETE-COMPONENT IDENTIFICATION

Discrete components, in addition to their normal identification such as R1, R2, C1, and so on, are prefixed by an associative code that reflects their application, as explained below.

POWER SUPPLY COMPONENTS

Discrete components (on a card) that are associated with the power supplies carry an

associative code of 98 or 99:

98C1, 98R1, etc: -V supply
99R1, 99VR1, etc: +V supply

└──┬──┘
 Associative code Component ID

DIP COMPONENTS

Discrete components associated with the grid-oriented ICs carry the alphanumeric grid coordinates as their associative code. The first character, therefore, is always a letter:

A1R1, A1CR1, etc.

└──┬──┘
 Associative code

Usually the associative code also implies the approximate physical location of the discrete component, but this is not a hand and fast rule.

NON-DIP COMPONENTS

Discrete components associated with transistors or other non-grid-oriented major components carry the "uniqueness" number of that major component as their associative code:

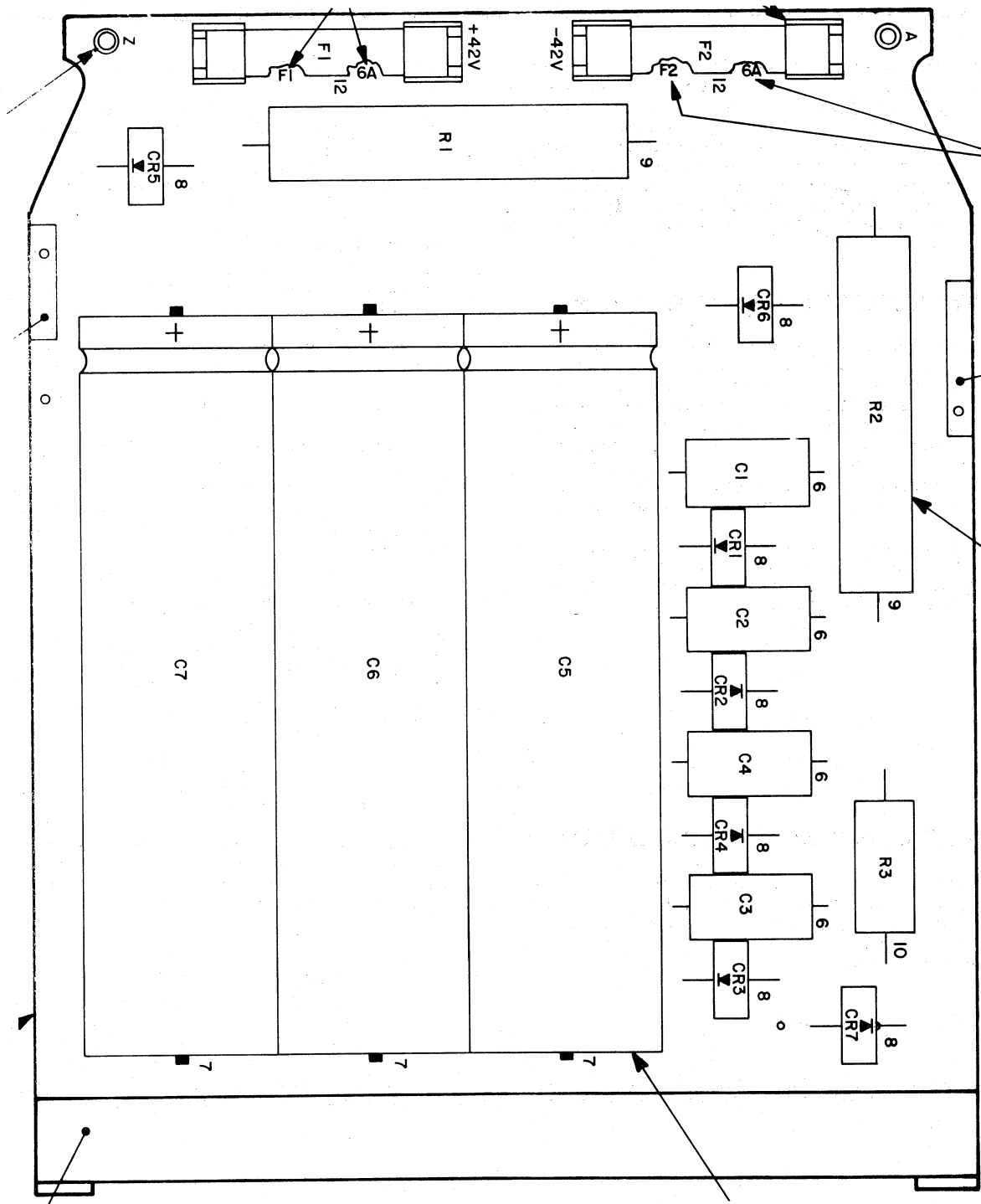
1R1, 3C1, etc.

└──┬──┘
 Associative code

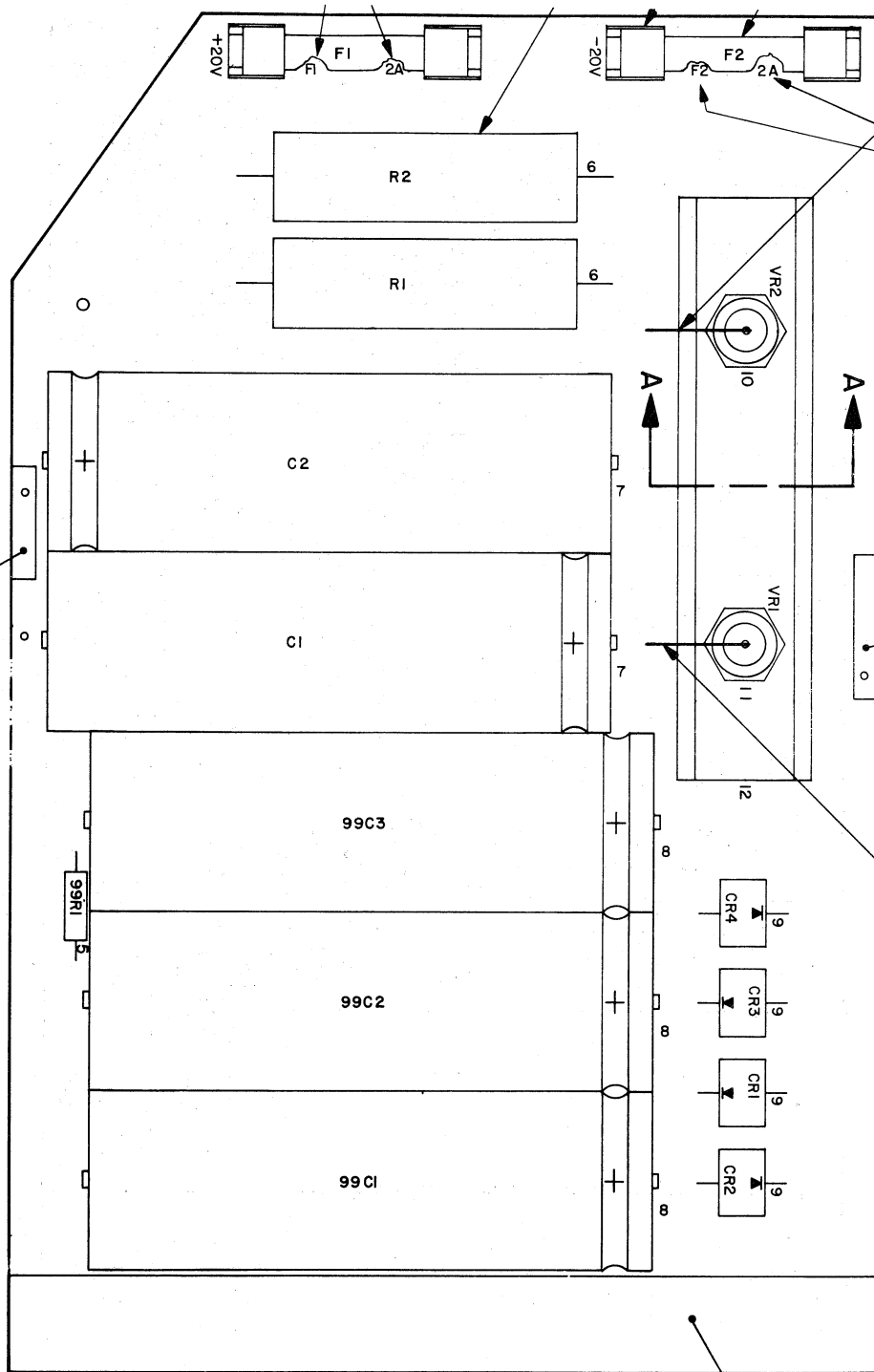
Again, the associative code does not necessarily mean that the discrete components will be physically clustered around the corresponding major component.

NOTE

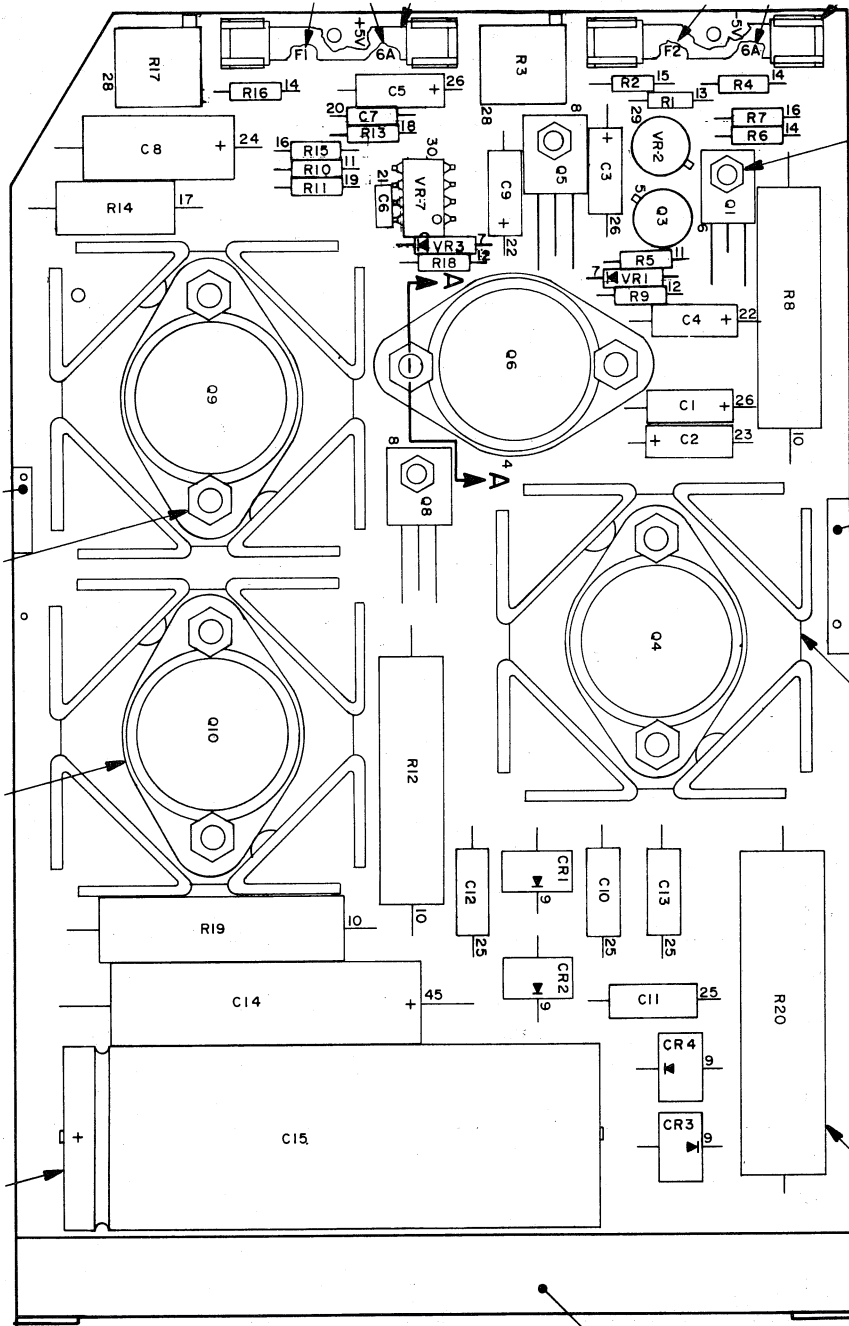
Numbers adjacent to the components are "find" numbers from the parts list used during card assembly. Disregard them. Also, note that the grid-oriented major components carry a U-prefix.



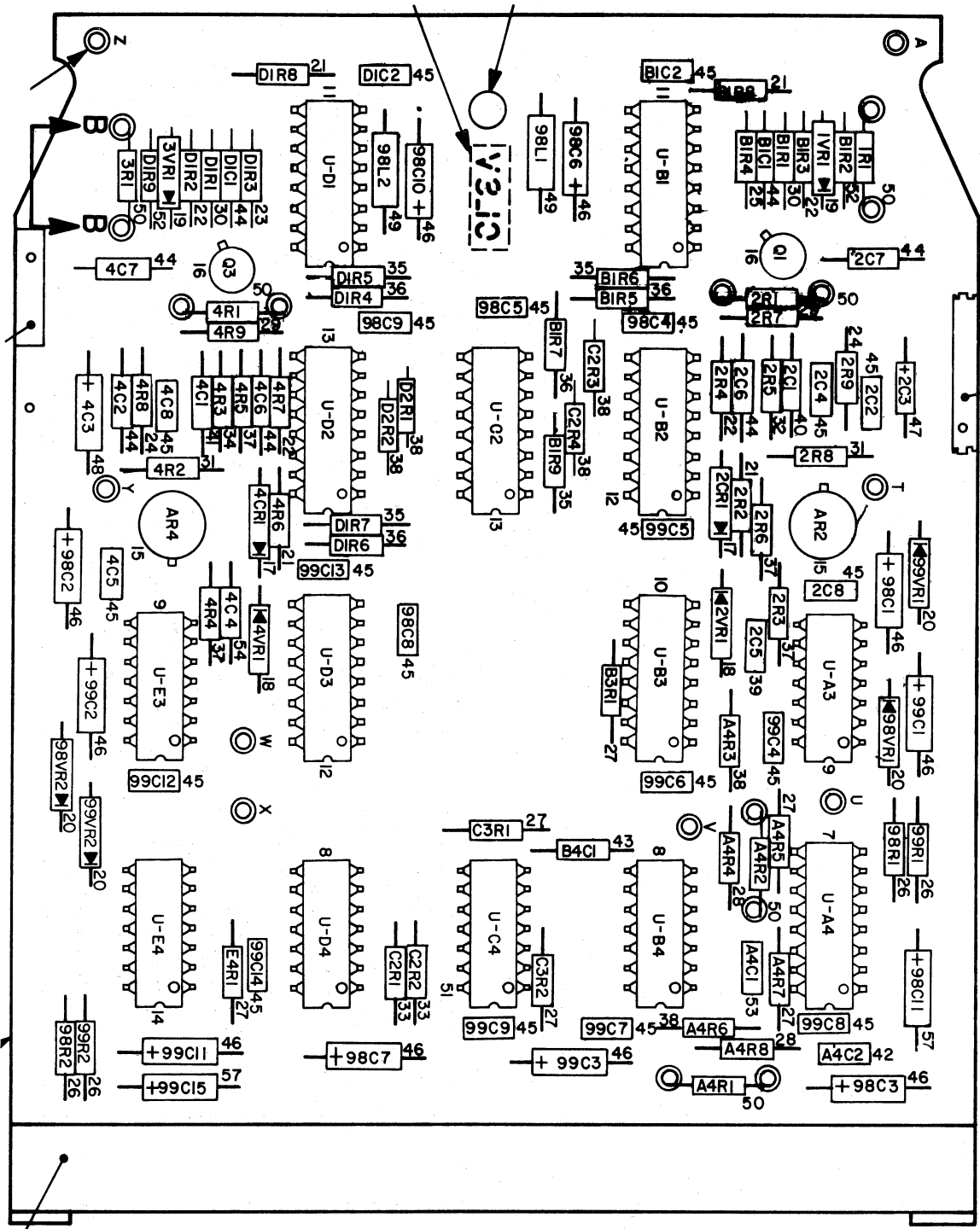
A1A01 (5SJV)



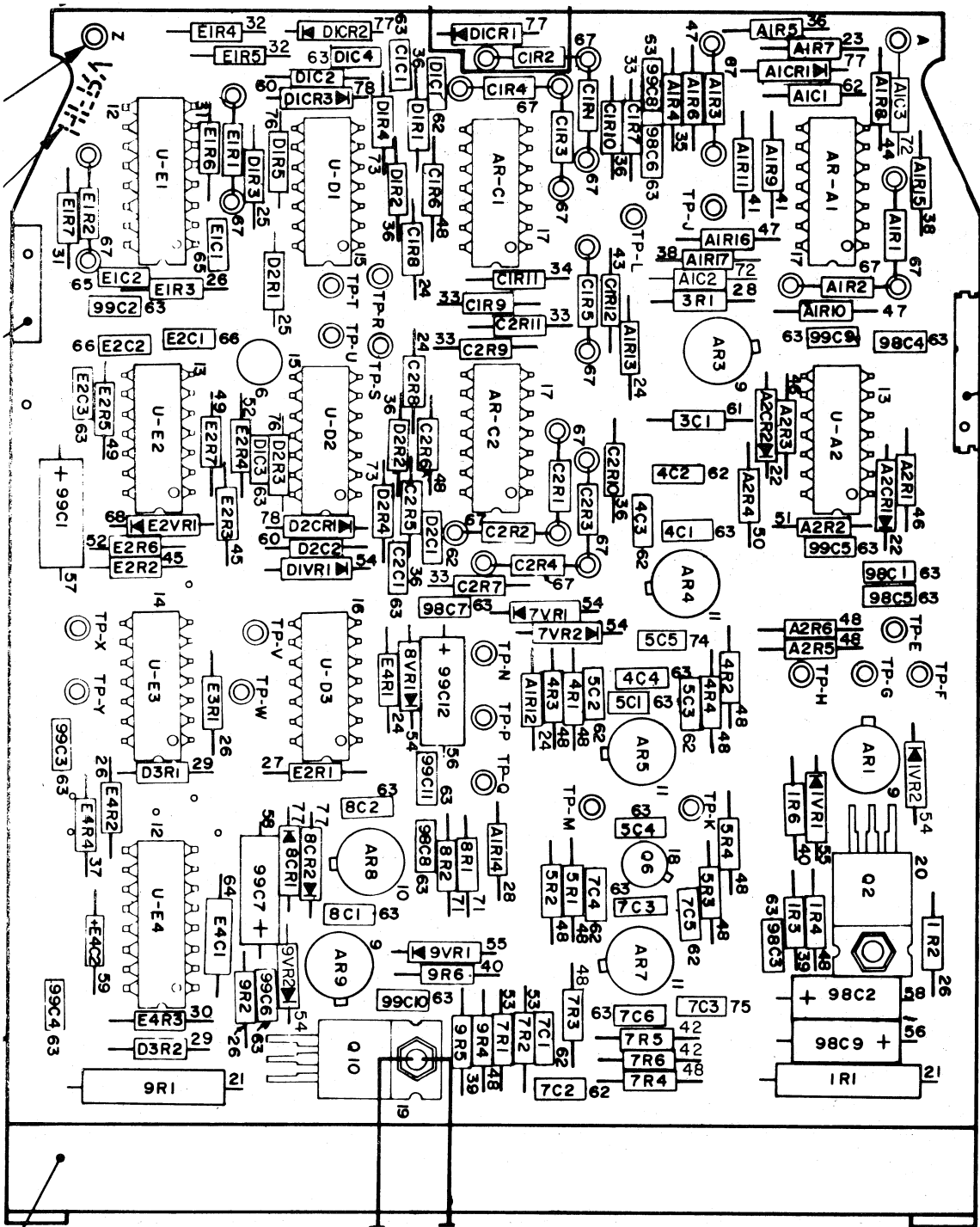
A1A02 (5SKV)



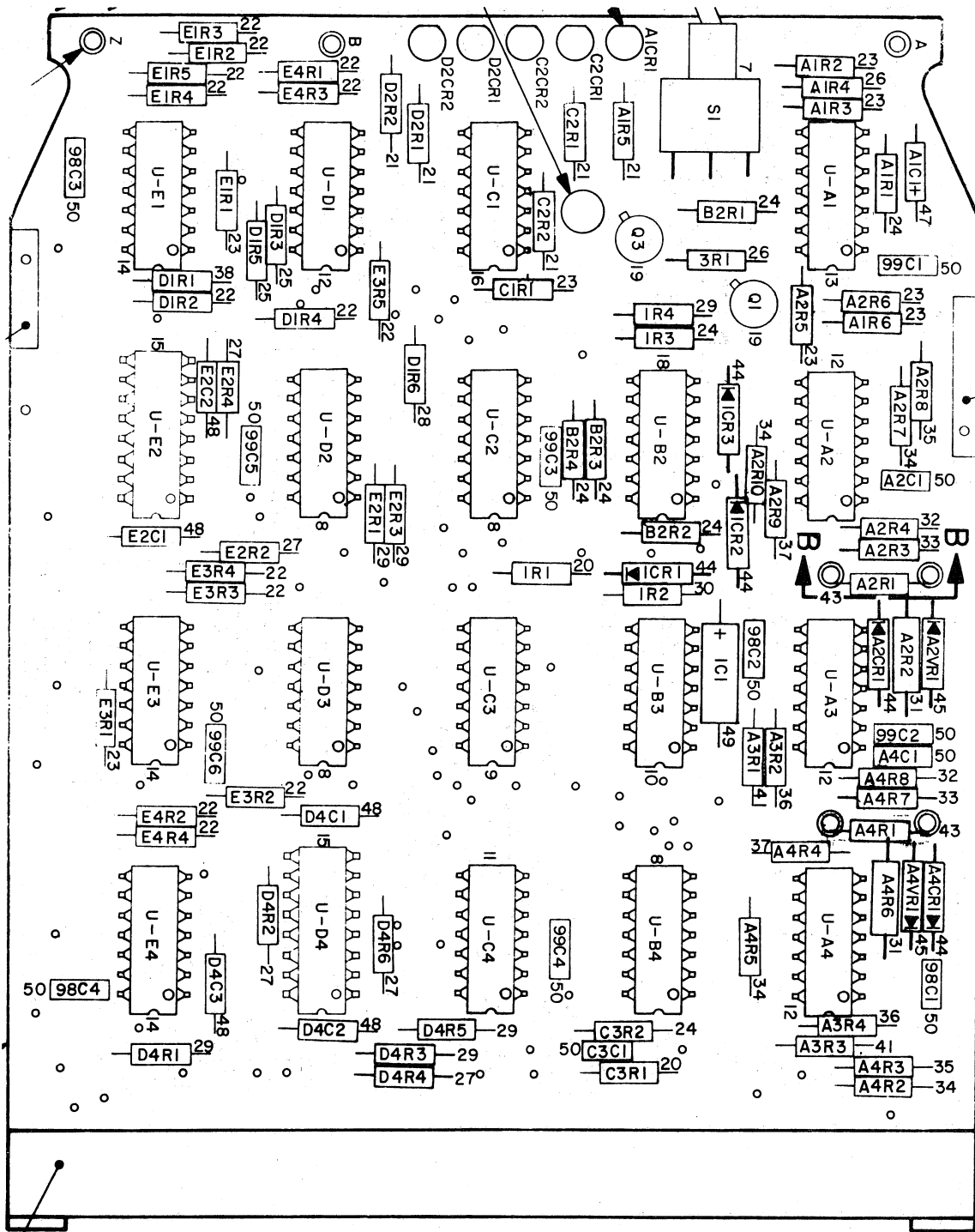
ALA03 (ASHV)



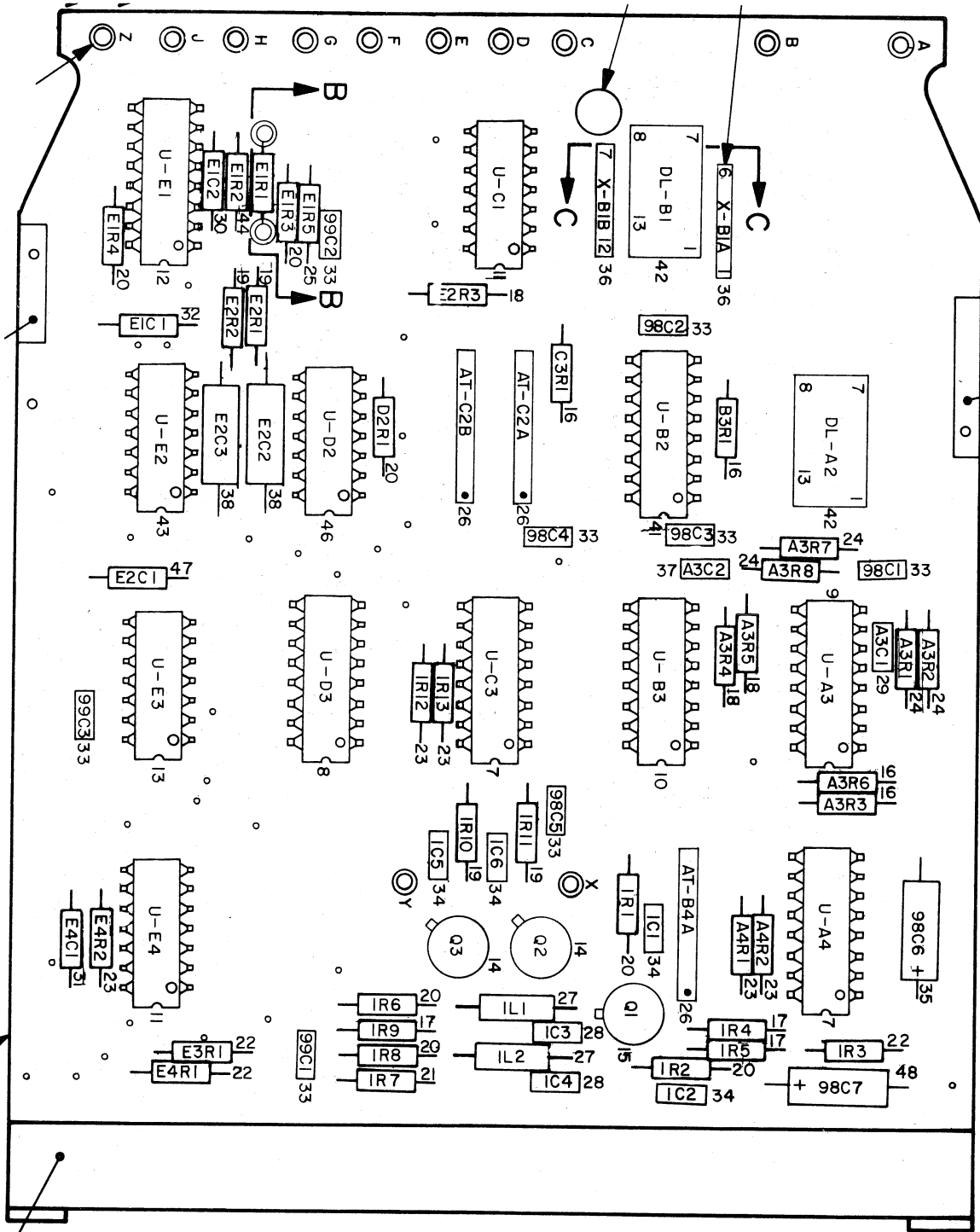
A2A01 (CLSV)



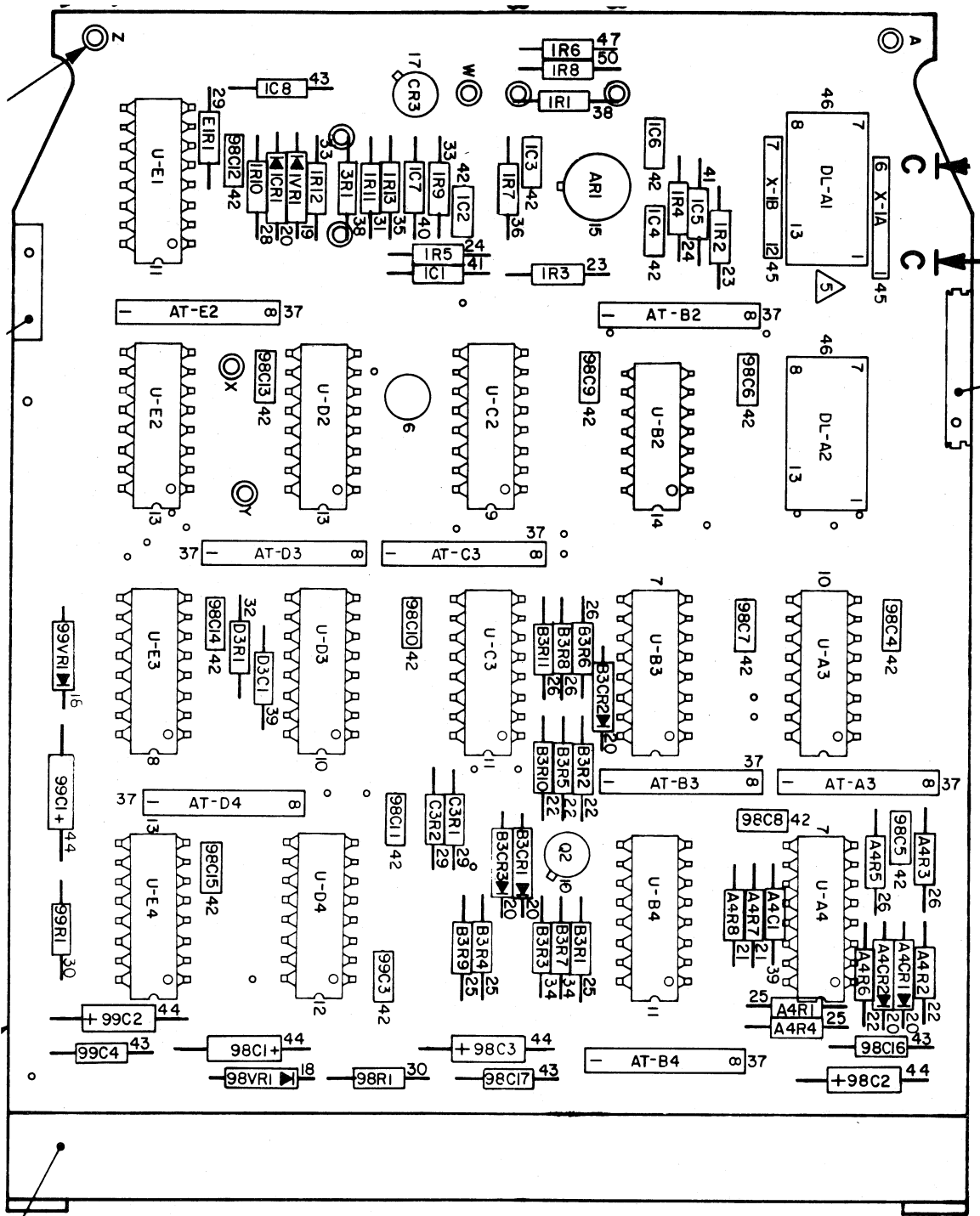
A2A03 (HFRV)



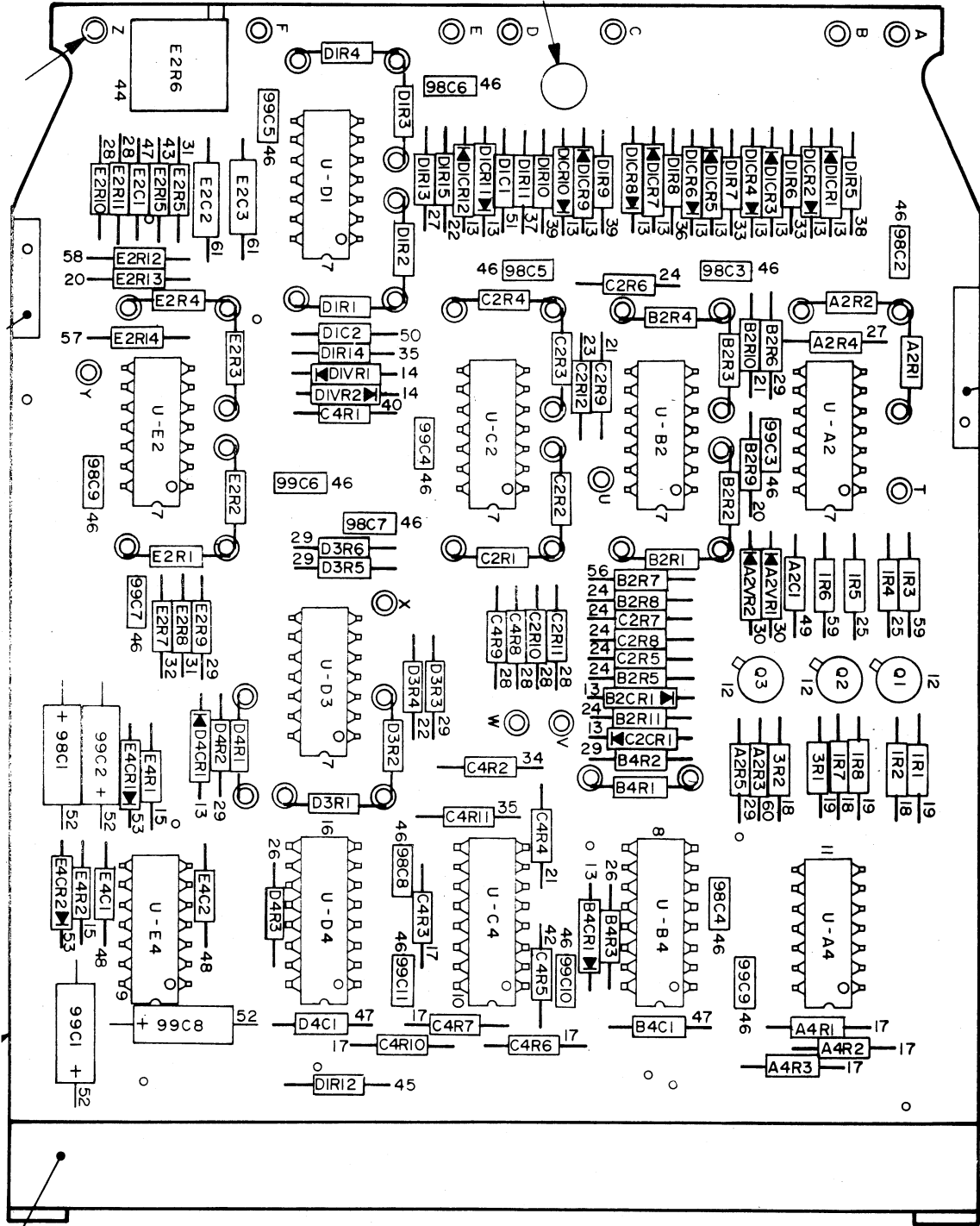
A2A04 (EKFV)



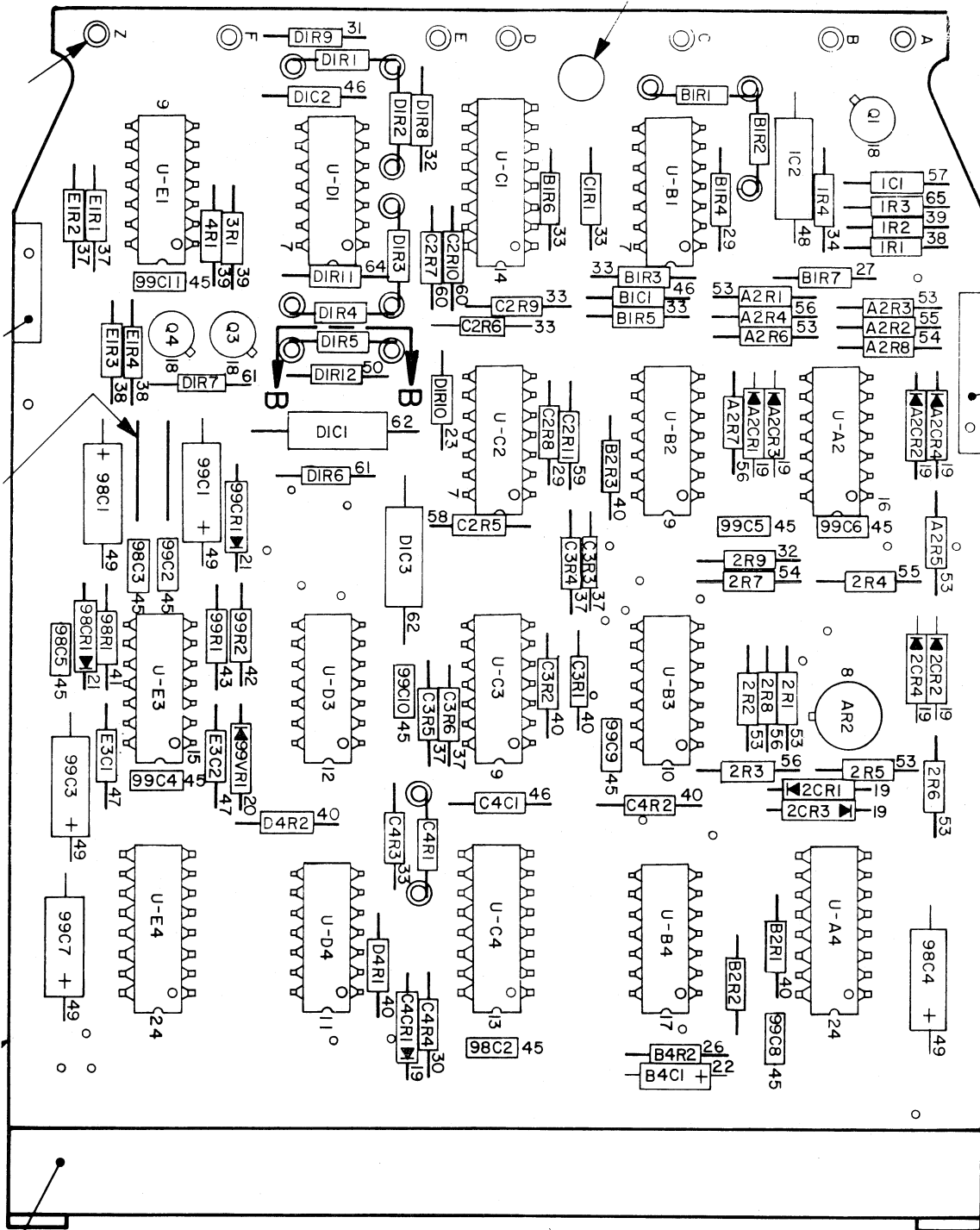
A2A05 (HLRV)



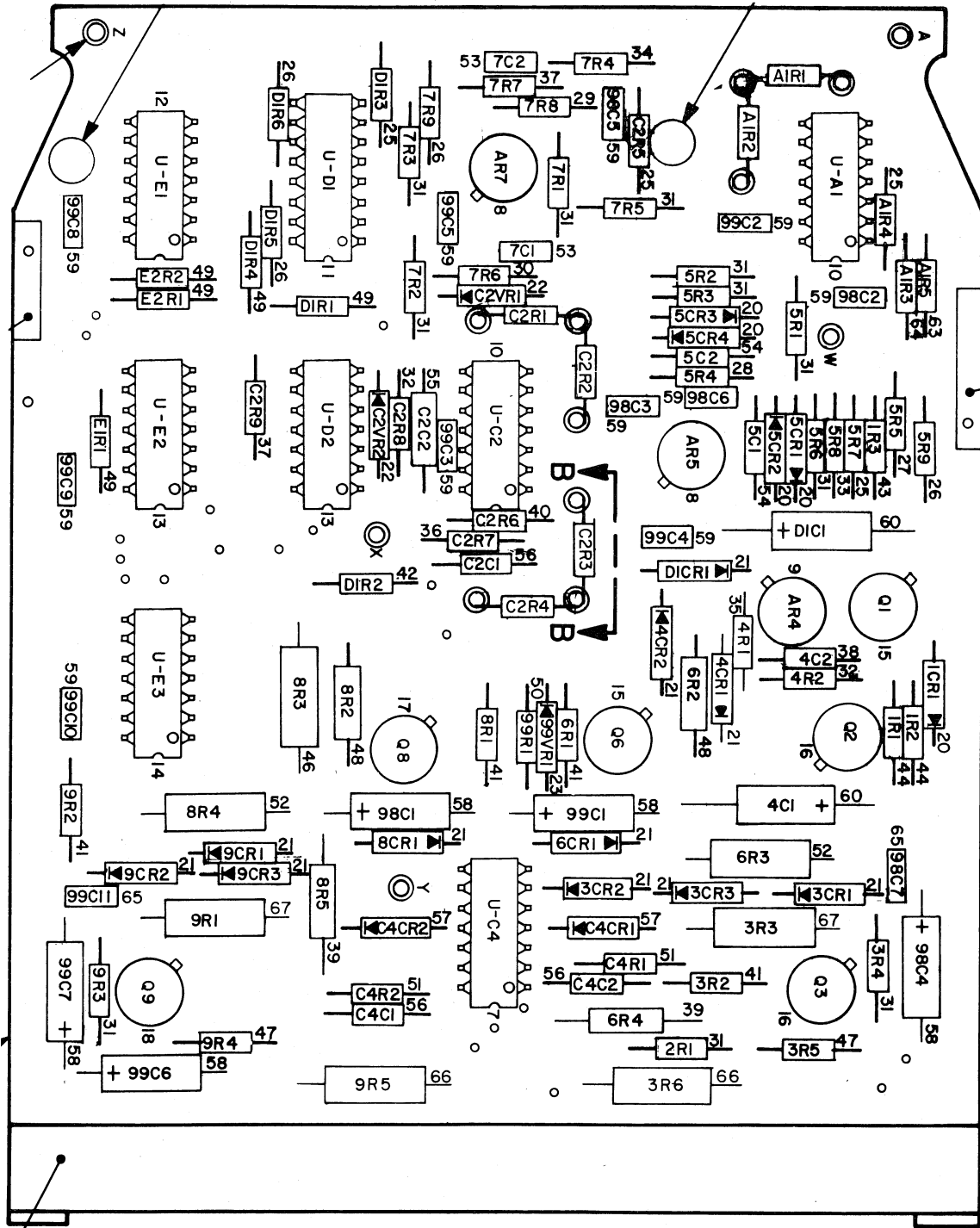
A2A06 (BLZV)



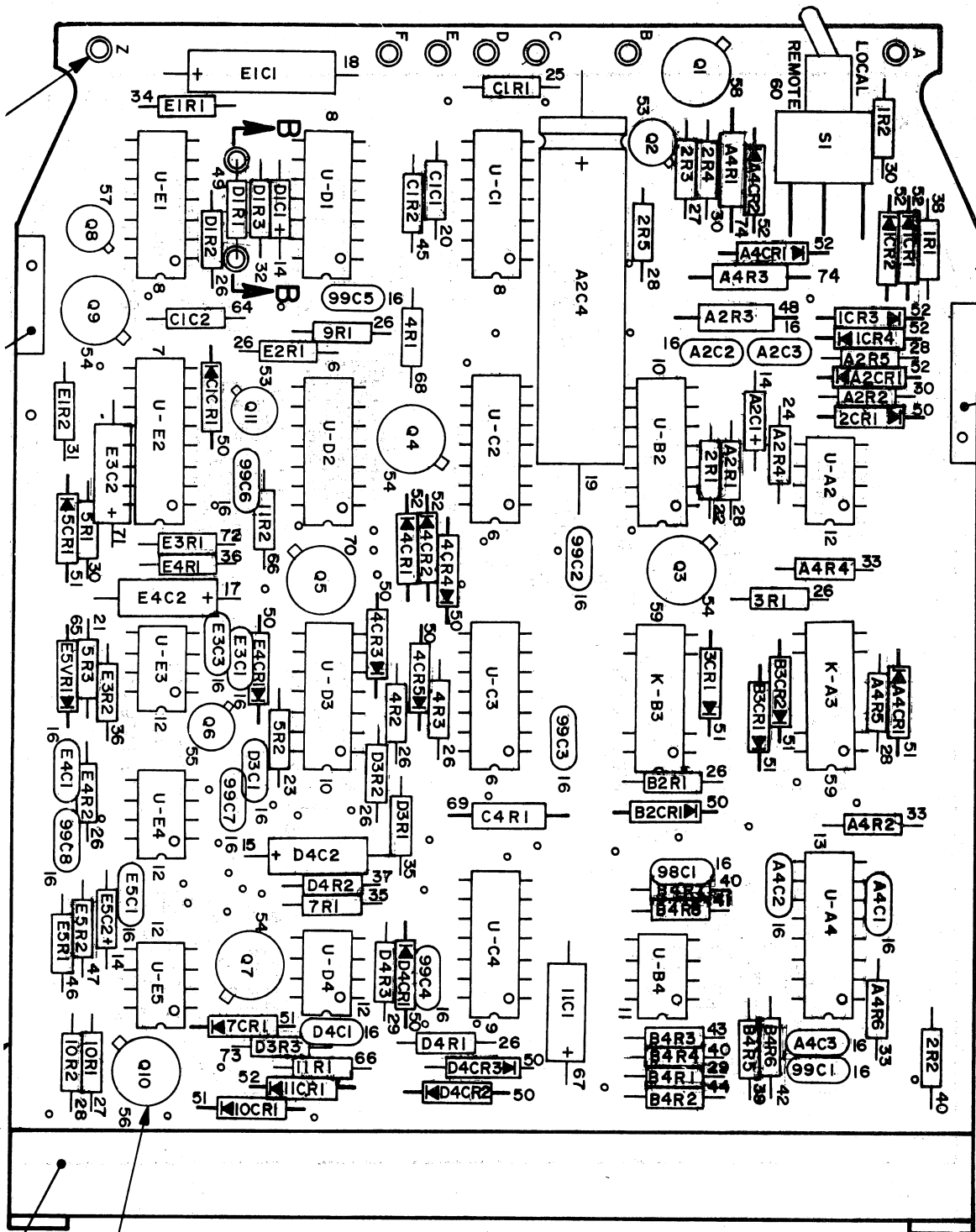
A2A07 (JLQV)



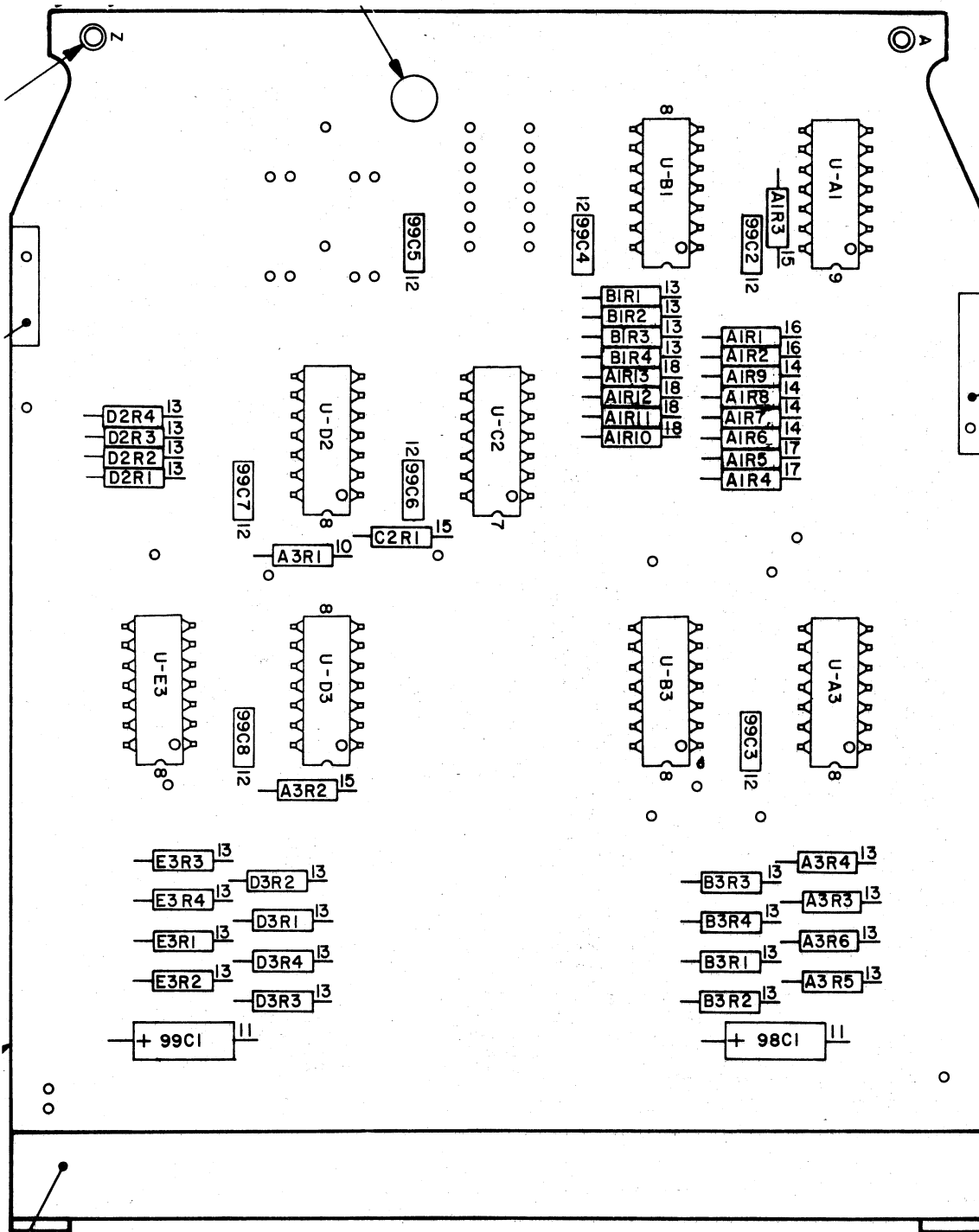
A2A08 (ELUV)



A2A09 (FLPV)



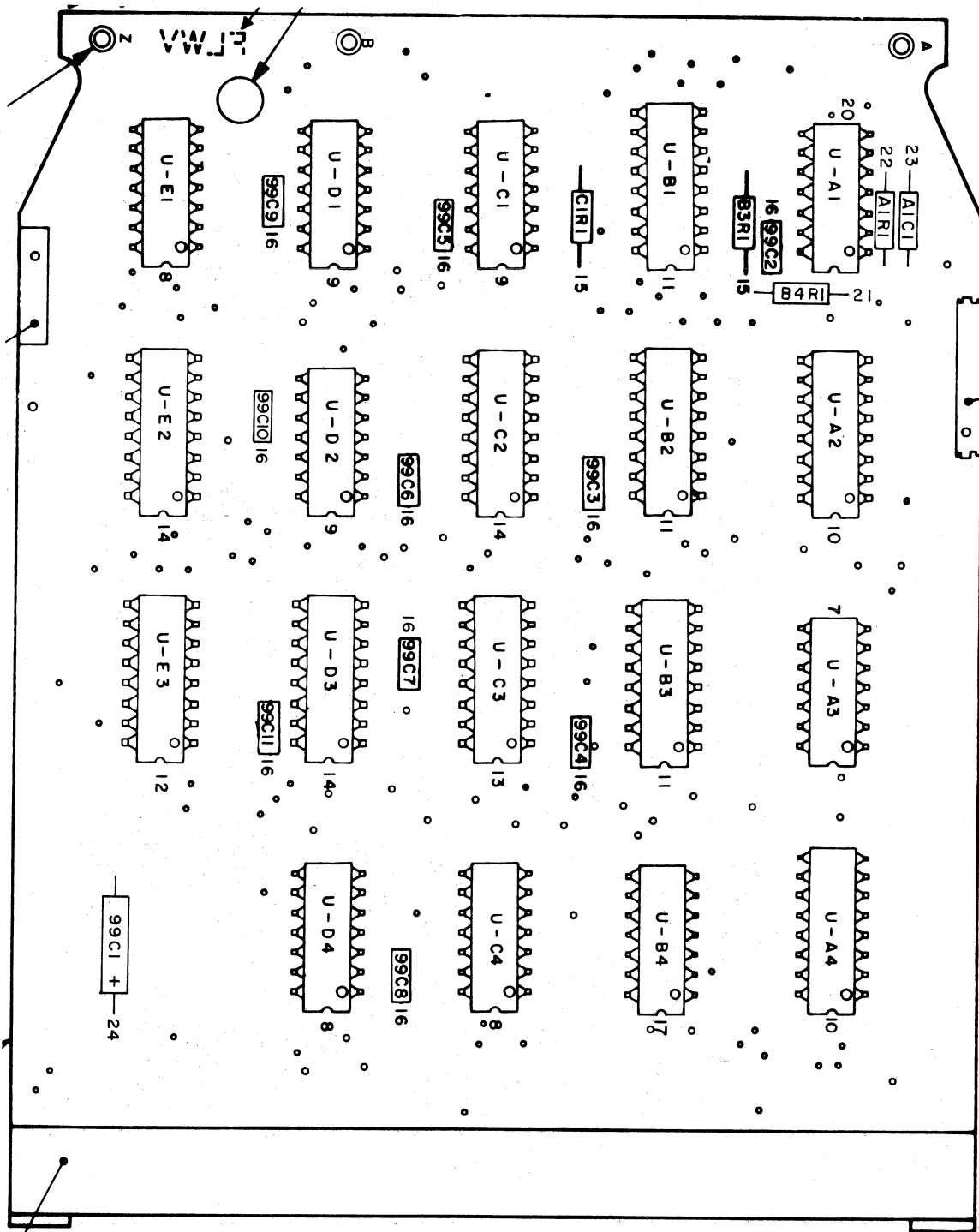
A2A10 (ASGV)



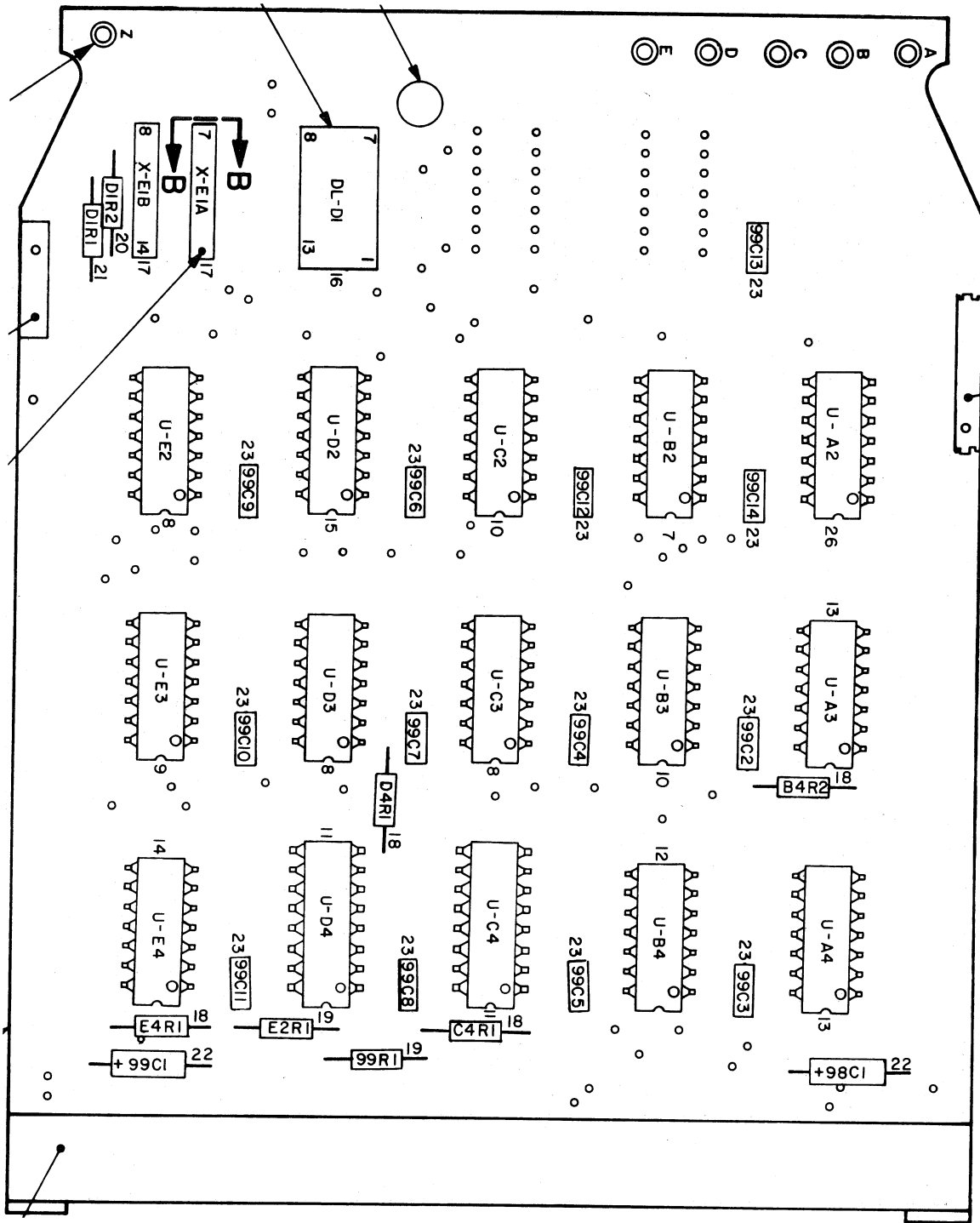
A2B01 (HTVV)



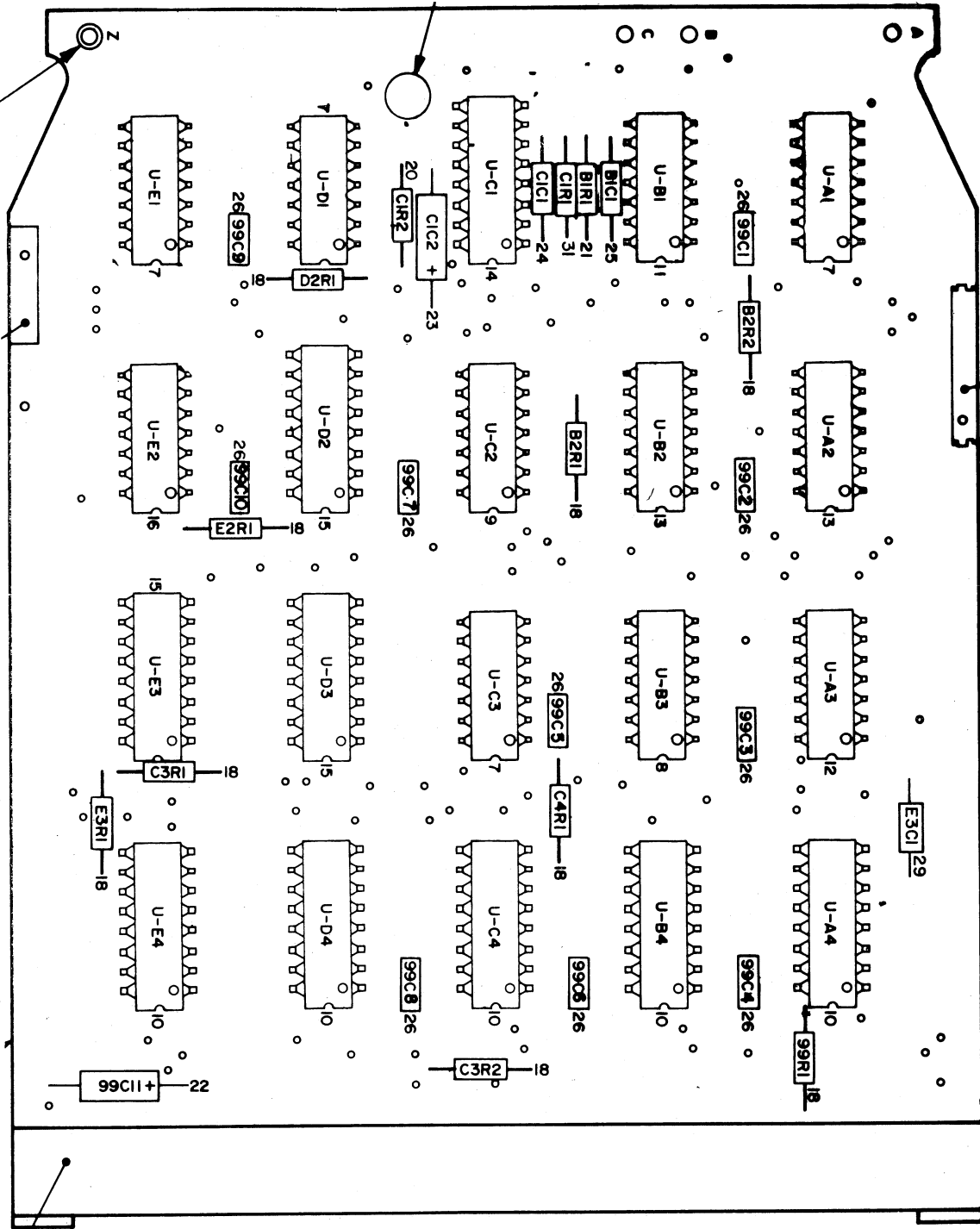
A2B02 (HRVV)



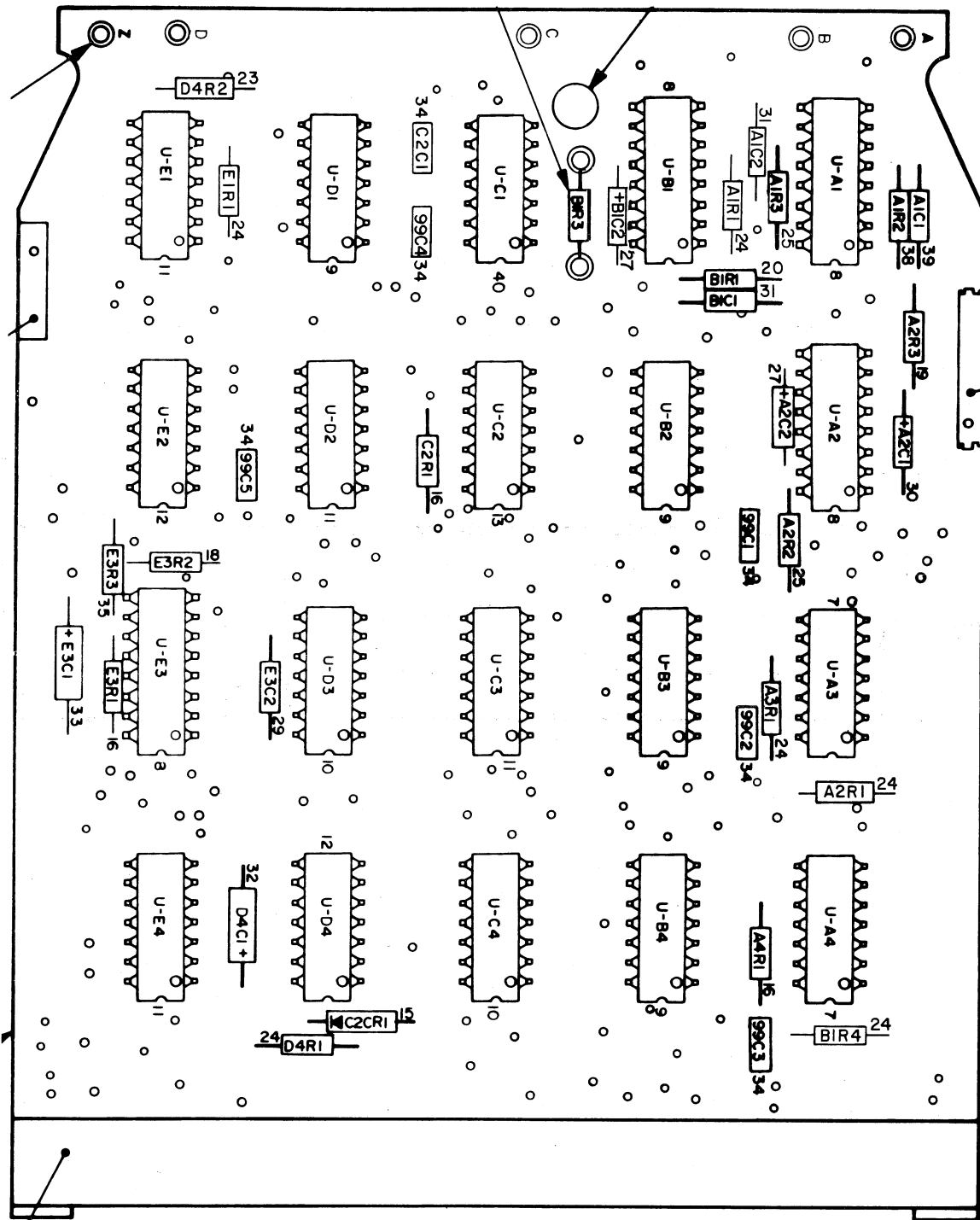
A2B06 (FLWV)



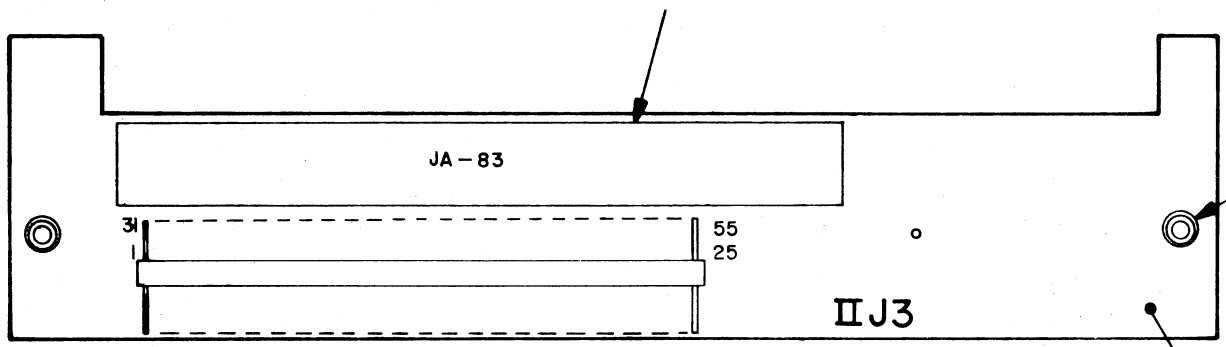
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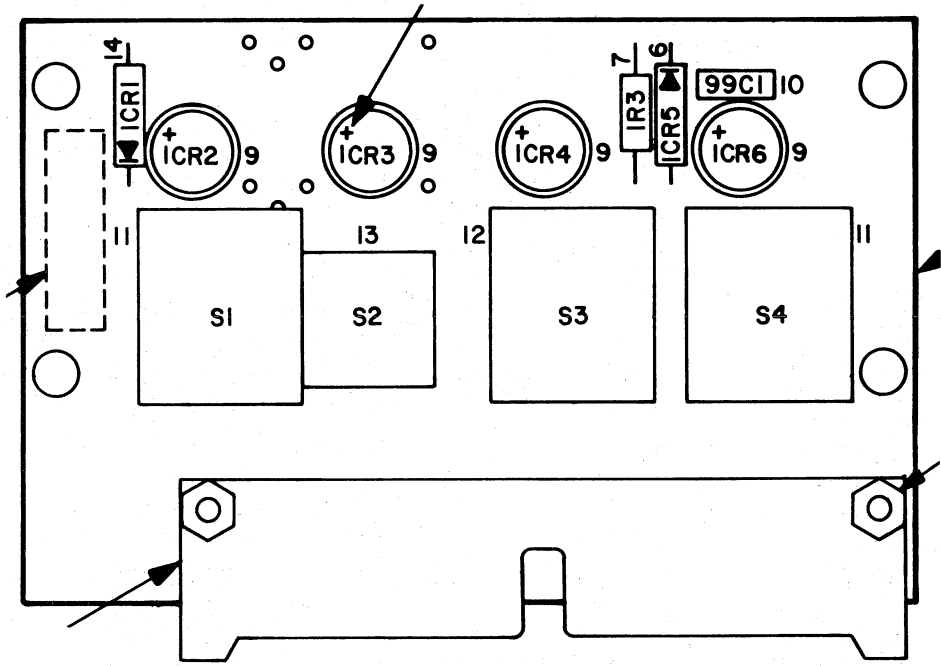
A2B08 (ELTV)



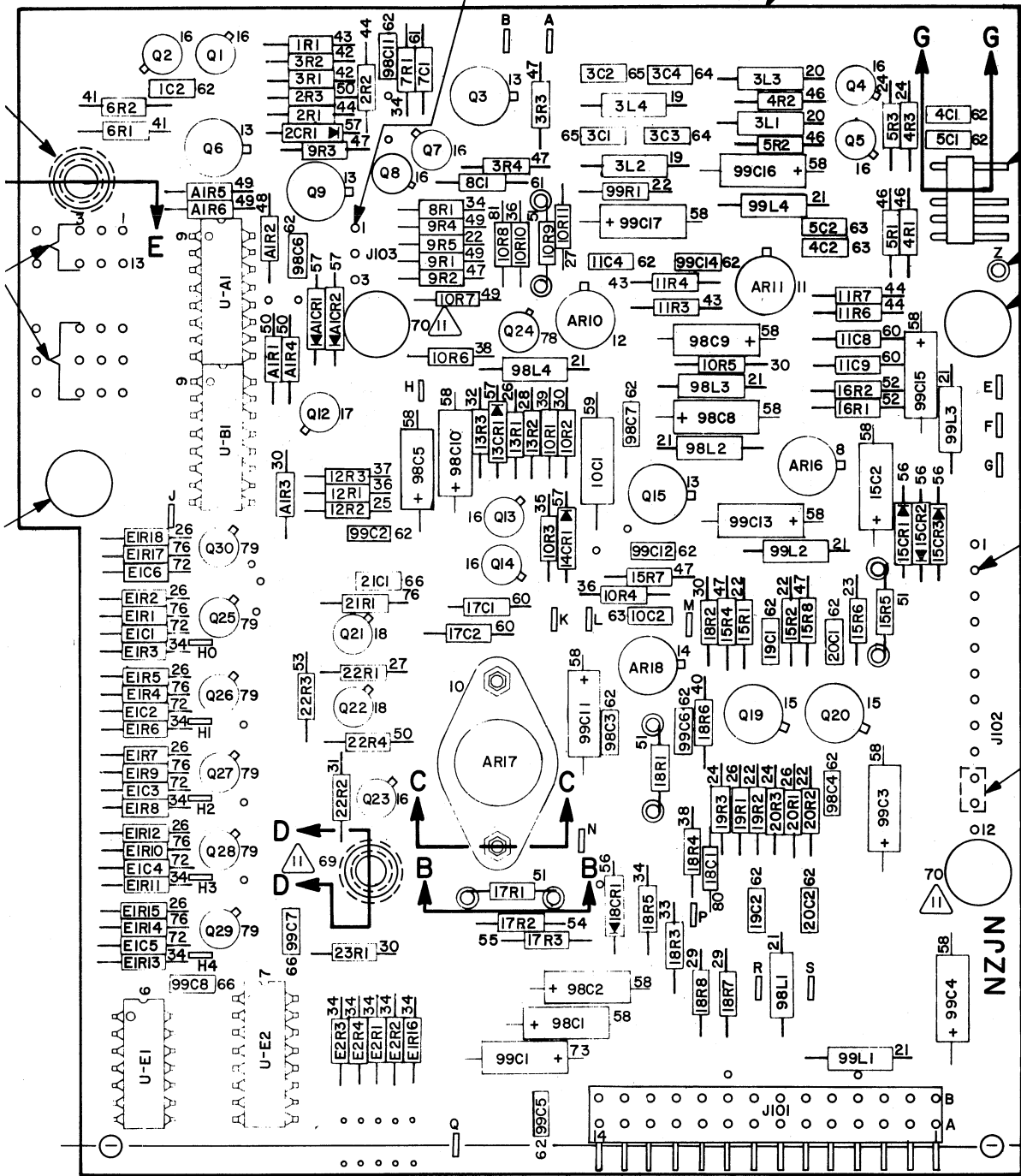
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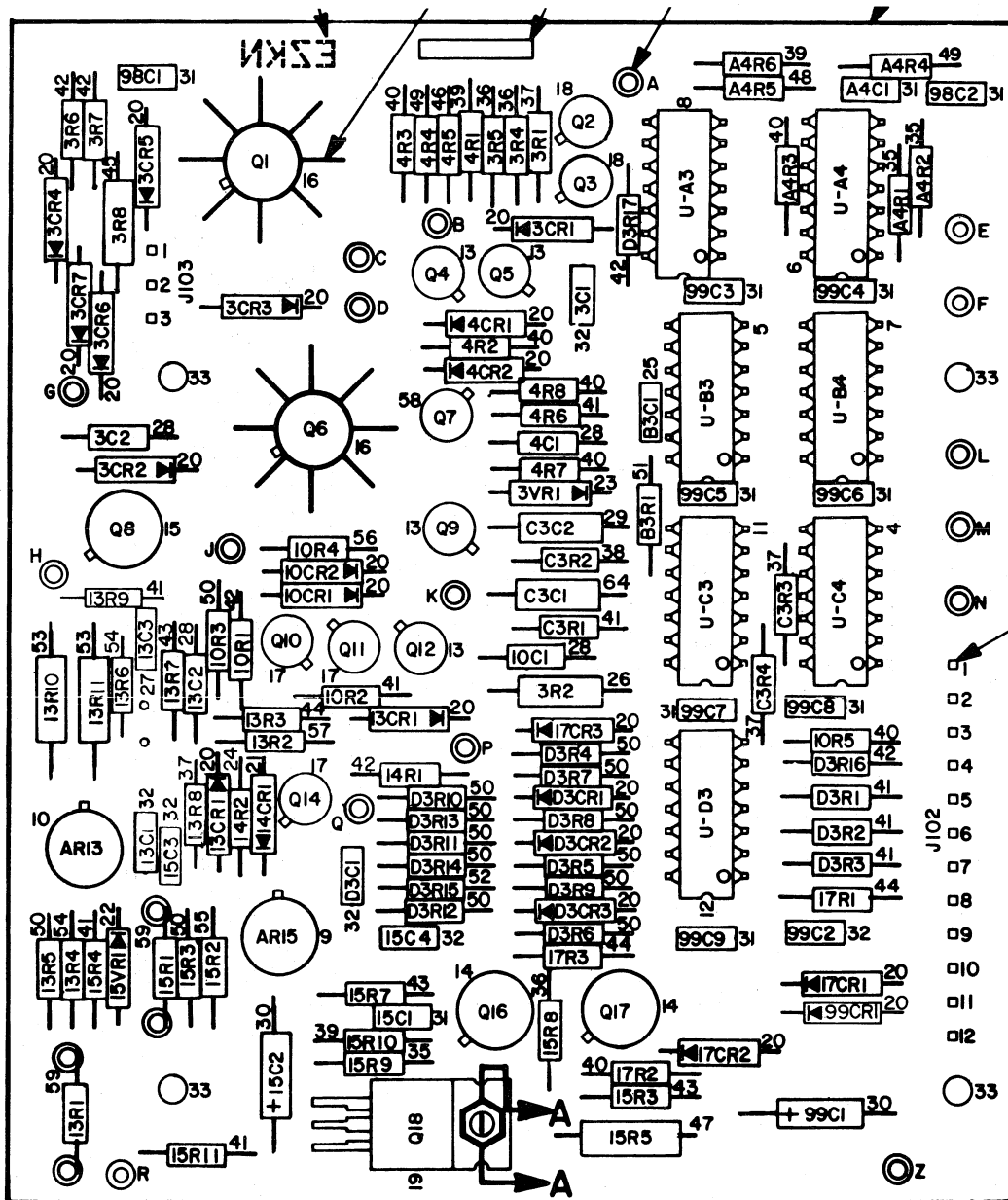
A2C1 (DXYV)



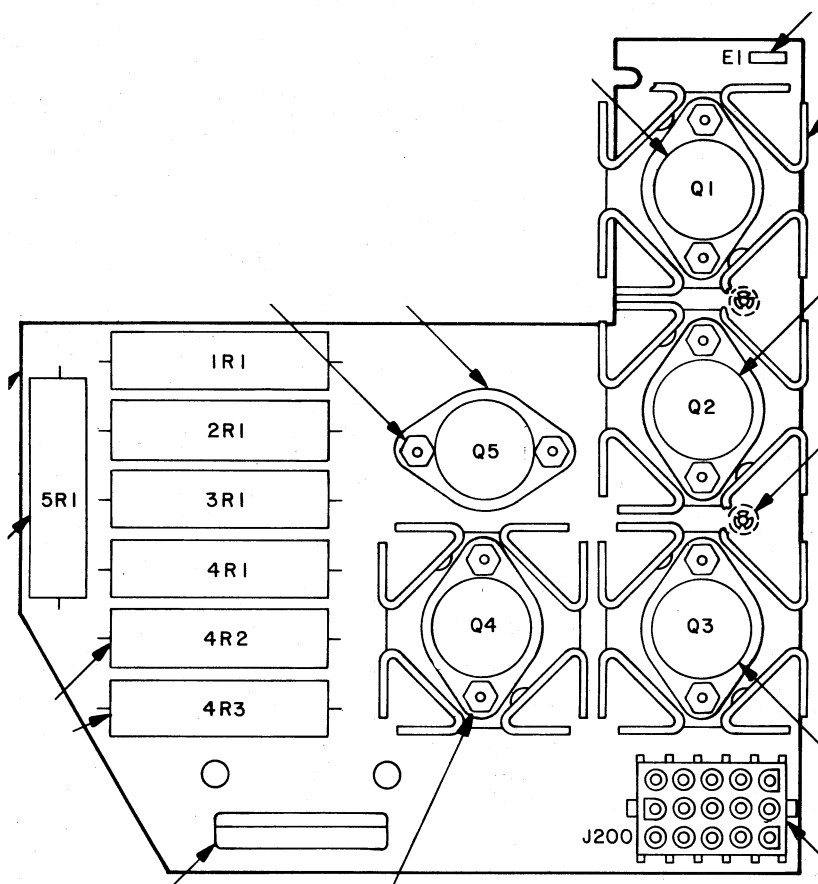
A3A01 (HZYN)



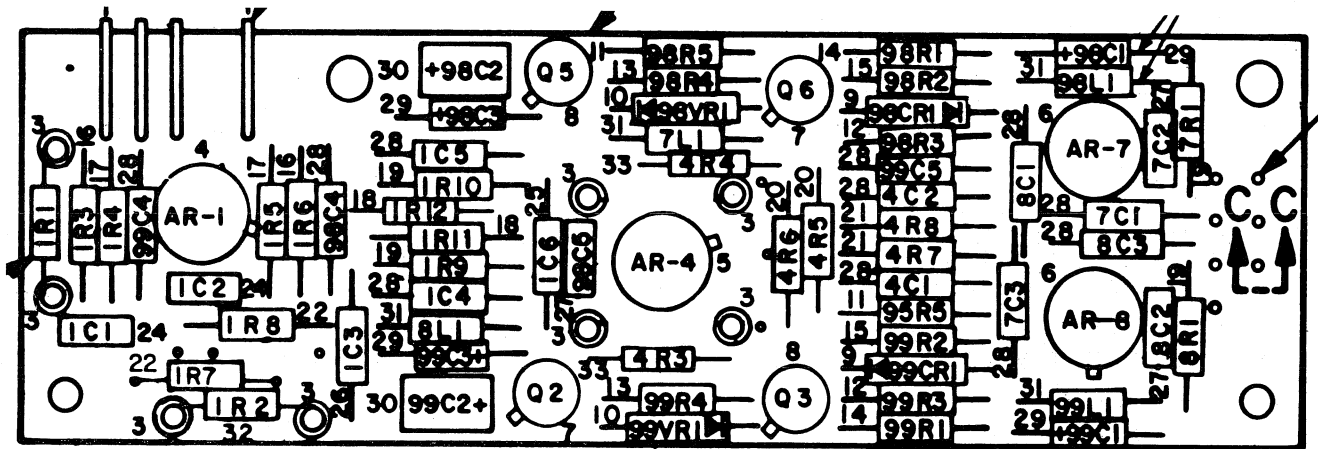
A3A02 (NZJN)



A3A03 (EZKN)



A3A04 (5VTN)



A3A05 (FZQN)

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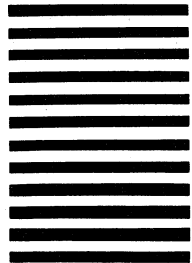
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