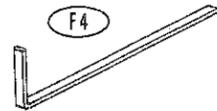
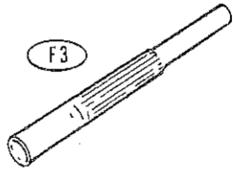
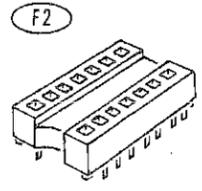
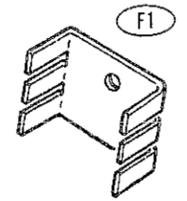
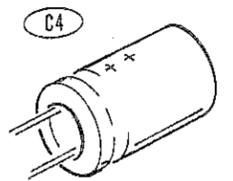
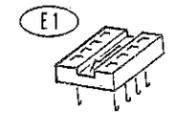
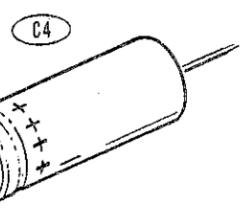
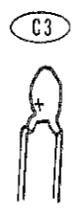
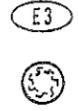
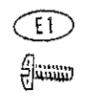
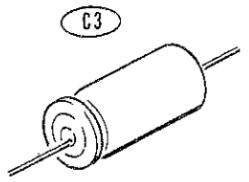
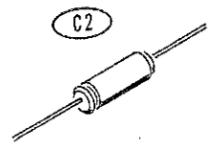
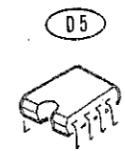
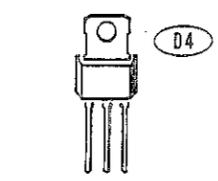
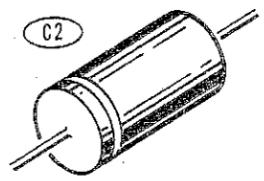
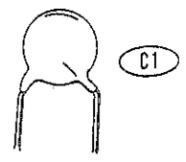
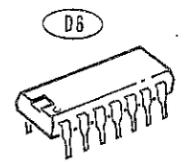
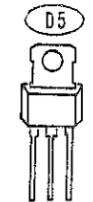
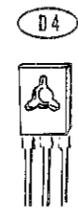
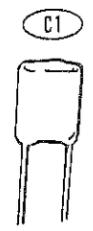
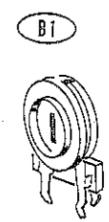
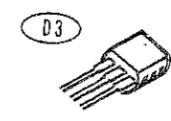
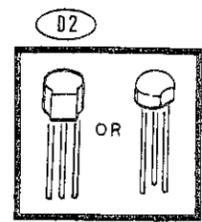
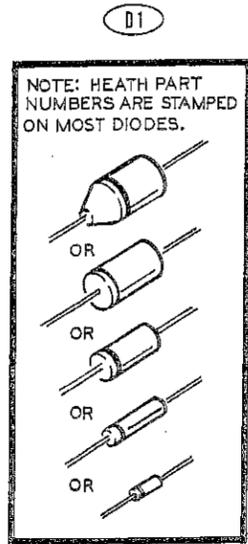
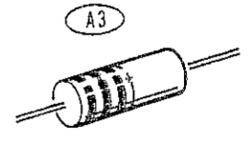
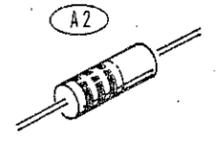
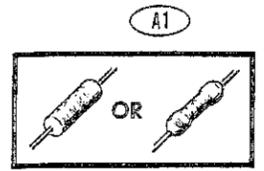
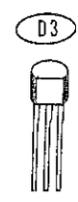
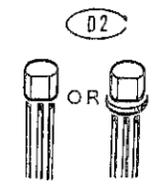
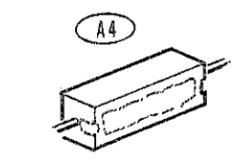
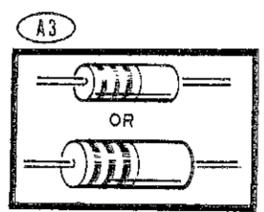
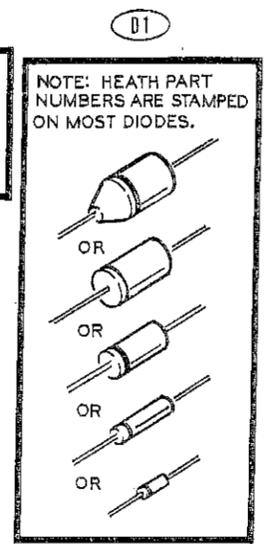
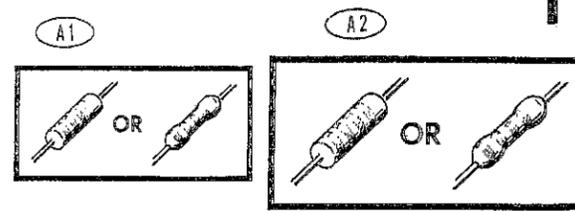


ILLUSTRATION BOOKLET

PARTS PICTORIAL

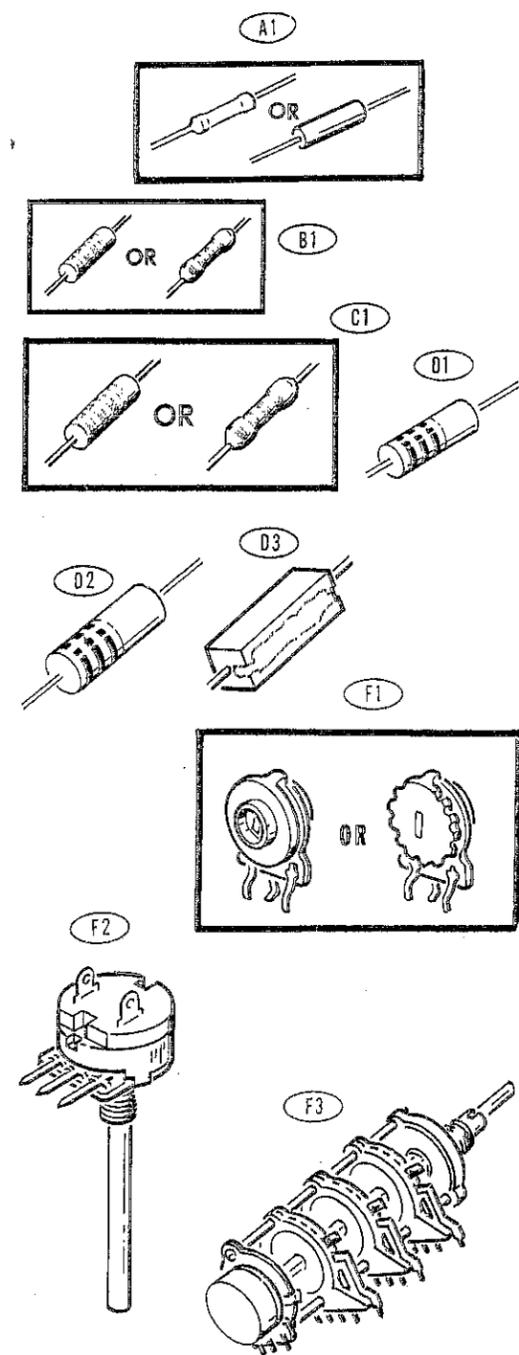


LOW VOLTAGE CIRCUIT BOARD

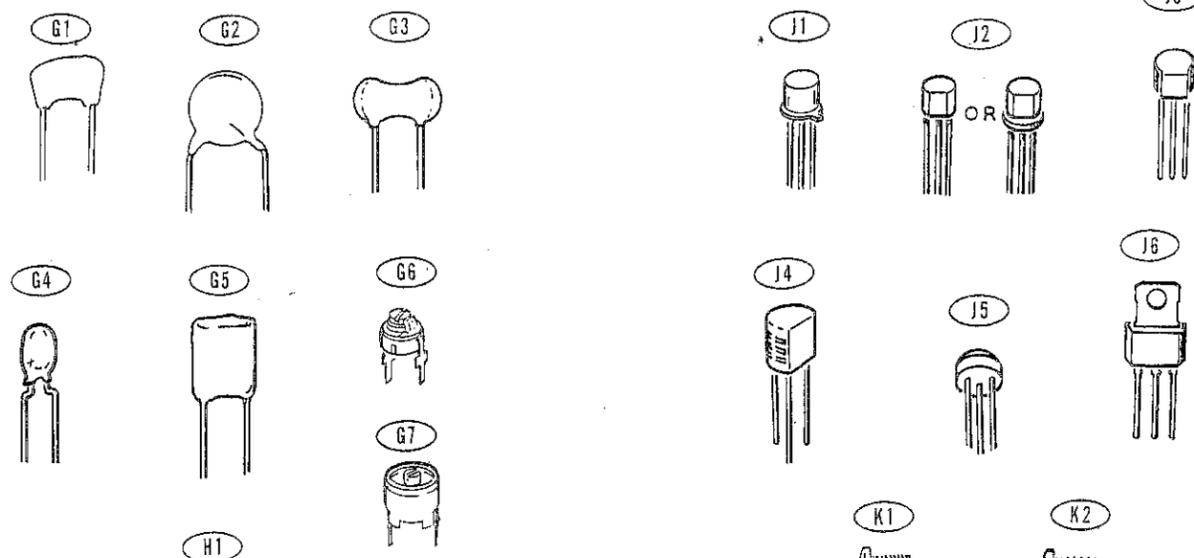
HIGH VOLTAGE CIRCUIT BOARD

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Model IO-4550

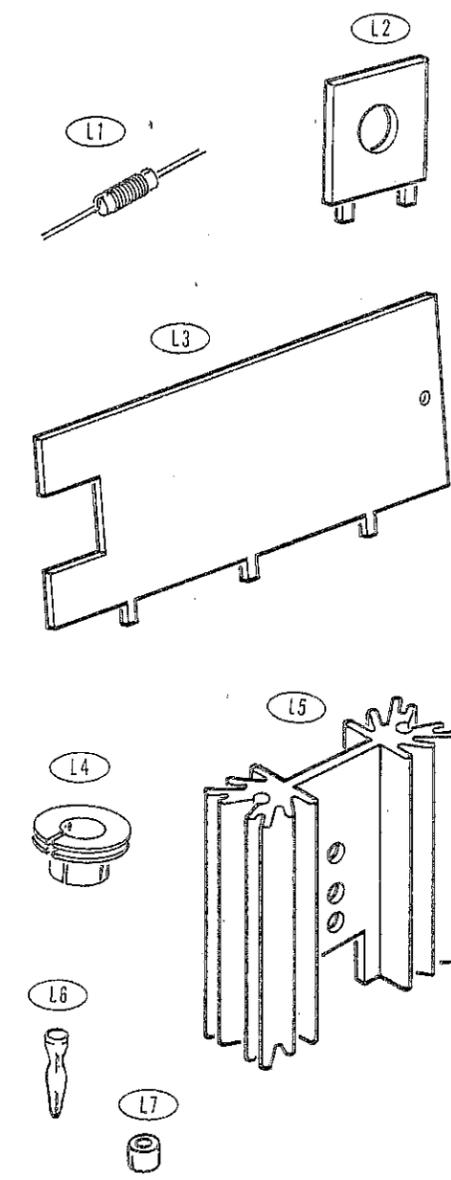
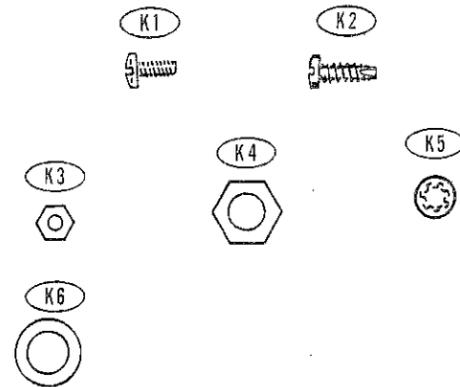


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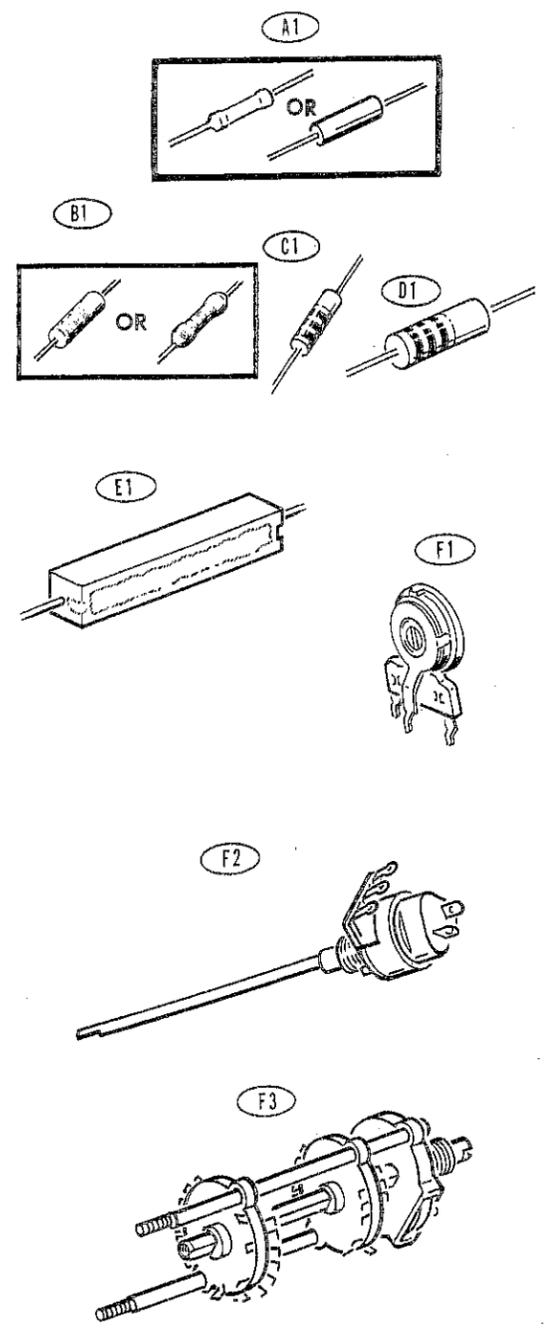


NOTE: HEATH PART NUMBERS ARE STAMPED ON MOST DIODES.

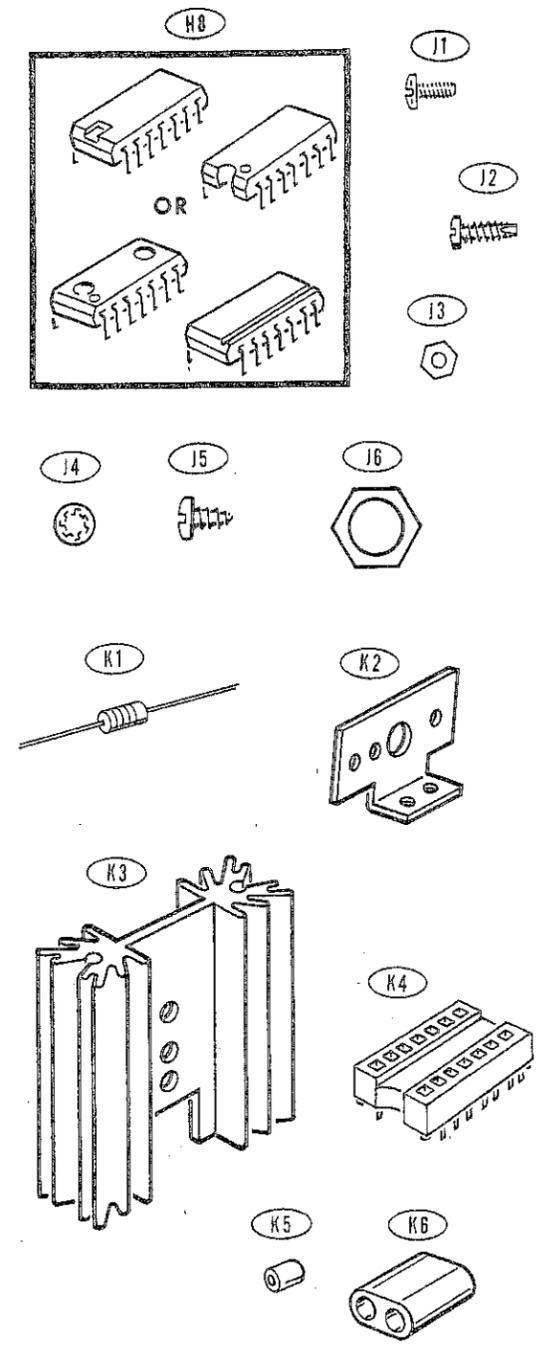
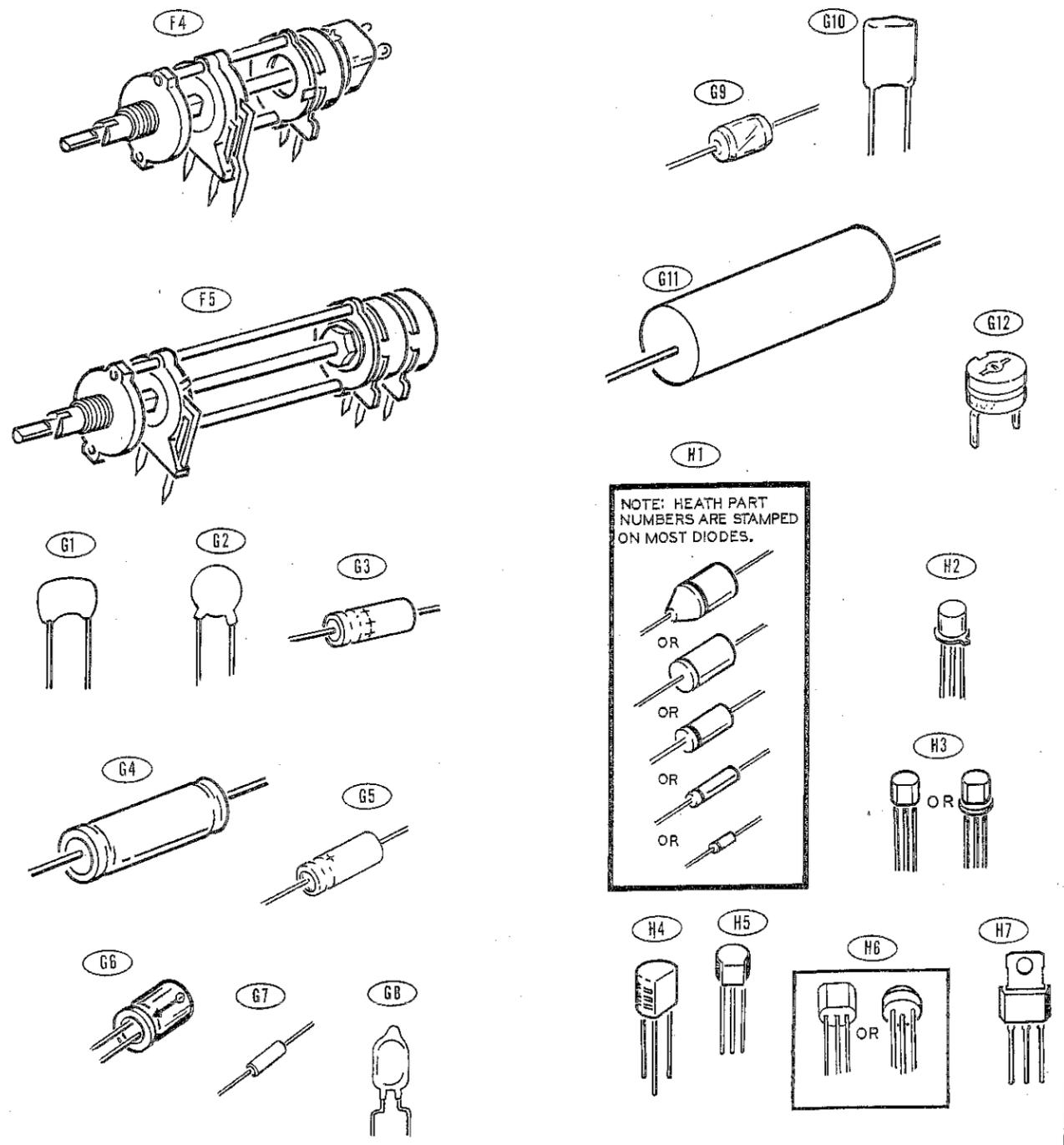
Five diodes with different heat sink orientations, labeled 'OR'.



VERTICAL CIRCUIT BOARD

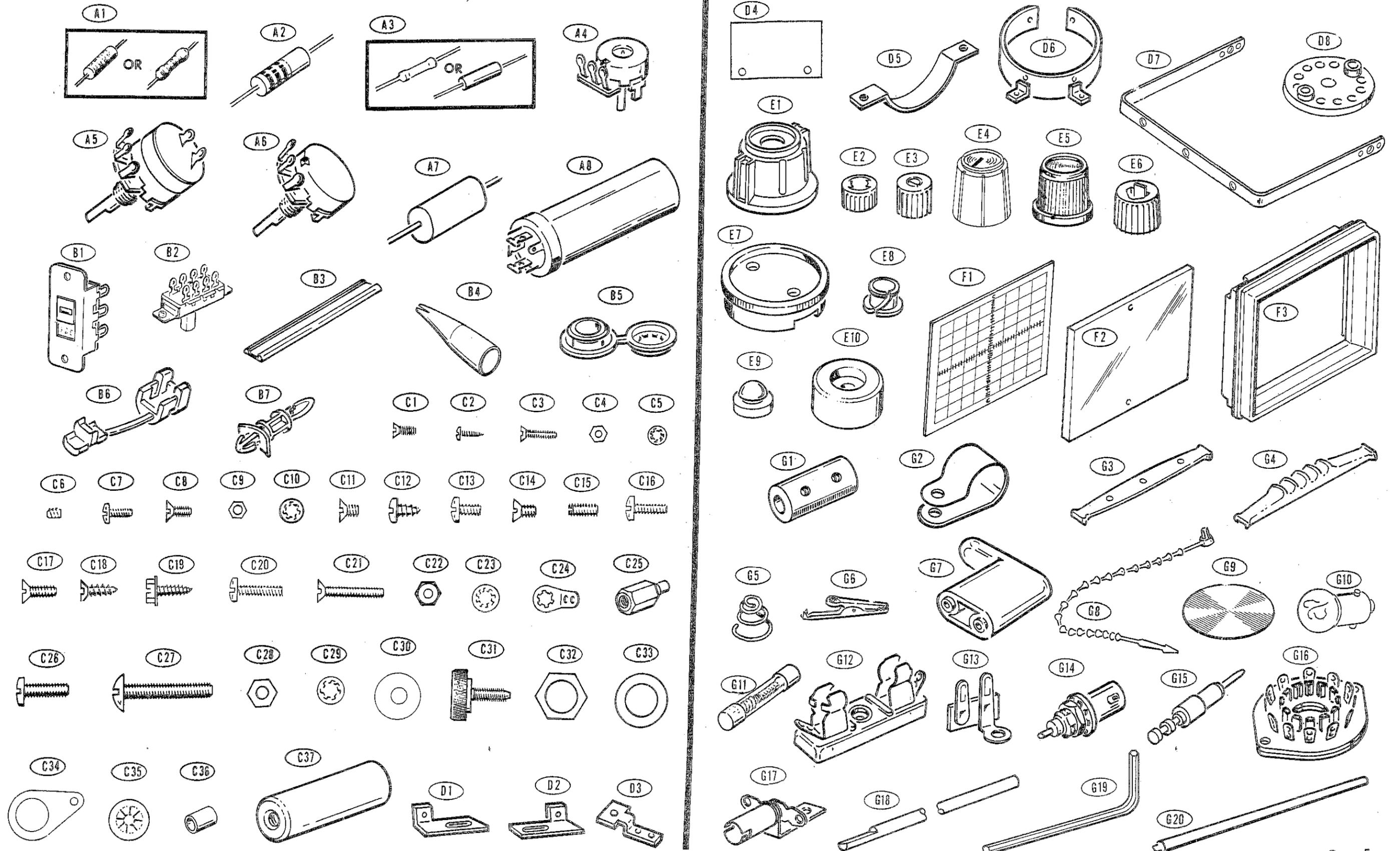


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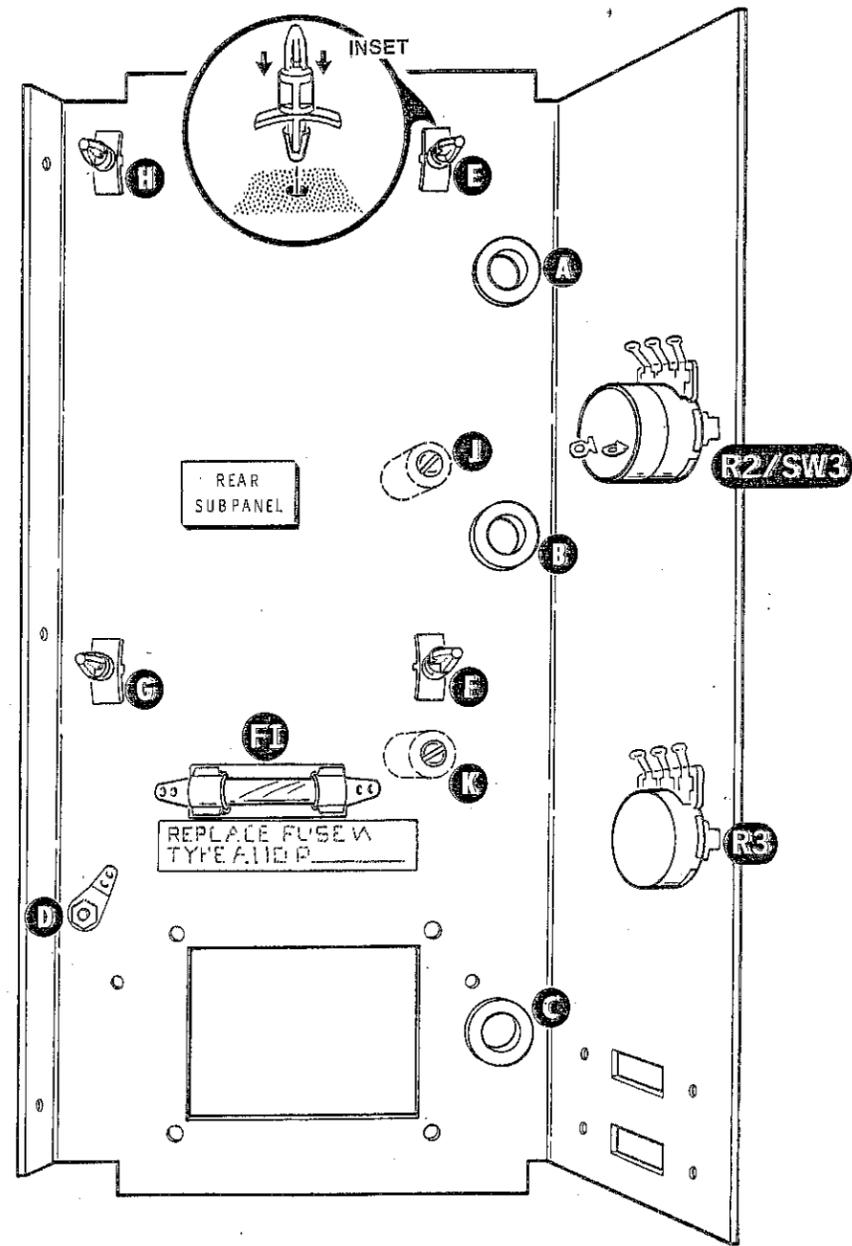


HORIZONTAL CIRCUIT BOARD

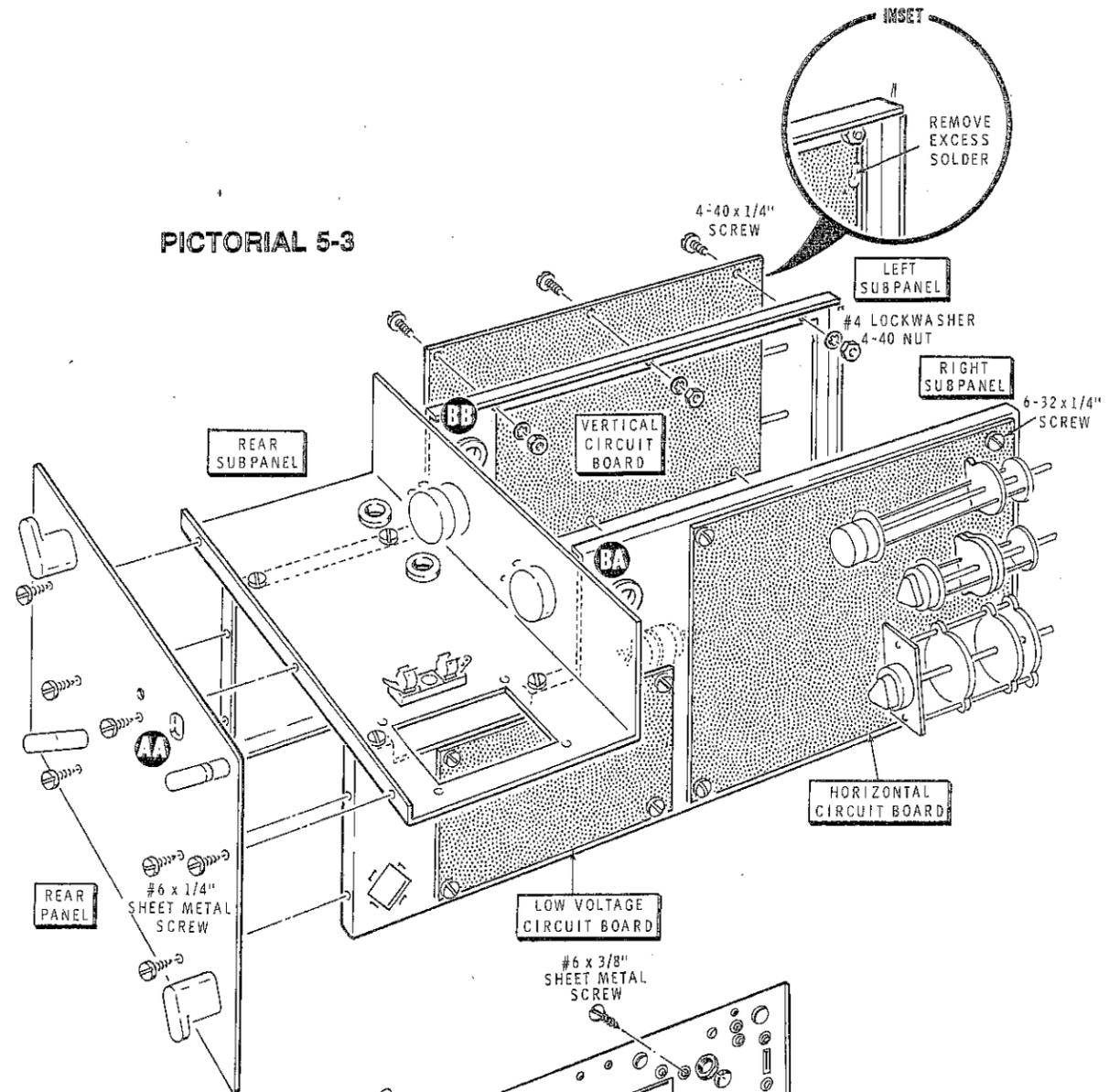
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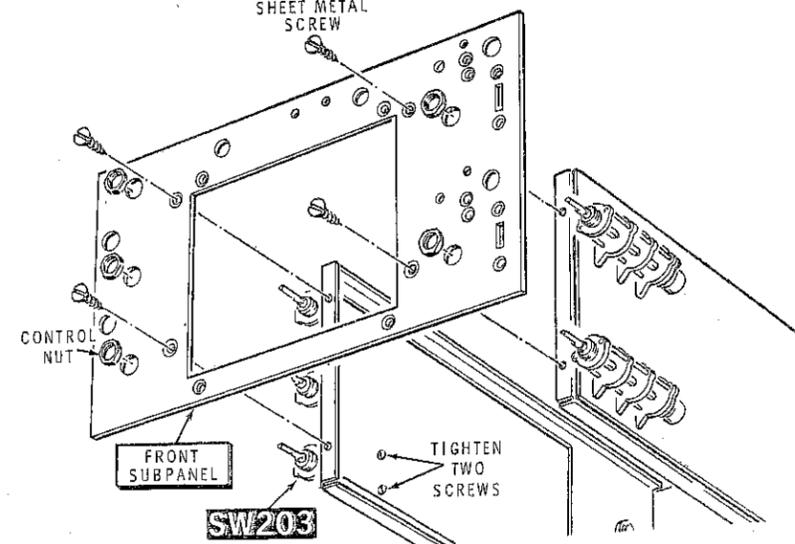
CHASSIS ASSEMBLY



PICTORIAL 5-1

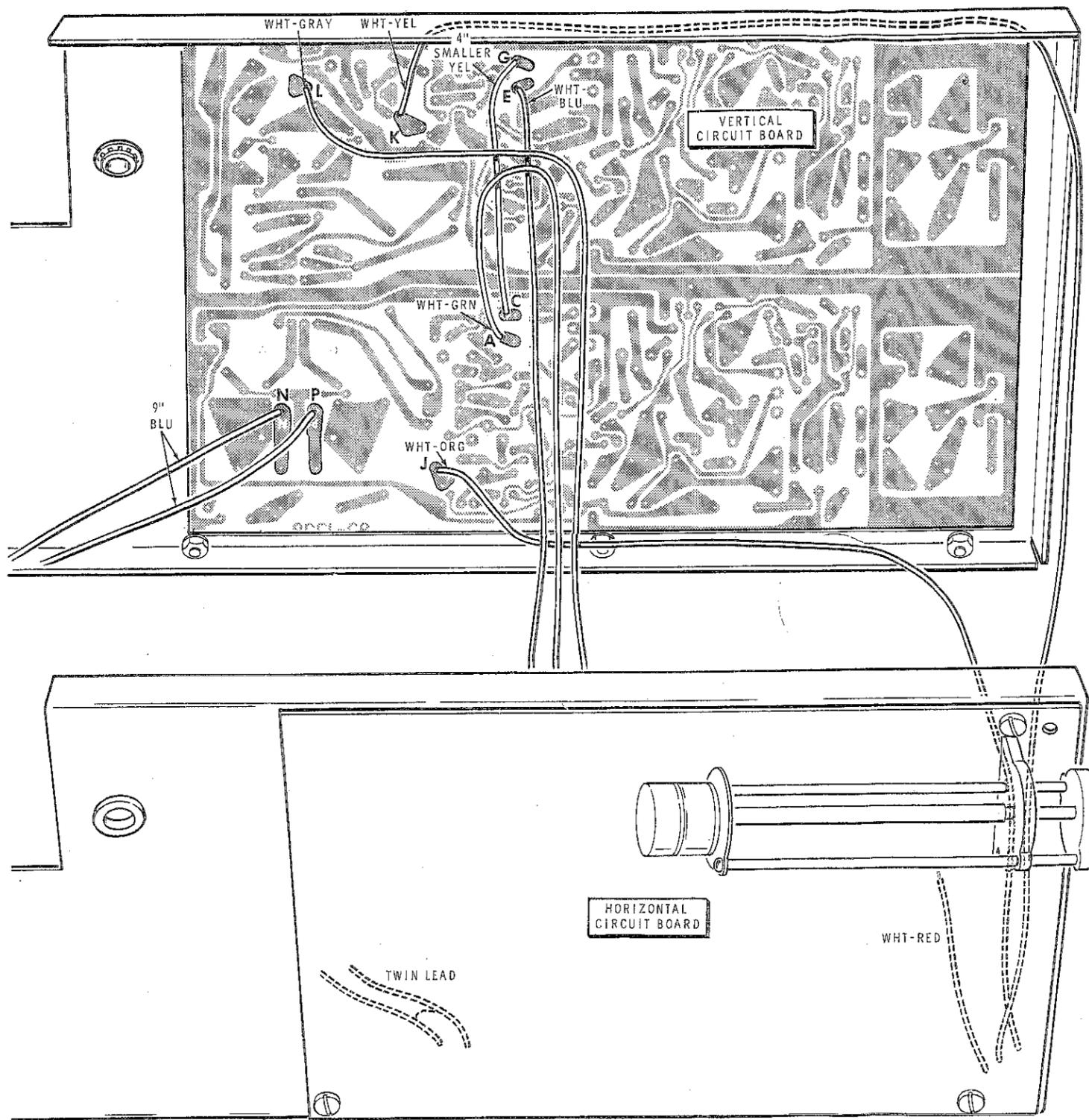


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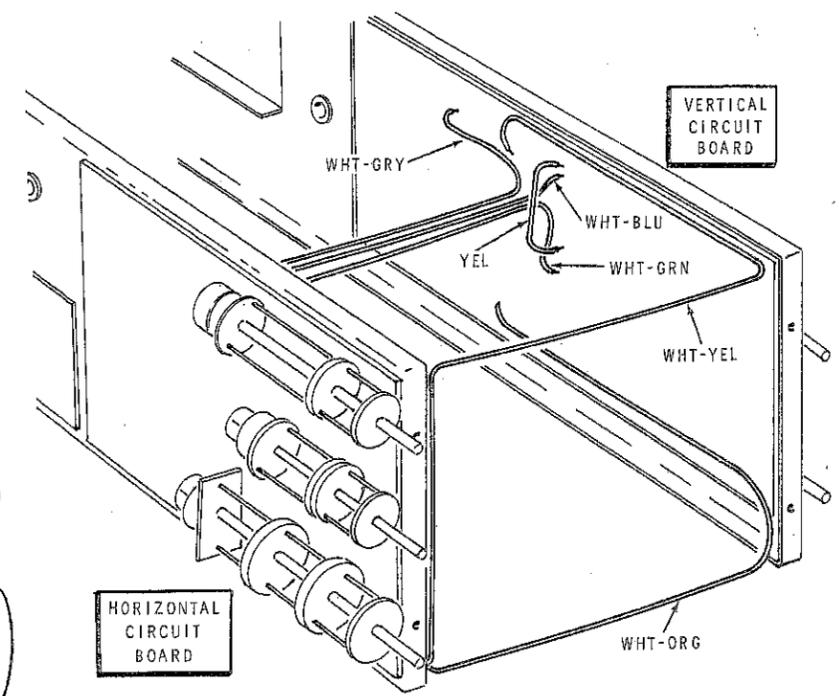


Detail 5-3B

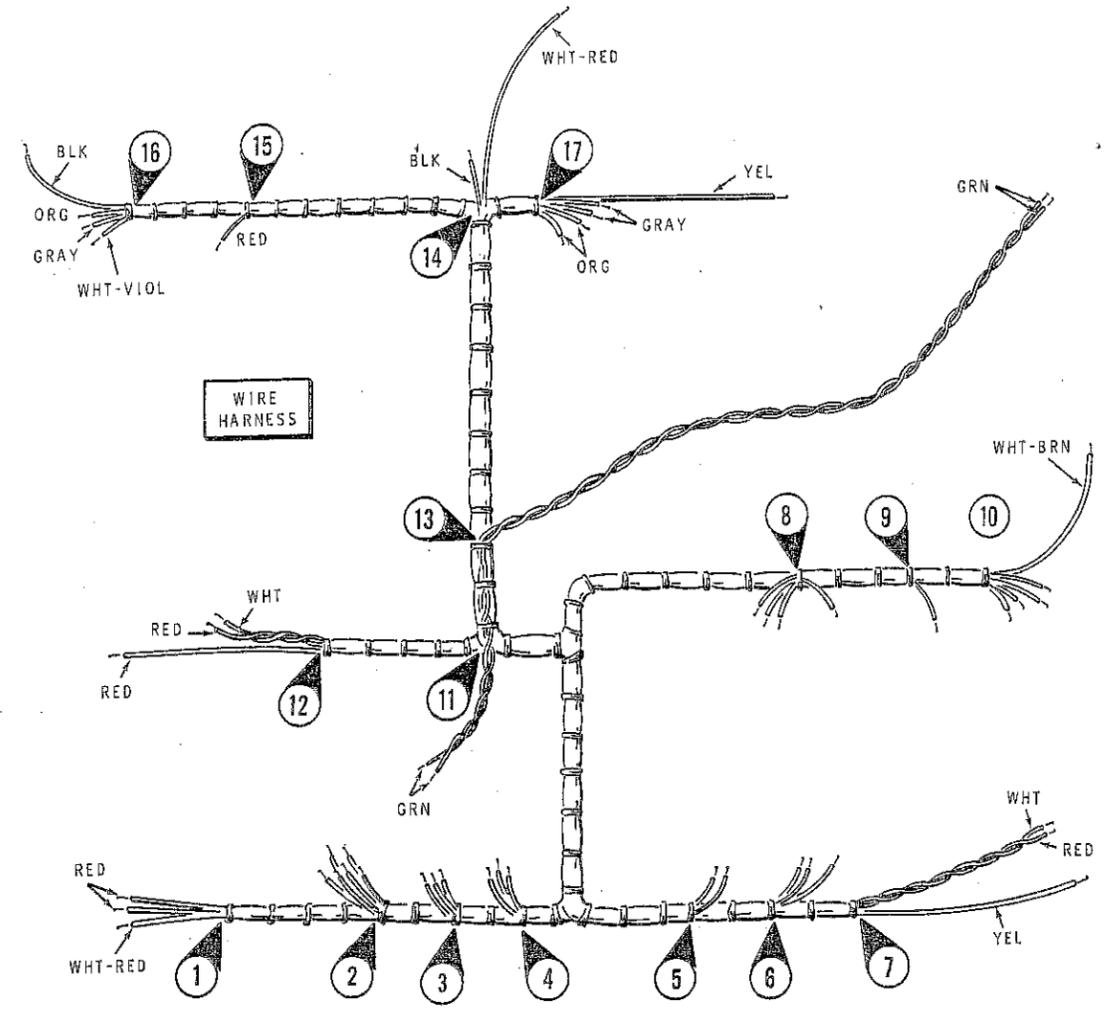
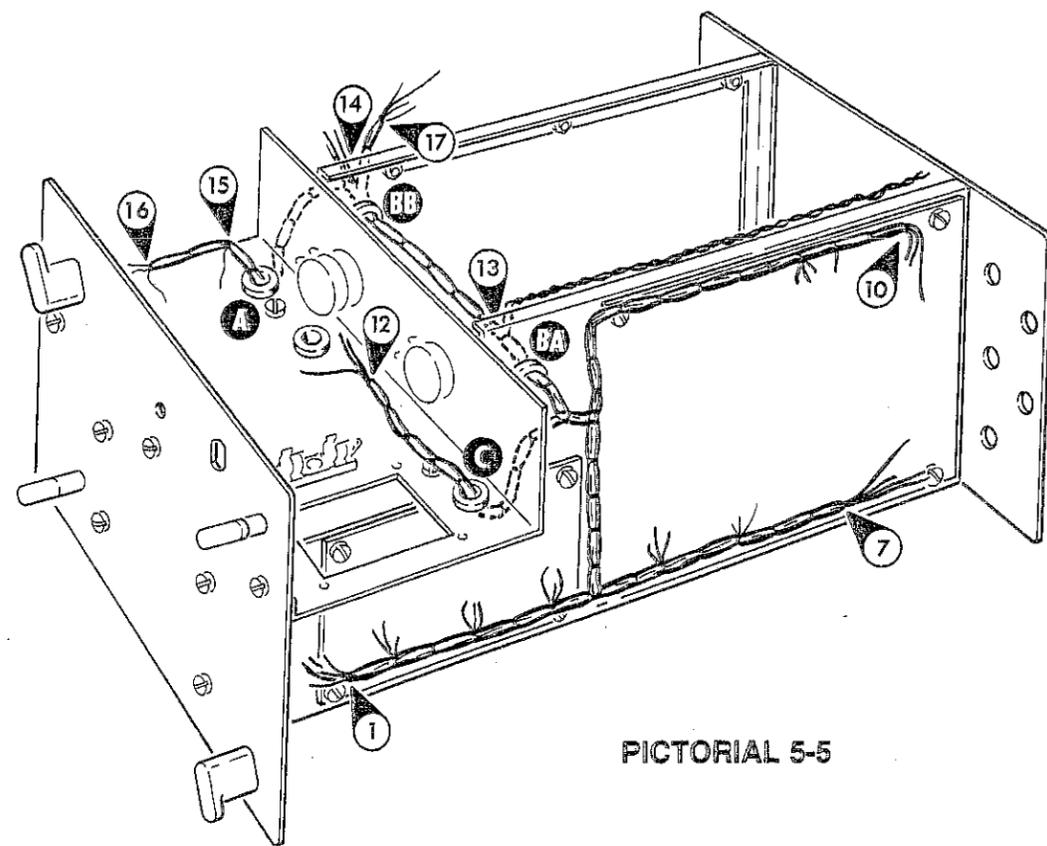
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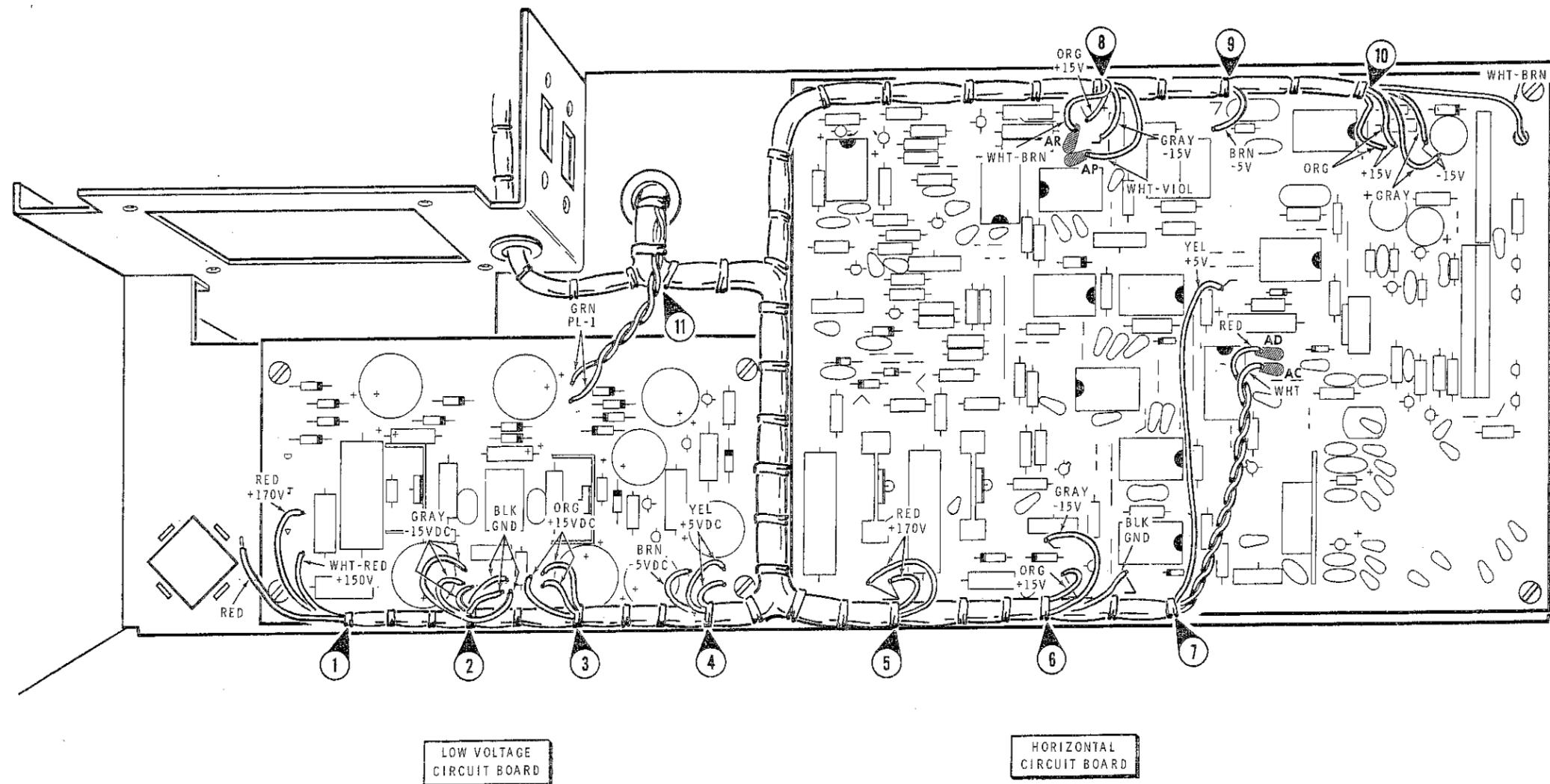
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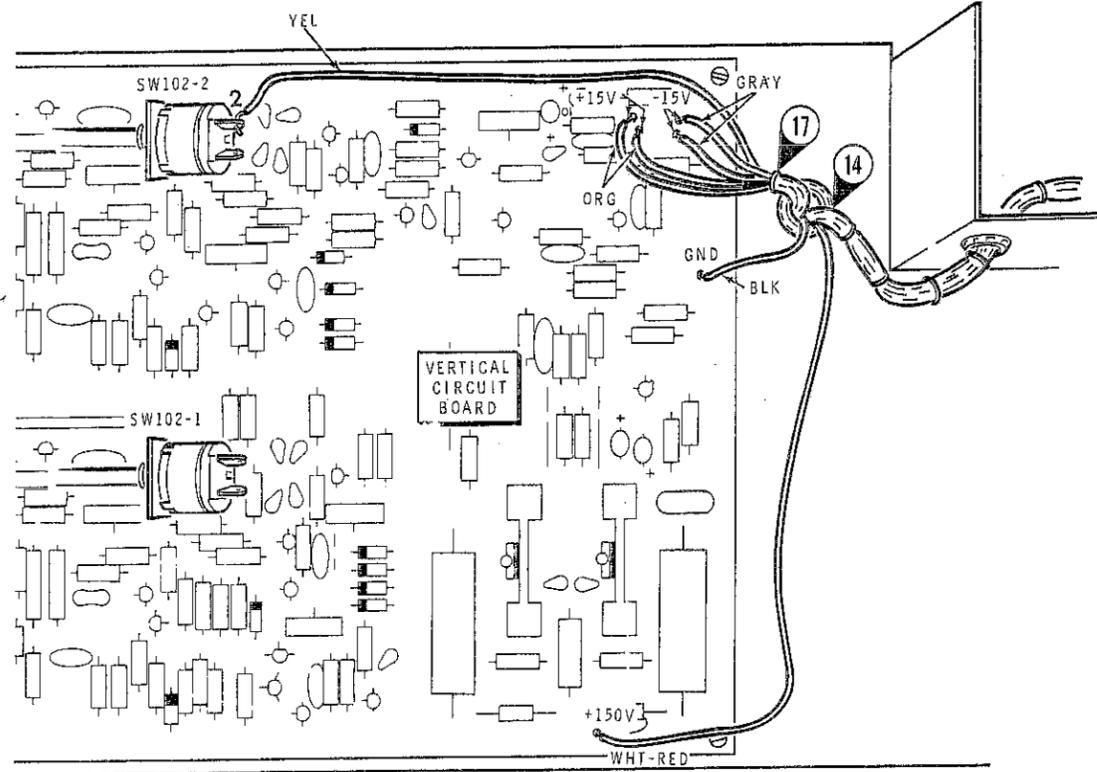
Detail 5-4A



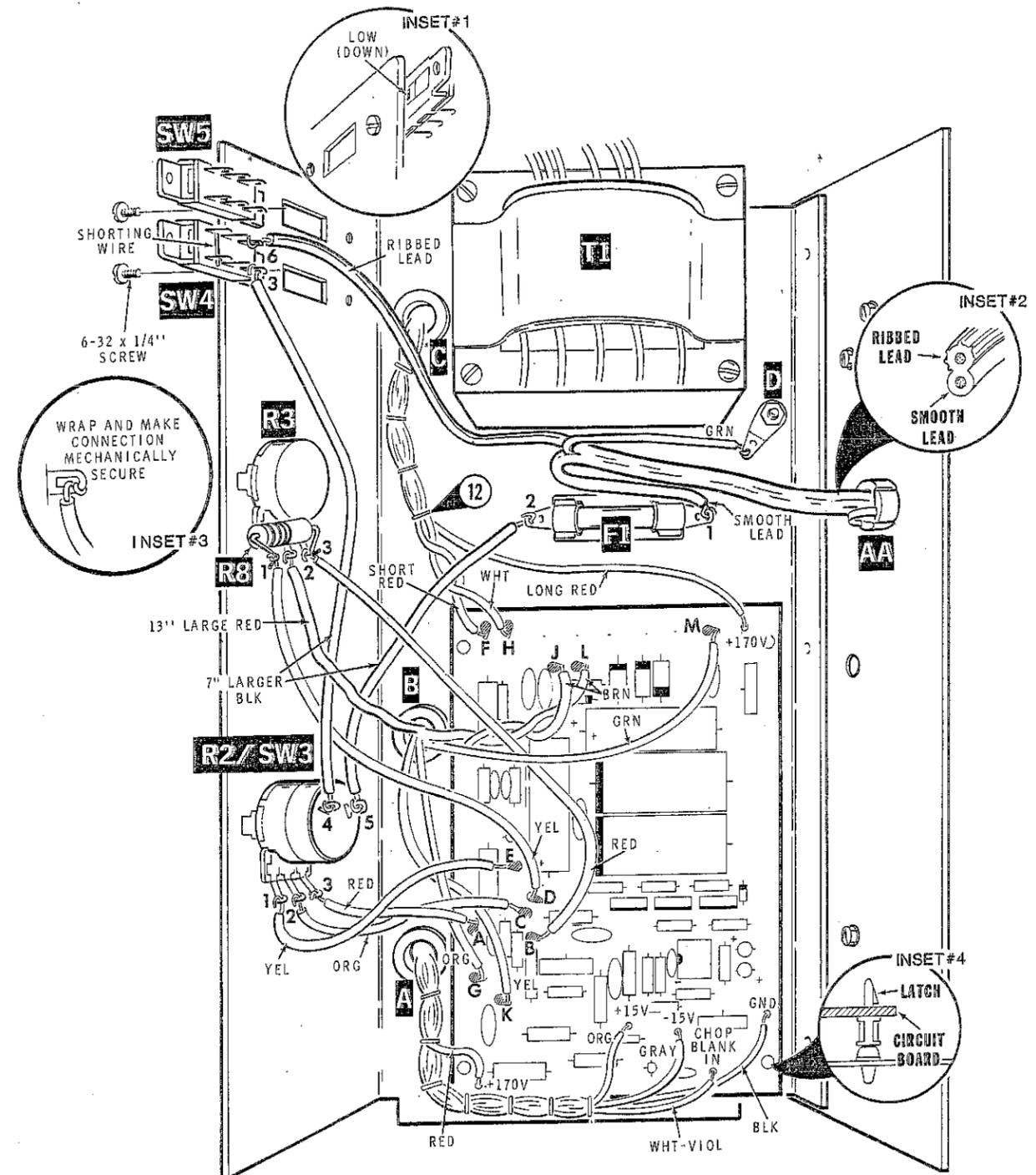
Detail 5-5A



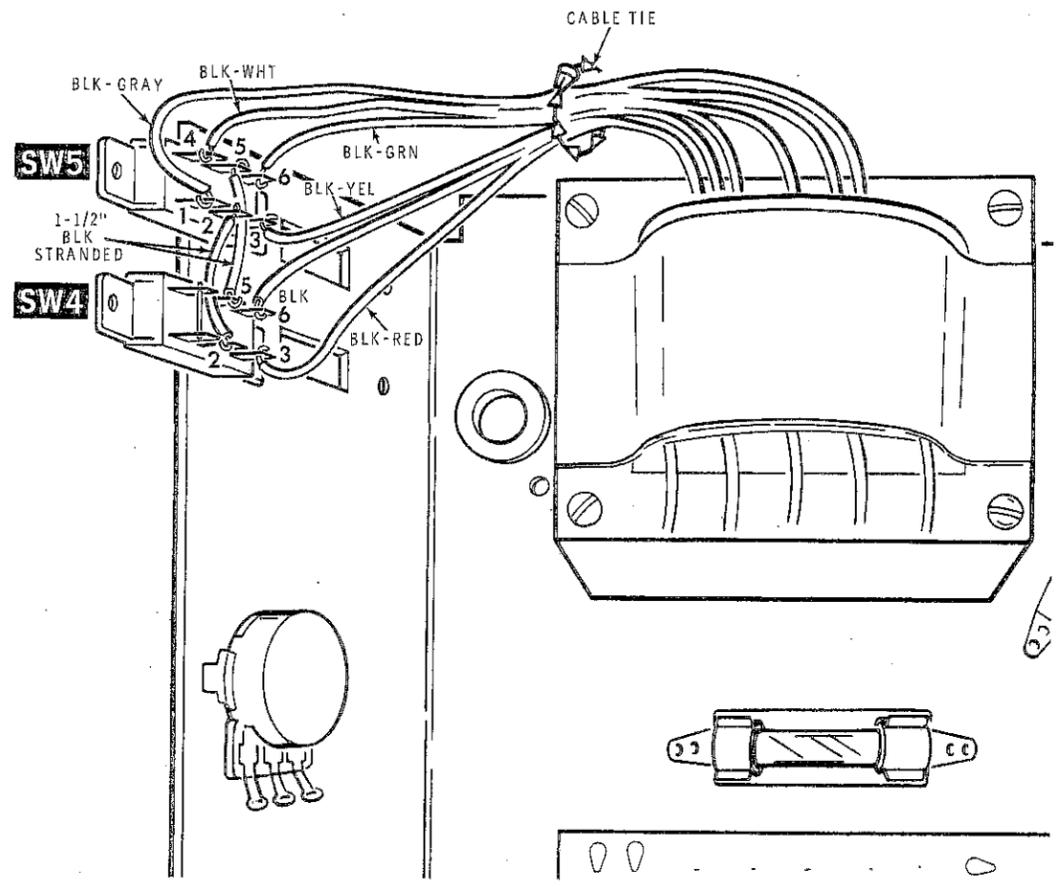
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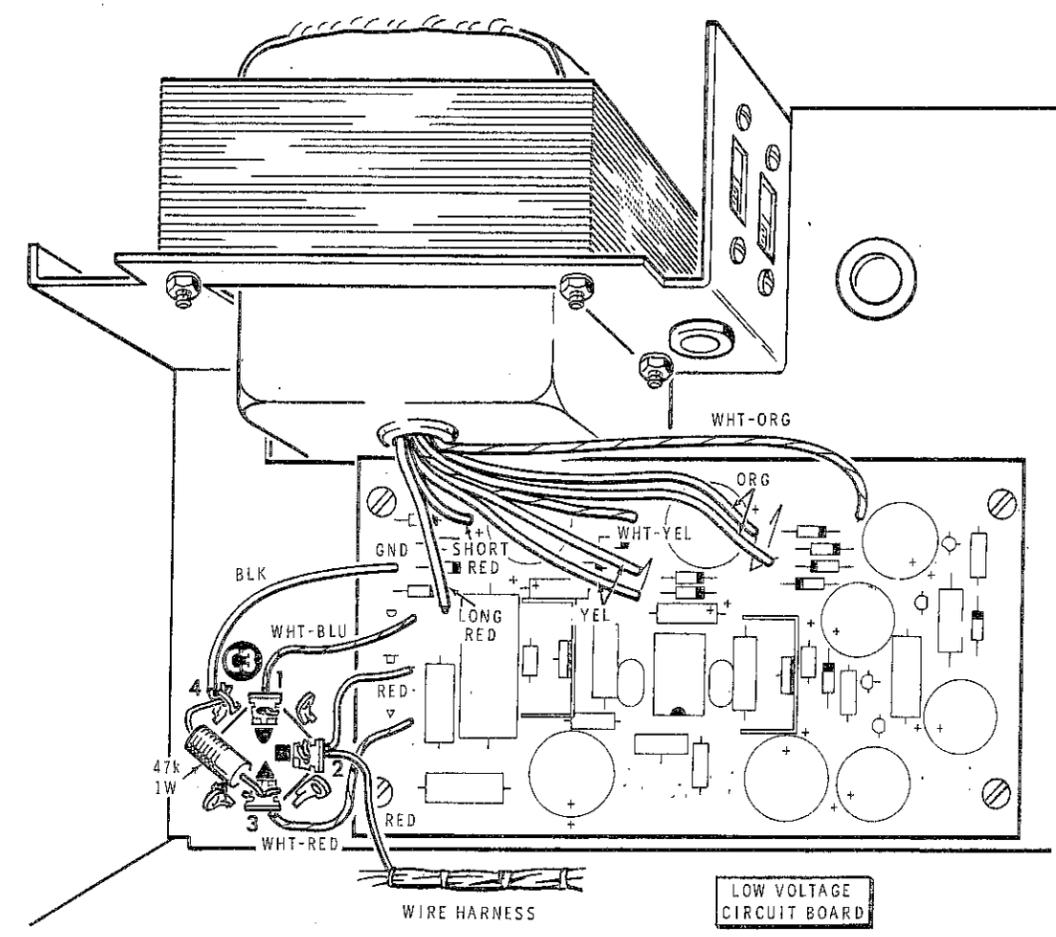
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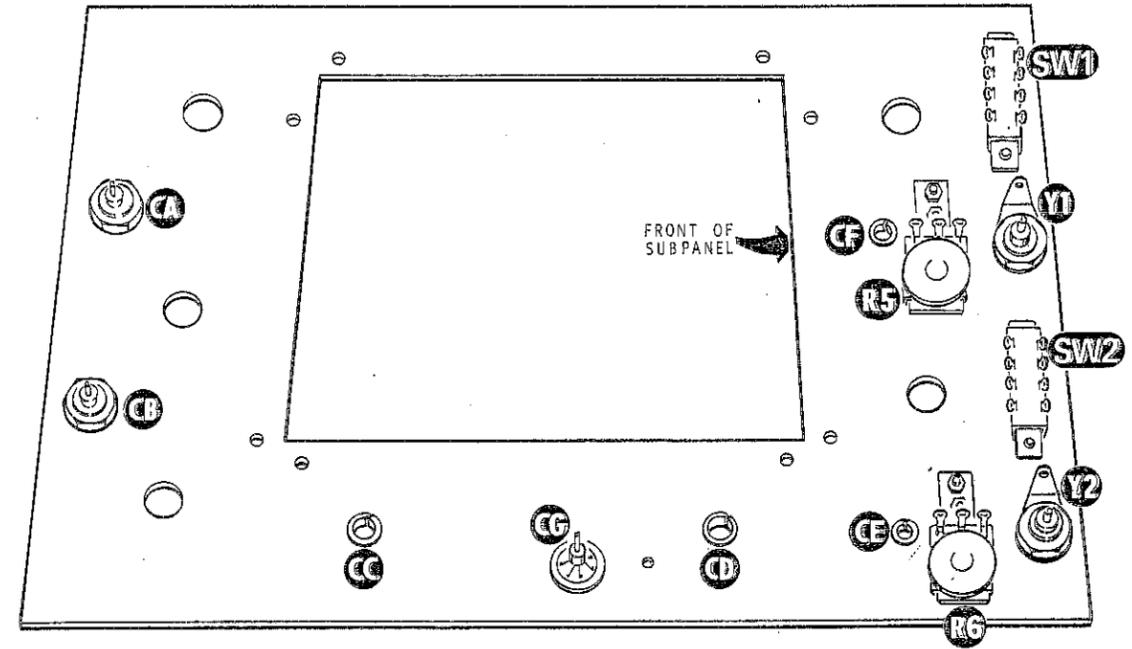
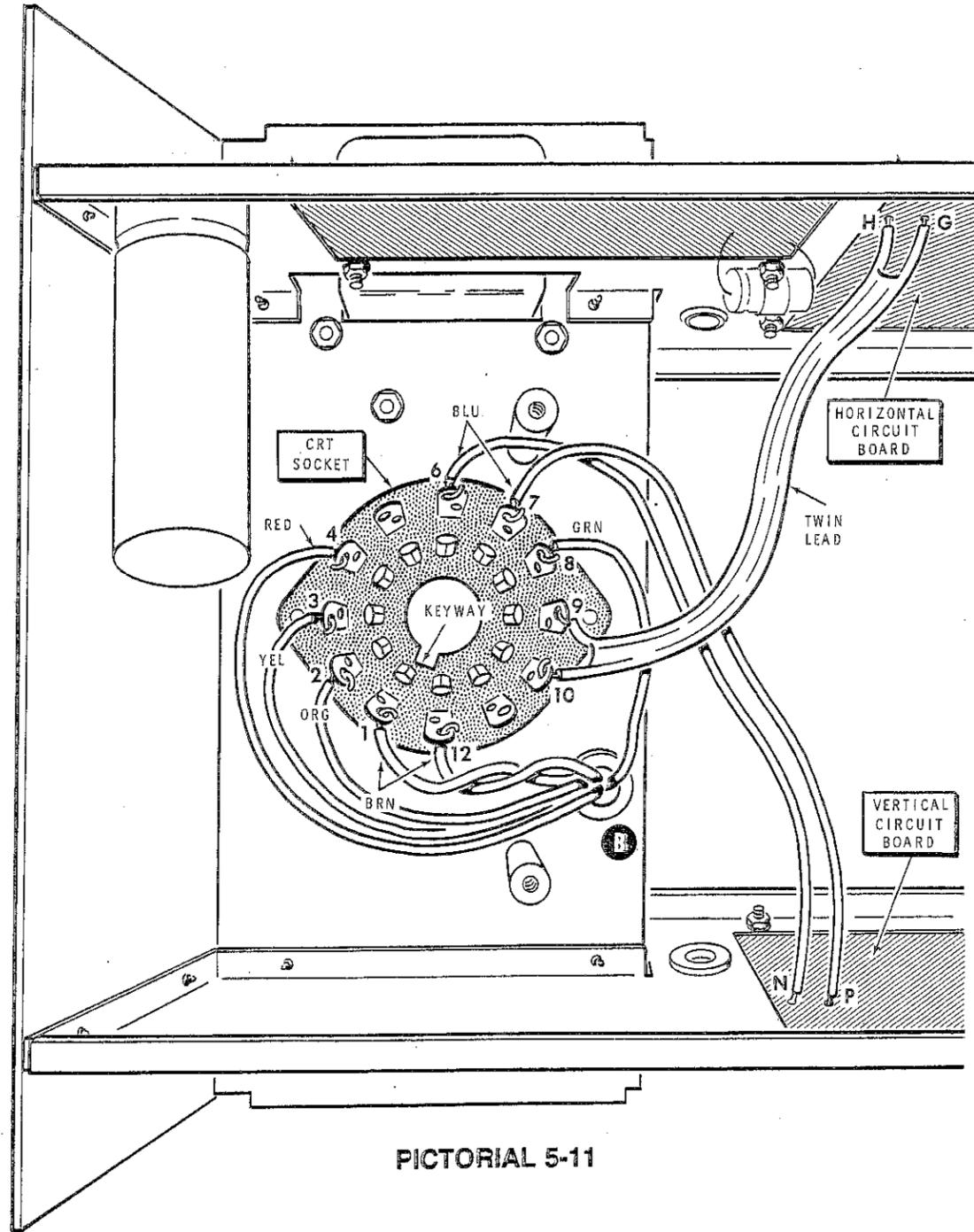
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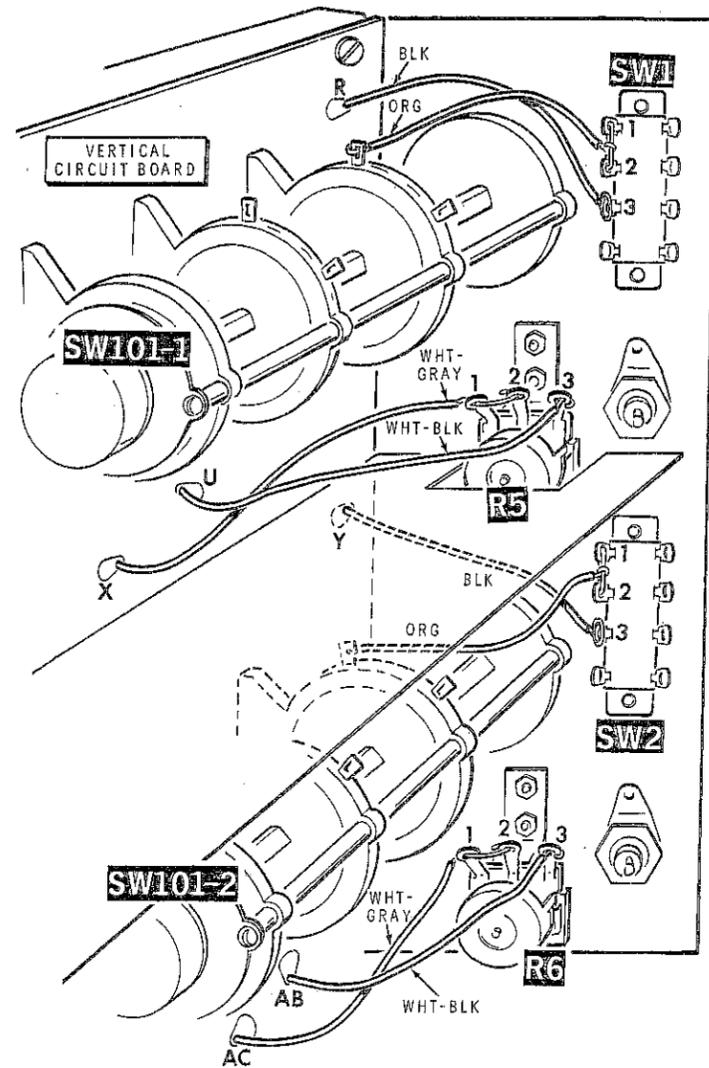


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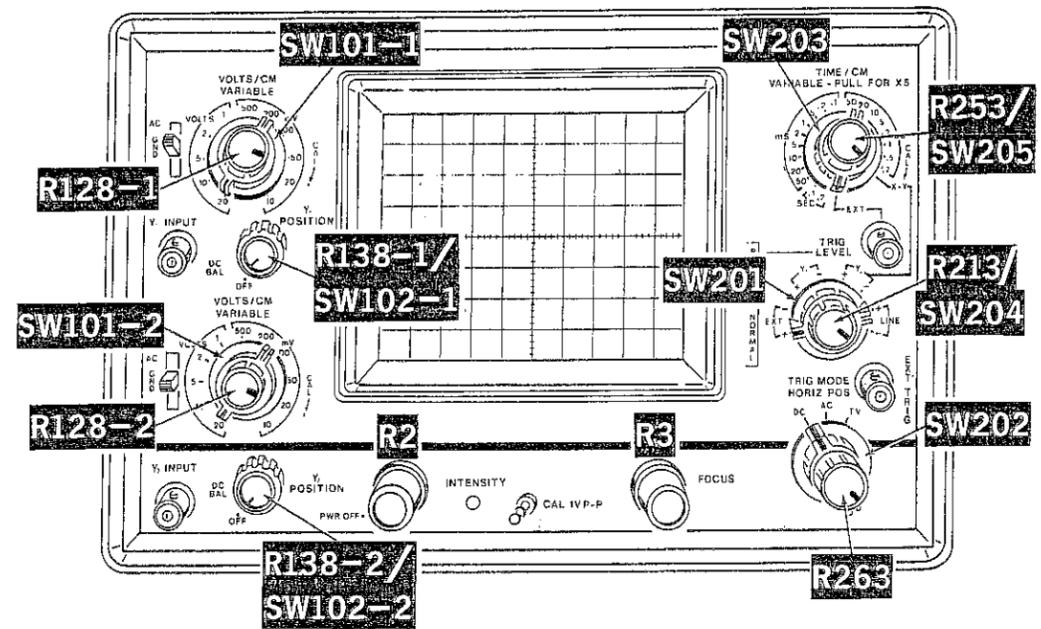


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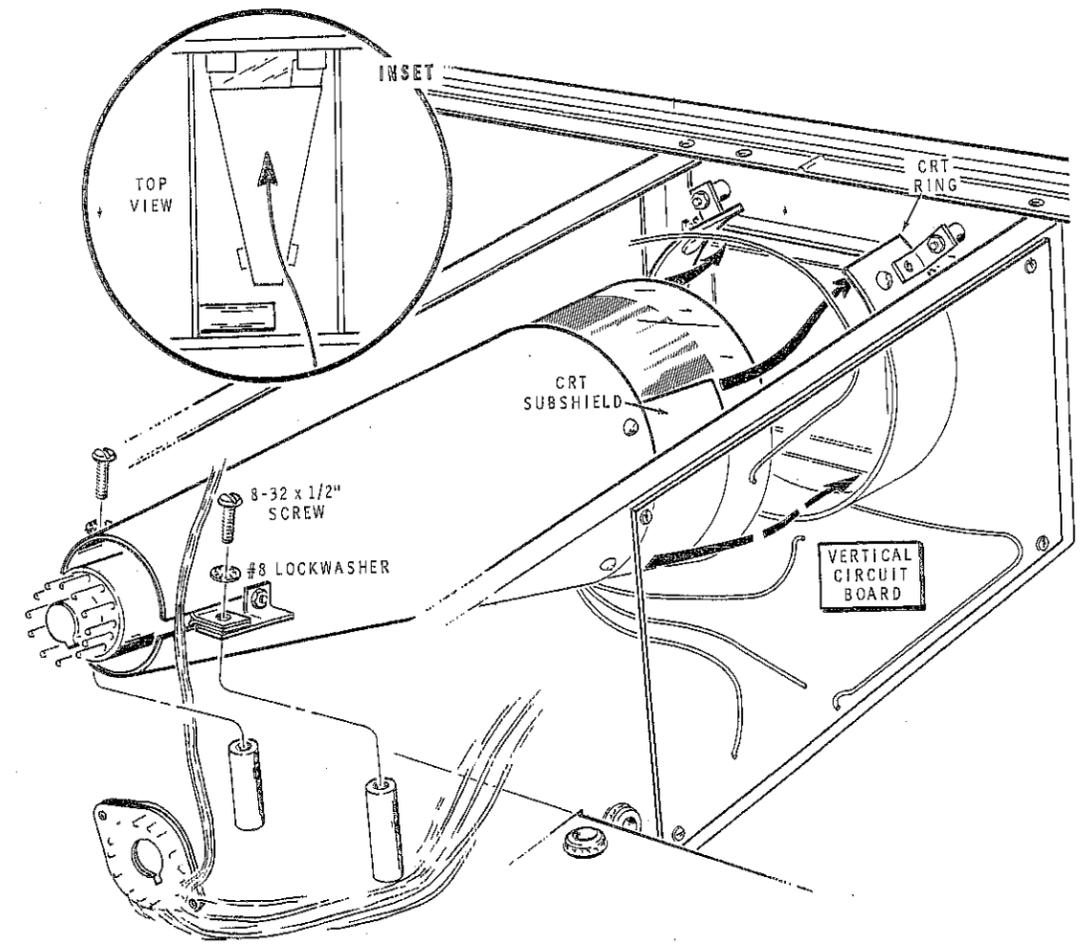




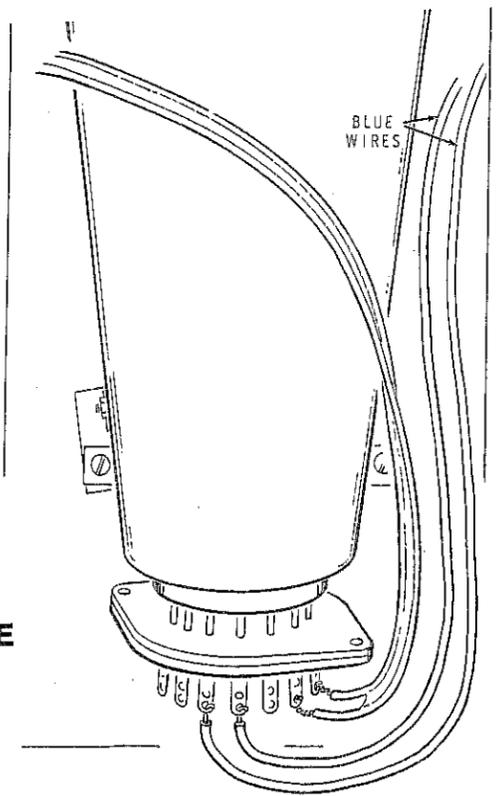
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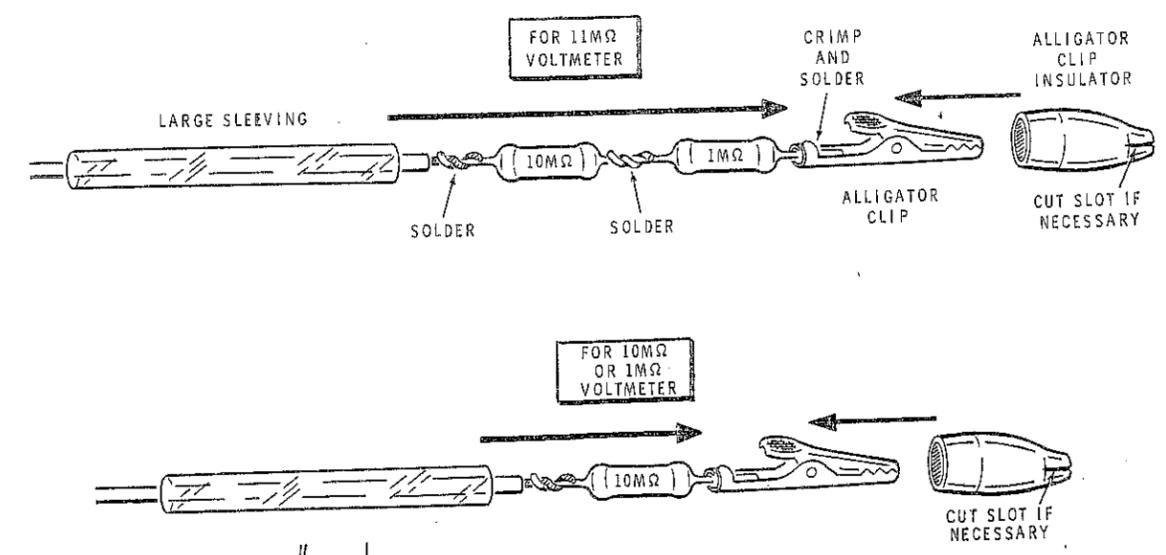
PICTORIAL 6-10



PICTORIAL 6-11



Detail 6-11E



PICTORIAL 6-13

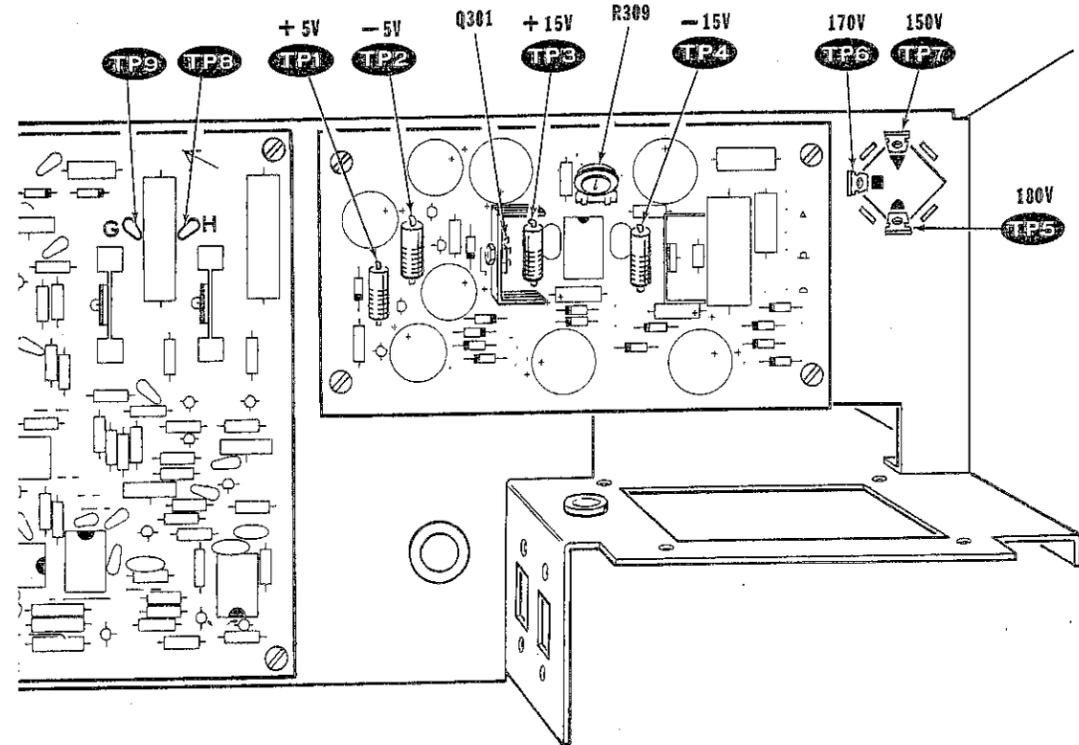


Figure 1-1

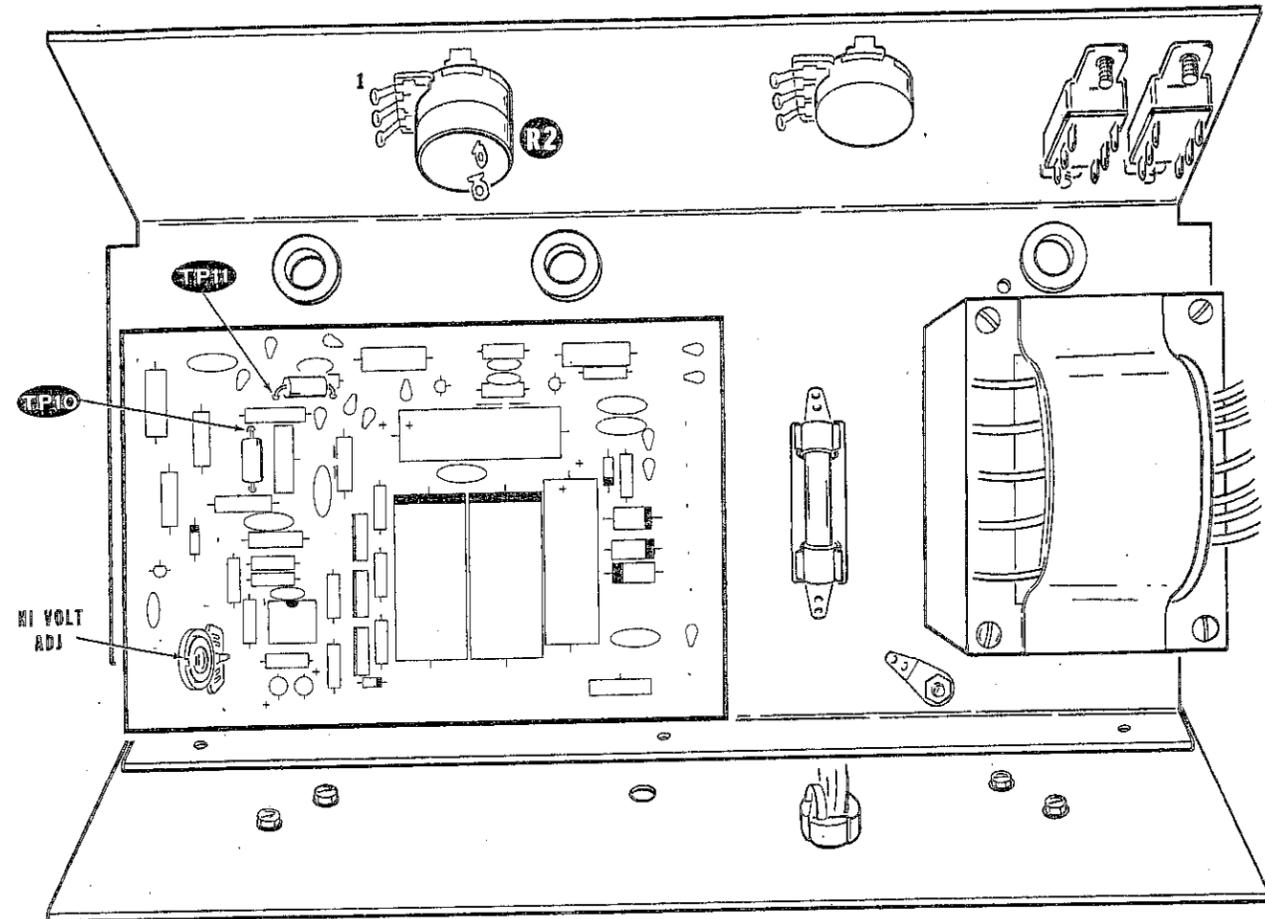
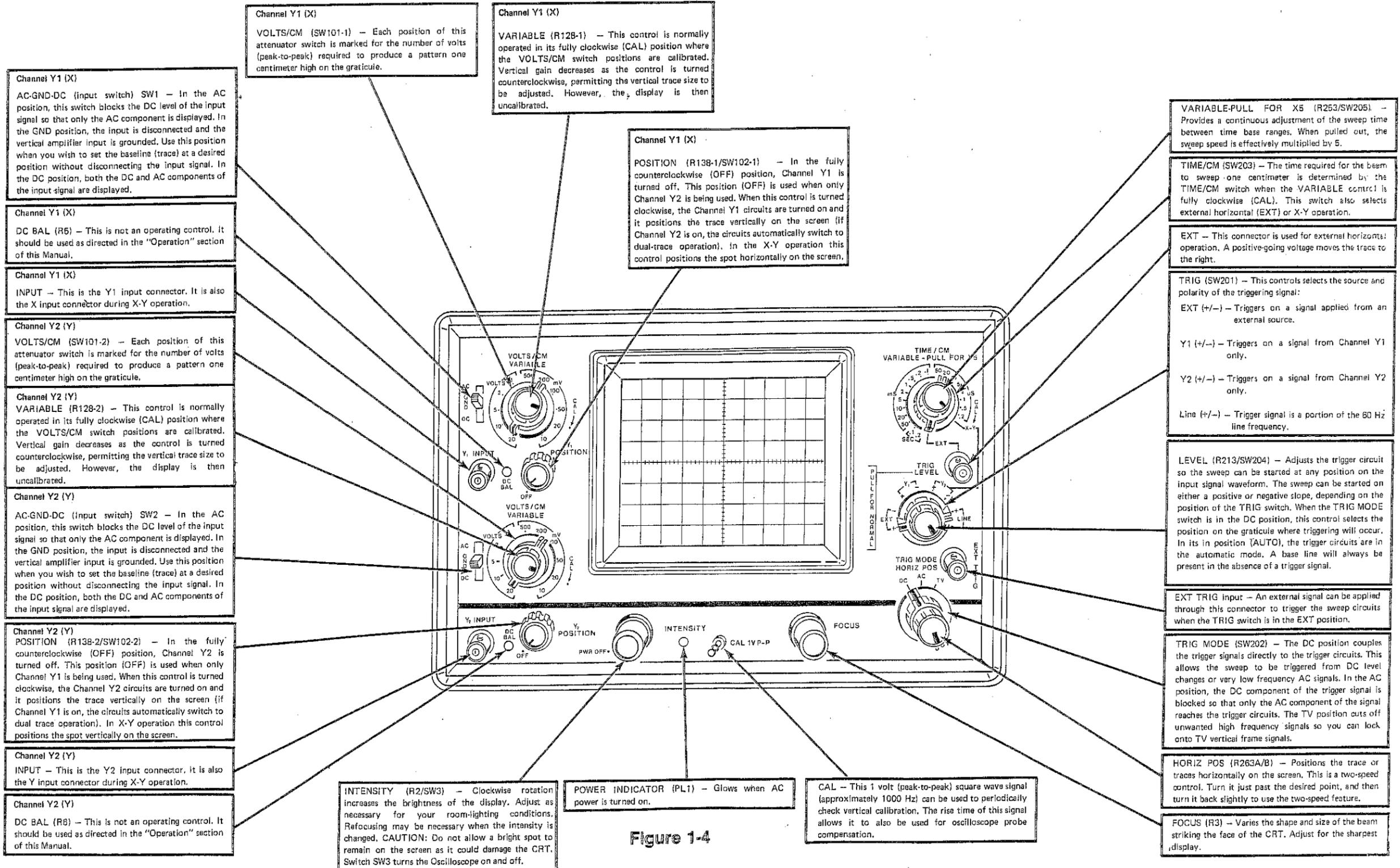


Figure 1-2



Channel Y1 (X)
 VOLTS/CM (SW101-1) — Each position of this attenuator switch is marked for the number of volts (peak-to-peak) required to produce a pattern one centimeter high on the graticule.

Channel Y1 (X)
 VARIABLE (R128-1) — This control is normally operated in its fully clockwise (CAL) position where the VOLTS/CM switch positions are calibrated. Vertical gain decreases as the control is turned counterclockwise, permitting the vertical trace size to be adjusted. However, the display is then uncalibrated.

Channel Y1 (X)
 POSITION (R138-1/SW102-1) — In the fully counterclockwise (OFF) position, Channel Y1 is turned off. This position (OFF) is used when only Channel Y2 is being used. When this control is turned clockwise, the Channel Y1 circuits are turned on and it positions the trace vertically on the screen (if Channel Y2 is on, the circuits automatically switch to dual-trace operation). In the X-Y operation this control positions the spot horizontally on the screen.

Channel Y1 (X)
 AC-GND-DC (input switch) SW1 — In the AC position, this switch blocks the DC level of the input signal so that only the AC component is displayed. In the GND position, the input is disconnected and the vertical amplifier input is grounded. Use this position when you wish to set the baseline (trace) at a desired position without disconnecting the input signal. In the DC position, both the DC and AC components of the input signal are displayed.

Channel Y1 (X)
 DC BAL (R6) — This is not an operating control. It should be used as directed in the "Operation" section of this Manual.

Channel Y1 (X)
 INPUT — This is the Y1 input connector. It is also the X input connector during X-Y operation.

Channel Y2 (Y)
 VOLTS/CM (SW101-2) — Each position of this attenuator switch is marked for the number of volts (peak-to-peak) required to produce a pattern one centimeter high on the graticule.

Channel Y2 (Y)
 VARIABLE (R128-2) — This control is normally operated in its fully clockwise (CAL) position where the VOLTS/CM switch positions are calibrated. Vertical gain decreases as the control is turned counterclockwise, permitting the vertical trace size to be adjusted. However, the display is then uncalibrated.

Channel Y2 (Y)
 AC-GND-DC (input switch) SW2 — In the AC position, this switch blocks the DC level of the input signal so that only the AC component is displayed. In the GND position, the input is disconnected and the vertical amplifier input is grounded. Use this position when you wish to set the baseline (trace) at a desired position without disconnecting the input signal. In the DC position, both the DC and AC components of the input signal are displayed.

Channel Y2 (Y)
 POSITION (R138-2/SW102-2) — In the fully counterclockwise (OFF) position, Channel Y2 is turned off. This position (OFF) is used when only Channel Y1 is being used. When this control is turned clockwise, the Channel Y2 circuits are turned on and it positions the trace vertically on the screen (if Channel Y1 is on, the circuits automatically switch to dual trace operation). In X-Y operation this control positions the spot vertically on the screen.

Channel Y2 (Y)
 INPUT — This is the Y2 input connector. It is also the Y input connector during X-Y operation.

Channel Y2 (Y)
 DC BAL (R6) — This is not an operating control. It should be used as directed in the "Operation" section of this Manual.

INTENSITY (R2/SW3) — Clockwise rotation increases the brightness of the display. Adjust as necessary for your room-lighting conditions. Refocusing may be necessary when the intensity is changed. CAUTION: Do not allow a bright spot to remain on the screen as it could damage the CRT. Switch SW3 turns the Oscilloscope on and off.

POWER INDICATOR (PL1) — Glows when AC power is turned on.

CAL — This 1 volt (peak-to-peak) square wave signal (approximately 1000 Hz) can be used to periodically check vertical calibration. The rise time of this signal allows it to also be used for oscilloscope probe compensation.

VARIABLE-PULL FOR X5 (R253/SW205) — Provides a continuous adjustment of the sweep time between time base ranges. When pulled out, the sweep speed is effectively multiplied by 5.

TIME/CM (SW203) — The time required for the beam to sweep one centimeter is determined by the TIME/CM switch when the VARIABLE control is fully clockwise (CAL). This switch also selects external horizontal (EXT) or X-Y operation.

EXT — This connector is used for external horizontal operation. A positive-going voltage moves the trace to the right.

TRIG (SW201) — This controls selects the source and polarity of the triggering signal:
 EXT (+/-) — Triggers on a signal applied from an external source.

Y1 (+/-) — Triggers on a signal from Channel Y1 only.

Y2 (+/-) — Triggers on a signal from Channel Y2 only.

Line (+/-) — Trigger signal is a portion of the 60 Hz line frequency.

LEVEL (R213/SW204) — Adjusts the trigger circuit so the sweep can be started at any position on the input signal waveform. The sweep can be started on either a positive or negative slope, depending on the position of the TRIG switch. When the TRIG MODE switch is in the DC position, this control selects the position on the graticule where triggering will occur. In its in position (AUTO), the trigger circuits are in the automatic mode. A base line will always be present in the absence of a trigger signal.

EXT TRIG Input — An external signal can be applied through this connector to trigger the sweep circuits when the TRIG switch is in the EXT position.

TRIG MODE (SW202) — The DC position couples the trigger signals directly to the trigger circuits. This allows the sweep to be triggered from DC level changes or very low frequency AC signals. In the AC position, the DC component of the trigger signal is blocked so that only the AC component of the signal reaches the trigger circuits. The TV position cuts off unwanted high frequency signals so you can lock onto TV vertical frame signals.

HORIZ POS (R263A/B) — Positions the trace or traces horizontally on the screen. This is a two-speed control. Turn it just past the desired point, and then turn it back slightly to use the two-speed feature.

FOCUS (R3) — Varies the shape and size of the beam striking the face of the CRT. Adjust for the sharpest display.

Figure 1-4

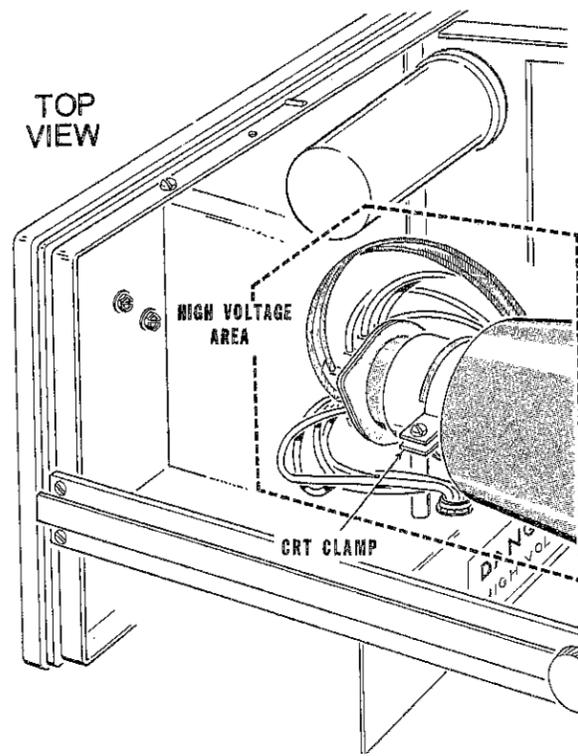
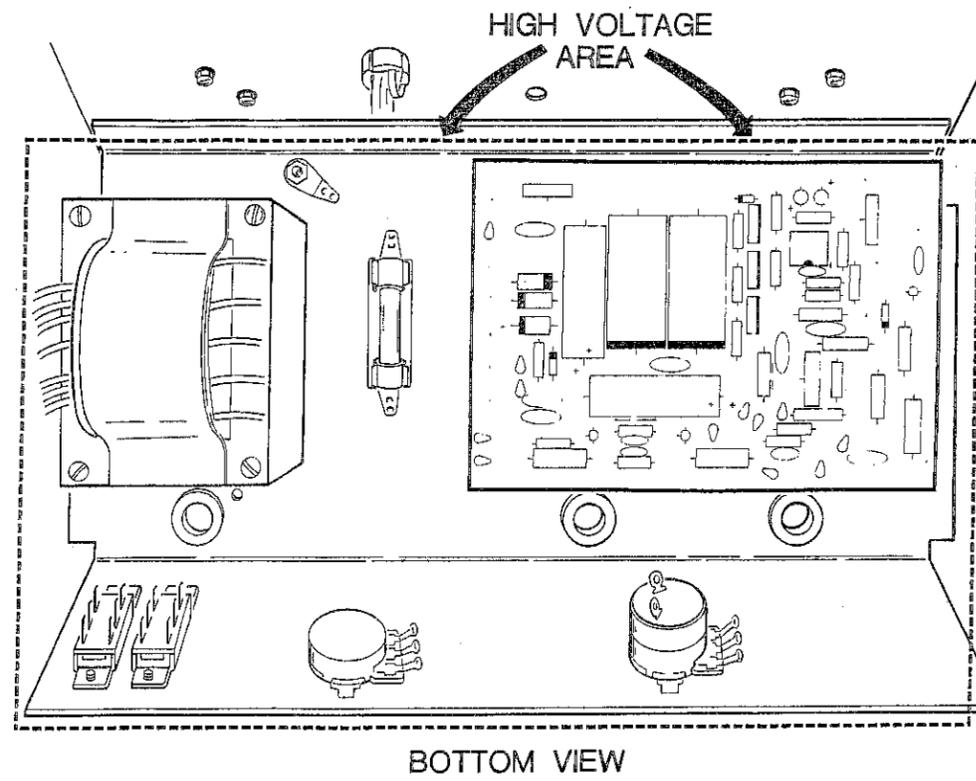
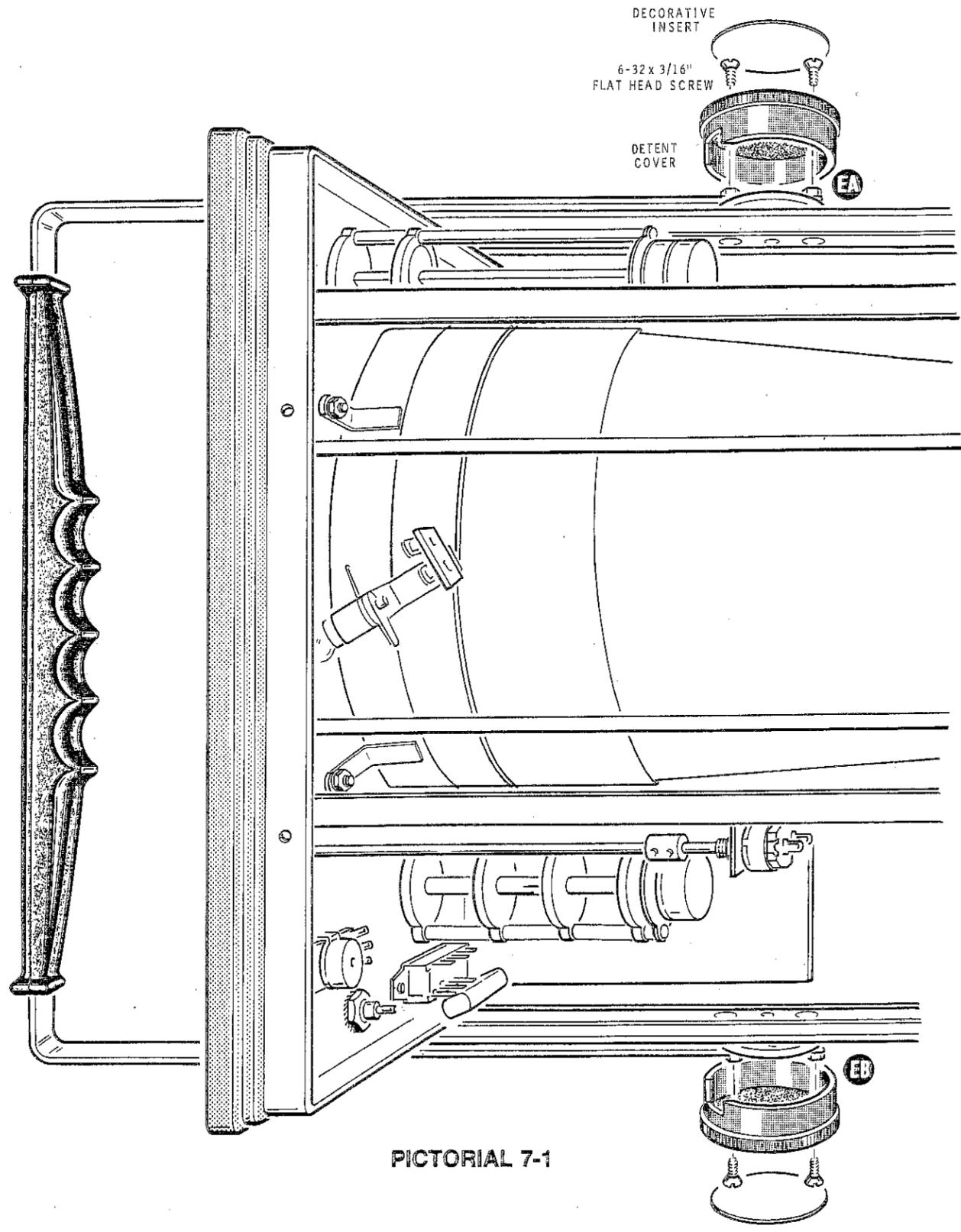
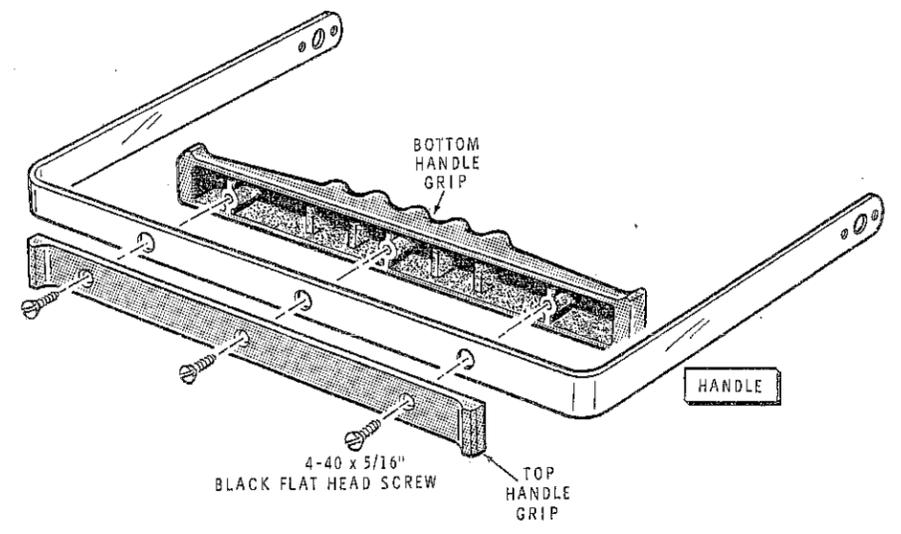
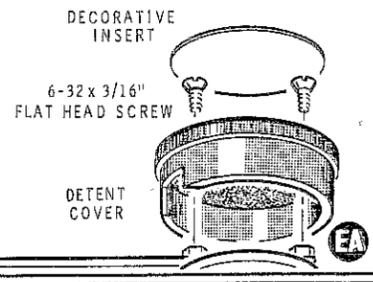


Figure 1-5

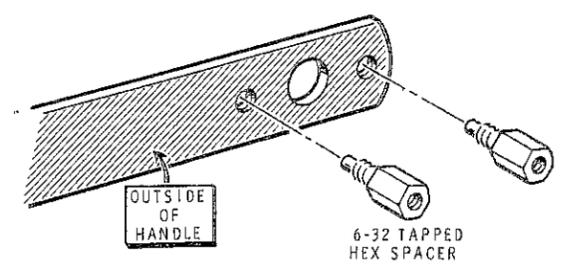




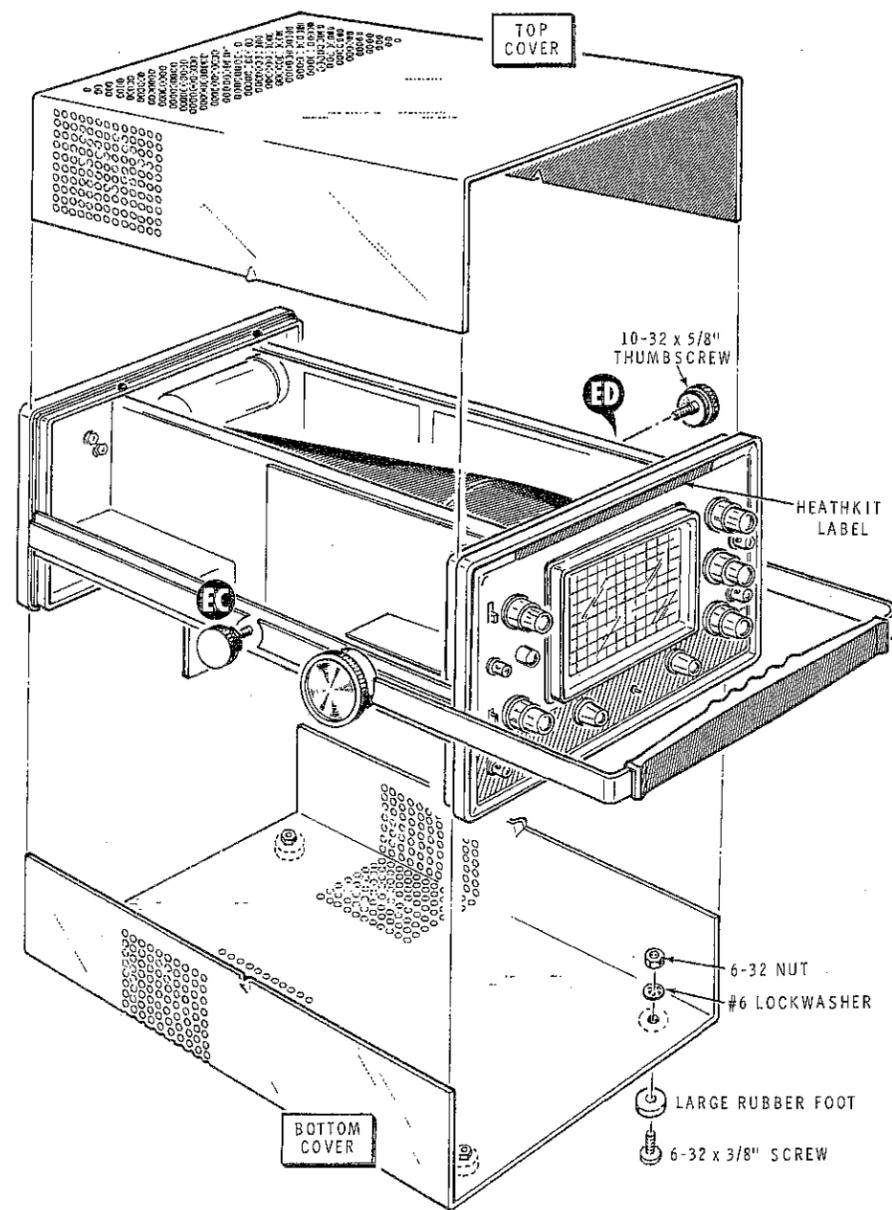
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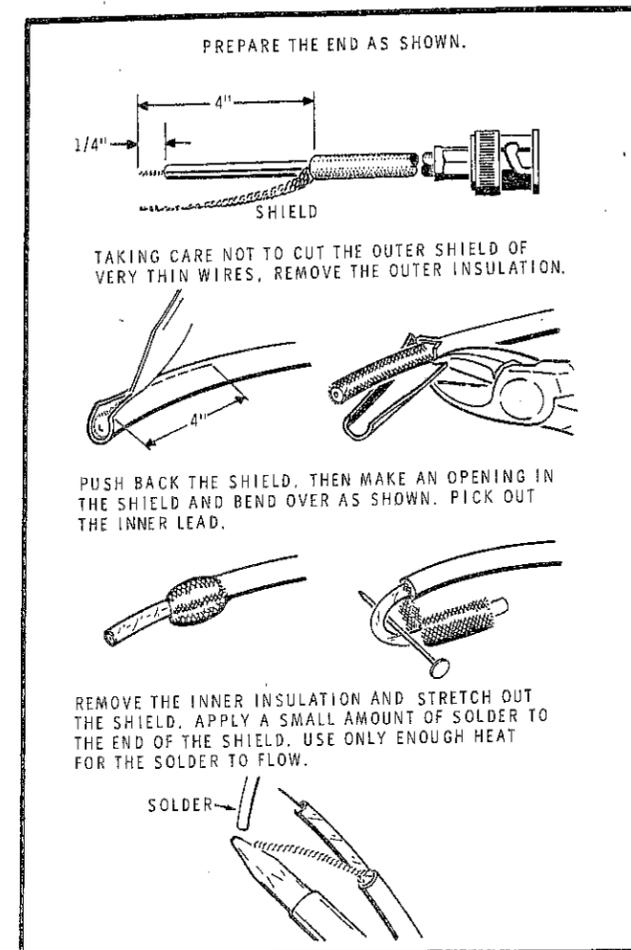
Detail 7-1A



Detail 7-1B



PICTORIAL 7-2



Detail 8-1A