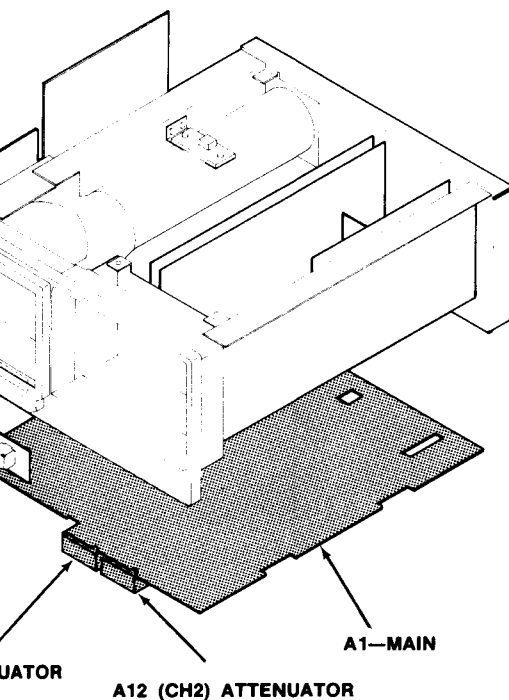
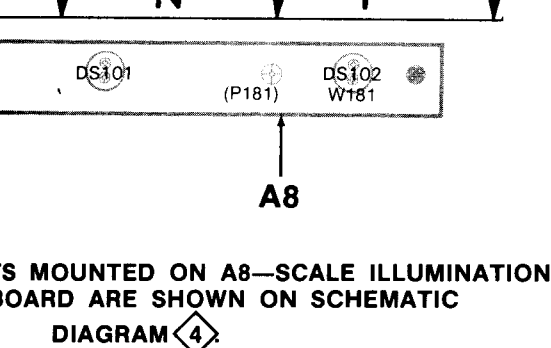




COMPONENTS WITHIN PARENTHESES MAY BE LOCATED PRECISELY AS SHOWN BUT NOT NECESSARILY IN THEIR INDICATED POSITION.

COMPONENTS THAT WERE ADDED TO THE BOARD AS A MODIFICATION.

ON SOME BOARDS AS "P" VICE "J".

ON BACK OF BOARD.

ES
IPLE

ematic
circuit
number

ply Number
parts List.

8—Scale Illumination boards.

MAR 1984

TABLE (CONT)

CIRCUIT NUMBER	SCHEM NUMBER	CIRCUIT NUMBER	SCHEM NUMBER	CIRCUIT NUMBER	SCHEM NUMBER	CIRCUIT NUMBER	SCHEM NUMBER	CIRCUIT NUMBER	SCHEM NUMBER
C100	4	C723	11	CR747	5	P100	4	R232	4
C102	11	C731	11	CR807	11	P100	4	R301	4
C103	4	C733	11	CR811	11	P101	5	R302	4
C104	4	C735	6	CR950	5	P101	5	R304	4
C105	4	C738	11	CR951	5	P102	5	R311	4
C106	11	C740	11	CR956	6	P102	5	R329	4
C107	11	C742	5	CR966	6	P103	4	R332	4
C108	11	C803	6	CR972	6	P106	6	R334	5
C113	11	C805	6	CR987	11	P107	5	R353	5
C114	11	C806	6	DL100	6	P108	5	R355	5
C115	4	C808	6	J9	5	P121	11	R357	5
C116	4	C809	6	J10	4	P121	11	R358	5
C117	4	C810	11	J11	4	P122	5	R359	5
C118	4	C811	11	J100	4	P122	11	R360	5
C119	11	C817	6	J100	4	P141	6	R361	5
C120	11	C819	11	J100	4	P141	6	R362	5
C121	11	C822	6	J101	5	Q130	4	R363	5
C122	4	C850	11	J101	5	Q131	4	R401	6
C125	11	C851	5	J102	5	Q154	5	R402	6
C130	4	C852	5	J102	5	Q155	5	R403	6
C175	4	C853	5	J102	5	Q190	4	R412	6
C176	4	C854	5	J103	4	Q460	4	R416	6
C177	4	C907	5	J104	5	Q460	4	R430	4
C179	4	C908	5	J104	5	Q550	5	R440	4
C180	5	C912	5	J105	4	Q600	6	R450	4
C181	5	C933	11	J110	4	Q623	6	R451	4
C184	4	C938	11	J111	4	Q624	6	R452	4
C185	4	C940	11	J112	8	Q645	5	R453	4
C200	4	C943	11	J113	5	Q700	11	R454	4
C202	4	C956	6	J114	8	Q709	5	R455	4
C203	4	C957	6	J115	8	Q741	5	R456	4
C205	4	C958	11	J116	5	R100	4	R457	4
C206	4	C966	11	J117	4	R101	4	R458	4
C207	11	C972	6	J118	5	R102	4	R459	4
C217	4	C973	11	J119	11	R114	4	R460	4
C218	11	C975	8	J181	4	R115	4	R461	4
C219	11	C988	11	J191	6	R117	4	R462	4
C220	11	C990	11	J191	11	R118	4	R463	4
C221	11	C995	6	J191	11	R119	4	R464	4
C222	4	CR100	4	J411	5	R120	11	R465	4
C223	4	CR101	4	J411	5	R121	4	R470	6
C225	11	CR107	11	J411	6	R123	4	R471	6
C301	4	CR130	4	J411	6	R125	11	R476	6
C302	4	CR131	4	J411	11	R129	4	R477	6
C306	5	CR140	4	J511	4	R130	4	R478	6
C307	11	CR141	4	J511	4	R131	4	R479	6
C310	4	CR142	4	J511	5	R133	4	R480	6
C311	4	CR143	4	J511	6	R135	4	R481	6
C325	11	CR144	4	J511	11	R136	4	R482	6
C329	4	CR145	4	J511	11	R140	4	R483	6
C332	4	CR146	4	J512	4	R141	4	R484	6
C336	11	CR147	4	J512	5	R142	4	R485	6
C402	6	CR148	4	J512	5	R143	4	R486	6
C404	6	CR149	4	J512	6	R144	4	R487	6
C412	6	CR150	4	J512	6	R149	4	R488	6
C415	11	CR151	4	J512	11	R152	5	R489	6
C450	4	CR152	4	L101	11	R153	5	R490	6
C454	4	CR153	4	L107	11	R154	5	R491	6
C458	11	CR154	4	L113	11	R155	5	R492	6
C460	4	CR155	4	L115	4	R156	5	R493	6
C464	4	CR160	4	L219	11	R159	4	R494	6
C478	6	CR161	4	L307	11	R161	4	R495	6
C480	11	CR162	4	L325	11	R162	4	R497	6
C487	6	CR163	4	L336	11	R163	4	R498	6
C488	6	CR200	4	L521	11	R165	5	R500	6
C500	11	CR201	4	L605	6	R190	4	R501	6
C501	11	CR355	5	L606	6	R191	4	R502	4
C512	5	CR356	5	L607	6	R192	4	R511	5
C513	5	CR358	5	L608	6	R193	4	R512	5
C520	5	CR359	5	L609	6	R194	4	R513	5
C521	11	CR460	4	L610	6	R195	4	R518	5
C528	5	CR461	4	L611	6	R196	4	R519	5
C536	5	CR476	6	L612	6	R197	4	R520	5
C537	5	CR484	6	L619	6	R198	4	R521	5
C544	5	CR485	6	L644	6	R199	4	R527	5
C617	6	CR495	6	L733	11	R200	4	R529	5
C625	6	CR600	6	L738	11	R201	4	R537	5
C645	5	CR601	6	L740	11	R202	4	R542	5
C650	5	CR616	6	L743	11	R216	4	R543	5
C653	5	CR619	6	L938	11	R217	4	R544	5
C660	5	CR620	6	L973	11	R218	4	R545	5
C669	5	CR621	6	LR101	11	R219	4	R550	5
C675	11	CR652	5	LR107	11	R220	11	R551	5
C707	5	CR653	5	LR180	4	R223	4	R552	5
C708	5	CR707	5	LR201	11	R225	11	R553	5
C709	5	CR741	5	LR218	11	R230	4	R554	5
C710	11	CR746	5	LR280	4	R231	4	R555	5
C712	5								
C722	11								

TEST WAVEFORM SETUP INFORMATION

The numbered waveforms below were obtained at the test points indicated on the accompanying schematic diagram and board dolly. The waveforms are representative of signals that may be expected at the associated points when the following setup conditions are observed. Any change(s) from the given setup conditions required to produce a given waveform are noted with that waveform illustration. Where B Sweep setup conditions are referenced with a waveform, it is assumed that the B SEC/DIV knob is set to 100 $\mu\text{s}/\text{div}$ unless otherwise noted.

2445 SETUP

Connect a 200-mV, 1-kHz squarewave to the CH 1 input of the 2445 using a BNC cable.

Set:

VERTICAL MODE CH 1
Input Coupling CH 1 and CH 2 1 M Ω DC

VOLTS/DIV CH 1 and CH 2 50 mV
CH 1 and CH 2 VAR In detent

A and B SEC/DIV 0.2 ms (knobs locked)

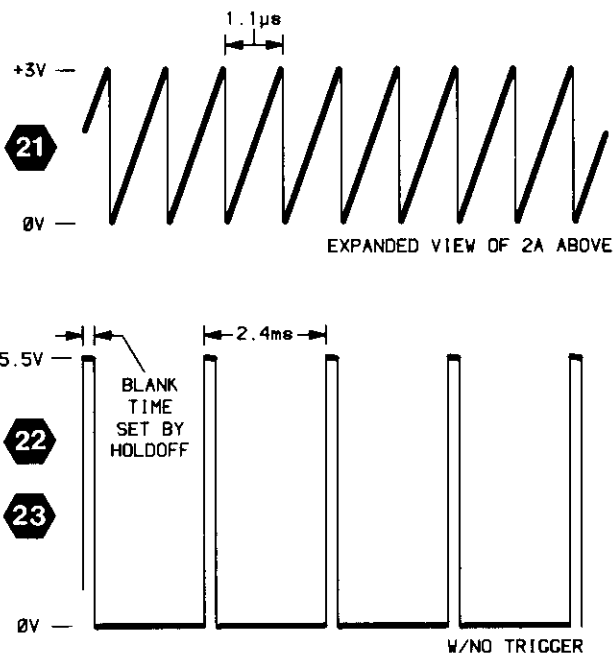
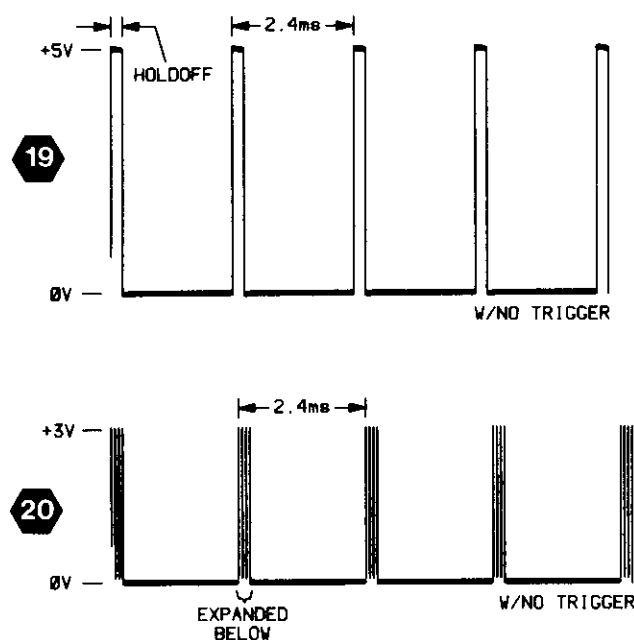
A and B SEC/DIV VAR In detent

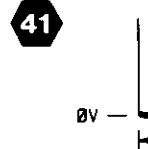
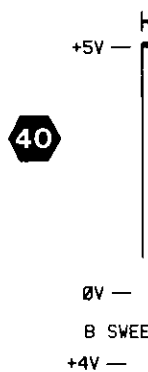
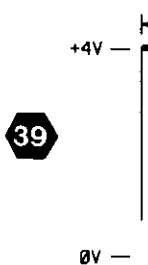
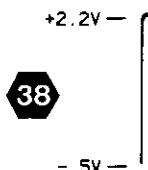
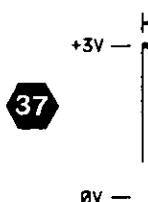
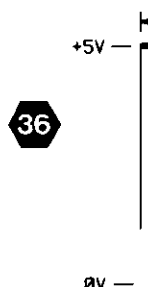
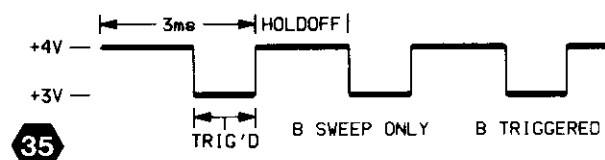
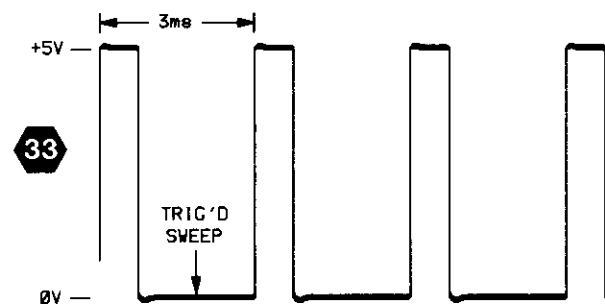
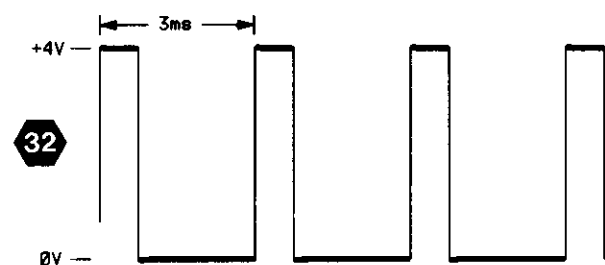
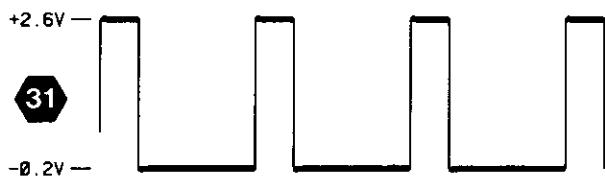
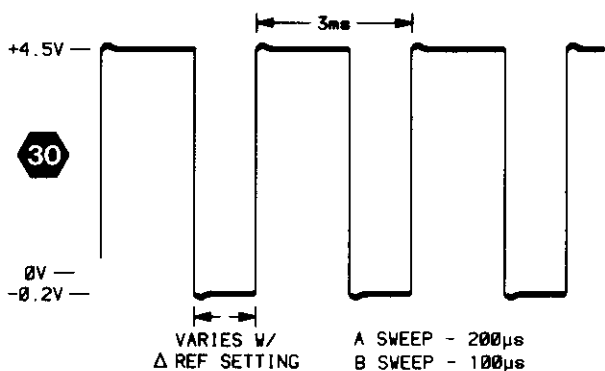
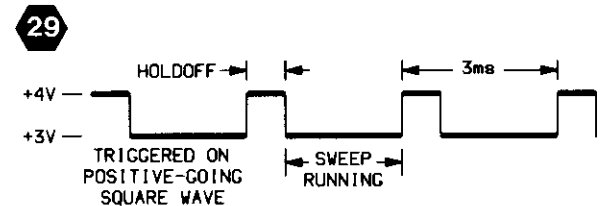
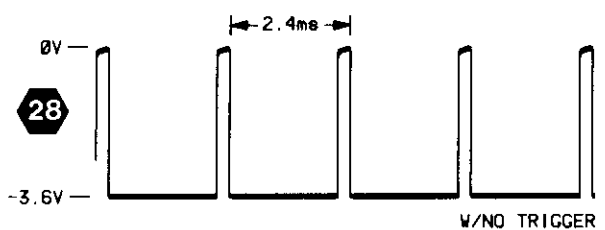
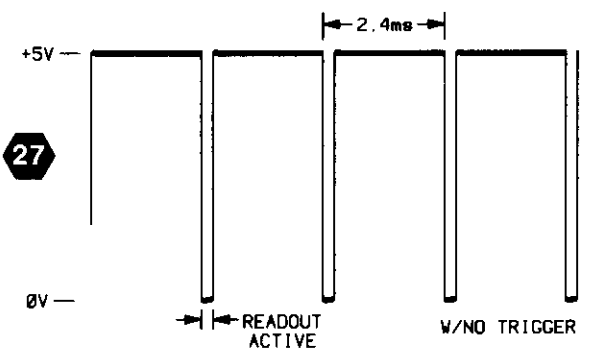
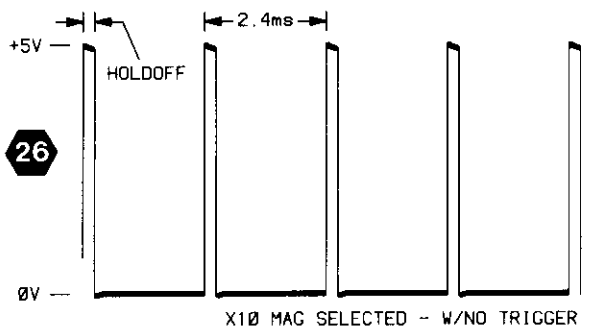
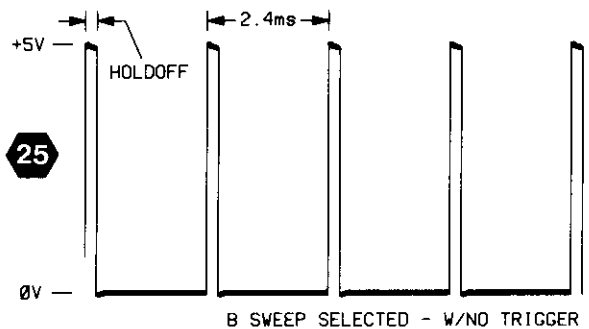
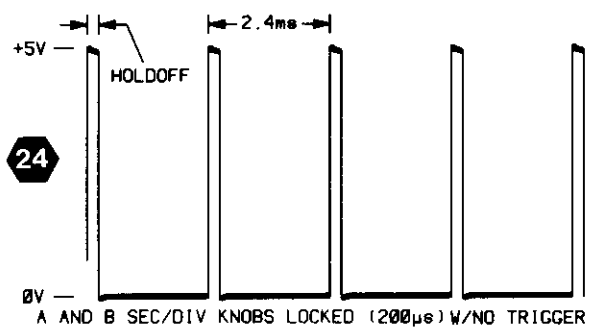
TRIGGER MODE AUTO
SOURCE VERT
COUPLING NOISE REJ
HOLDOFF In detent
SLOPE + (plus)
LEVEL Stably triggered display

Δt DLY readout
 Δ REF OR DLY POS 1000.0 μs readout
INTENSITY Midrange
READOUT INTENSITY Minimum (once DLY readout is set)
All other control settings are irrelevant.

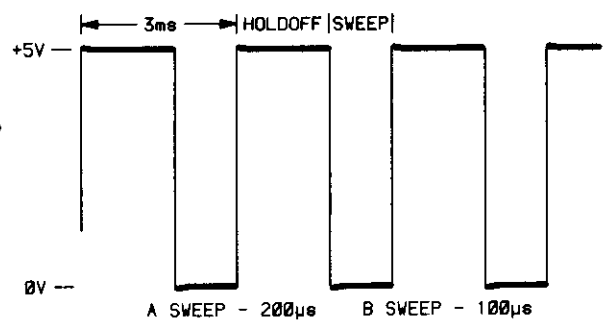
TEST OSCILLOSCOPE SETUP

Using a X10 probe with the test oscilloscope, set its Trigger Slope, Trigger Level, Volts/Div and Time/Div ranges as required to obtain the indicated displays.

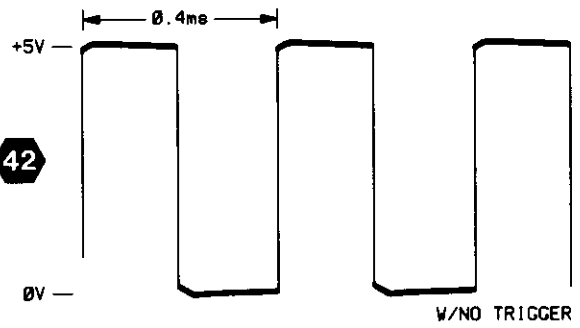




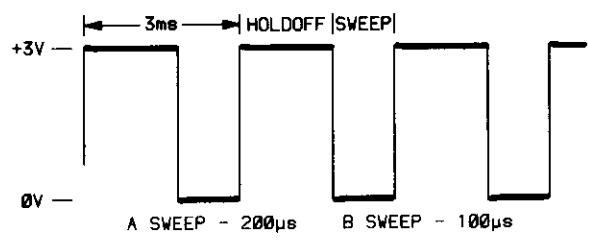
36



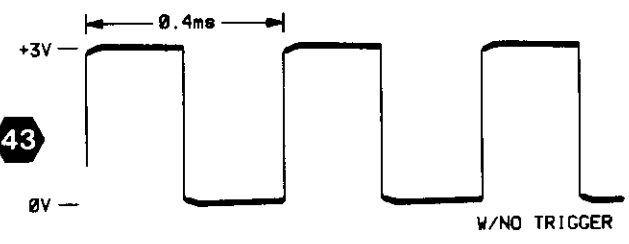
42



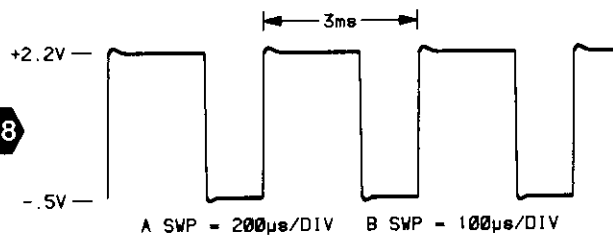
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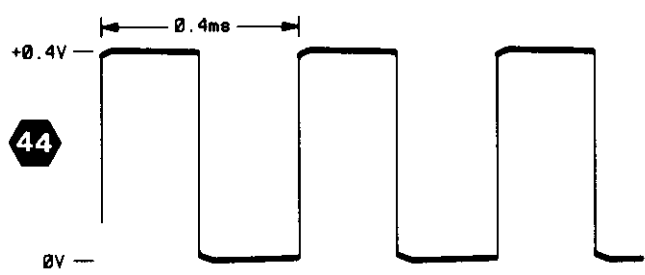
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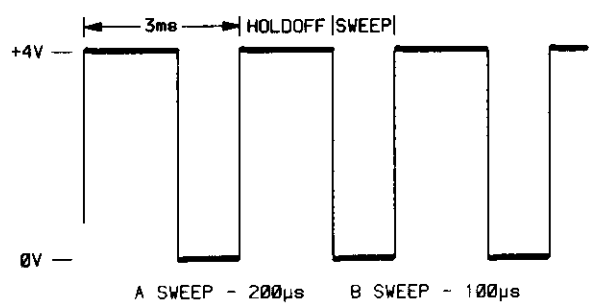
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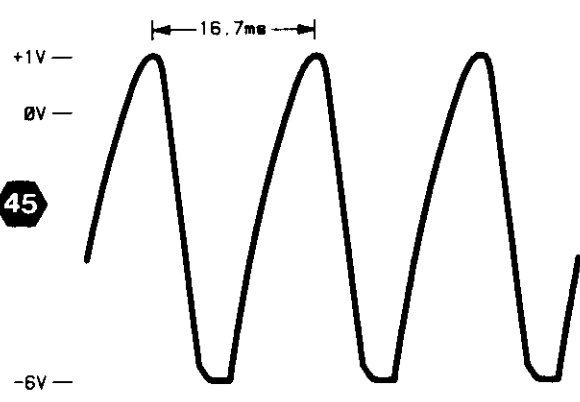
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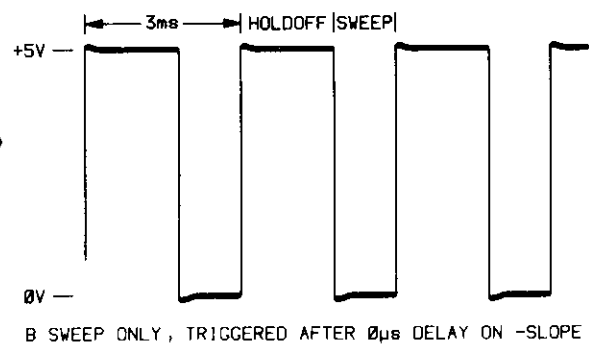
39



45



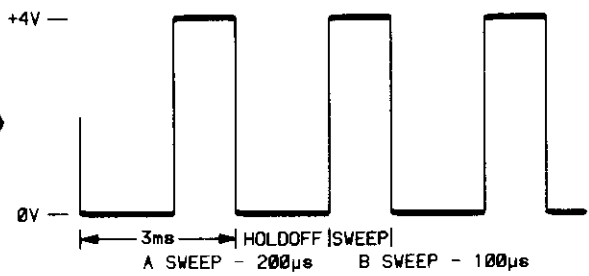
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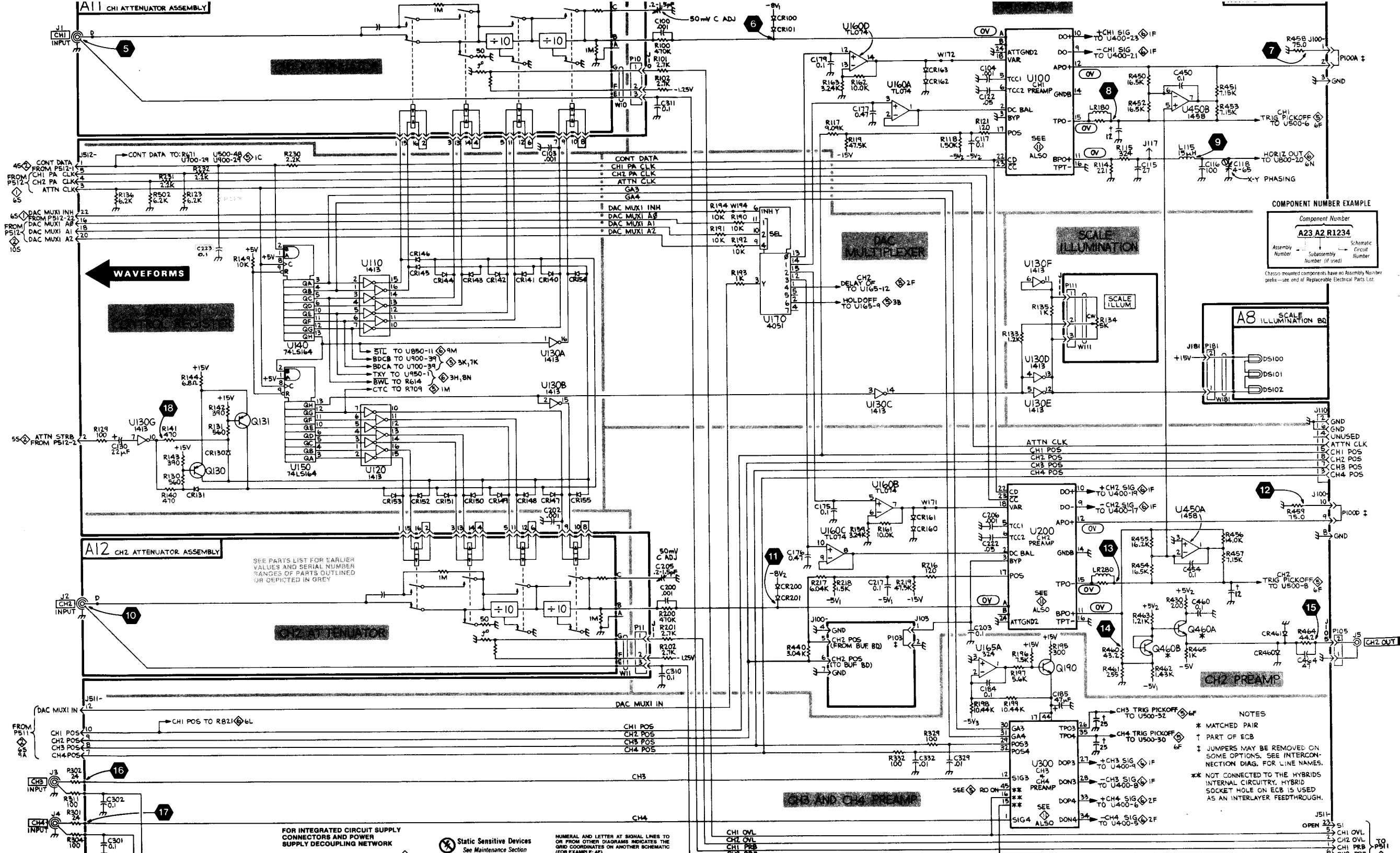


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ATTENUATORS AND PREAMPS DIAGRAM

4

ASSEMBLY A1

CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
C100	1H	4C	CR150	7F	6C	R114	3N	6D	R329	9L	2D
C103	3G	5C	CR151	7F	6C	R115	3N	6D	R332	9L	2D
C104	2M	5D	CR152	7E	6C	R117	2K	6E	R430	8P	3E
C105	1H	4C	CR153	7E	6C	R118	2L	5E	R440	8K	4F
C115	3P	6E	CR154	4G	6C	R119	2K	6D	R450	2N	3E
C116	3P	7E	CR155	7G	6C	R121	2M	4D	R451	2P	3E
C117	2M	4D	CR160	7L	2D	R123	3C	2H	R452	2N	3E
C118	3S	7E	CR161	7L	2D	R129	6B	5C	R453	2P	3E
C122	2M	5D	CR162	2L	2D	R130	6B	7B	R454	7N	3F
C130	6B	5C	CR163	2L	2D	R131	6C	7B	R455	7N	3E
C175	7K	2D	CR200	8J	3C	R133	5M	6B	R456	7P	3E
C176	7K	2D	CR201	8J	3C	R135	4M	6B	R457	7P	4F
C177	2K	2D	CR460	8S	3E	R136	3B	1H	R458	1S	4F
C179	2K	2D	CR461	8S	3E	R140	6B	7C	R459	7S	4G
C184	9M	2F				R141	6B	7C	R460	8N	3E
C185	9N	3B	J10	2H	5B	R142	5C	7C	R461	8N	3E
C200	8H	3C	J11	8H	3B	R143	6B	7C	R462	8P	4J
C202	7G	4C	J100	1T	4F	R144	5C	7B	R463	8N	3E
C203	8M	4C	J100	7T	4F	R149	4C	7B	R464	8S	3E
C205	7H	3C	J100	8K	4F	R159	7K	1D	R465	8P	3F
C206	7M	4D	J103	8L	4C	R161	7L	2D	R502	3B	1G
C217	7K	2D	J105	8T	3E	R162	2K	2D			
C222	7M	4D	J110	6T	2E	R163	2K	2D	U100	2M	5D
C223*	4C	2H	J111	4N	6B	R190	3J	2E	U110	4E	6B
C301	10B	1B	J117	2P	6E	R191	3J	2E	U120	6E	6C
C302	10B	3B	J181	5P	6B	R192	4J	2E	U130A	5G	6C
C310	8H	1C	J511	10T	1D	R193	4J	1E	U130B	5G	6C
C311	2H	1C	J511	9B	1D	R194	3J	1H	U130C	5K	6C
C329	9L	2D	J512	3A	1H	R195	8N	2E	U130D	5M	6C
C332	9L	2D				R196	8M	2E	U130E	5M	6C
C450	2P	3F	L115	3P	6E	R197	9M	2F	U130F	4M	6C
C454	7P	3F				R198	9M	3F	U130G	6B	6C
C460	8P	3E	LR180	2N	4E	R199	9M	3F	U140	5D	7B
C464	8S	3E	LR280	7N	3E	R200	8H	3C	U150	6D	7C
CR100	1J	5C				R201	8H	3B	U160A	2L	2D
CR101	1J	5C	P100A	2T	4F	R202	8H	3B	U160B	6L	2D
CR130	6C	7B	P100D	7T	4F	R216	7L	3D	U160C	7K	2D
CR131	6C	7B	P103	8L	4C	R217	7K	3D	U160D	1K	2D
CR140	4G	6B				R218	7K	3E	U165A	8M	2F
CR141	4F	6B	Q130	6C	7B	R219	7L	3D	U170	4J	2E
CR142	4F	6B	Q131	6C	7B	R223*	3C	2H	U200	7M	4D
CR143	4F	6B	Q190	8N	3E	R230	3D	2E	U300	10M	2B
CR144	4F	6B	Q460A	8P	3E	R231	3B	2E	U450A	7P	3F
CR145	4E	6B	Q460B	8P	3E	R232	3C	3E	U450B	2P	3F
CR146	4E	6B				R301	10A	1A			
CR147	7G	6C	R100	1H	4C	R302	10A	2A	W171	7L	2D
CR148	7F	6C	R101	1H	5B	R304	10A	1B	W172	1L	2D
CR149	7F	6C	R102	2H	5B	R311	10A	2A	W194	3J	2E

Partial A1 also shown on diagrams 5, 6, 8 and 11.

ASSEMBLY A8

CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
DS100	5S	1M	DS102	5S	1P	P181	5S	1P	W181	5S	1P
DS101	5S	1N									

ASSEMBLY A11

CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
J1	1A	5A	P10	1H	5B	W10	2H	5B			

ASSEMBLY A12

CHASSIS MOUNTED PARTS

CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
J2	8A	3A	J3	10A	CHASSIS	P105	8T	CHASSIS	R134	5N	CHASSIS
P11	8H	3B	J4	10A	CHASSIS	P111	4N	CHASSIS	W111	5N	CHASSIS
W11	9H	3B	J5	8T	CHASSIS						

ATTENUATORS & PREAMPS

4

See Par
serial n

A1—MAIN BOARD (CONT)

CIRCUIT NUMBER	SCHEM NUMBER	CIRCUIT NUMBER	SCHEM NUMBER	CIRCUIT NUMBER	SCHEM NUMBER
R556	5	R907	5	U700	5
R557	5	R910	5	U700	11
R558	5	R912	5	U735	6
R560	5	R924	5	U735	6
R600	6	R936	5	U735	6
R601	6	R937	5	U735	6
R602	6	R940	5	U735	6
R605	6	R941	5	U800	6
R606	6	R943	5	U800	11
R607	6	R944	5	U850	5
R608	6	R945	5	U850	5
R614	6	R950	5	U850	6
R615	6	R951	11	U850	11
R617	6	R952	5	U860	5
R618	6	R956	6	U860	5
R619	6	R957	6	U860	6
R620	6	R972	6	U860	11
R622	6	R973	6	U900	5
R624	6	R981	5	U900	11
R638	6	R995	6	U910	5
R639	6	S615	6	U910	5
R642	6	U100	4	U910	11
R643	5	U100	11	U950	6
R644	5	U110	4	U950	11
R645	5	U110	11	U975	5
R646	5	U120	4	U975	5
R650	6	U120	11	U975	6
R651	5	U130	4	U975	6
R652	5	U130	4	U975	11
R653	5	U130	4	U980	5
R654	5	U130	4	U980	5
R655	5	U130	4	U980	6
R659	6	U130	4	U980	6
R669	5	U130	4	U980	11
R670	5	U130	11	VR125	11
R671	5	U140	4	VR225	11
R672	5	U140	11	VR550	5
R678	5	U150	4	W101	11
R700	11	U150	11	W102	11
R701	11	U160	4	W103	11
R702	11	U160	4	W104	11
R707	5	U160	4	W105	11
R708	5	U160	4	W106	6
R709	5	U160	11	W107	5
R710	5	U165	4	W108	5
R713	5	U165	5	W109	11
R723	5	U165	5	W121	11
R724	5	U165	5	W121	11
R731	6	U165	11	W122	5
R732	6	U170	4	W122	11
R733	6	U170	11	W141	6
R734	6	U200	4	W141	6
R735	6	U200	11	W171	4
R736	5	U300	4	W172	4
R737	5	U300	11	W194	4
R738	5	U350	5	W666	5
R741	5	U350	5	W677	5
R742	5	U350	11	W916	6
R743	5	U400	6	W917	6
R744	5	U400	11	W918	6
R745	5	U450	4	W919	6
R746	5	U450	4		
R750	5	U450	11		
R800	6	U475	6		
R801	6	U475	6		
R802	6	U475	6		
R803	6	U475	6		
R804	6	U475	6		
R805	6	U485	6		
R806	6	U485	6		
R809	6	U485	6		
R811	11	U485	6		
R817	6	U485	6		
R820	6	U500	5		
R821	6	U500	11		
R822	6	U550	5		
R823	6	U550	5		
R850	6	U550	5		
R852	5	U550	5		
R853	5	U550	5		
R855	6	U600	6		
R856	6	U600	11		
R858	6	U650	5		
R860	6	U650	11		
R904	5				

ACRONYM DICTIONARY

The following listing explains some of the less obvious acronyms and signal labels used on this schematic. Acronyms and labels not shown in this listing may be included in the circuit descriptions (Section 3) and should be obvious if a little thought is given to the intended circuit function.

APO+ . . . auxiliary pickoff, noninverting
 ATTN CLK . . . attenuator clock
 ATTN STRB . . . attenuator strobe
 BDCA . . . bypass delay comparator A
 BDCB . . . bypass delay comparator B
 BPO+ . . . second auxiliary pickoff, noninverting
 BWL . . . bandwidth limit
 BYP . . . bypass
 CC . . . control clock
 CD . . . control data
 CH1 OVL . . . CH1 overload
 CH2 OVL . . . CH2 overload
 CH1 PA CLK . . . CH1 preamp clock
 CH2 PA CLK . . . CH2 preamp clock
 CH1 PRB — CH4 PRB . . . CH1 — CH4 probe encoding
 CONT DATA . . . control data
 CTC . . . capacitor, timing compensation
 DAC MUX1 INH . . . DAC multiplexer 1 inhibit
 DAC MUX1 A0 . . . DAC multiplexer 1, address bit 0
 DAC MUX1 A1 . . . DAC multiplexer 1, address bit 1
 DAC MUX1 A2 . . . DAC multiplexer 1, address bit 2
 DAC MUX1 IN . . . DAC multiplexer 1 input
 DO+ . . . display output, noninverting
 DO— . . . display output, inverting
 DON3 . . . display output, negative CH 3
 DOP3 . . . display output, positive CH 3
 DON4 . . . display output, negative CH 4
 DOP4 . . . display output, positive CH 4
 GA3 . . . gain 3
 GA4 . . . gain 4
 SI . . . scope identification bit
 SIL . . . slow intensity limit
 TPO— . . . trigger pickoff, inverting
 TPO3 . . . CH3 trigger pickoff
 TPO4 . . . CH4 trigger pickoff
 TPT— . . . trigger pickoff reverse termination
 TXY . . . triggered X-Y

TEST WAVEFORM SETUP INFORMATION

The numbered waveforms below were obtained at the test points indicated on the accompanying schematic diagram and board dolly. The waveforms are representative of signals that may be expected at the associated points when the following setup conditions are observed. Any change(s) from the given setup conditions required to produce a given waveform are noted with that waveform illustration.

2445 SETUP

Connect a 200-mV, 1-kHz squarewave signal from a signal generator to the CH 1 and CH 2 inputs of the 2445 via a BNC T-connector, a 50-ohm BNC cable and a dual-input coupler.

TRIGGER

MODE

SOURCE

COUPLING

AUTO

VERT

DC

All other control settings are irrelevant.

Set:

VERTICAL MODE CH 1

Input Coupling
CH 1 and CH 2 1 M Ω DC

VOLTS/DIV
CH 1 and CH 2 50 mV

A and B SEC/DIV 0.5 ms (knobs locked)

TEST OSCILLOSCOPE SETUP

Connect the 200-mV, 1-kHz squarewave from the BNC T-connector to the External Trigger input of the test oscilloscope using a 50-ohm BNC cable. Externally trigger the test oscilloscope on the rising edge of the 1-kHz signal and, using a X10 probe with the test oscilloscope, set its Volts/Div and Time/Div ranges as required to obtain the indicated displays.

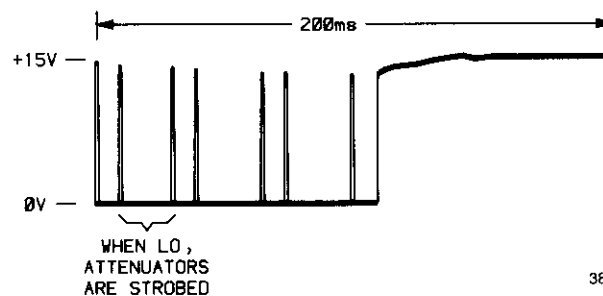
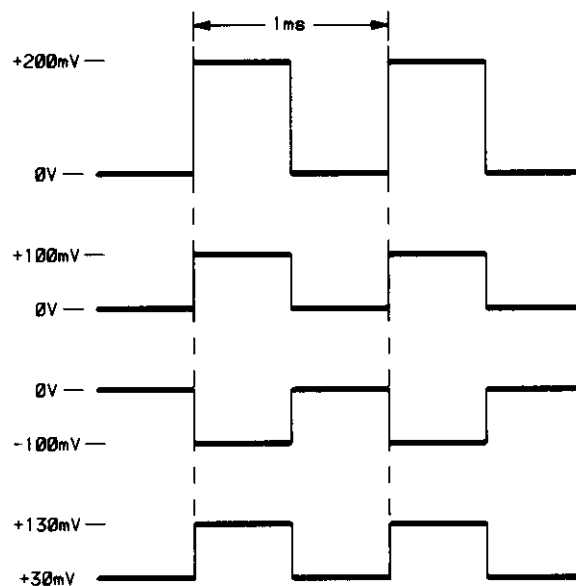
5 6 10 11 16 17

7 12 14 15

8 13

9

18



ACRONYM DICTIONARY

The following listing explains some of the less obvious acronyms and signal labels used on this schematic. Acronyms and labels not shown in this listing may be included in the circuit descriptions (Section 3) and should be obvious if a little thought is given to the intended circuit function.

ACA . . . A low-pass capacitor	ROR . . . readout request
ACB . . . B low-pass capacitor	SDO . . . sweep delay offset
AHO . . . A holdoff	$\overline{SG}$. . . sweep gate
A TIM REF . . . A timing reference	$\overline{SGA}$. . . sweep gate A
B TIM REF . . . B timing reference	$\overline{SGAZ}$. . . sweep gate A to Z axis
BDC . . . bypass delay comparator	$\overline{SGB}$. . . sweep gate B
BDCA . . . bypass delay comparator A	$\overline{SGBZ}$. . . sweep gate B to Z axis
BDCB . . . bypass delay comparator B	$\overline{SR0A}$. . . A trigger source select 0
BWL B . . . bandwidth limited B signal	$\overline{SR1A}$. . . A trigger source select 1
CAL . . . calibrator	$\overline{SR2A}$. . . A trigger source select 2
CAL OUT . . . calibrator out	$\overline{SR0B}$. . . B trigger source select 0
$\overline{CC}$. . . control clock	$\overline{SR1B}$. . . B trigger source select 1
$\overline{CCA}$. . . control clock A	$\overline{SR2B}$. . . B trigger source select 2
$\overline{CCB}$. . . control clock B	SSA . . . A selected signal source
CD . . . control data	SSB . . . B selected signal source
CHN5A . . . CH5 (for A trigger)	SSR . . . sweep start reference
CHN5B . . . CH5 (for B trigger)	$\overline{STBA}$. . . A compare strobe
CONT DATA . . . control data	$\overline{STBB}$. . . B compare strobe
CT . . . calibrator timing out	TC . . . timing clock
CTC . . . capacitor, timing compensation	TCS . . . timing capacitor select
CT0 . . . timing capacitor 0	TGA . . . A trigger
CT2 . . . timing capacitor 2	TGA . . . inverted A trigger
DG . . . delay gate	TGB . . . B trigger
DGB . . . delay gate bypass	TGB . . . inverted B trigger
DI . . . display intensity	THO . . . trigger holdoff
DOR . . . delay offset reference	THOA . . . trigger holdoff A
DR . . . delay reference	THOB . . . trigger holdoff B
$\overline{DS}$. . . delay select	TLA . . . trigger level A
HRR . . . holdoff ramp reset	TLB . . . trigger level B
HSA . . . horizontal select A	TRIG STAT STRB . . . trigger status strobe
HSB . . . horizontal select B	$\overline{TSA}$. . . trigger status A
IREF . . . current reference	$\overline{TSB}$. . . trigger status B
IT . . . timing current	TS IN . . . trace separation input
ITF . . . timing current feedback	TSO . . . trigger status output
ITR . . . timing current reference	$\overline{TSS}$. . . trigger status strobe
ITREF . . . timing current reference	TS1 . . . trace separation voltage 1
ITRR . . . timing current reference return	TS2 . . . trace separation voltage 2
IZD . . . inhibit zero delay	TS1+TS2 . . . trace separation 1 and 2
RDA . . . reset delay adjust	VBBI . . . bias voltage in
$\overline{ROA}$. . . readout acknowledge	$\overline{VBBO}$. . . bias voltage out
$\overline{ROB}$. . . readout blank	VS1 — VS4 . . . vertical selects 1 — 4
ROI . . . readout intensity	
RO ON . . . readout on	

DISPLAY SEQUENCER, TRIGGERING, A & B SWEEPS DIAGRAM

5

ASSEMBLY A1

CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
C180	3B	2E	J113	5A	7B	R537	9E	1E	R907	6M	7H
C181	2G	2E	J116	6A	9B	R542	7H	3F	R910	5K	9F
C306	1P	1B	J118	9S	2K	R543	8H	2F	R912	5K	9E
C512	8F	3H	J411	10S	1K	R544	8C	3H	R924	5K	7G
C513	8E	3H	J411	6A	1K	R545	8C	3H	R936	6K	9F
C520	7D	2H	J511	8A	1D	R550	8P	1G	R937	6K	8G
C528	7F	1G	J512	1A	1H	R551	8N	1E	R940	7M	6K
C536	9F	1F	J512	1S	1H	R552	8N	1E	R941	7M	9J
C537	9E	2F				R553	9N	1F	R943	6M	9H
C544	8D	3H	P101A	7B	3H	R554	8N	1G	R944	7M	8J
C645	8F	5G	P101B	8B	3H	R555	8P	1G	R945	6M	7J
C650	6E	7K	P102B	4K	6F	R556	9P	1F	R950	7P	6K
C653	6C	3J	P102D	8K	6F	R557	9P	1E	R952	6E	7K
C660	4D	3J	P107	7S	6K	R558	9P	1E	R981	4P	5K
C669	5C	2J	P108	4S	5K	R560	7N	1F			
C707	2M	8C	P122	8A	4H	R643	8F	5G	U165B	8N	2F
C708	2M	8C				R644	8F	5G	U165C	3C	2F
C709	2M	8D	Q154	4C	1E	R645	7F	5G	U165D	2G	2F
C712	1K	9E	Q155	3D	1F	R646	8F	5G	U350A	6C	8B
C742	3K	6D	Q550	8S	1E	R651	6B	1J	U350B	1N	8B
C851	3H	8E	Q645	8F	6G	R652	6C	2J	U500	7G	2G
C852	3H	8E	Q709	2M	8D	R653	5E	4J	U550A	9P	1F
C853	3H	8E	Q741	4M	6D	R654	7B	1J	U550B	8P	1F
C854	3H	8E				R655	7B	1J	U550C	8P	1F
C907	6M	7J	R152	3C	2F	R669	5C	2J	U550D	8N	1F
C908	5M	8J	R153	3C	2F	R670	2B	1J	U550E	9P	1F
C912	5K	9E	R154	4C	2E	R671	2D	2H	U650	6D	3J
			R155	3D	2F	R672	2B	2H	U700	3L	7D
CR355	1P	7B	R156	4C	2E	R678	2B	2H	U850B	6J	8F
CR356	1P	7B	R165	2H	2E	R707	2N	8C	U850C	3J	8F
CR358	5B	7B	R334	6B	9B	R708	2N	8C	U860A	3M	6F
CR359	6B	8B	R353	6B	2H	R709	1N	8C	U860B	2J	6F
CR652	6E	4J	R355	1P	7B	R710	1K	9F	U900	6L	8H
CR653	6C	3J	R357	5C	7C	R713	1K	9E	U910A	5K	9F
CR707	2M	8B	R358	5B	7C	R723	2K	8E	U910B	2K	9F
CR741	4M	6D	R359	6B	8B	R724	2K	8E	U975B	4P	6K
CR746	3P	5K	R360	5C	3H	R736	2K	9F	U975D	7P	6K
CR747	4P	5K	R361	6C	3H	R737	2K	9F	U980A	4N	6K
CR950	7P	6K	R362	1N	7B	R738	2K	9F	U980D	6M	6K
CR951	6P	6K	R363	1N	7B	R741	4M	6D			
			R511	4F	3H	R742	4M	6D	VR550	8N	1E
J9	9S	2A	R512	4F	3H	R743	4J	6D			
J101	4H	3H	R513	8E	3H	R744	4L	7F	W107	7S	6K
J101	7C	3H	R518	4H	3H	R745	4M	6D	W108	3S	5K
J102	3F	7F	R519	4H	3H	R746	4P	5K	W122	8A	4H
J102	4K	7F	R520	7C	2H	R750	3M	6D	W666	8E	1J
J102	8K	7F	R521	7C	2H	R852	3H	8E	W677	2E	2J
J104	4S	5K	R527	7F	1G	R853	3H	8E			
J104	7S	5K	R529	7F	1G	R904	6K	8J			

Partial A1 also shown on diagrams 4, 6, 8 and 11.

CHASSIS MOUNTED PARTS

CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
J7	7S	CHASSIS	P113	5A	CHASSIS	R351	5A	CHASSIS	W113	6A	CHASSIS
J8	3S	CHASSIS	P116	6A	CHASSIS	R352	6A	CHASSIS	W116	6A	CHASSIS

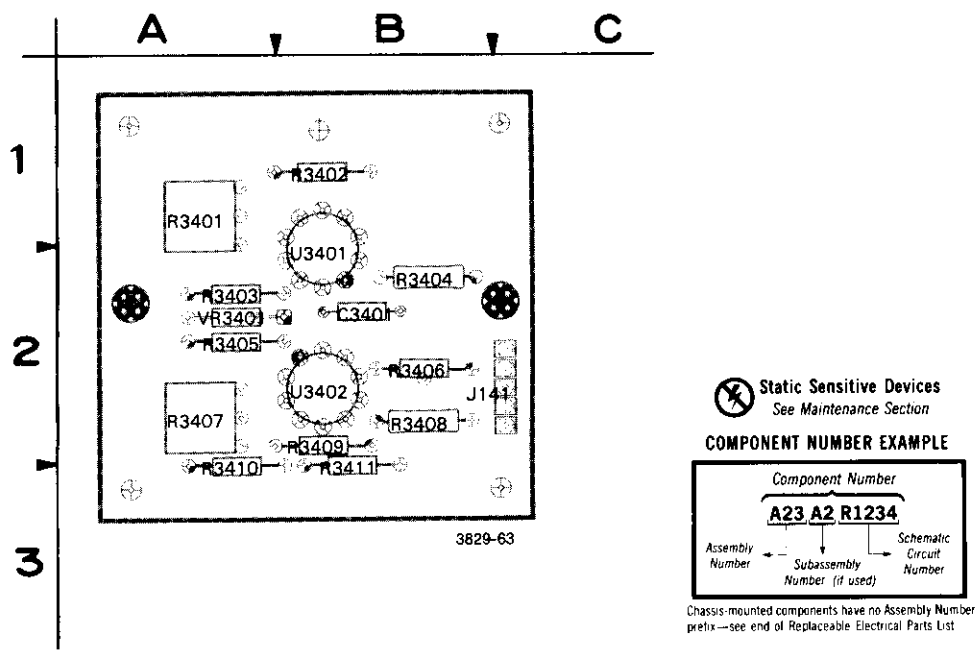
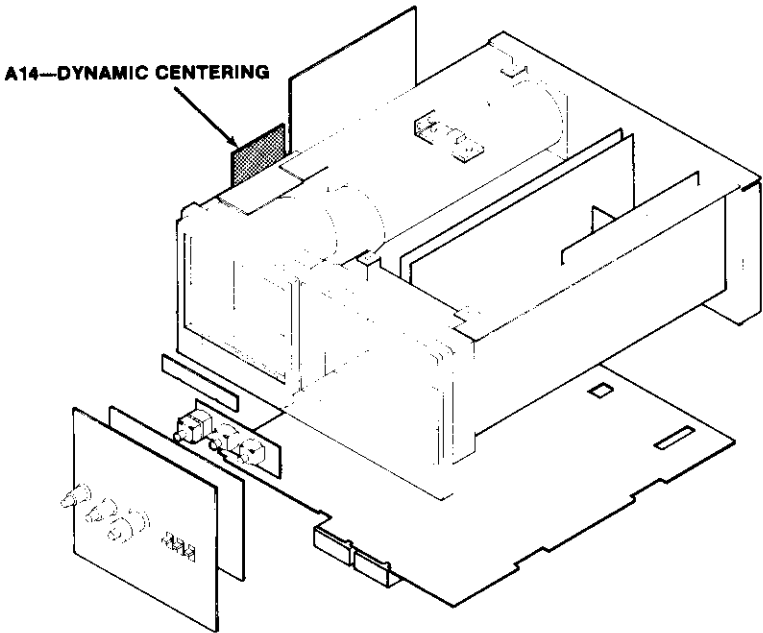


Figure 9-9. A14—Dynamic Centering board.

ALL COMPONENTS MOUNTED ON A14—DYNAMIC CENTERING BOARD ARE SHOWN ON SCHEMATIC DIAGRAM 6.



TEST WAVEFORM SETUP INFORMATION

The numbered waveforms below were obtained at the test points indicated on the accompanying schematic diagram and board dolly. The waveforms are representative of signals that may be expected at the associated points when the following setup conditions are observed. Any change(s) from the given setup conditions required to produce a given waveform are noted with that waveform illustration. Where B Sweep setup conditions are referenced with a waveform, it is assumed that the B SEC/DIV knob is set to 100 μ s/div unless otherwise noted.

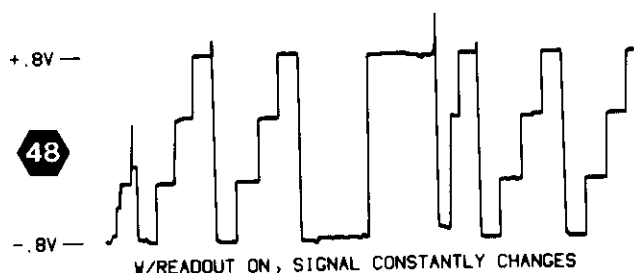
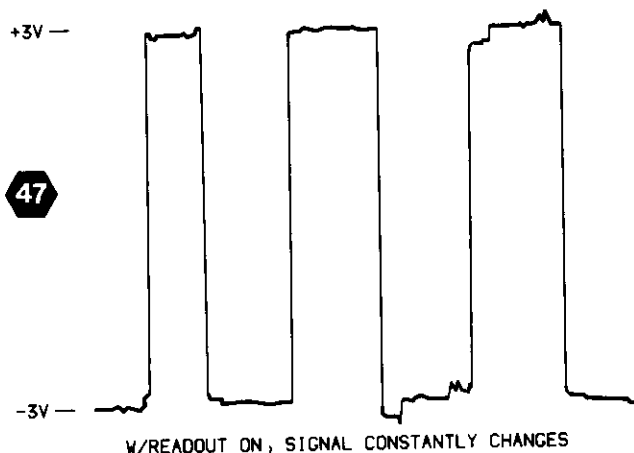
2445 SETUP

Connect a 200-mV, 1-kHz squarewave to the CH 1 input of the 2445 using a BNC cable.

Set:

VERTICAL MODE	CH 1
Input Coupling	
CH 1 and CH 2	1 M Ω DC
VOLTS/DIV	
CH 1 and CH 2	50 mV
CH 1 and CH 2 VAR	In detent
A and B SEC/DIV	0.2 ms (knobs locked)
A and B SEC/DIV VAR	In detent

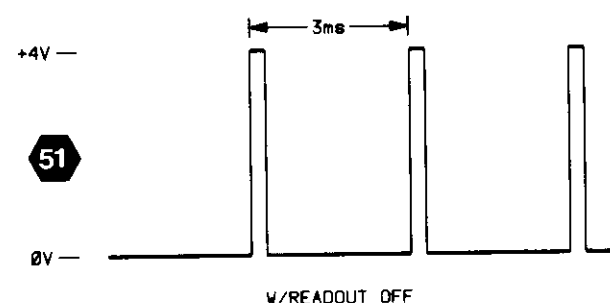
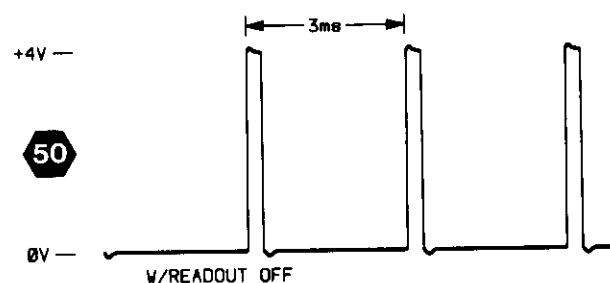
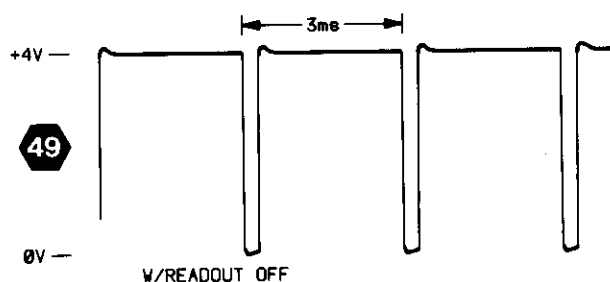
TRIGGER	
MODE	AUTO
SOURCE	VERT
COUPLING	NOISE REJ
HOLD OFF	In detent
SLOPE	+ (plus)
LEVEL	Stably triggered display



Δt	DLY readout
Δ REF OR DLY POS	1000.0 μ s readout
INTENSITY	Midrange
READOUT INTENSITY	Minimum (once DLY readout is set)
All other control settings are irrelevant.	

TEST OSCILLOSCOPE SETUP

Using a X10 probe with the test oscilloscope, set its Trigger Slope, Trigger Level, Volts/Div and Time/Div ranges as required to obtain the indicated displays.



0V —

52

-4V —

+100mV —

0V —

53

-150mV —

+100mV —

54

0V —

-150mV —

+30V —

+27V —

55

+22V —

+31V —

56

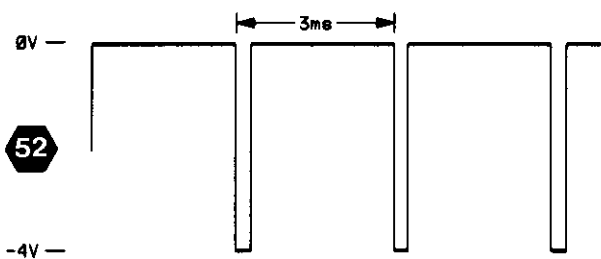
+27V —

+24V —

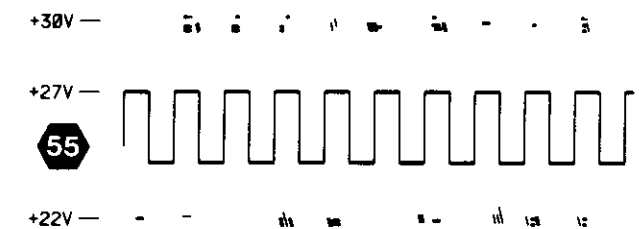
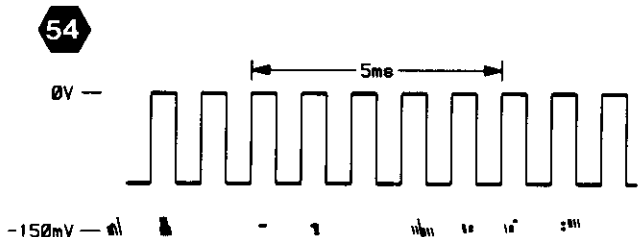
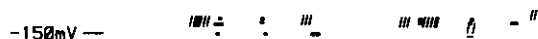
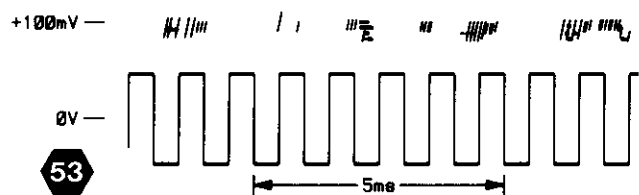
+4V —

57

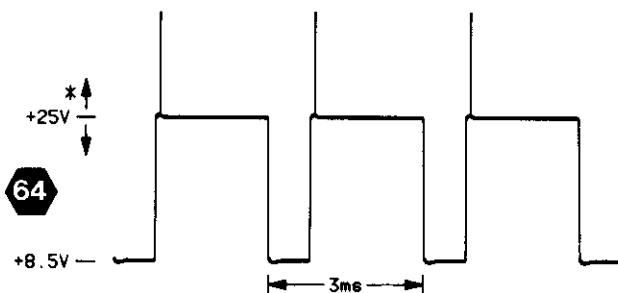
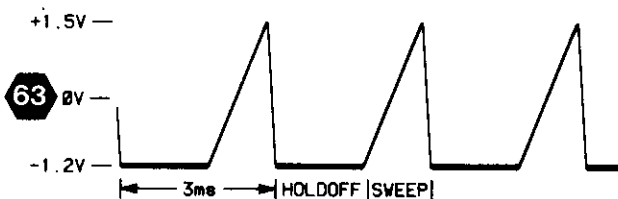
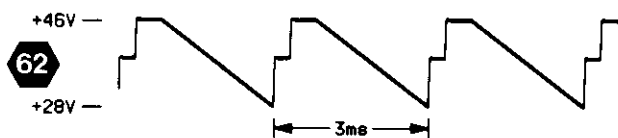
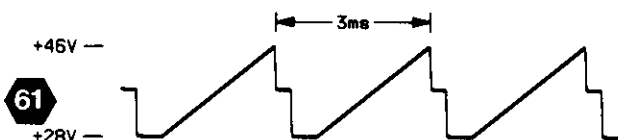
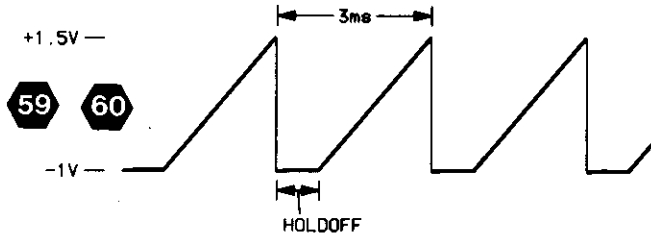
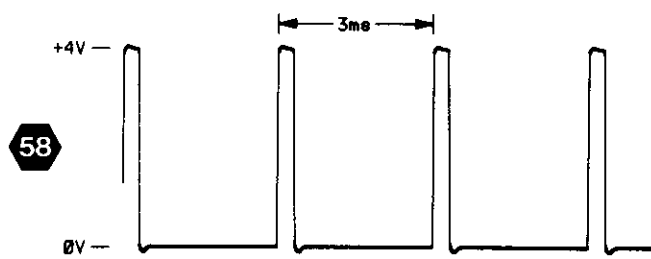
0V —



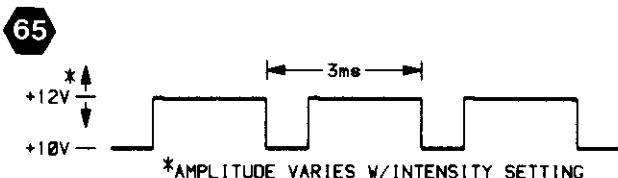
W/READOUT OFF



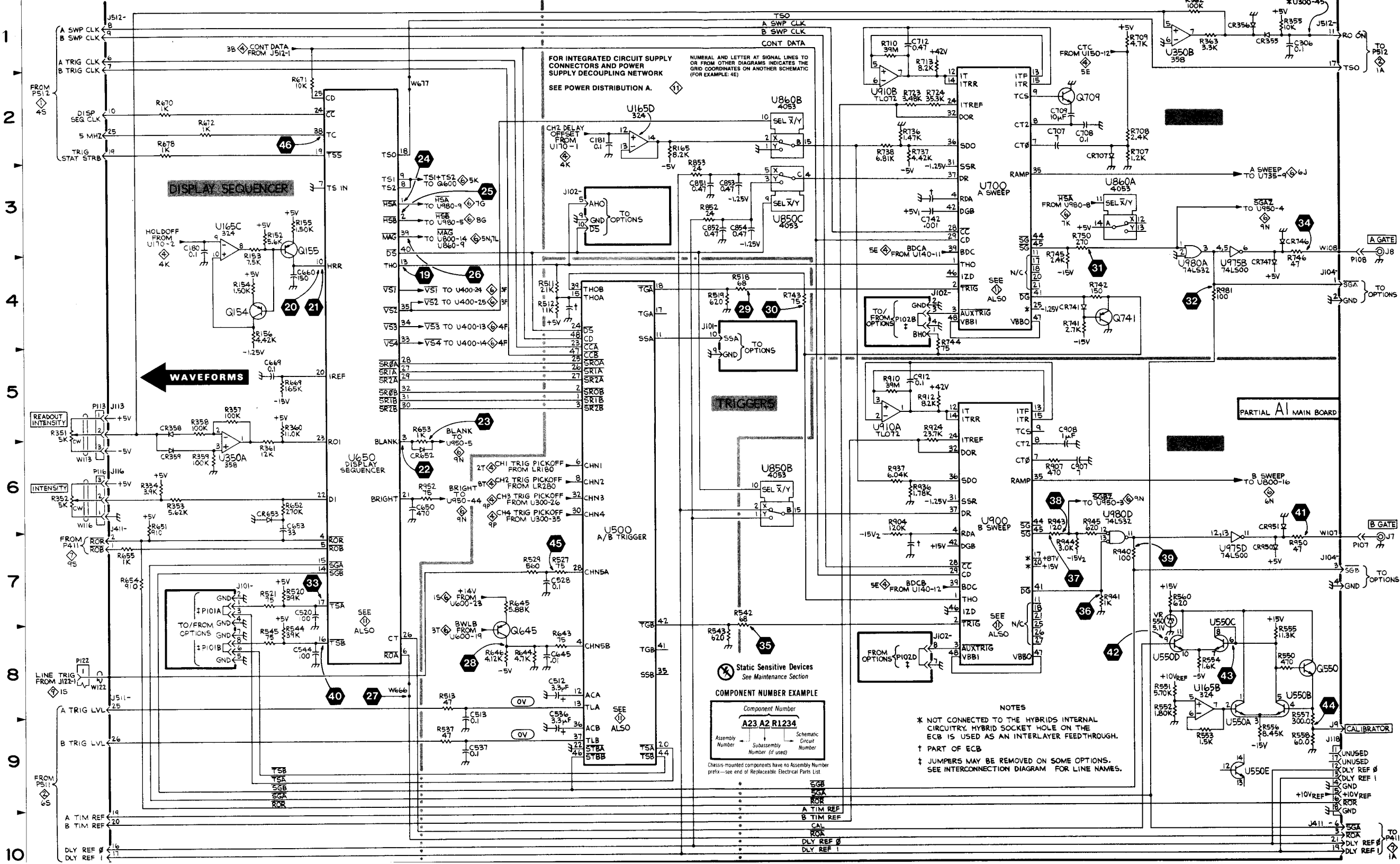
B SWEEP MUST BE SELECTED



*AMPLITUDE VARIES W/INTENSITY SETTING



*AMPLITUDE VARIES W/INTENSITY SETTING



ACRONYM DICTIONARY

The following listing explains some of the less obvious acronyms and signal labels used on this schematic. Acronyms and labels not shown in this listing may be included in the circuit descriptions (Section 3) and should be obvious if a little thought is given to the intended circuit function.

A+ . . . A sweep
 B+ . . . B sweep
 BD0 . . . buffered data bit 0
 BF . . . beamfind
 BTST . . . bootstrap
 BWL . . . bandwidth limit
 BWLA1 . . . A bandwidth limit inductor input
 BWLA2 . . . A bandwidth limit inductor output
 BWLB . . . bandwidth limit B
 BWLB1 . . . B bandwidth limit inductor input
 BWLB2 . . . B bandwidth limit inductor output
 CLB . . . current limit bypass
 CMB . . . common mode bypass
 COMP A . . . A compensation
 COMP B . . . B compensation
 GA . . . gain
 GADJ . . . gain adjust
 HSA . . . horizontal select A
 HSB . . . horizontal select B
 I BIAS . . . current reference
 ISRC . . . current source
 MKL RC . . . mean cathode loading RC
 MREG . . . mag registration
 Q GAIN . . . quadrapole gain
 RO DO . . . readout data out
 ROSFRAME . . . readout subframe
 R/W DLYD . . . read/write delayed
 RO . . . readout
 ROS1 . . . readout strobe 1
 ROS2 . . . readout strobe 2
 SGA . . . sweep gate A
 SGAZ . . . sweep gate A to Z-axis
 SGB . . . sweep gate B
 SGAB . . . sweep gate B to Z-axis
 SIL . . . slow intensity limit
 TADJ . . . thermal adjust
 TRANR . . . transient response
 TRANS RESP . . . transient response
 TRQ . . . transient response, quadrapole drive
 TRZ . . . transient response, Z-axis
 TS . . . trace separation
 TS1+TS2 . . . trace separation inputs 1 and 2
 TXY . . . triggered X-Y
 VZOUT . . . variable Z-axis output
 VQOUT . . . variable quadrapole output
 VS1 – VS4 . . . vertical selects 1 – 4
 X+ . . . noninverting external input
 X– . . . inverting external input

CHANNEL SWITCH AND OUTPUT AMPLIFIERS DIAGRAM

6

ASSEMBLY A1

CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
C402	3F	5F	L608	2N	5H	R500	10B	1J	R956	8N	7K
C404	2K	5J	L609	2M	5H	R501	10B	1J	R957	8N	7J
C412	2F	4F	L610	2M	5H	R600	3P	6J	R972	9S	9K
C478	3E	3J	L611	2L	5H	R601	2N	5H	R973	9P	9K
C487	2C	3K	L612	2L	5H	R602	2N	5H	R995	9B	7K
C488	2B	3K	L619	3P	6G	R605	2N	5H			
C617	3M	5G	L644	3P	6J	R606	2M	5H	S615	4M	8B
C625	1P	6G	P106	9A	7K	R607	2M	5G			
C735	6K	7E	P141	5F	9K	R608	2M	4H	U400	2G	5E
C803	6N	8F	P141	6C	9K	R614	3H	7E	U475A	3D	4J
C805	7S	7F				R615	4M	9B	U475B	3D	4J
C806	7P	7F	Q600	4L	4J	R617	3M	5G	U475C	1D	4J
C808	5P	7F	Q623	1P	6G	R618	3L	5G	U475D	3E	4J
C809	5S	7F	Q624	1N	6G	R619	3P	6G	U475E	3E	4J
C817	3B	7F				R620*	3T	4H	U485A	2C	3K
C822	5B	8E	R401	2F	5F	R622	4N	6G	U485B	2D	3K
C956	8M	6K	R402	3F	5F	R624	1P	6G	U485C	1B	3K
C957	8M	7J	R403	2K	5J	R638	3N	6J	U485D	1C	3K
C972	9S	9K	R412	2F	4F	R639	4N	6J	U485E	1B	3K
C995	9B	7K	R416	2F	4F	R642	4L	3E	U600	2P	6H
			R470	4C	3K	R650	4K	4J	U735A	5K	7E
CR476	3E	3J	R471	3C	4K	R659	3N	6J	U735B	5K	7E
CR484	4C	3K	R476	3F	4J	R731	5K	7E	U735C	6K	7E
CR485	4C	3K	R477	3E	3J	R732	6J	7E	U735D	6J	7E
CR495	2D	3K	R478	3E	3J	R733	6K	7E	U735E	6K	7E
CR600	4L	6J	R479	2E	4J	R734	6K	7E	U800	5P	7F
CR601*	3S	6J	R480	2D	2J	R735	6K	7E	U850A	8M	8F
CR616	4H	6K	R481	3D	4K	R800	7M	8F	U860C	7L	6F
CR619*	3S	6G	R482	3D	4K	R801	7M	8F	U950	8P	8K
CR620*	3S	4J	R483	2C	4K	R802	6N	8F	U975A	4D	6K
CR621*	3S	4H	R484	3D	4K	R803	6N	8G	U975C	7H	6K
CR956	8N	7K	R485	4C	4K	R804	6S	7F	U980B	8H	6K
CR966	8S	9K	R486	2C	4K	R805	6P	7F	U980C	7H	6K
CR972	9S	9K	R487	2B	3K	R806	7S	7F			
DL100	2H	5K	R488	2B	3K	R809	5S	7F	W106	9B	7K
			R489	2B	3K	R817	2B	6F	W141	7F	9K
J191	8S	8K	R490	1C	3J	R820	6L	6E	W141	9C	9K
J411	10S	1K	R491	1D	3J	R821	6L	6E	W916	2S	7H
J411	2B	1K	R492	2E	3J	R822	5B	6E	W917	3S	7H
J511	4B	1D	R493	2D	3J	R823	6M	8E	W918	5S	7G
J512	10B	1H	R494	2D	3K	R850	6L	8F	W919	6S	7G
J612	9S	1H	R495	2F	4J	R855	6N	6F			
L605	2N	5H	R497	4C	5K	R856	6M	9E			
L606	2M	5J	R498	3D	6K	R858	6M	9E			
L607	2M	5G				R860	6M	9D			

Partial A1 also shown on diagrams 4, 5, 8 and 11.

ASSEMBLY A9

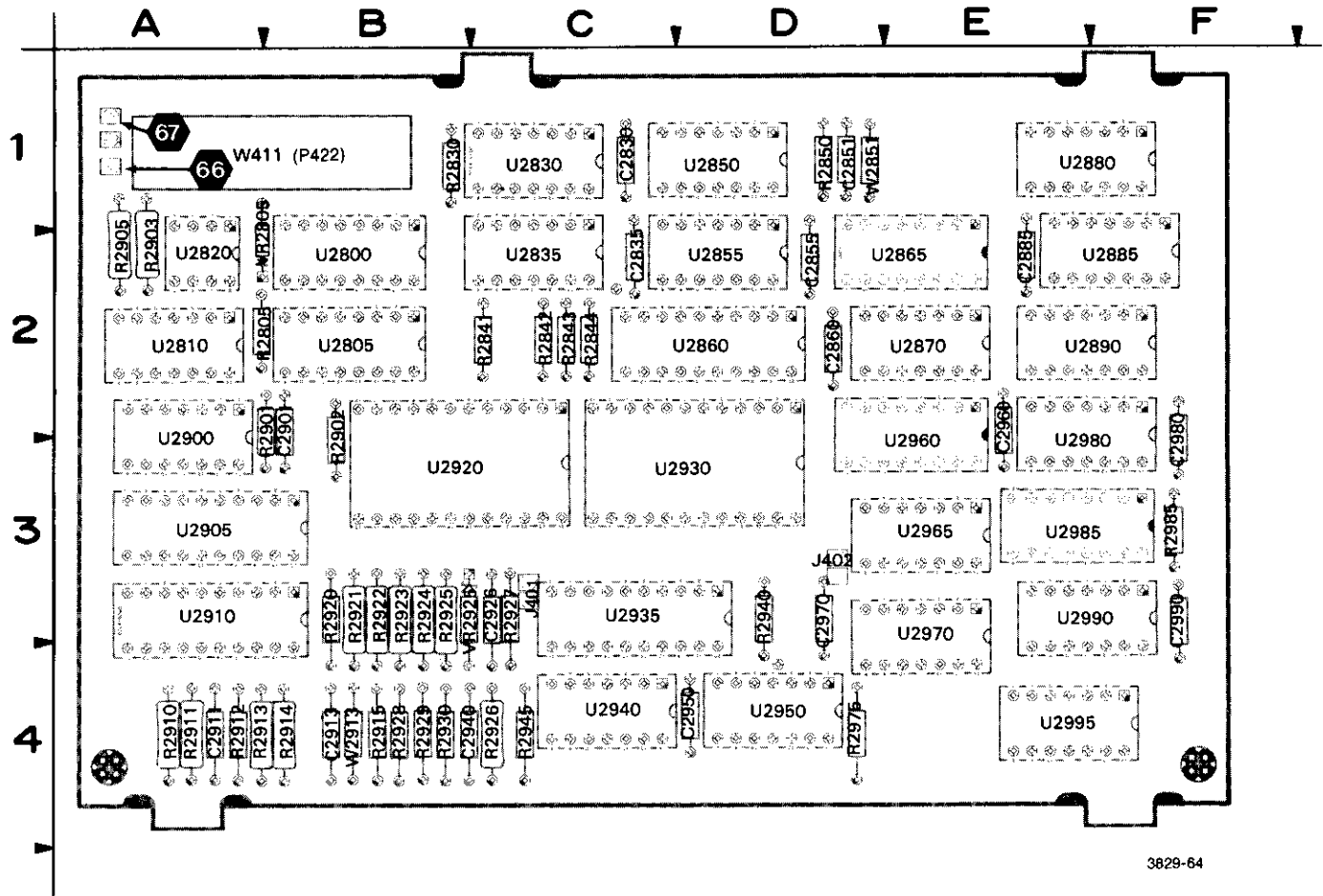
CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
P191	9L	4B	R1820	9K	1B	R1842	9K	1C			
			R1834	9L	1B						
Partial A9 also shown on diagrams 8 and 12.											

ASSEMBLY A14

CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
C3401	9D	2B	R3402	8E	1B	R3408	7F	2B	U3402	7E	2B
J141	5F	2B	R3403	6D	2A	R3409	6E	2B	VR3401	5D	2A
J141	6C	2B	R3404	8F	2B	R3410	8D	3A			
			R3405	7D	2A	R3411	8D	3B			
R3401	8F	1A	R3406	7D	2B						
			R3407	6F	2A	U3401	8E	2B			

CHASSIS MOUNTED PARTS

CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
J6	9A	CHASSIS									



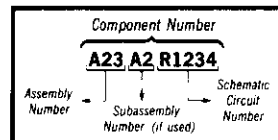
3829-64

Figure 9-10. A4—Readout board.

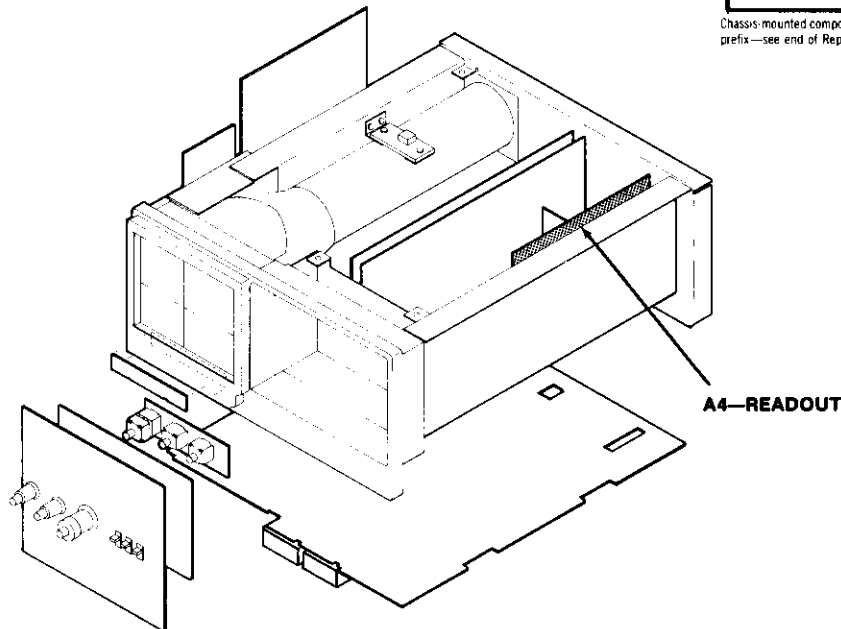
() COMPONENTS WITHIN PARENTHESES MAY NOT BE LOCATED PRECISELY AS SHOWN BUT ARE NEAR THEIR INDICATED POSITION.

Static Sensitive Devices
See Maintenance Section

COMPONENT NUMBER EXAMPLE



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



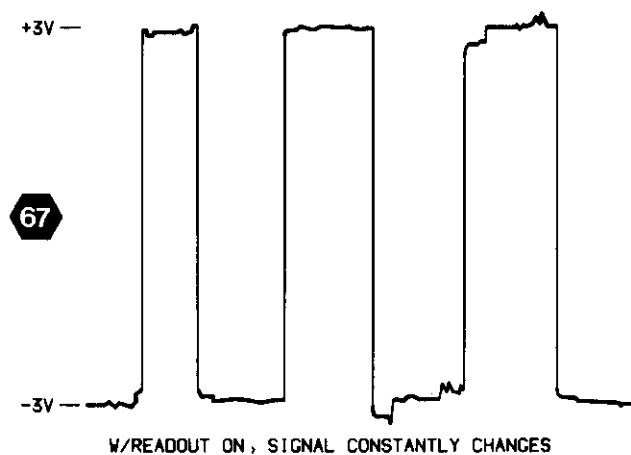
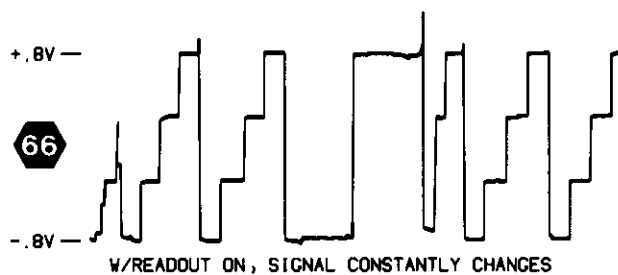
The num
board dolly
setup condi

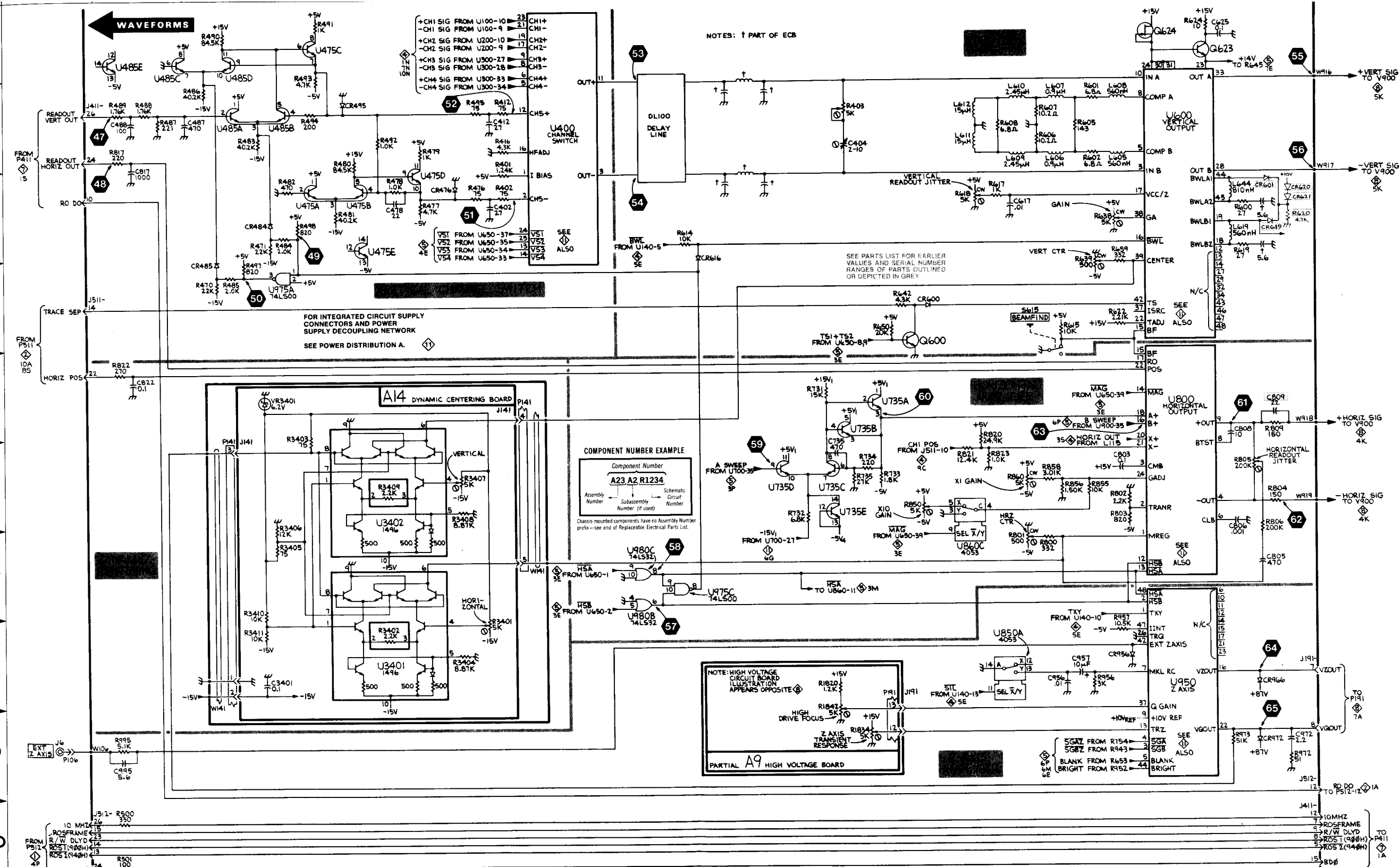
A4—READOUT BOARD

CIRCUIT NUMBER	SCHEM NUMBER	CIRCUIT NUMBER	SCHEM NUMBER	CIRCUIT NUMBER	SCHEM NUMBER	CIRCUIT NUMBER	SCHEM NUMBER
C2830	12	R2920	7	U2855	7	U2940	12
C2835	12	R2921	7	U2855	7	U2950	7
C2851	12	R2922	7	U2855	7	U2950	7
C2855	12	R2923	7	U2855	12	U2950	12
C2860	12	R2924	7	U2860	7	U2960	7
C2885	12	R2925	7	U2860	12	U2960	12
C2901	12	R2926	7	U2865	7	U2965	7
C2911	7	R2927	7	U2865	12	U2965	7
C2913	12	R2928	7	U2870	7	U2965	7
C2926	12	R2929	7	U2870	7	U2965	7
C2940	12	R2930	7	U2870	12	U2965	12
C2950	12	R2940	7	U2880	7	U2970	7
C2960	12	R2945	7	U2880	7	U2970	7
C2970	12	R2975	7	U2880	12	U2970	7
C2980	12	R2985	7	U2885	7	U2970	7
C2990	12	U2800	7	U2885	7	U2970	12
J401	7	U2800	12	U2885	7	U2980	7
J402	7	U2805	7	U2885	12	U2980	7
P411	7	U2805	12	U2890	7	U2980	7
P411	7	U2810	7	U2890	7	U2980	7
P411	7	U2810	7	U2890	7	U2980	12
P411	12	U2810	7	U2890	7	U2985	7
R2805	12	U2810	7	U2890	12	U2985	12
R2830	7	U2810	12	U2900	7	U2990	7
R2841	7	U2820	7	U2900	7	U2990	7
R2842	7	U2820	7	U2900	7	U2990	7
R2843	7	U2820	12	U2900	12	U2990	7
R2844	7	U2830	7	U2905	7	U2990	12
R2850	7	U2830	7	U2905	12	U2995	7
R2901	7	U2830	12	U2910	7	U2995	12
R2902	7	U2835	7	U2910	12	VR2805	12
R2903	7	U2835	7	U2920	7	VR2925	7
R2905	7	U2835	7	U2920	12	W411	7
R2910	7	U2835	7	U2930	7	W411	7
R2911	7	U2835	12	U2930	12	W411	7
R2912	7	U2850	7	U2935	7	W411	12
R2913	7	U2850	7	U2935	12	W2851	12
R2914	7	U2850	12	U2940	7	W2913	12
R2915	7	U2855	7	U2940	7		

TEST WAVEFORM SETUP INFORMATION

The numbered waveforms below were obtained at the test points indicated on the accompanying schematic diagram and board dolly. The waveforms are representative of signals that may be expected at the associated points when the indicated setup conditions are observed.





READOUT DIAGRAM



ASSEMBLY A4								
CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
C2911	2K	4A	R2945	2B	4C	U2900B	5L	2A
J401	1H	3C	R2975	7M	4D	U2900B	9L	2A
J402	3H	3D	R2985	8E	3F	U2900C	5L	2A
						U2905	4K	3A
P411	1A	1A	U2800	4P	2B	U2910	1K	3A
P411	1S	1A	U2805	2P	2B	U2920	2F	3B
P411	9S	1A	U2810A	6L	2A	U2930	1H	3D
			U2810B	6L	2A	U2935	1D	3C
			U2810C	6N	2A	U2940A	2C	4C
R2830	8C	1B	U2810D	5N	2A	U2940B	1B	4C
R2841	5M	2C	U2820A	5P	2A	U2950A	9E	4D
R2842	3B	2C	U2820B	3P	2A	U2950B	9J	4D
R2843	4B	2C	U2830A	8C	1C	U2960	3D	2E
R2844	5B	2C	U2830B	7B	1C	U2965A	5C	3E
R2850	9D	1D	U2835A	6G	2C	U2965B	9H	3E
R2901	5M	2B	U2835B	9K	2C	U2965C	4F	3E
R2902	3F	2B	U2835C	9G	2C	U2965D	9M	3E
R2903	5P	2A	U2835D	2E	2C	U2970A	9N	3E
R2905	5P	2A	U2850A	9D	1D	U2970B	9H	3E
R2910	1K	4A	U2850B	9E	1D	U2970C	7G	3E
R2911	1K	4A	U2855A	7B	2D	U2970D	9G	3E
R2912	2L	4A	U2855B	6E	2D	U2980A	9H	2E
R2913	3L	4A	U2855C	3E	2D	U2980B	8P	2E
R2914	3L	4B	U2855D	3E	2D	U2980C	9N	2E
R2915	4L	4B	U2860	5F	2D	U2980D	5E	2E
R2920	4M	3B	U2865	6D	2E	U2985	8F	3E
R2921	5M	3B	U2870A	6F	2E	U2990A	8E	3E
R2922	5M	3B	U2870B	5F	2E	U2990B	9H	3E
R2923	4M	3B	U2880A	8J	1E	U2990C	9M	3E
R2924	4M	3B	U2880B	8P	1E	U2990D	8M	3E
R2925	4M	3B	U2885A	10H	2F	U2995	9M	4E
R2926	5M	4C	U2885B	8J	2F			
R2927	2H	3C	U2885C	8S	2F	VR2925	4M	3C
R2928	4L	4B	U2890A	8B	2E			
R2929	4L	4B	U2890B	9K	2E	W411	10S	1A
R2930	4M	4B	U2890C	8L	2E	W411	1A	1A
R2940	8D	3D	U2890D	9K	2E	W411	5S	1A

Partial A4 also shown on diagram 12.

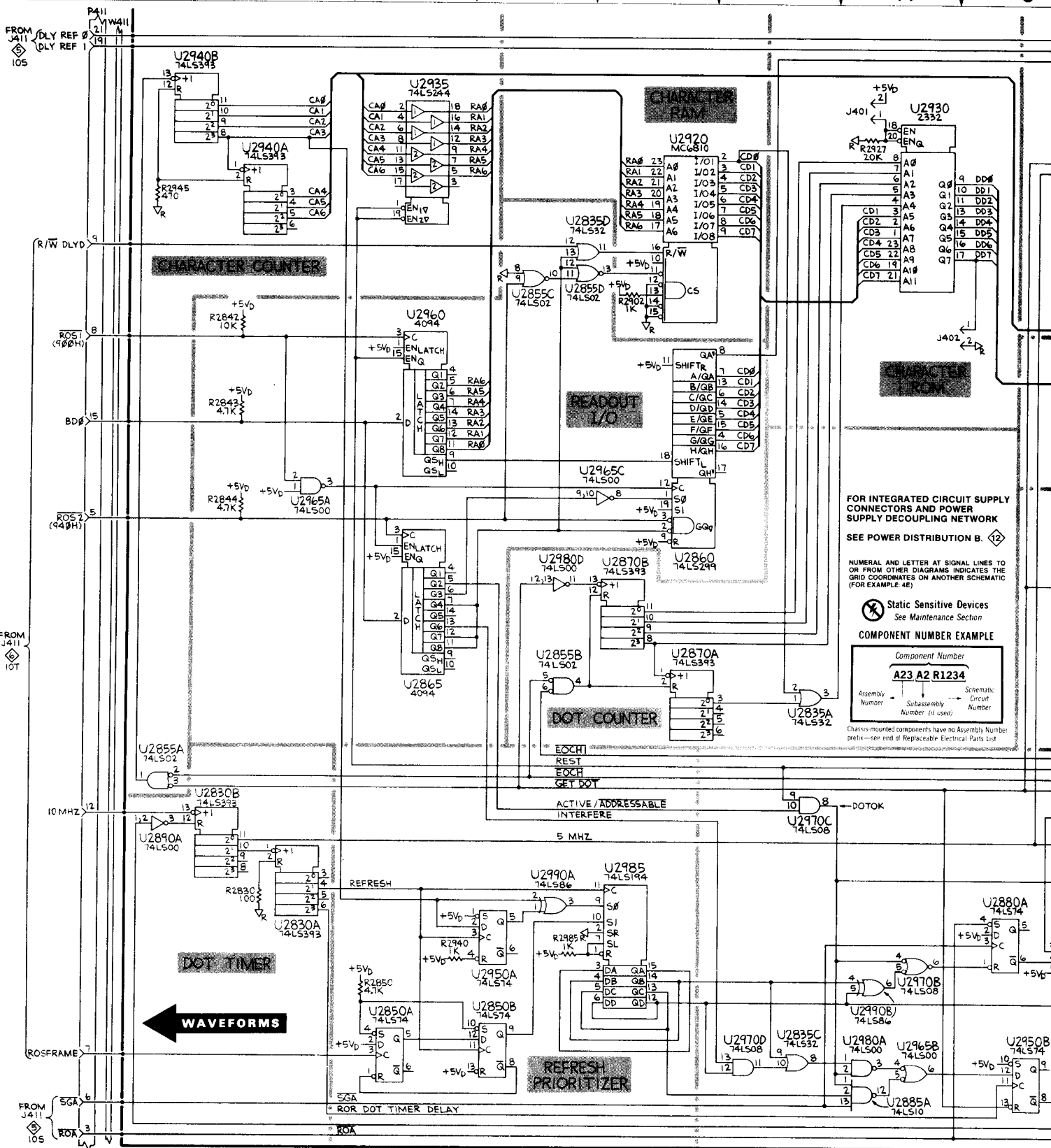
ACRONYM DICTIONARY

The following listing explains some of the less obvious acronyms and signal labels used on this schematic. Acronyms and labels not shown in this listing may be included in the circuit descriptions (Section 3) and should be obvious if a little thought is given to the intended circuit function.

BD0 . . . buffered data bit 0
 CA0 – CA6 . . . character address bits 0 – 7
 CD0 – CD7 . . . character data bits 0 – 7
 DD0 – DD7 . . . dot data bits 0 – 7
 EOCH . . . end of character
 EOCH1 . . . end of character delayed 1 dot
 EOCH2 . . . end of character delayed 2 dots
 RA0 – RA6 . . . RAM address bits 0 – 6
 ROA . . . readout acknowledge

ROB . . . readout blank
 RO DO . . . readout data out
 ROR . . . readout request
 ROR DOT TIMER DELAY . . . readout request dot timer delay
 ROSFRAME . . . readout subframe
 ROS1 . . . readout strobe 1
 ROS2 . . . readout strobe 2
 R/W DLYD . . . read/write delayed
 SGA . . . sweep gate A

A B C D E F G H J



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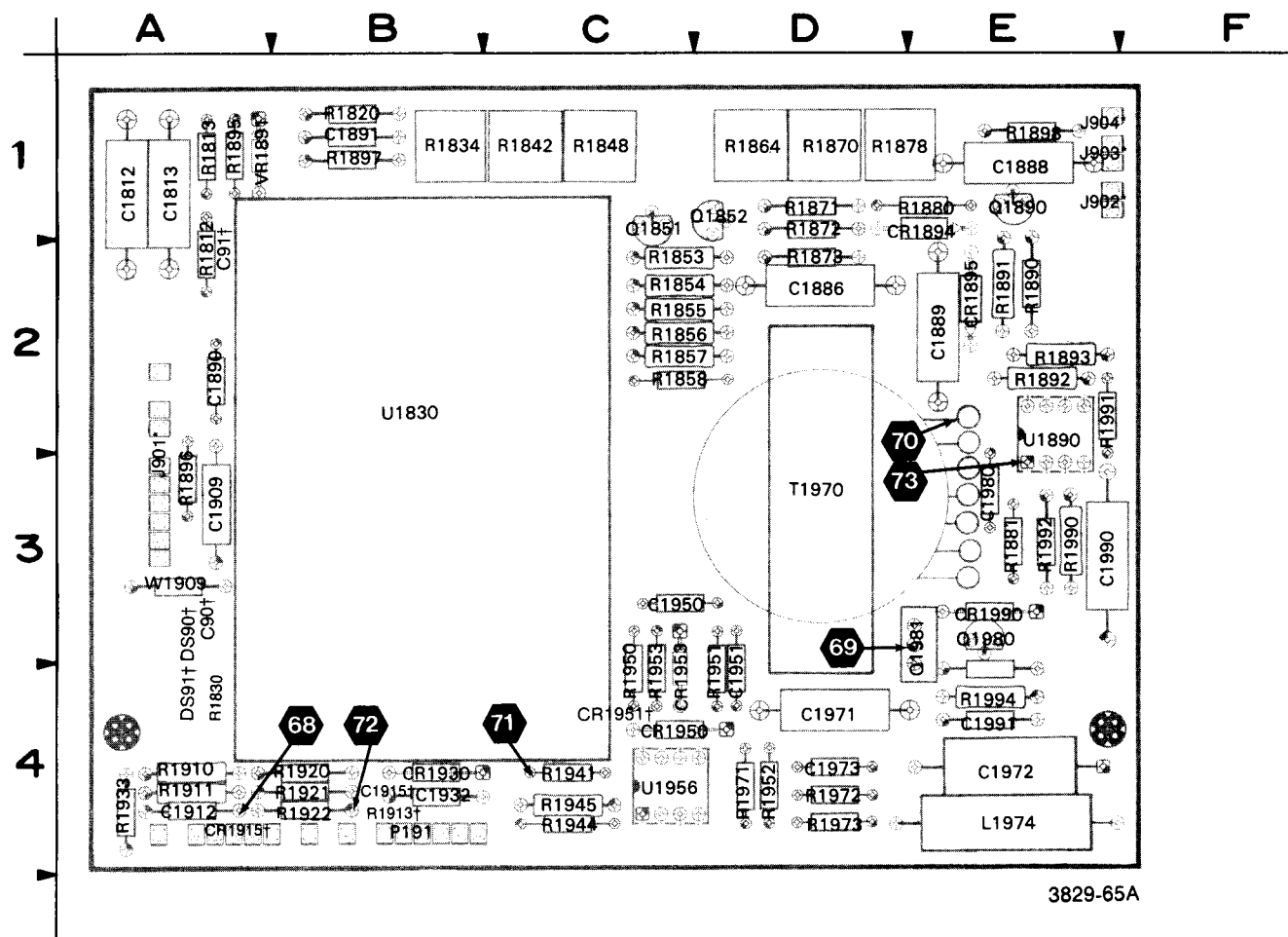
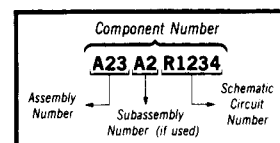


Figure 9-11. A9—High Voltage board.

- * LABELED ON SOME BOARDS AS "P" VICE "J".
- † INDICATES COMPONENTS THAT WERE MANUALLY ADDED TO THE BOARD AS A RESULT OF MODIFICATION.

⊗ Static Sensitive Devices
See Maintenance Section

COMPONENT NUMBER EXAMPLE



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

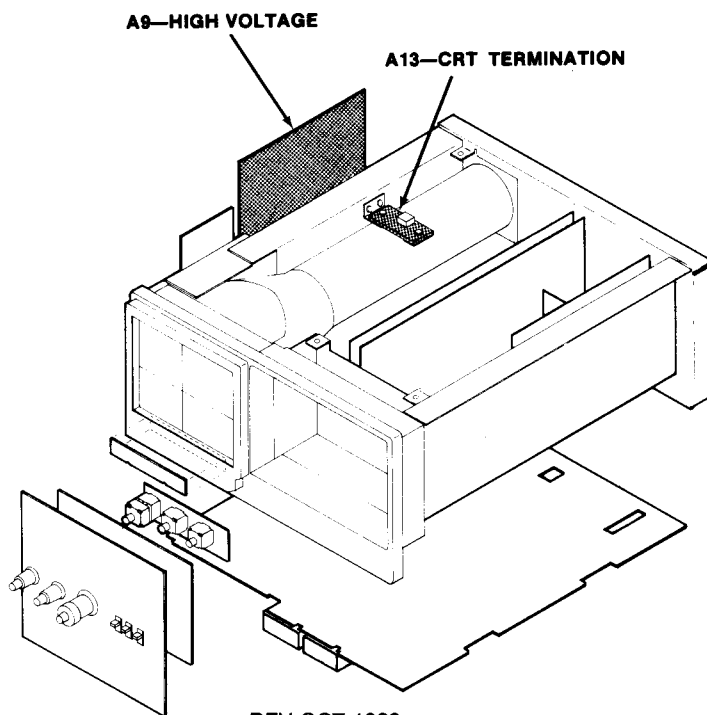
ACRONYM DICTIONARY

The following listing explains some of the less obvious acronyms and signal labels used on this schematic. Acronyms and labels not shown in this listing may be included in the circuit descriptions (Section 3) and should be obvious if a little thought is given to the intended circuit function.

PDA (14KV) . . . post deflection accelerator
VQOUT . . . variable quadrapole out
VZOUT . . . variable Z-axis out

A9—HIGH VOLTAGE BOARD

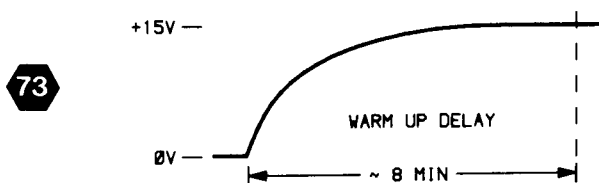
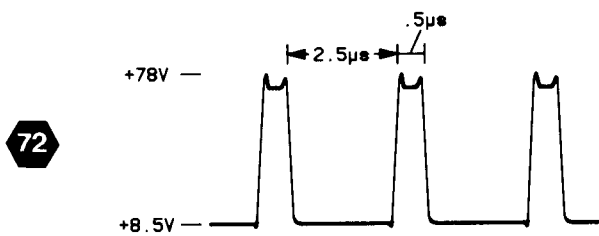
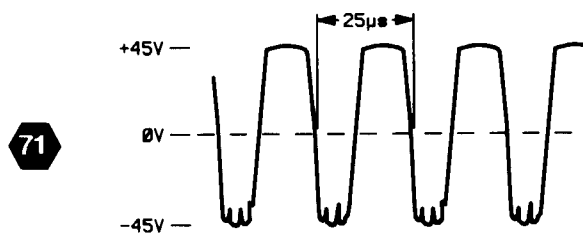
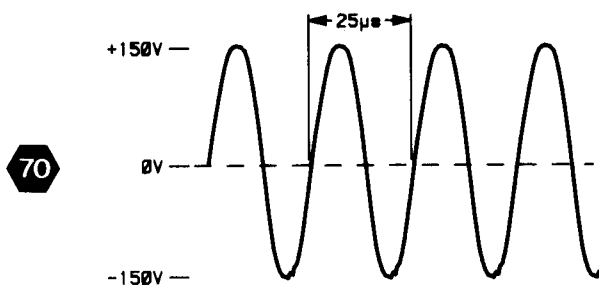
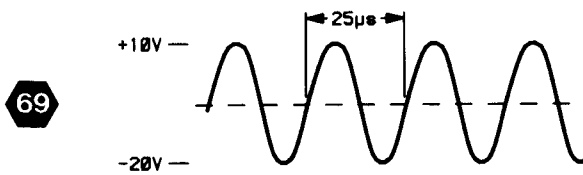
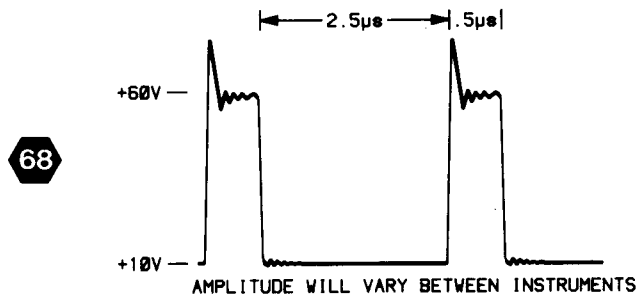
CIRCUIT NUMBER	SCHEM NUMBER	CIRCUIT NUMBER	SCHEM NUMBER	CIRCUIT NUMBER	SCHEM NUMBER
C90	8	L1974	8	R1896	8
C91	8	P191	6	R1897	8
C1812	8	P191	8	R1898	8
C1813	8	P191	8	R1910	8
C1886	8	P191	12	R1911	8
C1888	8	Q1851	8	R1913	8
C1889	8	Q1852	8	R1920	8
C1890	8	Q1890	8	R1921	8
C1891	8	Q1980	8	R1922	8
C1909	12	Q1981	8	R1922	8
C1912	8	R1812	8	R1933	12
C1915	8	R1813	8	R1941	8
C1932	8	R1820	6	R1944	8
C1950	8	R1830	8	R1945	8
C1951	8	R1834	6	R1950	8
C1971	8	R1842	6	R1951	8
C1972	8	R1848	8	R1952	8
C1973	8	R1853	8	R1953	8
C1980	8	R1854	8	R1971	8
C1990	8	R1855	8	R1972	8
C1991	8	R1856	8	R1973	8
CR1894	8	R1857	8	R1990	8
CR1895	8	R1858	8	R1991	8
CR1915	8	R1864	8	R1992	8
CR1930	8	R1870	8	R1994	8
CR1950	8	R1871	8	T1970	8
CR1951	8	R1872	8	U1830	8
CR1953	8	R1873	8	U1890	8
CR1990	8	R1878	8	U1890	8
DS90	8	R1880	8	U1890	12
DS91	8	R1881	8	U1956	8
J901	8	R1890	8	U1956	8
J901	8	R1891	8	U1956	12
J901	8	R1892	8	VR1891	8
J902	8	R1893	8	W1909	12
J903	8	R1895	8		
J904	8				



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TEST WAVEFORM SETUP INFORMATION

The numbered waveforms below were obtained at the test points indicated on the accompanying schematic diagram and board dolly. The waveforms are representative of signals that may be expected at the associated points whenever the instrument is running.



HIGH VOLTAGE SUPPLY AND CRT DIAGRAM

8

HIGH VOLTAGE SUPPLY AND CRT

8

ASSEMBLY A1

CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
C975	3D	7B	J112 J114	3C 2C	7B 8B	J115	4C	8B			

Partial A1 also shown on diagrams 4, 5, 6 and 11.

ASSEMBLY A9

CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
C90*	9H	3A	CR1990	8E	3E	R1853	4F	2C	R1922	7E	4B
C91	8H	2A				R1854	5F	2C	R1941	7E	4C
C1812	4F	1A	DS90	7H	3A	R1855	4E	2C	R1944	6C	4C
C1813	5F	1A	DS91	8H	4A	R1856	4E	2C	R1945	6D	4C
C1886	8C	2D				R1857	5E	2C	R1950	7C	4C
C1888	3H	1E	J901	3M	3A	R1858	5E	2C	R1951	7A	4D
C1889	8B	2E	J901	4J	3A	R1864	3F	1D	R1952	6B	4D
C1890	5S	2A	J901	5M	3A	R1870	3N	1D	R1953	7C	4C
C1891	3G	1B	J902	2J	1E	R1871	4F	1D	R1971	6B	4D
C1912	6N	4A	J903	4M	1E	R1872	5F	1D	R1972	6C	4D
C1915*	6E	4B	J904	5P	1E	R1873	3F	2D	R1973	6C	4D
C1932	6D	4B				R1878	8D	1D	R1990	3G	3E
C1950	7B	3C	L1974	9A	4E	R1880	4H	1E	R1991	8D	2E
C1951*	7B	4D				R1881	8E	3E	R1992	8E	3E
C1971	8E	4D	P191	2E	4B	R1890	3G	2E	R1994	8E	4E
C1972	8A	4E	P191	7A	4B	R1891	4G	2E			
C1973	6C	4D				R1892	3G	2E	T1970	10B	3D
C1980	8B	3E	Q1851	4F	1C	R1893	3G	2E			
C1990	8D	3E	Q1852	5F	1D	R1895	5S	1A	U1830	8G	2B
C1991	7E	4E	Q1890	3H	1E	R1896	5S	3A	U1890A	8D	2E
CR1894	8C	1E	Q1980	8E	3E	R1897	3H	1B	U1890B	3G	2E
CR1895	8B	2E	Q1981	8B	3E	R1898	4N	1E	U1956A	6C	4C
CR1915*	7E	4B				R1910	6P	4A	U1956B	6B	4C
CR1930	7E	4B	R1812	4F	2A	R1911	6P	4A			
CR1950	7E	4C	R1813	5F	1A	R1913*	7E	4B	VR1891	5S	1A
CR1951	7E	4C	R1830*	9E	4A	R1920	7E	4B			
CR1953	7C	4C	R1848	4N	1C	R1921	6P	4B			

Partial A9 also shown on diagrams 6 and 12.

ASSEMBLY A13

CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
J904	5P	**	R1501	5N	**						

CHASSIS MOUNTED PARTS

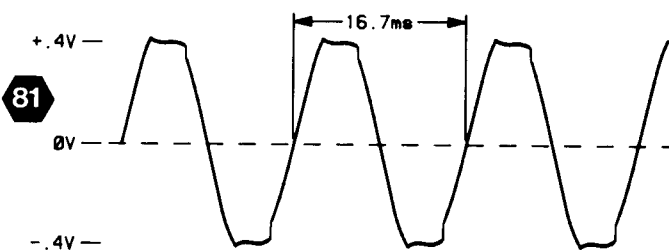
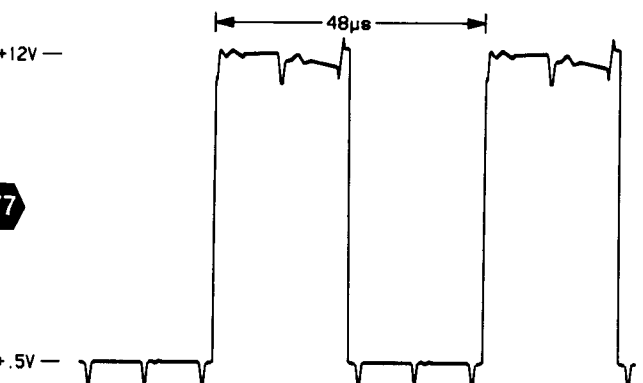
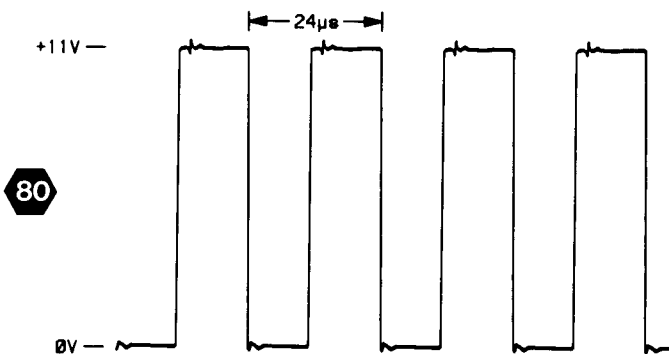
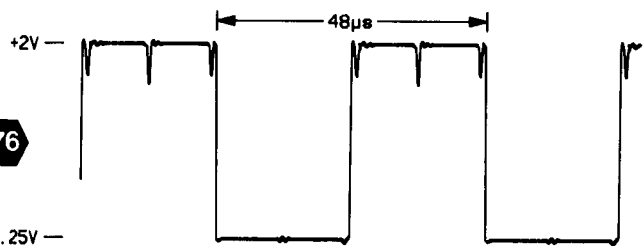
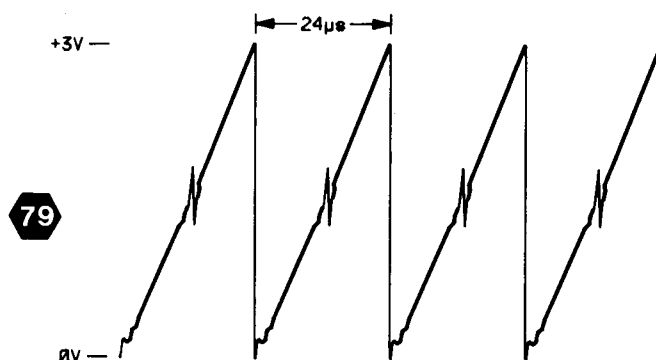
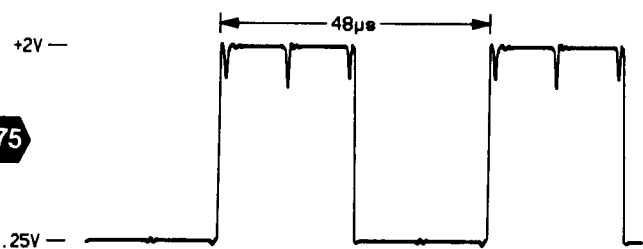
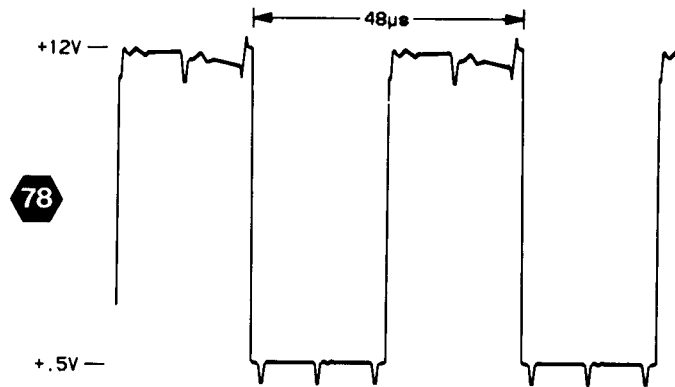
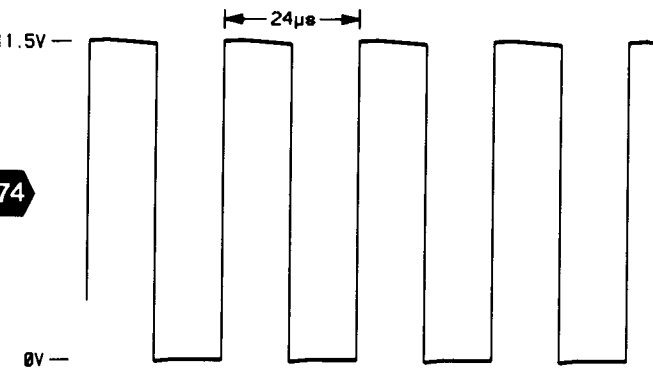
CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
L90	2L	CHASSIS	P901	3M	CHASSIS	R976	5B	CHASSIS	W115	5B	CHASSIS
LR1513	5M	CHASSIS	P901	4J	CHASSIS	R977	4B	CHASSIS	W900	3M	CHASSIS
LR1514	5M	CHASSIS	P901	5M	CHASSIS	R996	3K	CHASSIS	W900	6J	CHASSIS
			P902	2J	CHASSIS				W900	7J	CHASSIS
			P903	4M	CHASSIS	V900	2L	CHASSIS	W900	7M	CHASSIS
P112	3C	CHASSIS	P904	5P	CHASSIS				W902	3J	CHASSIS
P114	2C	CHASSIS				W112	4B	CHASSIS	W903	4M	CHASSIS
P115	4C	CHASSIS	R975	2B	CHASSIS	W114	3B	CHASSIS	W904	5P	CHASSIS

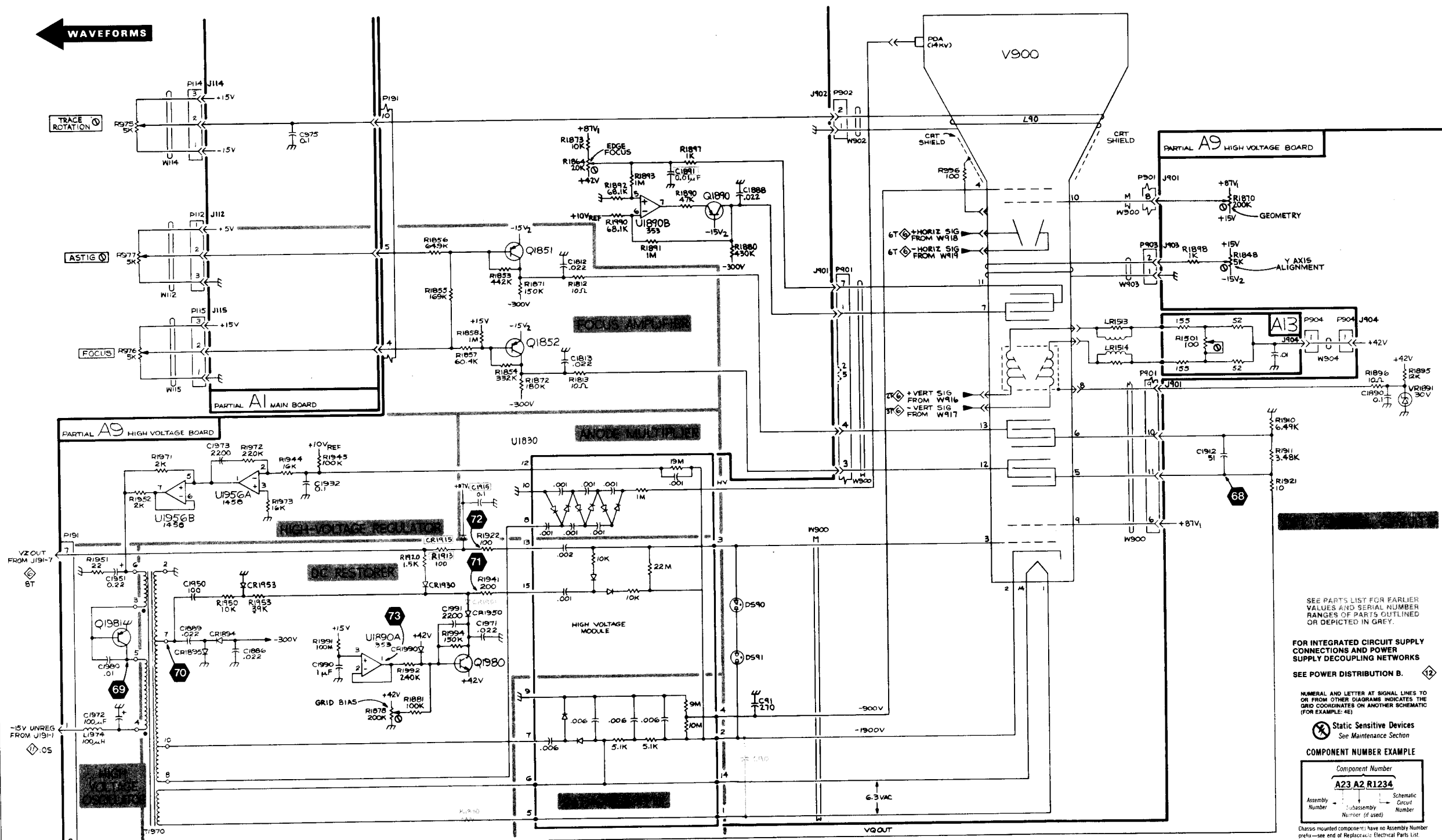
★★ BOARD ILLUSTRATION NOT SHOWN

*See Parts List for
serial number ranges.

TEST WAVEFORM SETUP INFORMATION

The numbered waveforms below were obtained at the test points indicated on the accompanying schematic diagram and board dolly. The waveforms are representative of signals that may be expected at the associated points whenever the instrument is running.





A2—REGULATOR BOARD

CIRCUIT NUMBER	SCHEM NUMBER	CIRCUIT NUMBER	SCHEM NUMBER	CIRCUIT NUMBER	SCHEM NUMBER	CIRCUIT NUMBER	SCHEM NUMBER
C1016	9	CR1351	10	R1014	9	R1307	10
C1018	9	CR1376	10	R1015	9	R1309	10
C1208	9			R1016	9	R1331	10
C1220	10	E1001	9	R1017	9	R1332	10
C1222	10	E1002	9	R1018	9	R1333	10
C1226	10			R1019	9	R1334	10
C1240	10	F1330	10	R1204	10	R1351	10
C1245	10			R1208	9	R1352	10
C1246	10	J121	10	R1212	10	R1353	10
C1260	10	J122	9	R1220	10	R1354	10
C1261	10	J122	10	R1221	10	R1355	10
C1270	10	J201	10	R1222	10	R1356	10
C1272	10	J202	10	R1223	10	R1357	10
C1274	10	J203	10	R1226	10	R1358	10
C1280	10	J204	9	R1227	10	R1359	10
C1290	10	J205	9	R1228	10	R1370	10
C1291	10	J206	9	R1229	10	R1372	10
C1300	10	J207	9	R1240	10	R1374	10
C1331	10	J231	9	R1241	10	R1376	10
C1250	10	J232	10	R1242	10	R1378	10
C1357	10	J233	10	R1243	10	R1400	10
C1374	10	J234	10	R1244	10	R1402	10
C1400	10			R1246	10		
C1402	10	L1011	9	R1247	10	RT1010	9
		L1012	9	R1248	10	RT1016	9
CR1011	9	L1402	10	R1249	10		
CR1220	10			R1261	10	S350	9
CR1221	10	P251	10	R1262	10		
CR1241	10			R1264	10	T1229	9
CR1242	10	Q1220	10	R1270	10		
CR1243	10	Q1221	10	R1273	10	TP201	10
CR1244	10	Q1222	10	R1274	10		
CR1260	10	Q1240	10	R1280	10	U1260	10
CR1261	10	Q1241	10	R1281	10	U1270	10
CR1262	10	Q1243	10	R1282	10	U1281	10
CR1263	10	Q1245	10	R1283	10	U1290	10
CR1264	10	Q1280	10	R1284	10	U1300	10
CR1281	10	Q1281	10	R1285	10	U1371	10
CR1282	10	Q1300	10	R1286	10		
CR1283	10	Q1351	10	R1287	10	VR1293	10
CR1300	10	Q1354	10	R1291	10		
CR1301	10	Q1370	10	R1292	10	W251	10
CR1302	10	Q1376	10	R1293	10		
CR1303	10			R1300	10		
CR1330	10	R1010	9	R1302	10		
CR1331	10	R1011	9	R1304	10		
CR1332	10	R1012	9	R1305	10		
CR1334	10	R1013	9	R1306	10		

ACRONYM DICTIONARY

The following listing explains some of the less obvious acronyms and signal labels used on this schematic. Acronyms and labels not shown in this listing may be included in the circuit descriptions (Section 3) and should be obvious if a little thought is given to the intended circuit function.

FB . . . feedback

PWM COMPARATOR . . . pulse-width modulator comparator

+5VD . . . +5 V digital

LOW-VOLTAGE POWER SUPPLY DIAGRAM

9

ASSEMBLY A2

CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
C1016	6C	2C	J122	1S	2F	R1011	5B	2A	RT1010	5B	2A
C1018	6B	3B	J204	5B	2B	R1012	6B	3A	RT1016	6C	2C
C1208	1P	3D	J205	6B	2B	R1013	7B	4B			
			J206	6B	4B	R1014	1N	4C	S350	4B	3A
CR1011	5C	1B	J207	7B	4B	R1015	1N	3C			
E1001	6B	2B	J231A	5D	1B	R1016	6C	2B	T1229	1N	3C
E1002	6C	3B				R1017	6A	3B			
			L1011	5B	2A	R1018	6B	3B			
			L1012	6B	3B	R1019*	6C	2C			
			R1010*	5B	2A	R1208	1N	3D			

Partial A2 also shown on diagram 10

ASSEMBLY A3

CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
C1020	4E	5G	CR1060	5L	5D	Q1021	2G	8J	R1064	9E	7E
C1021	7D	5J	CR1062	7F	7G	Q1022	3G	8J	R1065	6L	6E
C1022	6D	5H	CR1063	7F	7G	Q1029	3P	8F	R1066	8J	6E
C1023	3F	7H	CR1064	7F	7G	Q1030	6H	6F	R1067	9E	7E
C1025	3F	7H	CR1065	7F	7G	Q1040	6J	6F	R1068	9J	6E
C1032	3L	8G	CR1070	7L	6D	Q1050	5G	5F	R1069	7G	7G
C1033	4L	8G	CR1072	6G	7F	Q1060	9K	5D	R1070	9K	6D
C1034	3L	7G	CR1101	10M	6A	Q1062	7G	7G	R1071	6H	7F
C1035	4L	8H	CR1102	10M	6A	Q1070	9K	5E	R1072	6G	7F
C1040	6J	6F	CR1103	9N	7A				R1073*	7G	7G
C1048	4M	8E	CR1104	9P	7A	R1017*	5E	6H	R1075	9G	6E
C1050	6F	6F	CR1105	7N	7A	R1018	7D	5J	R1101	6P	5B
C1051	7E	7D	CR1106	7P	7A	R1019	6D	6J	R1102	6P	5B
C1052	6F	6E	CR1110	7M	5C	R1020	2E	8J	R1129	3P	8D
C1062	9F	7F	CR1113	8N	7B	R1021*	6E	6J	LR1060	9K	6E
C1065	5L	6E	CR1114	8N	7B	R1022	2F	7H			
C1066	7F	7H	CR1115	7N	7A	R1023	3G	8H	T1020	6D	6J
C1067	9E	7E	CR1116	7N	7B	R1024	2H	8H	T1050	6F	6G
C1071	6H	7F	CR1121	6P	7D	R1025	2G	8H	T1060	5M	6C
C1072	7H	7F	CR1122	5P	7D	R1027	2N	8J			
C1075	8J	6E	CR1123	5P	7D	R1028	3N	8E	U1029	3P	8E
C1101	10M	6B	CR1124	5P	8D	R1029	2P	8F	U1030	3K	8G
C1102	10P	6A	CR1131	5P	8D	R1030	6H	7F	U1062	8G	7E
C1110	9N	6B	CR1132	5P	8D	R1031	4M	8F	U1040	4N	8E
C1111	9N	6A				R1032	4L	8G	U1062A	8H	7E
C1112	8P	7A	F1101	9P	6B	R1033	5L	8G	U1062B	9H	7E
C1113	8P	6B	F1102	9P	6A	R1034	3L	8G	U1062C	9F	7E
C1114	8P	8C				R1035	4M	8F	U1062D	9F	7E
C1115	7P	8C	J231B	5D	5H	R1036	4L	8G	U1064	8H	7E
C1116	7P	8B	J232B	9P	5A	R1037	3L	8H	U1064A	9G	7E
C1120	5P	8D	J233B	3P	8D	R1040	5H	7F	U1064B	9H	7E
C1130	5P	8D	J234B	7P	7B	R1041	6H	6F	U1066	8J	7E
C1132	5P	8C	J301	6P	8C	R1042	3H	7G	U1066A	8J	7E
			J302	6P	5B	R1044	4M	8E	U1066B	9J	7E
			J303	9P	5B	R1045	4M	8E			
CR1022	2E	7H				R1046	5N	8E	VR1020	3G	8H
CR1023	2H	8H				R1050	6H	6F	VR1062	7G	7G
CR1028	3N	8F	L1110	9N	6A	R1052	5G	5F			
CR1030	5G	6F	L1113	9P	8A	R1060	9K	6D	W1021	7D	7J
CR1034	3L	7G	L1114	8P	8A	R1061	7G	7G	W1022	6D	7H
CR1035	5L	8H	L1115	7P	7C	R1062	8F	7E	W1050	6G	6F
CR1040	6H	6F	L1116	7P	8A	R1063	9F	7E	W1060	6L	6D
CR1050	6F	6F									

CHASSIS MOUNTED PARTS

CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
F90	5A	CHASSIS	P206	6A	CHASSIS	P233	3S	CHASSIS	S1020	5D	CHASSIS
P204	5A	CHASSIS	P207	7A	CHASSIS	P234	7S	CHASSIS			
P205	6A	CHASSIS	P231	5D	CHASSIS						
			P232	9S	CHASSIS	S90	6A	CHASSIS			

*See Parts List for serial number ranges.

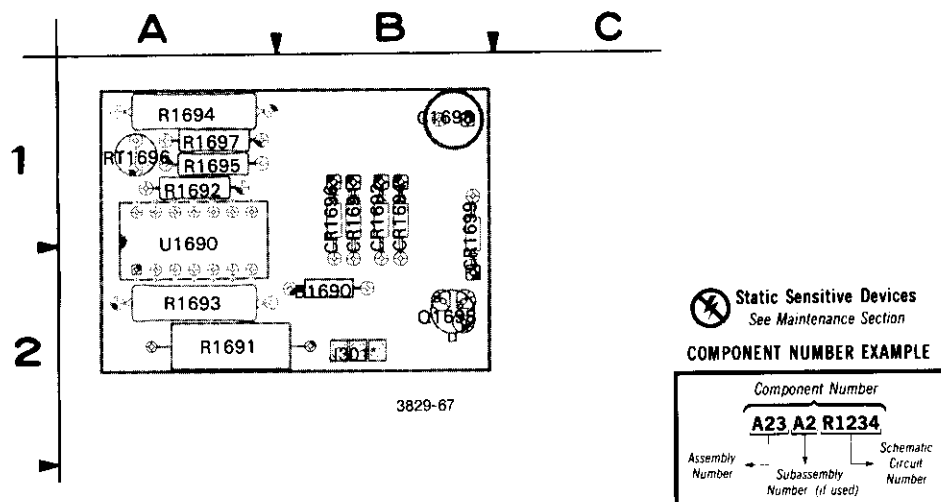
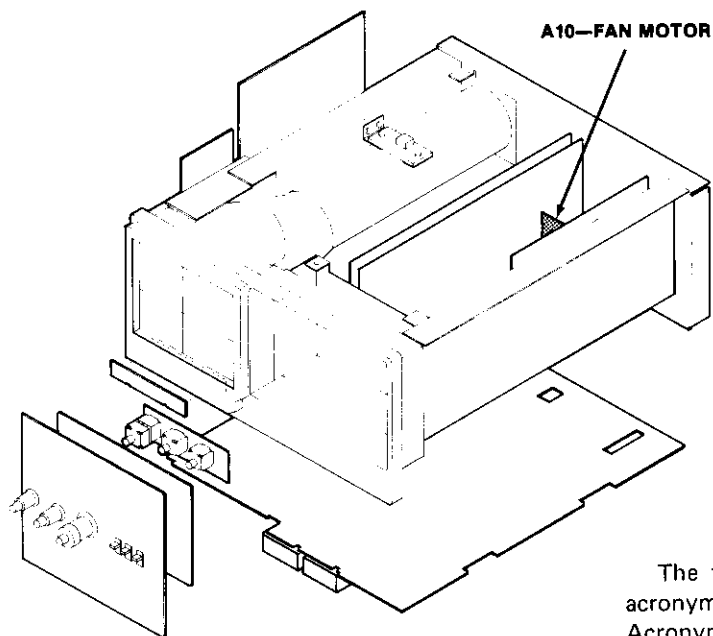


Figure 9-13. A10—Fan Motor board.

* LABELED ON SOME BOARDS AS "P" VICE "J".

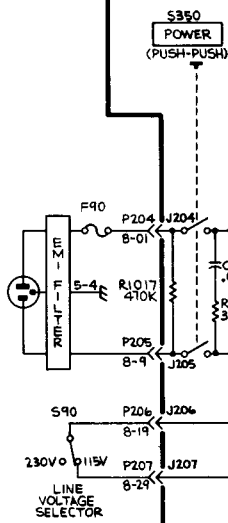
ALL COMPONENTS MOUNTED ON A10—FAN MOTOR BOARD ARE SHOWN ON SCHEMATIC DIAGRAM 10.



ACRONYM DICTIONARY

The following listing explains some of the less obvious acronyms and signal labels used on this schematic. Acronyms and labels not shown in this listing may be included in the circuit descriptions (Section 3) and should be obvious if a little thought is given to the intended circuit function.

FB . . . feedback
+5VD . . . +5 V digital



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

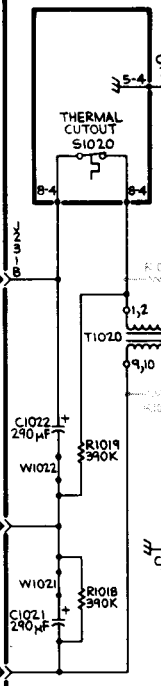
COMPONENT NUMBER EXAMPLE

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

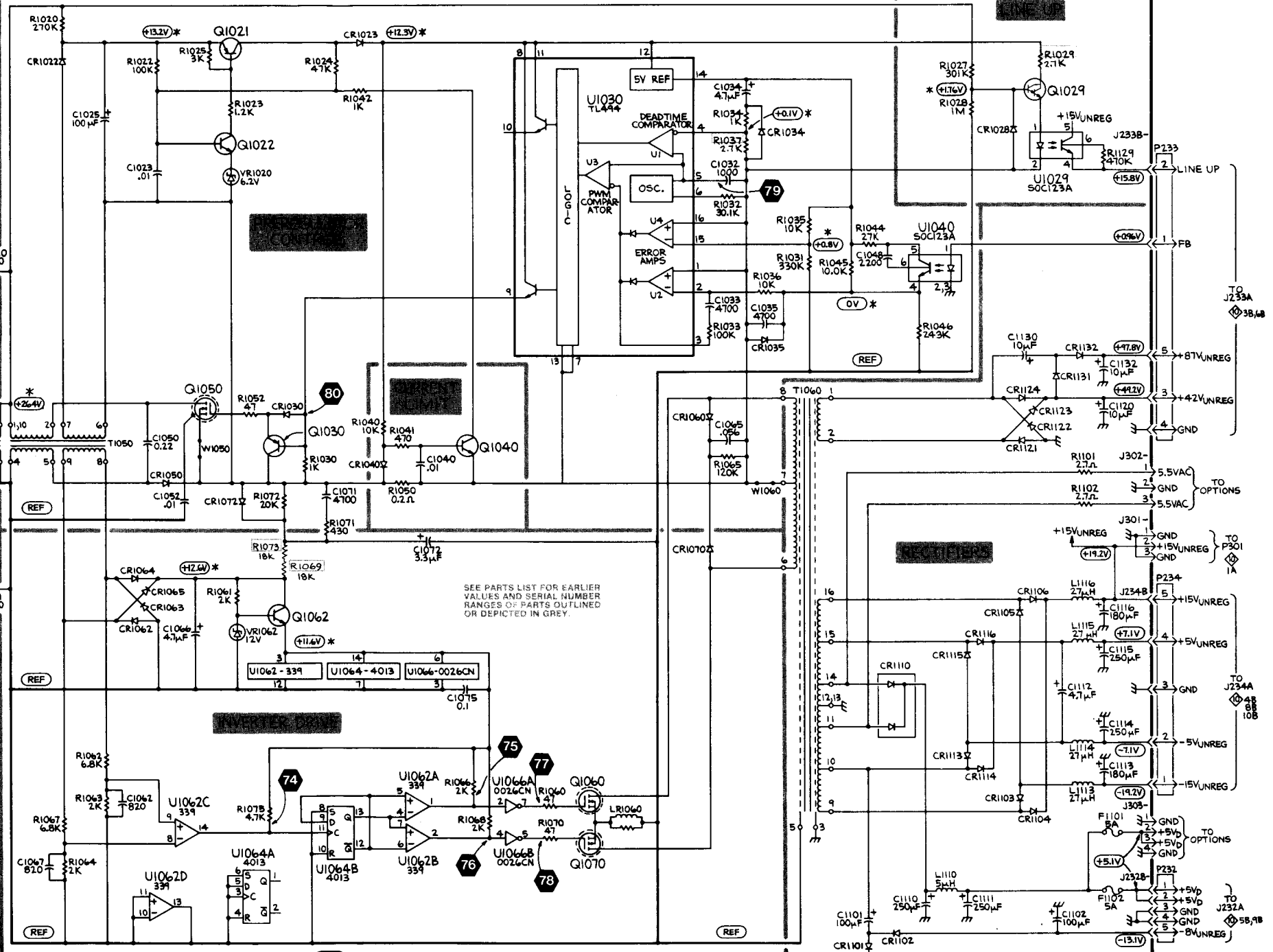
Chassis-mounted components have no Assembly Number prefix—see end of Replaceable Electrical Parts List.

NOTE: REGULATOR BOARD ILLUSTRATION IS OPPOSITE.

PARTIAL A2 REGULATOR BOARD



A3 INVERTER BOARD



NOTE: * INDICATES VOLTAGE WITH RESPECT TO (REF)

LOW-VOLTAGE REGULATORS AND FAN DRIVE DIAGRAM

10

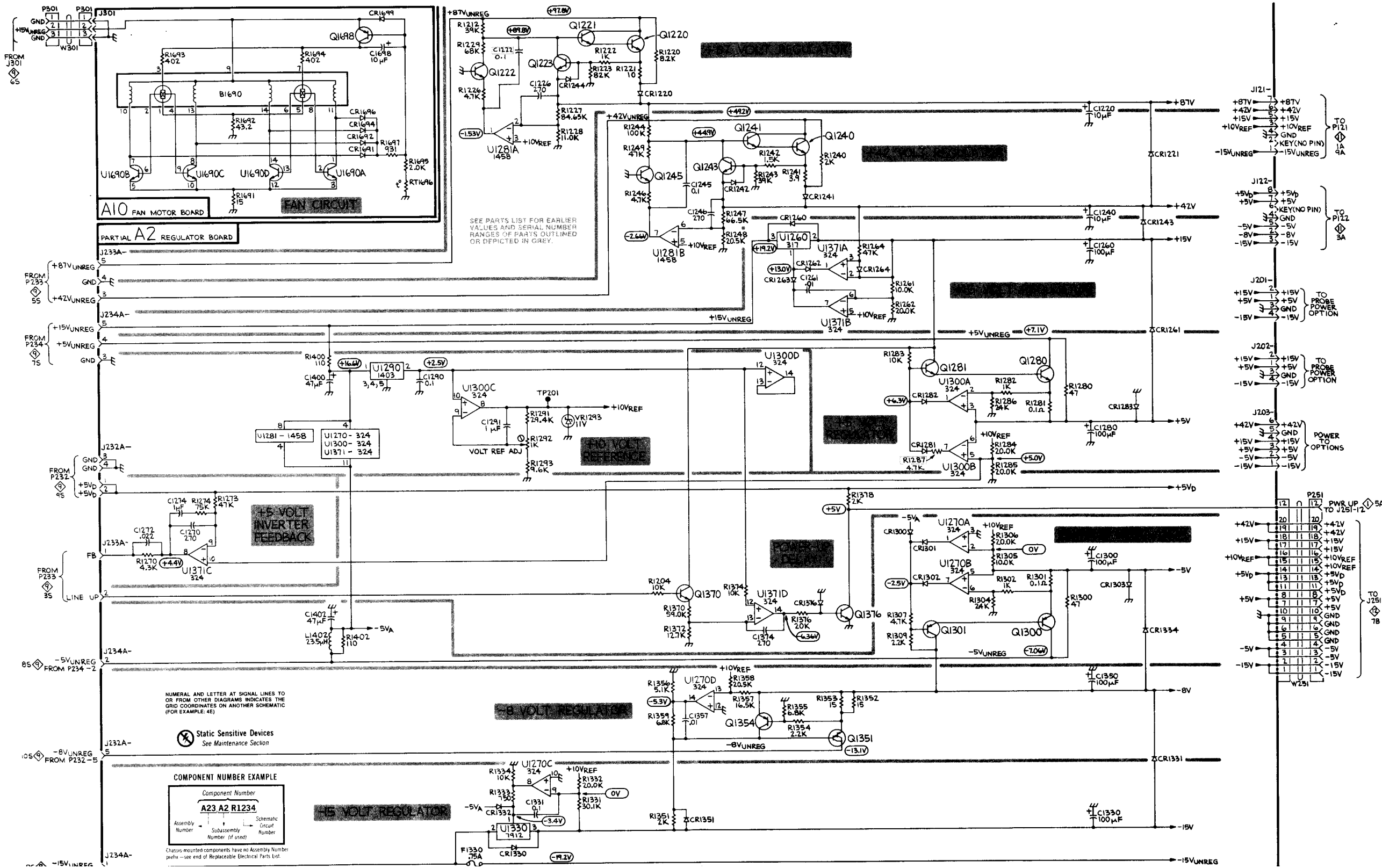
ASSEMBLY A2											
CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
C1220	2M	2D	CR1351	9H	4J	R1223	1G	4D	R1353	8J	2J
C1222*	1F	3E	CR1376	7J	1F	R1226	2F	3D	R1354	8J	2J
C1226	2F	2D				R1227	2G	2D	R1355	8J	2J
C1240	3M	2D	F1330	10F	2E	R1228	2G	3D	R1357	8H	3J
C1245	3H	3E				R1229	1F	3D	R1358	8H	3J
C1246	3H	2E	J121	2P	2E	R1240	2J	3F	R1359	8H	3J
C1260	3M	2D	J122	3P	2F	R1241	2J	4E	R1370	7H	3G
C1261	4J	3F	J201	4P	1D	R1242	2J	4E	R1372	7H	2G
C1270	6C	3G	J202	4P	1D	R1243	2J	4E	R1374	7H	2G
C1272	6B	3G	J203	5P	1G	R1244	2G	4E	R1376	7J	2G
C1274	6B	3F	J232A	5B	1J	R1246	3G	3E	R1378	6K	2G
C1280	5M	2E	J232A	9B	1J	R1247	3H	2D	R1400	4D	3H
C1290	5E	2H	J233A	3B	3F	R1248	3H	3E	R1402	7D	4H
C1291	5F	2H	J233A	6B	3F	R1249	2G	3E			
C1300	7M	2E	J234A	10B	3H	R1261	4K	3F	TP201	5F	2H
C1330	9M	2F	J234A	4B	3H	R1262	4K	2F			
C1331	9F	3J	J234A	8B	3H	R1264	3K	3F	U1260	3J	4F
C1350	8M	2F				R1270	7B	3F	U1270A	6L	3J
C1357	8H	2J	L1402	7D	4H	R1273	6C	3G	U1270B	7L	3J
C1374	7J	2G	P251	6S	1H	R1274	6C	3G	U1270C	9F	3J
C1400	5D	3H				R1280	5M	3G	U1270D	8H	3J
C1402	7D	4H				R1281	5M	3G	U1270	5D	3J
			Q1220	1H	4E	R1282	5L	2G	U1281A	2F	3D
CR1220	2H	3D	Q1221	1G	4D	R1283	4K	4F	U1281B	3H	3D
CR1221	2N	2D	Q1222	1F	3D	R1284	5L	2G	U1281	5C	3D
CR1241	3J	3E	Q1223	1F	4D	R1285	6L	2G	U1290	5E	2J
CR1242	3H	3E	Q1240	2K	4E	R1286	5L	2G	U1300A	5L	2H
CR1243	3N	2E	Q1241	2J	4E	R1287	5K	2G	U1300B	6L	2H
CR1244	2G	3D	Q1243	2H	3E	R1291	5F	2H	U1300C	5F	2H
CR1260	3J	4F	Q1245	3H	3E	R1292	5F	2H	U1300D	5J	2H
CR1261	4N	2E	Q1280	5M	4G	R1293	6F	2H	U1300	5D	2H
CR1262	3J	3F	Q1281	5L	4G	R1300	7M	3G	U1330	10F	4J
CR1263	4J	3F	Q1300	7M	4H	R1301	7M	3G	U1371A	3J	3F
CR1264	4K	3F	Q1301	7L	4H	R1302	7L	3H	U1371B	4K	3F
CR1281	5K	2G	Q1351	9K	2J	R1304	7L	3H	U1371C	7C	3F
CR1282	5K	2G	Q1354	8J	2J	R1305	7L	3H	U1371D	7J	3F
CR1283	5N	2F	Q1370	7H	3G	R1306	6L	3H	U1371	6D	3F
CR1300	6K	2H	Q1376	7K	1F	R1307	7K	3H			
CR1301	7K	3H				R1309	7K	4H	VR1293	5G	2H
CR1302	7K	3H	R1204	7H	3G	R1331	9G	3J			
CR1303	7M	2F	R1212	1F	4D	R1332	9G	3J	W251	8S	1H
CR1330	10F	4J	R1220	1H	3E	R1333	9F	3J			
CR1331	9N	2G	R1221	1G	4D	R1334	9F	3J			
CR1332	9F	4J	R1222	1G	4D	R1351	9H	4J			
CR1334	7N	2G				R1352	8K	2J			

Partial A2 also shown on diagram 9.

ASSEMBLY A10											
CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
B1690	2C	2B	CR1696	2D	1B	R1691	3C	2A	RT1696	3E	1A
			CR1699	1E	1B	R1692	2C	1A			
C1698	1E	1B	J301	1B	2B	R1693	1B	2A	U1690A	2D	1A
						R1694	1D	1A	U1690B	2B	1A
CR1691	2D	1B	Q1698	1D	2B	R1695	2E	1A	U1690C	2C	1A
CR1692	2D	1B				R1697	2E	1A	U1690D	2C	1A
CR1694	2D	1B									

CHASSIS MOUNTED PARTS											
CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
W301	1A	CHASSIS	P301	1A	CHASSIS						

*See Parts List for serial number ranges.



POWER DISTRIBUTION A DIAGRAM

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ASSEMBLY A1											
CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
C102	8B	6D	C850	7M	7F	L740	7H	6D	U170	5L	2E
C106	6A	5D	C933	2M	8G	L743	3H	6D	U200	5C	4D
C107	7B	5D	C938	7M	9G	L938	7K	6J	U300	5D	2B
C108	8B	6D	C940	7M	9H	L973	8M	9K	U350	5L	8B
C113	4B	6D	C943	3M	9H				U400	5E	5E
C114	3B	5D	C958	3M	7K	LR101	6A	5C	U450	2M	3F
C119	7B	5C	C966	1M	9K	LR107	6C	6D	U500	5E	2G
C120	2B	5E	C973	8M	9K	LR201	6B	4C	U600	5F	6H
C121	2B	5E	C988	7K	6K	LR218	7C	3D	U650	5G	3J
C125	4A	5C	C990	2M	8K				U700	5H	7D
C207	8A	4C				P121	2A	4J	U800	5J	7F
C218	7C	3D	CR107	7B	4H	P121	9A	4J	U850	6L	8F
C219	7B	3D	CR807	4J	7F	P122	3A	4H	U860	6L	6F
C220	2C	3D	CR811	2K	7F				U900	5H	8H
C221	2C	3D	CR987	4K	8K	Q700	1G	9C	U910	2G	9F
C225	4B	3C							U950	5K	8K
C307	7D	3B	J119	8S	4H	R120	2B	5E	U975	3L	6K
C325	3D	3C	J191	10S	8K	R125	4B	6D	U980	3L	6K
C336	3D	1C	J191	1S	8K	R220	2B	3C			
C415	7M	4F	J411	3S	1K	R225	4B	3C	VR125	4A	6D
C458	2M	4F	J511	10A	1D	R700	1G	9C	VR225	4B	3C
C480	2M	2J	J511	6S	1D	R701	1F	9C			
C500	4E	2F	J512	6S	1H	R702	2F	9D	W101	3A	9B
C501	6F	1G				R811	2K	7G	W102	3A	4K
C521	7M	2H	L101	8A	6D	R951	10P	9J	W103	3A	7G
C675	3M	3H	L107	7B	6D				W104	3A	3K
C710	1G	9D	L113	3B	6D	U100	5B	5D	W105	4A	5F
C722	3H	6D	L219	7B	3D	U110	2B	6B	W109	4A	9L
C723	3H	6D	L307	7D	3B	U120	2B	6C	W121	10A	4J
C731	10C	8E	L325	3D	3C	U130	2B	6C	W121	1A	4J
C733	2H	7E	L336	3D	1C	U140	3L	7B	W122	8A	4H
C738	8G	6E	L521	7E	2H	U150	3L	7C			
C740	7H	6D	L733	2H	6E	U160	2C	2D			
C810	2M	7F	L738	8G	6E	U165	4L	2F			
C811	3M	7F									
C819	7M	8E									

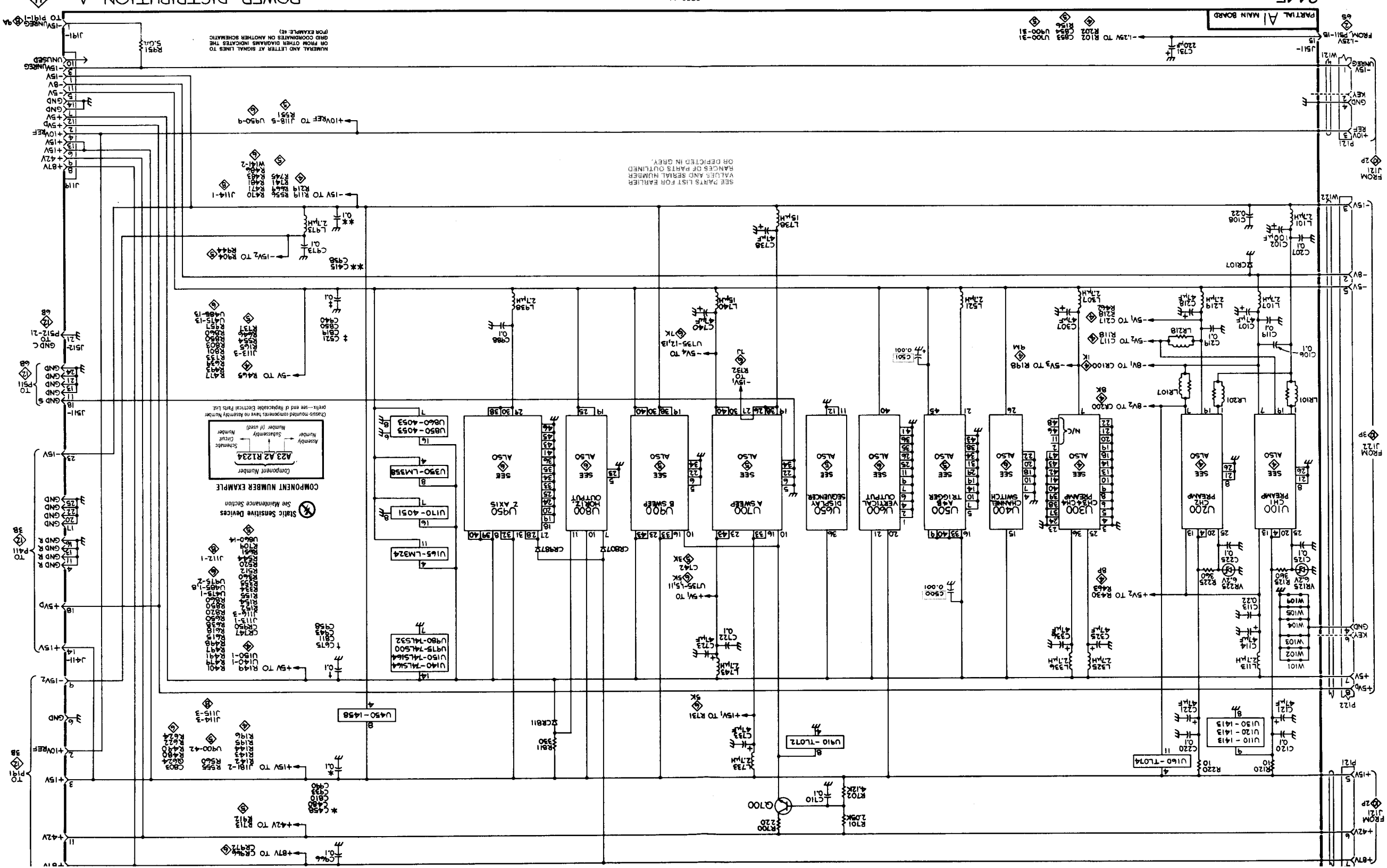
Partial A1 also shown on diagrams 4, 5, 6 and 8.

See Parts List for
serial number ranges.

ACRONYM DICTIONARY

The following listing explains some of the less obvious acronyms and signal labels used on this schematic. Acronyms and labels not shown in this listing may be included in the circuit descriptions (Section 3) and should be obvious if a little thought is given to the intended circuit function.

GND C . . . virtual ground "C"
 GND R . . . virtual ground "R"
 GND S . . . virtual ground "S"
 +5VD . . . +5 V digital
 +5V1 . . . +5 V decoupled (1)
 +5V2 . . . +5 V decoupled (2)
 -5V1 . . . -5 V decoupled (1)
 -5V2 . . . -5 V decoupled (2)
 -5V3 . . . -5 V decoupled (3)
 -5V4 . . . -5 V decoupled (4)
 -8V1 . . . -8 V decoupled (1)
 -8V2 . . . -8 V decoupled (2)
 +15V1 . . . +15 V decoupled (1)
 -15V2 . . . -15 V decoupled (2)



ACRONYM DICTIONARY

The following listing explains some of the less obvious acronyms and signal labels used on this schematic. Acronyms and labels not shown in this listing may be included in the circuit descriptions (Section 3) and should be obvious if a little thought is given to the intended circuit function.

GND C . . . virtual ground "C"
GND R . . . virtual ground "R"
GND S . . . virtual ground "S"
+5VD . . . +5 V digital
-15V2 . . . -15 V decoupled (2)
+87V1 . . . +87 V decoupled (1)

POWER DISTRIBUTION B DIAGRAM

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POWER DISTRIBUTION B

12

ASSEMBLY A4

CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
C2830	4C	1C	C2990	4C	3F	U2860	4G	2D	U2960	4G	2E
C2835	4C	2C				U2865	4G	2E	U2965	5H	3E
C2851	4C	1D	P411	3B	1A	U2870	4H	2E	U2970	5H	3E
C2855	4C	2D				U2880	4H	1E	U2980	5H	2E
C2860	4C	2D	R2805	4C	2B	U2885	4H	2F	U2985	4G	3E
C2885	4C	2E				U2890	4H	2E	U2990	5H	3E
C2901	4C	2B	U2800	4D	2B	U2900	5H	2A	U2995	5H	4E
C2913	5B	4B	U2805	4D	2B	U2905	4E	3A			
C2926	4C	3C	U2810	4H	2A	U2910	3D	3A	VR2805	4C	2B
C2940	3B	4C	U2820	3C	2A	U2920	4E	3B			
C2950	4C	4D	U2830	4H	1C	U2930	4F	3D	W411	5B	1A
C2960	4C	2E	U2835	4H	2C	U2935	4G	3C	W2851	4B	1D
C2970	4C	3D	U2850	4H	1D	U2940	5H	4C	W2913	5B	4B
C2980	4C	2F	U2855	4H	2D	U2950	5H	4D			

Partial A4 also shown on diagram 7.

ASSEMBLY A5

CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
C2041	8C	1C	C2637	7B	3D	U2134	8H	1B	U2496	8G	3J
C2188	8C	1H	C2642	10C	4D	U2162	8F	2J	U2556	8J	3J
C2217	9B	2E	C2734	9C	4F	U2178	8F	1J	U2580	8H	4J
C2218	9B	3D				U2214	9E	2D	U2596	9F	3J
C2221	10C	2C	J251	7B	2D	U2234	8D	2B	U2634	7D	4D
C2223	10B	2C				U2308	9F	2F	U2656	8H	4G
C2240	8C	1A	P511	6B	4C	U2335	8E	3D	U2668	9H	4G
C2328	10C	4E	P512	6B	4H	U2362	8F	3J	U2770	9H	3J
C2346	8C	3D				U2378	8F	2J			
C2354	8B	1C	R2608	6L	3A	U2408	8E	3A	W511	6B	4C
C2440	10C	4E				U2418	8E	3B	W512	7B	4H
C2475	8C	4J	TP508	7L	4K	U2427	7D	3C	W2143	7L	1A
C2485	8C	3K				U2435	7D	3E	W2526	6L	4A
C2527	7C	4D	U2034	8H	2B	U2456	8H	3B			
C2575	8C	4H	U2092	8E	1G	U2468	8J	4J			
C2586	9C	3K	U2108	8H	2G	U2480	8H	4K			

Partial A5 also shown on diagrams 1 and 2.

ASSEMBLY A6

CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
P651	6M	3F	U3300	8N	4B	U3375	8N	3D	W652	10M	2A
P652	6M	2A	U3325	8N	3C						
			U3350	8N	2F	W651	6M	3F			

Partial A6 also shown on diagram 3.

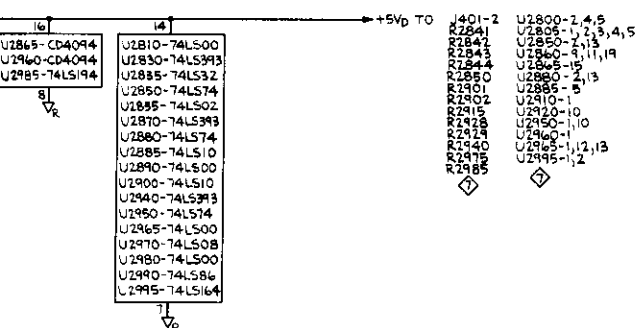
ASSEMBLY A9

CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
C1909	1C	3A	R1933	1B	4A	U1956	2C	4C			
P191	3B	4B	U1890	2C	2E	W1909	3B	3A			

Partial A9 also shown on diagrams 6 and 8.



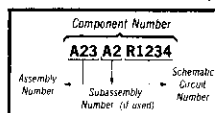
PARTIAL A4 READOUT BOARD



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

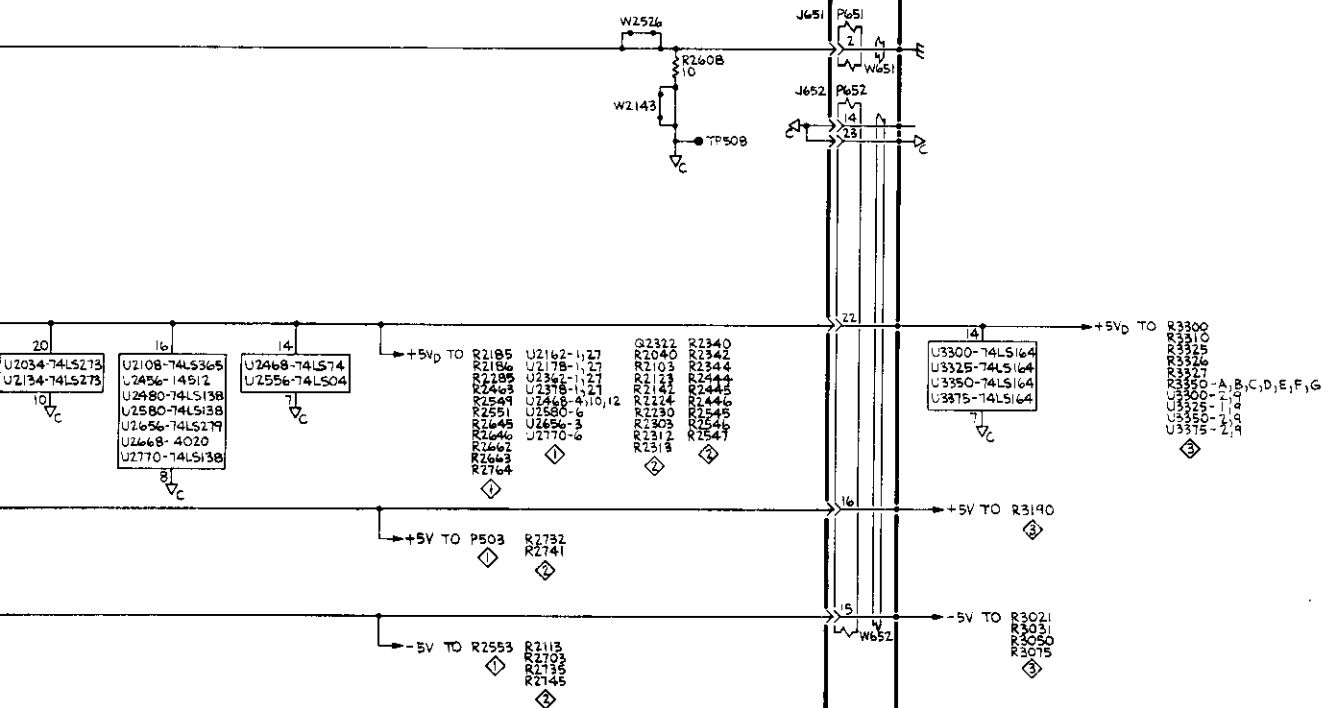
COMPONENT NUMBER EXAMPLE



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

PARTIAL A5 CONTROL BOARD

PARTIAL A6 FRONT PANEL BOARD



J500 A5 to Options		
Pin	Line Name	Schem
1	A7	1
2	A15	1
3	A6	1
4	A14	1
5	MR	1
6	A13	1
7	A5	1
8	A12	1
9	A4	1
10	A11	1
11	A3	1
12	A10	1
13	GND C	1
14	A9	1
15	A2	1
16	A8	1
17	A1	1
18	A0	1
19	R/W	1
20	BD7	1
21	GND C	1
22	BD6	1
23	BD3	1
24	BD5	1
25	BD2	1
26	GND C	1
27	BD1	1
28	BD4	1
29	BD0	1
30	E	1
31	GND C	1
32	10MHZ	1
33	VMA	1
34	RESET	1

J502 A5 to Options		
Pin	Line Name	Schem
1	OEA35	2
2	OEACLK	2
3	GND C	2
4	OEAI/O	2
5	OEAC2	2
6	OEAC1	2
7	OEAC3	2

J/P/W511 A5 to A1		
Pin	Line Name	Schem
1	CH1 PRB	2,4
2	CH2 OVL	2,4
3	CH4 PRB	2,4
4	CH3 PRB	2,4
5	CH1 OVL	2,4
6	CH2 PRB	2,4
7	CH4 POS	2,4
8	CH3 POS	2,4
9	CH2 POS	2,4
10	CH1 POS	2,4
11	GND	11,12
12	DAC MUX1 IN	2,4
13	GND	11,12
14	TRACE SEP	2,6
15	-1.25V	2,11
16	DLY REF 0	2,5
17	DLY REF 1	2,5
18	GND S	11,12
19	A TIM REF	2,5
20	B TIM REF	2,5
21	GND	11,12
22	HORIZ POS	2,6
23	S1	2,4
24	GND	11,12
25	A TRIG LVL	2,5
26	B TRIG LVL	2,5

J/P/W512 A5 to A1		
Pin	Line Name	Schem
1	CONT DATA	2,4
2	ATTN STRB	2,4
3	ATTN CLK	1,4
4	CH2 PA CLK	1,4
5	CH1 PA CLK	1,4
6	A TRIG CLK	1,5
7	B TRIG CLK	1,5
8	A SWP CLK	1,5
9	B SWP CLK	1,5
10	DISP SEQ CLK	1,5
11	RO ON	2,5
12	RO DO	2,6
13	ROS 2	1,6
14	ROS 1	1,6
15	ROSFRAME	1,6
16	DAC MUX1 A0	2,4
17	TSO	2,5
18	DAC MUX1 A1	2,4
19	TRIG STAT	1,5
20	STRB	2,4
21	DAC MUX1 A2	11,12
22	GND C	1,4
23	DAC MUX1 INH	1,6
24	R/W DLYD	1,6
25	5MHZ	1,5
26	10MHZ	1,6

J/P/W651 A6 to A5		
Pin	Line Name	Schem
1	DAC MUX1 IN	2,3
2	GND	12
3	HORIZ POS	2,3
4	+1.36V	2,3
5	-1.25V	2,3
6	DLY A	2,3
7	ΔA	2,3
8	ΔB	2,3
9	DLY B	2,3
10	HORIZ VAR	2,3
11	TRIG LEVEL	2,3
12	HOLD OFF	2,3
13	-1.25V	2,3
14	TRACE SEP	2,3
15	CH1 VAR	2,3
16	CH2 VAR	2,3
17	CH1 POS	2,3
18	CH2 POS	2,3
19	CH3 POS	2,3
20	CH4 POS	2,3

J/P/W652 A6 to A5		
Pin	Line Name	Schem
1	ROW 8	2,3
2	ROW 3	2,3
3	ROW 9	2,3
4	ROW 4	2,3
5	ROW 5	2,3
6	ROW 1	2,3
7	Unused	2,3
8	Unused	2,3
9	ROW 0	2,3
10	ROW 7	2,3
11	ROW 10	2,3
12	ROW 2	2,3
13	ROW 6	2,3
14	GND C	12
15	-5V	12
16	+5V	12
17	TRIG LED	2,3
18	COL 0	2,3
19	LED CLK	2,3
20	COL 1	2,3
21	LED DATA	2,3
22	+5V _b	12
23	GND C	12
24	COL 2	2,3
25	COL 3	2,3
26	COL 4	2,3

J/P/W671 A6 to A7		
Pin	Line Name	Schem
1	CH2 VAR	3
2	CH1 VAR	3
3	HORIZ VAR	3
4	-1.25V	3
5	+1.36V	3

W900 A9 to CRT		
Pin	Line Name	Schem
1	HEATER	8
2	CATHODE	8
3	GRID	8
4	SLOT	8
5	Q1+	8
6	Q2+	8
7	Q3-	8
8	PLATE	
	AVERAGE	8
9	FIRST ANODE	8
10	VARIABLE	
	OCTOPOLE	8
11	Q3+	8
12	Q1-	8
13	Q2-	8
14	HEATER	8

J/P901 A9 to CRT		
Pin	Line Name	Schem
1	Q3-	8
2	Key ^b	8
3	Q1-	8
4	Q2-	8
5	Key ^b	8
6	FIRST ANODE	8
7	Q3+	8
8	VARIABLE	
	OCTOPOLE	8
9	PLATE	
	AVERAGE	8
10	Q2+	8
11	Q1+	8

^a No pins exist in J121-2 and J122-2 positions; no wires exist in W121-2 and W122-2 positions; plugs are installed in P121-2 and P122-2 positions to key the connectors.

^b No pins exist in J901-2 and -5 positions; plugs are installed in P901-2 and -5 positions.

2445 Service

J110 A1 Test Connector		
Pin	Line Name	Schem
1	ATTN CLK	4
2	GND	4
3	CH4 POS	4
4	Unused	4
5	CH1 POS	4
6	GND	4
7	CH3 POS	4
8	CH2 POS	4

J/P/W121 A1 to A2		
Pin	Line Name	Schem
1	-15V _{UNREG}	10,11
2	Key ^a	10,11
3	+10V _{REF}	10,11
4	GND	10,11
5	+15V	10,11
6	+42V	10,11
7	+87V	10,11

J/P/W251 A2 to A5		
Pin	Line Name	Schem
1	-15V	10,12
2	-15V	10,12
3	-5V	10,12
4	-5V	10,12
5	GND	10,12
6	GND	10,12
7	+5V	10,12
8	+5V	10,12
9	GND	10,12
10	GND	10,12
11	+5V _D	10,12
12	PWR UP	1,10
13	+5V _D	10,12
14	+5V _D	10,12
15	+10V _{REF}	10,12
16	+10V _{REF}	10,12
17	+15V	10,12
18	+15V	10,12
19	+42V	10,12
20	+42V	10,12

J/P/W122 A1 to A2		
Pin	Line Name	Schem
1	LINE TRIG	5,9
2	-8V	10,11
3	-15V	10,11
4	GND	10,11
5	-5V	10,11
6	Key ^a	10,11
7	+5V	10,11
8	+5V _D	10,11

J118 A1 Test Connector		
Pin	Line Name	Schem
1	Unused	5
2	DLY REF 0	5
3	DLY REF 1	5
4	GND	5
5	+10V _{REF}	5
6	ROR	5
7	Unused	5
8	GND	5

J/P/W141 A1 to A14		
Pin	Line Name	Schem
1	GND	6
2	-15V	6
3	VQOUT	6
4	VERT	6
5	HORIZ	6

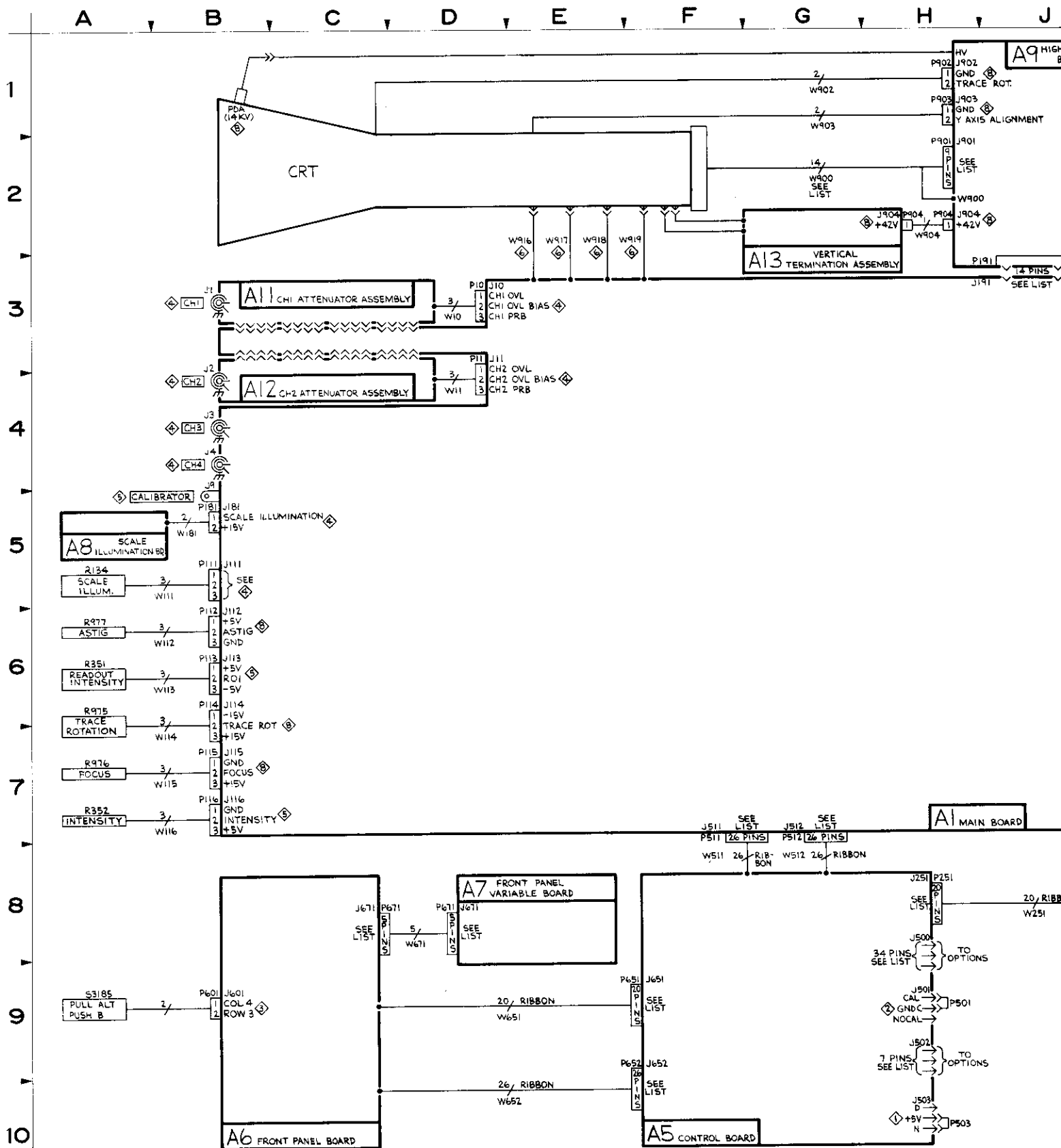
J/P/W411 A4 to A1		
Pin	Line Name	Schem
1	ROB	5,7
2	ROR	5,7
3	ROA	5,7
4	GND R	11,12
5	ROS 2	6,7
6	SGA	5,7
7	ROSFRAME	6,7
8	ROS 1	6,7
9	R/W DLYD	6,7
10	RO DO	6,7
11	GND R	11,12
12	10 MHZ	6,7
13	GND R	11,12
14	+15V	11,12
15	BD0	6,7
16	GND R	11,12
17	GND	11,12
18	+5V _D	11,12
19	DLY REF 1	5,7
20	GND	11,12
21	DLY REF 0	5,7
22	GND	11,12
23	-15V	11,12
24	READOUT HORIZ OUT	6,7
25	GND	11,12
26	READOUT VERT OUT	6,7

J119 A1 Test Connector		
Pin	Line Name	Schem
1	-15V	11
2	+5V _D	11
3	-15V _{UNREG}	11
4	+10V _{REF}	11
5	-5V	11
6	+15V	11
7	GND	11
8	+87V	11
9	+42V	11
10	Unused	11
11	-8V	11
12	+5V	11
13	+15V	11
14	GND	11

J/P191 A1 to A9		
Pin	Line Name	Schem
1	-15V _{UNREG}	8,11
2	+10V _{REF}	11,12
3	+15V	11,12
4	FOCUS	8
5	ASTIG	8
6	GND	11,12
7	VZOUT	6,8
8	VQOUT	6,8
9	-15V ₂	11,12
10	TRACE ROT	8
11	+42V	11,12
12	TRZ	6
13	QGAIN	6
14	+87V	11,12

CHASSIS MOUNTED PARTS

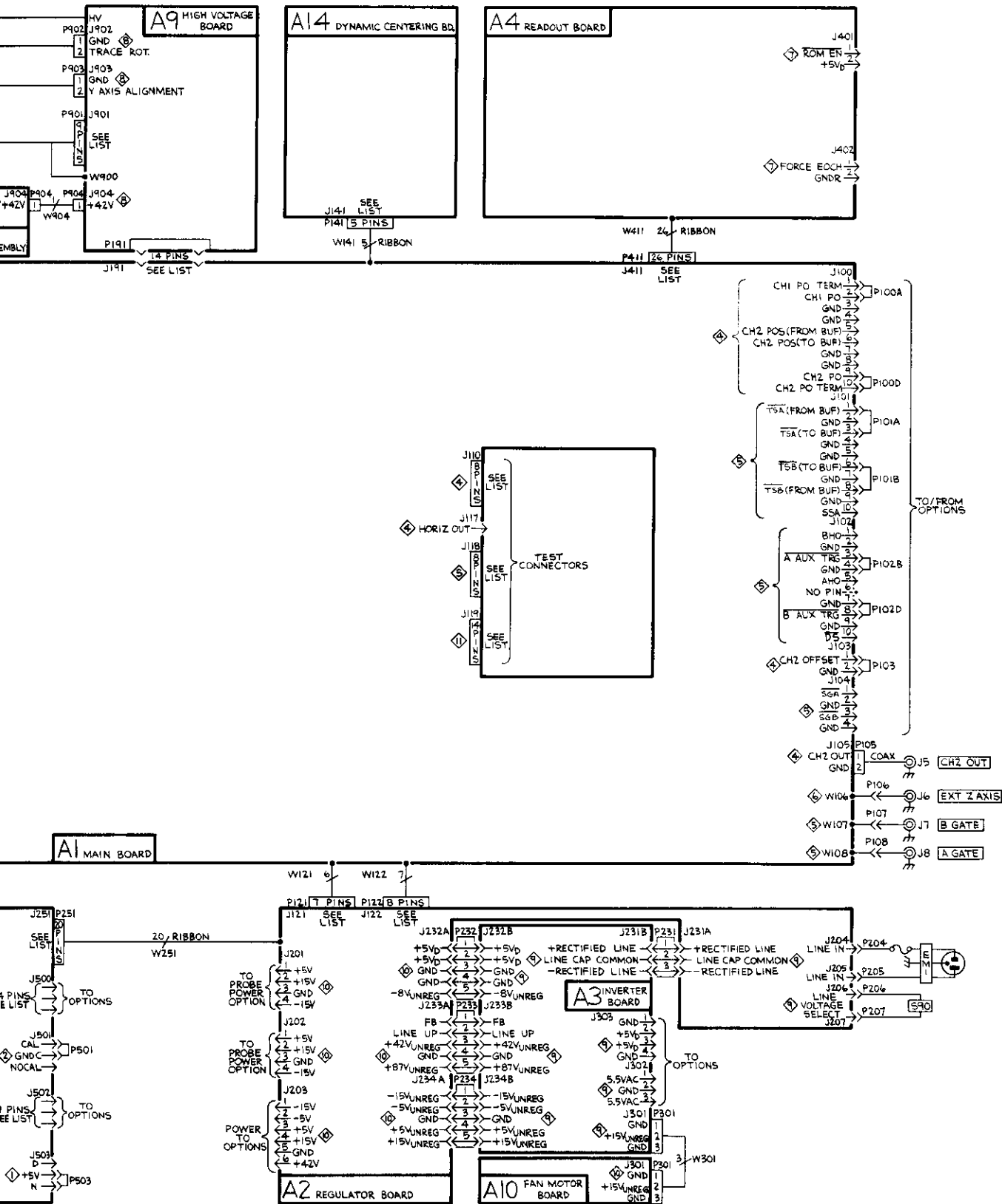
CIRCUIT NUMBER	SCHEM NUMBER	SCHEM LOCATION	CIRCUIT NUMBER	SCHEM NUMBER	SCHEM LOCATION
F90	9	5A	P904	8	5P
J3	4	10A	R134	4	5N
J4	4	10A	R351	5	5A
J5	4	8T	R352	5	6A
J6	6	9A	R975	8	2B
J7	5	7S	R976	8	5B
J8	5	3S	R977	8	4B
			R996	8	3K
L90	8	2L	S90	9	6A
LR1513	8	5M	S1020	9	5D
LR1514	8	5M	S3185	3	5D
P111	4	4N	V900	8	2L
P112	8	3C			
P113	5	5A	W111	4	5N
P114	8	2C	W112	8	4B
P115	8	4C	W113	5	6A
P116	5	6A	W114	8	3B
P204	9	5A	W115	8	5B
P205	9	6A	W116	5	6A
P206	9	6A	W121	10	2S
P207	9	7A	W122	10	3S
P231	9	5D	W122	9	1S
P232	9	9S	W301	10	1A
P233	9	3S	W671	3	8N
P234	9	7S	W900	8	3M
P601	3	5D	W900	8	6J
P671	3	7N	W900	8	7J
P901	8	3M	W900	8	7M
P901	8	4J	W902	8	3J
P901	8	5M	W903	8	4M
P902	8	2J			
P903	8	4M			



2445

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H J K L M N P S T

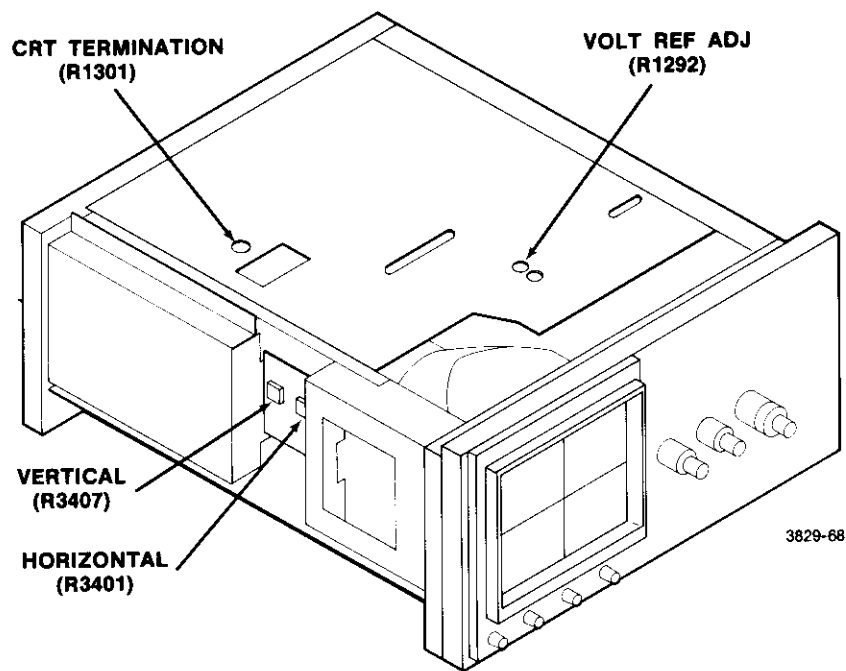


INTERCONNECTION DIAGRAM

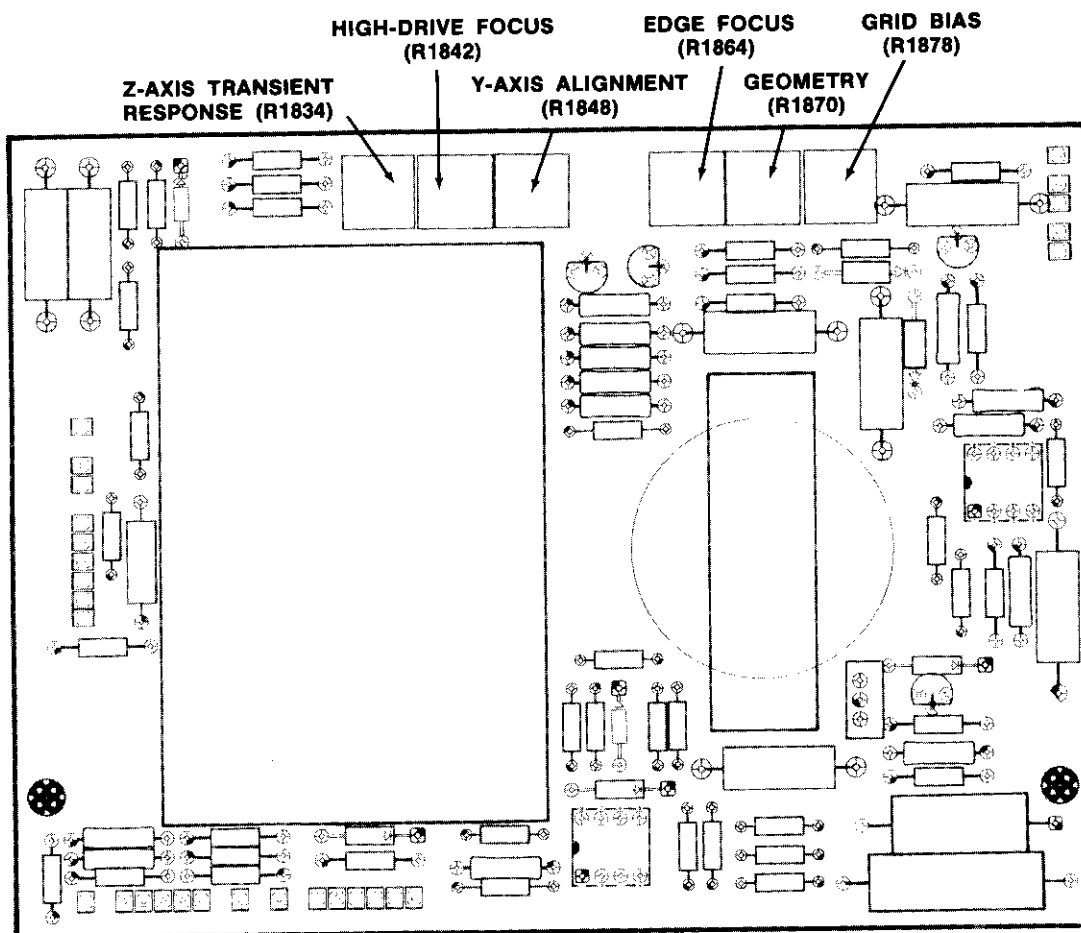
13

INTERCONNECTIONS

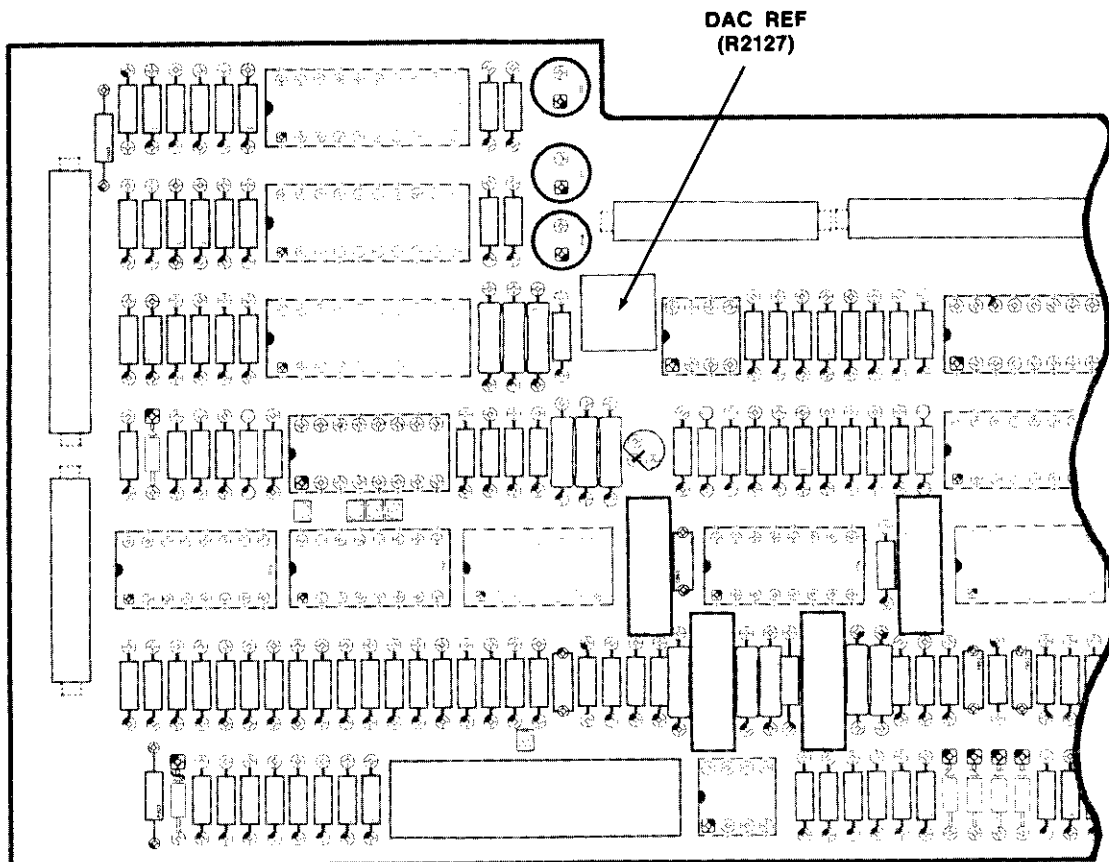
13



**A13—CRT TERMINATION, A14—DYNAMIC CENTERING,
ADJUSTMENT LOCATIONS 1**

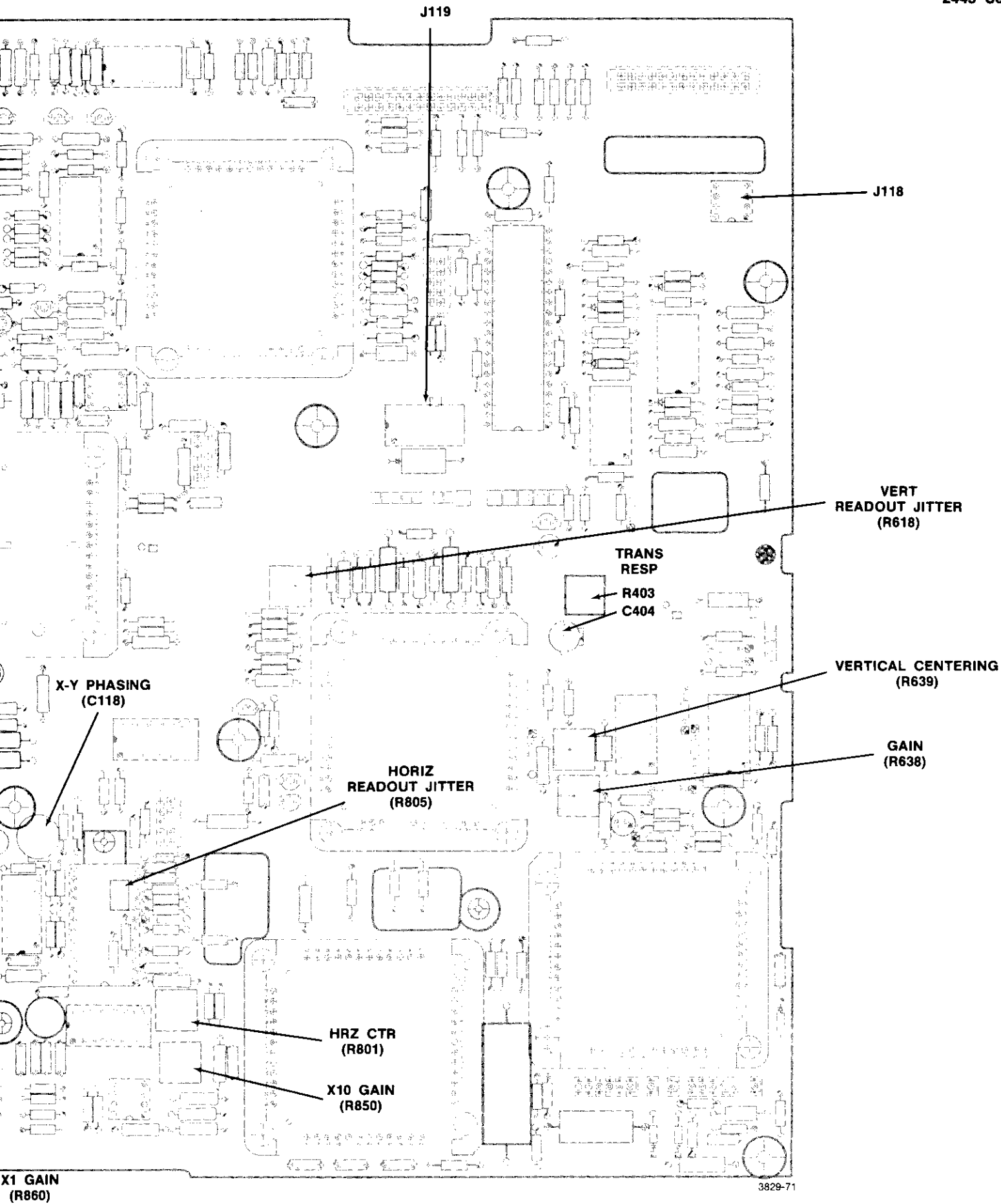


A9—HIGH VOLTAGE, ADJUSTMENT LOCATIONS 2



3829-70

A5—CONTROL, ADJUSTMENT LOCATIONS 3



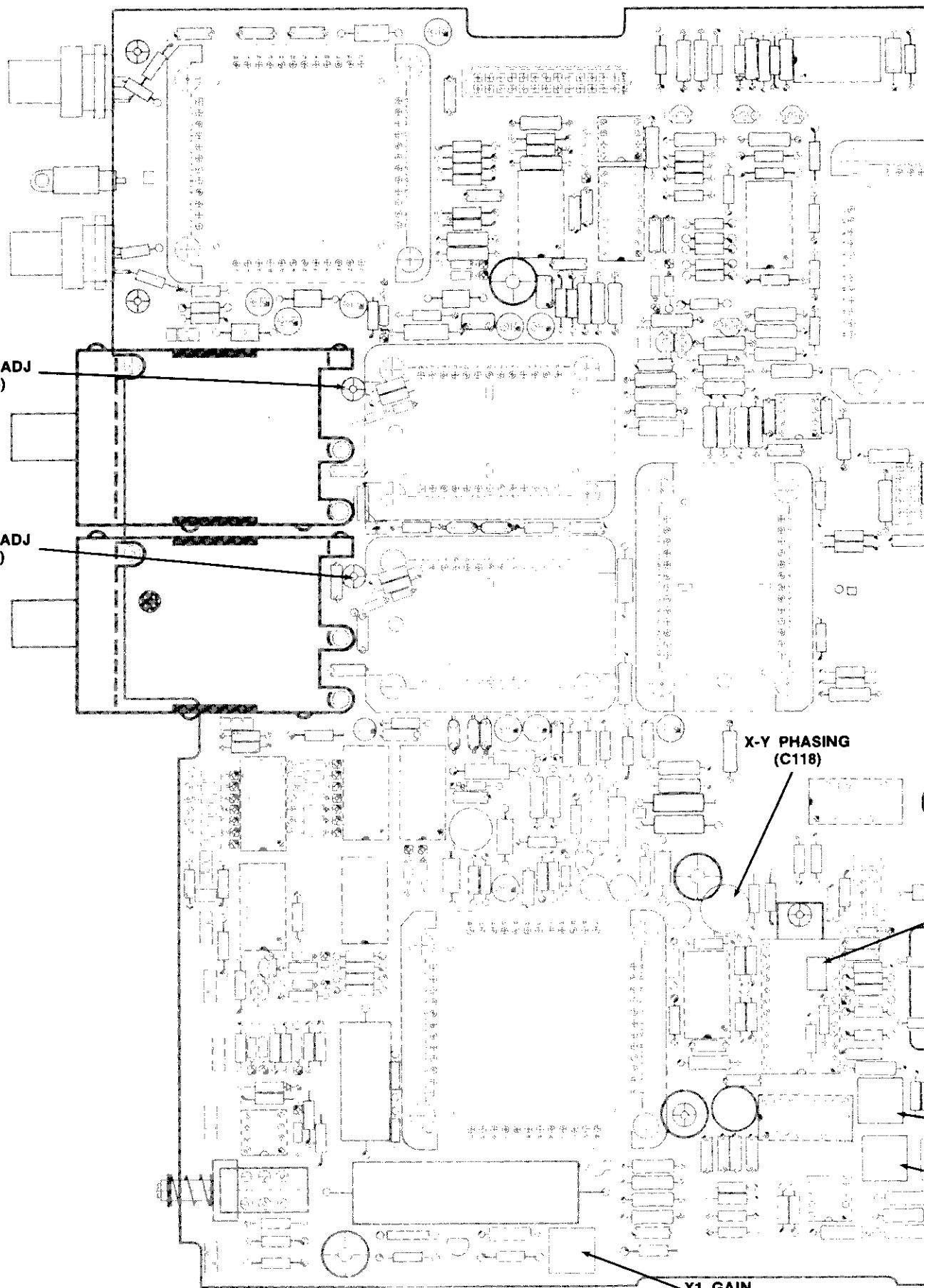
50mV C ADJ
(C205)

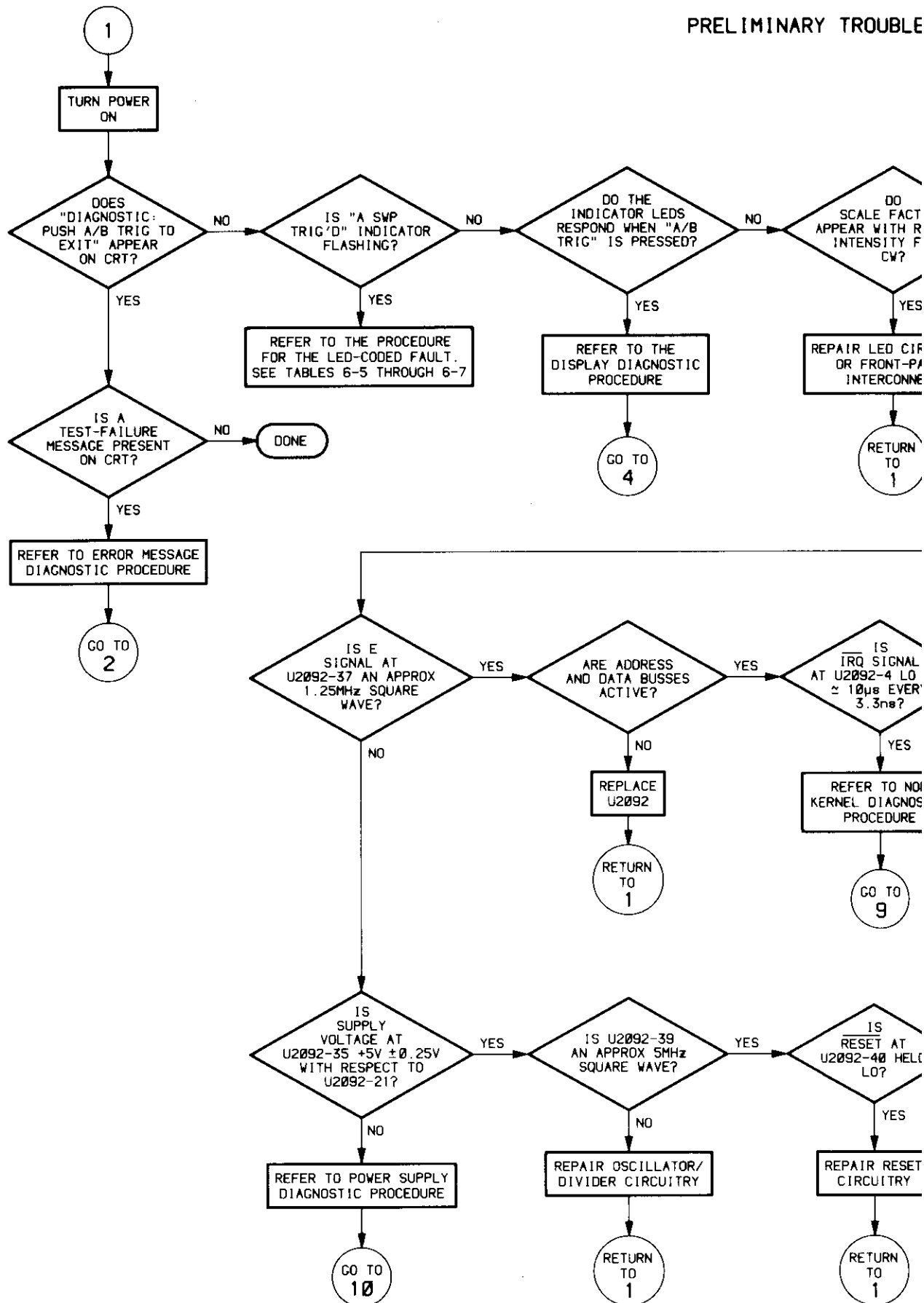
50mV C ADJ
(C105)

X-Y PHASING
(C118)

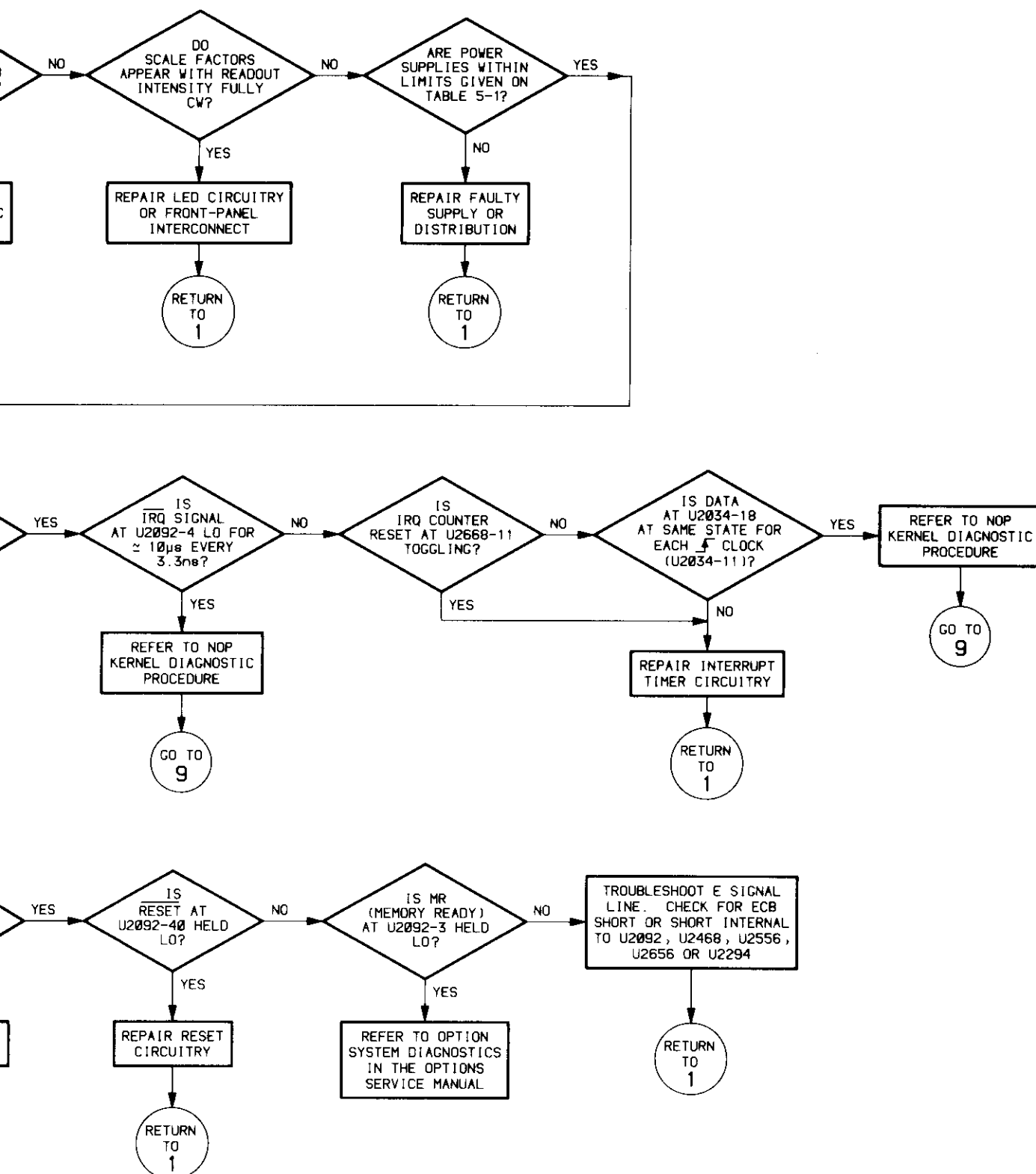
X1 GAIN
(R860)

A1—MAIN, ADJUSTMENT LOCATIONS 4



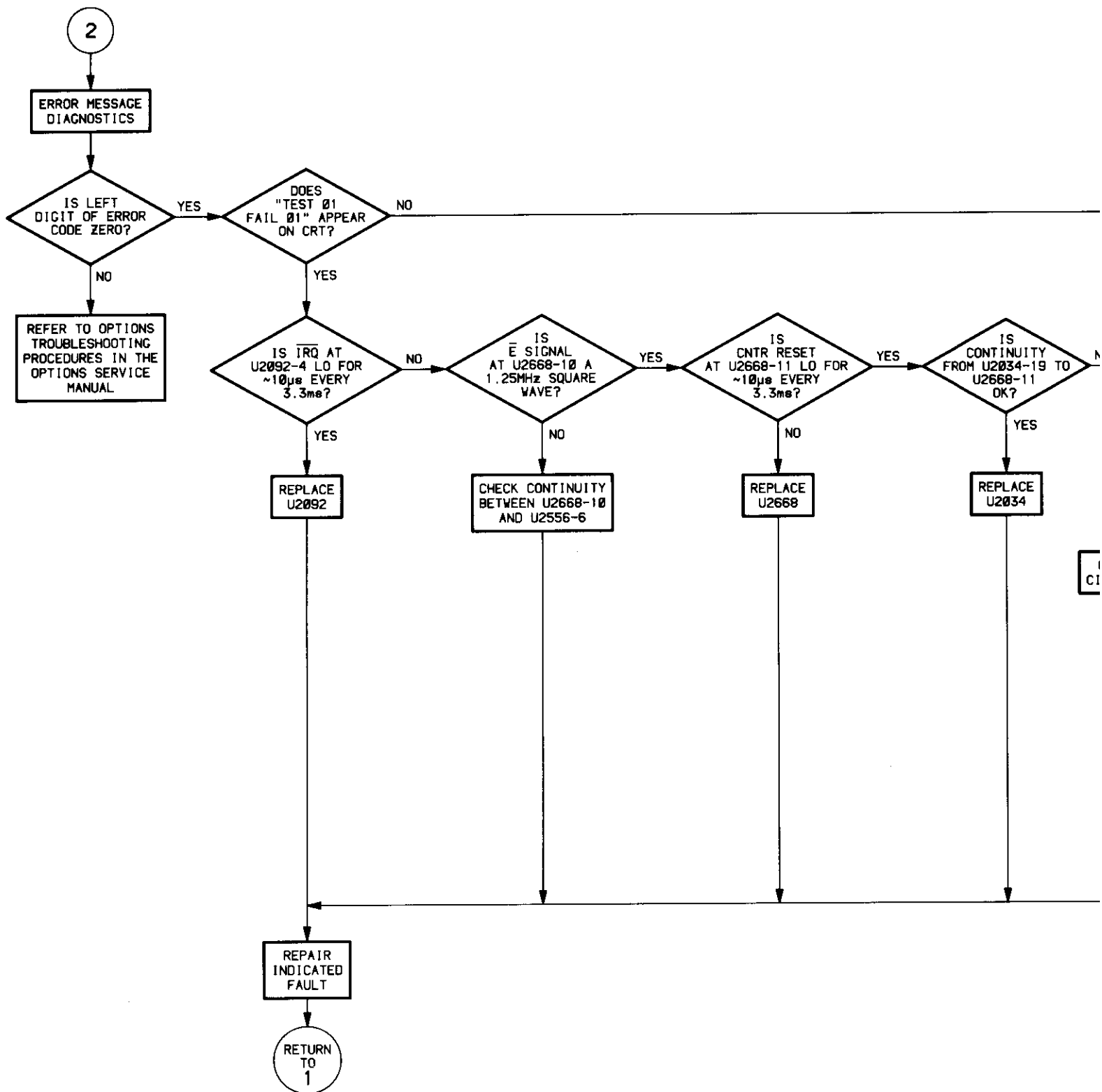


PRELIMINARY TROUBLESHOOTING

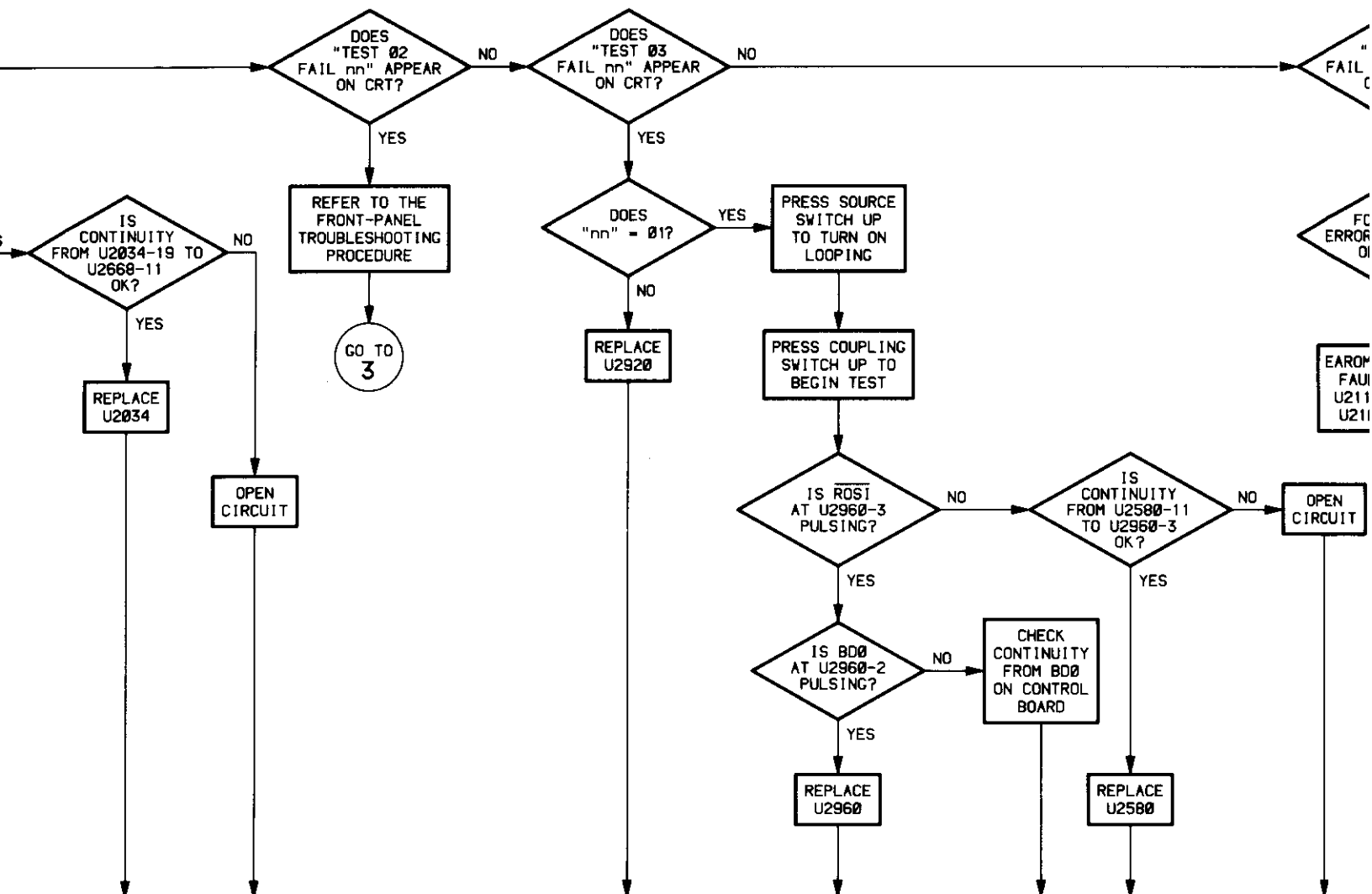


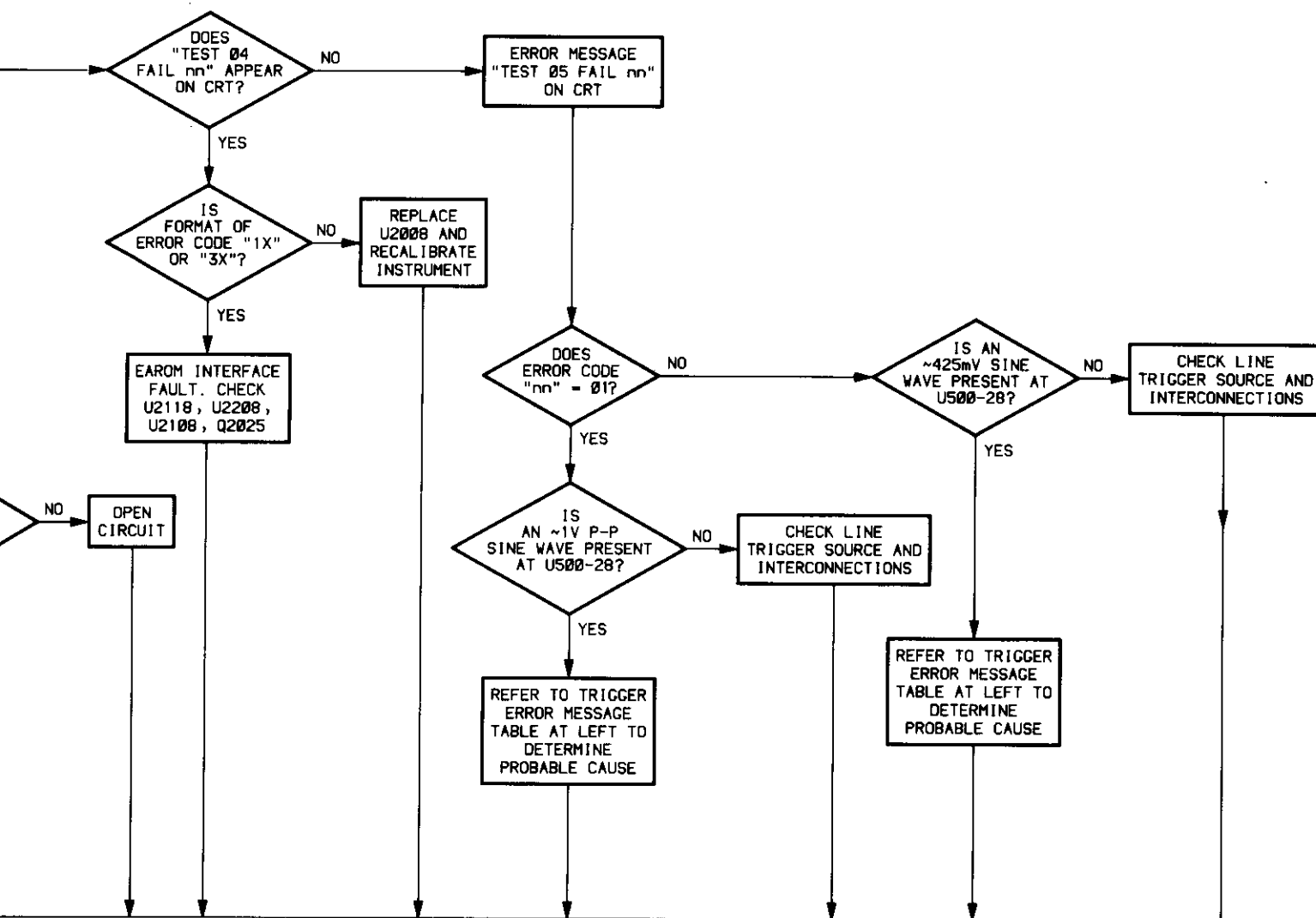
Probable Causes of Trigger Error Messages

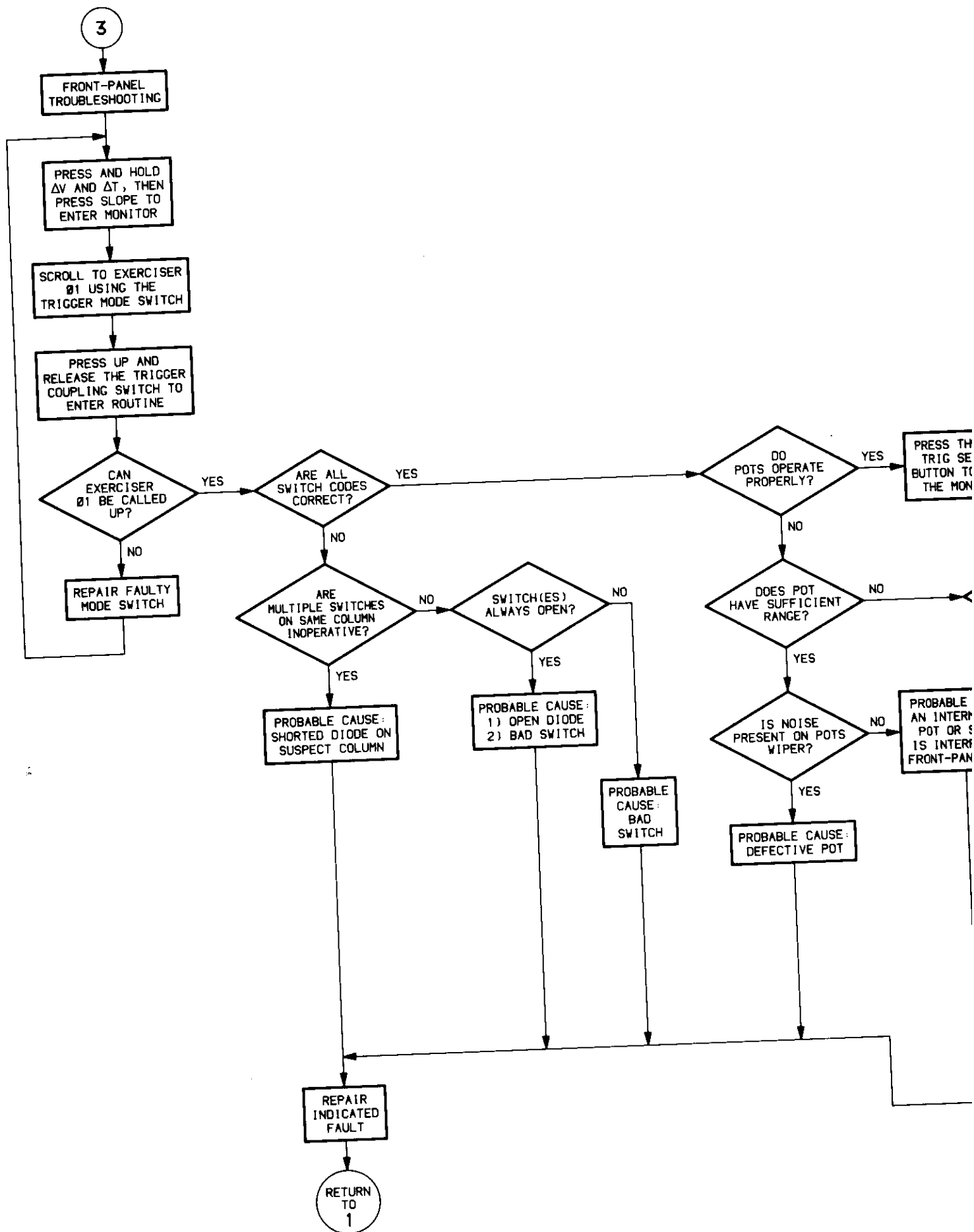
Test 05 Fail	Probable Causes of Failure
01	a. Line Signal b. U500 (Trigger) c. U650 (Trigger Status Data to Processor)
02 or 22	a. Line Signal b. U500 (Trigger)
04 or 44	a. U2634A, U2235, or U500 b. Line Signal



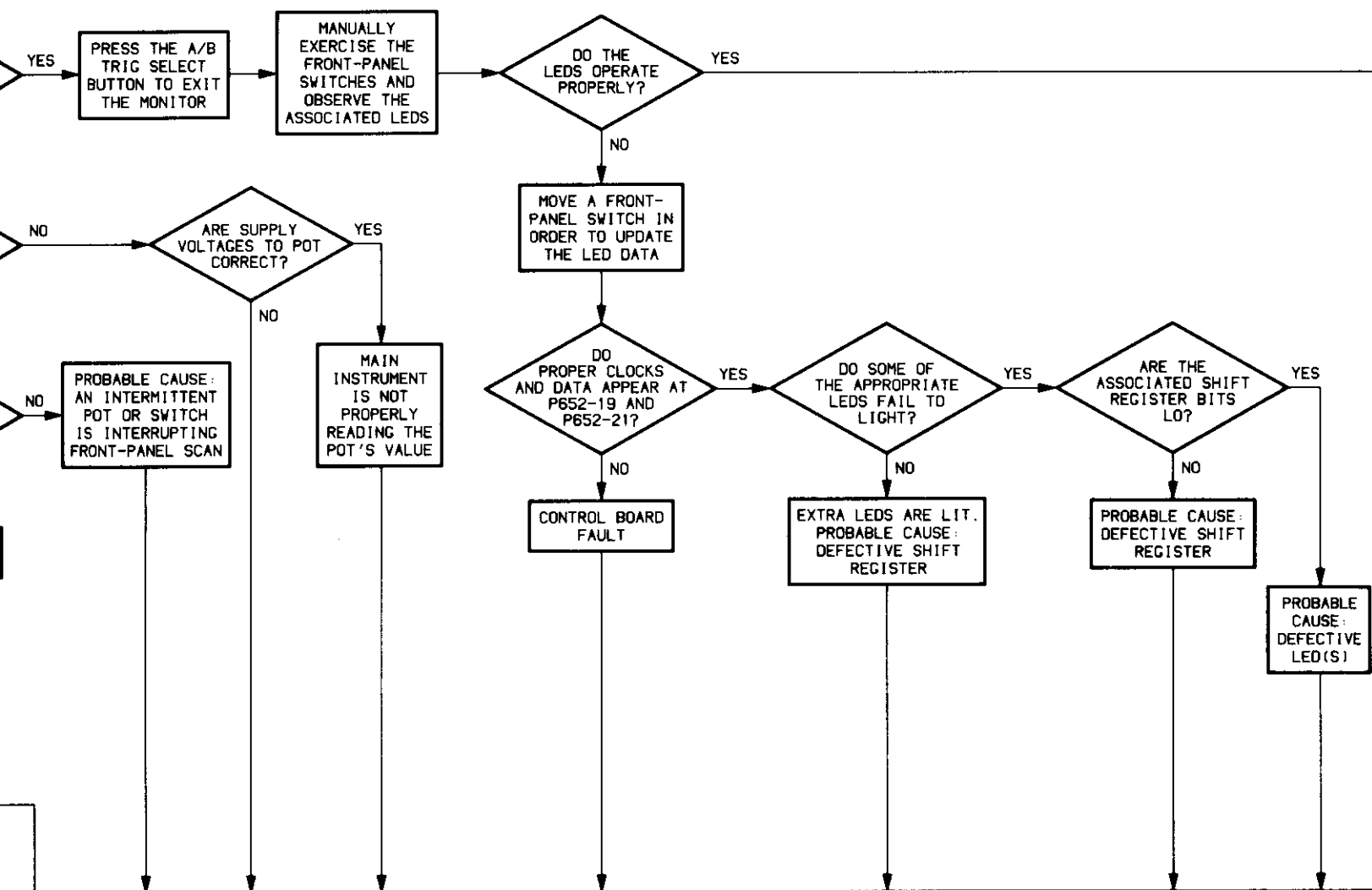
ERROR MESSAGE DIAGNOSTICS

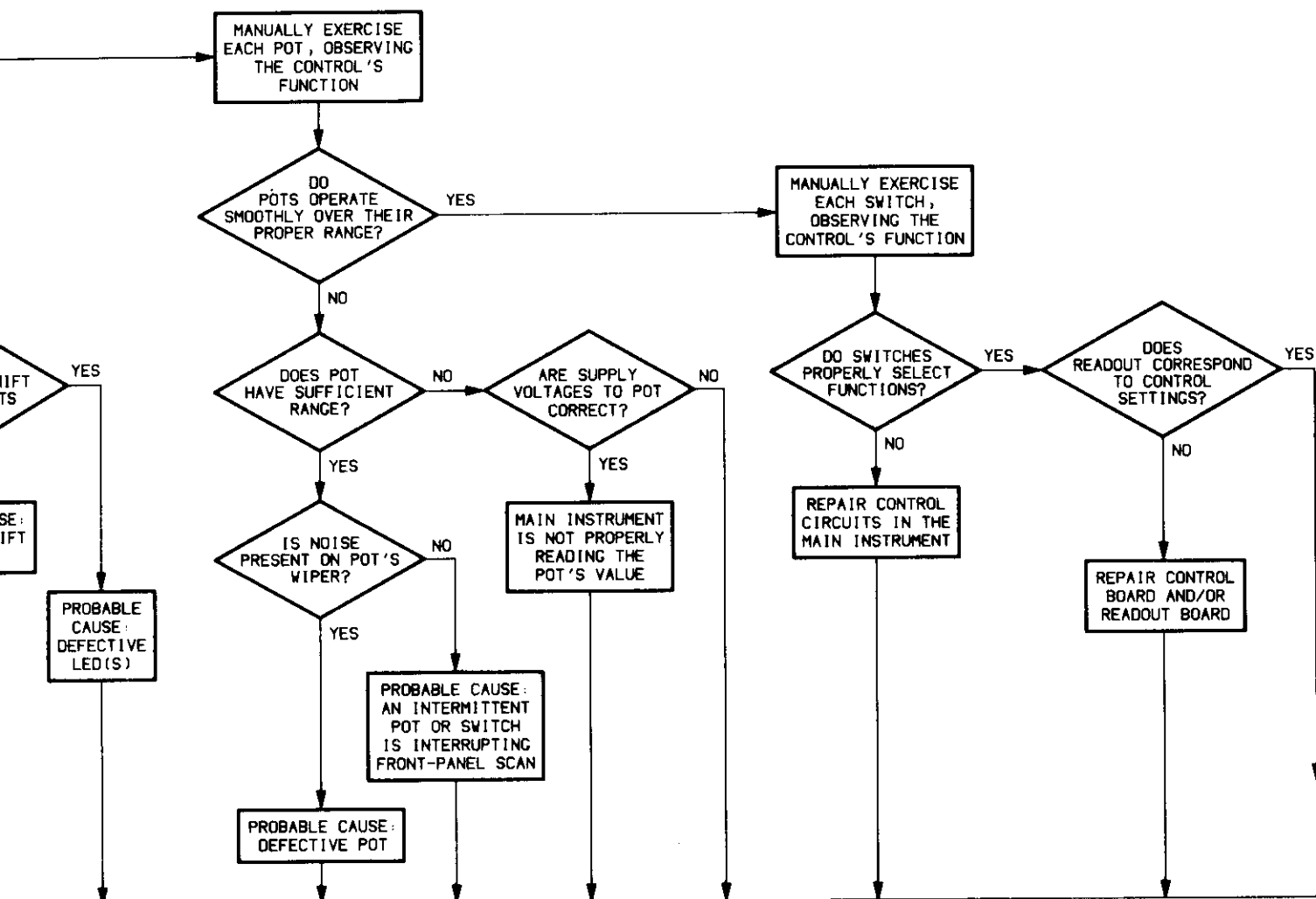






FRONT-PANEL TROUBLESHOOTING





VERTICAL TROUBLESHOOTING HINTS

With no signals connected to the four Vertical input connectors, select each channel for display and rotate its POSITION control through its entire range.

1. If one or more of the four Vertical channels properly responds to its POSITION control, the problem is in the preamp circuit of the defective channel or in the Vertical Channel Switch circuit. If none of them respond properly, the Channel Switch, Delay Line, Vertical Output Amplifier, and the hybrid power supplies should be suspect.
2. Check the range of the input positioning voltage for a faulty channel. Channel 1 and 2 positioning inputs (pin 17 of U100 and U200) should vary between -4.6 volts and -5.26 volts. Channel 3 and 4 positioning voltages (to pins 29 and 32 of U300) should vary between ground potential and -5 volts.
3. If the faulty channel's input positioning range is okay, check the positioning effect at the outputs of the Channel Switch (connect a DMM across the Delay Line). When the CH 1 or CH 2 POSITION control is rotated through its range, the DMM reading should vary from approximately $+700$ mV to -700 mV; for Channels 3 and 4, it should vary approximately from $+350$ mV to -350 mV.
4. If the range at the Delay Line is okay, connect the DMM across the vertical outputs to the crt (between L628 and L633). Range should vary approximately from $+11.5$ volts to -11.5 volts as the POSITION control of the displayed channel is rotated through its range.
5. If the output voltages to the crt are okay, check that the voltage between the crt termination resistors (CR1513 and CR1514) varies approximately from $+11.5$ volts to -11.5 volts as the POSITION control is rotated through its range.

See the "Theory of Operation" for further information.

HORIZONTAL TROUBLESHOOTING HINTS

If possible, set the 2445's TRIGGER controls so the TRIG'D LED remains illuminated (triggered sweep is running). Setting the TRIGGER MODE to AUTO LVL will usually do this.

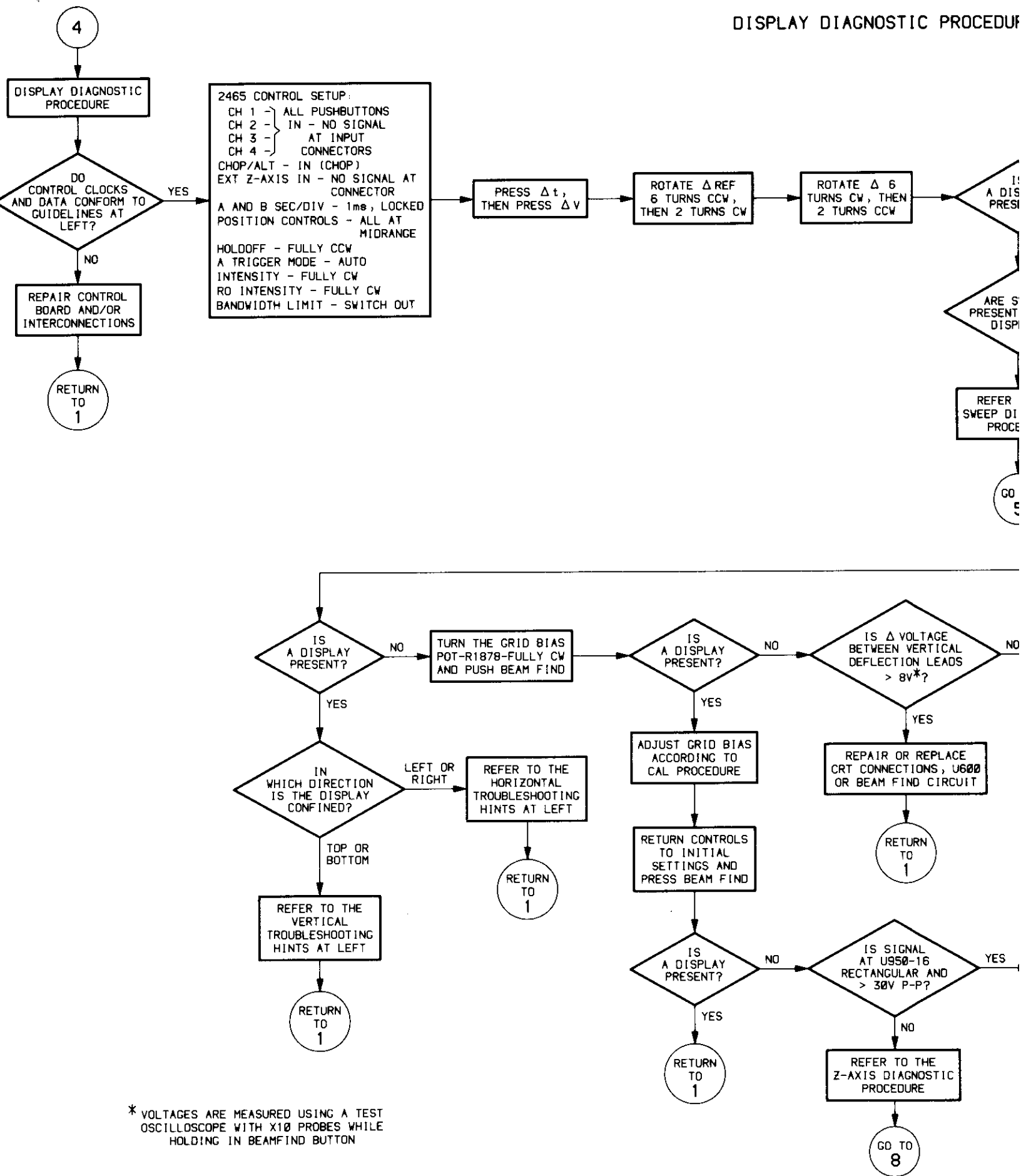
1. Check that the horizontal positioning input (pin 22 of U800) of the Horizontal Output IC varies approximately from -1.25 volts to $+1.25$ volts as the Horizontal POSITION control is rotated through its range. If it does not, repair the position circuit.

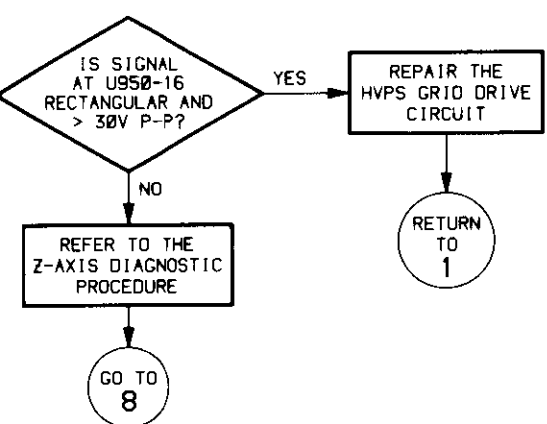
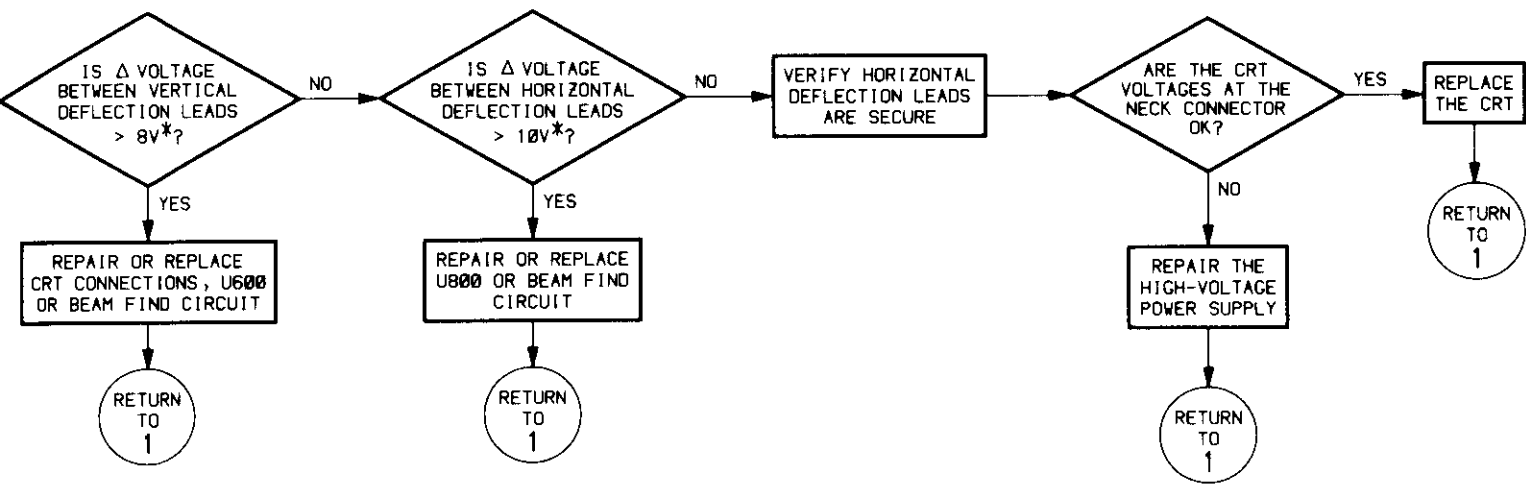
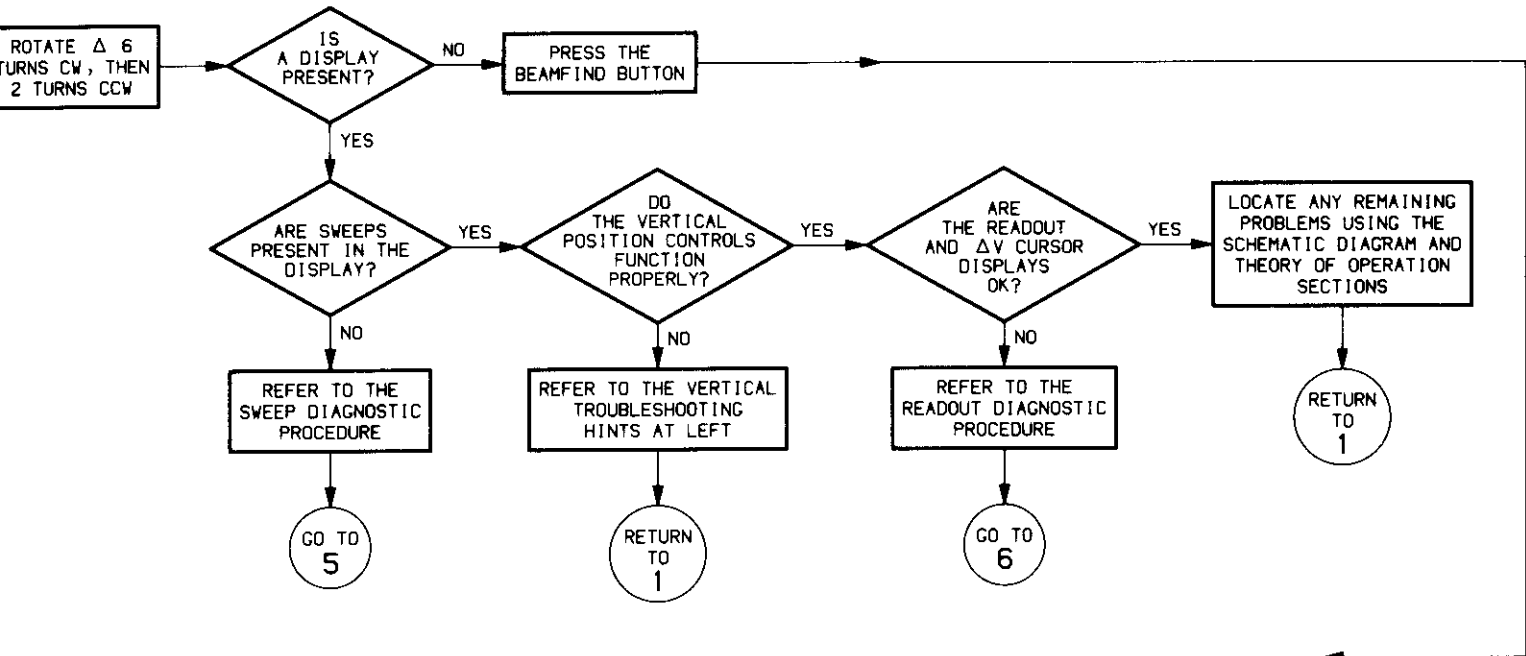
2. Check that the A Sweep Ramp at pin 18 of U800 is ramping from -1.25 volts to $+1.25$ volts. If it is not, check the buffer amplifier made up of U735 and its associated components. When operating properly, the voltages and waveforms at pins 3 and 9 of U735 will be nearly identical.
3. Check for proper select signals (TTL levels) at the HSA and HSB inputs of U800.
4. Check the power supply levels to U800.
5. Check the voltage on pin 6 of U800. If it is not $> +80$ volts, check the +OUT and -OUT pins for shorts.

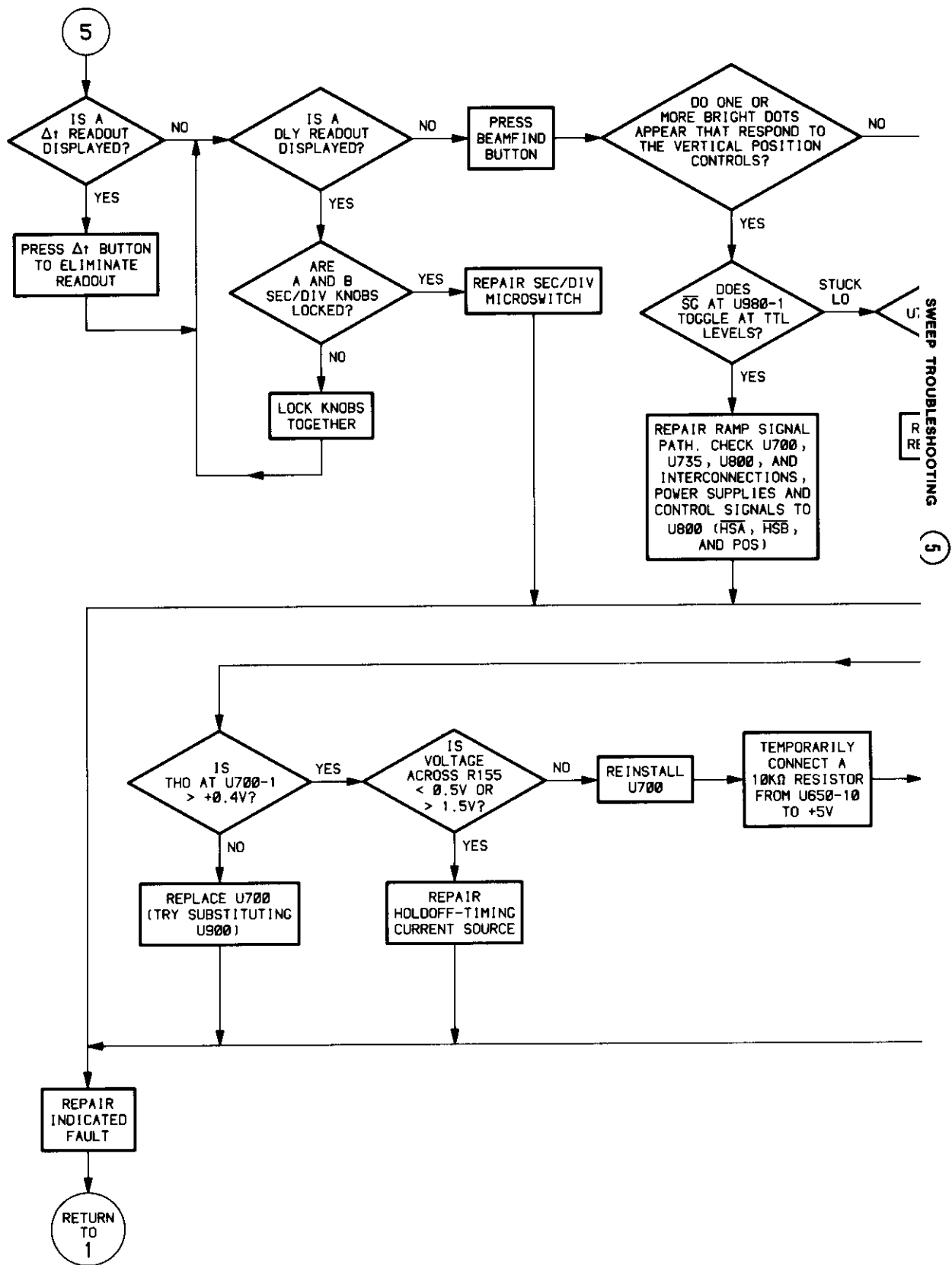
See the "Theory of Operation" for further information.

HOW TO VERIFY THE CONTROL DATA AND CONTROL CLOCK LINES

1. Power up the 2445 under test.
2. Move the NORM/DIAG jumper (P503 on the scope under test) to the DIAG position. This forces the processor into a NOP loop and exercises the Address Decode circuitry.
3. Trigger the test scope on the DAC MSB CLK at pin 14 of U2580 (on the Control Board). Use NORM TRIGGER and - SLOPE. Set TRIGGER LEVEL to $+1.4$ volts.
4. Verify that four bursts of clocks appear at 104-ms to 106-ms intervals.
5. Check that each of the outputs of U2850 has similar signals present (diagram 2).
6. Check that each output of U2596 (diagram 2) has four bursts of two pulses each occurring at 104-ms to 106-ms intervals.
7. Turn instrument power off and restore P503 to the NORM position.
8. Power up the 2445 again.
9. Set the 2445's CH 1 and CH 2 input coupling to $1\text{ M}\Omega$ DC and TRIGGER MODE to NORM.
10. Lock the TRIGGER COUPLING switch in its up position, using a rubber band looped between the TRIGGER LEVEL control and the switch's lever actuator.
11. Trigger the test oscilloscope on the DISP SEQ CLK (pin 8 of U2596 or pin 10 of P512).
12. With the test scope still triggered on the DISP SEQ CLK, verify that the ATTN STRB at pin 2 of P512 is eight positive-going strobes.
13. Verify that the control data on pin 1 of P512 is toggling at TTL levels.

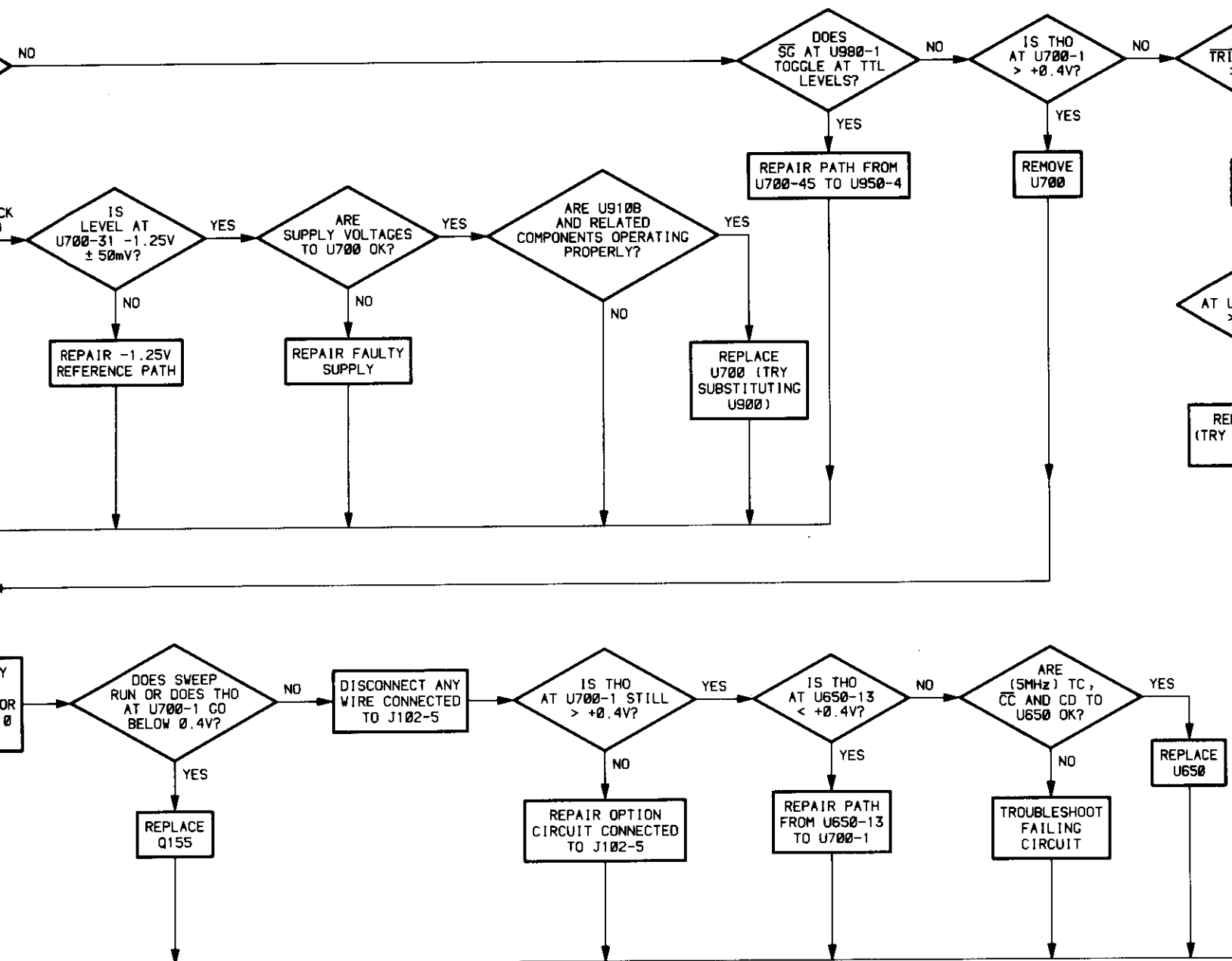




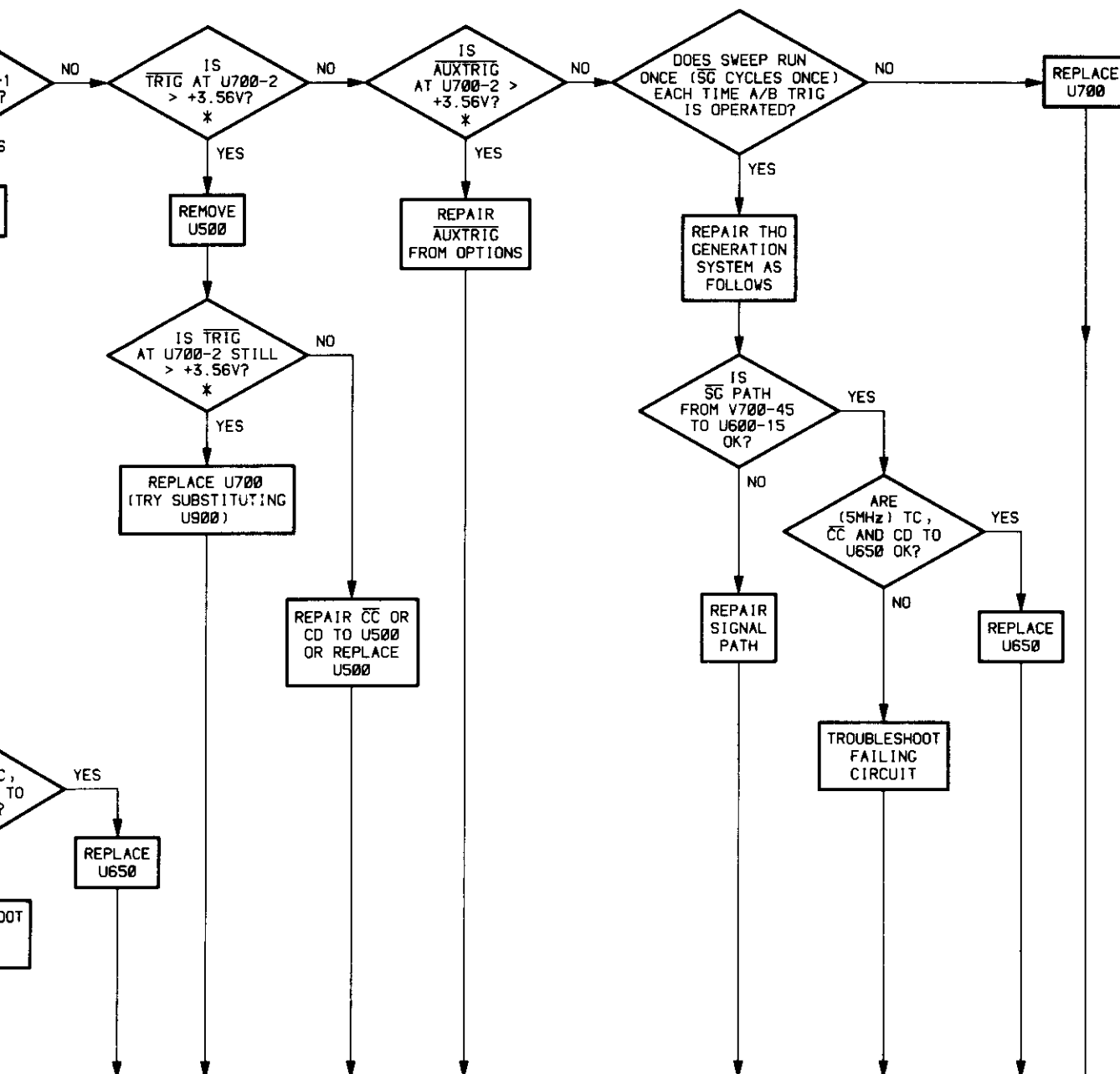


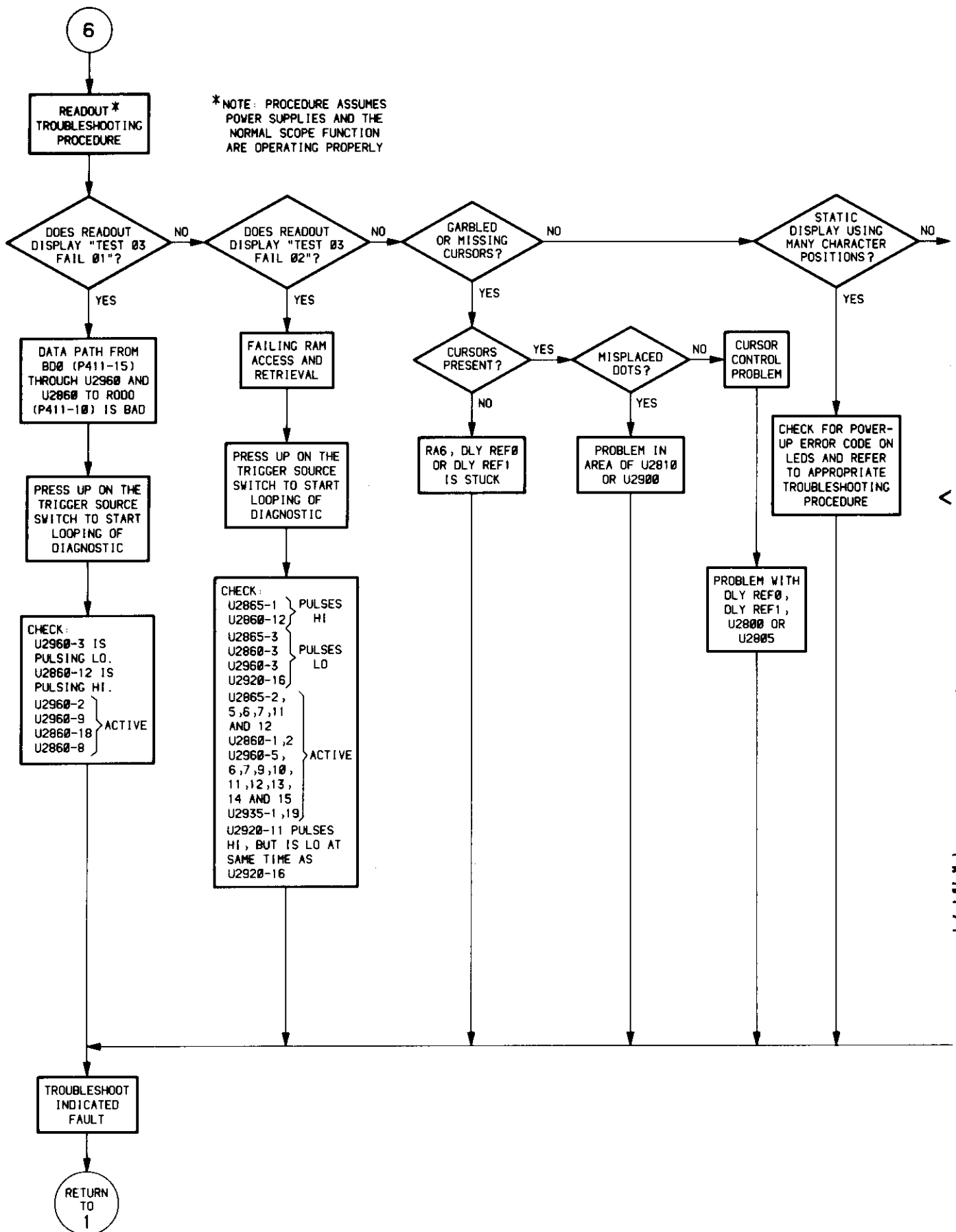
SWEEP TROUBLESHOOTING PROCEDURE

*NOTE: +
WITH RE

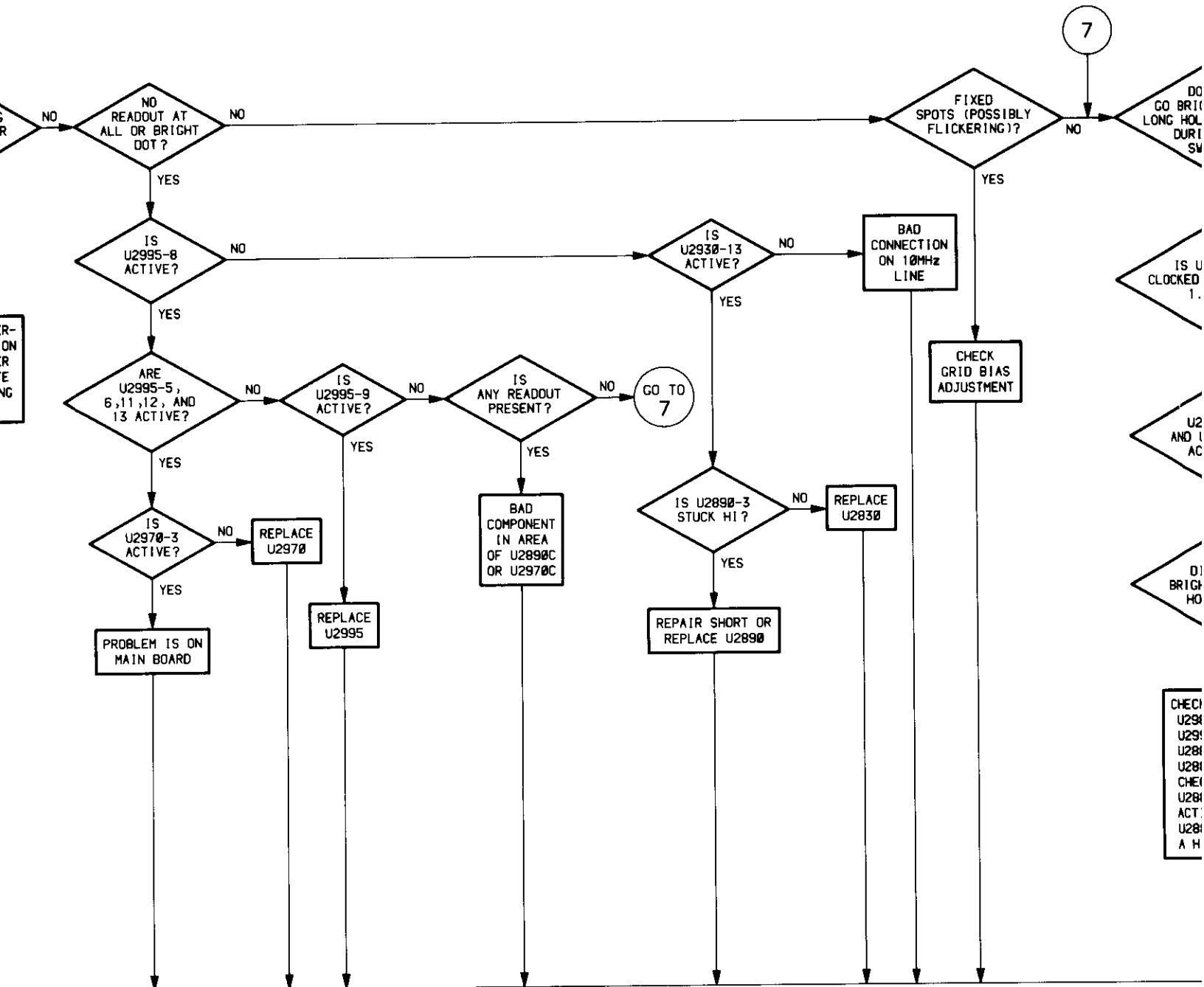


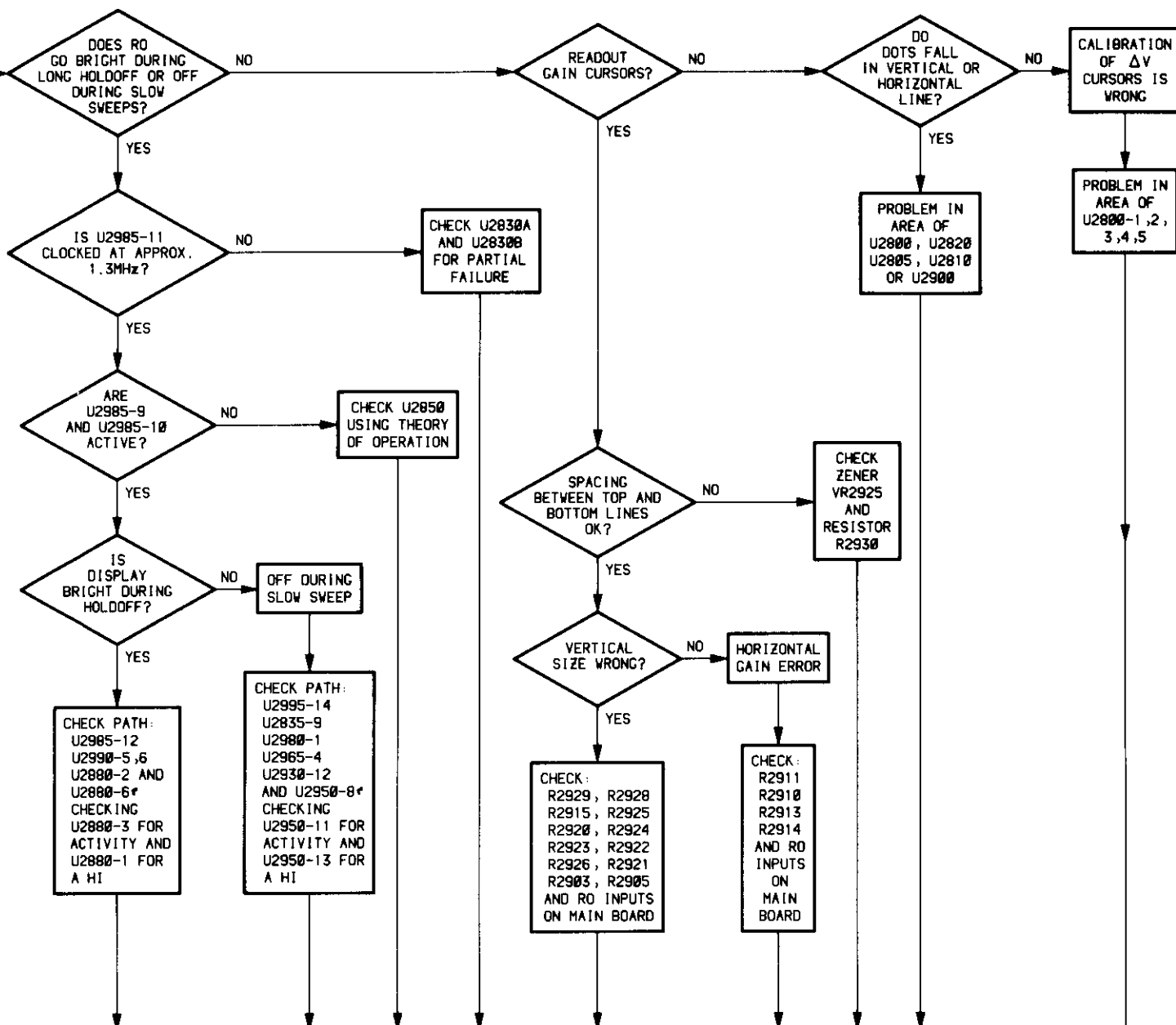
*NOTE: +3.56V IS MEASURED AS -1.44V
WITH RESPECT TO THE +5V SUPPLY



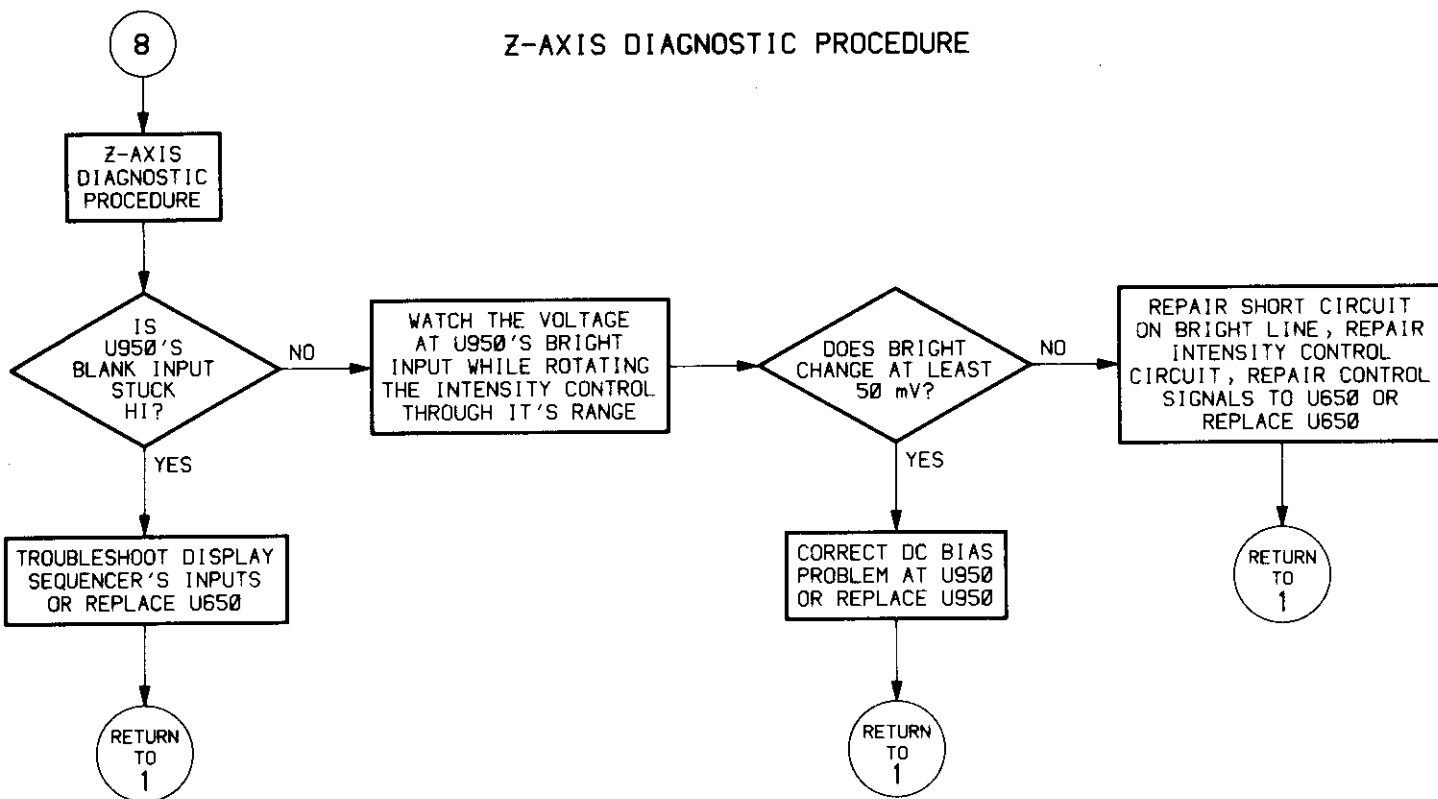


READOUT TROUBLESHOOTING PROCEDURE



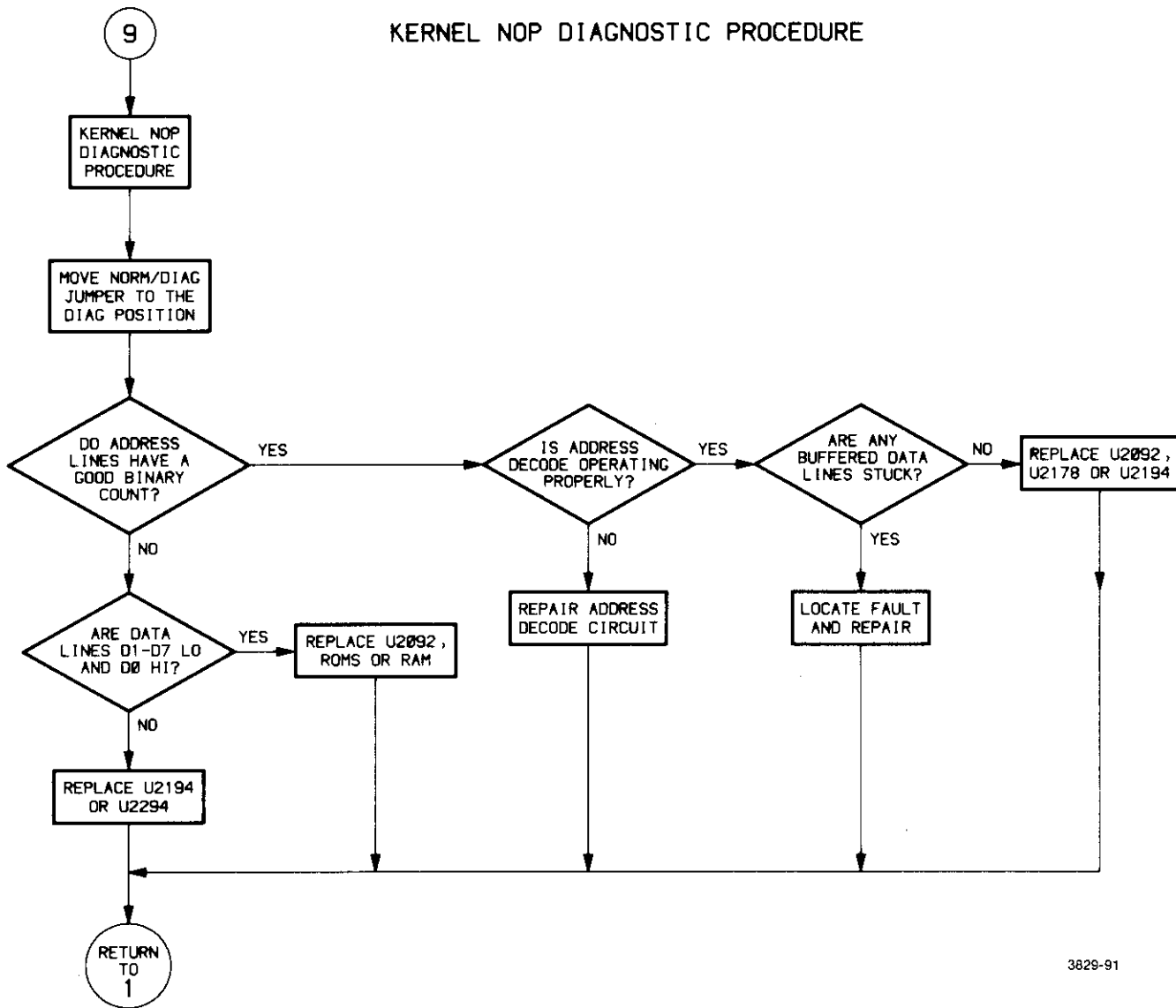


REPAIR INSTRUCTIONS
U & I



3829-65

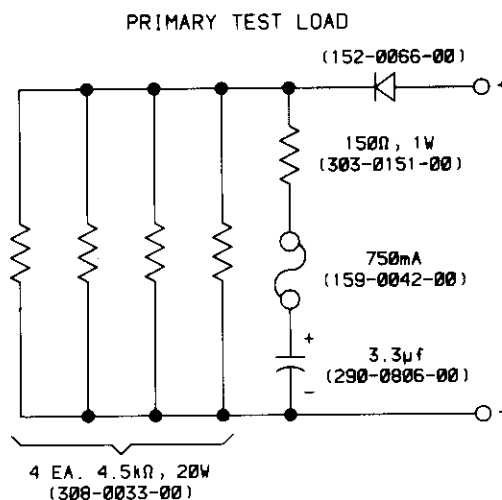
KERNEL NOP DIAGNOSTIC PROCEDURE



Power Supply Voltage Tolerances		
Power Supply	Test Point (+ Lead)	Reading
+10 V	J119-4	+9.99 to +10.01
+87 V	J119-8	+85.26 to +88.74
+42.4 V	J119-9	+41.55 to +43.25
+15 V	J119-6	+14.775 to +15.225
Digital +5 V	J119-2	+4.85 to +5.15
Analog +5 V	J119-12	+4.925 to +5.075
−5 V	J119-5	−4.965 to −5.035
−8 V	J119-11	−7.88 to −8.12
−15 V	J119-1	−14.775 to −15.225

Primary Test Load

The test load illustrated below may be used to test the operation of the Inverter with the output transformer (T1060) and drive transistors (Q1060 and Q1070) disconnected. Connect the + lead of the load to the lifted end of W1060 (see procedure in flowchart at right) and the - lead to the sources of Q1060 and Q1070. A schematic diagram of the load, showing the associated Tektronix part numbers, is given below.



+5 V_D Test Load

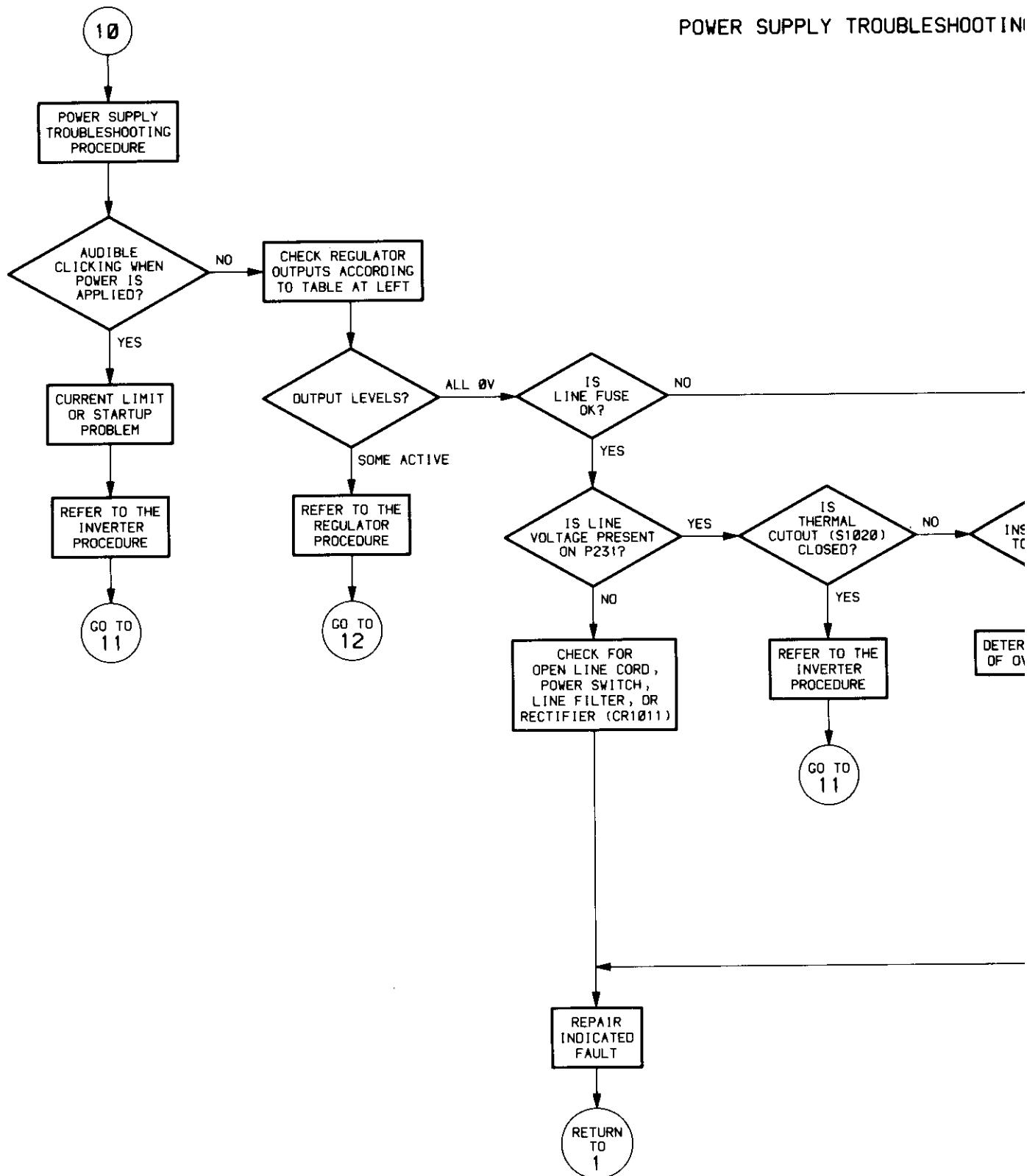
Some load is required for the Inverter to run. When the Power Supply module is removed from the instrument or when the Regulator Board is disconnected from the Inverter Board's output, the test load described below may be used to check operation of the Inverter.

NOTE

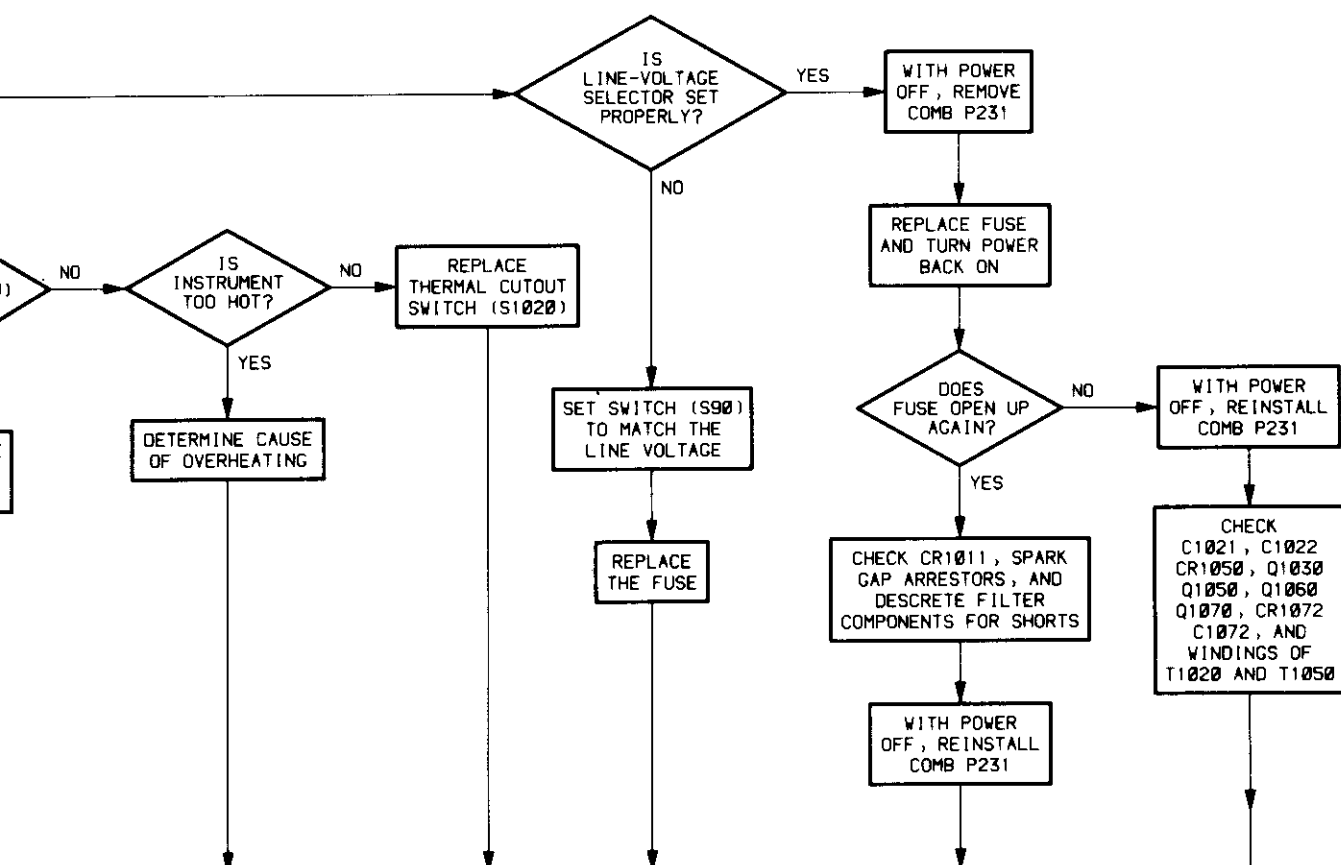
Each of the Regulators requires a load to regulate properly; this loading is not provided by the +5-V_D load.

TEST LOAD. Connect two 2-Ω, 25-watt resistors (Tektronix part number 308-0205-00) from the +5-V_D pins of J303 and J232 (on the Inverter Board) to ground.

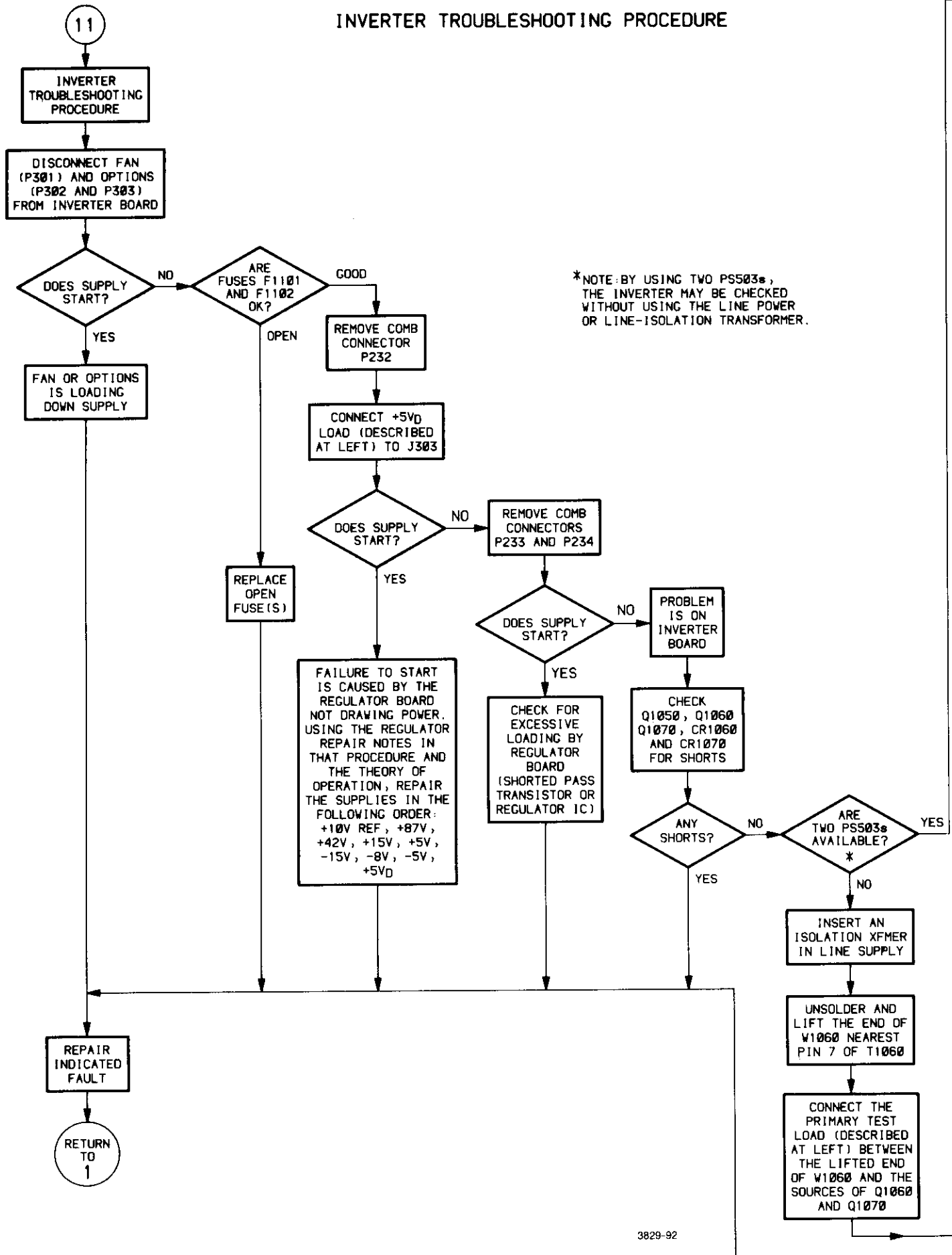
POWER SUPPLY TROUBLESHOOTING

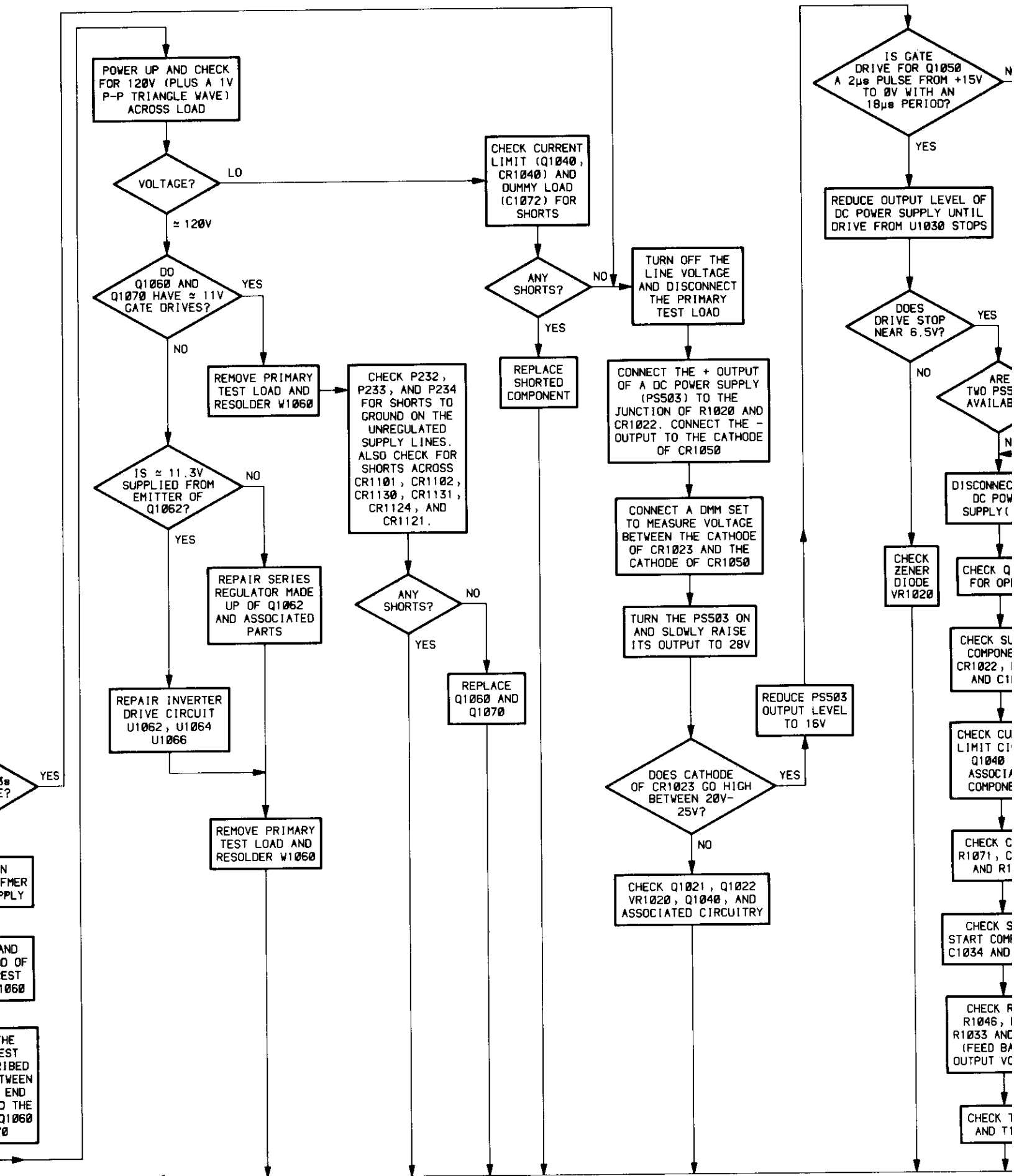


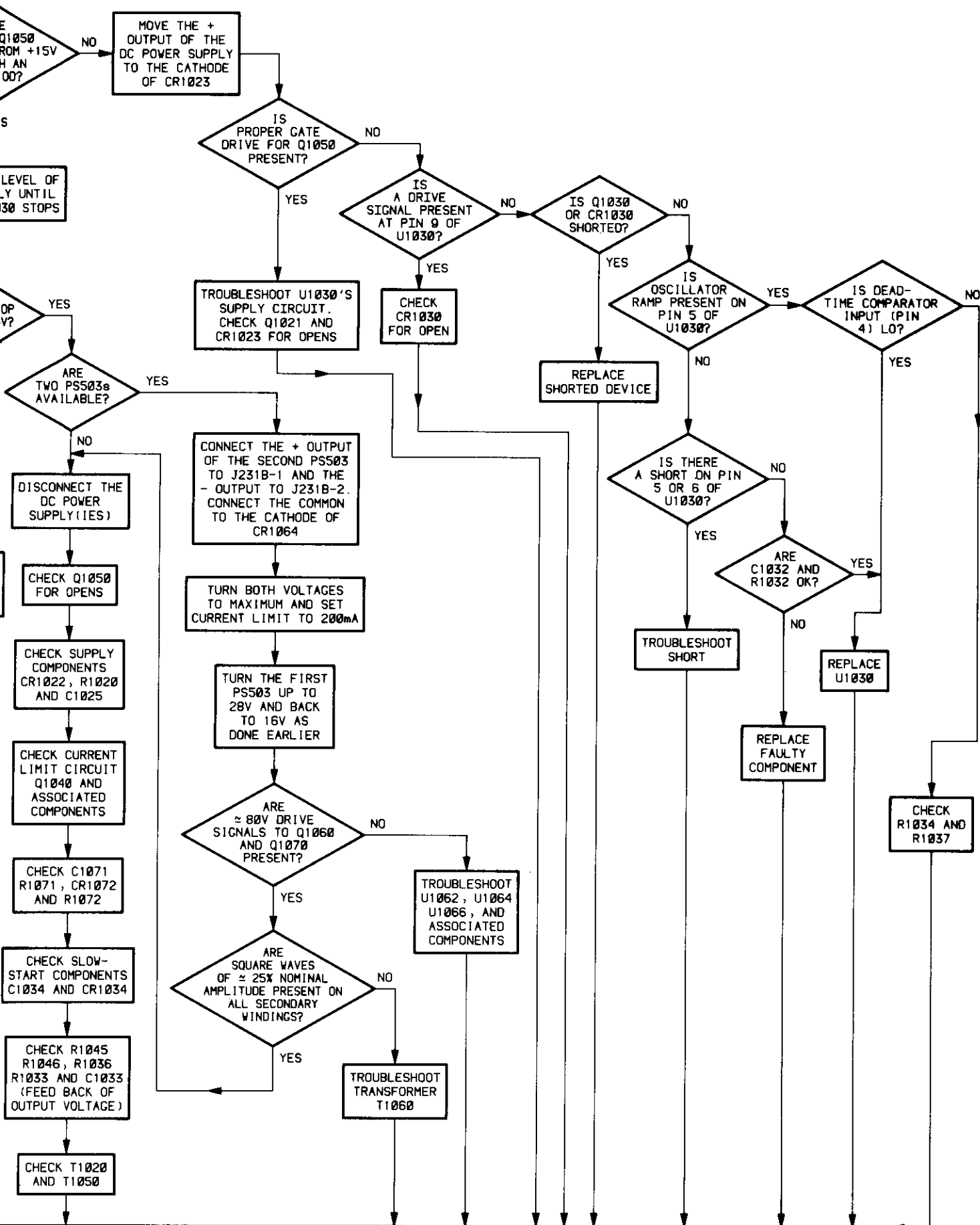
DOUBLESHOOTING PROCEDURE



INVERTER TROUBLESHOOTING PROCEDURE





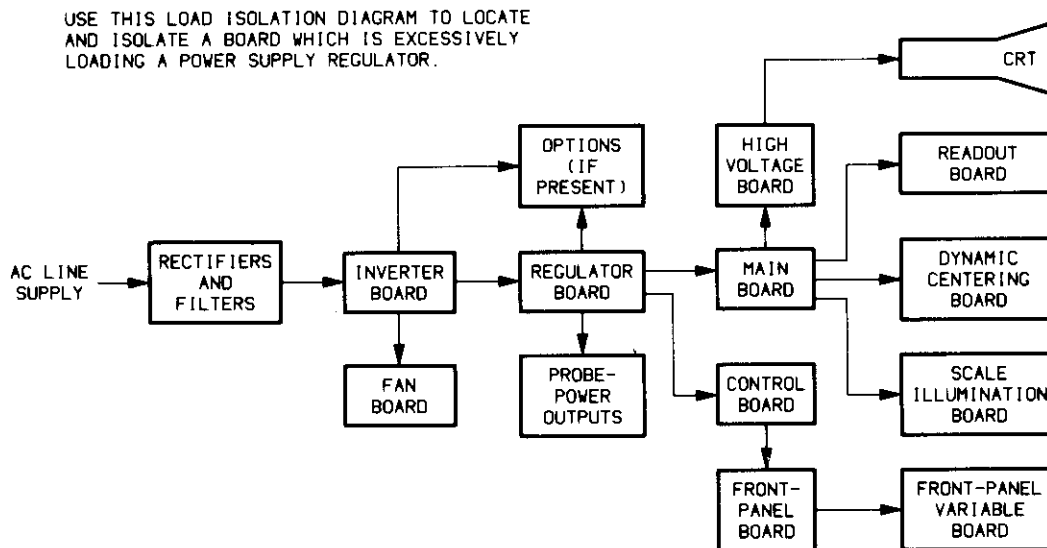


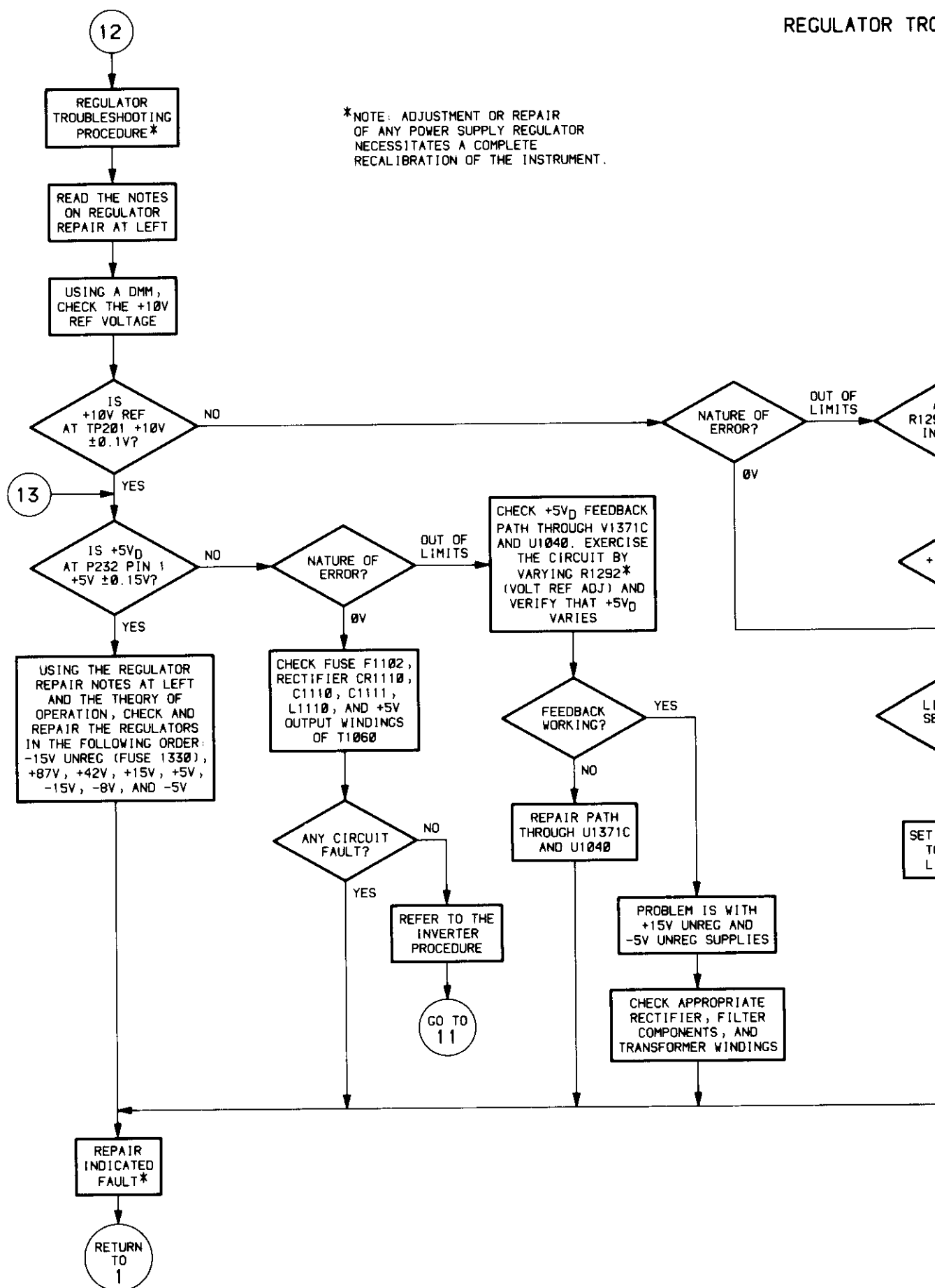
Regulator Repair Notes

Hints for troubleshooting a faulty supply Regulator:

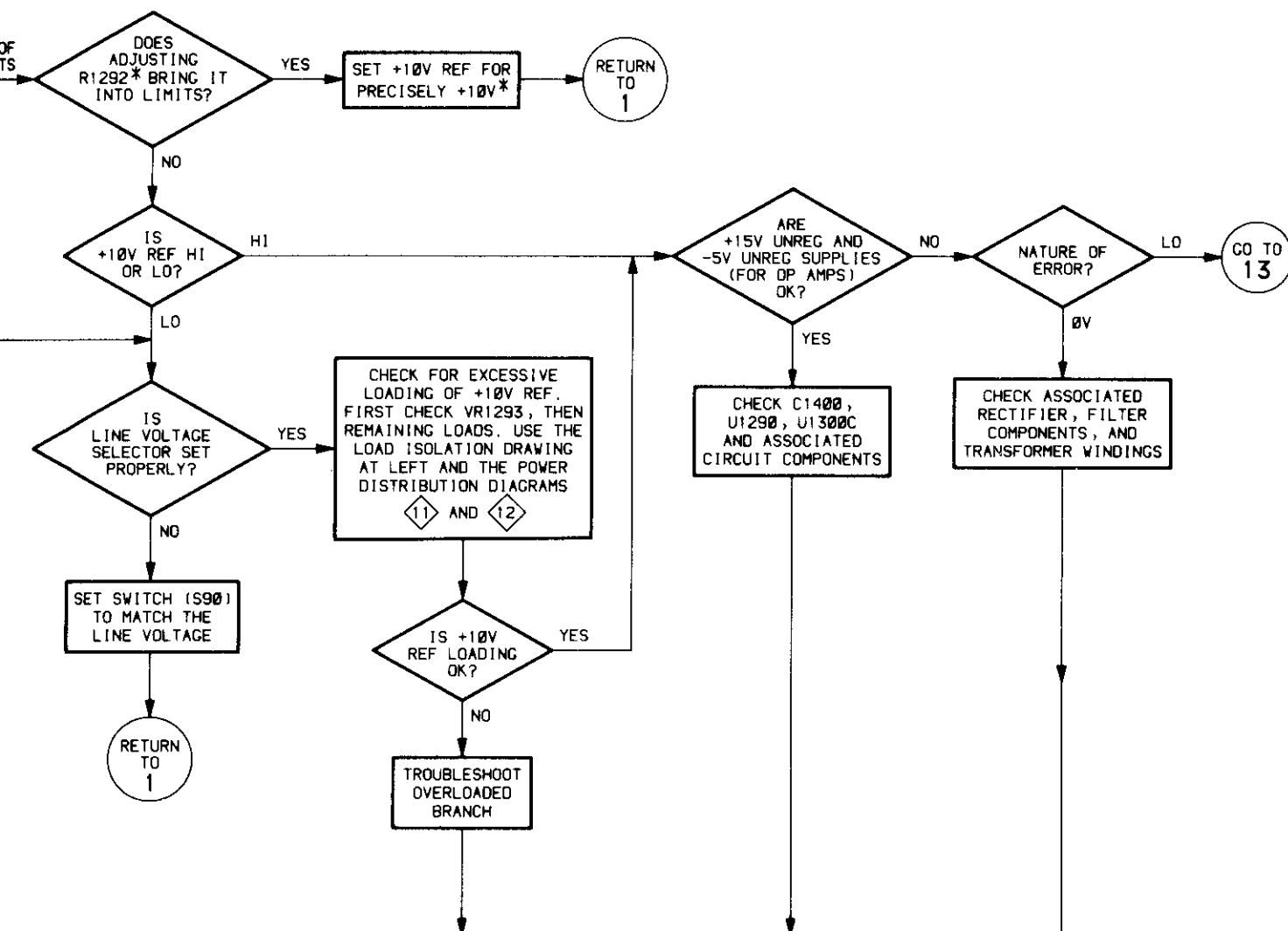
1. First verify that the $+10\text{-V}_{\text{REF}}$ level is correctly adjusted; if it is not, do so (see Adjustment Procedure in Section 5).
2. Regulator output is high:
 - a. Is the output loaded? All Regulators (except $+10\text{-V}_{\text{REF}}$) require some load to regulate, the lower voltage supplies requiring greater loads. The Regulators between $+15\text{ V}$ and -15 V may be loaded using $100\text{-}\Omega$ resistors of the proper power ratings.
 - b. Check for a short-circuited series-pass device.
 - c. Check feedback through the voltage-sense comparator.
3. Regulator output is low:
 - a. Check for excessive loading using the Load Isolation diagram below and the Interconnection Schematic (diagram 13).
 - b. The operation of the supply Regulators is interdependent. If a supply is out of regulation, verify that the supply of next greater magnitude is operating properly. Repair faulty Regulators in the following order: $+87\text{ V}$, $+42\text{ V}$, $+15\text{ V}$, $+5\text{ V}$, -15 V , -8 V , and then -5 V .
 - c. Verify that the current-limit circuit is not activated.
 - d. Check drive to series-pass device and verify that the device is not open circuited.
 - e. Check feedback through the voltage-sense comparator.
 - f. If supply goes low only when fully loaded, suspect an open-circuit diode in the associated rectifier circuit.

LOAD ISOLATION





REGULATOR TROUBLESHOOTING PROCEDURE



REPLACEABLE MECHANICAL PARTS

PARTS ORDERING INFORMATION

Replacement parts are available from or through your local Tektronix, Inc. Field Office or representative.

Changes to Tektronix instruments are sometimes made to accommodate improved components as they become available, and to give you the benefit of the latest circuit improvements developed in our engineering department. It is therefore important, when ordering parts, to include the following information in your order: Part number, instrument type or number, serial number, and modification number if applicable.

If a part you have ordered has been replaced with a new or improved part, your local Tektronix, Inc. Field Office or representative will contact you concerning any change in part number.

Change information, if any, is located at the rear of this manual.

SPECIAL NOTES AND SYMBOLS

X000 Part first added at this serial number
00X Part removed after this serial number

FIGURE AND INDEX NUMBERS

Items in this section are referenced by figure and index numbers to the illustrations.

INDENTATION SYSTEM

This mechanical parts list is indented to indicate item relationships. Following is an example of the indentation system used in the description column.

```

1 2 3 4 5      Name & Description
Assembly and/or Component
Attaching parts for Assembly and/or Component
    - - - * - - -
Detail Part of Assembly and/or Component
Attaching parts for Detail Part
    - - - * - - -
Parts of Detail Part
Attaching parts for Parts of Detail Part
    - - - * - - -
  
```

Attaching Parts always appear in the same indentation as the item it mounts, while the detail parts are indented to the right. Indented items are part of, and included with, the next higher indentation. The separation symbol - - - * - - - indicates the end of attaching parts.

Attaching parts must be purchased separately, unless otherwise specified.

ITEM NAME

In the Parts List, an Item Name is separated from the description by a colon (:). Because of space limitations, an Item Name may sometimes appear as incomplete. For further Item Name identification, the U.S. Federal Cataloging Handbook H6-1 can be utilized where possible.

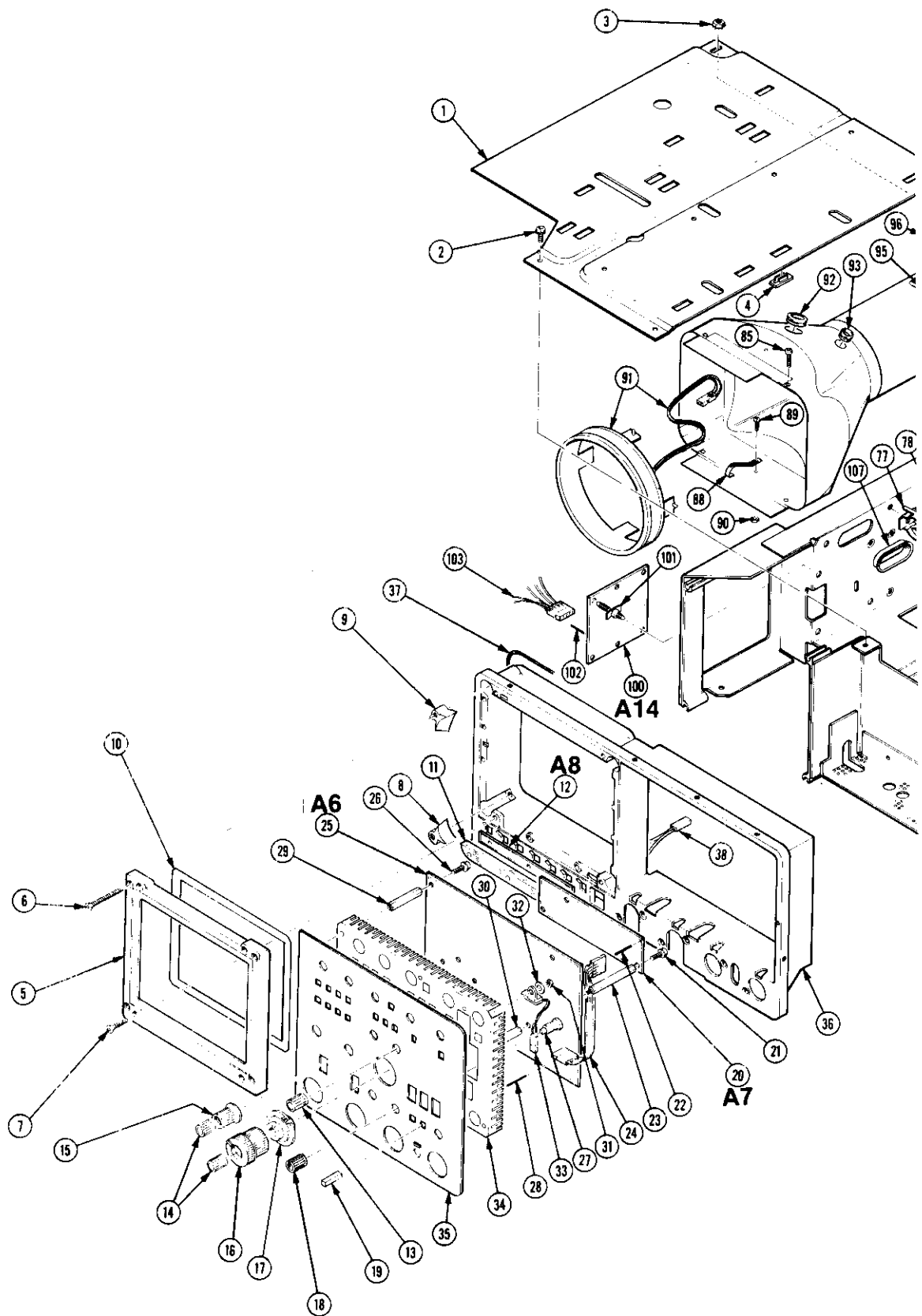
ABBREVIATIONS

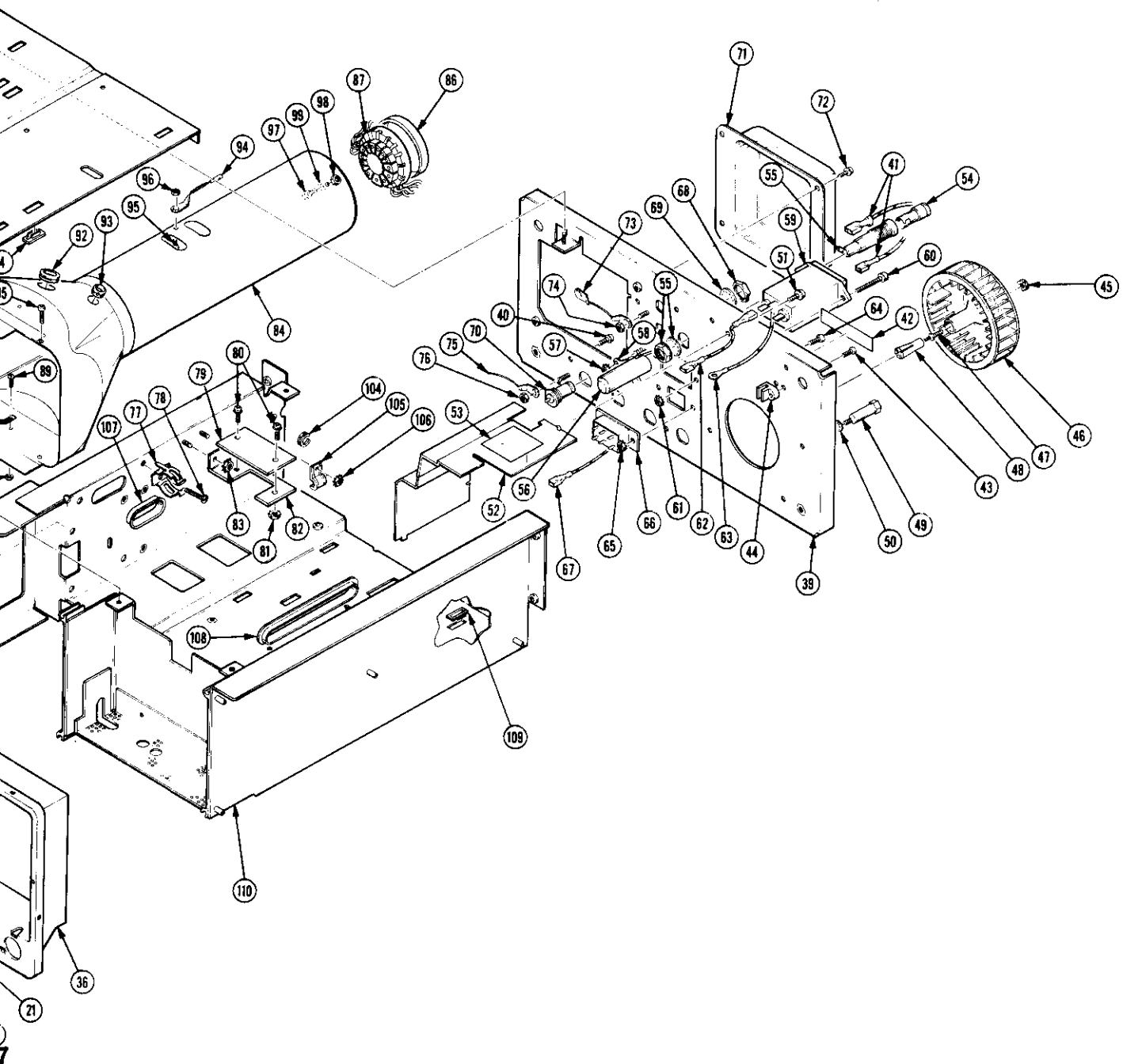
#	INCH	ELECTRN	ELECTRON	IN	INCH	SE	SINGLE END
ACTR	NUMBER SIZE	ELEC	ELECTRICAL	INCAND	INCANDESCENT	SECT	SECTION
ADPTR	ACTUATOR	ELECTLT	ELECTROLYTIC	INSUL	INSULATOR	SEMICON	SEMICONDUCTOR
ALIGN	ADAPTER	ELEM	ELEMENT	INTL	INTERNAL	SHLD	SHIELD
AL	ALIGNMENT	FPL	ELECTRICAL PARTS LIST	LPHLDR	LAMPHOLDER	SHLDR	SHOULDERED
ASSEM	ALUMINUM	EQPT	EQUIPMENT	MACH	MACHINE	SKT	SOCKET
ASSY	ASSEMBLED	EXT	EXTERNAL	MECH	MECHANICAL	SL	SLIDE
ATTEN	ASSEMBLY	FIL	FILLISTER HEAD	MTG	MOUNTING	SLFLKG	SELF-LOCKING
AWG	ATTENUATOR	FLX	FLEXIBLE	NIP	NIPPLE	SLVG	SLEEVING
BD	AMERICAN WIRE GAGE	FLH	FLAT HEAD	NON WIRE	NOT WIRE WOUND	SPR	SPRING
BRKT	BOARD	FLTR	FILTER	OBD	ORDER BY DESCRIPTION	SQ	SQUARE
BRS	BRACKET	FR	FRAME or FRONT	OD	OUTSIDE DIAMETER	SST	STAINLESS STEEL
BRZ	BRASS	FSTNR	FASTENER	OVH	OVAL HEAD	STL	STEEL
BSHG	BRONZE	FT	FOOT	PH BRZ	PHOSPHOR BRONZE	SW	SWITCH
CAB	BUSHING	FXD	FIXED	PL	PLAIN or PLATE	T	TUBE
CAP	CABINET	GSKT	GASKET	PLSTC	PLASTIC	TERM	TERMINAL
CER	CAPACITOR	HDL	HANDLE	PN	PART NUMBER	THD	THREAD
CHAS	CERAMIC	HEX	HEXAGON	PNH	PAN HEAD	THK	THICK
CKT	CHASSIS	HEX HD	HEXAGONAL HEAD	PWR	POWER	TNSN	TENSION
COMP	CIRCUIT	HEX SOC	HEXAGONAL SOCKET	RCPT	RECEPTACLE	TPG	TAPPING
CONN	COMPOSITION	HLCPS	HELICAL COMPRESSION	RES	RESISTOR	TRH	TRUSS HEAD
COV	CONNECTOR	HLEXT	HELICAL EXTENSION	RGD	RIGID	V	VOLTAGE
CPLG	COVER	HV	HIGH VOLTAGE	RLF	RELIEF	VAR	VARIABLE
CRT	COUPLING	IC	INTEGRATED CIRCUIT	RTRR	RETAINER	W	WITH
DEG	CATHODE RAY TUBE	ID	INSIDE DIAMETER	SCH	SOCKET HEAD	WSHR	WASHER
DWR	DEGREE	IDNT	IDENTIFICATION	SCOPE	OSCILLOSCOPE	XFMR	TRANSFORMER
	DRAWER	IMPLR	IMPELLER	SCR	SCREW	XSTR	TRANSISTOR

CROSS INDEX—MFR. CODE NUMBER TO MANUFACTURER

Mfr. Code	Manufacturer	Address	City, State, Zip
000BB	BERQUIST COMPANY	4350 WEST 78TH	MINNEAPOLIS, MN 55435
000BK	STAUFFER SUPPLY	105 SE TAYLOR	PORTLAND, OR 97214
000EL	PORTLAND SCREW CO.	6520 N. BASIN AVE.	PORTLAND, OR 97217
00779	AMP, INC.	P.O. BOX 3608	HARRISBURG, PA 17105
01121	ALLEN-BRADLEY COMPANY	1201 2ND STREET SOUTH	MILWAUKEE, WI 53204
01536	CAMCAR DIV OF TEXTRON INC. SEMS PRODUCTS UNIT	1818 CHRISTINA ST.	ROCKFORD, IL 61108
05006	TWENTIETH CENTURY PLASTICS, INC.	415 E WASHINGTON BLVD.	LOS ANGELES, CA 90015
06915	RICHCO PLASTIC CO.	5825 N. TRIPP AVE.	CHICAGO, IL 60646
06915	RICHCO PLASTIC CO.	5825 N. TRIPP AVE.	CHICAGO, IL 60646
09922	BURNDY CORPORATION	RICHARDS AVENUE	NORWALK, CT 06852
12327	FREEWAY CORPORATION	9301 ALLEN DRIVE	CLEVELAND, OH 44125
18565	CHOMERICS INC.	77 DRAGON COURT	WOBURN, MA 01801
22161	ADVANCE MACHINE CORP	10200 AVIATION BLVD	LOS ANGELES, CA 90045
22526	BERG ELECTRONICS, INC.	YOUK EXPRESSWAY	NEW CUMBERLAND, PA 17070
24931	SPECIALITY CONNECTOR CO., INC.	2620 ENDRESS PLACE	GREENWOOD, IN 46142
28817	CAL-METEX CORP., SUBSIDIARY OF METEX CORP.	509 HINDRY AVE.	INGLEWOOD, CA 90301
31918	IEE/SCHADOW INC.	8081 WALLACE ROAD	EDEN PRAIRIE, MN 55343
49671	RCA CORPORATION	30 ROCKEFELLER PLAZA	NEW YORK, NY 10020
50293	GENERAL ELECTRIC COMPANY, INSTALLATION AND SERVICE ENGINEERING DEPT.	1 RIVER ROAD	SCHENECTADY, NY 12306
54583	TDK ELECTRONICS CORP.	755 EASTGATE BLVD.	GARDEN CITY, NY 11530
70485	ATLANTIC INDIA RUBBER WORKS, INC.	571 W. POLK ST.	CHICAGO, IL 60607
71400	BUSSMAN MFG., DIVISION OF MCGRAW-EDISON CO.	2536 W. UNIVERSITY ST.	ST. LOUIS, MO 63107
73743	FISCHER SPECIAL MFG. CO.	446 MORGAN ST.	CINCINNATI, OH 45206
78189	ILLINOIS TOOL WORKS, INC.	ST. CHARLES ROAD	ELGIN, IL 60120
80009	SHAKEPROOF DIVISION	P O BOX 500	BEAVERTON, OR 97077
80033	TEKTRONIX, INC.	P. O. BOX 278,1345 MIAMI ST.	TOLEDO, OH 43605
82104	PRESTOLE EVERLOCK, INC.		
	STANDARD GRIGSBY CO., DIV. OF SUN CHEMICAL CORPORATION	920 RATHBONE AVENUE	AURORA, IL 60507
83385	CENTRAL SCREW CO.	2530 CRESCENT DR.	BROADVIEW, IL 60153
86928	SEASTROM MFG. COMPANY, INC.	701 SONORA AVENUE	GLENDALE, CA 91201
93907	TEXTRON INC. CAMCAR DIV	600 18TH AVE	ROCKFORD, IL 61101
95987	WECKESSER CO., INC.	4444 WEST IRVING PARK RD.	CHICAGO, IL 60641
S3109	C/O PANEL COMPONENTS CORP.	P.O. BOX 6626	SANTA ROSA, CA 95406
S3629	PANEL COMPONENTS CORP.	2015 SECOND ST.	BERKELEY, CA 94170
T0032	POWELL ELECTRONICS	411 FAIRCHILD DR.	MT. VIEW, CA 94040
T0171	ZEPHER ELECTRONICS	647 INDUSTRY DRIVE	SEATTLE, WA 98188
T0336	ANIXTER	P.O. BOX 88315 TUKWILA BRANCH	SEATTLE, WA 98188
T1105	J PHILLIP INDUSTRIES INC	5713 NORTHWEST HIGHWAY	CHICAGO, IL 60646
T1167	COLUMBINE PLASTICS	3195 BLUFF ST	BOULDER, CO
T1168	TEXSUN, INC	11368 W.OLYMPIC BLVD	LOS ANGELES, CA 90023
T1288	PRODUCTION PARTS INC	4288 SE INTERNATIONAL WAY	PORTLAND, OR 97222
T1302	MOUNTAIN MOULDING	606 SECOND ST	BERTHOUD, CO 80513

Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Discont	Qty	1	2	3	4	5	Name & Description	Mfr Code	Mfr Part Number
-1	334-4658-00			1						MARKER,IDENT:BLANK	80009	334-4658-00
-2	366-2041-01			4						KNOB::GY,BAR,0.172 ID X 0.410 OD	80009	366-2041-01
	377-0512-01			4						INSERT,KNOB:0.125 ID X 0.663 L,AL,0.247	80009	377-0512-01
	366-2036-00			1						PUSH BUTTON:GY,0.206 SQ,1.445 H	80009	366-2036-00
-3	333-2877-00			1						PANEL,FRONT:	80009	333-2877-00
-4	200-2779-00			1						COVER, TOP:TRIM	80009	200-2779-00
-5	348-0740-00			2						FOOT,CABINET:BOTTOM FRONT,PLASTIC ***** (ATTACHING PARTS) *****	80009	348-0740-00
-6	211-0718-00			2						SCREW,MACHINE:6-32 X 0.312,FLH,100 DEG ***** (END ATTACHING PARTS) *****	93907	ORD BY DESCR
-7	101-0082-00	B010100	B019999	1						TRIM,DECORATIVE:FRONT,PLASTIC	80009	101-0082-00
	101-0082-01	B020000								TRIM,DECORATIVE:FRONT,PLASTIC ***** (ATTACHING PARTS) *****	80009	101-0082-00
-8	211-0718-00			10						SCREW,MACHINE:6-32 X 0.312,FLH,100 DEG ***** (END ATTACHING PARTS) *****	93907	ORD BY DESCR
	214-3374-00	B010100	B011249	1						SPRING,FILTER:23 L	80009	214-3374-00
	214-3374-01	B011250		1						SPRING,FILTER:1.32 L,CU-BE		
-9	337-2926-00			1						SHLD,IMPLOSION:4.33 X 3.56 X 0.06,CLEAR	80009	337-2926-00
	378-0199-00			1						FILTER,LT,CRT:BLUE,4.1 X 3.32 X 0.03	80009	378-0199-00
-10	211-0720-00	B010100	B010999	1						SCR,ASSEM WSHR:6-32 X 0.50 PNH,TORX	01536	ORD BY DESCR
	211-0691-00	B011000		1						SCREW,MACHINE:6-32 X 0.625,PNH	01536	ORD BY DESCR
-11	343-0003-00			1						CLAMP,LOOP:0.25 ID,PLASTIC	95987	1-4-6B
-12	161-0104-00			1						CABLE ASSY,PWR,:3 WIRE,98.0 L,W/RTANG CONN (ALSO SEE STD ACCESS)	S3109	ORD BY DESCR
-13	334-4378-00			1						MARKER,IDENT:MKD PROBE POWER	80009	334-4378-00
-14	334-4381-00			1						MARKER,IDENT:MKD CONNECTOR IDENT	80009	334-4381-00
-15	334-4377-00	B010100	B013049	1						MARKER,IDENT:MKD CAUTION	80009	334-4377-00
	334-4377-02	B013050		1						MARKER,IDENT:MKD CAUTION	80009	334-4377-02
-16	348-0729-00			2						FOOT,CABINET:W/CORDWRAP,REAR,BLACK ***** (ATTACHING PARTS) *****	80009	348-0729-00
-17	212-0154-00			2						SCREW,MACHINE:8-32 X 1.125,PNH,TORX	93907	ORD BY DESCR
	211-0711-00			2						SCR,ASSEM WSHR:6-32 X 0.25 L,PNH,TORX ***** (END ATTACHING PARTS) *****	01536	ORD BY DESCR
-18	200-2685-00			1						COVER,REAR:	80009	200-2685-00
-19	334-4659-00			1						MARKER,IDENT:MKD TEKTRONIX	80009	334-4659-00
-20	367-0303-00	B010100	B010999	1						HANDLE,CARRYING:12.864 L,SST	80009	367-0303-01
	367-0303-02	B011000								HANDLE,CARRYING:12.704,SST ***** (ATTACHING PARTS) *****	80009	367-0303-02
-21	212-0144-00			2						SCREW,TPG,TF:8-16 X 0.562 L	93907	225-38131-012
-22	346-0195-00	B010100	B010999	2						STRAP,GROUND:STAINLESS STEEL ***** (END ATTACHING PARTS) *****	80009	346-0195-00
-23	437-0286-00			1						CABINET,SCOPE:ALUMINUM	80009	437-0286-00
	348-0764-01			AR						SHLD GSKT,ELEC:0.188 X 0.094,34.0 L		
	211-0721-00			2						SCREW,MACHINE:6-32 X 0.375,PNH,TORX	93907	ORD BY DESCR





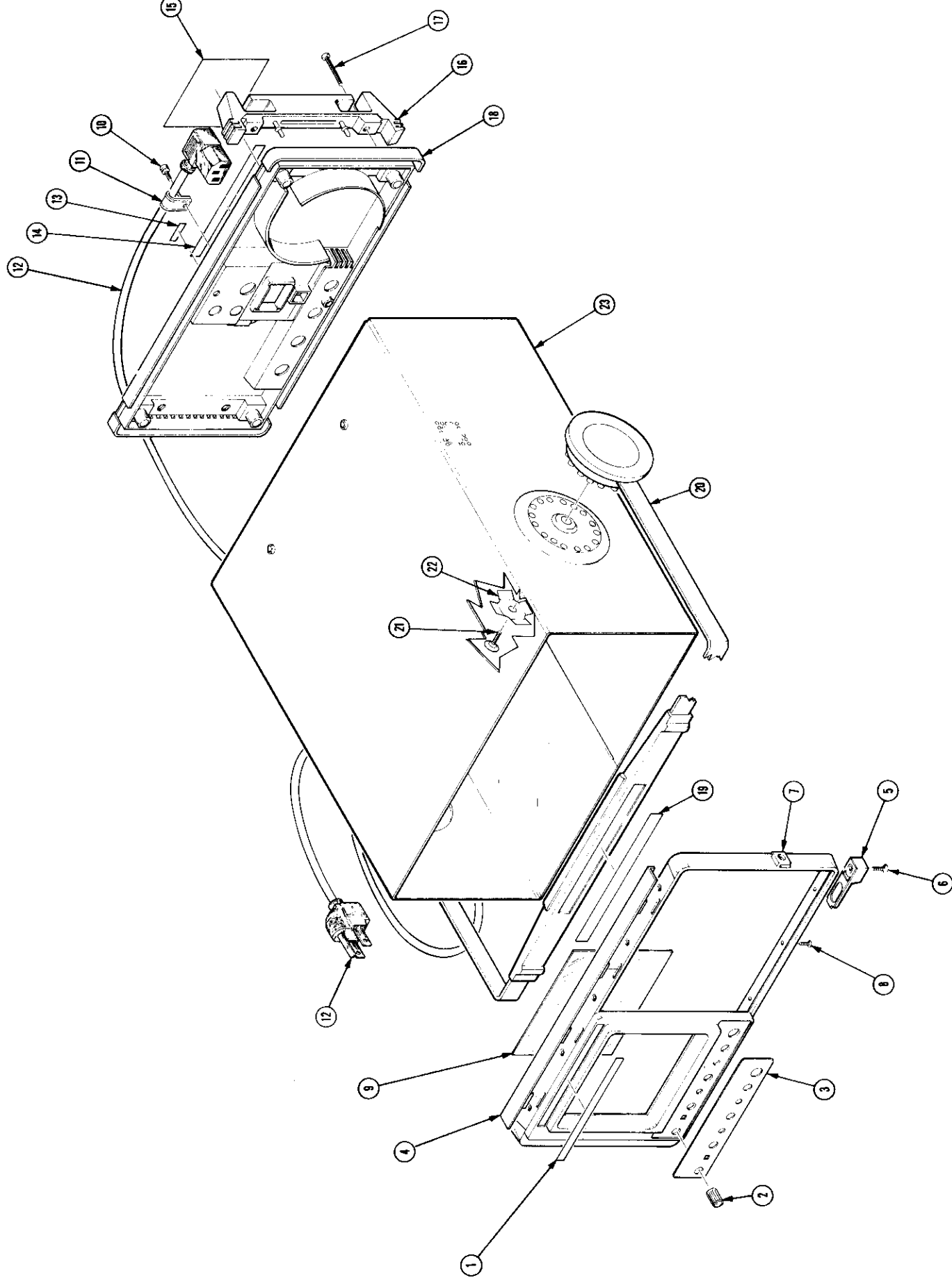


Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
2-1	407-2790-00			1		BRACKET,CKT BD:VERTICAL,ALUM ***** (ATTACHING PARTS) *****	80009	407-2790-00
-2	211-0711-00			4		SCR,ASSEM WSHR:6-32 X 0.25 L,PNH,TORX	01536	ORD BY DESCR
-3	210-0457-00			1		NUT,PL,ASSEM WA:6-32 X 0.312,STL CD PL ***** (END ATTACHING PARTS) *****	83385	ORD BY DESCR
-4	343-1012-00			1		RETAINER,CKT BD:	80009	343-1012-00
-5	426-1864-00			1		FRAME,CRT: ***** (ATTACHING PARTS) *****	80009	426-1864-00
-6	211-0713-00			4		SCREW,MACHINE:6-32 X 1.25,FLH,100 DEG,STL	93907	ORD BY DESCR
-7	213-0914-00			4		SCREW,TPG,TR:6-32 X 0.75,FLH,100 DEG,TOR ***** (END ATTACHING PARTS) *****	93907	ORD BY DESCR
-8	343-0992-00			2		RETAINER,CRT:RIGHT,PLASTIC (UPPER RT/LOWER LEFT/NAT)	80009	343-0992-00
-9	343-0993-00			2		RETAINER,CRT:PLASTIC (UPPER LEFT/LOWER RT/BLK)	80009	343-0993-00
-10	348-0731-00			1		GASKET:CRT	80009	348-0731-00
-11	378-0204-00			1		REFLECTOR,LIGHT:INT SCALE ILLUMINATION	80009	378-0204-00
-12	670-7280-00			1		CKT BOARD ASSY:SCALE ILLUMINATION (SEE A8 REPL)	80009	670-7280-00
	175-4593-00			1		.CA ASSY,SP,ELEC:2,26 AWG,4.0 L,RIBBON	80009	175-4593-00
-13	366-1833-00			3		KNOB:GRAY,0.25 ID X 0.392 X 0.39	80009	366-1833-00
-14	366-2145-01			3		KNOB:DOVE GY,TIME/DIV,0.08 ID X	80009	366-2145-01
-15	366-2038-00			2		KNOB:GY,0.25 ID X 0.706 OD X 0.6	80009	366-2038-00
-16	366-2039-00	B010100	B019999	1		KNOB:GY,B SWEEP,0.2 ID X 0.78 OD	80009	366-2039-00
	366-2039-01	B020000		1		KNOB:GY,B SWEEP	80009	366-2039-01
-17	366-2040-00			1		KNOB:CLEAR,A SWEEP,0.252 ID X 1.	80009	366-2040-00
-18	366-2041-01	B010100	B011999	7		KNOB:GY,BAR,0.172 ID X 0.410 OD	80009	366-2041-01
	366-2041-03	B012000		7		KNOB:DOVE GRAY,BAR,0.172 ID X 0.41 OD X 0.	80009	366-2041-03
-19	366-2017-00			16		KNOB:0.18 SQ X 0.644 H,IVORY GY (SUBPART OF A6 CKT BOARD)	80009	366-2017-00
-20	670-7284-00			1		CKT BOARD ASSY:FRONT PANEL VARIABLE (SEE A7 REPL)	80009	670-7284-00
-21	211-0304-00			3		SCREW,MACHINE:4-40 X 0.312,PNH ***** (ATTACHING PARTS) *****	01536	ORD BY DESCR
-22	131-0608-00			5		.TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-23	129-0941-00			2		SPACER,POST:1.86 L W/4-40 INT THD	80009	129-0941-00
-24	175-4597-00			1		.CA ASSY,SP,ELEC:5.26 AWG,4.0 L,RIBBON	80009	175-4597-00
-25				1		CKT BOARD ASSY:FRONT PANEL(SEE A6 REPL) (REPLACEABLE ONLY AS 672-1039-XX) ***** (ATTACHING PARTS) *****		
-26	211-0304-00			5		SCREW,MACHINE:4-40 X 0.312,PNH ***** (END ATTACHING PARTS) *****	01536	ORD BY DESCR
-27	377-0550-00			10		.INSERT,KNOB:0.178 ID X 0.640 THK,0.370	80009	377-0550-00
-28	131-0608-00	B010100	B019999	7		.TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
	131-0608-00	B020000		10		.TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
	352-0639-00			1		.HOLDER,LED:BLACK	80009	352-0639-00
	352-0641-00			2		.HOLDER,LED:FIVE,BLACK	80009	352-0641-00
	352-0642-00			1		.HOLDER,LED:FOUR,BLACK	80009	352-0642-00
-29	129-0938-00			5		SPACER,POST:1.102 L W/4-40 THD EACH END	80009	129-0938-00
-30	129-0978-00			2		SPACER,POST:0.375-32 AL,0.5 HEX	80009	129-0978-00
-31	220-0495-00			1		NUT,PLAIN,HEX:0.375-32 X 0.438 INCH BRS	73743	ORD BY DESCR
-32	210-0012-00			3		WASHER,LOCK:INTL,0.384 ID,INTL,0.022 TH (SEE CHASSIS PARTS S3185 REPL)	78189	1220-02-00-0541C
-33				-				
-34	354-0632-00	B010100	B019999	1		RING,MOUNTING:5.41 X 4.18	22161	OBD
	354-0632-01	B020000		1		RING,MOUNTING:5.41 X 4.18		
-35	333-2915-00	B010100	B019999	1		PANEL,FRONT:	80009	333-2915-00
	333-2915-01	B020000		1		PANEL,FRONT:2445		
	210-0077-00			2		WASHER,SPR TNSN:0.375 ID X 0.0025 OD	78189	3515-20-19-1744
	210-0586-00			3		NUT,PL,ASSEM WA:4-40 X 0.25,STL,CD PL	78189	211-041800-00
	214-3373-00			1		SPRING,GROUND:PHOSPHOR-BRONZE	80009	214-3373-00
	214-3428-00			2		SPRING,GROUND:VOLTS/DIV,SST	80009	214-3428-00
	348-0769-00			1		SHLD,GSKT,ELEK:TIME/DIV	80009	348-0769-00

Replaceable Mechanical Parts—2445 Service

Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
2-36	386-4728-00		1		SUBPANEL,FRONT:	80009	386-4728-00
-37	348-0276-00		AR		SHLD,GSKT,ELEK:0.026 OD NPRN W/WIRE NET CO	28817	01-0404-3719
-38	175-4593-00		1		CA ASSY,SP,ELEC:2.26 AWG,4.0 L,RIBBON	80009	175-4593-00
	-----		-		(SUBPART OF THE SUB-PANEL ASSEMBLY		
	-----		-		.NOT ILLUSTRATED)		
	175-4595-00		6		CA ASSY,SP,ELEC:3.22 AWG,2.0 L,RIBBON	80009	175-4595-00
					***** (ATTACHING PARTS) *****		
	210-0583-00		6		NUT,PLAIN,HEX:0.25-32 X 0.312 INCH,BRS	73743	2X20317-402
	210-0046-00		6		WASHER,LOCK:0.261 ID,INTL,0.018 THK,BRS	78189	1214-05-00-0541C
					***** (END ATTACHING PARTS) *****		
-39	386-4713-00	B010100	1	B019999	PLATE,REAR:POWER SUPPLY	80009	386-4713-00
	386-4713-01	B020000	1		PLATE,REAR:POWER SUPPLY		
					***** (ATTACHING PARTS) *****		
-40	211-0711-00		5		SCR,ASSEM WSHR:6-32 X 0.25 L,PNH,TORX	01536	ORD BY DESCR
					***** (END ATTACHING PARTS) *****		
	334-3379-00		1		MARKER,IDENT:MARKED GROUND SYMBOL	80009	334-3379-00
-41	195-3984-00		1		LEAD,ELECTRICAL:22 AWG,4.0 L,8-01	80009	195-3984-00
-42	334-4865-00		1		MARKER,IDENT:MKD FAN,CAUTION	80009	334-4865-00
-43	211-0304-00		2		SCREW,MACHINE:4-40 X 0.312,PNH	01536	ORD BY DESCR
-44	386-4863-00		1		SUPPORT,CKT BD:	80009	386-4863-00
-45	220-0555-00		1		NUT,PLAIN,HEX:8-32 X 0.25 INCH STL	000EL	ORD BY DESCR
-46	369-0043-01		1		IMPLR,FAN ASSY:2.8 DIA,0.25 DIA SHAFT	80009	369-0043-01
-47	355-0192-00		1		STUD,SHLDR & STEP:4-40 THD ONE END,8-32 TH	80009	355-0192-00
-48	343-1040-01		1		COLLAR,FAN MT:	80009	343-1040-01
-49	361-1188-00		4		SPACER,POST:1.15 L,4-40 THD 1 END	80009	361-1188-00
-50	210-0994-00		4		WASHER,FLAT:0.125 ID X 0.25" OD,STL	86928	5702-201-20
-51	211-0711-00		1		SCR,ASSEM WSHR:6-32 X 0.25 L,PNH,TORX	01536	ORD BY DESCR
-52	337-3021-00		1		SHIELD,ELEC:LUPS PEOPLE	80009	337-3021-00
-53	334-4759-00	B010100	1	B012699	MARKER,IDENT:MKD SHIELDS INVERTER	80009	334-4759-00
	334-5196-00	B012700	1		(STANDARD AND OPTIONS 05,06,09,10		
-54	200-0237-04		1		COVER,FUSE HLDR:PLASTIC,SAFETY CONTROLLED	80009	200-0237-04
-55	204-0832-00		1		BODY,FUSEHOLDER:3AG,5 X 20MM FUSES	S3629	031.1673(MDLFEU)
-56	200-2265-00		1		CAP,FUSEHOLDER:5 X 20MM FUSES	S3629	FEK 031.1663
					***** (ATTACHING PARTS) *****		
-57	210-0457-00		1		NUT,PL,ASSEM WA:6-32 X 0.312,STL CD PL	83385	ORD BY DESCR
					***** (END ATTACHING PARTS) *****		
-58	195-3984-00		1		LEAD,ELECTRICAL:22 AWG,4.0 L,8-01	80009	195-3984-00
	195-3986-00		1		LEAD,ELECTRICAL:18 AWG,4.0 L,8-0	80009	195-3986-00
-59	119-1536-00		1		FILTER,RFI:3A,250VAC,50/60 HZ	54583	ZUB2203-000
					***** (ATTACHING PARTS) *****		
-60	211-0332-00		2		SCR,ASSEM WSHR:4-40 X 0.5,PNH,TORX DRIVE	01536	ORD BY DESCR
-61	210-0586-00		2		NUT,PL,ASSEM WA:4-40 X 0.25,STL,CD PL	78189	211-041800-00
					***** (END ATTACHING PARTS) *****		
-62	195-3989-00		1		LEAD,ELECTRICAL:18 AWG,4.0 L,8-9	80009	195-3989-00
-63	195-3990-00		1		LEAD,ELECTRICAL:18 AWG,4.5 L,5-4	80009	195-3990-00
-64	211-0304-00		2		SCREW,MACHINE:4-40 X 0.312,PNH	01536	ORD BY DESCR
-65	210-0586-00		2		NUT,PL,ASSEM WA:4-40 X 0.25,STL,CD PL	78189	211-041800-00
-66	-----		1		(SEE S90 CHASSIS REPL)		
-67	195-3987-00		1		LEAD,ELECTRICAL:22 AWG,4.0 L,8-19	80009	195-3987-00
	195-3988-00		1		LEAD,ELECTRICAL:22 AWG,4.0 L,8-29	80009	195-3988-00
-68	-----		4		NUT,PLAIN,KNURL:(FURN WITH 131-1910-01 BNC		
-69	-----		4		WASHER,LOCK:(FURN WITH 131-1910-01 BNC'S)		
-70	131-1910-01		4		CONN,RCPT,ELEC:BNC,FEMALE	24931	28JR284-1
-71	200-2686-00		1		COVER,REAR:CRT	80009	200-2686-00
					***** (ATTACHING PARTS) *****		
-72	211-0711-00		1		SCR,ASSEM WSHR:6-32 X 0.25 L,PNH,TORX	01536	ORD BY DESCR
					***** (END ATTACHING PARTS) *****		
-73	195-8410-00		1		LEAD,ELECTRICAL:22 AWG,1.65 L	80009	195-8410-00
					***** (ATTACHING PARTS) *****		
-74	210-0551-00		1		NUT,PLAIN,HEX:4-40 X 0.25 INCH,STL	000BK	ORD BY DESCR
					***** (END ATTACHING PARTS) *****		
-75	195-9513-00		1		LEAD,ELECTRICAL:22 AWG,1.4 L	80009	195-9513-00
					***** (ATTACHING PARTS) *****		

Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
2-76	210-0551-00		1		NUT,PLAIN,HEX.:4-40 X 0.25 INCH,STL ***** (ATTACHING PARTS) *****	000BK	ORD BY DESCR
	131-1425-00		AR		TERM SET,PIN:(36) 0.025 SQ RTANG,0.15L	22526	65521-136
-77	344-0250-00		1		CLIP,ELECTRICAL:COMPONENT MOUNTING ***** (ATTACHING PARTS) *****	80033	E50005-007
-78	211-0504-00	B010100 B019999	1		SCREW,MACHINE:6-32 X 0.25 INCH,PNH STL	83385	ORD BY DESCR
	211-0722-00	B020000	1		SCREW,MACHINE:6-32 X 0.25 L,PNH,TORX ***** (END ATTACHING PARTS) *****		
-79	307-1154-00		1		PASSIVE NETWORK:CRT TERMINATOR,FINISHED ***** (ATTACHING PARTS) *****	80009	307-1154-00
-79	211-0324-00		2		SCR,ASSEM WSHR:4-40 X 0.188 L,PNH,TORX,MCH	01536	ORD BY DESCR
-81	210-0457-00		2		NUT,PL,ASSEM WA:6-32 X 0.312,STL CD PL ***** (END ATTACHING PARTS) *****	83385	ORD BY DESCR
-82	407-2809-00		1		BRACKET,ANGLE:RESISTOR,AL ***** (ATTACHING PARTS) *****	80009	407-2809-00
-83	210-0457-00		2		NUT,PL,ASSEM WA:6-32 X 0.312,STL CD PL ***** (END ATTACHING PARTS) *****	83385	ORD BY DESCR
	334-1379-00		1		LABEL:CRT,ADHESIVE BACK	80009	334-1379-00
	334-1951-00		1		MARKER,IDENT:CRT WARNING	80009	334-1951-00
-84	337-2931-00		1		SHIELD,CRT: ***** (ATTACHING PARTS) *****	80009	337-2931-00
-85	211-0324-00		4		SCR,ASSEM WSHR:4-40 X 0.188 L,PNH,TORX,MCH ***** (END ATTACHING PARTS) *****	01536	ORD BY DESCR
-86	200-0917-01		1		COV,ELECTRON TU:2.052 OD X 0.291" THK,PLST	80009	200-0917-01
-87	198-4603-00		1		WIRE SET,ELEC:	80009	198-4603-00
-88	214-0291-00		2		CONTACT,SPRING:1.188 X 0.375 X 0.25 INCH ***** (ATTACHING PARTS) *****	80009	214-0291-00
-89	211-0324-00		2		SCR,ASSEM WSHR:4-40 X 0.188 L,PNH,TORX,MCH	01536	ORD BY DESCR
-90	210-0586-00		2		NUT,PL,ASSEM WA:4-40 X 0.25,STL,CD PL ***** (END ATTACHING PARTS) *****	78189	211-041800-00
-91	119-1478-00	B010100 B020455	1		COIL,TUBE DEFL:FXD,TRACE ROTATION	80009	119-1478-00
	119-1478-01	B020456	1		COIL,TUBE DEFL:FXD TRACE REDUCTION	09250	ORD BY DESCR
-92	348-0762-00		1		GROMMET,PLASTIC:BLACK,ROUND,0.54 ID	T1302	ORD BY DESCR
-93	348-0004-00	B010100 B020455	1		GROMMET,RUBBER:0.281 ID X 0.563 INCH OD	70485	763
-94	195-6851-00		1		LEAD,ELECTRICAL:BRAIDED,1.65 L ***** (ATTACHING PARTS) *****	80009	195-6851-00
-95	211-0324-00		1		SCR,ASSEM WSHR:4-40 X 0.188 L,PNH,TORX,MCH	01536	ORD BY DESCR
-96	210-0551-00		1		NUT,PLAIN,HEX.:4-40 X 0.25 INCH,STL ***** (END ATTACHING PARTS) *****	000BK	ORD BY DESCR
	195-8410-00		1		LEAD,ELECTRICAL:22 AWG,1.65 L ***** (ATTACHING PARTS) *****	80009	195-8410-00
-97	211-0324-00		1		SCR,ASSEM WSHR:4-40 X 0.188 L,PNH,TORX,MCH	01536	ORD BY DESCR
-98	210-0551-00		1		NUT,PLAIN,HEX.:4-40 X 0.25 INCH,STL	000BK	ORD BY DESCR
-99	210-0994-00		1		WASHER,FLAT:0.125 ID X 0.25" OD,STL ***** (END ATTACHING PARTS) *****	86928	5702-201-20
-100	670-8000-00		1		CKT BOARD ASSY:DYNAMIC CENTERING (SEE A14 REPL) ***** (ATTACHING PARTS) *****	80009	670-8000-00
-101	361-0067-00		3		.SPACER,CKT BD:0.187,NYLON	06915	LCBS-3M
	211-0711-00		1		.SCR,ASSEM WSHR:6-32 X 0.25 L,PNH,TORX	01536	ORD BY DESCR
	129-0208-00	B020000	1		.SPACER,POST:0.312" LONG,6-32 ONE END	80009	129-0208-00
	343-1131-00	B020000	1		.CLAMP,LOOP:0.547 X 0.144 ID,METAL ***** (END ATTACHING PARTS) *****		
-102	131-0608-00		5		.TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-103	175-8010-00		1		CA ASSY,SP,ELEC:5.22 AWG,10.5 L,RIBBON	80009	175-8010-00
-104	348-0757-00		2		GROMMET,PLASTIC:BLACK U SHAPE,0.25 ID	80009	348-0757-00
-105	343-0081-00		1		STRAP,RETAINING: ***** (ATTACHING PARTS) *****	95987	3/16-H
-106	210-0457-00		1		NUT,PL,ASSEM WA:6-32 X 0.312,STL CD PL ***** (END ATTACHING PARTS) *****	83385	ORD BY DESCR
-107	348-0073-00		1		HINGE BLOCK,STA:L FR,R REAR,BLACK ACETAL	80009	348-0073-00
-108	348-0751-00		1		GROMMET,PLASTIC:BLACK,3.11 X 0.645 OBLONG	80009	348-0751-00
-109	343-1012-00		1		RETAINER,CKT BD:	80009	343-1012-00
-110	441-1618-00	B010100 B019999	1		CHASSIS,SCOPE:MAIN	80009	441-1618-00
	441-1618-01	B020000	1		CHASSIS,SCOPE:MAIN		

Replaceable Mechanical Parts—2445 Service

Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
3-1	337-2932-00		1		SHIELD,ELEC:HIGH VOLTAGE ***** (ATTACHING PARTS) *****		
-2	211-0304-00		4		SCREW,MACHINE:4-40 X 0.312,PNH ***** (END ATTACHING PARTS) *****	01536	ORD BY DESCR
	334-4750-00		1		MARRKER,IDENT:MKD HIGH VOLTAGE	80009	334-4750-00
-3	-----		1		CKT BOARD ASSY:HIGH VOLTAGE		
	-----		-		(SEE A9 REPL) ***** (ATTACHING PARTS) *****		
-4	361-1188-00		6		SPACER,POST:1.15 L,4-40 THD 1 END ***** (END ATTACHING PARTS) *****	80009	361-1188-00
-5	131-0592-00		14		.CONTACT,ELEC:0.885 INCH LONG	22526	47353
-6	131-0589-00		13		.TERMINAL,PIN:0.46 L X 0.025 SQ	22526	48283-029
-7	352-0661-00		1		.HOLDER,TERMINAL:17 SQUARE PINS	T1167	OBD
	175-4596-00		1		CA ASSY,SP,ELEC:5.22AWG,7.0 L, RIBBON	T0171	OBD
	348-0763-00		1		GROMMET,PLASTIC:NATURAL,OVAL 1.235 ID	80009	348-0763-00
-8	175-4581-00		1		CA ASSY,SP,ELEC:26.28 AWG,5.0 L,RIBBON	80009	175-4581-00
-9	-----		1		CKT BOARD ASSY:BUS MONITOR		
	-----		-		(SEE A4 REPL)		
-10	131-0608-00		7		.TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-11	175-4583-00		1		CA ASSY,SP,ELEC:26.28 AWG,2.5 L	80009	175-4583-00
-12	-----		1		CKT BOARD ASSY:DIGITAL CONTROL		
	-----		-		(SEE A5 REPL) ***** (ATTACHING PARTS) *****		
-13	211-0711-00		4		SCR,ASSEM WSHR:6-32 X 0.25 L,PNH,TORX ***** (END ATTACHING PARTS) *****	01536	ORD BY DESCR
-14	131-0993-00		1		.BUS,CONDUCTOR:2 WIRE BLACK	00779	850100-01
-15	131-0608-00		122		.TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-16	136-0757-00		1		.SKT,PL-IN ELEK:MICROCKT,40 PIN	09922	DILB40P-108
-17	136-0755-00		4		.SKT,PL-IN ELEK:MICROCIRCUIT,28 DIP	09922	DILB28P-108
	334-4759-00		1		.MARKER,IDENT:MKD SHIELDS INVERTER	80009	334-4759-00
-18	337-2978-00		1		SHIELD,ELEC:LOW VOLTAGE POWER SUPPLY ***** (ATTACHING PARTS) *****	80009	337-2978-00
-19	211-0711-00		2		SCR,ASSEM WSHR:6-32 X 0.25 L,PNH,TORX	01536	ORD BY DESCR
-20	211-0304-00		2		SCREW,MACHINE:4-40 X 0.312,PNH ***** (END ATTACHING PARTS) *****	01536	ORD BY DESCR
-21	407-2830-00		1		BRKT,CMPNT MTG:CAP & MOTOR,LEFT,PLASTIC ***** (ATTACHING PARTS) *****	80009	407-2830-00
-22	211-0332-00		2		SCR,ASSEM WSHR:4-40 X 0.5,PNH,TORX DRIVE ***** (END ATTACHING PARTS) *****	01536	ORD BY DESCR
-23	407-2829-00		1		BRKT,CMPNT MTG:CAP & MOTOR,RIGHT,PLASTIC ***** (ATTACHING PARTS) *****	80009	407-2829-00
-24	210-0586-00		3		NUT,PL,ASSEM WA:4-40 X 0.25,STL,CD PL ***** (END ATTACHING PARTS) *****	78189	211-041800-00
-25	129-0304-00		1		INSULATOR,STDF:0.25 OD X 1.23 INCH LONG	80009	129-0304-00
-26	407-2854-00		1		BRACKET,ANGLE:TRANSISTOR,ALUM ***** (ATTACHING PARTS) *****	80009	407-2854-00
-27	210-0586-00		2		NUT,PL,ASSEM WA:4-40 X 0.25,STL,CD PL ***** (END ATTACHING PARTS) *****	78189	211-041800-00
-28	343-1025-00		3		RETAINER,XSTR: ***** (ATTACHING PARTS) *****	80009	343-1025-00
-29	210-0406-00		3		NUT,PLAIN,HEX:4-40 X 0.188,BRS,CD PL ***** (END ATTACHING PARTS) *****	73743	12161-50
-30	342-0582-00		3		INSULATOR,PLATE:TRANSISTOR,CERAMIC	80009	342-0582-00
-31	388-8016-01		1		CKT BOARD:INVERTER TRANS	80009	388-8016-01
-32	195-6852-00		1		LEAD,ELECTRICAL:18 AWG,2.375 L,8-4 ***** (ATTACHING PARTS) *****	80009	195-6852-00
-33	210-0586-00		1		NUT,PL,ASSEM WA:4-40 X 0.25,STL,CD PL ***** (END ATTACHING PARTS) *****	78189	211-041800-00
-34	-----		3		TRANSISTOR:MOSFE,N-CHANNEL,SI,TO-220 (SEE A3Q1050,Q1060,Q1070 REPL) ***** (ATTACHING PARTS) *****		
-35	210-0586-00		3		NUT,PL,ASSEM WA:4-40 X 0.25,STL,CD PL ***** (END ATTACHING PARTS) *****	78189	211-041800-00

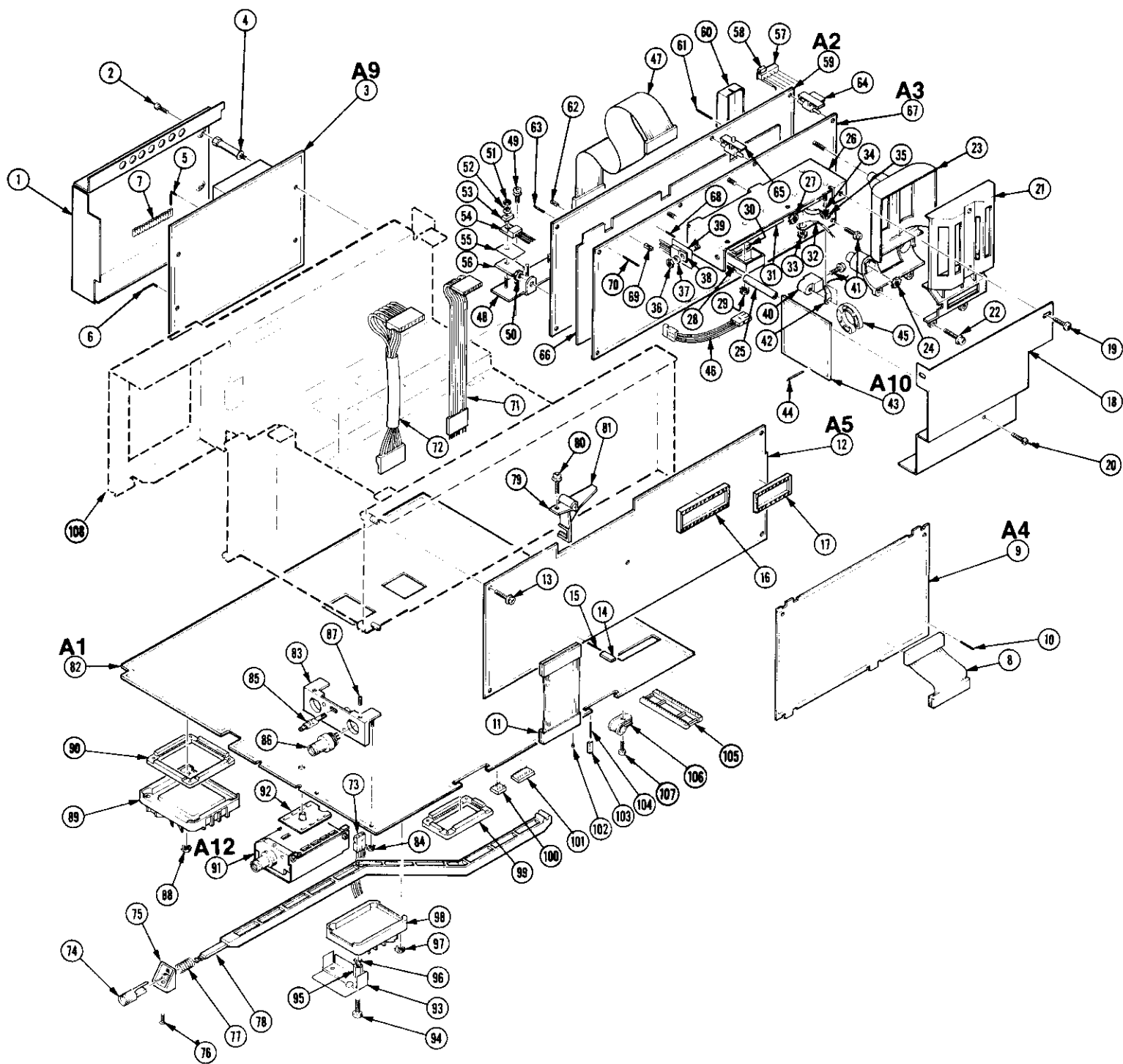
Fig. & Index	Tektronix Part No.	Serial/Model No. Eff	Discont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
3-36	210-0406-00			1		NUT,PLAIN,HEX:4-40 X 0.188,BRS,CD PL	73743	12161-50
-37	210-1002-00			1		WASHER,FLAT:0.125 ID X 0.25 INCH OD,BRS	12327	ORD BY DESCR
	210-1178-00			1		WASHER,SHLDR:U/W T0-220 TRANSISTOR	49671	DF137A
-38	-----			1		SEMICONV DEVICE:RECT,SI,10A,30V		
	-----			-		(SEE A3CR1110 REPL)		
-39	342-0354-00			1		INSULATOR,PLATE:TRANSISTOR,SILICON RUBBER	000BB	7403-10-52
-40	129-0912-00			1		SPACER,POST:0.62 L W 6/32 THD ONE END	80009	129-0912-00
						*****ATTACHING PARTS*****		
-41	211-0711-00			3		SCR,ASSEM WSHR:6-32 X 0.25 L,PNH,TORX	01536	ORD BY DESCR
						*****END ATTACHING PARTS*****		
-42	195-9720-00	B010100	B011299	1		LEAD,ELECTRICAL:18 AWG,1.4 L,5-4	80009	195-9720-00
	195-9720-01	B011300		1		LEAD,ELECTRICAL:18 AWG,2.4 L,0-N	80009	195-9720-01
-43	-----			1		CKT BOARD ASSY:FAN MOTOR		
	-----			-		(SEE A10 REPL)		
-44	131-0608-00			3		.TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-45	361-1187-00			1		.SPACER,FAN:0.125,POLYPHENYLENE	80009	361-1187-00
-46	175-4728-00			1		CA ASSY,SP,ELEC:2.22 AWG,8.0 L,RIBBON	80009	175-4728-00
-47	175-4585-00			1		CA ASSY,SP,ELEC:20,28 AWG,13.0 L	80009	175-4585-00
-48	407-2825-00			1		BRACKET,ANGLE:TRANSISTOR MTG	80009	407-2825-00
						*****ATTACHING PARTS*****		
-49	211-0711-00			3		SCR,ASSEM WSHR:6-32 X 0.25 L,PNH,TORX	01536	ORD BY DESCR
-50	210-0586-00			2		NUT,PL,ASSEM WA:4-40 X 0.25,STL,CD PL	78189	211-041800-00
						*****END ATTACHING PARTS*****		
-51	210-0406-00			6		NUT,PLAIN,HEX:4-40 X 0.188,BRS,CD PL	73743	12161-50
-52	210-1307-00			6		WASHER,LOCK:0.115 ID,SPLIT,0.025 THK	86928	A384-25N
-53	342-0536-00			6		INSULATOR,XSTR:T0-220,POLYENELENE	80009	342-0536-00
-54	-----			4		TRANSISTOR:SILICON,NPN		
	-----			-		(SEE A2Q1220,Q1240,Q1280,Q1300 REPL)		
	-----			2		MICROCIRCUIT,L:VOLTAGE REGULATOR		
	-----			-		(SEE A2U1260,U1330 REPL)		
-55	342-0563-00			6		INSULATOR,PLATE:TRANSISTOR,FIBERGLAS	18565	69-11-8805-1674
-56	361-1207-00			6		SPACER,PLATE:0.550 X 0.812,ALUM	80009	361-1207-00
-57	131-2779-00			3		CONN,PLUG,ELEC:CKT BD,1 X 5 MALE,0.15 SP	22526	65306-XXX
	131-2780-00			1		CONN,PLUG,ELEC:CKT BD,1 X 3 MALE,0.15 SP	22526	65306-007
-58	343-1067-00	B010100	B019999	4		RTNR,ELEC CONN:POLY,BLACK	80009	343-1067-00
	343-1067-01	B020000		4		RTNR,ELEC CONN:POLY,BLACK	80009	343-1067-01
-59	-----			1		CKT BOARD ASSY:REGULATOR		
	-----			-		(SEE A2 REPL-AVAILABLE AS 672-1037-XX ONLY		
-60	200-2735-00			1		.COVER,POWER SW:	80009	200-2735-00
-61	131-0608-00			16		.TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-62	136-0263-04			18		.SOCKET,PIN TERM:FOR 0.025 INCH SQ PIN	22526	75377-001
-63	-----			4		.TERM QIK DISC:CKT BD MNT,0.11 X 0.02		
	-----			-		(SEE A2P204,P205,P206,P207 REPL)		
-64	129-0976-00			1		SPACER,POST:0.86 L X 6-32,POLY,0.3	80009	129-0976-00
-65	361-1132-00	B010100	B019999	6		SPACER,CKT BD:A	80009	361-1132-00
	361-1132-01	B020000		4		SPACER,CKT BD:A POLYCARBONATE		
-66	388-8092-00	B010100	B019999	1		CIRCUIT BOARD:SHIELD, LOW VOLT PWR SUPPLY		
	337-3059-00	B020000		1		SHIELD,ELEC:LVPS	80009	337-3059-00
-67	-----			1		CKT BOARD ASSY:INVERTER		
	-----			-		(SEE A3 REPL-AVAILABLE AS 672-1037-XX ONLY		
-68	131-0608-00			7		.TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-69	136-0263-04			18		.SOCKET,PIN TERM:FOR 0.025 INCH SQ PIN	22526	75377-001
-70	131-0589-00			4		.TERMINAL,PIN:0.46 L X 0.025 SQ	22526	48283-029
	343-1099-00	B020000		1		.RTNR, POWER SUPPLY:LOW VOLTAGE, FRONT PC	T1168	ORD BY DESCR
						*****ATTACHING PARTS*****		
	211-0711-00	B020000	B020449	4		.SCR,ASSEM WSHR:6-32 X 0.25 L,PNH,TORX	01536	ORD BY DESCR
	211-0722-00	B020450		4		.SCREW,MACHINE:6-32 X 0.25 L,PNH,TORX		
	210-0006-00	B020450		4		.WASHER,LOCK:#6 INTL,0.018 THK,STL CD PL	78189	1206-00-00-0541C
						*****END ATTACHING PARTS*****		
	276-0525-00	B011700		1		.CORE,FERRITE:0.196 ID X 0.437"OD	01121	T037C351A
-71	175-4594-00			1		CA ASSY,SP,ELEC:7.22 AWG,7.0 L,RIBBON	80009	175-4594-00
-72	175-4598-00			1		CA ASSY,SP,ELEC:8.26 AWG,7.0 L,RIBBON	80009	175-4598-00
-73	175-4595-00			1		CA ASSY,SP,ELEC:3.22 AWG,2.0 L,RIBBON	80009	175-4595-00
-74	366-1767-00			1		PUSH BUTTON:BLACK,YELLOW INDICATOR	31918	FA201

Replaceable Mechanical Parts—2445 Service

Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
3-75	407-2904-00	B010100	B014137	1	BRACKET,EXT SFT:ABS	80009	407-2904-00
	407-2904-01	B014138		1	BRACKET,CONN:CENTER	80009	407-2904-01
-76	211-0718-00	B010100	B014137	1	SCREW,MACHINE:6-32 X 0.312,FLH,100 DEG	93907	ORD BY DESCR
	211-0500-00	B014138		1	SCREW,MACHINE:6-32 X 0.375,FLH,100 DEG	93907	ORD BY DESCR
-77	214-3328-00			1	SPRING,HLCPS:0.37 OD X 0.7 L,CLOSED ENDS	80009	214-3328-00
-78	384-1631-00			1	EXTENSION SHAFT:12.897 L X 0.375 OD,PLSTC	80009	384-1631-00
-79	407-2800-00			1	BRACKET,PIVOT:EXTENSION SHAFT,PLASTIC	80009	407-2800-00
					*****ATTACHING PARTS*****		
-80	211-0711-00			1	SCR,ASSEM WSHR:6-32 X 0.25 L,PNH,TORX	01536	ORD BY DESCR
					*****END ATTACHING PARTS*****		
-81	407-2803-00			1	BRACKET,PVT ARM:EXTENSION SHAFT,PLASTIC	80009	407-2803-00
-82	-----			1	CKT BOARD ASSY:MAIN		
	-----			-	(SEE A1 REPL)		
-83	386-4735-00			1	.PLATE,CMPNT MTG:ALUM	80009	386-4735-00
					*****ATTACHING PARTS*****		
-84	210-0586-00			2	.NUT,PL,ASSEM WA:4-40 X 0.25,STL,CD PL	78189	211-041800-00
					*****END ATTACHING PARTS*****		
	361-0382-00			2	.SPACER,PB SW:BROWN,0.275 INCH LONG	80009	361-0382-00
	361-0719-00			2	.SPACER,SLEEVE:0.092 ID X 0.062 IL,PLASTIC	82104	10-0144/0622
-85	131-2716-01			1	.TERMINAL,CAL:	80009	131-2716-01
-86	131-0679-02			2	.CONNECTOR,RCPT,:BNC,MALE,3 CONTACT	24931	28JR270-1
					*****ATTACHING PARTS*****		
-87	213-0006-00			2	.SETSCREW:8-32 X 0.188 INCH,HSS STL	50293	28701-98C-3B
					*****END ATTACHING PARTS*****		
-88	210-0586-00			36	.NUT,PL,ASSEM WA:4-40 X 0.25,STL,CD PL	78189	211-041800-00
-89	-----			9	.MICROCIRCUIT,LI:(A1U700 SHOWN, ALSO SEE		
	-----			-	.A1U100,A1U200,U300,U400,U500,U600,U900,		
					.U950 REPL)		
-90	136-0764-00			6	.SKT,PL-IN ELEK:48 LINE CONT IMPD HYBRID	80009	136-0764-00
	119-1445-01			1	.ATTENUATOR,VAR:PROGRAMMABLE 1X-100X,CH1	80009	119-1445-01
	-----			-	(SEE A11 REPL)		
-91	119-1445-02			1	.ATTENUATOR,VAR:PROGRAMMABLE 1X-100X,CH2	80009	119-1445-02
	-----			-	(SEE A12 REPL)		
-92	351-0677-00			2	.GUIDE,MAG CATCH:BLACK POLY	80009	351-0677-00
-93	337-3031-00			1	.SHIELD,ELEC:PRE-AMP	80009	337-3031-00
					*****ATTACHING PARTS*****		
-94	211-0324-00			2	.SCR,ASSEM WSHR:4-40 X 0.188 L,PNH,TORX,MC	01536	ORD BY DESCR
					*****END ATTACHING PARTS*****		
-95	129-0985-00	B010100	B019999	5	.SPACER,POST:0.350 L,W/4-40 THD THRU	T1288	OBD
	129-0098-00	B020000		5	.POST,ELEC-MECH:0.250 HEX,X0.406 INCH L,BR	80009	129-0098-00
-96	210-0003-00			2	.WASHER,LOCK:#4 EXT,0.015 THK,STL	78189	1104-00-00-0541C
-97	210-0586-00			4	.NUT,PL,ASSEM WA:4-40 X 0.25,STL,CD PL	78189	211-041800-00
	214-2270-00			2	.SPRING,GROUND:CRT TO SHIELD	80009	214-2270-00
					*****ATTACHING PARTS*****		
	211-0324-00			2	.SCR,ASSEM WSHR:4-40 X 0.188 L,PNH,TORX,MC	01536	ORD BY DESCR
					*****END ATTACHING PARTS*****		
	384-0617-00			1	.SPACER,POST:0.375 L X 0.25 HEX	80009	384-0617-00
	129-0985-00			1	.SPACER,POST:0.350 L,W/4-40 THD THRU	T1288	OBD
-98	214-0973-00			1	.HEAT SINK,ELEC:0.28 X 0.18 OVAL X 0.187"H	80009	214-0973-00
-99	136-0757-00			1	.SKT,PL-IN ELEK:MICROCKT,40 PIN	09922	DILB40P-108
-100	136-0727-00			2	.SKT,PL-IN ELEK:MICROCKT,8 CONTACT	09922	DILB8P-108
-101	136-0728-00			1	.SKT,PL-IN ELEK:MICROCKT,14 CONTACT	09922	DILB14P-108
-102	136-0252-07			32	.SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
-103	131-0993-00			7	.BUS,CONDUCTOR:2 WIRE BLACK	00779	850100-01
-104	131-0608-00			142	.TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-105	136-0763-00			3	.SKT,PL-IN ELEK:26 LINE CONT IMPD HYBRID	80009	136-0763-00
	195-3985-00			2	.LEAD,ELECTRICAL:22 AWG,1.7 L,9-N	T0171	OBD
	195-3991-00	B010100	B019999	1	.LEAD,ELECTRICAL:22 AWG,3.5 L,0-N	T0032	ORD BY DESCR
	195-3991-01	B020000		1	.LEAD,ELECTRICAL:22 AWG,3.5 L,0-N		
	195-6500-00	B010100	B019999	1	.LEAD,ELECTRICAL:STRD,22 AWG,300V,WHITE,2.	80009	195-6500-00
	195-6500-01	B020000		1	.LEAD,ELECTRICAL:STRD,22 AWG,300V,WHITE,2.		
	175-8010-00	B010100	B019999	1	.CA ASSY,SP,ELEC:5,22 AWG,10.5 L,RIBBON	80009	175-8010-00
	175-8010-01	B020000		1	.CA ASSY,SP,ELEC:5,22 AWG,10.5 L,RIBBON	80009	175-8010-01

Replaceable Mechanical Parts—2445 Service

Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
3-	195-6851-00	B010100	B019999	1		.LEAD,ELECTRICAL:BRAIDED,1.65 L	80009	195-6851-00
	195-6851-01	B020000		1		.LEAD,ELECTRICAL:BRAIDED,1.65 L	80009	195-6851-01
	175-2054-00	B011400		1		.WIRE,ELECTRICAL:SOLID,30 AWG,BLACK,KYNAR	T0336	1422 (30)-1
-106	343-0144-00			1		CLAMP,LOOP:0.125 INCH ID,BLK NYLON ***** (ATTACHING PARTS) *****	95987	1-8-2
-107	211-0714-00	B010100	B014137	1		SCREW,TPG,TR:4-40 X 0.625,PNH,TORX	83385	ORD BY DESCR
	211-0720-00	B014138		1		SCR,ASSEM WSHR:6-32 X 0.50 PNH,TORX ***** (END ATTACHING PARTS) *****	01536	ORD BY DESCR
-108	-----			1		CHASSIS,SCOPE:MAIN		
	-----			-		(ALSO SEE FIG. 2 RMPL)		



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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff Dscont	Qty	1	2	3	4	5	Name & Description	Mfr Code	Mfr Part Number
STANDARD ACCESSORIES											
4-1	010-6131-01		2						PROBE,VOLTAGE:P6131,10X W/ACCESSORIES	80009	010-6131-01
-2	200-2742-00		1						COVER,PROT:FRONT PANEL	80009	200-2742-00
-3	159-0021-00		1						FUSE,CARTRIDGE:3AG,2A,250V,FAST-BLOW	71400	AGC 2
-4	378-0199-00		1						FILTER,LT.CRT:BLUE,4.1 X 3.32 X 0.03	80009	378-0199-00
-5	016-0537-00		1						POUCH,ACCESSORY:VINYL,W/ZIPPER	05006	ZIP-6X91D
	016-0692-01		1						POUCH ASSEMBLY:2445/2465	80009	016-0692-01
-6	016-0692-00		1						.POUCH,ACCESSORY:	80009	016-0692-00
-7	386-4849-00		1						.PLATE,MOUNTING::ACCY POUCH,ALUM	80009	386-4849-00
	070-3829-00		1						MANUAL,TECH:SERVICE,2445 OSCILLOSCOPE	80009	070-3829-00
	070-3830-00		1						MANUAL,TECH:OPERATORS,2445 OSCILLOSCOPE	80009	070-3830-00
	070-4178-00		1						CARD,INFO:REF	80009	070-4178-00
	070-4366-00		1						SHEET,TECHNICAL:INSTR,016-0691-00 RACK	80009	070-4366-00
	070-4180-00		1						CARD,INFO:REF	80009	070-4180-00
	070-4210-00								MANUAL,TECH:	80009	070-4210-00
OPTIONAL ACCESSORIES											
	015-0227-00								ACCESSORY KIT:2,P6131 PROBE,VOLT,W/ACC &	80009	015-0227-00
	016-0720-00								COVER,PROT:NYLON	80009	016-0720-00
	346-0058-00								FASTENER,STRAP:CARRYING	80009	346-0058-00
	346-0199-00								STRAP,CARRYING:		
	161-0167-00								CABLE ASSY,PWR:3.0 X 0.75,6A,240V,2.5M	S3109	ORD BY DESCR
	-----								(OPT A5 SWITZERLAND)		
	161-0104-06								CABLE ASSY,PWR:3 X 0.75MM SQ,220V,98.0L	S3109	ORD BY DESCR
	-----								(EUROPEAN OPT.A1)		
	161-0104-07								CABLE ASSY,PWR:3 X 0.75MM SQ,240V,98.0 L	S3109	ORD BY DESCR
	-----								(UNITED KINGDOM OPT. A2)		
	161-0104-05								CABLE ASSY,PWR:3,18 AWG,240V,98.0 L	S3109	ORD BY DESCR
	-----								(AUSTRALIAN OPT.A3)		
	161-0104-08								CABLE ASSY,PWR:3,18 AWG,240V,98.0 L	T1105	ORD BY DESCR
	-----								(NORTH AMERICAN OPT.A4)		

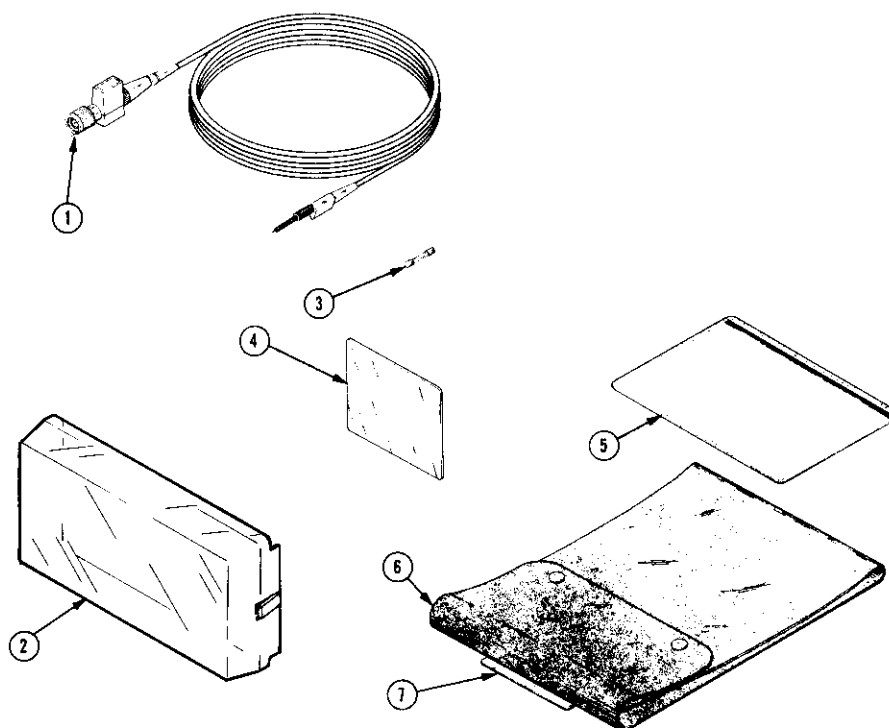


Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff Dscont	Qty	1	2	3	4	5	Name & Description	Mfr Code	Mfr Part Number
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STANDARD ACCESSORIES

4-1	010-6131-01		2						PROBE, VOLTAGE: P6131, 10X W/ACCESSORIES	80009	010-6131-01
-2	200-2742-00		1						COVER, PROT: FRONT PANEL	80009	200-2742-00
-3	159-0098-00		1						FUSE, CARTRIDGE: DIN, 1.6A	75915	212 01.6
-4	378-0208-00		1						FILTER, LT, CRT: CLEAR, 4.105 X3.415	80009	378-0208-00
-5	016-0537-00		1						POUCH, ACCESSORY: VINYL, W/ZIPPER	05006	ZIP-6X91D
	016-0692-01		1						POUCH ASSEMBLY: 2445/2465	80009	016-0692-01
-6	016-0692-00		1						. POUCH, ACCESSORY: 2465/2445	80009	016-0692-00
-7	386-4849-00		1						. PLATE, MOUNTING: ACCY POUCH, ALUM	80009	386-4849-00
	070-3829-00		1						MANUAL, TECH: SERVICE, 2445 OSCILLOSCOPE	80009	070-3829-00
	070-3830-00		1						MANUAL, TECH: OPERATORS, 2445 OSCILLOSCOPE	80009	070-3830-00
	070-4180-00		1						CARD, INFO: REF	80009	070-4180-00

OPTIONAL ACCESSORIES

4-1	010-6131-01								PROBE, VOLTAGE: P6131, 10X W/ACCESSORIES	80009	010-6131-01
	016-0720-00								COVER, PROT: NYLON	80009	016-0720-00
	346-0058-00								FASTENER, STRAP: CARRYING	80009	346-0058-00
	161-0104-05								CABLE ASSY, PWR: 3, 18 AWG, 240V, 98.0 L (AUSTRALIAN)	86221	OBD
	161-0104-06								CABLE ASSY, PWR: 3 X 0.75MM SQ, 220V, 98.0L (EUROPEAN)	80126	OBD
	161-0104-07								CABLE ASSY, PWR: 3 X 0.75MM SQ, 240V, 98.0 L (UNITED KINGDOM)	80126	OBD
	159-0172-00								. FUSE, CARTRIDGE: TYPE C, 13 AMP	S3629	PCC-1089
	161-0104-08								CABLE ASSY, PWR: 3, 18 AWG, 240V, 98.0 L	80126	OBD

2445 SERVICE

ACCESSORIES

MANUAL CHANGE INFORMATION

At Tektronix, we continually strive to keep up with latest electronic developments by adding circuit and component improvements to our instruments as soon as they are developed and tested.

Sometimes, due to printing and shipping requirements, we can't get these changes immediately into printed manuals. Hence, your manual may contain new change information on following pages.

A single change may affect several sections. Since the change information sheets are carried in the manual until all changes are permanently entered, some duplication may occur. If no such change pages appear following this page, your manual is correct as printed.

Date: 2-10-84

Change Reference: C4/1083 REV2

Product: 2445 SERVICE

Manual Part No.: 070-3829-00

DESCRIPTION

PG 38

NOTE

The following changes are in effect for all instruments serial numbered B020000 and above (unless noted otherwise).

REPLACEABLE ELECTRICAL PARTS LIST CHANGES

CHANGE TO:

A1	670-7285-06	CKT BOARD ASSY: MAIN	M52083
----		(OPTIONS 01,05,06,09 OR 1B ONLY)	
A1	670-7285-08	CKT BOARD ASSY: MAIN	M52083
----		(STANDARD)	
A2 & A3	672-1037-02	CKT BOARD ASSY: LV/POWER SUPPLY MODULE	PC132
A6	672-1039-02	CKT BOARD ASSY: FR PNL MODULE	B014138 M53017
A1C102	290-0973-00	CAP,FXD,ELCTLT: 100UF,20%,25VDC	B010800 PC93
A1C203	281-0862-00	CAP,FXD,CER DI: 0.001UF,+80-20%,100V	M51123
A1C203	283-0811-00	CAP,FXD,CER DI: 0.01UF,20%,100V	B020115 PC20
----		(OPTIONS 01,05,06,09, OR 1B ONLY)	
A1C513	283-0479-00	CAP,FXD,CER DI: 0.47UF,+80-20%,25V	PC132
A1C537	283-0479-00	CAP,FXD,CER DI: 0.47UF,+80-20%,25V	PC132
A1C660	281-0851-00	CAP,FXD,CER DI: 180PF,5%,100V	PC132
A1C731	290-0944-00	CAP,FXD,ELCTLT: 220UF,+50-10%,10V	B010800 PC93
A1C912	283-0421-00	CAP,FXD,CER DI: 0.1UF,+80-20%,50V	PC132
A1Q624	151-1025-00	TRANSISTOR: FET,N-CHAN,SI	PC132
A1R155	321-0206-00	RES,FXD,FILM: 1.37K OHM,1%,0.125W	PC132
A1R194	315-0103-00	RES,FXD,CMPSN: 10K OHM,5%,0.25W	PC132
A1R403	311-2099-00	RES,VAR,NONWIR: TRMR,500 OHM,10%,0.5W	PC132
A1R456	321-0329-00	RES,FXD,FILM: 26.1K OHM,1%,0.125W	M51123
A1R461	321-0139-00	RES,FXD,FILM: 274 OHM,1%,0.125W	M51123
A1R462	321-0201-00	RES,FXD,FILM: 1.21K OHM,1%,0.125W	M51123
A1R463	321-0193-00	RES,FXD,FILM: 1K OHM,1%,0.125W	M51123
A1R622	321-0255-00	RES,FXD,FILM: 4.42K OHM,1%,0.125W	M51123
A1R736	321-0197-00	RES,FXD,FILM: 1.1K OHM,1%,0.125W	PC132
A1R743	315-0102-00	RES,FXD,CMPSN: 1K OHM,5%,0.25W	PC132
A1R802	315-0821-00	RES,FXD,CMPSN: 820 OHM,5%,0.25W	M51123
A1R803	315-0222-00	RES,FXD,CMPSN: 2.2K OHM,5%,0.25W	M51123
A1R805	311-1242-00	RES,VAR,NONWW: TRMR,200K OHM,0.5W	PC132
A1R941	315-0561-00	RES,FXD,CMPSN: 560 OHM,5%,0.25W	PC132
A1U500	155-0239-01	MICROCKT,LINEAR: TRIGGER	PC15
----		(OPTION 01,05,06,09, OR 1B ONLY)	
A1U950	155-0242-01	MICROCKT,LINEAR: Z AXIS AUTOFOCUS	B011100 PC111
A4U2930	160-1631-02	MICROCKT,DGTL: 4096 X 8 EPROM,PRGM	PC137
A6DS3329	150-1105-00	LT EMITTING DIODE: YELLOW,30MA	B014138 M53017
A6R3350	307-0695-00	RES NTKW,FXD,FI: 9,150 OHM,2%,0.2W EA	B014138 M53017
A6S3185	260-2108-01	SWITCH,PUSH: SPDT,0.1A,125VAC	B014138 M53017
A6W651	175-8419-00	CA ASSY,SP,ELEC: 26,28 AWG,2.5L,RIBBON	B014138 M53017
A6W652	175-8418-00	CA ASSY,SP,ELEC: 20,36 AWG,8.0L,RIBBON	B014138 M53017
A9R1922	315-0331-03	RES,FXD,CMPSN: 330 OHM,5%,0.25W	B010800 PC130

REMOVE:

A1C303	281-0547-00	CAP,FXD,CER DI: 2.7PF,10%,500V	PC132
A1C312	281-0547-00	CAP,FXD,CER DI: 2.7PF,10%,500V	PC132
A1C450	283-0421-00	CAP,FXD,CER DI: 0.1UF,+80-20%,50V	PC132
A1C454	283-0421-00	CAP,FXD,CER DI: 0.1UF,+80-20%,50V	PC132
A1R121	315-0121-00	RES,FXD,CMPSN: 120 OHM,5%,0.25W	PC132
A1R216	315-0121-00	RES,FXD,CMPSN: 120 OHM,5%,0.25W	PC132
A1R511	321-0320-00	RES,FXD,FILM: 21K OHM,1%,0.125W	PC132
A1R512	321-0293-00	RES,FXD,FILM: 11K OHM,1%,0.125W	PC132

DESCRIPTION

REPLACEABLE ELECTRICAL PARTS LIST CHANGES (cont)

REMOVE (cont)

A1R737	321-0255-00	RES,FXD,FILM: 4.42K OHM,1%,0.125W	PC132
A1W194	131-0566-00	BUS CONDUCTOR: DUMMY RES,2.375,22AWG	PC132
A3R1101	307-0103-00	RES,FXD,CMPSN: 2.7 OHM,5%,0.25W	PC136
A3R1102	307-0103-00	RES,FXD,CMPSN: 2.7 OHM,5%,0.25W	PC136
A6R3327	315-0151-00	RES,FXD,CMPSN: 150 OHM,5%,0.25W	B014138 M53017

ADD:

A1C405	281-0122-00	CAP,VAR,CER DI: 2.5-9PF,100V	M50513
A1C967	281-0783-00	CAP,FXD,CER DI: 0.1UF,20%,100V	PC132
A1C980	281-0421-00	CAP,FXD,CER DI: 0.1UF,20%,50V	M50513
A1CR503	152-0141-02	SEMICON DVC,DI: SW,SI,30V,150MA	PC132
A1R405	315-0470-00	RES,FXD,CMPSN: 47 OHM,5%,0.25W	M50513
A1R431	315-0470-00	RES,FXD,CMPSN: 47 OHM,5%,0.25W	M50513
A1R466	321-0275-00	RES,FXD,FILM: 7.15K OHM,1%,0.125W	M51123
A1R503	315-0103-00	RES,FXD,CMPSN: 10K OHM,5%,0.25W	PC132
A1R504	315-0103-00	RES,FXD,CMPSN: 10K OHM,5%,0.25W	PC132
A1R901	315-0112-00	RES,FXD,CMPSN: 1.1K OHM,5%,0.25W	PC132
A1R902	315-0112-00	RES,FXD,CMPSN: 1.1K OHM,5%,0.25W	PC132
A1R903	315-0472-00	RES,FXD,CMPSN: 4.7K OHM,5%,0.25W	PC132
A1R939	315-0332-00	RES,FXD,CMPSN: 3.3K OHM,5%,0.25W	PC132
A1R942	321-0256-00	RES,FXD,FILM: 4.53K OHM,1%,0.125W	PC132
A2J203	131-2925-00	CONN,RCPT,ELEC: CKT BD,1 X 6,0.2 SPACING	
A3J303	131-2926-00	CONN,RCPT,ELEC: CKT BD,1 X 2,0.2 SPACING	
A3W1101	131-0566-00	BUS CONDUCTOR: DUMMY RES,2.375,22AWG	PC136
A3W1102	131-0566-00	BUS CONDUCTOR: DUMMY RES,2.375,22AWG	PC136
A6DS3357	150-1109-00	LT EMITTING DIODE: GREEN,30MA	B014138 M53017
A6DS3356	150-1109-00	LT EMITTING DIODE: GREEN,30MA	B014138 M53017
A6DS3355	150-1109-00	LT EMITTING DIODE: GREEN,30MA	B014138 M53017
A6DS3332	150-1109-00	LT EMITTING DIODE: GREEN,30MA	B014138 M53017
A6DS3328	150-1105-00	LT EMITTING DIODE: YELLOW,30MA	B014138 M53017
A6R3325	315-0151-00	RES,FXD,CMPSN: 150 OHM,5%,0.25W	B014138 M52017
A6R3329	315-0151-00	RES,FXD,CMPSN: 150 OHM,5%,0.25W	B014138 M53017

REPLACEABLE MECHANICAL PARTS LIST CHANGES

CHANGE TO:

FIG. #	PART #	QTY	DESCRIPTION	
1-7	101-0082-01	1	TRIM,DECORATIVE: FRONT,PLASTIC	PC139
2-28	131-0608-00	10	TERMINAL,PIN: 0.365 L X 0.025 PH BRZ GOLD	
2-34	354-0632-01	1	RING,MOUNTING: 5.41 X 4.18,BRASS	B014138 M53017
2-35	333-2915-01	1	PANEL,FRONT:	B014138 M53017
2-39	386-4713-01	1	PLATE,REAR: POWER SUPPLY	PC143
2-110	441-1618-01	1	CHASSIS,SCOPE: MAIN	PC139
3-65	361-1132-01	4	SPACER,CKT BD: A POLYCARBONATE	PC143
3-66	337-3059-00	1	SHIELD,ELEC: LOW VOLTAGE POWER SUPPLY	PC143

Under item 2-28, change the quantity of the following parts:

Change the quantity of 352-0639-00 to 1 (one).	B014138	M53017
Change the quantity of 352-0641-00 to 2 (two).	B014138	M53017
Add 352-0692-00 2 HOLDER,LED: EIGHT,BLACK	B014138	M53017

ADD the following item just below item 3-70.

343-1099-00	1	RTNR,POWER SPLY: LOW VOLTAGE,FRONT	PC143
337-3059-00	1	SHIELD,ELEC: LOW VOLTAGE POWER SUPPLY	PC143

DESCRIPTION

DIAGRAM CHANGES

Contained in this insert is a new layout of the A1 board (Main Board) along with a new parts locator table which are to be used with instruments serial numbered B020000 and above.

DIAGRAM 3 FRONT PANEL CONTROLS

For serial numbers B014138 and above, use the partial Diagram 3 contained in this insert when referring to the STATUS LEDS.

M53017

Also contained in this insert is a new layout of the A6 board (Front Panel) along with a new parts locator table which are to be used for instruments serial numbered B014138 and above.

DIAGRAM 4 ATTENUATORS & PREAMPS

Change C203 (location 8M) to a 0.001 μ F capacitor. M51123

Change R456 (location 7S) to a 26.1K Ω resistor. M51123

Change R461 (location 9N) to a 274 Ω resistor. M51123

Change R462 (location 9P) to a 1.21K Ω resistor. M51123

Change R463 (location 8P) to a 1K Ω resistor. M51123

Change the connections of J100-5 and J100-6 to read NC (No Connection) at location 8K. M51123

Remove C303 (location 11C) and connect R303 to ground. PC132

Remove C312 (location 10C) and connect R312 to ground. PC132

Remove C450 (location 2P) from pins 6 & 7 of U450B. PC132

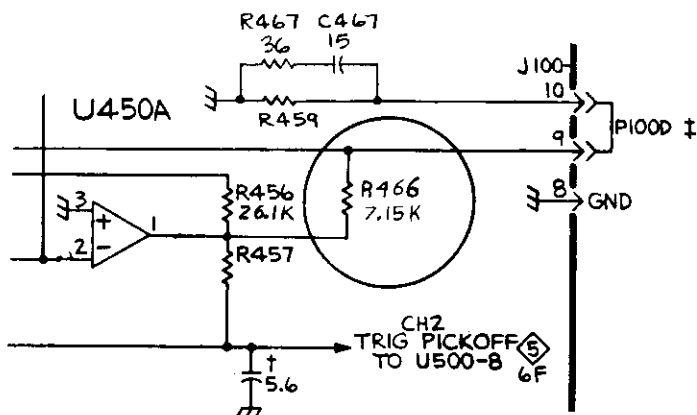
Remove C454 (location 7P) from pins 1 & 2 of U450A. PC132

Remove R121 (location 2M) and connect U100 pin 17 to the remaining circuitry. PC132

Remove R216 (location 7L) and connect U200 pin 17 to the remaining circuitry. PC132

Add R431 (47 Ω) in series with C460 (location 8P) to ground. M50513

Add R466 (7.15K Ω) to U450A pin 1 (location 7P) as shown here. M51123

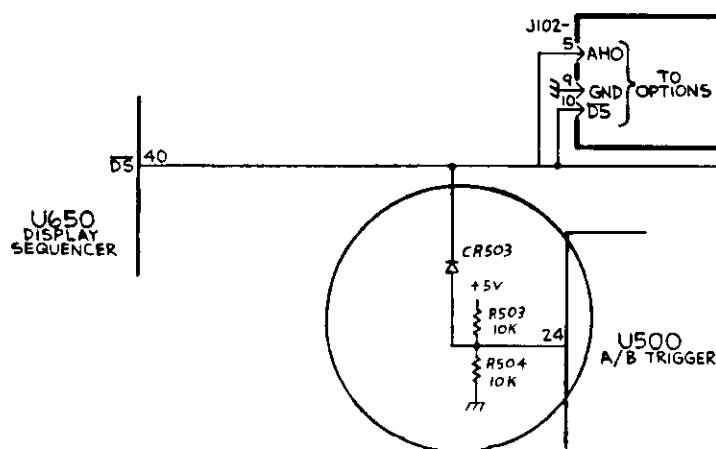


DESCRIPTION

DIAGRAM CHANGES (cont)

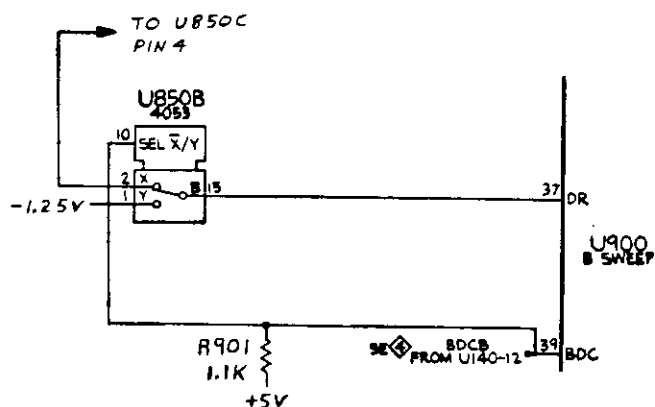
DIAGRAM 5 DISPLAY SEQUENCER, TRIGGERING, A & B SWEEPS

- Change C513 (location 8E) to a $0.47\mu\text{F}$ capacitor. PC132
- Change C537 (location 9E) to a $0.47\mu\text{F}$ capacitor. PC132
- Change C660 (location 4C) to a 180pF capacitor. PC132
- Change C912 (location 5K) to a $0.1\mu\text{F}$ capacitor. PC132
- Change R155 (location 3C) to a $1.37\text{K}\Omega$ resistor. PC132
- Change R736 (location 2K) to $1.1\text{K}\Omega$ resistor. PC132
- Change R743 (location 4J) to a $1\text{K}\Omega$ resistor. PC132
- Remove R511 & R512 (location 4F) and connect U500 pin 15 directly to U650 pin 13. PC132
- Remove R737 (location 2K). PC132
- Remove W194 (location 3J) and connect R194 directly to U170 pin 6. PC132
- Add R942 ($4.53\text{K}\Omega$) from U980D pin 13 (location 6M) to -15V . PC132
- Add CR503, R503, and R504 to U500 pin 24 (location 4F) as shown here. PC132



Disconnect pins 1, 2, and 10 of U850B (location 6J) and connect them as shown here.
Also add R901 ($1.1\text{K}\Omega$) as shown.

PC132



DESCRIPTION

DIAGRAM CHANGES (cont)

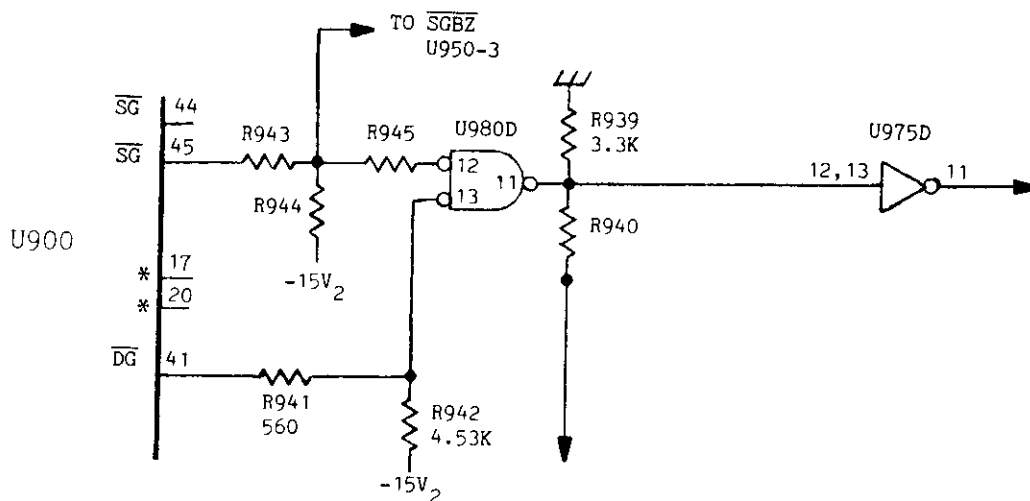
DIAGRAM 5 DISPLAY SEQUENCER, TRIGGERING, A & B SWEEPS (cont)

Add R939 (3.3K Ω) and R942 (4.53K Ω) to U980D (location 6M) as shown here.

PC132

Change R941 (location 7M) to a 560 Ω resistor.

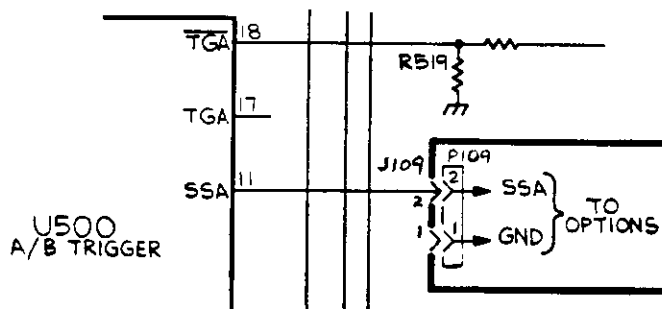
PC132



Replace J101 pins 9 & 10 with P109 & J109 pins 1 & 2 as shown here.

PC132

J101 pins 9 & 10 become NC (No Connection).



DESCRIPTION

DIAGRAM CHANGES (cont)

DIAGRAM 6 CHANNEL SWITCH AND OUTPUT AMPLIFIERS

- | | |
|---|--------|
| Change R403 (location 2J) to a 500 Ω variable resistor. | PC132 |
| Change R622 (location 4N) to a 4.42K Ω resistor. | M51123 |
| Change R802 (location 7N) to a 820 Ω resistor. | M51123 |
| Change R803 (location 7N) to a 2.2K Ω resistor. | M51123 |
| Add R902 (1.1K Ω) from U850A pin 11 (location 8M) to +5V. | PC132 |
| Add R903 (4.7K Ω) from U980C pin 8 (location 7H) to +5V. | PC132 |
| Add C405 (2.5-9 μ F) and R405 (47 Ω) to U600 as shown here. | M50513 |

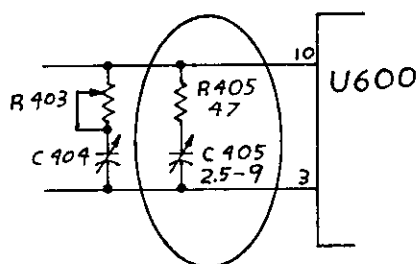


DIAGRAM 8 HIGH VOLTAGE SUPPLY AND CRT

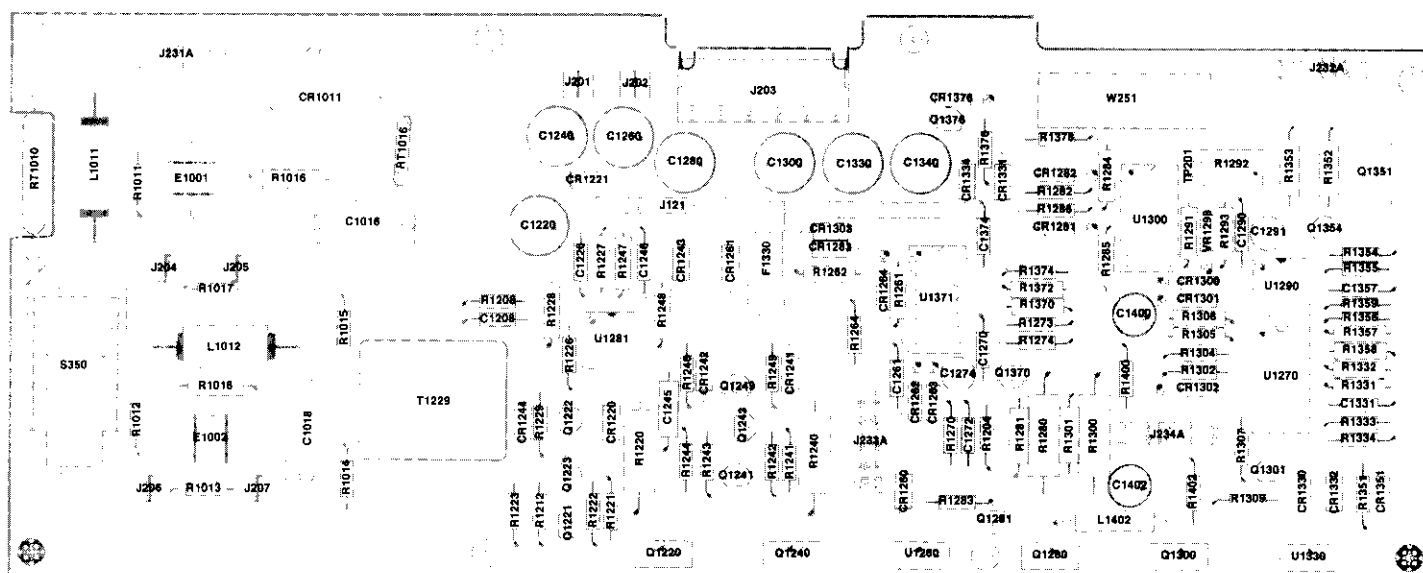
- | | | |
|--|---------|-------|
| Change R1922 (location 7E) to a 330 Ω resistor. | B010800 | PC130 |
|--|---------|-------|

DIAGRAM 9 LOW-VOLTAGE POWER SUPPLY

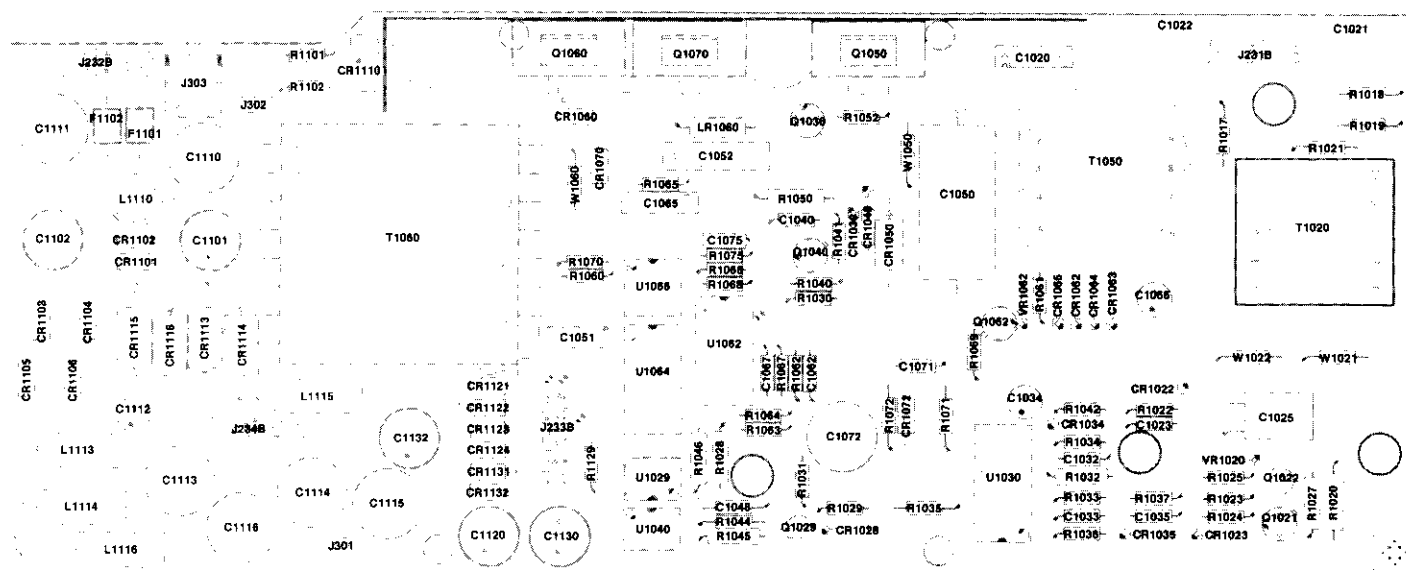
- | | |
|--|-------|
| Replace R1101 & R1102 (location 6P) with W1101 & W1102 (0 Ω jumpers). | PC132 |
|--|-------|

DIAGRAM 11 POWER DISTRIBUTION A

- | | |
|---|--------------|
| Add C967 (0.1 μ F) in parallel with C966 (location 1M). | PC132 |
| Add C980 (0.1 μ F) in parallel with C675, C811, C943, and C958 (location 3M). | PC134 |
| Change C102 (location 8A) to a 100 μ F capacitor. | B010800 PC93 |



**A2 REGULATOR BOARD
(SN B020000 AND ABOVE)**



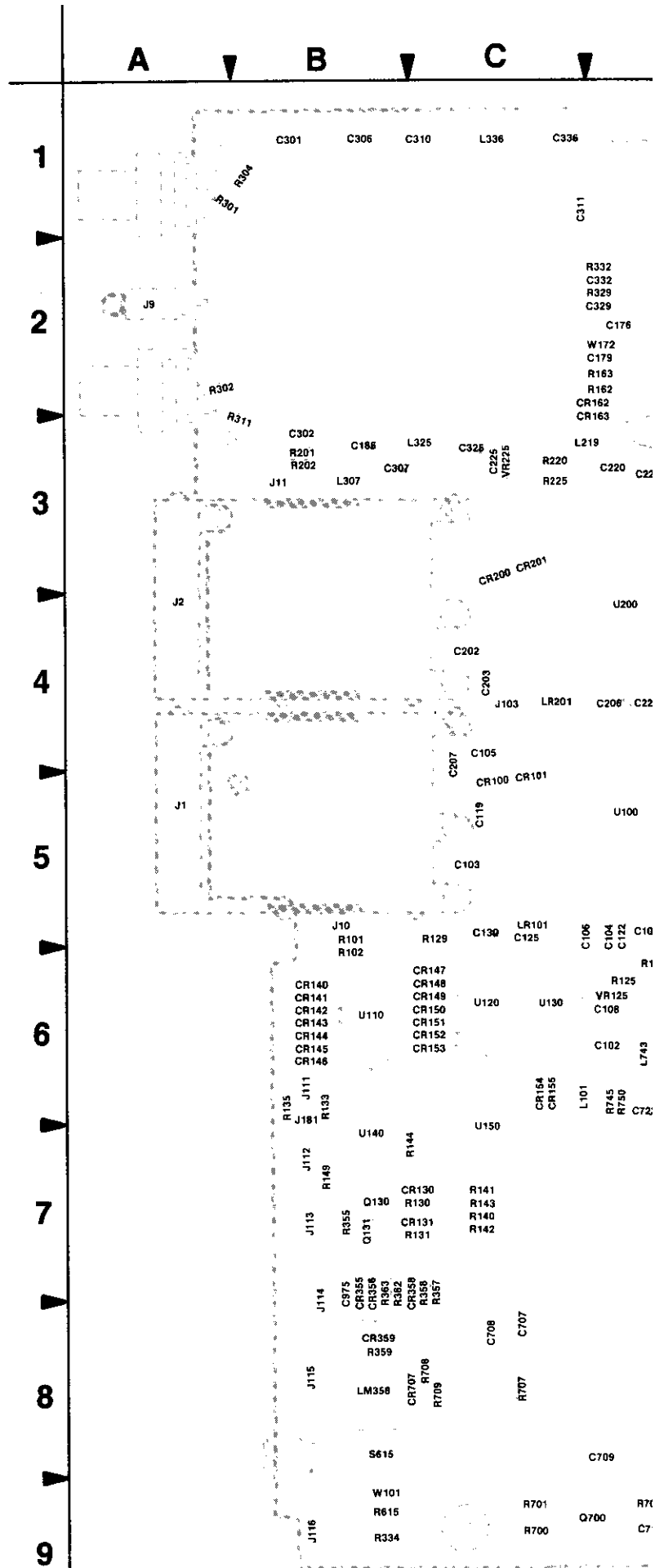
A3 INVERTER BOARD (SN B020000 AND ABOVE)

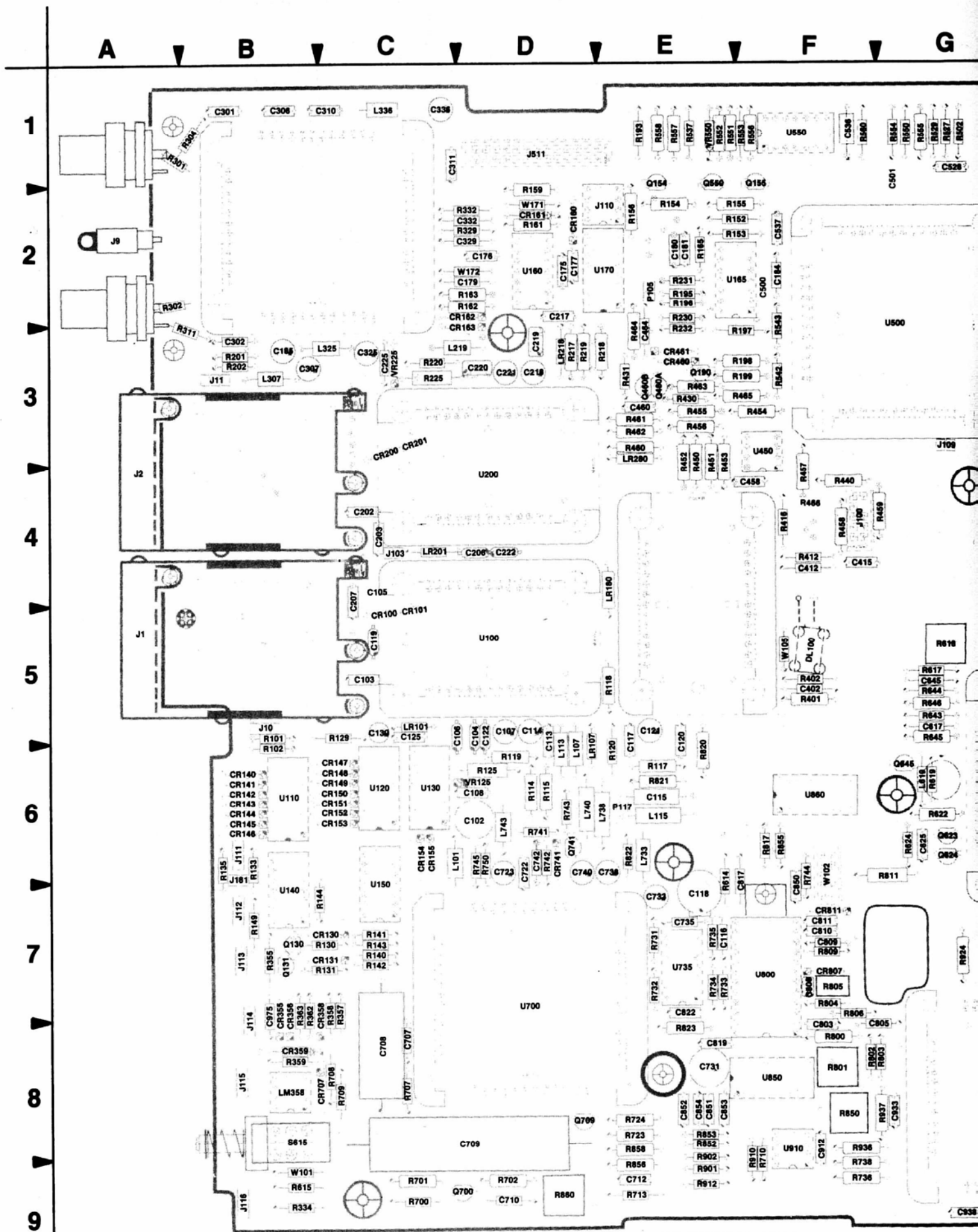
A1—MAIN BOARD
(SN B020000 AND ABOVE)

CIRCUIT NUMBER	SCHEM NUMBER	BOARD LOCATION	CIRCUIT NUMBER	SCHEM NUMBER	BOARD LOCATION	CIRCUIT NUMBER	SCHEM NUMBER	BOARD LOCATION	CIRCUIT NUMBER	SCHEM NUMBER	BOARD LOCATION	CIRCUIT NUMBER	SCHEM NUMBER	BOARD LOCATION	CIRCUIT NUMBER	SCHEM NUMBER	BOARD LOCATION
C100	4	4C	C669	5	2J	CR460	4	3E	L619	6	6G	R192	4	1H	R488	6	3K
C102	11	6D	C675	11	3H	CR461	4	3E				R193	4	1E	R489	6	3K
C103	4	5C	C707	5	8C	CR476	6	3J				R194	4	1H	R490	6	3J
C104	4	5D	C708	5	8C	CR484	6	3K	L644	6	6J	R195	4	2E	R491	6	3J
C105	4	4C	C709	5	8D	CR485	6	3K	L733	11	6E	R196	4	2E	R492	6	3J
C106	11	5D	C710	11	9D	CR495	6	3K	L738	11	6E	R197	4	3F	R493	6	3J
C107	11	5D	C712	5	9E	CR503	5	2H	L740	11	6D	R198	4	3F	R494	6	3K
C108	5	6D	C722	11	6D	CR600	6	6J	L743	11	6D	R199	4	3F	R495	6	4J
C108	11	6D	C723	11	6D	CR616	6	6K	L938	11	6J	R200	4	3C	R497	6	5K
C112	4	6D	C731	11	8E	CR652	5	4J	L973	11	9K	R201	4	3B	R498	6	6K
C113	11	6D	C733	11	7E	CR653	5	3J				R202	4	3B	R500	6	1J
C114	11	5D	C735	6	7E	CR707	5	8B	LR101	11	5C				R501	6	1J
C115	4	6E	C738	11	6E	CR741	5	6D	LR107	11	6D	R217	4	3D	R502	4	1G
C116	4	7E	C740	11	6D	CR746	5	5K	LR180	4	4E	R218	4	3E	R503	5	2H
C117	4	5E	C742	5	6D	CR747	5	5K	LR201	11	4C	R219	4	3D	R504	5	2H
C118	4	7E	C803	6	8F				LR218	11	3D	R220	11	3C	R511	5	3H
C119	11	5C	C805	6	8F	CR807	11	7F	LR280	4	3E				R512	5	3H
C120	11	5E	C806	6	7F	CR811	11	7F				R225	11	3C	R513	5	3H
C121	11	5E	C808	6	7F	CR950	5	6K	P100	4	4F	R230	4	2E	R518	5	3H
C122	4	5D	C809	6	7F	CR951	5	6K	P101	5	3H	R231	4	2E	R519	5	3H
C125	11	5C	C810	11	7F	CR956	6	7K	P102	5	7F	R232	4	2E	R520	5	2H
C130	4	5C	C811	11	7F	CR966	6	9K	P103	4	4C	R301	4	1A	R521	5	2H
C175	4	2D	C817	6	7F	CR972	6	9K	P106	6	7K	R302	4	2A	R527	5	1G
C176	4	2D	C819	11	8E	CR987	11	8K	P107	5	6K				R529	5	1G
C177	4	2D	C822	6	7E				P108	5	5K	R304	4	1B	R537	5	1E
C179	4	2D	C850	11	7F	DL100	6	5F	P121	11	4J	R311	4	2A	R542	5	3F
C180	5	2E	C851	5	8E	DL100	6	5K	P122	5	4H				R543	5	2F
C181	5	2E	C852	5	8E				P122	11	4H	R329	4	2D	R544	5	3H
C184	4	2F	C853	5	8E	J9	5	2A	P141	6	9K	R332	4	2D	R545	5	3H
C185	4	3B	C854	5	8E	J10	4	5B				R334	5	9B	R550	5	1G
C200	4	3C	C907	5	7H	J11	4	3B	Q130	4	7B	R353	5	2H	R551	5	1E
C202	4	4C	C908	5	8J	J100	4	4F	Q131	4	7B	R355	5	7B	R552	5	1E
C203	4	4C	C912	5	9E	J101	5	3H	Q154	5	1E	R357	5	7C	R553	5	1F
C205	4	3C	C933	11	8G	J102	5	7F	Q155	5	1F	R358	5	7C	R554	5	1G
C207	11	4C	C940	11	9G	J104	5	5K	Q460	4	3E	R360	5	3H	R556	5	1F
C217	4	2D	C943	11	9H	J105	4	2E	Q550	5	1E	R361	5	3H	R557	5	1E
C218	11	3D	C956	6	6K	J109	5	3G	Q600	6	4J	R362	5	7B	R558	5	1E
C219	11	3D	C957	6	7J	J110	4	2E	Q623	6	6G	R363	5	7B	R560	5	1F
C220	11	3D	C958	11	7K	J111	4	6B	Q624	6	6G	R401	6	5F	R600	6	6J
C221	11	3D	C966	11	9K	J112	8	7B	Q645	5	6G	R402	6	5F	R601	6	5H
C222	4	4D	C967	11	9J	J113	5	7B	Q700	11	9C	R403	6	5F	R602	6	5H
C223	4	2H	C972	6	9K	J114	8	8B	Q709	5	8D				R605	6	5H
C225	11	3C	C973	11	9K	J115	8	8B	Q741	5	6D	R412	6	4F	R606	6	5H
C301	4	1B	C975	8	7B	J116	5	9B				R416	6	4F	R607	6	5G
C302	4	3B	C980	11	6J	J117	4	6E	R100	4	4C				R608	6	4H
C306	5	1B	C988	11	6K	J118	5	2K	R101	4	5B	R430	4	3E	R614	6	7E
C307	11	3B	C990	11	8K	J119	11	4H	R102	4	6B	R440	4	3F	R615	6	9B
C310	4	1C	C995	6	7K	J181	4	6B	R114	4	6D	R450	4	3E	R617	6	5G
C311	4	1C				J191	6	8K	R115	4	6D	R451	4	3E	R618	6	5G
C325	11	3C	CR100	4	5C	J191	11	8K	R117	4	6E	R452	4	3E	R619	6	6G
C329	4	2D	CR101	4	5C	J411	5	1K	R118	4	5E	R453	4	3E	R622	6	6G
C332	4	2D	CR107	11	4H	J411	6	1K	R119	4	6D	R454	4	3F	R624	6	6G
C336	11	1C	CR130	4	7B	J411	11	1K	R120	11	5E	R455	4	3E	R638	6	6J
C402	6	5F	CR131	4	7B	J511	4	1D				R456	4	3E	R639	6	6J
C404	6	4F	CR140	4	6B	J511	5	1D	R123	4	2H	R457	4	3F	R642	6	4J
C412	6	4F	CR141	4	6B	J511	6	1D	R125	11	6D	R458	4	4F	R643	5	5G
C415	11	4F	CR142	4	6B	J511	11	1D	R129	4	5C	R459	4	4G	R644	5	5G
C458	11	3F	CR143	4	6B	J512	4	1H	R130	4	7C	R460	4	3E	R645	5	5G
C460	4	3E	CR144	4	6B	J512	5	1H	R131	4	7C	R461	4	3E	R646	5	5G
C464	4	3E	CR145	4	6B	J512	6	1H	R133	4	6B	R462	4	3E	R650	6	4J
C478	6	3J	CR146	4	6B	J512	11	1H	R135	4	6B	R463	4	3E	R651	5	1J
C480	11	2J	CR147	4	6C				R136	4	1H	R464	4	3E	R652	5	3J
C487	6	3K	CR148	4	6C	L101	11	6D	R140	4	7C	R465	4	3F	R653	5	4J
C488	6	3K	CR149	4	6C	L107	11	6D	R141	4	7C	R466	4	4F	R654	5	1J
C500	11	2F	CR150	4	6C	L113	11	6E	R142	4	7C				R655	5	1J
C501	11	1G	CR151	4	6C	L115	4	6E	R143	4	7C				R659	6	6J
C512	5	3H	CR152	4	6C	L219	11	3D	R144	4	7C	R470	6	3K	R669	5	2J
C513	5	3H	CR153	4	6C	L307	11	3B	R149	4	7B	R471	6	4K	R670	5	1H
C520	5	2H	CR154	4	6C	L325	11	3C	R152	5	2F	R476	6	4J	R671	5	2H
C521	11	2H	CR155	4	6C	L336	11	1C	R153	5	2F	R477	6	3J	R672	5	2H
C528	5	1G	CR160	4	2D	L403	6	4F	R154	5	2E	R478	6	3J	R678	5	2H
C536	5	1F	CR161	4	2D	L521	11	2H	R155	5	2F	R479	6	4J	R700	11	9C
C537	5	2F	CR162	4	2D	L605	6	5H	R156	5	2E	R480	6	4J	R701	11	9C
C544	5	3H	CR163	4	2D	L606	6	5J	R159	4	2D	R481	6	4K	R702	11	9D
C617	6	5G	CR200	4	3C	L607	6	5G	R161	4	2D	R482	6	4K	R707	5	8C
C625	6	6G	CR201	4	3C	L608	6	5H	R162	4	2D	R483	6	4K	R708	5	8C
C645	5	5G	CR355	5	7B	L609	6	5H	R163	4	2D	R484	6	4K	R709	5	8C
C650	5	7K	CR356	5	7B	L610	6	5H	R165	5	2E	R485	6	4K	R710	5	9F
C653	5	3J	CR358	5	7B	L611	6	5H	R190	4	1G	R486	6	4K	R713	5	9E
C660	5	3J	CR359	5	8B	L612	6	5H	R191	4	1G	R487	6	3K	R723	5	8E

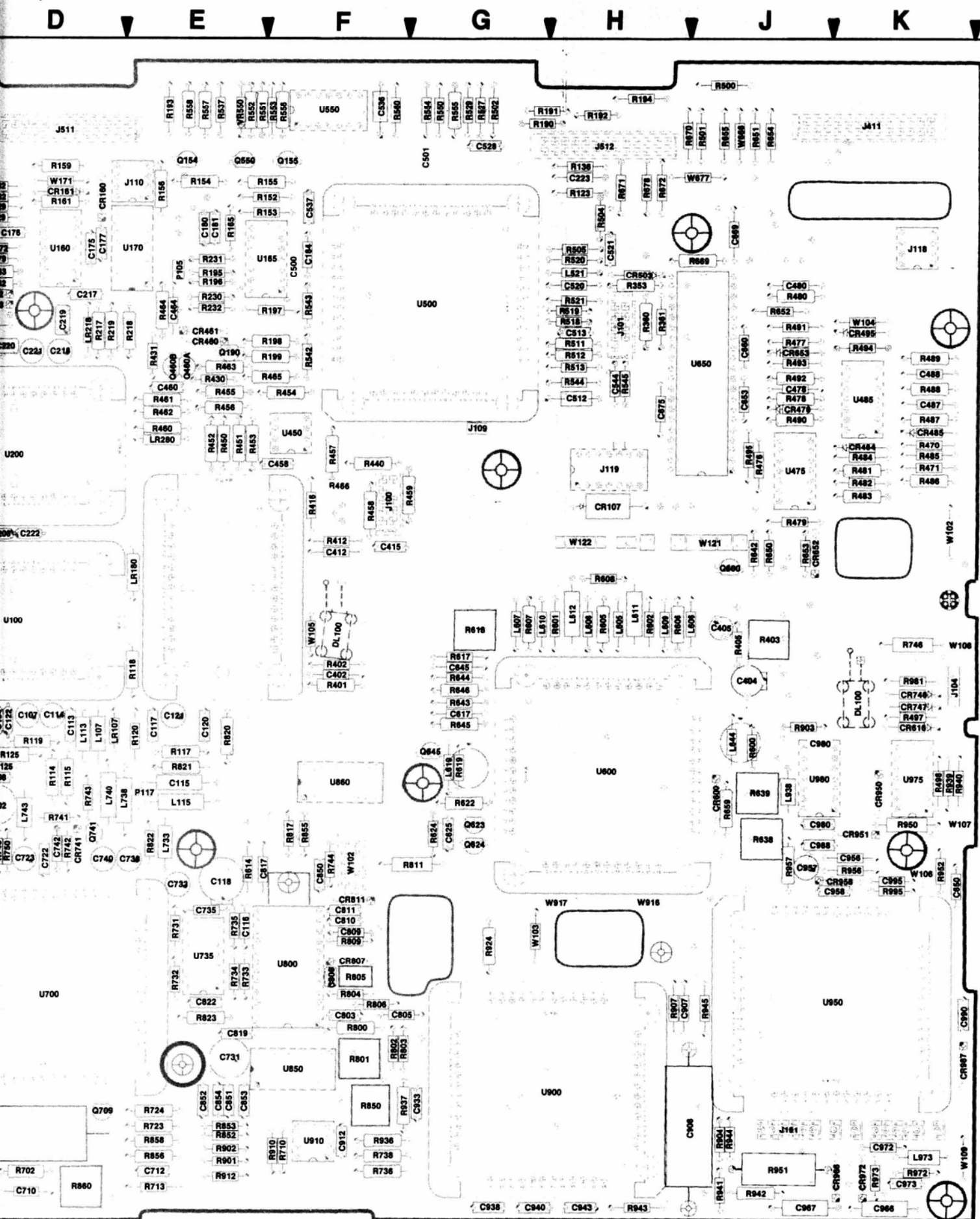
A1—MAIN BOARD (cont)
(SN B020000 AND ABOVE)

CIRCUIT NUMBER	SCHEM NUMBER	BOARD LOCATION	CIRCUIT NUMBER	SCHEM NUMBER	BOARD LOCATION
R724	5	8E	U160	4	2D
R731	6	7E	U160	11	2D
R732	6	7E	U165	4	2E
R733	6	7E	U165	5	2E
R734	6	7E	U165	11	2E
R735	6	7E	U170	4	2E
R736	5	9F	U170	11	2E
			U200	4	4D
R738	5	9F	U200	11	4D
R741	5	6D	U300	4	2B
R742	5	6D	U300	11	2B
R743	5	6D	U350	5	8B
R744	5	7F	U350	11	8B
R745	5	6D	U400	6	4E
R746	5	5K	U400	11	4E
R750	5	6D	U450	4	3F
			U450	11	3F
			U475	6	4J
			U485	6	3K
			U500	11	3G
R800	6	8F	U550	5	1F
R801	6	8F	U600	6	6H
R802	6	8G	U600	11	6H
R804	6	7F	U650	5	3J
R805	6	7F	U650	11	3J
R806	6	7F	U700	5	7D
R809	6	7F	U700	11	7D
R811	11	7G	U735	6	7E
R817	6	6F	U800	6	7F
R820	6	6E	U800	11	7F
R821	6	6E	U850	5	8F
R822	6	6E	U850	6	8F
R823	6	8E	U850	11	8F
R850	6	8F	U860	5	6F
R853	5	8E	U860	11	6F
R855	6	6F	U900	5	8H
R856	6	9E	U900	11	8H
R858	6	8E	U910	5	8F
R860	6	9D	U910	11	8F
R901	5	9E	U950	6	7K
R902	6	8E	U950	11	8K
R903	6	5J	U975	5	6K
R904	5	8J	U975	6	6K
R907	5	7H	U975	11	6K
R910	5	8F	U980	5	6J
R912	5	9E	U980	6	6J
R924	5	7G	U980	11	6J
R936	5	8F			
R937	5	8G	VR125	11	6D
R939	5	6K	VR225	11	3C
R940	5	6K	VR550	5	1E
R941	5	9J			
R942	5	9J	W101	11	9B
R943	5	9H	W102	11	4K
R944	5	8J	W103	11	7G
R945	5	8J	W104	11	3K
R950	5	6K	W105	11	5F
R951	11	9J	W106	6	7K
R952	5	7K	W107	5	6K
R956	6	7K	W108	5	5K
R957	6	7J	W109	11	9K
R972	6	9K	W121	11	4J
R973	6	9K	W122	5	4H
R981	5	5K	W122	11	4H
R995	6	7K	W141	6	9K
			W171	4	2D
S615	6	8B	W172	4	2D
			W666	5	1J
U100	4	5D	W677	5	2J
U100	11	5D	W916	6	7H
U110	4	6B	W917	6	7H
U110	11	6B			
U120	4	6C	W919	6	7F
U120	11	6C			
U130	4	6C			
U130	11	6C			
U140	4	6B			
U140	11	6B			
U150	4	6C			
U150	11	6C			





A1 MAIN BOARD
(SN B020000 AND ABOVE)



A1 MAIN BOARD
(SN B020000 AND ABOVE)

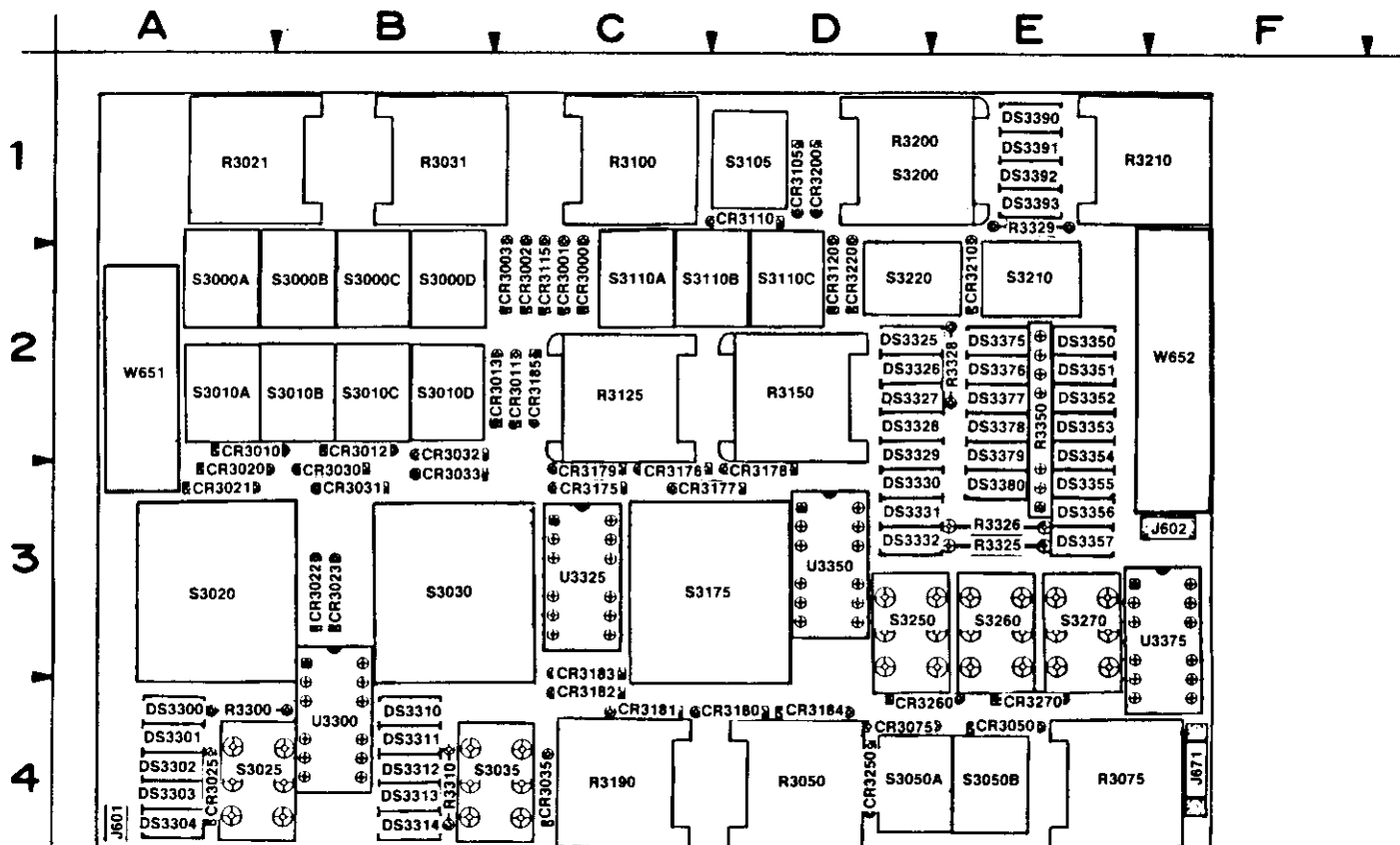
FRONT PANEL CONTROLS DIAGRAM (SN B014138 AND ABOVE)

2-10-84

C4/1083 REV2

3

ASSEMBLY A6											
CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
CR3000	2J	2C	CR3250	5K	4D	DS3391	7G	1E	R3350-10	7M	2E
CR3001	2K	2C	CR3260	6J	4D	DS3392	8L	1E	S3000A	3J	2A
CR3002	2M	2C	CR3270	2B	4E	DS3393	7F	1E	S3000B	3K	2B
CR3003	2N	2C							S3000C	3M	2B
CR3010	2L	2A	DS3300	6B	4A	J601	5D	4A	S3000D	3N	2B
CR3011	3D	2C	DS3301	6C	4A	J602	8K	3F	S3010A	3L	2A
CR3012	3K	2B	DS3302	6C	4A	J671	7P	4F	S3010B	3D	2B
CR3020	3B	3A	DS3304	7D	4A				S3010C	3K	2B
CR3021	3B	3A	DS3303	7C	4A	P602	7K	3F	S3010D	3L	2B
CR3022	3B	3B	DS3310	7D	4B	P651	3S	2A	S3025	1B	4A
CR3023	3C	3B	DS3311	7E	4B	P652	1S	2F	S3030	4D	3B
CR3025	2C	4A	DS3312	7E	4B	P652	7A	2F	S3035	2C	4C
CR3030	5B	3B	DS3313	7E	4B				S3050A	2B	4D
CR3031	5B	3B	DS3314	7F	4B	R3021	3P	1A	S3050B	2A	4E
CR3032	5B	2B	DS3325	8H	2D	R3031	4P	1B	S3105	4J	1D
CR3033	5C	3B	DS3326	8H	2D	R3050	4P	4D	S3110A	4M	2C
CR3035	2C	4C	DS3327	8G	2D	R3075	5P	4E	S3110B	4L	2C
CR3050	2C	4E	DS3328	8G	2D	R3100	5P	1C	S3110C	4K	2D
CR3075	2B	4D	DS3329	10M	2D	R3125	5P	2C	S3175A	3H	3C
CR3105	4J	1D	DS3330	8J	3D	R3150	6P	2D	S3175B	5H	3C
CR3110	4M	1D	DS3331	8J	3D	R3190	3P	4C	S3200	3J	1D
CR3115	4L	2C	DS3332	10M	3D	R3200	6P	1D	S3210	4N	2E
CR3120	4K	2D	DS3350	8J	2E	R3210	6P	1E	S3220	5L	2D
CR3175	2F	3C	DS3351	8K	2E	R3300	6D	4A	S3250	5K	3D
CR3176	2F	3C	DS3352	8K	2E	R3310	7F	4B	S3260	5J	3E
CR3177	2F	3C	DS3353	8L	2E	R3325	7L	3E	S3270	1A	3E
CR3178	2G	3D	DS3354	8L	3E	R3326	9N	3E			
CR3179	2G	3C	DS3355	8L	3E	R3328	10M	2E	U3300	8B	4B
CR3180	5F	4D	DS3356	7L	3E	R3329	10P	1D	U3325	9E	3C
CR3181	6F	4C	DS3357	7L	3E	R3350-2	10M	2E	U3350	9H	3D
CR3182	6F	4C	DS3375	9M	2E	R3350-3	9P	2E	U3375	10L	3F
CR3183	6G	3C	DS3376	9M	2E	R3350-4	8N	2E			
CR3184	6G	4D	DS3377	9N	2E	R3350-5	8M	2E	W651	8S	2A
CR3185	5C	2C	DS3378	9N	2E	R3350-6	8M	2E	W652	10A	2F
CR3200	3J	1D	DS3379	9N	2E	R3350-7	8L	2E	W652	3S	2F
CR3210	4N	2E	DS3380	9P	3E	R3350-8	7J	2E			
CR3220	5L	2D	DS3390	10P	1E	R3350-9	7G	2E			



A6 FRONT PANEL BOARD
(SN B014138 AND ABOVE)

A , B , C , D , E , F ,

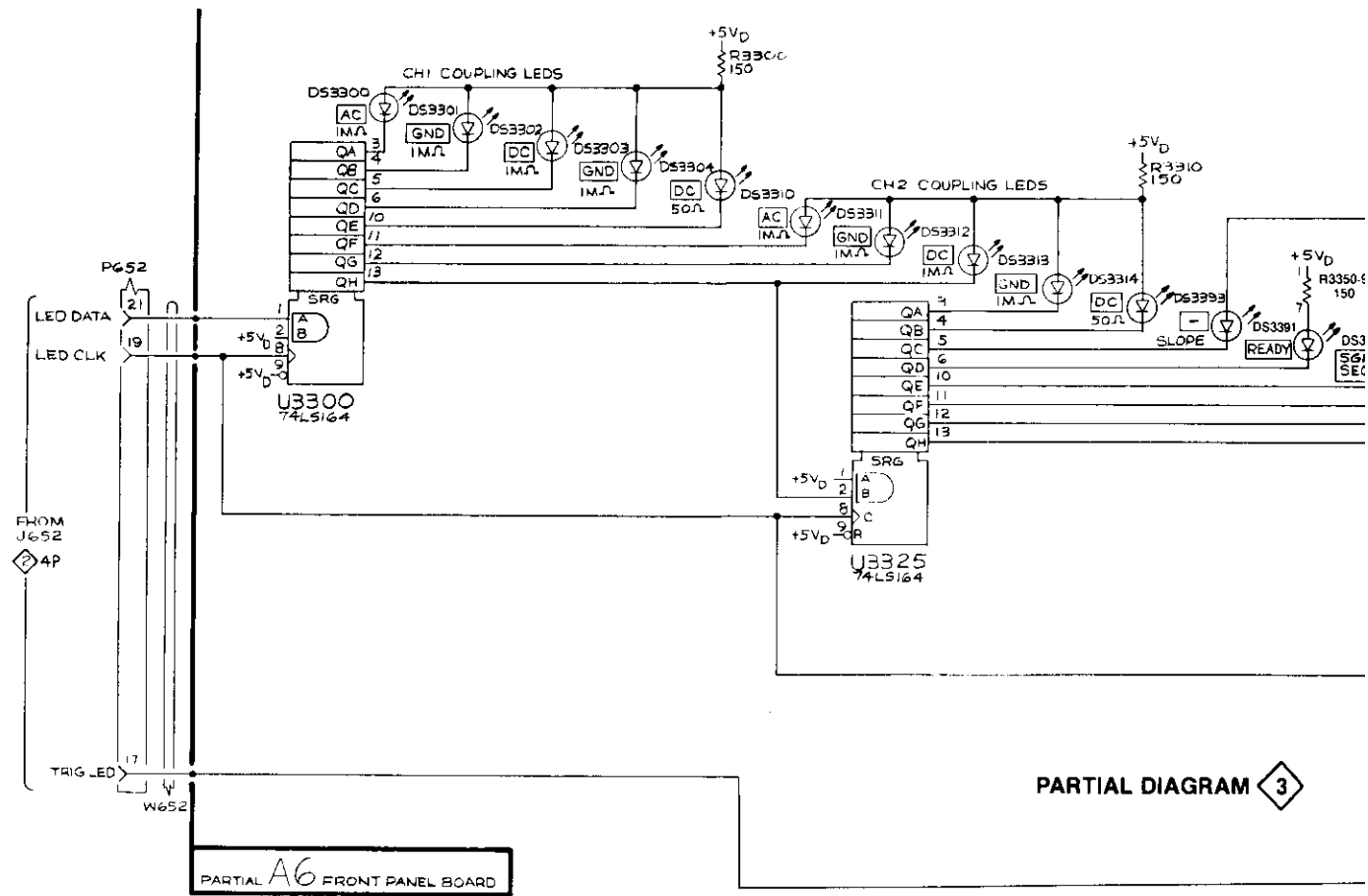
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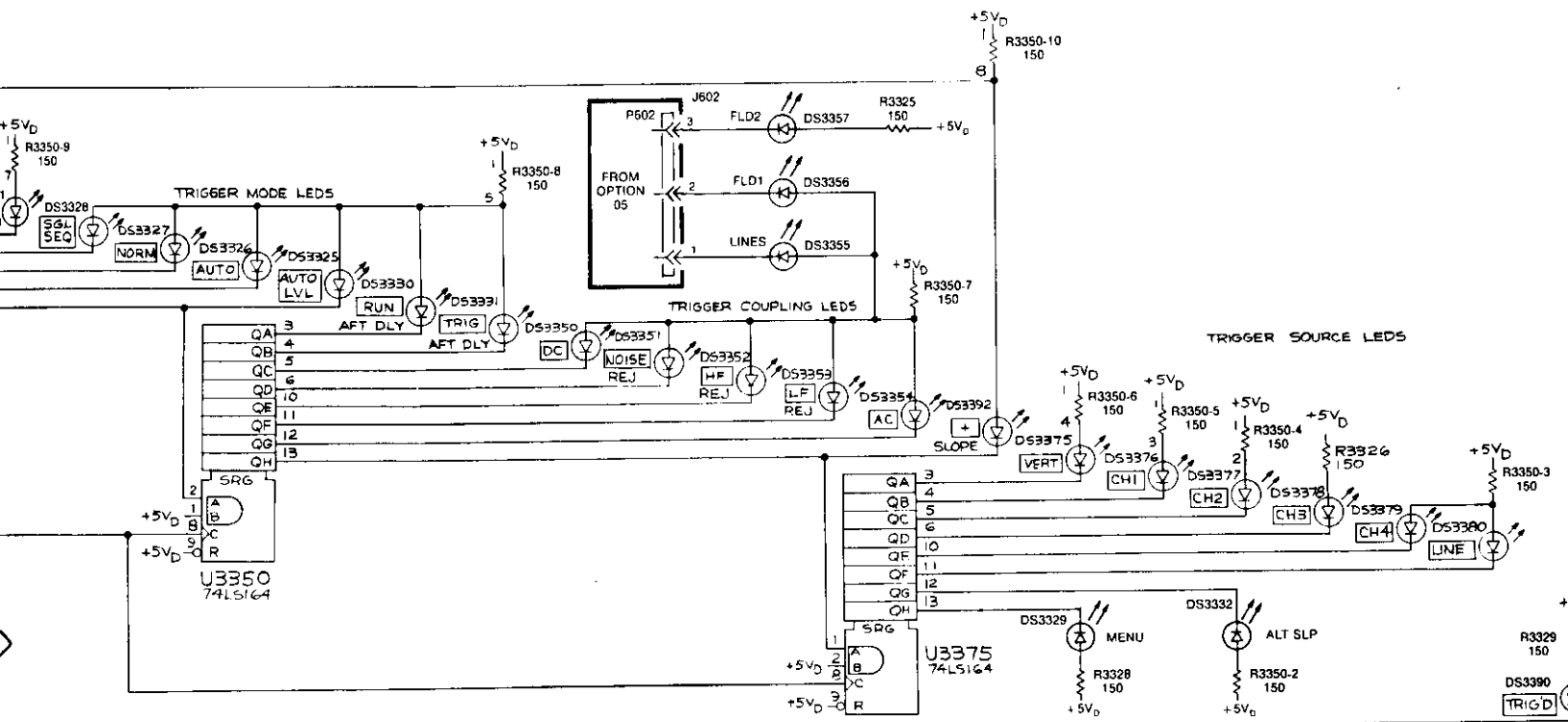
PARTIAL DIAGRAM 3

PARTIAL A6 FRONT PANEL BOARD

(SN B014138 AND ABOVE)

G , H , J , K , L , M , N , P

STATUS LEDs



Date: 4-10-84

Change Reference: C6/0484

Product: 2445 SERVICE

Manual Part No.: 070-3829-00

DESCRIPTION

PG 38

EFF SN: B020000

REPLACEABLE ELECTRICAL PARTS LIST CHANGES

CHANGE TO:

A1C119	283-0024-00	CAP,FXD,CER DI: 0.1 UF,+ 80-20%,50V	M52148
A1C809	281-0759-00	CAP,FXD,CER DI: 22 PF,10%,100V	M51879

REPLACEABLE MECHANICAL PARTS LIST CHANGES

CHANGE TO:

FIG. & INDEX	P.N.	QTY	DESCRIPTION	
2-37	348-0792-01	AR	SHLD,GSKT,ELEK:	M51282
3-75	407-2904-01	1	BRACKET,EXT SFT:ABS	M51427
3-76	211-0500-00	1	SCREW,MACHINE: 6-32 X 0.375 FLH,STL	M51427
3-107	211-0720-00	1	SCREW,MACHINE: 6-32 X .500 PNH	M52911

DIAGRAM CHANGES

DIAGRAM CHANNEL SWITCH AND OUTPUT AMPLIFIERS

Change C809 (location 5S) to a 22 pF capacitor.

M51879

DESCRIPTION

PG 38

EFF SN: B013550

REPLACEABLE ELECTRICAL PARTS LIST CHANGES

The serial number ranges for the 672-1037-xx board should read as follows:

672-1037-00	B010100	B013549	CKT BOARD ASSY: LOW VOLTAGE/PWR SPLY MODULE
672-1037-03	B013550	B019999	CKT BOARD ASSY: LOW VOLTAGE/PWR SPLY MODULE
672-1037-04	B020000		CKT BOARD ASSY: LOW VOLTAGE/PWR SPLY MODULE

CHANGE TO:

A2R1013	315-0753-00	RES,FXD,CMPSN: 75K OHM,5%,0.25W
A2R1014	315-0363-00	RES,FXD,CMPSN: 36K OHM,5%,0.25W
A2R1015	315-0363-00	RES,FXD,CMPSN: 36K OHM,5%,0.25W
A2R1208	315-0201-00	RES,FXD,CMPSN: 200 OHM,5%,0.25W
A3R1029	315-0272-00	RES,FXD,CMPSN: 2.7K OHM,5%,0.25W
A3R1037	315-0272-00	RES,FXD,CMPSN: 2.7K OHM,5%,0.25W
A3R1069	301-0183-00	RES,FXD,CMPSN: 18K OHM,5%,0.5W

ADD:

A2C1222	281-0783-00	CAP,FXD,CER DI: 0.1 UF,20%,100V
A2R1287	315-0472-00	RES,FXD,CMPSN: 4.7K OHM,5%,0.25W
A3R1010	301-0150-00	RES,FXD,CMPSN: 15 OHM,5%,0.5W
A3R1019	301-0150-00	RES,FXD,CMPSN: 15 OHM,5%,0.5W
A3R1073	301-0183-00	RES,FXD,CMPSN: 18K OHM,5%,0.5W

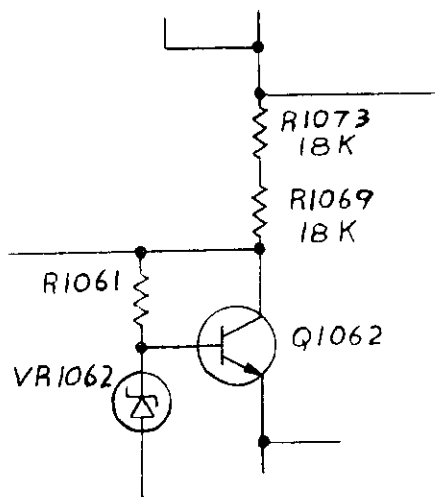
DIAGRAM CHANGES

DIAGRAM 9 LOW-VOLTAGE POWER SUPPLY

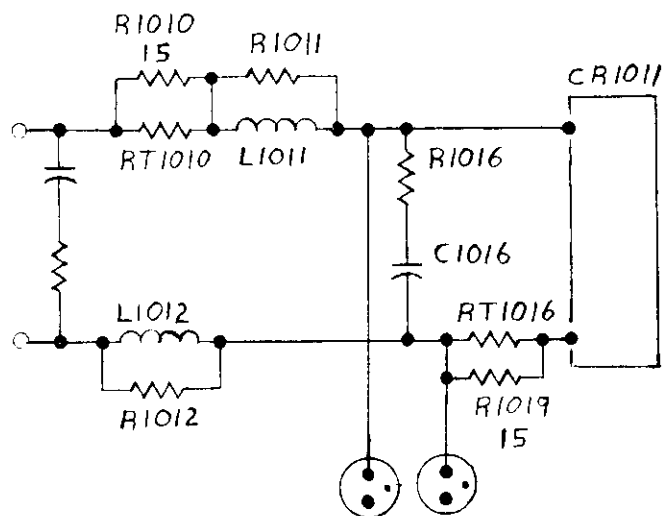
Change R1014 (location 1N) to a 36K Ω resistor.
 Change R1015 (location 1N) to a 36K Ω resistor.
 Change R1013 (location 7B) to a 75K Ω resistor.
 Change R1208 (location 1N) to a 200 Ω resistor.
 Change R1029 (location 2P) to a 2.7K Ω resistor.
 Change R1037 (location 3L) to a 2.7K Ω resistor.

DIAGRAM CHANGES (cont)

Change R1069 (location 7G) to an 18K Ω resistor and add R1073 (18K Ω) in series with R1069 as shown here.



Add R1010 & R1019 (15 Ω each) in parallel with RT1010 (location 5B) and RT1016 (location 6C) as shown here.

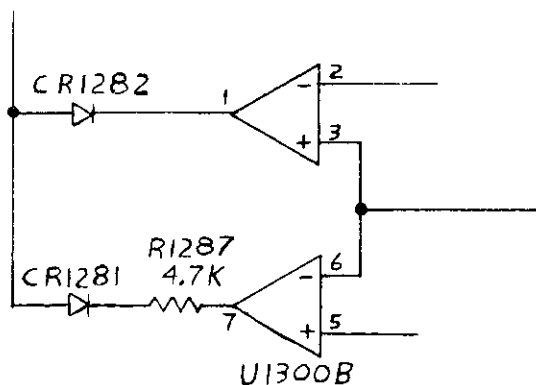


DESCRIPTION

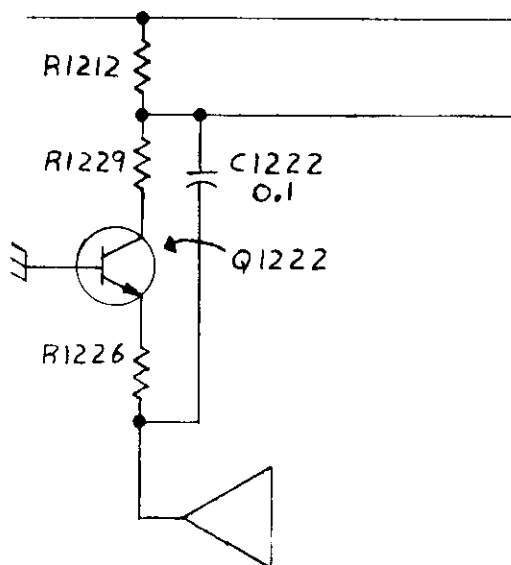
DIAGRAM CHANGES (cont)

DIAGRAM 10 LOW-VOLTAGE REGULATORS AND FAN DRIVE

Add R1287 (4.7K Ω) in series with CR1281 (location 5K) as shown here.



Add C1222 (0.1 μ F) in parallel with R1229, Q1222, and R1226 (location 1F) as shown here.



GUERNSEY TYPE - GENERAL

All Mainframes supplied with an Option A - 2 Power Cord have
a 5 Amp Fuse (Part Number 159-0093-00) fitted in the Plug.

4022/982

GUERNSEY TYPE 2445 - TENTATIVE S/N 101611
2465 - TENTATIVE S/N 101391

ELECTRICAL PARTS LIST CHANGE

CHANGE TO:-

A5U2162	160-1994-XX	Eprom
A5U2378	160-1995-XX	Eprom

REMOVE:-

A5U2362	160-1627-XX	Eprom
A5U2178	160-1625-XX	Eprom

4214/1183

GUERNSEY TYPE 2445 - TENTATIVE S/N 100641
2465 - TENTATIVE S/N 100791

CHANGE TO:-

A1U450	156-0158-03	Integrated Circuit	2445/2465
A2U1281	156-0158-03	Integrated Circuit	2445 only
A9U1956	156-0158-03	Integrated Circuit	2465 only

4150/783

GUERNSEY TYPE 2445 - TENTATIVE SEN 100421
2465 - TENTATIVE S/N 100601

ELECTRICAL PARTS LIST CHANGE

CHANGE TO:-

A2R1331	321-0685-00	Cap, Fxd, Cer, Di: 30.0K 5%
A2R1332	321-0318-02	Cap, Fxd, Cer, Di: 20.0K 5%
A2R1357	321-0318-02	Cap, Fxd, Cer, Di: 20.0K 5%
A2R1358	321-0689-00	Cap, Fxd, Cer, Di: 24.9K 5%

4087/383

GUERNSEY TYPE 2445 - TENTATIVE S/N 102681
2465 - TENTATIVE S/N 101901

ELECTRICAL PARTS LIST CHANGE

ADD:

A9R1833	315-0103-00	Resistor, 10K 5%
A9R1901	315-0101-03	Resistor, 100 Ohm 5%
A9L1921	108-0262-00	Coil, 510nH

CHANGE TO:

	670-7277-06	High Voltage Assembly
A9R1834	315-0103-00	Resistor, 10K 5%
A9R1973	315-0124-00	Resistor, 120K 5%
A9R1992	315-0394-00	Resistor, 390K 5%

REMOVE:

A9C1909	281-0783-00	Cap, Fxd, Cer, Di:
A9R1820	315-0122-00	Resistor
A9R1933	315-0102-00	Resistor
A9R1921	315-0100-02	Resistor

Note: Add R1901 with circuit running from pin 6 of J901 to +87 Volts
R1834 will go to ground and added R1833 to +15V and their junction
to Pin 12 of P191
Add L1921 in place of R1921

4205/983

GUERNSEY TYPE 2445 - TENTATIVE S/N 102681
2465 - TENTATIVE S/N 101901

ELECTRICAL PARTS LIST CHANGE

CHANGE TO:

V900	154-0850-01	Electron Tube
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4222/1283

GUERNSEY TYPE 2445 - TENTATIVE S/N 103031
2465 - TENTATIVE S/N 102781

ELECTRICAL PARTS LIST CHANGE

CHANGE TO:-

A6S3185 260-2108-02 Switch, pushbutton

4288/984

GUERNSEY TYPE 2445 - TENTATIVE S/N 102681

ELECTRICAL PARTS LIST CHANGE

CHANGE TO:

A4R2921 321-0303-00 Resistor, Fxd, Cmpsn 14.0K 1%
A4R2930 315-0152-00 Resistor, Fxd, Cmpsn 1.5K 5%

4251/184

GUERNSEY TYPE 2445 - TENTATIVE S/N 102060

ELECTRICAL PARTS LIST CHANGE

CHANGE TO:

A1R622 321-0226-00 Resistor, Fxd, Cmpsn, 2.21K 1%

4268/284

GUERNSEY TYPE 2445 - TENTATIVE S/N 103031
2465 - TENTATIVE S/N 102685

ELECTRICAL PARTS LIST CHANGE

ADD:-

A1C804 281-0759-00 Cap, Fxd, Cer, Di: 22pF 10% 100V

CHANGE TO:-

A1U800 155-0241-02 Microckt, Linear

Note: All C804 capacitor in parallel with R804

4285/384

GUERNSEY TYPE 2445 - TENTATIVE S/N 103031
2465 - TENTATIVE S/N 102781

ELECTRICAL PARTS LIST CHANGE

ADD

A9R1946 315-0106-00 Res, Fxd, Cmpsn, 10M 5%

CHANGE TO

A9R1895 315-0302-00 Res, Fxd, Cmpsn, 3K 5%

Note:

Add R1946 in parallel with R1945 for Unitrode Modules.
This resistor is to be 'Test Selected'

4296/484

GUERNSEY TYPE 2445 - TENTATIVE S/N 103331
2465 - TENTATIVE S/N 102921

ELECTRICAL PARTS LIST CHANGE

CHANGE TO:-

A10Q1698	151-0622-00	Transistor
A10R1691	308-0142-00	Resistor, 3W 5%
A10R1692	315-0101-00	Resistor, 100 Ohm 5%

4287/384

GUERNSEY TYPE 2445 - TENTATIVE S/N 103031
2465 - TENTATIVE S/N 102685

ELECTRICAL PARTS LIST CHANGE

ADD:-

A1C804	281-0759-00	Cap, Fxd, Cer, Di: 22pF 10% 100V
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CHANGE TO:-

A1U800	155-0241-02	Microckt, Linear
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Note: All C804 capacitor in parallel with R804

4285/384

GUERNSEY TYPE 2445 - TENTATIVE S/N 104162
2465 - TENTATIVE S/N 103258

ELECTRICAL PARTS LIST CHANGE

ADD

A1C823 281-0909-00 Capacitor, Fxd, Cer, Di: 0.022uF

Note: Add capacitor C823 to one end of R821 (J511 pin 10) and to C120 (gnd)

4363/984

GUERNSEY TYPE 2445 - TENTATIVE S/N 103631
2465 - TENTATIVE S/N 103077

ELECTRICAL PARTS LIST CHANGE

ADD:

A4R2919 321-0385-00 Resistor, Fxd, Film 100K Ohm 1% .125W

4324/684

GUERNSEY TYPE 2445 - TENTATIVE S/N 104761
2465 - TENTATIVE S/N 103881

ELECTRICAL PARTS LIST CHANGE

CHANGE TO:-

A5U2408 156-0513-03 Microckt, Digital
A5U2418 156-0513-03 Microckt, Digital

4278/884

ELECTRICAL PARTS LIST CHANGE

CHANGE TO:-

A1C117	283-0423-00	Capacitor, 50V 0.22uF
A1C175	283-0423-00	Capacitor, 50V 0.22uF
A1C180	283-0423-00	Capacitor, 50V 0.22uF
A1C181	283-0423-00	Capacitor, 50V 0.22uF
A1C217	283-0423-00	Capacitor, 50V 0.22uF
A1C528	283-0423-00	Capacitor, 50V 0.22uF
A1C822	283-0423-00	Capacitor, 50V 0.22uF
A1C103	281-0812-00	Capacitor, 1000pF
A1C202	281-0812-00	Capacitor, 1000pF
A1C223	281-0812-00	Capacitor, 1000pF
A1C120	281-0909-00	Capacitor, 0.022uF
A1C125	281-0909-00	Capacitor, 0.022uF
A1C207	281-0909-00	Capacitor, 0.022uF
A1C301	281-0909-00	Capacitor, 0.022uF
A1C306	281-0909-00	Capacitor, 0.022uF
A1C310	281-0909-00	Capacitor, 0.022uF
A1C311	281-0909-00	Capacitor, 0.022uF
A1C415	281-0909-00	Capacitor, 0.022uF
A1C458	281-0909-00	Capacitor, 0.022uF
A1C460	281-0909-00	Capacitor, 0.022uF
A1C521	281-0909-00	Capacitor, 0.022uF
A1C625	281-0909-00	Capacitor, 0.022uF
A1C722	281-0909-00	Capacitor, 0.022uF
A1C803	281-0909-00	Capacitor, 0.022uF
A1C810	281-0909-00	Capacitor, 0.022uF
A1C811	281-0909-00	Capacitor, 0.022uF
A1C819	281-0909-00	Capacitor, 0.022uF
A1C850	291-0909-00	Capacitor, 0.022uF
A1C912	281-0909-00	Capacitor, 0.022uF
A1C933	281-0909-00	Capacitor, 0.022uF
A1C938	281-0909-00	Capacitor, 0.022uF
A1C940	291-0909-00	Capacitor, 0.022uF
A1C943	281-0909-00	Capacitor, 0.022uF
A1C958	281-0909-00	Capacitor, 0.022uF
A1C973	281-0909-00	Capacitor, 0.022uF
A1C980	281-0909-00	Capacitor, 0.022uF
A1C988	281-0909-00	Capacitor, 0.022uF
A1C990	281-0909-00	Capacitor, 0.022uF
A1L619	108-0736-00	Coil, RF
A1R118	321-0212-00	Resistor, 1.58K
A1R218	321-0212-00	Resistor, 1.58K
A1R161	321-0293-00	Resistor, 11.0K
A1R162	321-0293-00	Resistor, 11.0K
A1R301	315-0470-00	Resistor, 47 Ohm
A1R302	315-0470-00	Resistor, 47 Ohm
A1R601	307-0113-00	Resistor, 5.1 Ohm,
A1R602	307-0113-00	Resistor, 5.1 Ohm
A1R608	307-0113-00	Resistor, 5.1 Ohm