DISK CARTRIDGE STORAGE

MACHINE LEVEL CONTROL RECORD

MACHINE TYPE DCS SERIAL No. 10618 SUFFIX LEVEL E/C 415447

B/M No.	E/C No.	D/A No.	DESCRIPTION	INSTALLED DATE	INITIAL
2166560	415352		Ins. SLT Panel Rework	11-1	PEH
2166561	415368		Ins. Functional Interlock Changes	11-1	"
2166562	415372		Ins. SLT Panel Rework	12-2	"
2166565	415374		Ins. Power Sequence Improvements	12-3	"
2167003	415388		Ins. Gate Asm. Revision	12-3	"
2166567	415408		Ins. Improved Read Amp. & Access Card	12-29	"
2166568	415419		Ins. Transducer Rewiring	12-29	"
2167006	415407A		Replace Head Load Springs	12-29	"
2167007	415335A		Replace Preload Bearing	12-29	"
2167009	415398		Remove Interlock Handle Spring	1-11	"
2166565	415374A		Correct Errors in EC 415374	3-9	"
2166569	415416		Replace ALDs & Supply 48v Terminal	3-9	"
2167011	415393		Ins. Filter Asm.	4-5	"
2167008	415423		Ins. Head Load Plug Retainer	4-5	"
2167005	415386		Ins. Transducer Locking Block	4-6	"
2166570	415433		Ins. Tachometer Capacitor	5-27	"
2166570	415433B		Ins. SLT Panel Rework (Corrects 415433)	7-14	"
2166572	415444		Ins. Access Logic SLT Card	7-14	"
2167024	415477		Replace Door Opener	7-22	"
2167102	421C01A		Replace Defective Spindle	7-22	"
2166573	415447		Ins. Interlock Compatibility	8-5	"
2167027	421102A		Replace Disk Guide	8-10	"
2167023	415379C		Replace Card Retainer	9-26	"
REA-1316787			Update SLT Board	10-8	"
	421029		new K2 card	6-6-71	RS
2251960	420400		DET ADT FILE.	1-10-91	E.N.
2166868	421011A	ON EC 415738	New Head clamp.	1-10-91	E.N.
2251947	421043		Cartridge light Improvement.	1-10-91	E.N.
2251958	421047		CE Head Load.	1-10-91	E.N.
2251980	421057		capacitor	9-9-91	RS
	421063		LOGICS	12/11/91	GC

ANY SIGNIFICANT REPLACEMENT OR REMOVAL SHOULD BE NOTED AND DATED.

P/N 2219161
SHEET 0 OF 4

IBM

FIELD ENGINEERING
INSTALLATION INSTRUCTIONS

MACHINE TYPE DISK CARTRIDGE STORAGE

ENGINEERING CHANGE HISTORY			
E/C NO.	DATE	SHEET	NO.
415416	12/30/65		
415438	23MAR66	1-4	

23 HOLE PUNCH FOR INSTALLATION BINDER

UNIT INSTALLATION INSTRUCTIONS
IBM DISK CARTRIDGE STORAGE

ENG. DATE	12/30/65	23MAR66				
CHANGE NO.	415416	415438				

NOTE: Do the following steps in the sequence given unless otherwise noted. For adjustment procedures consult the F.E. Maintenance Manual.

A. Unpacking

1. Remove packing. Check machines for possible shipping damage.
2. Inventory the parts in the CPU shipping group.
3. Remove shipping braces, etc.

B. Baseplate Grounding Check

1. Remove ground wire at voice coil.
2. Remove wire from DC terminal 1-4 or 5-4 (machines prior to Serial #00050) and frame ground.
3. Measure resistance between the base of the file and the CPU or frame. The reading should be 5 megohms or higher.

   (The baseplate is the large aluminum casting on which the access mechanism is mounted. It is normally grounded at the point only by means of a lead connected to the gate DC terminal.)
4. Replace wires to connector when finished with measurement.
5. If no extra grounds exist, continue.
6. Repeat item B for each module.

C. Cabling to CPU or FCU

1. Remove all AC power to CPU/FCU.
2. Install AC cable between CPU/FCU ard file #1. Plugging one end into the FCU AC plug provided and connect the other end to AC terminal block TB-4 (AC box) or TB7 on machines prior to Serial #00050.
3. Install DC cable between CPU/FCU. Connect to TB1 or TB5 (for machines prior to serial #00050).

D. Mechanical Checks

1. Check head load springs for proper seating against R/W heads. Check that arm clamps are snug.
2. Check the R/W head plugs for no loose connectors.
3. Check transducers for no loose connectors.
4. Check terminal voice coil and tachometer for no loose terminals or shorts.
5. Check motor drive belt for proper tension and tracking.

6. Check that SLT cards and paddle cards are securely plugged in the gate.

7. Repeat steps D1 - D6 for all disk storage drives being installed.

E. Power Check (Disk Pack Off)

1. Check voltage and cycles on all file units being installed to insure they match the CPU or FCU.

2. Check the following voltages with AC power on FCU or CPU. Adjust if necessary.

Voltage	TB1/TB5 Terminal No.	Tolerance	Source
+48	5	± 6%	FCU/CPU
+ 6	3	± 4%	" "
+ 3	1	± 4%	" "
- 3	2	± 4%	" "

3. Check the operation of all fans.

4. Repeat steps E2 and E3 on all files being installed.

F. Head-Disk Check (Power Off)

1. Inspect CE disk cartridge for shipping damage.

2. Vacuum entire base plate and clean.

3. Check R/W heads for damage.

4. Check adjustment of the head unload mechanism; see F.E. Maintenance Manual.

5. Mount CE disk cartridge

6. WARNING: Do not let heads load during this step. Carefully move carriage forward into disk cartridge.

7. Check closely for interference between heads, head cables, and disks. Move the carriage all the way to positive stop.

8. Restore the carriage to the fully retracted position.

9. Check for proper clearance of the index transducer to the slotted bottom disk by rotating disk.

10. Repeat steps F2-F9 on all files being installed.

G. File motor and head loading check

1. Mount CE disk cartridge and turn on the motor Start/Stop switch.

2. Check the following items:

   a. Pack motor starts.

   b. When heads are loaded use flashlight to check that head cables, etc., are clear of disks. Note: Head load delay circuit approx 90 sec.

   c. Carriage is detented at track 000.

   d. Ready light is on. (in CPU)

H. Head Unloading Check

1. While watching the heads on the DCS, turn the file off. The heads should unload immediately.

2. If the heads do not unload at once, before the disks slow down appreciably, determine and eliminate the cause of this failure before proceeding, then power back up and repeat step 1 above.

3. Repeat Sections G and H above on all files being installed.

4. With all file motors on, turn system power off. All motors should turn off, all heads should unload.

I. Head Alignment Check

Notice: All heads must be checked at installation to insure interchangeability of disk packs. Refer to F.E. Maintenance Manual for procedure.

(Note: Set scope and heads as if to align heads. Allow 30 minutes warm up time. Heads can be checked by applying slight pressure on carriage in both directions and viewing the scope output. The amplitude must not vary more than 25% of the optimum level. see figure in CE Maintenance Manual).

J. General Checks:

Run diagnostics to check the operation of files, FCU and meters.

2	3	4	5	6	7

LISTING BY PAGE SEQ	PAGE TITLE	PAGE NO.	PAGE P/N	DATE	ENG CHNG.
XA000	1.44 MC OSC WRITE SELECT AND SAFETY	XA011	2199521	NOV 68	421063
XA001	ACCESS LOGIC AND CONTROLS	XA031	2199523	NOV 67	421047
XA011	BASEPLATE ELECTRONICS	XA101	2199575	NOV 68	421063
XA012	BLOCK DIAGRAM	XA110	2199580	NOV 67	421047
XA013	CPU INTERFACE	XA061	2199526	NOV 67	421047
XA021	INDEX PAGE	XA000	2199571	NOV 68	421063
XA031	INTERLOCK HEAD LOAD	XA052	2199567	NOV 68	421063
XA041	LINE DRIVERS AND TERMINATORS	XA062	2199566	NOV 67	421047
XA042	READ AMPLIFIER AND DATA SEPARATOR	XA021	2199522	NOV 67	421047
XA051	SOCKET LISTING	XA001	2199527	NOV 68	421063
XA052	SOCKET LOCATION AND CABLE GUIDE	XA081	2199573	NOV 67	421047
XA061	TACHOMETER AMP AND DETENT SELECT	XA041	2199524	NOV 68	421063
XA062	TRANSDUCER INTERLOCK	XA051	2199525	NOV 67	421047
XA081	VOICE COIL BRIDGE	XA042	2199565	NOV 67	421047
XA101	WRITE DRIVER AND HEADS	XA013	2199563	NOV 67	421047
XA110	WRITE TRIGGER AND SELECT	XA012	2199564	NOV 67	421047

A
B
C
D
E

DATE	EC NUMBER	DATE	EC NUMBER
SEE INDEX CARD		NOV 67	421047
DEC 66	421025	15JUL68	421057
JAN 67	421029	NOV 68	421063
FEB 67	421032		
AUG 67	421043		

INDEX PAGE

DATE	SEP 65	P/N	2199571
		TYPE	13SD

IBM XA000

XA000

```
.2          CONNECTOR
            E02    XA101AA2
            E03    XA021AM4
            E04    XA061AB1
            E05    XA011AT2
            E07    XA031AW1
            E08    XA011AF2
            E09    XA021AL4
            E10    XA061AE3
            B12    XA051AG4
            B13    XA061AB4
            D02    XA021AS4
            D04    XA031BN4
            D05    XA011AS2
            D06    XA051AH4
            D07    XA061AB6
            D09    XA061AB7
            D10    XA061AB8
            D11    XA061AB9
            D12    XA101AA6
            D13    XA052BK4
-------------------------------------
A3          CONNECTOR
            B02    XA062AY4
            B04    XA061AB1
            B05    XA061AD2
            B07    XA062AL4
            B08    XA011AF2
            B09    XA061AD3
            B10    XA061AB3
            B12    XA051AG4
            B13    XA061AB4
            D02    XA101AA6
            D04    XA061AD6
            D06    XA062AJ4
            D07    XA061AB6
            D09    XA061AB7
            D10    XA061AB8
            D11    XA061AB9
            D12    XA062AK4
            D13    XA052BK4
=====================================
B2          SINGLE CARD          2310
            5803758 3758

      XA062 A1 A4 B1 B4 C1 C4
            D1 D2 E1 E2 E3 E4
            F1 F2 F3 F4 G1 G2
            G3 G4

            UNUSED PORTIONS

            H
-------------------------------------
B4          CONNECTOR
            A06    XA042AC4
            B04    XA101AA3
            B06    XA041AK4
            C04    XA011AV4
            C06    XA041AE2
            D04    XA041AE4
            E04    XA041AK2
            E06    XA052BT2
=====================================
C2          DOUBLE CARD          SDS
C3          5807319 7319

      XA021 A1 A2 A3 A4 A5 A6
            A7 A8 A9 AA

            UNUSED PORTIONS

            B C D
-------------------------------------
C4          CONNECTOR
            A06    XA101AA6
            B04    XA052BX2
            B06    XA052BE4
            C04    XA042AA4
            C06    XA042AC4
            D04    XA101AA5
            F04    XA101AA2
            E06    XA011AV4
=====================================
D2          DOUBLE CARD
D3          5806298 6298

      XA011 A1
      XA021 A2 A3 A4 A5 A6 A7
-------------------------------------
D4          CONNECTOR
            A04    XA041AW2
X           A06    XA041AW5
A           E04    XA011AV4
0           E06    XA051AB1
=====================================
1E2         DOUBLE CARD
 E3         5804679 4679

      XA012 A1 A2 A3 A4 A5 A6
            A8 A9 AA AB AC AD
            AE AF AG AH AL
      XA013 AN AP AQ AR AS AT
      XA012 AU
      XA013 AW
      XA021 AX
      XA013 AY
      XA012 AZ B1
-------------------------------------
E4          CONNECTOR
            A04    XA011AV4
            A06    XA011AV4
            D04    XA051AA3
            D06    XA051AA7
=====================================
F2          DOUBLE CARD
F3          5807198 7198

      XA041 A1 A2 A3 A4 A5 A6
            A7 A8 A9 AA AB AC
            AD AE AF AG AH AJ
            AK
-------------------------------------
F4          CONNECTOR
            A04    XA011AV4
=====================================
G2          DOUBLE CARD
G3          5807234 7234

      XA031 A1 A2 A3 A5 A6 A7
            A9 AB AC AD AE AF
            AG AH AJ AK AN AP
            AQ AY

            UNUSED PORTIONS

            B
-------------------------------------
G4          CONNECTOR
            E04    XA012AB2
            E06    XA011AU4
=====================================
H2          SINGLE CARD
            5800764 0764

      XA011 A1 A2 A7 AB A9 AA
            AB AC
-------------------------------------
H3          SINGLE CARD          SDS
            5803780 3780

      XA011 A1 A2 A3 A4
-------------------------------------
H4          CONNECTOR
            A06    XA011AU4
            B04    XA031AB2
            B06    XA011AU4
            C04    XA041AA2
            C06    XA052BX2
            D04    XA101AA2
            E04    XA101AA3
            E06    XA011AV4
=====================================
J2          DOUBLE CARD
J3          5807235 7235

      XA051 02 05 06 07 09 14
            15
      XA052 17 18
      XA051 20 21
      XA052 22 23 25 26 27 29
            30
      XA051 31
      XA052 32 33
      XA051 34
      XA052 AC
      XA051 B1 C1 D1 D2 D3 D4
-------------------------------------
J4          CONNECTOR
            A06    XA031AZ3
            B04    XA031AY7
            B06    XA042AA4
            C04    XA031AX7
            C06    XA061AB6
            D04    XA012AB2
            E04    XA041AA2
            E06    XA031AE4
=====================================
K2          DOUBLE CARD
K3          5807511 7511

      XA051 A1 A2 A3 A4 A5 A6
            A7 A8

            UNUSED PORTIONS

            B C
-------------------------------------
K4          CONNECTOR
            A04    XA031AB2
            A06    XA031AB1
=====================================
L2          SINGLE CARD
            5815

      XA011 A2
      XA052 B1
      XA011 B3
=====================================
M2          DOUBLE CARD
M3          5804613 4613

      XA042 A1 A2 A3 A4
      XA052 B1
=====================================
N2          DOUBLE CARD
N3          5804673 4673

      XA042 A1 A2 A3 A5 A6 A7
            A8 A9 AA AB
      XA031 AC
      XA042 AD AE AF AG
=====================================
```

PLUG LIST

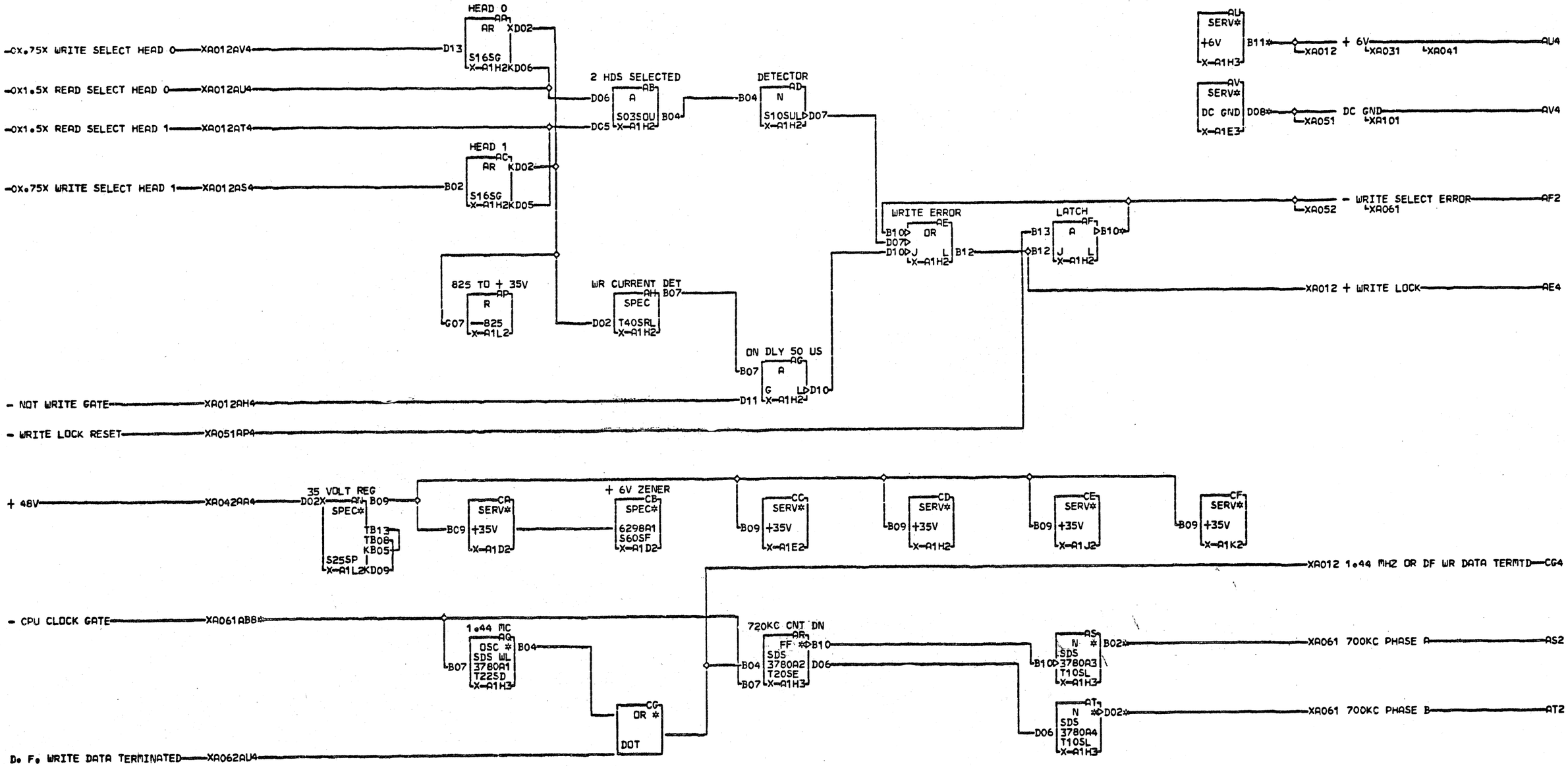
PART NO	ACC	TYPE	SOCKETS	TOTAL
5800764		0764	H2	01
5803758	2310	3758	B2	01
5803780	SDS	3780	H3	01
5804613		4613	M2	01
5804673		4673	N2	01
5804679		4679	E2	01
5806298		6298	D2	01
5807198		7198	F2	01
5807234		7234	G2	01
5807235		7235	J2	01
5807319	SDS	7319	C2	01
5807511		7511	K2	01
		5815	L2	01
		CONN	A2 A3 B4 C4 D4 E4 F4 G4 H4 J4 K4	11

SOCKET LISTING
DATE 11-26-68 MACH. 13SD

LOG 3322 BOARD 01X-A1
PREV. ENGR. 11-15-67 421047
PRES. ENGR. 11-26-68 421063
P.N. 2199527

IBM CORP. SDD BLK.

X A 0 0 1 000



NOTE. MAY USE 5804612 OR
5801352 IN PLACE OF 5805815
X ACC SDS USED
A IN SELF CONTAINED
0 VERSION WITHOUT
1 LINE DRIVERS AND
1 TERMINATORS

000

XA061AB8 01X-A1H4B06
01X-A1A2D10 AV4 X-A1E4A04
01X-A1A3D10 01X-A1D4E04
AF2 X-A1A2B08 01X-A1E4A06
01X-A1A3B08 01X-A1C4E06
AS2 X-A1A2D05 01X-A1H4E06
AT2 X-A1A2B05 01X-A1B4C04
AU4 X-A1G4E06 01X-A1F4A04
01X-A1H4A06

LOC. TYPE
X-A1D2 6298
X-A1H2 0764
X-A1H3 3780
X-A1L2 5815

1.44 MC OSC WRITE SELECT AND SAFETY

E.C.-HISTORY		MACH.13SD
415374	415444	
415374A	421025	FRAME 01
415433	421032	
415433B	421047	IBM CORP. SDD
DATE	LAST EC	
11-26-68	421063	P.N. 2199521

X A 0 1 1 000

180 TO - 3V
AA R * T61SM X-A1E2
B03
C
- HEAD 1 SELECT + HEAD 0 — XA061AB7*
HEAD SEL AB SW * NO *
NOTE 1 BA R-10K* K
+ 6V — XA011AU4
- CPU CLOCK GATE — XA061AB8
+ CE INTERLOCK — XA061AB6*
B13 AM OR J L D02 X-A1E2 B10
D02 AR N * T03TM X-A1E2 D12
AN N D04 J L J07 X-A1E2
AC OR B04 J L D05 X-A1E2 B03
AH N B02 J LD J11 X-A1E2
+ WRITE LOCK — XA011AE4
- CPU WRITE GATE — XA061AB9*
B02 AJ OR * B05 T03TL X-A1E2 D06
2K TO +6V AP R * T61ST X-A1E2
D06
430 TO +6V AD R * T61SO X-A1E2
- WRITE DATA GATE — XA061AB4*
B07
1.44 MHZ OR DF WR DATA TERMTD — XA011CG4
B07 AF A * J04 B08 NT32SC X-A1E2
B07 AG A * J06 B08 NT32SC X-A1E2
.001 UF TO GND AE CAP * T61SP X-A1E2 D13
J04 AK A * T20SG X-A1E2 B02
J06 AL A * T20SG X-A1E2
NOT WR CLAMP AW SPEC*K G04
D06 X-A1E2K G05
WRITE TRIGGER AQ FF * G04 T20SH X-A1E2 G05
XA013 -0 CLAMP- WRITE TRIGGER — AQ2
XA013 -.75 CLAMP- WRITE TRIGGER — AQ6
D02 J07 J11 AS A J LD G02 X-A1E2
XA011 -0X.75X WRITE SELECT HEAD 1 — AS4
+35V AND AT A * D02 D05 T03TK X-A1E2 G07
XA011 -0X1.5X READ SELECT HEAD 1 — AT4 (XA013)
+35V AND AU A * D12 D05 T03TK X-A1E2 J09
XA011 -0X1.5X READ SELECT HEAD 0 — AU4 (XA013)
XA011 - NOT WRITE GATE — AH4
J11 J07 D12 AV A J LD B12 X-A1E2
XA011 -0X.75X WRITE SELECT HEAD 0 — AV4

NOTE 1. RESISTOR LOCATED ON PADDLE X CARD OF CABLE IN A POS T7. SEE XA081.
0
1
2

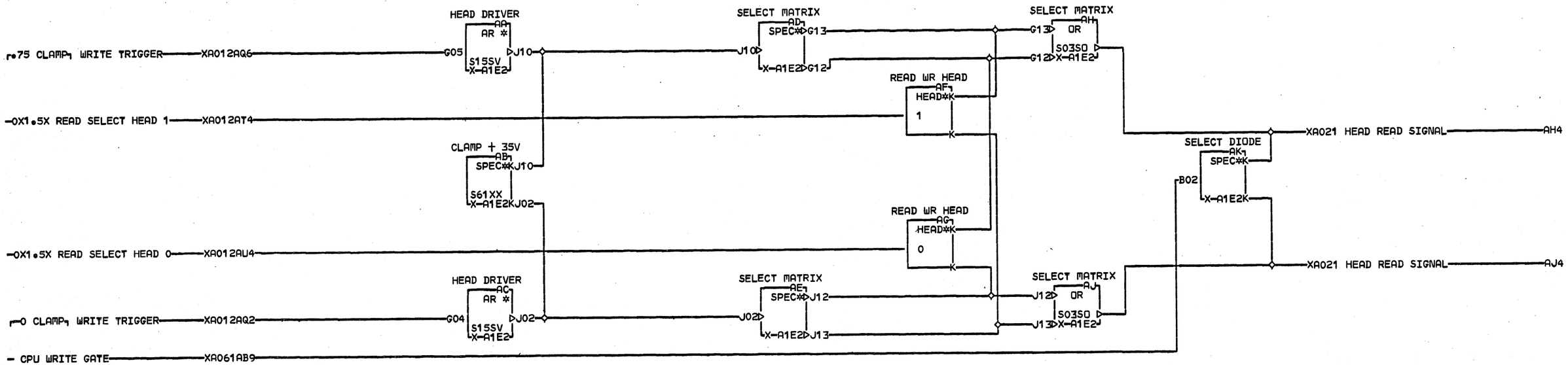
000

XA061AB4
01 X-A1A2B13
01 X-A1A3B13
XA061AB6
01 X-A1A2D07
01 X-A1A3D07
01 X-A1J4C06
XA061AB7
01 X-A1A2D09
01 X-A1A3D09
XA061AB9
01 X-A1A2D11
01 X-A1A3D11
AB2 X-A1J4D04
01 X-A1G4E04

LOC. TYPE
X-A1E2 4679

WRITE TRIGGER AND SELECT

E.C. HISTORY		MACH.13SD	X
415412D	415433		A
415411V	415433B	FRAME 01	0
415352	415444		1
415374A	421032	IBM CORP. SDD	2
DATE	LAST EC		000
12-12-67	421047	P.N. 2199564	

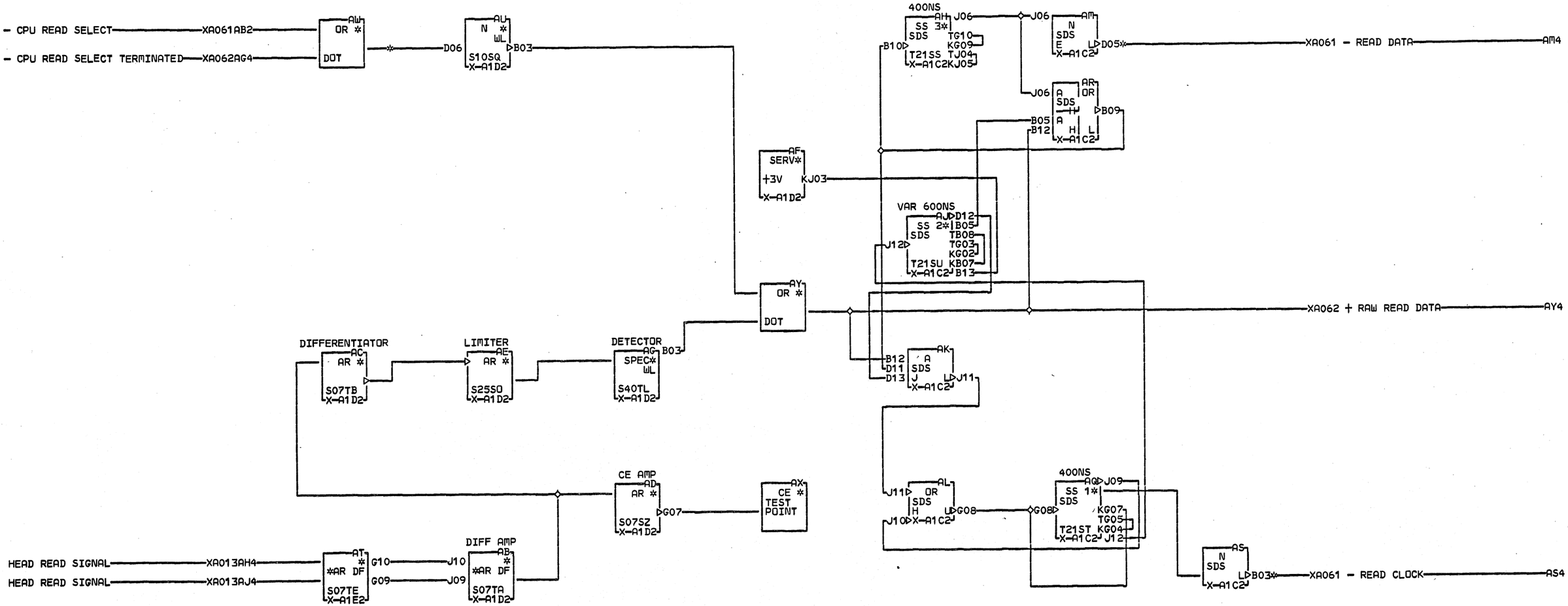


LOC• TYPE
X-A1E2 4679

WRITE DRIVER AND HEADS			
—E•C•—HISTORY—		MACH•13SD	
415412D	415433B		
415411V	415444	FRAME 01	
415374A			
415433		IBM CORP• SDD	
DATE	LAST EC		
11-13-67	421047	P•N• 2199563	

XA013 000

XA013 000



NOTE CARD CODE SDS
USED IN SELF CONTAINED
X VERSION WITHOUT LINE
A DRIVERS AND TERMINATORS
0
2 NOTE MAY USE 7319
1 INSTEAD OF 4665

000

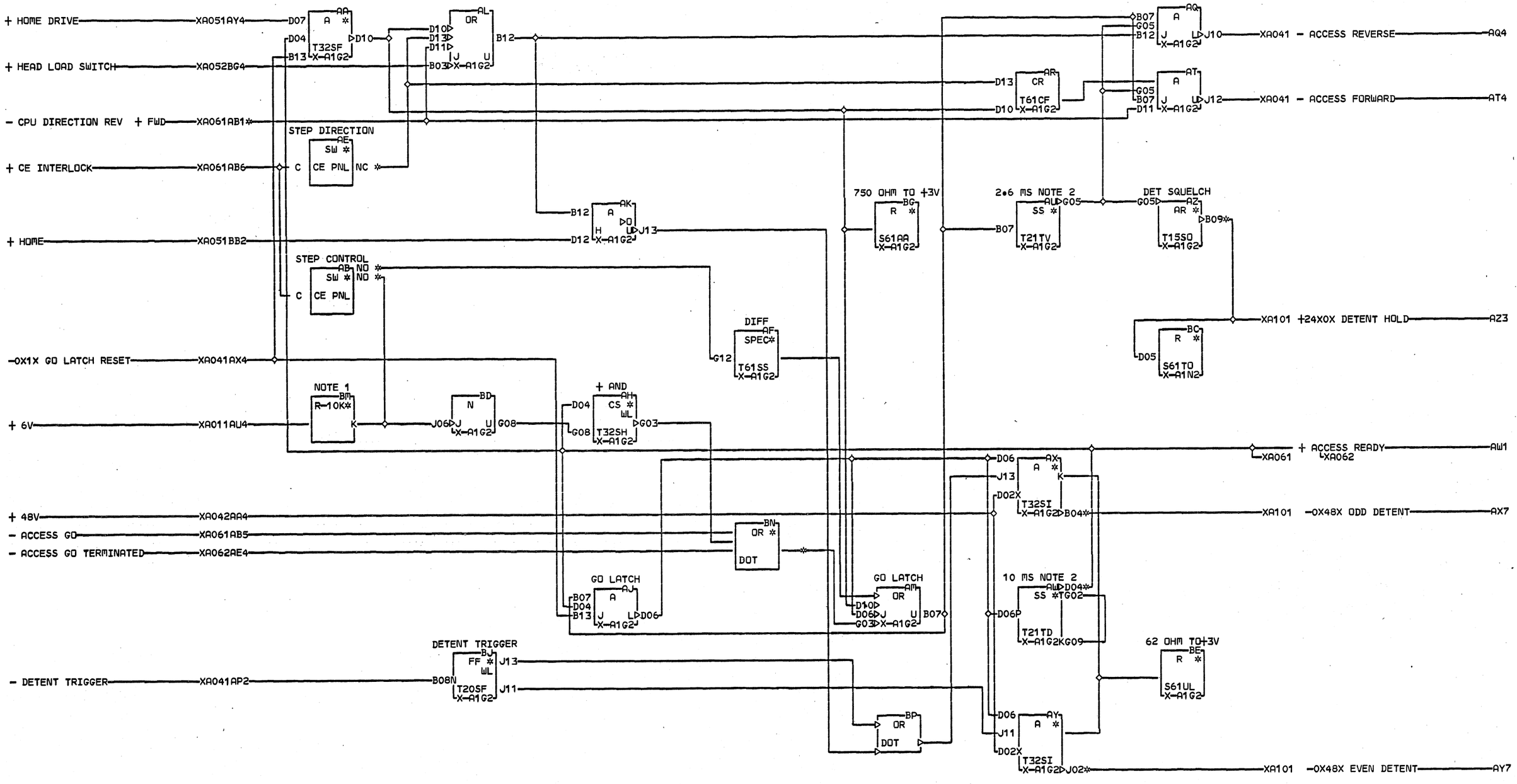
AM4 X-A1A2B03
AS4 X-A1A2D02
AW4 X-A1A2B09

LOC.	TYPE
X-A1C2	7319
X-A1D2	6298
X-A1E2	4679

READ AMPLIFIER AND
DATA SEPARATOR

E.C.-HISTORY		MACH.13SD	
415410U	415433		
415412D	415433B	FRAME 01	
415411V	415444		
415408	415447	IBM CORP. SDD	
DATE	LAST EC		000
12-12-67	421047	P.N. 2199522	

X A 0 2 1



NOTE 1. RESISTOR
LOCATED ON PADDLE
X CARD OF CABLE IN
A POS T7. SEE XA081.
0 NOTE 2. CARDS REWORKED INTO
3 5807234 FROM 5804674 MAY NOT
1 BE USED ON BOARDS ETCHED AT
EC LEVEL 421047 AND LATER
000

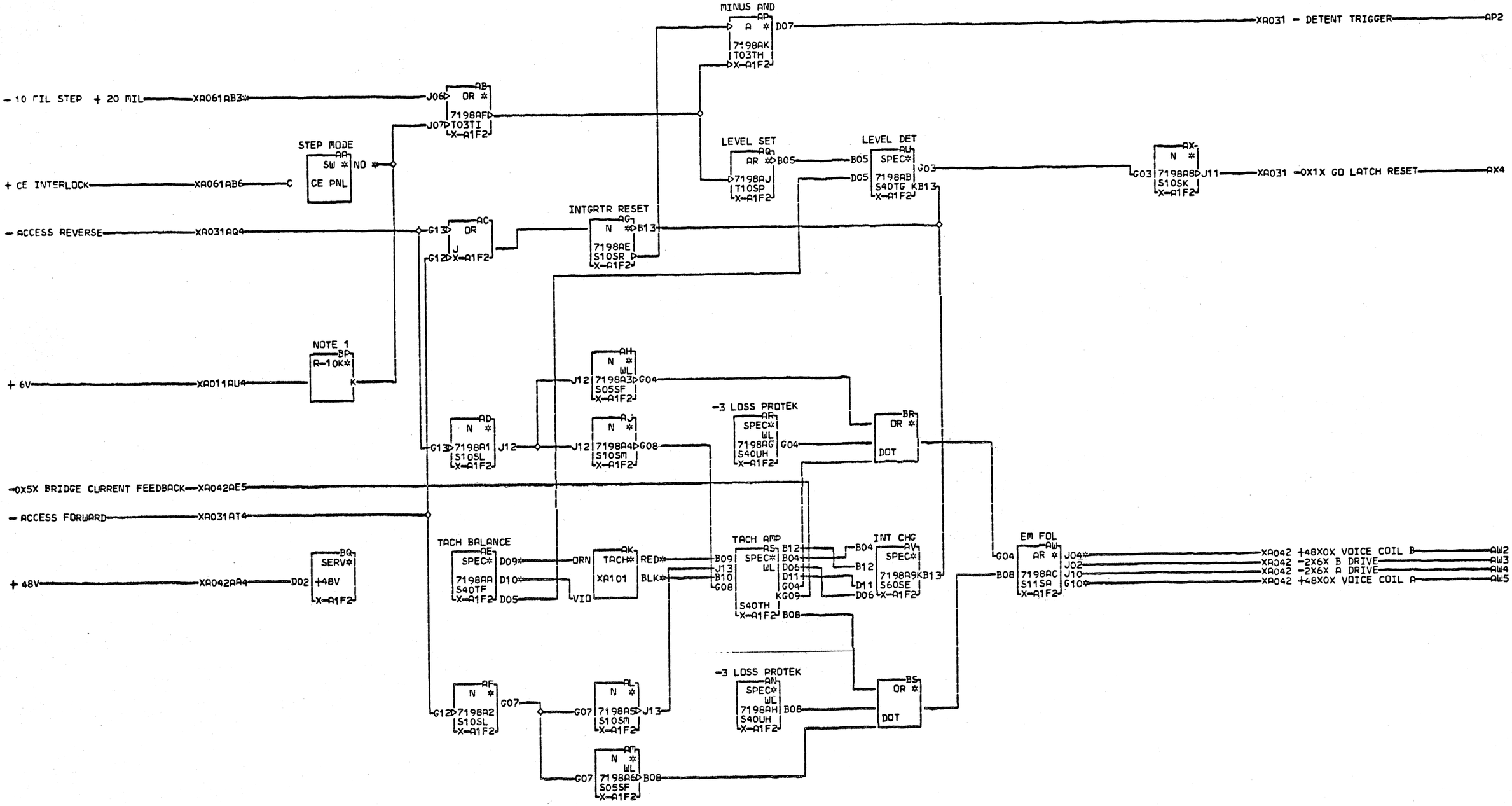
XA061AB1	AY7	X-A1J4B04
01	AZ3	X-A1J4A06
01	BN4	X-A1A2D04
AB1	X-A1K4A06	
AB2	X-A1K4A04	
01	X-A1H4B04	
AE4	X-A1J4E06	
AW1	X-A1A2B07	
AX7	X-A1J4C04	

LOC.	TYPE
X-A1G2	7234
X-A1N2	4673

ACCESS LOGIC AND CONTROLS

E.C. HISTORY		MACH.13SD	
415352	415433B		
415374	415444	FRAME	01
415374A	415447		
415433	421032	IBM CORP. SDD	
DATE	LAST EC		
12-12-67	421047	P.N. 2199523	

XA031 000



NOTE MAY USE
4667 INSTEAD OF
X 7198
A NOTE 1. RESISTOR
0 LOCATED ON PADDLE
4 CARD OF CABLE IN
1 POS T7. SEE XA081.

000

XA061AB3 AW2 X-A1D4A04
01X-A1A2B10 AW5 X-A1D4A06
01X-A1A3B10
AA2 X-A1J4E04
01X-A1H4C04
AE2 X-A1B4C06
AE4 X-A1B4D04
AK2 X-A1B4E04
AK4 X-A1B4B06

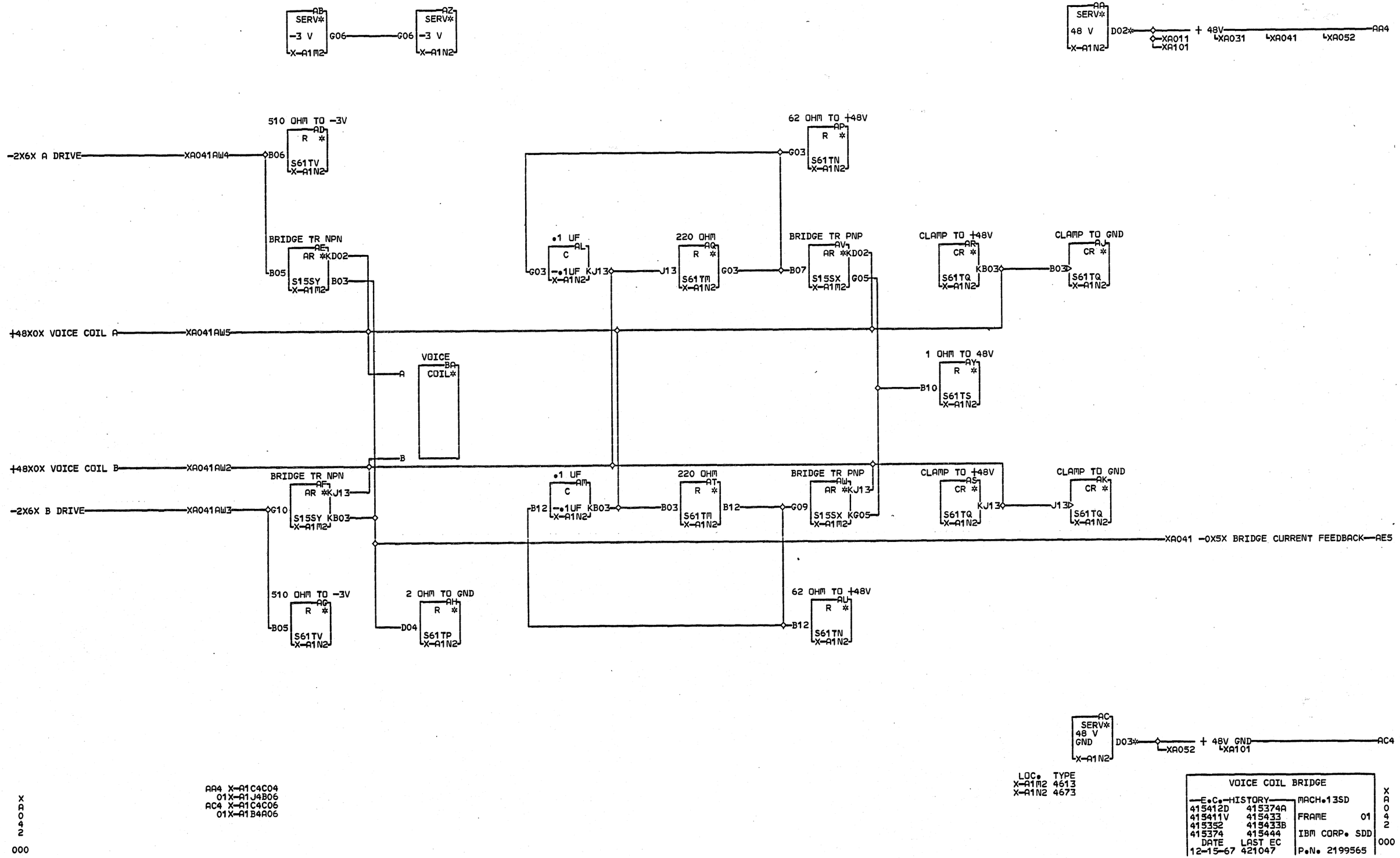
LOC. TYPE
X-A1F2 7198

TACH AMP AND DETENT SELECT

E.C.-HISTORY	
415352	415433B
415374	415444
415374A	421032
415433	421047
DATE	LAST EC
11-26-68	421063

MACH.13SD
FRAME 01
IBM CORP. SDD
P.N. 2199524

XA041 000



LOC• TYPE
X-A1M2 4613
X-A1N2 4673

AA4 X-A1C4C04
01X-A1J4B06
AC4 X-A1C4C06
01X-A1B4A06

VOICE COIL BRIDGE

E•C•	HISTORY	
4154120	415374A	MACH•13SD
4154110	415433	FRAME 01
4153520	415433B	
4153740	415444	IBM CORP• SDD
DATE	LAST EC	
12-15-67	421047	P•N• 2199565

XA042 000

SECT TRANS
COIL*
1
4
6 *
K 5
3 *
2
AAK
G09
G13
G02K
B12T
G07K
J12T
G03K S40TY
J11T X-A1K2
LIN AMP
SPEC*
AB1
J09*
TJ13
KJ06
TJ10
KG08
S40TX-A1K2
DETECTOR
SPEC*
AC
S25SQ
X-A1K2
J09
J07
165 US
SS *
AD1
B08
TB07
TD06
KJ04
TJ05
S21SF KD13
X-A1K2 KD09
J07P
B08
N *
AE
S10SQ
X-A1K2
D10
D10P
890 US
SS *
AF1
D12
TB05
B03
KD04
TD05
S21SG KB10
X-A1K2 KD11
D12
B08
A
J
LD
X-A1K2
AG
B04*
XA061 - REFERENCE PULSE
AG4
B08
B03
A
J
LD
X-A1K2
AH
D07*
XA061
XA062
- SECTOR PULSE
AH4
DC GND
XA011 AV4
B03
N
J
LD
X-A1K2
AJ
G04
G12
EM FOL
AR *
AK
NOTE 1
X-A1J2
J02
INTEGRATOR
AR *
AL
S60SQ
X-A1J2K
J13
G09
G03
J02
J10
LEVEL DETECTOR
SPEC*
AM
S40TZ
X-A1J2K
J04
J06
J13
NOTE 3
N *
AN
II
X-A1J2
N
LD
X-A1J2
AP
B03
XA052 INTEGRATOR LEVEL
AN4
- WRITE LOCK RESET
XA011
XA052
AP4
+ MOTOR ON SIGNAL
XA052 AJ4
A *
AQ
T03TT
X-A1J2
B05
RAMP GENERATOR
Z *
AR
S60SI TD12
X-A1J2
J02
DETECTOR
SPEC*
AS
NPN254
X-A1J2
D12
D13
NOTE 2
CV *
AT
PNP101
X-A1J2
D13
N *
AU
II
X-A1J2
J05
70 PERCENT
OR
AV
J
X-A1J2
J09
J05
XA052 - 70 PERCENT LATCH SET
AW4
LATCH
A
J
LD
X-A1J2
AW
B03
D09

FILTER
N *
BB
T10ST
X-A1J2
G02
B04
+ HOME
XA031
XA052
BB2
- FILE READY
XA052 BK4
B08
A
J
L
X-A1J2
AY
G02
B12
XA031 + HOME DRIVE
AY4
FILTER
N *
BD
T10ST
X-A1J2
G05
+ HEAD LOAD SWITCH
XA101 AA3*
- HOME SWITCH
XA101 AA2*
XA052 - HEAD LOAD SWITCH
BD2
FILTER
Z *
BF
S60SJ
X-A1J2
G13
- 90 SECOND TIME DELAY RELAY
XA101 AA6*
XA052 - 90 SECOND TIME DELAY
BF4

NOTE 1. PART OF S60SQ
NOTE 2. BLOCKS D1 TO D4
X ARE CKT FLYER S60SI
A NOTE 3. PART OF BLOCK AM
0 CKT FLYER S40TZ
5
1
000

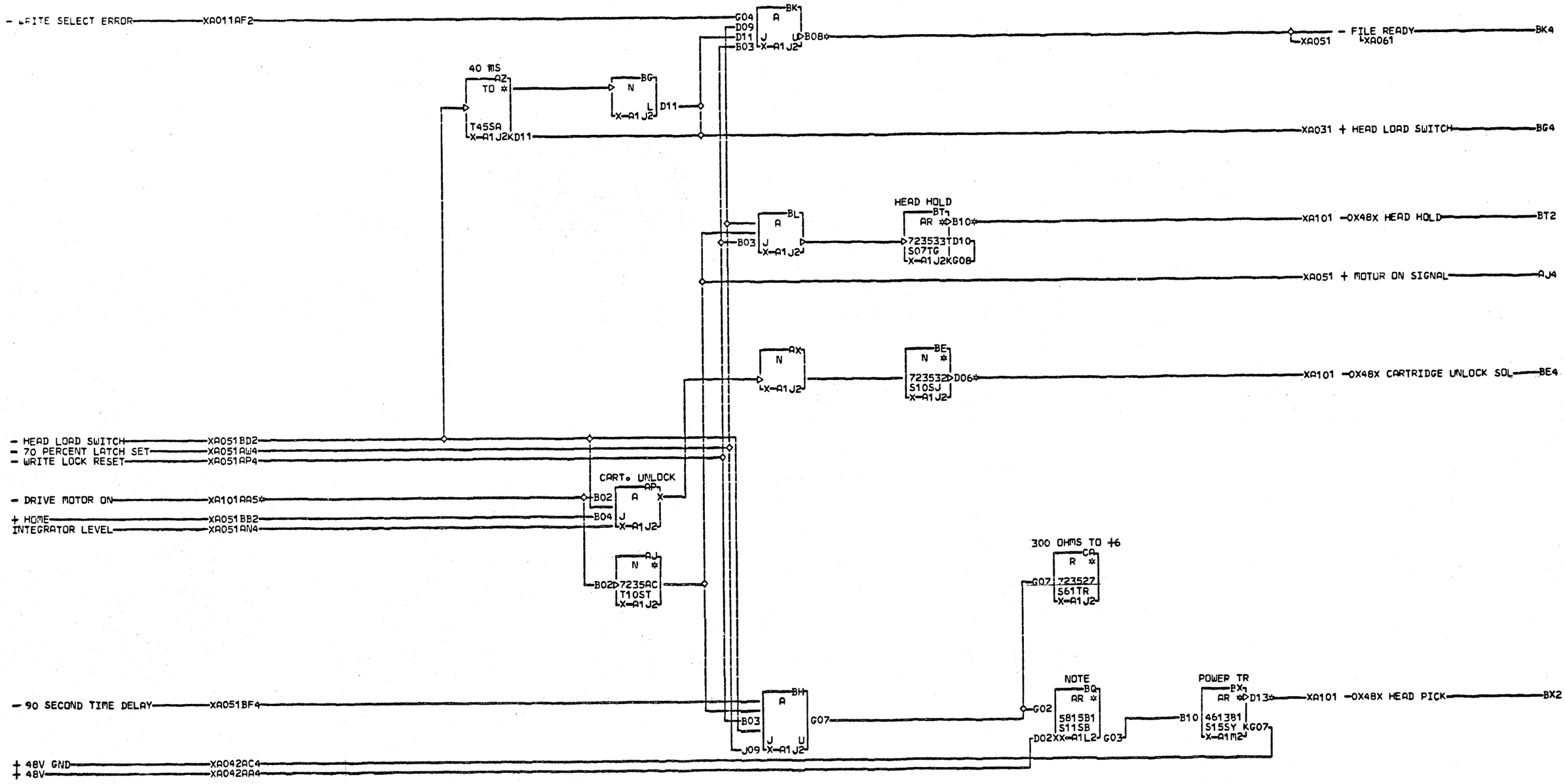
XA101AA2 01 X-A1C4E04 01 X-A1H4D04
XA101AA3 AB1 01 X-A1H4E04 01 X-A1B4B04
XA101AA6 AH4 01 X-A1C4A06
01 X-A1A3D02 01 X-A1A2D12
01 X-A1A2B02 AA3 X-A1E4D04
AA7 X-A1E4D06
AG4 X-A1A2B12
01 X-A1A3B12

LOC. TYPE
X-A1J2 7235
X-A1K2 7511

TRANSDUCER INTERLOCK

E.C.-HISTORY		MACH.13SD
415419	415447	
415433	421019	FRAME 01
415433B	421029	
415444	421032	IBM CORP. SDD
DATE	LAST EC	
12-15-67	421047	P.N. 2199525

XA051
000



NOTE. MAY USE 5804612 OR 5801352 IN PLACE OF 5805815

XA101AA5
01 X-A1C4D04
BE4 X-A1C4B06
BK4 X-A1A2D13
01 X-A1A3D13
BT2 X-A1B4E06
BX2 X-A1H4C06
01 X-A1C4B04

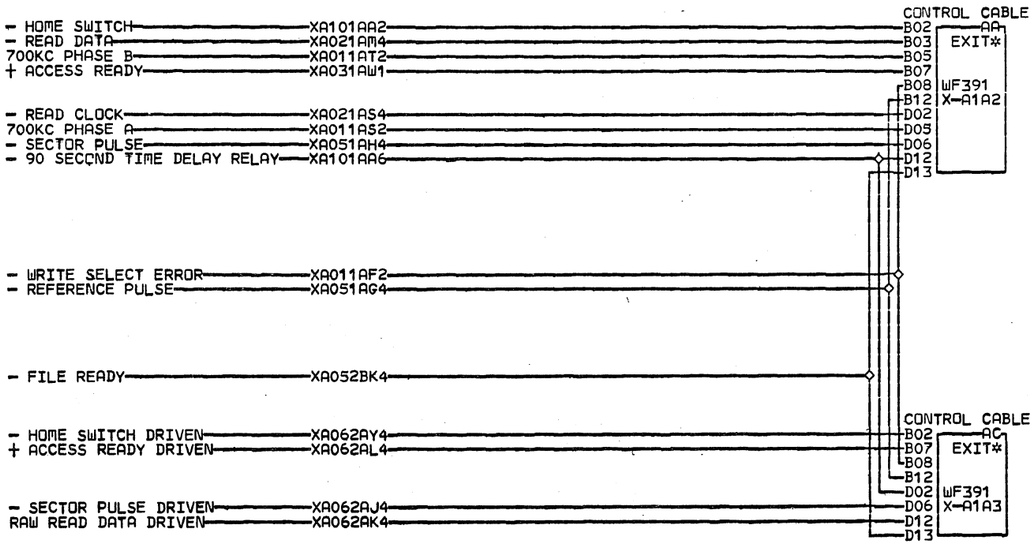
LOC.	TYPE
X-A1 J2	7235
X-A1 L2	5815
X-A1 M2	4613

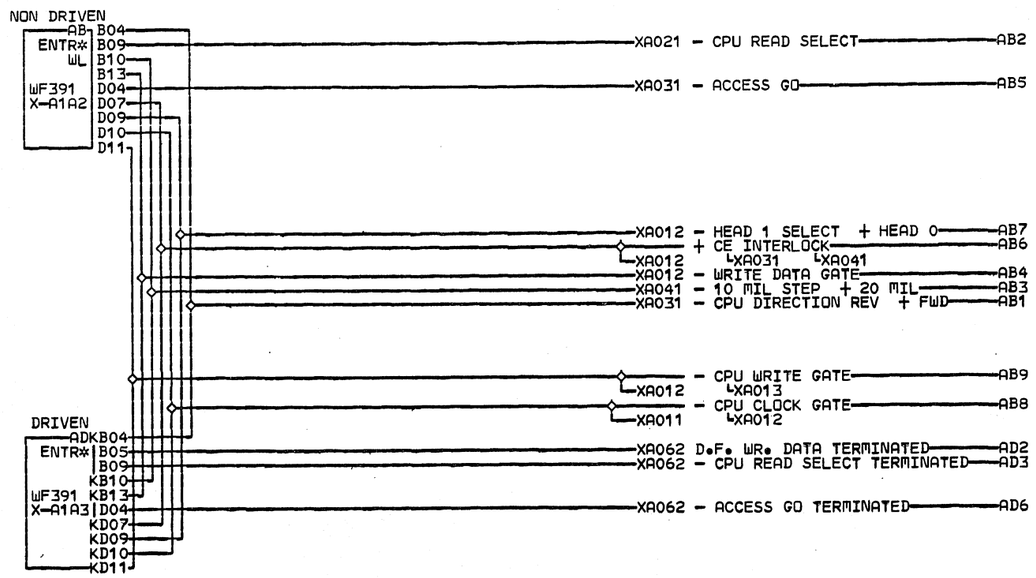
INTERLOCK HEAD LD.

E.C.-H_STORY	
415374A	415447
415433	421016
415433B	421032
415444	421047
DATE	LAST EC
11-26-68	421063

MACH.13SD
FRAME 01
IBM CORP. SDD
P.N. 2199567

XA052 000





XA061
000

CPU INTERFACE

E.C. HISTORY

MACH.13SD

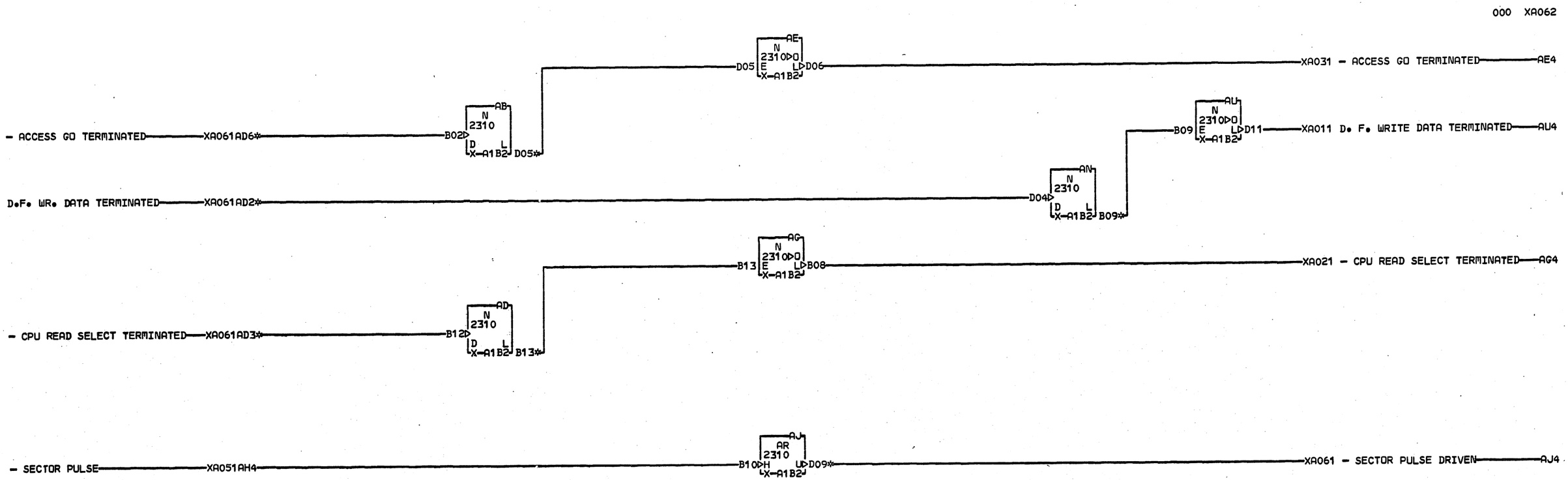
FRAME 01

IBM CORP. SDD

P.N. 2199526

DATE	LAST EC
11-16-67	421047

XA061
000



NOTE. ACC 2310 USED IN REMOTE VERSION WITHOUT WRITE OSC AND DATA SEPARATOR
2310-B1

000

XA061AD2 01 X-A1A3D04 X-A1B2D09 AY4 X-A1A3B02
01 X-A1A3B05 RESISTOR AK4 X-A1A3D12 RESISTOR
RESISTOR X-A1B2B02 RESISTOR X-A1B2D07
X-A1B2D04 AB6 RESISTOR X-A1B2B04
XA061AD3 X-A1B2D05 AL4 X-A1A3B07
01 X-A1A3B09 AD6 RESISTOR RESISTOR
RESISTOR X-A1B2B13 X-A1B2D02
X-A1B2B12 AJ4 X-A1A3D06 AN6 RESISTOR
XA061AD6 RESISTOR X-A1B2B09

LOC. TYPE
X-A1B2 3758

2310-B LINE DRIVERS AND TERMINATORS
MACH.13SD
—E.C.—HISTORY—
415411V 415433B
415352 415444
415374A 415447
415433 421032
DATE LAST EC
11-22-67 421047
FRAME 01
IBM CORP. SDD
P.N. 2199566

X A 0 6 2 000

SOLID LOGIC DESIGN AUTOMATION-BOARD—— 01K-A1

A B C D E F G M J K L P N P Q R S T U V W X Y Z

1 2 3 4 5 6 7 8

SYMBOLS

K= NO RULE/POCKET
E= CONFLICT
S= PORTIONS LEFT

SLDA CHART
DATE 07-06-66 ARCNo S-8-3702

LOG 188C BOARD 01K-A1
PREVo ENGRo 06-17-66 4134329
PRESo ENGRo 07-06-66 4138447
PoNo 2199527

IBA CORPo SDD DLNo

TERMINAL STRIPS, SWITCHES, RELAYS. COILS SOLENOIDS, AND DIODES

POINTS	TERMINAL BARRIER TB					
	1	2	3	3A	4	5
1	XA101	OPEN	XA101	XA101	XA101	OPEN
2	XA101	XA101	XA101	XA101	OPEN	OPEN
3	XA101	XA101	XA101	XA101	XA101	OPEN
4	XA101	XA101	XA101	XA101	XA101	OPEN
5	XA101	XA101	XA101	XA101	XA101	XA101
6	XA101	OPEN	XA101	XA101	XA101	XA101
7	-	XA101	XA101	XA101	XA101	XA101
8	-	XA101	XA101	XA101	XA101	XA101
9	-	-	-	-	XA101	-
10	-	-	-	-	XA101	-

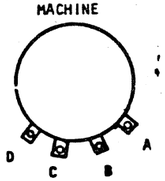
SWITCH	NO.	LOCATION
CART. IN PLACE	1	XA101
CART. UNLOCKED	2	XA101
HOME	3	XA101
HEAD LOAD	4	XA101
CE HEAD SEL	5	XA012
CE STEP MODE	6	XA041
CE DIRECTION	7	XA031
CE STEP CONTROL	8	XA031
MOTOR START	REF	XA101
MOTOR STOP	REF	XA101

RELAY	NO.	COIL	CONTACTS		
			1	2	3
START	K1	XA101	XA101	OPEN	XA101
TIMER	K2	XA101	XA101	OPEN	-
DR MOTOR	K3	XA101	XA101	-	-
BLOWER MTR	K4	XA101	XA101	-	-

COIL/SOL	LOCATION
R/W HEAD #0	XA013
R/W HEAD #1	XA013
TACHOMETER	XA041
TRANSDUCER	XA051
VOICE COIL	XA042
HEAD LOAD	XA101
ODD DETENT	XA101
EVEN DETENT	XA101
CART. UNLOCK	XA101

DIODES		LOCATION
DIODE	D1	XA101
DIODE	D2	XA101
DIODE	CR1	XA101

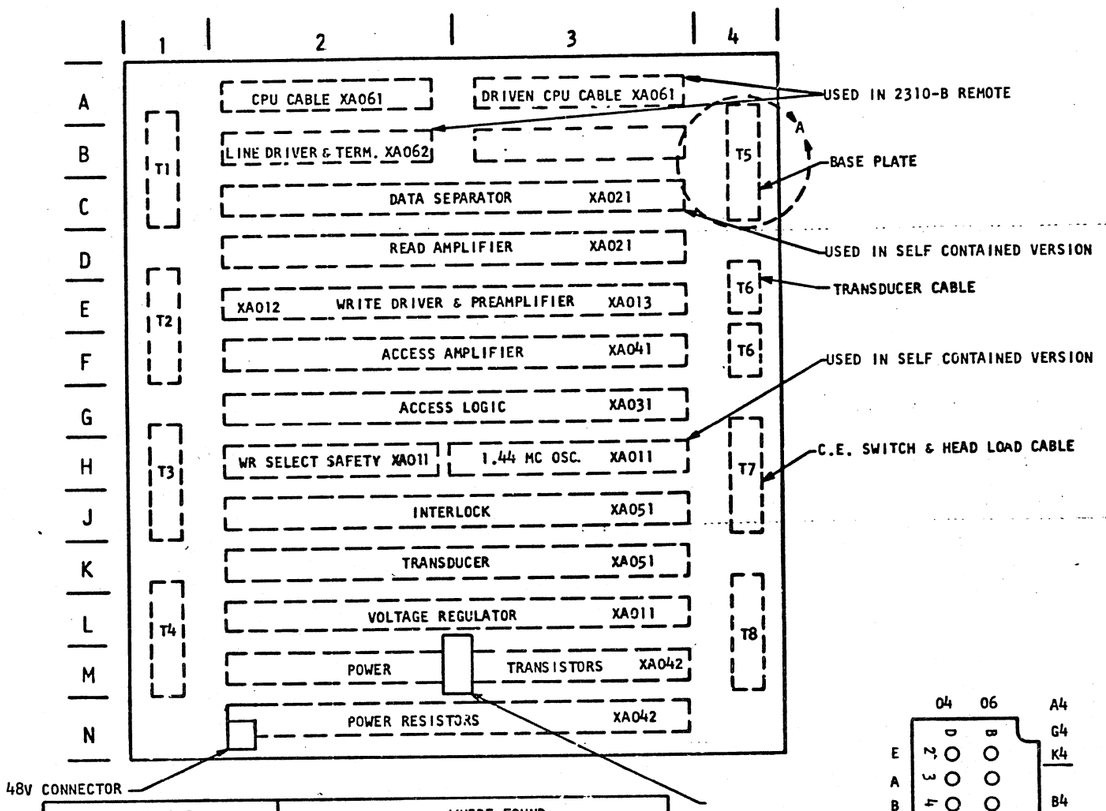
TACHOMETER CONNECTORS VIEW FROM FRONT OF MACHINE



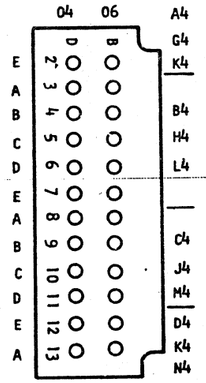
HEAD CABLE CONNECTIONS XA011

WIRE COLOR	OT	IB
GREY	E2 J12	E2 J13
RED	E2 J09	E2 G07
VIOLET	E2 G12	E2 G13
BLACK	D2 J08	E2 J08

LARGE CARD SOCKET ASSIGNMENTS & NOMENCLATURE. PIN SIDE SHOWN



VOLTAGE		WHERE FOUND
TB1-5	+48V	N2D02, G2D02, F2D02, L2D02, C4C04, J4B06
TB1-6	48V GND	N2D03, M3B07, B4A06, C4C06
	+35V REG	D2B09, E2B09, H2B09, J2B09, K2B09. L2B09
TB1-2	-3V	B06 SOCKETS B THRU M ROWS 2 AND 3, N3B06
TB1-4	DC GND	D08 SOCKETS A THRU N ROWS 2 AND 3
TB1-1	+3V	D03 SOCKETS B THRU M ROWS 2 AND 3
TB1-3	+6V	B11 SOCKETS B THRU M ROWS 2 AND 3 G4E06, H4A06, H4B06



DETAIL A

DATE	EC NUMBER	DATE	EC NUMBER
SEPT65	415326	FEB 67	421032
NOV 65	415374	AUG 67	421043
DEC 65	415374A	NOV 67	421047
MAR 66	415433		
MAY 66	415444		

SOCKET LOCATION AND CABLE GUIDE

DATE	SEPT65	P/N	2199573
		TYPE	13SD
IBM		XA081	

DATE	EC NUMBER	DATE	EC NUMBER	BASEPLATE AND AC BOX	DATE	OCT 65	P/N	2199575	XA101
SEE INDEX CARD				ELECTRONICS		RLU	TYPE	13SD	
AUG 67	421043								
NOV 67	42047								
15JUL68	421057								
NOV 68	421063								

-0X48X -HEAD PICK H4C06 (XA052BX2)
-0X48X -HEAD PICK C4B04 (XA052BX2)
CONNECTED IN BOARD
-0X48X -HEAD HOLD B4E06 (XA052BT2)
TB3-5
100Ω
TB3-6
TB2-7
HEAD LOAD SOL
TB2-8
D2
TB3-A-6
15Ω
TB3-A-2
-0X48X -ODD DETENT J4C04 (XA031AX7)
TB2-3
ODD DETENT
+24X0X DETENT HOLD J4A06 (XA031AZ3)
-0X48X -EVEN DETENT J4B04 (XA031AY7)
TB2-5
EVEN DETENT
TB2-4
DC GROUND H4E06 (XA011AV4)
TB2-2
HOME SW #3
N/O
-HOME SWITCH -AA2 H4D04 (XA051)
HEAD LOAD SW #4
+HEAD LOAD SW 4 -AA3 H4E04 (XA051)
N/O
-0X48X CART UNLOCK SOL C4B06 (XA052BE4)
NOTE 4. 5.
ON OR HEADS LOADED
CART UNLOCK
+48V
TB3-4 220Ω TB3-A-3
TB3-A-5 NOTE 6
CART UNLOCK
TB3-A-8
D1
TB3-A-7
TB3-A-4
+48V -AA4 C4C04 (XA042)
TB3-3
-DRIVE MOTOR ON -AA5 C4D04 (XA052)
N/C (MOMENTARY)
STOP
N/O (MAINT.)
START
N/O
TB3-7
TB3-8
CART IN PLACE SW #1
N/O
K1-1
START
START
K1
B
A
TB3-2
TB3-1
CART LOCK SW #2
N/O
CR1
TB4-3
TB4-1
90 SEC DELAY
K2
B
A
48V GROUND B4A06 (XA042AC4)
TB3-A-1
DC GROUND B4C04 (XA011)
K2-1
-90 SECOND TIME DELAY RELAY -AA6 C4A06 (XA051) (XA061)
AC CABLE REF
NOTE 5
HOT
GND
NEUT
G3
TB4-7
L1
50UH
TB4-5
C1 .01 UF
TB4-8
R1 100Ω
TB4-4 C2 .01UF
K1-3 START
100Ω
.01 UF
K3
BLUE
NOTE 3
RED
THERMAL
DRIVE MOTOR
YELLOW
G1
TB4-6
4
3
BLUE
K4
AC BOX
* 2
RED
THERMAL
BLOWER MOTOR
YELLOW
G2
T4-10
L2
50UH
TB4-9

NOTE 5
DC POWER CABLE REF

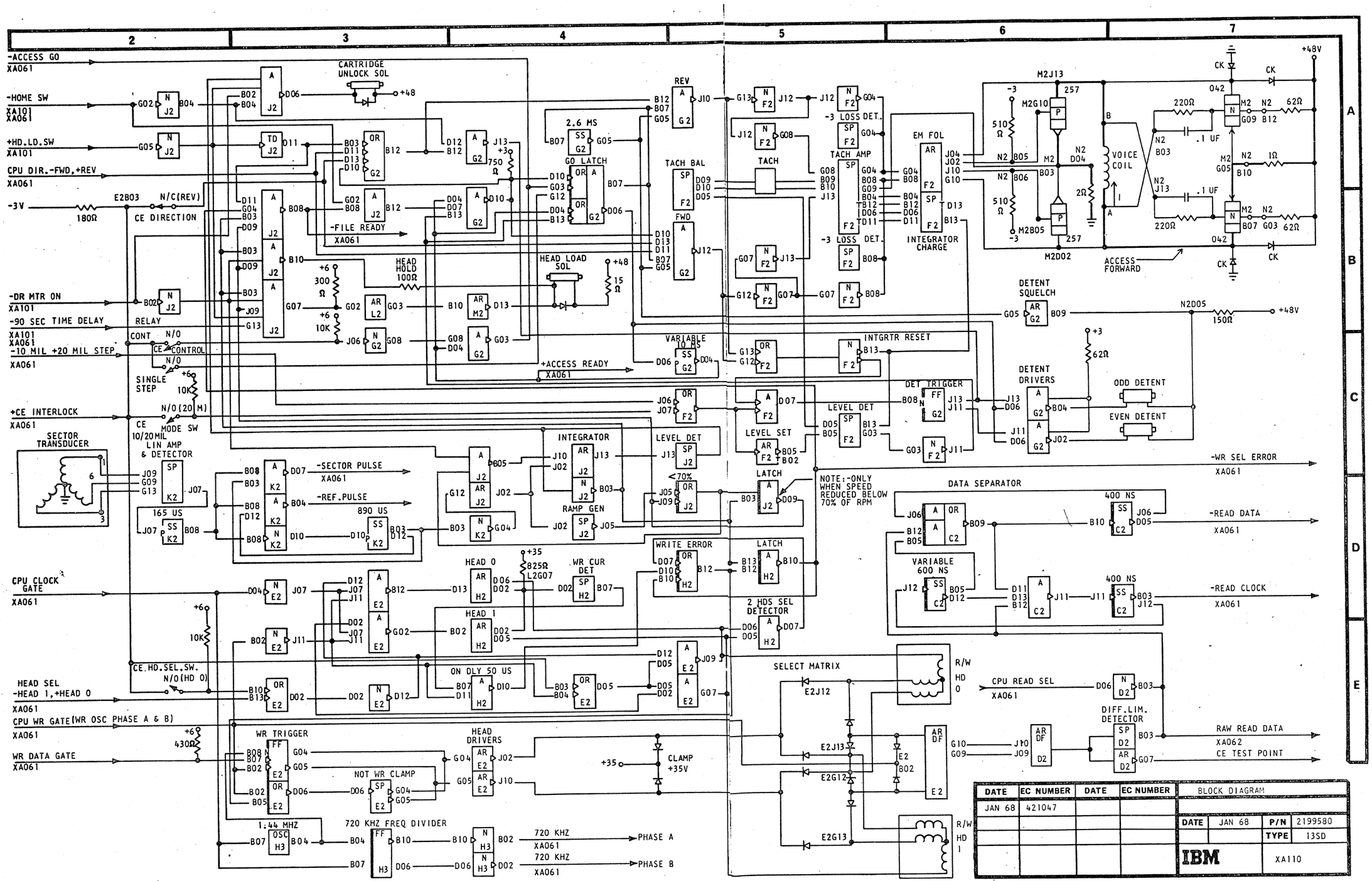
TB1

+3V	1	M3A01
-3V	2	M3E01
+6V	3	M2A14
DC GND	4	M2E14
		GND TO BASEPLATE
+48V	5	N2D02
NOTE 2	16UF	
48V GND	6	N2D03

ELECTRONIC GATE (XA081)

RED — TB5-5 — A
ORANGE — TB5-6 — B
.01μF
VIOLET — TB5-7 — D
BLACK — TB5-8 — C
TACH REF XA041

NOTES:
1.
2. THIS JUMPER USED IN 1130 SYSTEM.
3. THIS RC NET USED ON 115V 13 SD'S IN 1131 AFTER JUNE 1968 AND ALL 13 SD'S AFTER SEPT 1968.
4. CIRCUIT IN DASHED BOX IS SHOWN FOR REFERENCE ONLY.
5. ACTUAL CIRCUIT SHOWN ON ZB101/UF112 IN SYSTEM LOGIC OR UF111 IF S-D-STOR IS IN 2310B
6. USED WITH 2310B ONLY. WIRE BETWEEN TB3A-5 AND TB4-3 TAPED OR REMOVED FOR OTHER SYSTEMS



DATE	EC NUMBER	DATE	EC NUMBER	BLOCK DIAGRAM			
JAN 68	421047						
				DATE	JAN 68	P/N	2199580
						TYPE	13SD
				IBM		XA110	