To identify any component mounted on a circuit board and to locate that component in the appropriate schematic diagram

1. Locate the Circuit Board Illustration

a. In the instrument identify the Assembly Number of the circuit board in question. The Assembly Number is usually printed on the upper left corner of the circuit board on the component side.

b. In the manual locate and pull out tabbed page whose title corresponds with the Assembly Number of the circuit board. Circuit board assembly numbers and board nomenclature are printed on the back side of the tabs (facing the rear of the manual).

2. Determine the Circuit Number

a. Compare the circuit board with its illustration and locate the desired component by area and shape on the illustration.

b. Scan the table adjacent to the Circuit Board Illustration and find the Circuit Number of the desired component.

c. Determine the Schematic Diagram Number in which the component is located.

A6 CRT BOARD

COMPONENTS LOCATED ON SCHEMATIC DIAGRAM 10

C602	C632	Q668	R625
C603	C641		R626
C609	C643	R604	R627
C671	C651	R605	R630
C615		R608	R632
C616	Q606	R609	
C617	Q610	R610	
C618	Q615	R614	
C619	Q645	R616	
C624	Q656	R623	
C626	Q665	R624	

COMPONENTS LOCATED ON SCHEMATIC DIAGRAM 11

C670	Q670	R677	
C671	Q672	R679	
C673	Q673	R680	
C680			
C681	R671	U617	
P603	R673	U618	
P607	R674	U619	
Q669	R675		

COMPONENT LOCATION TABLE

CRT CIRCUIT DIAGRAM 10

A6 ASSEMBLY

CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
C602	2C	3C	Q656	2F	2B
C603	1C	1G	Q665	1G	1B
C609	4E	2E	Q668	2G	2B
C612	7C	3E			
C615	7C	3D	R604	4C	1E
C616	2C	3C	R605	5D	1E
C617	7D	3D	R608	4E	1D
C618	7E	3E	R609	4E	2D
C619	6E	3C	R610	7B	3E
C624	4F	3D	R614	7C	3D
C626	7G	2D	R616	1C	3D
C632	8G	1E	R623	4D	2E
C643	3D	4B	R625	7F	2D
C651	3E	3B	R626	7F	2D
		3B	R627	7G	1D
			R630	4F	1D
Q606	4E	2D			
Q610	7C	3D	TP624	3B	2D
Q615	7D	3D			
Q645	3E	3B	U615	1D	3C

CHASSIS MOUNTED PARTS

CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
L635	51	CHASSIS	V635	6J	CHASSIS

MANUAL BINDER

MANUAL BINDER

A6 CRT BOARD

A6 CRT BOARD

Figure 8-7. A6 CRT board component locations.

Static Sensitive Devices
See Maintenance Section

COMPONENT NUMBER EXAMPLE

Component Number
A23 A2 R1234

A6 CRT BOARD

PULL OUT PAGE TABS FOR CIRCUIT BOARD ILLUSTRATION

ASSEMBLY NUMBER AND CIRCUIT BOARD NAME

ILLUSTRATION FOR INSTRUMENT CIRCUIT BOARD LOCATION

4. Determine the Circuit Board Illustration and Component Location

a. From the schematic diagram, determine the Assembly Number of the circuit board on which the component is mounted. This information is boxed and located in a corner of the heavy line that distinguishes the board outline.

b. Scan the Component Location Table for the Assembly Number just determined and find the Circuit Number of the desired component.

c. Under the BOARD LOCATION column, read the grid coordinates for the desired component.

5. Locate the Component on the Circuit Board

a. In the manual, locate and pull out the tabbed page whose title and Assembly Number correspond with the desired circuit board. This information is on the back side of the tabs.

b. Using the Circuit Number and grid coordinates, locate the component on the Circuit Board Illustration.

c. In the circuit board location illustration, determine the location of the circuit board in the instrument.

d. Find the circuit board in the instrument and compare it with its illustration in the manual to locate the desired component on the board.

Figure 9-3. Locating components on schematic diagrams and circuit board illustrations.

uit Number

rcuit board with its illustration and locate
ponent by area and shape on the illustra-

djacent to the Circuit Board Illustration and
Number of the desired component.

Schematic Diagram Number in which the
ocated.

3. Locate the Component on the Schematic Diagram

a. Locate and pull out tabbed page whose number and title correspond with the Schematic Diagram Number just determined in the table. Schematic diagram nomenclature and numbers are printed on the front side of the tabs (facing the front of the manual).

b. Scan the Component Location Table adjacent to the schematic diagram and find the Circuit Number of the desired component.

c. Under the SCHEM LOCATION column, read the grid coordinates for the desired component.

d. Using the Circuit Number and grid coordinates, locate the component on the schematic diagram.

A6 CRT BOARD

COMPONENTS LOCATED ON SCHEMATIC DIAGRAM 10

C602	C632	Q668	R625
C603	C641		R626
C609	C643	R604	R627
C671	C651	R605	R630
C615		R608	R632
C616	Q606	R609	
C617	Q610	R610	
C618	Q615	R614	
C619	Q645	R616	
C624	Q656	R623	
C626	Q665	R624	

COMPONENTS LOCATED ON SCHEMATIC DIAGRAM 11

C670	Q670	R677	
C671	Q672	R679	
C673	Q673	R680	
C680			
C681	R671	U617	
P603	R673	U618	
P607	R674	U619	
Q669	R675		

CRT CIRCUIT DIAGRAM 10

COMPONENT LOCATION TABLE

A6 ASSEMBLY

CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
C602	2C	3C	Q656	2F	2B
C603	1C	1G	Q665	1G	1B
C609	4E	2E	Q668	2G	2B
C612	7C	3E			
C615	7C	3D	R604	4C	1E
C616	2C	3C	R605	5D	1E
C617	7D	3D	R608	4E	1D
C618	7E	3E	R609	4E	2D
C619	6E	3C	R610	7B	3E
C624	4F	3D	R614	7C	3D
C626	7G	2D	R616	1C	3D
C632	8G	1F	R623	4D	2E
C643	3D	4B	R625	7F	2D
C651	3E	3B	R626	7F	2D
		3B	R627	7G	1D
			R630	4F	1D
Q606	4E	2D			
Q610	7C	3D	TP624	3B	2D
Q615	7D	3D			
Q645	3E	3B	U615	1D	3C

CHASSIS MOUNTED PARTS

CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
L635	51	CHASSIS	V635	6J	CHASSIS

MANUAL BINDER

PULL OUT PAGE TABS FOR SCHEMATIC DIAGRAMS

CRT CIRCUIT 10

MANUAL BINDER

PARTIAL A6 CRT CIRCUIT BOARD

CRT CIRCUIT 10

SCHEMATIC DIAGRAM NAME AND NUMBER

Numeral and letter at signal lines to or from other diagrams indicates the grid coordinates on another schematic (for example: 4E)

To identify any component in a schematic diagram and to locate that component on its respective circuit board.

(3516-81)4206-33

d Component

he the Assembly
he component is
ocated in a corner
board outline.

or the Assembly
uit Number of the

n, read the grid

c diagrams and circuit board illustrations.

STRATION FOR
UMENT CIRCUIT
RD LOCATION

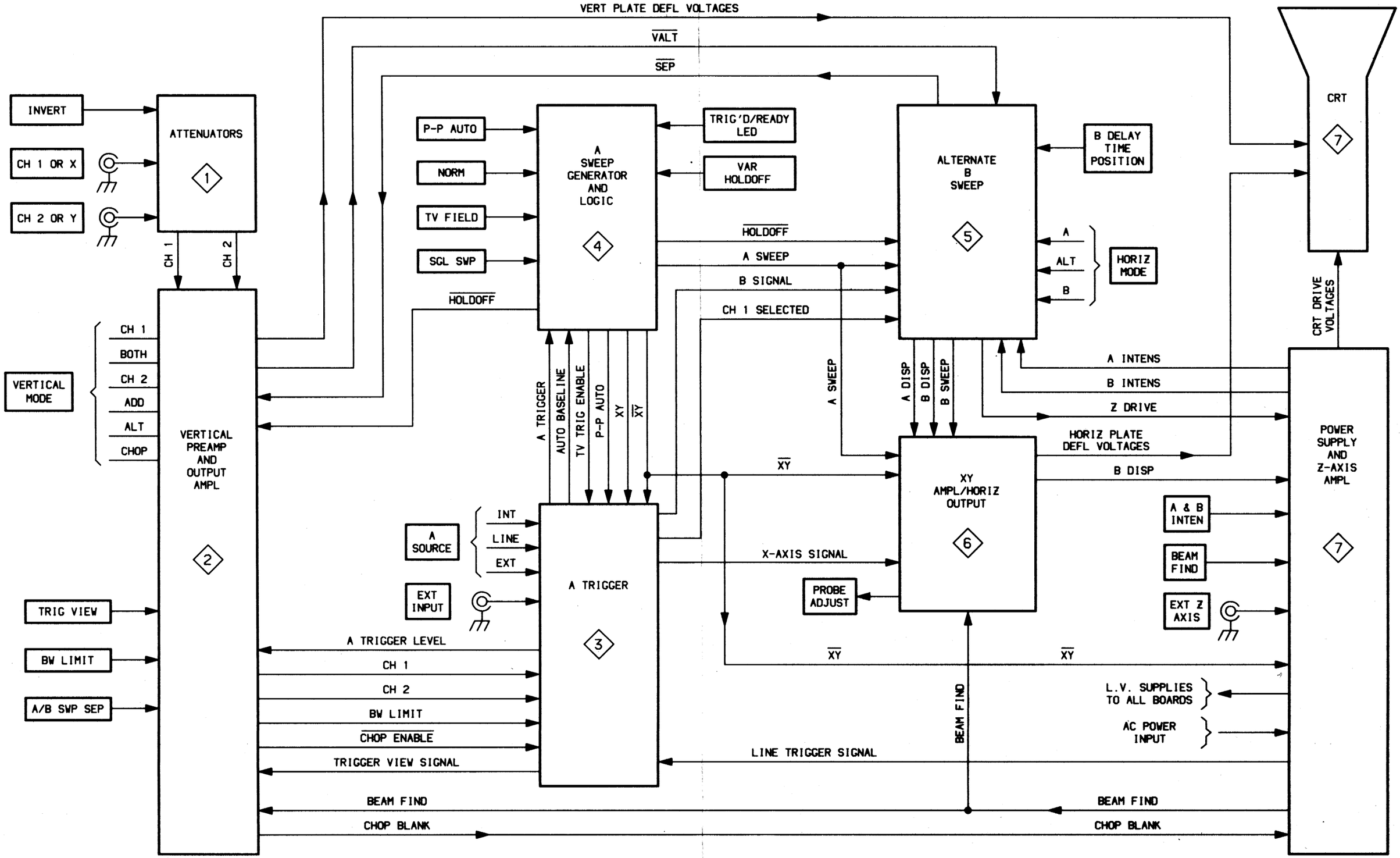


Figure 9-4. Basic block diagram.

4206-34

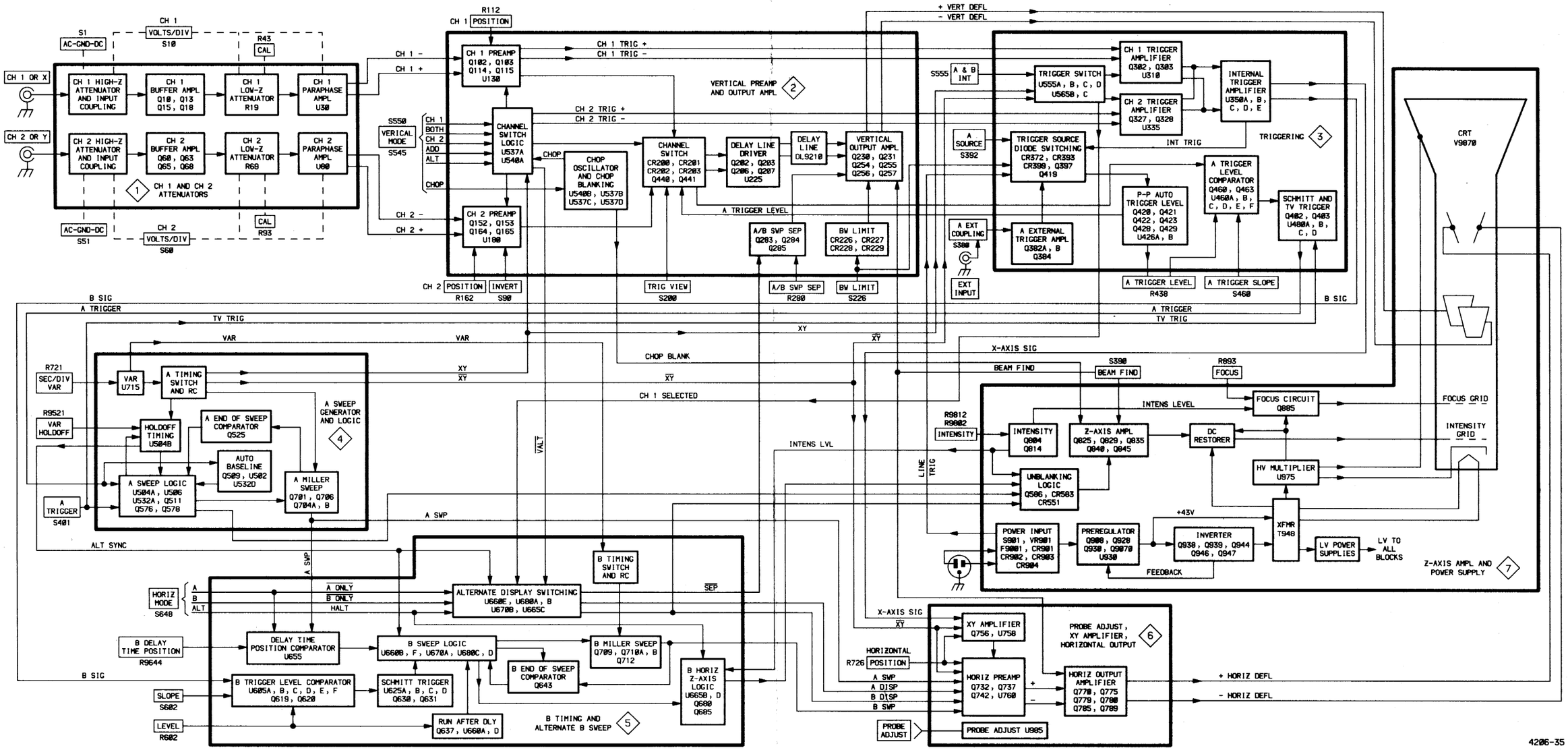
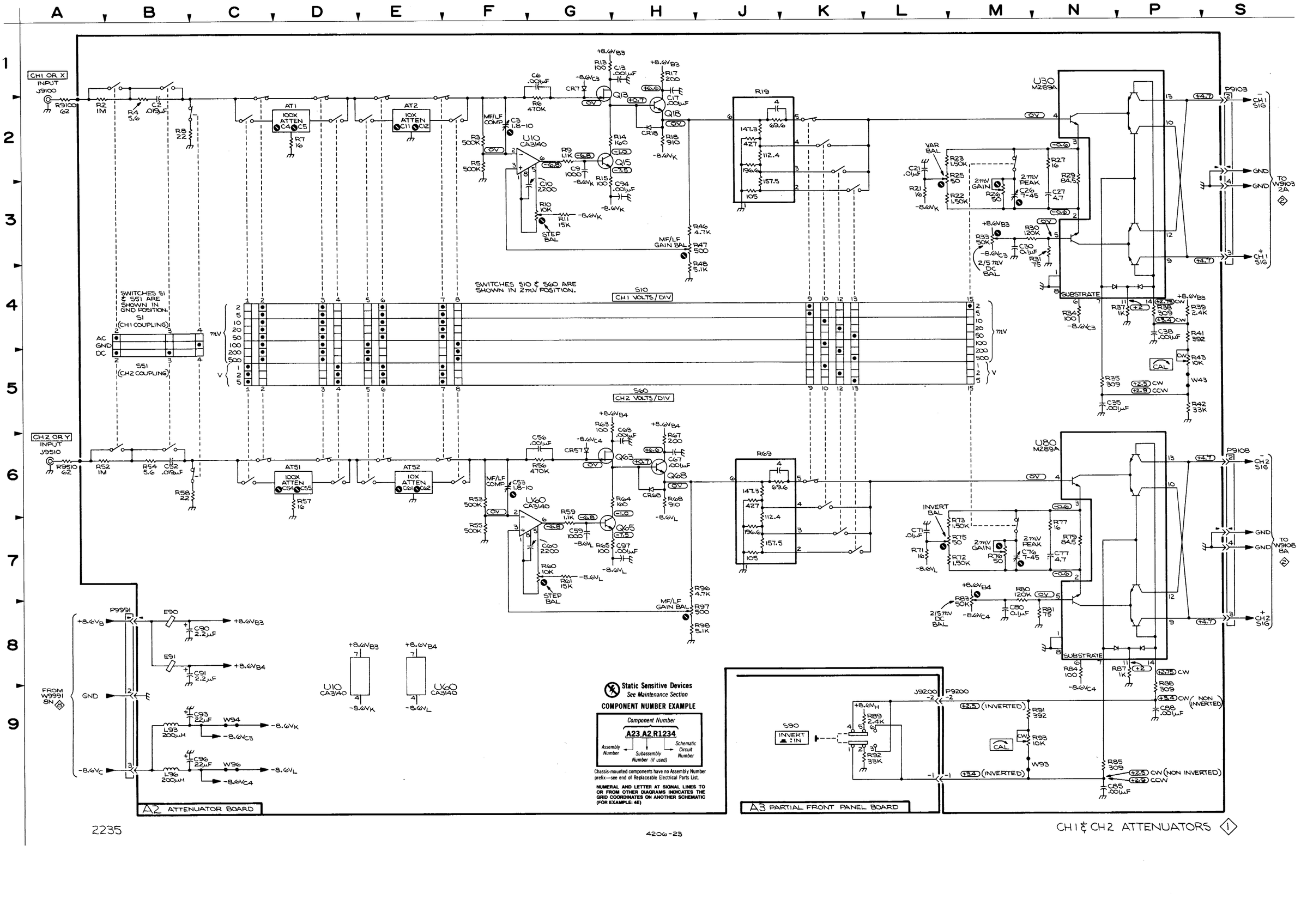
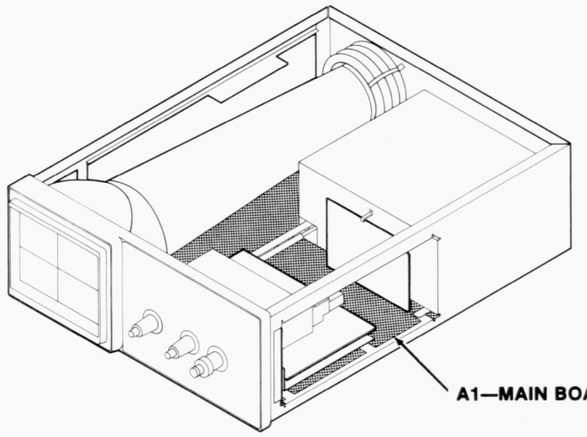


Figure 9-5. Detailed block diagram.


CH1 OR X INPUT J9100
R9100 62
R2 1M
R4 5.6
C2 .019µF
R6 22
AT1 100X ATTEN C4 C5
R7 16
AT2 10X ATTEN C11 C12
MF/LF COMP C3 1.8-10
U10 CA3140
R3 500K
R5 500K
C6 .001µF
R6 470K
CR7
Q13
Q15
R13 100
C13 .001µF
R14 160
R15 100
C34 .001µF
R9 1.1K
C9 1000
R10 10K
R11 15K
STEP BAL
R17 200
C17 .001µF
Q18
CR18
R18 910
R19
147.3
69.6
427
112.4
196.6
157.5
105
MF/LF GAIN BAL
R46 4.7K
R47 500
R48 5.1K
SWITCHES S10 & S60 ARE SHOWN IN 2mV POSITION.
SWITCHES S1 & S51 ARE SHOWN IN GND POSITION.
S1 (CH1 COUPLING)
AC GND DC
S51 (CH2 COUPLING)
S10 CH1 VOLTS/DIV
S60 CH2 VOLTS/DIV
mV
V
2 5 10 20 50 100 200 500 1 2 5
CH2 OR Y INPUT J9510
R9510 62
R52 1M
R54 5.6
C52 .019µF
R58 22
AT51 100X ATTEN C54 C55
R57 16
AT52 10X ATTEN C61 C62
MF/LF COMP C53 1.8-10
U60 CA3140
R53 500K
R55 500K
C56 .001µF
R56 470K
CR57
Q63
Q65
R63 100
C63 .001µF
R64 160
R65 100
C67 .001µF
C67 .001µF
Q68
CR68
R68 910
R69
147.3
69.6
427
112.4
196.6
157.5
105
MF/LF GAIN BAL
R96 4.7K
R97 500
R98 5.1K
U30 M289A
U80 M289A
VAR BAL
C21 .01µF
R23 1.50K
R25 50
R22 1.50K
R21 16
2mV GAIN
2mV PEAK
R26 50
C26 7-45
R27 16
R29 84.5
C27 4.7
R30 120K
C30 0.1µF
R31 75
2/5 mV DC BAL
R33 50K
SUBSTRATE
R34 100
R37 1K
R38 309
R39 2.4K
C38 .001µF
R41 392
R43 10K
W43
R35 309
C35 .001µF
R42 33K
INVERT BAL
C71 .01µF
R73 1.50K
R75 50
R72 1.50K
R71 16
2mV GAIN
2mV PEAK
R76 50
C76 7-45
R77 16
R79 84.5
C77 4.7
R80 120K
C80 0.1µF
R81 75
2/5 mV DC BAL
R83 50K
R84 100
R87 1K
R88 309
C88 .001µF
R91 392
R93 10K
W93
R85 309
C85 .001µF
R92 33K
S90 INVERT :IN
P9103
P9108
CH1 SIG
CH2 SIG
GND
TO W9103 2A
TO W9108 8A
P9991
FROM W9991 8N
E90
E91
C90 2.2µF
C91 2.2µF
C93 22µF
L93 200µH
W94
C96 22µF
L96 200µH
W96
U10 CA3140
U60 CA3140
J9200
P9200
Static Sensitive Devices
See Maintenance Section
COMPONENT NUMBER EXAMPLE
Component Number
A23 A2 R1234
Assembly Number
Subassembly Number (if used)
Schematic Circuit Number
Chassis-mounted components have no Assembly Number prefix—see end of Replaceable Electrical Parts List.
NUMERAL AND LETTER AT SIGNAL LINES TO OR FROM OTHER DIAGRAMS INDICATES THE GRID COORDINATES ON ANOTHER SCHEMATIC (FOR EXAMPLE: 4E)
A2 ATTENUATOR BOARD
A3 PARTIAL FRONT PANEL BOARD
CH1 & CH2 ATTENUATORS
2235
4206-23



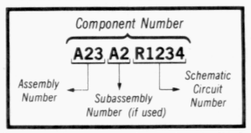
*These components are located on the reverse side of the circuit board.

Figure 9-7. A1—Main board.

4206-37

Static Sensitive Devices
See Maintenance Section

COMPONENT NUMBER EXAMPLE



Chassis-mounted components have no Assembly Number prefix—see end of Replaceable Electrical Parts List.

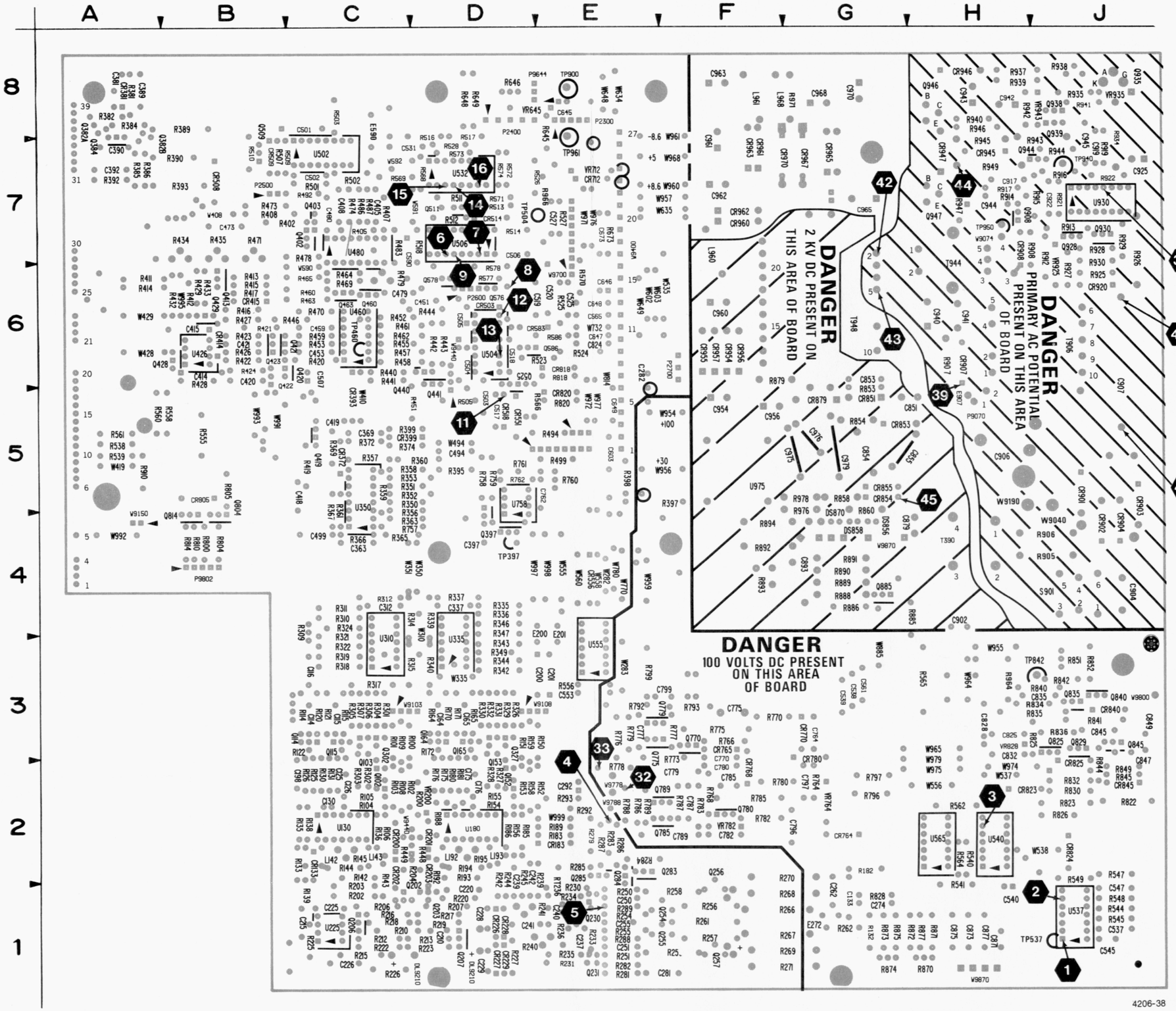
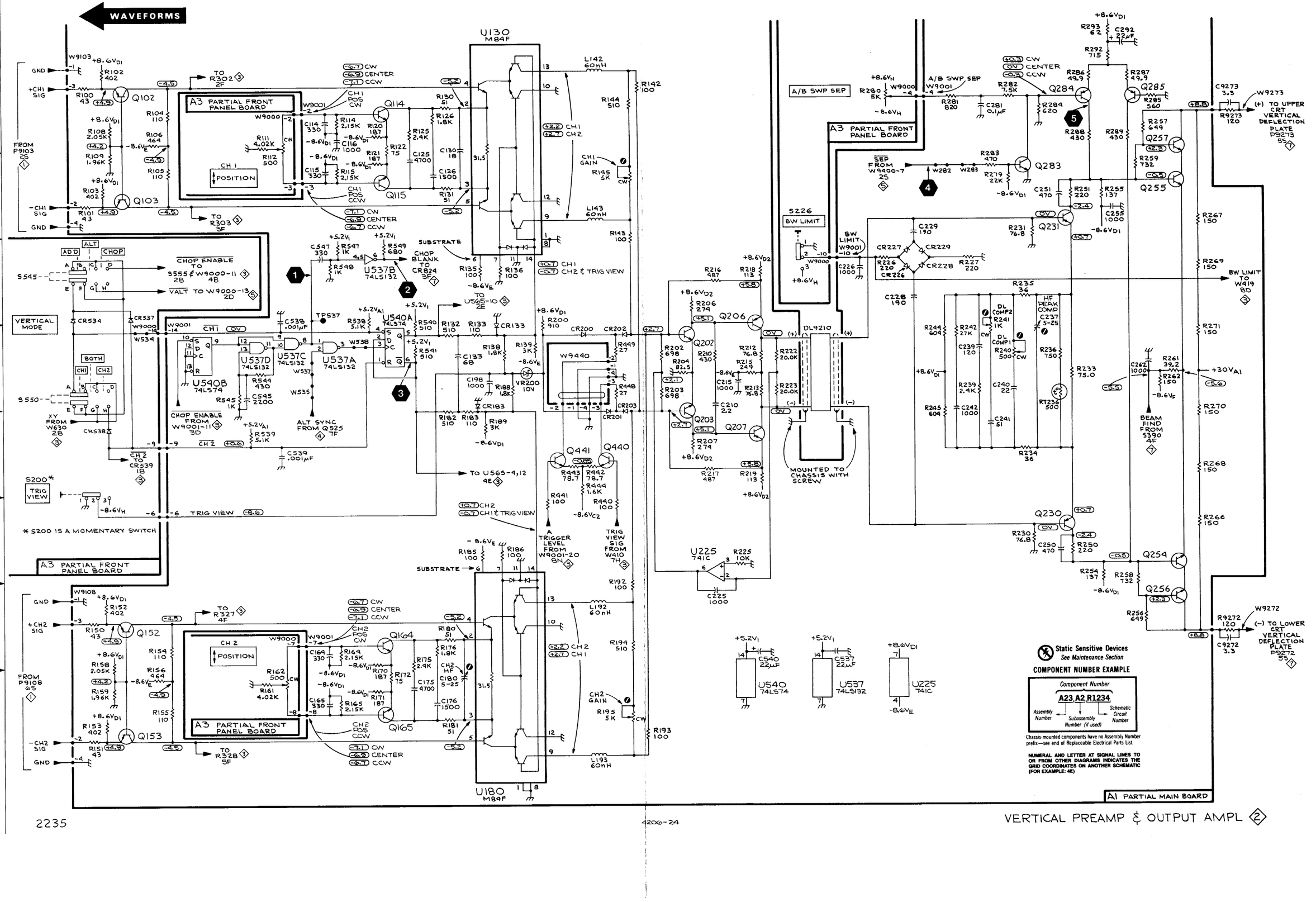
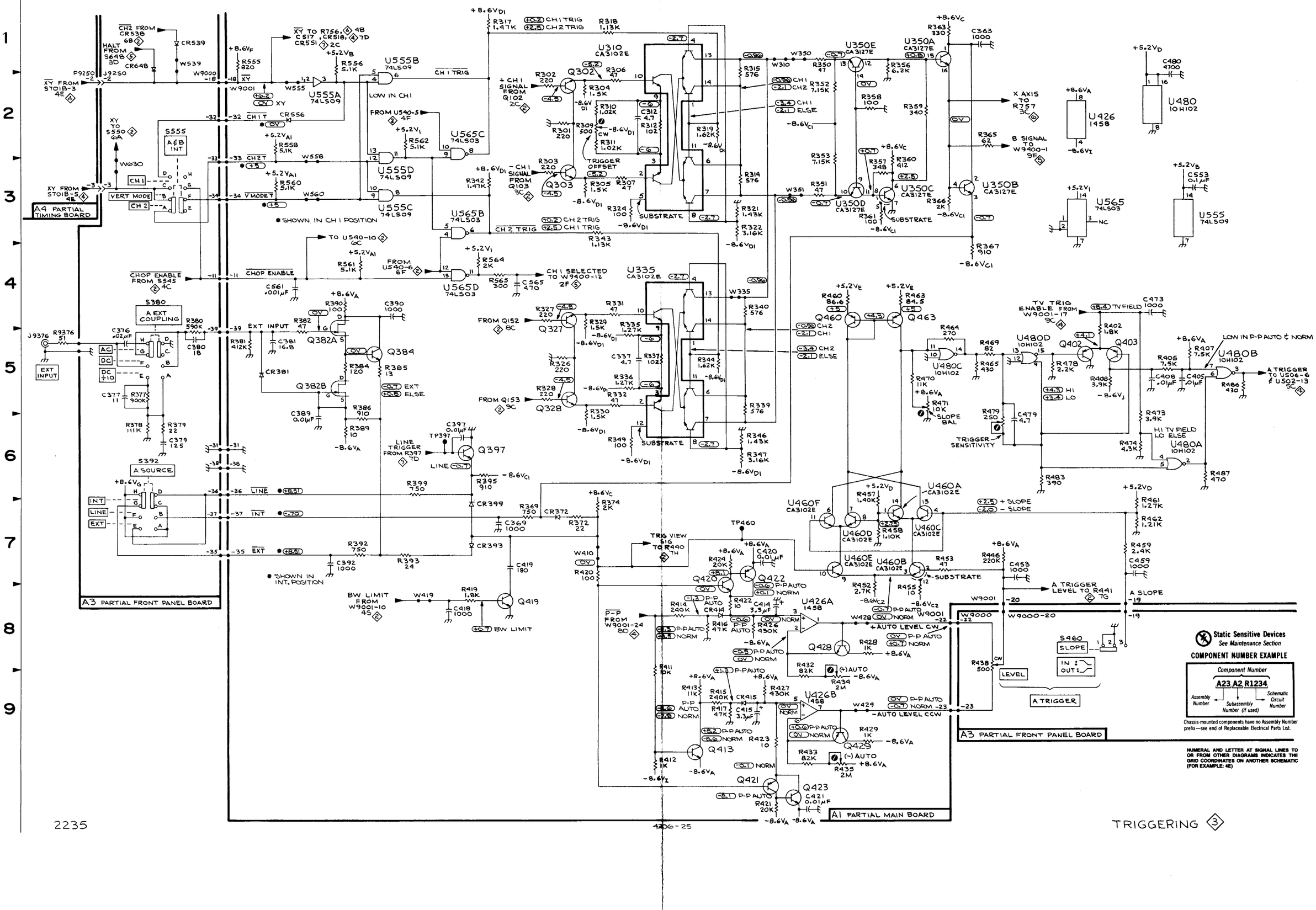


Figure 9-8. Circuit view of A1—Main board.


WAVEFORMS
A3 PARTIAL FRONT PANEL BOARD
CH 1 POSITION
CH 2 POSITION
A/B SWP SEP
A1 PARTIAL MAIN BOARD
S226 BW LIMIT
U130 M84F
U180 M89F
U540A 74LS74
U540B 74LS74
U537A 74LS132
U537B 74LS132
U537C 74LS132
U537D 74LS132
U540 74LS74
U537 74LS132
U225 741C
Q102
Q103
Q114
Q115
Q152
Q153
Q164
Q165
Q202
Q203
Q206
Q207
Q231
Q283
Q284
Q285
Q255
Q257
Q230
Q254
Q256
Q440
Q441
DL9210
MOUNTED TO CHASSIS WITH SCREW
TRIGGER LEVEL FROM W9001-20 8N
TRIG VIEW SIG FROM W410 7H
BEAM FIND FROM S390 4F
TO U565-10 2E
TO U565-4,12 4E
TO R302 2F
TO R303 3F
TO R327 4F
TO R328 5F
FROM P9103 2S
FROM P9108 6S
TO (+) UPPER CRT VERTICAL DEFLECTION PLATE P9273 5S
TO (-) LOWER CRT VERTICAL DEFLECTION PLATE P9272 5S
BW LIMIT TO W419 8D
S545
S550
S200* TRIG VIEW
* S200 IS A MOMENTARY SWITCH
Static Sensitive Devices
See Maintenance Section
COMPONENT NUMBER EXAMPLE
Component Number
A23,A2,R1234
Assembly Number
Subassembly Number (if used)
Schematic Circuit Number
Chassis-mounted components have no Assembly Number prefix—see end of Replaceable Electrical Parts List.
NUMERAL AND LETTER AT SIGNAL LINES TO OR FROM OTHER DIAGRAMS INDICATES THE GRID COORDINATES ON ANOTHER SCHEMATIC (FOR EXAMPLE: 4E)


A3 PARTIAL FRONT PANEL BOARD
A4 PARTIAL TIMING BOARD
A1 PARTIAL MAIN BOARD
A3 PARTIAL FRONT PANEL BOARD
U555B 74LS09
U555A 74LS09
U565C 74LS03
U555D 74LS09
U555C 74LS09
U565B 74LS03
U565D 74LS03
U310 CA3102E
U335 CA3102E
U350E CA3127E
U350A CA3127E
U350D CA3127E
U350C CA3127E
U350B CA3127E
U460A CA3102E
U460F CA3102E
U460D CA3102E
U460C CA3102E
U460E CA3102E
U460B CA3102E
U426A 1458
U426B 1458
U480 10H102
U480A 10H102
U480B 10H102
U480C 10H102
U480D 10H102
U426 1458
U565 74LS03
U555 74LS09
Q302
Q303
Q327
Q328
Q382A
Q382B
Q384
Q397
Q403
Q413
Q419
Q420
Q421
Q422
Q423
Q428
Q429
Q460
Q463
Q402
CH 1 TRIG
CH 2 TRIG
LOW IN CH1
FROM U540-5
TRIGGER OFFSET
SUBSTRATE
CH 1 SIGNAL FROM Q102
CH 1 SIGNAL FROM Q103
CHOP ENABLE FROM S545
TO U540-10
FROM U540-6
CH 1 SELECTED TO W9400-12
FROM Q152
FROM Q153
EXT INPUT
LINE TRIGGER FROM R397
BW LIMIT FROM W9001-10
P-P FROM W9001-24
TRIG VIEW SIG TO R490
X AXIS TO R757
B SIGNAL TO W9400-1
A TRIGGER TO U506-6 & U502-13
A TRIGGER LEVEL TO R441
A SLOPE
TV TRIG ENABLE FROM W9001-17
LOW IN P-P AUTO & NORM
TRIGGER SENSITIVITY
SLOPE BAL
LEVEL
SLOPE
A TRIGGER
HI TV FIELD LO ELSE
+ AUTO LEVEL CW
- AUTO LEVEL CCW
S380 A EXT COUPLING
S392 A SOURCE
S555 A&B INT
S460 SLOPE
Static Sensitive Devices
See Maintenance Section
COMPONENT NUMBER EXAMPLE
Component Number
A23 A2 R1234
Assembly Number
Subassembly Number (if used)
Schematic Circuit Number
Chassis-mounted components have no Assembly Number prefix—see end of Replaceable Electrical Parts List.
NUMERAL AND LETTER AT SIGNAL LINES TO OR FROM OTHER DIAGRAMS INDICATES THE GRID COORDINATES ON ANOTHER SCHEMATIC (FOR EXAMPLE: 4E)
4206-25

WAVEFORMS

PARTIAL S701B
A AND B SEC/DIV
A TIMING
SHOWN IN XY POSITION
DOT INDICATES POSITION WHEN SWITCH IS CLOSED

S701A
A AND B SEC/DIV
A TIMING
SHOWN IN XY POSITION

A AND B SEC/DIV
CAL

VAR HOLD OFF
NORM
MAX

* S401A IS A MOMENTARY SWITCH

SHOWN IN SGL SWP READY

FRONT
S701A,B BOTTOM VIEW

Q704A
Q704B
Q706
Q701
Q525
Q511
Q509
Q576
Q578

U715 741
U504A 96L502
U504B 96L502
U506A 10H131
U506B 10H131
U532A 10H102
U532B 10H102
U532C 10H102
U532D 10H102
U502 10198

A TRIG FROM U480B
TV TRIG ENABLE TO R402,C473, & R473 4M
TRIG'D LED
A SWP TO R740
A GATE
TO R737
TO P9250-2
TO P9250-3
TO R711
TO W535
ALT SYNC TO W9400-21
TO W9400-20
TO CR583
SS RESET
P-P AUTO
SGL SWP
SS

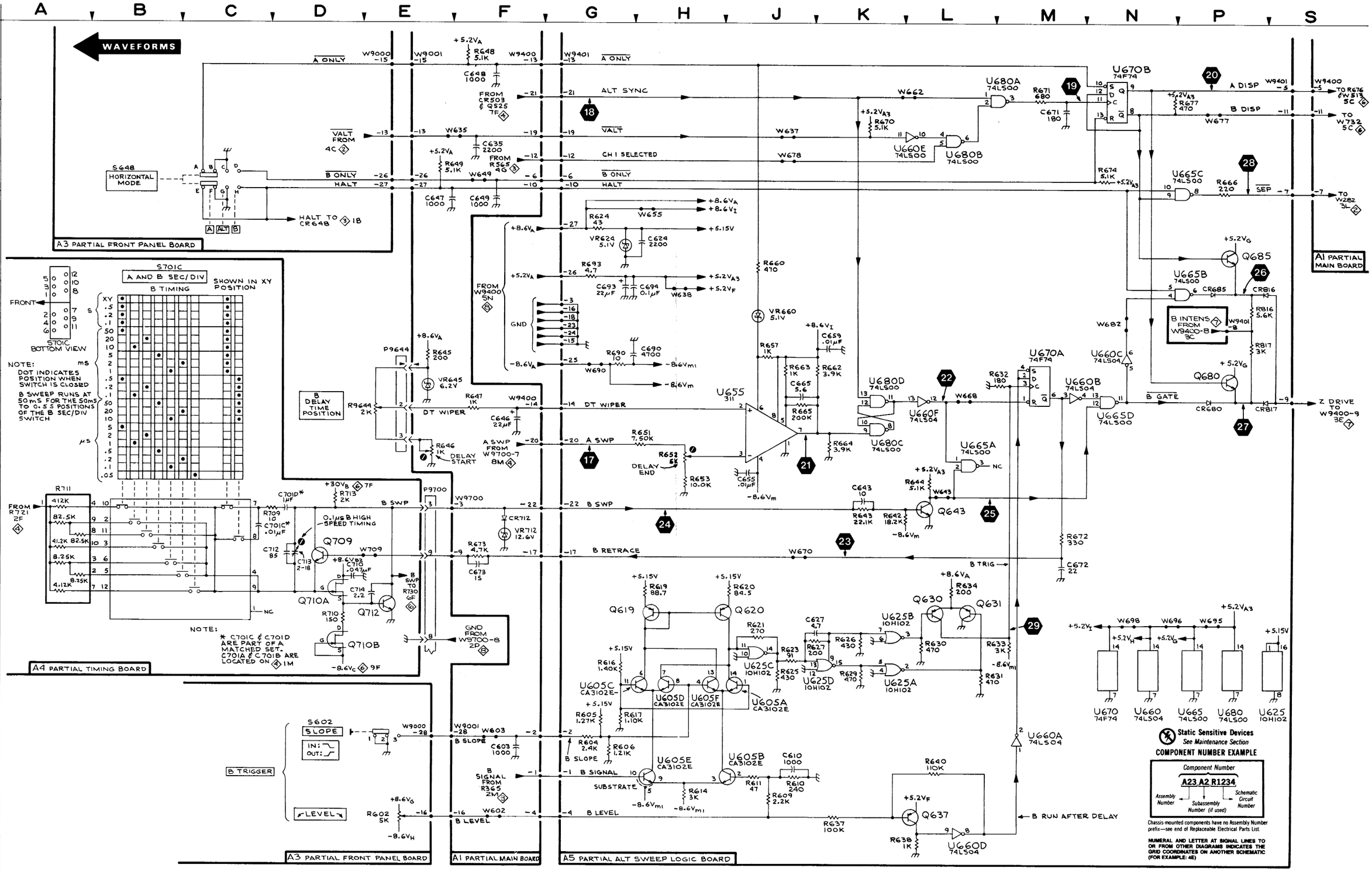
A3 PARTIAL FRONT PANEL BOARD
A1 PARTIAL MAIN BOARD
A4 PARTIAL TIMING BOARD

Static Sensitive Devices
See Maintenance Section

COMPONENT NUMBER EXAMPLE
Component Number A23,A2,R1234
Assembly Number
Subassembly Number (if used)
Schematic Circuit Number

Chassis-mounted components have no Assembly Number prefix—see end of Replaceable Electrical Parts List.

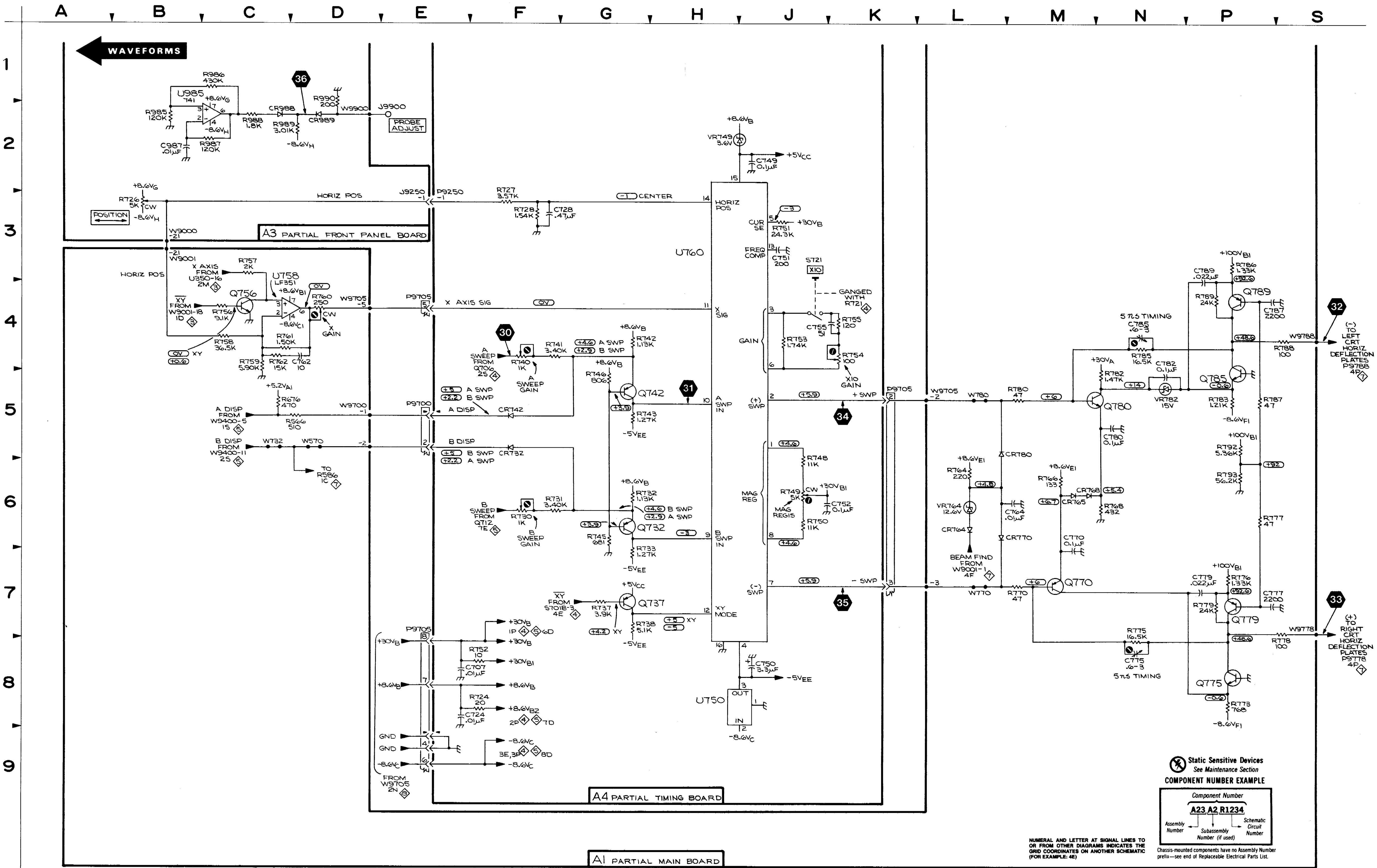
NUMERAL AND LETTER AT SIGNAL LINES TO OR FROM OTHER DIAGRAMS INDICATES THE GRID COORDINATES ON ANOTHER SCHEMATIC (FOR EXAMPLE: 4E)



2235

4206-27

B TIMING & ALTERNATE B SWEEP 5



Static Sensitive Devices
See Maintenance Section

COMPONENT NUMBER EXAMPLE

Component Number
A23 A2 R1234
Assembly Number — Subassembly Number (if used) — Schematic Circuit Number

Chassis-mounted components have no Assembly Number prefix—see end of Replaceable Electrical Parts List.

NUMERAL AND LETTER AT SIGNAL LINES TO OR FROM OTHER DIAGRAMS INDICATES THE GRID COORDINATES ON ANOTHER SCHEMATIC (FOR EXAMPLE: 4E)

2235

4206-28

PROBE ADJUST, XY AMPLIFIER & HORIZONTAL OUTPUT ⑥

WAVEFORMS

A5 PARTIAL ALT SWEEP LOGIC BOARD

NOTE: THESE COMPONENTS ARE LOCATED ON 5

A6 FILTER BOARD

A3 PARTIAL FRONT PANEL BOARD

WARNING

AN ISOLATION TRANSFORMER MUST BE USED WHEN PROBING THE PRIMARY CIRCUITRY OF THE POWER SUPPLY. THE PRIMARY VOLTAGES ARE NOT REFERENCED TO CHASSIS GROUND.

AC-SOURCE POTENTIAL IS PRESENT IN THE PREREGULATOR AND INVERTER CIRCUITRY. DISCONNECT THE POWER CORD FROM THE AC-POWER SOURCE BEFORE ATTEMPTING REPAIRS OR RESISTANCE MEASUREMENTS. SEE THE MAINTENANCE SECTION OF THIS MANUAL (SECTION 6) FOR TROUBLESHOOTING INSTRUCTIONS.

Static Sensitive Devices
See Maintenance Section

COMPONENT NUMBER EXAMPLE

Component Number: A23 A2 R1234
(A23: Assembly Number; A2: Subassembly Number (if used); R1234: Schematic Circuit Number)

Chassis-mounted components have no Assembly Number prefix—see end of Replaceable Electrical Parts List.

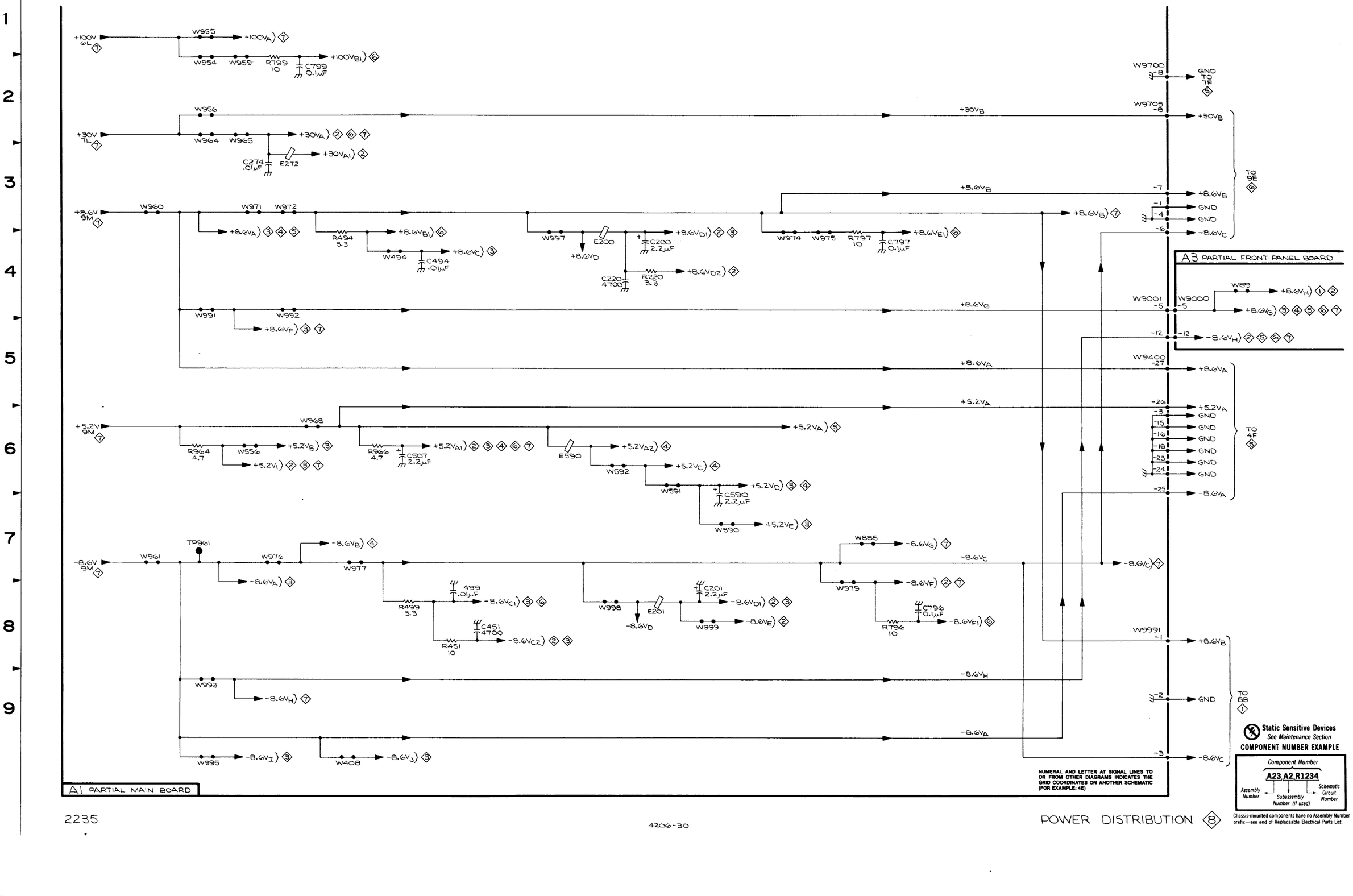
NUMERAL AND LETTER AT SIGNAL LINES TO OR FROM OTHER DIAGRAMS INDICATES THE GRID COORDINATES ON ANOTHER SCHEMATIC (FOR EXAMPLE: 4E)

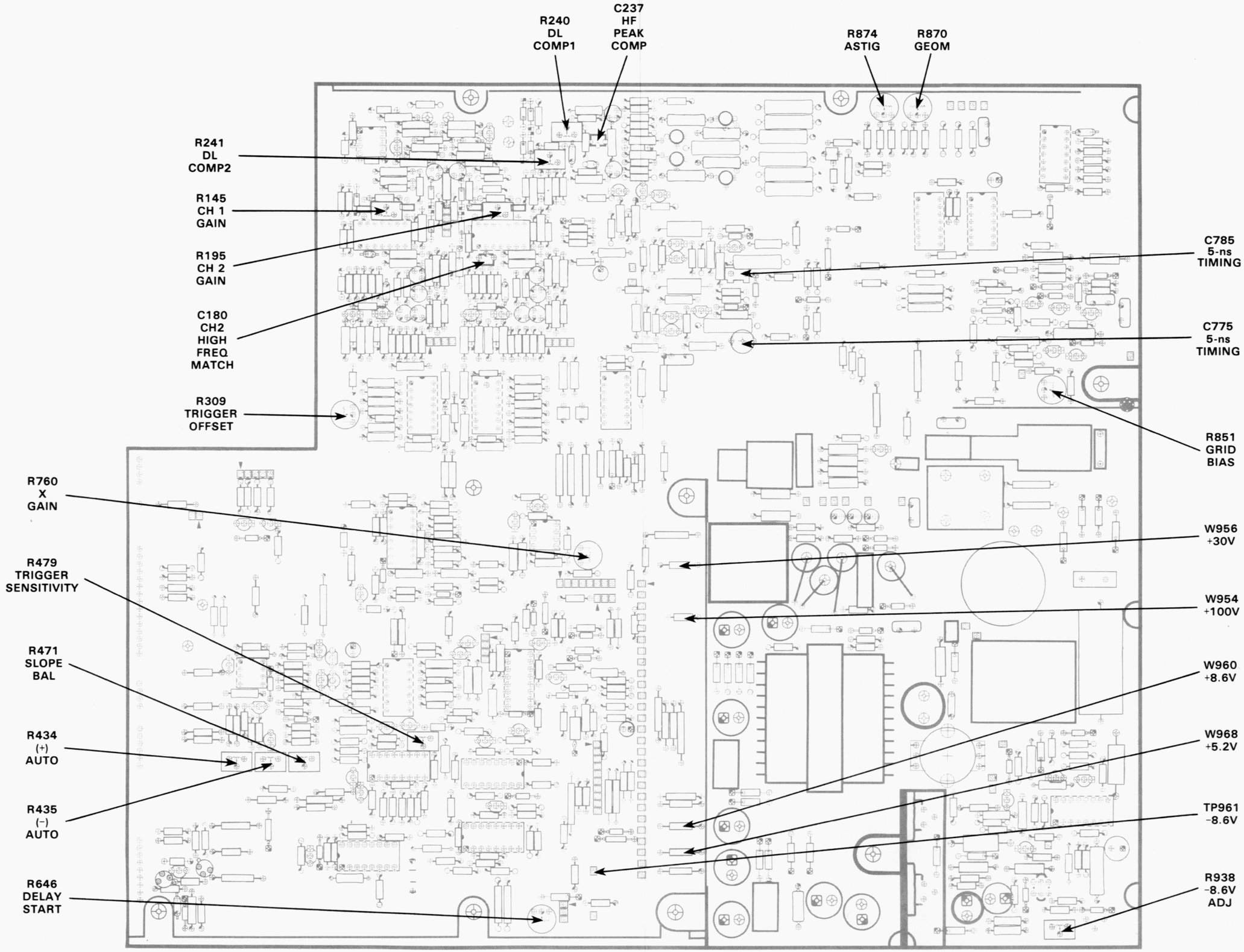
A1 PARTIAL MAIN BOARD

2235

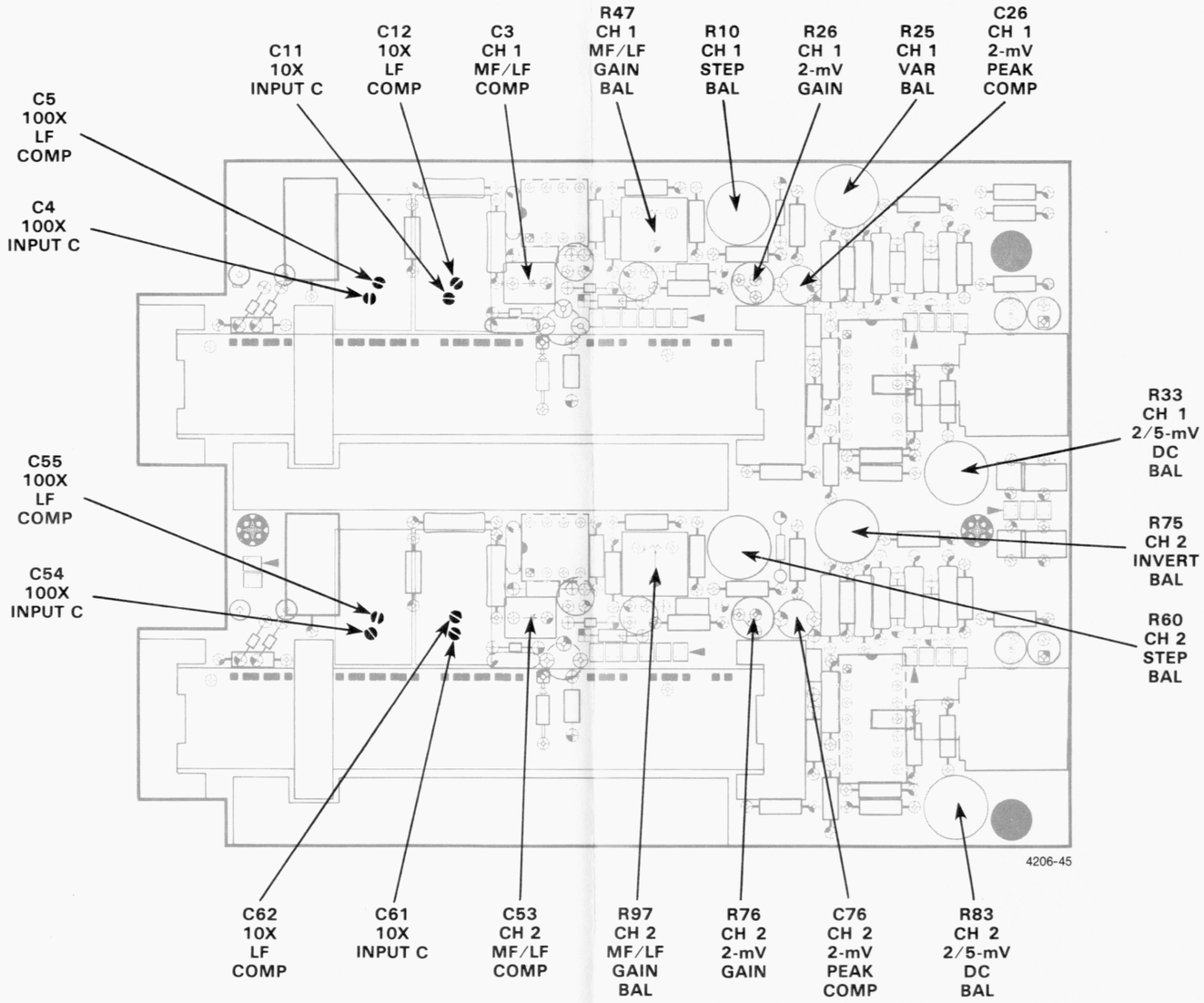
POWER SUPPLY, Z AXIS & CRT 7

4206-29


+100V 6L 7
W955
+100VA) 7
W954
W959
R799 10
C799 0.1µF
+100VB1) 6
W956
+30V 7L 7
W964
W965
+30VA) 2 6 7
C274 .01µF
E272
+30VA1) 2
+30VB
+8.6V 9M 7
W960
W971
W972
+8.6VA) 3 4 5
R494 3.3
W494
C494 .01µF
+8.6VB1) 6
+8.6VC) 3
W997
E200
+8.6VD
C200 2.2µF
+8.6VD1) 2 3
C220 4700
R220 3.3
+8.6VD2) 2
+8.6VB
+8.6VB) 7
W974
W975
R797 10
C797 0.1µF
+8.6VE1) 6
W991
W992
+8.6VF) 3 7
+8.6VG
+8.6VA
+5.2V 9M 7
W968
+5.2VA) 5
R964 4.7
W556
+5.2VB) 3
+5.2V1) 2 3 7
R966 4.7
C507 2.2µF
+5.2VA1) 2 3 4 6 7
E590
+5.2VA2) 4
W592
+5.2VC) 4
W591
C590 2.2µF
+5.2VD) 3 4
W590
+5.2VE) 3
+5.2VA
TP961
-8.6V 9M 7
W961
W976
W977
-8.6VB) 4
-8.6VA) 3
R499 3.3
C499 .01µF
-8.6VC1) 3 6
R451 10
C451 4700
-8.6VC2) 2 3
W998
E201
-8.6VD
C201 2.2µF
-8.6VD1) 2 3
W999
-8.6VE) 2
W885
-8.6VG) 7
-8.6VC
W979
-8.6VF) 2 7
RT96 10
C796 0.1µF
-8.6VF1) 6
-8.6VC) 7
W993
-8.6VH) 7
-8.6VH
W995
-8.6VI) 3
W408
-8.6VJ) 3
-8.6VA
W9700 -8
GND TO 7F 8
W9705 -8
+30VB
-7
+8.6VB
-1
GND
-4
GND
-6
-8.6VC
TO 9E 6
A3 PARTIAL FRONT PANEL BOARD
W89
+8.6VH) 1 2
W9001 -5
W9000 -5
+8.6VG) 3 4 5 6 7
-12
-12
-8.6VH) 2 5 6 7
W9400 -27
+8.6VA
-26
+5.2VA
-3
GND
-15
GND
-16
GND
-18
GND
-23
GND
-24
GND
TO 4F 5
-25
-8.6VA
W9991 -1
+8.6VB
-2
GND
TO 8B 1
-3
-8.6VC
A1 PARTIAL MAIN BOARD
NUMERAL AND LETTER AT SIGNAL LINES TO OR FROM OTHER DIAGRAMS INDICATES THE GRID COORDINATES ON ANOTHER SCHEMATIC (FOR EXAMPLE: 4E)
Static Sensitive Devices
See Maintenance Section
COMPONENT NUMBER EXAMPLE
Component Number
A23 A2 R1234
Assembly Number
Subassembly Number (if used)
Schematic Circuit Number
Chassis-mounted components have no Assembly Number prefix—see end of Replaceable Electrical Parts List.



A1—MAIN BOARD ADJUSTMENT LOCATIONS



A2—ATTENUATOR BOARD ADJUSTMENT LOCATIONS

GENERAL NOTES

A. Use schematic diagrams, the overall block diagram, circuit board illustrations, and circuit descriptions when analyzing instrument malfunctions and locating test points. The schematic diagrams include typical waveforms and voltages that are intended as an aid in troubleshooting.

B. Always set the POWER switch to OFF and unplug the line cord before swapping, removing, or replacing components, and before connecting or disconnecting instrument leads and cables.

C. When analyzing circuit malfunctions, consider connectors and cables as possible causes of failure.

SPECIFIC NOTES

1. Set initial front-panel controls as follows:

POWER Switch	ON (button in)
A INTENSITY	Midrange
FOCUS	Midrange
Vertical POSITION	Midrange
VERTICAL MODE	CH 1
CH 1 VOLTS/DIV	Ø.1V
CH 1 VOLTS/DIV Variable	Cal detent
CH 1 AC-GND-DC	GND
Horizontal POSITION	Midrange
HORIZONTAL MODE	A
A SEC/DIV	Ø.1ms
A SEC/DIV Variable	Cal detent
X1Ø Magnifier	Off (knob in)
A TRIGGER Mode	P-P AUTO
A&B INT	VERT MODE
A SOURCE	INT

2. Verify the low-voltage power supplies at the following test points:

SUPPLY	TEST POINT	TOLERANCE
+5.2V	W968	5.Ø4 to 5.36V
+8.6V	W96Ø	8.43 to 8.77V
-8.6V	TP961	-8.56 to -8.64V
+3ØV	W956	29.1 to 3Ø.9V
+1ØØV	W954	97 to 1Ø3V

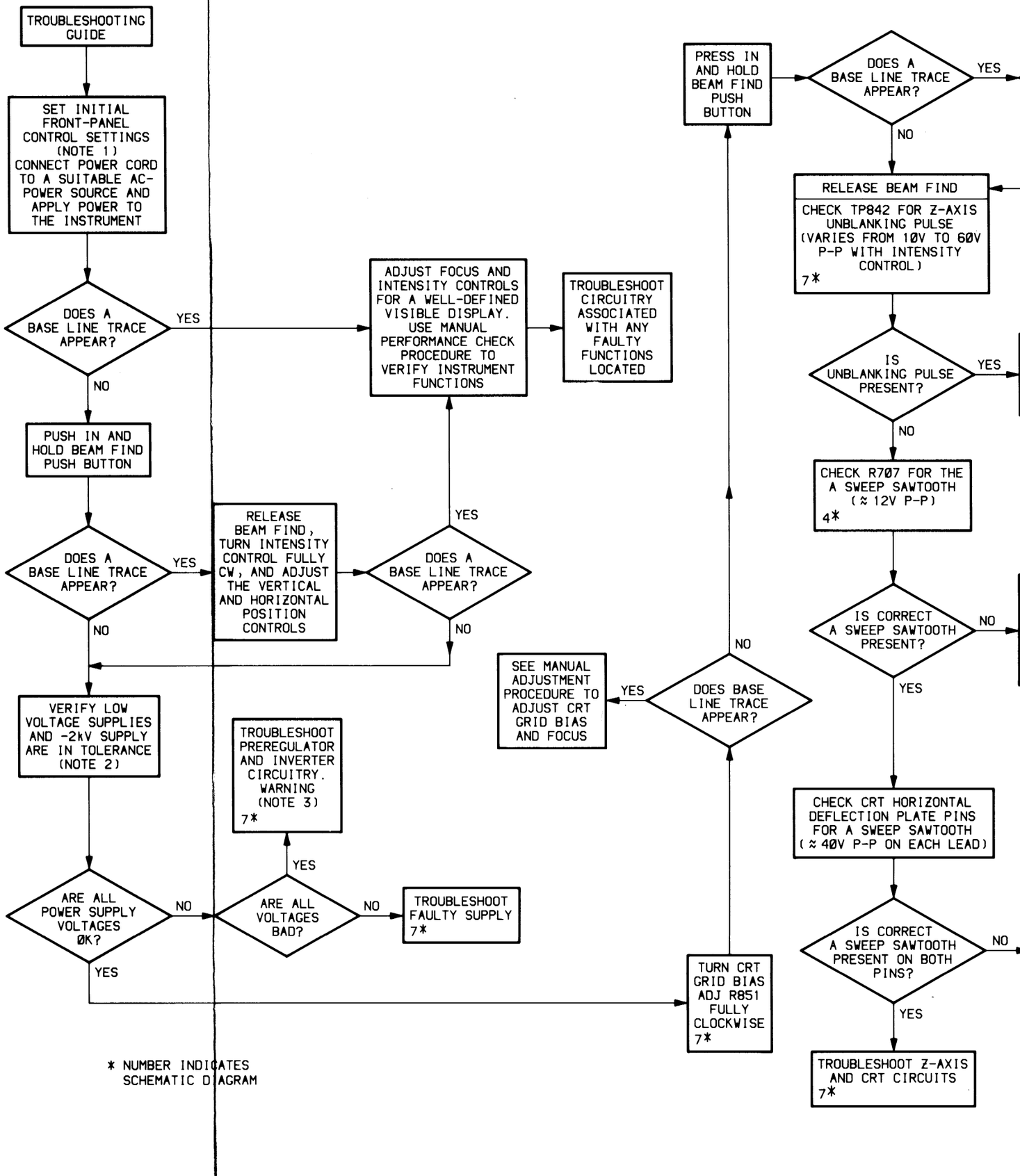
NOTE

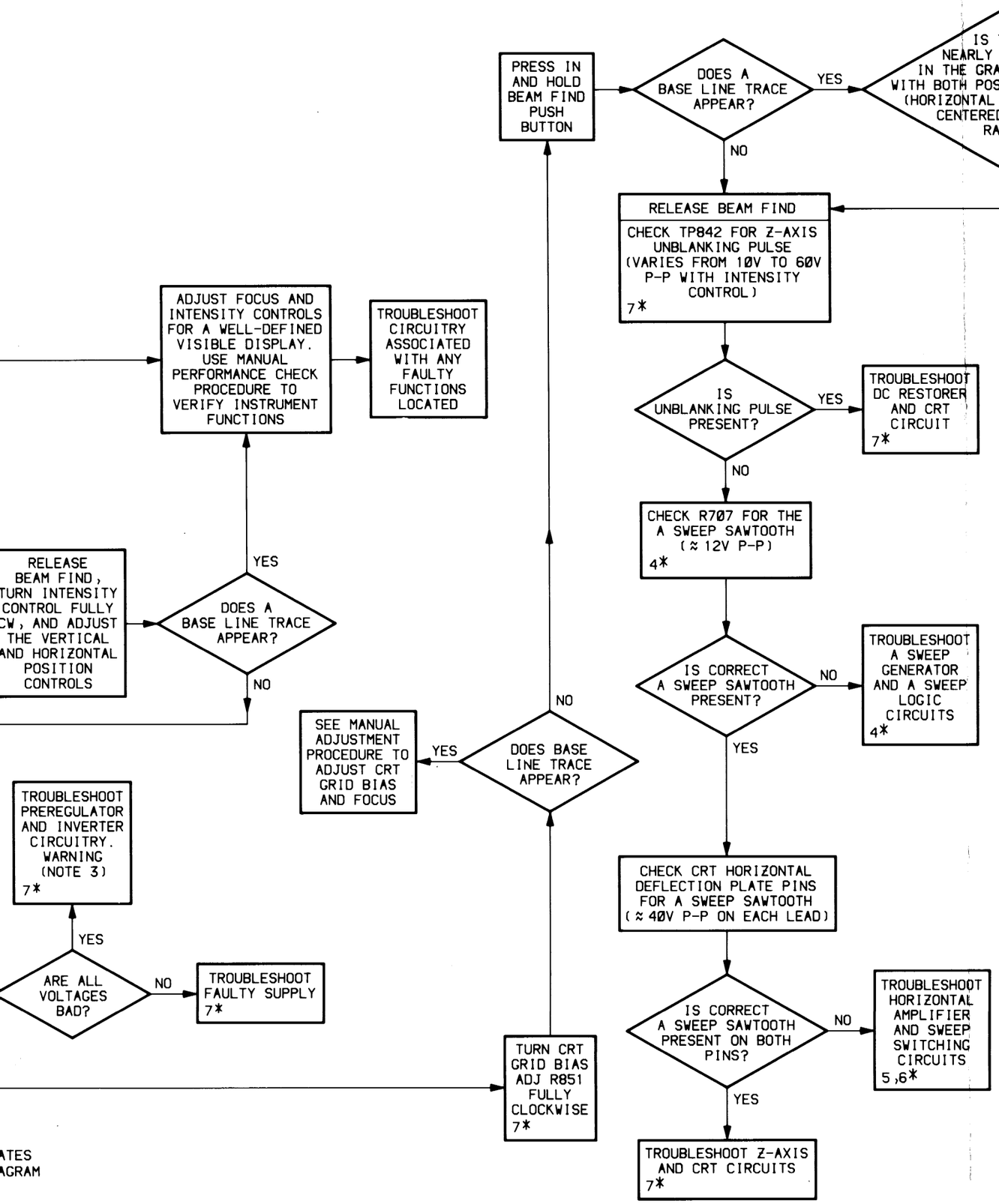
A HV probe is required to measure the -2kV supply. Turn off the power and make the test equipment connections to the oscilloscope. Set the voltmeter to read at least -3kV, then turn the oscilloscope power back on to take the reading. After obtaining the reading, turn off the oscilloscope power to disconnect the test equipment connections, and replace the crt socket cover.

Verify the -2kV supply at pin 2 of the crt socket. The voltage should be between -1900 and -2100V.

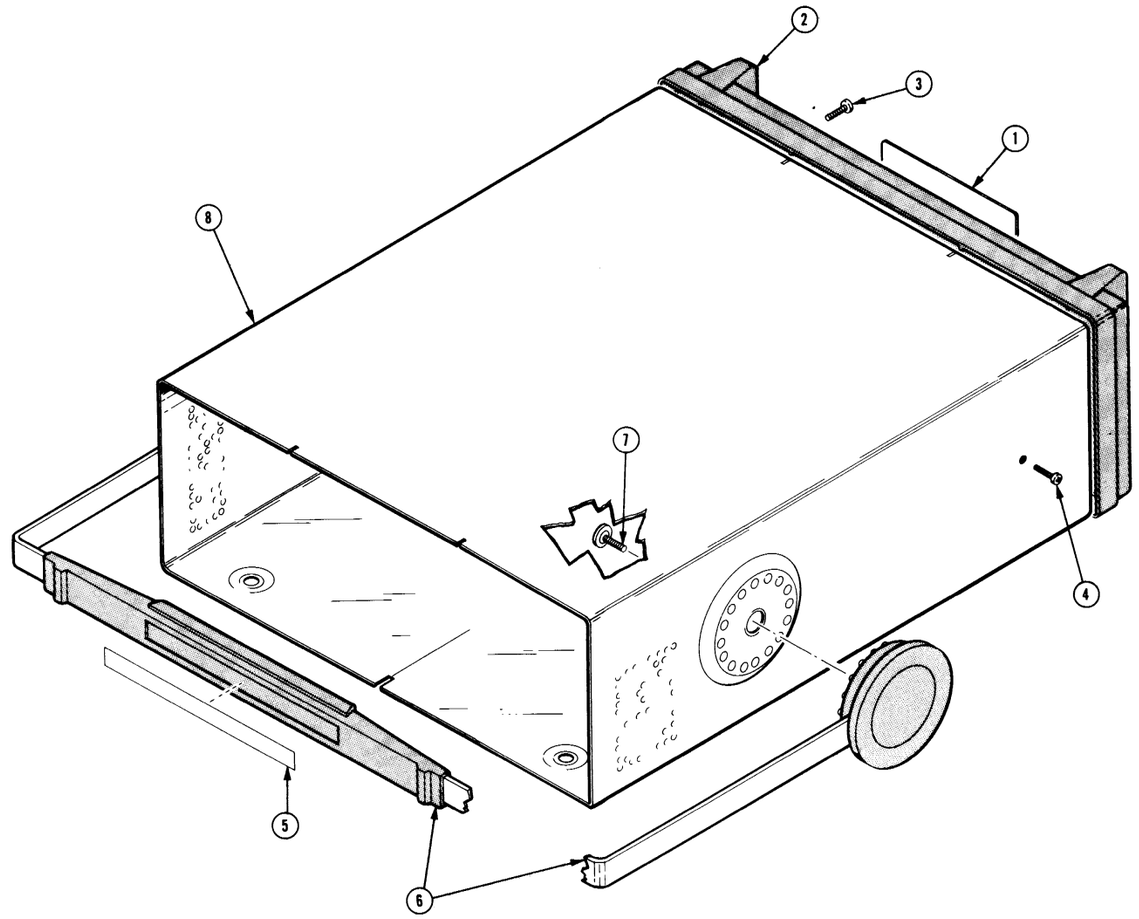
3. ### WARNING

The Preregulator and Inverter circuits have a floating common reference with respect to chassis ground. Ac-source potential is present on the common reference points. Connect the instrument to the ac-power source through an isolation transformer to prevent the possibility of personal injury or equipment damage when troubleshooting these circuits.




PRESS IN AND HOLD BEAM FIND PUSH BUTTON
DOES A BASE LINE TRACE APPEAR?
YES
NO
IS TRACE NEARLY CENTERED IN THE GRATICULE AREA WITH BOTH POSITION CONTROLS (HORIZONTAL AND VERTICAL) CENTERED IN THEIR RANGE?
NO
YES
IS TRACE OFF CENTER HORIZONTALLY OR VERTICALLY?
VERTICALLY OFF CENTER
HORIZONTALLY OFF CENTER
RELEASE BEAM FIND BUTTON AND MOMENTARILY SHORT ACROSS DELAY LINE LEADS 2*
DOES TRACE COME TO NEAR CENTER OF GRATICULE AREA?
NO
YES
TROUBLESHOOT VERTICAL OUTPUT AMPLIFIER 2*
TROUBLESHOOT VERTICAL ATTENUATOR X1/X10 AMPL, VERTICAL PREAMPLIFIER, AND DELAY LINE DRIVER FOR SOURCE OF IMBALANCE 1,2*
TROUBLESHOOT HORIZONTAL AMPLIFIER CIRCUITRY 6*
RELEASE BEAM FIND
CHECK TP842 FOR Z-AXIS UNBLANKING PULSE (VARIES FROM 10V TO 60V P-P WITH INTENSITY CONTROL) 7*
IS UNBLANKING PULSE PRESENT?
YES
TROUBLESHOOT DC RESTORER AND CRT CIRCUIT 7*
NO
CHECK R707 FOR THE A SWEEP SAWTOOTH (≈ 12V P-P) 4*
IS CORRECT A SWEEP SAWTOOTH PRESENT?
NO
TROUBLESHOOT A SWEEP GENERATOR AND A SWEEP LOGIC CIRCUITS 4*
YES
CHECK CRT HORIZONTAL DEFLECTION PLATE PINS FOR A SWEEP SAWTOOTH (≈ 40V P-P ON EACH LEAD)
IS CORRECT A SWEEP SAWTOOTH PRESENT ON BOTH PINS?
NO
TROUBLESHOOT HORIZONTAL AMPLIFIER AND SWEEP SWITCHING CIRCUITS 5,6*
YES
TROUBLESHOOT Z-AXIS AND CRT CIRCUITS 7*
DOES BASE LINE TRACE APPEAR?
NO
YES
SEE MANUAL ADJUSTMENT PROCEDURE TO ADJUST CRT GRID BIAS AND FOCUS
TURN CRT GRID BIAS ADJ R851 FULLY CLOCKWISE 7*
ADJUST FOCUS AND INTENSITY CONTROLS FOR A WELL-DEFINED VISIBLE DISPLAY. USE MANUAL PERFORMANCE CHECK PROCEDURE TO VERIFY INSTRUMENT FUNCTIONS
TROUBLESHOOT CIRCUITRY ASSOCIATED WITH ANY FAULTY FUNCTIONS LOCATED
RELEASE BEAM FIND, TURN INTENSITY CONTROL FULLY CW, AND ADJUST THE VERTICAL AND HORIZONTAL POSITION CONTROLS
YES
DOES A BASE LINE TRACE APPEAR?
NO
ARE ALL VOLTAGES BAD?
NO
TROUBLESHOOT FAULTY SUPPLY 7*
YES
TROUBLESHOOT PREREGULATOR AND INVERTER CIRCUITRY. WARNING (NOTE 3) 7*

ATES
AGRAM


2
3
1
8
7
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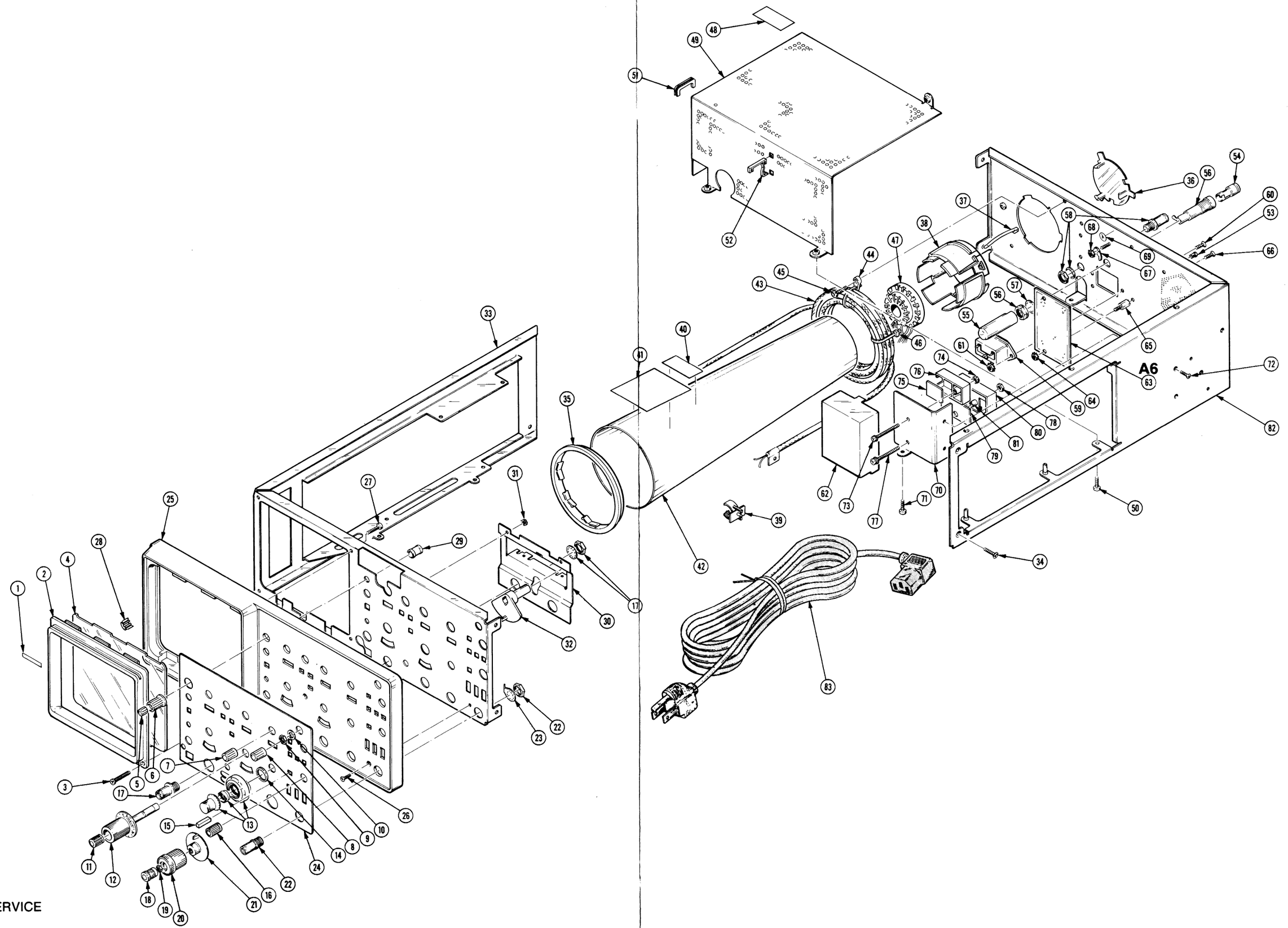
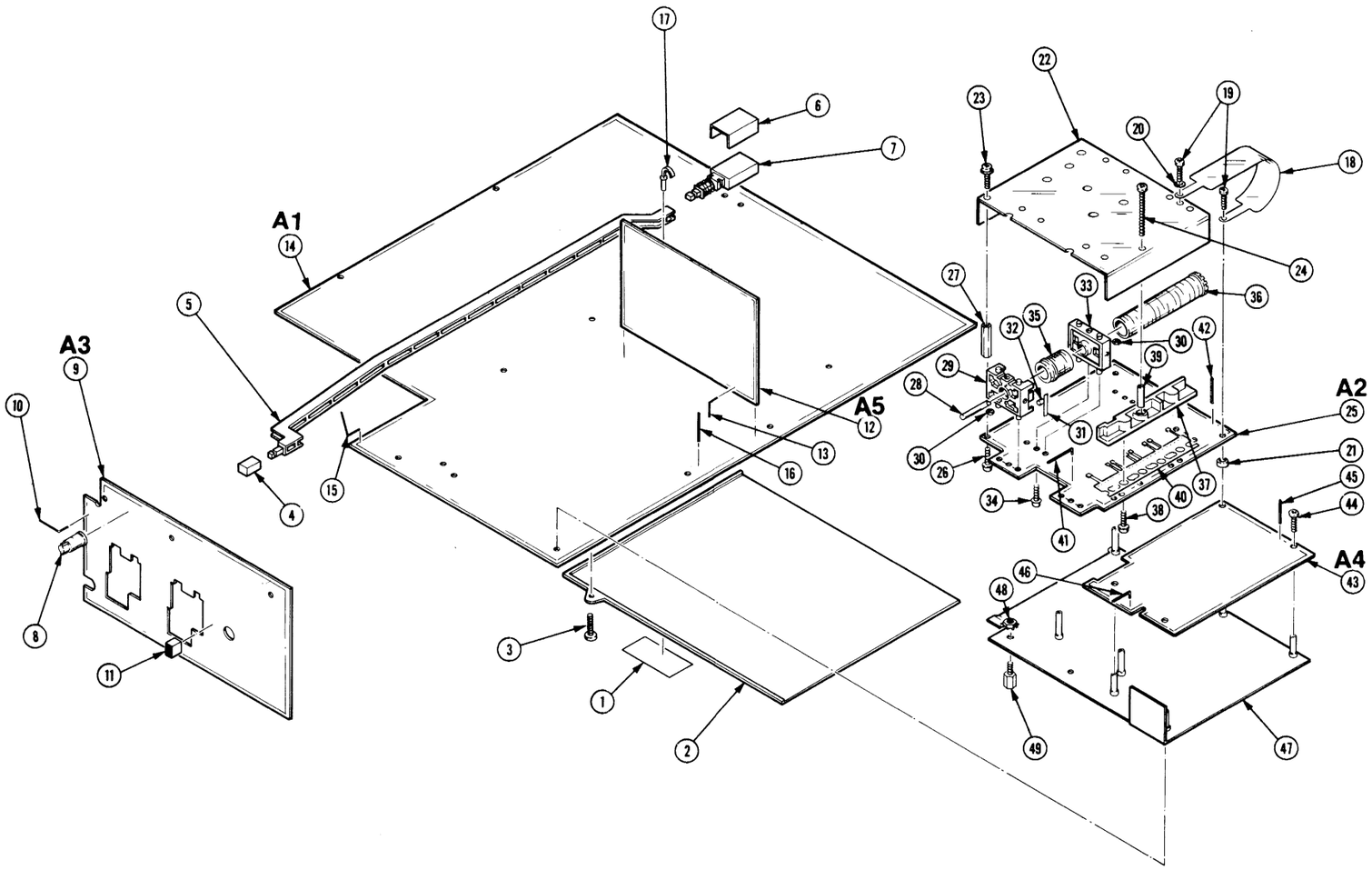
6


A6



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