

067-0601-00 CALIBRATION FIXTURE

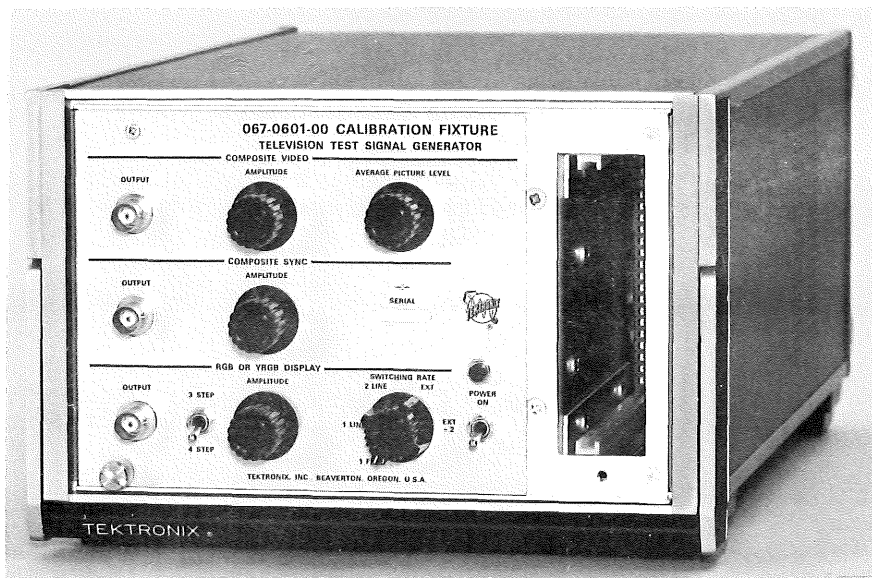
Video Test Signal Generator



MANUFACTURERS OF CATHODE-RAY OSCILLOSCOPES

067-0601-00 CALIBRATION FIXTURE

Video Test Signal Generator



The Television Test Signal Generator is a small, portable source of composite, interlaced television signals for almost any TV system. A plug-in unit provides the control of the line and field rate, sync timing, and sync pulse counter. The signal generator is intended for calibration and adjustment of television waveform monitors and other equipment requiring a composite video waveform for functional checkout.

The calibration fixture consists of a composite video generator with a compartment to receive interchangeable line and field rate control plug-in units; a composite sync generator; and a RGB or YRGB display generator for simulating the sweep-stepping output from video color-processing amplifiers.

The plug-in unit provides complete time control of the signal generator and is wired with diodes to generate a signal conforming to existing broadcast and closed-circuit standards. Each plug-in unit provides capability for one standard without recalibration or adjustment of the instrument.

The instrument requires a plug-in unit for operation. Plug-ins for many TV systems are available; contact your Tektronix field engineer or representative.

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SECTION 1

CHARACTERISTICS

COMPOSITE VIDEO

AMPLITUDE Control

Adjusts output P-P amplitude of composite video output. Continuously variable to at least 300 mV sync amplitude, into 75 ohms, and at least 700 mV video into 75 ohms, depending on AVERAGE PICTURE LEVEL control.

AVERAGE PICTURE LEVEL Control

Adjusts video component amplitude of composite video output. Continuously variable to at least 700 mV above blanking, limited by AMPLITUDE control. The video signal is constant amplitude for each line and each field. Once APL has been set, the ratio of video to sync remains constant with AMPLITUDE.

OUTPUT Connector

Provides output of composite video signal. Output DC level is 700 mV or less. Source impedance is approximately 75 ohms.

COMPOSITE SYNC

AMPLITUDE Control

Adjusts output P-P amplitude of composite sync output. Continuously variable to at least 4 V into 75 ohms and at least 8 V unterminated.

OUTPUT Connector

Provides output of negative-going composite sync signal. Output DC level is less than 1 V. Source impedance is approximately 75 ohms.

RGB OR YRGB DISPLAY

SWITCHING RATE

Five-position switch selects rate or source of staircase output.

- 1 FIELD Display switches output level at end of each field (field rate).
- 1 LINE Display switches output level at end of each line (line rate).
- 2 LINE Display switches output level at end of two lines (one-half line rate).
- EXT Display switches output level at rate determined by external signal.
- EXT ÷ 2 Display switches output level at one-half rate of external signal.

AMPLITUDE Control

Adjusts output amplitude of RGB OR YRGB DISPLAY signal. Continuously variable to at least 12 V P-P into 10 k Ω .

3-STEP, 4-STEP Toggle Switch

Selects 3 (RGB) or 4 (YRGB) step display output. Step amplitudes are within 5% of each other.

OUTPUT Connector

Provides output of RGB OR YRGB DISPLAY. Signal output is symmetrical about 0 V.

Rear Panel

FIELD TRIGGER OUTPUT

Provides output of a positive-going squarewave whose transition occurs at the start of each vertical blanking interval. The positive and negative portions are not locked to specific fields, but tend to remain in one relationship for given instrument turn-on. Output is at least 1 V P-P. Source impedance is 10 k Ω . DC level is 0.5 V or less.

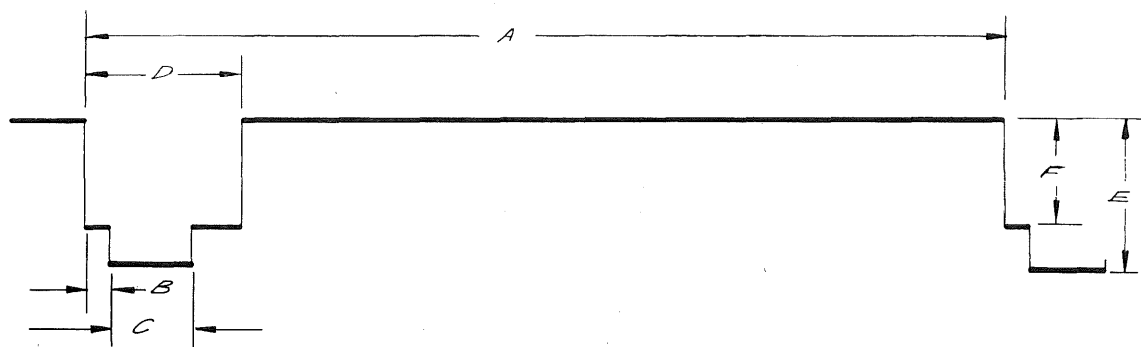


FIG. 1-1
HORIZONTAL DETAIL TIMING

- A Horizontal Line Time (1/2 clock oscillator frequency)
- B Front Porch Time
- C H-Sync Time
- D H-Blanking Time
- E Comp Video Amplitude
- F Average Picture Level

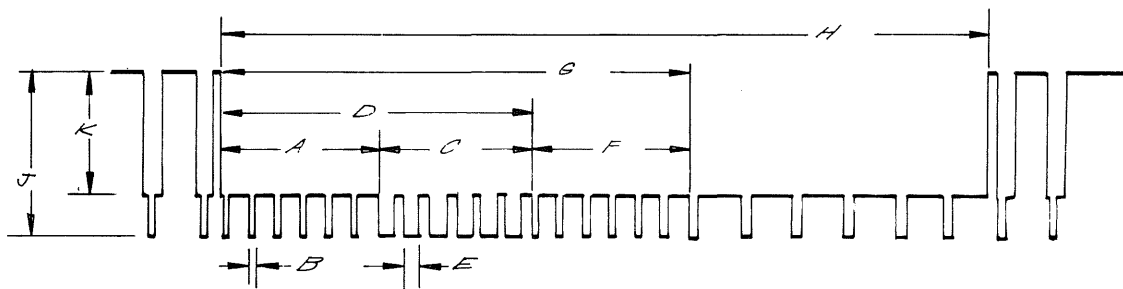


FIG. 1-2

VERTICAL DETAIL TIMING

- A First Equalizer Pulse Group Count
- B Equalizer Pulse Time
- C Vertical Serration Group
- D Vertical Serration Group Count
- E Vertical Serration Pulse Time
- F Second Equalizer Group
- G Second Equalizer Group Count
- H Vertical Blanking Time
- J Composite Video Amplitude
- K Average Picture Level

Rear Panel (cont)

RGB-YRGB SYNC OUTPUT

With RGB OR YRGB DISPLAY SWITCHING RATE set for 2 LINE or EXT $\div 2$ provides output of a positive-going squarewave signal. The square-wave negative transitions occur with the RGB or YRGB step transitions. Output is approximately 1 V P-P. Source impedance is approximately 1 k Ω . DC level is 0.5 V or less. No output is provided for other positions of display switch.

VERT OR HORIZ DRIVE EXT INPUT

Provides input for synchronizing the RGB or YRGB staircase generator to an external signal, such as the vertical or horizontal drive signal. Minimum input pulse amplitude is +1 V for at least 1 μ s. Input impedance is AC coupled into 10 k Ω . Maximum safe input is 10 V (DC plus peak AC).

PLUG-IN

The plug-in determines the composition of the television signal generated by the generator. It provides the clock frequency, number of lines, H-blanking time, front porch time, H-sync pulse time, field rate, equalizer pulse time, number of equalizing pulses before and after vertical serrations, number and time of vertical serrations, and V-blanking time.

Clock: Crystal-controlled oscillator whose frequency is 2 H frequency.

Lines/Frame: 1 to 2047 (eleven base 2 diode locations).

First Equalizer Pulse Group: 0 to 31 (five base 2 diode locations).

Vertical Serration Pulse Group: 0 to 31 (five base 2 diode locations).

Second Equalizer Pulse Group: 0 to 31 (five base 2 diode locations).

H-Blanking Width: Continuously variable from 0.5 μ s to 20 μ s.

Front Porch Width: Continuously variable from 0.1 μ s to 3 μ s after start of H-Blanking interval.

PLUG-IN (cont)

H-Sync Pulse Width: Continuously variable from 0.2 μ s to 10 μ s after front porch interval.

Vertical Blanking Pulse Width: Continuously variable from 40 μ s to 2000 μ s.

Equalizing Pulse Width(Both 1st and 2nd groups): Continuously variable from 0.1 μ s to 5 μ s.

Vertical Serration Pulse Width: Continuously variable from 1 μ s to 50 μ s.

Power Input Requirements

Line Voltage (RMS)

115 V Range: 105 V to 125 V

230 V Range: 210 V to 250 V

Crest Factor: At least 1:3

Frequency Range: 50 Hz to 440 Hz

Power: 10 W at 115 V, 60 Hz

Fuse Data

115 V 4/10 A

230 V 2/10 A

The instrument is provided with a three-wire power cord with a three-terminal, polarized plug for connection to the power source. The third wire is directly connected to the instrument frame, and is intended to ground the instrument to protect operating personnel, as recommended by national and international safety codes. Color coding of cord conductors follows the National Electrical Code which specifies Black, Line; White, Neutral; Green, Safety Earth or Ground.

The instrument is intended to be operated from a power source with its neutral at or near ground (earth) potential. It is not intended for operation from two phases of a multi-phase system, or across the legs of a single-phase, three wire system.

SECTION 2

OPERATING INSTRUCTIONS

The Television Test Signal Generator provides three basic output signals-- composite video, composite sync, and RGB or YRGB switching signal. These outputs provide suitable signals for maintenance and calibration of waveform monitors and other television equipment, especially when the equipment is multi-standard requiring many different H-sync and vertical group configurations. The Television Test Signal Generator does not provide color capability, nor is it suitable as a system reference for sync signals.

Composite Video Signal

This signal may be used in place of a standard signal for checking DC restorer action, sync and trigger performance, and other applications where variable signal and variable APL are used to check video system performance. A picture monitor with DC restoration will display a constant luminance (brightness) level depending on APL control. The signal does not have set-up, therefore the APL is continuously variable from 0 IRE units to more than 100 IRE units. The total, peak-to-peak signal amplitude is continuously variable with the AMPLITUDE control. The output can drive a 75 ohm impedance system or a high impedance system. Since the source impedance is approximately 75 ohms, the output amplitude into a high impedance will be about twice that into 75 ohms.

Composite Sync Signal

This signal may be used for checking external sync capabilities of waveform monitors and other instruments. The total, peak-to-peak signal amplitude is continuously variable and can drive a 75 ohm impedance system. Since the source impedance is approximately 75 ohms, the output amplitude into a high impedance will be about twice that into 75 ohms.

A field-rate trigger output signal is available at the rear panel. This is a positive-going squarewave which switches state at the start of each vertical blanking interval. The output impedance is high, and should not be used to drive a 75 ohm load.

RGB OR YRGB DISPLAY

This signal may be used for checking 3- or 4-line/sweep display capability of Tektronix waveform monitors. The signal is applied to the RGB-YRGB connector (without termination) on the waveform monitor and provides the DC positioning voltage, thus simulating a 3- or 4-line display that might be encountered in monitoring a color chain encoder. The AMPLITUDE control provides a pseudo horizontal gain control for this mode. Some monitors may require an external trigger

RGB OR YRGB DISPLAY (cont'd)

to obtain a stable display; this trigger is available from the RGB-YRGB SYNC OUTPUT on the rear panel. This output operates only in the 2 LINE or EXT ÷ 2 mode. RGB-YRGB SYNC OUTPUT should be connected to the monitor external sync input without termination.

Tektronix waveform monitors require one of the following connectors for input to RGB-YRGB DISPLAY mode:

Plug, 9-pin Cable End, EBY
Cover

Tektronix Part No. 136-0099-00

Tektronix Part No. 200-0249-00

Plug, 9-pin Cable, No. 165-13,
Amphenol

Tektronix Part No. 134-0049-00

The connectors should be wired as shown in Fig. 2-1, which energizes the internal relay and allows external positioning (RGB-YRGB) signal to control the display.

RGB - YRGB SIGNAL FROM GENERATOR

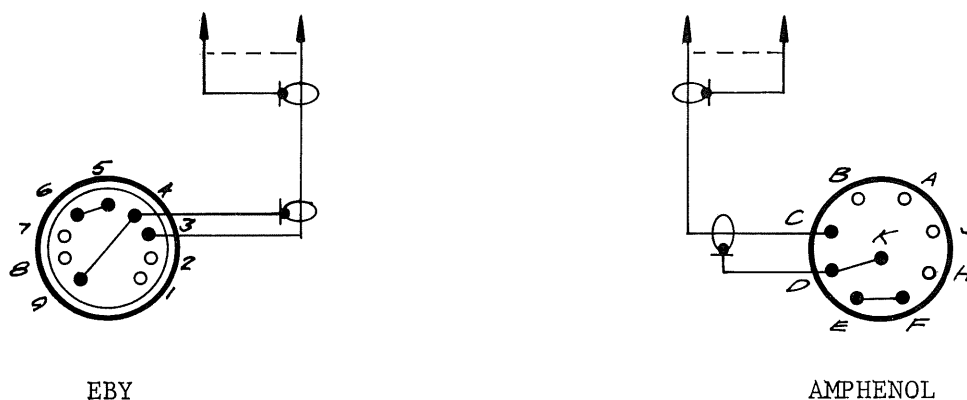


FIG. 2-1

WIRING FOR RGB-YRGB INPUT CONNECTORS
FOR TEKTRONIX WAVEFORM MONITORS

SECTION 3

CIRCUIT DESCRIPTION

Clock Oscillator



The clock oscillator is a crystal-controlled, two-stage oscillator circuit with an emitter follower providing buffering. The crystal is in the feedback path and has a small, adjustable capacitor in parallel with it to provide fine frequency adjustment. The collector circuit of Q106 is a broadly-tuned circuit for suppressing other possible frequency oscillation. Q110 is an untuned amplifier which drives the crystal and the buffer emitter follower, Q120. C101 drives the crystal case to reduce stray capacitance which might affect the frequency.

Counter



(Also



and



)

The clock signal is amplified by Q200 for the counting function and the pulse shaping function. The waveform at the collector of Q200 is rectangular.

The rectangular clock signal is applied to flip-flop U200 where each negative-going transition causes the flip-flop to toggle (or switch to its other state). Thus flip-flop U200 counts down by two.

In a similar manner, flip-flops U205 through U250 count down, each stage dividing by two, thus giving a binary counting facility. Each flip-flop provides an output, indicating it has counted one-half the number of input pulses. With the clock running at twice the line frequency, an extra pulse is available for providing half-line offset (interlace).

The output of each flip-flop is returned to the plug-in unit for counting lines, first and second equalizing pulses, and vertical serration pulses. U203, U208, U213, U218, and U223 provide additional drive capability for 1, 2, 4, 8, and 16 counting. Each flip-flop output is a positive-going signal of at least 1 V.

Counting is accomplished when all flip-flops (determined by the diode positions in the plug-in unit) are in their high state, disconnecting the diodes, and allowing the appropriate input line to go to its high state.

Counter  (Also  and ) (Cont'd)

The line counter, Q203, resets the counters (flip-flops U200 through U250) initiating a new field count. Interlace is achieved by counting an odd number of lines, thus the counter begins its field count one-half line after termination of the previous field. (The clock runs at 2 H frequency, providing a half-line counting facility.) The line counter also resets first and second equalizer counters and the vertical serration counter.

Pulse Timing 

The clock signal is inverted and amplified by U300A. Its output is applied to U315 for front porch timing. Also the output of U300A is inverted and amplified by U300B and applied to flip-flop U305, where each negative-going transition causes the flip-flop to toggle (or switch to its other state). This provides an H-rate squarewave. This squarewave is applied to U310 for H-blanking timing.

Timing is accomplished with a resistor-capacitor charge circuit. When the output of the first half of the I. C. goes to zero the timing capacitor is discharged. Charging occurs through the variable resistor in the plug-in unit towards +3.6 V. When the voltage at the input of the second half of the I. C. reaches about 0.5 V, the I. C. amplifier turns on. Its output is applied to the input to allow the first half amplifier output to return to the supply voltage, +3.6 V. The input to the timing circuit is, essentially, an Exclusive Or Gate so that the timing cycle cannot be interrupted.

The front porch timing I. C. is run directly from the clock signal, that is, at a 2 H rate. This signal is inverted and amplified by U320A for equalizer timing, U340, and vertical serration timing, U345. U350 provides inversion and squaring of these timing signals. Also, the 2 H front porch timing signal is inverted again by U320 B and applied to flip-flop U325.

Flip-flop U325 is caused to toggle at a 2 H rate by each negative-going transition from U320B (at the end of each front-porch time). The H-rate squarewave from U305 is applied to flip-flop U325 to lock U325 output to U305 output. The output signal of flip-flop U325 is applied to U330 to develop the H-sync pulse timing.

Vertical blanking time is initiated by the start of the field count from the second equalizer pulse counter. The positive-going transition applied to U355 causes it to initiate timing.

Pulse Timing (cont'd)

Composite blanking is generated from two signals: vertical blanking time and horizontal blanking time. These two signals, from U355 and U310, are applied to Or Gate, U335B. When either signal is in its high state, the output of U335B is low. This signal is inverted twice by U360, providing a composite blanking signal.

Gating (Also and)

The first equalizer pulse counter consists of amplifier U253A and flip-flop U255. Counting is initiated at the beginning of each field. In this configuration flip-flop U255 cannot switch more than once until reset by the line counter; it holds in its down state until reset, thus locking out any further counting. The output of flip-flop U255 (inverted) is applied to flip-flop U270 to provide a field rate output trigger. The first equalizer counter is also used to develop the composite sync signal.

The vertical serration counter consists of amplifier U253B and flip-flop U260. Counting is initiated at the beginning of each field. In this configuration, flip-flop U260 cannot switch more than once until reset by the line counter. It holds in its down state until reset, thus locking out any further counting. The outputs of flip-flop U260 are used to develop the composite sync signal. The output of flip-flop U260 and first equalizer counter flip-flop U255 are applied to And Gate U258B to provide a vertical serration counter gate.

The second equalizer counter consists of Q265 and flip-flop U265. Counting is initiated at the beginning of each field. In this configuration, flip-flop U265 cannot switch more than once until reset by the line counter; it holds in its down state until reset, thus locking out any further counting. The outputs of flip-flop U265 are used to develop the composite sync signal. The output of flip-flop U265 and vertical serration counter flip-flop U260 are applied to And Gate U263A to provide a second equalizer counter gate.

The first equalizer group is generated from two signals: first equalizer pulse counter and equalizer pulse timing. The counter signal is a gate from U255 which has been generated by counting from the start of the field. The timing signal is a variable, starting at the end of each H-sync front porch. These two signals are applied to And Gate U258A, giving an output of the first group of equalizer pulses.

Gating  (Also  and ) (Cont'd)

The vertical serration group is generated from two signals: vertical serration pulse counter and vertical serration pulse timing. The counter signal is a gate from U258B, amplified by U268A. The timing signal is a variable, starting at the end of each H-sync front porch. These two signals are applied to And Gate U273A, giving an output of the vertical serration pulses.

The second equalizer group is generated from two signals: second equalizer pulse counter and equalizer pulse timing. The counter signal is a gate from U263A, amplified by U268B. The timing signal is a variable, starting at the end of each H-sync front porch. These two signals are applied to And Gate U273B, giving an output of the second group of equalizer pulses.

The H-sync signal is generated from two signals: Second equalizer pulse counter and the H-sync pulse timing. The counter signal is a gate from U265. The timing signal is a variable, starting at the end of each H-sync front porch. These two signals are applied to And Gate U263B, giving an output of H-sync.

Each of the four signals

- First Equalizer Pulse Group,
- Vertical Serration Pulse Group,
- Second Equalizer Pulse Group, and
- H-Sync,

are mixed through diodes at the base of Q275, which provides a switching function (off, or +3.6 V supply, to on, saturated). The signal at the collector of Q275 is the inverted composite sync signal approximately 3.6 V P-P in amplitude.

Output 

The output circuitry consists of two amplifiers: Composite sync amplifier and composite video amplifier.

The composite sync signal from the gating circuit is applied to emitter follower Q400. Amplifier Q405 inverts the signal and provides limiting since it runs from fully on (saturated) to the limit provided by the three diodes, approximately 1.5 V. A variable amplitude facility is provided by AMPLITUDE pot, R407. Emitter follower Q410 drives the input to the operational amplifier Q415 and Q420. Diode D410 helps to establish quiescent DC level at the output to approximately 0 V. Because the output stage is an operational amplifier, the output series resistor, R421, establishes the output impedance at approximately 75 ohms.

Output (Cont'd)

The composite video signal is developed from composite sync and composite blanking. Each of these two signals is added at the base of emitter follower, Q430. Video Sync Amplitude control, R425, calibrates the sync level of the composite video. AVERAGE PICTURE LEVEL, R440, provides adjustment of a variable blanking level which appears as a video amplitude. Composite video AMPLITUDE provides adjustment of the peak-to-peak amplitude of the output signal. Emitter follower Q435, and output resistor, R438, provide an output impedance of about 75 ohms.

RGB or YRGB DISPLAY

The RGB or YRGB display circuit can be considered in two parts; first, the switching rate source, and second, the step generator.

The switching rate source is selected by switching rate, SW505, by the divide-by-two flip-flop U500, and inverter U515A. The divide-by-two flip-flop U500 is used only in 2-LINE and $\text{EXT} \div 2$ rates. The RGB-YTGB sync output is driven by the output of U500, and therefore operates only in 2-LINE and $\text{EXT} \div 2$ rates. The inverter U515A is used only in 1-FIELD.

When in EXTERNAL or $\text{EXT} \div 2$, I.C.'s U500 and U515A are protected by D551, D552, and D553 from excessive input signals.

When in four-step mode flip-flop U505 provides a divide-by-two function. The output of flip-flop U505 is applied to flip-flop U510 and is divided by two again. These two signals are applied to differential amplifiers Q530, Q535 and Q520, Q525. These two differential amplifiers operate in a similar fashion, as current switches. When the base of the input amplifier (Q530 or Q520) is above ground level (positive), the emitter follows, thus cutting off the opposite amplifier (Q535 or Q525). Conversely, when the signal at the base of the input amplifier (Q530 or Q520) is below ground (negative) the opposite amplifier (Q535 or Q525) gains control, holding the two emitters at approximately -0.6 V, thus cutting off the input amplifier (Q530 or Q520). Under these conditions current flow is determined by the total emitter resistance (R530 and R532 or R520 and R521). The outputs of each differential amplifier share a common collector resistor (R525, R526), algebraically adding the currents in the emitter circuits (assuming negligible base current). Due to the input pulse timing, all possible combinations of two inputs with two states each appears in the collector circuit, giving a four level staircase.

When in three-step mode, And Gate U515B resets flip-flops U505 and U510, allowing only three combinations of pulses to appear at the two differential amplifier inputs.

RGB or YRGB DISPLAY (Cont'd)

The step generator output is applied to emitter follower Q540 to operational amplifier U550. Input resistor R545 and R544 (12 V Step Adjust) sets the maximum output amplitude. Step Balance input resistor R543 sets the DC output level. Feedback resistor R546 (AMPLITUDE) and R547 provides front panel control of the peak-to-peak output.

POWER SUPPLY

The power supply consists of two supplies, -15 V and +3.6 V, using a common Zener diode as a reference. Both supplies are series-regulated.

The -15 V supply consists of a series regulator transistor, Q620, driven by an amplifier, Q630, stage whose emitter is set at -8.8 V by the Zener diode, D630. The error amplifier, Q630, compares this voltage with the voltage at the base, one-half the -15 V supply, -7.5 V. Thus, the -15 V is held constant.

The +3.6 V supply also consists of a series regulator, Q660, but includes an emitter follower, Q650 to drive the series regulator. The error amplifier, Q640, emitter is established at -8.8 V. The base is set by a pot, R645, which sets the current in the error amplifier; this current determines the voltage at the base of emitter follower Q650, in turn setting the current in the series regulator, Q660, to establish 3.6 V at the output.

A third power supply establishes +15 V for the RGB OR YRGB DISPLAY output operational amplifier U550. This supply allows the output signal to swing symmetrically about zero. The power supply consists of a voltage-doubler rectifier (C670, R670, D670, D675, C680, R680) added to the -15 V supply winding. The output is shunt-regulated by zener diode D680.

SECTION 4 MAINTENANCE

GENERAL MAINTENANCE

This section contains a complete calibration procedure for the calibration fixture. The instrument will not often require a complete, start-from-scratch calibration, but will need occasional adjustments as components age or are replaced.

Calibration is a valuable part of preventive maintenance, since many types of minor troubles may be discovered and corrected before they become serious enough to disable the instrument. Also, certain troubles can be isolated to a particular section by attempting calibration.

All front panel controls are in capital letters (AVERAGE PICTURE LEVEL). Internal adjustments are identified by an R or C number, (R645), or control function beginning with capital letters (Front Porch).

The calibration procedure is broken down into sections involving circuits; if a particular circuit needs recalibration prior steps may be omitted.

CALIBRATION

Test Equipment

Volt-Ohm-Milliammeter	Triplett 630 NA
Oscilloscope	Tektronix Type 547 with Type W Plug-In Unit
Vertical: DC-10 MHz, 10 mV/DIV, with comparison voltage (Differential slideback).	
Horizontal: Delayed sweep facility.	
Probe, 1X Attenuation	Tektronix Type P6011
Probe, 10X Attenuation	Tektronix Type P6010
Coaxial Cable, 75 Ω , BNC (2 required)	Tektronix 012-0074-00
Termination, 75 Ω , Signal-Feed-Through	Tektronix 011-0103-02
Counter (For setting clock frequency of Plug-In Unit)	HP 5245L or equivalent

CALIBRATION (Cont'd)

Power Supply (With Plug-In)

Resistances to Ground. The resistances to ground measured with a VOM provide a check for shorted or open devices. The normal resistances are:

+3.6 V	Approximately 20 Ω
-15 V	Approximately 400 Ω
+15 V	Approximately 400 Ω

Voltages. The power supply voltages and ripple should regulate over the line voltage operating range listed in the Characteristics section. Adjust +3.6 V (R645) to within limits stated:

Supply	Ripple
+3.6 V within 3% (Adjustable)	20 mV P-P or less
-15 V within 5% (Referenced to +3.6 V)	20 mV P-P or less
+15 V within 5% (Zener Reference)	750 mV P-P or less

The operation of the Television Test Signal Generator requires a plug-in unit for clock frequency, lines, H-sync detail timing, and V-sync detail timing. If any of these functions are inoperative or misadjusted, the generator can not produce a suitable signal. The plug-in unit calibration procedure appears at the end of the procedure; each plug-in unit should be calibrated with its associated generator.

Clock (Plug-In)

The instrument requires a clock signal for all functions. The clock is a crystal oscillator on the plug-in unit. Check for a signal of crystal frequency about 1 V P-P at collector of Q200. C100 on the plug-in unit provides slight frequency and amplitude adjustment.

CALIBRATION (cont'd)

COMPOSITE VIDEO (With Plug-In)

Video Sync Amplitude, R425. Connect the composite video output through a 75 ohm cable and 75 ohm termination to the test scope input. Set AVERAGE PICTURE LEVEL fully clockwise. Set AMPLITUDE for 700 mV video. Adjust Video Sync Amp, R425, for 300 mV P-P of sync signal.

Video Sync Compensation, C427. Connect the composite video output through a 75 ohm cable and 75 ohm termination to the test scope input. Set AMPLITUDE fully clockwise and AVERAGE PICTURE LEVEL fully counter-clockwise. Adjust C427 for best corner on leading edge of sync.

AVERAGE PICTURE LEVEL. Connect the composite video output through a 75 ohm cable and 75 ohm termination to the test scope input. Set AMPLITUDE and AVERAGE PICTURE LEVEL fully clockwise. Measure peak-to-peak signal amplitude; should be greater than 1 V (300 mV plus more than 700 mV video information).

COMPOSITE SYNC OUTPUT (With Plug-In)

Composite Sync Amplitude. Connect composite sync output through a 75 ohm cable and 75 ohm termination to test scope input. Set AMPLITUDE fully clockwise. Measure peak-to-peak sync amplitude; should be greater than 4 V.

RGB OR YRGB DISPLAY (With Plug-In)

The RGB OR YRGB DISPLAY calibration controls, R542, R532, R522, and R545 interact. Initially set all controls to midrange. Set display to 4 STEP, AMPLITUDE fully clockwise, and switching rate to 1 LINE. Connect OUTPUT to test scope input, DC coupled, 2 V/div and free-running sweep.

Adjust these controls in sequence, slowly approaching the final value for each step, and maintaining Step Balance R542, for a signal centered about 0 V DC. (An easy way to check or adjust Step Balance is to switch to 3 STEP display and adjust R542 for center step at 0 V DC.) This incremental approach should result in very little adjustment of Step Balance, R542.

CALIBRATION (cont'd)

RGB OR YRGB DISPLAY (cont'd)

4 V Step Adjust, R532	Adjust for first step amplitude of 4 V, referenced to -6 V DC level.
8 V Step Adjust, R522	Adjust for second step amplitude of 8 V referenced to -6 V.
12 V Step Adjust, R545	Adjust for peak-to-peak amplitude of 12 V.
Step Balance, R542	Adjust for equal + and - excursions around zero.

Using the differential slideback measuring technique, re-adjust the Step Adjust controls for each step to be 4 V within 0.20 V. (Refer to Type W-Unit instruction manual.) Due to the interaction of controls, do not adjust for final value in one step, but approach the final value in small increments, repeating the process at least twice.

This completes the calibration of the generator. Check the rear panel connectors for appropriate output amplitudes to verify performance; see Section 1.

CALIBRATION (cont'd)

PLUG-IN UNIT (With Generator)

See Section 8 for specifications.

Clock Frequency, C100.

Connect a 10X probe from test scope vertical input to collector of Q200. Obtain a display several divisions high. Connect a 1X probe from counter AC coupled input to test scope vertical signal output. Adjust C100 for frequency of particular plug-in in use; see Section 8 for plug-in specifications.

(For a visual display of the frequency as C100 is adjusted, set test scope for delayed mode operation: trigger delaying sweep, time base B, from internal signal at 2 ms/div; set delay-time multiplier for about 8.00; display delayed sweep, time base A, at 20 μ s/div to observe changes in frequency as C100 is adjusted.)

Horizontal Detail Timing (See Figure 4-1). See Section 8 for specifications

Connect the Composite Video OUTPUT through a 75 ohm cable and 75 ohm termination to the test scope input, DC coupled. Set Composite Video AVERAGE PICTURE LEVEL fully clockwise; set AMPLITUDE for about a 1 V P-P signal. For greater resolution and accuracy, the delayed sweep mode may be used.

Horizontal Blanking Time, R145. Obtain a display of the horizontal blanking time on the test scope. Adjust R145 for specified time at 50% amplitude points.

Front Porch Time, R125. Obtain a display of the H-sync front porch on the test scope. Adjust R125 for specified time at 50% of blanking to 50% of H-sync.

Horizontal Sync Pulse Width, R130. Obtain a display of the H-sync pulse on the test scope. Adjust R130 for specified time at 50% amplitude points.

Vertical Detail Timing (See Figure 4-2). See Section 8 for specifications.

Connect the Composite Video OUTPUT through a 75 ohm cable and 75 ohm termination to the test scope input, DC coupled. Set Composite Video AMPLITUDE fully clockwise; set AVERAGE PICTURE LEVEL for about a 1 V P-P signal. Externally trigger the

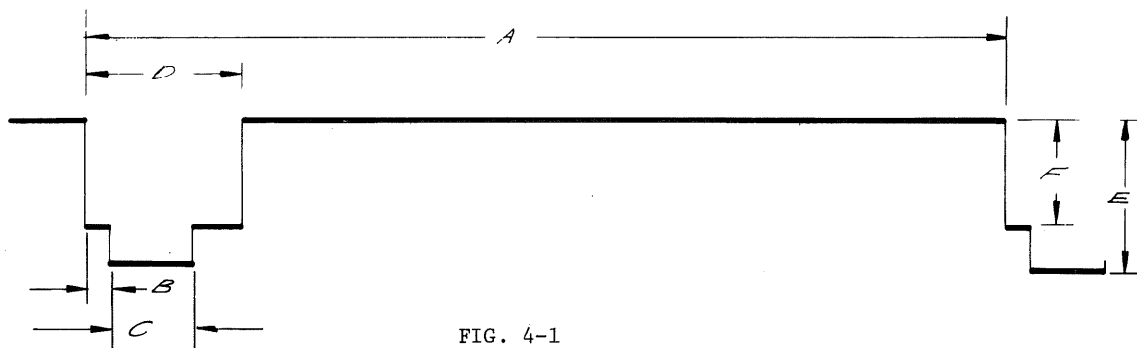


FIG. 4-1
HORIZONTAL DETAIL TIMING

- A Horizontal Line Time (1/2 clock oscillator frequency)
- B Front Porch Time
- C H-Sync Time
- D H-Blanking Time
- E Comp Video Amplitude
- F Average Picture Level

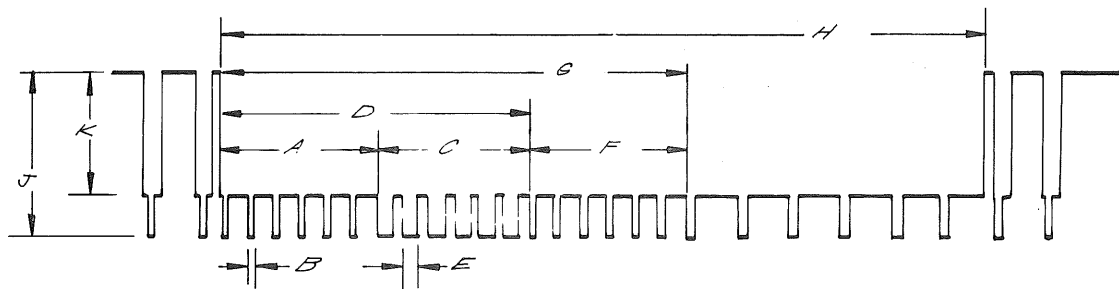


FIG. 4-2

VERTICAL DETAIL TIMING

- A First Equalizer Pulse Group Count
- B Equalizer Pulse Time
- C Vertical Serration Group
- D Vertical Serration Group Count
- E Vertical Serration Pulse Time
- F Second Equalizer Group
- G Second Equalizer Group Count
- H Vertical Blanking Time
- J Composite Video Amplitude
- K Average Picture Level

CALIBRATION (cont'd)

Vertical Detail Timing (cont'd)

delaying sweep, time base B, from the field rate output on the rear panel (do not use 75 ohm termination). Set delaying sweep time/div time base B, to display two vertical groups. Set delay-time multiplier and delayed sweep time/div (time base A) to intensify the second vertical group. Now set display to delayed sweep.

Vertical Blanking Time, R150. Using delayed sweep time/div (time base A) and delay-time multiplier, obtain a display of vertical blanking time. Adjust R150 for specified time at 50% amplitude points. For greater resolution and accuracy, the delayed sweep mode may be used.

Equalizer Pulse Time, R135. Using delayed sweep time/div (time base A) and delay-time multiplier, obtain a display of the equalizer pulse. Adjust R135 for specified time at 50% amplitude points.

Vertical Serration Pulse Time, R140. Using delayed sweep time/div (time base A) and delay-time multiplier, obtain a display of a vertical serration pulse. Adjust R140 for specified time at 50% amplitude points.

This completes the calibration of the plug-in unit. Due to differences in integrated circuits, plug-in unit timing should be calibrated to its generator to obtain optimum accuracy.

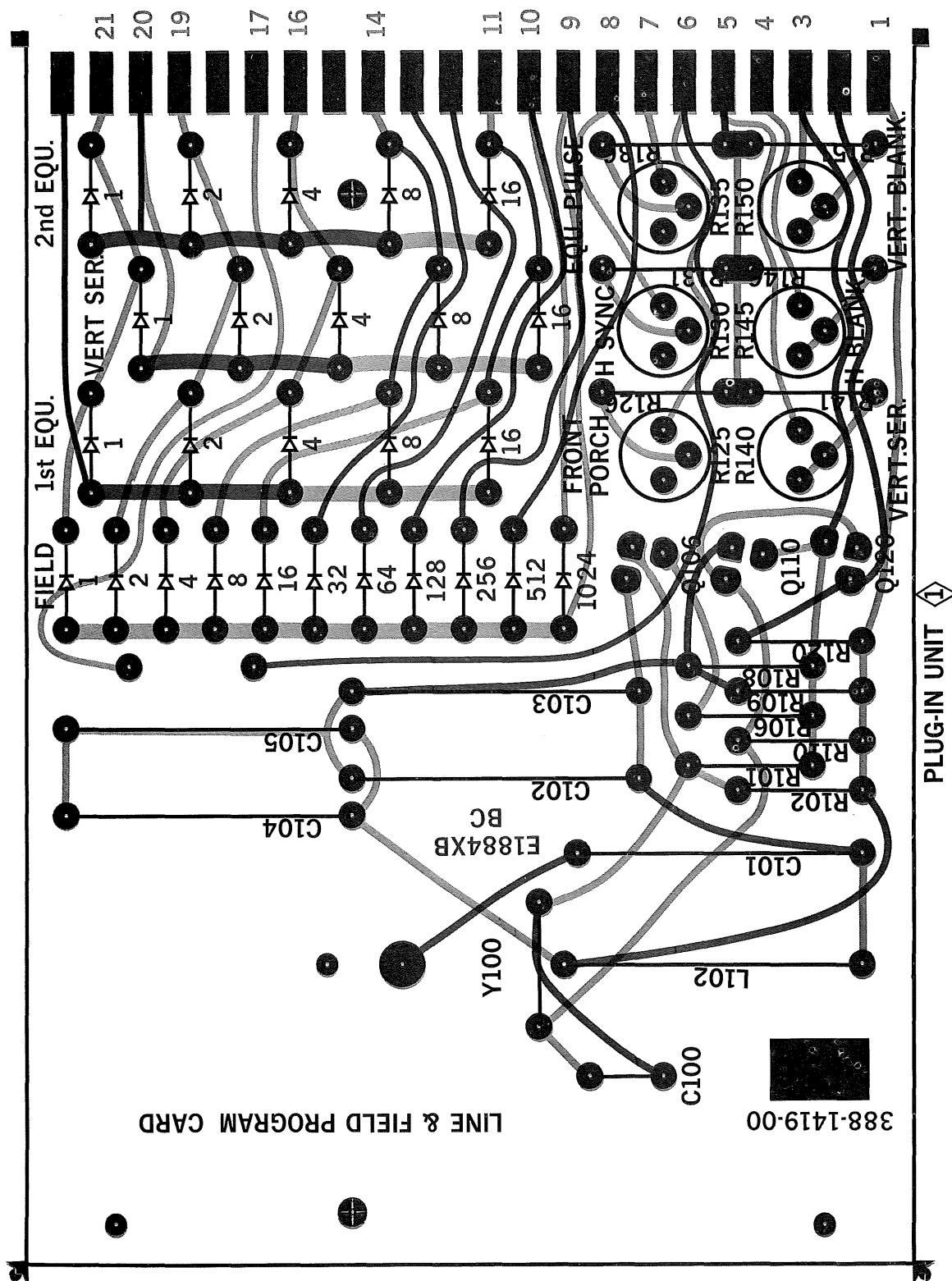
SECTION 5

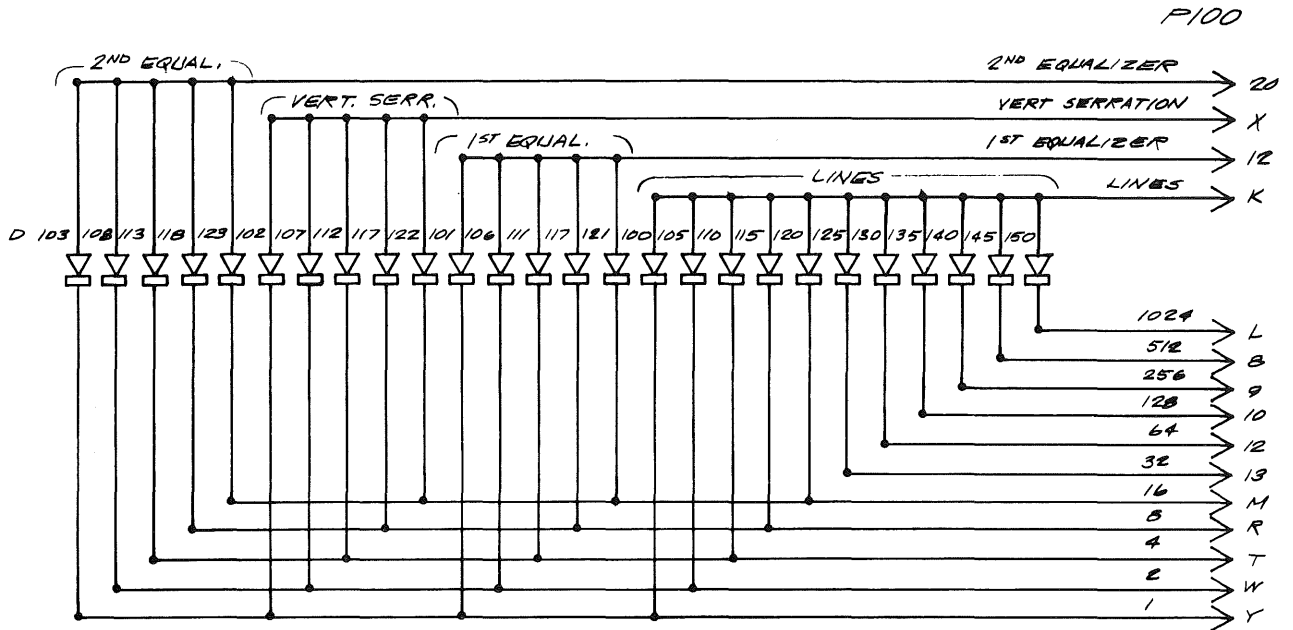
SCHEMATIC DIAGRAMS

CIRCUIT BOARD IDENTIFICATION

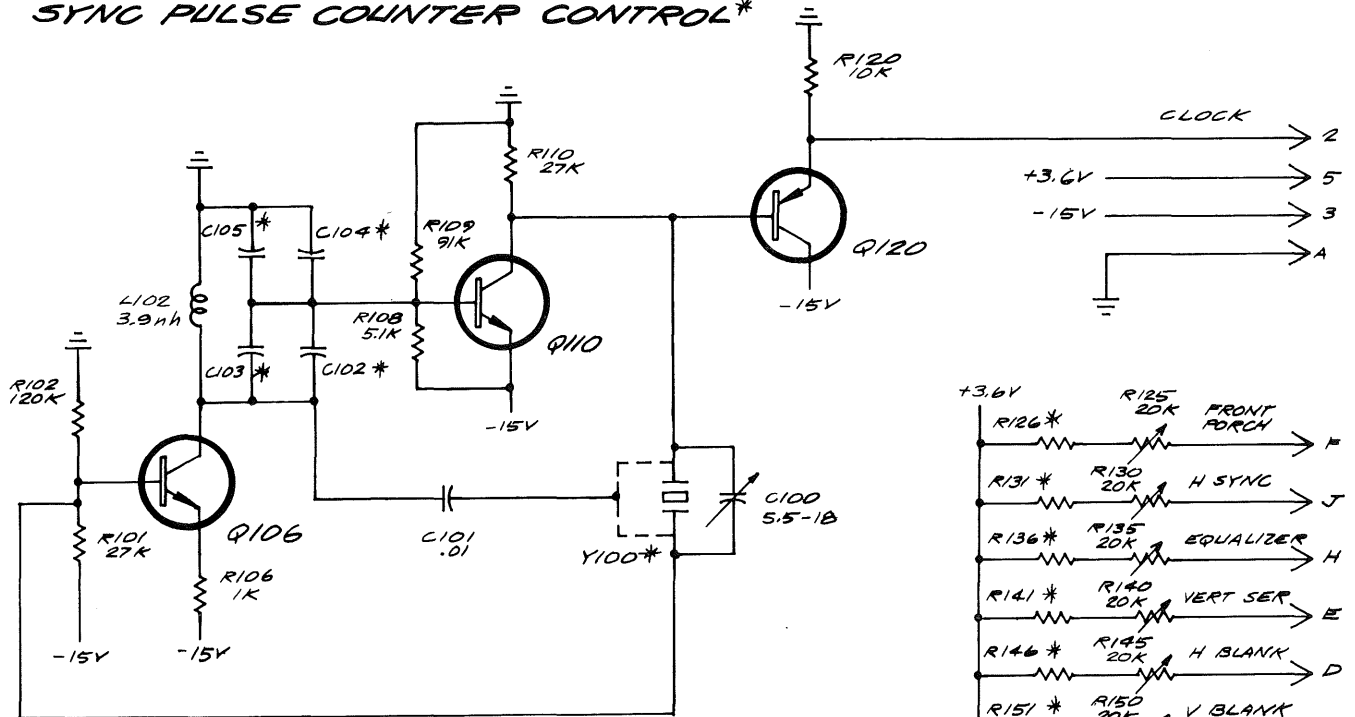
Coupled with each schematic is a convenient pictorial record of that circuit board. They can easily be used to identify the circuit board in your instrument by name and help in locating the components on the correct schematic.

Each circuit board layout can be cross referenced with its respective schematic by matching the diamond shaped number symbols of the layout to the schematic.





SYNC PULSE COUNTER CONTROL*



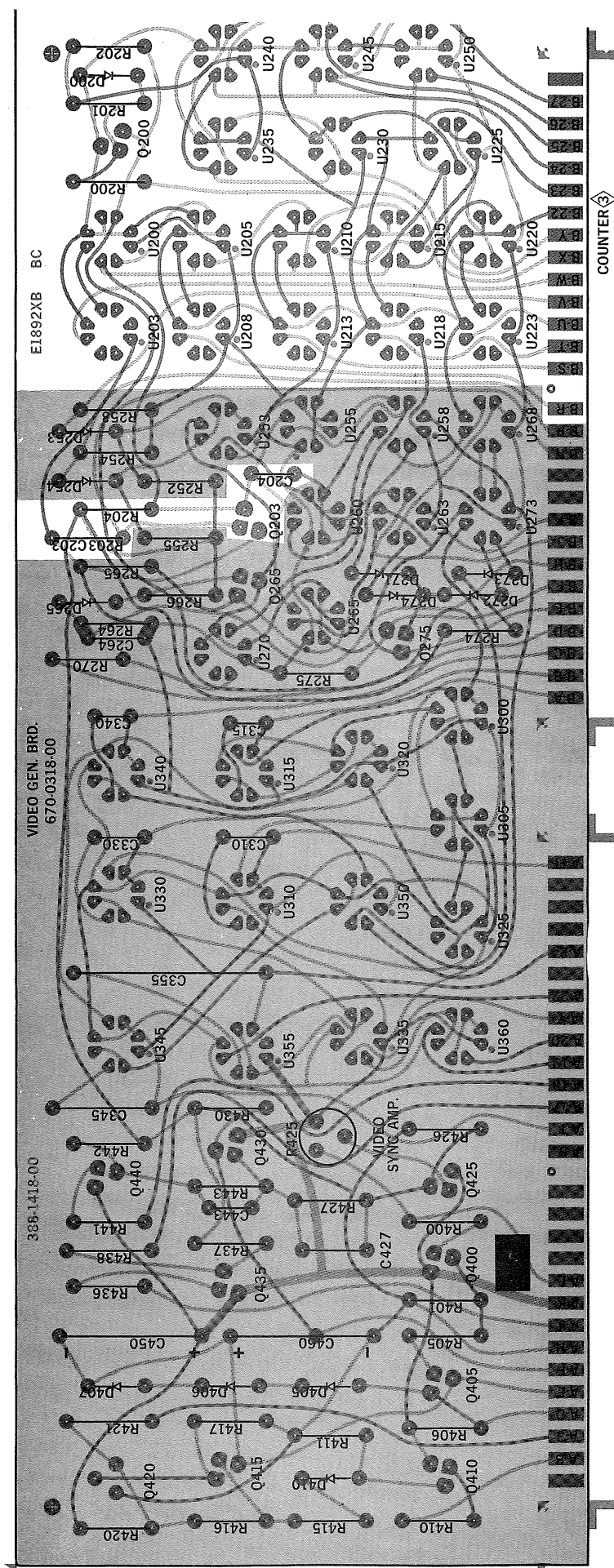
CLOCK OSCILLATOR

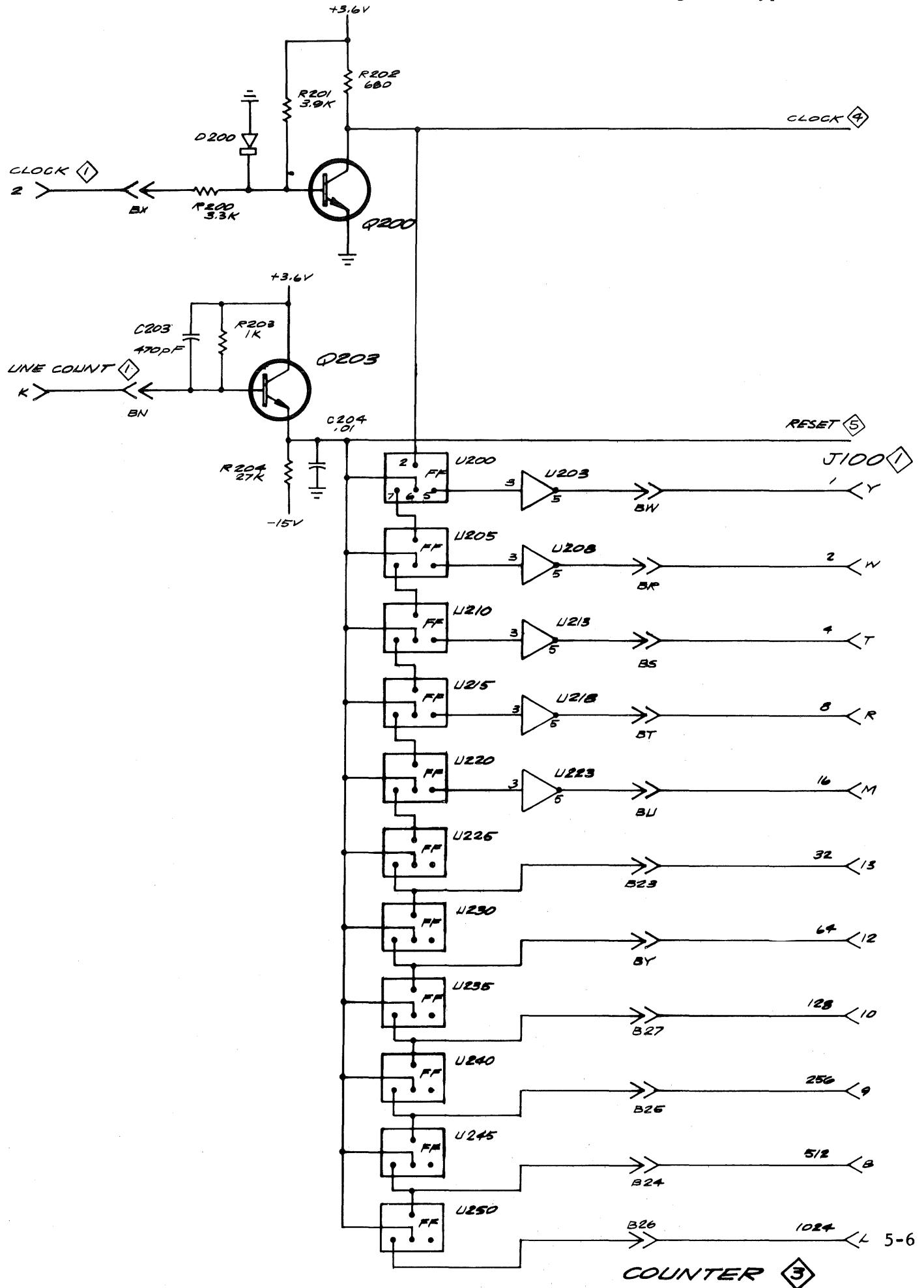
SYNC TIMING

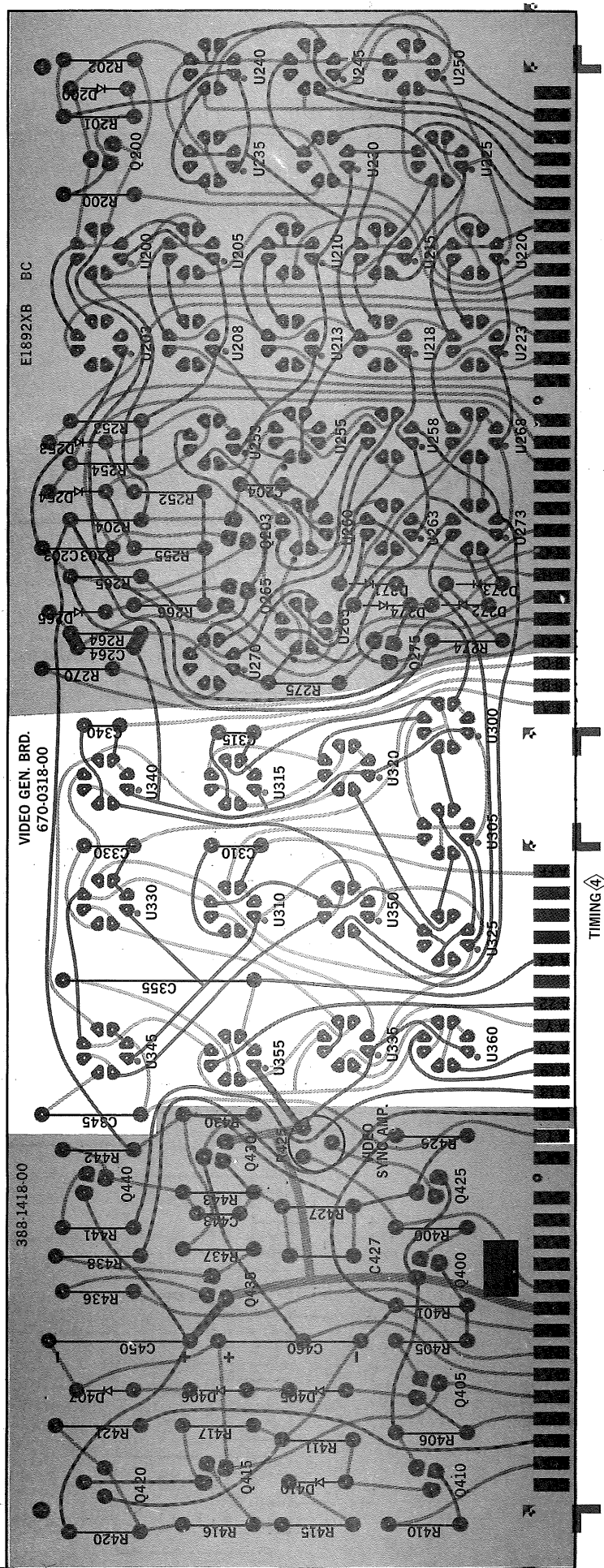
* SEE ACTUAL PLUG-IN SCHEMATIC

<u>PIN NO.</u>	<u>CIRCUIT</u>
1	NC
2	CLOCK $\diamond 3$
3	-15V $\diamond 8$
4	NC
5	+3.6V $\diamond 8$
6	NC
7	NC
8	512 COUNT CONTROL $\diamond 3$
9	256 COUNT CONTROL $\diamond 3$
10	128 COUNT CONTROL $\diamond 3$
11	NC
12	64 COUNT CONTROL $\diamond 3$
13	32 COUNT CONTROL $\diamond 3$
14	NC
15	NC
16	NC
17	NC
18	NC
19	NC
20	2ND EQUALIZER COUNT $\diamond 5$
21	NC
22	1ST EQUALIZER COUNT $\diamond 5$

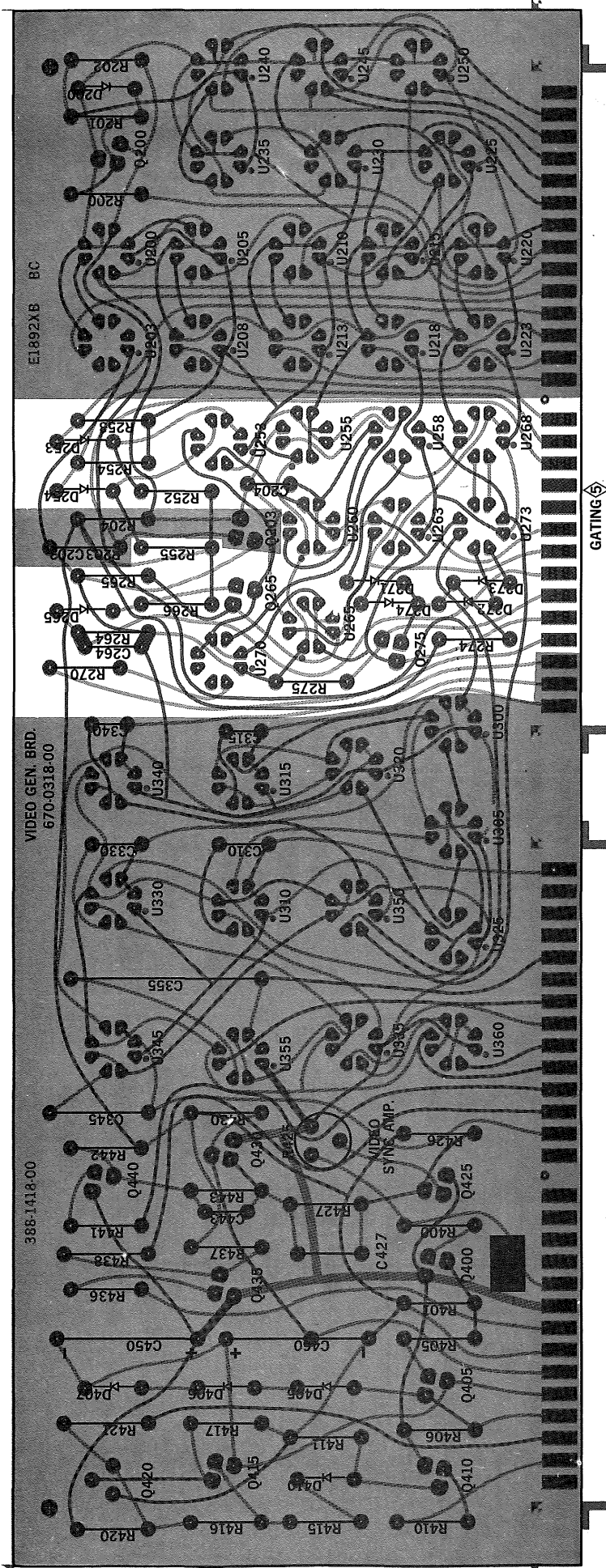
<u>PIN NO.</u>	<u>CIRCUIT</u>
A	GROUND $\diamond 8$
B	NC
C	VERT BLANK TIME $\diamond 4$
D	H BLANK TIME $\diamond 4$
E	VERT SERRATION TIME $\diamond 4$
F	FRONT PORCH TIME $\diamond 4$
H	EQUALIZER PULSE TIME $\diamond 4$
J	H-SYNC TIME $\diamond 4$
K	FIELD LINE COUNT $\diamond 4$
L	1024 COUNT CONTROL $\diamond 3$
M	16 COUNT CONTROL $\diamond 3$
N	NC
P	NC
R	8 COUNT CONTROL $\diamond 3$
S	NC
T	4 COUNT CONTROL $\diamond 3$
U	NC
V	NC
W	2 COUNT CONTROL $\diamond 3$
X	VERT SERRATION COUNT $\diamond 5$
Y	1 COUNT CONTROL $\diamond 3$
Z	NC

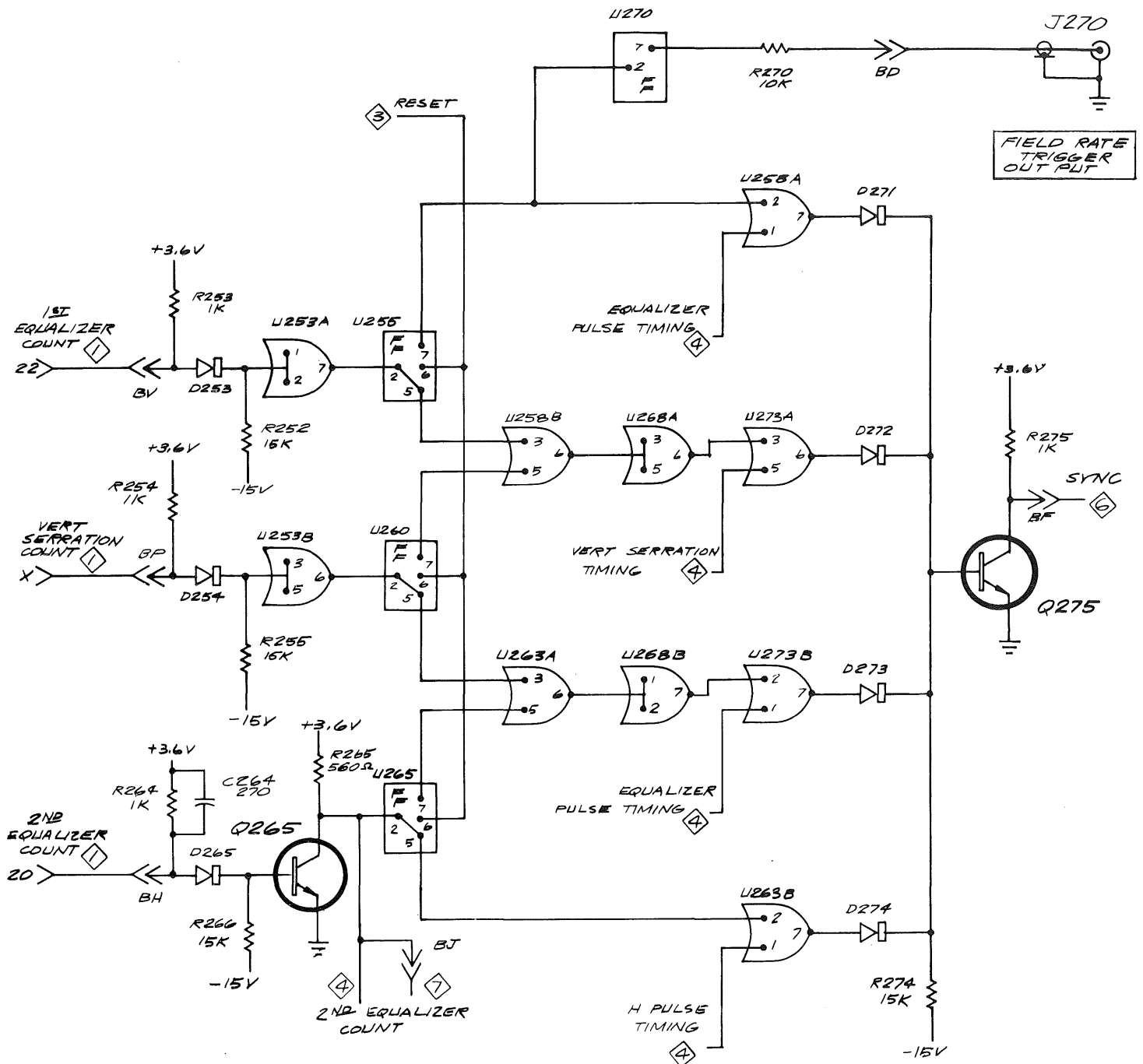


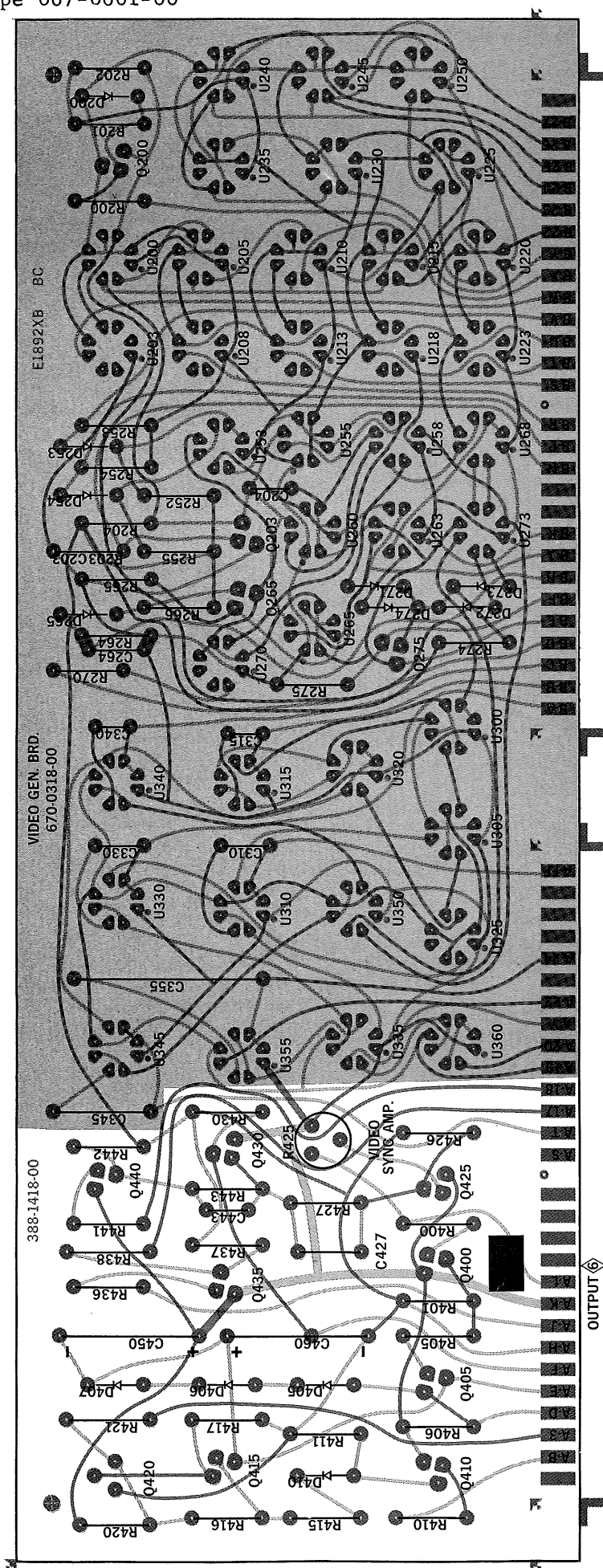


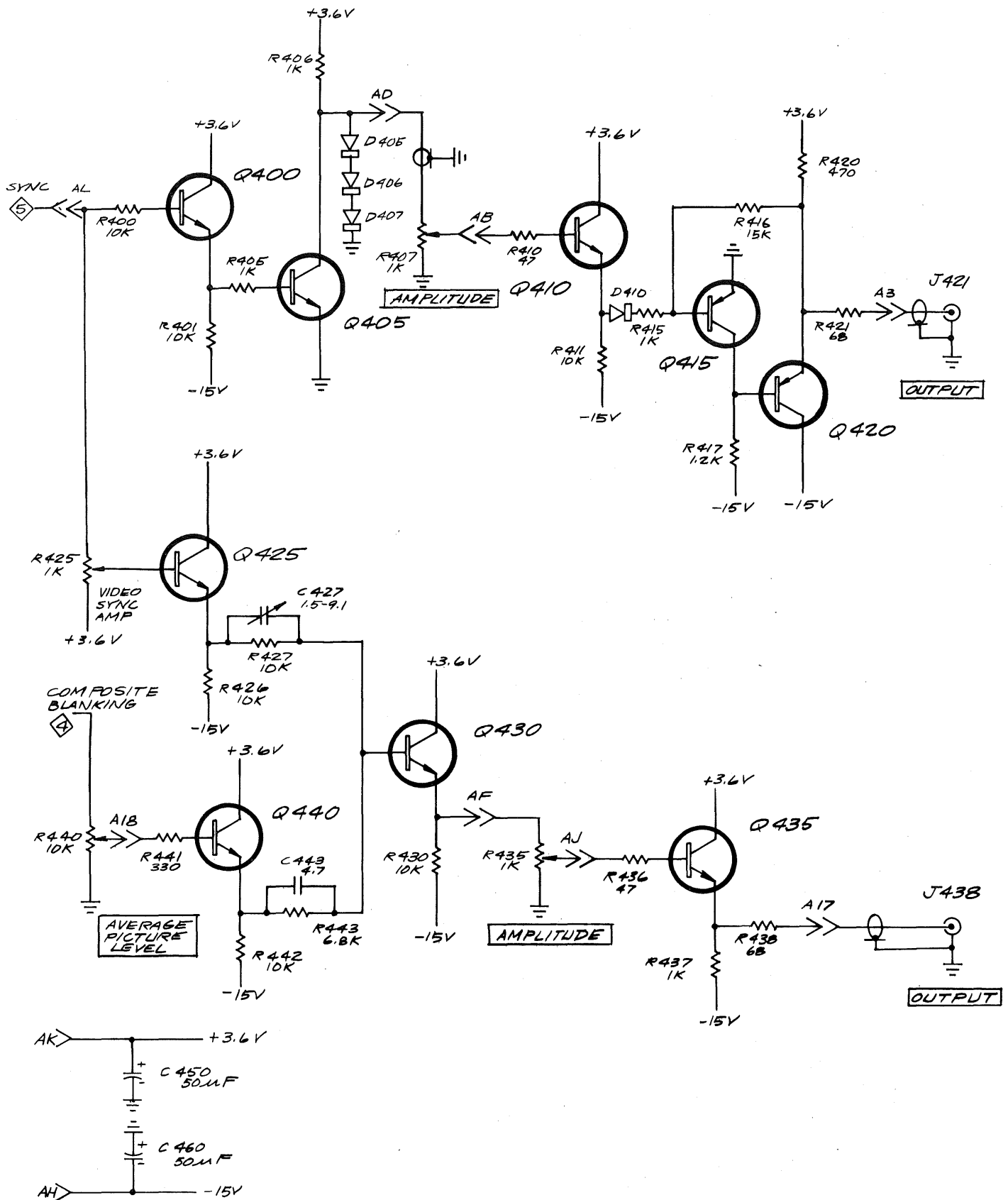






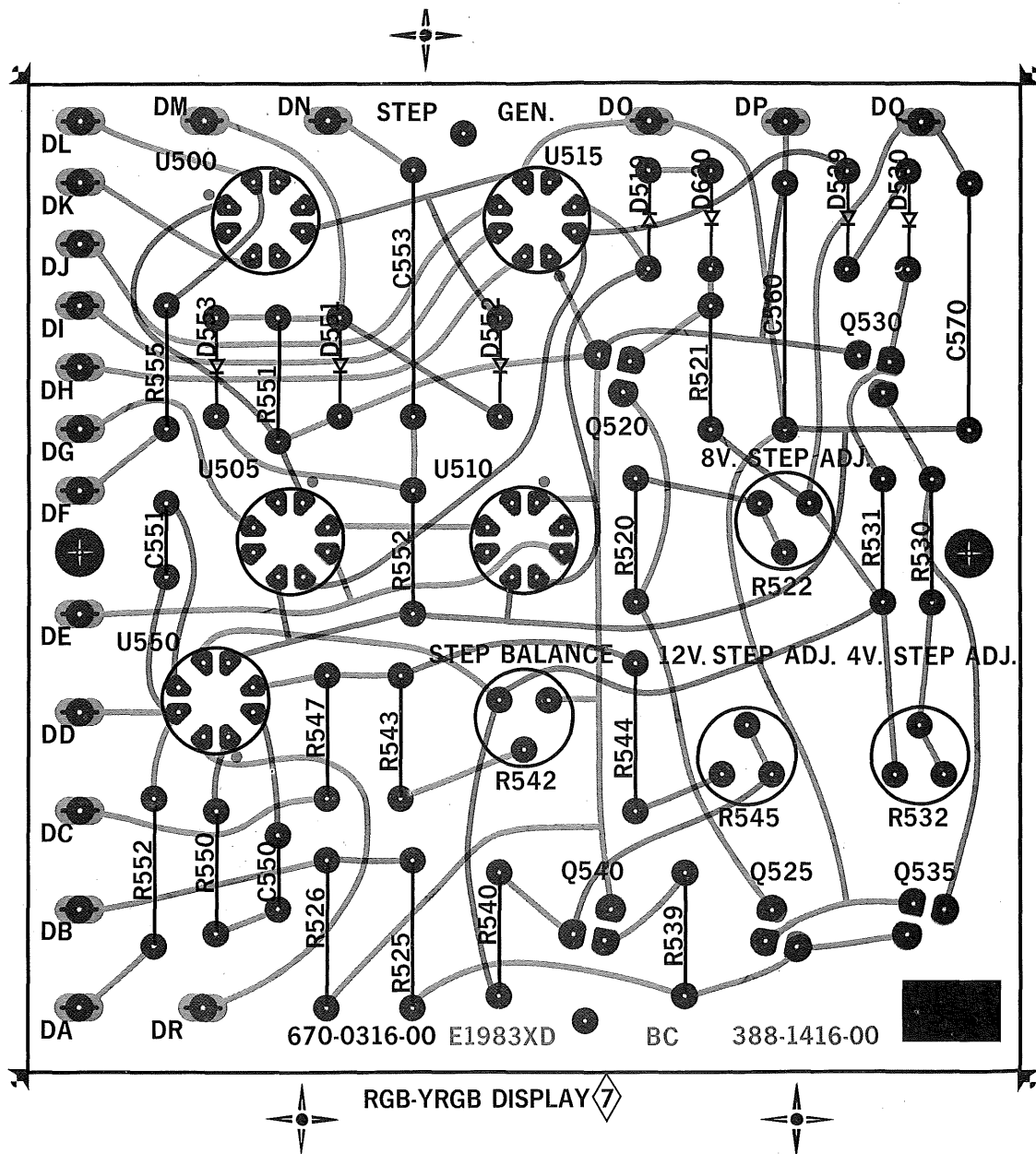


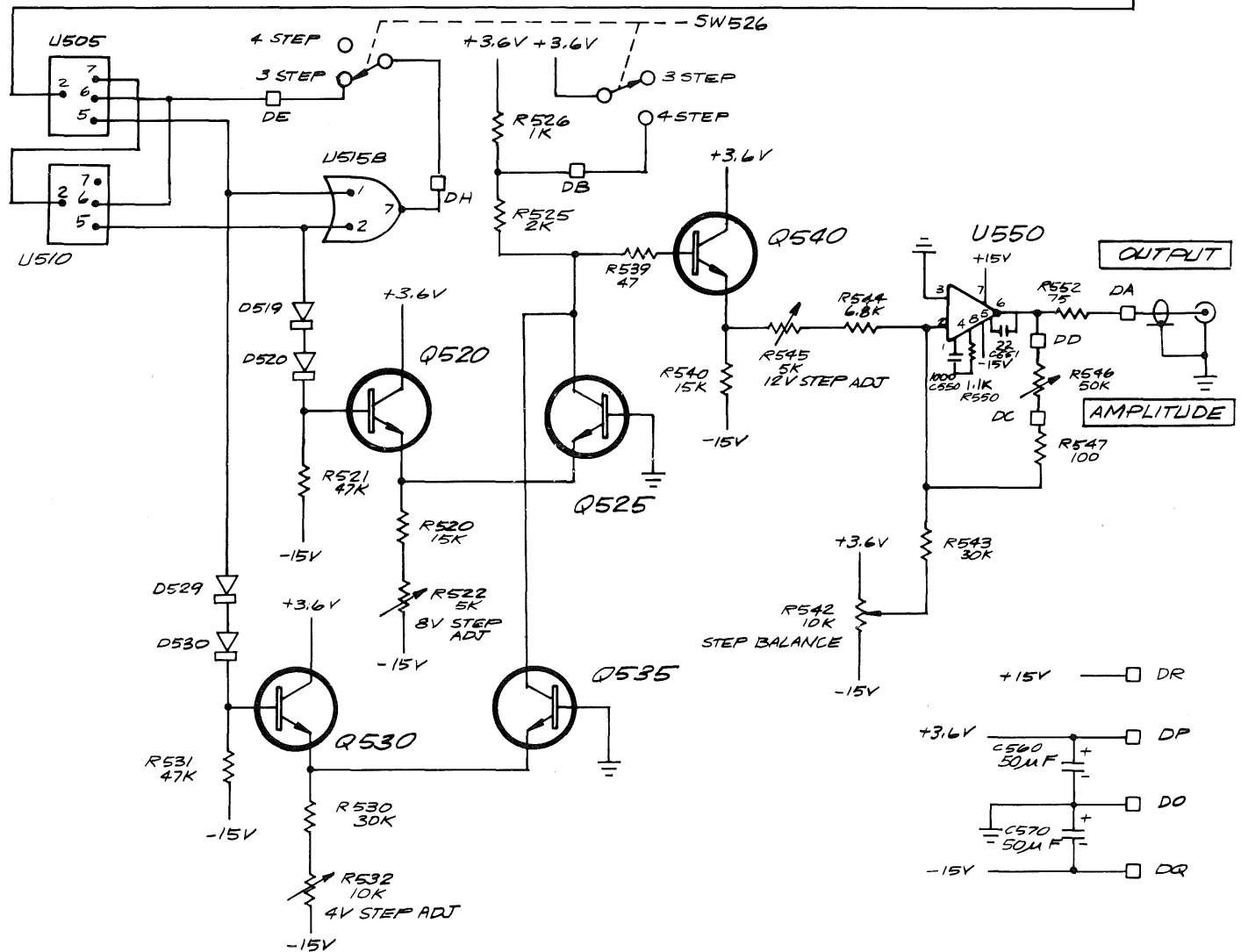
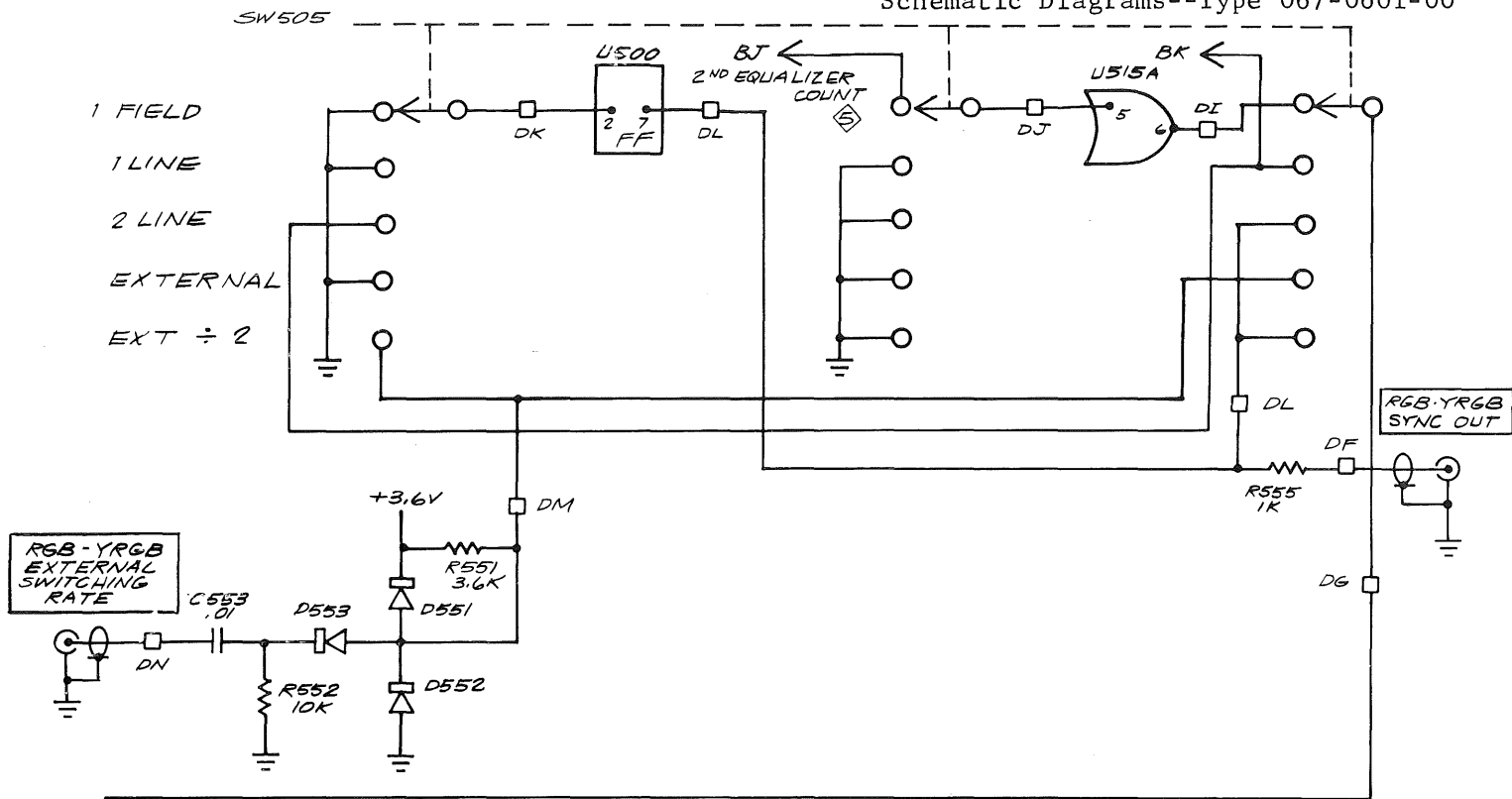


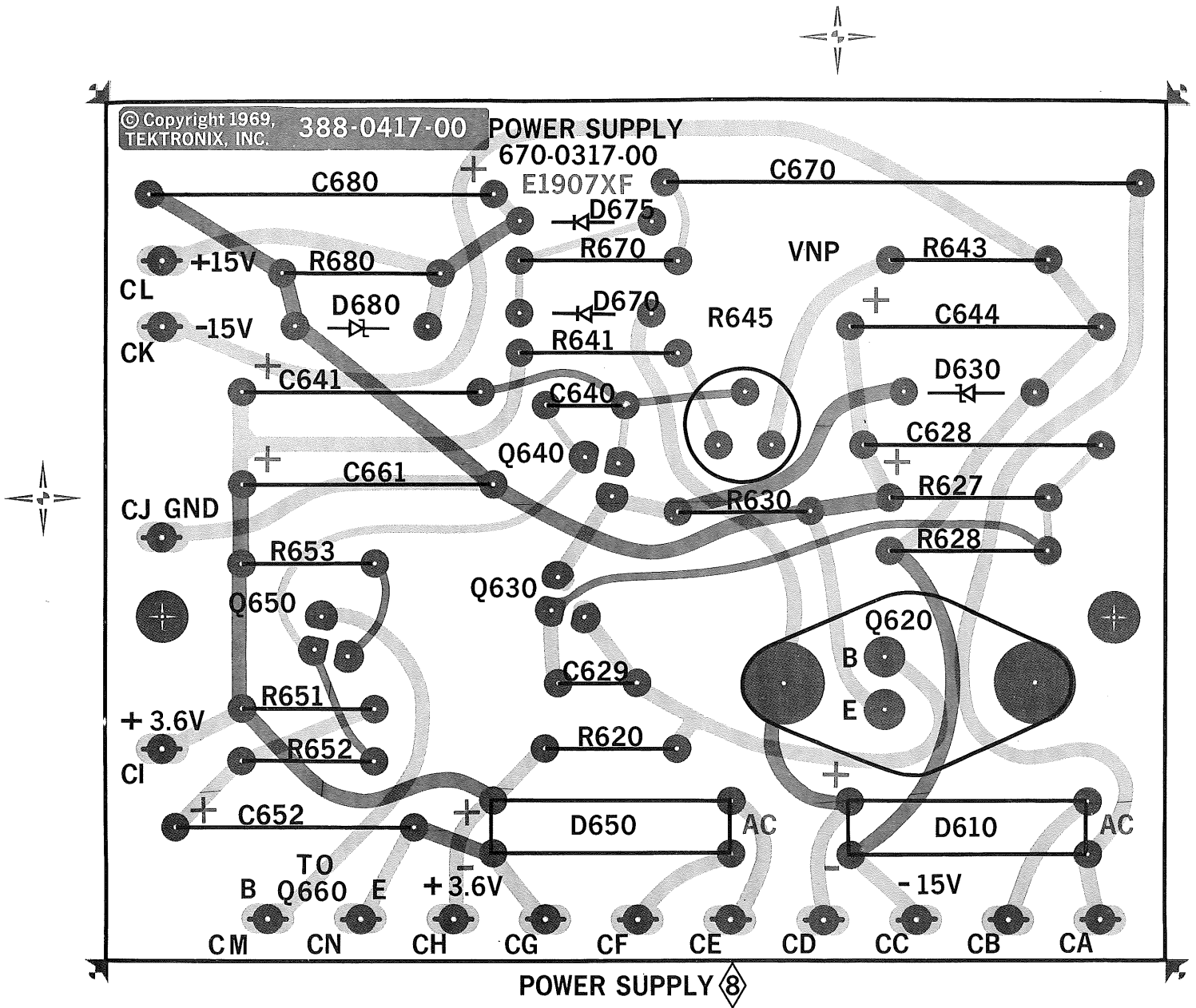


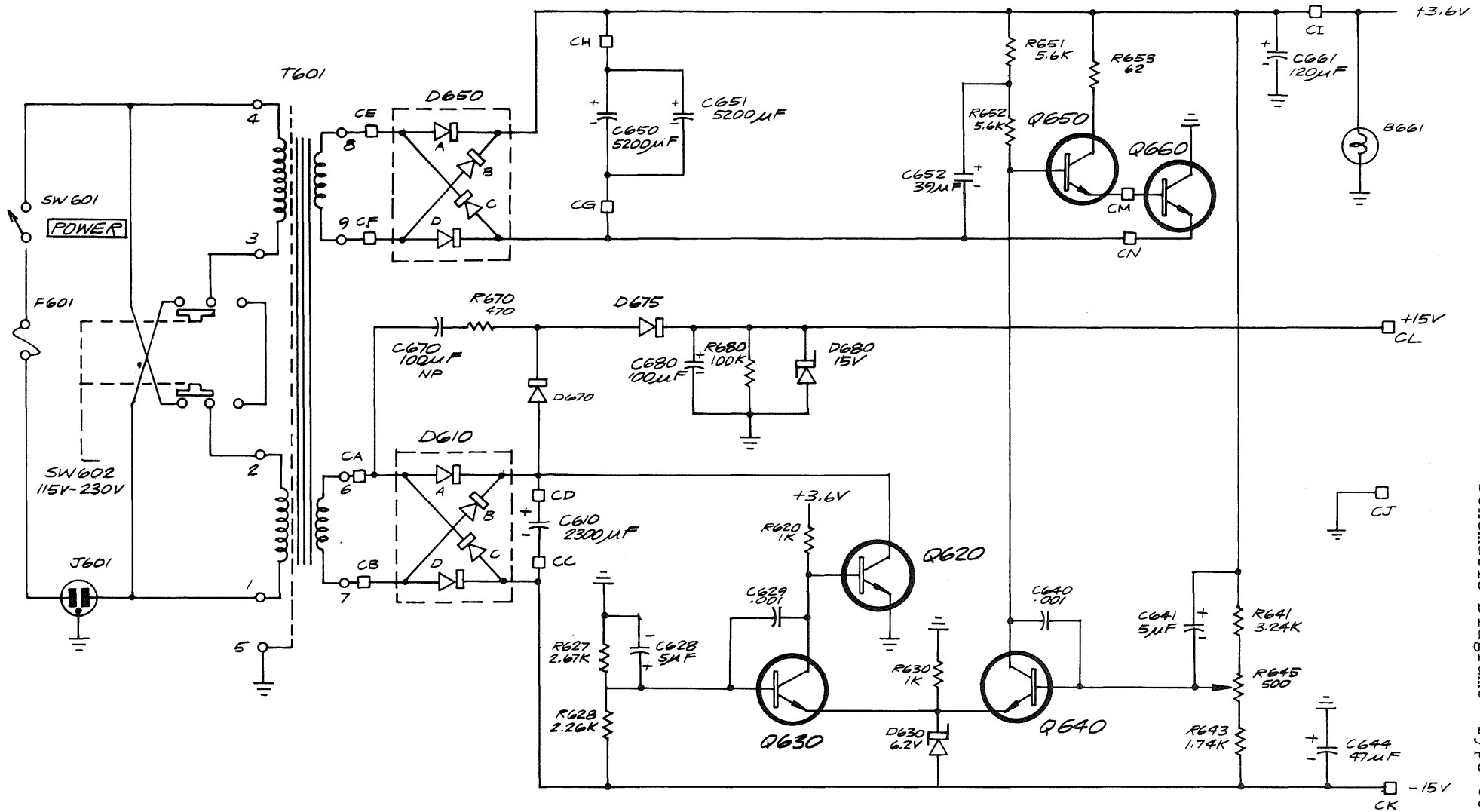
GROUNDS: B22
 BE
 A19

OUTPUT









Schematic Diagrams--Type 067-0601-00

SECTION 6

ELECTRICAL PARTS LIST

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff	Disc	Description
CHASSIS				
Bulb				
B661	136-0223-00			Socket, light
Capacitors				
Tolerance $\pm 20\%$ unless otherwise indicated.				
C610	290-0337-00		2300 μ F	Elect. 50 V +75%-10%
C611	290-0337-00		2300 μ F	Elect. 50 V +75%-10%
C650	290-0403-00		5200 μ F	Elect. 10 V +75%-10%
C651	290-0403-00		5200 μ F	Elect. 10 V +75%-10%
Fuse				
F601	159-0031-00		0.4A	3AG Slo-Blo
Connectors				
J100	131-0106-01			Receptacle, electrical
J270	131-0106-01			Receptacle, electrical
J421	131-0106-01			Receptacle, electrical
J438	131-0106-01			Receptacle, electrical
J601	131-0171-00			Motor base, 3 wire
P100	136-0156-01			Socket, 44 pin
Transistor				
Q660	*151-0148-00		Silicon	Selected from RCA 40250

Electrical Parts List--Type 067-0601-00

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff	Disc	Description
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Resistors

Resistors are fixed, composition, $\pm 10\%$ unless otherwise indicated.

R407	311-0220-00	1 k Ω , Var
R435	311-0220-00	1 k Ω , Var
R440	311-0191-00	10 k Ω , Var
R546	311-0224-00	50 k Ω , Var

Switches

Wired or Unwired

SW505	260-1115-00	Rotary	SWITCHING RATE
SW526	260-0834-00	Toggle	3 STEP-4 STEP
SW601	260-0834-00	Toggle	POWER
SW602	260-0675-00	Slide	115 V-230 V

Transformer

T601	120-0629-00	POWER
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STEP GENERATOR Circuit Board Assembly

*670-0316-00

Complete Board

Capacitors

Tolerance $\pm 20\%$ unless otherwise indicated.

C550	283-0594-00	0.001 μ F	Mica	100 V	1%
C551	281-0510-00	22 pF	Cer	500 V	
C553	285-0569-00	0.01 μ F	PTM	200 V	
C560	290-0158-00	50 μ F	Elect.	25 V	+75%-15%
C570	290-0158-00	50 μ F	Elect.	25 V	+75%-15%

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff	Disc	Description
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Semiconductor Device, Diodes

D519	*152-0185-00		Silicon	Replaceable by 1N4152
D520	*152-0185-00		Silicon	Replaceable by 1N4152
D529	*152-0185-00		Silicon	Replaceable by 1N4152
D530	*152-0185-00		Silicon	Replaceable by 1N4152
D551	*152-0185-00		Silicon	Replaceable by 1N4152
D552	*152-0185-00		Silicon	Replaceable by 1N4152
D553	*152-0185-00		Silicon	Replaceable by 1N4152

Transistor

Q520	151-0190-00		Silicon	2N3904
Q525	151-0190-00		Silicon	2N3904
Q530	151-0190-00		Silicon	2N3904
Q535	151-0190-00		Silicon	2N3904
Q540	151-0190-00		Silicon	2N3904

Resistors

Resistors are fixed, composition, $\pm 10\%$ unless otherwise indicated.

R520	315-0183-00	18 k Ω	1/4 W		5%
R521	315-0473-00	47 k Ω	1/4 W		5%
R522	311-0463-00	5 k Ω , Var			
R525	321-0222-00	2 k Ω	1/8 W	Prec	1%
R526	321-0193-00	1 k Ω	1/8 W	Prec	1%
R530	315-0333-00	33 k Ω	1/4 W		5%
R531	315-0473-00	47 k Ω	1/4 W		5%
R532	311-0541-00	20 k Ω , Var			
R539	315-0470-00	47 Ω	1/4 W		5%
R540	315-0153-00	15 k Ω	1/4 W		5%

Electrical Parts List--Type 067-0601-00

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff	Disc	Description
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Resistors (cont)

R542	311-0510-00		10 k Ω , Var	
R543	315-0303-00		30 k Ω	1/4 W 5%
R544	315-0682-00		6.8 k Ω	1/4 W 5%
R545	311-0463-00		5 k Ω , Var	
R547	315-0101-00		100 Ω	1/4 W 5%
R550	315-0112-00		1.1 k Ω	1/4 W 5%
R551	315-0362-00		3.6 k Ω	1/4 W 5%
R552	301-0750-00		75 Ω	1/2 W 5%
R555	315-0102-00		1 k Ω	1/4 W 5%

Integrated Circuits

U500	156-0012-00		Clocked J-K Flipflop	Replaceable by Fairchild μ L923
U505	156-0012-00		Clocked J-K Flipflop	Replaceable by Fairchild μ L923
U510	156-0012-00		Clocked J-K Flipflop	Replaceable by Fairchild μ L923
U515	156-0011-00		Medium Power Dual 2-Input Gate	
U550	156-0015-00		Replaceable by Fairchild μ L914 Oper. Ampl. TO-99	

POWER SUPPLY Circuit Board Assembly

*670-0317-00

Complete Board

Capacitors

Tolerance $\pm 20\%$ unless otherwise indicated.

C628	290-0026-00	5 μ F	Elect.	25 V
C629	283-0000-00	0.001 μ F	Cer	500 V
C640	283-0000-00	0.001 μ F	Cer	500 V
C641	290-0026-00	5 μ F	Elect.	25 V
C644	290-0272-00	47 μ F	Elect.	50 V

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff	Disc	Description
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Capacitors (cont)

C652	290-0297-00		39 μ F	Elect. 10 V
C661	290-0140-00		120 μ F	Elect. 10 V
C670	290-0215-00		100 μ F	Elect. 25 V
C680	290-0291-00		100 μ F	Elect. 25 V

Semiconductor Device, Diodes

D610	152-0199-00		Rectifier Bridge	MDA 962-3
D630	152-0227-00		Zener 1N753A	400 mW, 6.2 V, 5%
D650	152-0199-00		Rectifier Bridge	MDA 962-3
D670	*152-0107-00		Silicon	Replaceable by 1N647
D675	*152-0107-00		Silicon	Replaceable by 1N647

D680	152-0243-00		Zener	1N965B 400 mW, 15 V, 5%
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Transistors

Q620	*151-0148-00		Silicon	Selected from RCA 40250
Q630	151-0190-00		Silicon	2N3904
Q640	151-0190-00		Silicon	2N3904
Q650	*151-0192-00		Silicon	Replaceable by MPS 6521

Resistors

Resistors are fixed, composition, $\pm 10\%$ unless otherwise indicated.

R620	315-0102-00		1 k Ω	1/4 W		5%
R627	321-0234-00		2.67 k Ω	1/8 W	Prec	1%
R628	321-0227-00		2.26 k Ω	1/8 W	Prec	1%
R630	315-0102-00		1 k Ω	1/4 W		5%
R641	321-0242-00		3.24 k Ω	1/8 W	Prec	1%
R643	321-0216-00		1.74 k Ω	1/2 W	Prec	1%
R645	311-0480-00		500 Ω , Var			
R651	315-0562-00		5.6 k Ω	1/4 W		5%
R652	315-0562-00		5.6 k Ω	1/4 W		5%
R653	315-0620-00		62 Ω	1/4 W		5%

Electrical Parts List--Type 067-0601-00

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff	Disc	Description
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Resistors (cont)

R670	315-0471-00		470 Ω	1/4 W	5%
R680	315-0104-00		100 k Ω	1/4 W	5%

VIDEO GEN. Circuit Board Assembly

*670-0318-00

Complete Board

Capacitors

Tolerance $\pm 20\%$ unless otherwise indicated.

C203	283-0032-00		470 pF	Cer	500 V	5%
C204	283-0003-00		0.01 μ F	Cer	150 V	
C264	283-0084-00		270 pF	Cer	1000 V	5%
C310	283-0655-00		0.0033 μ F	Mica	500 V	1%
C315	283-0594-00		0.001 μ F	Mica	100 V	1%
C330	283-0655-00		0.0033 μ F	Mica	500 V	1%
C340	283-0594-00		0.001 μ F	Mica	100 V	1%
C345	285-0598-00		0.01 μ F	PTM	100 V	5%
C355	285-0633-00		0.22 μ F	PTM	100 V	10%
C427	281-0079-00		1.5-9.1 pF, Var	Air		
C443	281-0501-00		4.7 pF	Cer	500 V	± 1 pF
C450	290-0158-00		50 μ F	Elect.	25 V	+75%-15%
C460	290-0158-00		50 μ F	Elect.	25 V	+75%-15%

Semiconductor Device, Diodes

D200	*152-0185-00	Silicon	Replaceable by 1N4152
D253	*152-0185-00	Silicon	Replaceable by 1N4152
D254	*152-0185-00	Silicon	Replaceable by 1N4152
D265	*152-0185-00	Silicon	Replaceable by 1N4152
D271	*152-0185-00	Silicon	Replaceable by 1N4152

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff	Disc	Description
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Semiconductor Device, Diodes (cont)

D272	*152-0185-00		Silicon	Replaceable by 1N4152
D273	*152-0185-00		Silicon	Replaceable by 1N4152
D274	*152-0185-00		Silicon	Replaceable by 1N4152
D405	*152-0185-00		Silicon	Replaceable by 1N4152
D406	*152-0185-00		Silicon	Replaceable by 1N4152
D407	*152-0185-00		Silicon	Replaceable by 1N4152
D410	*152-0185-00		Silicon	Replaceable by 1N4152

Transistors

Q200	151-0190-00		Silicon	2N3906
Q203	151-0224-00		Silicon	2N3692
Q265	151-0224-00		Silicon	2N3692
Q275	151-0190-00		Silicon	2N3904
Q400	151-0190-00		Silicon	2N3904
Q405	151-0190-00		Silicon	2N3904
Q410	151-0190-00		Silicon	2N3904
Q415	151-0188-00		Silicon	2N3906
Q420	*151-0134-00		Silicon	Replaceable by 2N2905
Q425	151-0190-00		Silicon	2N3906
Q430	151-0190-00		Silicon	2N3906
Q435	151-0190-00		Silicon	2N3906
Q440	151-0190-00		Silicon	2N3906

Resistors

Resistors are fixed, composition, $\pm 10\%$ unless otherwise indicated.

R200	315-0332-00	3.3 k Ω	1/4 W	5%
R201	315-0392-00	3.9 k Ω	1/4 W	5%
R202	315-0681-00	680 Ω	1/4 W	5%
R203	315-0102-00	1 k Ω	1/4 W	5%
R204	315-0273-00	27 k Ω	1/4 W	5%

Electrical Parts List--Type 067-0601-00

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff Disc	Description
Resistors (cont)			
R252	315-0153-00	15 k Ω	1/4 W 5%
R253	315-0102-00	1 k Ω	1/4 W 5%
R254	315-0102-00	1 k Ω	1/4 W 5%
R255	315-0153-00	15 k Ω	1/4 W 5%
R264	315-0102-00	1 k Ω	1/4 W 5%
R265	315-0681-00	680 Ω	1/4 W 5%
R266	315-0153-00	15 k Ω	1/4 W 5%
R270	315-0103-00	10 k Ω	1/4 W 5%
R274	315-0153-00	15 k Ω	1/4 W 5%
R275	315-0102-00	1 k Ω	1/4 W 5%
R400	315-0103-00	10 k Ω	1/4 W 5%
R401	315-0103-00	10 k Ω	1/4 W 5%
R405	315-0102-00	1 k Ω	1/4 W 5%
R406	315-0102-00	1 k Ω	1/4 W 5%
R410	315-0470-00	47 Ω	1/4 W 5%
R411	315-0103-00	10 k Ω	1/4 W 5%
R415	315-0102-00	1 k Ω	1/4 W 5%
R416	315-0153-00	15 k Ω	1/4 W 5%
R417	315-0122-00	1.2 k Ω	1/4 W 5%
R420	315-0471-00	470 Ω	1/4 W 5%
R421	302-0680-00	68 Ω	1/2 W
R425	311-0462-00	1 k Ω , Var	
R426	315-0103-00	10 k Ω	1/4 W 5%
R427	315-0103-00	10 k Ω	1/4 W 5%
R430	315-0103-00	10 k Ω	1/4 W 5%
R436	315-0470-00	47 Ω	1/4 W 5%
R437	315-0102-00	1 k Ω	1/4 W 5%
R438	302-0680-00	68 Ω	1/2 W
R441	315-0331-00	330 Ω	1/4 W 5%
R442	315-0103-00	10 k Ω	1/4 W 5%

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff Disc	Description
Resistors (cont)			
R443	315-0682-00	6.8 k Ω 1/4 W	5%
Integrated Circuits			
U200	156-0012-00	Clocked J-K Flipflop	Replaceable by Fairchild μ L923
U203	156-0010-00	Buffer-Inverter	Replaceable by Fairchild μ L900
U205	156-0012-00	Clocked J-K Flipflop	Replaceable by Fairchild μ L923
U208	156-0010-00	Buffer-Inverter	Replaceable by Fairchild μ L900
U210	156-0012-00	Clocked J-K Flipflop	Replaceable by Fairchild μ L923
U213	156-0010-00	Buffer-Inverter	Replaceable by Fairchild μ L900
U215	156-0012-00	Clocked J-K Flipflop	Replaceable by Fairchild μ L923
U218	156-0010-00	Buffer-Inverter	Replaceable by Fairchild μ L900
U220	156-0012-00	Clocked J-K Flipflop	Replaceable by Fairchild μ L923
U223	156-0010-00	Buffer-Inverter	Replaceable by Fairchild μ L900
U225	156-0012-00	Clocked J-K Flipflop	Replaceable by Fairchild μ L923
U230	156-0012-00	Clocked J-K Flipflop	Replaceable by Fairchild μ L923
U235	156-0012-00	Clocked J-K Flipflop	Replaceable by Fairchild μ L923
U240	156-0012-00	Clocked J-K Flipflop	Replaceable by Fairchild μ L923
U245	156-0012-00	Clocked J-K Flipflop	Replaceable by Fairchild μ L923

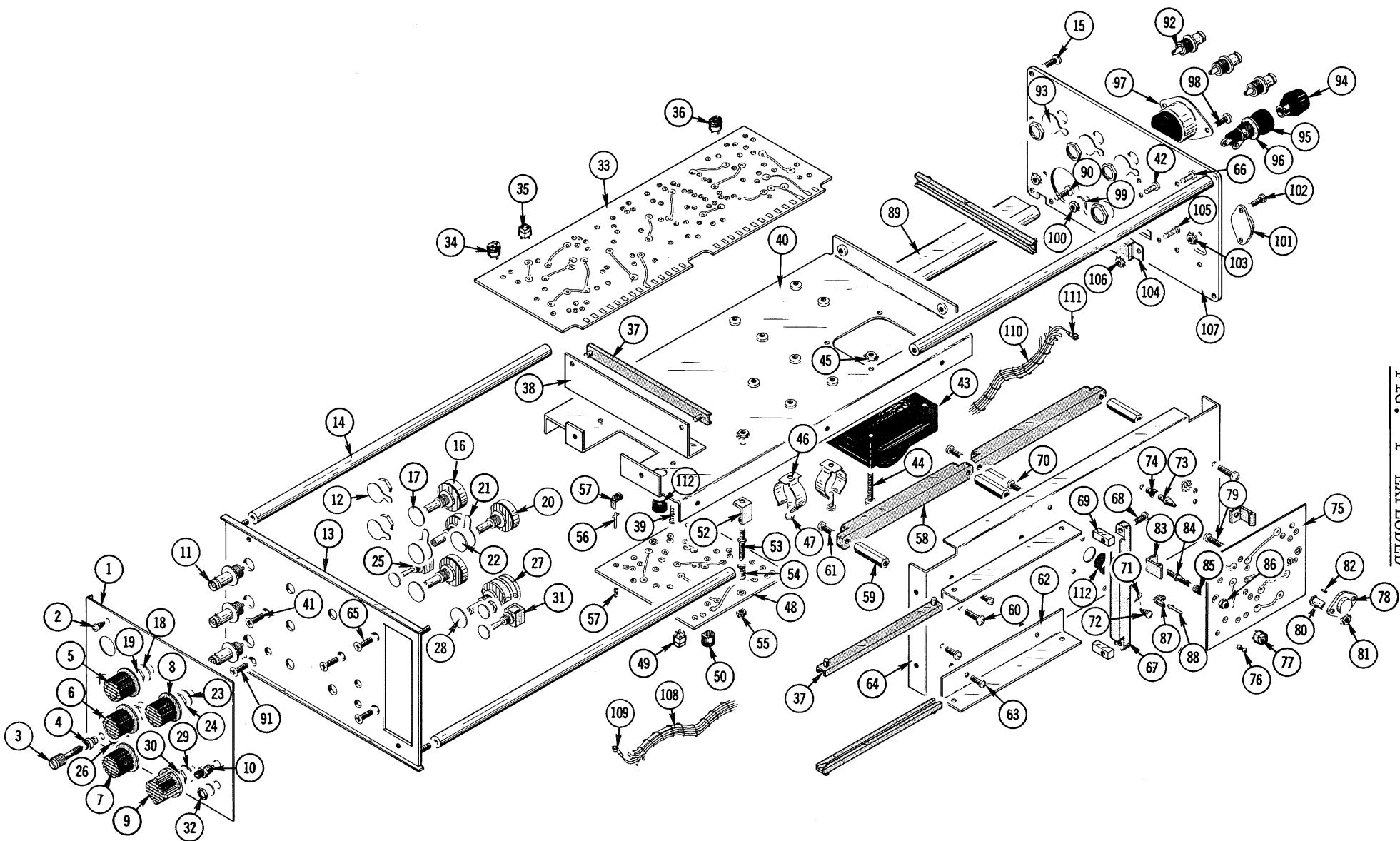
Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff Disc	Description
Integrated Circuits (cont)			
U250	156-0012-00		Clocked J-K Flipflop Replaceable by Fairchild μ L923
U253	156-0011-00		Medium Power Dual 2-Input Gate Replaceable by Fairchild μ L914
U255	156-0012-00		Clocked J-K Flipflop Replaceable by Fairchild μ L923
U258	156-0011-00		Medium Power Dual 2-Input Gate Replaceable by Fairchild μ L914
U260	156-0012-00		Clocked J-K Flipflop Replaceable by Fairchild μ L923
U263	156-0011-00		Medium Power Dual 2-Input Gate Replaceable by Fairchild μ L914
U265	156-0012-00		Clocked J-K Flipflop Replaceable by Fairchild μ L923
U268	156-0011-00		Medium Power Dual 2-Input Gate Replaceable by Fairchild μ L914
U270	156-0012-00		Clocked J-K Flipflop Replaceable by Fairchild μ L923
U273	156-0011-00		Medium Power Dual 2-Input Gate Replaceable by Fairchild μ L914
U300	156-0011-00		Medium Power Dual 2-Input Gate Replaceable by Fairchild μ L914
U305	156-0012-00		Clocked J-K Flipflop Replaceable by Fairchild μ L923
U310	156-0011-00		Medium Power Dual 2-Input Gate Replaceable by Fairchild μ L914
U315	156-0011-00		Medium Power Dual 2-Input Gate Replaceable by Fairchild μ L914
U320	156-0011-00		Medium Power Dual 2-Input Gate Replaceable by Fairchild μ L914
U325	156-0012-00		Clocked J-K Flipflop Replaceable by Fairchild μ L923
U330	156-0011-00		Medium Power Dual 2-Input Gate Replaceable by Fairchild μ L914
U335	156-0011-00		Medium Power Dual 2-Input Gate Replaceable by Fairchild μ L914
U340	156-0011-00		Medium Power Dual 2-Input Gate Replaceable by Fairchild μ L914
U345	156-0011-00		Medium Power Dual 2-Input Gate Replaceable by Fairchild μ L914
U350	156-0011-00		Medium Power Dual 2-Input Gate Replaceable by Fairchild μ L914

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff	Disc	Description
Integrated Circuits (cont)				
5	156-0011-00			Medium Power Dual 2-Input Gate Replaceable by Fairchild μ L914
0	156-0011-00			Medium Power Dual 2-Input Gate Replaceable by Fairchild μ L914

FIG. 1 EXPLODED



SECTION 7

MECHANICAL PARTS LIST

FIG. 1 EXPLODED

Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	No. Disc	Q						Description
				Y	1	2	3	4	5	
1-1	333-1256-00			1						PANEL, front
	- - - - -			-						mounting hardware: (not included w/panel)
-2	213-0088-00			1						SCREW, thread forming, #4 x 1/4 inch, PHS
-3	214-0553-00			1						LATCH SCREW
-4	358-0255-00			1						BUSHING, latch screw
-5	366-0173-00			1						KNOB, charcoal--AMPLITUDE (COMPOSITE VIDEO)
	- - - - -			-						knob includes:
	213-0004-00			1						SETSCREW, 6-32 x 3/16 inch, HSS
-6	366-0173-00			1						KNOB, charcoal--AMPLITUDE (COMPOSITE SYNC)
	- - - - -			-						knob includes:
	213-0004-00			1						SETSCREW, 6-32 x 3/16 inch, HSS
-7	366-0173-00			1						KNOB, charcoal--AMPLITUDE
	- - - - -			-						(RGB or YRGB DISPLAY)
	- - - - -			-						knob includes:
	213-0004-00			1						SETSCREW, 6-32 x 3/16 inch, HSS
-8	366-0173-00			1						KNOB, charcoal--AVERAGE PICTURE LEVEL
	- - - - -			-						(COMPOSITE VIDEO)
	- - - - -			-						knob includes:
	213-0004-00			1						SETSCREW, 6-32 x 3/16 inch, HSS
-9	366-0322-01			1						KNOB, charcoal--SWITCHING RATE
	- - - - -			-						(RGB or YRGB DISPLAY)
	- - - - -			-						knob includes:
	213-0004-00			1						SETSCREW, 6-32 x 3/16 inch, HSS
-10	136-0223-00			1						SOCKET, light
	- - - - -			-						mounting hardware: (not included w/socket)
	210-0046-00			1						WASHER, lock, internal, 0.261 ID x 0.400 OD
	210-0562-00			1						NUT, hex., 1/4-40 x 5/16 inch
-11	131-0106-01			3						CONNECTOR, electrical, BNC
	- - - - -			-						mounting hardware for each: (not included w/connector)
-12	210-0255-00			1						LUG, solder, 3/8 inch diameter
-13	386-1702-00			1						SUBPANEL, front
-14	384-0615-00			3						ROD, spacer
	- - - - -			-						mounting hardware for each: (not included w/rod)
	- - - - -			-						w/rod)
-15	212-0023-00			1						SCREW, 8-32 x 3/8 inch, PHS
-16	- - - - -			2						RESISTOR, variable
	- - - - -			-						mounting hardware for each: (not included w/resistor)
	- - - - -			-						w/resistor)
-17	210-0012-00			1						WASHER, lock, internal, 3/8 ID x 1/2 inch OD
-18	210-0978-00			1						WASHER, flat, 3/8 ID x 1/2 inch OD
-19	210-0590-00			1						NUT, hex., 3/8-32 x 7/16 inch

FIG. 1 EXPLODED (CONT)

Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff Disc	Q † Y 1 2 3 4 5	Description
1-20	- - - - -		2	RESISTOR, variable
	- - - - -		-	mounting hardware for each: (Not included
	- - - - -		-	w/resistor)
-21	210-0207-00		1	LUG, solder, 3/8 inch diameter
-22	210-0012-00		1	WASHER, lock, internal, 3/8 ID x 1/2 inch OD
-23	210-0978-00		1	WASHER, flat, 3/8 ID x 1/2 inch OD
-24	210-0590-00		1	NUT, hex., 3/8-32 x 7/16 inch
-25	260-0834-00		1	SWITCH, toggle--3 STEP 4 STEP
	- - - - -		-	mounting hardware: (not included w/switch)
	210-0046-00		1	WASHER, lock, internal, 0.261 ID x 0.400 OD
	210-0940-00		1	WASHER, flat, 1/4 ID x 3/8 inch OD
-26	210-0562-00		1	NUT, hex., 1/4-40 x 5/16 inch
-27	260-1115-00		1	SWITCH, unwired--SWITCHING RATE
	- - - - -		-	mounting hardware: (not included w/switch)
-28	210-0012-00		1	WASHER, lock, internal, 3/8 ID x 1/2 inch OD
-29	210-0978-00		1	WASHER, flat, 3/8 ID x 1/2 inch OD
-30	210-0590-00		1	NUT, hex., 3/8-32 x 7/16 inch
-31	260-0834-00		1	SWITCH, toggle--POWER ON
	- - - - -		-	mounting hardware: (not included w/switch)
	210-0046-00		1	WASHER, lock, internal, 0.261 ID x 0.400 OD
	210-0940-00		1	WASHER, flat, 1/4 ID x 3/8 inch OD
-32	210-0562-00		1	NUT, hex., 1/4-40 x 5/16 inch
-33	670-0318-00		1	ASSEMBLY, circuit board--VIDEO GENERATOR
	- - - - -		-	assembly includes:
	388-1418-00		1	BOARD, circuit
-34	136-0183-00		1	SOCKET, transistor, 3 pin
-35	136-0220-00		12	SOCKET, transistor, 3 pin, square shape
-36	136-0237-00		38	SOCKET, transistor, 8 pin
-37	351-0087-00		4	GUIDE, circuit board, plastic
-38	407-0732-00		1	BRACKET, circuit board guide, front
	- - - - -		-	mounting hardware: (not included w/bracket)
-39	211-0504-00		2	SCREW, 6-32 x 1/4 inch, PHS

FIG. 1 EXPLODED (CONT)

Fig. & Index No.	Tektronix Part No.	Serial/Model Eff	No. Disc	Q					Description
				1	2	3	4	5	
1-40	441-0920-00			1					CHASSIS, power
	- - - - -			-					mounting hardware: (not included w/chassis)
-41	211-0538-00			2					SCREW, 6032 x 0.312 inch, 100° csk, FHS
-42	211-0504-00			2					SCREW, 6-32 x 1/4 inch, PHS
-43	- - - - -			1					TRANSFORMER
	- - - - -			-					mounting hardware: (not included w/
	- - - - -			-					transformer)
-44	211-0517-00			4					SCREW, 6-32 x 1 inch, PHS
-45	210-0457-00			4					NUT, keps, 6-32 x 5/16 inch
-46	344-0118-00			8					CLIP, capacitor mounting
	- - - - -			-					mounting hardware for each: (not included
	- - - - -								w/clip)
-47	211-0503-00			1					SCREW, 6-32 x 0.188 inch, PHS
-48	670-0316-00			1					ASSEMBLY, circuit board--STEP GENERATOR
	- - - - -			-					assembly includes:
	388-1416-00			1					BOARD, circuit
-49	136-0220-00			5					SOCKET, transistor, 3 pin, square shape
-50	136-0237-00			5					SOCKET, transistor, 8 pin
-51	136-0263-01			18					SOCKET, pin terminal,
	- - - - -			-					circuit board mounting
	- - - - -			-					mounting hardware: (not included w/assembly)
-52	344-0147-00			2					CLIP, circuit board, plastic
-53	214-0967-00			2					PIN, guide
-54	214-0966-00			2					SPRING, helical, compression
-55	210-0589-00			2					NUT, locking, 4-40 x 1/4 inch
-56	131-0513-02			24					TERMINAL, feed thru, 0.83 inch long
	- - - - -			-					mounting hardware for each: (not included
	- - - - -			-					w/terminal)
-57	358-0329-00			1					BUSHING, feed thru terminal, plastic
-58	131-0292-01			2					CONNECTOR, electrical, 56 pin contact
	- - - - -			-					mounting hardware for each: (not included
	- - - - -			-					w/connector)
-59	129-0093-00			2					POST, hex., 0.938 inch long
-60	212-0023-00			2					SCREW, 8-32 x 3/8 inch, PHS
-61	211-0014-00			2					SCREW, 4-40 x 0.500 inch, PHS

FIG. 1 EXPLODED (CONT)

Fig. & Index No.	Tektronix Part No.	Serial/Model Eff	No. Disc	Q t y						Description
					1	2	3	4	5	
1-62	407-0734-00			2						BRACKET, circuit board guide, right & left
	- - - - -			-						mounting hardware for each: (not included
	- - - - -			-						w/bracket)
-63	211-0504-00			2						SCREW, 6-32 x 1/4 inch, PHS
-64	441-0919-00			1						CHASSIS, main
	- - - - -			-						mounting hardware: (not included w/chassis,
-65	211-0538-00			3						SCREW, 6-32 x 0.312 inch, 100° csk, PHS
-66	211-0504-00			2						SCREW, 6-32 x 1/4 inch, PHS
-67	136-0156-01			1						SOCKET, 44 pin, slotted
	- - - - -			-						mounting hardware: (not included w/socket,
-68	211-0014-00			2						SCREW, 4-40 x 0.500 inch, PHS
-69	391-0085-00			2						BLOCK, connector mounting, 0.500 inch long
-70	212-0023-00			2						SCREW, 8-32 x 3/8 inch, PHS
-71	210-0201-00			1						LUG, solder, SE #4
	- - - - -			-						mounting hardware: (not included w/lug)
-72	213-0044-00			1						SCREW, thread forming, 5-32 x 3/16 inch, PHS
-73	105-0065-00			4						SUPPORT, circuit board, plastic
	- - - - -			-						mounting hardware for each: (not included
	- - - - -			-						w/support)
-74	361-0007-00			1						SPACER, plastic, 5/32 inch long
-75	670-0317-00			1						ASSEMBLY, circuit board--POWER SUPPLY
	- - - - -			-						assembly includes:
	388-0417-00			1						BOARD circuit
-76	136-0263-01			14						SOCKET, pin terminal
	- - - - -			-						circuit board mounting
-77	136-0220-00			3						SOCKET, transistor, 3 pin, square shape
-78	- - - - -			1						TRANSISTOR
	- - - - -			-						mounting hardware: (not included
	- - - - -			-						w/transistor)
-79	211-0511-00			2						SCREW, 6-32 x 0.500 inch, PHS
-80	220-0435-00			2						NUT, captive, 6-32 x 0.187 inch
-81	210-0457-00			2						NUT, keps, 6-32 x 5/16 inch
-82	136-0234-00			2						RECEPTACLE, electrical
	- - - - -			-						mounting hardware: (not included w/
	- - - - -			-						assembly)
	210-0586-00			1						NUT, keps, 4-40 x 1/4 inch
-83	344-0147-00			2						CLIP, circuit board, plastic
-84	214-0967-00			2						PIN, guide
-85	214-0966-00			2						SPRING, helical, compression
-86	210-0589-00			2						NUT, locking, 4-40 x 1/4 inch

FIG. 1 EXPLODED (CONT)

Fig. & Index No.	Tektronix Part No.	Serial/Model Eff	No. Disc	Q t Y	1	2	3	4	5	Description
1-87	131-0513-00			8						TERMINAL, feed thru, 1.384 inches long
	- - - - -			-						mounting hardware for each: (not included
	- - - - -			-						w/terminal)
-88	358-0329-00			1						BUSHING, feed thru terminal, plastic
-89	351-0096-00			1						GUIDE, rail
	- - - - -			-						mounting hardware: (not included w/guide)
-90	212-0023-00			2						SCREW, 8-32 x 3/8 inch, PHS
-91	211-0538-00			1						SCREW, 6-32 x 5/16 inch, 100° csk, FHS
-92	131-0106-01			3						CONNECTOR, electrical, BNC
	- - - - -			-						mounting hardware for each: (not included
	- - - - -			-						w/connector)
-93	210-0255-00			1						LUG, solder, 3/8 inch diameter
	210-0413-00			1						NUT, hex., 3/8-32 x 1/2 inch
	352-0002-00			1						ASSEMBLY, fuse holder
	- - - - -			-						assembly includes:
-94	200-0582-00			1						CAP, fuse, black
-95	352-0010-00			1						HOLDER, fuse
-96	210-0873-00			1						WASHER, rubber, 1/2 ID x 11/16 inch OD
	- - - - -			1						NUT
-97	131-0171-00			1						CONNECTOR, motor base, 3 wire
	- - - - -			-						mounting hardware: (not included w/
	- - - - -			-						connector)
-98	211-0542-00			2						SCREW, 6-32 x 0.312 inch, THS
-99	210-0202-00			1						LUG, solder, SE #6
-100	210-0457-00			2						NUT, keps, 6-32 x 5/16 inch
-101	- - - - -			1						TRANSISTOR
	- - - - -			-						mounting hardware: (not included w/
	- - - - -			-						transistor)
-102	211-0507-00			2						SCREW, 6-32 x 0.312 inch, PHS
-103	210-0457-00			2						NUT, keps, 6-32 x 5/16 inch

FIG. 1 EXPLODED (CONT)

Fig. & Index No.	Tektronix Part No.	Serial/Model Eff	No. Disc	Q † Y						Description
					1	2	3	4	5	
1-104	260-0675-00			1						SWITCH, slide--115 V-230V
	- - - - -			-						mounting hardware: (not included w/switch)
-105	211-0008-00			2						SCREW, 4-40 x 0.250 inch, PHS
-106	210-0586-00			2						NUT, keps, 4-40 x 1/4 inch
-107	386-1639-00			1						PANEL, rear
-108	179-1480-00			1						WIRING HARNESS, main
	- - - - -			-						wiring harness includes:
-109	131-0512-00			8						CONNECTOR, terminal, 0.315 inch long
-110	179-1481-00			1						WIRING HARNESS, power
	- - - - -			-						wiring harness includes:
-111	131-0512-00			24						CONNECTOR, terminal, 0.315 inch long
-112	348-0063-00			2						GROMMET, plastic, 1/2 inch diameter

FIG. 2 CABINET

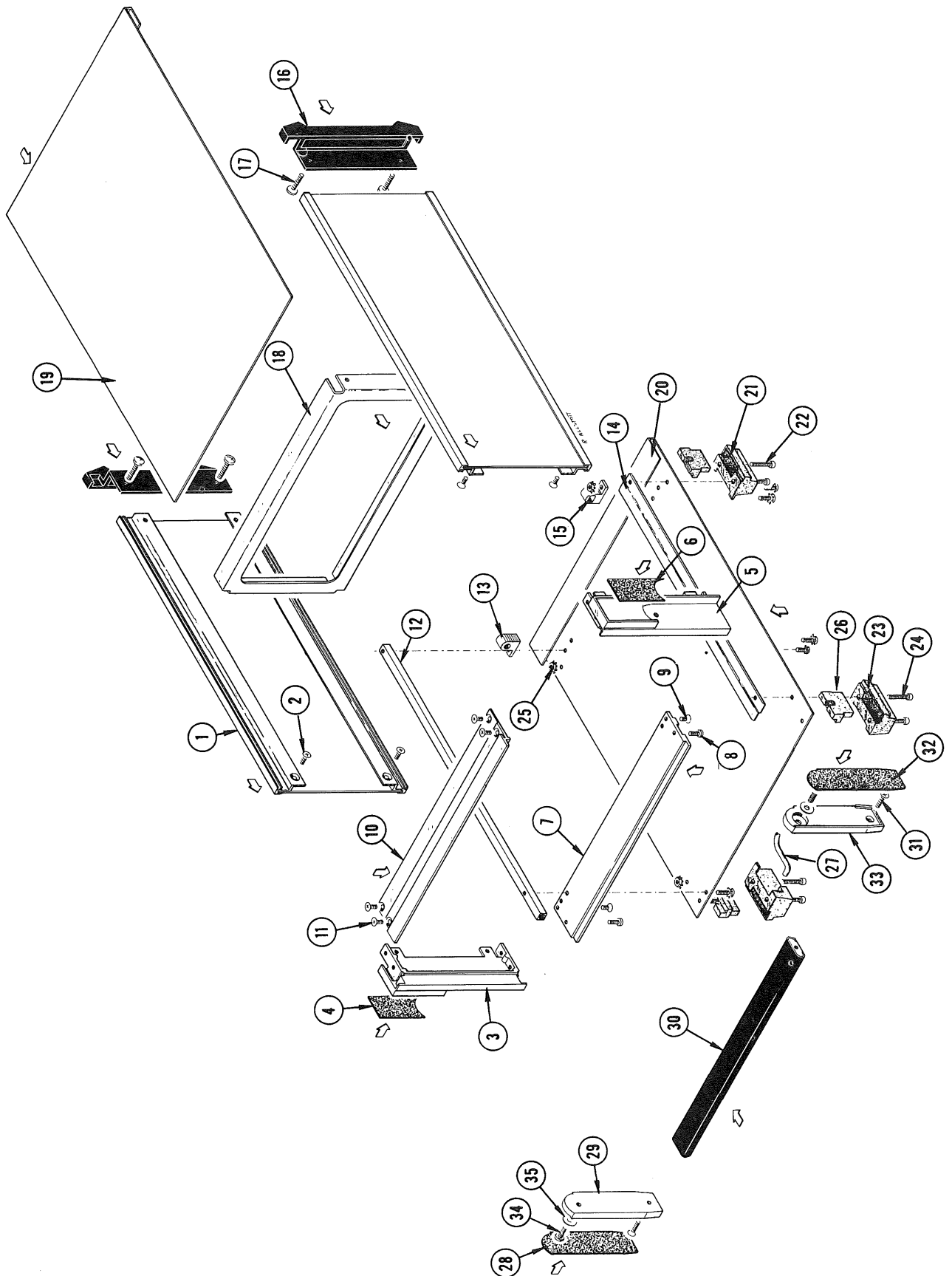


FIG. 2 CABINET

Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	No. Disc	Q ↑ Y						Description
					1	2	3	4	5	
2-	437-0078-00			1						CABINET
	- - - - -			-						cabinet includes:
-1	386-0141-00			2						PLATE, side
	- - - - -			-						mounting hardware for each:
	- - - - -			-						(not included w/plate)
-2	212-0002-00			2						SCREW, 8-32 x 1/4 inch, FHS
-3	426-0253-00			1						FRAME, front, left
-4	377-0121-00			1						INSERT, frame, left
-5	426-0252-00			1						FRAME, front, right
-6	377-0120-00			1						INSERT, frame, right
-7	426-0254-00			1						FRAME, front, bottom
	- - - - -			-						mounting hardware: (not included w/frame)
-8	212-0004-00			2						SCREW, 8-32 x 5/16 inch, PHS
-9	212-0002-00			2						SCREW, 8-32 x 1/4 inch, FHS
-10	426-0255-00			1						FRAME, front, top
	- - - - -			-						mounting hardware: (not included w/frame)
-11	212-0002-00			4						SCREW, 8-32 x 1/4 inch, FHS
-12	351-0093-00			1						GUIDE, left
	- - - - -			-						mounting hardware: (not included w/guide)
	212-0023-00			1						SCREW, 8-32 x 3/8 inch, PHS
-13	358-0293-01			1						BUSHING, plug-in securing, left
	- - - - -			-						mounting hardware:
	- - - - -			-						(not included w/bushing)
	211-0510-00			1						SCREW, 6-32 x 3/8 inch, PHS
	210-0005-00			1						LOCKWASHER, external, #6
	212-0001-00			1						SCREW, 8-32 x 1/4 inch, PHS
	210-0007-00			1						LOCKWASHER, external, #8
-14	351-0092-00			1						GUIDE, right
-15	358-0294-01			1						BUSHING, plug-in securing, right
	- - - - -			-						mounting hardware:
	- - - - -			-						(not included w/bushing)
	212-0001-00			1						SCREW, 8-32 x 1/4 inch, PHS
	210-0007-00			1						LOCKWASHER, external, #8
	211-0510-00			1						SCREW, 6-32 x 3/8 inch, PHS
	210-0005-00			1						LOCKWASHER, external, #6
	210-0457-00			1						NUT, keps, 6-32 x 5/16 inch

FIG. 2 CABINET (cont)

Fig. & Index No.	Tektronix Part No.	Serial/Model Eff	No. Disc	Q ↑ Y						Description
					1	2	3	4	5	
2-16	348-0075-00			2						FOOT, rear guard, left and right
	- - - - -			-						mounting hardware for each:
	- - - - -			-						(not included w/foot)
-17	212-0004-00			2						SCREW, 8-32 x 5/16 inch, PHS
-18	386-0139-00			1						PLATE, rear
-19	386-0138-00			1						PLATE, top
-20	386-0140-00			1						PLATE, bottom
-21	348-0073-00			2						FOOT, left front and right rear
	- - - - -			-						mounting hardware for each:
	- - - - -			-						(not included w/foot)
-22	211-0532-00			2						SCREW, 6-32 x 3/4 inch, FIL HS
-23	348-0074-00			2						FOOT, right front and left rear
	- - - - -			-						mounting hardware for each:
	- - - - -			-						(not included w/foot)
-24	211-0532-00			2						SCREW, 6-32 x 3/4 inch, FIL HS
-25	210-0457-00			2						NUT, keps, 6-32 x 5/16 inch
-26	377-0119-00			4						INSERT, foot
-27	348-0072-00			1						FOOT, flip-stand bail
-28	377-0123-00			1						INSERT, pivot, left
-29	367-0051-00			1						PIVOT, handle, left
-30	367-0052-00			1						HANDLE
	- - - - -			-						mounting hardware: (not included w/handle)
-31	212-0040-00			2						SCREW, 8-32 x 3/8 inch, FHS
-32	377-0122-00			1						INSERT, pivot, right
-33	367-0050-00			1						PIVOT, handle, right
-34	214-0554-00			2						BOLT, hinge
-35	214-0558-00			2						WASHER, thrust, 5/16 ID x 1/2 inch OD

STANDARD ACCESSORIES

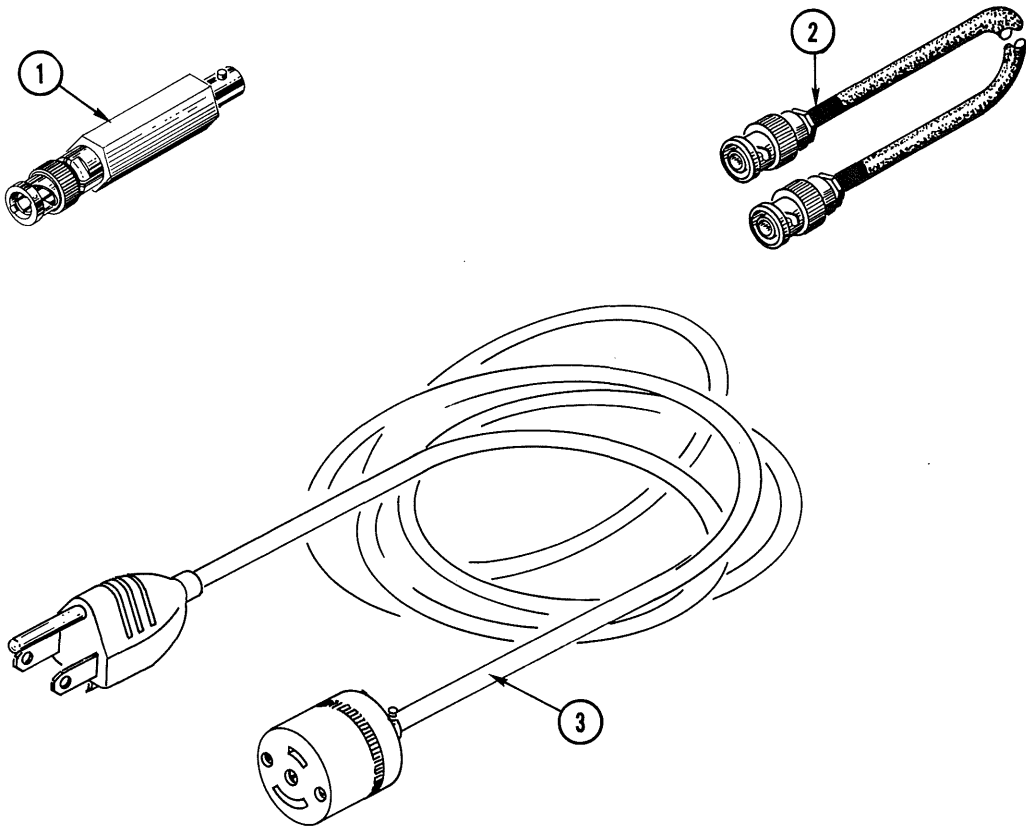
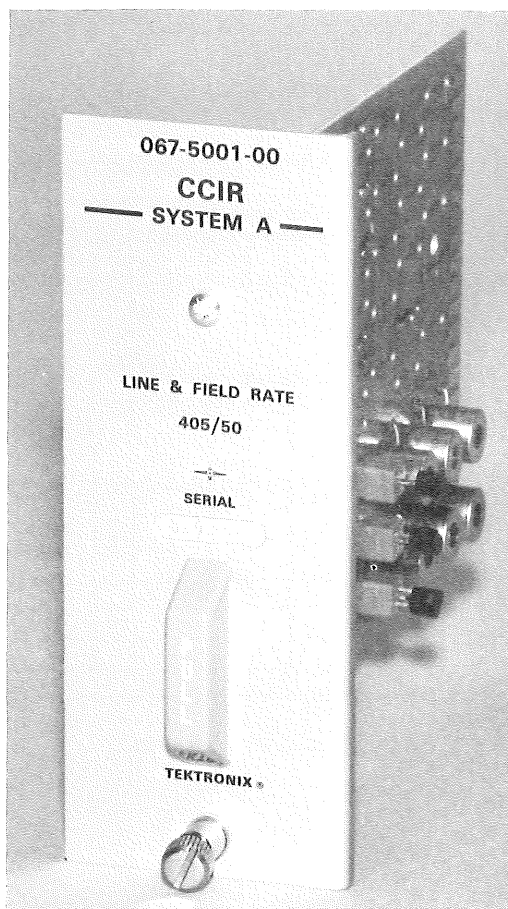


Fig. & Index No.	Tektronix Part No.	Serial/Model Eff	No. Disc	Qty					Description
				1	2	3	4	5	
1	011-0103-02			1					1 TERMINATION, coaxial, 75 Ω
2	012-0074-00			2					2 CABLE, 75 Ω , BNC
3	161-0036-00			1					1 CABLE ASSEMBLY, power, twist lock
	062-1126-00			2					2 MANUAL, instruction (not shown)

SECTION 8
PLUG-IN UNITS

067-5001-00 CALIBRATION FIXTURE

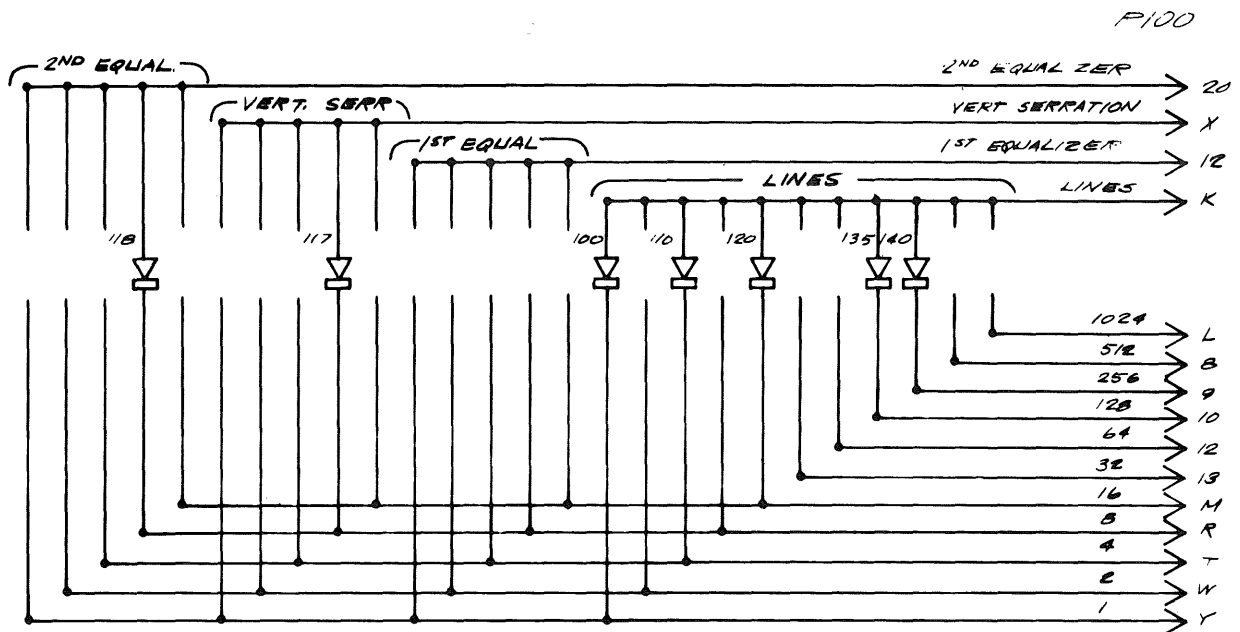
CCIR SYSTEM A 405/50 LINE/FIELD RATE PLUG-IN UNIT
For 067-0601-00 Television Test Signal Generator



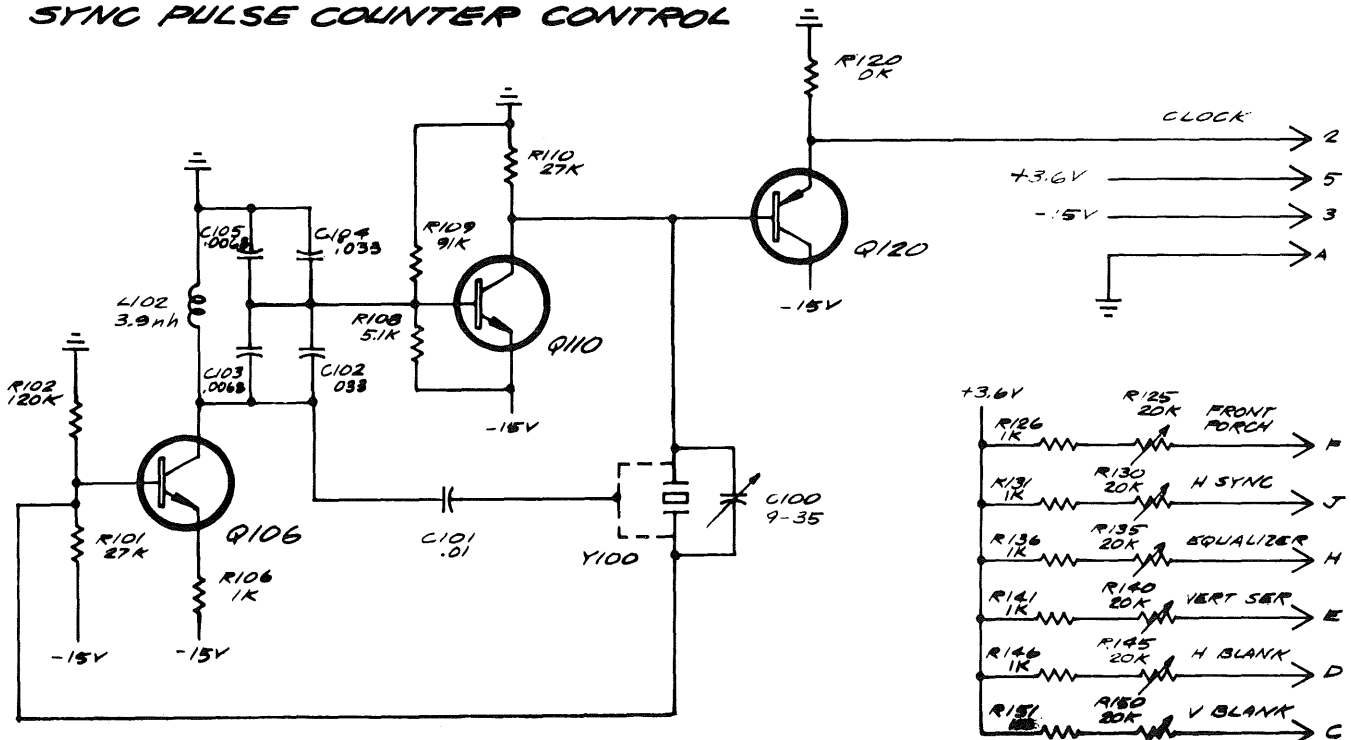
The CCIR System A 405/50 Line/Field Rate Plug-in Unit provides control of the line and field rate, sync timing, and sync pulse counting for the Tektronix 067-0601-00 Television Test Signal Generator. The plug-in unit with its generator provide a source of composite television signals for calibration and adjustment of television waveform monitors and other equipment.

Clock frequency	20.250 kHz within 0.1%
Lines/frame	405
Horizontal blanking pulse width	17.5 μ s to 19 μ s
Front porch pulse width	1.5 μ s to 2 μ s
Horizontal sync pulse width	8 μ s to 10 μ s
Vertical blanking pulse width	1303 to 1550 μ s
First equalizer pulse group count	0
Vertical serration pulse group count	8
Vertical serration pulse width	38 μ s to 42 μ s
Second equalizer pulse group count	8

FOR MECHANICAL PARTS SEE PLUG-IN DETAIL PAGE 8-42



SYNC PULSE COUNTER CONTROL



CLOCK OSCILLATOR

SYNC TIMING

ELECTRICAL PARTS LIST

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff	Disc	Description
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Capacitors

Tolerance $\pm 20\%$ unless otherwise indicated.

C100	281-0092-00		9-35 pF, Var Cer		
C101	285-0598-00		0.01 μ F	PTM	100 V 5%
C102	285-0702-00		0.033 μ F	PTM	100 V 5%
C103	285-0685-00		0.0068 μ F	PTM	100 V 10%
C104	285-0702-00		0.033 μ F	PTM	100 V 5%
C105	285-0685-00		0.0068 μ F	PTM	100 V 10%

Semiconductor Device, Diodes

D100	*152-0185-00		Silicon	Replaceable by 1N4152
D110	*152-0185-00		Silicon	Replaceable by 1N4152
D117	*152-0185-00		Silicon	Replaceable by 1N4152
D118	*152-0185-00		Silicon	Replaceable by 1N4152
D120	*152-0185-00		Silicon	Replaceable by 1N4152
D135	*152-0185-00		Silicon	Replaceable by 1N4152
D140	*152-0185-00		Silicon	Replaceable by 1N4152

Inductor

L120	108-0224-00		3.9 μ H	
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Transistors

Q106	151-0190-00		Silicon	2N3904
Q110	151-0190-00		Silicon	2N3904
Q120	151-0188-00		Silicon	2N3906

Resistors

Resistors are fixed, composition, $\pm 10\%$ unless otherwise indicated.

R101	315-0273-00		27 k Ω	1/4 W	5%
R102	315-0124-00		120 k Ω	1/4 W	5%
R106	315-0102-00		1 k Ω	1/4 W	5%
R108	315-0512-00		5.1 k Ω	1/4 W	5%
R109	315-0913-00		91 k Ω	1/4 W	5%

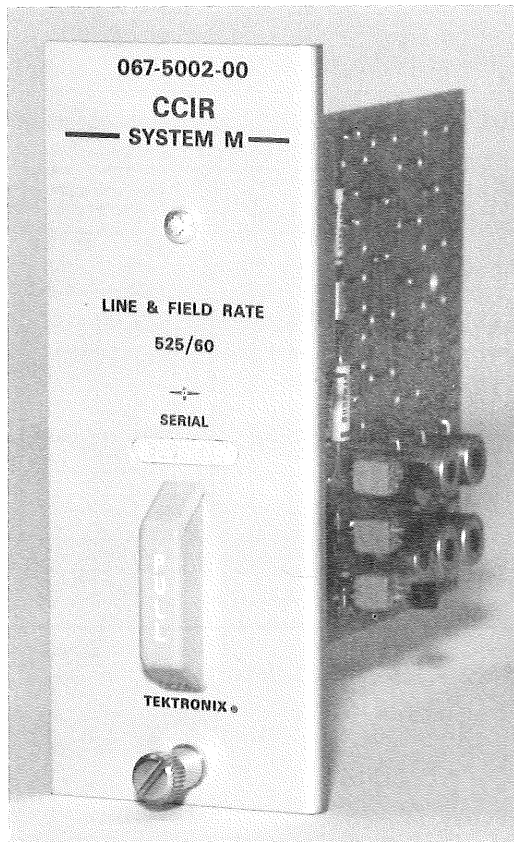
ELECTRICAL PARTS LIST (CONT)

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff Disc	Description
Resistors (cont)			
R110	315-0273-00	27 k Ω	1/4 W 5%
R120	315-0103-00	10 k Ω	1/4 W 5%
R125	311-0840-00	20 k Ω , Var	
R126	315-0102-00	1 k Ω	1/4 W 5%
R130	311-0840-00	20 k Ω , Var	
R131	315-0102-00	1 k Ω	1/4 W 5%
R135	311-0840-00	20 k Ω , Var	
R136	315-0102-00	1 k Ω	1/4 W 5%
R140	311-0840-00	20 k Ω , Var	
R141	315-0103-00	10 k Ω	1/4 W 5%
R145	311-0840-00	20 k Ω , Var	
R146	315-0102-00	1 k Ω	1/4 W 5%
R150	311-0840-00	20 k Ω , Var	
R151	315-0102-00	1 k Ω	1/4 W 5%
Crystal			
Y100	158-0057-00	20.250 kHz	

067-5002-00 CALIBRATION FIXTURE

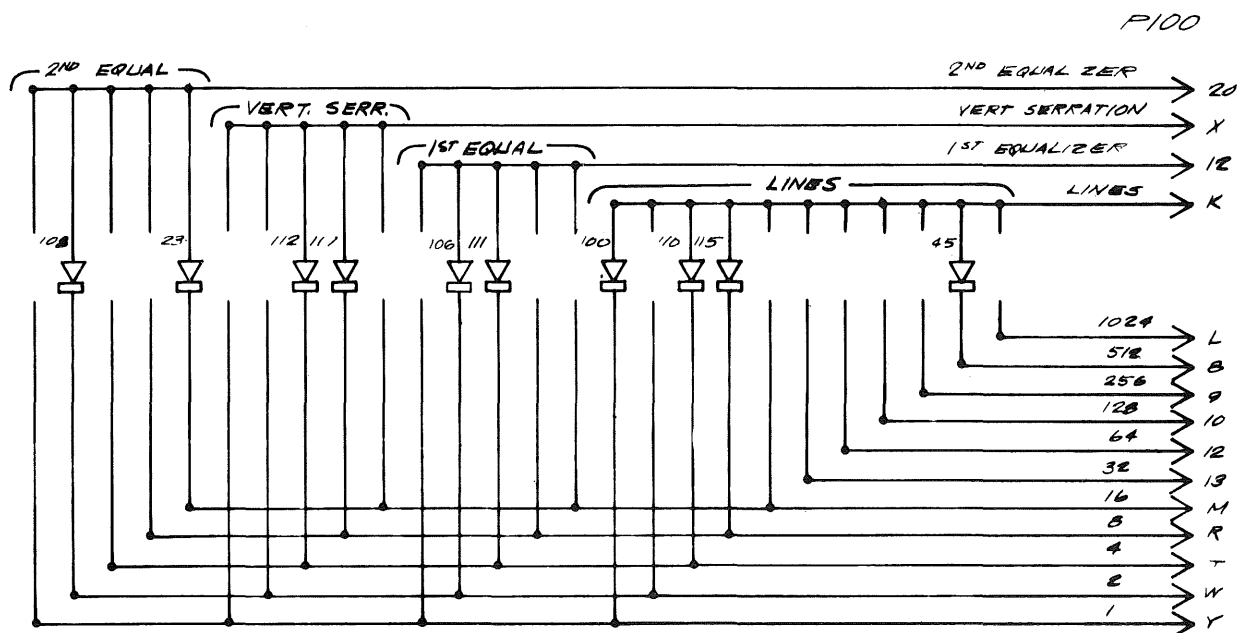
CCIR SYSTEM M 525/60 LINE/FIELD RATE PLUG-IN UNIT
For 067-0601-00 Television Test Signal Generator



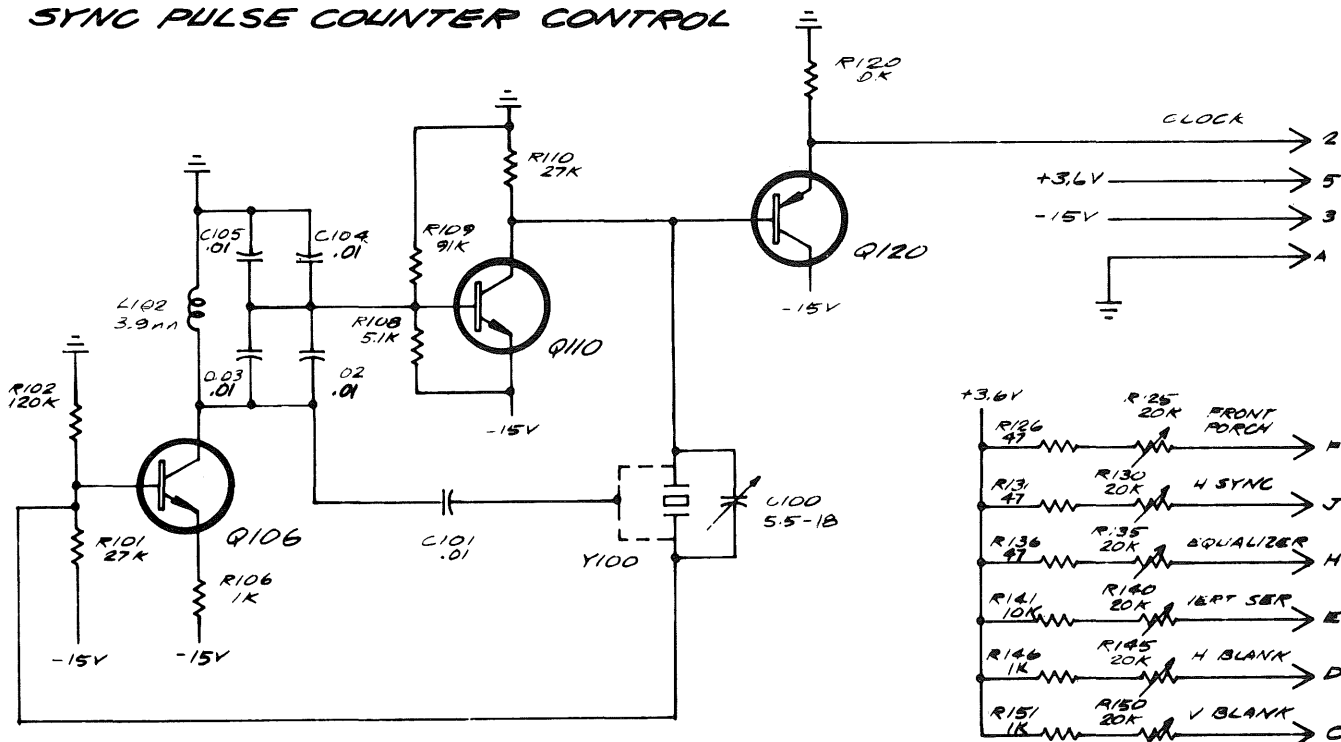
The CCIR System M 525/60 Line/Field Rate Plug-in Unit provides control of the line and field rate, sync timing, and sync pulse counting for the Tektronix 067-0601-00 Television Test Signal Generator. The plug-in unit with its generator provide a source of composite television signals for calibration and adjustment of television waveform monitors and other equipment.

Clock frequency	31.50 kHz within 0.1%
Lines/frame	525
Horizontal blanking pulse width	10.2 to 11.4 μ s
Front porch pulse width	1.27 to 2.54 μ s
Horizontal sync pulse width	4.19 to 5.7 μ s
Vertical blanking pulse width	1217.2 to 1344.2 μ s
First equalizer pulse group count	6
Equalizer pulse width	2.29 to 2.54 μ s
Vertical serration pulse group count	12
Vertical serration pulse width	26.4 to 28 μ s
Second equalizer pulse group count	18

FOR MECHANICAL PARTS SEE PLUG-IN DETAIL PAGE 8-42



SYNC PULSE COUNTER CONTROL



CLOCK OSCILLATOR

SYNC TIMING

ELECTRICAL PARTS LIST

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff Disc	Description
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Capacitors

Tolerance $\pm 20\%$ unless otherwise indicated.

C100	281-0093-00	5.5-18 pF, Var Cer			
C101	285-0598-00	0.01 μ F	PTM	100 V	5%
C102	285-0598-00	0.01 μ F	PTM	100 V	5%
C103	285-0598-00	0.01 μ F	PTM	100 V	5%
C104	285-0598-00	0.01 μ F	PTM	100 V	5%
C105	285-0598-00	0.01 μ F	PTM	100 V	5%

Semiconductor Device, Diodes

D100	*152-0185-00	Silicon	Replaceable by 1N4152
D106	*152-0185-00	Silicon	Replaceable by 1N4152
D108	*152-0185-00	Silicon	Replaceable by 1N4152
D110	*152-0185-00	Silicon	Replaceable by 1N4152
D111	*152-0185-00	Silicon	Replaceable by 1N4152
D112	*152-0185-00	Silicon	Replaceable by 1N4152
D115	*152-0185-00	Silicon	Replaceable by 1N4152
D117	*152-0185-00	Silicon	Replaceable by 1N4152
D123	*152-0185-00	Silicon	Replaceable by 1N4152
D145	*152-0185-00	Silicon	Replaceable by 1N4152

Inductor

L102	108-0224-00	3.9 μ H
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Transistors

Q106	151-0190-00	Silicon	2N3904
Q110	151-0190-00	Silicon	2N3904
Q120	151-0188-00	Silicon	2N3906

ELECTRICAL PARTS LIST (CONT)

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff Disc	Description
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Resistors

Resistors are fixed, composition, $\pm 10\%$ unless otherwise indicated.

R101	315-0273-00	27 k Ω	1/4 W	5%
R102	315-0124-00	120 k Ω	1/4 W	5%
R106	315-0102-00	1 k Ω	1/4 W	5%
R108	315-0512-00	5.1 k Ω	1/4 W	5%
R109	315-0913-00	91 Ω	1/4 W	5%

R110	315-0273-00	27 k Ω	1/4 W	5%
R102	315-0103-00	10 k Ω	1/4 W	5%
R125	311-0840-00	20 k Ω , Var		
R126	315-0470-00	47 Ω	1/4 W	5%
R130	311-0840-00	20 k Ω , Var		

R131	315-0470-00	47 Ω	1/4 W	5%
R135	311-0840-00	20 k Ω , Var		
R136	315-0470-00	47 Ω	1/4 W	5%
R140	311-0840-00	20 k Ω , Var		
R141	315-0103-00	10 k Ω	1/4 W	5%

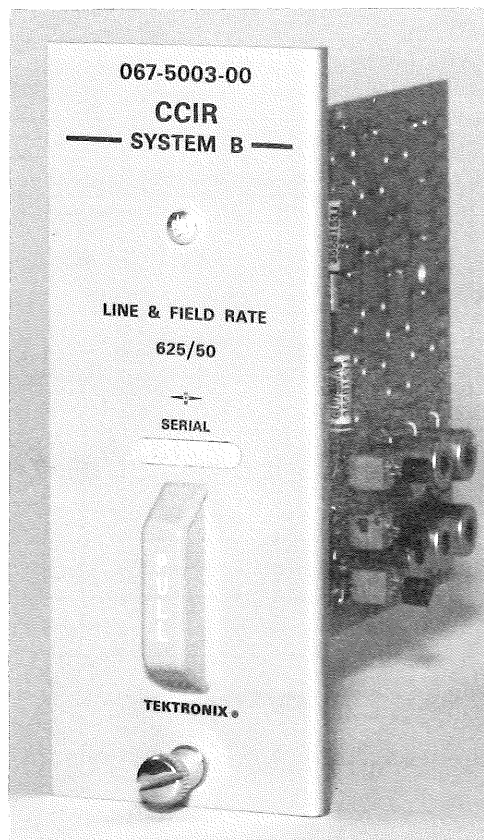
R145	311-0840-00	20 k Ω , Var		
R146	315-0102-00	1 k Ω	1/4 W	5%
R150	311-0840-00	20 k Ω , Var		
R151	315-0102-00	1 k Ω	1/4 W	5%

Crystal

Y100	158-0059-00	31.500 kHz
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067-5003-00 CALIBRATION FIXTURE

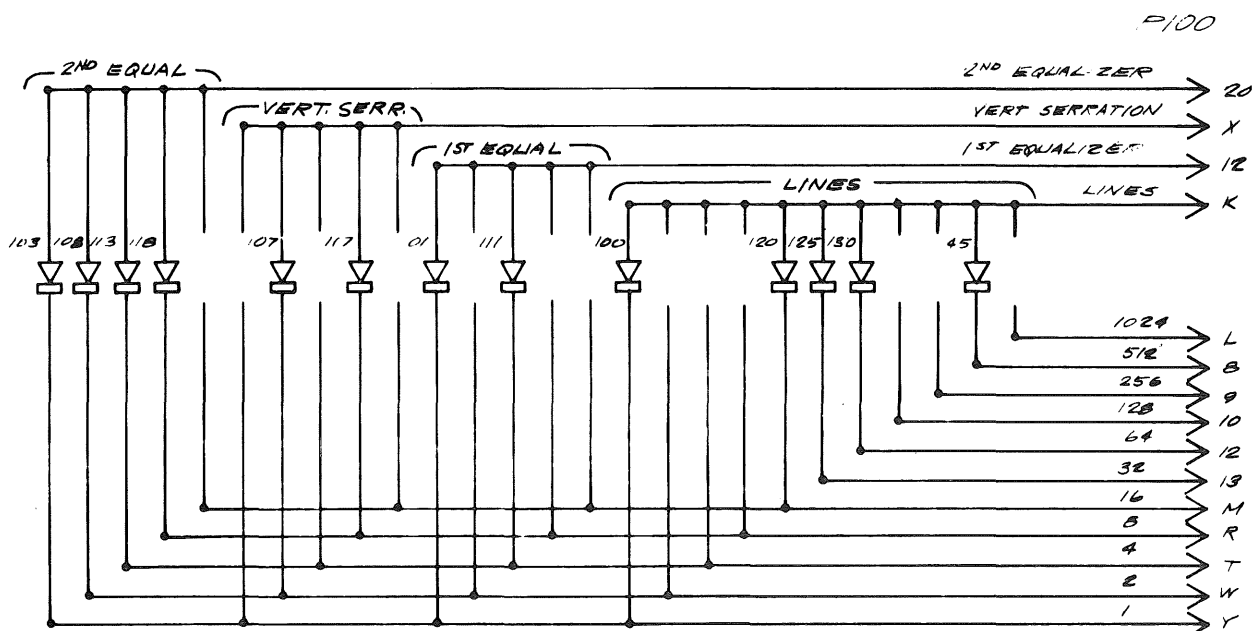
CCIR SYSTEM B 625/50 LINE/FIELD RATE PLUG-IN UNIT
For 067-0601-00 Television Test Signal Generator



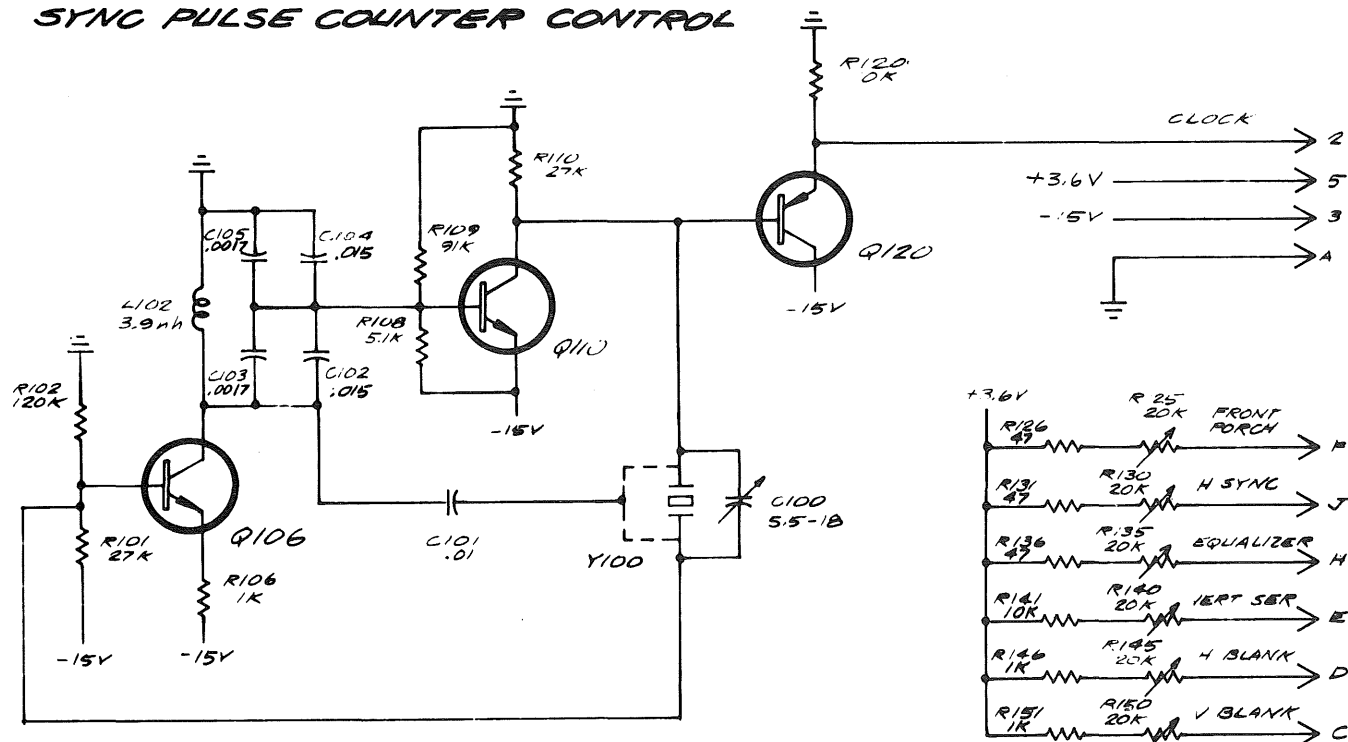
The CCIR System B 625/50 Line/Field Rate Plug-in Unit provides control of the line and field rate, sync timing, and sync pulse counting for the Tektronix 067-0601-00 Television Test Signal Generator. The plug-in unit with its generator provide a source of composite television signals for calibration and adjustment of television waveform monitors and other equipment.

Clock frequency	31.250 kHz within 0.1%
Lines/frame	625
Horizontal blanking pulse width	11.8 μ s to 12.3 μ s
Front porch pulse width	1.3 μ s to 1.8 μ s
Horizontal sync pulse width	4.5 μ s to 4.9 μ s
Vertical blanking pulse width	1164 to 1420 μ s
First equalizer pulse group count	5
Equalizer pulse width	2.2 μ s to 2.4 μ s
Vertical serration pulse group count	10
Vertical serration pulse width	26.5 μ s to 26.9 μ s
Second equalizer pulse group count	15

FOR MECHANICAL PARTS SEE PLUG-IN DETAIL PAGE 8-42



SYNC PULSE COUNTER CONTROL



CLOCK OSCILLATOR

SYNC TIMING

ELECTRICAL PARTS LIST

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff	Disc	Description
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Capacitors

Tolerance $\pm 20\%$ unless otherwise indicated.

C100	281-0093-00		5.5-18 pF, Var Cer		
C101	285-0598-00		0.01 μ F	PTM	100 V 5%
C102	285-0719-00		0.015 μ F	PTM	100 V 5%
C103	285-0651-01		0.0017 μ F	PTM	100 V 5%
C104	285-0719-00		0.015 μ F	PTM	100 V 5%
C105	285-0651-01		0.0017 μ F	PTM	100 V 5%

Semiconductor Device, Diodes

D100	*152-0185-00	Silicon	Replaceable by 1N4152
D101	*152-0185-00	Silicon	Replaceable by 1N4152
D103	*152-0185-00	Silicon	Replaceable by 1N4152
D107	*152-0185-00	Silicon	Replaceable by 1N4152
D108	*152-0185-00	Silicon	Replaceable by 1N4152
D111	*152-0185-00	Silicon	Replaceable by 1N4152
D113	*152-0185-00	Silicon	Replaceable by 1N4152
D117	*152-0185-00	Silicon	Replaceable by 1N4152
D118	*152-0185-00	Silicon	Replaceable by 1N4152
D120	*152-0185-00	Silicon	Replaceable by 1N4152
D125	*152-0185-00	Silicon	Replaceable by 1N4152
D130	*152-0185-00	Silicon	Replaceable by 1N4152
D145	*152-0185-00	Silicon	Replaceable by 1N4152

Inductor

L102	108-0224-00	3.9 μ H
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Transistors

Q106	151-0190-00	Silicon	2N3904
Q110	151-0190-00	Silicon	2N3904
Q120	151-0188-00	Silicon	2N3906

ELECTRICAL PARTS LIST (CONT)

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff	Disc	Description
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Resistors

Resistors are fixed, composition, $\pm 10\%$ unless otherwise indicated.

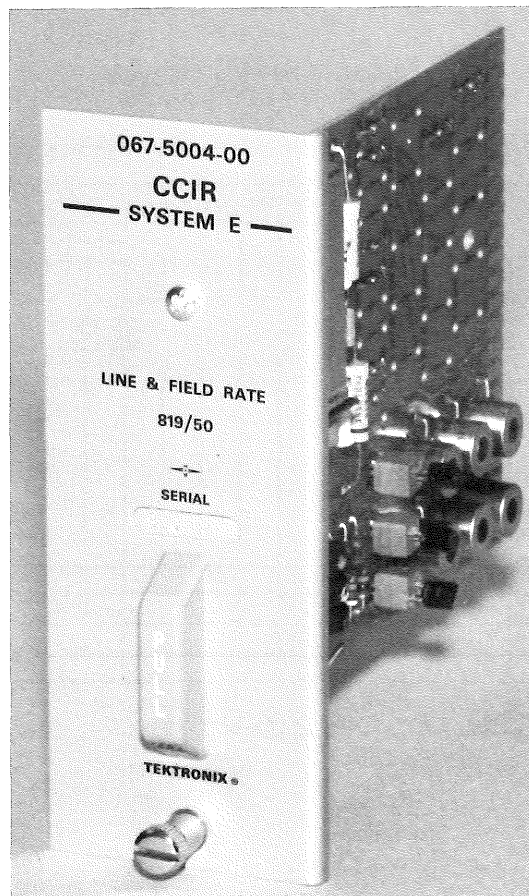
R101	315-0273-00		27 k Ω	1/4 W	5%
R102	315-0124-00		120 k Ω	1/4 W	5%
R106	315-0102-00		1 k Ω	1/4 W	5%
R108	315-0512-00		5.1 k Ω	1/4 W	5%
R109	315-0913-00		91 k Ω	1/4 W	5%
R110	315-0273-00		27 k Ω	1/4 W	5%
R120	315-0103-00		10 k Ω	1/4 W	5%
R125	311-0840-00		20 k Ω , Var		
R126	315-0470-00		47 Ω	1/4 W	5%
R130	311-0840-00		20 k Ω , Var		
R131	315-0470-00		47 Ω	1/4 W	5%
R135	311-0840-00		20 k Ω , Var		
R136	315-0470-00		27 Ω	1/4 W	5%
R140	311-0840-00		20 k Ω , Var		
R141	315-0103-00		10 k Ω	1/4 W	5%
R145	311-0840-00		20 k Ω , Var		
R146	315-0102-00		1 k Ω	1/4 W	5%
R150	311-0840-00		20 k Ω , Var		
R151	315-0102-00		1 k Ω	1/4 W	5%

Crystal

Y100	158-0058-00		31.250 kHz		
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067-5004-00 CALIBRATION FIXTURE

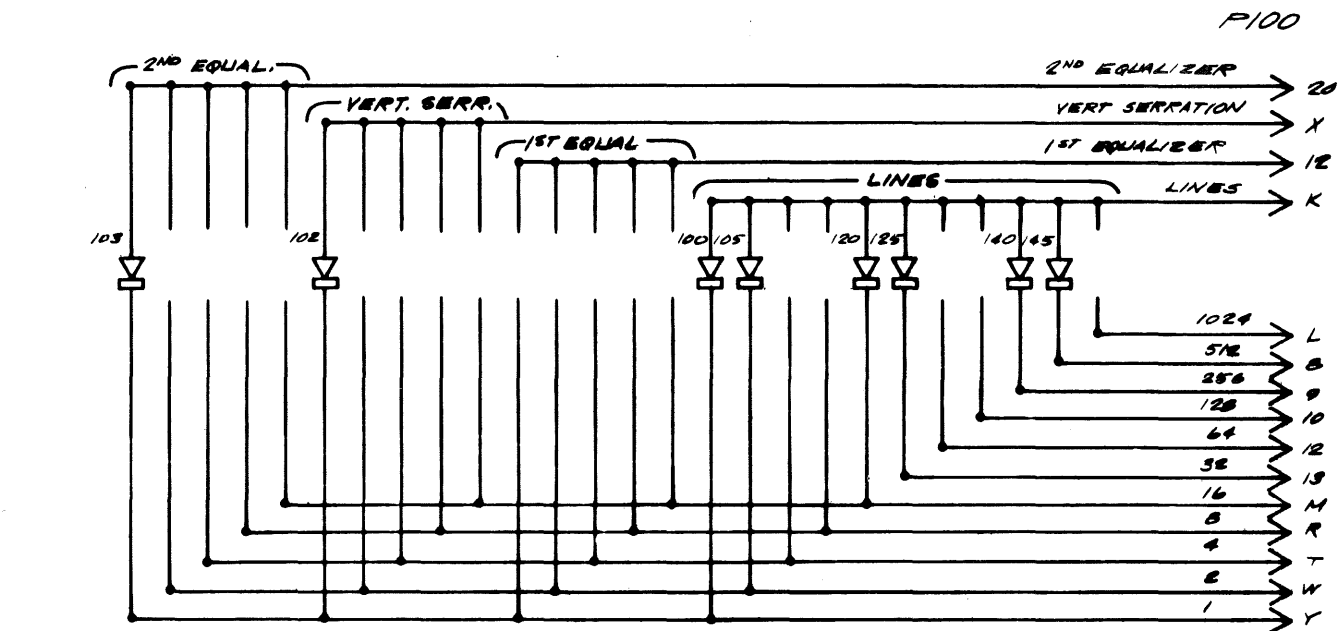
CCIR SYSTEM E 819/50 LINE/FIELD RATE PLUG-IN UNIT
For 067-0601-00 Television Test Signal Generator



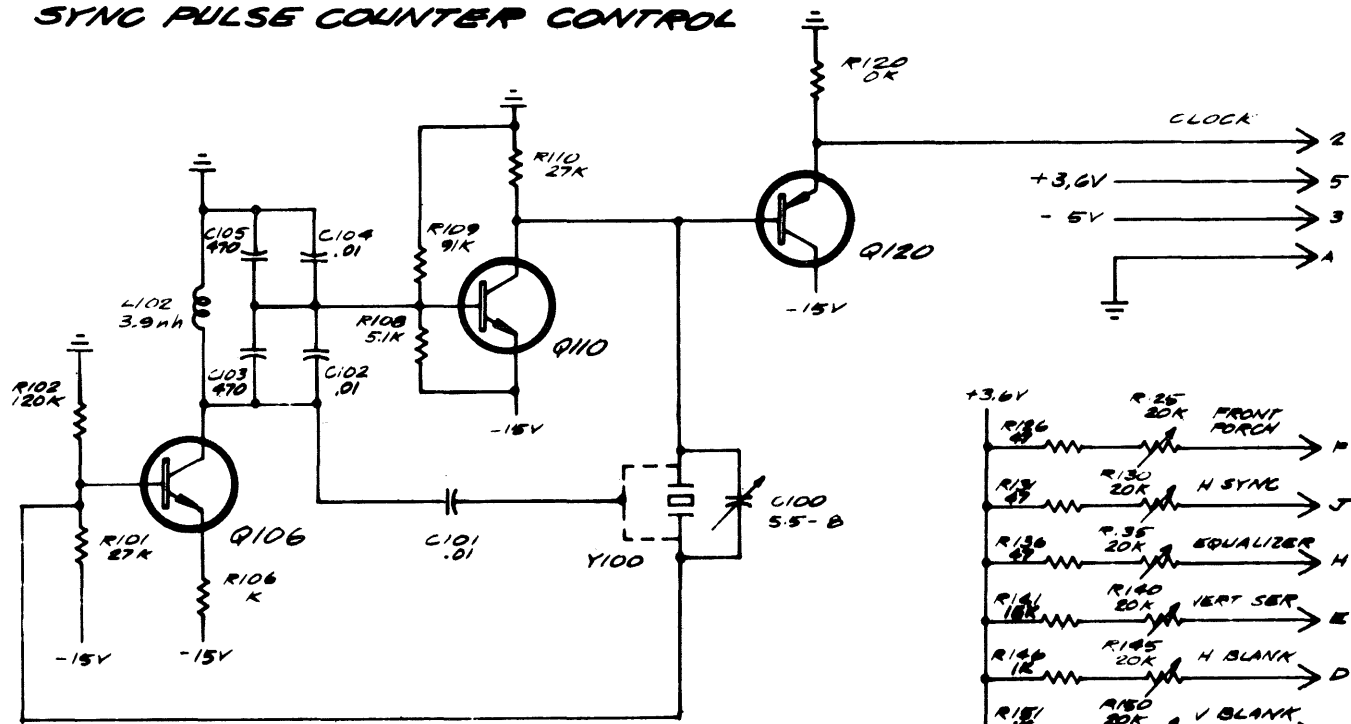
The CCIR System E 819/50 Line/Field Rate Plug-in Unit provides control of the line and field rate, sync timing, and sync pulse counting for the Tektronix 067-0601-00 Television Test Signal Generator. The plug-in unit with its generator provide a source of composite television signals for calibration and adjustment of television waveform monitors and other equipment.

Clock frequency	40.950 kHz within 0.1%
Lines/frame	819
Horizontal blanking pulse width	9.2 μ s to 9.8 μ s
Front porch pulse width	0.5 μ s to 0.7 μ s
Horizontal sync pulse width	2.4 μ s to 2.6 μ s
Vertical blanking pulse width	1953.6 to 2051.28 μ s
First equalizer pulse group count	0
Vertical serration pulse group count	1
Vertical serration pulse width	19 μ s to 21 μ s
Second equalizer pulse group count	1

FOR MECHANICAL PARTS SEE PLUG-IN DETAIL PAGE 8-42

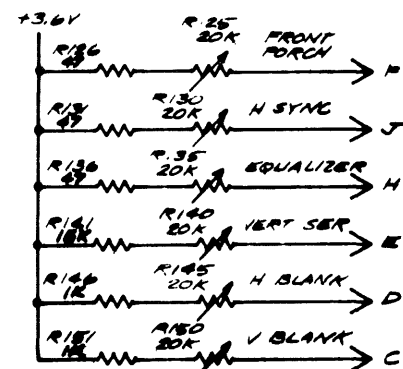


SYNC PULSE COUNTER CONTROL



CLOCK OSCILLATOR

SYNC TIMING



ELECTRICAL PARTS LIST

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff	Disc	Description
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Capacitors

Tolerance $\pm 20\%$ unless otherwise indicated.

C100	281-0093-00		5.5-18 pF, Var Cer		
C101	285-0598-00		0.01 μ F	PTM	100 V 5%
C102	285-0598-00		0.01 μ F	PTM	100 V 5%
C103	281-0580-00		470 pF	Cer	500 V 10%
C104	285-0598-00		0.01 μ F	PTM	100 V 5%
C105	281-0580-00		470 pF	Cer	500 V 10%

Semiconductor Device, Diodes

D100	*152-0185-00		Silicon	Replaceable by 1N4152
D102	*152-0185-00		Silicon	Replaceable by 1N4152
D103	*152-0185-00		Silicon	Replaceable by 1N4152
D105	*152-0185-00		Silicon	Replaceable by 1N4152
D120	*152-0185-00		Silicon	Replaceable by 1N4152
D125	*152-0185-00		Silicon	Replaceable by 1N4152
D140	*152-0185-00		Silicon	Replaceable by 1N4152
D145	*152-0185-00		Silicon	Replaceable by 1N4152

Inductor

L102	108-0224-00		3.9 μ H
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Transistors

Q106	151-0190-00		Silicon	2N3904
Q110	151-0190-00		Silicon	2N3904
Q120	151-0188-00		Silicon	2N3906

Resistors

Resistors are fixed, composition, $\pm 10\%$ unless otherwise indicated.

R101	315-0273-00		27 k Ω	1/4 W	5%
R102	315-0124-00		120 k Ω	1/4 W	5%
R106	315-0102-00		1 k Ω	1/4 W	5%
R108	315-0512-00		5.1 k Ω	1/4 W	5%
R109	315-0913-00		91 k Ω	1/4 W	5%

ELECTRICAL PARTS LIST (CONT)

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff Disc	Description
Resistors (cont)			
R110	315-0273-00	27 k Ω	1/4 W 5%
R120	315-0103-00	10 k Ω	1/4 W 5%
R125	311-0840-00	20 k Ω , Var	
R126	315-0470-00	47 Ω	1/4 W 5%
R130	311-0840-00	20 k Ω , Var	
R131	315-0470-00	47 Ω	1/4 W 5%
R135	311-0840-00	20 k Ω , Var	
R136	315-0470-00	47 Ω	1/4 W 5%
R140	311-0840-00	20 k Ω , Var	
R141	315-0153-00	15 k Ω	1/4 W 5%
R145	311-0840-00	20 k Ω , Var	
R146	315-0102-00	1 k Ω	1/4 W 5%
R150	311-0840-00	20 k Ω , Var	
R151	315-0102-00	1 k Ω	1/4 W 5%
Crystal			
Y100	158-0060-00	40.950 kHz	

067-5005-00 CALIBRATION FIXTURE

CCIR SYSTEM F 819/50 LINE/FIELD RATE PLUG-IN UNIT
For 067-0601-00 Television Test Signal Generator



The CCIR System F 819/50 Line/Field Rate Plug-in Unit provides control of the line and field rate, sync timing, and sync pulse counting for the Tektronix 067-0601-00 Television Test Signal Generator. The plug-in unit with its generator provide a source of composite television signals for calibration and adjustment of television waveform monitors and other equipment.

Clock frequency	40.950 kHz within 0.1%
Lines/frame	819
Horizontal blanking pulse width	9.0 μ s to 9.4 μ s
Front porch pulse width	0.8 μ s to 1.2 μ s
Horizontal sync pulse width	3.4 μ s to 3.8 μ s
Vertical blanking pulse width	1425 to 1474 μ s
First equalizer pulse group count	7
Equalizer pulse width	1.6 μ s to 1.8 μ s
Vertical serration pulse group count	14
Vertical serration pulse width	20.6 μ s to 21.0 μ s
Second equalizer pulse group count	21

FOR MECHANICAL PARTS SEE PLUG-IN DETAIL PAGE 8-42

ELECTRICAL PARTS LIST

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff Disc	Description
Capacitors			
C100	281-0093-00	5.5-18 pF, Var	Cer
C101	285-0598-00	0.01 μ F	PTM 100 V 5%
C102	285-0598-00	0.01 μ F	PTM 100 V 5%
C103	281-0580-00	470 pF	Cer 500 V 10%
C104	285-0598-00	0.01 μ F	PTM 100 V 5%
C105	281-0580-00	470 pF	Cer 500 V 10%
Semiconductor Device, Diodes			
D100	*152-0185-00	Silicon	Replaceable by 1N4152
D101	*152-0185-00	Silicon	Replaceable by 1N4152
D103	*152-0185-00	Silicon	Replaceable by 1N4152
D105	*152-0185-00	Silicon	Replaceable by 1N4152
D106	*152-0185-00	Silicon	Replaceable by 1N4152
D107	*152-0185-00	Silicon	Replaceable by 1N4152
D111	*152-0185-00	Silicon	Replaceable by 1N4152
D112	*152-0185-00	Silicon	Replaceable by 1N4152
D113	*152-0185-00	Silicon	Replaceable by 1N4152
D117	*152-0185-00	Silicon	Replaceable by 1N4152
D120	*152-0185-00	Silicon	Replaceable by 1N4152
D123	*152-0185-00	Silicon	Replaceable by 1N4152
D125	*152-0185-00	Silicon	Replaceable by 1N4152
D140	*152-0185-00	Silicon	Replaceable by 1N4152
D145	*152-0185-00	Silicon	Replaceable by 1N4152
Inductor			
L102	108-0224-00	3.9 μ H	
Transistors			
Q106	151-0190-00	Silicon	2N3904
Q110	151-0190-00	Silicon	2N3904
Q120	151-0188-00	Silicon	2N3906

ELECTRICAL PARTS LIST (CONT)

Values are fixed unless marked Variable.

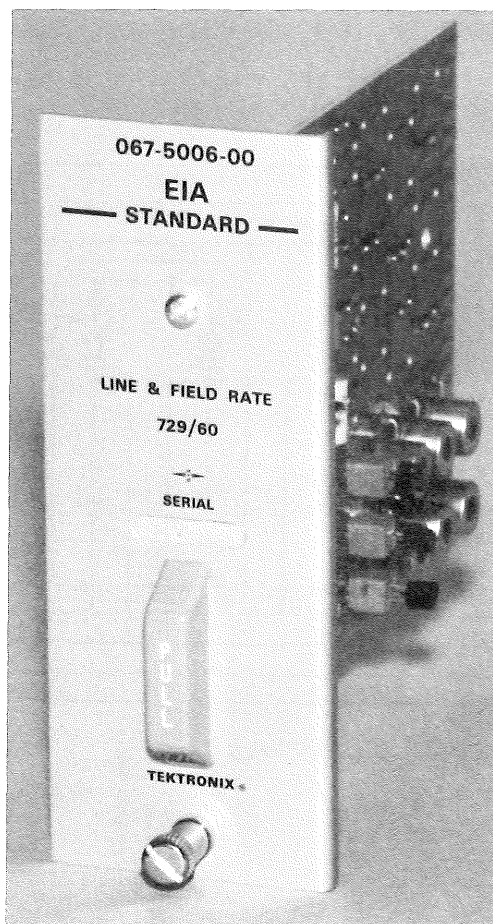
Ckt. No.	Tektronix Part No.	Serial/Model No. Eff Disc	Description
Resistors			
Resistors are fixed, composition, $\pm 10\%$ unless otherwise indicated.			
R101	315-0273-00	27 k Ω	1/4 W 5%
R102	315-0124-00	120 k Ω	1/4 W 5%
R106	315-0102-00	1 k Ω	1/4 W 5%
R108	315-0512-00	5.1 k Ω	1/4 W 5%
R109	315-0913-00	91 k Ω	1/4 W 5%
R110	315-0273-00	27 k Ω	1/4 W 5%
R120	315-0103-00	10 k Ω	1/4 W 5%
R125	311-0840-00	20 k Ω , Var	
R126	315-0470-00	47 Ω	1/4 W 5%
R130	311-0840-00	20 k Ω , Var	
R131	315-0470-00	47 Ω	1/4 W 5%
R135	311-0840-00	20 k Ω , Var	
R136	315-0470-00	47 Ω	1/4 W 5%
R140	311-0840-00	20 k Ω , Var	
R141	315-0103-00	10 k Ω	1/4 W 5%
R145	311-0840-00	20 k Ω , Var	
R146	315-0102-00	1 k Ω	1/4 W 5%
R150	311-0840-00	20 k Ω , Var	
R151	315-0102-00	1 k Ω	1/4 W 5%

Crystal

Y100	158-0060-00	40,950 kHz
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067-5006-00 CALIBRATION FIXTURE

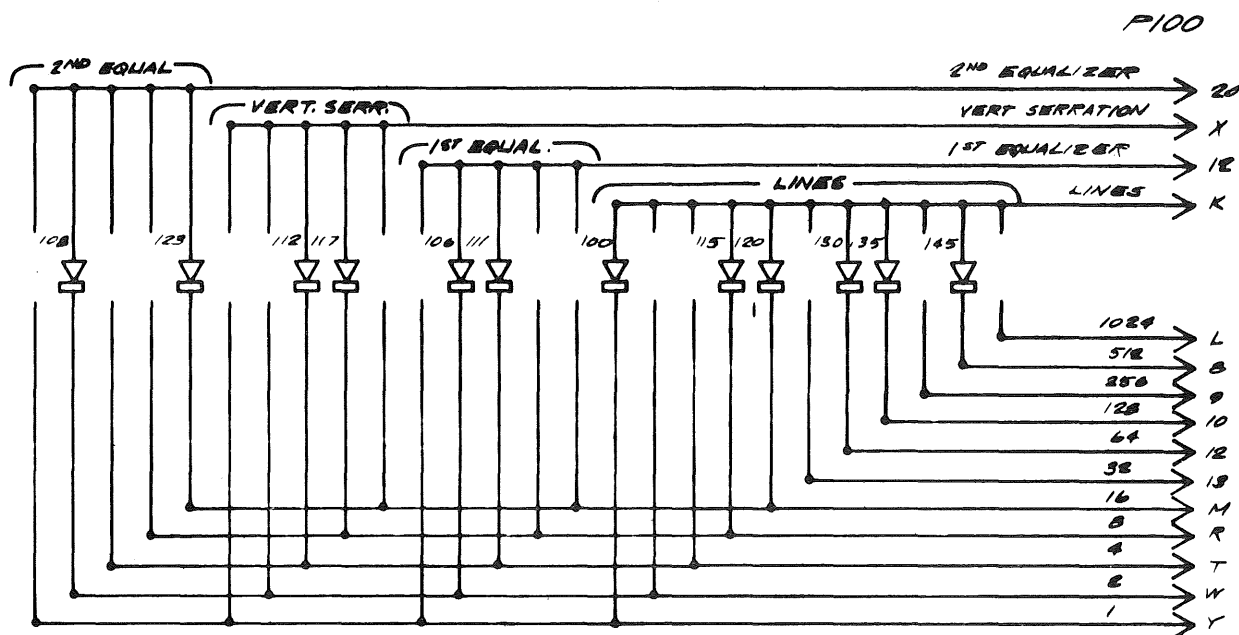
EIA STANDARD 729/60 LINE/FIELD RATE PLUG-IN UNIT
For 067-0601-00 Television Test Signal Generator



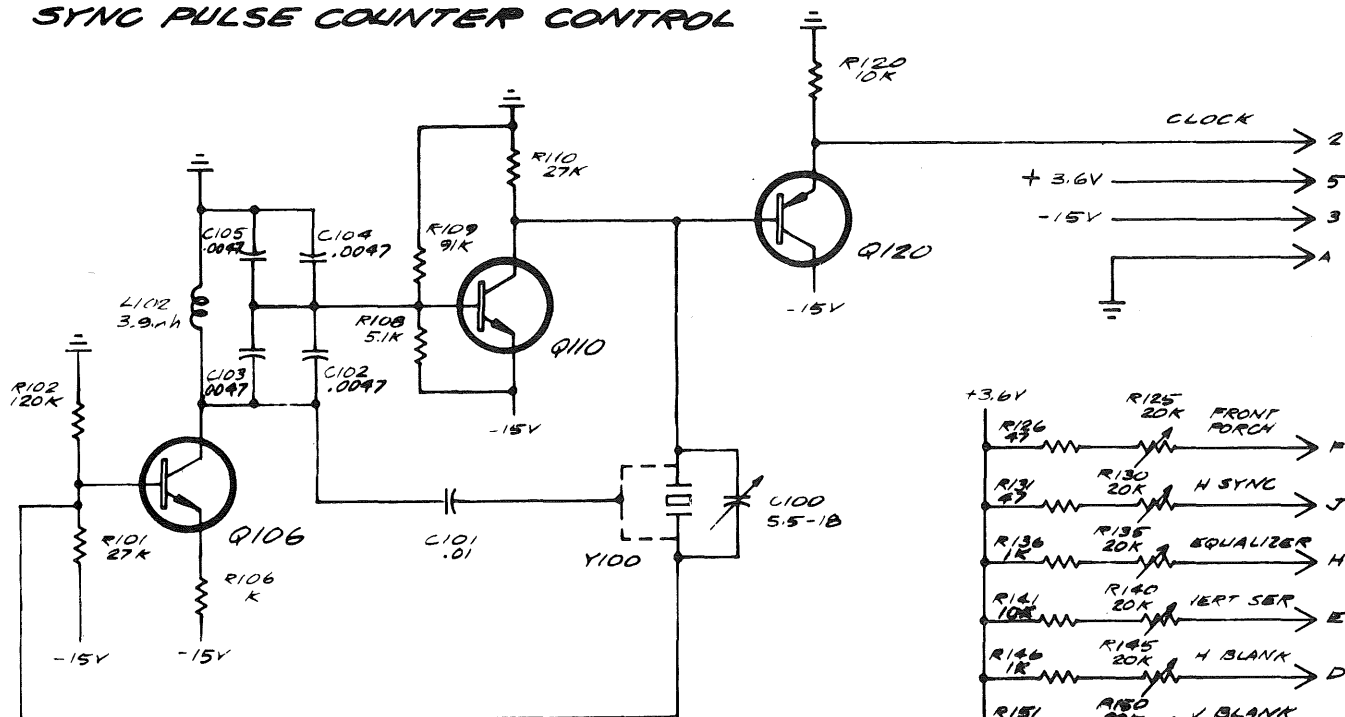
The EIA Standard 729/60 Line/Field Rate Plug-in Unit provides control of the line and field rate, sync timing, and sync pulse counting for the Tektronix 067-0601-00 Television Test Signal Generator. The plug-in unit with its generator provide a source of composite television signals for calibration and adjustment of television waveform monitors and other equipment.

Clock frequency	43.740 kHz within 0.1%
Lines/frame	729
Horizontal blanking pulse width	7.5 to 8.1 μ s
Front porch pulse width	0.9 to 1.8 μ s
Horizontal sync pulse width	3.2 to 3.6 μ s
Vertical blanking pulse width	876 to 967
First equalizer pulse group count	6
Equalizer pulse width	1.6 to 2.0 μ s
Vertical serration pulse group count	12
Vertical serration pulse width	19 to 20 μ s
Second equalizer pulse group count	18

FOR MECHANICAL PARTS SEE PLUG-IN DETAIL PAGE 8-42



SYNC PULSE COUNTER CONTROL



ELECTRICAL PARTS LIST

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff Disc	Description
Capacitors			
C100	281-0093-00	5.5-18 pF, Var Cer	
C101	285-0598-00	0.01 μ F PTM	100 V 5%
C102	285-0643-00	0.0047 μ F PTM	100 V 5%
C103	285-0643-00	0.0047 μ F PTM	100 V 5%
C104	285-0643-00	0.0047 μ F PTM	100 V 5%
C105	285-0643-00	0.0047 μ F PTM	100 V 5%
Semiconductor Device, Diodes			
D100	*152-0185-00	Silicon	Replaceable by 1N4152
D106	*152-0185-00	Silicon	Replaceable by 1N4152
D108	*152-0185-00	Silicon	Replaceable by 1N4152
D111	*152-0185-00	Silicon	Replaceable by 1N4152
D112	*152-0185-00	Silicon	Replaceable by 1N4152
D115	*152-0185-00	Silicon	Replaceable by 1N4152
D117	*152-0185-00	Silicon	Replaceable by 1N4152
D120	*152-0185-00	Silicon	Replaceable by 1N4152
D123	*152-0185-00	Silicon	Replaceable by 1N4152
D130	*152-0185-00	Silicon	Replaceable by 1N4152
D135	*152-0185-00	Silicon	Replaceable by 1N4152
D145	*152-0185-00	Silicon	Replaceable by 1N4152
Inductor			
L102	108-0224-00	3.9 μ H	
Transistors			
Q106	151-0190-00	Silicon	2N3904
Q110	151-0190-00	Silicon	2N3904
Q120	151-0188-00	Silicon	2N3906

ELECTRICAL PARTS LIST (CONT)

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff Disc	Description
Resistors			
Resistors are fixed, composition, $\pm 10\%$ unless otherwise indicated.			
R101	315-0273-00	27 k Ω	1/4 W 5%
R102	315-0124-00	120 k Ω	1/4 W 5%
R106	315-0102-00	1 k Ω	1/4 W 5%
R108	315-0512-00	5.1 k Ω	1/4 W 5%
R109	315-0913-00	91 k Ω	1/4 W 5%
R110	315-0273-00	27 k Ω	1/4 W 5%
R120	315-0103-00	10 k Ω	1/4 W 5%
R125	311-0840-00	20 k Ω , Var	
R126	315-0470-00	47 Ω	1/4 W 5%
R130	311-0840-00	20 k Ω , Var	
R131	315-0470-00	20 k Ω , Var	
R135	311-0840-00	20 k Ω , Var	
R136	315-0102-00	1 k Ω	1/4 W 5%
R140	311-0840-00	20 k Ω , Var	
R141	315-0103-00	10 k Ω	1/4 W 5%
R145	311-0840-00	20 k Ω , Var	
R146	315-0102-00	1 k Ω	1/4 W 5%
R150	311-0840-00	20 k Ω , Var	
R151	315-0102-00	1 k Ω	1/4 W 5%

Crystal

Y100	158-0061-00	43.740 kHz
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067-5007-00 CALIBRATION FIXTURE

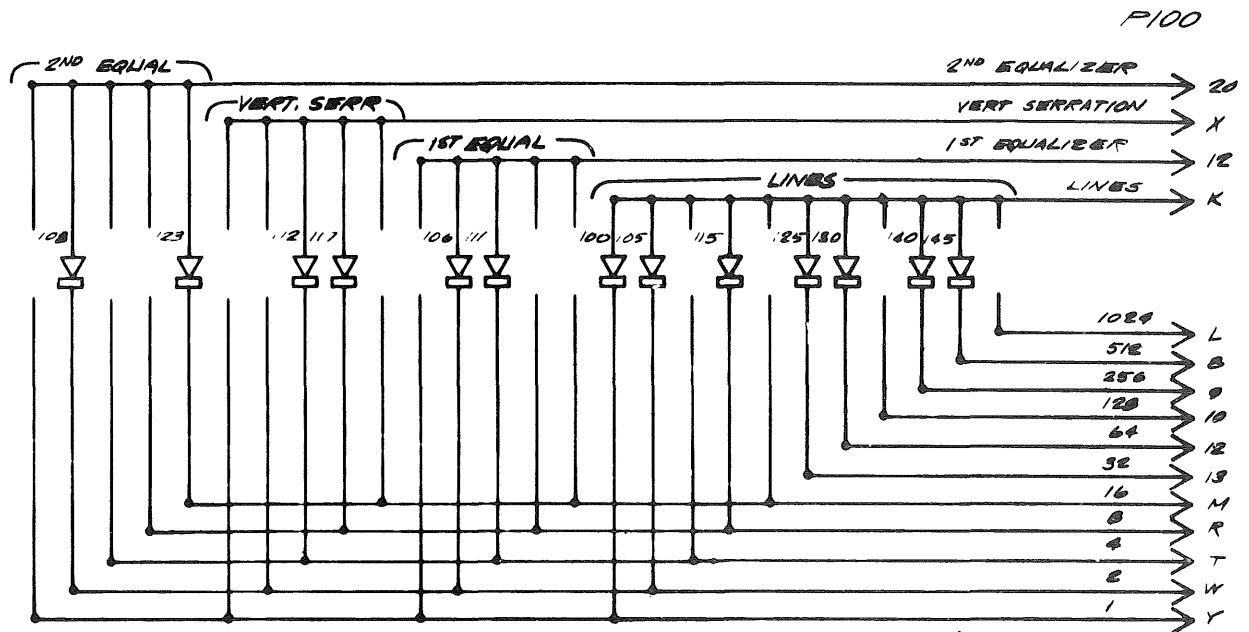
EIA STANDARD 875/60 LINE/FIELD RATE PLUG-IN UNIT
For 067-0601-00 Television Test Signal Generator



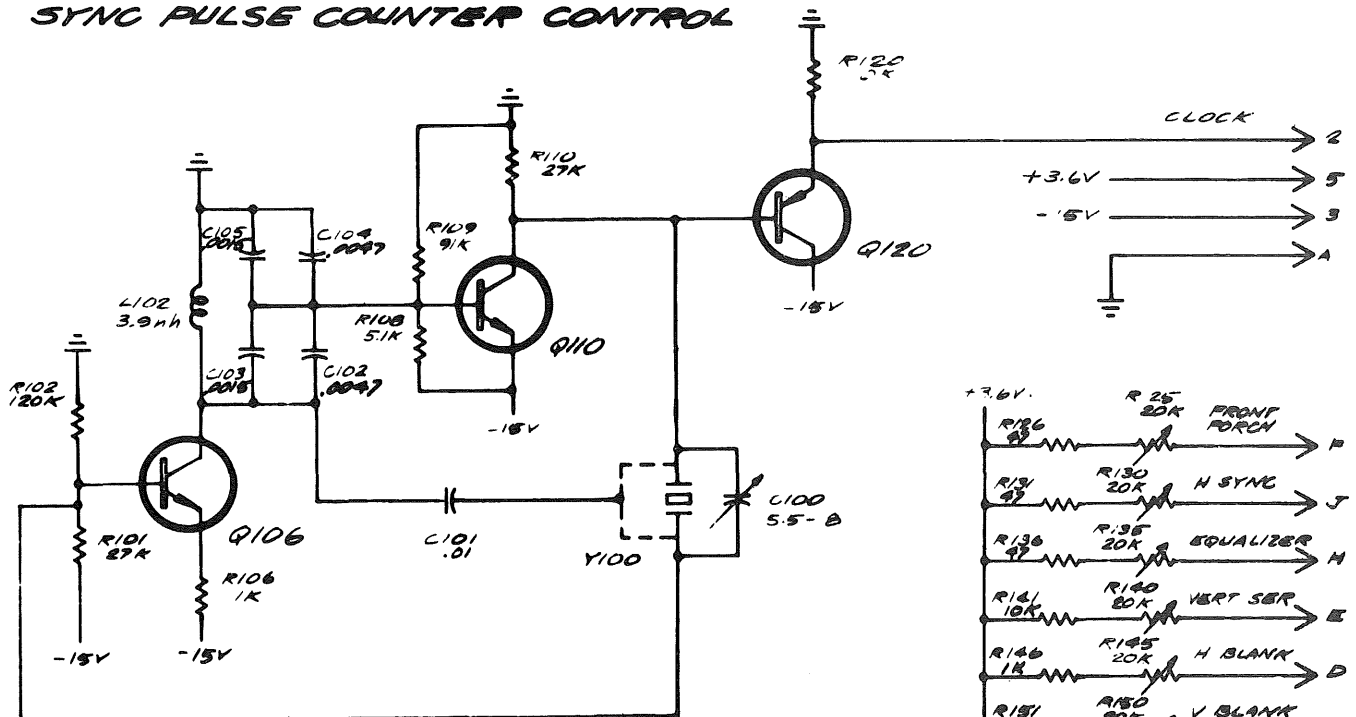
The EIA Standard 875/60 Line/Field Rate Plug-in Unit provides control of the line and field rate, sync timing, and sync pulse counting for the Tektronix 067-0601-00 Television Test Signal Generator. The plug-in unit with its generator provide a source of composite television signals for calibration and adjustment of television waveform monitors and other equipment.

Clock frequency	52.50 kHz within 0.1%
Lines/frame	875
Horizontal blanking pulse width	6.3 to 6.8 μ s
Front porch pulse width	0.77 to 1.5 μ s
Horizontal sync pulse width	2.7 to 3.0 μ s
Vertical blanking pulse width	730 to 807 μ s
First equalizer pulse group count	6
Equalizer pulse width	1.4 to 1.7 μ s
Vertical serration pulse group count	12
Vertical serration pulse width	16.0 to 16.8 μ s
Second equalizer pulse group count	18

FOR MECHANICAL PARTS SEE PLUG-IN DETAIL PAGE 8-42



SYNC PULSE COUNTER CONTROL



CLOCK OSCILLATOR

SYNC TIMING

ELECTRICAL PARTS LIST

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff Disc	Description
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Capacitors

Tolerance $\pm 20\%$ unless otherwise indicated.

C100	281-0093-00	5.5-18 pF, Var Cer	
C101	285-0598-00	0.01 μ F PTM	100 V 5%
C102	285-0643-00	0.0047 μ F PTM	100 V 5%
C103	285-0626-00	0.0015 μ F PTM	100 V 10%
C104	285-0643-00	0.0047 μ F PTM	100 V 5%
C105	285-0626-00	0.0015 μ F PTM	100 V 10%

Semiconductor Device, Diodes

D100	*152-0185-00	Silicon	Replaceable by 1N4152
D105	*152-0185-00	Silicon	Replaceable by 1N4152
D106	*152-0185-00	Silicon	Replaceable by 1N4152
D108	*152-0185-00	Silicon	Replaceable by 1N4152
D111	*152-0185-00	Silicon	Replaceable by 1N4152
D112	*152-0185-00	Silicon	Replaceable by 1N4152
D115	*152-0185-00	Silicon	Replaceable by 1N4152
D117	*152-0185-00	Silicon	Replaceable by 1N4152
D123	*152-0185-00	Silicon	Replaceable by 1N4152
D125	*152-0185-00	Silicon	Replaceable by 1N4152
D130	*152-0185-00	Silicon	Replaceable by 1N4152
D140	*152-0185-00	Silicon	Replaceable by 1N4152
D145	*152-0185-00	Silicon	Replaceable by 1N4152

Inductor

L102	108-0224-00	3.9 μ H
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Transistors

Q106	151-0190-00	Silicon	2N3904
Q110	151-0190-00	Silicon	2N3904
Q120	151-0188-00	Silicon	2N3906

ELECTRICAL PARTS LIST (CONT)

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff	Disc	Description
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Resistors

Resistors are fixed, composition, $\pm 10\%$ unless otherwise indicated.

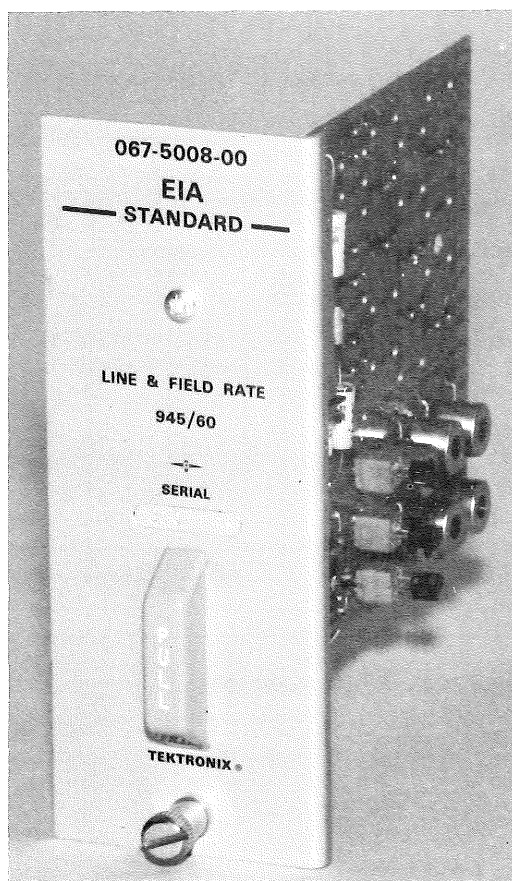
R101	315-0273-00		27 k Ω	1/4 W	5%
R102	315-0124-00		120 k Ω	1/4 W	5%
R106	315-0102-00		1 k Ω	1/4 W	5%
R108	315-0512-00		5.1 k Ω	1/4 W	5%
R109	315-0913-00		91 k Ω	1/4 W	5%
R110	315-0273-00		27 k Ω	1/4 W	5%
R120	315-0103-00		10 k Ω	1/4 W	5%
R125	311-0840-00		20 k Ω , Var		
R126	315-0470-00		47 Ω	1/4 W	5%
R130	311-0840-00		20 k Ω , Var		
R131	315-0470-00		47 Ω	1/4 W	5%
R135	311-0840-00		20 k Ω , Var		
R136	315-0470-00		47 Ω	1/4 W	5%
R140	311-0840-00		20 k Ω , Var		
R141	315-0103-00		10 k Ω	1/4 W	5%
R145	311-0840-00		20 k Ω , Var		
R146	315-0102-00		1 k Ω	1/4 W	5%
R150	311-0840-00		20 k Ω , Var		
R151	315-0102-00		1 k Ω	1/4 W	5%

Crystal

Y100	158-0062-00		52.50 kHz		
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067-5008-00 CALIBRATION FIXTURE

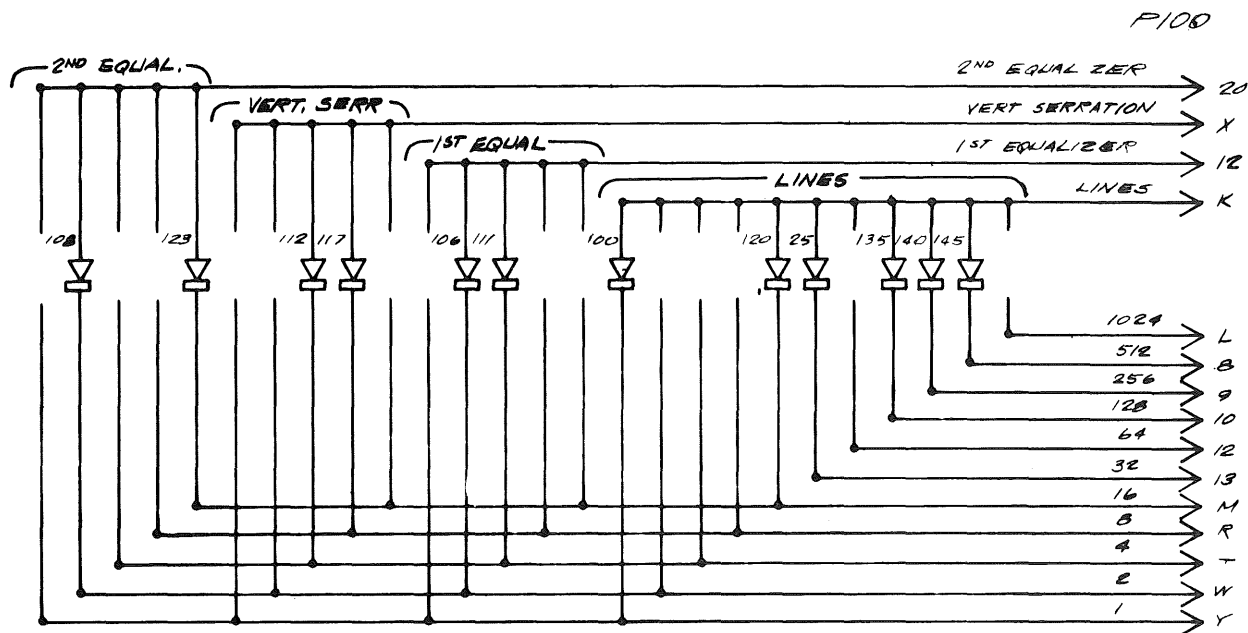
EIA STANDARD 945/60 LINE/FIELD RATE PLUG-IN UNIT
For 067-0601-00 Television Test Signal Generator



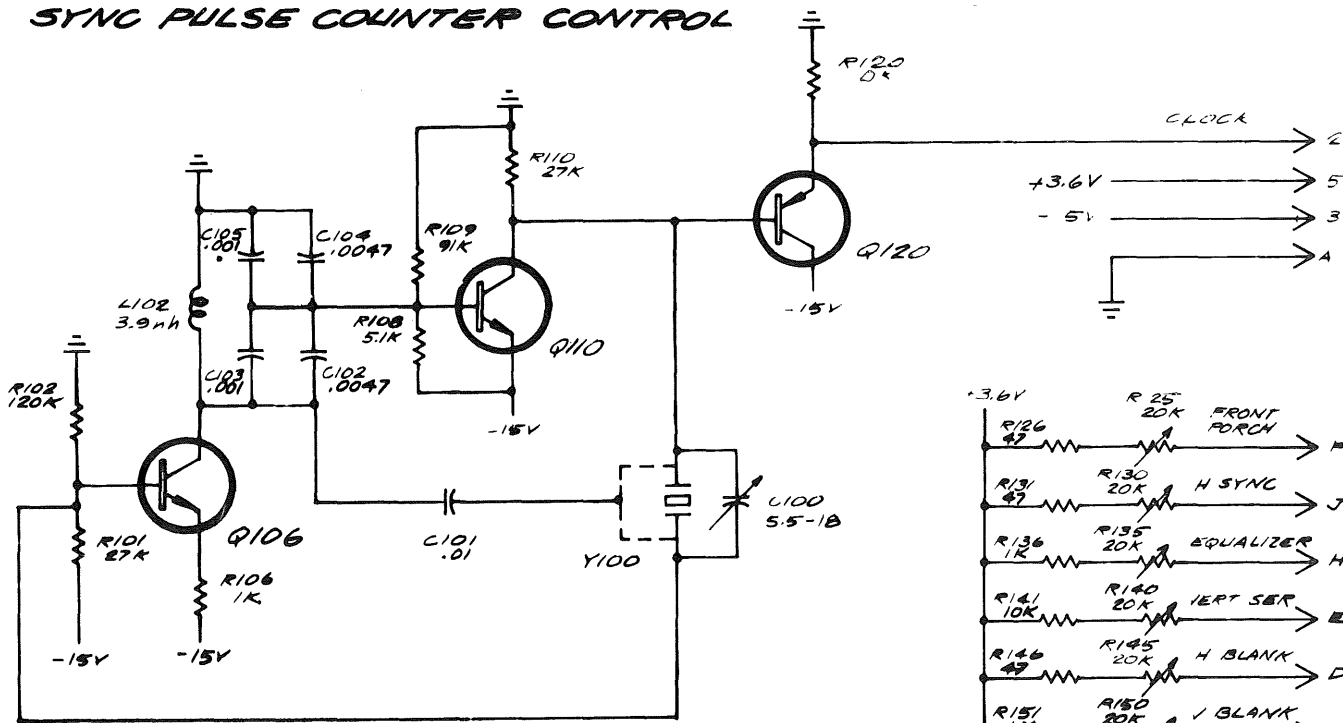
The EIA Standard 945/60 Line/Field Rate Plug-in Unit provides control of the line and field rate, sync timing, and sync pulse counting for the Tektronix 067-0601-00 Television Test Signal Generator. The plug-in unit with its generator provide a source of composite television signals for calibration and adjustment of television waveform monitors and other equipment.

Clock frequency	56.70 kHz within 0.1%
Lines/frame	945
Horizontal blanking pulse width	5.8 to 6.3 μ s
Front porch pulse width	0.7 to 1.4 μ s
Horizontal sync pulse width	2.5 to 2.8 μ s
Vertical blanking pulse width	677 to 747 μ s
First equalizer pulse group count	6
Equalizer pulse width	1.3 to 1.5 μ s
Vertical serration pulse group count	12
Vertical serration pulse width	14.8 to 15.5 μ s
Second equalizer pulse group count	18

FOR MECHANICAL PARTS SEE PLUG-IN DETAIL PAGE 8-42



SYNC PULSE COUNTER CONTROL



CLOCK OSCILLATOR

SYNC TIMING

ELECTRICAL PARTS LIST

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff Disc	Description
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Capacitors

Tolerance $\pm 20\%$ unless otherwise indicated.

C100	281-0093-00	5.5-18 pF, Var Cer	
C101	285-0598-00	0.01 μ F PTM	100 V 5%
C102	285-0643-00	0.0047 μ F PTM	100 V 5%
C103	285-0862-00	0.001 μ F PTM	100 V 10%
C104	285-0643-00	0.0047 μ F PTM	100 V 5%
C105	285-0862-00	0.001 μ F PTM	100 V 10%

Semiconductor Device, Diodes

D100	*152-0185-00	Silicon	Replaceable by 1N4152
D106	*152-0185-00	Silicon	Replaceable by 1N4152
D108	*152-0185-00	Silicon	Replaceable by 1N4152
D111	*152-0185-00	Silicon	Replaceable by 1N4152
D112	*152-0185-00	Silicon	Replaceable by 1N4152
D117	*152-0185-00	Silicon	Replaceable by 1N4152
D120	*152-0185-00	Silicon	Replaceable by 1N4152
D123	*152-0185-00	Silicon	Replaceable by 1N4152
D125	*152-0185-00	Silicon	Replaceable by 1N4152
D135	*152-0185-00	Silicon	Replaceable by 1N4152
D140	*152-0185-00	Silicon	Replaceable by 1N4152
D145	*152-0185-00	Silicon	Replaceable by 1N4152

Inductor

L102	108-0224-00	3.9 μ H
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Transistors

Q106	151-0190-00	Silicon	2N3904
Q110	151-0190-00	Silicon	2N3904
Q120	151-0188-00	Silicon	2N3906

ELECTRICAL PARTS LIST (CONT)

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff	Disc	Description
Resistors				
Resistors are fixed, composition, $\pm 10\%$ unless otherwise indicated.				
R101	315-0273-00		27 k Ω	1/4 W 5%
R102	315-0124-00		120 k Ω	1/4 W 5%
R106	315-0102-00		1 k Ω	1/4 W 5%
R109	315-0913-00		91 k Ω	1/4 W 5%
R110	315-0273-00		27 k Ω	1/4 W 5%
R120	315-0103-00		10 k Ω	1/4 W 5%
R125	311-0840-00		20 k Ω , Var	
R126	315-0470-00		47 Ω	1/4 W 5%
R130	311-0840-00		20 k Ω , Var	
R131	315-0470-00		47 Ω	1/4 W 5%
R135	311-0840-00		20 k Ω , Var	
R136	315-0102-00		1 k Ω	1/4 W 5%
R140	311-0840-00		20 k Ω , Var	
R141	315-0103-00		10 k Ω	1/4 W 5%
R145	311-0840-00		20 k Ω , Var	
R146	315-0470-00		47 Ω	1/4 W 5%
R150	311-0840-00		20 k Ω , Var	
R151	315-0102-00		1 k Ω	1/4 W 5%

Crystal

Y100	158-0063-00	56.70 kHz
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067-5009-00 CALIBRATION FIXTURE

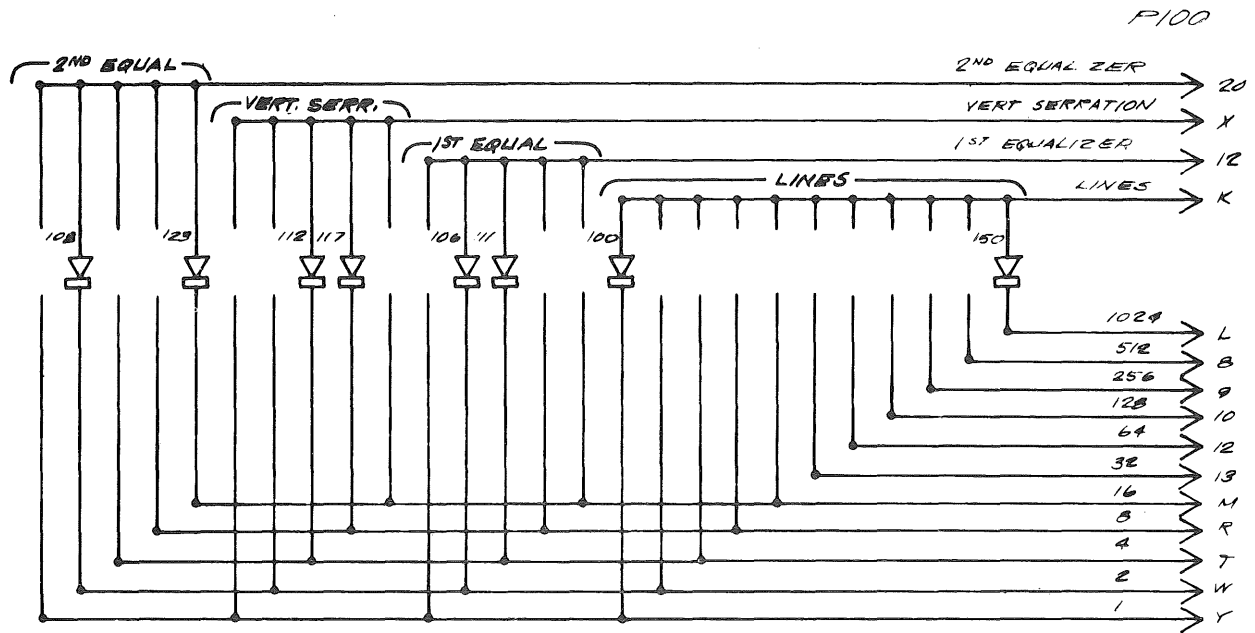
EIA STANDARD 1029/60 LINE/FIELD RATE PLUG-IN UNIT
For 067-0601-00 Television Test Signal Generator



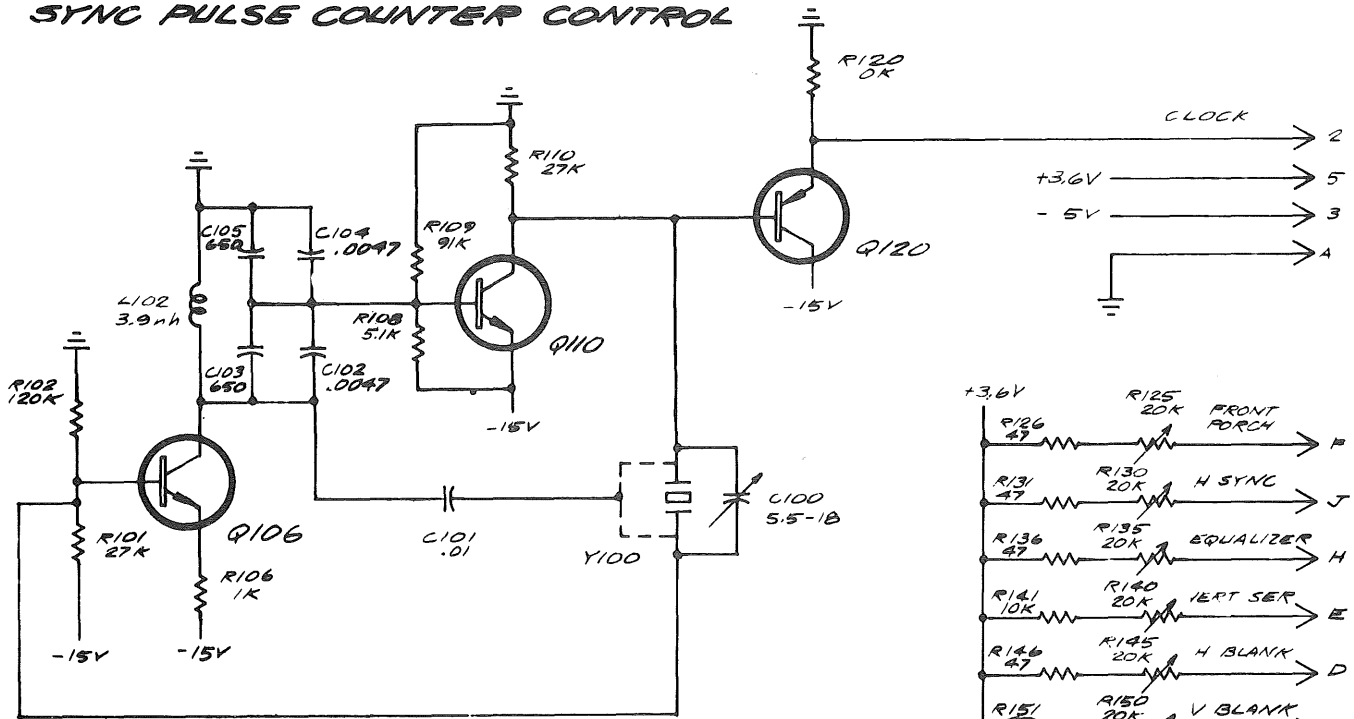
The EIA Standard 1029/60 Line/Field Rate Plug-in Unit provides control of the line and field rate, sync timing, and sync pulse counting for the Tektronix 067-0601-00 Television Test Signal Generator. The plug-in unit with its generator provide a source of composite television signals for calibration and adjustment of television waveform monitors and other equipment.

Clock frequency	61.740 kHz within 0.1%
Lines/frame	1029
Horizontal blanking pulse width	5.3 to 5.8 μ s
Front porch pulse width	0.65 to 1.3 μ s
Horizontal sync pulse width	2.7 to 2.6 μ s
Vertical blanking pulse width	621 to 685 μ s
First equalizer pulse group count	6
Equalizer pulse width	1.2 to 1.4 μ s
Vertical serration pulse group count	12
Vertical serration pulse width	13.6 to 14.2 μ s
Second equalizer pulse group count	18

FOR MECHANICAL PARTS SEE PLUG-IN DETAIL PAGE 8-42



SYNC PULSE COUNTER CONTROL



CLOCK OSCILLATOR

SYNC TIMING

ELECTRICAL PARTS LIST

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff Disc	Description
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Capacitors

Tolerance $\pm 20\%$ unless otherwise indicated.

C100	281-0093-00	5.5-18 pF, Var	Cer		
C101	285-0598-00	0.01 μ F	PTM	100 V	5%
C102	285-0643-00	0.0047 μ F	PTM	100 V	5%
C103	281-0623-00	650 pF	Cer	500 V	5%
C104	285-0643-00	0.0047 μ F	PTM	100 V	5%
C105	281-0623-00	650 pF	Cer	500 V	5%

Semiconductor Device, Diodes

D100	*152-0185-00	Silicon	Replaceable by 1N4152
D106	*152-0185-00	Silicon	Replaceable by 1N4152
D108	*152-0185-00	Silicon	Replaceable by 1N4152
D110	*152-0185-00	Silicon	Replaceable by 1N4152
D111	*152-0185-00	Silicon	Replaceable by 1N4152
D112	*152-0185-00	Silicon	Replaceable by 1N4152
D117	*152-0185-00	Silicon	Replaceable by 1N4152
D123	*152-0185-00	Silicon	Replaceable by 1N4152
D150	*152-0185-00	Silicon	Replaceable by 1N4152

Inductor

L102	108-0224-00	3.9 μ H
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Transistors

Q106	151-0190-00	Silicon	2N3904
Q110	151-0190-00	Silicon	2N3904
Q120	151-0188-00	Silicon	2N3906

ELECTRICAL PARTS LIST (CONT)

Values are fixed unless marked Variable.

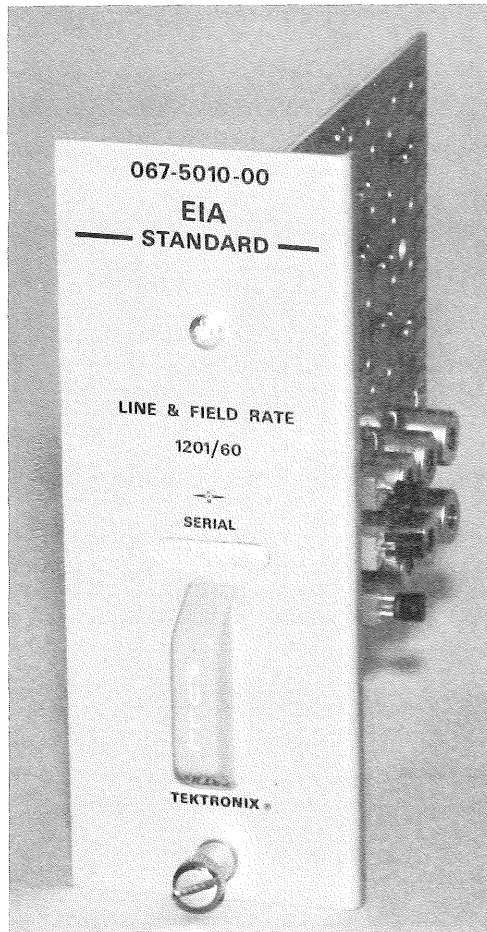
Ckt. No.	Tektronix Part No.	Serial/Model No. Eff	Disc	Description
Resistors				
Resistors are fixed, composition, $\pm 10\%$ unless otherwise indicated.				
R101	315-0273-00		27 k Ω	1/4 W 5%
R102	315-0124-00		120 k Ω	1/4 W 5%
R106	315-0102-00		1 k Ω	1/4 W 5%
R108	315-0512-00		5.1 k Ω	1/4 W 5%
R109	315-0913-00		91 k Ω	1/4 W 5%
R110	315-0273-00		27 k Ω	1/4 W 5%
R120	315-0103-00		10 k Ω	1/4 W 5%
R125	311-0840-00		20 k Ω , Var	
R126	315-0470-00		47 Ω	1/4 W 5%
R130	311-0840-00		20 k Ω , Var	
R131	315-0470-00		47 Ω	1/4 W 5%
R135	311-0840-00		20 k Ω , Var	
R136	315-0470-00		47 Ω	1/4 W 5%
R140	311-0840-00		20 k Ω , Var	
R141	315-0103-00		10 k Ω	1/4 W 5%
R145	311-0840-00		20 k Ω , Var	
R146	315-0470-00		47 Ω	1/4 W 5%
R150	311-0840-00		20 k Ω , Var	
R151	315-0470-00		47 Ω	1/4 W 5%

Crystal

Y100	158-0064-00	61.740 kHz
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067-5010-00 CALIBRATION FIXTURE

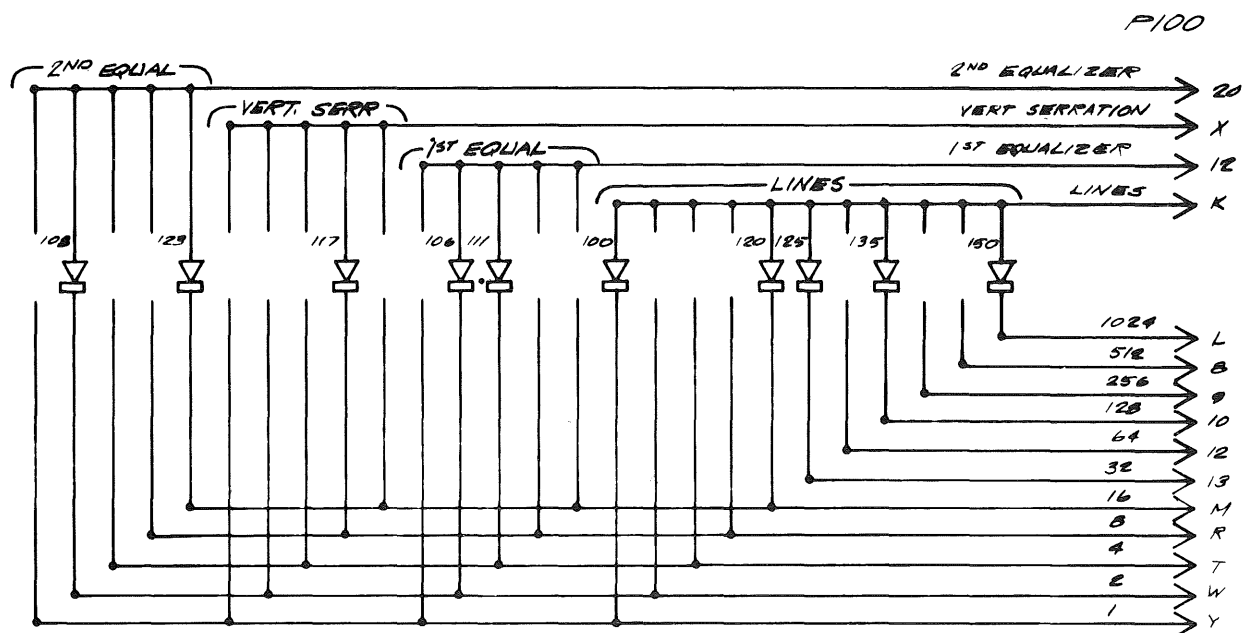
EIA STANDARD 1201/60 LINE/FIELD RATE PLUG-IN UNIT
For 067-0601-00 Television Test Signal Generator



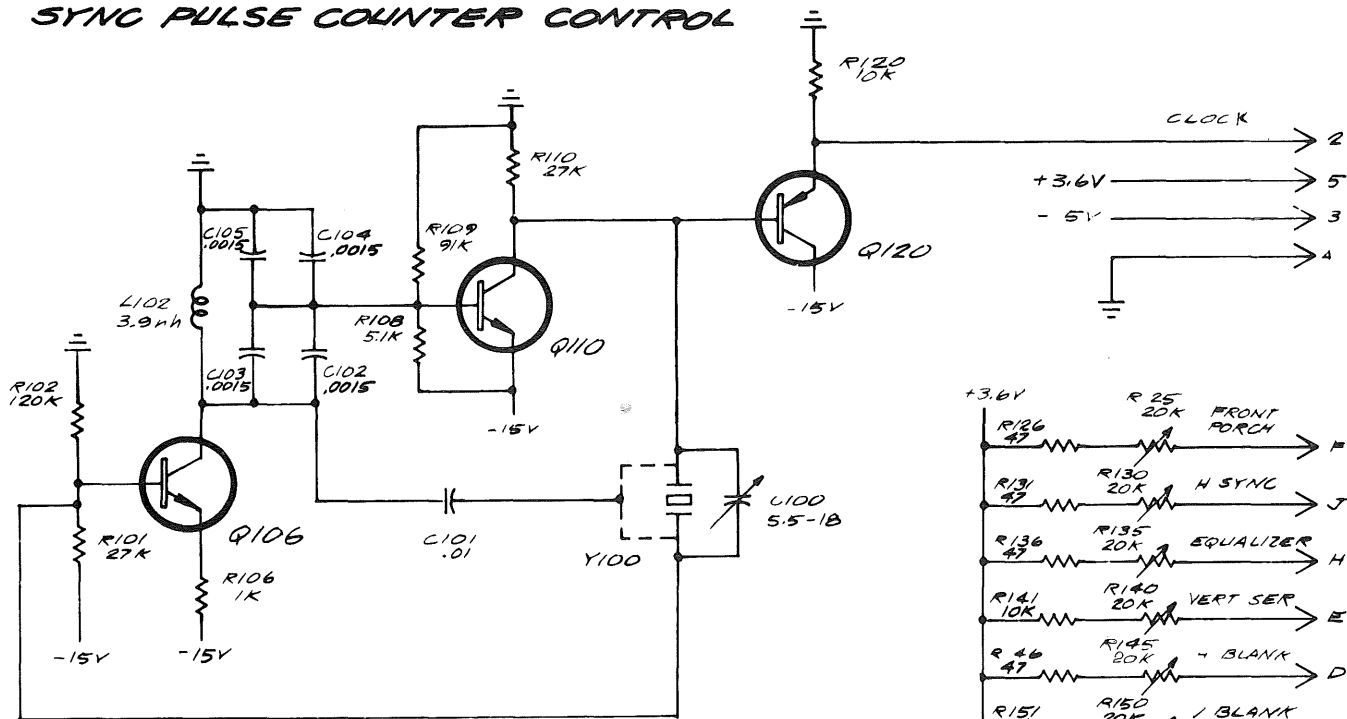
The EIA Standard 1201/60 Line/Field Rate Plug-in Unit provides control of the line and field rate, sync timing, and sync pulse counting for the Tektronix 067-0601-00 Television Test Signal Generator. The plug-in unit with its generator provide a source of composite television signals for calibration and adjustment of television wave form monitors and other equipment.

Clock frequency	72.00 kHz within 0.1%
Lines/frame	1201
Horizontal blanking pulse width	4.6 to 4.9 μ s
Front porch pulse width	0.56 to 1.1 μ s
Horizontal sync pulse width	1.9 to 2.2 μ s
Vertical blanking pulse width	534 to 588 μ s
First equalizer pulse group count	6
Equalizer pulse width	1.0 to 1.2 μ s
Vertical serration pulse group count	12
Vertical serration pulse group width	11.7 to 12.2 μ s
Second equalizer pulse group count	18

FOR MECHANICAL PARTS SEE PLUG-IN DETAIL PAGE 8-42



SYNC PULSE COUNTER CONTROL



CLOCK OSCILLATOR

SYNC TIMING

ELECTRICAL PARTS LIST

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff	Disc	Description
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Capacitors

Tolerance $\pm 20\%$ unless otherwise indicated.

C100	281-0093-00		5.5-18 pF, Var	Cer		
C101	285-0598-00		0.01 μ F	PTM	100 V	5%
C102	285-0626-00		0.0015 μ F	PTM	100 V	10%
C103	285-0626-00		0.0015 μ F	PTM	100 V	10%
C104	285-0626-00		0.0015 μ F	PTM	100 V	10%
C105	285-0626-00		0.0015 μ F	PTM	100 V	10%

Semiconductor Device, Diodes

D100	*152-0185-00		Silicon	Replaceable by 1N4152
D106	*152-0185-00		Silicon	Replaceable by 1N4152
D108	*152-0185-00		Silicon	Replaceable by 1N4152
D111	*152-0185-00		Silicon	Replaceable by 1N4152
D112	*152-0185-00		Silicon	Replaceable by 1N4152
D117	*152-0185-00		Silicon	Replaceable by 1N4152
D120	*152-0185-00		Silicon	Replaceable by 1N4152
D123	*152-0185-00		Silicon	Replaceable by 1N4152
D125	*152-0185-00		Silicon	Replaceable by 1N4152
D135	*152-0185-00		Silicon	Replaceable by 1N4152
D150	*152-0185-00		Silicon	Replaceable by 1N4152

Inductors

L102	108-0224-00		3.9 μ H
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Transistors

Q106	151-0190-00		Silicon	2N3904
Q110	151-0190-00		Silicon	2N3904
Q120	151-0188-00		Silicon	2N3906

ELECTRICAL PARTS LIST (CONT)

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff Disc	Description
Resistors			
Resistors are fixed, composition, $\pm 10\%$ unless otherwise indicated.			
R101	315-0273-00	27 k Ω	1/4 W 5%
R102	315-0124-00	120 k Ω	1/4 W 5%
R106	315-0102-00	1 k Ω	1/4 W 5%
R108	315-0512-00	5.1 k Ω	1/4 W 5%
R109	315-0913-00	91 k Ω	1/4 W 5%
R110	315-0273-00	27 k Ω	1/4 W 5%
R120	315-0103-00	10 k Ω	1/4 W 5%
R125	311-0840-00	20 k Ω , Var	
R126	315-0470-00	47 Ω	1/4 W 5%
R130	311-0840-00	20 k Ω , Var	
R131	315-0470-00	47 Ω	1/4 W 5%
R135	311-0840-00	20 k Ω , Var	
R136	315-0470-00	47 Ω	1/4 W 5%
R140	311-0840-00	20 k Ω , Var	
R141	315-0103-00	10 k Ω	1/4 W 5%
R145	311-0840-00	20 k Ω , Var	
R146	315-0470-00	47 Ω	1/4 W 5%
R150	311-0840-00	20 k Ω , Var	
R151	315-0102-00	1 k Ω	1/4 W 5%

Crystal

Y100	158-0065-00	72.00 kHz
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PLUG-IN DETAIL
MECHANICAL PARTS

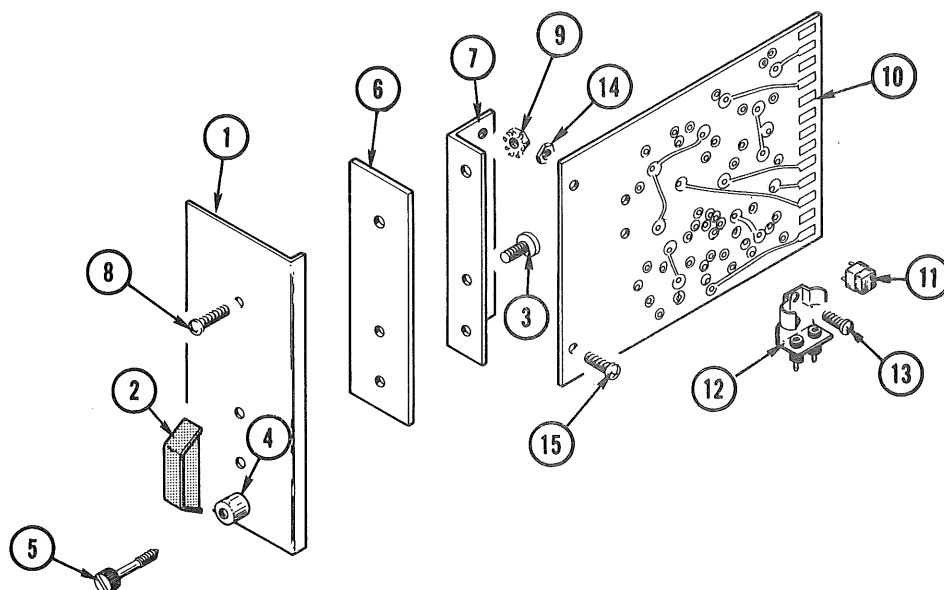


Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	No. Disc	Q					Description
				Y	1	2	3	4	
1	333-1284-00			1	PANEL, front	(for 067-5001-00)			
	333-1283-00			1	PANEL, front	(for 067-5002-00)			
	333-1282-00			1	PANEL, front	(for 067-5003-00)			
	333-1281-00			1	PANEL, front	(for 067-5004-00)			
	333-1280-00			1	PANEL, front	(for 067-5005-00)			
	333-1279-00			1	PANEL, front	(for 067-5006-00)			
	333-1278-00			1	PANEL, front	(for 067-5007-00)			
	333-1277-00			1	PANEL, front	(for 067-5008-00)			
	333-1276-00			1	PANEL, front	(for 067-5009-00)			
	333-1275-00			1	PANEL, front	(for 067-5010-00)			
2	367-0120-00			1	PULL, plug-in				
	- - - - -			-	mounting hardware: (not included w/pull)				
3	212-0008-00			2	SCREW, 8-32 x 1/2 inch, THS				

PLUG-IN DETAIL
MECHANICAL PARTS

Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	No. Disc	Q † Y	1	2	3	4	5	Description
4	358-0255-00			1						BUSHING, latch
5	214-0329-00			1						FASTENER, screw
6	386-1703-00			1						PLATE, backing, front panel
7	407-0733-00			1						BRACKET, circuit card
	- - - - -			-						mounting hardware: (not included w/bracket)
8	211-0012-00			1						SCREW, 4-40 x 3/8 inch, PHS
9	210-0586-00			1						NUT, keps, 4-40 x 1/4 inch
10	388-1419-00			1						CARD, circuit
	- - - - -			-						board includes:
11	136-0220-00			3						SOCKET, 3 pin, transistor
12	136-0153-00			1						SOCKET, 2 pin crystal, w/clamp
	- - - - -			-						mounting hardware: (not included w/socket)
13	211-0079-00			2						SCREW, 2-56 x 3/16 inch, PHS
14	210-0405-00			2						NUT, hex., 2-56 x 3/16 inch
	- - - - -			-						mounting hardware: (not included w/card)
15	211-0008-00			2						SCREW, 4-40 x 3/8 inch, PHS