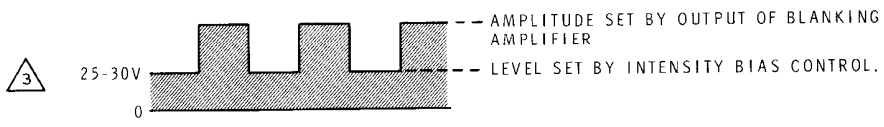
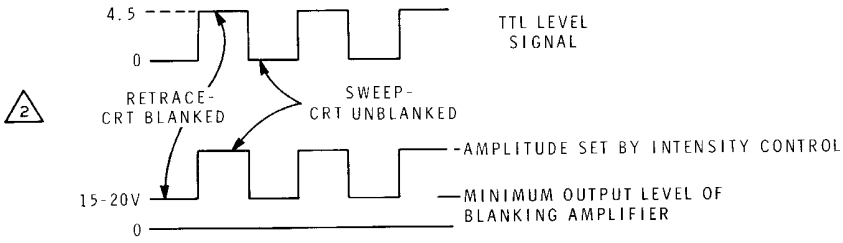
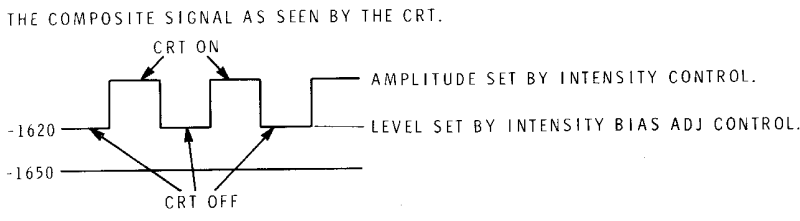


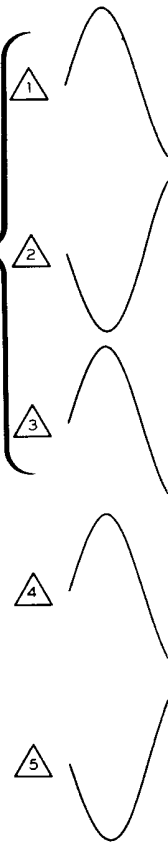
1 IN NORMAL OPERATION, A PULSE BLANKS THE CRT AFTER EACH SWEEP.

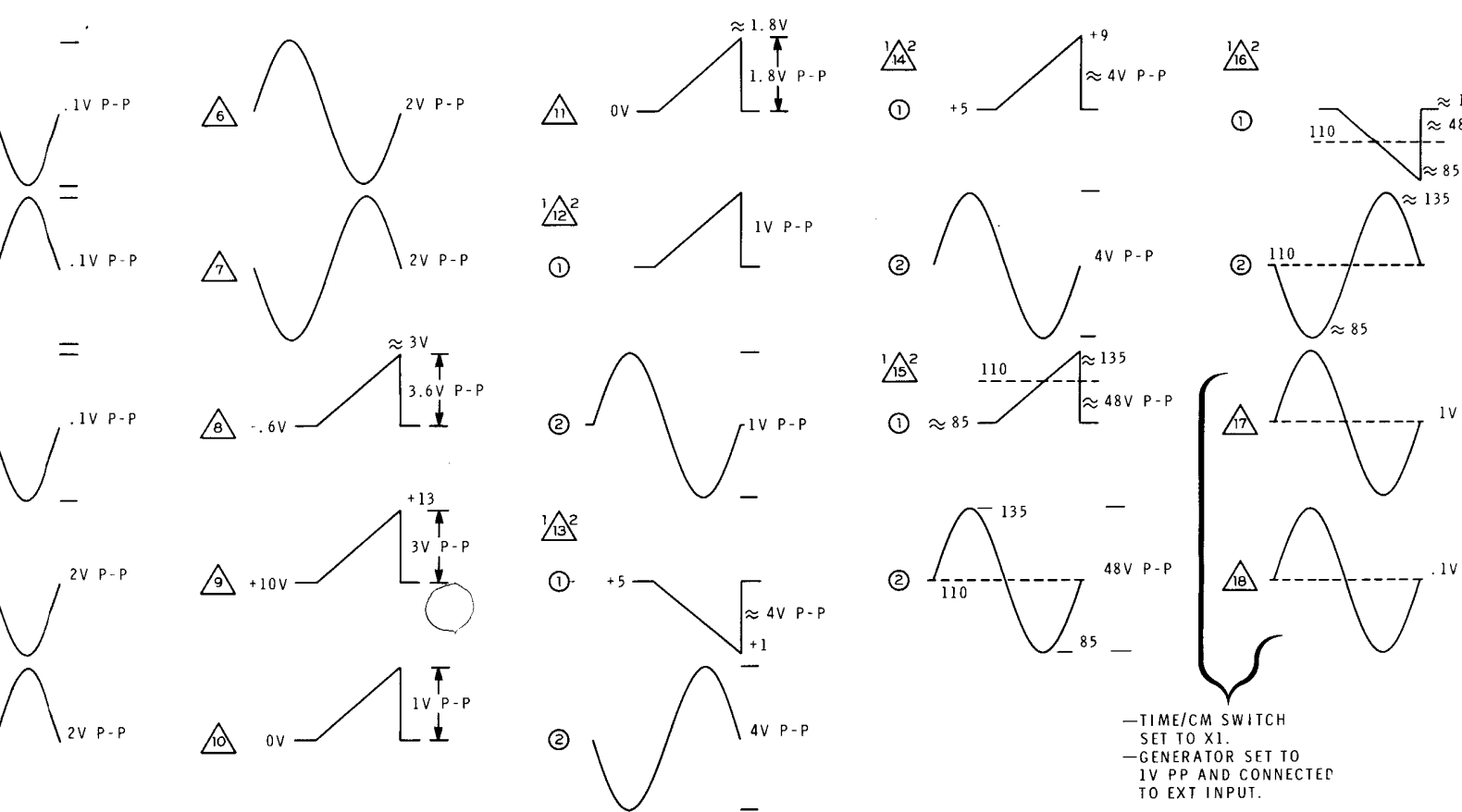
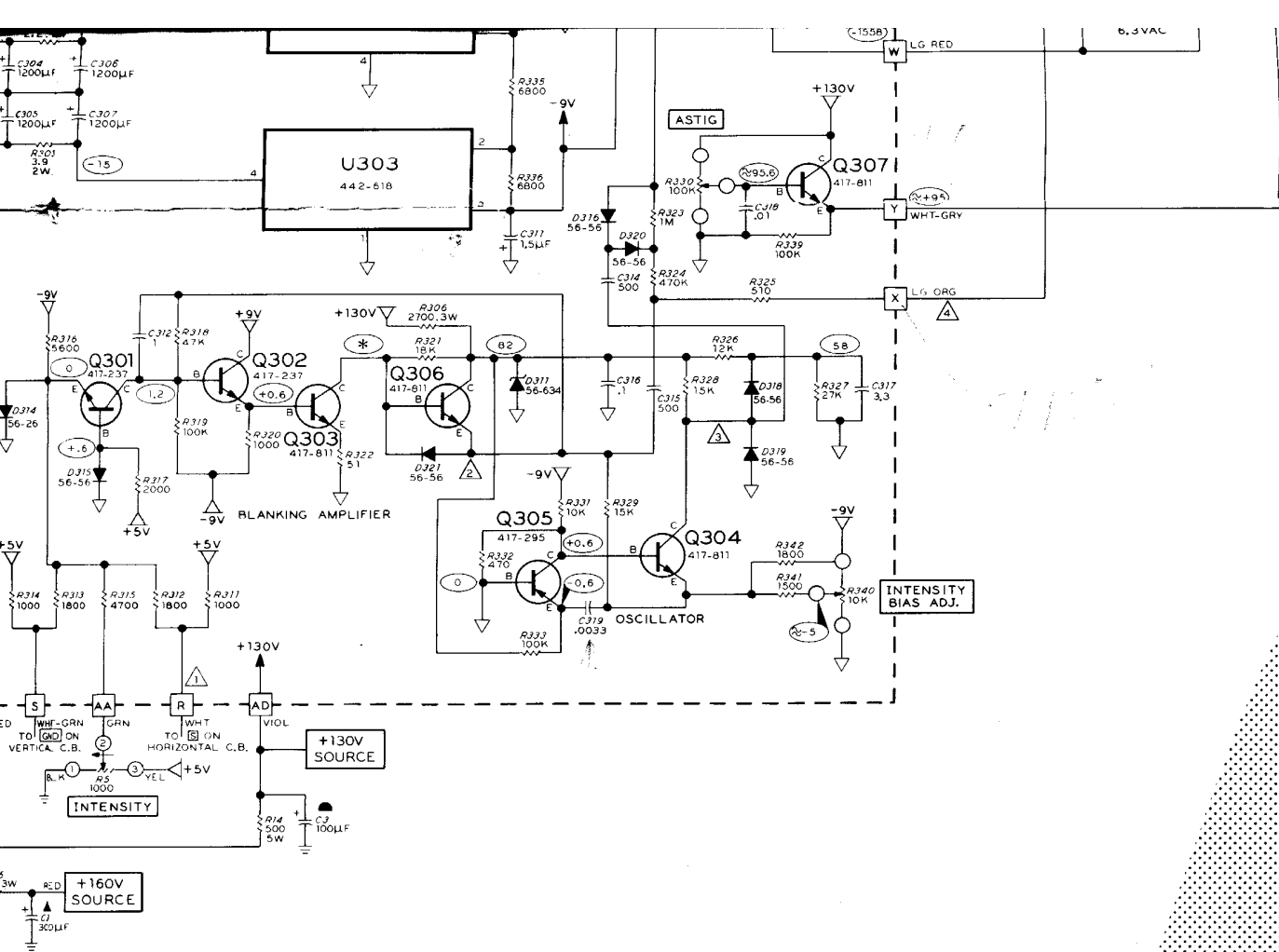


4 CAUTION: DO NOT MEASURE UNLESS YOU HAVE TAKEN PRECAUTIONS TO PROTECT THE INPUT OF THE MEASURING INSTRUMENT FOR -1650 VDC.



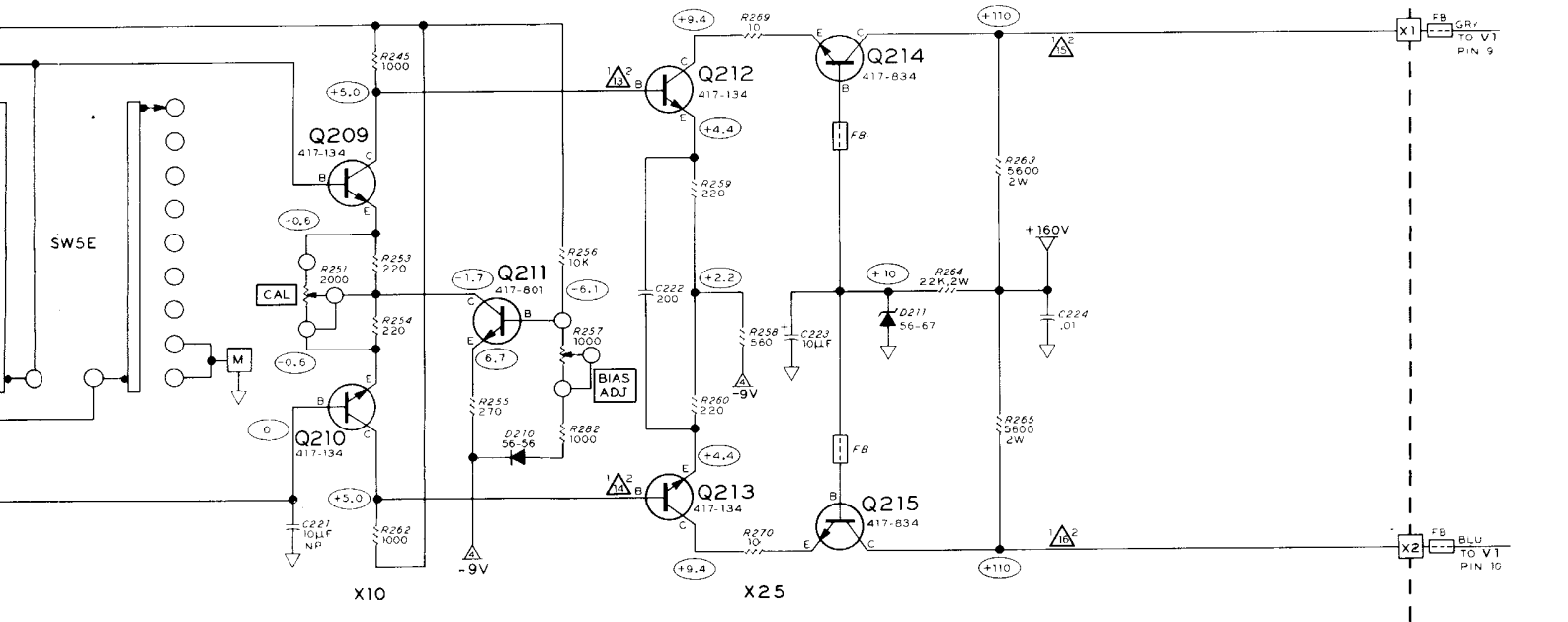
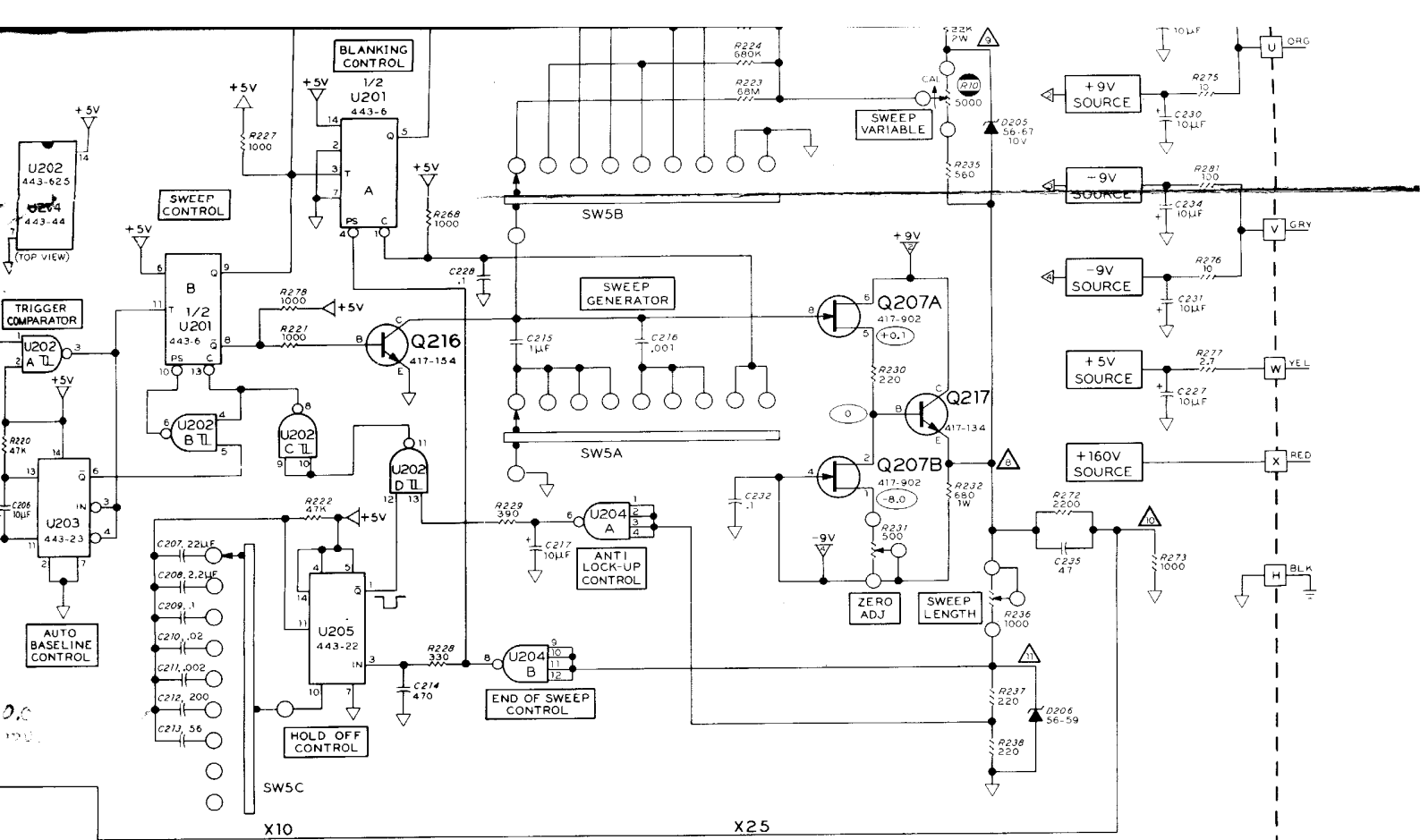
-INT-EXT-LINE SWITCH TO EXT.  
-GENERATOR SET TO .1V PP AND CONNECTED TO EXT INPUT.





-TIME/CM SWITCH  
 SET TO X1.  
 -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

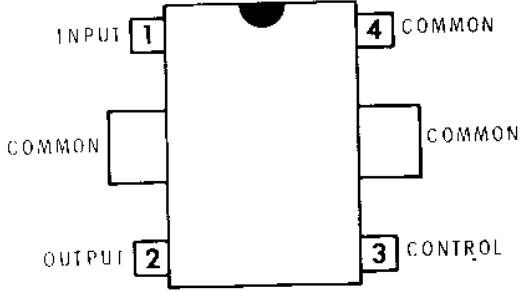
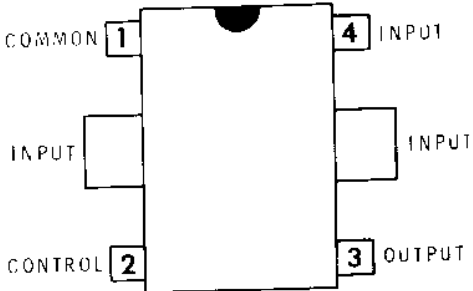
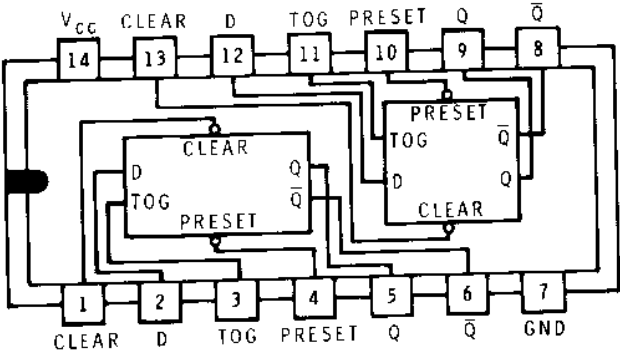
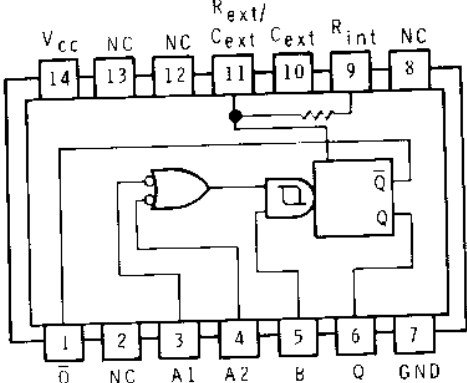
| HEATH PART NUMBER | MAY BE REPLACED WITH | IDENTIFICATION  |
|-------------------|----------------------|---|
| 56-26             | 1N191                | <p>IMPORTANT: THE BANDIED END OF DIODES CAN BE MARKED IN A NUMBER OF WAYS.</p> <p>BANDIED END</p> |
| 56-56             | 1N4149               |   |
| 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<br>417-237            | 2N4121<br>SE6020           |                |
| 417-295<br>417-801<br>417-811 | MPSL51<br>MPSA20<br>MPSL01 |                |
| 417-834                       | MPSU10                     |                |
| 417-902                       | NPD5566N                   |                |



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).

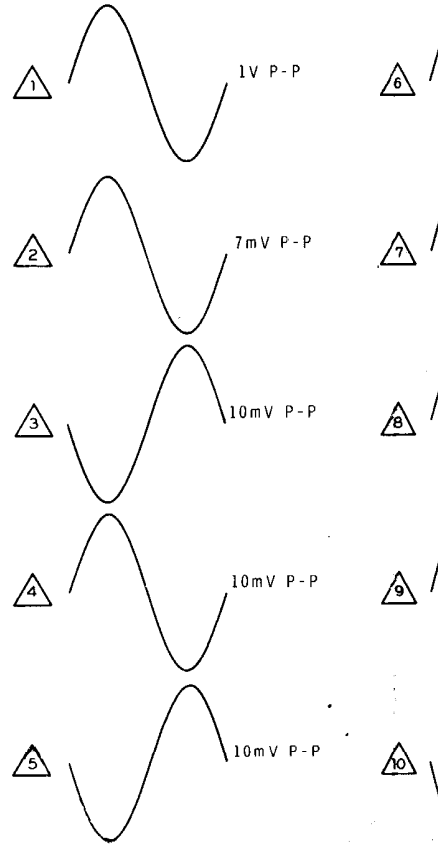
| HEATH PART NUMBER | MAY BE REPLACED WITH | BASING DIAGRAM (TOP VIEW) |
|-------------------|----------------------|---------------------------|
| 443-23            | SN74122N             |                           |
| 443-44            | SN7413N              |                           |
| 443-625           | SN74132N             |                           |

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

**NOTES:**

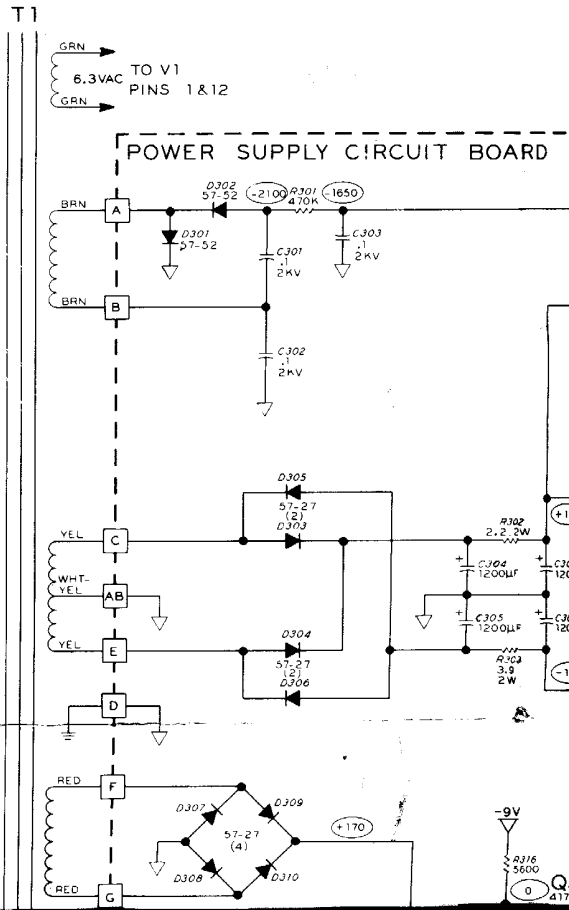
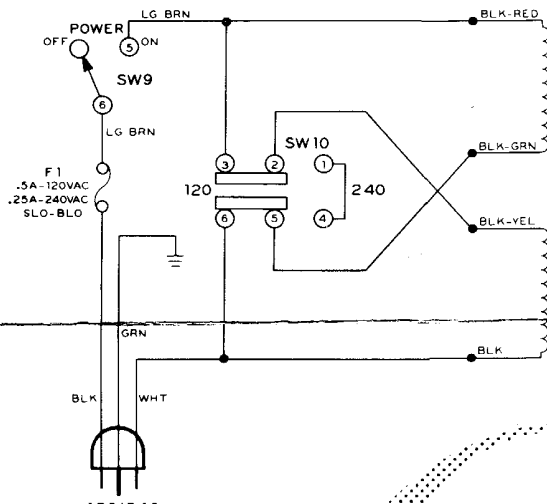
1. REFER TO THE CIRCUIT BOARD X-RAY VIEWS FOR THE PHYSICAL LOCATION OF PARTS.
2. ALL RESISTORS ARE 1/2-WATT, 5% UNLESS MARKED OTHERWISE.
3. ALL CAPACITOR VALUES LARGER THAN 1.0 ARE IN  $\mu\text{F}$  UNLESS OTHERWISE SPECIFIED. CAPACITOR VALUES LESS THAN 1.0 ARE IN  $\mu\text{F}$ .
4.  $\square$  THIS 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

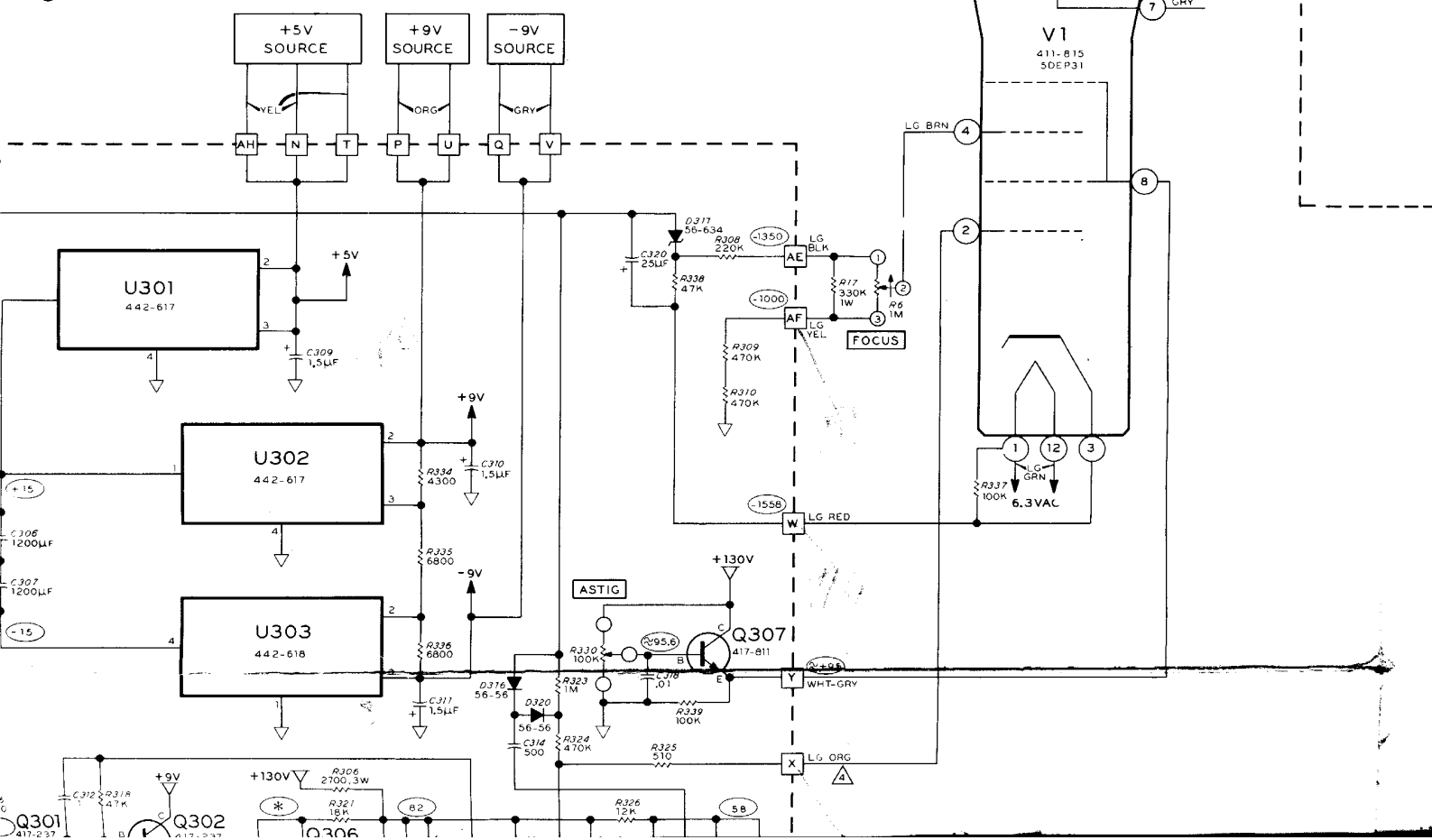
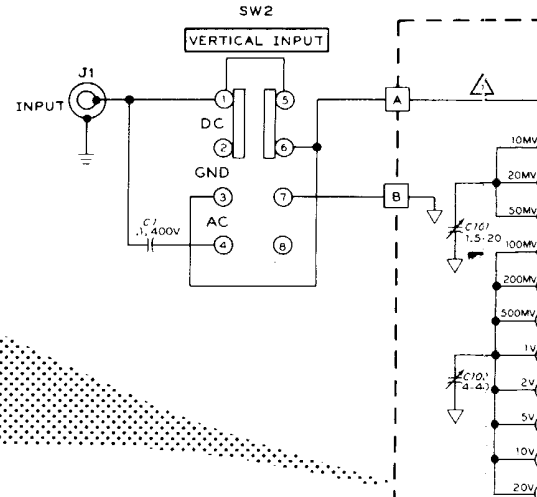
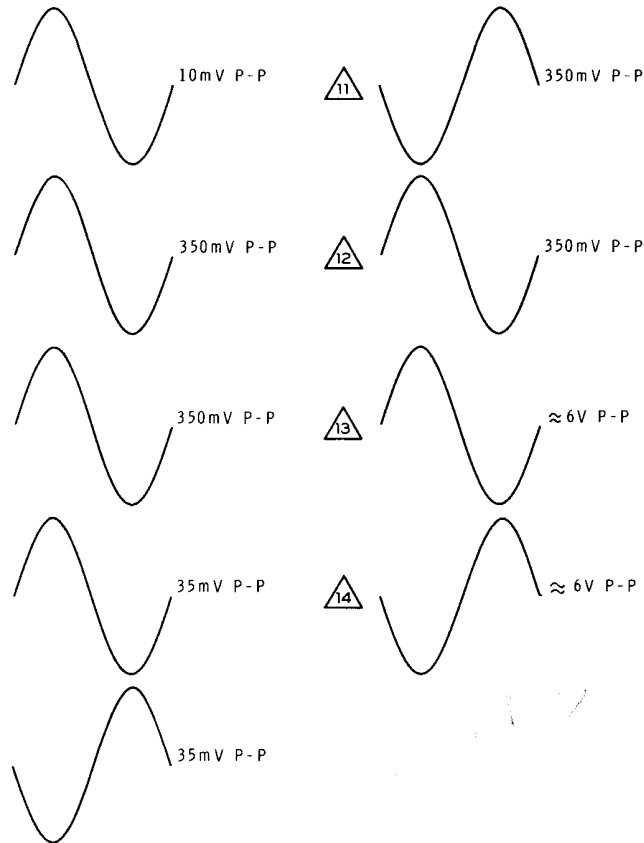


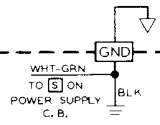
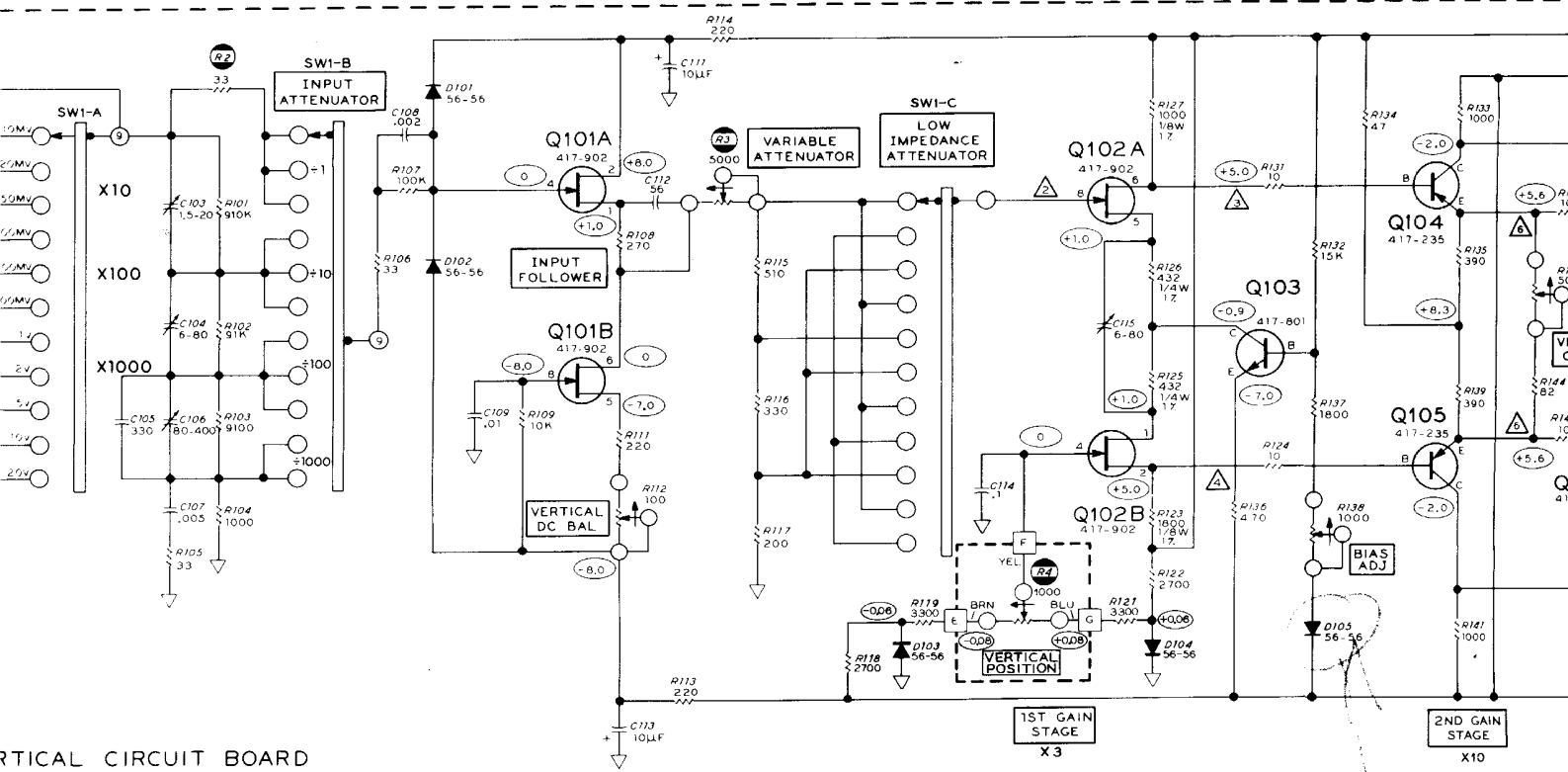
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Part of 595-2074



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





**HORIZONTAL CIRCUIT BOARD**

