

2108762

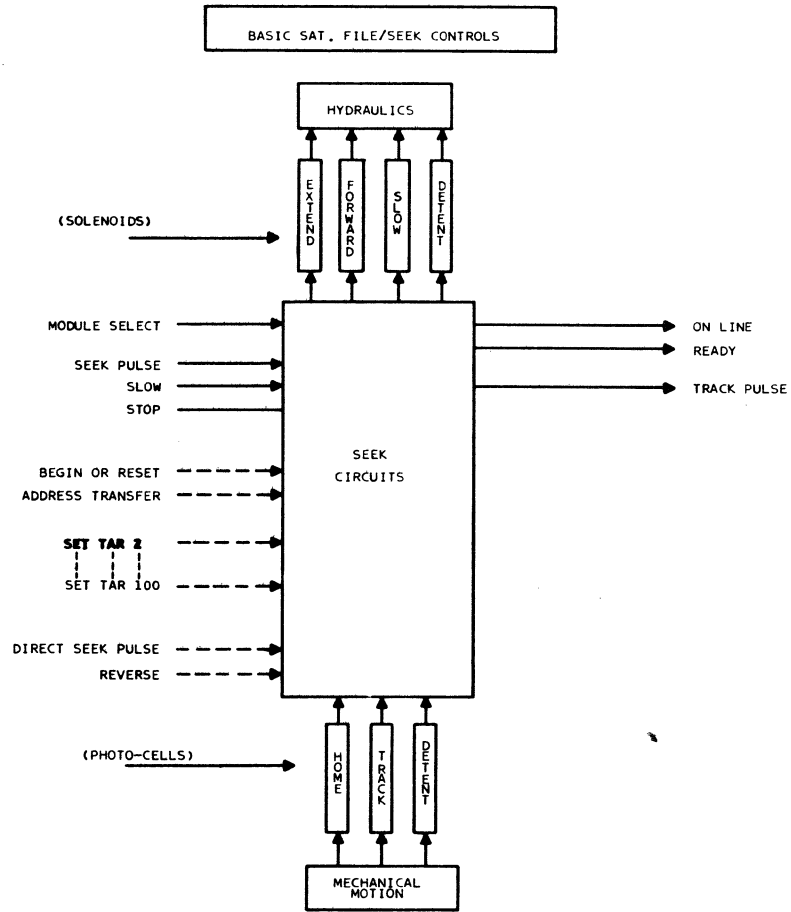
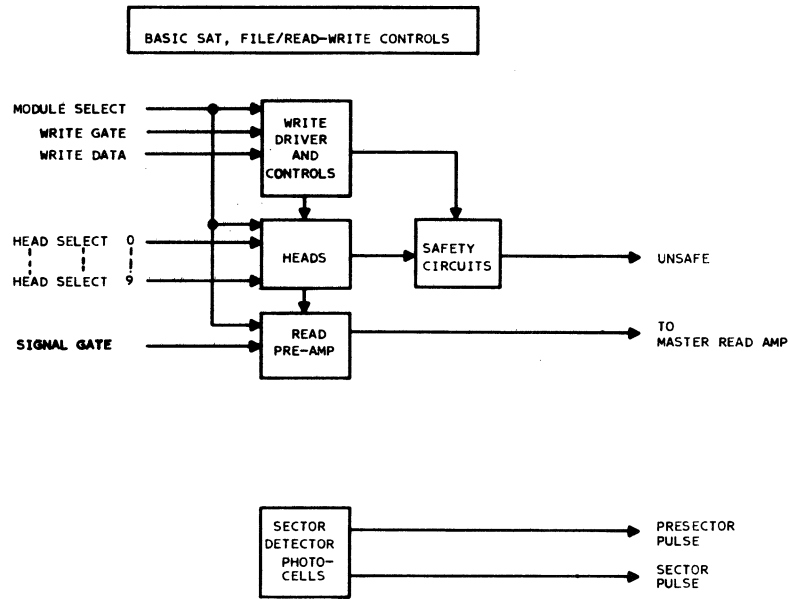
INTERMEDIATE LEVEL
DIAGRAM PACKAGE

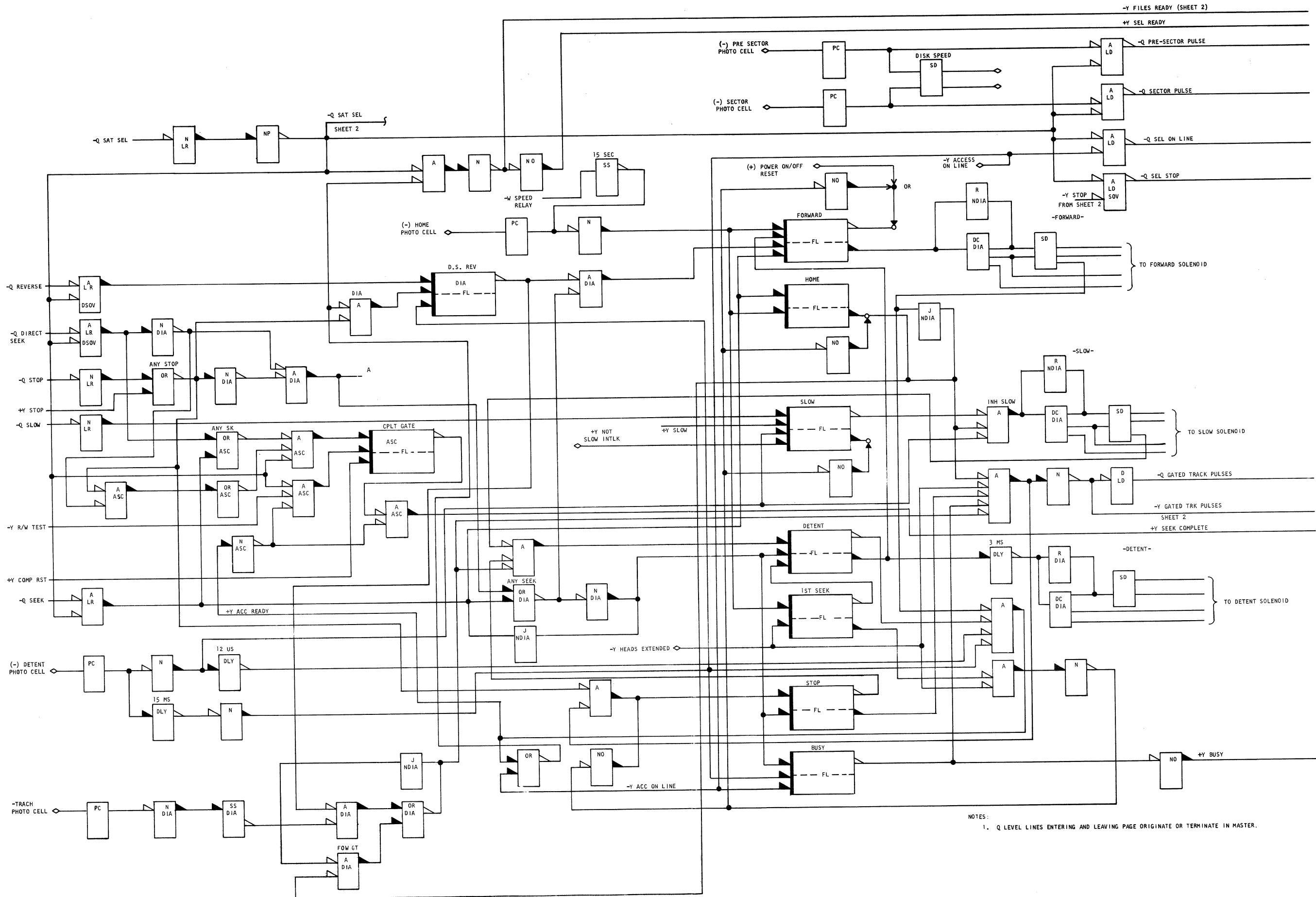
1311-MOD II

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407470	8-20-63	1 THRU 18
408319	6-1-64	5-7, 17 & 18 CANCEL 2,3,11,12 - 14 REVISED





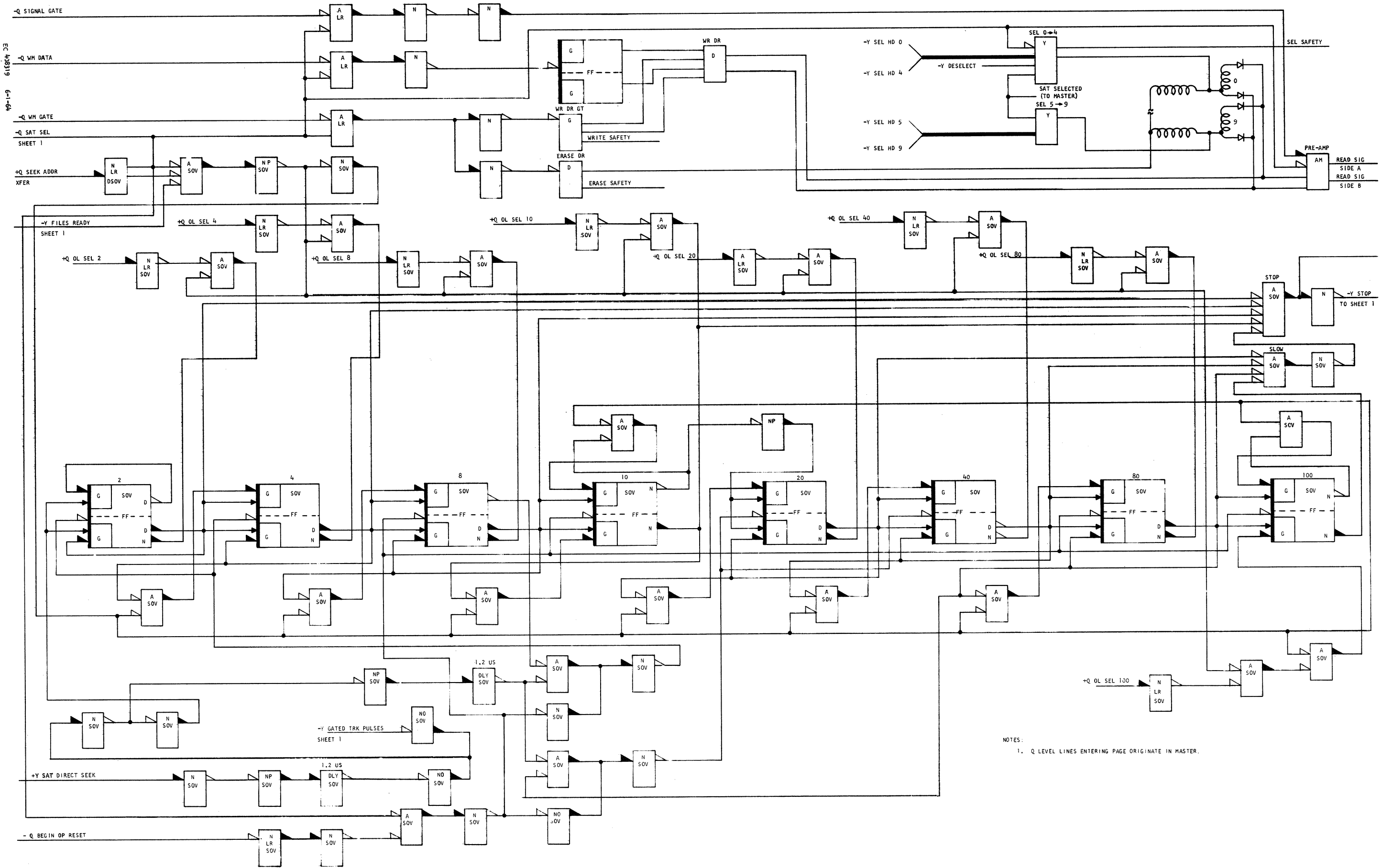
NOTES:
1. Q LEVEL LINES ENTERING AND LEAVING PAGE ORIGINATE OR TERMINATE IN MASTER.

2108762

ILD-1

1311-II

PAGE 2



EC 498319 6-1-66

SHEET 1

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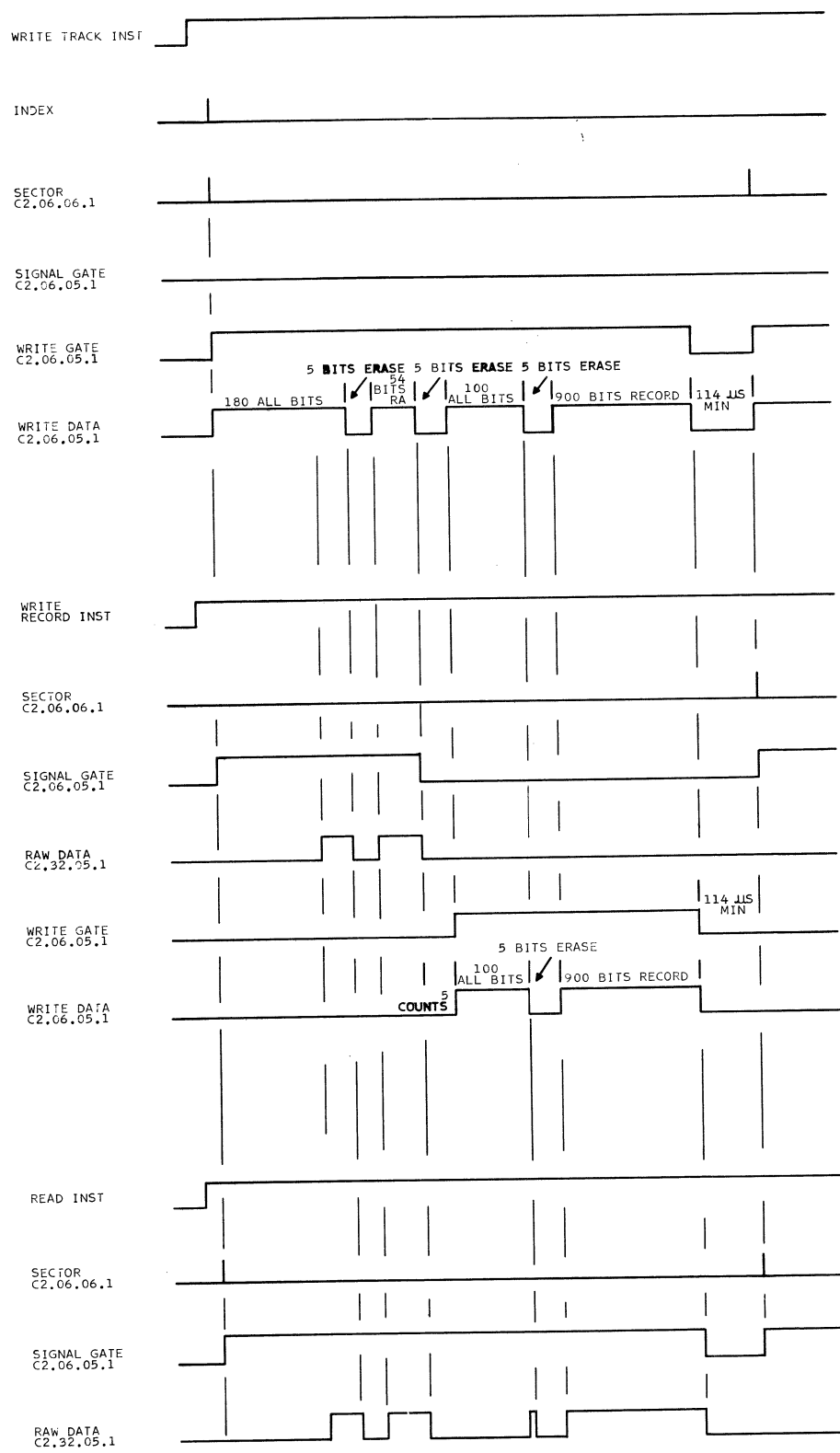
NOTES:
1. Q LEVEL LINES ENTERING PAGE ORIGINATE IN MASTER.

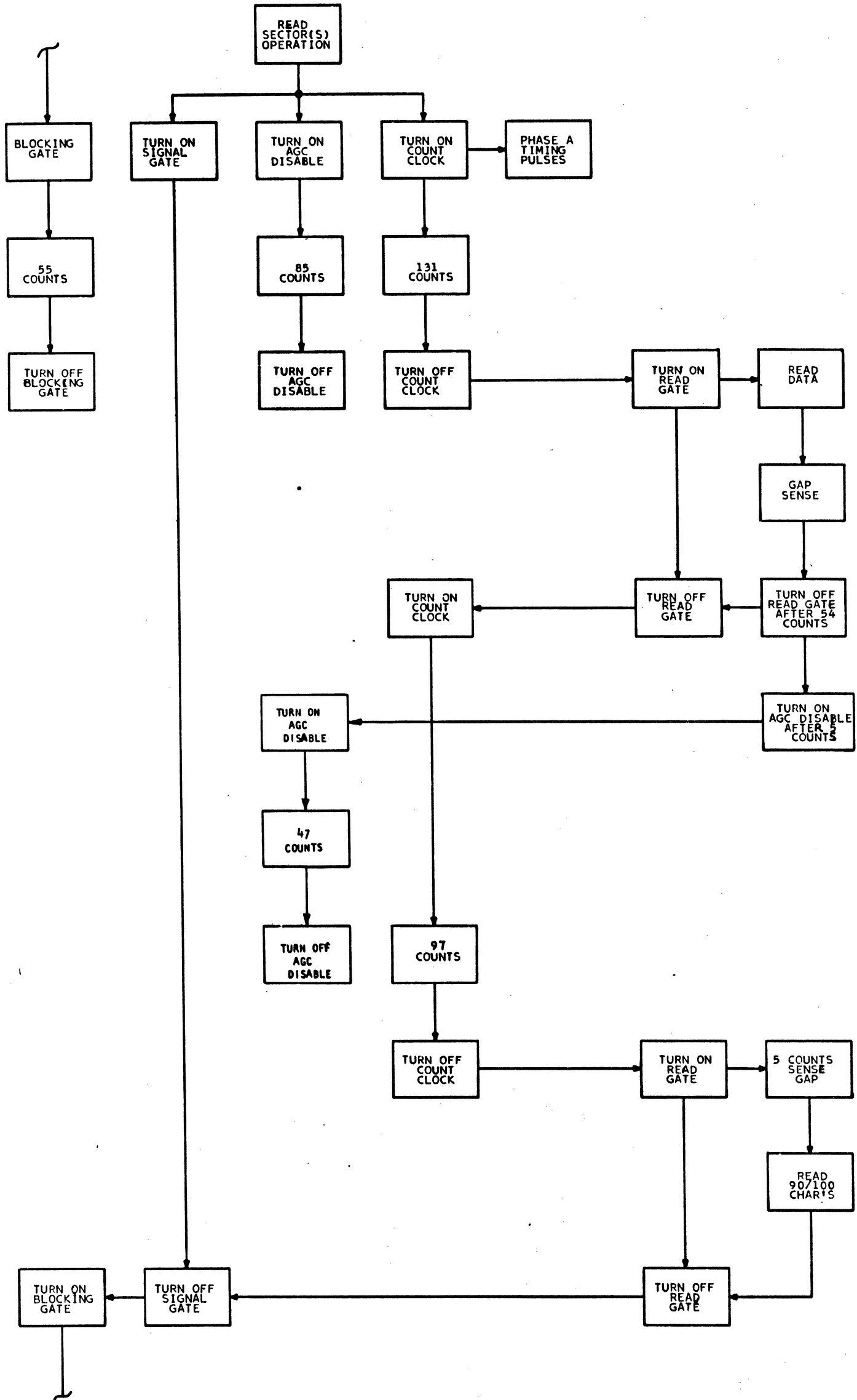
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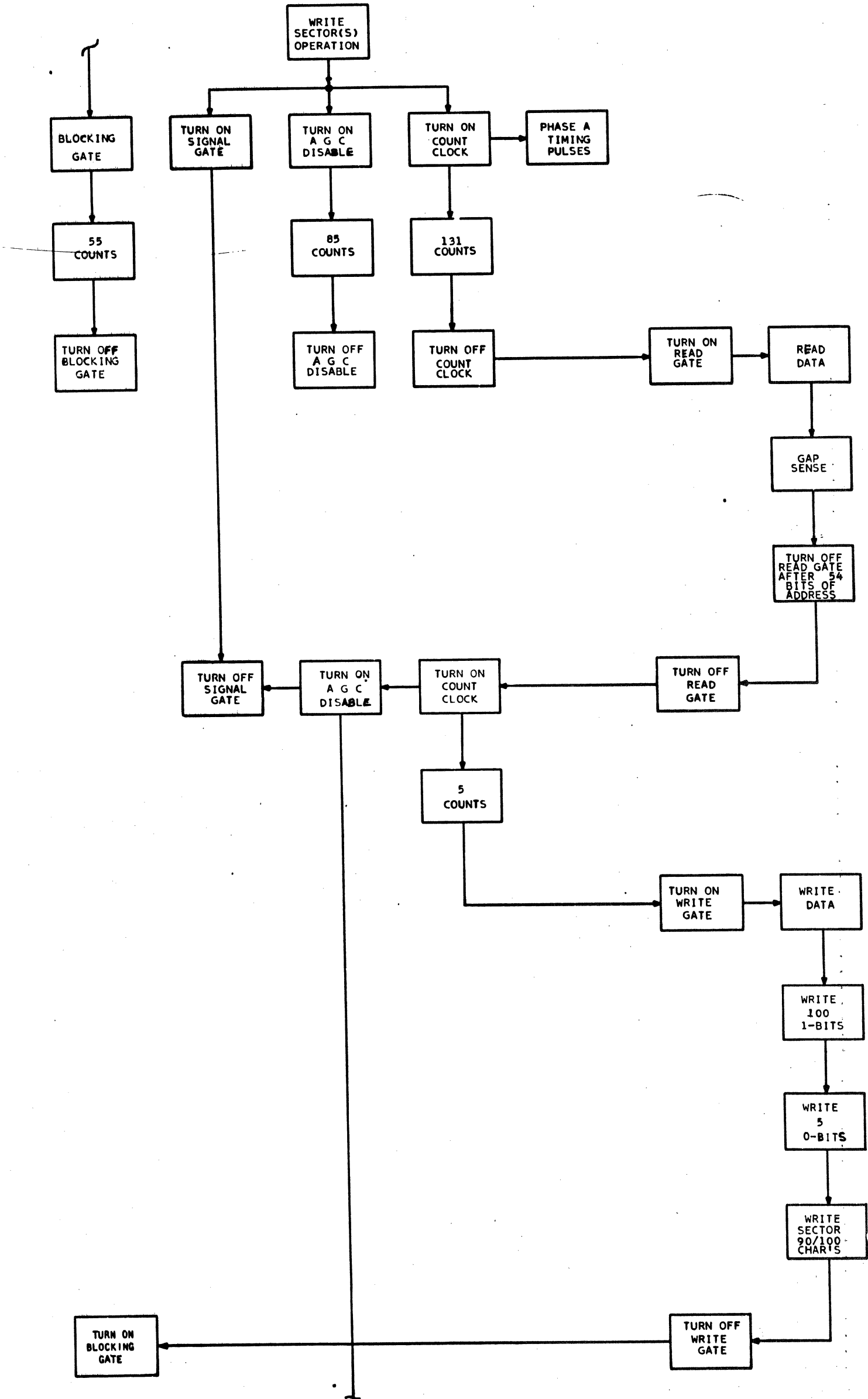
ILD - 2

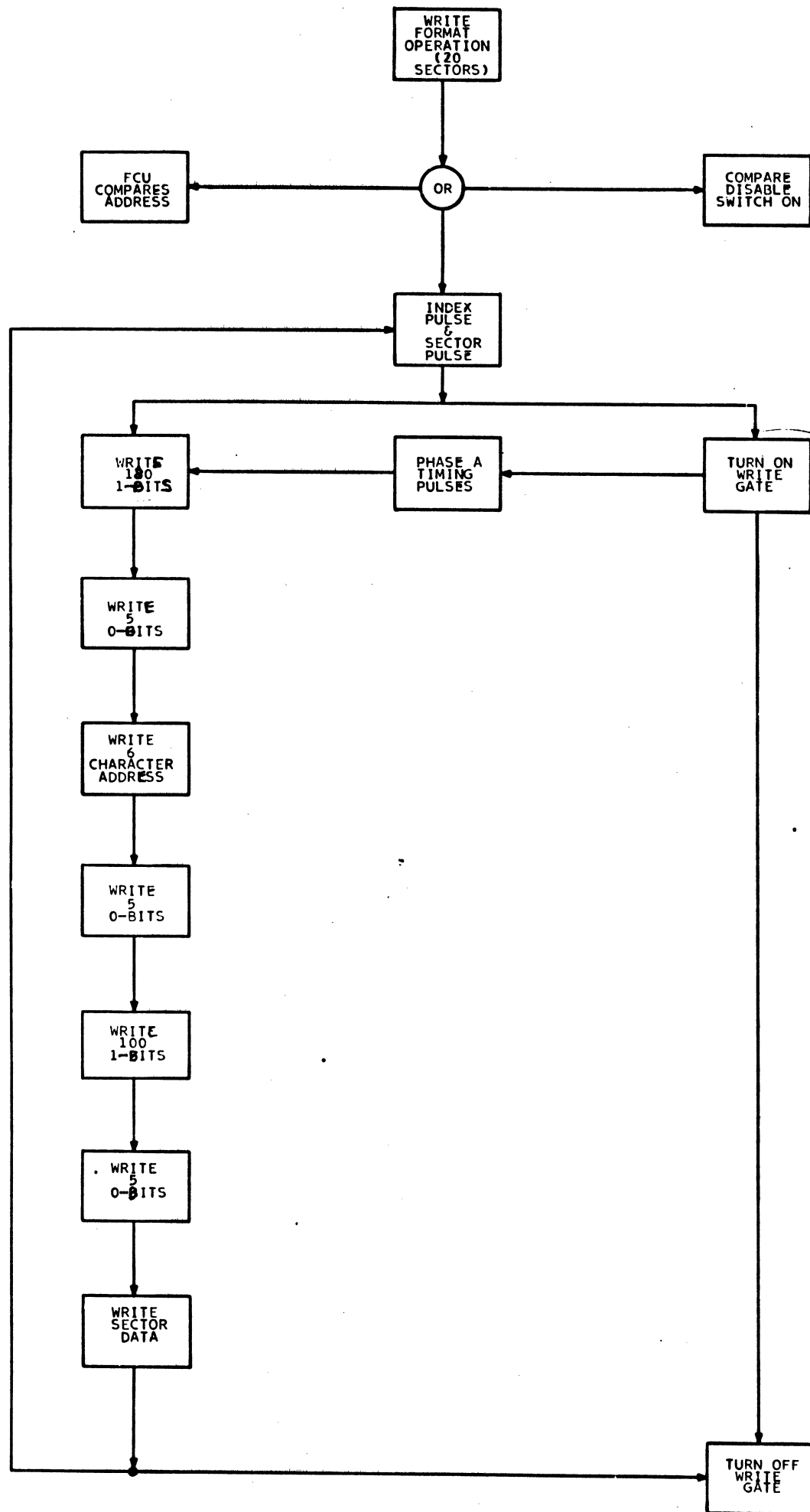
1311-II

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13	Home Latch	C2.22.05.1
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Access Busy Latch C2.22.02.1Purpose

- a) If seek overlap feature is not installed this latch indicates to file controls that access is moving.
- b) If seek overlap feature is installed it can only gate track pulses for file it is associated with.

Set

- a) Any seek

Reset

- a) 15 MS Detent in
- b) Not access on line.

Detent Latch C2.22.05.1Purpose

Turns on detent solenoid.

Set

- a) Track pulse, stop latch, & slow latch.

Reset

- a) Any seek pulse
- b) First seek latch off.

First Seek Latch C2.22.05.1Purpose

When off, causes seek to track 00.

Set

- a) Home pulse.

Reset

- a) Not heads extended.

Forward Latch C2.22.05.1Purpose

Causes forward & forward hold solenoids to be picked, which gives access forward pressure.

Set

- a) Detent latch.
- b) Home pulse.

Reset

- a) Power on reset.
- b) Return to home seek pulse.
- c) Reverse & direct seek pulse.
- d) First seek reset.

Home Latch C2.22.05.1Purpose

When on it indicates return to home seek is in progress. It will be turned off by home pulse.

When on also blocks track pulses & slow drive

Set

- a) Return to home seek pulse.

Reset

Home pulse.

Reverse Latch C2.22.06.1Purpose

- a) Allows track pulses on reverse direct seek.

Set

- a) Master Reverse.

Reset

- a) 15 MS detent in
- b) Master stop & Ready.

Slow Latch C2.22.05.1Purpose

- a) Causes access to move at slow speed when seeking.

Set

- a) Mod 0 slow.
- b) Not slow interlock.

Reset

- a) Detent photo cell pulse.

Stop Latch C2.22.06.1

Purpose

Blocks track pulses & helps set detent latch.

Set

- a) Master stop & track pulse.

Reset

- a) Any seek pulse.

TAR (Track Address Register) C2.25.02.1

Triggers 2, 4, 8, 10, 20, 40, 80, 100

Purpose

- a) The TAR is pulled to a particular count and then always counts down.
- b) During a Seek Op (this is a seek overlap feature), the TAR is used to count tracks, and the decoded outputs tell the access arm when to slow down, and when to stop.
- c) During seek ops the counter counts down by two's.

Set

- a) Count Trk. pulse.

Reset

- a) TAR reset 1 for triggers 2 - 4.
TAR Reset 1 is a delayed track pulse & trigger 8 on. Also, begin op reset.
- b) TAR Reset 2 for Triggers 20 & 40.
TAR Reset 2 is a delayed track pulse and trigger 80.
Also, begin op reset.
- c) All other triggers use TAR Reset which is made of Begin Op Reset.

Write Trigger C2.32.05.1

Purpose

This trigger flips with each write data bit.

SET

- a) Binary - with each write data bit.

RESET

- a) None.

1311-II Input/Output
Signal Lines

(Presented in General Order of Timed Occurrence During Operations)

<u>Category</u>	<u>Title</u>	<u>Logic</u>	<u>Level at Logical "1"</u>	<u>1311-II</u>	<u>1311-I</u>	<u>Description</u>
Selection	Module Select (one line/drive)	C2.06.05.1	-C	←		Selects unit to be used.
	Head Select (ten lines)	C2.32.05.1	-Y	←		One line selected to gate desired head for reading or writing.
Condition	Selected and Ready	C2.22.02.1	+Y	→		Signal indicating the selected unit is ready to read or write.
	Busy	C2.22.02.1	+Y	→		Signal indicating the carriage is in motion.
	Sel On Line	C2.06.06.1	-C	→		Signal indicating the selected unit is operable.
	Write Safety	C2.32.05.1		→		Signal indicating that an unsafe condition exists in the write safety circuits.
	Erase Safety	C2.32.05.1		→		Signal indicating that an unsafe condition exists in the erase safety circuits.
	Sel Safety	C2.32.05.1		→		Signal indicating that an unsafe condition exists in the Sel Safety circuits.
Seek	Seek	C2.06.05.1	-C	←		A Start Pulse to the motion control circuits. motion is from previous setting to outside home cylinder, to new setting.
	Gated Track Pulses	C2.06.06.1	-C	→		Signal pulse occurring each time a cylinder is located when the access carriage is in motion in the Forward direction.
	Slow	C2.06.05.1	-C	←		Signal to motion control circuits that causes motion to proceed at slow speed when carriage is within 10 tracks of desired location.
	Ready to Stop	C2.06.05.1	-C	←		Signal to motion control circuits that causes motion to stop and a detent to set.
Direct Seek	Direct Seek	C2.06.05.1	-C	←		(Optional Feature) A start pulse to the motion control circuits. Motion is directly from previous setting to new setting.
	Reverse	C2.06.05.1	-C	←		(Direct Seek Optional Feature) Signal causes motion in the reverse direction. When at +C level causes motion in the forward direction.

1311 -II Input/Output
Signal Lines

(Presented in General Order of Timed Occurrence During Operations)

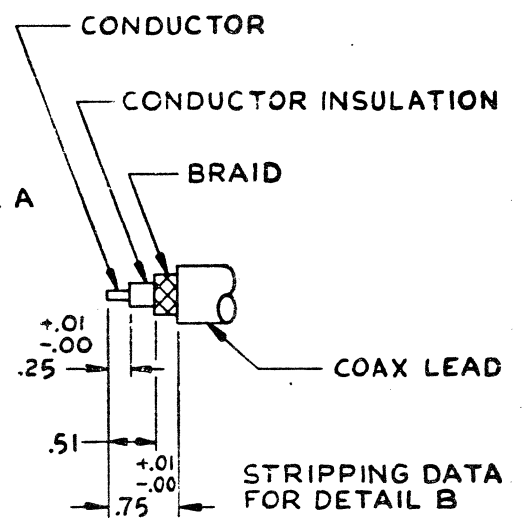
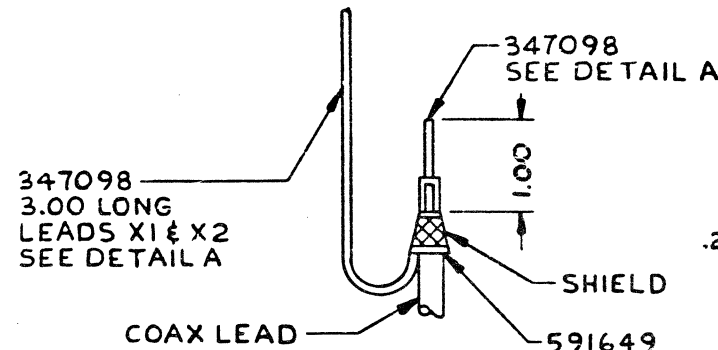
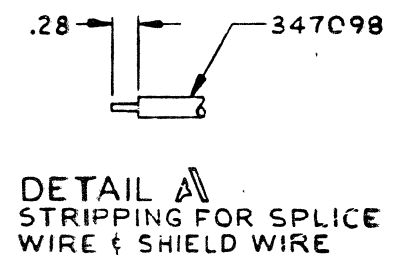
<u>Category</u>	<u>Title</u>	<u>Logic</u>	<u>Level at</u> <u>Logical "1"</u>	<u>1311-II</u> <u>1311-I</u>	<u>Description</u>
	Gated Track Pulses	C2.06.06.1		→	Signal pulse occurring each time a cylinder is located when the access carriage is in motion.
Seek Overlap	Begin Op Reset	C2.06.05.5	-C	←	(Optional Feature) Used to reset track address reg. if unit is not busy.
	Seek Addr. Xfer	C2.06.05.5	+C	←	(Seek Overlap Optional Feature) Used to enable the setting of a new address into the track address reg.
	Set TAR (8 lines)	C2.06.05.4	+C	←	(Seek Overlap Optional Feature) An address buss used to set a new address into the track address.
	Seld Stop	C2.06.06.1	-C	→	(Seek Overlap Optional Feature) Used to enable sending of the Direct Seek signal. When at the +C level indicates motion has not terminated. Also used to block sending of direct seek signal if previous setting is the same as the new desired setting.
Read/Write	Pre-Sector Pulse	C2.06.06.1	-C	→	Signal pulse occurring just prior to each sector. Used with sector pulse when they overlap to create an index pulse which defines beginning of track.
	Sector Pulse	C2.06.06.1	-C	→	Signal pulse, following the pre-sector pulse, that defines the beginning of each sector. It is also used, with pre-sector pulse when they overlap, to create an Index Pulse.
	Signal Gate	C2.06.05.1	-C	←	Used to block unwanted transients at input to the read pre-amplifier during write operations.
	Write Gate	C2.06.05.1	-C	←	Used to enable write data to be written to the magnet surface.
	Pre-Amp Output	C2.32.05.1		→	Serial-Serial Data Read from magnetic surface.
	Write Data	C2.06.05.1	-C	←	Serial-Serial data to be written on the magnetic surface.

CABLE FROM SATELLITE	MASTER LOCATION NOTE XV							
	LEAD 1		LEAD XI		LEAD 2		LEAD X2	
NO. 1	A07D	A10D	A08J	A10J	A07A	A10A	A08J	A10J
NO. 2	A07E	A10E	A09J	A11J	A07H	A10H	A09J	A11J
NO. 3	A07F	A10F	A10J	A13J	A07Q	A10Q	A10J	A13J
NO. 4	A07G	A10G	A11J	A14J	A07R	A10R	A11J	A14J
	A	B	A	B	A	B	A	B

STANDARDS CODE	TECH SERVICES APPRO	SYM	DATE	CHANGE NO	TECH APPRO	SYM	DATE	CHANGE NO	TECH APPRO	DEVELOPMENT NO	Q/M
5-2090	ELEC		4-6-64	408310D							
RELEASED FOR ASM	QTY		9-23-64	408050J							
2179002	1		2-11-65	LC8307A						2178585	

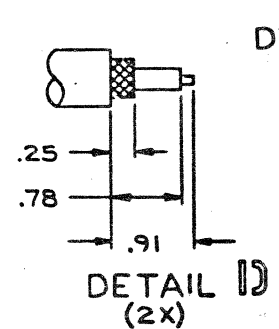
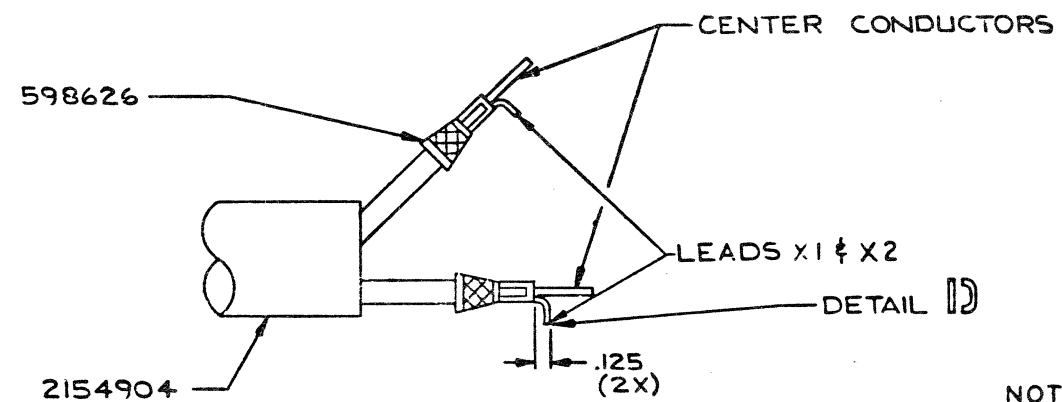
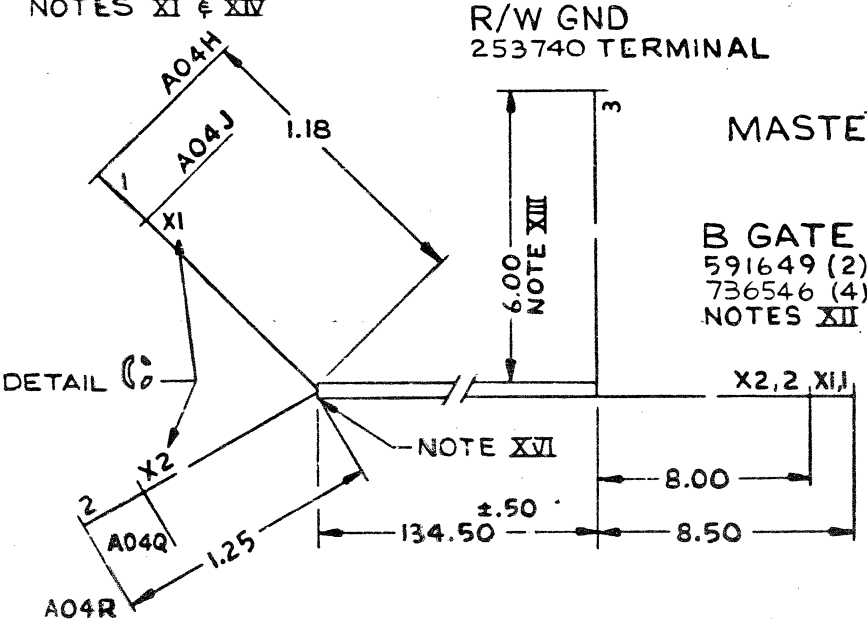
2178585

- 2154904-2 COAX SHIELDED CABLE
- 347098-NO. 22 AWG BLACK FOR SPLICE LEADS & LEADS XI & X2 (NOTE XII)
- 591649-(2) CONNECTOR
- 595978-CONNECTOR-CARD
- 253740-TERMINAL
- 736546-(4) TERMINAL
- 595626 (2) TERMINATION
- 112628-(2) SCREW
- 2178869-CLAMP



- 114050-TAPE (NOTE XIV)
- 113821-TUBING (NOTE XIII)
- LAST WIRE NO. USED - 3
- WIRE NO'S NOT USED - NONE

- SATELLITE**
B GATE
 598626 (2) TERMINATION
 595978 CONNECTOR CARD
 2178869 CLAMP
 112628(2) SCREW
 NOTES XI & XIV



- NOTES:**
- X CABLE MUST CONFORM TO ENG SPEC 899610
 - XI SEE DETAIL "C" FOR PREPARATION OF COAX LEADS & SHIELD LEADS XI & X2 ON SATELLITE END
 - XII SEE DETAIL "B" FOR TERMINATION OF COAX LEADS & SHIELD ON MASTER END
 - XIII LEAD 3 IS FORMED BY TWISTING THE CABLE SHIELD INTO A WIRE & PULLING THRU TUBING 113821
 - XIV TAPE WITH 114050 AT BREAKOUT OF LEAD 3 TO COVER EXPOSED SHIELD ON MASTER END ONLY
 - XV USE COLUMN "A" FOR MOD I AT SUFFIX "C" LEVEL CONNECTIONS. USE COLUMN "B" FOR CONNECTING TO ALL OTHER MASTERS
 - XVI CUT SHIELD OFF THIS END. TAPE TO COVER EXPOSED SHIELD.

2178585

IBM MATERIAL	NO	TOLERANCE UNLESS OTHERWISE NOTED	2 PLACE DEC ±	MUST CONFORM TO ENG SPEC 890350	INTERNATIONAL BUSINESS MACHINES CORP
CASE DEPTH			3 PLACE DEC ±	ALIGNMENT WITHIN	NAME CABLE ASM
HARDNESS			ANGLES ±	CONC TO DU WITHIN	PRE-AMP INTERCONN
SURFACE TREATMENT		CORNERS AND / OR EDGES BROKEN	OUTSIDE MAX	FLAT WITHIN	DESIGN LNS 2-1764 TYPE 1311-II
		RADI UNLESS OTHERWISE NOTED	INSIDE MAX	PARALLEL TO DU WITHIN	DETAIL BW 3-1-64 SCALE
				STRAIGHT WITHIN	CHECK LUS 3-20-64 DRAW EDD 3-11-64
				SQUARE TO DU WITHIN	APPRO KEF 1-1-64 CHECK G 3-5-64

2178578

STANDARDS CODE	TECH SERVICES APPRO	SYM	DATE	CHANGE NO	TECH APPRO	SYM	DATE	CHANGE NO	TECH APPRO	DEVELOPMENT NO	Q/M
5-2090	ELEC			4-664	40830D						
RELEASED FOR ASM	MET			10-29-64	408050L						
2179002	PLASTIC			11-20-64	408335						
	FINISH			APR 66	D411196						

2178578

2178578

TO MASTER OR SATELLITE

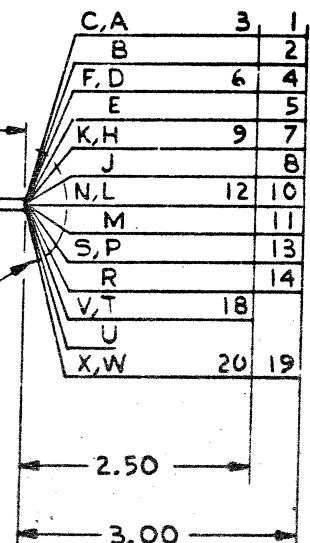
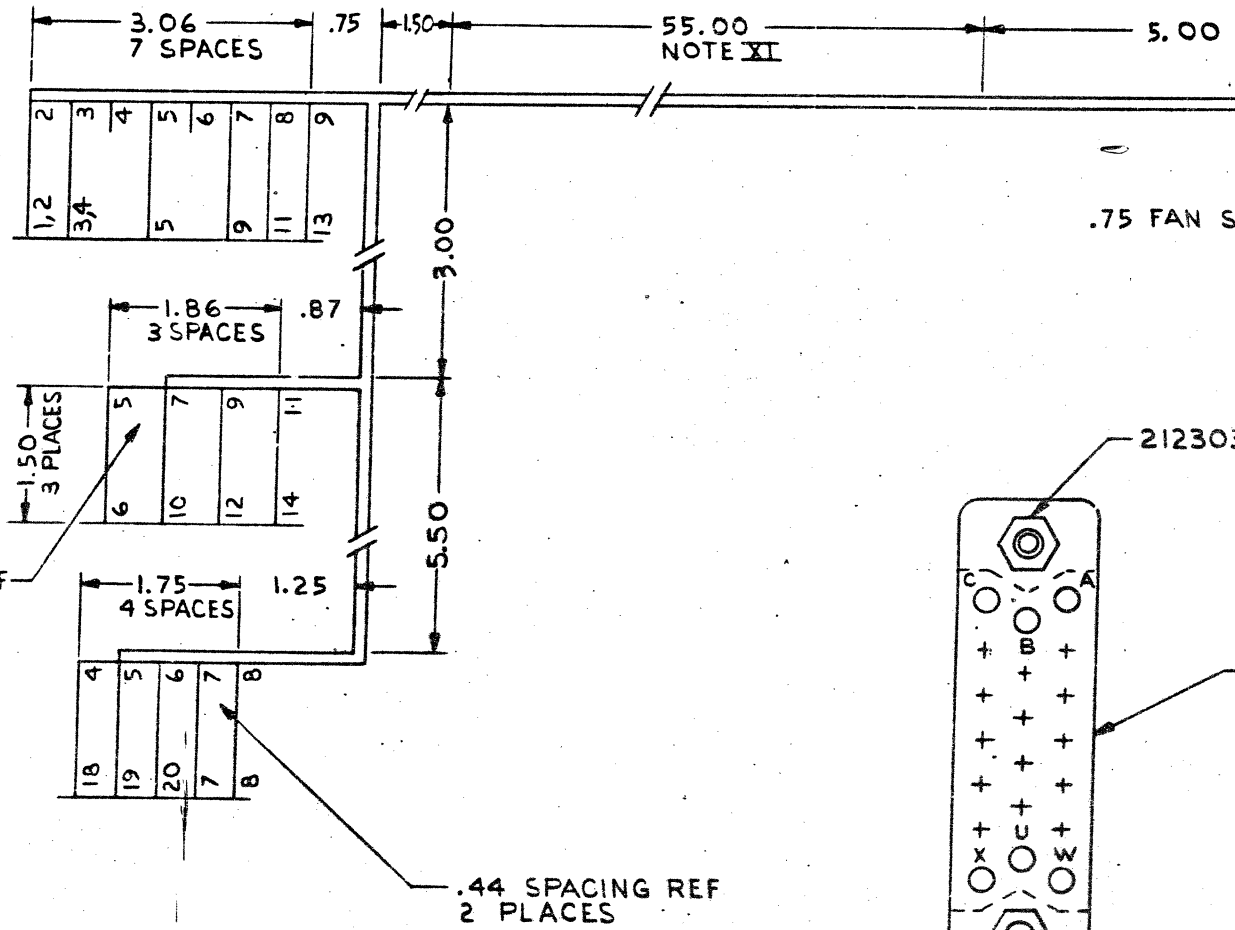
- 2122255 CONNECTOR
- 2122258 (5) CONTACT PINS (LEADS 7,8,18,19, & 20)
- 2122260 (12) CONTACT PINS
- 2123032 STRAIN RELIEF

SATELLITE

TS5
255994 (8) TERMINAL

D.C. ISOL BUS
186965 (4) TERMINAL

TS6
186967 (5) TERMINAL



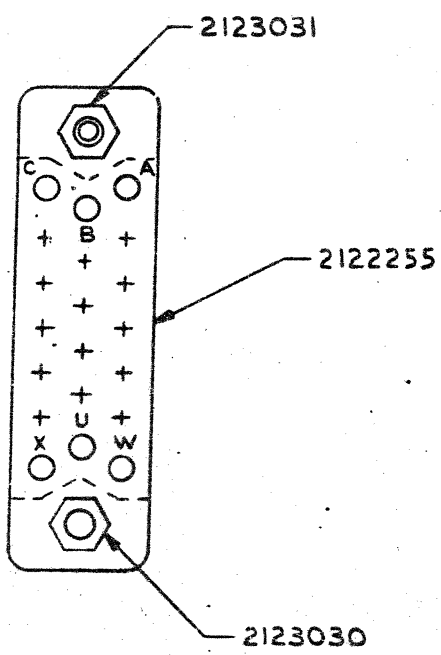
- 2154903 19 CONDUCTOR CABLE
- NO. 16 AWG WHITE LEADS 1,2,3, & 4
- NO. 16 AWG TWISTED PAIR LEADS 5,6,9-14
- NO. 20 AWG BLACK LEADS 7,8,18,19, & 20
- 2122255 MALE CONNECTOR
- 186967 (5) TERMINAL
- 186965 (4) TERMINAL
- 255994 (8) TERMINAL

- 2123030 GUIDE PIN
- 2123031 GUIDE PIN
- 2122258 (5) CONTACT PINS
- 2122260 (12) CONTACT PINS
- 2123032 STRAIN RELIEF

147440 MACHINE THREAD

LAST WIRE NO. USED- 20
WIRE NO'S. NOT USED- 15,16, & 17

NOTES:
X CABLE MUST CONFORM TO ENG SPEC 899610
XI ALL AREAS TO BE STRIPPED OF OUTER JACKET EXCEPT THIS DIMENSION. CUT OFF UNUSED WIRES AT THESE POINTS.

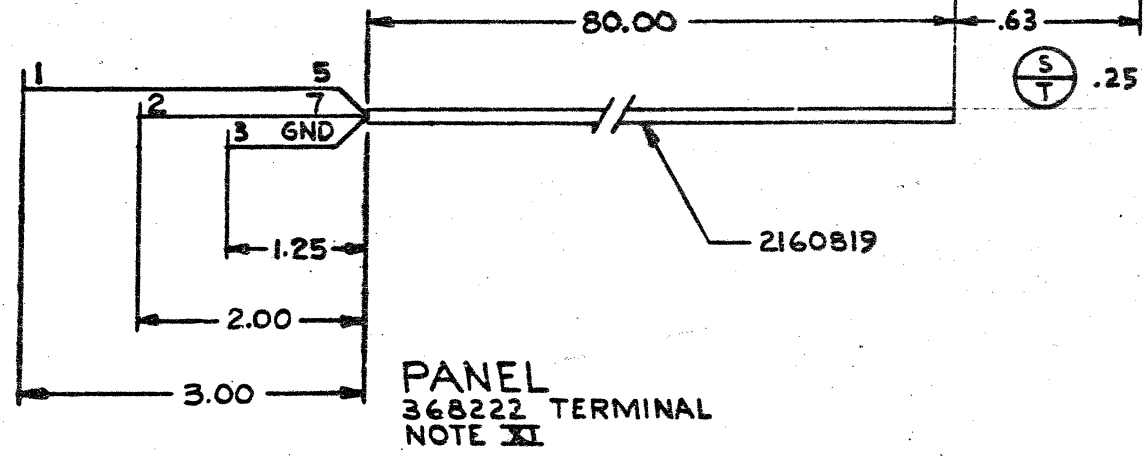
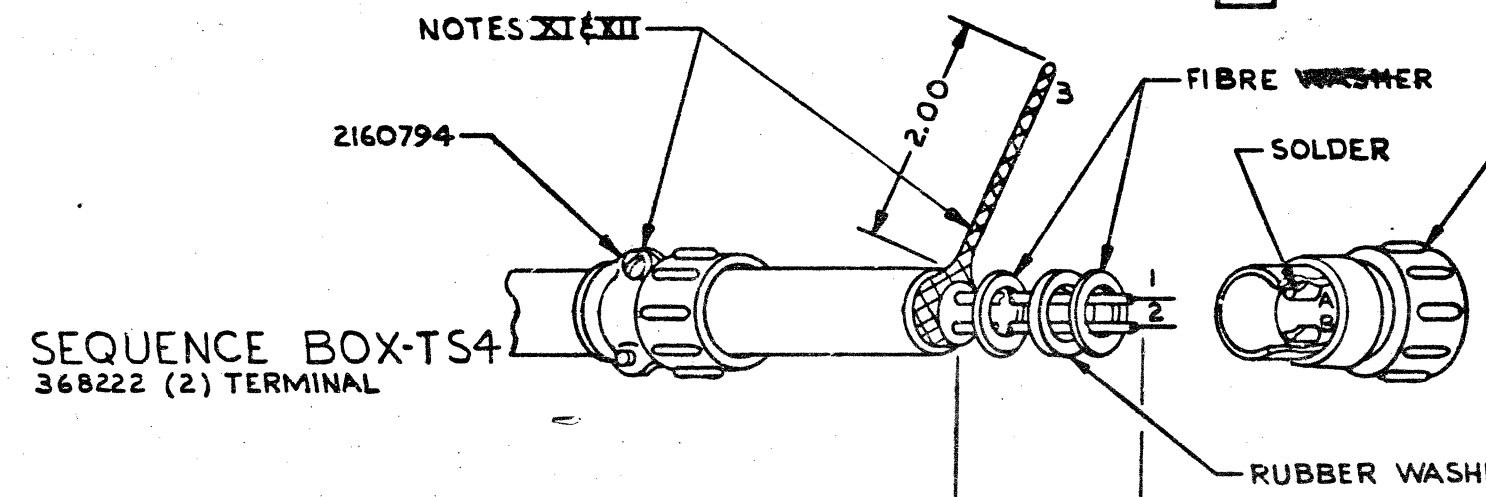


IBM MATERIAL	NO	TOLERANCE UNLESS OTHERWISE NOTED	2 PLACE DEC ±	3 PLACE DEC ±	ANGLES ±	CORNERS AND / OR EDGES BROKEN	RADI UNLESS OTHERWISE NOTED	MUST CONFORM TO ENG SPEC 890350	ALIGNMENT WITHIN	CONC TO DU WITHIN	FLAT WITHIN	PARALLEL TO DU WITHIN	STRAIGHT WITHIN	SQUARE TO DU WITHIN	INTERNATIONAL BUSINESS MACHINES CORP	NAME	DESIGN	DETAIL	CHECK	APPRO	DATE	SCALE	DRAWN	DATE
									NOTE I	NOTE II	NOTE III	NOTE IV	NOTE V	NOTE VI		CABLE ASM-	LNS 2-7-64	500 2-10-64	LNS 2-21-64	RES 2-30-64		DW 2-14-64	EDD 2-12-63	

2178578

STANDARDS CODE	TECH SERVICES APPRO	SYM	DATE	CHANGE NO	TECH APPRO	SYM	DATE	CHANGE NO	TECH APPRO	DEVELOPMENT NO	Q/M
RELEASED FOR ASM	QTY									2178579	
2179782	1										

2178579



2160819 CABLE NOTE XIII
368222 (3) TERMINAL
253740 TERMINAL
62031 LOCKWASHER

2160794 CLAMP
2160792 PLUG

2178579

$\frac{S}{T}$ SKIN & TIN AS NOTED

LAST WIRE NO. USED - 3
WIRE NO'S NOT USED - NONE

- NOTES:
- XI CABLE MUST CONFORM TO ENG SPEC 89%10
 - XII FORM SHIELD INTO WIRE, LEAD 3 APPLY 21228% TUBING OVER FORMED SHIELD.
 - XIII ASSEMBLY PROCEDURE. FEED SHIELD BACK UNDER CABLE CLAMP. CRIMP 253740 TERMINAL ON SHIELD AND FASTEN TO CABLE CLAMP. USE 62031 WASHER UNDER TERMINAL TO SECURE.
 - XIV WHITE WIRE FOR LEAD 1, BLACK WIRE FOR LEAD 2

2178579

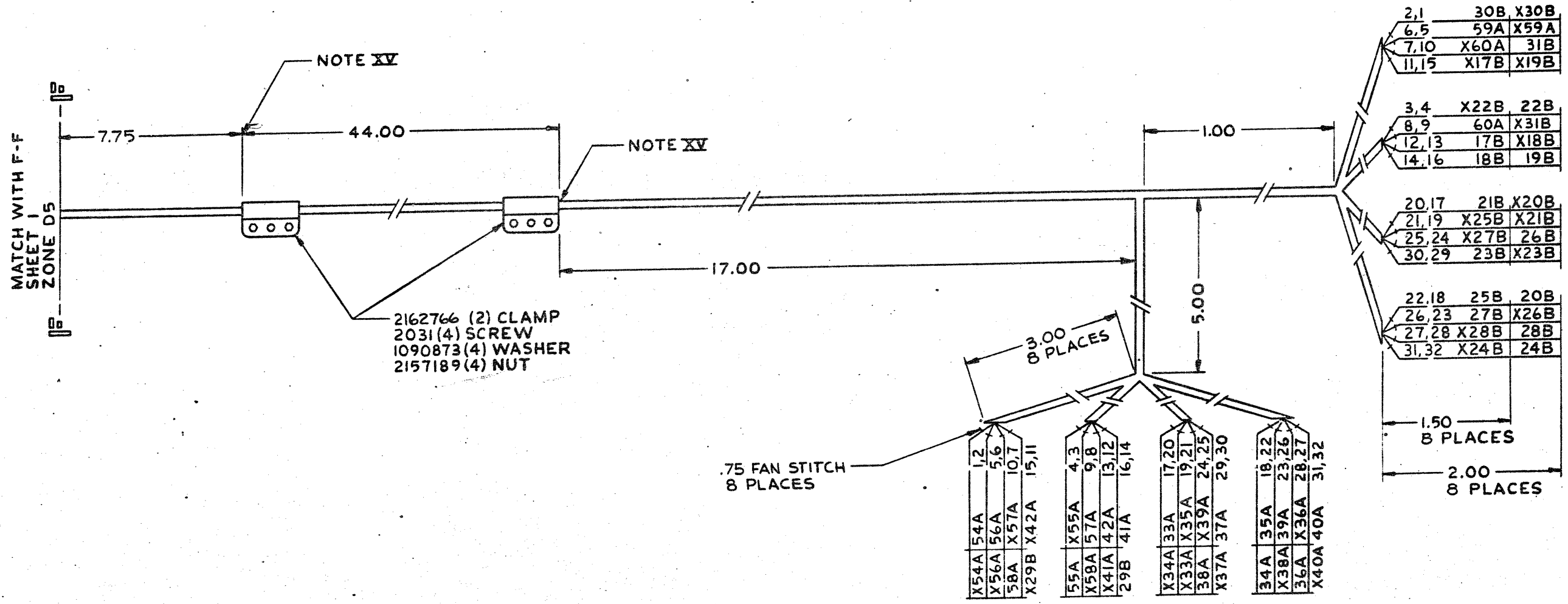
IBM MATERIAL	NO	TOLERANCE UNLESS OTHERWISE NOTED	2 PLACE DEC ±	MUST CONFORM TO ENG SPEC 890350	INTERNATIONAL BUSINESS MACHINES CORP
CASE DEPTH			3 PLACE DEC ±	ALIGNMENT WITHIN NOTE I	NAME CABLE ASM-
HARDNESS			ANGLES ±	CONC TO DU WITHIN TIR NOTE II	AC INTERCONNECTING
SURFACE TREATMENT		CORNERS AND / OR EDGES BROKEN	OUTSIDE MAX	FLAT WITHIN NOTE III	DESIGN LNS 2-7-64 TYPE
		RADI UNLESS OTHERWISE NOTED	INSIDE MAX	PARALLEL TO DU WITHIN NOTE IV	DETAIL LNS 2-8-64 SCALE
				STRAIGHT WITHIN NOTE V	CHECK LNS 3-30-64 DRAW ED&D 2-26-64
				SQUARE TO DU WITHIN NOTE VI	APPRO KES 4-1-64 CHECK GWA 2-28-64

2178580

STANDARDS CODE	TECH SERVICES APPRO	SYM	DATE	CHANGE NO	TECH APPRO	SYM	DATE	CHANGE NO	TECH APPRO	DEVELOPMENT NO	Q/M
			4-6-64	408110D							
			5-25-64	D408302							
			8-6-64	408310K							
			10-21-64	408050K							
RELEASED FOR ASM	QTY									2178580	
2179002	1										

SHEET 2 OF 2

CONNECTORS
 546013(2) CONNECTOR
 598041(64) TERMINAL
 NOTES XI, XIII, XVI & XVIII



IBM MATERIAL	NO	TOLEPANCE UNLESS OTHERWISE NOTED	2 PLACE DEC ±	MUST CONFORM TO ENG SPEC 890350	INTERNATIONAL BUSINESS MACHINES CORP
CASE DEPTH		OTHERWISE NOTED	3 PLACE DEC ±	ALIGNMENT WITHIN	NAME CABLE ASM
HARDNESS		CORNERS AND/OR EDGES BROKEN	ANGLES ±	CONC TO DU WITHIN	SIGNAL 1311-1 TO 1311-2
SURFACE TREATMENT		RADIUS UNLESS OTHERWISE NOTED	OUTSIDE MAX	FLAT WITHIN	DESIGN LNS 2-10-64 TYPE 1311
			INSIDE MAX	PARALLEL TO DU WITHIN	DETAIL LNS 2-10-64 SCALE
				STRAIGHT WITHIN	CHECK LNS 3-12-64 DRAW EDD 2-11-64
				SQUARE TO DU WITHIN	APPRO KES 3-30-64 CHECK DW 2-14-64

2178580

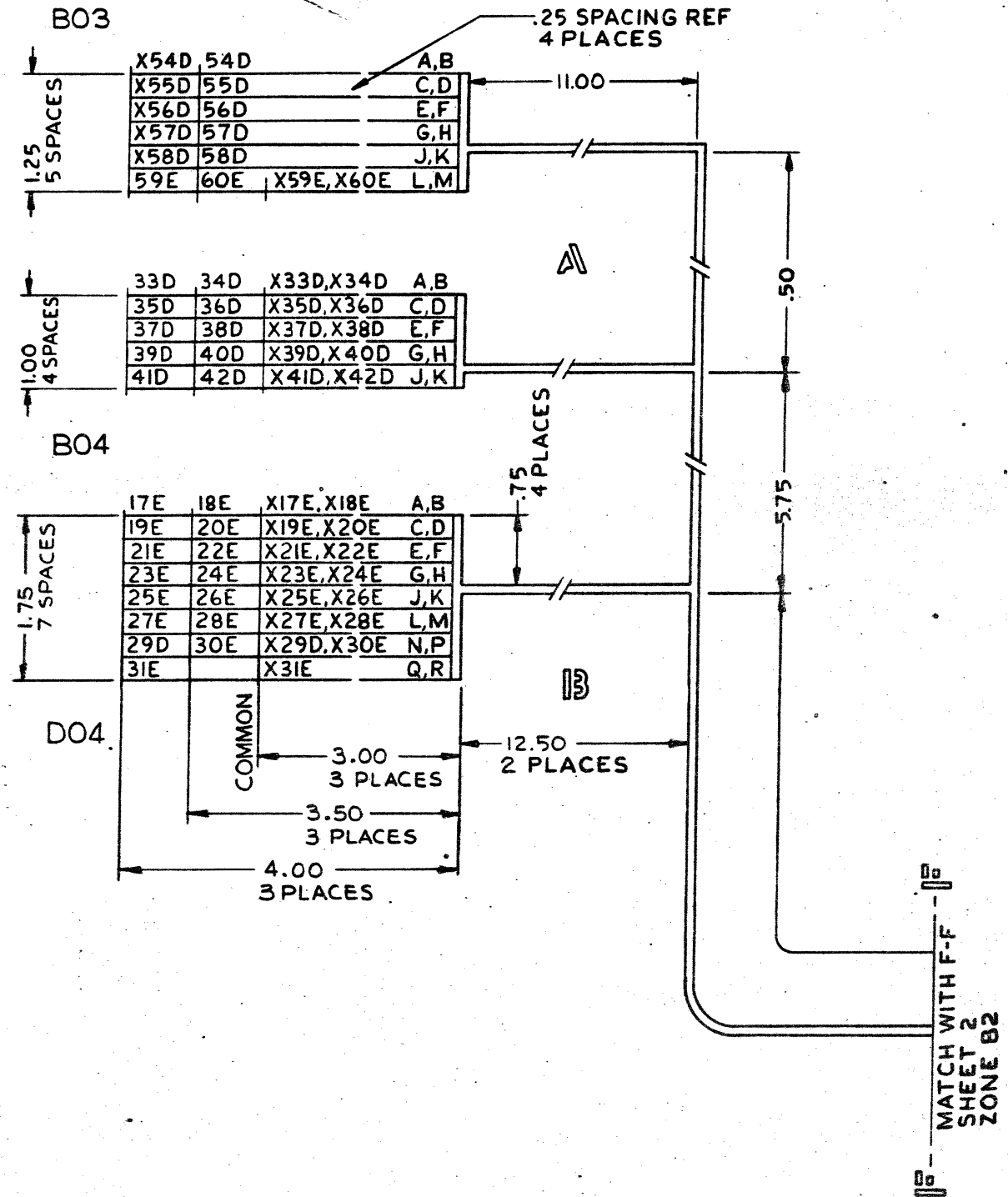
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STANDARDS CODE	TECH SERVICES APPRO	SYM	DATE	CHANGE NO	TECH APPRO	SYM	DATE	CHANGE NO	TECH APPRO	DEVELOPMENT NO	Q/M
			4-6-64	408310D							
			5-25-64	D408302							
			8-6-64	408310K							
			10-21-64	408050K							
2179002	1									2178580	

SHEET 1 OF 2

CARD GATE
396303(3) CONNECTOR CARD

Ⓢ .19
NOTES III, XIV, XVI & XVII



- NOTES:
- X CABLE MUST CONFORM TO ENG SPEC 899610
 - XI CONNECTORS MUST CONFORM TO ENG SPEC 897037
 - XII CONNECTOR CARDS MUST CONFORM TO ENG SPEC 890470
 - XIII WHEN CRIMPED CONTACT IS INSERTED INTO RECEPTACLE, GAP BETWEEN CONTACT AND RECEPTACLE WALL MUST NOT EXCEED .005
 - XV STRIP CABLE COVERING TO THESE POINTS
 - XVI CARDS ONLY TO BE IDENTIFIED WITH LETTERING .25 ±.06 HIGH, BLACK COLOR AND MUST CONFORM TO ENG SPEC 899654
 - XVII JUMPER "R" PIN TO COMMON BUS WITH 509670 WIRE
 - XVIII ASSEMBLE CONNECTOR 546013 PER REF DWG 2128708
 - XIV ASSEMBLE CONNECTOR CARD PER REF DWG 216211, EXCEPT FOR CONNECTOR CARD PART NO. AND ADDITIONAL LENGTH OF CARD

2178689-NO. 22 AWG TWISTED PAIR COLOR CODED ALL LEADS
T1, T2, T3 ETC. OF TWISTED PAIR FOR LEADS XI, X2, X3 ETC.
1, 2, 3 ETC. OF TWISTED PAIR FOR LEADS 1, 2, 3 ETC.

509670-NO. 22 AWG NOTE XVII
396303-(3) CONNECTOR CARD
546013-(2) CONNECTOR
598041-(64) TERMINAL

- 2031-(4) SCREW
- 48594-(4) SCREW
- 322552-(4) SCREW
- 338238-(9) SCREW
- 587393-(2) SCREW
- 216208-(3) CLAMP
- 587385-(4) CLAMP
- 2162766-(2) CLAMP
- 216209-(3) SUPPORT
- 216210-(3) SPACER
- 257189-(4) NUT
- 587383-(2) COVER
- 597506-(4) RETAINER
- 1090873-(4) WASHER

147440-MACHINE THREAD

Ⓢ SKIN & TIN AS NOTED

LAST WIRE NO. USED-60
WIRE NO'S NOT USED-1-16, 32, 43-53

089812

IBM MATERIAL	NO	TOLERANCE UNLESS OTHERWISE NOTED	2 PLACE DEC ±	MUST CONFORM TO ENG SPEC 890350	INTERNATIONAL BUSINESS MACHINES CORP
CASE DEPTH			3 PLACE DEC ±	ALIGNMENT WITHIN NOTE I	NAME CABLE ASM-
HARDNESS			ANGLES ±	CONC TO DU WITHIN TIR NOTE II	SIGNAL 1311-1 TO 1311-2
SURFACE TREATMENT		CORNERS AND / OR EDGES BROKEN	OUTSIDE MAX	FLAT WITHIN NOTE III	DESIGN LNS 2-10-64 TYPE 1311-II
		RADI UNLESS OTHERWISE NOTED	INSIDE MAX	PARALLEL TO DU WITHIN NOTE IV	DETAIL 3W 2-10-64 SCALE
				STRAIGHT WITHIN NOTE V	CHECK LNS 2-13-64 DRAW EDD 2-11-64
				SQUARE TO DU WITHIN NOTE VI	APPRO KES 4-1-66 CHECK DW 2-14-64