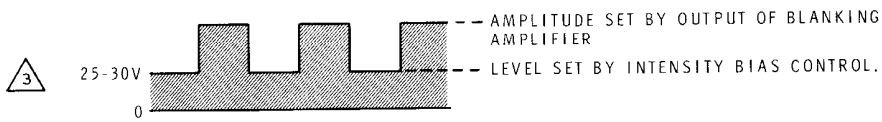
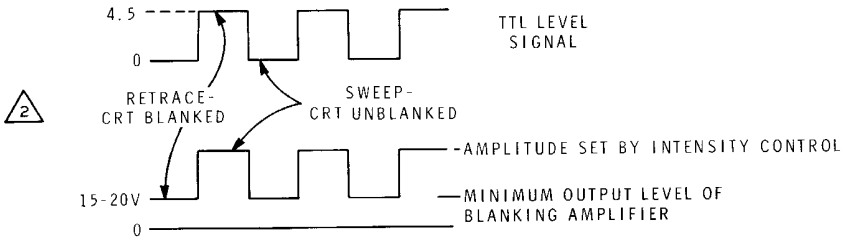
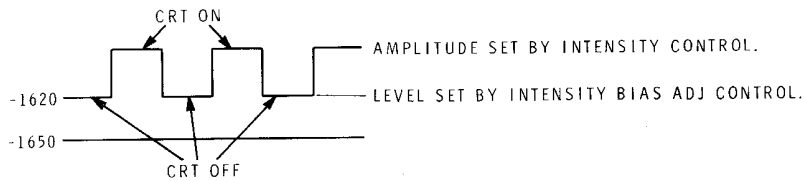


1 IN NORMAL OPERATION, A PULSE BLANKS THE CRT AFTER EACH SWEEP.

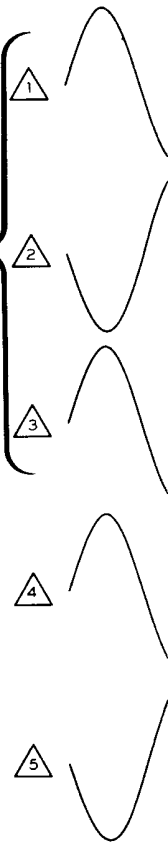


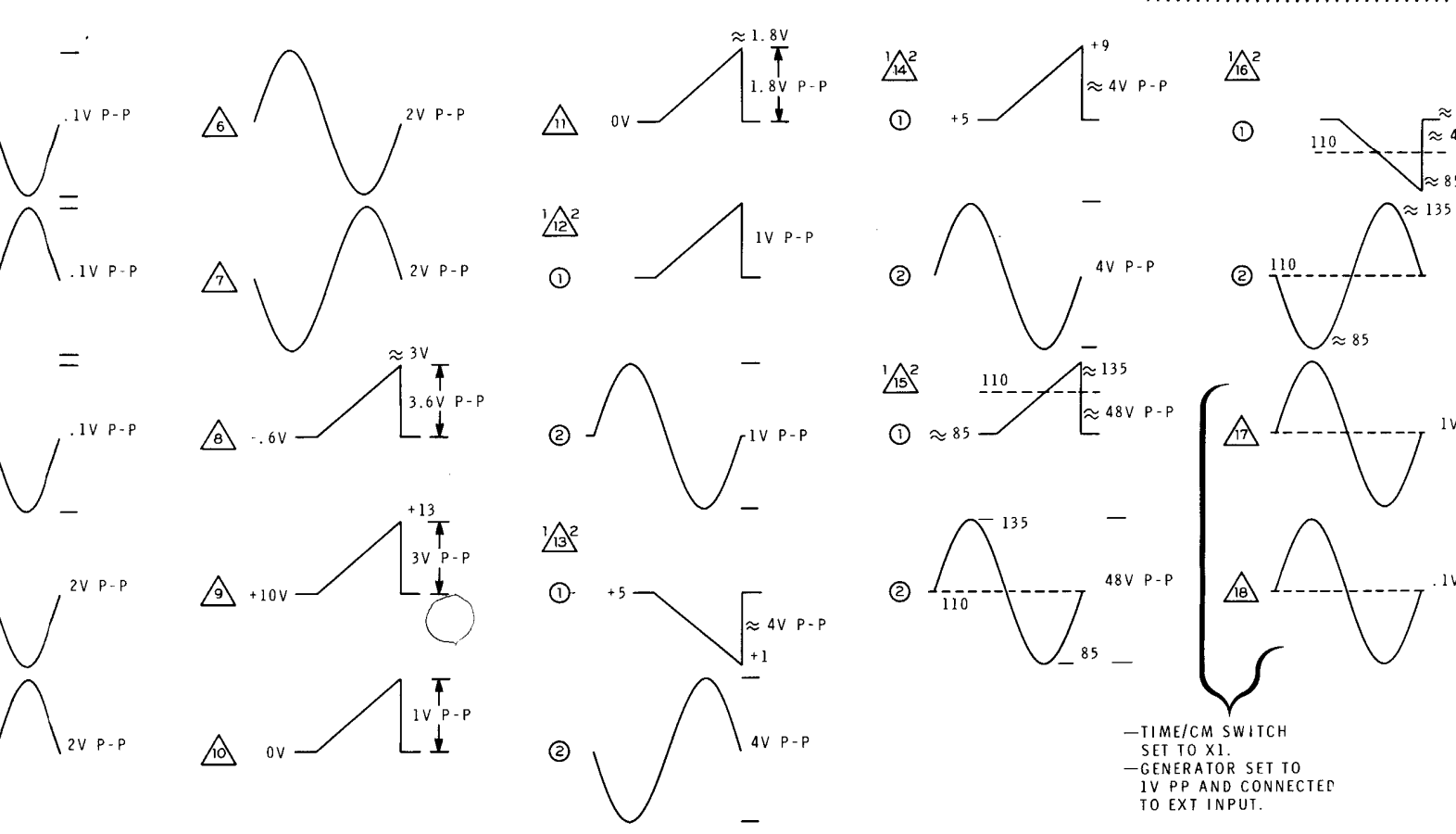
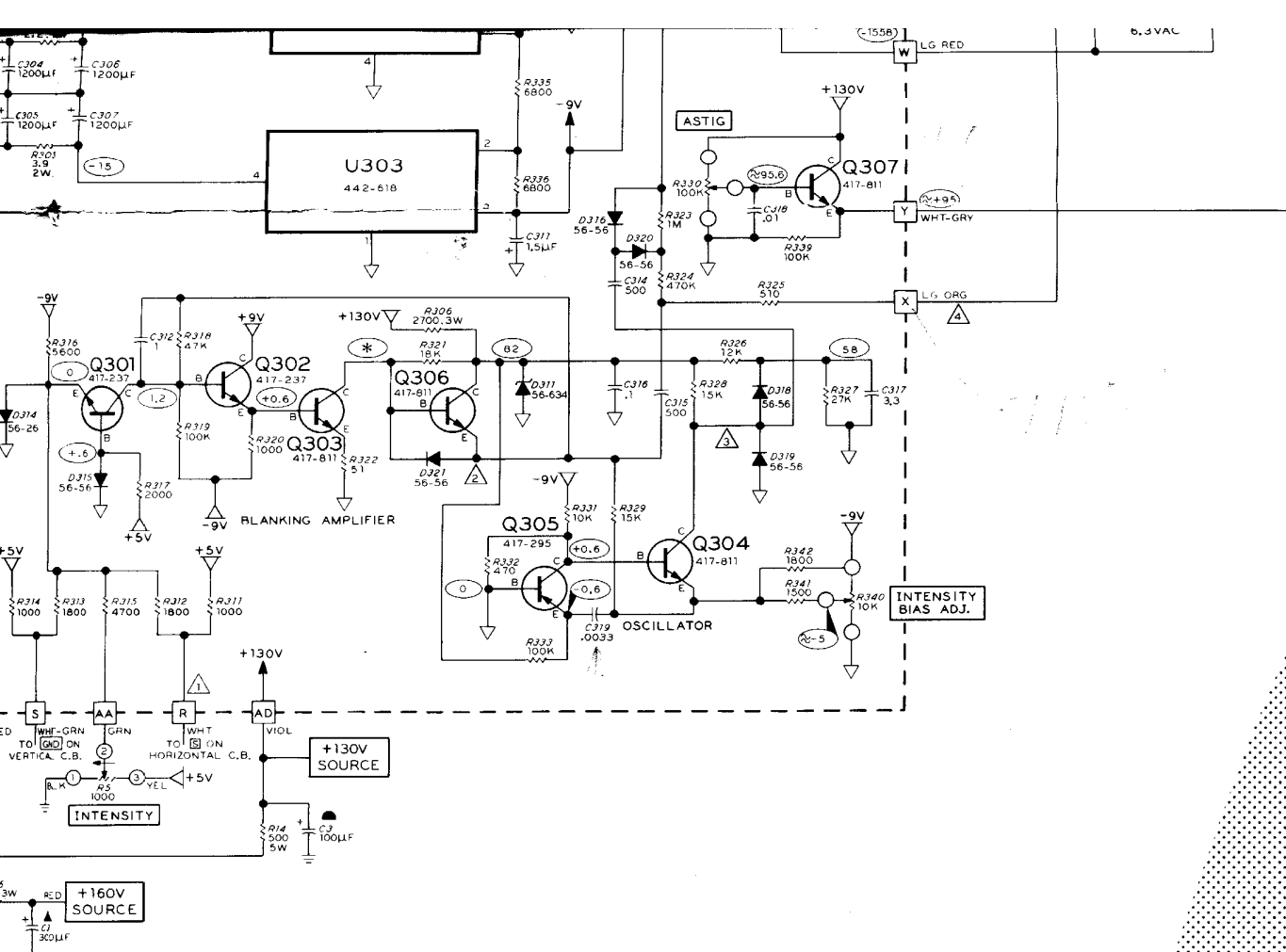
4 CAUTION: DO NOT MEASURE UNLESS YOU HAVE TAKEN PRECAUTIONS TO PROTECT THE INPUT OF THE MEASURING INSTRUMENT FOR -1650 VDC.

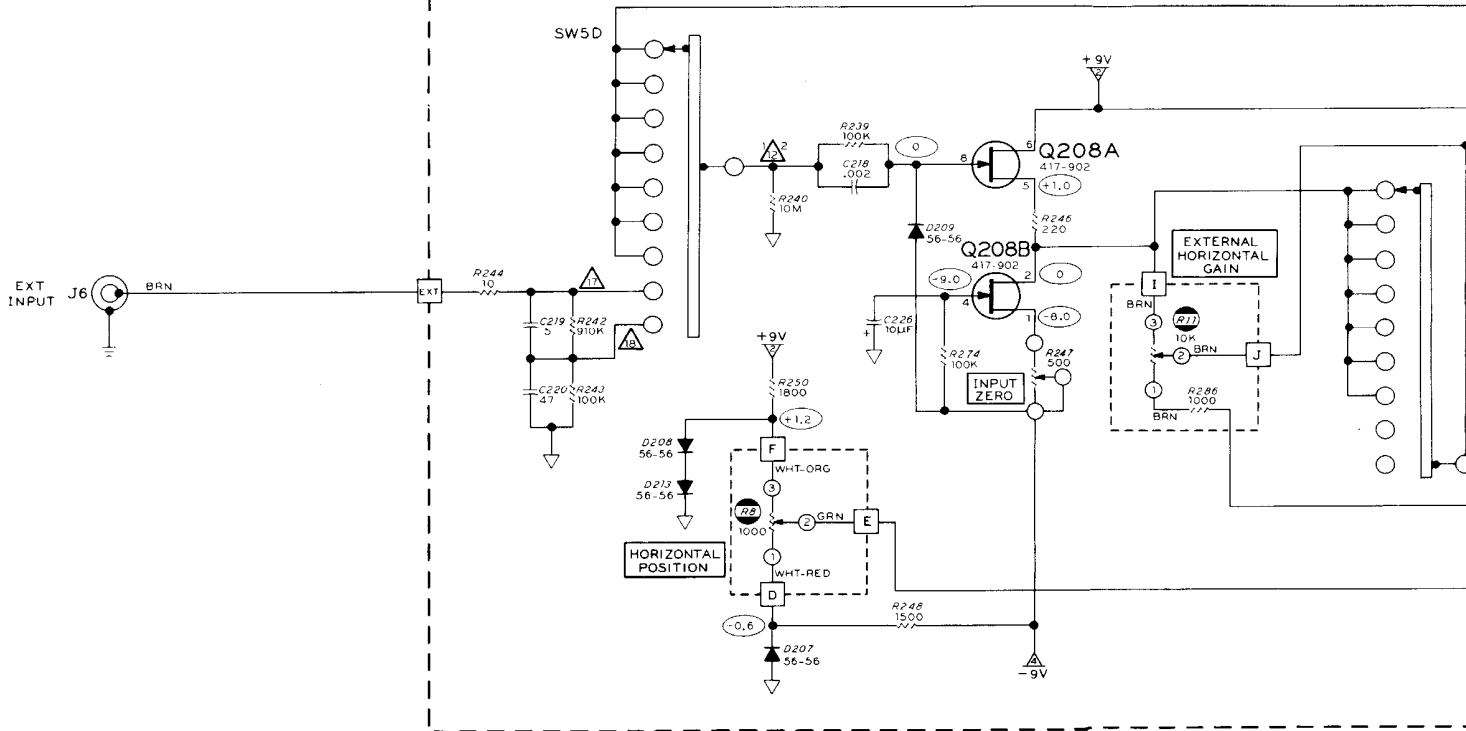
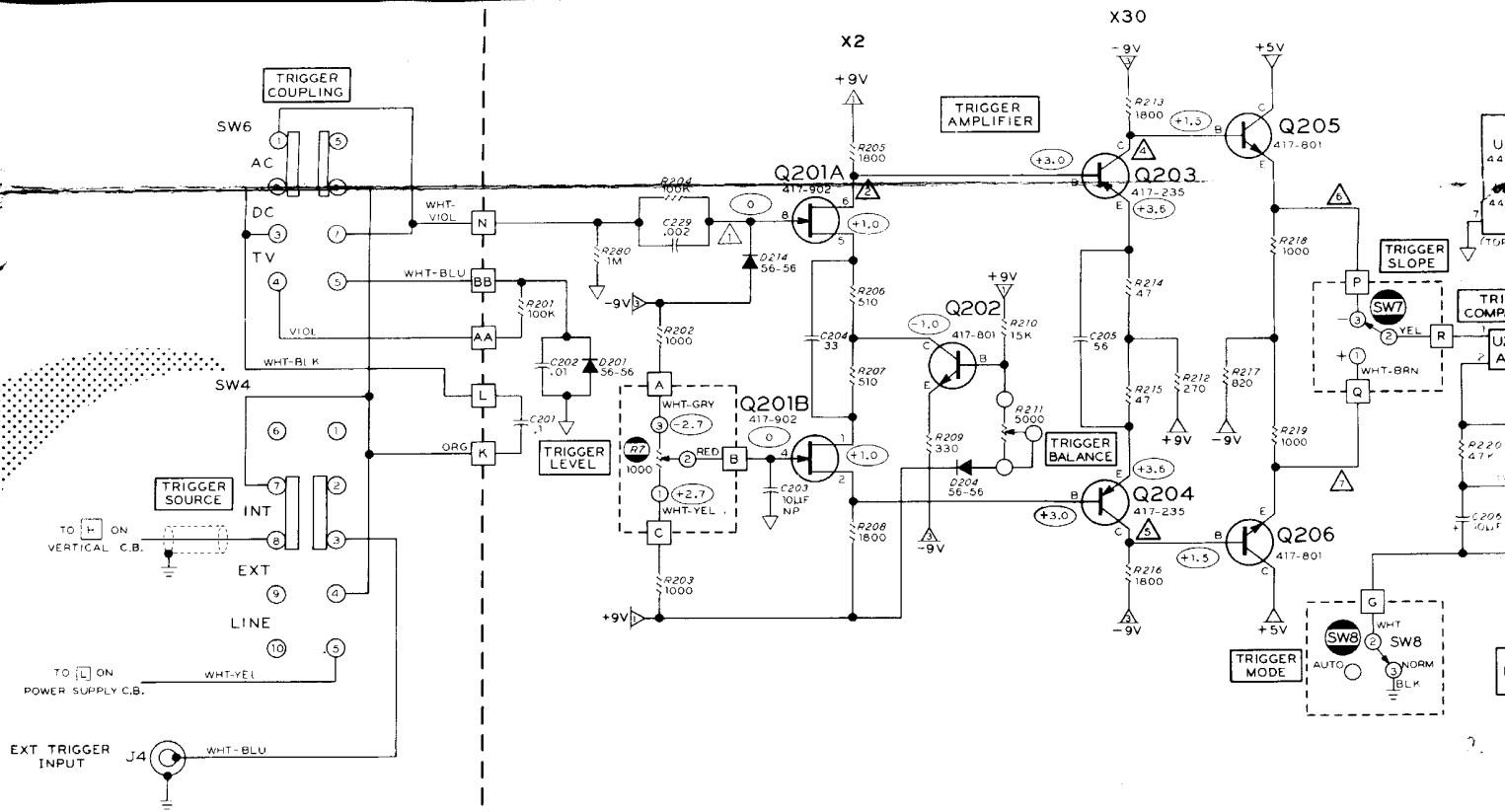
THE COMPOSITE SIGNAL AS SEEN BY THE CRT.

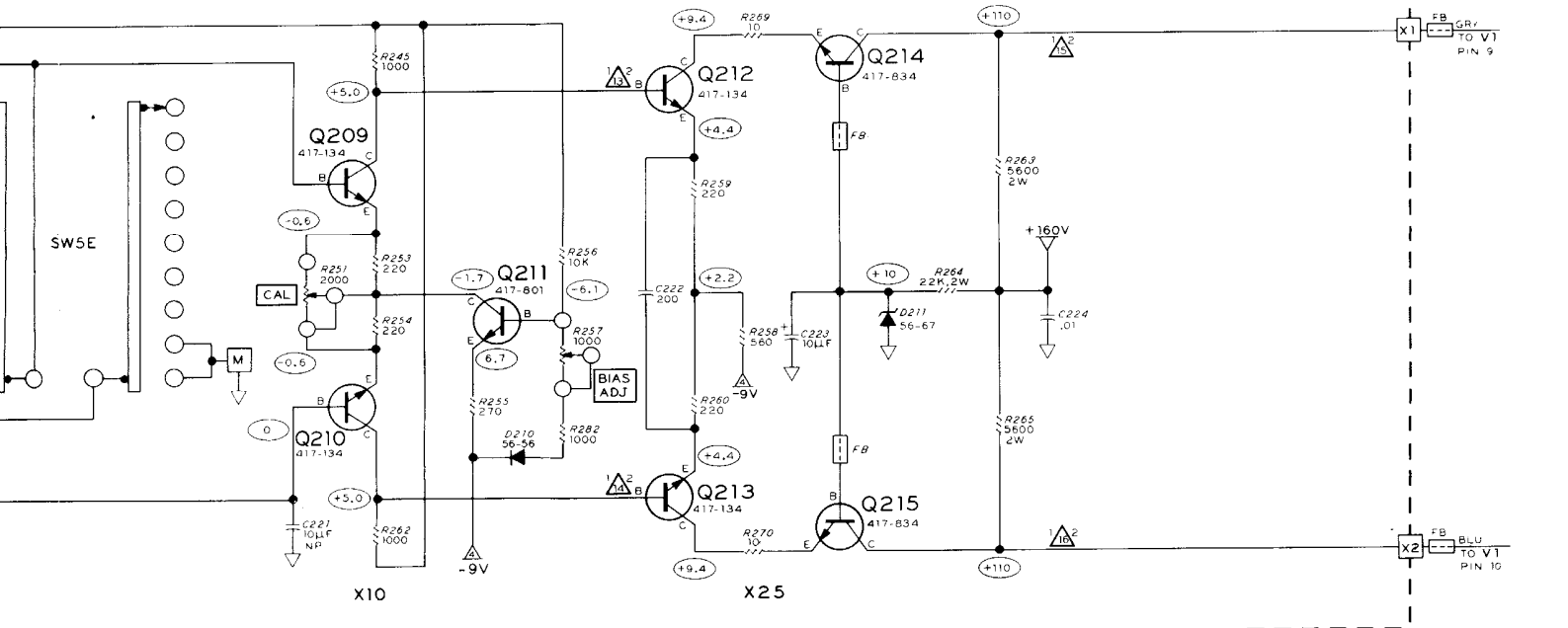
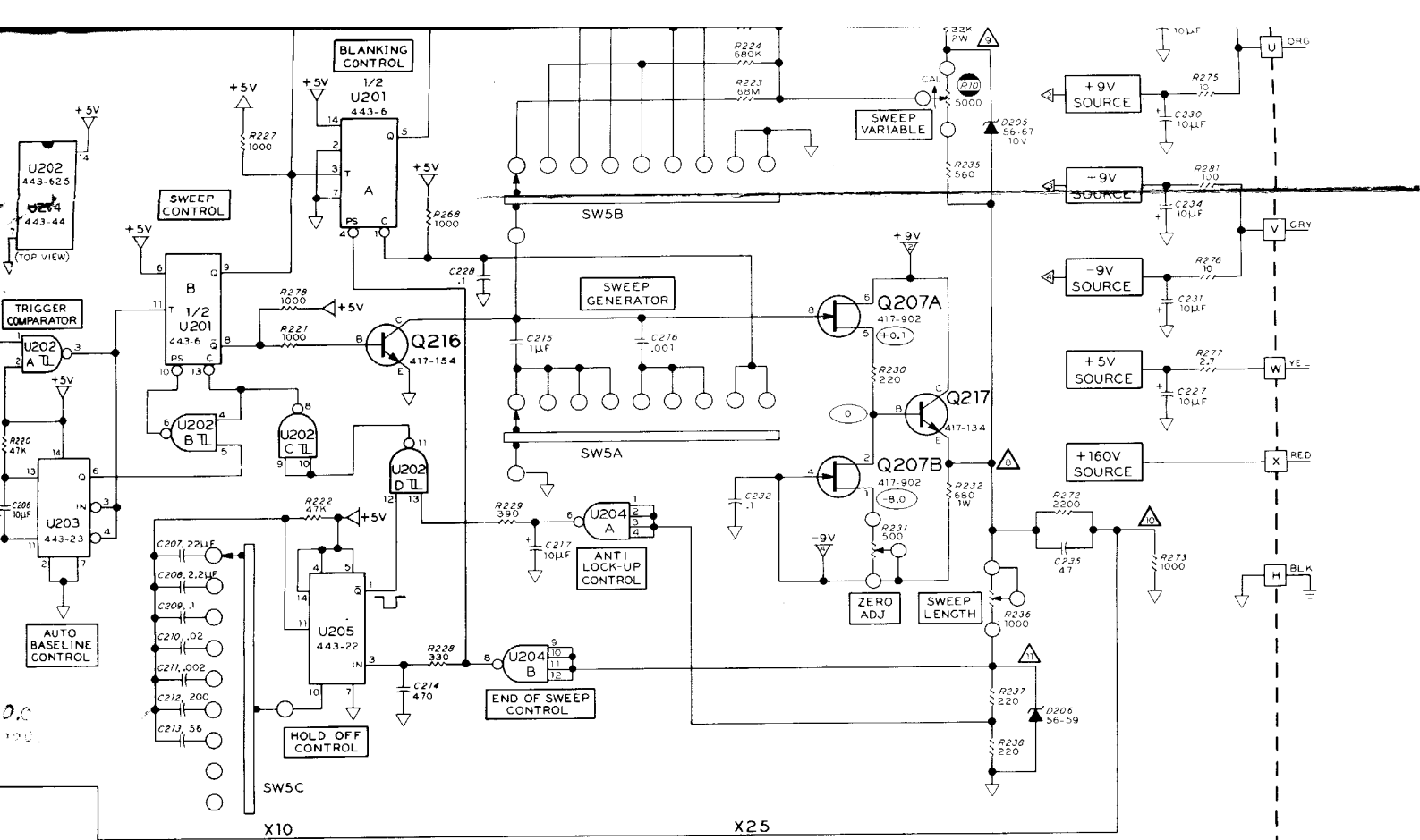


-INT-EXT-LINE SWITCH TO EXT.  
-GENERATOR SET TO .1V PP AND CONNECTED TO EXT INPUT.











# 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-4105 Oscilloscope.

### DIODES

CIRCUIT COMPONENT NUMBER	HEATH PART NUMBER
D101-D106	56-56
D107	56-67
D201	56-56
D204	56-56
D205	56-67
D206	56-59
D207-D210	56-56
D211	56-67

### DIODES (Cont'd.)

CIRCUIT COMPONENT NUMBER	HEATH PART NUMBER
D213, D214	56-56
D301, D302	57-27
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
Q101, Q102	471-902
Q103	417-801
Q104, Q105	417-235
Q106, Q109	417-235
Q111, Q112	417-134
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
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

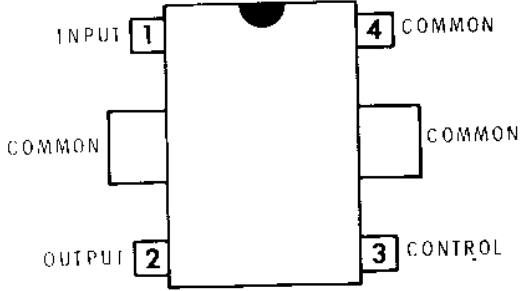
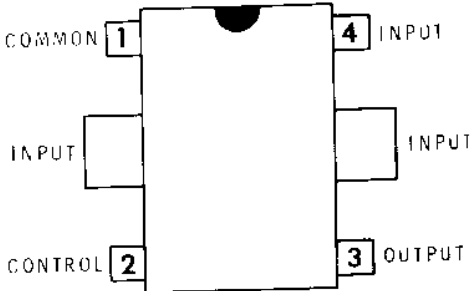
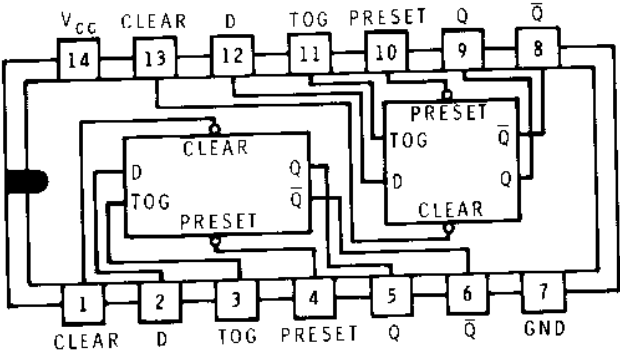
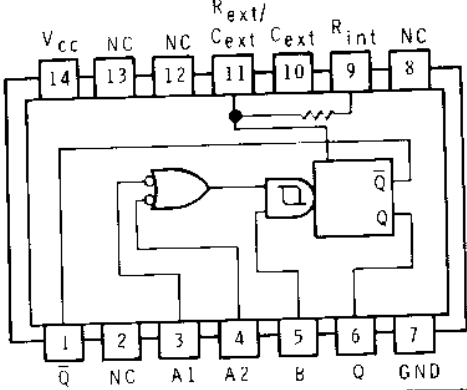
HEATH PART NUMBER	MAY BE REPLACED WITH	IDENTIFICATION
56-26	1N191	<p>IMPORTANT: THE BANDIED END OF DIODES CAN BE MARKED IN A NUMBER OF WAYS.</p> <p>BANDIED END</p>
56-56	1N4149	
56-59	1N750A	
56-67	VR10A	
56-89	GD510	
59-634	2EZ82D5	
57-27	1N2071	
57-52	DO-7	

**TRANSISTORS**

HEATH PART NUMBER	MAY BE REPLACED WITH	IDENTIFICATION
417-134	MPS6520	
417-154	2N2369	
417-235 417-237	2N4121 SE6020	
417-295 417-801 417-811	MPSL51 MPSA20 MPSL01	
417-834	MPSU10	
417-902	NPD5566N	<p>TOP VIEW</p>



INTEGRATED CIRCUITS

HEATH PART NUMBER	MAY BE REPLACED WITH	BASING DIAGRAM (TOP VIEW)
442-617	$\mu$ A78MGT2	
442-618	$\mu$ A79MGT2	
443-6	SN7474N	
443-22	SN74121N	



Integrated Circuits (Cont'd).

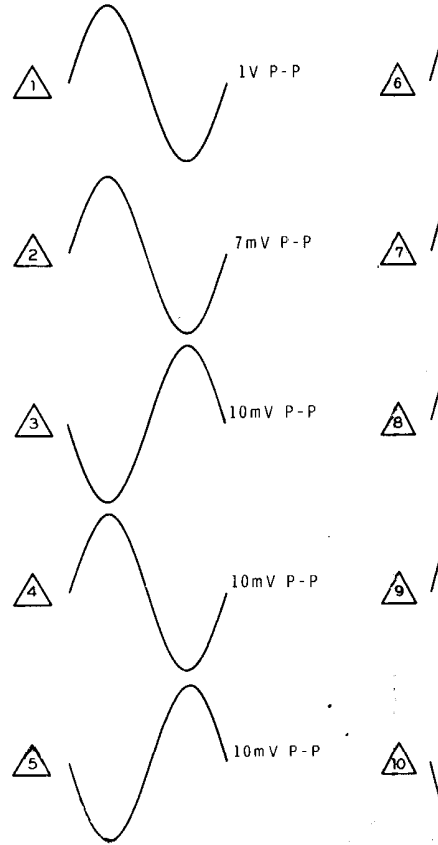
HEATH PART NUMBER	MAY BE REPLACED WITH	BASING DIAGRAM (TOP VIEW)
443-23	SN74122N	<p>The diagram shows the pin configuration for the SN74122N monostable multivibrator. Pin 14 is V<sub>CC</sub> and pin 7 is GND. Pin 13 is R<sub>ext</sub>/C<sub>ext</sub>, pin 11 is C<sub>ext</sub>, and pin 9 is R<sub>int</sub>. Pin 8 is the output Q. The internal circuit includes an AND gate with inputs A1 (pin 1) and A2 (pin 2), and a B input (pin 3). The output of the AND gate is connected to the CLR pin (pin 5). The output Q (pin 8) is connected to the CLR pin (pin 5) through a resistor. Pin 10 is NC.</p>
443-44	SN7413N	<p>The diagram shows the pin configuration for the SN7413N hex inverters. Pin 14 is V<sub>CC</sub> and pin 7 is GND. The two inverters are labeled A and B. Inverter A has inputs 1A (pin 1), 1B (pin 2), and 1C (pin 3), and output 1Y (pin 6). Inverter B has inputs 2A (pin 9), 2B (pin 10), and 2C (pin 12), and output 2Y (pin 8). Pin 11 is NC.</p>
443-625	SN74132N	<p>The diagram shows the pin configuration for the SN74132N hex inverters with NAND gates. Pin 14 is V<sub>CC</sub> and pin 7 is GND. The four inverters are labeled A, B, C, and D. Inverter A has inputs 1A (pin 1) and 1B (pin 2), and output 1Y (pin 6). Inverter B has inputs 4A (pin 4) and 4B (pin 5), and output 4Y (pin 3). Inverter C has inputs 9A (pin 9) and 9B (pin 10), and output 9Y (pin 8). Inverter D has inputs 12A (pin 12) and 12B (pin 11), and output 12Y (pin 13). Pin 14 is V<sub>CC</sub>.</p>

**SCHEMATIC OF THE  
HEATHKIT®  
IO-4105/SO-4105  
OSCILLOSCOPE**

**NOTES:**

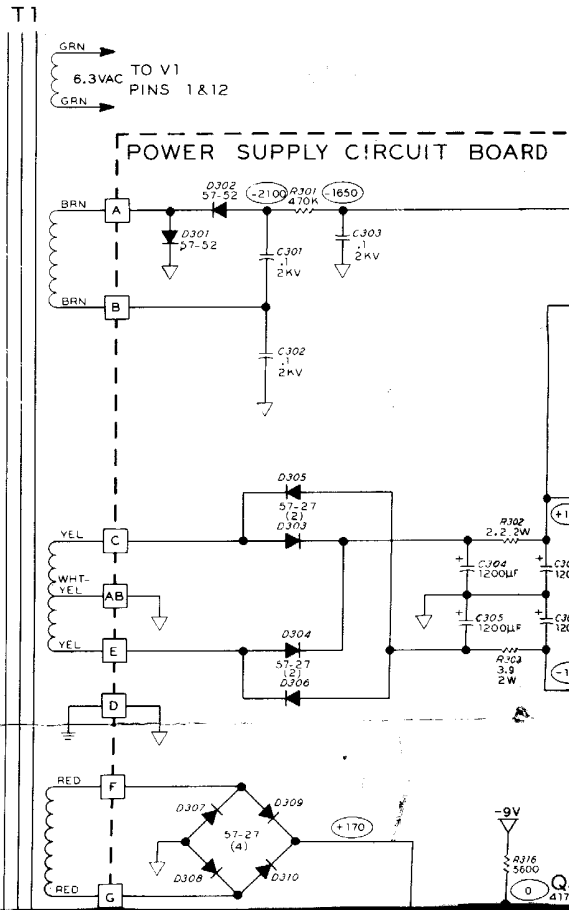
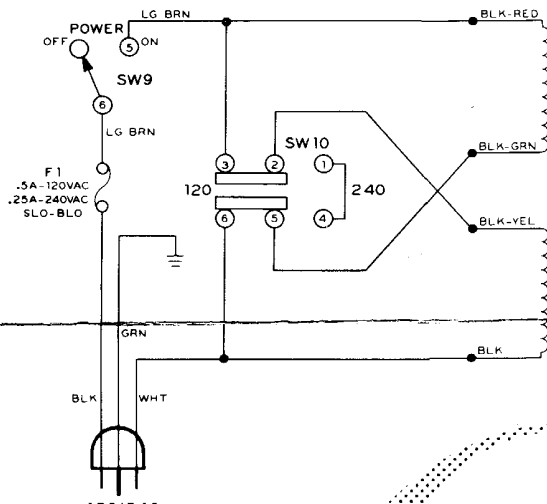
1. REFER TO THE CIRCUIT BOARD X-RAY VIEWS FOR THE PHYSICAL LOCATION OF PARTS.
2. ALL RESISTORS ARE 1/2-WATT, 5% UNLESS MARKED OTHERWISE.
3. ALL CAPACITOR VALUES LARGER THAN 1.0 ARE IN  $\mu\text{F}$  UNLESS OTHERWISE SPECIFIED. CAPACITOR VALUES LESS THAN 1.0 ARE IN  $\mu\text{F}$ .
4.  $\square$  THIS SYMBOL WITH A LETTER IN IT INDICATES A WIRE CONNECTION TO A CIRCUIT BOARD.
5.  $\nabla$  THIS SYMBOL INDICATES CIRCUIT BOARD GROUND (COMMON FOIL) ON A CIRCUIT BOARD.
6.  $\equiv$  THIS SYMBOL INDICATES CHASSIS GROUND.
7.  $\triangle$  THIS SYMBOL DENOTES A WAVEFORM DISPLAY AT THE INDICATED POINT.
8.  $\ominus$  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.  $\circ$  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.

—AC-GND-DC  
—VOLTS/CM 5  
—GENERATOR  
CONNECTED

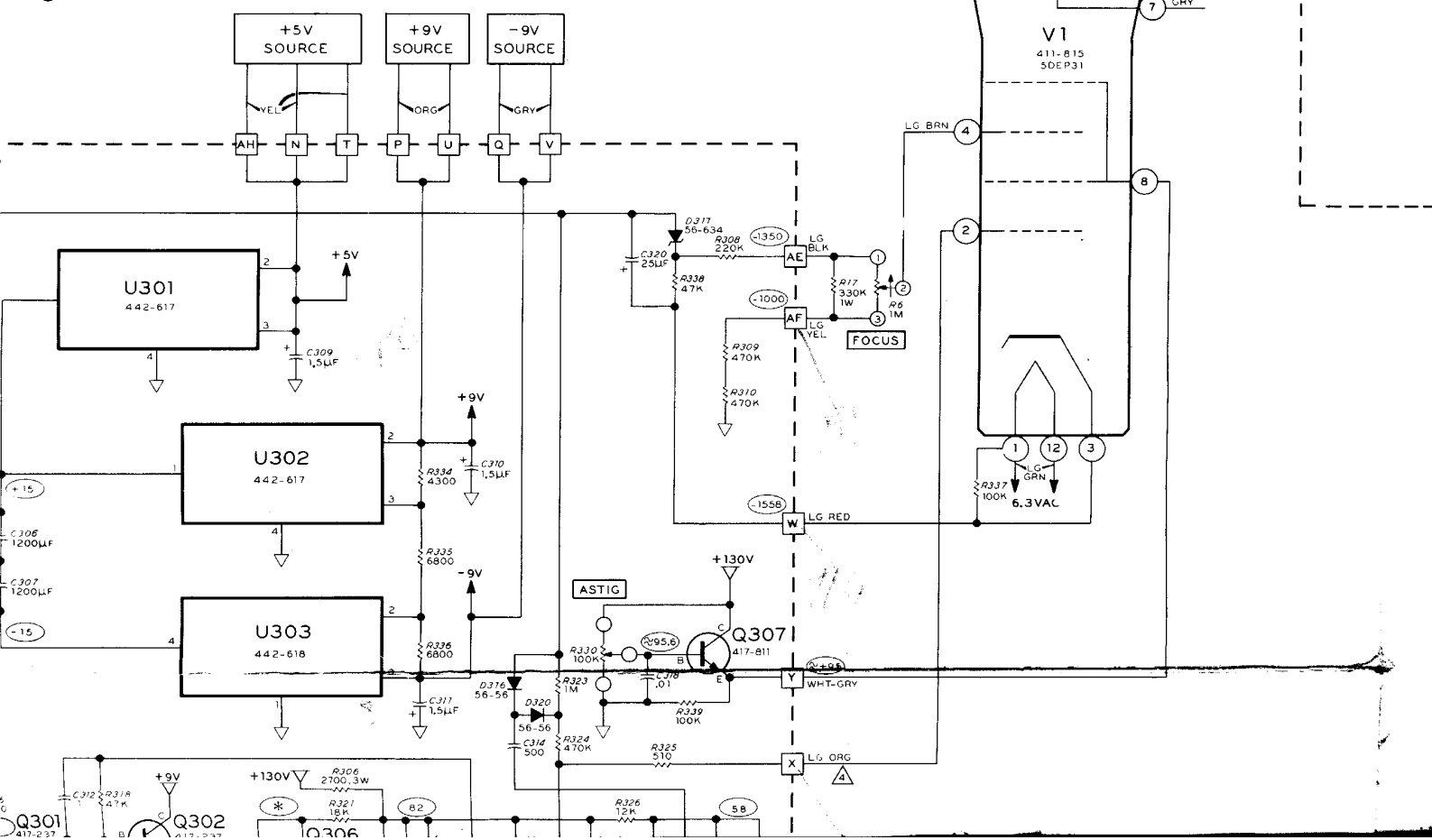
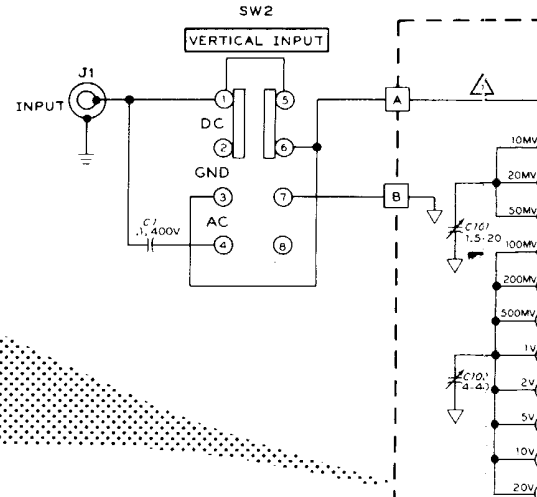
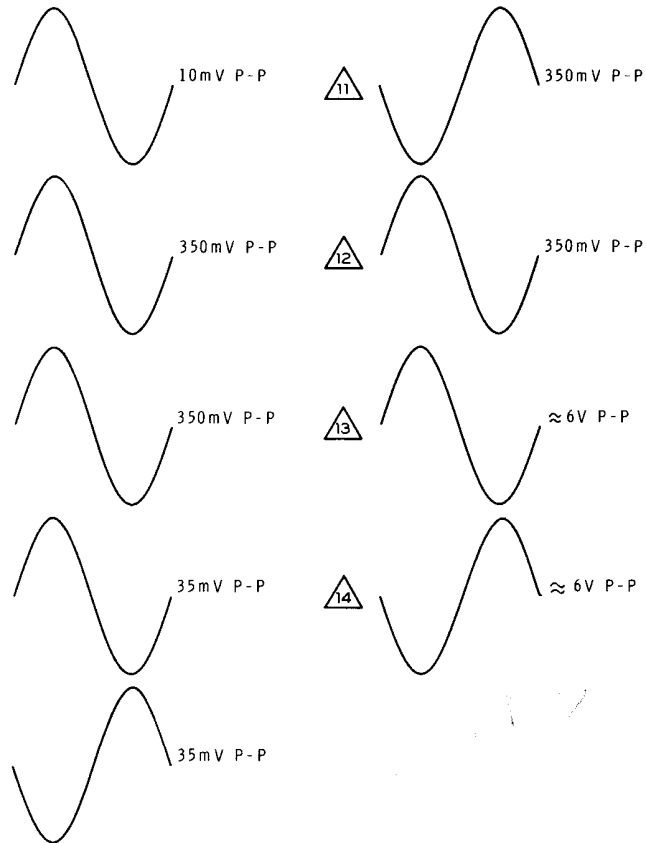


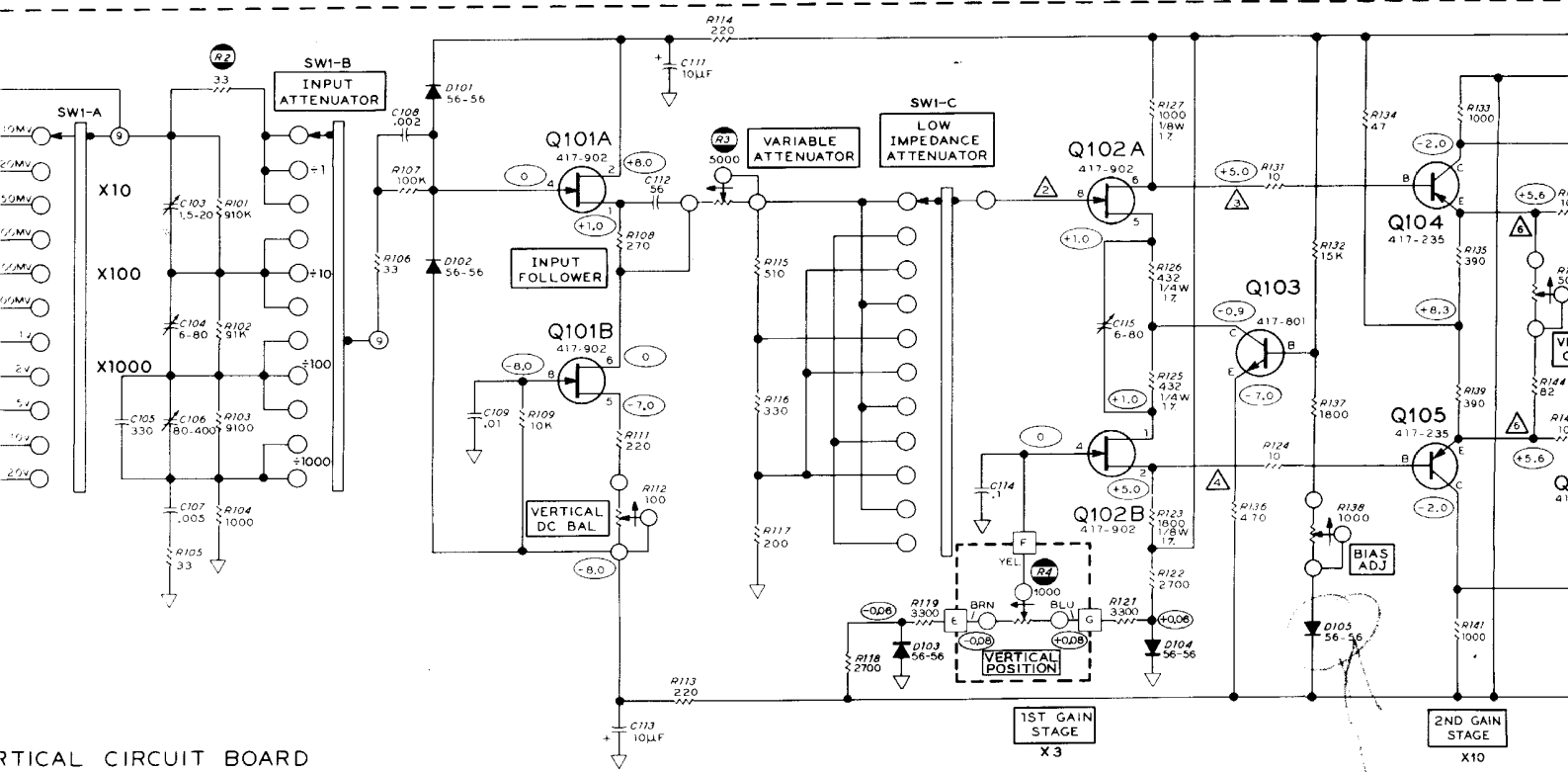
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Part of 595-2074



DC SWITCH TO AC OR DC.  
 M SWITCH TO 1.  
 OR SET TO 1V PP AND  
 ED TO INPUT.





**HORIZONTAL CIRCUIT BOARD**

