

Symbol	Part Code	Description	Q'ty			
			A	B	C	D
D 851	HDS0437	Diode 1SS133	1	1	1	1
D 852	HDS0437	Diode 1SS133	1	1	1	1
D 853	HDS0437	Diode 1SS133	1	1	1	1
D 854	HDS0437	Diode 1SS133	1	1	1	1

ALT MAG SWITCHING

Symbol	Part Code	Description	Q'ty			
			A	B	C	D
R 860	RCE0770	R, Carbon 1/4W 1.2kΩ ±5%				1
R 860	RME1192	R, Metal 1/4W 24.3kΩ ±1%			1	
R 861	RCE0777	R, Carbon 1/4W 4.7kΩ ±5%			1	1
R 862	RCE0777	R, Carbon 1/4W 4.7kΩ ±5%			1	1
R 863	RCE0777	R, Carbon 1/4W 4.7kΩ ±5%			1	1
R 864	RCE0765	R, Carbon 1/4W 470Ω ±5%			1	1
R 865	RCE0765	R, Carbon 1/4W 470Ω ±5%			1	1
R 866	RME1085	R, Metal 1/4W 12.1kΩ ±1%			1	1
R 861	RME1090	R, Metal 1/4W 33.2kΩ ±1%			1	
R 869	RCE0745	R, Carbon 1/4W 10Ω ±5%			1	1
TR 860	HTA0224	Transistor 2SA1029D			1	1
TR 861	HTA0224	Transistor 2SA1029D			1	1
IC 801	IDH0586	Digital IC HD74LS74AP			1	1

HV Z AMP HIGH VOLTAGE CKT

Symbol	Part Code	Description	Q'ty				
			A	B	C	D	
R 1001	RMS0023	R, Metal 1/4W 1.43M Ω	$\pm 0.5\%$	1	1	1	
R 1001	RMS0018	R, Metal 1/4W 1M Ω	$\pm 1\%$				1
R 1002	RCE0789	R, Carbon 1/4W 47k Ω	$\pm 5\%$	1	1	1	1
R 1003	RCE0797	R, Carbon 1/4W 220k Ω	$\pm 5\%$	1	1	1	1
R 1004	RCE0769	R, Carbon 1/4W 1k Ω	$\pm 5\%$	1	1	1	1
R 1005	RCE0777	R, Carbon 1/4W 4.7k Ω	$\pm 5\%$	1	1	1	1
R 1005	RCE0775	R, Carbon 1/4W 3.3k Ω	$\pm 5\%$				1
R 1006	RCE0757	R, Carbon 1/4W 100 Ω	$\pm 5\%$	1	1	1	1
R 1012	RCE0789	R, Carbon 1/4W 47k Ω	$\pm 5\%$				1
R 1014	RCE0715	R, Carbon 1/2W 6.8k Ω	$\pm 5\%$	1	1	1	1
R 1017	RMV0004	R, Metal 1/2W 22.1M Ω	$\pm 1\%$	1	1	1	1
R 1016	RCE0800	R, Carbon 1/4W 470k Ω	$\pm 5\%$	1	1	1	1
R 1016	RCE0745	R, Carbon 1/4W 10 Ω	$\pm 5\%$				1
R 1020	RCE0798	R, Carbon 1/4W 330k Ω	$\pm 5\%$	1	1	1	1
R 1021	RCE0785	R, Carbon 1/4W 22k Ω	$\pm 5\%$	1	1	1	1
R 1021	RCE0773	R, Carbon 1/4W 2.2k Ω	$\pm 5\%$				1
R 1023	RCE0777	R, Carbon 1/4W 4.7k Ω	$\pm 5\%$	1	1	1	1
R 1024	RSE0434	R, Solid ERC14G 10M Ω		1	1	1	1
R 1033	RCE0781	R, Carbon 1/4W 10k Ω	$\pm 5\%$				1
R 1034	RCE0785	R, Carbon 1/4W 22k Ω	$\pm 5\%$				1
R 1038	RCE0793	R, Carbon 1/4W 100k Ω	$\pm 5\%$				1
R 1038	RCE0798	R, Carbon 1/4W 330k Ω	$\pm 5\%$	1	1	1	1
R 1350	RCE0749	R, Carbon 1/4W 22 Ω	$\pm 5\%$	1	1	1	1
C 1001	CQA0099	C, Plastic 50V 0.022 μ F	$\pm 10\%$	1	1	1	1
C 1002	CES0035	C, AL Elyc 50V 47 μ F	$\pm 10\%$	1	1	1	1
C 1005	CQA0101	C, Plastic 50V 0.047 μ F	$\pm 10\%$	1	1	1	1
C 1012	CCD0231	C, Ceramic 2000V 4700pF	$\pm 80\%$ $\pm 20\%$	1	1	1	1
C 1013	CCD0231	C, Ceramic 2000V 4700pF	$\pm 80\%$ $\pm 20\%$	1	1	1	1
C 1014	CCD0231	C, Ceramic 2000V 4700pF	$\pm 80\%$ $\pm 20\%$	1	1	1	1
C 1016	CCD0245	C, Ceramic 2000V 100pF	$\pm 10\%$	1	1	1	1
C 1020	CCD0286	C, Ceramic 500V 1000pF	$\pm 100\%$ $\pm 0\%$	1	1	1	1
C 1021	CEC0213	C, AL Elyc 160V 1 μ F	1	1	1	1	1
C 1023	CCD0246	C, Ceramic 2kV 1000pF	$\pm 10\%$	1	1	1	1
C 1025	CCD0231	C, Ceramic 2000V 4700pF	$\pm 80\%$ $\pm 20\%$	1	1	1	1
C 1034	CCD0287	C, Ceramic 500V 4700pF	$\pm 100\%$ $\pm 0\%$				1
C 1035	CCD0287	C, Ceramic 500V 4700pF	$\pm 100\%$ $\pm 0\%$	1	1	1	1
C 1038	CCD0287	C, Ceramic 500V 4700pF	$\pm 100\%$ $\pm 0\%$	1	1	1	1
RV 1021	RNE0054	VR, Metal EVN39C00YB15 (100K)		1	1	1	1
RV 1033	RNE0054	VR, Metal EVN39C00YB15 (100K)					1
RV 1035	RNE0055	VR, Metal EVN39C00YB25 (200K)		1	1	1	1
RV 1035	RNE0054	VR, Metal EVN39C00YB15 (100K)					1
RV 1348	8348450	VR, Metal CR29R 22k Ω		1	1	1	1
TR 1001	HTK0081	Transistor 2SK304E		1	1	1	1
TR 1002	HTA0224	Transistor 2SA1029D		1	1	1	1
TR 1006	HTD0155	Transistor 2SD313E		1	1	1	1
	HYX0010	30F-TO-220		1	1	1	1
TR 1348	HTC0148	Transistor 2SC458C		1	1	1	1
TR 1349	HTA0224	Transistor 2SA1029D		1	1	1	1
D 1012	HDY0031	Diode Y10GA		1	1	1	1
D 1013	HDY0031	Diode Y10GA					1
D 1020	HDH0072	Diode HZ22					1
D 1021	HDS0250	Diode 1SS83		1	1	1	1
D 1022	HDS0250	Diode 1SS83		1	1	1	1
D 1023	HDS0250	Diode 1SS83		1	1	1	1
D 1024	HDS0250	Diode 1SS83		1	1	1	1
D 1038	HDH0072	Diode HZ22		1	1	1	1

Symbol	Part Code	Description	Q'ty				
			A	B	C	D	
T 1001	3180008	XFMR FOR V-211,212,222, 422		1	1	1	1
F 1001		Fuse TSCR UL 125V 0.25A		1	1	1	1
MUT1001	3180009	Multiplier 10KV X5					1
NL 1024	ELL0019	Lamps NE-2		1	1	1	1
NL 1025	ELL0019	Lamps NE-2		1	1	1	1
F 1001	EFL0147	Fuse TSCR UL 125V 0.5A					1

PANEL and OTHERS

Symbol	Part Code	Description	Q'ty				
			A	B	C	D	
V 1001	DPX0076	CRT 150BTB31 (IG)		1	1	1	
V 1001	DPX0077	CRT 2977B31					1
	8338351	Terminal Z-048		1	1	1	1
J 9	JHB0088	CON. Coax BNC071		1	1	1	1
L 1350		Coil Trace Rotation		1	1	1	1

Z AXIS AMP

Symbol	Part Code	Description	Q'ty				
			A	B	C	D	
R 901	RCE0789	R, Carbon 1/4W 47k Ω	$\pm 5\%$	1	1	1	1
R 901	RCE0787	R, Carbon 1/4W 33k Ω	$\pm 5\%$				1
R 902	RCE0776	R, Carbon 1/4W 3.9k Ω	$\pm 5\%$	1	1	1	1
R 903	RCE0784	R, Carbon 1/4W 18k Ω	$\pm 5\%$				1
R 903	RCE0779	R, Carbon 1/4W 6.8k Ω	$\pm 5\%$	1	1	1	1
R 904	RCE0725	R, Carbon 1/2W 47k Ω	$\pm 5\%$	1	1	1	1
R 904	RCE0723	R, Carbon 1/2W 33k Ω	$\pm 5\%$				1
R 906	RCE0793	R, Carbon 1/4W 100k Ω	$\pm 5\%$				1
R 906	RCE0793	R, Carbon 1/4W 100k Ω	$\pm 5\%$	1	1	1	1
R 907	RCE0757	R, Carbon 1/4W 100 Ω	$\pm 5\%$	1	1	1	1
R 908	RCE0771	R, Carbon 1/4W 1.5k Ω	$\pm 5\%$				1
R 908	RCE0773	R, Carbon 1/4W 2.2k Ω	$\pm 5\%$	1	1	1	1
R 909	RCE0798	R, Carbon 1/4W 330k Ω	$\pm 5\%$	1	1	1	1
R 909	RCE0797	R, Carbon 1/4W 220k Ω	$\pm 5\%$				1
R 910	RCE0783	R, Carbon 1/4W 15k Ω	$\pm 5\%$				1
R 910	RCE0793	R, Carbon 1/4W 100k Ω	$\pm 5\%$	1	1	1	1
R 911	RCE0781	R, Carbon 1/4W 10k Ω	$\pm 5\%$	1	1	1	1
R 911	RCE0769	R, Carbon 1/4W 1k Ω	$\pm 5\%$				1
R 912	RCE0745	R, Carbon 1/4W 10 Ω	$\pm 5\%$	1	1	1	1
R 912	RCE0745	R, Carbon 1/4W 10 Ω	$\pm 5\%$				1
R 915	RCE0761	R, Carbon 1/4W 220 Ω	$\pm 5\%$	1	1	1	1
R 930	RCE0776	R, Carbon 1/4W 3.9k Ω	$\pm 5\%$				1
R 930	RCE0777	R, Carbon 1/4W 4.7k Ω	$\pm 5\%$	1	1	1	1
R 931	RCE0787	R, Carbon 1/4W 33k Ω	$\pm 5\%$				1
R 905	RCE0795	R, Carbon 1/4W 150k Ω	$\pm 5\%$				1

Symbol	Part Code	Description	Q'ty			
			A	B	C	D
C 901	CES0028	C, AL Elyc 10V 47 μ F \pm 10%	1	1	1	1
C 904	CCD0272	C, Ceramic 500V 1 pF \pm 0.25pF	1	1	1	1
C 908	CCD0287	C, Ceramic 500V 4700 pF \pm 100% -0	1	1	1	1
C 912	CET0033	TC 04SM 160V 1 μ	1	1	1	1
TR 901	HTC0192	Transistor 2SC641K-C	1	1	1	1
TR 906	HTC0148	Transistor 2SC458C	1	1	1	1
TR 910	HTA0277	Transistor 2SA1207S	1	1	1	1
TR 912	HTC0722	Transistor 2SC2909S	1	1	1	1
TR 931	HTA0104	Transistor 2SA778AK			1	1
D 901	HDS0437	Diode 1SS133	1	1	1	1
D 902	HDS0437	Diode 1SS133	1	1	1	1
D 910	HDS0437	Diode 1SS133	1	1	1	1

CRT

Symbol	Part Code	Description	Q'ty			
			A	B	C	D
R 1018	RCE0738	R, Carbon 1/2W 2.2M Ω \pm 5%	1	1	1	
R 1030	RCE0781	R, Carbon 1/4W 10k Ω \pm 5%	1	1	1	
R 1031	RCE0793	R, Carbon 1/4W 100k Ω \pm 5%	1	1	1	
J 1001	8390152	Socket 1339 (CRT)	1	1	1	
PEF-626		PCB PB-14	R	R	R	

CRT

Symbol	Part Code	Description	Q'ty			
			A	B	C	D
R 1018	RCE0738	R, Carbon 1/2W 2.2M Ω \pm 5%				1
R 1030	RCE0777	R, Carbon 1/4W 4.7k Ω \pm 5%				1
R 1031	RCE0793	R, Carbon 1/4W 100k Ω \pm 5%				1
R 1032	RCE0757	R, Carbon 1/4W 100 Ω \pm 5%				1
J 1001	8390152	Socket 1339 (CRT)				1
PEF-627		PCB PE-14				R

POWER SUPPLY

Symbol	Part Code	Description	Q'ty			
			A	B	C	D
R 1101	RCE0793	R, Carbon 1/4W 100kΩ ±5%	1	1	1	1
R 1102	RCE0769	R, Carbon 1/4W 1.0kΩ ±5%	1	1	1	1
R 1103	RCE0775	R, Carbon 1/4W 3.3kΩ ±5%	1	1	1	
R 1103	RCE0774	R, Carbon 1/4W 2.7kΩ ±5%				1
R 1104	RME1096	R, Metal 1/4W 100kΩ ±1%	1	1	1	
R 1104	RME1091	R, Metal 1/4W 39.2kΩ ±5%				1
R 1105	RCE0777	R, Carbon 1/4W 4.7kΩ ±5%	1	1	1	
R 1105	RCE0775	R, Carbon 1/4W 3.3kΩ ±5%				1
R 1106	RME1086	R, Metal 1/4W 15.0kΩ ±1%	1	1	1	
R 1106	RME1084	R, Metal 1/4W 10.0kΩ ±1%				1
R 1107	RCE0785	R, Carbon 1/4W 22kΩ ±5%	1	1	1	1
R 1109	RCE0769	R, Carbon 1/4W 1kΩ ±5%	1	1	1	1
R 1110	RCE0761	R, Carbon 1/4W 220Ω ±5%	1	1	1	1
R 1110	RCE0767	R, Carbon 1/4W 220Ω ±5%	1	1	1	1
R 1121	RCE0761	R, Carbon 1/4W 220Ω ±5%	1	1	1	1
R 1124	RCE0783	R, Carbon 1/4W 15kΩ ±5%	1	1	1	1
R 1125	RCE0753	R, Carbon 1/4W 47Ω ±5%	1	1	1	1
R 1131	RCE0685	R, Carbon 1/2W 22Ω ±5%	1	1	1	
R 1131	RCE0689	R, Carbon 1/2W 47Ω ±5%				1
R 1132	RCE0689	R, Carbon 1/2W 47Ω ±5%				1
R 1141	RCE0800	R, Carbon 1/4W 470kΩ ±5%	1	1	1	1
R 1142	RCE0787	R, Carbon 1/4W 33kΩ ±5%	1	1	1	1
C 1101	CES0201	C, AL Elyc 160V 47μF	1	1	1	1
C 1102	CES0203	C, AL Elyc 250V 47μF	1	1	1	1
C 1109	CES0201	C, AL Elyc 160V 47μF	1	1	1	1
C 1110	CQA0092	C, Plastic 50V 0.0015μF	1	1	1	1
C 1111	CES0204	C, AL Elyc 25V 2200μF	1	1	1	1
C 1112	CES0028	C, AL Elyc 10V 47μF/LB	1	1	1	1
C 1121	CES0204	C, AL Elyc 25V 2200μF	1	1	1	1
C 1121	CES0028	C, AL Elyc 10V 47μF/LB	1	1	1	1
C 1124	CQA0101	C, Plastic 50V 0.047μF ±10%	1	1	1	1
C 1131	CES0036	C, AL Elyc 25V 22μF/LB	1	1	1	1
C 1138	CES0028	C, AL Elyc 10V 47μF/LB	1	1	1	1
TR 1102	HTC0671	Transistor 2SC1505L	1	1	1	1
TR 1101	HTA0104	Transistor 2SA778AK	1	1	1	1
TR 1103	HTA0224	Transistor 2SA1029D	1	1	1	1
TR 1104	HTC0148	Transistor 2SC458C	1	1	1	1
IC 1111	ILH0109	Digital IC HA17808P	1	1	1	1
IC 1121	ILM0342	Digital IC M PC7808	1	1	1	1
IC 1131	ILH0108	Digital IC HA17805P	1	1	1	1
D 1101	HDS0476	Diode S5566J	1	1	1	1
D 1102	HDS0476	Diode S5566J	1	1	1	1
D 1103	HDS0476	Diode S5566J	1	1	1	1
D 1104	HDS0476	Diode S5566J	1	1	1	1
D 1105	HDS0476	Diode S5566J	1	1	1	1
D 1106	HDS0476	Diode S5566J	1	1	1	1
D 1111	HDS0475	Diode S5566B	1	1	1	1
D 1112	HDS0475	Diode S5566B	1	1	1	1
D 1113	HDS0475	Diode S5566B	1	1	1	1
D 1114	HDS0475	Diode S5566B	1	1	1	1
P 1101	JBX0703	Connector 1-171825-0	1	1	1	1
PEF-621	PCB	PB-15	R	R	R	R

SCALE, ILLUM LAMP

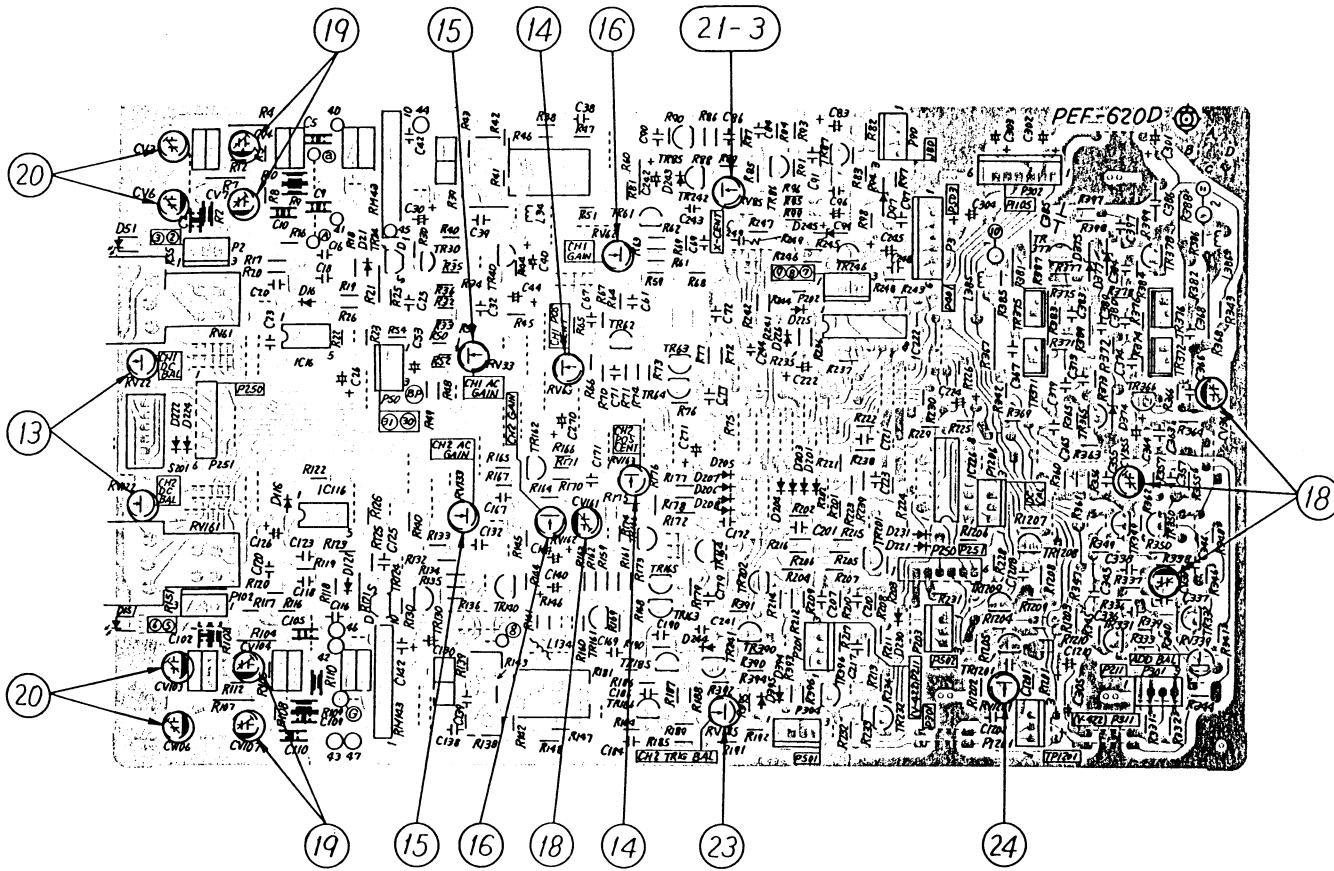
Symbol	Part Code	Description	Q'ty			
			A	B	C	D
PL 1401	8400068	Lamp 8V			1	1
PL 1402	8400068	Lamp 8V			1	1
PL 1403	8400068	Lamp 8V			1	1
PEF-623	PCB	PB-15			R	R

PANEL and OTHERS

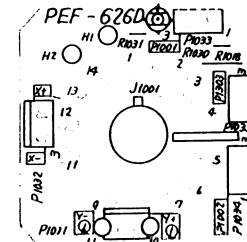
Symbol	Part Code	Description	Q'ty			
			A	B	C	D
J 1102	JJC0026	Connector CM3 (C-170)	1	1	1	1
J 1103	3142147	Unit PWP S-17221 (100/120/220/240V)	1	1	1	1
S 1101	8400067	SW, PB SDV 3P	1	1	1	1
T 1101	3173880	XFMR For V-211, 212, 222, 422	1	1	1	1
D 1110	HDS0408	Diode SR503D with mount(red)	1	1	1	1
TR 1310	HTD0155	Transistor 2SD313E			1	1

9 RV/LAMP

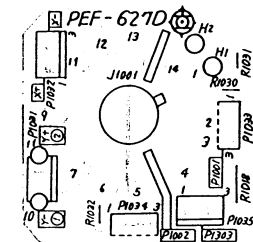
Symbol	Part Code	Description	Q'ty			
			A	B	C	D
R 932	RCE0737	R, Carbon 1/2W 1.8M Ω \pm 5%				1
R 932	RCE0738	R, Carbon 1/2W 2.2M Ω \pm 5%				1
R 933	RMW0008	R, Metal VR37-15M Ω \pm 5%	1	1	1	1
R 1019	RCE0793	R, Carbon 1/4W 100k Ω \pm 5%				1
R 1019	RCE0798	R, Carbon 1/4W 330k Ω \pm 5%				1
R 1301	RCE0773	R, Carbon 1/4W 2.2k Ω \pm 5%				1
R 1301	RCE0775	R, Carbon 1/4W 3.3k Ω \pm 5%	1	1	1	
R 1310	RCE0777	R, Carbon 1/4W 4.7k Ω \pm 5%				1 1
R 1311	RCE0775	R, Carbon 1/4W 3.3k Ω \pm 5%				1 1
R 932	RCE0715	R, Carbon 1/2W 6.8k Ω \pm 5%	1	1		
R 1019	RCE0800	R, Carbon 1/4W 470k Ω \pm 5%	1	1		
R 1312	RCE0773	R, Carbon 1/4W 2.2k Ω \pm 5%				1 1
RV 1301	8348452	VR, Carbon EVH-CCAK20B14	1	1	1	1
RV 1311	8348452	VR, Carbon EVH-CCAK20B14				1 1
RV 1401	RNE0059	VR, Metal EVHNDGK20B26	1	1	1	1
TR 1311	HTA0224	Transistor 2SA1029D				1 1
D 1310	HDS0437	Diode 1SS133				1 1
PEF-625		PCB PB-15				R R



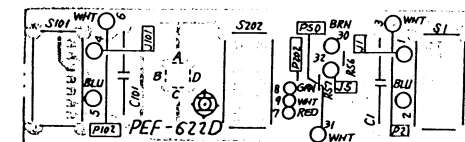
PEF-620D PCB



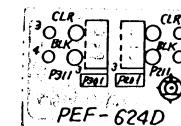
PEF-626D PCB



PEF-627D PCB



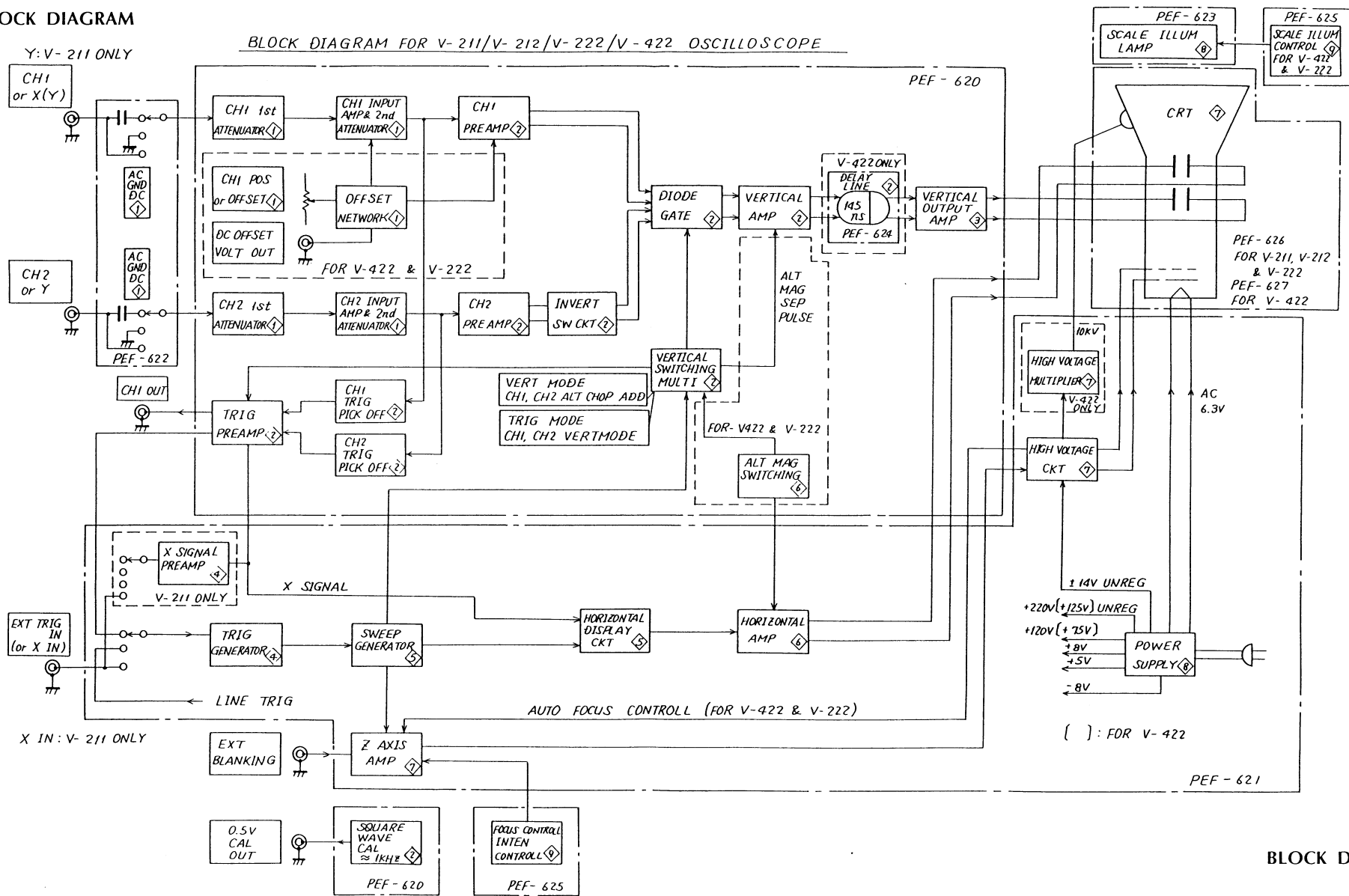
PEF-622D PCB



PEF-624D PCB

8. BLOCK DIAGRAM

BLOCK DIAGRAM FOR V-211/V-212/V-222/V-422 OSCILLOSCOPE



BLOCK DIAGRAM

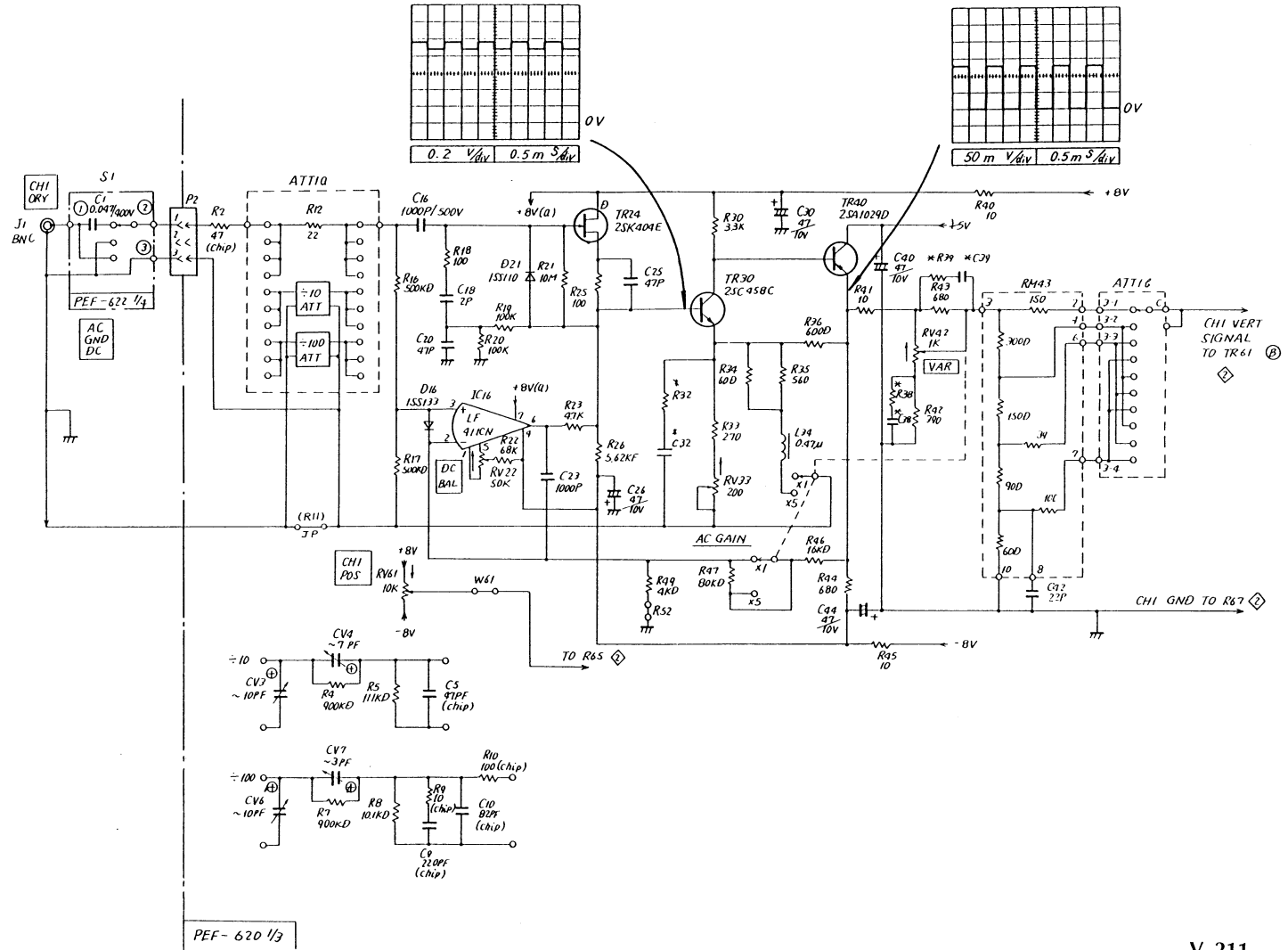
10. SCHEMATIC DIAGRAMS

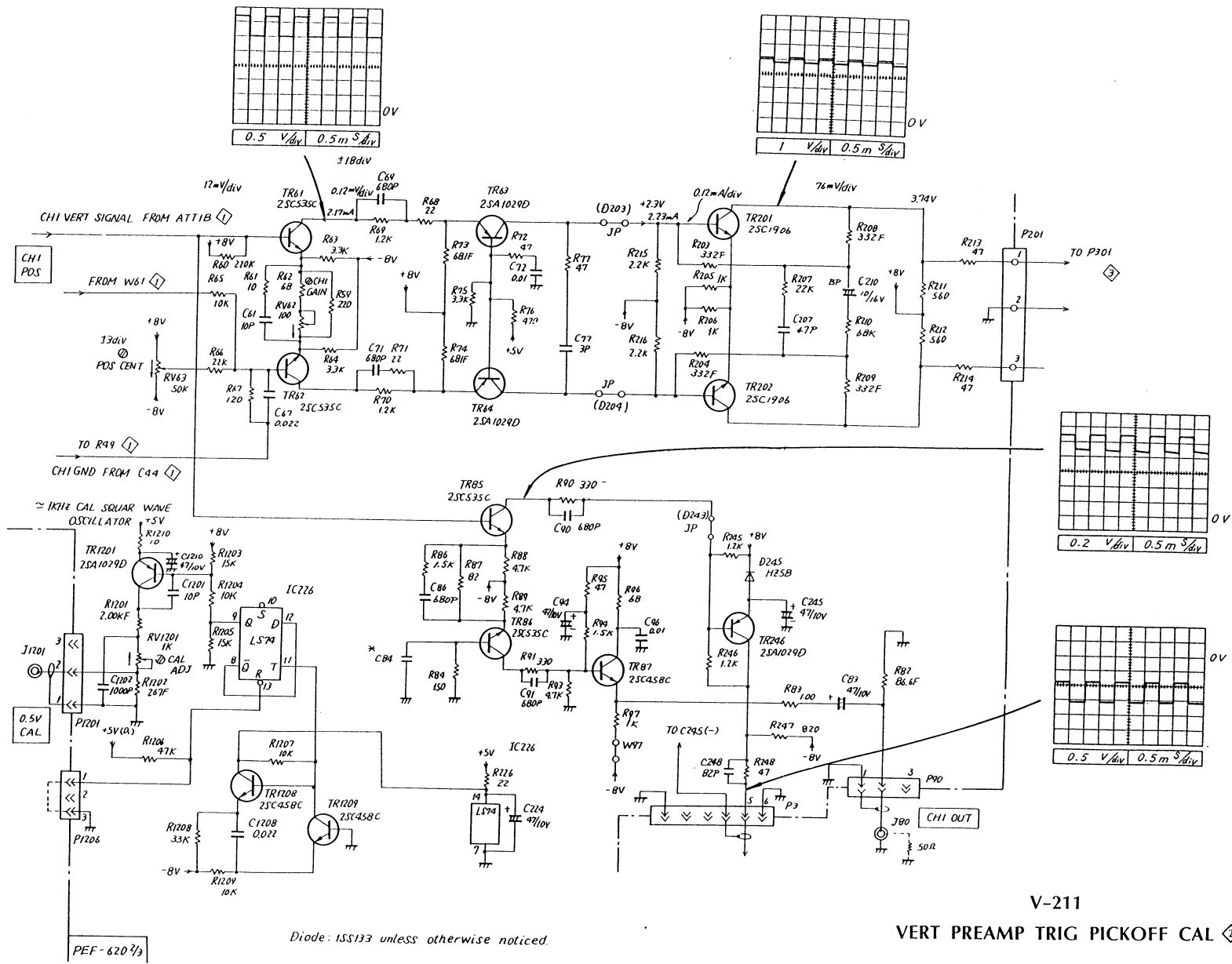
Note

1. This basic circuit diagram is subject to change without notice.
2. All resistor values in ohm: 1/4W and all capacitor values in microfarad unless indicated.
3. * Factory selected values.

DC VOLTAGE MEASUREMENT CONDITIONS

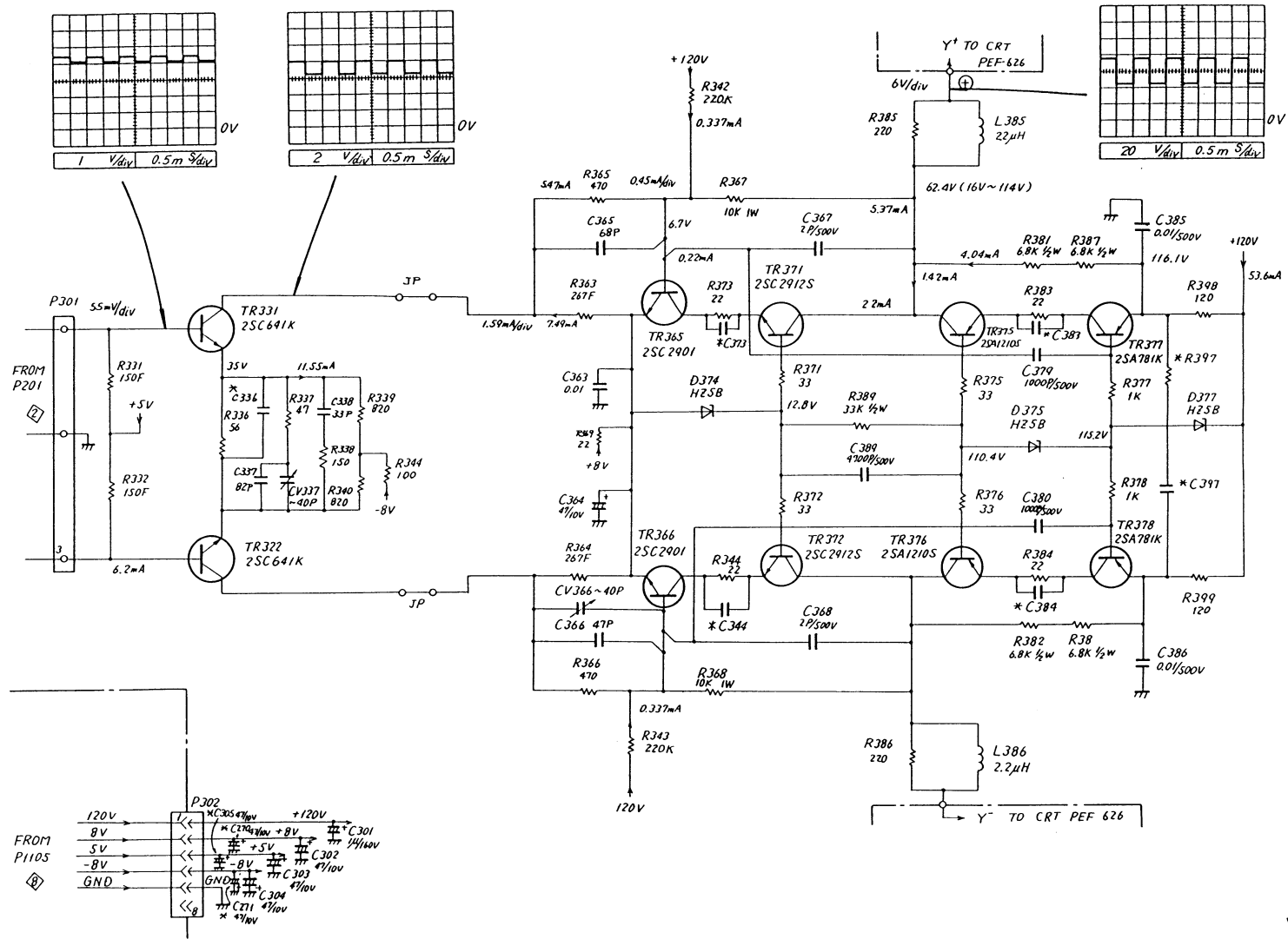
- TRIG LEVEL : CENTER
- AC-GND-DC : DC
- VOLTS/DIV : 10 mV
- INPUT : CH1
- TRIG MODE : AUTO
- TRIG SOURCE : INT
- INT TRIG : CH1
- SWEEP TIME : 0.5 ms
- PROBE : 10 : 1



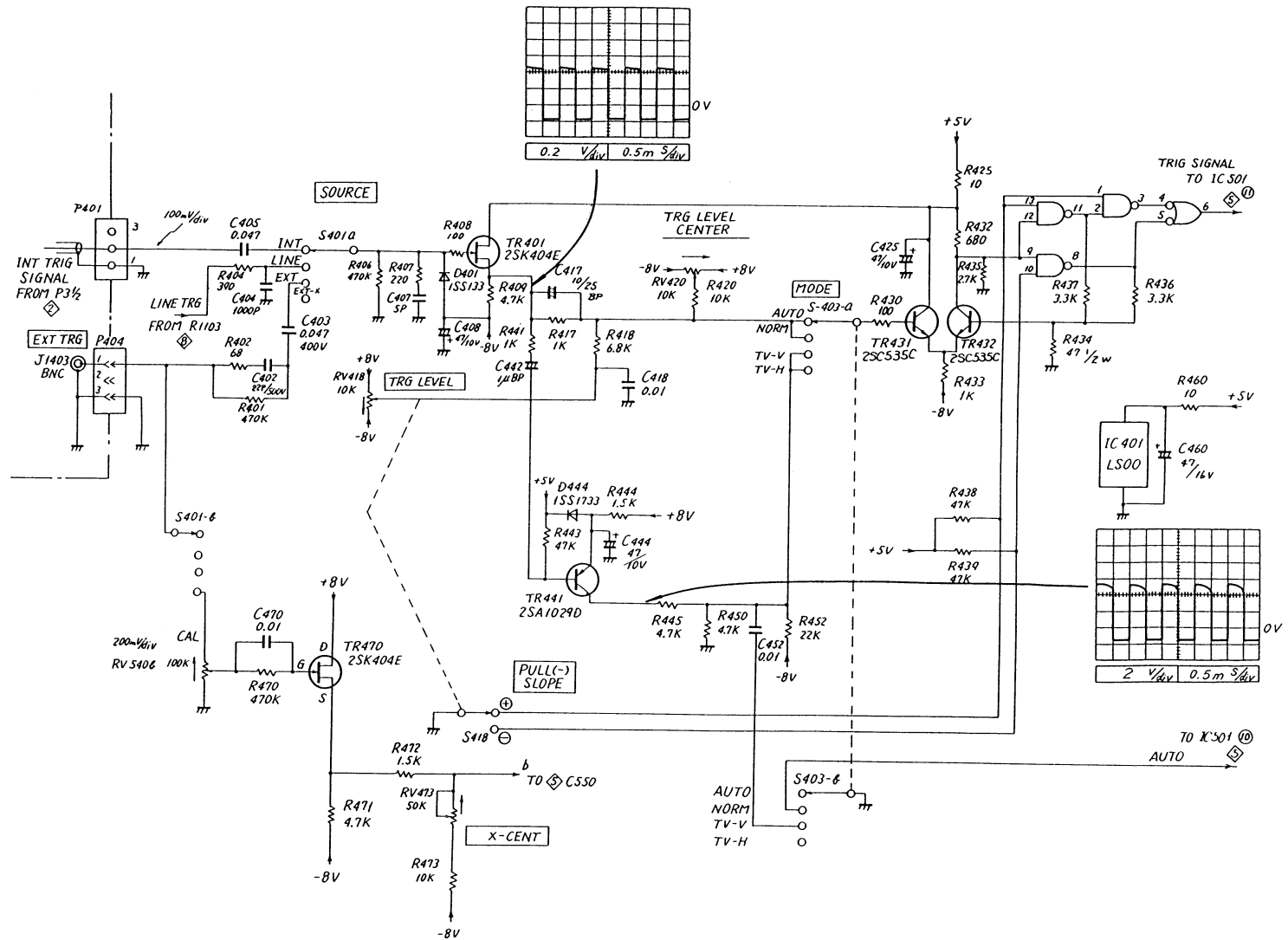


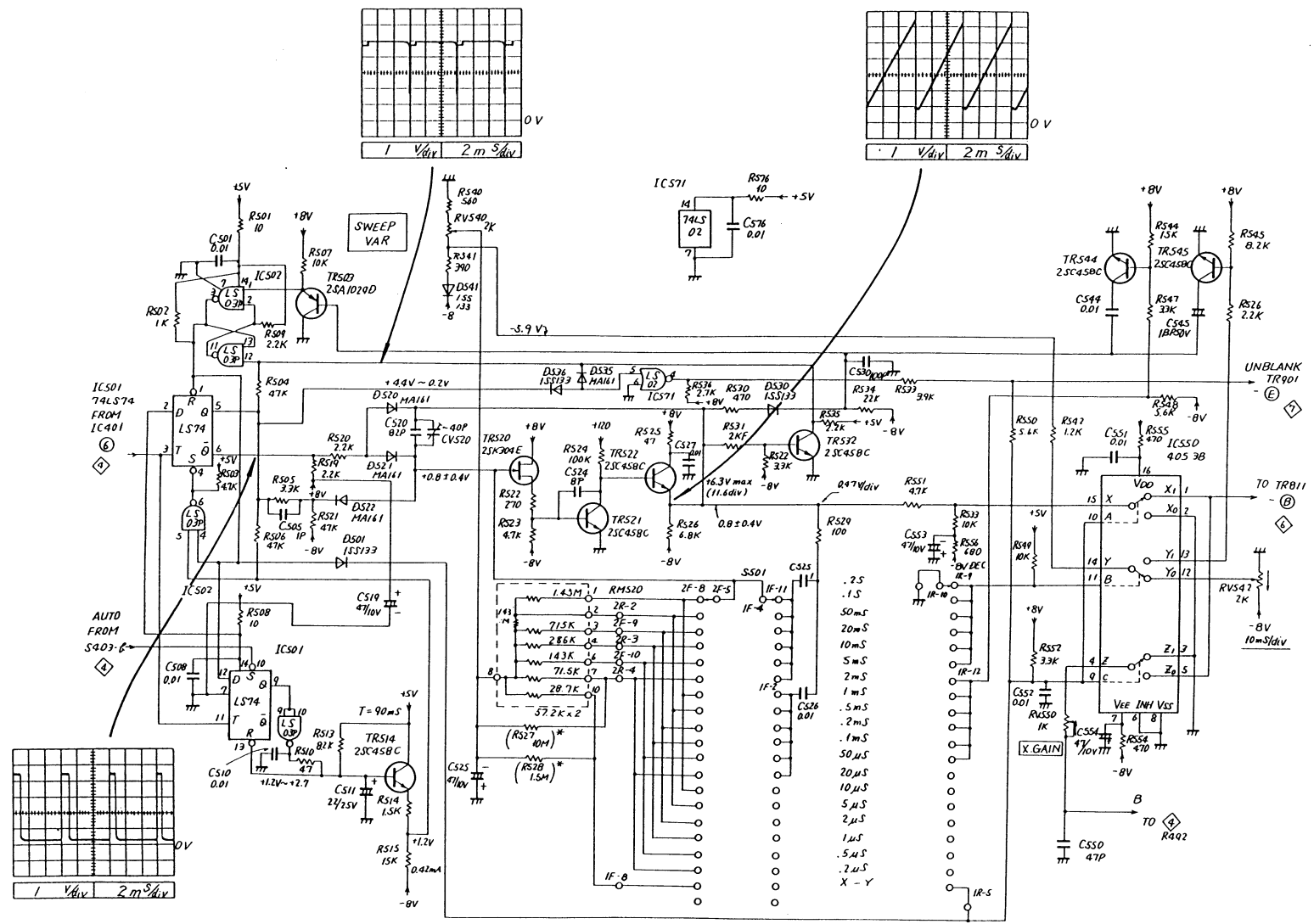
Diode: 1SS133 unless otherwise noticed.

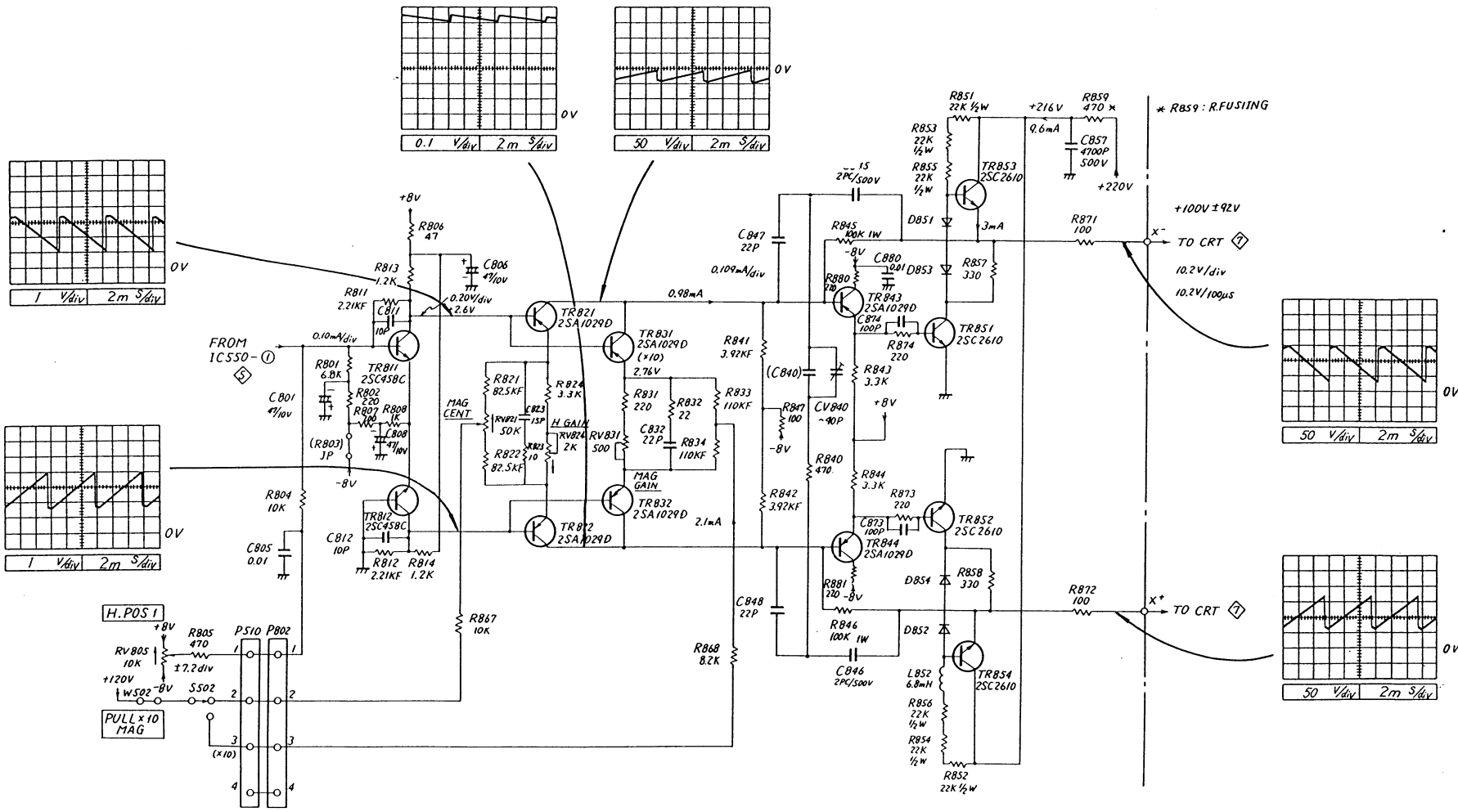
V-211
VERT PREAMP TRIG PICKOFF CAL

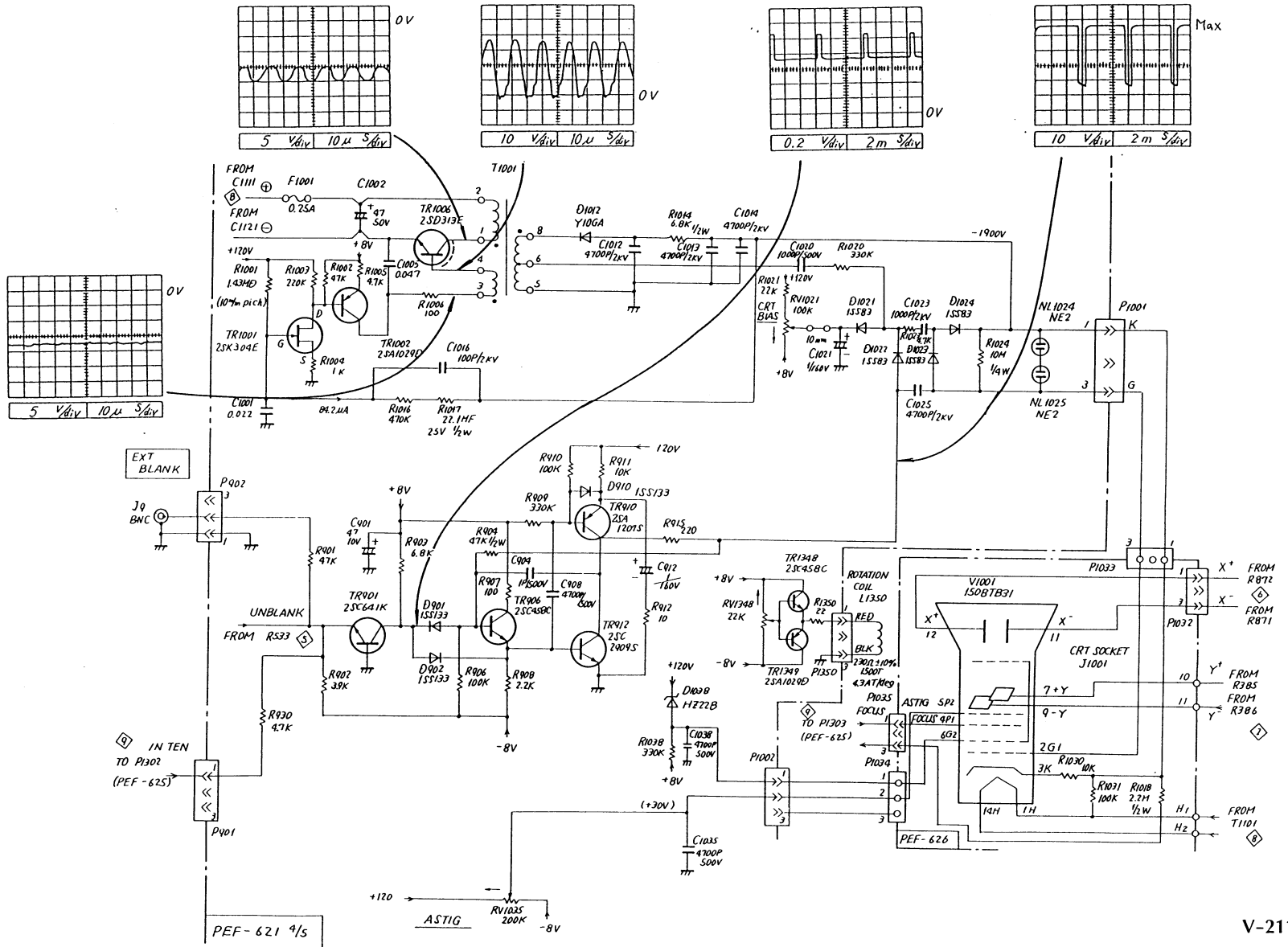


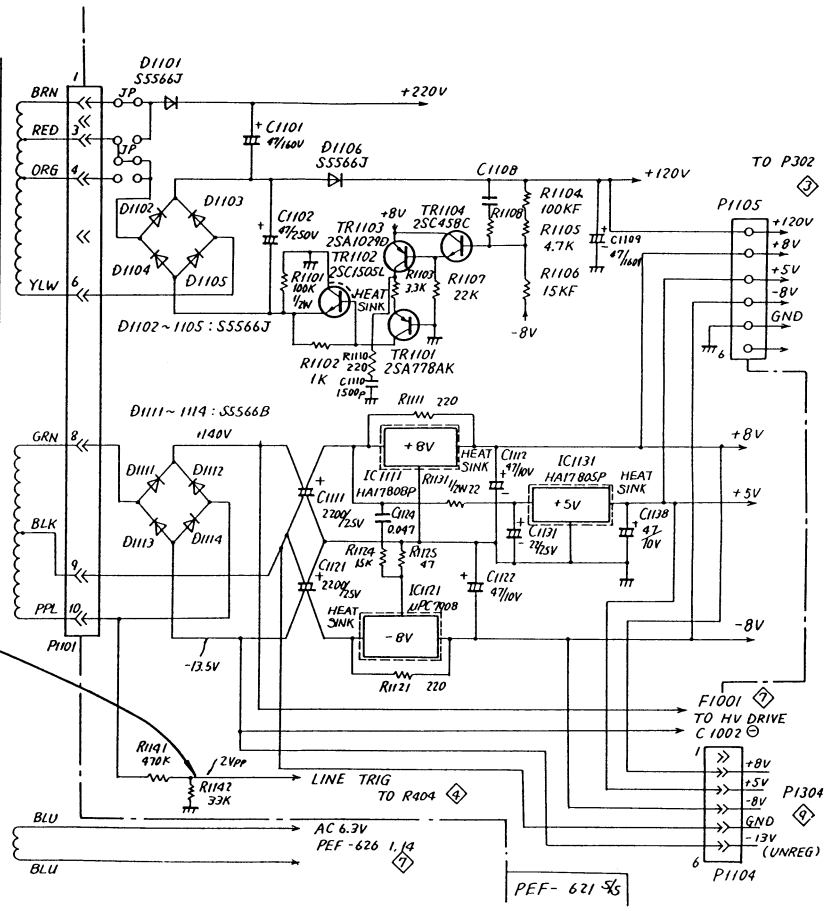
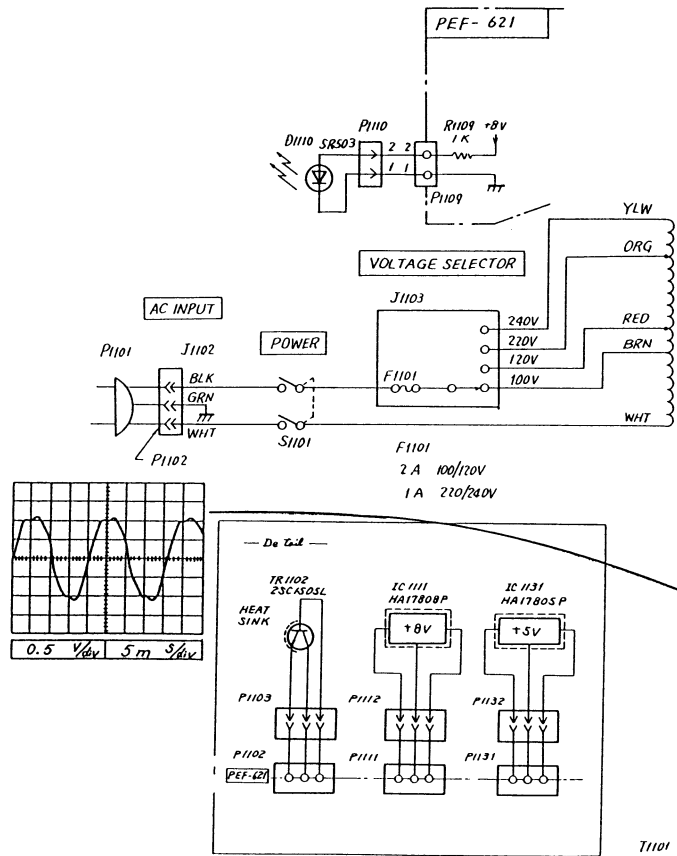
V-211
V OUT



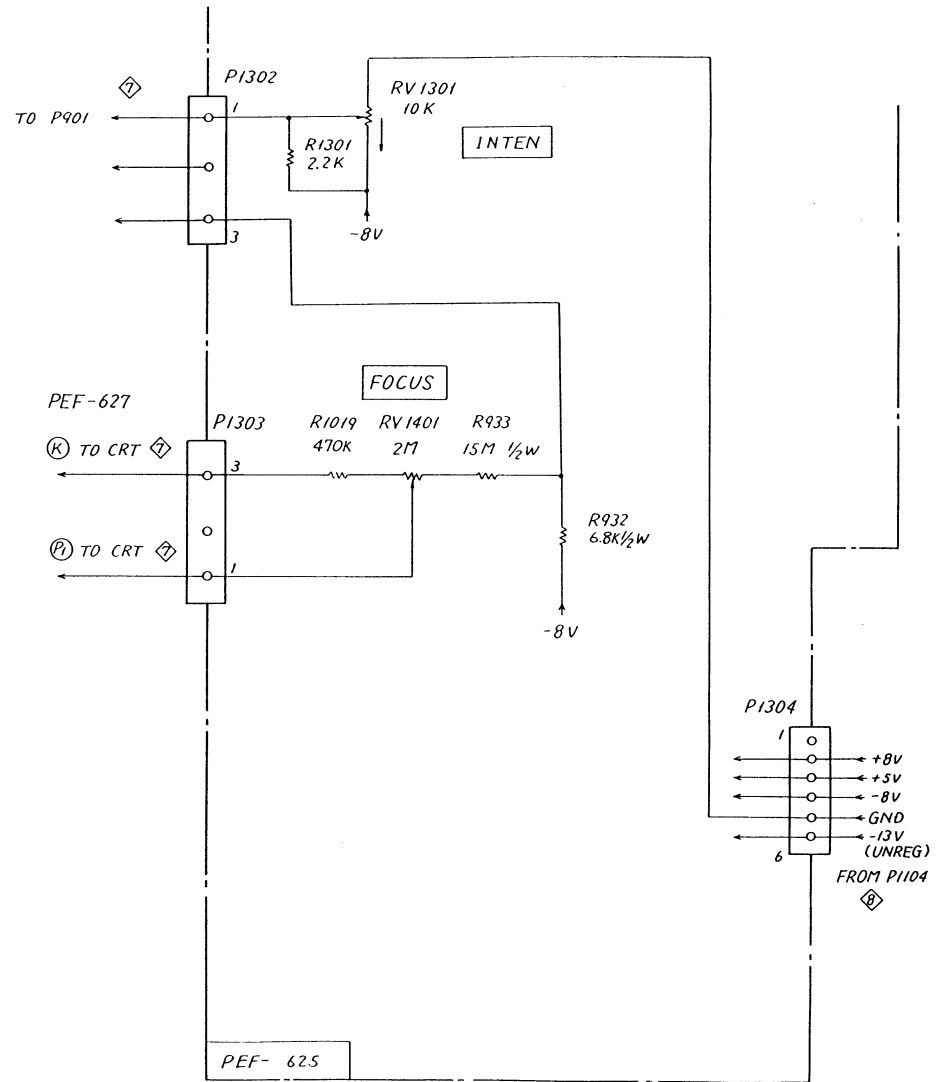




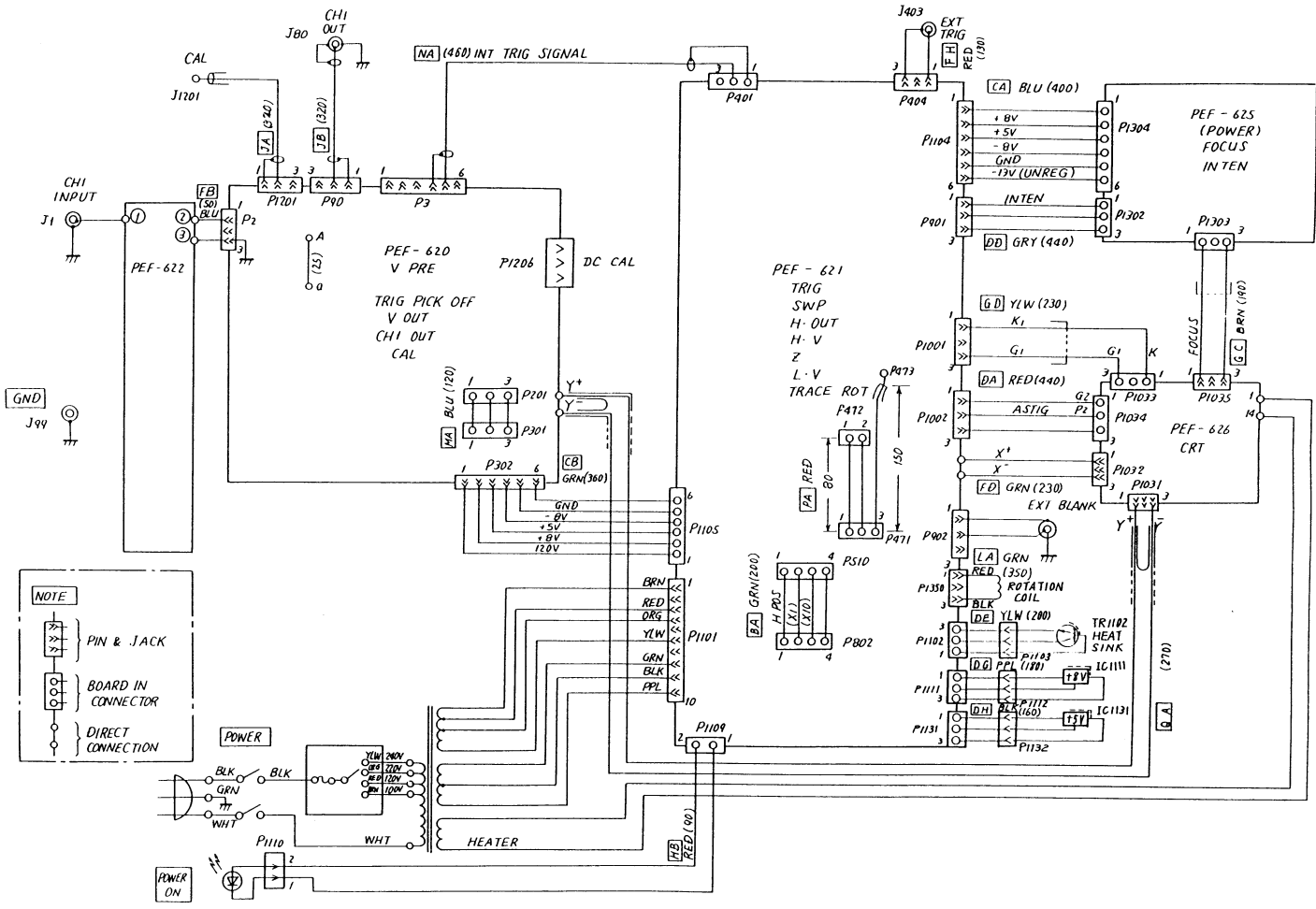




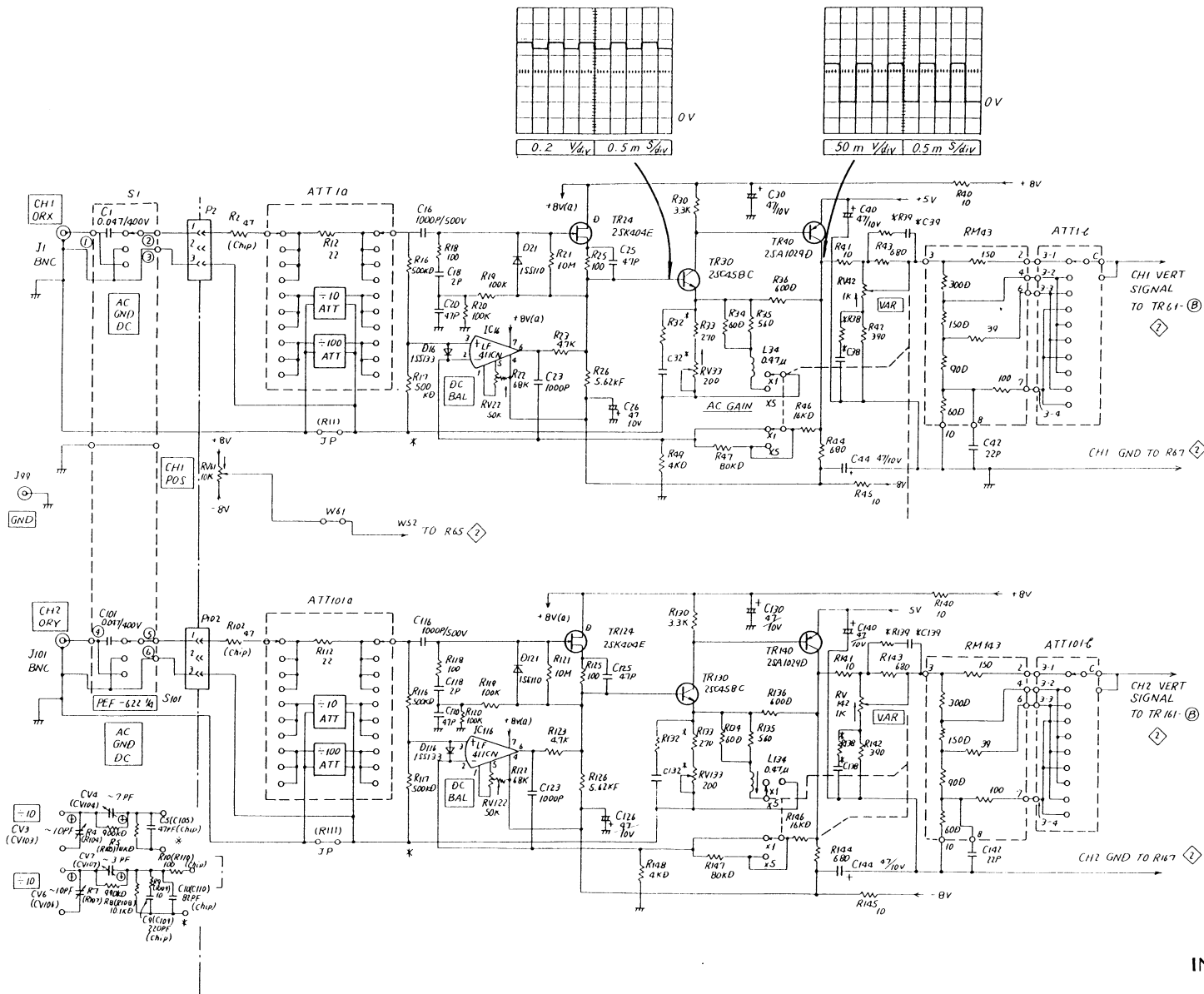
V-211
POWER SUPPLY



V-211
RV/LAMP $\text{\textcircled{Q}}$

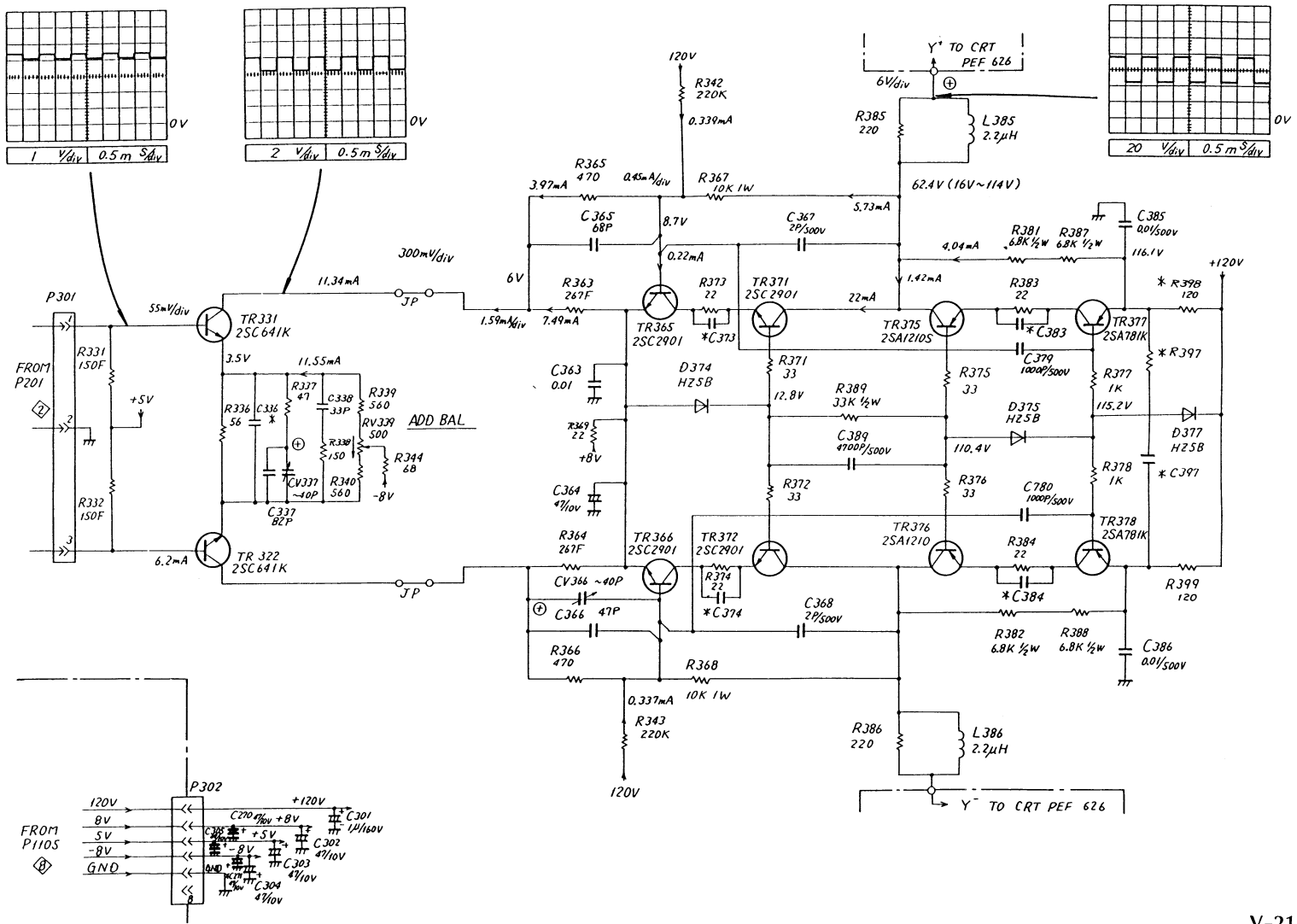


V-211
WIRING DIAGRAM

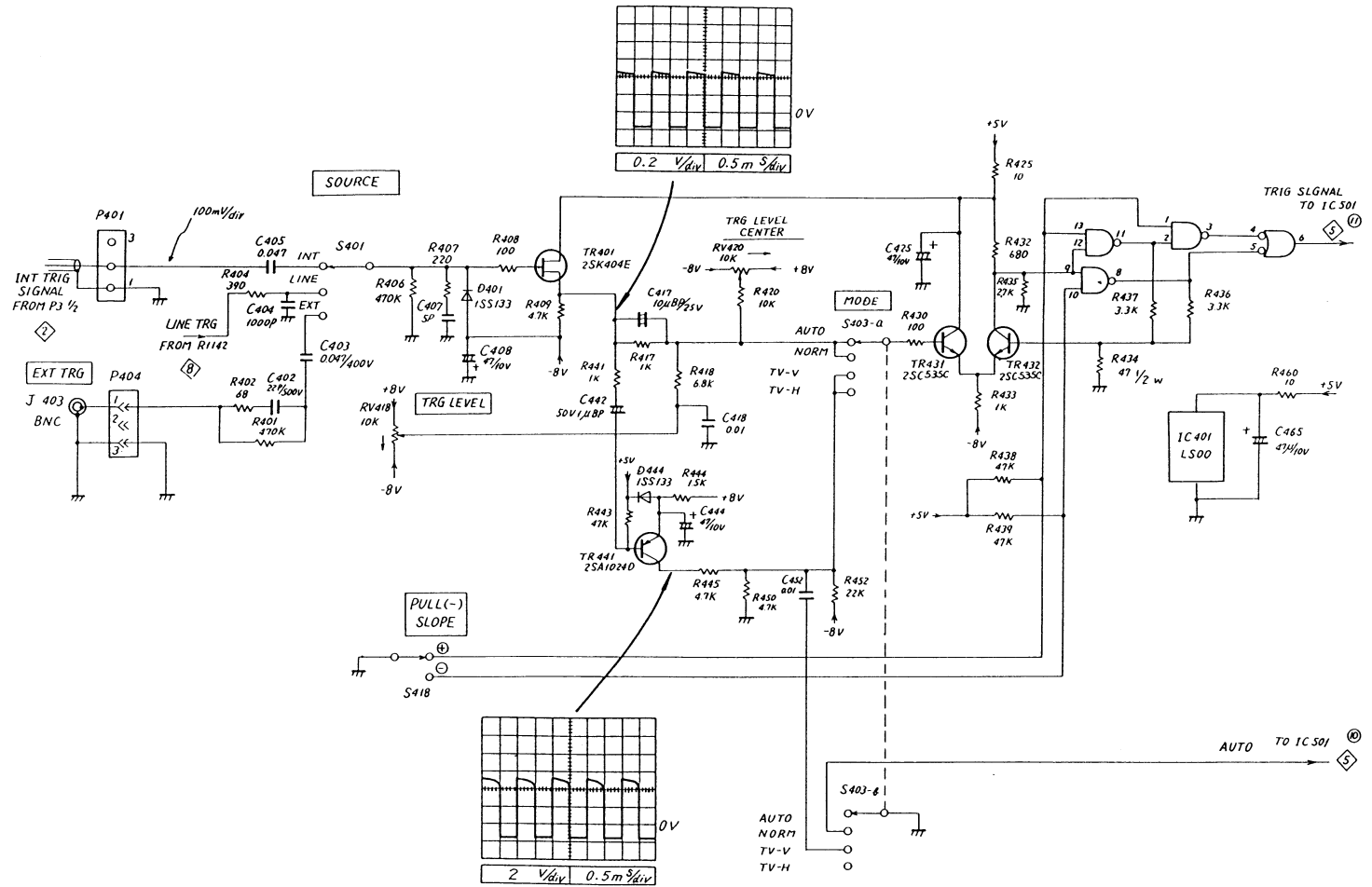


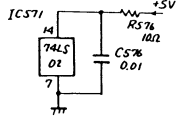
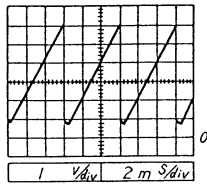
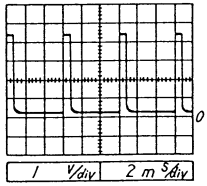
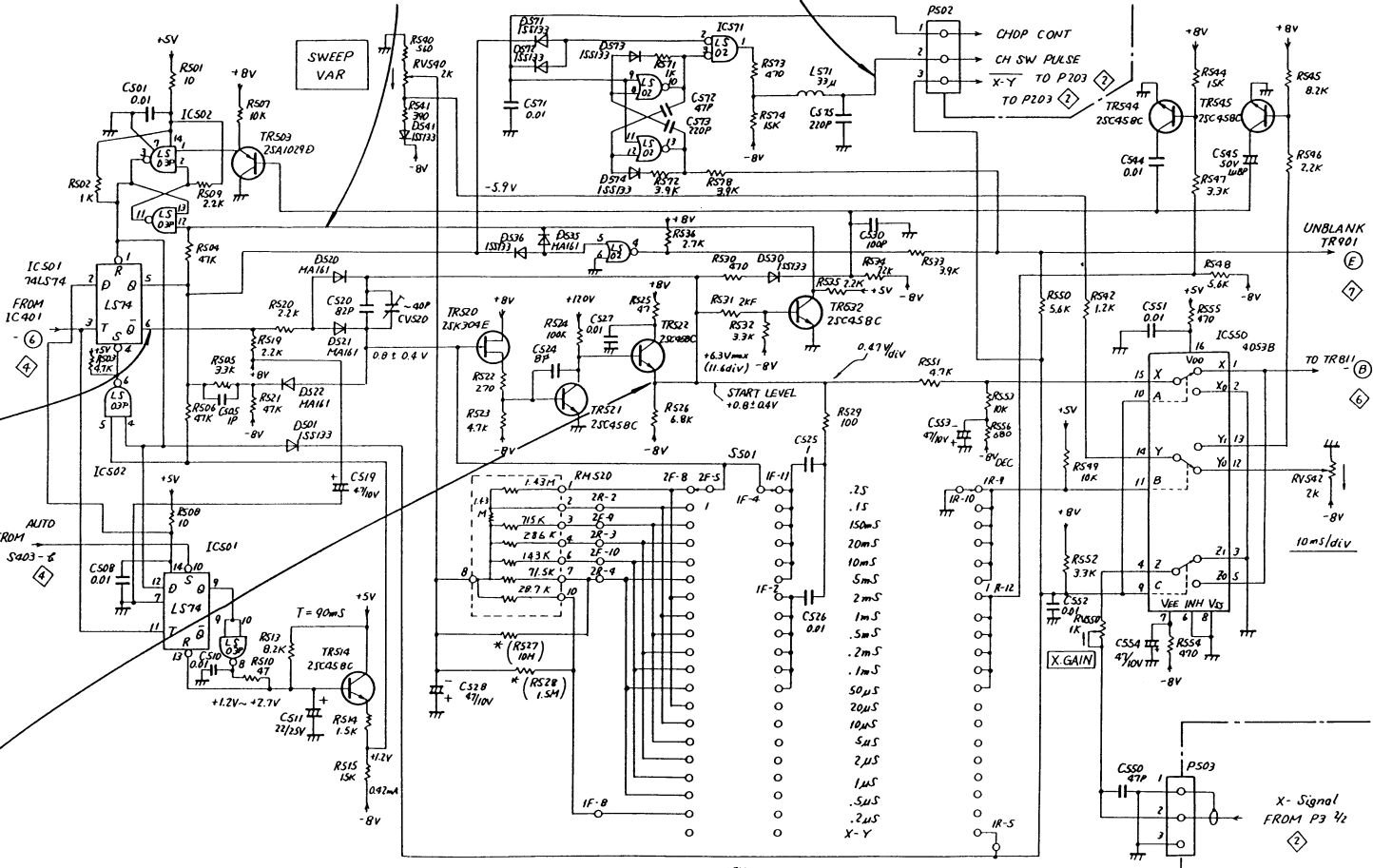
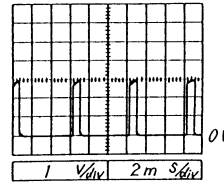
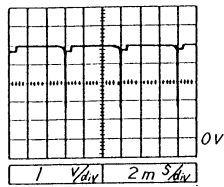
V-212

INPUT AMP

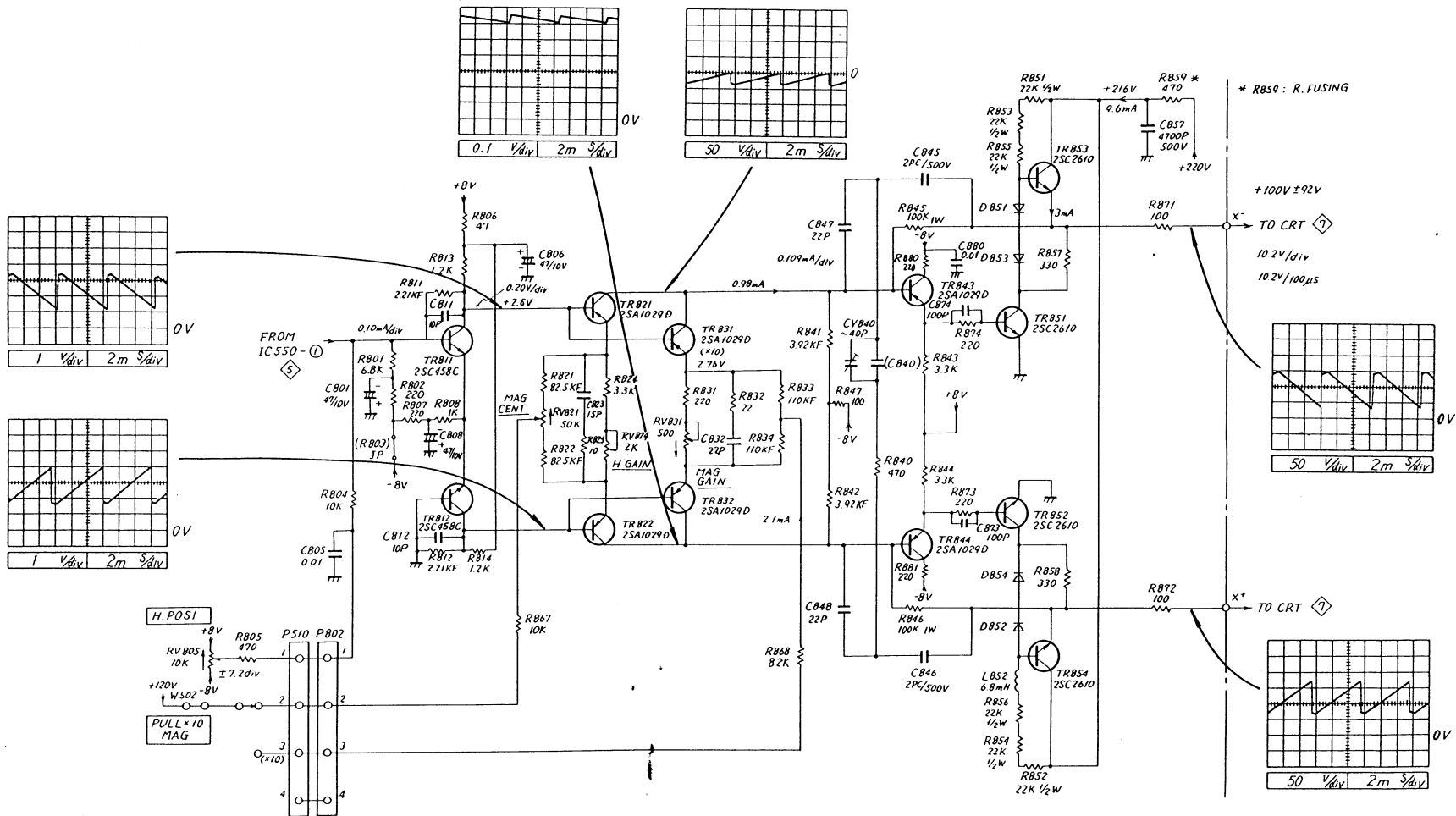


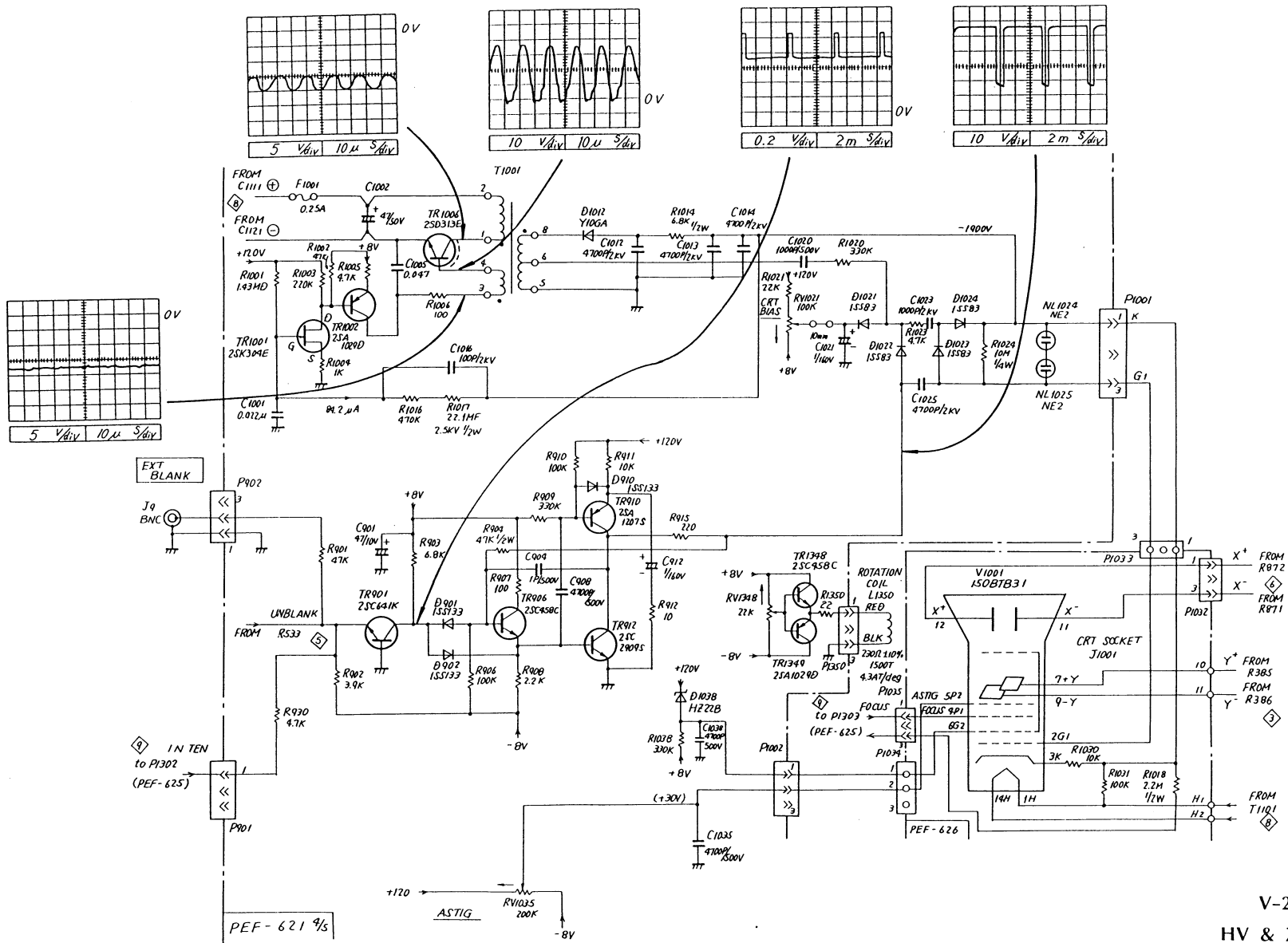
V-212
V OUT



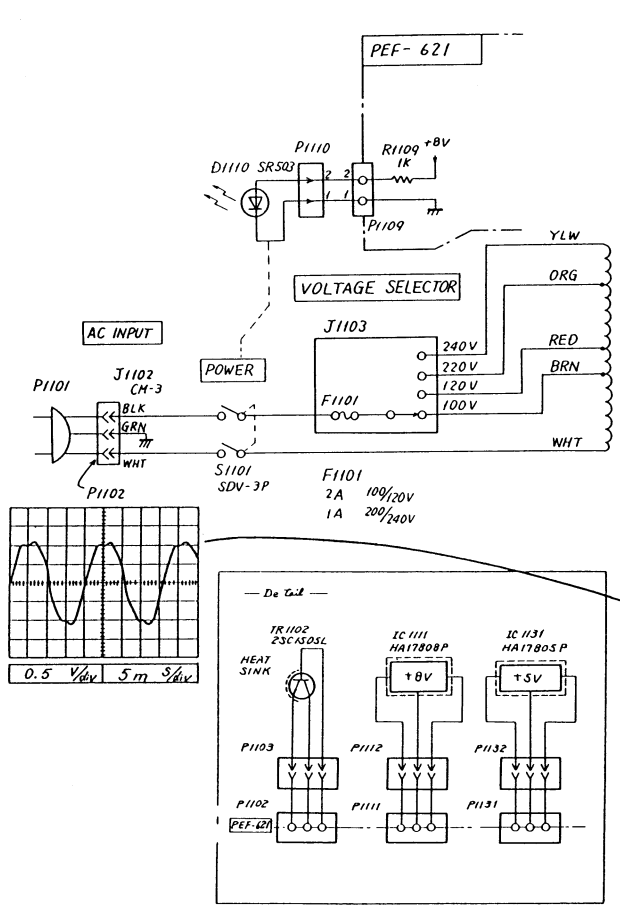


V-212 SWEEP GEN

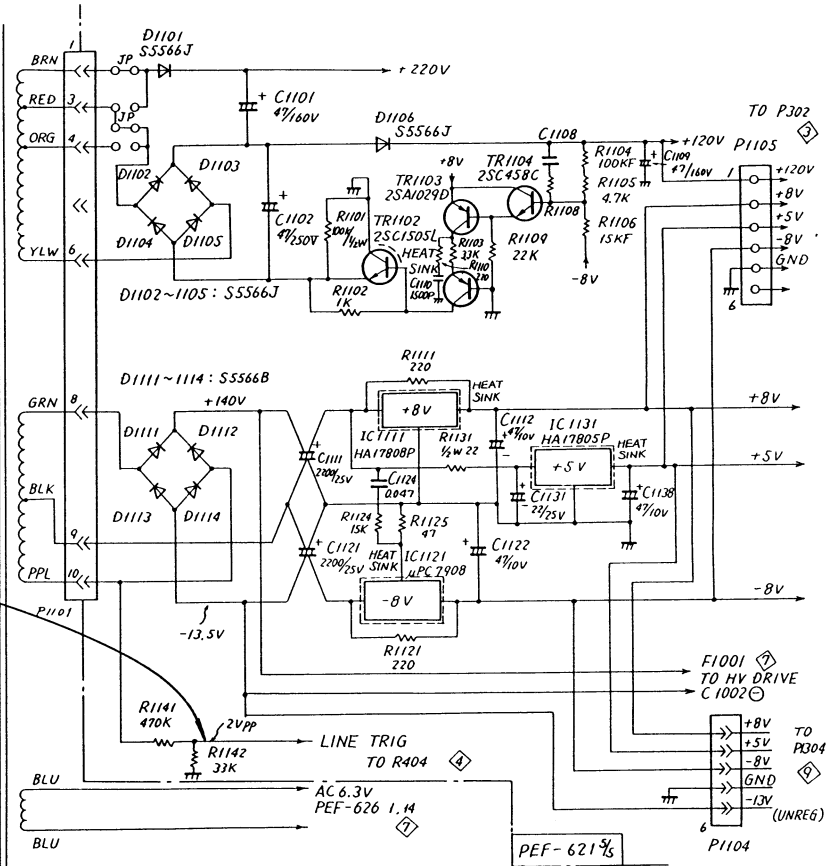


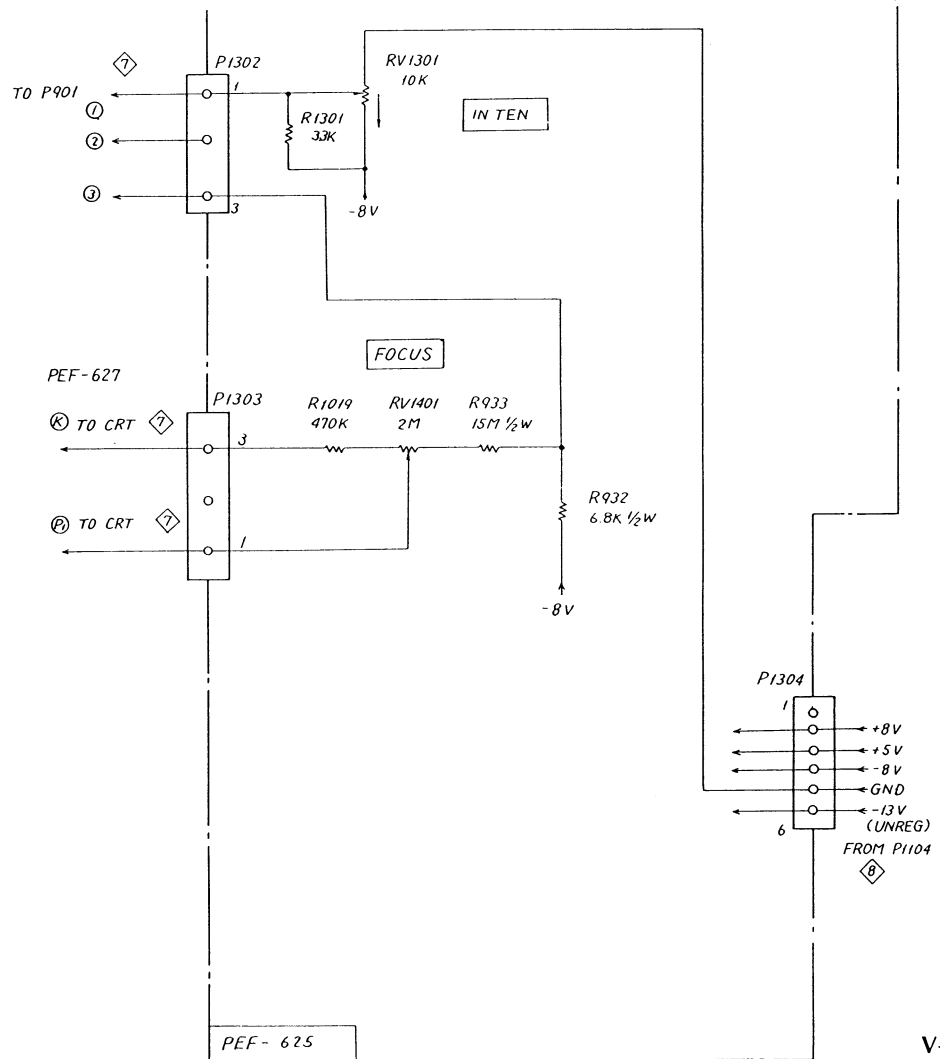


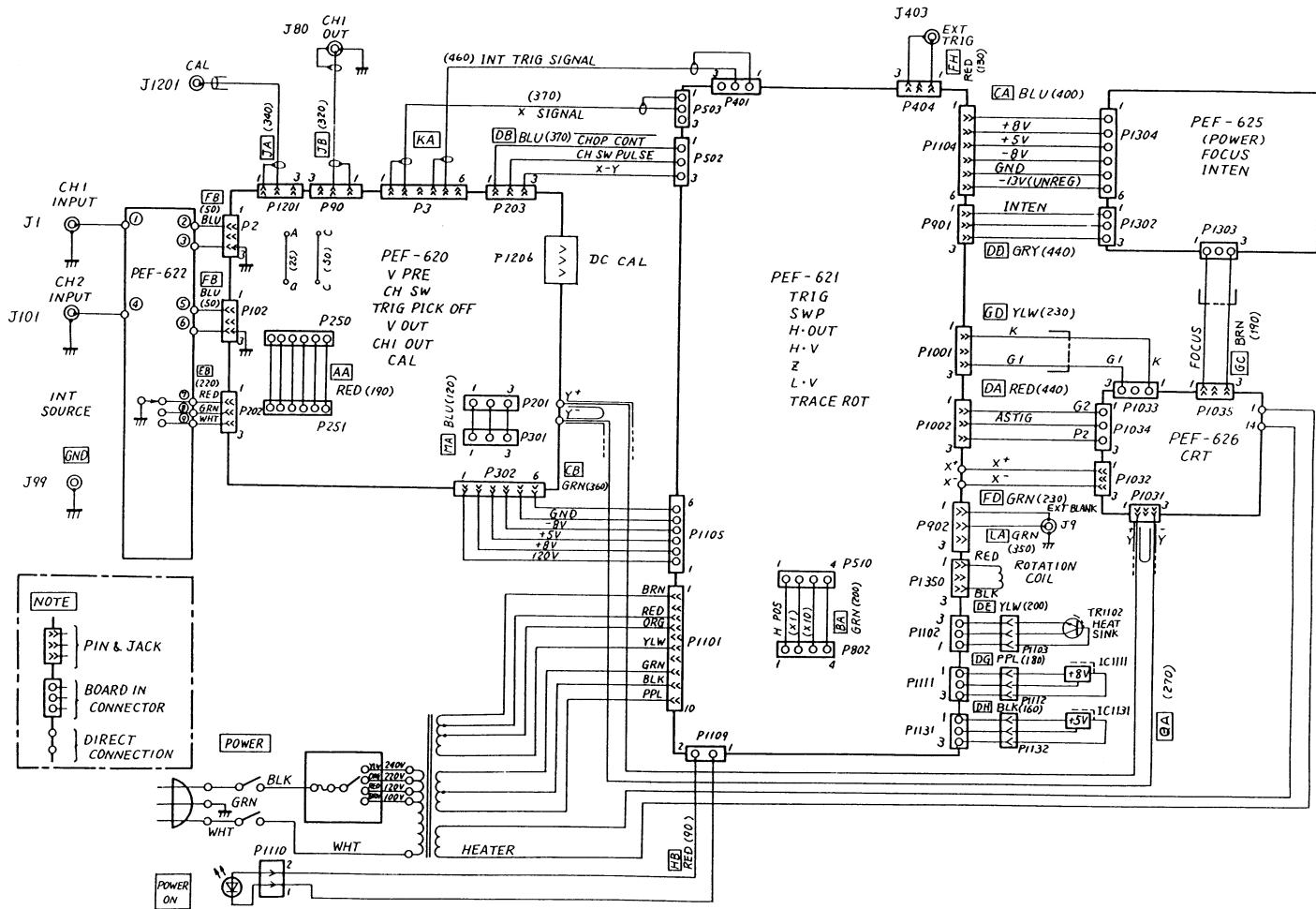
V-212
HV & Z AMP



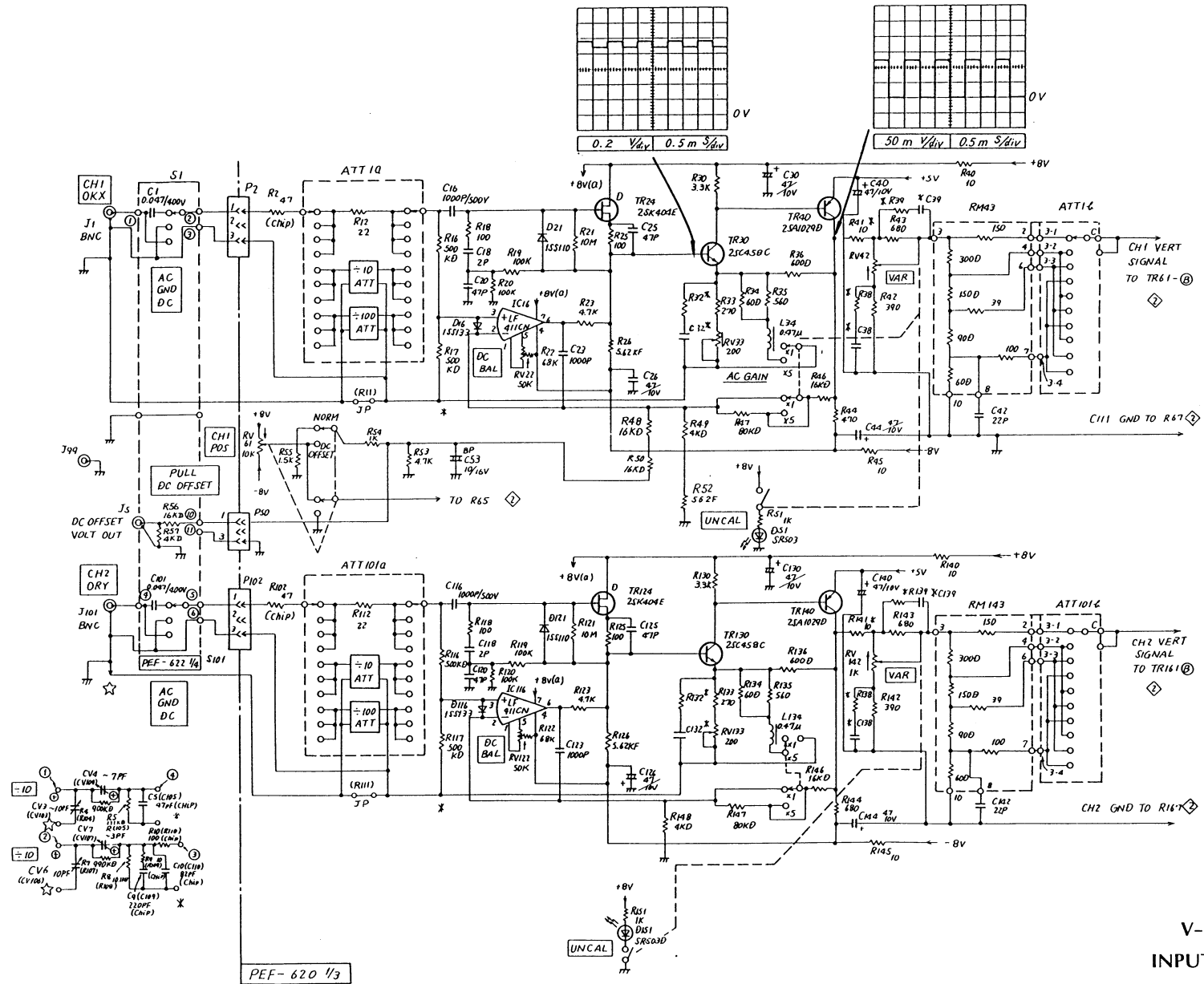
T1101



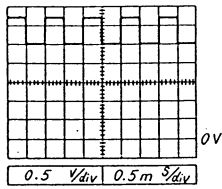




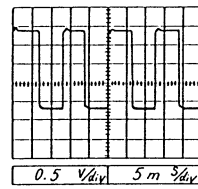
V-212
 WIRING DIAGRAM



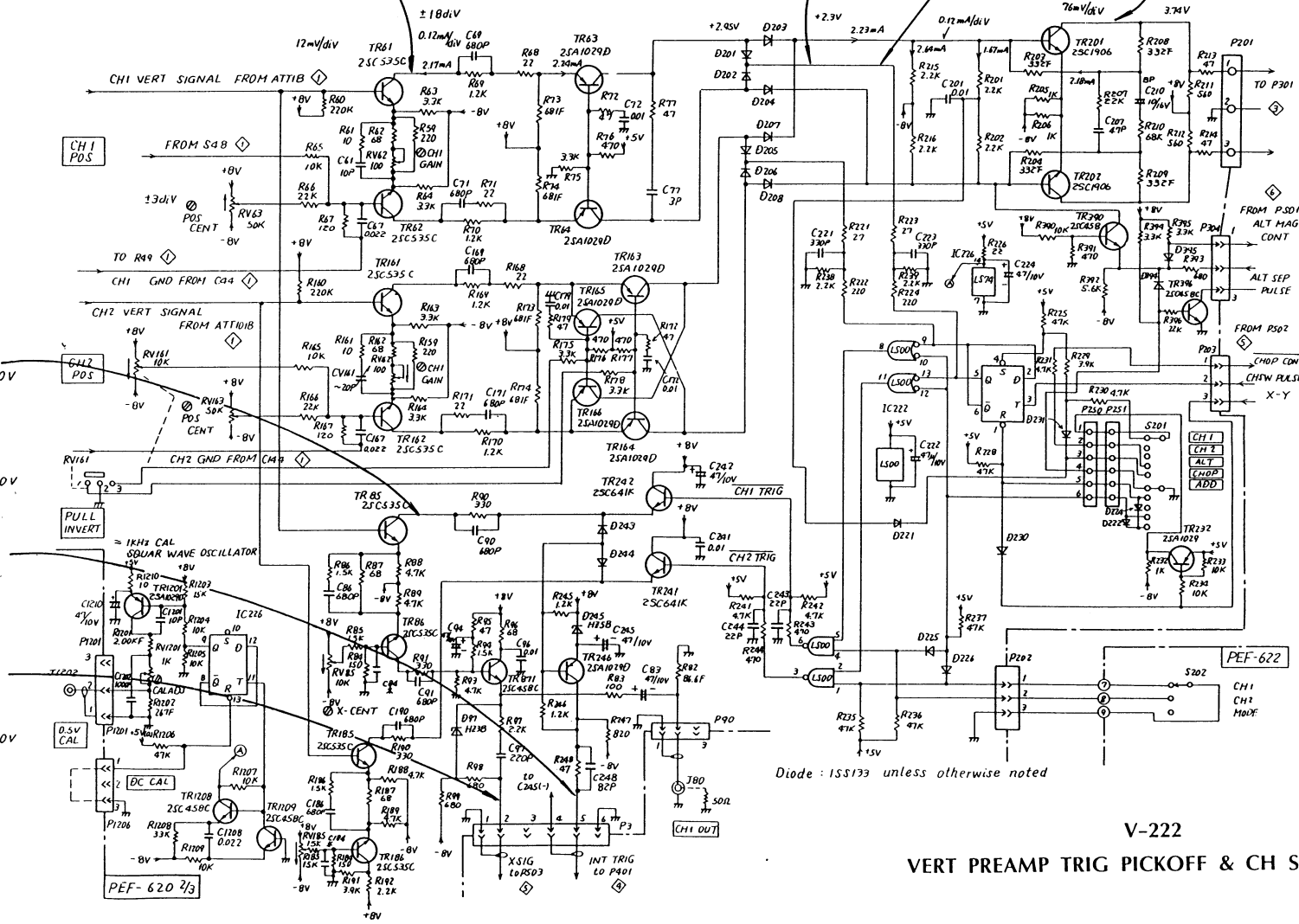
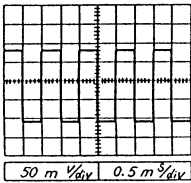
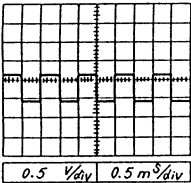
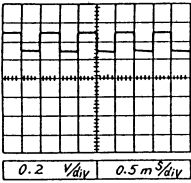
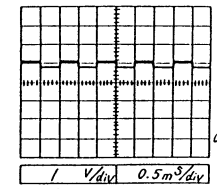
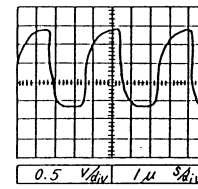
V-222
INPUT AMP



V - MODE : ACT

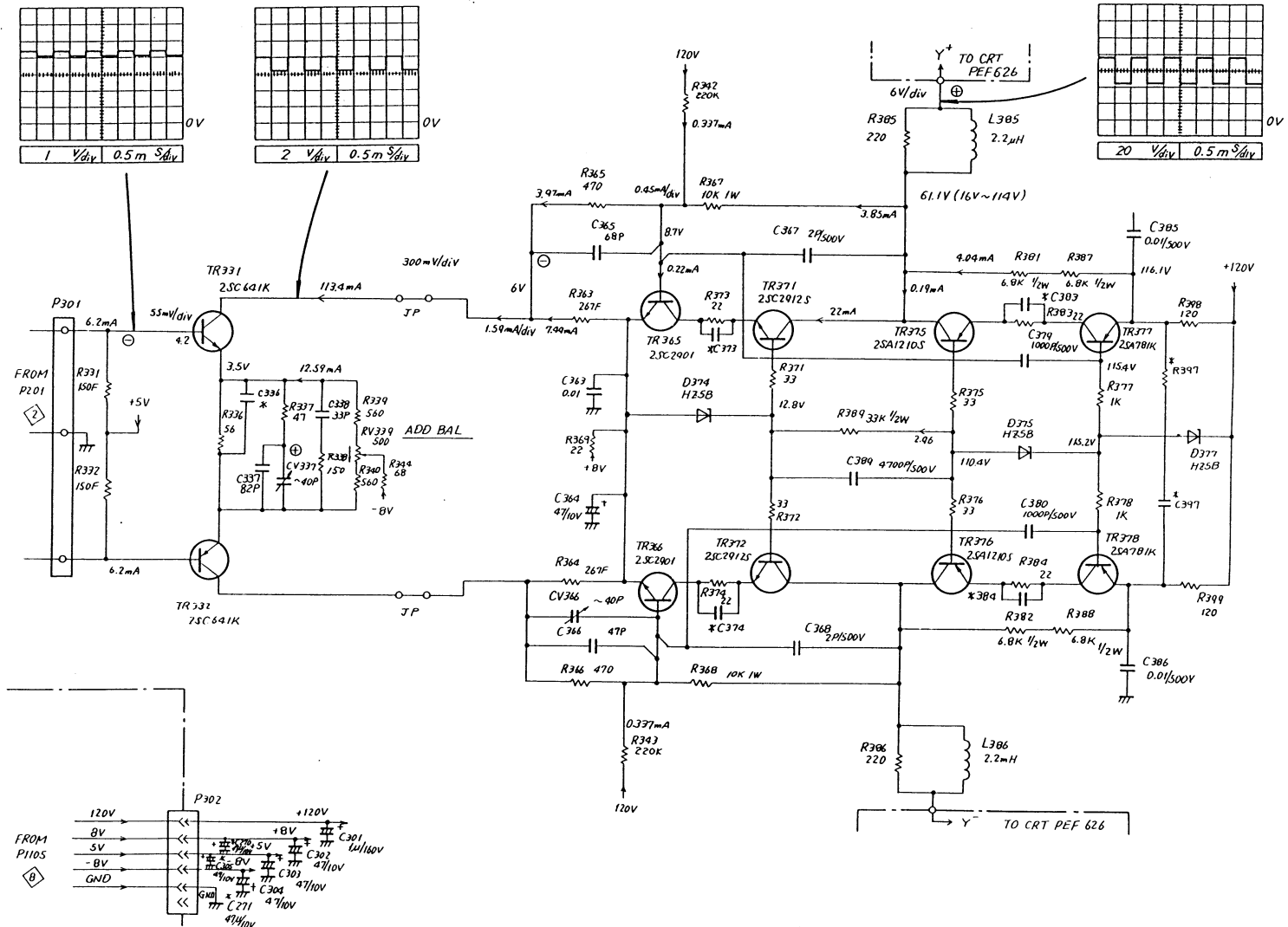


V - MODE : CHOP

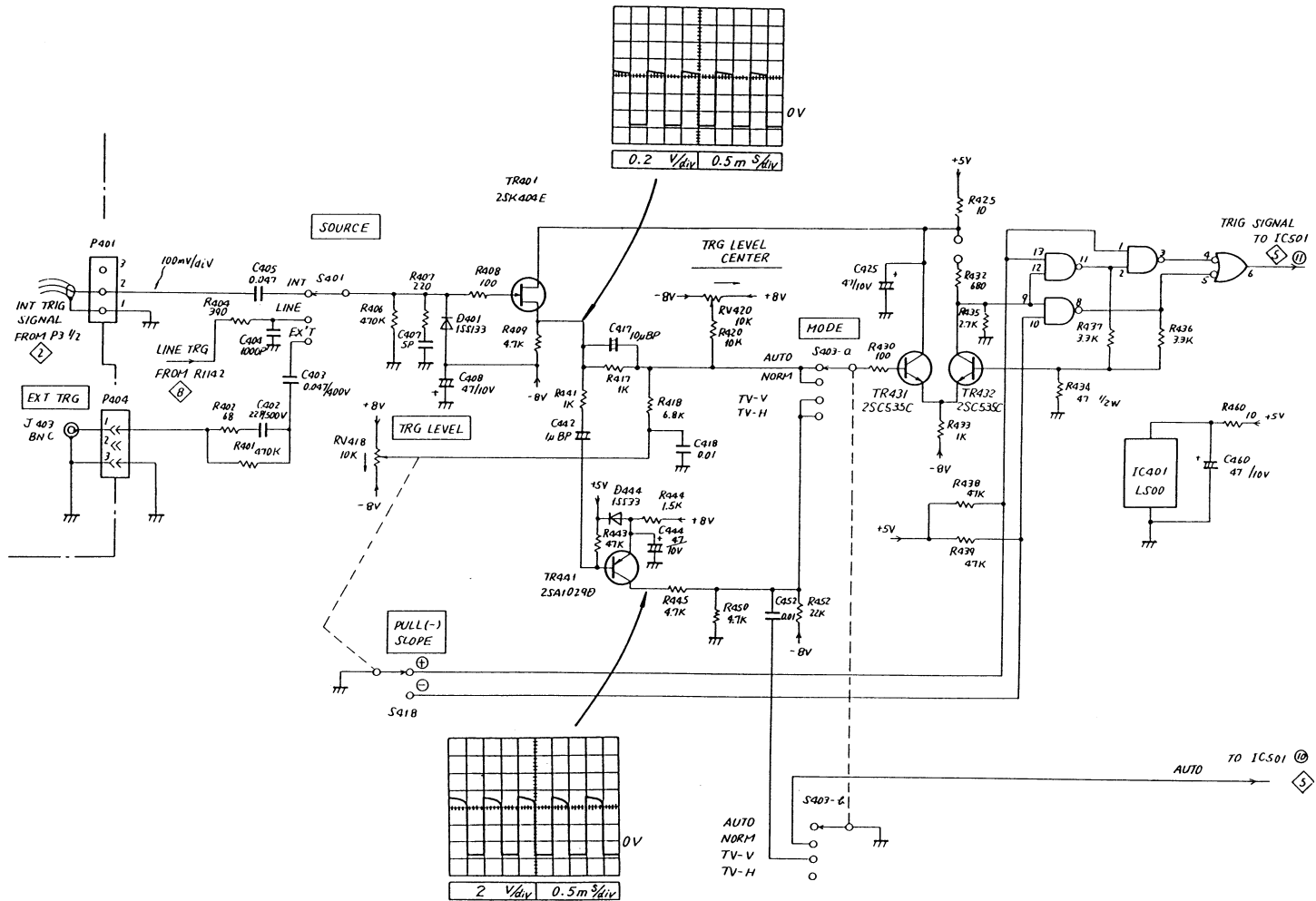


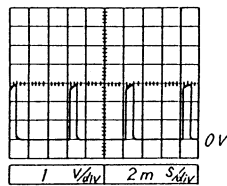
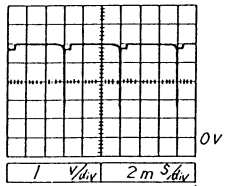
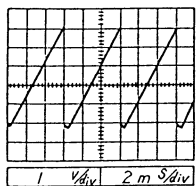
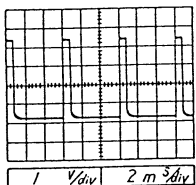
Diode : 1S1133 unless otherwise noted

V-222
VERT PREAMP TRIG PICKOFF & CH SW MULTI

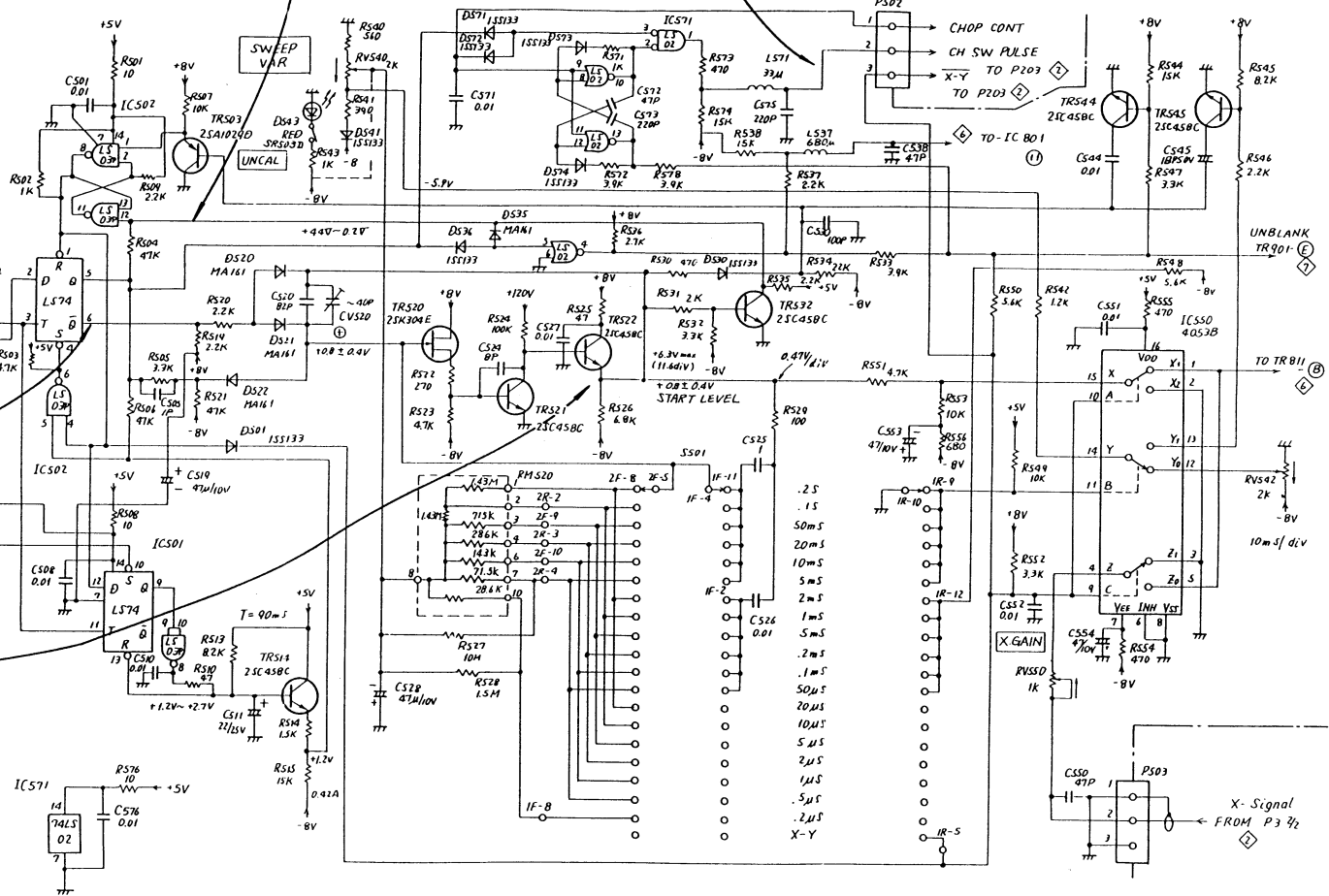


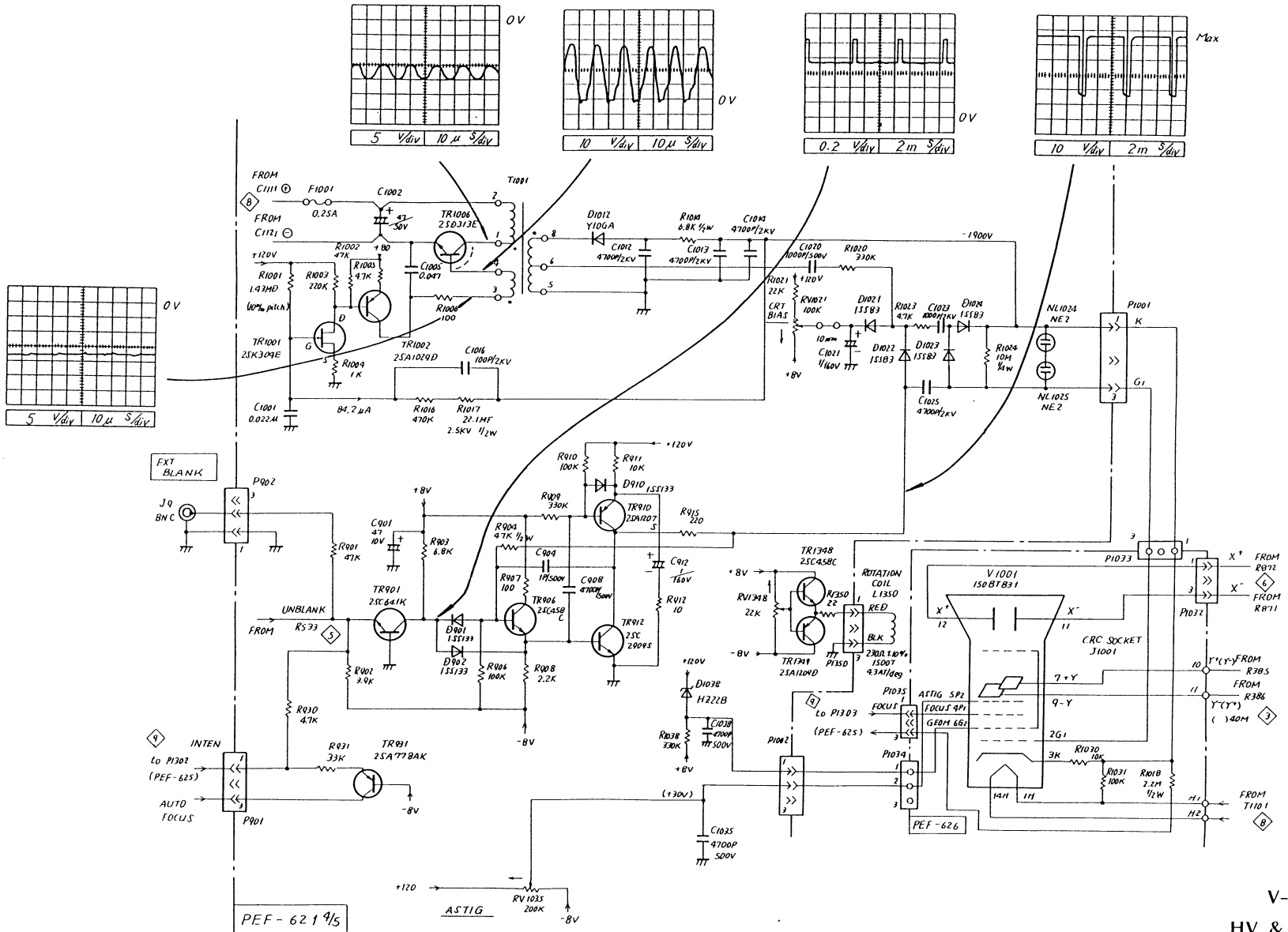
V-222
V OUT





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V-222

HV & Z AMP