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067-0690-00/01

CALIBRATION FIXTURE HIGH RESOLUTION TEST GENERATOR

INSTRUCTION MANUAL

Tektronix, Inc.
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Beaverton, Oregon 97077

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PRODUCT 067-0690-00/01 CALIBRATION FIXTURE

This manual supports the following versions of this product: Version 1 and up

MANUAL REVISION STATUS

REV.	DATE	DESCRIPTION
@	9/74	Original Issue
A	2/78	Rewrite and update to support -00 and -01 versions of product.
B	1/80	Revised Issue

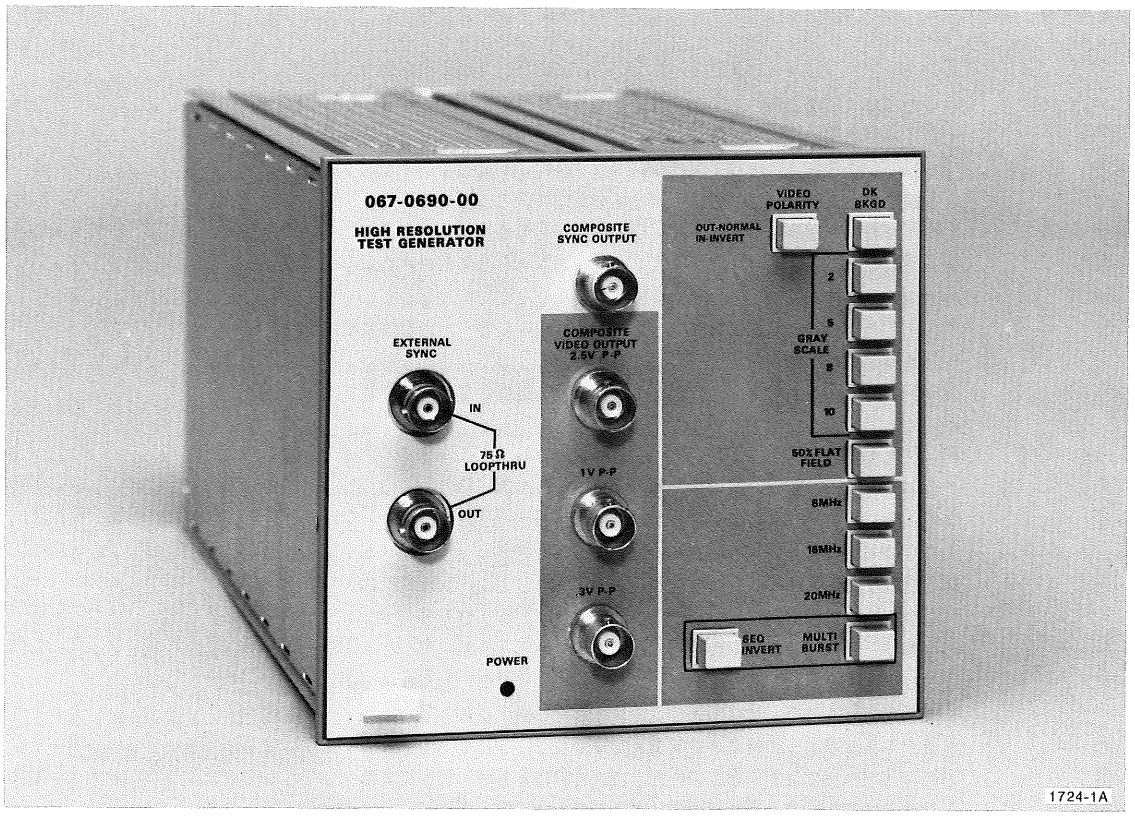
CONTENTS

WARNING

The following servicing instructions are for use by qualified personnel only. To avoid personal injury, do not perform any servicing other than that contained in operating instructions unless you are qualified to do so.

ILLUSTRATIONS

TABLES



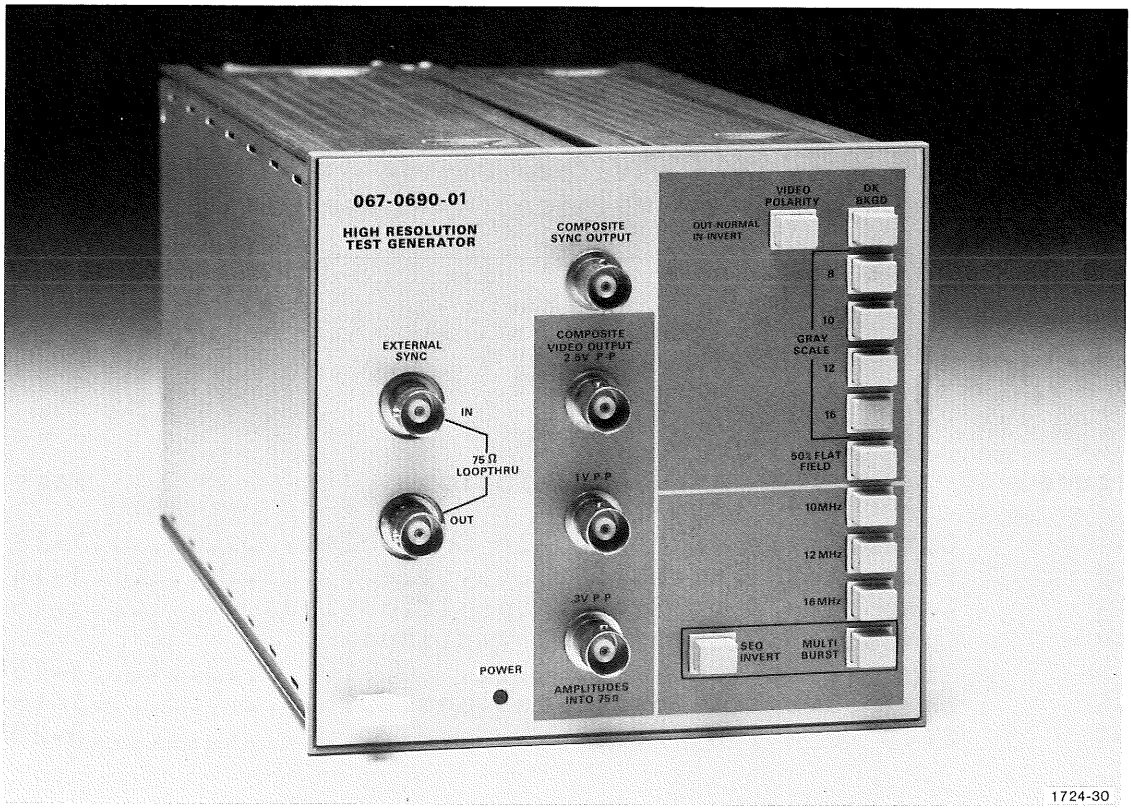


Figure 1-1. 067-0690-00 and 067-0690-01 High Resolution Test Generators.

Section 1

INSTALLATION AND OPERATION

Introduction

The TEKTRONIX 067-0690-00/01 High Resolution Test Generator (Figure 1-1)provides a variety of signals useful in investigating performance of video processing equipment, such as the TEKTRONIX Hard Copy Units. The generator fits into a TEKTRONIX TM 500-Series Power Module and occupies two compartments.

Outputs of composite video of three amplitudes and of composite sync are continuously available from the front panel BNC connectors. The content of the composite video waveform may be varied by the front panel push switches.

The line rate, affecting all output signals, may be set internally to a variety of scanning frequencies; or the generator may be "gen locked" to an external source of composite sync or composite video applied to the front-panel BNC loop-through connectors. In this mode, the generator will lock onto the driving scan frequency and synchronize its output signals accordingly.

PREPARATION FOR USE

Introduction

The Generator is calibrated for a 1029 lines per frame, 60 fields per second output. For internal generation of other scanning rates, refer to the Service section of this manual. The 067-0690-01 is calibrated for a 525 lines per frame, 60 fields per second output.

The generator is designed to operate in any 2-wide compartment of a TM 500-Series Power Module. Refer to the Power Module Instruction Manual for line voltage requirements and Power Module operating instructions.

Installation and Removal

CAUTION

It is recommended that the Power Module be turned off before inserting or removing the Generator. Arcing at the connector terminals can reduce connector life. However, no other internal damage will result if the supply is inserted into a live Power Module.

1. Install the Generator in the Power Module by aligning its upper and lower grooves with the Power Module rails. Insert gently until the generator's front panel is flush with the front of the Power Module.

2. Remove the Generator from the Power Module by pulling the white release latch at the lower left of the front panel, and sliding the unit straight out.

Turn-On Procedure

1. Check that the Generator is fully inserted into the Power Module.

2. Pull the PWR switch on the front panel of the Power Module and observe the lighting of the POWER indicator light on the generator front panel.

FRONT PANEL CONNECTORS

75Ω Loopthru (IN and OUT)

These two BNC connectors (Figure 1-2) allow the user to drive the generator in synchronism with external signals. With no signal applied to IN, the generator operates at a field rate determined by the internal crystal oscillator.

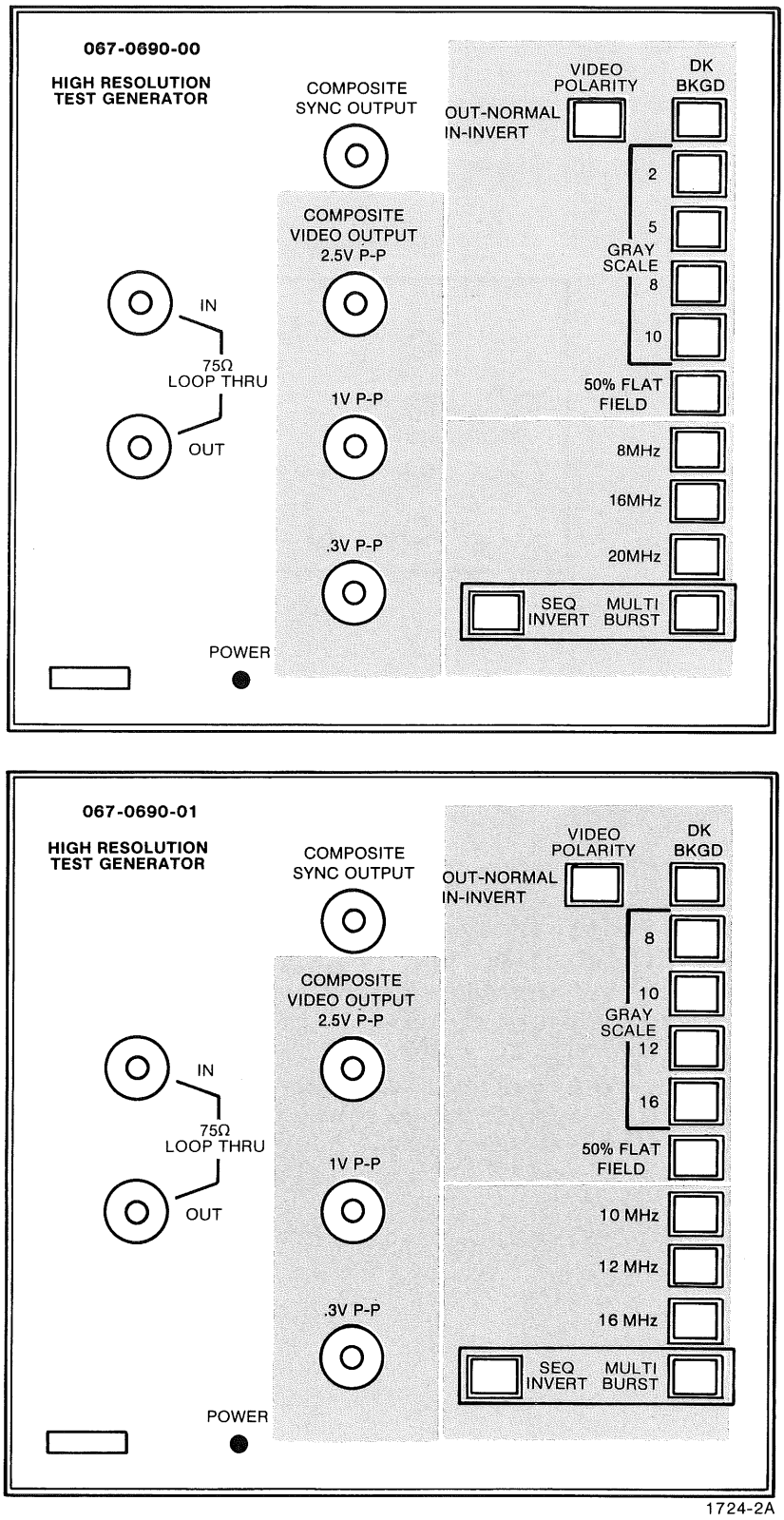


Figure 1-2. 067-0690-00/01 Front Panels.

By applying a composite sync or composite video signal of suitable level to the IN connector, the Generator enters "gen lock" operation, and its output waveforms are synchronized with the driving signal. The OUT connector enables the user to place the Generator in a 75 Ω video "loop through" signal path (Figure 1-3).

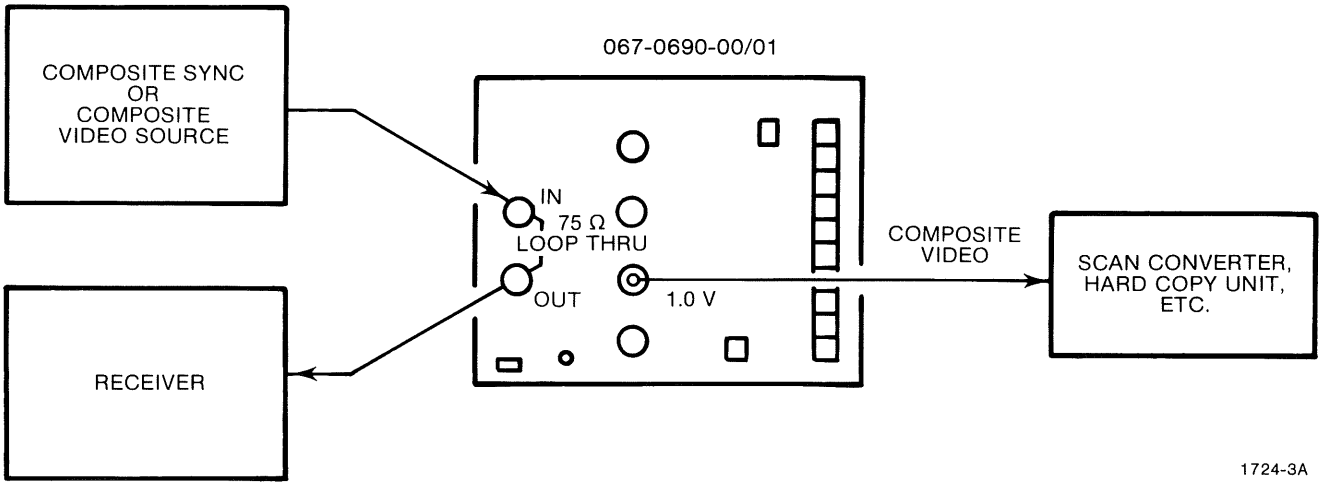


Figure 1-3. Gen Lock Configuration.

Composite Sync Output

This BNC connector (Figure 1-2) provides a 4 volt peak-to-peak composite sync signal into a 75 Ω termination. The composite sync signal agrees with EIA Standard RS-170 and is illustrated in Figure 1-4. The horizontal scanning period (H) is determined by the generator's internal crystal oscillator, or by the horizontal period of an external signal during gen lock operation. The vertical scanning period (V) of the composite sync signal is determined by H and the setting of internal controls described in the Service section of this manual. In gen lock operation, H and V are determined by the H and V of the driving signal.

The Composite Sync signal is not affected by the generator front panel controls.

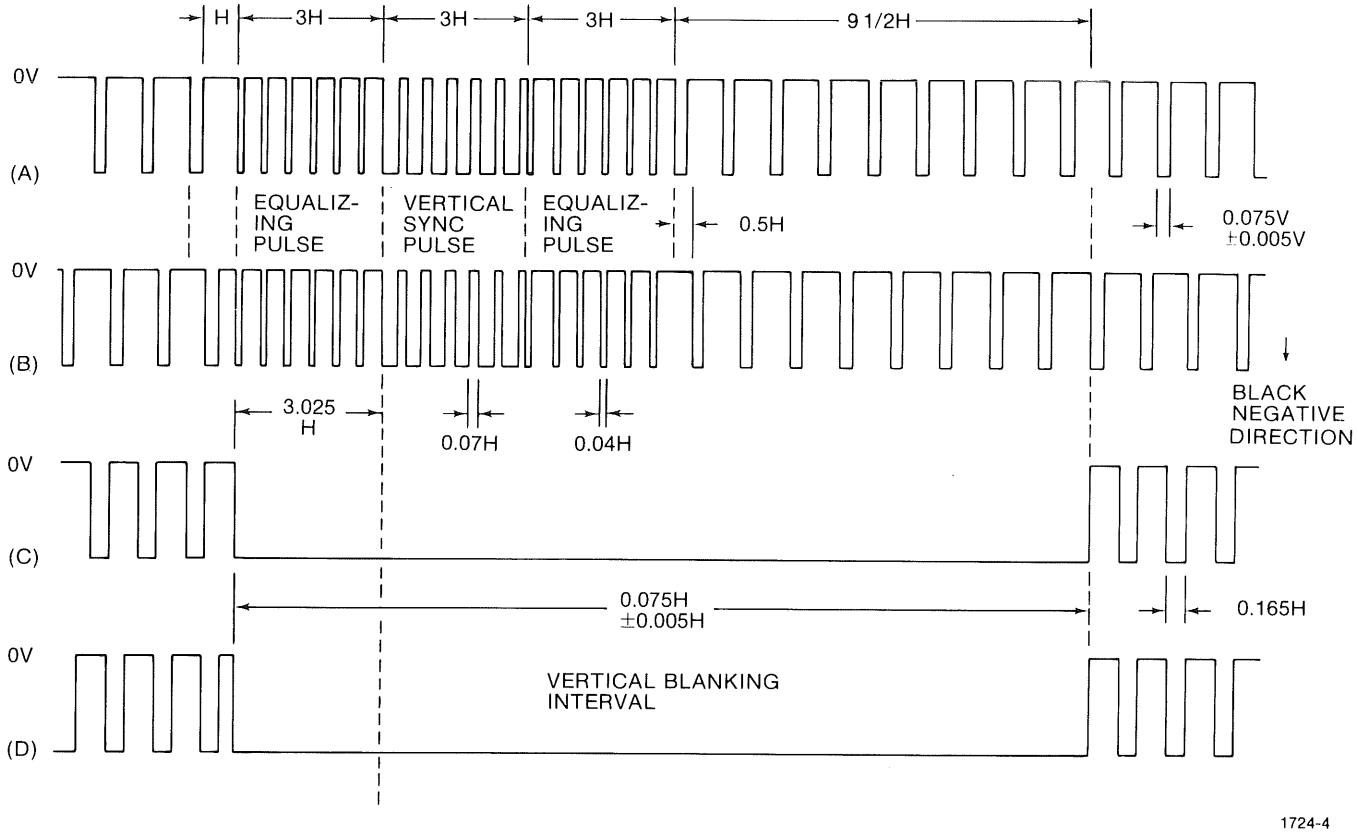


Figure 1-4. Composite Sync Waveforms.

Composite Video Output (2.5 V, 1.0 V. 0.3 V)

The three BNC Connectors directly below COMPOSITE SYNC OUTPUT provide three levels (2.5 V. 1.0V, and 0.3V) of peak-to-peak composite video signal to a 75Ω termination. The three levels allow for testing of automatic gain control circuitry in instruments such as the TEKTRONIX Hard Copy Units.

The composite video signal is obtained directly from the generator's composite sync signal by adding the product of blanking and video envelope signals to it (Figure 1-5). The parameters H and V are therefore exactly those of the composite sync signal previously decribed.

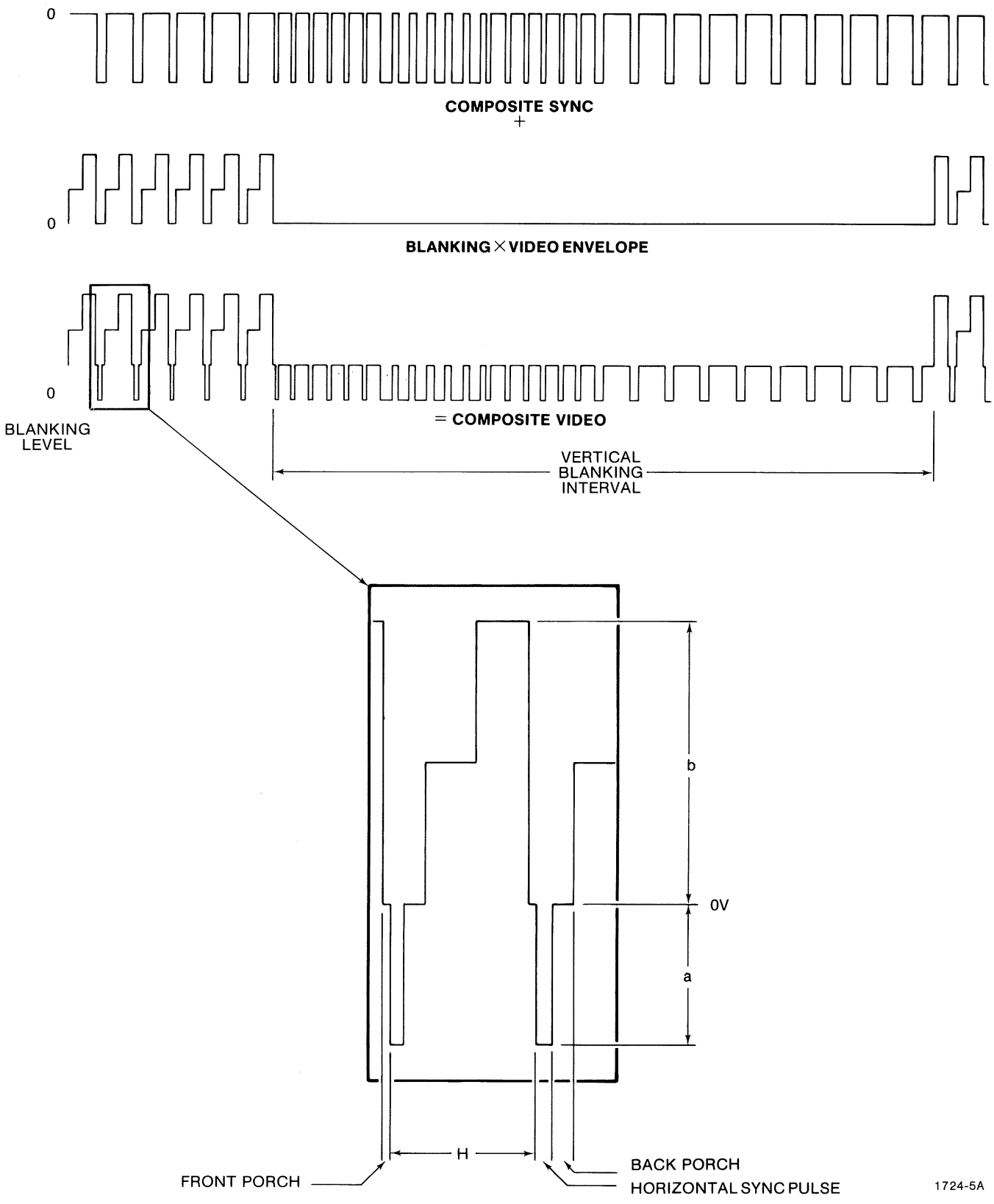


Figure 1-5. 067-0690-00/01 Composite Video Signal.

The content of the video envelope is determined by the Generator's front panel switches, as described in the following text.

FRONT PANEL SWITCHES

Introduction

The Generator front panel push-button switches (Figure 1-2) allow the user to select a variety of video envelopes for the generator's composite video signal. The available video envelopes, and hence available test patterns, fall into two categories: Gray Scale and Continuous Frequency.

A Gray Scale video envelope is a staircase waveform, comprising a number of steps selected by the upper group of front panel switches. When viewed on a monitor, the GRAY SCALE composite video signal results in a bar pattern on the screen, ranging in intensity from black through white (see Figure 1-6 for an 8-step GRAY SCALE). This signal allows the user to test the range of contrast available on the video monitor.

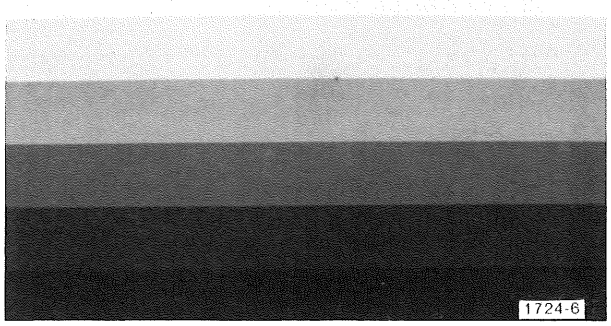


Figure 1-6. 8-Step Gray Scale Test Pattern.

The VIDEO POLARITY control selects whether the increase in intensity occurs toward the top, or towards the bottom of the pattern. (OUT-NORMAL or IN-INVERT).

The lower group of front panel switches select a CONTINUOUS FREQUENCY video envelope, resulting in a test pattern of vertical stripes. The frequency of the modulating sinusoid is selected by pressing the 8, 16, or 20 MHz button switches on the front panel (-00 version), or the 10, 12 or 16 MHz (-01 version). Multiburst operation allows the modulating sinusoid to step through five discrete frequencies during a vertical period. The resulting pattern is fifteen horizontal bars on the screen, each horizontal bar containing vertical stripes.

Gray Scale Functions

Refer to Figure 1-7 for waveform specifications.

DK BKGD (Dark Background) -- This switch selects the minimum video level, resulting in a dark screen.

GRAY SCALE 2 (-00 Version only) -- This switch provides a white and a black horizontal bar of equal height.

GRAY SCALE 5 (-00 version only) -- This switch provides five horizontal bars of equal height ranging in intensity from black through white.

GRAY SCALE 8 -- This switch provides eight horizontal bars of equal height (Figure 1-6), ranging in intensity from black through white.

GRAY SCALE 10 -- This switch provides ten horizontal bars of equal height, ranging in intensity from black through white.

GRAY SCALE 12 (-01 version only) -- This switch provides twelve horizontal bars of equal height ranging in intensity from black through white.

GRAY SCALE 16 (-01 version only) -- This switch provides sixteen horizontal bars of equal height, ranging in intensity from black through white.

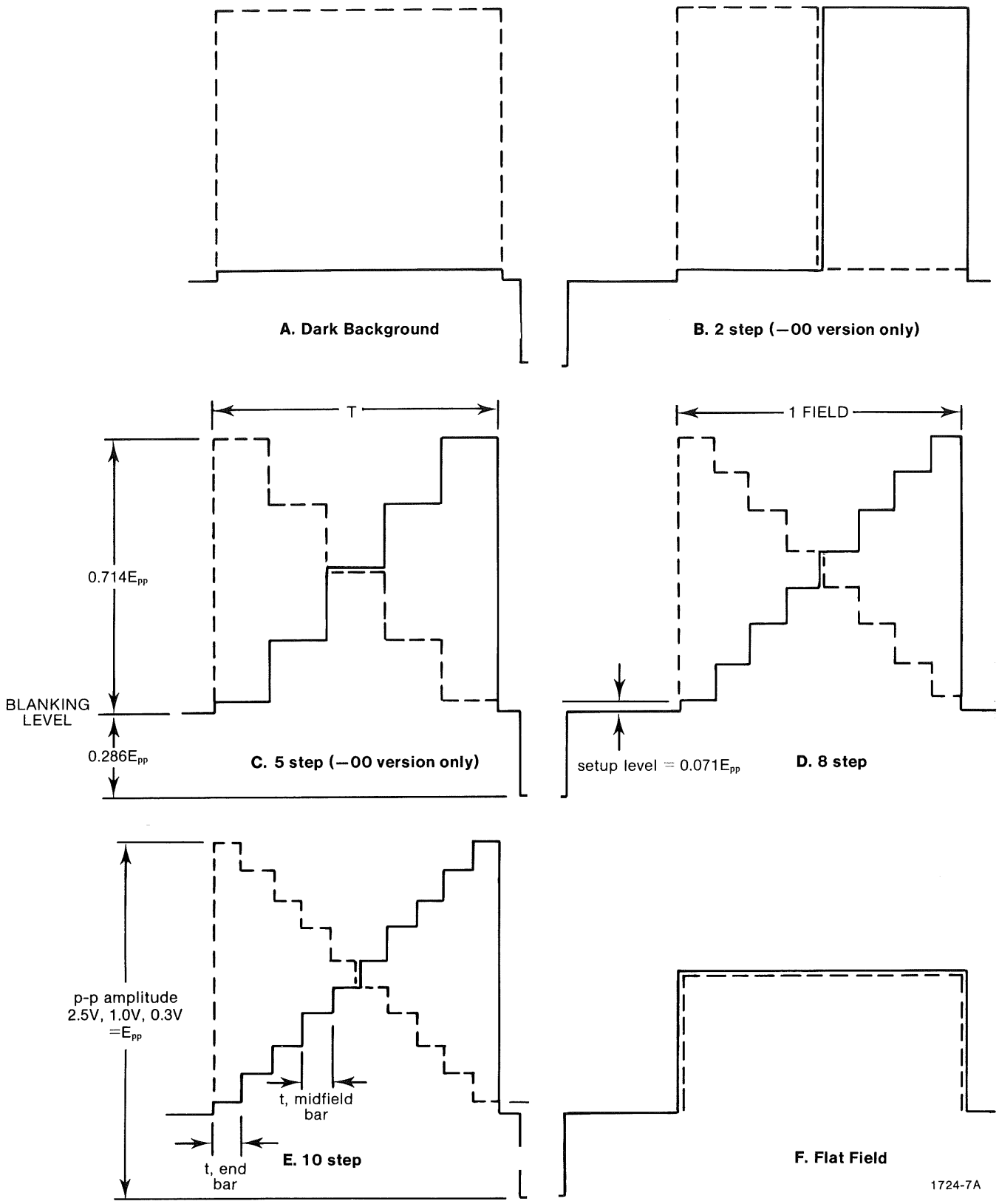


Figure 1-7. Gray Scale Waveforms.

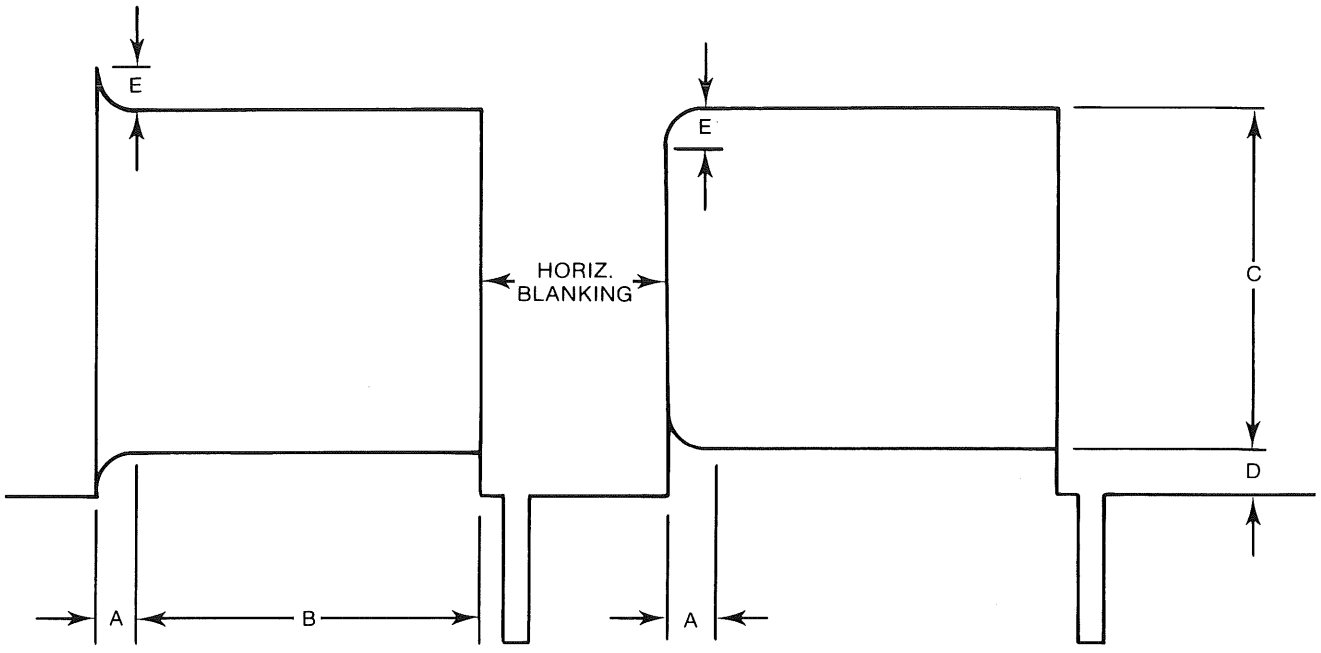
VIDEO POLARITY -- Pressing this switch once inverts the order of the grayscale bar pattern selected. The switch locks in the IN position until pushed a second time. The second push restores the original order of grayscale bars.

50% FLAT FIELD -- Pressing this switch causes a constant 50% intensity field on the screen, unaffected by the VIDEO POLARITY switch.

Sinusoidal Functions

Refer to Figure 1-8 for waveform specifications.

8 MHz -- This switch causes an 8 MHz sinusoidal modulation of the video envelope, and results in a vertical stripe pattern on the screen (Figure 1-9).



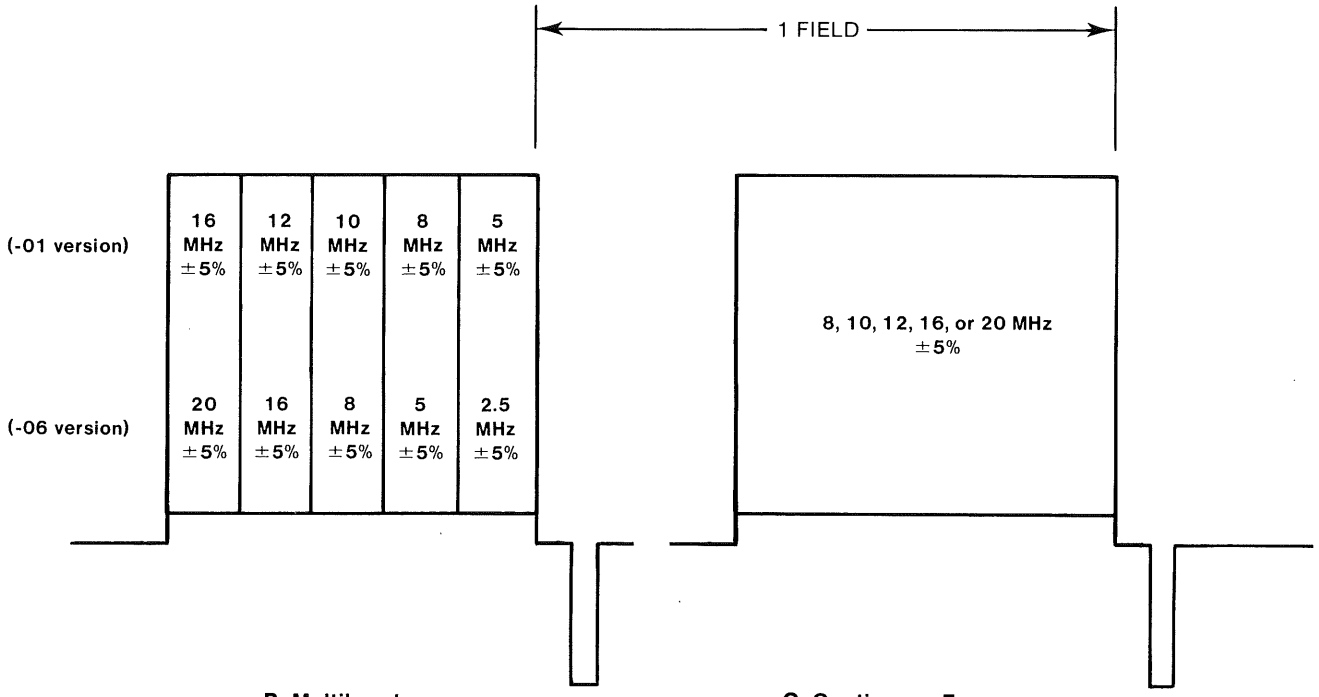
A = OSCILLATOR TURN-ON RECOVERY TIME
A+B = ACTIVE LINE PERIOD
C = OSCILLATOR AMPLITUDE
D = D.C. OSCILLATOR LEVEL
E = OSCILLATOR STARTUP TRANSIENT

$\frac{A}{B} \leq 5\%$

C=0.643 ±0.064V
D=0.071 ±0.01V

} AT 1.0V COMPOSITE VIDEO OUTPUT CONNECTOR

A. Multiburst Transient Characteristics.



B. Multiburst

C. Continuous Frequency

1724-8A

Figure 1-8. Multiburst and Continuous Frequency Waveforms.

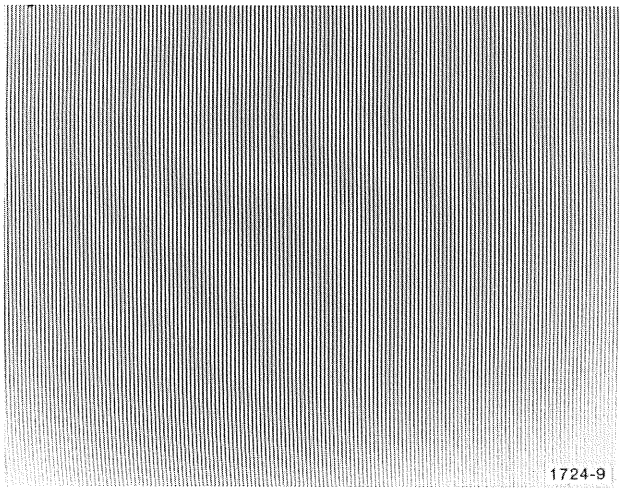


Figure 1-9. 8 MHz Continuous Frequency Test Pattern.

10 MHz -- This switch causes a 10 MHz sinusoidal modulation of the video envelope, and results in a vertical stripe pattern of slightly less spacing than that of the 8 MHz one.

12 MHz -- This switch causes a 12 MHz sinusoidal modulation of the video envelope, and results in a vertical stripe pattern of slightly less spacing than that of the 10 MHz one.

16 MHz -- This switch causes a 16 MHz sinusoidal modulation of the video envelope, and results in a vertical stripe pattern with one half the spacing observed during 8 MHz modulation.

20 MHz -- This switch causes a 20 MHz sinusoidal modulation of the video envelope, and results in a vertical stripe pattern with spacing less than observed during 16 MHz modulation.

MULTIBURST -- For the -00 version, this switch causes a stepping of the modulation frequency through 2.5, 5, 8, 16, and 20 MHz values repetitively during the vertical scan. For the -01 version, the frequencies are 5, 8, 10, 12, and 16 MHz (see Figure 1-10).

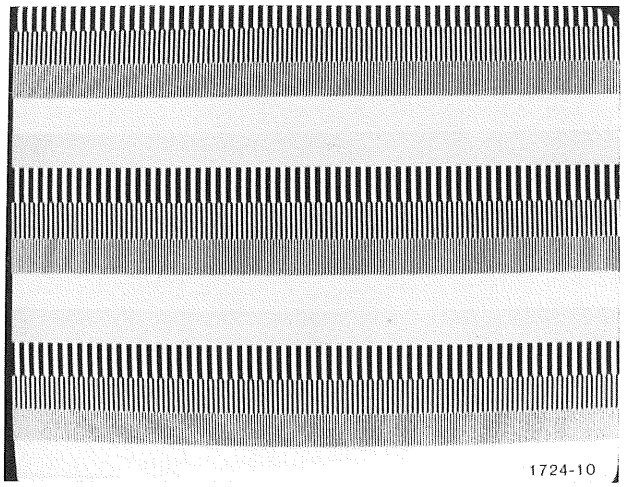


Figure 1-10. Multiburst Test Pattern (With SEQ INVERT Button Out).

SEQ INVERT -- This switch, in conjunction with multiburst, allows inversion of the multiburst sequencing. Pressing the switch once inverts the order of modulating frequencies, and pressing twice restores the original sequence.

Table 1-1 lists the optional crystals that can be interchanged with Y55 on the Sync Generator Board.

Table 1-1

OPTIONAL INTERCHANGEABLE CRYSTALS

Crystal Frequency	Scan Rate	Tektronix Part No.
31.5KHz	525/60	158-0059-00 *
31.25KHz	625/50	158-0058-00
40.5KHz	675/60	158-0095-00
43.74KHz	729/60	158-0061-00
52.5KHz	875/60	158-0062-00
56.7KHz	945/60	158-0063-00
61.38KHz	1023/60	158-0096-00
61.74KHz	1029/60	158-0064-00 **
73.5KHz	1225/60	158-0097-00

* Standard on 067-0690-01.
** Standard on 067-0690-00

SPECIFICATIONS

Power Connections

The 067-0690-00/01 uses the + 33 and +11 volt DC unregulated power supplies of the TM 500-Type Power Module in which it is housed.

Table 1-2

POWER REQUIREMENTS

Characteristics	Performance Requirement
Line Voltage Required	104 -- 126 VAC.
Generator Power Supplies	+15 volt reference ±1%, 5 mV ripple +5 volt ±1%, 5 mV ripple -15 volt ±15%, 5 mV ripple.
Generator Power Consumption	20 Watts.

Composite Sync Output Signal

The specifications on the composite sync signal (Table 1-3) are for three commonly used line and field rates. HR refers to high resolution scanning with 675 to 1235 lines per frame. Refer to Figure 1-4.

Table 1-3

COMPOSITE SYNC SIGNAL SPECIFICATIONS

Signal	Lines/Frame Fields/Second	525 60	625 50	High Resolution 60
Line Sync	Pulse Duration	4.7 us ±0.5 us	4.7±0.5 us	2.75 us ±0.25 us
	Rise and Falltime	≤300 ns	≤300 ns	≤300 ns
	Front Porch Duration	1.5 us ±0.1 us	1.5 us ±0.1 us	1 us ±0.1 us
	Line Period (H)	63.5 us ±1%	64.0 us ±1%	all periods ±1%
Field Sync	Pulse Duration	3H	3H	3H
	Field Period (v)	16.667 ms ±1%	20.000 ms ±1%	16.667 ms ±1%
Comp Sync Signal	Amplitude	4 V P-P ±0.2 V into 75 Ω termination		
	Return Loss	≥30 dB 50 Hz to 5 MHz		
	Rise and Falltime	≤190 ns		

Composite Sync Input Signal (Must conform to Figure 1-4)
Amplitude: 200 mV to 3.5 V

Loopthrough Input Return Loss: ≥40 dB, 50 Hz to 5 MHz

Composite Video Signal

Refer to Figure 1-4 and the previous Composite Sync Specifications. Additionally, the amplitude specifications in Table 1-3 apply to **A** and **B** of Figure 1-4.

Table 1-4

COMPOSITE VIDEO SIGNAL AMPLITUDE SPECIFICATIONS

Composite Video Output Level	2.5V	1.0V	0.3V
Video b	1.785V ±0.25 V	0.714V ±0.1V	0.214V ±0.03 V
Sync a	0.715 ±0.089V	0.286V ±0.036V	0.086V ±0.011V

Gray Scale Specifications

Refer to Figure 1-7 for illustration of the 067-0690-00/01 gray scale waveform. For gray scale 2, 5, 8, and 10 step functions and for the multiburst function, all bars of the test pattern must contain an equal number of lines (±5%) and consequently have equal duration (±5%). An exception to this is the 2 bars at the extreme top and bottom of the screen. These edge bars contain 5 fewer lines than a non-edge bar.

Table 1-5

ENVIRONMENTAL SPECIFICATIONS

Temperature	
Operating	15° C TO 35° C
Storage	-15° C TO 75° C
Vibration	15 minutes each axis at 0.015", frequency varied from 10-50-10-cycle/second in 1 minute cycles with instrument secured to vibration platform. Three minutes each axis at any resonant point or at 50 cycles/second.
Shock	30 g's, 1/2 sine, 11 ms duration, 2 guillotine-type shocks per axis.
Dimensions	11.5" L X 5 5/16" W X 5" H.
Weight	3 pounds.

Section 2

CIRCUIT DESCRIPTION

INTRODUCTION

The High Resolution Test Generator circuitry is contained on three circuit boards. The Sync Generator board contains the sync generator circuits and the +5V and -15 V power supplies. The Logic and Outboard board contains the bar-generating circuits and the comp video and comp sync output amplifier circuits. The Oscillator and Gray Scale board contains the multiburst generator and the bar-timing and output circuits for the gray scale generator. It also contains +5V and +15V power supplies.

BLOCK DIAGRAM

Refer to the Generator Block Diagram in the Schematics section. This diagram shows the interrelation between the functions of the three circuit boards. The sync generator is located at the top of the diagram, Logic and Output below it, and Oscillator and Gray scale at the bottom. All connector designations are shown except for the power supply interface with the TM 500 Series Power Module.

SYNC GENERATOR

Refer to the Sync Generator Schematic Diagram. Assume that no signal is applied to the LOOPTHRU input; that is, the generator is running in the internal mode. Because no external signal is applied, no separated sync pulses will drive U505, an astable multivibrator. The resulting low Q output enables the generator's internal crystal oscillator. The oscillator rate is twice that of a horizontal line (the serration frequency). Counting and gating circuitry in the Sync Generator produce the complete range of synchronization, blanking and drive signals. The composite sync output is fed directly to the composite sync amplifier which outputs the signal to the front panel COMP SYNC connector.

GEN LOCK OPERATION

Should an external source of composite information (be it a composite sync or composite video signal) be applied to the COMP SYNC IN connectors, the video signal is clipped by the sync stripper circuitry. The remaining sync pulses drive U505, disabling the internal crystal oscillator and enabling the variable frequency, voltage controlled (VCO) oscillator. This oscillator then drives the sync generator circuitry at the external signal's characteristic serration rate. The output horizontal sync pulse train (H SYNC) is returned to the phase detector, where it is compared with the externally applied horizontal sync signal. The error signal from the phase detector locks the VCO to the driving frequency.

Vertical sync pulses for driving and sync gen signals are aligned by an error signal developed at U675, which causes a reset of the sync gen counters (U355, U365 and U375).

BAR GENERATION

The four gray scale functions and the multiburst function require that the content of the composite video envelope be stepped through different states during a vertical sweep. The astable multivibrator (bar generator) comprising Q105 and Q119 on the Logic and Output Board begins this function and runs continuously at a rate determined by TIMING 1 and TIMING 2 time constants and the 50/60 field rate strap option. The timing constants are chosen by the gray scale and multiburst switch on the Oscillator and Gray Scale board. The gray scale switch, step 2, causes the multivibrator to oscillate at twice the field rate; the gray scale switch, step 5, causes oscillation at five times the field rate; and the gray scale switch steps 8 and 10 have analogous functions. The multiburst switch causes a 15 times field rate oscillation, allowing the 15 multiburst bars to be of equal width.

The bar generator is synchronized to H SYNC and V BLNK, on the Sync Generator, and its output is provided to both the gray scale counter and multiburst generator.

GRAY SCALE

Refer to the Oscillator and Gray Scale Schematic diagram. The signal GRAY GEN from the bar generator clocks counter U226, which is only disabled by the multiburst switch. The outputs from this counter drive a digital-to-analog (d to a) converter that provides a staircase waveform to the divider network composed of R12, R13, R16, and R18. The front panel switches then adjust the staircase to the appropriate normalized level, which is then applied to one input of a differential amplifier.

A clamp is provided by V SYNC, which stabilizes the amplifier between fields. The second input to the differential amplifier is held at a reference voltage, with the result that both positive and negative going normalized staircase waveforms are made available to VIDEO POLARITY switch S45. The latter switch selects the appropriate positive-going or negative-going staircase, and the closed state of one of the gray scale switches relays this signal to the composite video output amplifier.

The dark background and flat-field selections cause a departure from normal gray scale functions. Both dark background and flat-field switches ground the staircase input. and both outputs of the differential amplifier are determined by the reference voltage. Normally, this reference is ground. In the case of dark background selection, the ground reference ensures a low-level constant dark background signal relayed to the composite video output amplifier.

The flat field switch applies a positive reference voltage to the differentiual amplifier, adjusted by R217 to ensure that both amplifier outputs are at an equal and intermediate (in terms of resulting intensity) voltage level.

FREQUENCY GATE GENERATOR

The GRAY GEN signal from the bar generator is applied to the frequency gate generator. The latter's outputs are gates enabling the five Colpitts oscillators. If a sinusoid of 8 MHz, 16 MHz, or 20 MHz is selected by a front panel switch, the appropriate gate for the selected oscillator is held high for the duration of the vertical scan. Selection of multiburst enables the frequency gate generator to step thgrough the five frequency gates at a 16-step-per-field repetition rate.

MULTIBURST GENERATOR

The multiburst generator is composed of five Colpitts oscillators gated by the outputs of the frequency gate generator previously described, and H DRIVE, which allows the appropriate oscillator to be keyed slightly prior to the removal of the horizontal blanking pulse. This preparatory time allows the keyed oscillator to reach steady-state characteristics. The outputs of the oscillators are summed and relayed through a closed 8 MHz, 16 MHz, 20 MHz or multiburst selection switch to the composite video output amplifier.

COMPOSITE VIDEO OUTPUT AMPLIFIER

The selected video envelope, either gray scale sinusoid, or multiburst is combined with composite sync at the composite video output amplifier. The resulting composite video signal passes through a voltage divider, and the 2.5V, 1.0 V, and 0.3 V signals are made available to the three front panel output connectors.

POWER SUPPLIES

The Sync Generator and Oscillator and Gray Scale boards contain the power supply regulators. The Sync Generator board accepts +11.5 V and -33.5 V unregulated voltages from the Power Module and supplies +5 V regulated and -15 V regulated. The Oscillator and Gray Scale board accepts +11.5V and +33.5 V unregulated from the Power Module and supplies +5 V regulated and +15V regulated.

The +15 V supply is variable by means of R182 (Oscillator and Gray Scale Board) and is used as a reference for the remaining non-adjustable supplies.

WARNING

THE FOLLOWING SERVICING INSTRUCTIONS ARE FOR USE BY QUALIFIED PERSONNEL ONLY. TO AVOID PERSONAL INJURY, DO NOT PERFORM ANY SERVICING OTHER THAN THAT CONTAINED IN OPERATING INSTRUCTIONS UNLESS YOU ARE QUALIFIED TO DO SO. REFER TO OPERATORS SAFETY SUMMARY AND SERVICE SAFETY SUMMARY PRIOR TO PERFORMING ANY SERVICE.

Section 3

SERVICE

INTRODUCTION

The 067-0690-00/01 High Resolution Test Generator contains three circuit boards: the Sync Generator board, the Logic And Output board, and the Oscillator And Gray Scale board. Refer to Figure 3-1 which illustrates the mounting of these boards, and to Figure 3-2, which shows locations of user options.

For access to the Sync Generator and Oscillator and Gray Scale boards, remove the two sliding covers from the Generator. The field-rate strap (Figure 3-2b)on the Logic and Output board can be reached through the rear of the Generator by the use of needle-nose pliers. Access to the Logic and Output board requires lifting the Sync Generator board. This can be done by gently prying the indicator lamp from its housing, disconnecting P111, and removing the four mounting screws on the Sync Generator board.

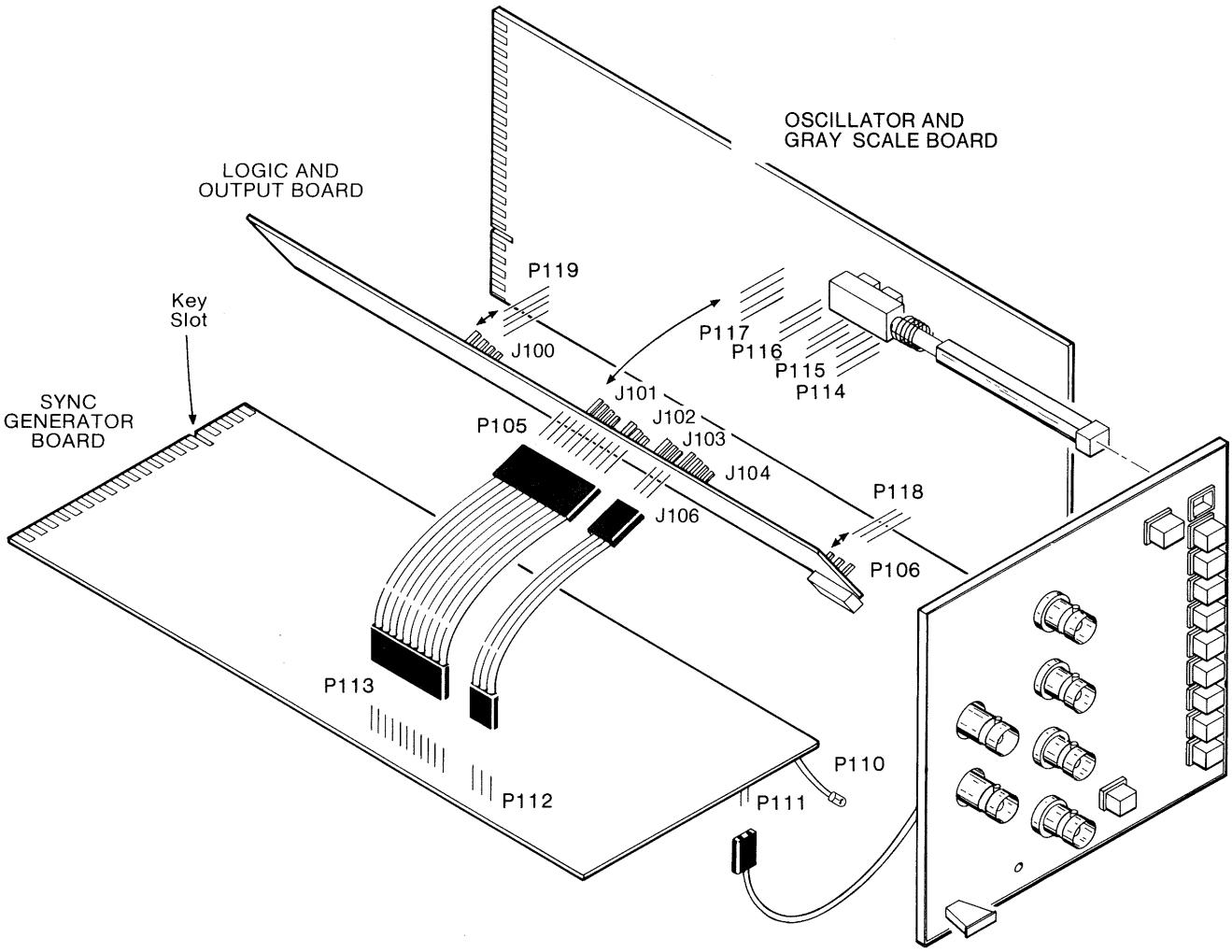


Figure 3-1. Interconnections of the Three Circuit Boards.

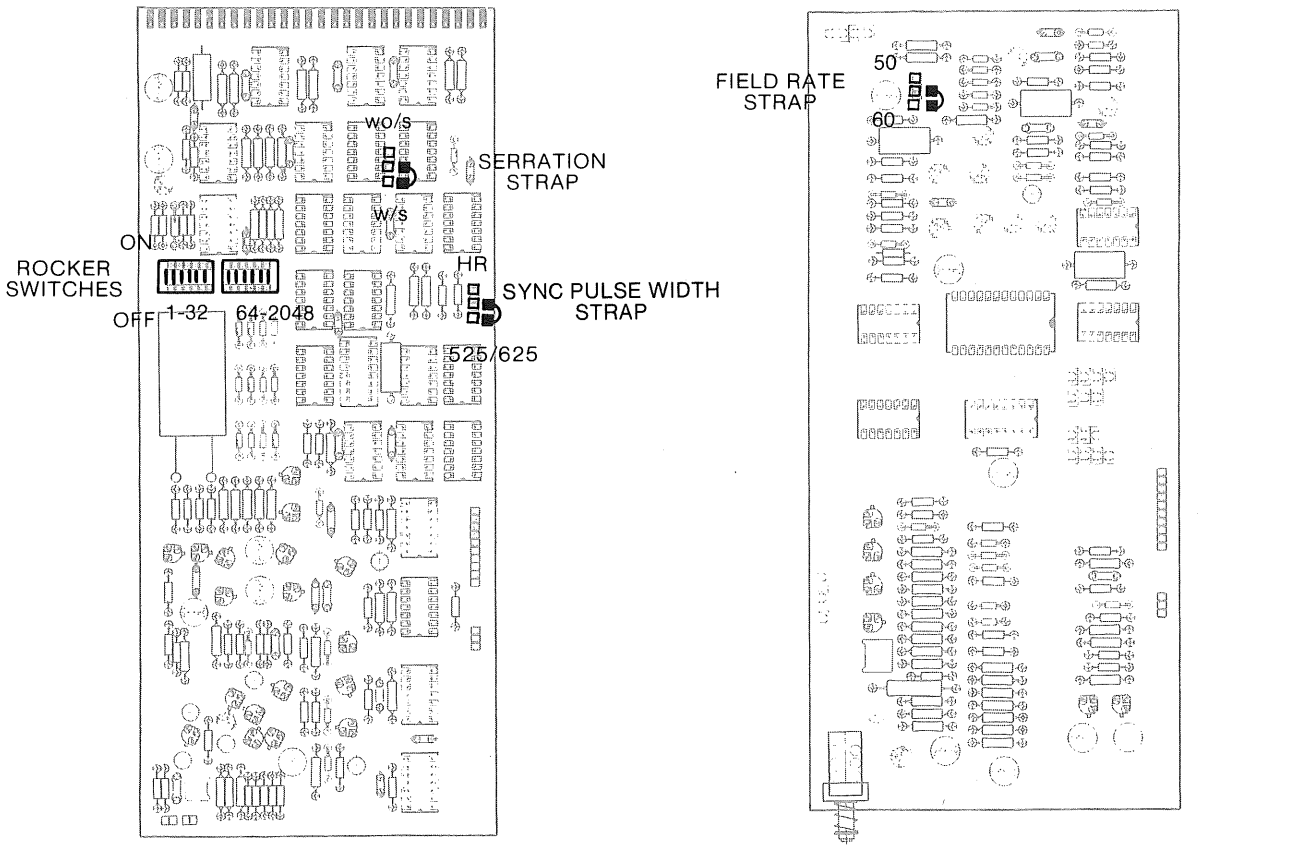


Figure 3-2. Location of User Options on (A) Sync Generator Board and (B) Logic and Output Board.

USER OPTIONS

The Generator contains three straps and twelve small rocker switches which should be set by the user with the following considerations:

Sync Pulse Width Strap--525/625 or HR (High Resolution).

This strap, located on the Sync Generator board (Figure 3-2) determines the generator blanking and sync pulse widths. This effect is independent of whether the generator is driven by its internal crystal oscillator, or by an external source (during gen lock operation). If the desired resolution is 525 or 625 lines/frame, set the strap to the 525/625 lines/frame, set the strap to the 525/625 position. If the desired resolution is between 675 and 1235 lines/frame, set the strap to the HR (high resolution position).

Serration Strap -- With Serration (W/S) or Without Serration (WO/S)

This strap, located on the Sync Generator board, (Figure 3-2) affects the generator's gen lock operation. If the external signal used for driving the generator contaiuns serration pulses, place the strap in the W/S position. If no serration pulses are present, place the strap in the WO/S position.

Field Rate Strap -- 50 or 60

This strap, located on the Logic and Output board (Figure 3-2), allows the user to select a particular field rate. During internal operation (with the gen lock signal absent), the generator produces a field rate determined by the crystal frequency and the setting of rocker switches as described in the following text.

During gen lock operation, the field rate is controlled by the rate of the field signal applied to the loop-thru connector. If this signal has a 60 field/second rate, set the strap to 60. If it has a 50 field/second rate, set this strap to 50.

Rocker Switches -- 12 two position switches labled 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, and 2048.

These switches, located on the Sync Generator board (Figure 3-2) allow the user to select the number of lines per frame of the generated video signal. For 1029 lines /frame, the switches marked 1024, 4 and 1 should be placed in the ON position (1024 +4 +1 = 1029).

During gen lock operation, the applied signal determines the generator's line/frame output. The rocker switches must be set to the applied signal's line/frame value.

During internal operation, the line/frame ratio is affected by the horizontal line rate, which is in turn determined by the frequency of the oscillator crystal (Y55). The crystal supplied with the generator (067-0690-00) produces a 1029 line/frame (61.74 KHz crystal) signal, and the rocker switches should be placed in the 1029 positions. The 067-0690-01 Generator is supplied with a 31.5 KHz crystal.

Should another line /frame value be desired, the crystal should be replaced with one of proper frequency:

crystal frequency = (lines /frame) x (fields /second)

As an example, if 1029 lines per frame/60 fields per second output is desired, find the crystal frequency by multiplying 1029 x 60, for a frequency of 61.74 KHz.

CALIBRATION PROCEDURE

Introduction

The following calibration procedure will enable the user to place the Generator within the specifications outlined in Section 1. The procedure is meant to be followed in a step-by-step manner, and it will not normally be necessary to repeat a step. Where such repetition is necessary (due to interaction of adjustments), it is noted in the procedure.

Equipment Required

The following TEKTRONIX, Inc. or equivalent equipment is required for the procedure.

7603 Oscilloscope with 7B53 Time Base and 7A13 Differential Amplifier.

P6065 X10 Probe

75 Ω BNC Cable.

15-0149-00 Return Loss Bridge

DC 503 Frequency Counter with 2 P6011 probes.

DM 501 Multimeter

(2) 067-0645-01 Extender Cables

Sine Wave Generator, 50 Hz to 50 MHz

PG 501 or PG 502 Pulse Generator

Variable Transformer, rated at 50 watts or more, with an output voltage range of 104 to 126 Vac.

75 Ω BNC Terminator, Tektronix Part Number 011-0055-00

Tools Required

In addition to the above, the following tools are necessary:

Phillips screwdriver, 1/4 in.

Standard screwdriver, 1/8 in.

Non-ferrous adjustment tool, 1/16 in. hex tip.

(2) Integrated Circuit Clips.

1. Preliminary Procedures

a. With the Power Module power switch set to OFF (pushed in), connect the Generator to the Power Module connectors by means of the two extender cables.

b. Remove the sliding protective covers from both sides of the generator. Place the variable transformer in series between the ac supply and the Power Module. Set to 115 V.

c. Turn the Power Module power switch to ON (pull).

CAUTION

Utmost care must be taken when probing the energized instrument. Carelessness may result in equipment damage.

2. Power Supplies

a. With the multimeter set to read in the +15 volt range, connect the IC clip to U181, Pin 3 (Figure 3-3). Attach the ground probe to the generator chassis. Adjust R182 so that the voltage is +14.85 to +15.15 volts. With the oscilloscope probe at the same test point, ripple should be less than 5 mV.

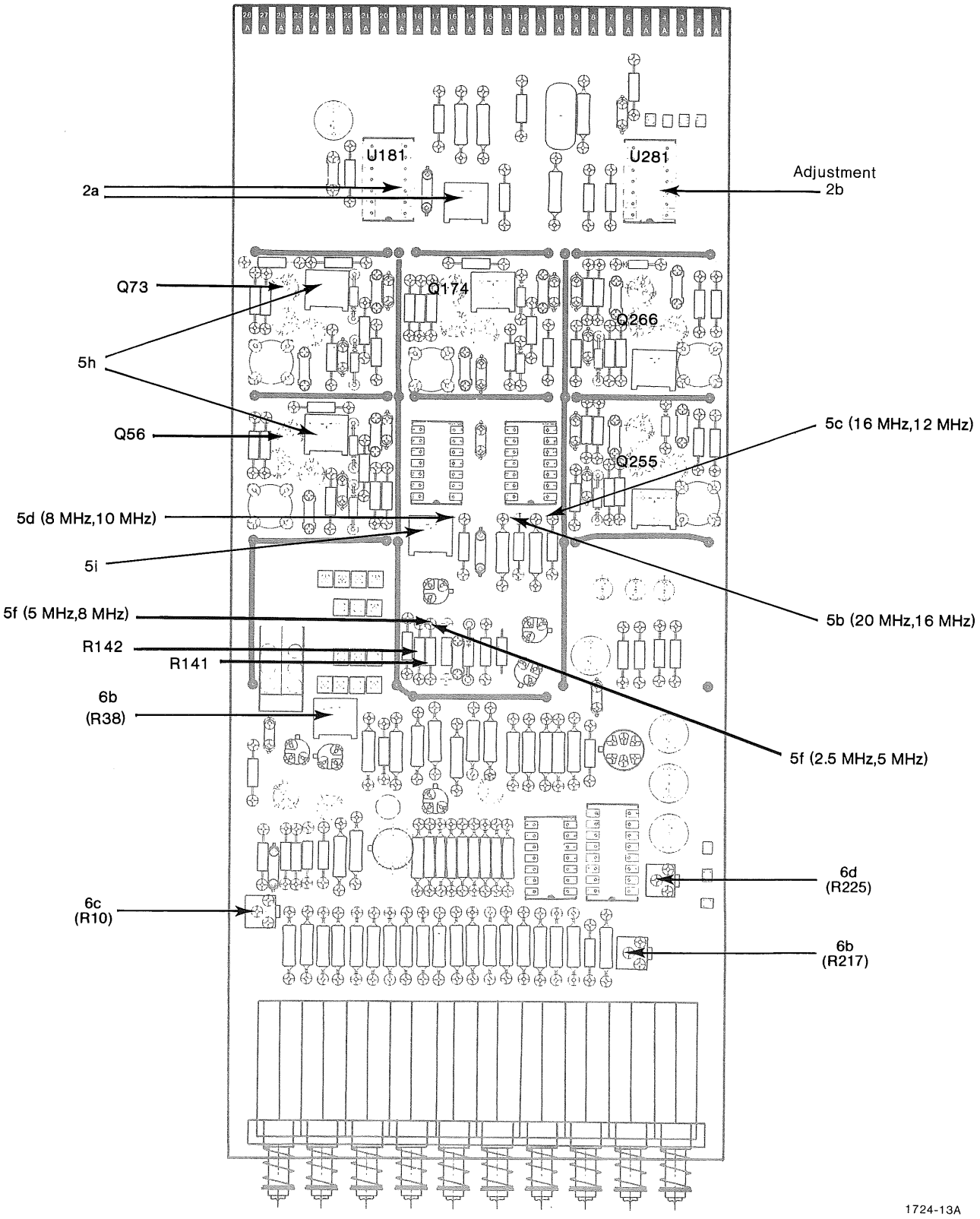


Figure 3-3. Oscillator and Gray Scale Board Calibration and Test Points. Second Values in Parentheses are for the 067-0690-01.

b. Transfer the IC clip and multimeter probe to U281, Pin 3 (Figure 3-3). Voltage should be +4.95 to 5.05 volts. Ripple should be under 5 mV. Line voltages for these tolerances are 104 to 126 Vac.

c. Set the multimeter to measure in the +5V range, and attach the IC Clip on the multimeter probe to Pin 3 of U185 (Figure 3-3). +4.95 to 5.05 volts should be measured. Ripple should be less than 5mV. Line voltages for these tolerances is 104 to 126 Vac.

d. Set the multimeter to read in the -15 V range. Place the IC Clip and probe on U175, pin 7 (Figure 3-4). Voltage should be -15.85 to -15.15 volts. Ripple should be under 5mV. Line voltage for these tolerances should be 104 to 126 Vac.

3. Line, Field and Interlace

a. The following test points are located on the Sync Generator board, Figure 3-4. Set rocker switches SW 165 and SW 265 to the desired line-per-frame ratio, as outlined at the beginning of this section.

b. Set the DC 503 Function switch to Freq A with a gate time of 1 s. Turn the Display Time Control fully counterclockwise. Move the IC clip to U295. Connect a probe from channel A to U295, pin 1. The displayed number should equal the horizontal rate of the generator ±10%. For example, a 525 lines per frame with 30 frames per second selection results in a horizontal rate of 525 x 30 = 15,750 Hz. The ± 10% tolerance for this value would require a display of 14,175 to 17,325 Hz on the DC 503.

c. Move the IC clip to U655. Connect a probe from channel B to U655, Pin 8. Set the DC 503 Function switch to Ratio A/B, and the N/Clock Rate switch to 10 . The counter should now display a value equal to the number of lines per field. For 1029 lines, for example, the number displayed should be 514.5. For 525 lines/frame (NTSC), the number displayed will be 262.5.

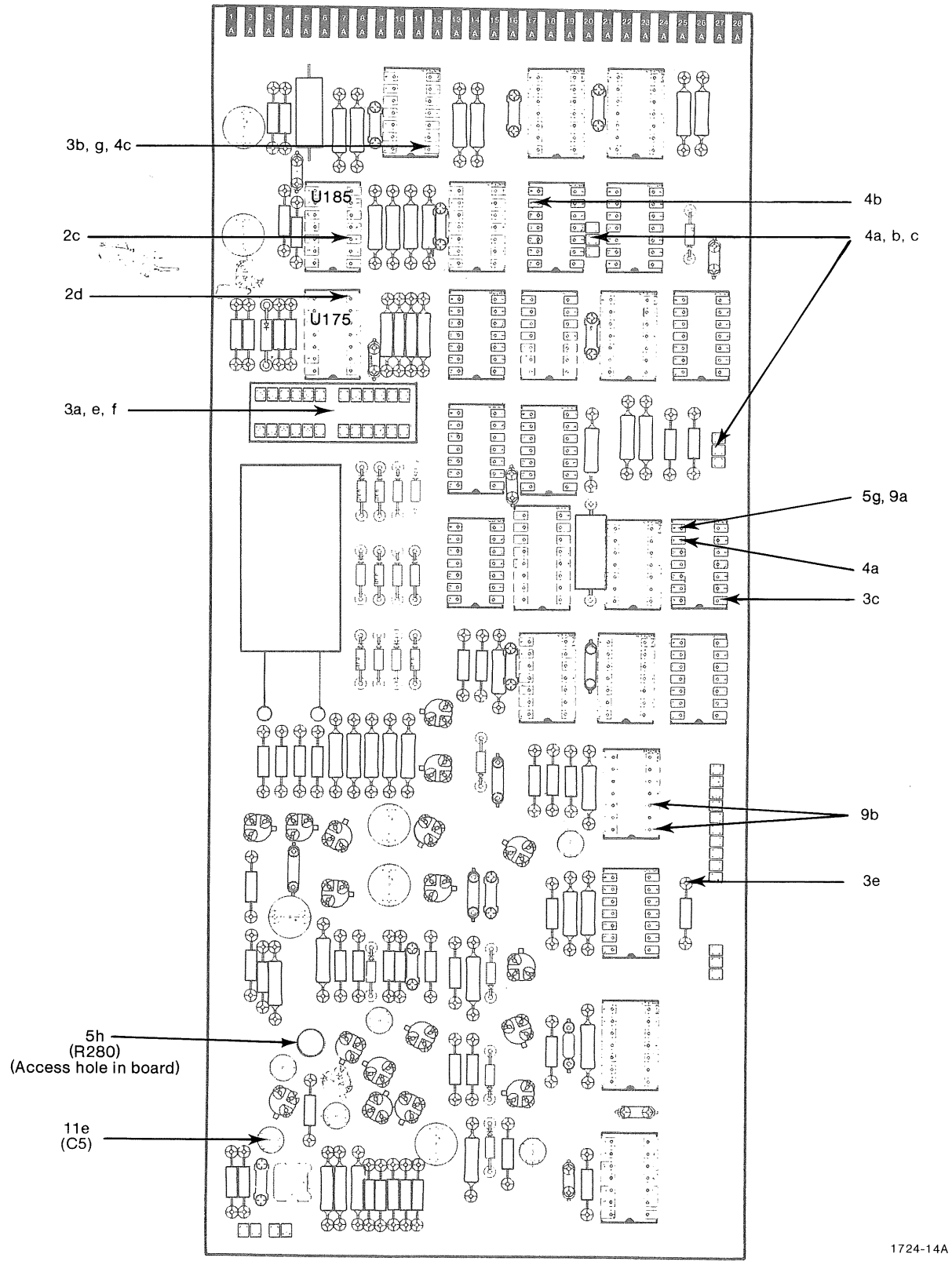


Figure 3-4. Sync Generator Calibration and Test Points

d. Set the DC 503 Function switch to Period B. The counter will read in the range 16.500 to 16.733 if the generator is set for 60 Hz operation, and in the range 19.800 to 20.200 if set for 50 Hz operation.

e. Remove the IC clip and the DC 503 probes. Connect the channel A probe to the diode side of R625. Set the counter function switch to Freq A, gate of 1 s. Turn all of the rocker switches to the position marked OFF. Turn each switch, one at a time, to the ON position. The counter should read a value equal to the crystal frequency divided by the number associated with the particular switch. For example, the following values should be observed with a crystal of 31.500 kHz inserted.

Switch ON	DC 503 Display
1	31.500
2	15.750
3	7.875
4	3.938
5	1.968
6	0.985
.	.
.	.
.	.
.	.

f. Set the rocker switches to the proper setting for the crystal installed. For the example of 525 lines per frame and 30 frames per second, the appropriate crystal frequency is 31.500 kHz and the correct rocker switch settings are as follows:

Switch	Setting
1	ON
2	OFF
4	ON
8	ON
16	OFF
32	OFF
64	OFF
128	OFF
256	OFF
512	ON
1024	OFF
2048	OFF

g. Set the DC 503 Function switch to Period B and the N/Clock Rate switch to 10^4. Connect the IC Clip and then the B channel probe to U295, Pin 1, where pulses are generated for each horizontal blanking interval. The DC 503 display should be in the range indicated by the following, dependent upon the selected lines per frame and fields per second ratios.

Lines per Frame	Fields per Second	DC 503 Display (H)
625	50	63.36 to 64.64
525	60	62.86 to 64.14
675	60	48.81 to 49.79
729	60	45.24 to 46.16
875	60	37.72 to 38.48
945	60	34.85 to 35.55
1032	60	32.18 to 32.82
1235	60	26.93 to 27.47

4. Blanking, Field, and Line

a. Place the Sync Pulse Width Strap (Figure 3-2) in the 525/625 position. Place the Serration strap in the W/S position. Connect the signal on U655, Pin 9 (Figure 3-4) to the oscilloscope by means of a X10 probe. With the oscilloscope sweep set at 0.2 ms per cm, verify a field blanking pulse with a duration of from 1167.7 us to 1333.3 us (Figure 3-5).

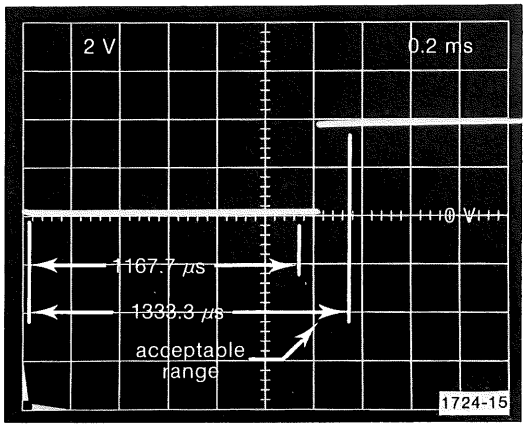


Figure 3-5. The Field (Also Called Vertical) Blanking Pulse as Seen at U655 Pin 9.

b. Change the oscilloscope sweep to 2 ms per cm, and move the prove to U485, Pin 9 (Figure 3-4). Set the trigger control to positive level and positive slope. Move the Serration strap to the WO/S position. Observe two pulses with a period of 16.67 ms (equal to the vertical interval, V), as shown in Figure 3-6. The pulse at this pin occurs during the time at which serrations appear in the vertical sync and equalizing pulses. The period between pulses is the inverse of the field rate. For example, at 60 fields per second, the period would be 16.67 ms. Replace the serration strap to the W/S position.

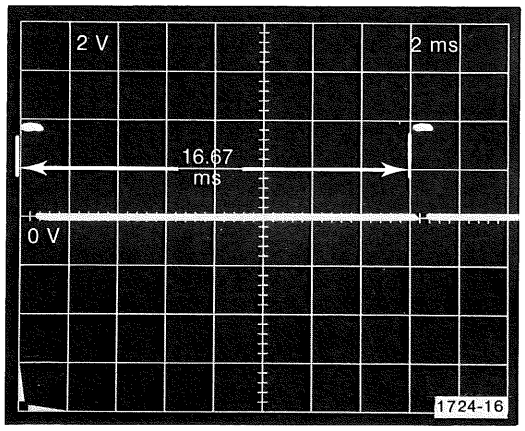


Figure 3-6. Vertical Interval.

c. Connect the probe to U295 Pin 1(Figure 3-4), and set the oscilloscope sweep to 2 us per cm negative trigger-slope. Observe a low-active horizontal blanking pulse with 10.6 to 11.4 us duration. Place the sync pulse width strap in the HR position, and observe a pulse with duration 6.0 to 7.3 us (Figure 3-7)

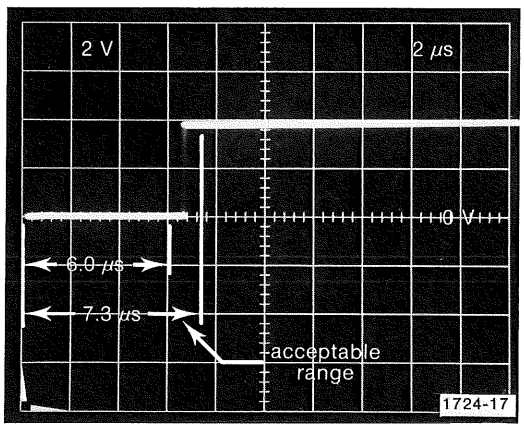


Figure 3-7. Horizontal Blanking Pulse Width.

5. Multiburst Frequencies

a. Press the MULTIBURST switch on the Generator front panel.

b. Connect the probe from channel A of the DC 503 counter to the junction of R258 and R155 (Figure 3-3). Set the counter Function switch to Freq A, Gate Time 1 s. Press the channel A button marked AC COUPL. Remove Q255 from its socket. The Counter should then read the oscillator frequency in Mhz. Rotate L259 tuning slug for a value in the range 19 to 21 MHz. Replace Q255 (this will be 16 MHz for the 067-0690-01).

c. Move the Counter channel A probe to the junction of R277 and R159 (Figure 3-3). Remove Q266, and adjust L269 for a reading of 15.2 to 16.8 MHz (12 MHz for the 067-0690-01) on the counter. Replace Q266.

d. Move the counter probe to the junction of R152 and R173 (Figure 3-3). Remove Q174. Adjust L161 for a reading of 7.6 to 8.4 MHz (10 MHz for the 067-0690-01) on the counter. Replace Q174.

e. Move the counter probe to the junction of R72 and R142 (Figure 3-3). Remove Q73. Adjust L61 for a reading of 4.8 to 5.2 MHz (8 MHz for the 067-0690-01) on the counter. Replace Q73.

f. Move the counter probe to the junction of R58 and R141 (Figure 3-3). Remove Q56. Adjust L51 for a reading of 2.4 to 2.6 MHz (5 MHz for the 067-0690-01) on the counter. Replace Q56. Remove the probe.

g. Connect the Composite Video Output 1 V P-P signal to the oscilloscope vertical input, terminating with a 75 Ω impedance. Drive the oscilloscope external trigger with the signal at U655 Pin 8 (Figure 3-4). Set sweep to 2 ms per cm, and vertical deflection to 0.2 V per cm. Observe the composite video waveform on the screen (Figure 3-8). Adjust R280, located on the Logic and Output board, for a blanking level of 0.0 V to ground. R280 is accessible through a hole in the Sync Generator board.

h. Adjust the oscillator amplitudes by means of R255, R266, R74, R59 and R176 (Figure 3-3); each amplitude should fall in the range 0.579 to 0.707 V.

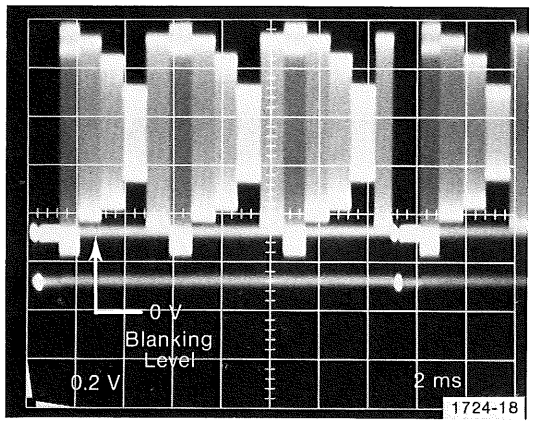


Figure 3-8. Composite Video Waveform for The Multiburst Function.

i. Adjust R151 for a field amplitude between 0.06 and 0.08 V on the low end and 0.614 to 0.814 on the high end, relative to the 0.0 V blanking level (Figure 3-9).

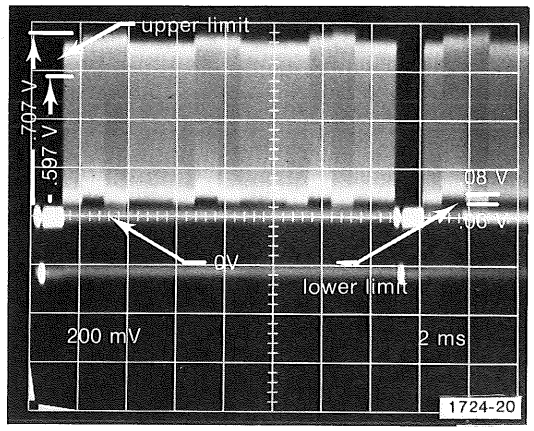


Figure 3-9. Multiburst Composite Video Waveform Following Adjustment.

These levels, and the amplitudes specified in step h above must remain within specification for Multiburst, 20 MHz, 16 MHz and 8 MHz functions. The SEQ INVERT button must have no effect. Each time a frequency is activated, it must have a duration of 1/15 of the total field time ±5%. Distortion of the multiburst waveform must not exceed the limits of Figure 1-8.

6. Gray Scale Balance, Level and Amplitude

a. The following test points are located on Figure 3-3. Set up the oscilloscope as in Step g above.

b. Depress the 50% FLAT FIELD switch. Adjust R217 (Logic And Output Board) for no shift in background level when the VIDEO POLARITY switch is depressed. Depress the 10 Gray Scale switch (16 Gray Scale for the 067-0690-01), and adjust R38 for an amplitude of 0.579 to 0.707 V from the black to the white level (Figure 3-10).

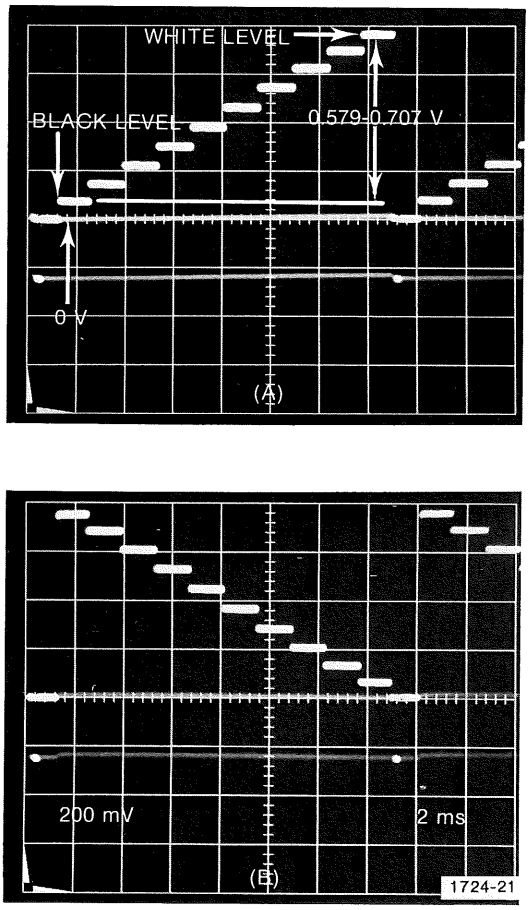


Figure 3-10. Composite Video Waveforms for the 10 Step Gray Scale Function.

c. Adjust R10 for minimum shift between fields when reversing the VIDEO POLARITY switch. That is, check that the white level (highest voltage plateau) is the same amplitude relative to the blanking level, whether it is the first or the last step.

d. Adjust R225 for a white-level amplitude in the range 0.614 to 0.814 volts relative to the blanking level. The black level amplitude at this setting should fall within the range 0.0671 to 0.0871 V, and the p-p amplitude should be 1.0 V. Some interaction may occur in these steps, and readjustment may be necessary.

e. Switch the Generator to 8, 5, and 2 (12, 10, and 8 for the 067-0690-01) gray scale functions. Again, the composite video waveform must fall within the specifications outlined in steps 5a, b and d. The DK BKGD function may be considered a single-step gray scale, and with VIDEO POLARITY in the OUT-NORMAL position, a composite video level of from 0.0671 to 0.0871 V should be observed. With VIDEO POLARITY in the IN-INVERT position, the waveform composite video level should be in the range 0.614 to 0.814 V. During the 50% FLAT FIELD function, a composite video waveform of approximately 1/2 the amplitude of the light background function should be observed. Light background refers to the combined DK BKGD and VIDEO POLARITY INVERT functions.

7. Gray Scale Linearity and Timing

a. Cycle through the 2, 5, 8, and 10 (8, 10, 12, and 16 for the 067-0690-01) Gray Scale functions, with the oscilloscope still monitoring the 1.0 V p-p composite video waveform. At each function perform the tests of steps 7b, c, and d.

b. The number of plateaus in the staircase, beginning with the black step at a nominal 0.0 V and ending with the white step at a nominal 0.71 V, must equal 2, 5, 8, or 10 (8, 10, 12, or 16 for the 067-0690-01) as selected.

c. Each plateau in the staircase must be flat, with a tilt of less than 10 mV. Each step must be equally spaced from the steps immediately above and below it (Figure 3-10).

d. For the selected field rate (either 50 or 60 Hz) and gray scale function, consult the following table. The time range indicated represents the allowable range of step duration (the step width of the observed waveform). The first and last staircase steps may exceed the lower limit by as much as 5H (see step g under Line, Field, and Interlace).

Table 3-1

STEP DURATION, ms

FIELD RATE:	60	50
Gray Scale Steps		
2	7.3--8.1	8.8--9.7
5	2.9--3.3	3.5--3.9
8	1.8--2.0	2.2--2.4
10	1.4--1.6	1.8--2.0

8. The Composite Video Waveform (see Figure 1-5)

a. The rise and fall times on all the sync portions (that is, negative portions of the COMPOSITE VIDEO) must be less than 300 ns, regardless of line rate.

b. Change the oscilloscope BNC input line from the Generator COMPOSITE VIDEO OUTPUT 1 V P-P connector to the COMPOSITE VIDEO OUTPUT 2.5 V P-P connector. As previously, the line should be terminated with 75 Ω at the oscilloscope input.

c. Verify a total peak-to-peak amplitude of from 2.3 to 2.7 V.

d. Verify a sync amplitude of from -0.679 to -0.751 volts, with respect to the blanking level.

e. Verify a setup level of from 0.152 to 0.202 volts with respect to the blanking level.

f. For all gray scale waveforms, the white level must have an amplitude in the range 1.52 to 2.02 volts relative to the blanking level.

g. Check steps 6b, 6c, and 6d Gray Scale specifications for this output.

h. Change the oscilloscope input connection to the Generator front panel connector marked COMPOSITE VIDEO OUTPUT .3 V P-P. The composite video waveform seen must have a peak-to-peak amplitude in the range 270 to 333 mV.

i. Sync amplitude should be 83 to 91 mV, relative to blanking.

j. Setup level should be 19 to 23 mV, relative to blanking.

k. White level should be 194 to 238 mV, for all gray scale functions.

l. Check steps 6b, 6c, and 6d of Gray scale Balance, Level, and Amplitude for this output.

9. Composite Sync Output

a. Transfer the 75 Ω oscilloscope input to the Generator output labelled COMPOSITE SYNC OUTPUT. Connect a probe from the oscilloscope external trigger to U655 Pin 8 (Sync Generator board). Set the oscilloscope controls as follows:

Horizontal	2 ms per cm
Vertical	1 V per cm
Delay Time	50 us

Adjust the Delay Time Multiplier, and view the composite sync waveform. With the delay "window" centered on the vertical sync interval, a waveform like that of Figure 3-11 should result. (Also, see Figure 1-4) Amplitude must be -3.8 to -4.2 V referenced to ground. Rise and delay times must not exceed 190 ns.

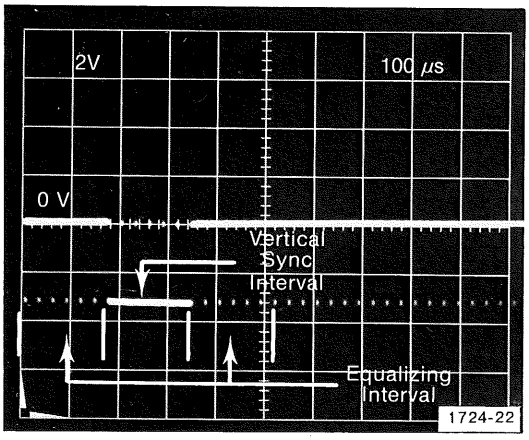


Figure 3-11. Composite Sync Waveform During Equalizing and Vertical Sync Periods.

10. External Sync (Gen Lock Operation)

a. Connect the pulse generator (Tektronix PG501 or 502) to the Generator EXTERNAL SYNC IN connector, using a 75 Ω line. Adjust pulse amplitude to approximately -4 V, pulse duration to approximately 3 us. For step 10b, the pulse train period should be varied from 64.0 us to 27.2 us.

b. Connect a probe from oscilloscope channel 1 to U535 Pin 3, and a probe from channel 2 to U535 Pin 1 (Figure 3-4). Trigger on channel 1. The resulting horizontal sync pulse should be relatively stationary over the variation of pulse train period described in the previous step. Jitter should be no more than 50 ns at 525/60 (lines per frame and field rate) and no more than 20 ns at 1029/60. These are limits of horizontal variation allowed in the observed oscilloscope waveform.

11. Return Loss

a. Connect the Return Loss Bridge to the oscilloscope input. Set both oscilloscope channels to dc. The Bridge reference lead should be terminated with the 75 Ω device which accompanies the instrument. The "unknown" lead should be unterminated.

b. Apply the sinewave generator, set to 5 MHz, to the input of the Return Loss Bridge. Adjust the sine wave level until a 250 mV peak-to-peak amplitude is observed on the oscilloscope.

c. Connect the "unknown" lead of the bridge to the Generator COMPOSITE VIDEO OUTPUT 1V P-P. Select an arbitrary function of the Generator (for instance, 50% FLAT FIELD). The oscilloscope should show no more than 8 mV of 5 MHz sine wave superimposed on the composite video waveform.

d. Repeat the previous step, but transfer the "unknown" lead of the bridge to the COMPOSITE SYNC OUTPUT.

e. Transfer the bridge "unknown" lead to the EXTERNAL SYNC IN. Apply a 75 Ω termination to the EXTERNAL SYNC OUT connector. Adjust C5 on the Sync Generator board until the peak-to-peak amplitude of the sine wave observed is no greater than 2.5 mV.

CONCLUSION

This completes the Generator calibration procedure. Turn off power to TM 500 Power Module. Remove all test equipment leads, and check that all Generator strap options are returned to previous settings. Install the Generator side covers, remove the extender cables, and install the Generator back into the TM 500 Power Module. The Generator is now ready for use.

Section 4
REPLACEABLE ELECTRICAL PARTS

PARTS ORDERING INFORMATION

Replacement parts are available from or through your local Tektronix, Inc. Field Office or representative.

Changes to Tektronix instruments are sometimes made to accommodate improved components as they become available, and to give you the benefit of the latest circuit improvements developed in our engineering department. It is therefore important, when ordering parts, to include the following information in your order: Part number, instrument type or number, serial number, and modification number if applicable.

If a part you have ordered has been replaced with a new or improved part, your local Tektronix, Inc. Field Office or representative will contact you concerning any change in part number.

Change information, if any, is located at the rear of this manual.

LIST OF ASSEMBLIES

A list of assemblies can be found at the beginning of the Electrical Parts List. The assemblies are listed in numerical order. When the complete component number of a part is known, this list will identify the assembly in which the part is located.

CROSS INDEX-MFR. CODE NUMBER TO MANUFACTURER

The Mfr. Code Number to Manufacturer index for the Electrical Parts List is located immediately after this page. The Cross Index provides codes, names and addresses of manufacturers of components listed in the Electrical Parts List.

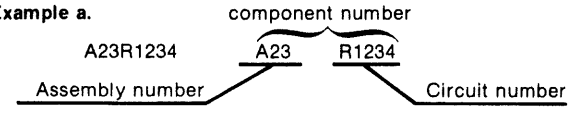
ABBREVIATIONS

Abbreviations conform to American National Standard Y1.1.

COMPONENT NUMBER (column one of the Electrical Parts List)

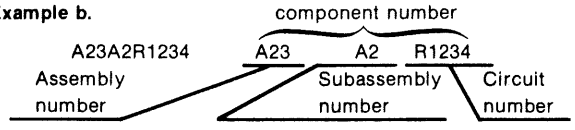
A numbering method has been used to identify assemblies, subassemblies and parts. Examples of this numbering method and typical expansions are illustrated by the following:

Example a.



Read: Resistor 1234 of Assembly 23

Example b.



Read: Resistor 1234 of Subassembly 2 of Assembly 23

Only the circuit number will appear on the diagrams and circuit board illustrations. Each diagram and circuit board illustration is clearly marked with the assembly number. Assembly numbers are also marked on the mechanical exploded views located in the Mechanical Parts List. The component number is obtained by adding the assembly number prefix to the circuit number.

The Electrical Parts List is divided and arranged by assemblies in numerical sequence (e.g., assembly A1 with its subassemblies and parts, precedes assembly A2 with its subassemblies and parts).

Chassis-mounted parts have no assembly number prefix and are located at the end of the Electrical Parts List.

TEKTRONIX PART NO. (column two of the Electrical Parts List)

Indicates part number to be used when ordering replacement part from Tektronix.

SERIAL/MODEL NO. (columns three and four of the Electrical Parts List)

Column three (3) indicates the serial number at which the part was first used. Column four (4) indicates the serial number at which the part was removed. No serial number entered indicates part is good for all serial numbers.

NAME & DESCRIPTION (column five of the Electrical Parts List)

In the Parts List, an Item Name is separated from the description by a colon (:). Because of space limitations, an Item Name may sometimes appear as incomplete. For further Item Name identification, the U.S. Federal Cataloging Handbook H6-1 can be utilized where possible.

MFR. CODE (column six of the Electrical Parts List)

Indicates the code number of the actual manufacturer of the part. (Code to name and address cross reference can be found immediately after this page.)

MFR. PART NUMBER (column seven of the Electrical Parts List)

Indicates actual manufacturers part number.

CROSS INDEX - MFR. CODE NUMBER TO MANUFACTURER

Mfr. Code	Manufacturer	Address	City, State, Zip Code
00815	MIDLAND-ROSS CORP NORTHERN ENGINEERING LABS DIV	357 BELOIT	BURLINGTON WI 53105
00853	SANGAMO WESTON INC SANGAMO CAPACITOR DIV	SANGAMO RD P O BOX 128	PICKENS SC 29671
01121	ALLEN-BRADLEY CO	1201 SOUTH 2ND ST	MILWAUKEE WI 53204
01295	TEXAS INSTRUMENTS INC SEMICONDUCTOR GROUP	13500 N CENTRAL EXPRESSWAY P O BOX 225012 M/S 49	DALLAS TX 75265
03508	GENERAL ELECTRIC CO SEMI-CONDUCTOR PRODUCTS DEPT	N GENESEE ST	AUBURN NY 13021
04099	CAPCO INC	FORESIGHT INDUSTRIAL PARK P O BOX 2164	GRAND JUNCTION CO 81501
04222	AVX CERAMICS DIV OF AVX CORP	19TH AVE SOUTH P O BOX 867	MYRTLE BEACH SC 29577
04713	MOTOROLA INC SEMICONDUCTOR GROUP	5005 E MCDOWELL RD	PHOENIX AZ 85008
05397	UNION CARBIDE CORP MATERIALS SYSTEMS DIV	11901 MADISON AVE	CLEVELAND OH 44101
07263	FAIRCHILD CAMERA AND INSTRUMENT CORP SEMICONDUCTOR DIV	464 ELLIS ST	MOUNTAIN VIEW CA 94042
07716	TRW INC TRW ELECTRONICS COMPONENTS TRW IRC FIXED RESISTORS/BURLINGTON	2850 MT PLEASANT AVE	BURLINGTON IA 52601
13511	AMPHENOL CADRE DIV BUNKER RAMO CORP		LOS GATOS CA
13606	SPRAGUE ELECTRIC CO TRANSISTOR DIVISION	PEMBROKE RD	CONCORD NH 03301
14193	CAL-R INC	1601 OLYMPIC BLVD	SANTA MONICA CA 90404
14433	ITT SEMICONDUCTORS DIV		WEST PALM BEACH FL
15238	ITT SEMICONDUCTORS A DIVISION OF INTERNATIONAL TELEPHONE AND TELEGRAPH CORP	500 BROADWAY P O BOX 168	LAWRENCE MA 01841
19701	MEPCO/ELECTRA INC A NORTH AMERICAN PHILIPS CO	P O BOX 760	MINERAL WELLS TX 76067
24546	CORNING GLASS WORKS	550 HIGH ST	BRADFORD PA 16701
31918	ITT SCHADOW INC	8081 WALLACE RD	EDEN PRAIRIE MN 55343
32997	BOURNS INC TRIMPOT DIV	1200 COLUMBIA AVE	RIVERSIDE CA 92507
52763	STETTNER ELECTRONICS INC	6135 AIRWAYS BLVD PO BOX 21947	CHATTANOOGA TN 37421
54583	TDK ELECTRONICS CORP	755 EASTGATE BLVD	GARDEN CITY NY 11530
56289	SPRAGUE ELECTRIC CO	87 MARSHALL ST	NORTH ADAMS MA 01247
57668	ROHM CORP	16931 MILLIKEN AVE	IRVINE CA 92713
58854	GTE PRODUCTS CORP LIGHTING PRODUCTS GROUP	60 BOSTON ST	SALEM MA 01970
59660	TUSONIX INC	2155 N FORBES BLVD	TUCSON, ARIZONA 85705
59821	CENTRALAB INC SUB NORTH AMERICAN PHILIPS CORP	7158 MERCHANT AVE	EL PASO TX 79915
75042	TRW INC TRW ELECTRONIC COMPONENTS IRC FIXED RESISTORS PHILADELPHIA DIV	401 N BROAD ST	PHILADELPHIA PA 19108
80009	TEKTRONIX INC	4900 S W GRIFFITH DR P O BOX 500	BEAVERTON OR 97077
80031	MEPCO/ELECTRA INC	22 COLUMBIA RD	MORRISTOWN NJ 07960
81073	GRAYHILL INC	561 HILLGROVE AVE P O BOX 373	LA GRANGE IL 60525
91637	DALE ELECTRONICS INC	P O BOX 609	COLUMBUS NE 68601

Component No.	Tektronix Part No.	Serial/Assembly No. Effective	Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A1	670-3257-00	B010100	B011005	CIRCUIT BD ASSY:SYNC GEN	80009	670-3257-00
A1	670-3257-02	B011006		CIRCUIT BD ASSY:SYN GEN	80009	670-3257-02
A2	670-2997-01			CIRCUIT BD ASSY:OSCILLATOR AND GRAY (067-0690-00 ONLY)	80009	670-2997-01
A2	670-2997-02	B010100	B011005	CIRCUIT BD ASSY:OSCILLATOR & GRAY (067-0690-01 ONLY)	80009	670-2997-02
A2	670-2997-03	B011006		CIRCUIT BD ASSY:OSC & GRAY (067-0690-01)	80009	670-2997-03
A3	670-3067-00	B010100	B011005	CIRCUIT BD ASSY:LOGIC & OUTPUT	80009	670-3067-00
A3	670-3067-02	B011006		CIRCUIT BD ASSY:LOGIC & OUTPUT	80009	670-3067-02

Component No.	Tektronix Part No.	Serial/Assembly No. Effective	Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A1	670-3257-00	B010100	B011005	CIRCUIT BD ASSY:SYNC GEN	80009	670-3257-00
A1	670-3257-02	B011006		CIRCUIT BD ASSY:SYN GEN	80009	670-3257-02
A1C4	281-0625-00			CAP,FXD,CER DI:35PF,5%,500V	52763	2RDPLZ007 35P0JC
A1C5	281-0185-00			CAP,VAR,PLASTIC:2-18PF,250V	80031	2808D00218MH02F0
A1C6	290-0523-00			CAP,FXD,ELCTLT:2.2UF,20%,20V	05397	T368A225M020AS
A1C12	290-0523-00			CAP,FXD,ELCTLT:2.2UF,20%,20V	05397	T368A225M020AS
A1C26	290-0529-00			CAP,FXD,ELCTLT:47UF,20%,20V	05397	T362C476M020AS
A1C27	283-0003-00			CAP,FXD,CER DI:0.01UF,+80-20%,150V	59821	D103Z40Z5UJDCEX
A1C83	290-0529-00			CAP,FXD,ELCTLT:47UF,20%,20V	05397	T362C476M020AS
A1C89	283-0000-00			CAP,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-610-Y5U0102P
A1C93	290-0529-00			CAP,FXD,ELCTLT:47UF,20%,20V	05397	T362C476M020AS
A1C111	290-0523-00			CAP,FXD,ELCTLT:2.2UF,20%,20V	05397	T368A225M020AS
A1C209	290-0529-00			CAP,FXD,ELCTLT:47UF,20%,20V	05397	T362C476M020AS
A1C218	290-0524-00			CAP,FXD,ELCTLT:4.7UF,20%,10V	05397	T368A475M010AZ
A1C224	281-0523-00			CAP,FXD,CER DI:100PF,20%,350V	52763	2RDPLZ007 100PMU
A1C228	290-0529-00			CAP,FXD,ELCTLT:47UF,20%,20V	05397	T362C476M020AS
A1C229	290-0529-00			CAP,FXD,ELCTLT:47UF,20%,20V	05397	T362C476M020AS
A1C274	283-0000-00			CAP,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-610-Y5U0102P
A1C289	281-0546-00			CAP,FXD,CER DI:330PF,10%,500V	52763	2RDPLZ007 330PM0
A1C295	281-0623-00	B010100	B011005	CAP,FXD,CER DI:650PF,5%,500V	52763	2RDPLZ007 650PM0
A1C295	283-0774-00	B011006		CAP,FXD,MICA DI:639 PF,1%,300V	00853	D153F6390F0
A1C325	283-0051-00			CAP,FXD,CER DI:0.0033UF,5%,100V	04222	SR301A332JAA
A1C326	281-0623-00			CAP,FXD,CER DI:650PF,5%,500V	52763	2RDPLZ007 650PM0
A1C339	283-0003-00			CAP,FXD,CER DI:0.01UF,+80-20%,150V	59821	D103Z40Z5UJDCEX
A1C405	290-0523-00			CAP,FXD,ELCTLT:2.2UF,20%,20V	05397	T368A225M020AS
A1C409	283-0177-00			CAP,FXD,CER DI:1UF,+80-20%,25V	04222	SR302E105ZAATR
A1C415	283-0142-00			CAP,FXD,CER DI:0.0027UF,5%,200V	54583	CK45YE2D272J-A
A1C429	290-0535-00			CAP,FXD,ELCTLT:33UF,20%,10V TANTALUM	56289	196D336X0010KA1
A1C449	283-0626-00			CAP,FXD,MICA DI:1800PF,5%,500V	00853	D195F182J0
A1C461	283-0177-00			CAP,FXD,CER DI:1UF,+80-20%,25V	04222	SR302E105ZAATR
A1C495	283-0625-00			CAP,FXD,MICA DI:220PF,1%,500V	00853	D105F221F0
A1C510	283-0177-00			CAP,FXD,CER DI:1UF,+80-20%,25V	04222	SR302E105ZAATR
A1C545	283-0664-00			CAP,FXD,MICA DI:2800PF,5%,500V	00853	D195F282J0
A1C555	285-0835-00			CAP,FXD,PLASTIC:0.22UF,2%,100V	04099	TEK15-7
A1C575	281-0638-00			CAP,FXD,CER DI:240PF,5%,500V	52763	2RDPLZ007 240PM0
A1C595	283-0596-00			CAP,FXD,MICA DI:528PF,1%,300V	00853	D153F5280F0
A1C681	283-0177-00			CAP,FXD,CER DI:1UF,+80-20%,25V	04222	SR302E105ZAATR
A1CR125	152-0141-02			SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A1CR143	152-0141-02	B010100	B011005	SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A1CR143	152-0075-00	B011006		SEMICOND DVC,DI:SM,GE,22V,80MM,DO-7	14433	G866
A1CR145	152-0141-02	B010100	B011005	SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A1CR145	152-0075-00	B011006		SEMICOND DVC,DI:SM,GE,22V,80MM,DO-7	14433	G866
A1CR147	152-0141-02	B010100	B011005	SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A1CR147	152-0075-00	B011006		SEMICOND DVC,DI:SM,GE,22V,80MM,DO-7	14433	G866
A1CR149	152-0141-02	B010100	B011005	SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A1CR149	152-0075-00	B011006		SEMICOND DVC,DI:SM,GE,22V,80MM,DO-7	14433	G866
A1CR153	152-0141-02	B010100	B011005	SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A1CR153	152-0075-00	B011006		SEMICOND DVC,DI:SM,GE,22V,80MM,DO-7	14433	G866
A1CR155	152-0141-02	B010100	B011005	SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A1CR155	152-0075-00	B011006		SEMICOND DVC,DI:SM,GE,22V,80MM,DO-7	14433	G866
A1CR157	152-0141-02	B010100	B011005	SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A1CR157	152-0075-00	B011006		SEMICOND DVC,DI:SM,GE,22V,80MM,DO-7	14433	G866
A1CR159	152-0141-02	B010100	B011005	SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A1CR159	152-0075-00	B011006		SEMICOND DVC,DI:SM,GE,22V,80MM,DO-7	14433	G866
A1CR163	152-0141-02	B010100	B011005	SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A1CR163	152-0075-00	B011006		SEMICOND DVC,DI:SM,GE,22V,80MM,DO-7	14433	G866
A1CR165	152-0141-02	B010100	B011005	SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A1CR165	152-0075-00	B011006		SEMICOND DVC,DI:SM,GE,22V,80MM,DO-7	14433	G866
A1CR167	152-0141-02	B010100	B011005	SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)

Component No.	Tektronix Part No.	Serial/Assembly No. Effective	Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A1CR167	152-0075-00	B011006		SEMICOND DVC,DI:SM,GE,22V,80MW,DO-7	14433	G866
A1CR169	152-0141-02	B010100	B011005	SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A1CR169	152-0075-00	B011006		SEMICOND DVC,DI:SM,GE,22V,80MW,DO-7	14433	G866
A1CR305	152-0141-02			SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A1CR317	152-0141-02			SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A1CR323	152-0141-02			SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A1CR333	152-0141-02			SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A1CR685	152-0141-02			SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A1Q11	151-0190-00			TRANSISTOR:NPN,SI,TO-92	80009	151-0190-00
A1Q27	151-0190-00			TRANSISTOR:NPN,SI,TO-92	80009	151-0190-00
A1Q28	151-0190-00			TRANSISTOR:NPN,SI,TO-92	80009	151-0190-00
A1Q80	151-0188-00			TRANSISTOR:PNP,SI,TO-92	80009	151-0188-00
A1Q112	151-0190-00			TRANSISTOR:NPN,SI,TO-92	80009	151-0190-00
A1Q114	151-0190-00			TRANSISTOR:NPN,SI,TO-92	80009	151-0190-00
A1Q125	151-0190-00			TRANSISTOR:NPN,SI,TO-92	80009	151-0190-00
A1Q127	151-0190-00			TRANSISTOR:NPN,SI,TO-92	80009	151-0190-00
A1Q215	151-0188-00			TRANSISTOR:PNP,SI,TO-92	80009	151-0188-00
A1Q216	151-0188-00			TRANSISTOR:PNP,SI,TO-92	80009	151-0188-00
A1Q217	151-0190-00			TRANSISTOR:NPN,SI,TO-92	80009	151-0190-00
A1Q219	151-0190-00			TRANSISTOR:NPN,SI,TO-92	80009	151-0190-00
A1Q228	151-0190-00			TRANSISTOR:NPN,SI,TO-92	80009	151-0190-00
A1Q229	151-0281-00			TRANSISTOR:NPN,SI,400 MILLIWATTS	80009	151-0281-00
A1Q238	151-0188-00			TRANSISTOR:PNP,SI,TO-92	80009	151-0188-00
A1Q239	151-0188-00			TRANSISTOR:PNP,SI,TO-92	80009	151-0188-00
A1Q415	151-0188-00			TRANSISTOR:PNP,SI,TO-92	80009	151-0188-00
A1Q419	151-0190-00			TRANSISTOR:NPN,SI,TO-92	80009	151-0190-00
A1Q421	151-0190-00			TRANSISTOR:NPN,SI,TO-92	80009	151-0190-00
A1Q424	151-0190-00			TRANSISTOR:NPN,SI,TO-92	80009	151-0190-00
A1R2	315-0821-00			RES,FXD,FILM:820 OHM,5%,0.25M	19701	5043CX820R0J
A1R3	315-0102-00			RES,FXD,FILM:1K OHM,5%,0.25M	57668	NTR25JE01K0
A1R15	315-0153-00			RES,FXD,FILM:15K OHM,5%,0.25M	19701	5043CX15K00J
A1R16	315-0100-00			RES,FXD,FILM:10 OHM,5%,0.25M	19701	5043CX10RR00J
A1R17	315-0203-00			RES,FXD,FILM:20K OHM,5%,0.25M	57668	NTR25J-E 20K
A1R18	321-0308-00			RES,FXD,FILM:15.8K OHM,1%,0.125M,TC=T0	07716	CEAD 15801F
A1R25	315-0104-00			RES,FXD,FILM:100K OHM,5%,0.25M	57668	NTR25J-E100K
A1R32	315-0104-00			RES,FXD,FILM:100K OHM,5%,0.25M	57668	NTR25J-E100K
A1R35	315-0103-00			RES,FXD,FILM:10K OHM,5%,0.25M	19701	5043CX10K00J
A1R37	315-0103-00			RES,FXD,FILM:10K OHM,5%,0.25M	19701	5043CX10K00J
A1R72	315-0153-00			RES,FXD,FILM:15K OHM,5%,0.25M	19701	5043CX15K00J
A1R73	315-0471-00			RES,FXD,FILM:470 OHM,5%,0.25M	57668	NTR25J-E470E
A1R75	308-0420-00			RES,FXD,WW:1.8 OHM,3%,1.5M	91637	RS-1A-91
A1R76	315-0151-00			RES,FXD,FILM:150 OHM,5%,0.25M	57668	NTR25J-E150E
A1R85	315-0562-00			RES,FXD,FILM:5.6K OHM,5%,0.25M	57668	NTR25J-E05K6
A1R86	315-0332-00			RES,FXD,FILM:3.3K OHM,5%,0.25M	57668	NTR25J-E03K3
A1R94	315-0202-00			RES,FXD,FILM:2K OHM,5%,0.25M	57668	NTR25J-E 2K
A1R95	315-0270-00			RES,FXD,FILM:27 OHM,5%,0.25M	19701	5043CX27R00J
A1R97	308-0764-00			RES,FXD,WW:2.7 OHM,5%,2M	75042	BWF 2.7 OHM +-5%
A1R103	321-0316-00			RES,FXD,FILM:19.1K OHM,1%,0.125M,TC=T0	07716	CEAD19101F
A1R104	321-0280-00			RES,FXD,FILM:8.06K OHM,1%,0.125M,TC=T0	19701	5033ED8K060F
A1R105	321-0289-00			RES,FXD,FILM:10.0K OHM,1%,0.125M,TC=T0	19701	5033ED10K0F
A1R121	321-0197-00			RES,FXD,FILM:1.10K OHM,1%,0.125M,TC=T0	07716	CEAD11000F
A1R122	315-0752-00			RES,FXD,FILM:7.5K OHM,5%,0.25M	57668	NTR25J-E07K5
A1R123	315-0104-00			RES,FXD,FILM:100K OHM,5%,0.25M	57668	NTR25J-E100K
A1R131	315-0302-00			RES,FXD,FILM:3K OHM,5%,0.25M	57668	NTR25J-E03K0
A1R133	321-0289-00			RES,FXD,FILM:10.0K OHM,1%,0.125M,TC=T0	19701	5033ED10K0F
A1R135	321-0289-00			RES,FXD,FILM:10.0K OHM,1%,0.125M,TC=T0	19701	5033ED10K0F
A1R195	321-0289-07			RES,FXD,FILM:10.0K OHM,0.1%,0.125M,TC=T9	19701	5033RE10K00B
A1R197	321-0816-07			RES,FXD,FILM:5K OHM,0.1%,0.125M,TC=T9	19701	5033RE5K000B
A1R203	315-0302-00			RES,FXD,FILM:3K OHM,5%,0.25M	57668	NTR25J-E03K0

Component No.	Tektronix Part No.	Serial/Assembly No. Effective	Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A1R204	315-0103-00			RES,FXD,FILM:10K OHM,5%,0.25M	19701	5043CX10K00J
A1R205	315-0103-00			RES,FXD,FILM:10K OHM,5%,0.25M	19701	5043CX10K00J
A1R206	315-0151-00			RES,FXD,FILM:150 OHM,5%,0.25M	57668	NTR25J-E150E
A1R207	315-0100-00			RES,FXD,FILM:10 OHM,5%,0.25M	19701	5043CX10RR00J
A1R222	315-0512-00			RES,FXD,FILM:5.1K OHM,5%,0.25M	57668	NTR25J-E05K1
A1R223	315-0512-00			RES,FXD,FILM:5.1K OHM,5%,0.25M	57668	NTR25J-E05K1
A1R226	315-0242-00			RES,FXD,FILM:2.4K OHM,5%,0.25M	57668	NTR25J-E02K4
A1R233	321-0277-00			RES,FXD,FILM:7.50K OHM,1%,0.125M,TC=T0	24546	NA55D7501F
A1R235	321-0277-00			RES,FXD,FILM:7.50K OHM,1%,0.125M,TC=T0	24546	NA55D7501F
A1R237	321-0311-00			RES,FXD,FILM:16.9K OHM,1%,0.125M,TC=T0	07716	CEAC16901F
A1R275	321-0816-07			RES,FXD,FILM:5K OHM,0.1%,0.125M,TC=T9	19701	5033RE5K000B
A1R276	321-0603-07			RES,FXD,FILM:15K OHM,0.1%,0.125M,TC=T9	19701	5033RE15K00B
A1R277	321-0816-07			RES,FXD,FILM:5K OHM,0.1%,0.125M,TC=T9	19701	5033RE5K000B
A1R278	321-0816-07			RES,FXD,FILM:5K OHM,0.1%,0.125M,TC=T9	19701	5033RE5K000B
A1R285	321-0329-00	B010100	B011005	RES,FXD,FILM:26.1K OHM,1%,0.125M,TC=T0	19701	5043ED26K10F
A1R285	321-0332-00	B011006		RES,FXD,FILM:28.0K OHM,1%,0.125M,TC=T0	07716	CEAD28001F
A1R286	321-0350-00	B010100	B011005	RES,FXD,FILM:43.2K OHM,1%,0.125M,TC=T0	19701	5043ED43K20F
A1R286	321-0342-00	B011006		RES,FXD,FILM:35.7K OHM,1%,0.125M,TC=T0	07716	CEAD35701F
A1R287	321-0335-00			RES,FXD,FILM:30.1K OHM,1%,0.125M,TC=T0	57668	RB14FXE30K1
A1R289	321-0344-00			RES,FXD,FILM:37.4K OHM,1%,0.125M,TC=T0	19701	5033ED 37K40F
A1R305	321-0303-00			RES,FXD,FILM:14.0K OHM,1%,0.125M,TC=T0	07716	CEAD 14001F
A1R309	315-0104-00			RES,FXD,FILM:100K OHM,5%,0.25M	57668	NTR25J-E100K
A1R315	315-0102-00			RES,FXD,FILM:1K OHM,5%,0.25M	57668	NTR25JE01K0
A1R317	315-0103-00			RES,FXD,FILM:10K OHM,5%,0.25M	19701	5043CX10K00J
A1R321	315-0203-00			RES,FXD,FILM:20K OHM,5%,0.25M	57668	NTR25J-E 20K
A1R322	321-0350-00			RES,FXD,FILM:43.2K OHM,1%,0.125M,TC=T0	19701	5043ED43K20F
A1R347	315-0100-00			RES,FXD,FILM:10 OHM,5%,0.25M	19701	5043CX10RR00J
A1R348	315-0512-00			RES,FXD,FILM:5.1K OHM,5%,0.25M	57668	NTR25J-E05K1
A1R349	321-0311-00			RES,FXD,FILM:16.9K OHM,1%,0.125M,TC=T0	07716	CEAC16901F
A1R395	321-0286-00			RES,FXD,FILM:9.31K OHM,1%,0.125M,TC=T0	19701	5043ED9K310F
A1R397	321-0323-00			RES,FXD,FILM:22.6K OHM,1%,0.125M,TC=T0	07716	CEAD22601F
A1R409	315-0203-00			RES,FXD,FILM:20K OHM,5%,0.25M	57668	NTR25J-E 20K
A1R415	315-0103-00			RES,FXD,FILM:10K OHM,5%,0.25M	19701	5043CX10K00J
A1R419	321-0337-00			RES,FXD,FILM:31.6K OHM,1%,0.125M,TC=T0	07716	CEAD31601F
A1R425	315-0103-00			RES,FXD,FILM:10K OHM,5%,0.25M	19701	5043CX10K00J
A1R428	321-0316-00			RES,FXD,FILM:19.1K OHM,1%,0.125M,TC=T0	07716	CEAD19101F
A1R429	321-0289-00			RES,FXD,FILM:10.0K OHM,1%,0.125M,TC=T0	19701	5033ED10K0F
A1R436	315-0362-00			RES,FXD,FILM:3.6K OHM,5%,0.25M	19701	5043CX3K600J
A1R437	315-0100-00			RES,FXD,FILM:10 OHM,5%,0.25M	19701	5043CX10RR00J
A1R438	315-0103-00			RES,FXD,FILM:10K OHM,5%,0.25M	19701	5043CX10K00J
A1R439	321-0289-00			RES,FXD,FILM:10.0K OHM,1%,0.125M,TC=T0	19701	5033ED10K0F
A1R565	321-0281-00			RES,FXD,FILM:8.25K OHM,1%,0.125M,TC=T0	19701	5043ED8K250F
A1R566	321-0319-00			RES,FXD,FILM:20.5K OHM,1%,0.125M,TC=T0	19701	5033ED20K50F
A1R567	321-0309-00			RES,FXD,FILM:16.2K OHM,1%,0.125M,TC=T0	19701	5033ED16K20F
A1R625	315-0102-00			RES,FXD,FILM:1K OHM,5%,0.25M	57668	NTR25JE01K0
A1R665	315-0512-00			RES,FXD,FILM:5.1K OHM,5%,0.25M	57668	NTR25J-E05K1
A1R667	315-0272-00			RES,FXD,FILM:2.7K OHM,5%,0.25M	57668	NTR25J-E02K7
A1R695	321-0304-00			RES,FXD,FILM:14.3K OHM,1%,0.125M,TC=T0	19701	5033ED14K30F
A1R697	321-0288-00			RES,FXD,FILM:9.76K OHM,1%,0.125M,TC=T0	19701	5033ED9K760F
A1S165	260-1589-00			SWITCH,ROCKER:(6)SPST,125MA,30VDC	81073	76SB06S
A1S265	260-1589-00			SWITCH,ROCKER:(6)SPST,125MA,30VDC	81073	76SB06S
A1U175	156-0071-00			MICROCKT,LINEAR:VOLTAGE REGULATOR	04713	MC1723CL
A1U185	156-0071-00			MICROCKT,LINEAR:VOLTAGE REGULATOR	04713	MC1723CL
A1U295	156-0072-00			MICROCKT,DGTL:MONOSTABLE MV	01295	SN74121(N OR J)
A1U355	156-0032-00			MICROCKT,DGTL:4-BIT BINARY COUNTER	01295	SN7493N
A1U365	156-0032-00			MICROCKT,DGTL:4-BIT BINARY COUNTER	01295	SN7493N
A1U375	156-0032-00			MICROCKT,DGTL:4-BIT BINARY COUNTER	01295	SN7493N
A1U385	156-0072-00			MICROCKT,DGTL:MONOSTABLE MV	01295	SN74121(N OR J)
A1U445	156-0072-00			MICROCKT,DGTL:MONOSTABLE MV	01295	SN74121(N OR J)

Component No.	Tektronix Part No.	Serial/Assembly No. Effective	Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A1U455	156-0042-00			MICROCKT,DGTL:DUAL J-K MA-SLAVE FF	01295	SN7476N
A1U465	156-0030-00			MICROCKT,DGTL:QUAD 2-INPUT NAND GATE	01295	SN7400(N OR J)
A1U475	156-0047-00			MICROCKT,DGTL:TPL 3-INP NAND GATE	01295	SN7410N
A1U485	156-0039-00			MICROCKT,DGTL:DUAL J-K MA-SLAVE FF	01295	SN7473N
A1U495	156-0072-00			MICROCKT,DGTL:MONOSTABLE MV	01295	SN74121(N OR J)
A1U505	156-0143-00			MICROCKT,DGTL:RETRIG MONOSTABLE MV M/	01295	SN74122 N OR J
A1U515	156-0072-00			MICROCKT,DGTL:MONOSTABLE MV	01295	SN74121(N OR J)
A1U525	156-0043-00			MICROCKT,DGTL:QUAD 2-INP NOR GATE	01295	SN7402N
A1U535	156-0124-00			MICROCKT,DGTL:TTL	04713	MC4044
A1U545	156-0072-00			MICROCKT,DGTL:MONOSTABLE MV	01295	SN74121(N OR J)
A1U555	156-0072-00			MICROCKT,DGTL:MONOSTABLE MV	01295	SN74121(N OR J)
A1U575	156-0072-00			MICROCKT,DGTL:MONOSTABLE MV	01295	SN74121(N OR J)
A1U585	156-0039-00			MICROCKT,DGTL:DUAL J-K MA-SLAVE FF	01295	SN7473N
A1U595	156-0072-00			MICROCKT,DGTL:MONOSTABLE MV	01295	SN74121(N OR J)
A1U645	156-0058-00			MICROCKT,DGTL:HEX INVERTER	01295	SN7404N
A1U655	156-0039-00			MICROCKT,DGTL:DUAL J-K MA-SLAVE FF	01295	SN7473N
A1U675	156-0030-00			MICROCKT,DGTL:QUAD 2-INPUT NAND GATE	01295	SN7400(N OR J)
A1VR75	152-0127-00			SEMICOND DVC,DI:ZEN,SI,7.5V,5%,0.4W,DO-7	14433	Z5347 (1N958B)
A1Y55	158-0064-00			XTAL UNIT,QTZ:61.74KHZ 0.02%, SERIES	00815	NE-13N

Component No.	Tektronix Part No.	Serial/Assembly No. Effective	Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A2	670-2997-01			CIRCUIT BD ASSY:OSCILLATOR AND GRAY (067-0690-00 ONLY)	80009	670-2997-01
A2	670-2997-02	B010100	B011005	CIRCUIT BD ASSY:OSCILLATOR & GRAY (067-0690-01 ONLY)	80009	670-2997-02
A2	670-2997-03	B011006		CIRCUIT BD ASSY:OSC & GRAY (067-0690-01)	80009	670-2997-03
A2C22	283-0167-00			CAP,FXD,CER DI:0.1UF,10%,100V	04222	3430-100C-104K
A2C31	290-0559-00			CAP,FXD,ELCTLT:22UF,20%,35V	05397	T368C226M035AS
A2C41	283-0177-00			CAP,FXD,CER DI:1UF,+80-20%,25V	04222	SR302E105ZAATR
A2C51	283-0620-00			CAP,FXD,MICA DI:470PF,1%,300V (067-0690-00 ONLY)	00853	D155F471F0
A2C51	283-0630-00			CAP,FXD,MICA DI:110PF,1%,100V (067-0690-01 ONLY)	00853	D155F111F0
A2C52	283-0177-00			CAP,FXD,CER DI:1UF,+80-20%,25V	04222	SR302E105ZAATR
A2C59	283-0729-00			CAP,FXD,MICA DI:2500PF,5%,500V (067-0690-00 ONLY)	00853	D195F252J0
A2C59	283-0687-00			CAP,FXD,MICA DI:560PF,2%,300V (067-0690-01 ONLY)	00853	D153F561G0
A2C61	283-0167-00			CAP,FXD,CER DI:0.1UF,10%,100V	04222	3430-100C-104K
A2C62	283-0603-00			CAP,FXD,MICA DI:113PF,2%,300V (067-0690-00 ONLY)	00853	D155F1130G0
A2C62	283-0628-00			CAP,FXD,MICA DI:410PF,1%,500V (067-0690-01 ONLY)	00853	D155F411F0
A2C65	283-0177-00			CAP,FXD,CER DI:1UF,+80-20%,25V	04222	SR302E105ZAATR
A2C78	283-0687-00			CAP,FXD,MICA DI:560PF,2%,300V (067-0690-00 ONLY)	00853	D153F561G0
A2C78	283-0626-00			CAP,FXD,MICA DI:1800PF,5%,500V (067-0690-01 ONLY)	00853	D195F182J0
A2C79	283-0167-00			CAP,FXD,CER DI:0.1UF,10%,100V	04222	3430-100C-104K
A2C81	281-0525-00			CAP,FXD,CER DI:470PF,+/-94PF,500V	52763	2RDPLZ007 470PM0
A2C88	290-0529-00			CAP,FXD,ELCTLT:47UF,20%,20V	05397	T362C476M020AS
A2C143	281-0504-00			CAP,FXD,CER DI:10PF,+/-1PF,500V	54583	TCC20CH2H100FYA
A2C152	283-0003-00			CAP,FXD,CER DI:0.01UF,+80-20%,150V	59821	D103Z40Z5UJDCEX
A2C153	283-0000-00			CAP,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-610-Y5U0102P
A2C162	283-0628-00			CAP,FXD,MICA DI:410PF,1%,500V (067-0690-00 ONLY)	00853	D155F411F0
A2C162	283-0770-00			CAP,FXD,MICA DI:300 PF,1%,500V (067-0690-01 ONLY)	00853	D155F301F0
A2C165	283-0177-00			CAP,FXD,CER DI:1UF,+80-20%,25V	04222	SR302E105ZAATR
A2C178	283-0626-00			CAP,FXD,MICA DI:1800PF,5%,500V (067-0690-00 ONLY)	00853	D195F182J0
A2C178	283-0624-00			CAP,FXD,MICA DI:1300PF,2%,500V (067-0690-01 ONLY)	00853	D195F132G0
A2C179	283-0167-00			CAP,FXD,CER DI:0.1UF,10%,100V	04222	3430-100C-104K
A2C181	283-0003-00			CAP,FXD,CER DI:0.01UF,+80-20%,150V	59821	D103Z40Z5UJDCEX
A2C188	290-0533-00			CAP,FXD,ELCTLT:330UF,20%,6V	13606	196D337X0006TE4
A2C229	290-0529-00			CAP,FXD,ELCTLT:47UF,20%,20V	05397	T362C476M020AS
A2C231	290-0529-00			CAP,FXD,ELCTLT:47UF,20%,20V	05397	T362C476M020AS
A2C235	290-0529-00			CAP,FXD,ELCTLT:47UF,20%,20V	05397	T362C476M020AS
A2C241	283-0177-00			CAP,FXD,CER DI:1UF,+80-20%,25V	04222	SR302E105ZAATR
A2C242	290-0529-00			CAP,FXD,ELCTLT:47UF,20%,20V	05397	T362C476M020AS
A2C243	290-0536-00			CAP,FXD,ELCTLT:10UF,20%,25V TANTALUM	05397	T368B106M025AS
A2C246	290-0536-00			CAP,FXD,ELCTLT:10UF,20%,25V TANTALUM	05397	T368B106M025AS
A2C248	290-0536-00			CAP,FXD,ELCTLT:10UF,20%,25V TANTALUM	05397	T368B106M025AS
A2C252	283-0177-00			CAP,FXD,CER DI:1UF,+80-20%,25V	04222	SR302E105ZAATR
A2C255	283-0629-00			CAP,FXD,MICA DI:62PF,1%,500V (067-0690-00 ONLY)	00853	D105E620F0
A2C255	283-0599-00			CAP,FXD,MICA DI:98PF,5%,500V (067-0690-01 ONLY)	00853	D105F980J0
A2C257	283-0167-00			CAP,FXD,CER DI:0.1UF,10%,100V	04222	3430-100C-104K
A2C259	283-0604-00			CAP,FXD,MICA DI:304PF,2%,500V	00853	D155F3040G0

Component No.	Tektronix Part No.	Serial/Assembly No. Effective	Dscont	Name & Description	Mfr. Code	Mfr. Part No.
				(067-0690-00 ONLY)		
A2C259	283-0620-00			CAP,FXD,MICA DI:470PF,1%,300V	00853	D155F471F0
				(067-0690-01 ONLY)		
A2C262	283-0177-00			CAP,FXD,CER DI:1UF,+80-20%,25V	04222	SR302E105ZAATR
A2C271	283-0167-00			CAP,FXD,CER DI:0.1UF,10%,100V	04222	3430-100C-104K
A2C274	283-0620-00			CAP,FXD,MICA DI:470PF,1%,300V	00853	D155F471F0
				(067-0690-00 ONLY)		
A2C274	283-0594-00			CAP,FXD,MICA DI:0.001UF,1%,100V	00853	D151F102F0
				(067-0690-01 ONLY)		
A2C277	283-0599-00			CAP,FXD,MICA DI:98PF,5%,500V	00853	D105F980J0
				(067-0690-00 ONLY)		
A2C277	283-0725-00			CAP,FXD,MICA DI:214PF,1%,500V	00853	D155F2140F0
				(067-0690-01 ONLY)		
A2C296	283-0000-00			CAP,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-610-Y5U0102P
A2CR52	152-0141-02			SEMICOND DVC,DI:SW,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A2CR59	152-0141-02			SEMICOND DVC,DI:SW,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A2CR66	152-0141-02			SEMICOND DVC,DI:SW,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A2CR76	152-0141-02			SEMICOND DVC,DI:SW,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A2CR152	152-0141-02			SEMICOND DVC,DI:SW,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A2CR167	152-0141-02			SEMICOND DVC,DI:SW,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A2CR176	152-0141-02			SEMICOND DVC,DI:SW,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A2CR251	152-0141-02			SEMICOND DVC,DI:SW,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A2CR259	152-0141-02			SEMICOND DVC,DI:SW,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A2CR263	152-0141-02			SEMICOND DVC,DI:SW,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A2CR275	152-0141-02			SEMICOND DVC,DI:SW,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A2L51	114-0257-00			COIL,RF:VARIABLE,6-11UH	80009	114-0257-00
A2L61	114-0257-00			COIL,RF:VARIABLE,6-11UH	80009	114-0257-00
				(067-0690-00 ONLY)		
A2L61	114-0246-00			COIL,RF:VARIABLE,700-1100NH	80009	114-0246-00
				(067-0690-01 ONLY)		
A2L161	114-0246-00			COIL,RF:VARIABLE,700-1100NH	80009	114-0246-00
A2L259	114-0246-00			COIL,RF:VARIABLE,700-1100NH	80009	114-0246-00
A2L269	114-0246-00			COIL,RF:VARIABLE,700-1100NH	80009	114-0246-00
A2Q25	151-0188-00			TRANSISTOR:PNP,SI,TO-92	80009	151-0188-00
A2Q26	151-0190-02			TRANSISTOR:NPN,SI,TO-92	04713	SPS3319(2N3904)
A2Q32	151-0190-02			TRANSISTOR:NPN,SI,TO-92	04713	SPS3319(2N3904)
A2Q33	151-0190-02			TRANSISTOR:NPN,SI,TO-92	04713	SPS3319(2N3904)
A2Q55	151-1025-00			TRANSISTOR:FET,N-CHAN,SI,TO-92	04713	SPF3036
A2Q56	151-0221-00			TRANSISTOR:PNP,SI,TO-92	80009	151-0221-00
A2Q57	151-0190-02			TRANSISTOR:NPN,SI,TO-92	04713	SPS3319(2N3904)
A2Q72	151-1025-00			TRANSISTOR:FET,N-CHAN,SI,TO-92	04713	SPF3036
A2Q73	151-0221-00			TRANSISTOR:PNP,SI,TO-92	80009	151-0221-00
A2Q74	151-0190-02			TRANSISTOR:NPN,SI,TO-92	04713	SPS3319(2N3904)
A2Q121	151-0232-00			TRANSISTOR:NPN,SI,TO-78	07263	SP12141
A2Q136	151-0190-02			TRANSISTOR:NPN,SI,TO-92	04713	SPS3319(2N3904)
A2Q138	151-0188-00			TRANSISTOR:PNP,SI,TO-92	80009	151-0188-00
A2Q146	151-0302-00			TRANSISTOR:NPN,SI,TO-18	04713	ST899
A2Q148	151-0302-00			TRANSISTOR:NPN,SI,TO-18	04713	ST899
A2Q149	151-0301-00			TRANSISTOR:PNP,SI,TO-18	04713	ST898
A2Q173	151-1025-00			TRANSISTOR:FET,N-CHAN,SI,TO-92	04713	SPF3036
A2Q174	151-0221-00			TRANSISTOR:PNP,SI,TO-92	80009	151-0221-00
A2Q175	151-0190-02			TRANSISTOR:NPN,SI,TO-92	04713	SPS3319(2N3904)
A2Q235	151-1036-00			TRANSISTOR:FET,N-CHAN,SI,TO-71	80009	151-1036-00
A2Q255	151-0221-00			TRANSISTOR:PNP,SI,TO-92	80009	151-0221-00
A2Q257	151-0190-02			TRANSISTOR:NPN,SI,TO-92	04713	SPS3319(2N3904)
A2Q259	151-1025-00			TRANSISTOR:FET,N-CHAN,SI,TO-92	04713	SPF3036
A2Q266	151-0221-00			TRANSISTOR:PNP,SI,TO-92	80009	151-0221-00
A2Q268	151-1025-00			TRANSISTOR:FET,N-CHAN,SI,TO-92	04713	SPF3036
A2Q276	151-0190-02			TRANSISTOR:NPN,SI,TO-92	04713	SPS3319(2N3904)
A2R10	311-1263-00			RES,VAR,NONWW:1K OHM,10%,0.50W	32997	3329P-L58-102

Component No.	Tektronix Part No.	Serial/Assembly No. Effective	Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A2R11	321-0321-00			RES,FXD,FILM:21.5K OHM,1%,0.125M,TC=T0 (067-0690-00 ONLY)	07716	CEAD21501F
A2R11	321-0260-00			RES,FXD,FILM:4.99K OHM,1%,0.125M,TC=T0 (067-0690-01 ONLY)	19701	5033ED4K990F
A2R12	321-0154-00			RES,FXD,FILM:392 OHM,1%,0.125M,TC=T0 (067-0690-00 ONLY)	07716	CEAD392R0F
A2R12	321-0021-00	B010100	B011005	RES,FXD,FILM:16.2 OHM,1%,0.125M,TC=T0 (067-0690-01 ONLY)	57668	RB14FXE 16E2
A2R12	321-0027-00	B011006		RES,FXD,FILM:18.7 OHM,1%,0.125M,TC=T0 (067-0690-01 ONLY)	57668	RB14FXE 18E7
A2R13	321-0615-00			RES,FXD,FILM:20.4K OHM,0.125M,TC=T0 (067-0690-00 ONLY)	07716	CEAD20401F
A2R13	321-0260-00			RES,FXD,FILM:4.99K OHM,1%,0.125M,TC=T0 (067-0690-01 ONLY)	19701	5033ED4K990F
A2R14	321-0072-00			RES,FXD,FILM:54.9 OHM,1%,0.125M,TC=T0 (067-0690-00 ONLY)	91637	CMF55116G54R90F
A2R14	321-0004-00	B010100	B011005	RES,FXD,FILM:10.7 OHM,1%,0.125M (067-0690-01 ONLY)	57668	RB14FXE 10E7
A2R14	321-1008-04	B011006		RES,FXD,FILM:12.0 OHM,0.1%,0.125M,TC=T2 (067-0690-01 ONLY)	57668	CRB14 BYE 12 OHM
A2R15	321-0280-00			RES,FXD,FILM:8.06K OHM,1%,0.125M,TC=T0 (067-0690-00 ONLY)	19701	5033ED8K060F
A2R15	321-0251-00			RES,FXD,FILM:4.02K OHM,1%,0.125M,TC=T0 (067-0690-01 ONLY)	19701	5033ED4K020F
A2R16	321-0021-00			RES,FXD,FILM:16.2 OHM,1%,0.125M,TC=T0 (067-0690-00 ONLY)	57668	RB14FXE 16E2
A2R16	321-0013-00	B010100	B011005	RES,FXD,FILM:13.3 OHM,1%,0.125M,TC=T0 (067-0690-01 ONLY)	57668	RB14FXE 13E3
A2R16	321-0017-00	B011006		RES,FXD,FILM:14.7 OHM,1%,0.125M,TC=T0 (067-0690-01 ONLY)	57668	RB14FXE 14E7
A2R17	321-0260-00			RES,FXD,FILM:4.99K OHM,1%,0.125M,TC=T0 (067-0690-00 ONLY)	19701	5033ED4K990F
A2R17	321-0243-00			RES,FXD,FILM:3.32K OHM,1%,0.125M,TC=T0 (067-0690-01 ONLY)	19701	5033ED3K32F
A2R18	321-0075-00			RES,FXD,FILM:59.0 OHM,1%,0.125M,TC=T0 (067-0690-00 ONLY)	91637	CMF55116G59R00F
A2R18	321-0059-00			RES,FXD,FILM:40.2 OHM,0.5%,0.125M,TC=T0 (067-0690-01 ONLY)	91637	CMF55116G40R20F
A2R21	315-0153-00			RES,FXD,FILM:15K OHM,5%,0.25M	19701	5043CX15K00J
A2R22	315-0470-00			RES,FXD,FILM:47 OHM,5%,0.25M	57668	NTR25J-E47E0
A2R23	315-0512-00			RES,FXD,FILM:5.1K OHM,5%,0.25M	57668	NTR25J-E05K1
A2R24	315-0222-00			RES,FXD,FILM:2.2K OHM,5%,0.25M	57668	NTR25J-E02K2
A2R25	315-0103-00			RES,FXD,FILM:10K OHM,5%,0.25M	19701	5043CX10K00J
A2R26	321-0208-00			RES,FXD,FILM:1.43K OHM,1%,0.125M,TC=T0	19701	5033ED1K43F
A2R27	321-0143-00			RES,FXD,FILM:301 OHM,1%,0.125M,TC=T0	07716	CEAD301R0F
A2R31	315-0101-00			RES,FXD,FILM:100 OHM,5%,0.25M	57668	NTR25J-E 100E
A2R38	311-1225-00			RES,VAR,NONWM:TRMR,1K OHM,0.5M	32997	3386F-T04-102
A2R39	321-0134-00			RES,FXD,FILM:243 OHM,1%,0.125M,TC=T0 (067-0690-00 ONLY)	19701	5043ED243R0F
A2R39	321-0189-00			RES,FXD,FILM:909 OHM,1%,0.125M,TC=T2 (067-0690-01 ONLY)	19701	5033ED909R0F
A2R40	315-0102-00			RES,FXD,FILM:1K OHM,5%,0.25M	57668	NTR25JE01K0
A2R51	315-0512-00			RES,FXD,FILM:5.1K OHM,5%,0.25M	57668	NTR25J-E05K1
A2R53	315-0202-00			RES,FXD,FILM:2K OHM,5%,0.25M	57668	NTR25J-E 2K
A2R54	315-0511-00			RES,FXD,FILM:510 OHM,5%,0.25M	19701	5043CX510R0J
A2R56	315-0100-00			RES,FXD,FILM:10 OHM,5%,0.25M	19701	5043CX10RR00J
A2R57	315-0202-00			RES,FXD,FILM:2K OHM,5%,0.25M	57668	NTR25J-E 2K
A2R58	315-0912-00			RES,FXD,FILM:9.1K OHM,5%,0.25M	57668	NTR25J-E09K1
A2R59	311-1232-00			RES,VAR,NONWM:TRMR,50K OHM,0.5M	32997	3386F-T04-503
A2R61	315-0152-00			RES,FXD,FILM:1.5K OHM,5%,0.25M	57668	NTR25J-E01K5
A2R64	315-0512-00			RES,FXD,FILM:5.1K OHM,5%,0.25M	57668	NTR25J-E05K1
A2R67	315-0202-00			RES,FXD,FILM:2K OHM,5%,0.25M	57668	NTR25J-E 2K

Component No.	Tektronix Part No.	Serial/Assembly No. Effective	Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A2R68	315-0511-00			RES,FXD,FILM:510 OHM,5%,0.25M	19701	5043CX510R0J
A2R71	315-0100-00			RES,FXD,FILM:10 OHM,5%,0.25M	19701	5043CX10RR00J
A2R72	315-0912-00			RES,FXD,FILM:9.1K OHM,5%,0.25M	57668	NTR25J-E09K1
A2R73	315-0202-00			RES,FXD,FILM:2K OHM,5%,0.25M	57668	NTR25J-E 2K
A2R74	311-1232-00			RES,VAR,NONWM:TRMR,50K OHM,0.5M	32997	3386F-T04-503
A2R75	315-0152-00			RES,FXD,FILM:1.5K OHM,5%,0.25M	57668	NTR25J-E01K5
A2R82	315-0152-00			RES,FXD,FILM:1.5K OHM,5%,0.25M	57668	NTR25J-E01K5
A2R111	321-0251-00			RES,FXD,FILM:4.02K OHM,1%,0.125M,TC=T0 (067-0690-00 ONLY)	19701	5033ED4K020F
A2R111	321-0231-00			RES,FXD,FILM:2.49K OHM,1%,0.125M,TC=T0 (067-0690-01 ONLY)	19701	5033ED2K49F
A2R112	321-0280-00			RES,FXD,FILM:8.06K OHM,1%,0.125M,TC=T0 (067-0690-00 ONLY)	19701	5033ED8K060F
A2R112	321-0251-00			RES,FXD,FILM:4.02K OHM,1%,0.125M,TC=T0 (067-0690-01 ONLY)	19701	5033ED4K020F
A2R113	321-0260-00			RES,FXD,FILM:4.99K OHM,1%,0.125M,TC=T0 (067-0690-00 ONLY)	19701	5033ED4K990F
A2R113	321-0243-00			RES,FXD,FILM:3.32K OHM,1%,0.125M,TC=T0 (067-0690-01 ONLY)	19701	5033ED3K32F
A2R114	321-0251-00			RES,FXD,FILM:4.02K OHM,1%,0.125M,TC=T0 (067-0690-00 ONLY)	19701	5033ED4K020F
A2R114	321-0231-00			RES,FXD,FILM:2.49K OHM,1%,0.125M,TC=T0 (067-0690-01 ONLY)	19701	5033ED2K49F
A2R115	321-0234-00			RES,FXD,FILM:2.67K OHM,1%,0.125M,TC=T0	19701	5033ED2K67F
A2R116	321-0234-00			RES,FXD,FILM:2.67K OHM,1%,0.125M,TC=T0	19701	5033ED2K67F
A2R117	321-0227-00			RES,FXD,FILM:2.26K OHM,1%,0.125M,TC=T0	01121	RNK2261F
A2R119	321-0143-00			RES,FXD,FILM:301 OHM,1%,0.125M,TC=T0	07716	CEAD301R0F
A2R122	321-0171-00			RES,FXD,FILM:590 OHM,1%,0.125M,TC=T0	19701	5033ED590R0F
A2R123	321-0231-00			RES,FXD,FILM:2.49K OHM,1%,0.125M,TC=T0	19701	5033ED2K49F
A2R124	321-0122-00			RES,FXD,FILM:182 OHM,1%,0.125M,TC=T0	19701	5033ED182R0F
A2R125	321-0122-00			RES,FXD,FILM:182 OHM,1%,0.125M,TC=T0	19701	5033ED182R0F
A2R126	321-0184-00			RES,FXD,FILM:806 OHM,1%,0.125M,TC=T0	19701	5033ED806R0F
A2R127	321-0184-00			RES,FXD,FILM:806 OHM,1%,0.125M,TC=T0	19701	5033ED806R0F
A2R128	321-0210-00			RES,FXD,FILM:1.50K OHM,1%,0.125M,TC=T0	19701	5033ED1K50F
A2R129	321-0210-00			RES,FXD,FILM:1.50K OHM,1%,0.125M,TC=T0	19701	5033ED1K50F
A2R130	321-0162-00			RES,FXD,FILM:475 OHM,1%,0.125M,TC=T0	19701	5033ED475R0F
A2R131	321-0193-00	B010100	B011005	RES,FXD,FILM:1K OHM,1%,0.125M,TC=T0	19701	5033ED1K00F
A2R131	321-0206-00	B011006		RES,FXD,FILM:1.37K OHM,1%,0.125M,TC=T0	07716	CEAD13700F
A2R132	321-0280-00			RES,FXD,FILM:8.06K OHM,1%,0.125M,TC=T0	19701	5033ED8K060F
A2R133	321-0280-00			RES,FXD,FILM:8.06K OHM,1%,0.125M,TC=T0	19701	5033ED8K060F
A2R135	321-0193-00			RES,FXD,FILM:1K OHM,1%,0.125M,TC=T0	19701	5033ED1K00F
A2R136	321-0193-00			RES,FXD,FILM:1K OHM,1%,0.125M,TC=T0	19701	5033ED1K00F
A2R137	321-0177-00			RES,FXD,FILM:681 OHM,1%,0.125M,TC=T0	07716	CEAD681R0F
A2R138	321-0222-00			RES,FXD,FILM:2.00K OHM,1%,0.125M,TC=T0	19701	5033ED2K00F
A2R139	321-0222-00			RES,FXD,FILM:2.00K OHM,1%,0.125M,TC=T0	19701	5033ED2K00F
A2R140	315-0511-00			RES,FXD,FILM:510 OHM,5%,0.25M	19701	5043CX510R0J
A2R141	315-0103-00			RES,FXD,FILM:10K OHM,5%,0.25M	19701	5043CX10K00J
A2R142	315-0103-00			RES,FXD,FILM:10K OHM,5%,0.25M	19701	5043CX10K00J
A2R143	315-0152-00			RES,FXD,FILM:1.5K OHM,5%,0.25M	57668	NTR25J-E01K5
A2R144	315-0751-00			RES,FXD,FILM:750 OHM,5%,0.25M	57668	NTR25J-E750E
A2R145	315-0432-00			RES,FXD,FILM:4.3K OHM,5%,0.25M	57668	NTR25J-E04K3
A2R151	311-1224-00			RES,VAR,NONWM:TRMR,500 OHM,0.5M	32997	3386F-T04-501
A2R152	315-0103-00			RES,FXD,FILM:10K OHM,5%,0.25M	19701	5043CX10K00J
A2R154	321-0216-00			RES,FXD,FILM:1.74K OHM,1%,0.125M,TC=T0	07716	CEAD17400F
A2R155	315-0103-00			RES,FXD,FILM:10K OHM,5%,0.25M	19701	5043CX10K00J
A2R157	321-0240-00			RES,FXD,FILM:3.09K OHM,1%,0.125M,TC=T0	07716	CEAD30900F
A2R159	315-0103-00			RES,FXD,FILM:10K OHM,5%,0.25M	19701	5043CX10K00J
A2R164	315-0512-00			RES,FXD,FILM:5.1K OHM,5%,0.25M	57668	NTR25J-E05K1
A2R168	315-0511-00			RES,FXD,FILM:510 OHM,5%,0.25M	19701	5043CX510R0J
A2R171	315-0100-00			RES,FXD,FILM:10 OHM,5%,0.25M	19701	5043CX10RR00J

Component No.	Tektronix Part No.	Serial/Assembly No. Effective	Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A2R172	315-0202-00			RES,FXD,FILM:2K OHM,5%,0.25W	57668	NTR25J-E 2K
A2R173	315-0912-00			RES,FXD,FILM:9.1K OHM,5%,0.25W	57668	NTR25J-E09K1
A2R175	315-0152-00			RES,FXD,FILM:1.5K OHM,5%,0.25W	57668	NTR25J-E01K5
A2R176	311-1232-00			RES,VAR,NONWW:TRMR,50K OHM,0.5W	32997	3386F-T04-503
A2R177	315-0202-00			RES,FXD,FILM:2K OHM,5%,0.25W	57668	NTR25J-E 2K
A2R182	311-1225-00			RES,VAR,NONWW:TRMR,1K OHM,0.5W	32997	3386F-T04-102
A2R183	315-0153-00			RES,FXD,FILM:15K OHM,5%,0.25W	19701	5043CX15K00J
A2R184	321-0276-00			RES,FXD,FILM:7.32K OHM,1%,0.125W,TC=T0	19701	5043ED7K320F
A2R185	321-0271-00			RES,FXD,FILM:6.49K OHM,1%,0.125W,TC=T0	07716	CEAD64900F
A2R186	307-0113-00			RES,FXD,CMPSN:5.1 OHM,5%,0.25W	01121	CB51G5
A2R187	315-0151-00			RES,FXD,FILM:150 OHM,5%,0.25W	57668	NTR25J-E150E
A2R188	321-0816-07			RES,FXD,FILM:5K OHM,0.1%,0.125W,TC=T9	19701	5033RE5K000B
A2R211	321-0171-00			RES,FXD,FILM:590 OHM,1%,0.125W,TC=T0	19701	5033ED590R0F
A2R213	321-0231-00			RES,FXD,FILM:2.49K OHM,1%,0.125W,TC=T0	19701	5033ED2K49F
A2R215	315-0512-00			RES,FXD,FILM:5.1K OHM,5%,0.25W	57668	NTR25J-E05K1
A2R216	321-0615-00	B010100	B011005	RES,FXD,FILM:20.4K OHM,0.125W,TC=T0	07716	CEAD20401F
A2R216	321-0314-00	B011006		RES,FXD,FILM:18.2K OHM,1%,0.125W,TC=T0	19701	5043ED18K20F
A2R217	311-1268-00			RES,VAR,NONWW:TRMR,10K OHM,0.5W	32997	3329P-L58-103
A2R225	311-1258-00			RES,VAR,NONWW:TRMR,50 OHM,0.5W	32997	3329P-L58-500
A2R230	321-0251-00			RES,FXD,FILM:4.02K OHM,1%,0.125W,TC=T0	19701	5033ED4K020F
A2R231	321-0240-00			RES,FXD,FILM:3.09K OHM,1%,0.125W,TC=T0	07716	CEAD30900F
A2R233	321-0251-00			RES,FXD,FILM:4.02K OHM,1%,0.125W,TC=T0	19701	5033ED4K020F
A2R234	307-0106-00			RES,FXD,CMPSN:4.7 OHM,5%,0.25W	01121	CB 47G5
A2R243	315-0101-00			RES,FXD,FILM:100 OHM,5%,0.25W	57668	NTR25J-E 100E
A2R244	307-0106-00			RES,FXD,CMPSN:4.7 OHM,5%,0.25W	01121	CB 47G5
A2R245	307-0106-00			RES,FXD,CMPSN:4.7 OHM,5%,0.25W	01121	CB 47G5
A2R248	307-0106-00			RES,FXD,CMPSN:4.7 OHM,5%,0.25W	01121	CB 47G5
A2R251	315-0202-00			RES,FXD,FILM:2K OHM,5%,0.25W	57668	NTR25J-E 2K
A2R253	315-0511-00			RES,FXD,FILM:510 OHM,5%,0.25W	19701	5043CX510R0J
A2R254	315-0512-00			RES,FXD,FILM:5.1K OHM,5%,0.25W	57668	NTR25J-E05K1
A2R255	311-1232-00			RES,VAR,NONWW:TRMR,50K OHM,0.5W	32997	3386F-T04-503
A2R256	315-0152-00			RES,FXD,FILM:1.5K OHM,5%,0.25W	57668	NTR25J-E01K5
A2R257	315-0202-00			RES,FXD,FILM:2K OHM,5%,0.25W	57668	NTR25J-E 2K
A2R258	315-0912-00			RES,FXD,FILM:9.1K OHM,5%,0.25W	57668	NTR25J-E09K1
A2R260	315-0100-00			RES,FXD,FILM:10 OHM,5%,0.25W	19701	5043CX10RR00J
A2R261	315-0202-00			RES,FXD,FILM:2K OHM,5%,0.25W	57668	NTR25J-E 2K
A2R264	315-0511-00			RES,FXD,FILM:510 OHM,5%,0.25W	19701	5043CX510R0J
A2R265	315-0512-00			RES,FXD,FILM:5.1K OHM,5%,0.25W	57668	NTR25J-E05K1
A2R266	311-1232-00			RES,VAR,NONWW:TRMR,50K OHM,0.5W	32997	3386F-T04-503
A2R272	315-0152-00			RES,FXD,FILM:1.5K OHM,5%,0.25W	57668	NTR25J-E01K5
A2R273	315-0202-00			RES,FXD,FILM:2K OHM,5%,0.25W	57668	NTR25J-E 2K
A2R277	315-0912-00			RES,FXD,FILM:9.1K OHM,5%,0.25W	57668	NTR25J-E09K1
A2R279	315-0100-00			RES,FXD,FILM:10 OHM,5%,0.25W	19701	5043CX10RR00J
A2R281	315-0222-00			RES,FXD,FILM:2.2K OHM,5%,0.25W	57668	NTR25J-E02K2
A2R282	321-0289-07			RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9	19701	5033RE10K00B
A2R283	315-0562-00			RES,FXD,FILM:5.6K OHM,5%,0.25W	57668	NTR25J-E05K6
A2R284	308-0441-00			RES,FXD,MM:3 OHM,5%,3W	14193	SA31-3R00J
A2R297	315-0270-00			RES,FXD,FILM:27 OHM,5%,0.25W	19701	5043CX27R00J
A2S1	260-1621-00			SWITCH,PUSH:10 BUTTON,4 POLE,MODE	80009	260-1621-00
A2S2	----- -----			(PART OF S1)		
A2S3	----- -----			(PART OF S1)		
A2S4	----- -----			(PART OF S1)		
A2S45	260-1208-00			SWITCH,PUSH:DPDT,28VDC,PUSH-PUSH	31918	ORDER BY DESCR
A2S101	260-1621-00			SWITCH,PUSH:10 BUTTON,4 POLE,MODE	80009	260-1621-00
A2S102	----- -----			(PART OF S101)		
A2S103	----- -----			(PART OF S101)		
A2S201	----- -----			(PART OF S101)		
A2S202	----- -----			(PART OF S101)		
A2S203	----- -----			(PART OF S101)		

Component No.	Tektronix Part No.	Serial/Assembly No. Effective	Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A2U151	156-0129-00			MICROCKT,DGTL:QUAD 2-INP AND GATE	01295	SN7408 N OR J
A2U155	156-0129-00			MICROCKT,DGTL:QUAD 2-INP AND GATE	01295	SN7408 N OR J
A2U181	156-0071-00			MICROCKT,LINEAR:VOLTAGE REGULATOR	04713	MC1723CL
A2U225	156-0092-00			MICROCKT,DGTL:HEX INV W/OPEN COLLECTOR	01295	SN7405N
A2U226	156-0117-00			MICROCKT,DGTL:SYN 4-BIT BINARY COUNTER	01295	SN74161 N OR J
A2U281	156-0071-00			MICROCKT,LINEAR:VOLTAGE REGULATOR	04713	MC1723CL
A2VR143	152-0149-00			SEMICOND DVC,DI:ZEN,SI,10V,5%,0.4W,DO-7	15238	Z5406

Component No.	Tektronix Part No.	Serial/Assembly No. Effective	Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A3	670-3067-00	B010100	B011005	CIRCUIT BD ASSY:LOGIC & OUTPUT	80009	670-3067-00
A3	670-3067-02	B011006		CIRCUIT BD ASSY:LOGIC & OUTPUT	80009	670-3067-02
A3C12	283-0177-00			CAP,FXD,CER DI:1UF,+80-20%,25V	04222	SR302E105ZAATR
A3C29	285-0835-00			CAP,FXD,PLASTIC:0.22UF,2%,100V	04099	TEK15-7
A3C68	281-0629-00			CAP,FXD,CER DI:33PF,5%,600V	52763	2RDPLZ007 33P0JC
A3C95	290-0529-00			CAP,FXD,ELCTLT:47UF,20%,20V	05397	T362C476M020AS
A3C96	290-0529-00			CAP,FXD,ELCTLT:47UF,20%,20V	05397	T362C476M020AS
A3C104	283-0000-00			CAP,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-610-Y5U0102P
A3C105	281-0523-00			CAP,FXD,CER DI:100PF,20%,350V	52763	2RDPLZ007 100PMU
A3C109	285-0835-00			CAP,FXD,PLASTIC:0.22UF,2%,100V	04099	TEK15-7
A3C112	281-0523-00			CAP,FXD,CER DI:100PF,20%,350V	52763	2RDPLZ007 100PMU
A3C119	290-0535-00			CAP,FXD,ELCTLT:33UF,20%,10V TANTALUM	56289	196D336X0010KA1
A3C151	290-0529-00			CAP,FXD,ELCTLT:47UF,20%,20V	05397	T362C476M020AS
A3C187	281-0547-00			CAP,FXD,CER DI:2.7PF,+/-0.25PF,500V	52763	2RDPLZ007 2P70CC
A3C195	290-0529-00			CAP,FXD,ELCTLT:47UF,20%,20V	05397	T362C476M020AS
A3C209	290-0529-00			CAP,FXD,ELCTLT:47UF,20%,20V	05397	T362C476M020AS
A3C213	285-0835-00			CAP,FXD,PLASTIC:0.22UF,2%,100V	04099	TEK15-7
A3C221	283-0000-00			CAP,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-610-Y5U0102P
A3C228	290-0529-00			CAP,FXD,ELCTLT:47UF,20%,20V	05397	T362C476M020AS
A3C291	290-0529-00			CAP,FXD,ELCTLT:47UF,20%,20V	05397	T362C476M020AS
A3CR4	152-0141-02			SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A3CR5	152-0141-02			SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A3CR13	152-0141-02			SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A3CR21	152-0141-02			SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A3CR75	152-0141-02			SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A3CR104	152-0141-02			SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A3CR105	152-0141-02			SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A3CR106	152-0141-02			SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A3CR107	152-0141-02			SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A3CR108	152-0141-02			SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A3CR115	152-0141-02			SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A3CR117	152-0141-02			SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A3CR163	152-0141-02			SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A3CR165	152-0141-02			SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A3CR167	152-0141-02			SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A3CR176	152-0141-02			SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A3CR177	152-0141-02			SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A3CR218	152-0141-02			SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A3CR224	152-0141-02			SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A3CR260	152-0141-02			SEMICOND DVC,DI:SM,SI,30V,150MA,30V,DO-35	03508	DA2527 (1N4152)
A3Q10	151-0188-00			TRANSISTOR:PNP,SI,TO-92	80009	151-0188-00
A3Q85	151-0220-00			TRANSISTOR:PNP,SI,TO-92	80009	151-0220-00
A3Q86	151-0220-00			TRANSISTOR:PNP,SI,TO-92	80009	151-0220-00
A3Q105	151-0190-02			TRANSISTOR:NPN,SI,TO-92	04713	SPS3319(2N3904)
A3Q116	151-0190-02			TRANSISTOR:NPN,SI,TO-92	04713	SPS3319(2N3904)
A3Q119	151-0190-02			TRANSISTOR:NPN,SI,TO-92	04713	SPS3319(2N3904)
A3Q125	151-0188-00			TRANSISTOR:PNP,SI,TO-92	80009	151-0188-00
A3Q126	151-0207-00			TRANSISTOR:NPN,SI,X-55,SEL	57668	XD11BCP0207
A3Q127	151-0190-02			TRANSISTOR:NPN,SI,TO-92	04713	SPS3319(2N3904)
A3Q219	151-0188-00			TRANSISTOR:PNP,SI,TO-92	80009	151-0188-00
A3Q227	151-0190-02			TRANSISTOR:NPN,SI,TO-92	04713	SPS3319(2N3904)
A3Q259	151-0271-00			TRANSISTOR:PNP,SI,TO-92	04713	SPS8236
A3Q261	151-0223-00			TRANSISTOR:NPN,SI,TO-92	04713	SPS8026
A3Q265	151-0223-00			TRANSISTOR:NPN,SI,TO-92	04713	SPS8026
A3Q275	151-0190-02			TRANSISTOR:NPN,SI,TO-92	04713	SPS3319(2N3904)
A3Q285	151-0301-00			TRANSISTOR:PNP,SI,TO-18	04713	ST898
A3Q291	151-0190-02			TRANSISTOR:NPN,SI,TO-92	04713	SPS3319(2N3904)
A3R5	315-0302-00			RES,FXD,FILM:3K OHM,5%,0.25M	57668	NTR25J-E03K0
A3R6	315-0302-00			RES,FXD,FILM:3K OHM,5%,0.25M	57668	NTR25J-E03K0

Component No.	Tektronix Part No.	Serial/Assembly No. Effective	Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A3R9	315-0101-00			RES,FXD,FILM:100 OHM,5%,0.25M	57668	NTR25J-E 100E
A3R14	315-0102-00			RES,FXD,FILM:1K OHM,5%,0.25M	57668	NTR25JE01K0
A3R17	315-0153-00			RES,FXD,FILM:15K OHM,5%,0.25M	19701	5043CX15K00J
A3R18	315-0182-00			RES,FXD,FILM:1.8K OHM,5%,0.25M	57668	NTR25J-E1K8
A3R19	315-0152-00			RES,FXD,FILM:1.5K OHM,5%,0.25M	57668	NTR25J-E01K5
A3R31	321-0275-00			RES,FXD,FILM:7.15K OHM,1%,0.125M,TC=T0	07716	CEAD71500F
A3R66	315-0100-00			RES,FXD,FILM:10 OHM,5%,0.25M	19701	5043CX10RR00J
A3R67	321-0085-00			RES,FXD,FILM:75 OHM,1%,0.125M,TC=T0	57668	CRB14FXE 75 OHM
A3R69	315-0471-00			RES,FXD,FILM:470 OHM,5%,0.25M	57668	NTR25J-E470E
A3R76	315-0512-00			RES,FXD,FILM:5.1K OHM,5%,0.25M	57668	NTR25J-E05K1
A3R77	321-0258-00			RES,FXD,FILM:4.75K OHM,1%,0.125M,TC=T0	19701	5033ED4K750F
A3R78	321-0275-00			RES,FXD,FILM:7.15K OHM,1%,0.125M,TC=T0	07716	CEAD71500F
A3R79	315-0100-00			RES,FXD,FILM:10 OHM,5%,0.25M	19701	5043CX10RR00J
A3R82	315-0472-00			RES,FXD,FILM:4.7K OHM,5%,0.25M	57668	NTR25J-E04K7
A3R83	321-0278-09			RES,FXD,FILM:7.68K OHM,1%,0.125M,TC=T9	01121	ADVISE
A3R106	315-0302-00			RES,FXD,FILM:3K OHM,5%,0.25M	57668	NTR25J-E03K0
A3R109	321-0277-00			RES,FXD,FILM:7.50K OHM,1%,0.125M,TC=T0	24546	NA55D7501F
A3R110	315-0333-00	B011006		RES,FXD,FILM:33K OHM,5%,0.25M	57668	NTR25J-E33K0
A3R113	315-0101-00			RES,FXD,FILM:100 OHM,5%,0.25M	57668	NTR25J-E 100E
A3R114	315-0152-00			RES,FXD,FILM:1.5K OHM,5%,0.25M	57668	NTR25J-E01K5
A3R151	315-0512-00			RES,FXD,FILM:5.1K OHM,5%,0.25M	57668	NTR25J-E05K1
A3R160	315-0182-00			RES,FXD,FILM:1.8K OHM,5%,0.25M	57668	NTR25J-E1K8
A3R167	315-0182-00			RES,FXD,FILM:1.8K OHM,5%,0.25M	57668	NTR25J-E1K8
A3R178	315-0103-00			RES,FXD,FILM:10K OHM,5%,0.25M	19701	5043CX10K00J
A3R180	315-0103-00			RES,FXD,FILM:10K OHM,5%,0.25M	19701	5043CX10K00J
A3R183	321-0334-00			RES,FXD,FILM:29.4K OHM,1%,0.125M,TC=T0	07716	CEAD29401F
A3R185	321-0271-00			RES,FXD,FILM:6.49K OHM,1%,0.125M,TC=T0	07716	CEAD64900F
A3R186	321-0155-00			RES,FXD,FILM:402 OHM,1%,0.125M,TC=T0	07716	CEAD402R0F
A3R187	321-0222-00			RES,FXD,FILM:2.00K OHM,1%,0.125M,TC=T0	19701	5033ED2K00F
A3R189	321-0085-00			RES,FXD,FILM:75 OHM,1%,0.125M,TC=T0	57668	CRB14FXE 75 OHM
A3R191	321-0114-00			RES,FXD,FILM:150 OHM,1%,0.125 M,TC=T0	19701	5033ED150R0F
A3R195	321-0096-00			RES,FXD,FILM:97.6 OHM,1%,0.125M,TC=T0	91637	CMF55116G97R60F
A3R202	321-0220-00			RES,FXD,FILM:1.91K OHM,1%,0.125M,TC=T0	19701	5033ED1K91F
A3R205	321-0242-00			RES,FXD,FILM:3.24K OHM,1%,0.125M,TC=T0	19701	5043ED3K240F
A3R210	311-1559-00	B011006		RES,VAR,NONWW:TRMR,10K OHM,0.5W	32997	3352T-1-103
A3R212	307-0106-00			RES,FXD,CMPSN:4.7 OHM,5%,0.25W	01121	CB 47G5
A3R214	315-0302-00			RES,FXD,FILM:3K OHM,5%,0.25M	57668	NTR25J-E03K0
A3R217	315-0102-00			RES,FXD,FILM:1K OHM,5%,0.25M	57668	NTR25JE01K0
A3R218	315-0302-00			RES,FXD,FILM:3K OHM,5%,0.25M	57668	NTR25J-E03K0
A3R221	315-0332-00			RES,FXD,FILM:3.3K OHM,5%,0.25M	57668	NTR25J-E03K3
A3R223	315-0302-00			RES,FXD,FILM:3K OHM,5%,0.25M	57668	NTR25J-E03K0
A3R225	315-0513-00			RES,FXD,FILM:51K OHM,5%,0.25M	57668	NTR25J-E51K0
A3R227	315-0102-00			RES,FXD,FILM:1K OHM,5%,0.25M	57668	NTR25JE01K0
A3R229	307-0106-00			RES,FXD,CMPSN:4.7 OHM,5%,0.25W	01121	CB 47G5
A3R258	315-0151-00			RES,FXD,FILM:150 OHM,5%,0.25M	57668	NTR25J-E150E
A3R259	315-0152-00	B010100	B011005	RES,FXD,FILM:1.5K OHM,5%,0.25M	57668	NTR25J-E01K5
A3R259	315-0202-00	B011006		RES,FXD,FILM:2K OHM,5%,0.25M	57668	NTR25J-E 2K
A3R261	315-0391-00			RES,FXD,FILM:390 OHM,5%,0.25M	57668	NTR25J-E390E
A3R263	321-0059-00			RES,FXD,FILM:40.2 OHM,0.5%,0.125M,TC=T0	91637	CMF55116G40R20F
A3R264	321-0059-00			RES,FXD,FILM:40.2 OHM,0.5%,0.125M,TC=T0	91637	CMF55116G40R20F
A3R265	321-0225-00			RES,FXD,FILM:2.15K OHM,1%,0.125M,TC=T0	19701	5033ED2K15F
A3R267	321-0236-00			RES,FXD,FILM:2.80K OHM,1%,0.125M,TC=T0	07716	CEAD28000F
A3R269	321-0126-00			RES,FXD,FILM:200 OHM,1%,0.125M,TC=T0	19701	5033ED200R0F
A3R271	321-0105-00			RES,FXD,FILM:121 OHM 1%,0.125M,TC=\0	07716	CEAD121R0F
A3R273	321-0231-00			RES,FXD,FILM:2.49K OHM,1%,0.125M,TC=T0	19701	5033ED2K49F
A3R275	321-0181-00			RES,FXD,FILM:750 OHM,1%,0.125M,TC=T0	07716	CEAD750R0F
A3R278	321-0181-00			RES,FXD,FILM:750 OHM,1%,0.125M,TC=T0	07716	CEAD750R0F
A3R279	321-0235-00			RES,FXD,FILM:2.74K OHM,1%,0.125M,TC=T0	07716	CEAD27400F
A3R280	311-1224-00			RES,VAR,NONWW:TRMR,500 OHM,0.5W	32997	3386F-T04-501

Component No.	Tektronix Part No.	Serial/Assembly No. Effective	Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A3R281	315-0510-00			RES,FXD,FILM:51 OHM,5%,0.25M	19701	5043CX51R00J
A3R283	323-0181-00			RES,FXD,FILM:750 OHM,1%,0.5M,TC=TO	75042	CECTO-7500F
A3R285	321-0106-00			RES,FXD,FILM:124 OHM 1%,0.125M,TC=TO	07716	CEAD124R0F
A3R287	321-0119-00			RES,FXD,FILM:169 OHM,1%,0.125M,TC=TO	07716	CEAD169R0F
A3R289	321-0131-00			RES,FXD,FILM:226 OHM,1%,0.125M,TC=TO	19701	5043ED226R0F
A3S295	260-1208-00			SWITCH,PUSH:DPDT,28VDC,PUSH-PUSH	31918	ORDER BY DESCR
A3U25	156-0072-00			MICROCKT,DGTL:MONOSTABLE MV	01295	SN74121(N OR J)
A3U35	156-0047-00			MICROCKT,DGTL:TPL 3-INP NAND GATE	01295	SN7410N
A3U135	156-0078-00			MICROCKT,DGTL:1 OF 16 DECODER/DEMUX	01295	SN74154N
A3U145	156-0175-00			MICROCKT,DGTL:SYN UP/DOWN BIN COUNTER	01295	SN74191 N OR J
A3U235	156-0047-00			MICROCKT,DGTL:TPL 3-INP NAND GATE	01295	SN7410N
A3U245	156-0041-00			MICROCKT,DGTL:DUAL D FLIP FLOP	01295	SN7474(N OR J)

Component No.	Tektronix Part No.	Serial/Assembly No. Effective	Dscont	Name & Description	Mfr. Code	Mfr. Part No.
	----- -----			CHASSIS PARTS		
DS1030	150-0048-01			LAMP,INCAND:5V,0.06A,#683,AGED & SEL	58854	683AS15
J1020	131-0955-00			CONN,RCPT,ELEC:BNC,FEMALE	13511	31-279
J1022	131-0955-00			CONN,RCPT,ELEC:BNC,FEMALE	13511	31-279
J1030	131-0955-00			CONN,RCPT,ELEC:BNC,FEMALE	13511	31-279
J1032	131-0955-00			CONN,RCPT,ELEC:BNC,FEMALE	13511	31-279
J1034	131-0955-00			CONN,RCPT,ELEC:BNC,FEMALE	13511	31-279
J1038	131-0955-00			CONN,RCPT,ELEC:BNC,FEMALE	13511	31-279
Y55	158-0059-00			XTAL UNIT,QTZ:31.5KHZ,0.02,SERIES (067-0690-01 ONLY)	00815	NE-13N

Section 5

SCHEMATICS

Symbols and Reference Designators

Electrical components shown on the diagrams are in the following units unless noted otherwise:

Capacitors = Values one or greater are in picofarads (pF). Values less than one are in microfarads (μF).

Resistors = Ohms (Ω).

Graphic symbols and class designation letters are based on ANSI Standard Y32.2-1975.

Logic symbology is based on ANSI Y32.14-1973 in terms of positive logic. Logic symbols depict the logic function performed and may differ from the manufacturer's data.

Abbreviations are based on ANSI Y1.1-1972.

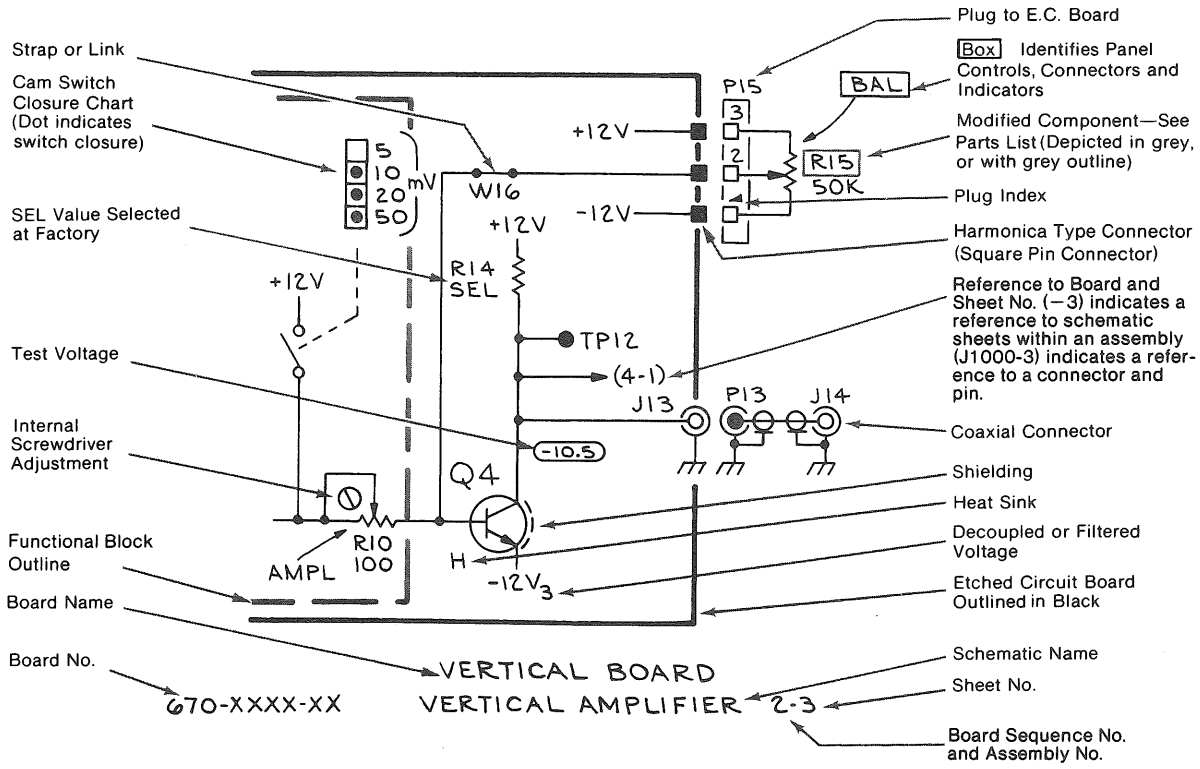
Other ANSI standards that are used in the preparation of diagrams by Tektronix, Inc. are:

Y14.15, 1966	Drafting Practices.
Y14.2, 1973	Line Conventions and Lettering.
Y10.5, 1968	Letter Symbols for Quantities Used in Electrical Science and Electrical Engineering.

The following prefix letters are used as reference designators to identify components or assemblies on the diagrams.

A	Assembly, separable or repairable (circuit board, etc)	H	Heat dissipating device (heat sink, heat radiator, etc)	S	Switch or contactor
AT	Attenuator, fixed or variable	HR	Heater	T	Transformer
B	Motor	HY	Hybrid circuit	TC	Thermocouple
BT	Battery	J	Connector, stationary portion	TP	Test point
C	Capacitor, fixed or variable	K	Relay	U	Assembly, inseparable or non-repairable (integrated circuit, etc.)
CB	Circuit breaker	L	Inductor, fixed or variable	V	Electron tube
CR	Diode, signal or rectifier	M	Meter	VR	Voltage regulator (zener diode, etc.)
DL	Delay line	P	Connector, movable portion	W	Wirestrap or cable
DS	Indicating device (lamp)	Q	Transistor or silicon-controlled rectifier	Y	Crystal
E	Spark Gap, Ferrite bead	R	Resistor, fixed or variable	Z	Phase shifter
F	Fuse	RT	Thermistor		
FL	Filter				

The following special symbols may appear on the diagrams:



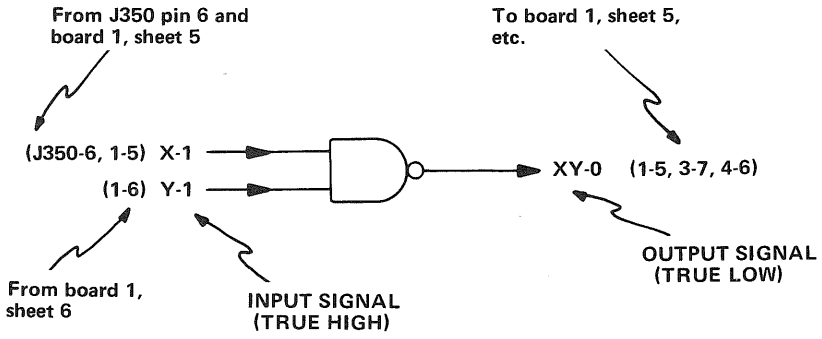
1. TRUE HIGH and TRUE LOW Signals

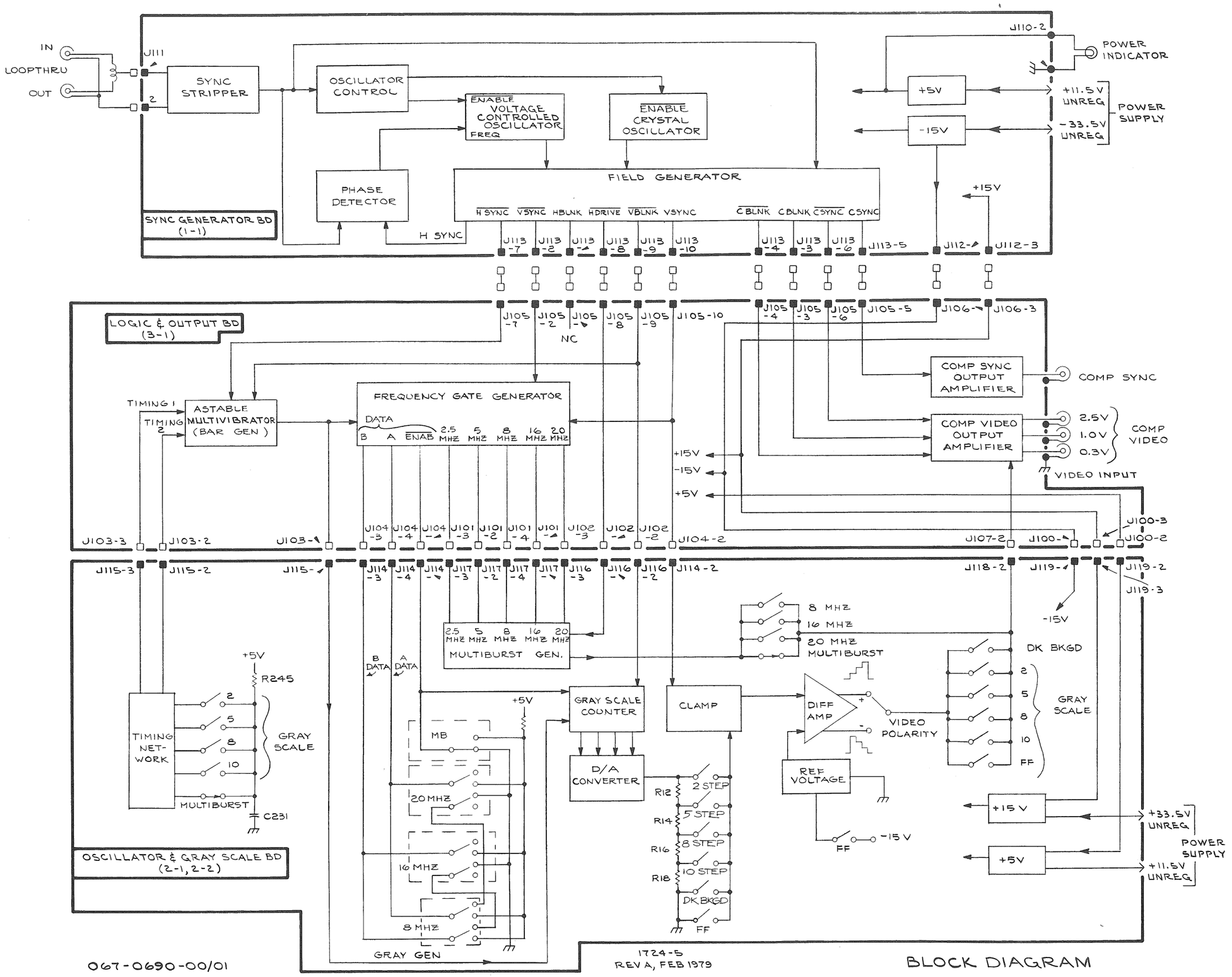
Signal names on the schematics are followed by −1 or −0. A TRUE HIGH signal is indicated by −1, and a TRUE LOW signal is indicated by −0.

SIGNAL−1 = TRUE HIGH
SIGNAL−0 = TRUE LOW

2. Cross-References

Schematic cross-references (from/to information) are included on the schematics. The "from" reference only indicates the signal "source," and the "to" reference lists all loads where the signal is used. All from/to information will be enclosed in parentheses.



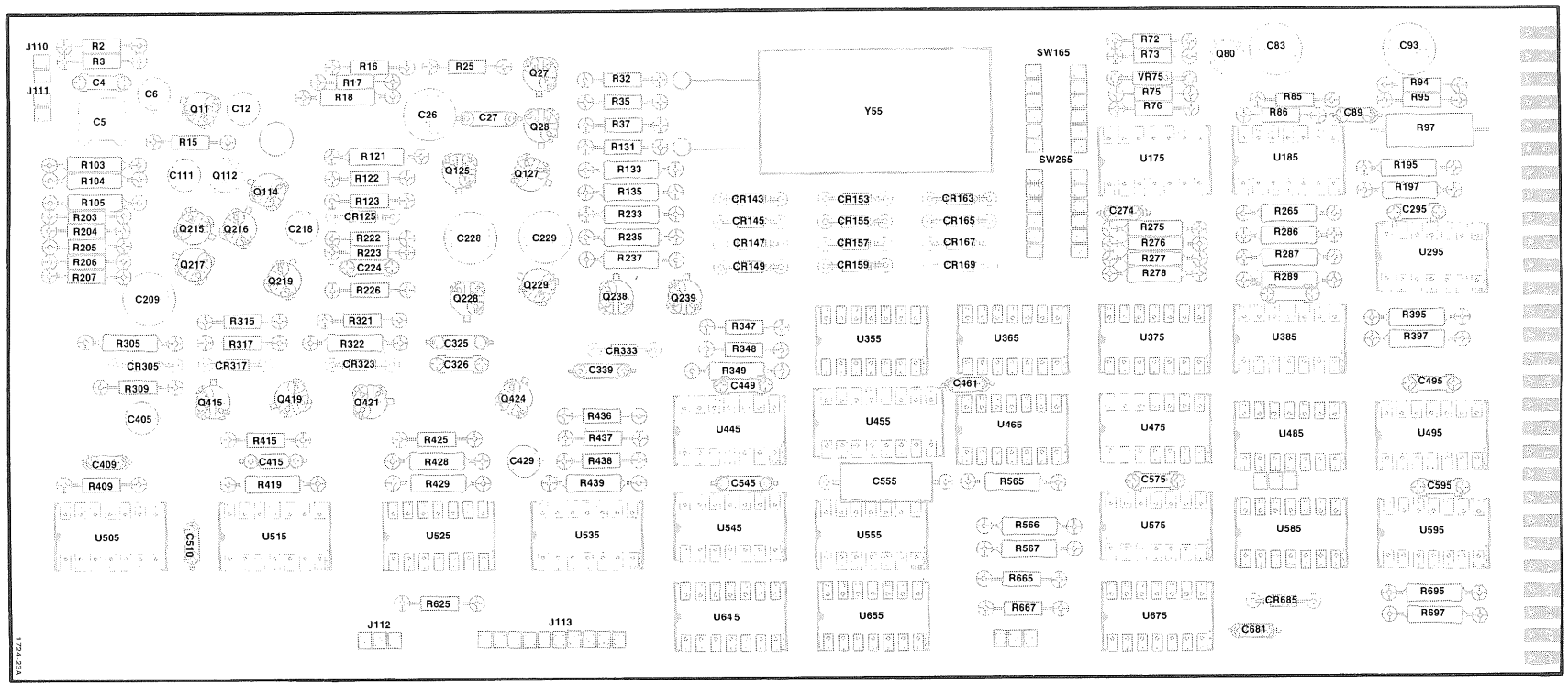


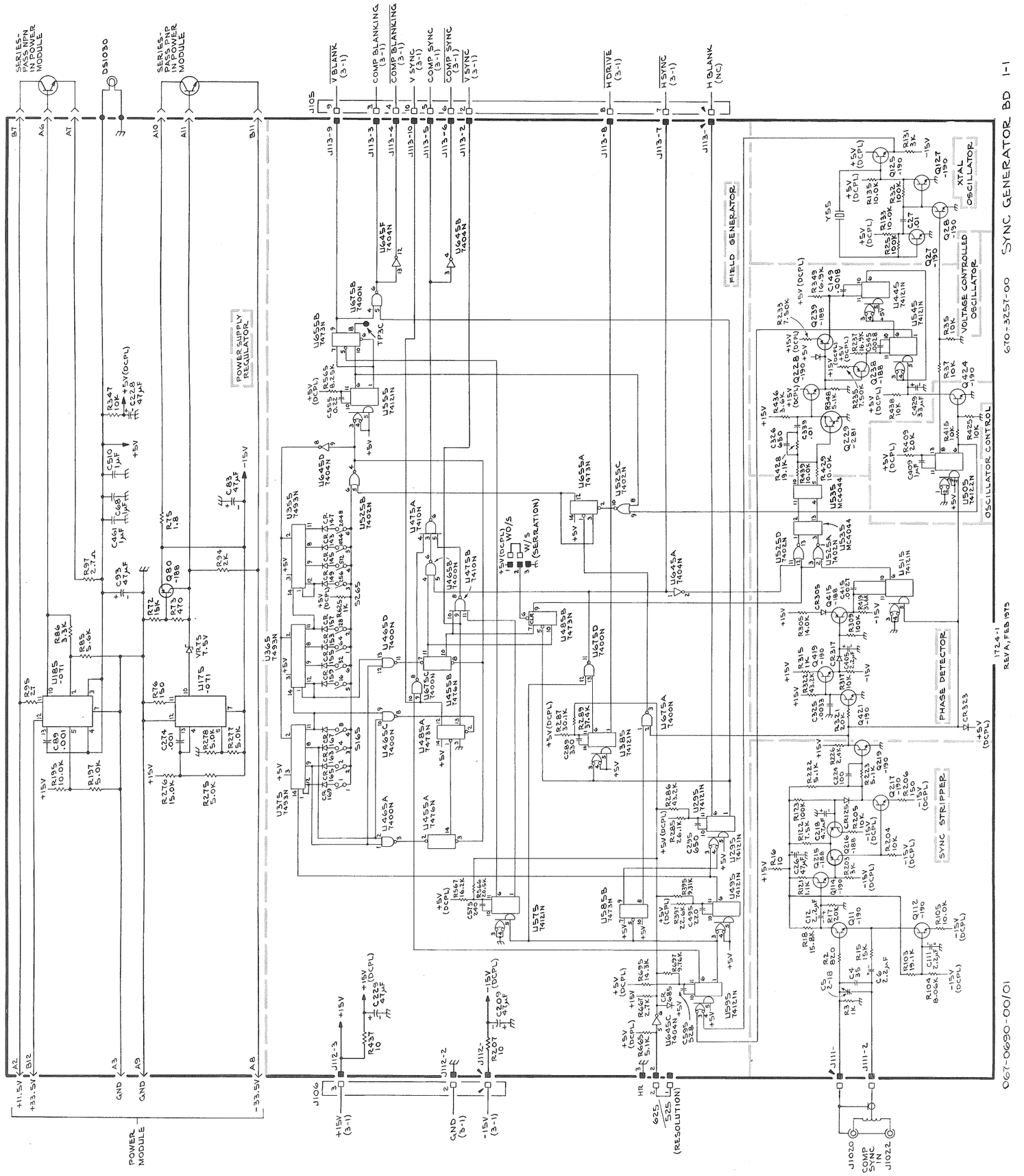
067-0690-00/01

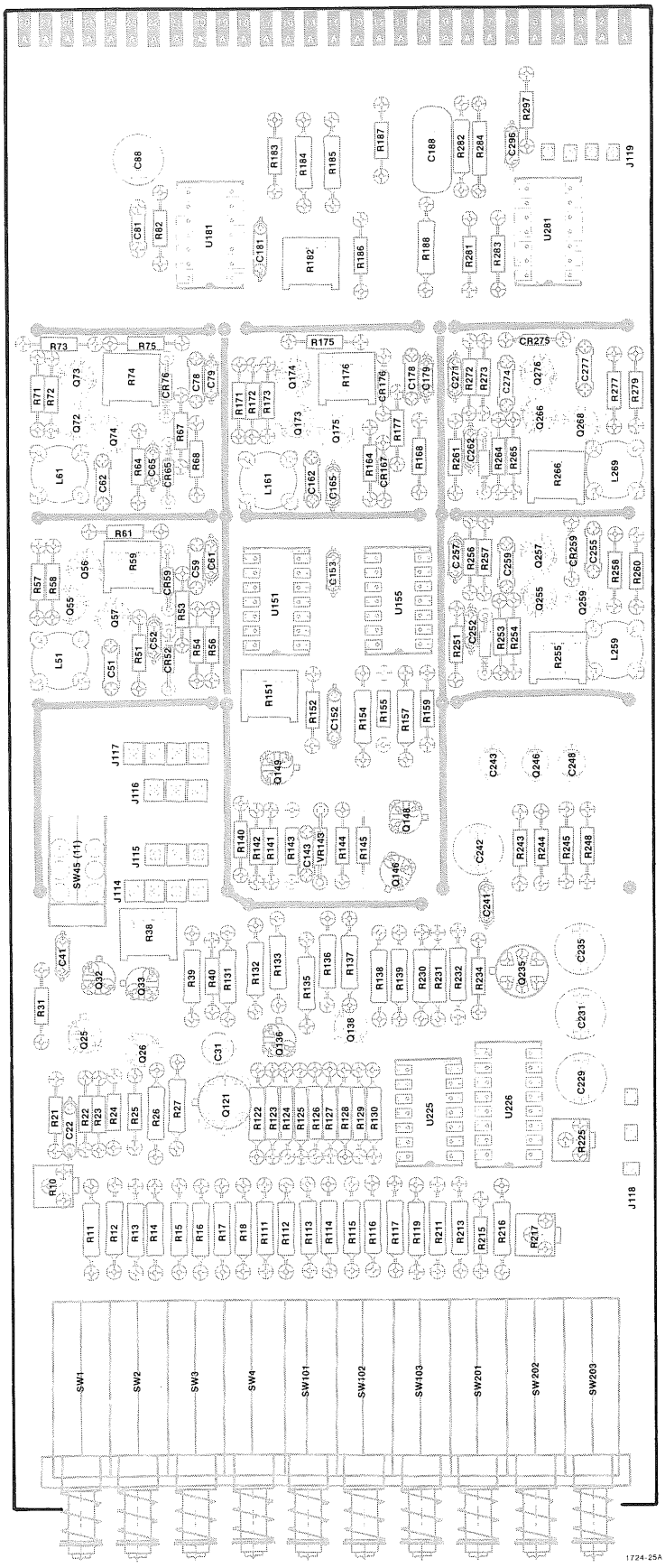
1724-5
REV A, FEB 1979

BLOCK DIAGRAM

Sync Generator 670-3257-00.




SYNC GENERATOR BD 1-1
670-3257-00
067-0690-00/01
172.4-1
REV A, FEB 1972
POWER MODULE
FIELD GENERATOR
PHASE DETECTOR
SYNC STRIPPER
OSCILLATOR CONTROL
VOLTAGE CONTROLLED OSCILLATOR
XTAL OSCILLATOR
POWER SUPPLY REGULATOR
SERIES-PASS NPN POWER MODULE
SERIES-PASS PNP POWER MODULE
DS1030
Y55
J105
J106
J1020
J1022
J1111
J1112
V BLANK (3-1)
COMP BLANKING (3-1)
V SYNC (3-1)
COMP SYNC (3-1)
H DRIVE (3-1)
H SYNC (3-1)
H BLANK (NC)
+11.5V
+33.5V
-33.5V
GND
+15V (3-1)
GND (3-1)
-15V (3-1)
HR
625
525
(RESOLUTION)
COMP SYNC IN



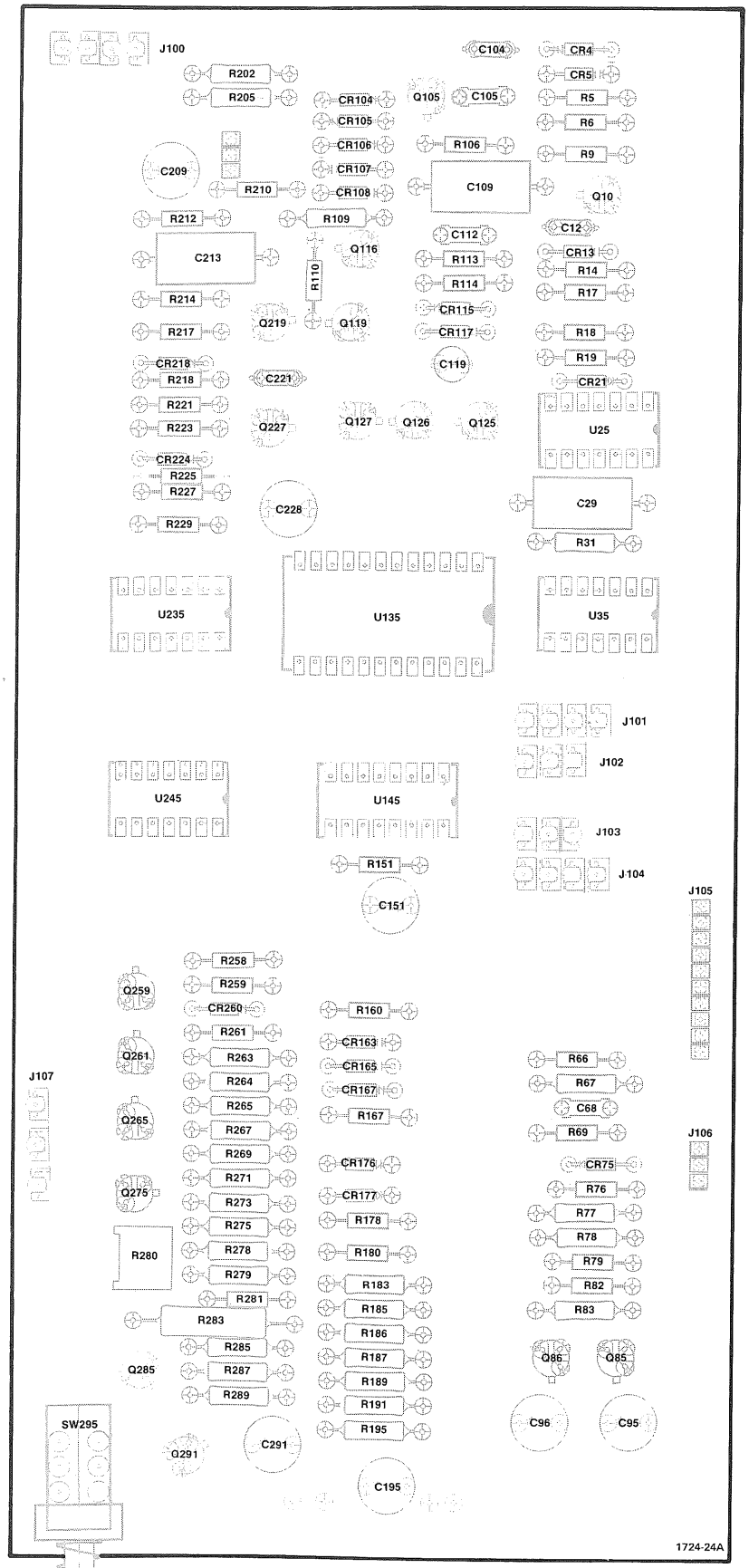
Oscillator and Gray Scale 670-2997-00 & Up.

POWER MODULE
+33.5V
B12
+11.5V
A2
+11.5V RETURN
A3
+33.5V RETURN
B9
POWER REGULATOR
R187 150
C81 470
U181 -071
R185 6.65K
R182 1K
R184 7.32K
C181 .01
R82 1.5K
R183 15K
R186 5.1
C88 47µF
+15V
B7
A6
A7
J119-3
J100 +15V (3-1)
SERIES-PASS NPN IN POWER MODULE
R297 27
C296 .001
R281 2.2K
R282 10.0K
R188 5.00K
U281 -071
R283 5.6K
R284 3Ω
C188 330µF
+5V
A10
A11
B11
J119-2
J100 +5V (3-1)
J119-4
GND
SERIES-PASS PNP IN POWER MODULE
J107 VIDEO INPUT (3-1)
J118-2
S203-C
S202-C
S201-C
S103-C
S102-C
S101-C
S4-C
S3-C
S2-C
S1-C
MULTIBURST (2-2)
J104 ENABLE (3-1)
J103 GRAY GEN (3-1)
J102 VBLK (3-1)
J104 VSYNC (3-1)
J114-
J115-
J116-2
J114-2
U226 74161N
U225C 7405N
U225B 7405N
U225A 7405N
U225F 7405P
+5V
R234 4.7
C229 47µF
R136 1.00K
R138 2.00K
R232 4.02K
R133 8.06K
R135 1.00K
R139 2.00K
R230 4.02K
R132 8.06K
R231 3.09K
R248 4.7
C235 47µF
-15V
GRAY SCALE CONVERTER
D TO A CONVERTER
R244 4.7
C242 47µF
R21 15K
R23 5.1K
R51 100Ω
C41 1µF
Q32 -190
Q33 -190
Q25 -188
R131 1.00K
R38 1.00K
R39 243
R40 1K
R12 392Ω
R14 59Ω
R16 16.2
R18 59
S2-B
S3-B
S4-B
S101-B
S51-B
S102-B
Q26 -190
R22 47
C22 0.1
DIFFERENTIAL AMPLIFIER
Q235A -1036
R126 806
S-45
R127 806
R122 590
R123 2.49K
Q121 -232
R124 182
R125 182
R211 590
Q235B -1036
R213 2.49K
R119 301
R24 2.2K
R25 10K
R27 301
C31 22µF
R26 1.43K
R10 1K
R128 1.50K
R137 681
Q136 -190
Q138 -188
R130 475Ω
R129 1.50K
R225 50Ω
R2216 20.4K
R117 2.26K
R217 10K
S102-D
REFERENCE VOLTAGE
CLAMP
TIMING NETWORK
R245 4.7
C231 47µF
S2-A
S3-A
S4-A
S101-A
S203-A
R13 20.4K
R15 8.06K
R17 4.99K
R111 4.02K
R113 4.99K
R112 8.06K
R11 21.5K
R116 2.67K
R115 2.67K
R114 4.02K
J115-3
J115-2
J103 TIMING-1 (3-1)
TIMING-2 (3-1)
J104 ENABLE (3-1)
DATA A (3-1)
DATA B (3-1)
J114-4
J114-3
R215 5.1K
S203B
S103-C
S202-D
S103-A
S201-D
S201-A
S103-D
J118-4
J118-3
GND (3-1)
GND (3-1)

067-0690-00/01

1724-3
REV A, FEB 1979

670-2997-00 & UP OSCILLATOR & GRAY SCALE BD 2-2



Logic and Output 670-3067-00.

ASTABLE MULTIVIBRATOR (BAR GENERATOR)
FREQUENCY GATE GENERATOR
COMPOSITE VIDEO OUTPUT AMPLIFIER
COMPOSITE SYNC OUTPUT AMPLIFIER
SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES OF PARTS OUTLINED OR DEPICTED IN GREY.
FIELD RATE
TIMING-1 (2-1)
TIMING-2 (2-1)
V BLK (1-1)
H SYNC (1-1)
G RAY GEN (2-1)
ENABLE (2-1)
DATA-A (2-1)
DATA-B (2-1)
V SYNC (1-1)
V SYNC (1-1)
H DRIVE (1-1)
+15V (2-1,2-2)
+5V (2-1,2-2)
GND
-15V (2-2)
COMP SYNC (1-1)
COMP BLK (1-1)
COMP BLK (1-1)
VIDEO INPUT (2-1)
GND (2-1)
GND (2-1)
COMP SYNC (1-1)
2.0MHz (2-2)
16MHz (2-2)
8 MHz (2-2)
5 MHz (2-2)
2.5MHz (2-2)
V SYNC (2-1)
H DRIVE (2-2)
V BLK (2-1)
+15V (1-1)
GND (1-1)
-15V (1-1)
J1030 +2.5V TERM
J1032 +1.0V TERM
J1034 +0.30V TERM
J1038 COMP SYNC OUTPUT
U145 74191N
U135 74154N
U245 7471N
U25 74121N
U35B 7410N
U35A 7410N
U35C 7410N
U235C 7410N
U235A 7410N
S295
Q105 -190
Q116 -190
Q119 -190
Q125 -188
Q126 2907
Q127 -190
Q219 -188
Q285 -301
Q291 -190
Q275 -190
Q259 -271
Q261 -223
Q265 -223
Q86 -220
Q85 -220
Q10 -188
CR104 -141's
CR105
CR106
CR107
CR108
CR117 -141
CR115 -141
CR224 -141
CR21
CR165
CR176
CR177
CR167
CR260
CR75
R202 1.91K
R205 3.24K
R210 10K
R110 39K
R223 3K
R227 1K
R221 3.3K
R225 51K
R212 4.7K
R229 4.7K
R160 1.8K
R185 6.49K
R186 402
R187 2K
R189 75
R278 750
R273 2.49K
R281 51
R283 750
R285 1.4K
R287 169
R289 226
R191 150
R195 97.6
R271 121
R275 750
R259 2K
R258 150
R261 39Ω
R263 40.2
R264 40.7
R265 2.15K
R267 2.8K
R269 200
R83 7.68K
R78 7.15K
R66 10
R76 5.1K
R77 4.75K
R82 4.7K
R79 10
R67 75
R69 470
R280 500
R279 2.74K
R183 29.4K
R180 10K
R178 10K
R167 1.8K
R151 5.1K
R14 1K
R17 15K
R19 1.5K
R18 1.8K
R31 7.15K
R9 100Ω
R114 1.5K
R113 100Ω
R6 3K
R5 3K
R106 3K
R214 3K
R218 3K
R217 1K
C109 0.22μF
C104 .001
C119 33μF
C112 100pF
C105 100pF
C29 0.22
C12 1μF
C213 0.22μF
C221 .001μF
C291 47μF
C187 2.7
C195 47μF
C209 47μF
C12 1μF
C151 47μF
C228 47μF
C96 47μF
C95 47μF
C68 33
067-0690-00/01
1724-4
REV
670-3067-00 & UP LOGIC & OUTPUT BD 3-1

Section 6
REPLACEABLE MECHANICAL PARTS

PARTS ORDERING INFORMATION

Replacement parts are available from or through your local Tektronix, Inc. Field Office or representative.

Changes to Tektronix instruments are sometimes made to accommodate improved components as they become available, and to give you the benefit of the latest circuit improvements developed in our engineering department. It is therefore important, when ordering parts, to include the following information in your order: Part number, instrument type or number, serial number, and modification number if applicable.

If a part you have ordered has been replaced with a new or improved part, your local Tektronix, Inc. Field Office or representative will contact you concerning any change in part number.

Change information, if any, is located at the rear of this manual.

ITEM NAME

In the Parts List, an Item Name is separated from the description by a colon (:). Because of space limitations, an Item Name may sometimes appear as incomplete. For further Item Name identification, the U.S. Federal Cataloging Handbook H6-1 can be utilized where possible.

FIGURE AND INDEX NUMBERS

Items in this section are referenced by figure and index numbers to the illustrations.

INDENTATION SYSTEM

This mechanical parts list is indented to indicate item relationships. Following is an example of the indentation system used in the description column.

1 2 3 4 5 *Name & Description*

Assembly and/or Component
Attaching parts for Assembly and/or Component
••••END ATTACHING PARTS••••
Detail Part of Assembly and/or Component
Attaching parts for Detail Part
••••END ATTACHING PARTS••••
Parts of Detail Part
Attaching parts for Parts of Detail Part
••••END ATTACHING PARTS••••

Attaching Parts always appear in the same indentation as the item it mounts, while the detail parts are indented to the right. Indented items are part of, and included with, the next higher indentation.

Attaching parts must be purchased separately, unless otherwise specified.

ABBREVIATIONS

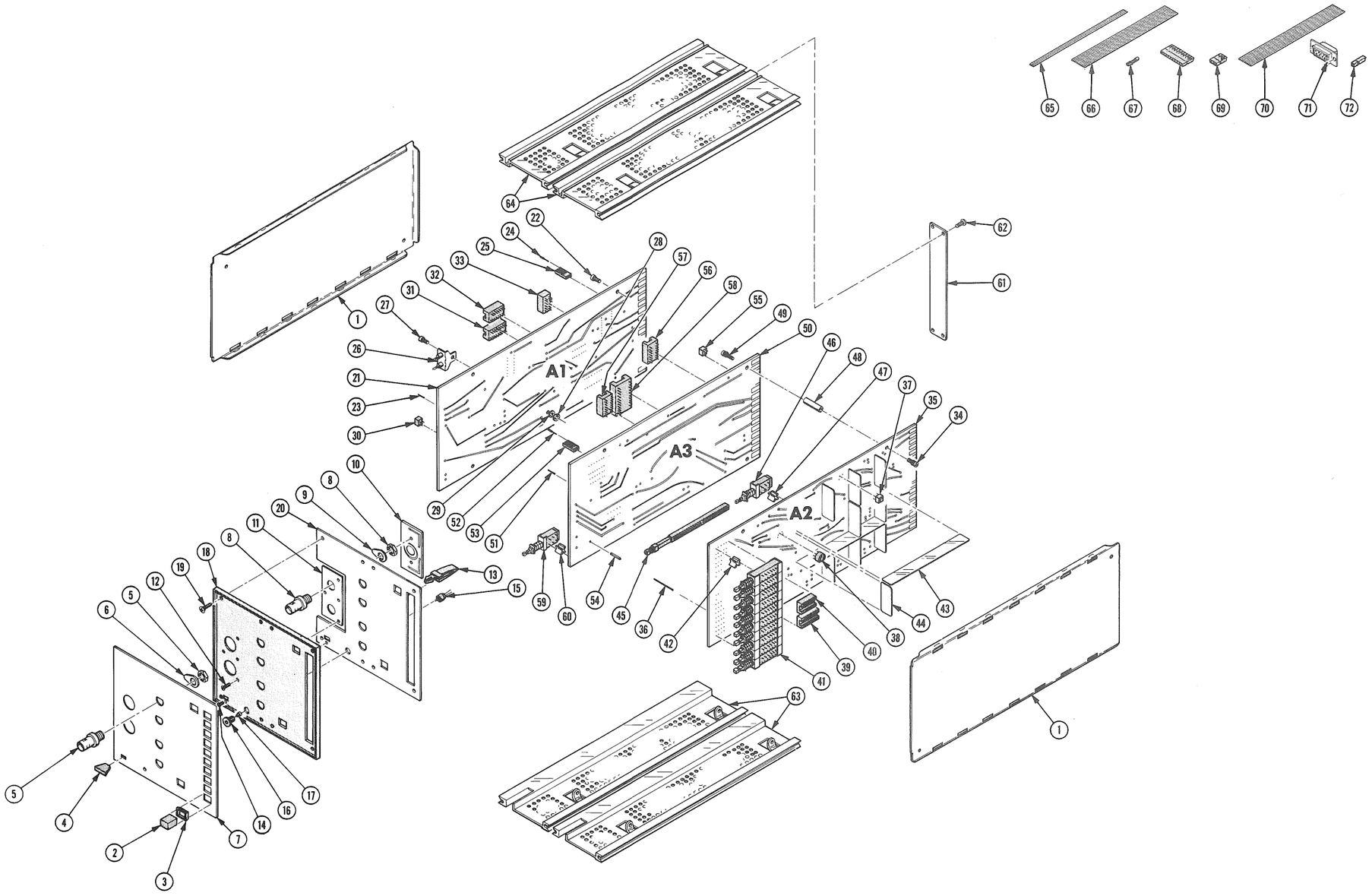
"	INCH
#	NUMBER SIZE
ACTR	ACTUATOR
ADPTR	ADAPTER
ALIGN	ALIGNMENT
AL	ALUMINUM
ASSEM	ASSEMBLED
ASSY	ASSEMBLY
ATTEN	ATTENUATOR
AWG	AMERICAN WIRE GAGE
BD	BOARD
BRKT	BRACKET
BRS	BRASS
BRZ	BRONZE
BSHG	BUSHING
CAB	CABINET
CAP	CAPACITOR
CER	CERAMIC
CHAS	CHASSIS
CKT	CIRCUIT
COMP	COMPOSITION
CONN	CONNECTOR
COV	COVER
CPLG	COUPLING
CRT	CATHODE RAY TUBE
DEG	DEGREE
DWR	DRAWER
ELCTRN	ELECTRON
ELEC	ELECTRICAL
ELCTLT	ELECTROLYTIC
ELEM	ELEMENT
EPL	ELECTRICAL PARTS LIST
EQPT	EQUIPMENT
EXT	EXTERNAL
FIL	FILLISTER HEAD
FLEX	FLEXIBLE
FLH	FLAT HEAD
FLTR	FILTER
FR	FRAME or FRONT
FSTNR	FASTENER
FT	FOOT
FXD	FIXED
GSKT	GASKET
HDL	HANDLE
HEX	HEXAGON
HEX HD	HEXAGONAL HEAD
HEX SOC	HEXAGONAL SOCKET
HLCPS	HELICAL COMPRESSION
HLEXT	HELICAL EXTENSION
HV	HIGH VOLTAGE
IC	INTEGRATED CIRCUIT
ID	INSIDE DIAMETER
IDENT	IDENTIFICATION
IMPLR	IMPELLER
IN	INCH
INCAND	INCANDESCENT
INSUL	INSULATOR
INTL	INTERNAL
LPHLDR	LAMPHOLDER
MACH	MACHINE
MECH	MECHANICAL
MTG	MOUNTING
NIP	NIPPLE
NON WIRE	NOT WIRE WOUND
OBD	ORDER BY DESCRIPTION
OD	OUTSIDE DIAMETER
OVH	OVAL HEAD
PH BRZ	PHOSPHOR BRONZE
PL	PLAIN or PLATE
PLSTC	PLASTIC
PN	PART NUMBER
PNH	PAN HEAD
PWR	POWER
RCPT	RECEPTACLE
RES	RESISTOR
RGD	RIGID
RLF	RELIEF
RTNR	RETAINER
SCH	SOCKET HEAD
SCOPE	OSCILLOSCOPE
SCR	SCREW
SE	SINGLE END
SECT	SECTION
SEMICOND	SEMICONDUCTOR
SHLD	SHIELD
SHLDR	SHOULDERED
SKT	SOCKET
SL	SLIDE
SLFLKG	SELF-LOCKING
SLVG	SLEEVING
SPR	SPRING
SQ	SQUARE
SST	STAINLESS STEEL
STL	STEEL
SW	SWITCH
T	TUBE
TERM	TERMINAL
THD	THREAD
THK	THICK
TNSN	TENSION
TPG	TAPPING
TRH	TRUSS HEAD
V	VOLTAGE
VAR	VARIABLE
W/	WITH
WSHR	WASHER
XFMR	TRANSFORMER
XSTR	TRANSISTOR

CROSS INDEX - MFR. CODE NUMBER TO MANUFACTURER

Mfr. Code	Manufacturer	Address	City, State, Zip Code
05820	EG AND G WAKEFIELD ENGINEERING	60 AUDUBON RD	WAKEFIELD MA 01880
08261	SPECTRA-STRIP AN ELTRA CO	7100 LAMPSON AVE	GARDEN GROVE CA 92642
12327	FREEWAY CORP	9301 ALLEN DR	CLEVELAND OH 44125
22526	DU PONT E I DE NEMOURS AND CO INC DU PONT CONNECTOR SYSTEMS	30 HUNTER LANE	CAMP HILL PA 17011
31918	ITT SCHADOW INC	8081 WALLACE RD	EDEN PRAIRIE MN 55343
45722	USM CORP., PARKER-KALON FASTENER DIV		CAMPBELLSVILLE, KY 42718
71124	BRAND-REX CO	RT 32 P O BOX 498	WILLIMANTIC CT 06226
71590	GLOBE-UNION INC CENTRALAB ELECTRONICS DIV	HWY 20 W P O BOX 858	FORT DODGE IA 50501
71785	TRW INC TRW CINCH CONNECTORS	1501 WORSE AVE	ELK GROVE VILLAGE IL 60007
73743	FISCHER SPECIAL MFG CO	446 MORGAN ST	CINCINNATI OH 45206
77900	SHAKEPROOF DIV OF ILLINOIS TOOL WORKS	SAINT CHARLES RD	ELGIN IL 60120
80009	TEKTRONIX INC	4900 S W GRIFFITH DR P O BOX 500	BEAVERTON OR 97077
83385	MICRODOT MANUFACTURING INC GREER-CENTRAL DIV	3221 W BIG BEAVER RD	TROY MI 48098
91506	AUGAT INC	33 PERRY AVE P O BOX 779	ATTLEBORO MA 02703
93907	TEXTRON INC CAMCAR DIV	600 18TH AVE	ROCKFORD IL 61101
TK0435	LEWIS SCREW CO	4114 S PEORIA	CHICAGO IL 60609
TK1319	MORELLIS Q & D PLASTICS	1812 16-TH AVE	FOREST GROVE OR 97116

Fig. & Index No.	Tektronix Part No.	Serial/Assembly No. Effective	Dscont	Qty	12345 Name & Description	Mfr. Code	Mfr. Part No.
1-1	337-1399-00			2	SHIELD,ELEC:SIDE	80009	337-1399-00
-2	366-1257-00			12	PUSH BUTTON:SIL GY,0.43 X 0.32 X 0.253	80009	366-1257-00
-3	426-0681-00			12	FRAME,PUSH BTN:	80009	426-0681-00
-4	366-1422-01			1	KNOB:LATCH	80009	366-1422-01
-5	----- -----			4	CONN,RCPT,:(SEE J1030,1032,1034,1038 EPL)		
-6	210-0255-00			4	TERMINAL,LUG:0.391 ID,LOCKING,BRS CD PL	12327	ORDER BY DESCR
-7	333-1898-00			1	PANEL,FRONT: (067-0690-00 ONLY)	80009	333-1898-00
	333-2549-00			1	PANEL,FRONT: (067-0690-01 ONLY)	80009	333-2549-00
-8	----- -----			2	CONNECTOR,RCPT,:(SEE J1020,1022 EPL)		
-9	210-0255-00			1	TERMINAL,LUG:0.391 ID,LOCKING,BRS CD PL	12327	ORDER BY DESCR
-10	388-2307-00			1	CIRCUIT BOARD:LOOP THRU	80009	388-2307-00
-11	386-2025-00			1	PLATE,CONN MTG:ALUMINUM (ATTACHING PARTS)	80009	386-2025-00
-12	211-0038-00			4	SCREW,MACHINE:4-40 X 0.312,FLH,100 DEG,STL (END ATTACHING PARTS)	TK0435	ORDER BY DESCR
-13	214-1513-01			1	LCH,PL-IN RTNG:PLASTIC (ATTACHING PARTS)	80009	214-1513-01
-14	213-0254-00			1	SCREW,TPG,TF:2-32 X 0.25,TYPE B,FLH,100 DEG (END ATTACHING PARTS)	45722	ORDER BY DESCR
-15	200-0935-00			1	BASE,LAMPHOLDER:0.29 OD X 0.19 L,BK PLSTC	80009	200-0935-00
-16	352-0157-00			1	LAMPHOLDER:(1)T-2 UNBASED,WHITE	80009	352-0157-00
-17	378-0602-00			1	LENS,LIGHT:GREEN	80009	378-0602-00
-18	386-2355-03			1	SUBPANEL,FRONT: (ATTACHING PARTS)	80009	386-2355-03
-19	213-0229-00			8	SCREW,TPG,TF:6-20 X 0.375,TYPE B,FLH,100 DE G,STL (END ATTACHING PARTS)	93907	ORDER BY DESCR
-20	337-2042-00			1	SHIELD,ELEC:REAR SUBPANEL	80009	337-2042-00
-21	----- -----			1	CKT BOARD ASSY:SYNC GENERATOR(SEE A1 EPL) (ATTACHING PARTS)		
-22	213-0146-00			4	SCREW,TPG,TF:6-20 X 0.312,TYPE B,PNH,STL (END ATTACHING PARTS) .CKT BOARD ASSY INCLUDES:	83385	ORDER BY DESCR
-23	131-0608-00			21	.TERMINAL,PIN:0.365 L X 0.025 BRZ GLD PL	22526	48283-036
	131-0993-00			2	.BUS,CONDUCTOR:SHUNT ASSEMBLY,BLACK	22526	65474-005
-24	131-0707-00			2	..CONTACT,ELEC:22-26 AWG,BRS,CU BE GLD PL	22526	47439-000
-25	352-0169-00			2	..HLDR,TERM CONN:2 WIRE,BLACK	80009	352-0169-00
	175-0529-00			AR	.WIRE,ELECTRICAL:STRD,26 AWG,300V RMS	71124	11715-000-T-127
-26	136-0153-00			1	.SKT,PL-IN ELEK:CRYSTAL,2 CONT W/CLAMP .(ATTACHING PARTS)	91506	8000AG6
-27	211-0022-00			1	.SCREW,MACHINE:2-56 X 0.188,PNH,STL	TK0435	ORDER BY DESCR
-28	210-0405-00			1	.NUT,PLAIN,HEX:2-56 X 0.188,BRS CD PL	73743	12157-50
-29	210-0001-00			1	.WASHER,LOCK:#2 INTL,0.013 THK,STL .(END ATTACHING PARTS)	77900	1202-00-00-0541C
-31	136-0260-01			1	.SKT,PL-IN ELEK:MICROCIRCUIT,16 DIP,PCB MT	71785	133-51-02-075
-32	136-0269-00			24	.SKT,PL-IN ELEK:MICROCIRCUIT,14 DIP,PCB MT	71785	133-51-02-073
-33	----- -----			2	.SW,ROCKER:(SEE S165,S265 REPL)		
	672-0475-00			1	CIRCUIT BD ASSY: (067-0690-00 ONLY)	80009	672-0475-00
	672-0804-00			1	CIRCUIT BD ASSY:LOGIC & OUTPUT (067-0690-01 ONLY) (ATTACHING PARTS)	80009	672-0804-00
-34	211-0116-00			4	SCR,ASSEM WSHR:4-40 X 0.312,PNH,BRS,NP,POZ (END ATTACHING PARTS) .VIDEO ASSY INCLUDES:	77900	ORDER BY DESCR
-35	----- -----			1	.CKT BD ASSY:OSC & GRAY SCALE(SEE A2 REPL)		
-36	131-0592-00			21	..TERMINAL,PIN:0.885 L X 0.025 SQ BRS	22526	47333
-37	136-0220-00			4	..SKT,PL-IN ELEK:TRANSISTOR 3 CONTACT	71785	133-23-11-034
-39	136-0260-01			1	..SKT,PL-IN ELEK:MICROCIRCUIT,16 DIP,PCB MT	71785	133-51-02-075
-40	136-0269-00			5	..SKT,PL-IN ELEK:MICROCIRCUIT,14 DIP,PCB MT	71785	133-51-02-073
-41	260-1621-00			1	..SWITCH,PUSH:10 BUTTON,4 POLE,MODE	80009	260-1621-00
-42	361-0542-00			6	..SPACER,PUSH SW:0.078 L,POLYPROPYLENE	71590	PCS-078
-43	337-1994-00			2	..SHIELD,ELEC:OSC & GREY SCALE	80009	337-1994-00
-44	337-2049-00			9	..SHIELD,CRT:OSC & GREY SCALE,UPPER	80009	337-2049-00
-45	384-1101-00			1	..EXTENSION SHAFT:4.14 L X 0.187 SQ,PLASTIC	80009	384-1101-00

Fig. & Index No.	Tektronix Part No.	Serial/Assembly No. Effective	Dscont	Qty	12345 Name & Description	Mfr. Code	Mfr. Part No.
1-46	260-1208-00			1	..SWITCH,PUSH:DPDT,28VDC,PUSH-PUSH	31918	ORDER BY DESCR
-47	361-0384-00			2	..SPACER,PB SW:0.133 L,RED POLYCARBONATE	80009	361-0384-00
-48	361-0105-00			4	.SPACER,POST:0.775 L W/4-40 THD EA END,AL	80009	361-0105-00
					.(ATTACHING PARTS)		
-49	211-0116-00			4	.SCR,ASSEM WSHR:4-40 X 0.312,PNH,BRS,NP,POZ	77900	ORDER BY DESCR
					.(END ATTACHING PARTS)		
-50	----- -----			1	.CKT BOARD ASSY:LOGIC AND OUTPUT(SEE A3 EPL)		
-51	131-0608-00			16	..TERMINAL,PIN:0.365 L X 0.025 BRZ GLD PL	22526	48283-036
	131-0993-00			1	..BUS,CONDUCTOR:SHUNT ASSEMBLY,BLACK	22526	65474-005
-52	131-0707-00			2	...CONTACT,ELEC:22-26 AWG,BRS,CU BE GLD PL	22526	47439-000
-53	352-0169-00			1	...HLDR,TERM CONN:2 WIRE,BLACK	80009	352-0169-00
	175-0529-00			AR	...WIRE,ELECTRICAL:STRD,26 AWG,300V RMS	71124	11715-000-T-127
-54	136-0263-04			21	..SOCKET,PIN TERM:U/W 0.025 SQ PIN	22526	75377-001
-56	136-0260-01			1	..SKT,PL-IN ELEK:MICROCIRCUIT,16 DIP,PCB MT	71785	133-51-02-075
-57	136-0269-00			4	..SKT,PL-IN ELEK:MICROCIRCUIT,14 DIP,PCB MT	71785	133-51-02-073
-58	136-0432-00			1	..SKT,PL-IN ELEK:MICROCIRCUIT,24 DIP	71785	133-59-02-011
-59	260-1208-00			1	..SWITCH,PUSH:DPDT,28VDC,PUSH-PUSH	31918	ORDER BY DESCR
-60	361-0685-00			2	..SPACER,PUSH SW:0.04 L,TURQUOISE BLUE	TK1319	ORDER BY DESCR
	214-0498-00			1	..HEAT SINK,XSTR:TO-18,AL BLACK ANODIZED	05820	201-AB
-61	386-2827-00			1	PLATE,SUPPORT:REAR	80009	386-2827-00
					(ATTACHING PARTS)		
-62	213-0146-00			4	SCREW,TPG,TF:6-20 X 0.312,TYPE B,PNH,STL	83385	ORDER BY DESCR
					(END ATTACHING PARTS)		
-63	426-0724-04			2	FR SECT,PLUG-IN:BOTTOM	80009	426-0724-04
-64	426-0725-05			2	FR SECT,PLUG-IN:TOP	80009	426-0725-05
	175-1468-00			1	CA ASSY,SP,ELEC:4,26 AWG RBN,10,26 AWG RBN,	80009	175-1468-00
					5.0 L		
-65	175-0826-00			1	.CABLE,SP,ELEC:3,26 AWG,STRD,PVC JKT,RBN	80009	175-0826-00
-66	175-0833-00			1	.CABLE,SP,ELEC:10,26 AWG STRD,PVC JKT,RBN	08261	111-2699-970
-67	131-0707-00			26	.CONTACT,ELEC:22-26 AWG,BRS,CU BE GLD PL	22526	47439-000
-68	352-0168-00			2	.HLDR,TERM CONN:10 WIRE,BLACK	80009	352-0168-00
-69	352-0169-00			2	.HLDR,TERM CONN:2 WIRE,BLACK	80009	352-0169-00
					ACCESSORIES		
	070-1724-01			1	MANUAL,TECH:INSTR	80009	070-1724-01


A1
A2
A3