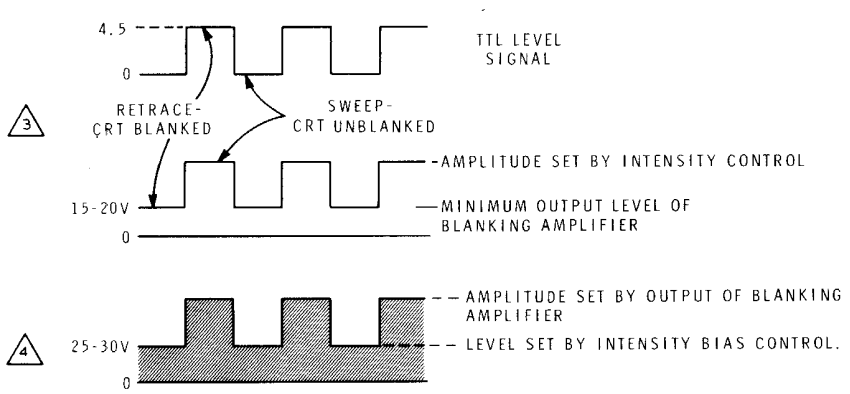
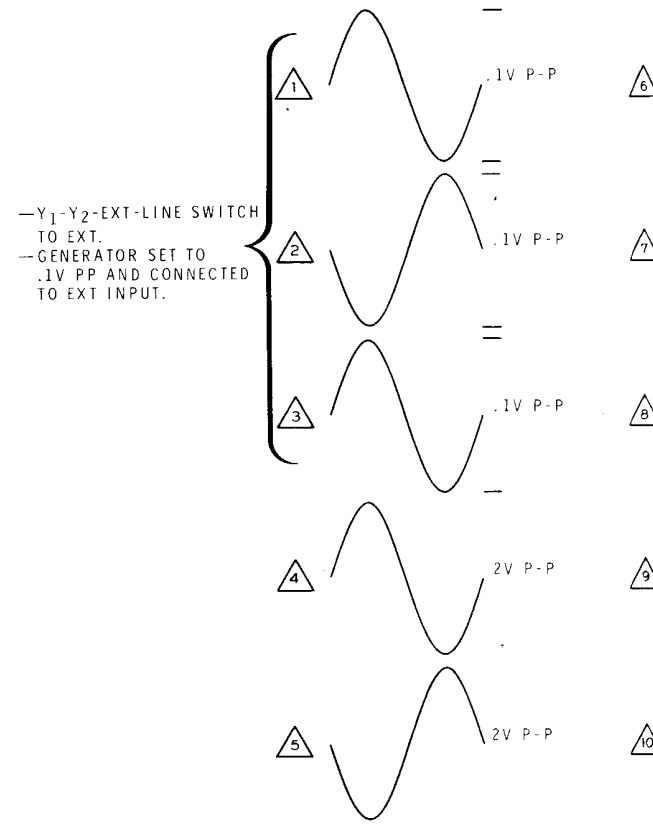
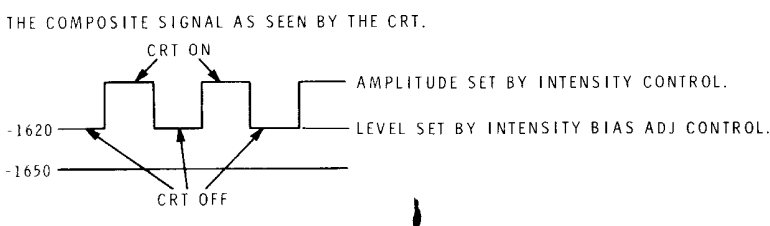
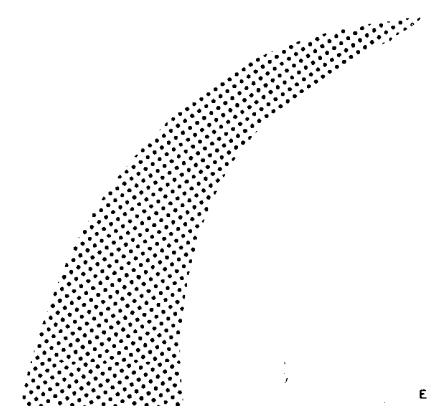
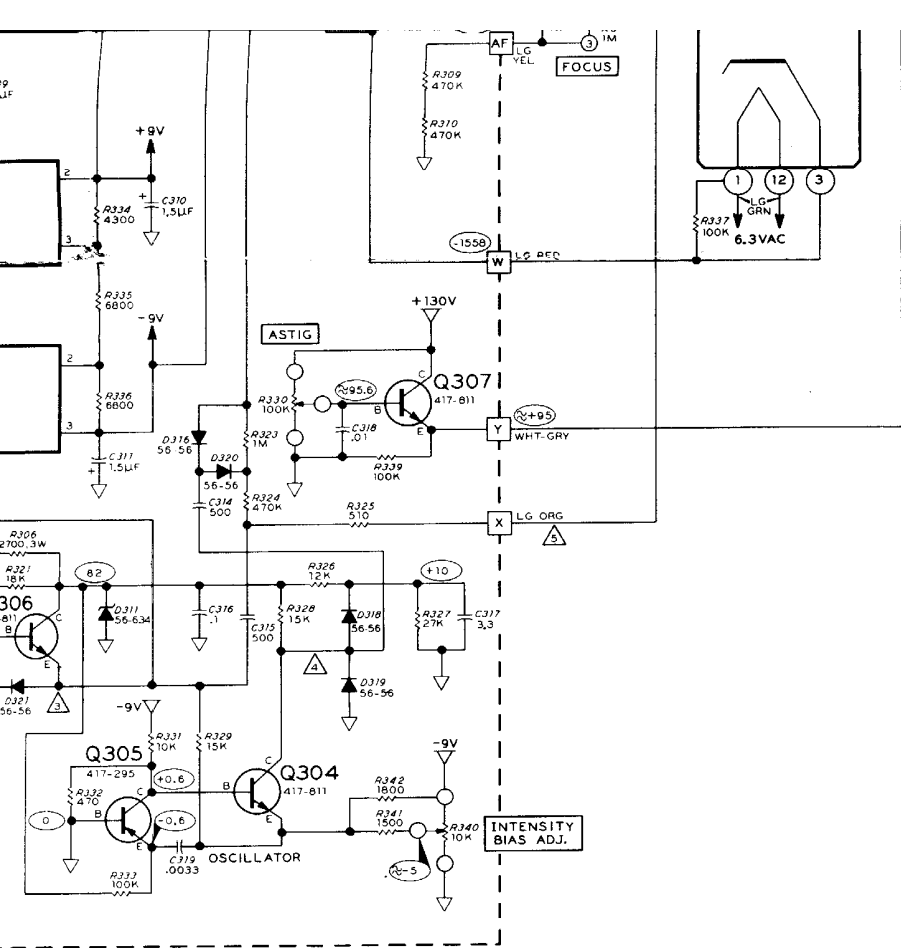


- 1 IN CHOP MODE, INPUT IS 4.5 AT 200KHZ RATE.
- 2 IN NORMAL OPERATION, A PULSE BLANKS THE CRT AFTER EACH SWEEP.



5 CAUTION: DO NOT MEASURE UNLESS YOU HAVE TAKEN PRECAUTIONS TO PROTECT THE INPUT OF THE MEASURING INSTRUMENT FOR -1650 VDC.

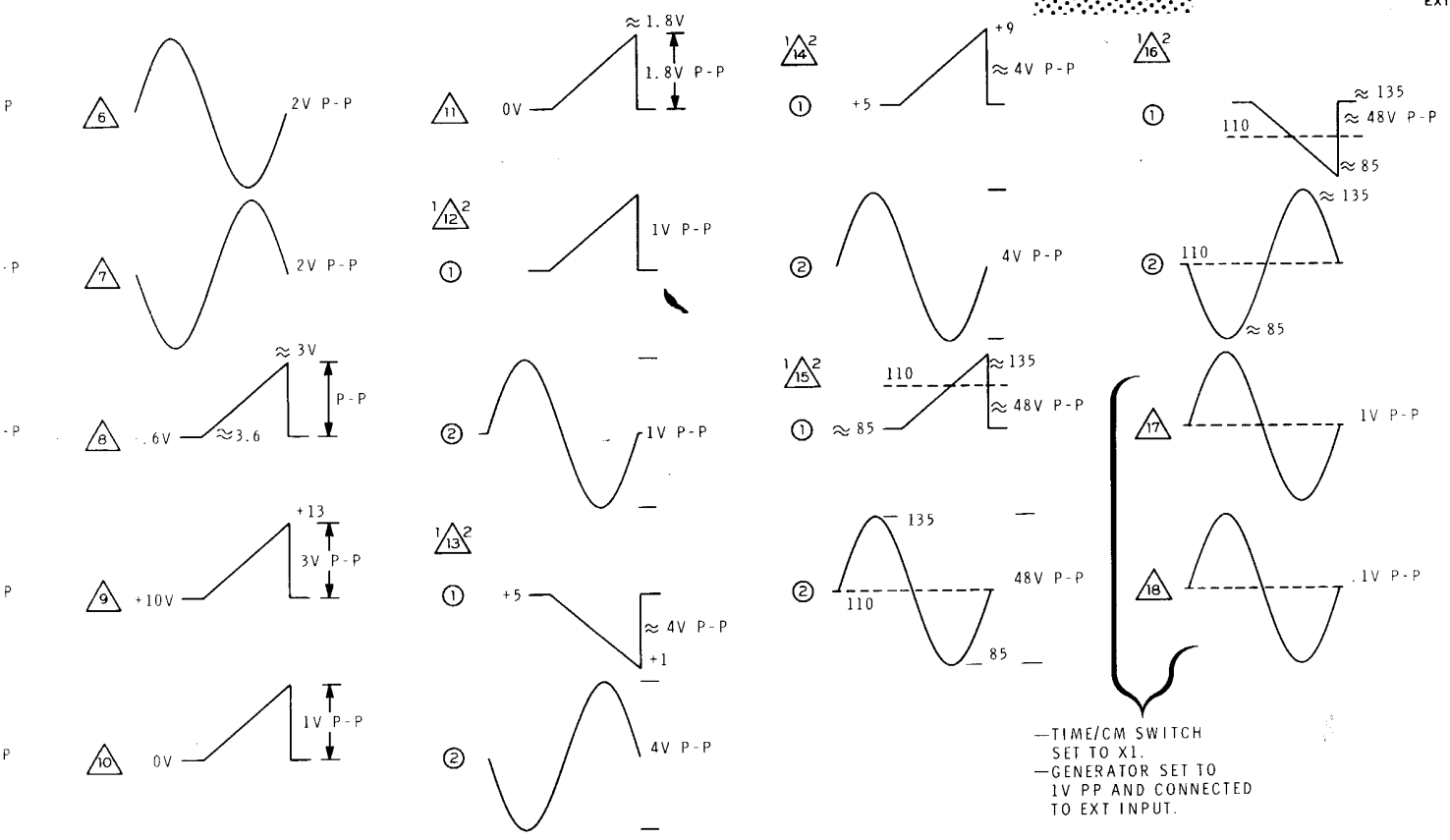




TO ON VERTICAL C.B.
 TO ON VERTICAL C.B.
 TO ON POWER SUPPLY C.B.

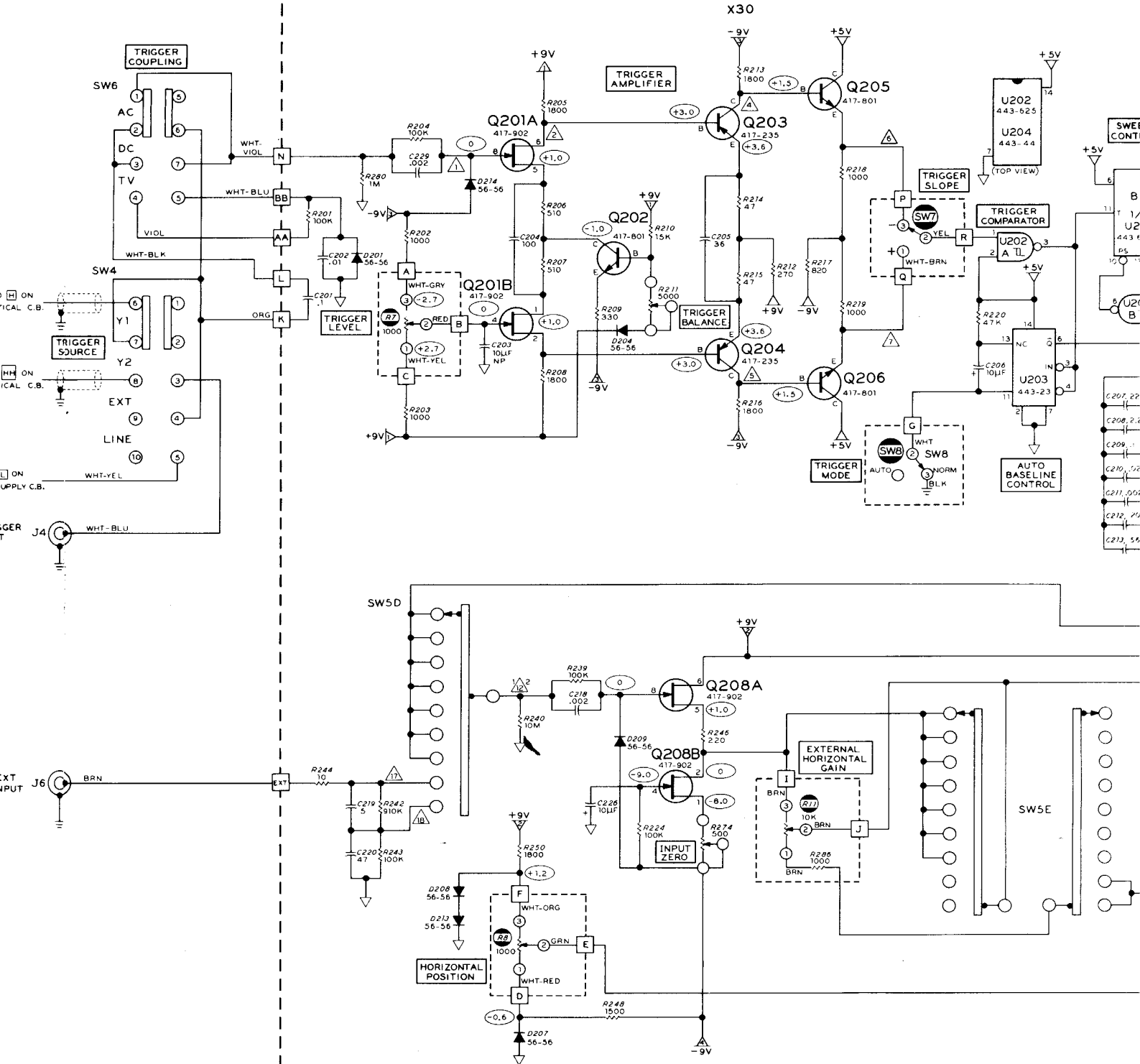
EXT TRIGGER INPUT J4

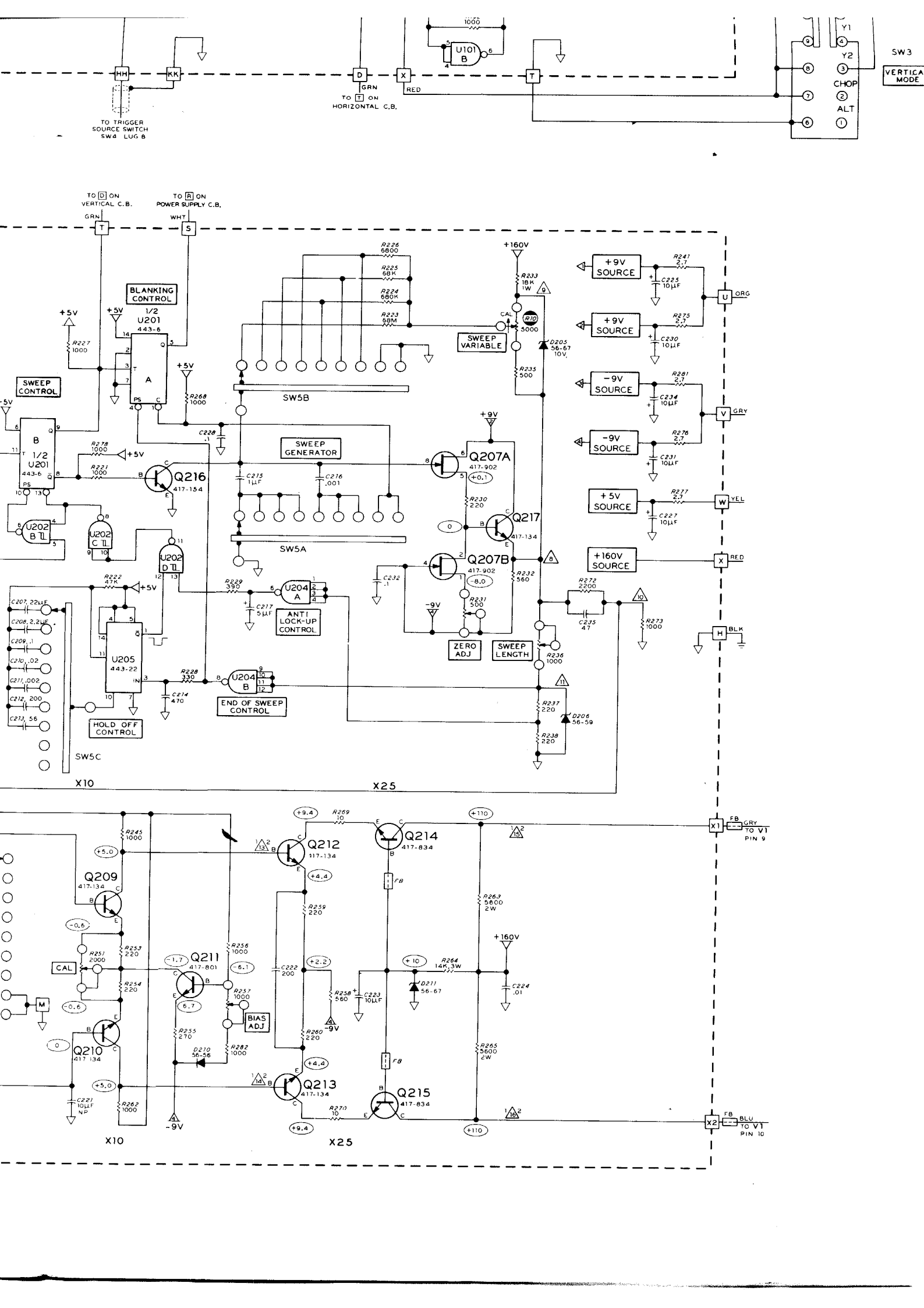
EXT TRIGGER INPUT J6



-TIME/CM SWITCH SET TO X1.
 -GENERATOR SET TO 1V PP AND CONNECTED TO EXT INPUT.

HORIZONTAL CIRCUIT BOARD







SEMICONDUCTOR IDENTIFICATION CHARTS

This section is divided into two parts: "Component Number Index" and "Part Number Index." The Component Number Index provides a cross-reference between Circuit Component Numbers and their respective Heath Part Numbers. The component numbers

are listed in numerical order. The Part Number Index provides a lead configuration detail (basing diagram) for each semiconductor part number. The Heath Part Numbers in this section are also listed in numerical order.

COMPONENT NUMBER INDEX

This index shows the Heath Part Number for each semiconductor in the IO-4205 Oscilloscope.

DIODES

CIRCUIT COMPONENT NUMBER	HEATH PART NUMBER
D101A, B-D106A,B	56-56
D107	56-67
D108A, B;D109A,B	56-56
D111A,B; D112A,B	56-56
D113-D116	56-89
D201	56-56
D204	56-56
D205	56-67
D206	56-59
D207-D210	56-56
D211	56-67

CIRCUIT COMPONENT NUMBER	HEATH PART NUMBER
D213,D214	56-56
D301, D302	57-52
D303, D310	57-27
D311	56-634
D312	56-56
D313	56-89
D314	56-26
D315, D316	56-56
D317	56-634
D318, D321	56-56



TRANSISTORS

CIRCUIT COMPONENT NUMBER	HEATH PART NUMBER
Q101A,B; Q102A,B	471-902
Q103A,B	417-801
Q104A,B; Q105A,B	417-260
Q106A,B, Q109A,B	417-235
Q111A,B; Q112A,B	417-293
Q113, Q114	417-237
Q115, Q116	417-834
Q117, Q118	417-801
Q201	417-902
Q202	417-801
Q203, Q204	417-235
Q205, Q206	417-801
Q207, Q208	417-902
Q209, Q210	417-134
Q211	417-801
Q212, Q213	417-134
Q214, Q215	417-834
Q216	417-154
Q217	417-134
Q301, Q302	417-237
Q303, Q304	417-811
Q305	417-295
Q306, Q307	417-811

INTEGRATED CIRCUITS

CIRCUIT COMPONENT NUMBER	HEATH PART NUMBER
U101	443-1
U102	443-4
U201	443-6
U202	443-625
U203	443-23
U204	443-44
U205	443-22
U301, U302	442-617
U303	442-618

PART NUMBER INDEX

This index shows a lead configuration detail (basing diagram) for each semiconductor part number.

DIODES

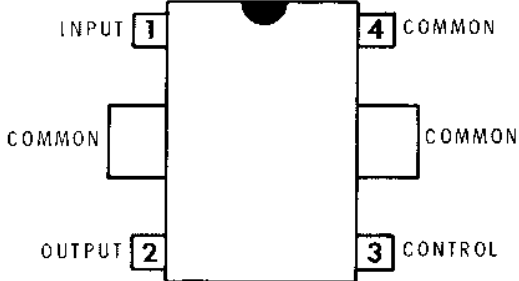
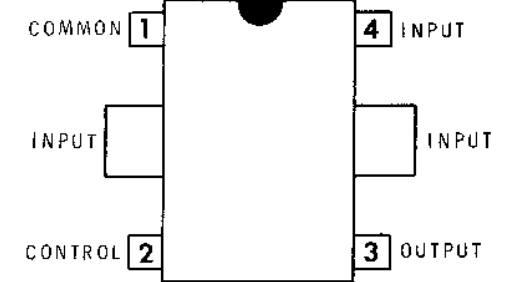
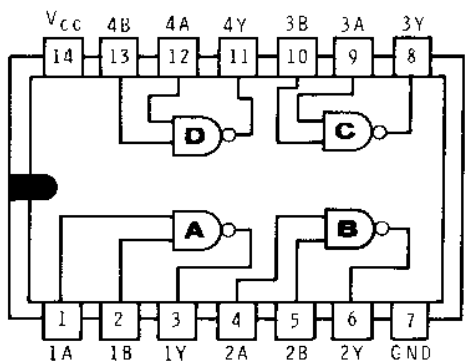
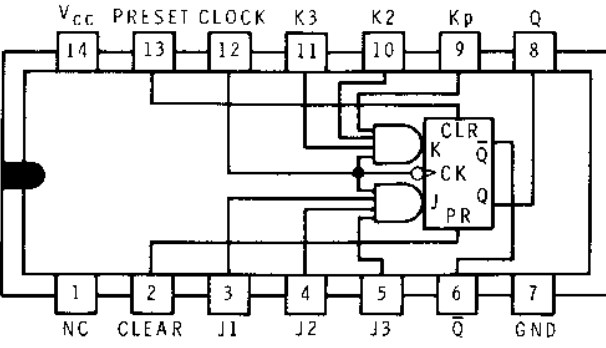
HEATH PART NUMBER	MAY BE REPLACED WITH	IDENTIFICATION
56-26	1N191	<p>IMPORTANT: THE BANDED END OF DIODES CAN BE MARKED IN A NUMBER OF WAYS.</p> <p>BANDED END</p>
56-56	1N4149	
56-59	1N750A	
56-67	VR10A	
50-89	GD510	
56-634	2EZ82D5	
57-27	1N2071	
57-52	DO-7	

TRANSISTORS

HEATH PART NUMBER	MAY BE REPLACED WITH	IDENTIFICATION
417-134	MPS6520	
417-154	2N2369	
417-235 417-237	2N4121 SE6020	
417-260	2N4258A	
417-293 417-295 417-801 417-811	2N5770 MPSL51 MPSA20 MPSL01	
417-834	MPSU10	
417-902	NPD5566N	



INTEGRATED CIRCUITS

HEATH PART NUMBER	MAY BE REPLACED WITH	BASING DIAGRAM (TOP VIEW)
442-817	μ A78MGT2	
442-618	μ A79MGT2	
443-1	SN7400N	
443-4	SN7472N	

Integrated Circuits (Cont'd).

HEATH PART NUMBER	MAY BE REPLACED WITH	BASING DIAGRAM (TOB VIEW)
443-6	SN7474N	
443-22	SN74121N	
443-23	SN74122N	
443-44	SN7413N	



Integrated Circuits (Cont'd.)

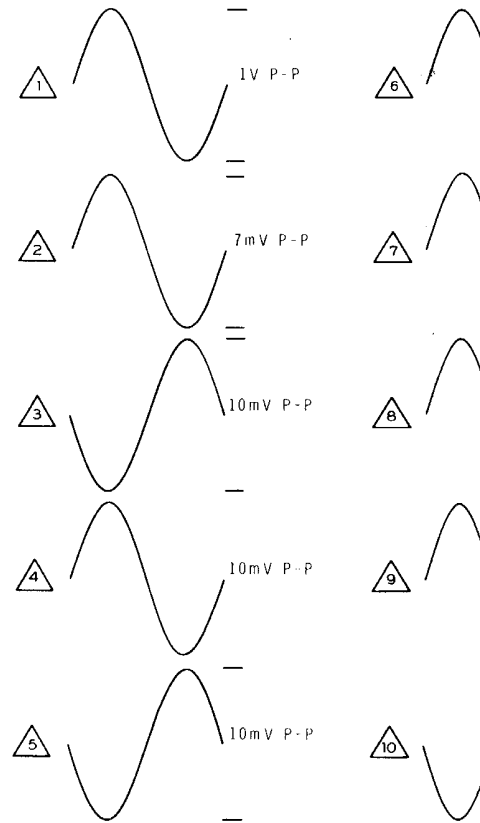
HEATH PART NUMBER	MAY BE REPLACED WITH	BASING DIAGRAM (TOP VIEW)
443-625	SN74132N	<p>The basing diagram shows a 14-pin integrated circuit. Pin 14 is labeled VCC and pin 7 is labeled GND. The internal circuit consists of four inverters labeled A, B, C, and D. Inverter A has its input at pin 2 and output at pin 1. Inverter B has its input at pin 5 and output at pin 4. Inverter C has its input at pin 9 and output at pin 8. Inverter D has its input at pin 12 and output at pin 11. A solid black circle is located on the left side of the diagram, between pins 1 and 14.</p>

SCHEMATIC OF THE HEATHKIT® MODEL IO-4205 DUAL TRACE OSCILLOSCOPE

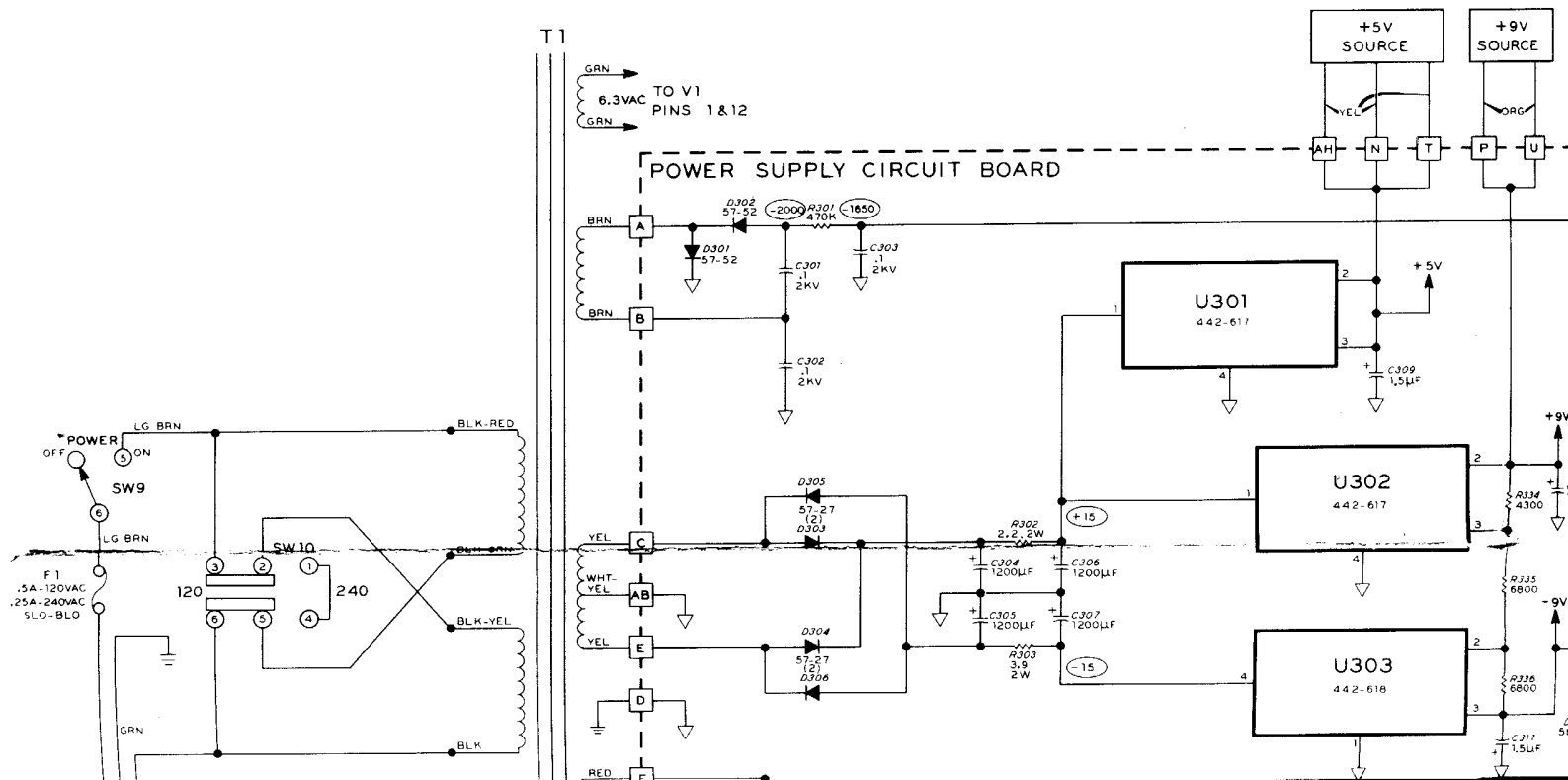
→ AC-GND-DC SW
→ VOLTS/CM SW
→ Y₁-Y₂-CHOP-ALT
→ GENERATOR SET
CONNECTED TO Y

NOTES:

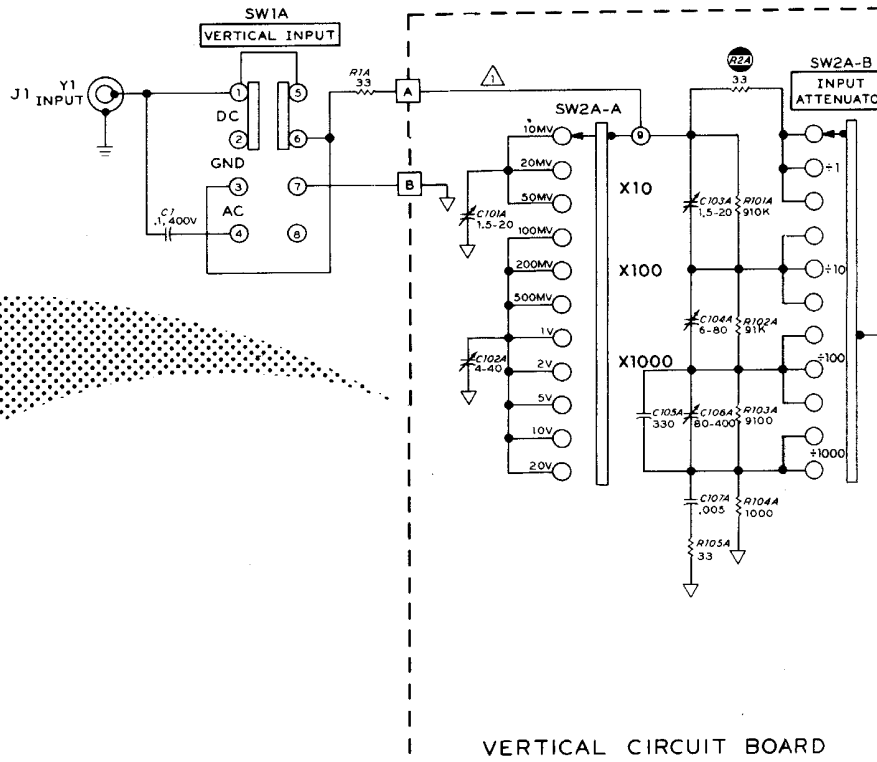
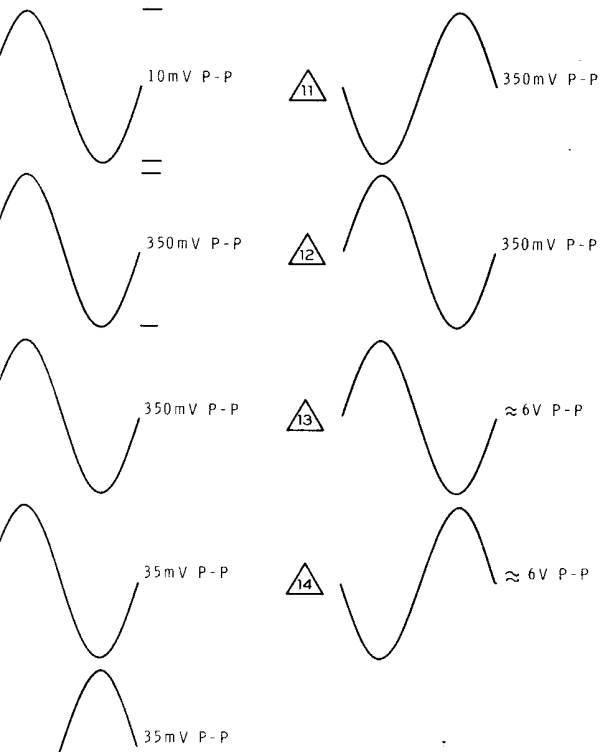
1. REFER TO THE CIRCUIT BOARD X-RAY VIEWS FOR THE PHYSICAL LOCATION OF PARTS.
2. ALL RESISTORS ARE 1/2-WATT, 5% UNLESS MARKED OTHERWISE.
3. ALL CAPACITOR VALUES LARGER THAN 1.0 ARE IN pF UNLESS OTHERWISE SPECIFIED. CAPACITOR VALUES LESS THAN 1.0 ARE IN μF.
4. □ THIS SYMBOL WITH A LETTER IN IT INDICATES A WIRE CONNECTION TO A CIRCUIT BOARD.
5. ▽ THIS SYMBOL INDICATES CIRCUIT BOARD GROUND (COMMON FOIL) ON A CIRCUIT BOARD.
6. ≡ THIS SYMBOL INDICATES CHASSIS GROUND.
7. △ THIS SYMBOL DENOTES A WAVEFORM DISPLAY AT THE INDICATED POINT.
8. ⊖ THIS SYMBOL INDICATES A PART MOUNTED ON THE CHASSIS, ALTHOUGH ITS LOCATION ON THE SCHEMATIC SUGGESTS ANOTHER LOCATION.
9. CIRCUIT COMPONENT NUMBERS ARE IN THE FOLLOWING GROUPS:
 - 1 - 99 PARTS ON THE CHASSIS.
 - 101 - 199 PARTS ON THE VERTICAL AMPLIFIER CIRCUIT BOARD.
 - 201 - 299 PARTS ON THE HORIZONTAL AMPLIFIER CIRCUIT BOARD.
 - 301 - 399 PARTS ON THE POWER SUPPLY CIRCUIT BOARD.
10. ○ THIS SYMBOL INDICATES A DC VOLTAGE MEASURED FROM THE POINT INDICATED TO GROUND WITH THE VERTICAL AMPLIFIERS BALANCED, THE TIME/CM SWITCH IN THE EXT POSITION, AND THE HORIZONTAL POSITION CONTROL CENTERED.



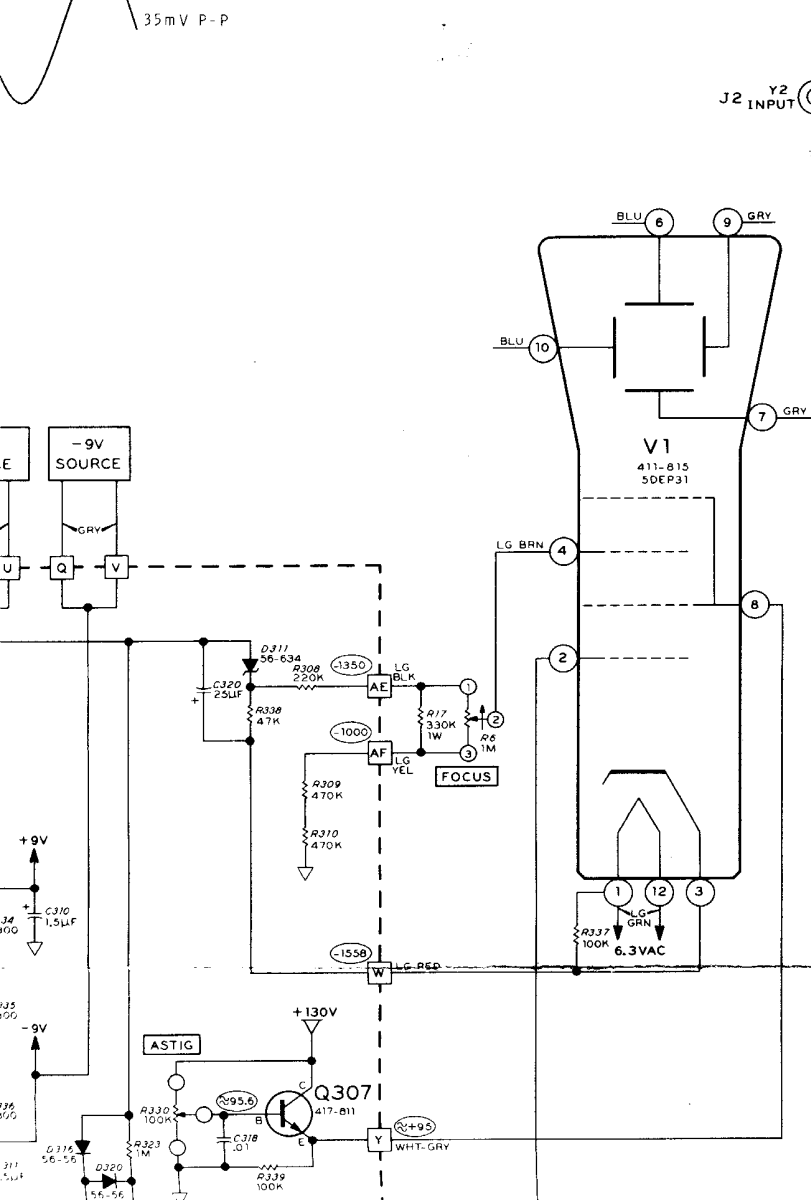
Copyright © 1978
Heath Company
All Rights Reserved
Printed in the United States of America

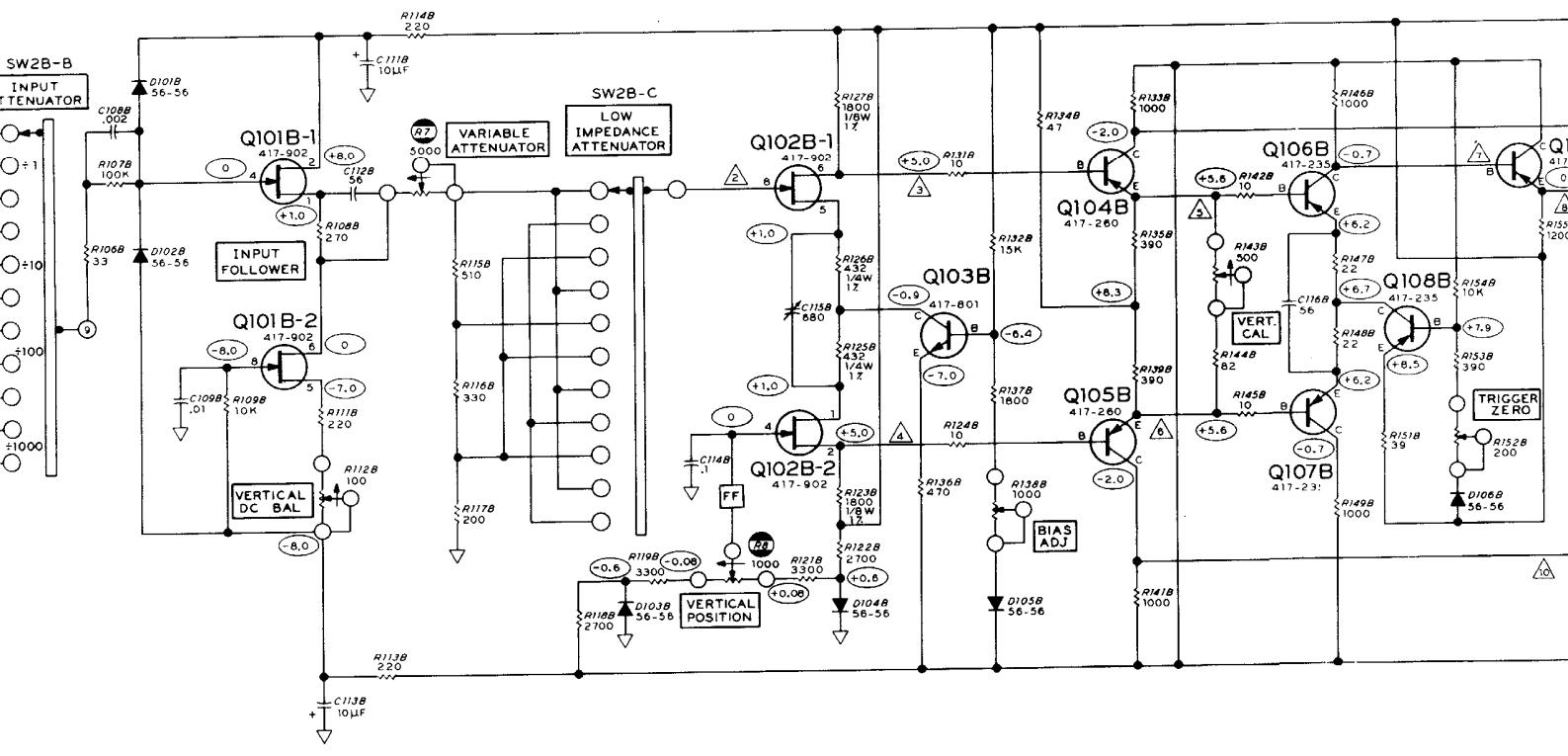
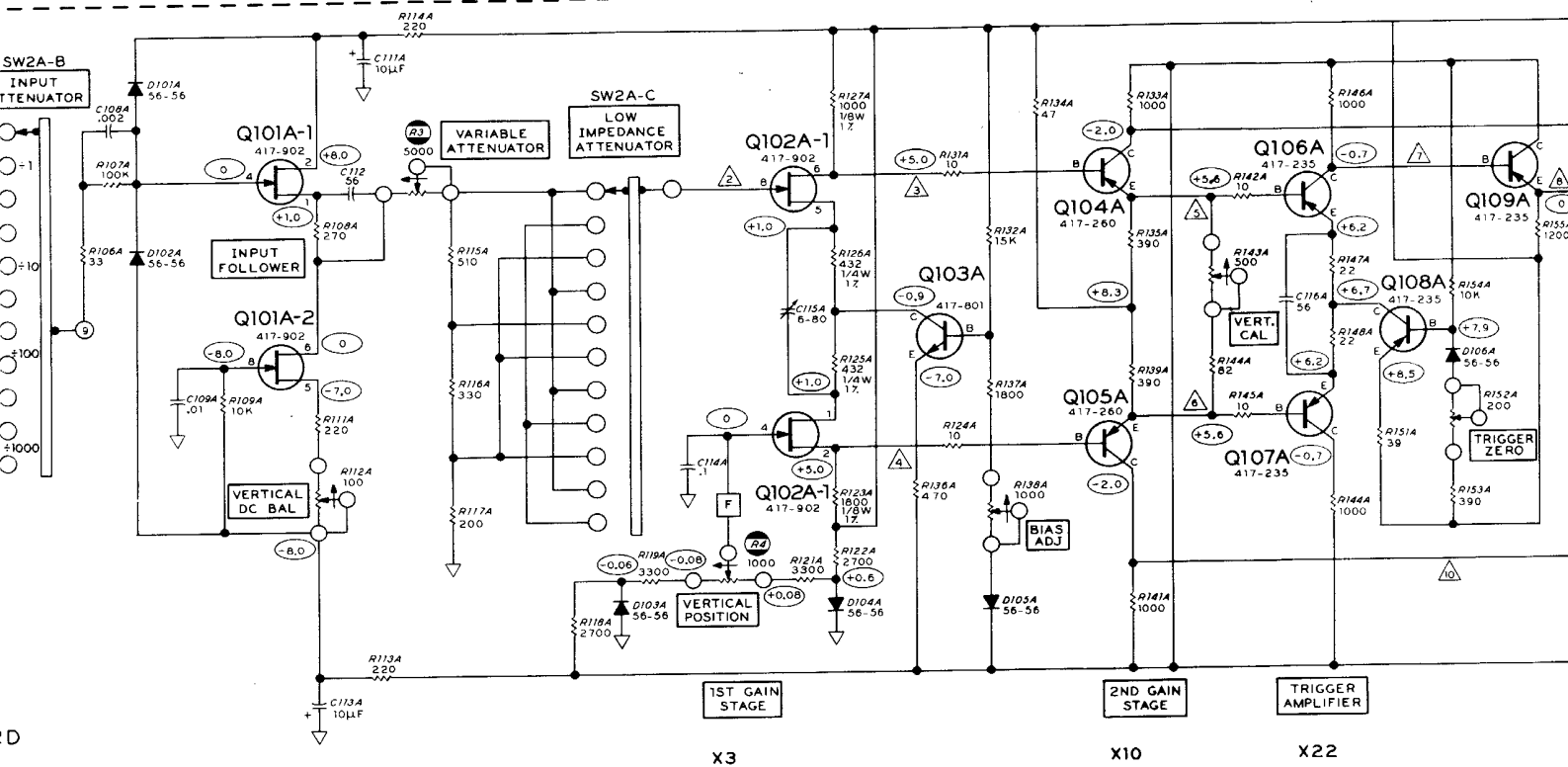


SWITCH TO AC OR DC.
 SWITCH TO 1.
 P-ALT SWITCH TO Y₁.
 SET TO 1V PP AND
 TO Y₁ INPUT.



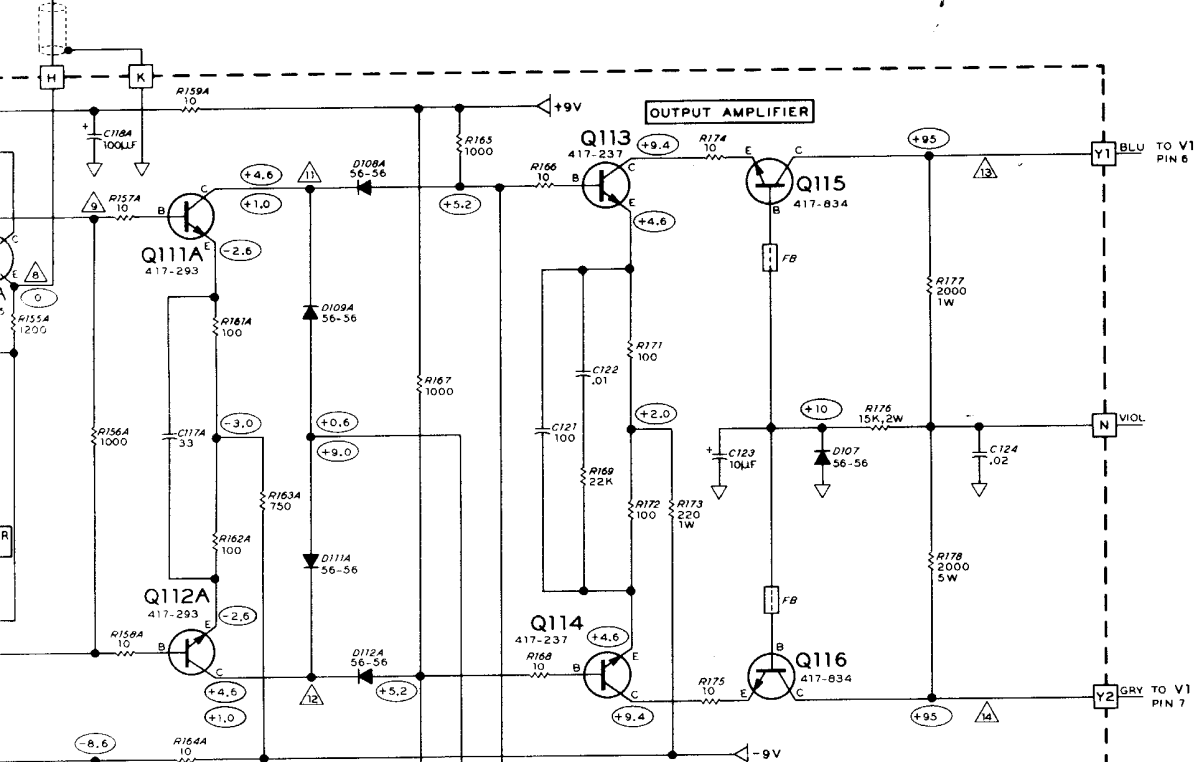
VERTICAL CIRCUIT BOARD





HORIZONTAL CIRCUIT BOARD

TO TRIGGER SOURCE SWITCH SW4 LUG 6



3RD GAIN STAGE CHANNEL SWITCHES

OUTPUT AMPLIFIER

X10

SWITCH DRIVERS

+9V SOURCE

-9V SOURCE

+5V SOURCE

CHANNEL CONTROL

PHASE ADJ

CHOP OSCILLATOR

SW3 VERTICAL MODE

TO TRIGGER SOURCE SWITCH SW4 LUG 8

TO [T] ON VERTICAL C.B.

TO [R] ON POWER SUPPLY C.B.

