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5B42
DELAYING TIME BASE

INSTRUCTION MANUAL

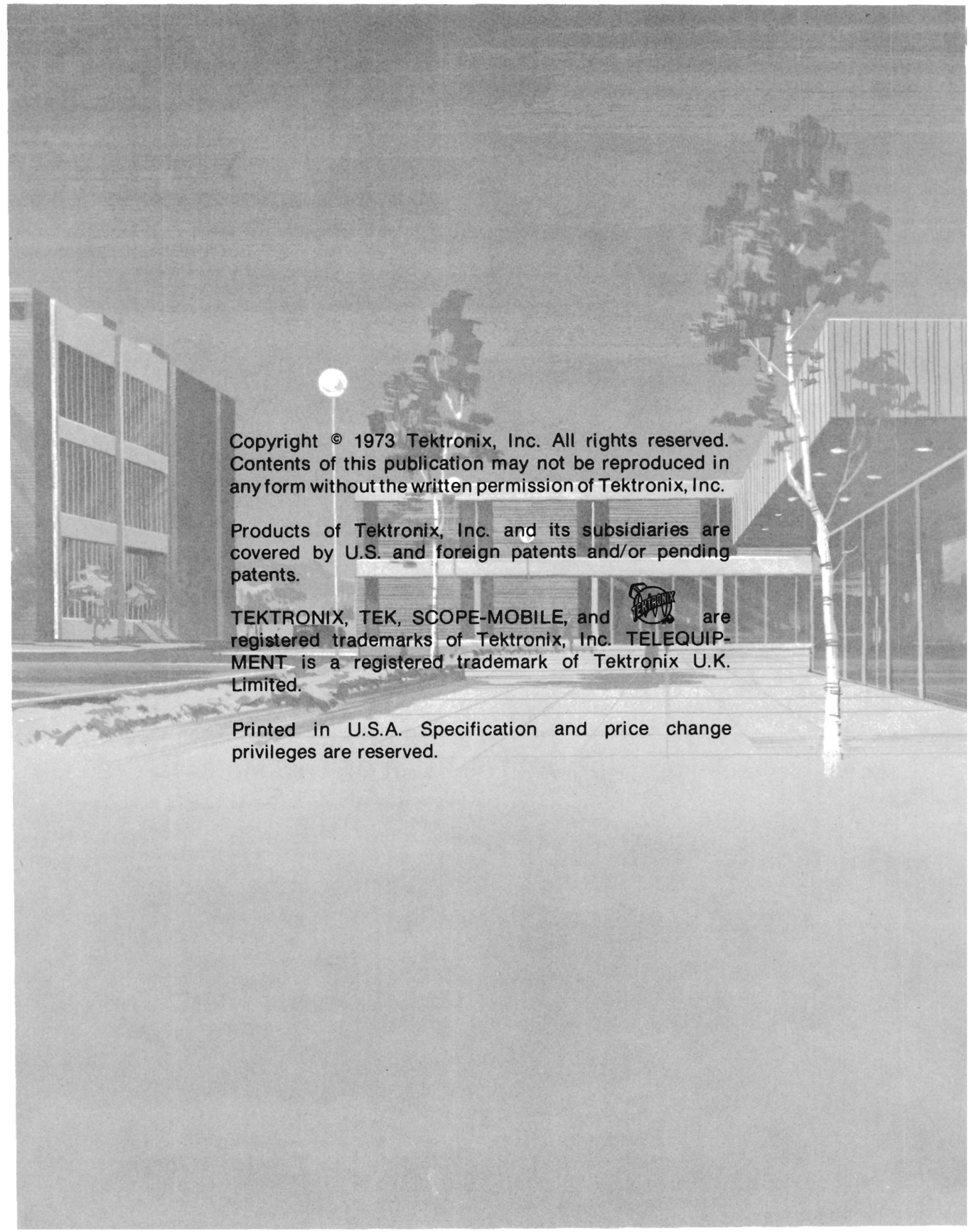
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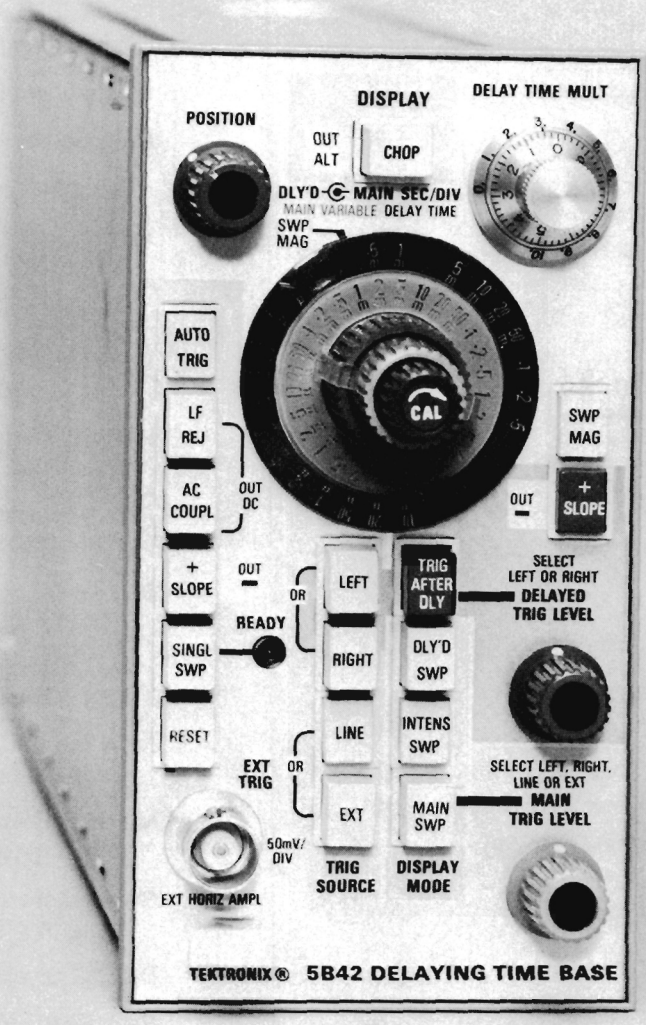
WARNING

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.

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OPERATING INSTRUCTIONS

INSTRUMENT DESCRIPTION

The 5B42 Delaying Time Base provides normal and fully triggerable delayed sweeps for the 5400 series oscilloscopes. It features edge-lighted main and delayed SEC/DIV selector switches. When used in a mainframe with readout capabilities, the SEC/DIV information is displayed on the CRT face. All front panel controls are conveniently grouped and color coded for ease of identification and operation. Pushbuttons select various trigger modes from either vertical plug-in compartment and the various sweep modes. Although designed for use in the right hand or sweep compartment of the oscilloscope, the 5B42 will operate in the vertical compartments to produce vertical sweeps.

PREPARATION FOR USE

Your 5B42 is calibrated and ready for use when received. Fig. 1-1 shows installation-removal procedure. Refer to the Front Panel Controls illustration in the fold-out pages for a complete description of the front panel. Color patterns printed on the front panel help to identify functionally grouped controls. Blue surrounds controls associated with the display mode, light green with the main trigger, and dark green with the delayed trigger controls. Also, the shades of grey on the TRIG LEVEL controls correspond with the grey on the SEC/DIV switch knobs for easy identification.

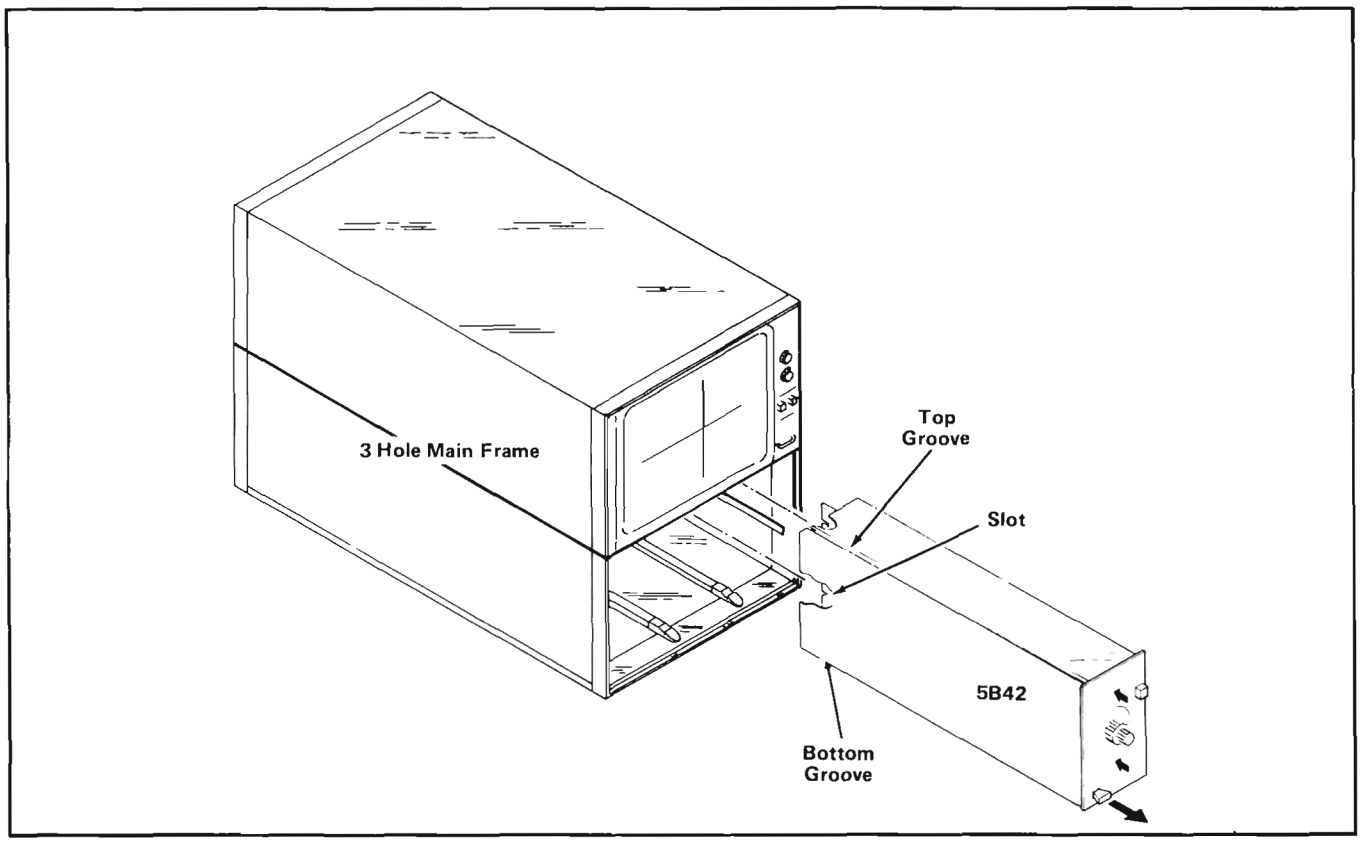


Fig. 1-1. 5B42 Installation-Removal Procedure.

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BASIC OPERATION

NOTE

Effective SN B090000 and up, the MAIN SEC/DIV-DLY'D SEC/DIV knob assembly is manufactured with a locking pin removed from the assembly (all instruments below SN B090000 use a locking pin). This pin removal allows the Delayed Sweep to operate at a slower sweep rate than the Main Sweep rate. Avoid this type of operation to prevent illogical displays, and always set the DLY'D SEC/DIV control for the same or a faster sweep rate than the MAIN SEC/DIV control.

Triggered Display

With the 5B42 Time Base properly installed in the horizontal plug-in compartment, apply power to the main frame. Connect the CALIBRATOR output on the display module to the vertical plug-in. Adjust the vertical plug-in gain for a two division display. Push the LEFT or RIGHT TRIGGER SOURCE button, depending on which compartment contains the vertical plug-in. Push the MAIN SWEEP button in the MODE column, and the AUTO TRIG button in the light green TRIG SOURCE area. Rotate the position controls for the vertical plug-in and 5B42 until a trace is visible. Adjust the MAIN TRIG LEVEL control until the display stabilizes. Now rotate the MAIN TRIG LEVEL control from stop to stop. Notice that the trace free runs over most of the control rotation. Release the AUTO TRIG button and rotate the MAIN TRIG LEVEL control from stop to stop. Notice that the trace appears only when it is triggered, and disappears over most of the control rotation.

Single Sweep Mode

Obtain a stable display, positioning the sweep so that the start is visible. The sweep is starting on the negative-going portion of the square wave. Push the + SLOPE button. The trace will start on a positive-going waveform. Remove the jumper from the calibrator to the vertical plug-in. Depress the button labeled SINGL SWP. The READY light is now visible. Watch the CRT, and touch the jumper to the vertical plug-in input. If the intensity is high enough, a fast single trace will be visible and the READY light will extinguish. Remove the signal to the vertical, and depress the RESET button. The READY light will be visible again, and the sweep is rearmed. Release the SINGL SWP button and obtain a stable display by pushing the AUTO TRIG button, and adjusting the MAIN TRIG LEVEL control.

Dual Trace Display Switching

The button labeled CHOP in the blue DISPLAY MODE section of the front panel selects the switching mode for dual sweep vertical plug-ins. With the button out, the switching is done in the alternate mode, i.e., one channel is displayed for one full sweep, and then the other channel is displayed. This can be demonstrated by using a dual channel vertical plug-in and slowing the 5B42 sweep speed to about 10 ms/div with the trace free running. Pushing the button in gives the chopped mode.

Use the chopped mode for viewing slower dual-trace displays and the alternate mode for faster displays. Return the vertical plug-in to a single channel display and reconnect the calibrator waveform.

Delayed Sweep

Set the DELAY TIME MULT dial to mid-range. Obtain a triggered display. Push the INTENS SWP button in the blue DISPLAY MODE column. Notice the number illuminated in the outer ring of the SEC/DIV sweep dial. Set the DLY'D SEC/DIV to 1 m and the MAIN SEC/DIV to 5 m. Reduce the INTENSITY control on the display module until a portion of the display is visible as an intensified portion. Rotate the DELAY TIME MULT dial and notice the brightened portion move smoothly across the display. The brightened portion represents the delayed sweep, and occurs in one fifth the time of the main sweep according to the described SEC/DIV switch settings. The delayed sweep speed is independent of the main sweep speed, and may be set to any speed equal to or faster than the main sweep. Press the DLY'D SWP pushbutton in the blue DISPLAY MODE column; the bright portion of the display will spread across the entire CRT. See Fig. 1-2A.

Triggered Delayed Sweep

Press the TRIG AFTER DLY and the INTENS SWP pushbuttons and adjust the DLY'D TRIG LEVEL control for a stable display with an intensified portion. Rotate the DELAY TIME MULT dial and the brightened portion will jump from waveform to waveform. Push the + SLOPE button located in the dark green area above the DELAYED TRIG LEVEL knob. The start of the intensified portion will shift from the negative portion of the waveform to the positive portion. Press the DLY'D SWP pushbutton. The intensified portion of the triggered waveform is now displayed across the entire CRT. Return to the INTENS SWP mode. In this mode the delayed sweep will not start until the main sweep has passed the number of divisions shown on the DELAY TIME MULT dial. The next trigger after this point will start the delayed sweep. One purpose of the triggered mode is to eliminate jitter that may be present in highly magnified displays. Another purpose is to select the trigger starting the delayed sweep. For example, to view a low level signal impressed on a high level signal, trigger the main sweep on the high level signal and the delayed sweep

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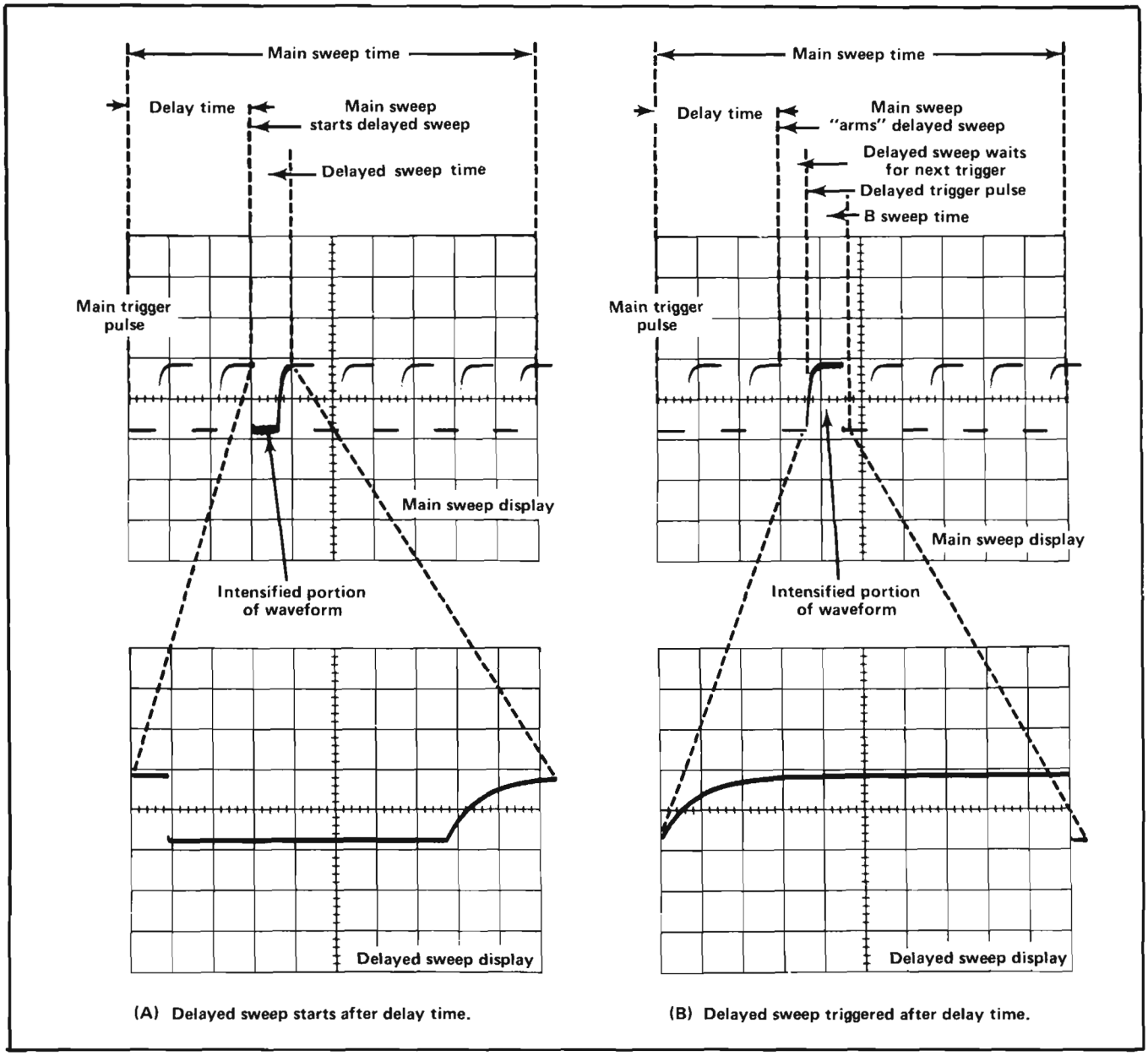


Fig. 1-2. Relationships of Main and Delayed sweeps.

on the low level signal. Select the portion to trigger the delayed sweep in the intensified mode. See Fig. 1-2B.

Press the SWP MAG button and notice the sweep speed increase by an order of magnitude. This is shown on the SEC/DIV dial and the CRT readout.

If the waveform viewed is line-frequency related, push the button labeled LINE in the light green TRIG SOURCE column. The signal activating the trigger circuits in this mode is taken from the power line. External triggers may be applied to the EXT TRIG connector. Push the button labeled EXT in the light green TRIG SOURCE column.

External Horizontal Amplifier

To use the 5B42 as an amplifier, rotate the MAIN SEC/DIV switch fully CCW to the AMP position. Apply the calibrator waveform to the BNC connector marked EXT HORIZ AMPL. Two dots approximately eight divisions apart are visible. There is no front-panel gain adjustment for the external horizontal amplifier.

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SPECIFICATIONS

All references to divisions or VOLTS/DIV refer to major graticule divisions in this manual.

Main Sweep

ACCURACY: (Measured in 5400 series oscilloscope over center 8 graticule divisions. Exclude the first 30 ns and the last 10 div of the magnified sweep):

	+15°C to +35°C		0°C to +50°C	
	Unmag	Mag	Unmag	Mag
1 s/div to 0.5 μs/div	3%	4%	4%	5.5%
5 s/div and 2 s/div 0.2 μs/div and 0.1 μs/div	4%	5%	5%	6.5%
Any two divisions within center 8 divisions	6.5%	6.5%	8%	8%

VARIABLE RANGE: Continuously variable between calibrated sweep rates. Extends sweep rate to at least 12.5 s/div.

TRIGGERING:

Coupling	Vertical Plug-In Series	Freq. Range	Minimum Signal Required	
			Int.	Ext.
DC	5400	DC to 10 MHz	0.4 div	100 mV
		10 MHz to 60 MHz	1.0 div	400 mV
	5100	DC to 2 MHz	0.4 div	
AC		Requirements increase below 50 Hz.		
LF REJ		Requirements increase below 20 kHz.		

TRIGGER LEVEL RANGE: ≥±8 div.

SINGLE SWEEP: Same requirements as main sweep.

EXTERNAL TRIGGER INPUT:

Maximum input voltage: 350 V DC + peak AC, 350 V P-P AC at ≤1 kHz.

Input R and C: 1 MΩ ±2% paralleled by ≈20 pF.

Trigger Level Range: ≥±2.5 V.

Delayed Sweep

ACCURACY: (Measured in 5400 series oscilloscope over center 8 graticule divisions):

	+15°C to +35°C		0°C to +50°C	
	Unmag	Mag	Unmag	Mag
0.1 s/div to 0.5 μs/div	3%	4%	4%	5.5%
0.5 s/div and 0.2 s/div; 0.2 μs/div and 0.1 μs/div	4%	5%	5%	6.5%
Any two divisions within center 8 divisions	6.5%	6.5%	8%	8%

TRIGGERING:

DC to 10 MHz: 0.4 div.

60 MHz: 1 div.

EXTERNAL HORIZONTAL INPUT:

Deflection Factor: 50 mV/div ±3%.

Bandwidth:

DC Coupled: DC to ≥2 MHz.

AC Coupled: ≤50 Hz to ≥2 MHz.

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Delaying Sweep Characteristics

DELAY TIME MULTIPLIER RANGE: 0.2 to 10 times the TIME/DIV setting.

INHERENT DELAY TO START OF DELAYED SWEEP: <100 ns.

DIFFERENTIAL TIME MEASUREMENT ACCURACY:

1 μs/div to 0.5 s/div delay time:	≤1% + 0.2% of full scale.
1 s/div to 5 s/div delay time:	≤2% + 0.2% of full scale.

JITTER: ≤1 part in 20,000 of 10 times the main TIME/DIV setting.

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THEORY OF OPERATION

Introduction

Refer to the complete schematic diagrams, and the block diagram, located in the pullout pages at the back of this manual, for a complete understanding of the 5B42 theory of operation.

External Horizontal Amplifier

Signals applied to the EXT HORIZ AMPL input, J10, are fed through a divide-by-two attenuator, consisting of R11, R15, and AC compensating capacitor, C15, to the gate of source follower Q20. When S10A is in the AC COUPL position, C11 AC couples the signal to Q20. The circuit DC balance is set by R25 through Q24. In the AMP mode, the signal travels past protective diodes CR30 and VR30 to Q34, an emitter follower. The emitter of Q34 drives the emitter of Q36, operating as an operational amplifier. The feedback path is through VR42, R45, R50, and R52. The latter sets the gain at two. The amplifier is disabled, when the MAIN SEC/DIV switch is not in the AMP position, by raising the common emitters to about +5 V. The output from the amplifier is the junction of VR42 and R45. Positioning in the external mode is accomplished by a section of the main POSITION control connected to the base of Q36 through R49.

External Trigger Channel Switch

The purpose of the trigger switches is to isolate the unwanted trigger source. They also provide gain. The output of Q20 feeds the base of Q60, whose emitter drives Q62 in a grounded-base configuration. The output of Q62 drives Q80 as a grounded-base amplifier. The base level of Q80 is set by CR80, R80, R83, and R85. To prevent coupling of the trigger signal through the switch, the emitters of Q60 and Q62 are disconnected from −15 V. The collector of Q62 rises toward +15 V as Q62 is turned off. Diode CR81 conducts, and causes a very low impedance to ground at the output of Q62. CR81 maintains the DC stability of the circuit, and shorts any capacity-coupled signal that may be present on the collector of Q62 to ground. C98 AC-couples the output of either Q80, Q90, or Q230 in the AC-coupled mode. C99 and R280 form a high pass RC combination for rejection of low frequency signals. Q90's base is connected to a secondary of the line transformer. A low level voltage at line frequency is obtained for line triggering. Q60, Q62, Q200, and Q210 are disabled in the line mode by removing the −15 V from their emitters.

Internal Trigger Channel Switching

These switches (Schematic 2) operate in the same manner as the switch described in the preceding paragraph. The trigger signal from the right vertical plug-in is applied to the base of Q100, through pin 4A on the rear interface connector. The left vertical plug-in trigger signal is applied through pin 4B to the base of Q150. The outputs of the right or left trigger switches are applied to the internal trigger channel switch, and then to the main trigger comparator (Schematic 3). CR235 holds the base of Q230 positive when the plug-in is operating in the external amplifier mode to prevent coupling of any trigger signals from either vertical plug-in to the external horizontal amplifier.

Main Trigger Comparator

This circuit selects the voltage level on the waveform where triggering takes place. The triggering signal is applied to the base of Q280. Q280 and Q290 serve as a voltage comparator. The DC level at the base of Q290 is set by R320, the MAIN TRIG LEVEL control. If the voltage at the base of Q280 is higher, current will flow through Q280 and the collector of Q290 will be high. The opposite is true if the base voltage of Q280 is lower, and the collector of Q290 will be low. C285 and R285 improve high frequency response. LR293, C293, LR299, and C299 prevent coupling of switching transients into the voltage supply lines.

Delayed Trigger Comparator

This comparator operates in the same manner as the Main Trigger Comparator. The input to the base of Q370 is selected from either the right or left trigger channel switch. It is not possible to trigger the delayed sweep externally.

Main Trigger Generator (SN B059999 and below)

This circuitry uses emitter-coupled logic. Significant high levels are approximately 4.2 V, and low levels 3.2 V. Low amplitude analog trigger signals may operate gates U320, U330A, U330B, and U335A. The remainder of the gates operate at digital levels exclusively.

Input to the main trigger generator is pin 7 of U320, an exclusive OR gate. Pushing the + SLOPE button sets a low on pin 9, which allows U320 to operate as a non-inverting amplifier with a gain of five. A positive-

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going trigger signal at pin 10 of U320 causes a positive output from pin 14 of U335C which starts the sweep. U335B and C form a latch, which generates the sweep gate. When the sweep ends, the junction of R356 and R357 goes high, setting latch U330C and D so that a high is on pin 14 of U330C. This high resets latch U335B and C. In this state, U335C can not initiate a sweep gate. When the hold-off time passes, the junction of R356 and R357 goes low. A low at pin 6 of U330B, or the next negative-going trigger, causes latch U330C and D to reset, enabling latch U335B and C. The next positive output from U320 initiates the sweep gate by lowering pin 13 of U335C. When negative slope triggering is desired, a high is placed on pin 9 of U320, which allows U320 to operate as an inverting amplifier with a gain of five.

Main Trigger Generator (SN B060000 and up)

Integrated circuit U300 converts the trigger comparator output signal to a gate that is used for sweep control. With pin 1 connected to ground (+SLOPE), a positive-going signal on the input (pin 13) causes the output (pin 3) to rise to about 4.1 V. Pin 14 is negative-going under these conditions. The output gate occurs when a trigger signal passes through the hysteresis limits at the input of U300 (pin 13 is within 20 mV of pin 14). Placing pin 1 at +5 V (—SLOPE) creates an output gate at pin 3, when pin 13 is negative-going and pin 14 positive-going. After completion of the sweep, and during holdoff time, pins 6 and 10 are high (about +4.2 V). This action inhibits the trigger generator until these pins drop to about +3.2 V, which occurs after completion of holdoff time.

Delayed Trigger Generator (SN B059999 and below)

This generator operates, in the triggered mode, in the same manner as the main trigger generator. In the delayed sweep and intensified sweep modes, the delayed sweep starts when the junction of R438 and R440 goes low. The highs placed on pins 14 and 15 of U410, through diodes CR410 and CR411, cause a continuous low at pin 6 of U420B. This causes pin 12 of U425C to go low at the beginning of the delayed pickoff gate. Pin 9 of U425B is held high, causing a continuous low on pin 13 of U425C. Two lows at the inputs of U425C cause a high at pin 14 starting the delayed sweep runup.

Delayed Trigger Generator (SN B060000 and up)

In the Trig After Delay mode, this generator operates in the same manner as the Main Trigger Generator, U300. The delayed sweep starts when two conditions are met: the delay gate at pin 6 and 10 of U400 must be low (approximately +3.2 V), and a trigger signal must pass through the hysteresis limits at the input of U400 (i.e., pin 13 is within 20 mV of pin 14).

Sweep Control

U450, with additional external circuitry, controls the main sweep generator. In the automatic triggering mode, pin 19 of U450 is connected to ground. If pin 1 of U450 receives no trigger pulses from the main trigger generator for a period of time determined by R495 and C495, circuitry in U450 outputs a negative-going square wave. This negative-going square wave from pin 3 of U450, drives the base of Q480 negative. The collector goes positive and stays positive for the duration of the sweep. A positive pulse at the emitter of Q480, from the trigger switches, also causes the collector of Q480 to go positive, starting the sweep. This positive pulse is also applied to the unblanking circuitry, in the plug-in and the mainframe, to unblank the CRT during the sweep.

The sweep ramp is fed to the base of Q470, which forms a comparator with Q460. Q470 is conducting and Q460 is off. As the ramp rises, current flow in Q470 is reduced until CR460 is forward biased, and Q460 comes sharply into conduction. This positive pulse at pin 16 of U450 causes the auto gate (from pin 3) to go positive, terminating the sweep through Q480. If the unit is operating in the triggered mode, a positive gate appears at pin 17, lowering the sweep gate via the main trigger generator and Q480, terminating the sweep.

As the sweep ramp decays toward ground, Q460 and Q470 switch, so that pin 16 of U450 again goes low. No negative pulse can appear at pin 3 to start the next sweep. Pin 17 remains high, locking out the main trigger generator until holdoff time is completed. This time is determined by C500, R500, C501 and C502. These components are switched according to sweep rates, as shown in the switch details. Holdoff is necessary to allow all sweep-generating circuits to discharge before the start of the next sweep.

When the external horizontal amplifier mode is used, pin 18 of U450 is connected through CR455 to +5 V. This disables the sweep until the switch is opened.

In the single sweep mode, the automatic trigger capability is removed by ungrounding pin 19 of U450. Pin 12 is connected to +5 V. The next trigger operates the sweep in the normal manner. The gate at pin 17, however, remains high, locking out further triggers until pin 11 of U450 is grounded and pin 15 is connected to +5 V through the spring-loaded RESET button. VR490 and CR490 provide —5 V for U450.

Main Sweep Generator

The sweep ramp is generated in U550. The ramp is fed to the horizontal amplifiers and the sweep control from pin 8. Timing capacitors C_t and timing resistors R_t determine the rate of rise. The DELAY TIME MULT potentiometer

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controls one half of a comparator in U550. The other half is connected internally to the ramp. When the ramp voltage reaches the voltage on the center arm of the delay time potentiometer, pin 4 of U550 goes high, driving the collector of Q570 low. This low gate starts the delayed sweep through the delayed trigger generator. A low at the collector of Q574 deactivates the delayed sweep by locking pin 4 of U550 in the low state. This occurs only when operating in the main sweep mode. When operating in other than the main sweep mode, pin 5 of U550 is high during main sweep time, allowing the delayed sweep to start at the selected time. Q540 aids in reducing sweep jitter, and R545 compensates for leakage current in U550.

Delayed Sweep Generator

The delayed sweep generator integrated circuit is identical to the one used in the main sweep. Several external connections are changed to suit the delayed sweep operating mode. Pin 5 of U600 is always connected to +5 V, enabling the generator whenever the plug-in has power applied. When the positive sweep gate from the delayed trigger generator is applied to pin 1, the sweep starts, and the CRT is unblanked through the emitter of Q690. The sweep runs up until the delayed trigger generator receives a positive-going pulse from Q570. The delayed sweep gate, at pin 1 of U600, goes negative, the CRT is blanked and the sweep decays. If the sweep time of the delayed sweep is much faster than the main sweep, the delayed sweep ramp will reach 10 V, its limit, before the gate at pin 1 returns the ramp to ground. The voltage at pin 6 is fixed at 10 V. As the ramp rises past 10 V (at the end of the sweep) pin 4 goes high, blanking the CRT through Q690. Under this condition, the CRT is blanked through the base of Q690 from pin 4 of U600, and the delayed sweep remains high until turned off by the delayed sweep gate.

Output Buffer

Main or delayed sweep ramps are applied to the base of Q650. Q650 and Q670 comprise an emitter-coupled paraphase buffer for the sweep ramp. In the magnified mode, emitter degeneration is reduced, resulting in an increase in gain by ten times. Clamping limits the peak-to-peak excursion at the collector of Q650 to about 1.2 V. Q665 is a constant current source. Sweep positioning is accomplished by varying current balance in the amplifier through the base of Q670.

When the plug-in is operated in the external amplifier mode, the base of Q680 is connected through R682 to +5 V. This saturates Q680 and eliminates the effect of the position control on the base of Q670. Positioning is accomplished in the external horizontal amplifier as described previously. The base of Q720 is made more positive through CR685 to unblank the CRT. Output from the external horizontal amplifier is connected to R672, and R672 is disconnected from ground.

The main sweep gate is applied at the base of Q730. CR732 conducts only when the emitter of Q730 goes negative at the end of the main sweep gate. This negative-going pulse activates circuitry in the main frame to alternate traces in vertical plug-ins. When the CHOP pushbutton is in, pins 18A and 20A on the interface connector are connected together, causing the vertical plug-ins to operate in the chopped mode.

The main sweep gate, during sweep time, raises the base of Q720 through CR710. The collector is made more negative and the CRT is unblanked, during sweep time, through circuitry in the main frame. In the delayed sweep mode, the base of Q720 is held low, through CR712, preventing the CRT from unblanking by the main sweep gate. Q695 improves unblanking from the main sweep at the faster sweep speeds. CR690 and CR691 are protective diodes for Q690 and the internal circuitry of U600 connected to pin 1.

Readout

The DLY'D, MAIN SEC/DIV, CAL, DLY'D SWP, MAIN SWP, INTENS SWP, and MAG switches have contacts wired into the readout circuitry. A zero to −15 V pulse, approximately 125 μs in length, is applied at different times to all of the rear interface connectors associated with the readout circuitry, except the two column and row lines. These are the output lines. The readout circuitry, in the 5B42, sets the correct amount of current, to the appropriate channel row and column lines during the pulse time, for the particular character desired. See the mainframe manual for more details on the time slot and current required for each character. Connecting the anode of CR970 to +5 V, in the AMP mode, disables both main and delayed sweep readouts. When the DLY'D SWP pushbutton is in, +5 V is connected to the anode of CR971. This disables the main sweep readout. When either the MAIN SWP or INTENS SWP pushbuttons are depressed, the delay sweep readout is inactivated via CR976. When the MAG button is depressed, two additional zeros are added to the readout showing the correct time per division for the active sweeps. When the CAL knob is not in its detent position, the uncalibrated sign (>) appears in the slot for the main sweep only. Diodes CR901 through CR933, connected to the time slot lines, decouple noise pulses generated in the main frame readout circuitry.

Timing Switch Details

Timing capacitors and resistors are connected according to the switching chart shown on Schematic 7. The CAL potentiometer varies the timing resistance in any position of the MAIN SEC/DIV switch. Lamps DS760 through DS766 illuminate the SEC/DIV knob skirts. The diodes in series with the lamps prevent series current from one lamp lighting another, in certain switch combinations.

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SERVICE INFORMATION

Services Available

Tektronix, Inc. provides complete instrument repair and adjustment at local Field Service Centers and at the Factory Service Center. Contact your local Tektronix Field Office or Representative for further information.

Maintenance

Refer to the oscilloscope mainframe manual for general service information. The "A" Board is the board on the left when facing the front of the 5B42. The "B" Board is on the right. To remove the A circuit board, remove the ten pushbuttons on the front panel located in the light green TRIG SOURCE area by pulling straight out. Remove the pushrods connected to the +SLOPE, SINGL SWP, and RESET switches by separating the ends of the rods with a screwdriver. Unsolder the white and orange wire connected to the POSITION control and the coaxial cable connected to the EXT TRIG bnc connector. Loosen the 0.050 inch Allen screw on the CAL switch shaft, accessible through the hole in the A board, located as shown on the Controls, Connectors & Block Diagram pullout page. The knob must be in the CAL position. Remove the shaft by pulling the knob. Remove five screws on the A Board and four screws on the B Board, as shown on the Internal Adjustment Procedure pullout page. Fold the A Board back to gain access to the cam switches or other switches located between the boards.

Removal of the B Board will not usually be necessary, but may be accomplished by removing all leads soldered to the board. Remove the attached switch knobs and levers, and the three screws holding the board to the chassis.

Jumpers for the +5 V, +15 V, +30 V, −15 V, and −30 V supplies are located in the lower rear corner of the A Board. Remove these jumpers rather than the board interconnecting cable to isolate the A Board from the power supplies.

Repackaging For Shipment

If the Tektronix instrument is to be shipped to a Tektronix Service Center for service or repair, attach a tag showing: owner (with address) and the name of an individual at your firm that can be contacted. Include complete instrument serial number and a description of the service required.

Save and re-use the package in which your instrument was shipped. If the original packaging is unfit for use or not available, repackage the instrument as follows:

Surround the instrument with polyethylene sheeting to protect the finish of the instrument. Obtain a carton of corrugated cardboard of the correct carton strength and having inside dimensions of no less than six inches more than the instrument dimensions. Cushion the instrument by tightly packing three inches of dunnage or urethane foam between carton and instrument, on all sides. Seal carton with shipping tape or industrial stapler.

The carton test strength for your instrument is 200 pounds.

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DIAGRAMS AND CIRCUIT BOARD ILLUSTRATIONS

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.

The overline on a signal name indicates that the signal performs its intended function when it goes to the low state.

Abbreviations are based on ANSI Y1.1-1972.

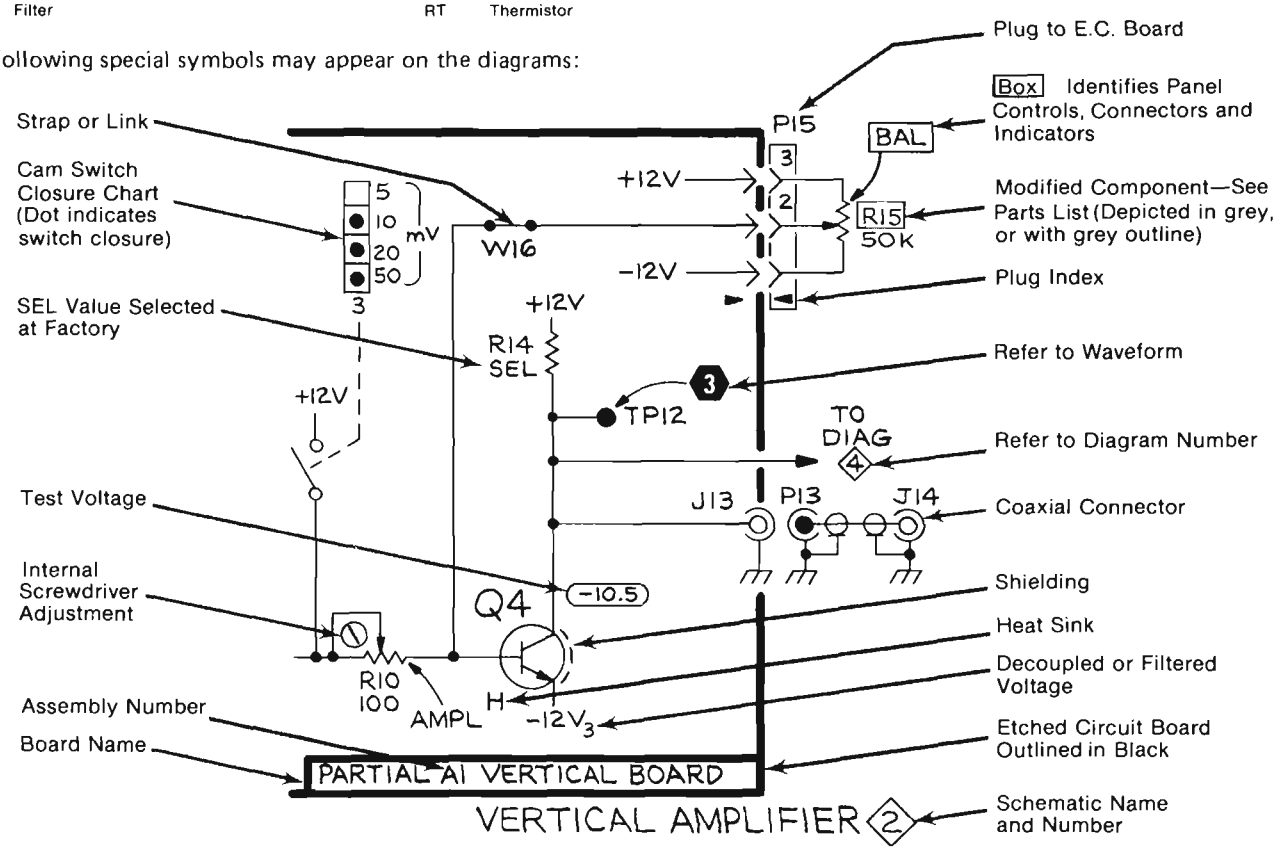
Other ANSI standards that are used in the preparation of diagrams by Tektronix, Inc. are:

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:



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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.

SPECIAL NOTES AND SYMBOLS

X000	Part first added at this serial number
00X	Part removed after this serial number

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.

ABBREVIATIONS

ACTR	ACTUATOR	PLSTC	PLASTIC
ASSY	ASSEMBLY	QTZ	QUARTZ
CAP	CAPACITOR	RECP	RECEPTACLE
CER	CERAMIC	RES	RESISTOR
CKT	CIRCUIT	RF	RADIO FREQUENCY
COMP	COMPOSITION	SEL	SELECTED
CONN	CONNECTOR	SEMICOND	SEMICONDUCTOR
ELCTLT	ELECTROLYTIC	SENS	SENSITIVE
ELEC	ELECTRICAL	VAR	VARIABLE
INCAND	INCANDESCENT	WW	WIREWOUND
LED	LIGHT EMITTING DIODE	XFMR	TRANSFORMER
NONWIR	NON WIREWOUND	XTAL	CRYSTAL

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CROSS INDEX—MFR. CODE NUMBER TO MANUFACTURER

Mfr. Code	Manufacturer	Address	City, State, Zip
00853	SANGAMO ELECTRIC CO., S. CAROLINA DIV.	P O BOX 128	PICKENS, SC 29671
01121	ALLEN-BRADLEY COMPANY	1201 2ND STREET SOUTH	MILWAUKEE, WI 53204
01295	TEXAS INSTRUMENTS, INC., SEMICONDUCTOR GROUP	P O BOX 5012, 13500 N CENTRAL EXPRESSWAY	DALLAS, TX 75222
02111	SPECTROL ELECTRONICS CORPORATION	17070 EAST GALE AVENUE	CITY OF INDUSTRY, CA 91745
04222	AVX CERAMICS, DIVISION OF AVX CORP.	P O BOX 867, 19TH AVE. SOUTH	MYRTLE BEACH, SC 29577
04713	MOTOROLA, INC., SEMICONDUCTOR PROD. DIV.	5005 E MCDOWELL RD,PO BOX 20923	PHOENIX, AZ 85036
07263	FAIRCHILD SEMICONDUCTOR, A DIV. OF FAIRCHILD CAMERA AND INSTRUMENT CORP.	464 ELLIS STREET	MOUNTAIN VIEW, CA 94042
08806	GENERAL ELECTRIC CO., MINIATURE LAMP PRODUCTS DEPARTMENT	NELA PARK	CLEVELAND, OH 44112
11237	CTS KEENE, INC.	3230 RIVERSIDE AVE.	PASO ROBLES, CA 93446
12697	CLAROSTAT MFG. CO., INC.	LOWER WASHINGTON STREET	DOVER, NH 03820
13511	AMPHENOL CARDRE DIV., BUNKER RAMO CORP.		LOS GATOS, CA 95030
14433	ITT SEMICONDUCTORS	3301 ELECTRONICS WAY P O BOX 3049	WEST PALM BEACH, FL 33402
14552	MICRO SEMICONDUCTOR CORP.	2830 E FAIRVIEW ST.	SANTA ANA, CA 92704
27014	NATIONAL SEMICONDUCTOR CORP.	2900 SEMICONDUCTOR DR.	SANTA CLARA, CA 95051
53944	ELT INC., GLOW LITE DIVISION	BOX 698	PAULS VALLEY, OK 73075
55210	GETTIG ENG. AND MFG. COMPANY	PO BOX 85, OFF ROUTE 45	SPRING MILLS, PA 16875
56289	SPRAGUE ELECTRIC CO.	87 MARSHALL ST.	NORTH ADAMS, MA 01247
59660	TUSONIX INC.	2155 N FORBES BLVD	TUCSON, AZ 85705
72982	ERIE TECHNOLOGICAL PRODUCTS, INC.	644 W. 12TH ST.	ERIE, PA 16512
73138	BECKMAN INSTRUMENTS, INC., HELIPOT DIV.	2500 HARBOR BLVD.	FULLERTON, CA 92634
74970	JOHNSON, E. F., CO.	299 10TH AVE. S. W.	WASECA, MN 56093
75042	TRW ELECTRONIC COMPONENTS, IRC FIXED RESISTORS, PHILADELPHIA DIVISION	401 N. BROAD ST.	PHILADELPHIA, PA 19108
76493	BELL INDUSTRIES, INC., MILLER, J. W., DIV.	19070 REYES AVE., P O BOX 5825	COMPTON, CA 90224
80009	TEKTRONIX, INC.	P O BOX 500	BEAVERTON, OR 97077
80031	ELECTRA-MIDLAND CORP., MEPCO DIV.	22 COLUMBIA ROAD	MORRISTOWN, NJ 07960
90201	MALLORY CAPACITOR CO., DIV. OF P. R. MALLORY AND CO., INC.	3029 E. WASHINGTON STREET P. O. BOX 372	INDIANAPOLIS, IN 46206
91418	RADIO MATERIALS COMPANY, DIV. OF P.R. MALLORY AND COMPANY, INC.	4242 W BRYN MAWR	CHICAGO, IL 60646
91637	DALE ELECTRONICS, INC.	P. O. BOX 609	COLUMBUS, NE 68601
92966	SYLVANIA MINIATURE LIGHTING PRODUCTS, INC., SUB OF GTE SYLVANIA, LIGHT. PROD.	526 ELM STREET	KEARNY, NJ 07032

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Ckt No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Name & Description	Mfr Code	Mfr Part Number
A1	670-2475-00	B010100	B059999	CKT BOARD ASSY:A	80009	670-2475-00
A1	670-2475-01	B060000	B063676	CKT BOARD ASSY:A	80009	670-2475-01
A1	670-2475-02	B063677	B079999	CKT BOARD ASSY:A	80009	670-2475-02
A1	670-2475-03	B080000		CKT BOARD ASSY:A	80009	670-2475-03
A2	670-2476-00	B010100	B053592	CKT BOARD ASSY:B	80009	670-2476-00
A2	670-2476-01	B053593	B059999	CKT BOARD ASSY:B	80009	670-2476-01
A2	670-2476-02	B060000	B069999	CKT BOARD ASSY:B	80009	670-2476-02
A2	670-2476-03	B070000	B079999	CKT BOARD ASSY:B	80009	670-2476-03
A2	670-2476-04	B080000		CKT BOARD ASSY:B	80009	670-2476-04
C10	281-0509-00			CAP.,FXD,CER DI:15PF,+/-1.5PF,500V	59660	301-000C0G0150K
C11	283-0001-00			CAP.,FXD,CER DI:0.005UF,+100-0%,500V	72982	831-559E502P
C15	281-0182-00			CAP.,VAR,PLSTC:1.8-10PF,500V	80031	2805D1R810BH02F0
C21	290-0534-00			CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C25	290-0534-00			CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C36	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C60	290-0534-00			CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C62	281-0562-00			CAP.,FXD,CER DI:39PF,10%,500V	59660	301-000U2J0390K
C67	290-0534-00	B010100	B053054	CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C67	283-0059-00	B053055		CAP.,FXD,CER DI:1UF,+80-20%,25V	72982	8131N031Z5U0105Z
C73	290-0534-00			CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C80	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C90	283-0110-00			CAP.,FXD,CER DI:0.005UF,+80-20%,150V	56289	19C242B
C97	283-0000-00			CAP.,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-519-Z5U-102P
C98	290-0524-00			CAP.,FXD,ELCTLT:4.7UF,20%,10V	90201	TDC475M010EL
C99	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C105	281-0519-00			CAP.,FXD,CER DI:47PF,+/-4.7PF,500V	59660	308-000C0G0470K
C110	290-0534-00	B010100	B053054	CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C110	283-0059-00	B053055		CAP.,FXD,CER DI:1UF,+80-20%,25V	72982	8131N031Z5U0105Z
C118	290-0534-00			CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C130	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C155	281-0519-00			CAP.,FXD,CER DI:47PF,+/-4.7PF,500V	59660	308-000C0G0470K
C160	290-0534-00	B010100	B053054	CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C160	283-0059-00	B053055		CAP.,FXD,CER DI:1UF,+80-20%,25V	72982	8131N031Z5U0105Z
C168	290-0534-00			CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C180	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C200	290-0534-00			CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C205	281-0512-00			CAP.,FXD,CER DI:27PF,+/-2.7PF,500V	59660	308-000C0G027OK
C210	290-0534-00	B010100	B053054	CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C210	283-0059-00	B053055		CAP.,FXD,CER DI:1UF,+80-20%,25V	72982	8131N031Z5U0105Z
C218	290-0534-00			CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C230	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C280	283-0003-00	B010100	B059999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C285	281-0510-00			CAP.,FXD,CER DI:22PF,+/-4.4PF,500V	59660	301-000C0G0220M
C293	290-0534-00			CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C299	290-0534-00			CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C300	290-0534-00	XB060000		CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C302	281-0528-00	XB060000	B063676	CAP.,FXD,CER DI:82PF,+/-8.2PF,500V	59660	301-000U2M0820K
C302	281-0510-00	B063677		CAP.,FXD,CER DI:22PF,+/-4.4PF,500V	59660	301-000C0G0220M
C304	281-0605-00	XB060000		CAP.,FXD,CER DI:200PF,10%,500V	04222	7001-1375
C310	281-0524-00	B010100	B050657	CAP.,FXD,CER DI:150PF,+/-30PF,500V	04222	7001-1381
C310	281-0523-00	B050658		CAP.,FXD,CER DI:100PF,+/-20PF,500V	72982	301-000U2M0101M
C314	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C330	290-0534-00	B010100	B059999X	CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C335	290-0534-00	B010100	B059999X	CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C350	281-0512-00	B010100	B030506	CAP.,FXD,CER DI:27PF,+/-2.7PF,500V	59660	308-000C0G027OK
C350	281-0605-00	B030507	B050657	CAP.,FXD,CER DI:200PF,10%,500V	04222	7001-1375
C350	281-0523-00	B050658	B059999X	CAP.,FXD,CER DI:100PF,+/-20PF,500V	72982	301-000U2M0101M

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Ckt No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Name & Description	Mfr Code	Mfr Part Number
C370	283-0003-00	B010100	B053592X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C375	281-0510-00			CAP.,FXD,CER DI:22PF,+/-4.4PF,500V	59660	301-000C0G0220M
C383	290-0534-00			CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C389	290-0534-00			CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C400	281-0524-00			CAP.,FXD,CER DI:150PF,+/-30PF,500V	04222	7001-1381
C401	290-0534-00	XB053593		CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C404	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C410	283-0003-00	B010100	B053592X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C411	290-0534-00	B010100	B053592X	CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C420	290-0534-00	B010100	B053592X	CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C425	290-0534-00	B010100	B053592X	CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C445	290-0534-00			CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C450	290-0534-00			CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C473	283-0000-00			CAP.,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-519-Z5U-102P
C480	281-0524-00			CAP.,FXD,CER DI:150PF,+/-30PF,500V	04222	7001-1381
C490	290-0534-00			CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C495	290-0534-00			CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C500	281-0605-00			CAP.,FXD,CER DI:200PF,10%,500V	04222	7001-1375
C501	290-0534-00			CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C502	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C503	281-0523-00			CAP.,FXD,CER DI:100PF,+/-20PF,500V	72982	301-000U2M0101M
C534	290-0534-00			CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C536	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C538	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C542	281-0523-00			CAP.,FXD,CER DI:100PF,+/-20PF,500V	72982	301-000U2M0101M
C543	281-0510-00	B010100	B063676	CAP.,FXD,CER DI:22PF,+/-4.4PF,500V	59660	301-000C0G0220M
C543	281-0518-00	B063677		CAP.,FXD,CER DI:47PF,+/-9.4PF,500V	59660	301-000U2J0470M
C547	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C550	281-0078-00			CAP.,VAR,AIR DI:1.4-7.3PF,750V	74970	189-0503-075
C551	283-0649-00			CAP.,FXD,MICA D:105PF,1%,300V	00853	D153F1050F0
C554	285-0754-02 ----- ----- ----- ----- ----- ----- ----- -----			CAP.,FXD,PLSTC:0.001UF,3%,400V (C554,C556,C558,AVAILABLE AS A MATCHED SET,PART NUMBER 295-0151-00. THE LETTER SUFFIX AND TOLERANCE SHOULD BE THE SAME FOR ALL OF THE TIMING CAPACITORS IN THE ASSEMBLY)	80009	285-0754-02
C556	285-0781-01 ----- -----			CAP.,FXD,PLSTC:0.1UF,3.5%,100V (SEE FOOTNOTE ON C554)	80009	285-0781-01
C558	285-0784-01 ----- -----			CAP.,FXD,PLSTC:10.0UF,3.5%,25V (SEE FOOTNOTE ON C554)	80009	285-0784-01
C586	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C590	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C593	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C610	281-0523-00			CAP.,FXD,CER DI:100PF,+/-20PF,500V	72982	301-000U2M0101M
C612	281-0510-00			CAP.,FXD,CER DI:22PF,+/-4.4PF,500V	59660	301-000C0G0220M
C615	281-0078-00	B010100	B010199	CAP.,VAR,AIR DI:1.4-7.3PF,750V	74970	189-0503-075
C615	281-0079-00	B010200		CAP.,VAR,AIR DI:1.5-9.1PF,800V	74970	189-0504-075
C616	283-0631-00			CAP.,FXD,MICA D:95PF,1%,100V	00853	D151E950F0
C618	285-0753-01			CAP.,FXD,PLSTC:0.01UF,3%,100V	80009	285-0753-01
C620	285-0752-00			CAP.,FXD,PLSTC:1UF,3.5%,50V	80009	285-0752-00
C654	281-0513-00			CAP.,FXD,CER DI:27PF,+/-5.4PF,500V	59660	301-055P2G0270M
C685	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C697	281-0512-00			CAP.,FXD,CER DI:27PF,+/-2.7PF,500V	59660	308-000C0G0270K
C710	283-0000-00			CAP.,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-519-Z5U-102P
C732	281-0546-00			CAP.,FXD,CER DI:330PF,10%,500V	04222	7001-1380
C750	283-0002-00	B010100	B069999X	CAP.,FXD,CER DI:0.01UF,+80-20%,500V	91418	SM103Z5014R9
C762	283-0002-00	B010100	B069999X	CAP.,FXD,CER DI:0.01UF,+80-20%,500V	91418	SM103Z5014R9

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Ckt No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Name & Description	Mfr Code	Mfr Part Number
CR30	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR36	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR80	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR81	152-0153-00			SEMICOND DEVICE:SILICON,15V,50MA	07263	FD7003
CR87	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR130	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR131	152-0153-00			SEMICOND DEVICE:SILICON,15V,50MA	07263	FD7003
CR180	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR181	152-0153-00			SEMICOND DEVICE:SILICON,15V,50MA	07263	FD7003
CR230	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR231	152-0153-00			SEMICOND DEVICE:SILICON,15V,50MA	07263	FD7003
CR235	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR339	152-0141-02	XB060000	B063676X	SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR340	152-0141-02	XB063677		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR410	152-0153-00	B010100	B053592X	SEMICOND DEVICE:SILICON,15V,50MA	07263	FD7003
CR411	152-0153-00	B010100	B053592X	SEMICOND DEVICE:SILICON,15V,50MA	07263	FD7003
CR412	152-0141-02	XB053593		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR440	152-0141-02	XB060000		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR450	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR455	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR456	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR457	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR460	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR484	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR500	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR540	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR570	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR572	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR600	152-0153-00			SEMICOND DEVICE:SILICON,15V,50MA	07263	FD7003
CR683	152-0107-00	XB700000		SEMICOND DEVICE:SILICON,400V,400MA	01295	G727
CR685	152-0153-00			SEMICOND DEVICE:SILICON,15V,50MA	07263	FD7003
CR690	152-0153-00			SEMICOND DEVICE:SILICON,15V,50MA	07263	FD7003
CR691	152-0008-00			SEMICOND DEVICE:GERMANIUM,75V,60MA	14433	G1409
CR702	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR710	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR712	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR720	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR730	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR732	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR752	152-0107-00	B010100	B069999X	SEMICOND DEVICE:SILICON,400V,400MA	01295	G727
CR753	152-0107-00	XB070000		SEMICOND DEVICE:SILICON,400V,400MA	01295	G727
CR755	152-0107-00	XB070000		SEMICOND DEVICE:SILICON,400V,400MA	01295	G727
CR756	152-0107-00	B010100	B069999X	SEMICOND DEVICE:SILICON,400V,400MA	01295	G727
CR760	152-0107-00			SEMICOND DEVICE:SILICON,400V,400MA	01295	G727
CR761	152-0107-00	B010100	B069999X	SEMICOND DEVICE:SILICON,400V,400MA	01295	G727
CR762	152-0107-00			SEMICOND DEVICE:SILICON,400V,400MA	01295	G727
CR901	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR903	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR905	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR907	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR909	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR911	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR913	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR921	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR923	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR925	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR927	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R

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CR929	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR931	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR933	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR970	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR971	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR975	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR976	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
DS450	150-0046-00			LAMP,INCAND:10V,0.04A	08806	2107D
DS760	150-0111-00	B010100	B069999	LAMP,GLOW:NEON,1.2MA	53944	A1B-3
DS760	150-0130-00	B070000		LAMP,INCAND:5V,60MA	92966	34254-TINNED
DS762	150-0111-00	B010100	B069999	LAMP,GLOW:NEON,1.2MA	53944	A1B-3
DS762	150-0130-00	B070000		LAMP,INCAND:5V,60MA	92966	34254-TINNED
DS764	150-0111-00	B010100	B069999	LAMP,GLOW:NEON,1.2MA	53944	A1B-3
DS764	150-0130-00	B070000		LAMP,INCAND:5V,60MA	92966	34254-TINNED
DS766	150-0111-00	B010100	B069999	LAMP,GLOW:NEON,1.2MA	53944	A1B-3
DS766	150-0130-00	B070000		LAMP,INCAND:5V,60MA	92966	34254-TINNED
J10	131-0955-00			CONN,RCPT,ELEC:BNC,FEMALE	13511	31-279
LR60	108-0245-00			COIL,RF:3.9UH	76493	B6310-1
LR67	108-0245-00	B010100	B053122X	COIL,RF:3.9UH	76493	B6310-1
LR73	108-0245-00	B010100	B053122X	COIL,RF:3.9UH	76493	B6310-1
LR110	108-0245-00	B010100	B053122X	COIL,RF:3.9UH	76493	B6310-1
LR118	108-0245-00	B010100	B053122X	COIL,RF:3.9UH	76493	B6310-1
LR160	108-0245-00	B010100	B053122X	COIL,RF:3.9UH	76493	B6310-1
LR168	108-0245-00	B010100	B053122X	COIL,RF:3.9UH	76493	B6310-1
LR200	108-0245-00	B010100	B053122X	COIL,RF:3.9UH	76493	B6310-1
LR210	108-0245-00			COIL,RF:3.9UH	76493	B6310-1
LR218	108-0245-00	B010100	B053122X	COIL,RF:3.9UH	76493	B6310-1
LR293	108-0245-00	B010100	B053122X	COIL,RF:3.9UH	76493	B6310-1
LR299	108-0245-00	B010100	B053122X	COIL,RF:3.9UH	76493	B6310-1
LR300	108-0245-00	XB060000		COIL,RF:3.9UH	76493	B6310-1
LR330	108-0245-00	B010100	B059999X	COIL,RF:3.9UH	76493	B6310-1
LR335	108-0245-00	B010100	B059999X	COIL,RF:3.9UH	76493	B6310-1
LR383	108-0245-00			COIL,RF:3.9UH	76493	B6310-1
LR389	108-0245-00			COIL,RF:3.9UH	76493	B6310-1
LR400	108-0245-00	XB053593		COIL,RF:3.9UH	76493	B6310-1
LR410	108-0245-00	B010100	B053592X	COIL,RF:3.9UH	76493	B6310-1
LR420	108-0245-00	B010100	B053592X	COIL,RF:3.9UH	76493	B6310-1
LR425	108-0245-00	B010100	B053592X	COIL,RF:3.9UH	76493	B6310-1
LR445	108-0245-00			COIL,RF:3.9UH	76493	B6310-1
Q20 Q24	151-1042-00			SEMICOND DVC SE:MATCHED PAIR FET	27014	SF50031
Q34	151-0341-00			TRANSISTOR:SILICON,NPN	07263	S040065
Q36	151-0341-00			TRANSISTOR:SILICON,NPN	07263	S040065
Q60	151-0190-00			TRANSISTOR:SILICON,NPN	07263	S032677
Q62	151-0190-00			TRANSISTOR:SILICON,NPN	07263	S032677
Q80	151-0188-00			TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q90	151-0341-00			TRANSISTOR:SILICON,NPN	07263	S040065
Q100	151-0190-00			TRANSISTOR:SILICON,NPN	07263	S032677
Q110	151-0190-00			TRANSISTOR:SILICON,NPN	07263	S032677
Q130	151-0188-00			TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q150	151-0190-00			TRANSISTOR:SILICON,NPN	07263	S032677
Q160	151-0190-00			TRANSISTOR:SILICON,NPN	07263	S032677
Q180	151-0188-00			TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q200	151-0190-00			TRANSISTOR:SILICON,NPN	07263	S032677
Q210	151-0190-00			TRANSISTOR:SILICON,NPN	07263	S032677

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Q230	151-0188-00			TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q280	151-0190-00			TRANSISTOR:SILICON,NPN	07263	S032677
Q290	151-0190-00			TRANSISTOR:SILICON,NPN	07263	S032677
Q340	151-0190-00	XB063677		TRANSISTOR:SILICON,NPN	07263	S032677
Q370	151-0190-00			TRANSISTOR:SILICON,NPN	07263	S032677
Q380	151-0190-00			TRANSISTOR:SILICON,NPN	07263	S032677
Q440	151-0190-00	XB060000		TRANSISTOR:SILICON,NPN	07263	S032677
Q460	151-0188-00			TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q470	151-0188-00			TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q480	151-0188-00			TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q540	151-1005-00			TRANSISTOR:SILICON,JFE,N-CHANNEL	80009	151-1005-00
Q570	151-0190-00			TRANSISTOR:SILICON,NPN	07263	S032677
Q574	151-0341-00			TRANSISTOR:SILICON,NPN	07263	S040065
Q650	151-0220-00			TRANSISTOR:SILICON,PNP	07263	S036228
Q665	151-0188-00			TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q670	151-0220-00			TRANSISTOR:SILICON,PNP	07263	S036228
Q680	151-0190-00			TRANSISTOR:SILICON,NPN	07263	S032677
Q690	151-0325-00			TRANSISTOR:SILICON,PNP,SEL FROM 2N4258	80009	151-0325-00
Q695	151-0188-00			TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q700	151-0195-00			TRANSISTOR:SILICON,NPN	80009	151-0195-00
Q720	151-0195-00			TRANSISTOR:SILICON,NPN	80009	151-0195-00
Q730	151-0188-00			TRANSISTOR:SILICON,PNP	04713	SPS6868K
R10	316-0330-00	B010100	B085104	RES.,FXD,CMPSN:33 OHM,10%,0.25W	01121	CB3301
R10	315-0330-00	B085105		RES.,FXD,CMPSN:33 OHM,5%,0.25W	01121	CB3305
R11	321-0452-00			RES.,FXD,FILM:499K OHM,1%,0.125W	91637	MFF1816G49902F
R15	321-0452-00			RES.,FXD,FILM:499K OHM,1%,0.125W	91637	MFF1816G49902F
R16	316-0101-00	B010100	B085104	RES.,FXD,CMPSN:100 OHM,10%,0.25W	01121	CB1011
R16	315-0101-00	B085105		RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R20	316-0220-00	B010100	B085104	RES.,FXD,CMPSN:22 OHM,10%,0.25W	01121	CB2201
R20	315-0220-00	B085105		RES.,FXD,CMPSN:22 OHM,5%,0.25W	01121	CB2205
R21	316-0330-00	B010100	B085104	RES.,FXD,CMPSN:33 OHM,10%,0.25W	01121	CB3301
R21	315-0330-00	B085105		RES.,FXD,CMPSN:33 OHM,5%,0.25W	01121	CB3305
R25	311-1568-00			RES.,VAR,NONWIR:50 OHM,20%,0.50W	73138	91-90-0
R26	316-0330-00	B010100	B085104	RES.,FXD,CMPSN:33 OHM,10%,0.25W	01121	CB3301
R26	315-0330-00	B085105		RES.,FXD,CMPSN:33 OHM,5%,0.25W	01121	CB3305
R30	316-0153-00	B010100	B085104	RES.,FXD,CMPSN:15K OHM,10%,0.25W	01121	CB1531
R30	315-0153-00	B085105		RES.,FXD,CMPSN:15K OHM,5%,0.25W	01121	CB1535
R36	316-0472-00	B010100	B085104	RES.,FXD,CMPSN:4.7K OHM,10%,0.25W	01121	CB4721
R36	315-0472-00	B085105		RES.,FXD,CMPSN:4.7K OHM,5%,0.25W	01121	CB4725
R38	315-0621-00			RES.,FXD,CMPSN:620 OHM,5%,0.25W	01121	CB6215
R40	316-0223-00	B010100	B085104	RES.,FXD,CMPSN:22K OHM,10%,0.25W	01121	CB2231
R40	315-0223-00	B085105		RES.,FXD,CMPSN:22K OHM,5%,0.25W	01121	CB2235
R42	315-0392-00			RES.,FXD,CMPSN:3.9K OHM,5%,0.25W	01121	CB3925
R45	321-0204-00			RES.,FXD,FILM:1.3K OHM,1%,0.125W	91637	MFF1816G13000F
R47	316-0153-00	B010100	B085104	RES.,FXD,CMPSN:15K OHM,10%,0.25W	01121	CB1531
R47	315-0153-00	B085105		RES.,FXD,CMPSN:15K OHM,5%,0.25W	01121	CB1535
R49	321-0342-00			RES.,FXD,FILM:35.7K OHM,1%,0.125W	91637	MFF1816G35701F
R50	321-0190-00			RES.,FXD,FILM:931 OHM,1%,0.125W	91637	MFF1816G931R0F
R52	311-1566-00			RES.,VAR,NONWIR:200 OHM,20%,0.50W	73138	91-88-0
R60	316-0330-00	B010100	B085104	RES.,FXD,CMPSN:33 OHM,10%,0.25W	01121	CB3301
R60	315-0330-00	B085105		RES.,FXD,CMPSN:33 OHM,5%,0.25W	01121	CB3305
R62	316-0390-00	B010100	B085104	RES.,FXD,CMPSN:39 OHM,10%,0.25W	01121	CB3901
R62	315-0390-00	B085105		RES.,FXD,CMPSN:39 OHM,5%,0.25W	01121	CB3905
R65	315-0680-00			RES.,FXD,CMPSN:68 OHM,5%,0.25W	01121	CB6805
R67	323-0185-00	B010100	B053122	RES.,FXD,FILM:825 OHM,1%,0.50W	75042	CECT0-8250F
R67	323-0633-00	B053123		RES.,FXD,FILM:801 OHM,1%,0.5W	75042	CECT0-8010F
R68	315-0240-00	XB053123		RES.,FXD,CMPSN:24 OHM,5%,0.25W	01121	CB2405

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R69	315-0680-00			RES.,FXD,CMPSN:68 OHM,5%,0.25W	01121	CB6805
R70	316-0330-00	B010100	B085104	RES.,FXD,CMPSN:33 OHM,10%,0.25W	01121	CB3301
R70	315-0330-00	B085105		RES.,FXD,CMPSN:33 OHM,5%,0.25W	01121	CB3305
R73	322-0173-00	B010100	B053122	RES.,FXD,FILM:619 OHM,1%,0.25W	75042	CEBT0-6190F
R73	322-0172-00	B053123		RES.,FXD,FILM:604 OHM,1%,0.25W	75042	CEBT0-6040F
R74	315-0150-00	XB053123		RES.,FXD,CMPSN:15 OHM,5%,0.25W	01121	CB1505
R80	315-0203-00			RES.,FXD,CMPSN:20K OHM,5%,0.25W	01121	CB2035
R83	316-0183-00	B010100	B085104	RES.,FXD,CMPSN:18K OHM,10%,0.25W	01121	CB1831
R83	315-0183-00	B085105		RES.,FXD,CMPSN:18K OHM,5%,0.25W	01121	CB1835
R85	316-0153-00	B010100	B085104	RES.,FXD,CMPSN:15K OHM,10%,0.25W	01121	CB1531
R85	315-0153-00	B085105		RES.,FXD,CMPSN:15K OHM,5%,0.25W	01121	CB1535
R87	322-0218-00			RES.,FXD,FILM:1.82K OHM,1%,0.25W	75042	CEBT0-1821F
R90	316-0564-00	B010100	B085104	RES.,FXD,CMPSN:560K OHM,10%,0.25	01121	CB5641
R90	315-0564-00	B085105		RES.,FXD,CMPSN:560K OHM,5%,0.25W	01121	CB5645
R93	315-0222-00			RES.,FXD,CMPSN:2.2K OHM,5%,0.25W	01121	CB2225
R95	316-0562-00	B010100	B085104	RES.,FXD,CMPSN:5.6K OHM,10%,0.25W	01121	CB5621
R95	315-0562-00	B085105		RES.,FXD,CMPSN:5.6K OHM,5%,0.25W	01121	CB5625
R97	321-0151-00			RES.,FXD,FILM:365 OHM,1%,0.125W	91637	MFF1816G365R0F
R100	316-0330-00	B010100	B085104	RES.,FXD,CMPSN:33 OHM,10%,0.25W	01121	CB3301
R100	315-0330-00	B085105		RES.,FXD,CMPSN:33 OHM,5%,0.25W	01121	CB3305
R103	321-0078-00			RES.,FXD,FILM:63.4 OHM,1%,0.125W	91637	MFF1816G63R40F
R105	316-0220-00	B010100	B085104	RES.,FXD,CMPSN:22 OHM,10%,0.25W	01121	CB2201
R105	315-0220-00	B085105		RES.,FXD,CMPSN:22 OHM,5%,0.25W	01121	CB2205
R108	315-0300-00			RES.,FXD,CMPSN:30 OHM,5%,0.25W	01121	CB3005
R110	323-0188-00	B010100	B053122	RES.,FXD,FILM:887 OHM,1%,0.50W	75042	CECT0-8870F
R110	323-0185-00	B053123		RES.,FXD,FILM:825 OHM,1%,0.50W	75042	CECT0-8250F
R111	315-0620-00	XB053123		RES.,FXD,CMPSN:62 OHM,5%,0.25W	01121	CB6205
R114	315-0300-00			RES.,FXD,CMPSN:30 OHM,5%,0.25W	01121	CB3005
R115	316-0330-00	B010100	B085104	RES.,FXD,CMPSN:33 OHM,10%,0.25W	01121	CB3301
R115	315-0330-00	B085105		RES.,FXD,CMPSN:33 OHM,5%,0.25W	01121	CB3305
R118	322-0175-00	B010100	B053122	RES.,FXD,FILM:649 OHM,1%,0.25W	75042	CEBT0-6490F
R118	322-0173-00	B053123		RES.,FXD,FILM:619 OHM,1%,0.25W	75042	CEBT0-6190F
R119	315-0300-00	XB053123		RES.,FXD,CMPSN:30 OHM,5%,0.25W	01121	CB3005
R130	315-0203-00			RES.,FXD,CMPSN:20K OHM,5%,0.25W	01121	CB2035
R135	316-0183-00	B010100	B085104	RES.,FXD,CMPSN:18K OHM,10%,0.25W	01121	CB1831
R135	315-0183-00	B085105		RES.,FXD,CMPSN:18K OHM,5%,0.25W	01121	CB1835
R137	316-0153-00	B010100	B085104	RES.,FXD,CMPSN:15K OHM,10%,0.25W	01121	CB1531
R137	315-0153-00	B085105		RES.,FXD,CMPSN:15K OHM,5%,0.25W	01121	CB1535
R139	321-0149-00			RES.,FXD,FILM:348 OHM,1%,0.125W	91637	MFF1816G348R0F
R140	322-0222-00			RES.,FXD,FILM:2K OHM,1%,0.25W	75042	CEBT0-2001F
R150	316-0330-00	B010100	B085104	RES.,FXD,CMPSN:33 OHM,10%,0.25W	01121	CB3301
R150	315-0330-00	B085105		RES.,FXD,CMPSN:33 OHM,5%,0.25W	01121	CB3305
R153	321-0078-00			RES.,FXD,FILM:63.4 OHM,1%,0.125W	91637	MFF1816G63R40F
R155	316-0220-00	B010100	B085104	RES.,FXD,CMPSN:22 OHM,10%,0.25W	01121	CB2201
R155	315-0220-00	B085105		RES.,FXD,CMPSN:22 OHM,5%,0.25W	01121	CB2205
R158	315-0300-00			RES.,FXD,CMPSN:30 OHM,5%,0.25W	01121	CB3005
R160	323-0188-00	B010100	B053122	RES.,FXD,FILM:887 OHM,1%,0.50W	75042	CECT0-8870F
R160	323-0185-00	B053123		RES.,FXD,FILM:825 OHM,1%,0.50W	75042	CECT0-8250F
R161	315-0620-00	XB053123		RES.,FXD,CMPSN:62 OHM,5%,0.25W	01121	CB6205
R164	315-0300-00			RES.,FXD,CMPSN:30 OHM,5%,0.25W	01121	CB3005
R165	316-0330-00	B010100	B085104	RES.,FXD,CMPSN:33 OHM,10%,0.25W	01121	CB3301
R165	315-0330-00	B085105		RES.,FXD,CMPSN:33 OHM,5%,0.25W	01121	CB3305
R168	322-0175-00	B010100	B053122	RES.,FXD,FILM:649 OHM,1%,0.25W	75042	CEBT0-6490F
R168	322-0173-00	B053123		RES.,FXD,FILM:619 OHM,1%,0.25W	75042	CEBT0-6190F
R169	315-0300-00	XB053123		RES.,FXD,CMPSN:30 OHM,5%,0.25W	01121	CB3005
R180	315-0203-00			RES.,FXD,CMPSN:20K OHM,5%,0.25W	01121	CB2035
R185	316-0183-00	B010100	B085104	RES.,FXD,CMPSN:18K OHM,10%,0.25W	01121	CB1831

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R185	315-0183-00	B085105		RES.,FXD,CMPSN:18K OHM,5%,0.25W	01121	CB1835
R187	316-0153-00	B010100	B085104	RES.,FXD,CMPSN:15K OHM,10%,0.25W	01121	CB1531
R187	315-0153-00	B085105		RES.,FXD,CMPSN:15K OHM,5%,0.25W	01121	CB1535
R200	316-0330-00	B010100	B085104	RES.,FXD,CMPSN:33 OHM,10%,0.25W	01121	CB3301
R200	315-0330-00	B085105		RES.,FXD,CMPSN:33 OHM,5%,0.25W	01121	CB3305
R205	316-0101-00	B010100	B085104	RES.,FXD,CMPSN:100 OHM,10%,0.25W	01121	CB1011
R205	315-0101-00	B085105		RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R208	315-0131-00			RES.,FXD,CMPSN:130 OHM,5%,0.25W	01121	CB1315
R210	323-0185-00	B010100	B053122	RES.,FXD,FILM:825 OHM,1%,0.50W	75042	CECT0-8250F
R210	323-0633-00	B053123		RES.,FXD,FILM:801 OHM,1%,0.5W	75042	CECT0-8010F
R211	315-0240-00	XB053123		RES.,FXD,CMPSN:24 OHM,5%,0.25W	01121	CB2405
R214	315-0131-00			RES.,FXD,CMPSN:130 OHM,5%,0.25W	01121	CB1315
R215	316-0330-00	B010100	B085104	RES.,FXD,CMPSN:33 OHM,10%,0.25W	01121	CB3301
R215	315-0330-00	B085105		RES.,FXD,CMPSN:33 OHM,5%,0.25W	01121	CB3305
R218	322-0173-00	B010100	B053122	RES.,FXD,FILM:619 OHM,1%,0.25W	75042	CEBT0-6190F
R218	322-0172-00	B053123		RES.,FXD,FILM:604 OHM,1%,0.25W	75042	CEBT0-6040F
R219	315-0150-00	XB053123		RES.,FXD,CMPSN:15 OHM,5%,0.25W	01121	CB1505
R228	316-0270-00	B010100	B085104	RES.,FXD,CMPSN:27 OHM,10%,0.25W	01121	CB2701
R228	315-0270-00	B085105		RES.,FXD,CMPSN:27 OHM,5%,0.25W	01121	CB2705
R230	315-0203-00			RES.,FXD,CMPSN:20K OHM,5%,0.25W	01121	CB2035
R235	315-0822-00			RES.,FXD,CMPSN:8.2K OHM,5%,0.25W	01121	CB8225
R236	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R237	316-0153-00	B010100	B085104	RES.,FXD,CMPSN:15K OHM,10%,0.25W	01121	CB1531
R237	315-0153-00	B085105		RES.,FXD,CMPSN:15K OHM,5%,0.25W	01121	CB1535
R280	316-0222-00	B010100	B085104	RES.,FXD,CMPSN:2.2K OHM,10%,0.25W	01121	CB2221
R280	315-0222-00	B085105		RES.,FXD,CMPSN:2.2K OHM,5%,0.25W	01121	CB2225
R282	315-0680-00			RES.,FXD,CMPSN:68 OHM,5%,0.25W	01121	CB6805
R285	315-0821-00			RES.,FXD,CMPSN:820 OHM,5%,0.25W	01121	CB8215
R287	315-0821-00			RES.,FXD,CMPSN:820 OHM,5%,0.25W	01121	CB8215
R290	315-0821-00			RES.,FXD,CMPSN:820 OHM,5%,0.25W	01121	CB8215
R293	323-0208-00			RES.,FXD,FILM:1.43K OHM,1%,0.50W	75042	CECT0-1431F
R297	321-0078-00	XB060000		RES.,FXD,FILM:63.4 OHM,1%,0.125W	91637	MFF1816G63R40F
R298	321-0097-00	B010100	B059999	RES.,FXD,FILM:100 OHM,1%,0.125W	91637	MFF1816G100R0F
R298	321-0078-00	B060000		RES.,FXD,FILM:63.4 OHM,1%,0.125W	91637	MFF1816G63R40F
R299	321-0087-00			RES.,FXD,FILM:78.7 OHM,1%,0.125W	91637	MFF1816G78R70F
R304	315-0133-00	XB060000		RES.,FXD,CMPSN:13K OHM,5%,0.25W	01121	CB1335
R306	315-0302-00	XB060000		RES.,FXD,CMPSN:3K OHM,5%,0.25W	01121	CB3025
R308	315-0103-00	XB060000		RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R310	315-0680-00			RES.,FXD,CMPSN:68 OHM,5%,0.25W	01121	CB6805
R312	315-0222-00			RES.,FXD,CMPSN:2.2K OHM,5%,0.25W	01121	CB2225
R314	315-0133-00			RES.,FXD,CMPSN:13K OHM,5%,0.25W	01121	CB1335
R320	311-0580-00			RES.,VAR,NONWIR:50K OHM,20%,0.50W	11237	300SF-41695
R325	316-0122-00	B010100	B059999X	RES.,FXD,CMPSN:1.2K OHM,10%.0.25W	01121	CB1221
R326	315-0220-00	B010100	B059999X	RES.,FXD,CMPSN:22 OHM,5%,0.25W	01121	CB2205
R328	315-0430-00	B010100	B059999X	RES.,FXD,CMPSN:43 OHM,5%,0.25W	01121	CB4305
R329	316-0122-00	B010100	B059999X	RES.,FXD,CMPSN:1.2K OHM,10%.0.25W	01121	CB1221
R332	316-0102-00	B010100	B059999X	RES.,FXD,CMPSN:1K OHM,10%,0.25W	01121	CB1021
R334	316-0102-00	B010100	B059999X	RES.,FXD,CMPSN:1K OHM,10%,0.25W	01121	CB1021
R336	316-0102-00	B010100	B059999X	RES.,FXD,CMPSN:1K OHM,10%,0.25W	01121	CB1021
R337	315-0331-00	B010100	B059999X	RES.,FXD,CMPSN:330 OHM,5%,0.25W	01121	CB3315
R339	316-0102-00	B010100	B059999X	RES.,FXD,CMPSN:1K OHM,10%,0.25W	01121	CB1021
R339	315-0102-00	XB063677		RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R340	315-0361-00	XB063677		RES.,FXD,CMPSN:360 OHM,5%,0.25W	01121	CB3615
R342	316-0102-00	B010100	B059999X	RES.,FXD,CMPSN:1K OHM,10%,0.25W	01121	CB1021
R345	316-0102-00	B010100	B059999X	RES.,FXD,CMPSN:1K OHM,10%,0.25W	01121	CB1021
R347	316-0102-00	B010100	B059999X	RES.,FXD,CMPSN:1K OHM,10%,0.25W	01121	CB1021
R348	315-0682-00	B010100	B059999X	RES.,FXD,CMPSN:6.8K OHM,5%,0.25W	01121	CB6825

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R350	315-0362-00	B010100	B059999X	RES.,FXD,CMPSN:3.6K OHM,5%,0.25W	01121	CB3625
R354	315-0102-00	B010100	B050657	RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R354	315-0132-00	B050658	B059999X	RES.,FXD,CMPSN:1.3K OHM,5%,0.25W	01121	CB1325
R356	315-0182-00	B010100	B059999X	RES.,FXD,CMPSN:1.8K OHM,5%,0.25W	01121	CB1825
R357	315-0102-00	B010100	B059999X	RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R370	316-0330-00	B010100	B010250	RES.,FXD,CMPSN:33 OHM,10%,0.25W	01121	CB3301
R370	315-0680-00	B010251		RES.,FXD,CMPSN:68 OHM,5%,0.25W	01121	CB6805
R375	316-0101-00	B010100	B085104	RES.,FXD,CMPSN:100 OHM,10%,0.25W	01121	CB1011
R375	315-0101-00	B085105		RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R377	315-0820-00			RES.,FXD,CMPSN:82 OHM,5%,0.25W	01121	CB8205
R380	315-0820-00			RES.,FXD,CMPSN:82 OHM,5%,0.25W	01121	CB8205
R383	323-0208-00			RES.,FXD,FILM:1.43K OHM,1%,0.50W	75042	CECT0-1431F
R388	321-0097-00	B010100	B053592	RES.,FXD,FILM:100 OHM,1%,0.125W	91637	MFF1816G100R0F
R388	321-0078-00	B053593		RES.,FXD,FILM:63.4 OHM,1%,0.125W	91637	MFF1816G63R40F
R389	321-0087-00			RES.,FXD,FILM:78.7 OHM,1%,0.125W	91637	MFF1816G78R70F
R390	321-0078-00	XB053593		RES.,FXD,FILM:63.4 OHM,1%,0.125W	91637	MFF1816G63R40F
R400	316-0330-00	B010100	B010250	RES.,FXD,CMPSN:33 OHM,10%,0.25W	01121	CB3301
R400	315-0680-00	B010251		RES.,FXD,CMPSN:68 OHM,5%,0.25W	01121	CB6805
R402	315-0222-00			RES.,FXD,CMPSN:2.2K OHM,5%,0.25W	01121	CB2225
R404	315-0133-00			RES.,FXD,CMPSN:13K OHM,5%,0.25W	01121	CB1335
R410	311-0580-00			RES.,VAR,NONWIR:50K OHM,20%,0.50W	11237	300SF-41695
R415	316-0122-00	B010100	B053592X	RES.,FXD,CMPSN:1.2K OHM,10%.0.25W	01121	CB1221
R416	315-0220-00	B010100	B053592X	RES.,FXD,CMPSN:22 OHM,5%,0.25W	01121	CB2205
R418	315-0430-00	B010100	B053592X	RES.,FXD,CMPSN:43 OHM,5%,0.25W	01121	CB4305
R419	316-0122-00	B010100	B053592X	RES.,FXD,CMPSN:1.2K OHM,10%.0.25W	01121	CB1221
R422	316-0102-00	B010100	B053592X	RES.,FXD,CMPSN:1K OHM,10%,0.25W	01121	CB1021
R424	316-0102-00	B010100	B053592X	RES.,FXD,CMPSN:1K OHM,10%,0.25W	01121	CB1021
R426	316-0102-00	B010100	B053592X	RES.,FXD,CMPSN:1K OHM,10%,0.25W	01121	CB1021
R429	316-0102-00	B010100	B085104	RES.,FXD,CMPSN:1K OHM,10%,0.25W	01121	CB1021
R429	315-0102-00	B085105		RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R432	316-0102-00	B010100	B053592X	RES.,FXD,CMPSN:1K OHM,10%,0.25W	01121	CB1021
R435	316-0102-00	B010100	B053592X	RES.,FXD,CMPSN:1K OHM,10%,0.25W	01121	CB1021
R437	316-0102-00	B010100	B053592X	RES.,FXD,CMPSN:1K OHM,10%,0.25W	01121	CB1021
R438	315-0201-00	B010100	B053592X	RES.,FXD,CMPSN:200 OHM,5%,0.25W	01121	CB2015
R439	315-0361-00	XB060000		RES.,FXD,CMPSN:360 OHM,5%,0.25W	01121	CB3615
R440	315-0911-00			RES.,FXD,CMPSN:910 OHM,5%,0.25W	01121	CB9115
R442	315-0102-00	XB060000		RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R450	316-0102-00	B010100	B085104	RES.,FXD,CMPSN:1K OHM,10%,0.25W	01121	CB1021
R450	315-0102-00	B085105		RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R451	316-0180-00	B010100	B085104	RES.,FXD,CMPSN:18 OHM,10%,0.25W	01121	CB1801
R451	315-0180-00	B085105		RES.,FXD,CMPSN:18 OHM,5%,0.25W	01121	CB1805
R452	315-0181-00	XB020000		RES.,FXD,CMPSN:180 OHM,5%,0.25W	01121	CB1815
R455	316-0472-00	B010100	B085104	RES.,FXD,CMPSN:4.7K OHM,10%,0.25W	01121	CB4721
R455	315-0472-00	B085105		RES.,FXD,CMPSN:4.7K OHM,5%,0.25W	01121	CB4725
R460	315-0202-00			RES.,FXD,CMPSN:2K OHM,5%,0.25W	01121	CB2025
R464	321-0259-00			RES.,FXD,FILM:4.87K OHM,1%,0.125W	91637	MFF1816G48700F
R465	315-0123-00	B010100	B039999	RES.,FXD,CMPSN:12K OHM,5%,0.25W	01121	CB1235
R465	321-0298-00	B040000		RES.,FXD,FILM:12.4K OHM,1%,0.125W	91637	MFF1816G12401F
R468	315-0242-00	B010100	B039999	RES.,FXD,CMPSN:2.4K OHM,5%,0.25W	01121	CB2425
R468	321-0228-00	B040000		RES.,FXD,FILM:2.32K OHM,1%,0.125W	91637	MFF1816G23200F
R470	321-0247-00			RES.,FXD,FILM:3.65K OHM,1%,0.125W	91637	MFF1816G36500F
R472	315-0223-00			RES.,FXD,CMPSN:22K OHM,5%,0.25W	01121	CB2235
R473	315-0202-00			RES.,FXD,CMPSN:2K OHM,5%,0.25W	01121	CB2025
R475	321-0193-00	B010100	B059999	RES.,FXD,FILM:1K OHM,1%,0.125W	91637	MFF1816G10000F
R475	321-0222-00	B060000	B063676	RES.,FXD,FILM:2K OHM,1%,0.125W	91637	MFF1816G20000F
R475	321-0193-00	B063677		RES.,FXD,FILM:1K OHM,1%,0.125W	91637	MFF1816G10000F
R476	321-0253-00	B010100	B059999	RES.,FXD,FILM:4.22K OHM,1%,0.125W	91637	MFF1816G42200F

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R476	321-0282-00	B060000	B063676	RES.,FXD,FILM:8.45K OHM,1%,0.125W	91637	MFF1816G84500F
R476	321-0253-00	B063677		RES.,FXD,FILM:4.22K OHM,1%,0.125W	91637	MFF1816G42200F
R480	316-0102-00	B010100	B059999X	RES.,FXD,CMPSN:1K OHM,10%,0.25W	01121	CB1021
R480	315-0102-00	XB063677		RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R482	315-0471-00	B010100	B052429	RES.,FXD,CMPSN:470 OHM,5%,0.25W	01121	CB4715
R482	315-0511-00	B052430		RES.,FXD,CMPSN:510 OHM,5%,0.25W	01121	CB5115
R483	315-0131-00			RES.,FXD,CMPSN:130 OHM,5%,0.25W	01121	CB1315
R484	315-0681-00			RES.,FXD,CMPSN:680 OHM,5%,0.25W	01121	CB6815
R489	316-0332-00	B010100	B085104	RES.,FXD,CMPSN:3.3K OHM,10%,0.25W	01121	CB3321
R489	315-0332-00	B085105		RES.,FXD,CMPSN:3.3K OHM,5%,0.25W	01121	CB3325
R490	301-0391-00			RES.,FXD,CMPSN:390 OHM,5%,0.50W	01121	EB3915
R495	316-0334-00	B010100	B085104	RES.,FXD,CMPSN:330K OHM,10%,0.25W	01121	CB3341
R495	315-0334-00	B085105		RES.,FXD,CMPSN:330K OHM,5%,0.25W	01121	CB3345
R500	315-0163-00			RES.,FXD,CMPSN:16K OHM,5%,0.25W	01121	CB1635
R503	315-0154-00			RES.,FXD,CMPSN:150K OHM,5%,0.25W	01121	CB1545
R520	311-1324-00			RES.,VAR,WW:10K OHM,5%,2W	02111	534-9572 103J
R522	311-1560-00			RES.,VAR,NONWIR:5K OHM,20%,0.50W	73138	91-82-0
R523	321-0318-02			RES.,FXD,FILM:20K OHM,0.5%,0.125W	91637	MFF1816D20001D
R525	321-0829-02			RES.,FXD,FILM:202 OHM,0.5%,0.125W	91637	MFF1816D202R0D
R527	321-0332-00			RES.,FXD,FILM:28K OHM,1%,0.125W	91637	MFF1816G28001F
R530	311-1555-00			RES.,VAR,NONWIR:100K OHM,20%,0.5W	73138	91-77-0
R534	316-0103-00	B010100	B085104	RES.,FXD,CMPSN:10K OHM,10%,0.25W	01121	CB1031
R534	315-0103-00	B085105		RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R536	316-0104-00	B010100	B085104	RES.,FXD,CMPSN:100K OHM,10%,0.25W	01121	CB1041
R536	315-0104-00	B085105		RES.,FXD,CMPSN:100K OHM,5%,0.25W	01121	CB1045
R538	316-0100-00	B010100	B085104	RES.,FXD,CMPSN:10 OHM,10%,0.25W	01121	CB1001
R538	315-0100-00	B085105		RES.,FXD,CMPSN:10 OHM,5%,0.25W	01121	CB1005
R540	316-0153-00	B010100	B085104	RES.,FXD,CMPSN:15K OHM,10%,0.25W	01121	CB1531
R540	315-0153-00	B085105		RES.,FXD,CMPSN:15K OHM,5%,0.25W	01121	CB1535
R542	315-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R543	316-0274-00	B010100	B085104	RES.,FXD,CMPSN:270K OHM,10%,0.25W	01121	CB2741
R543	315-0274-00	B085105		RES.,FXD,CMPSN:270K OHM,5%,0.25W	01121	CB2745
R545	311-1555-00			RES.,VAR,NONWIR:100K OHM,20%,0.5W	73138	91-77-0
R547	315-0621-00			RES.,FXD,CMPSN:620 OHM,5%,0.25W	01121	CB6215
R549	316-0473-00	B010100	B085104	RES.,FXD,CMPSN:47K OHM,10%,0.25W	01121	CB4731
R549	315-0473-00	B085105		RES.,FXD,CMPSN:47K OHM,5%,0.25W	01121	CB4735
R550	311-1537-00	B010100	B095255	RES.,VAR,NONWIR:PNL,20K OHM,1W,W/SW	12697	381-CM40064
	----- -----			(FURNISHED AS A UNIT WITH S900)		
R550	311-2007-00	B095256		RES.,VAR,NONWIR:PNL,20K OHM,20%,1W	12697	CM41744
	----- -----			(FURNISHED AS A UNIT WITH S900)		
R551	321-0289-00			RES.,FXD,FILM:10K OHM,1%,0.125W	91637	MFF1816G10001F
R552	321-0164-00			RES.,FXD,FILM:499 OHM,1%,0.125W	91637	MFF1816G499R0F
R556	316-0124-00	B010100	B085104	RES.,FXD,CMPSN:120K OHM,10%,0.25W	01121	CB1241
R556	315-0124-00	B085105		RES.,FXD,CMPSN:120K OHM,5%,0.25W	01121	CB1245
R557	321-0234-00			RES.,FXD,FILM:2.67K OHM,1%,0.125W	91637	MFF1816G26700F
R558	315-0330-00	XB060000		RES.,FXD,CMPSN:33 OHM,5%,0.25W	01121	CB3305
R559	321-0268-03			RES.,FXD,FILM:6.04K OHM,0.25%,0.125W	91637	MFF1816D60400C
R560	321-0827-03			RES.,FXD,FILM:3.61K OHM,0.25%,0.125W	91637	MFF1816D36100C
R562	321-0830-03			RES.,FXD,FILM:2.41K OHM,0.25%,0.125W	91637	MFF1816D24100C
R564	321-0200-00			RES.,FXD,FILM:1.18K OHM,1%,0.125W	91637	MFF1816G11800F
R566	323-0498-03			RES.,FXD,FILM:1.5M OHM,0.25%,0.50W	91637	HFF12915003C
R567	323-0498-03			RES.,FXD,FILM:1.5M OHM,0.25%,0.50W	91637	HFF12915003C
R569	321-0917-03			RES.,FXD,FILM:27.2K OHM,0.25%,0.125W	91637	MFF1816D27201C
R570	321-0856-03			RES.,FXD,FILM:330K OHM,0.25%,0.125W	91637	MFF1816D33002C
R571	315-0912-00			RES.,FXD,CMPSN:9.1K OHM,5%,0.25W	01121	CB9125
R573	316-0332-00	B010100	B085104	RES.,FXD,CMPSN:3.3K OHM,10%,0.25W	01121	CB3321
R573	315-0332-00	B085105		RES.,FXD,CMPSN:3.3K OHM,5%,0.25W	01121	CB3325

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Ckt No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Name & Description	Mfr Code	Mfr Part Number
R574	316-0103-00	B010100	B085104	RES.,FXD,CMPSN:10K OHM,10%,0.25W	01121	CB1031
R574	315-0103-00	B085105		RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R580	315-0911-00			RES.,FXD,CMPSN:910 OHM,5%,0.25W	01121	CB9115
R581	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R585	321-0365-00	B010100	B053592	RES.,FXD,FILM:61.9K OHM,1%,0.125W	91637	MFF1816G61901F
R585	321-0363-00	B053593		RES.,FXD,FILM:59K OHM,1%,0.125W	91637	MFF1816G59001F
R586	321-0385-00			RES.,FXD,FILM:100K OHM,1%,0.125W	91637	MFF1816G10002F
R590	315-0621-00			RES.,FXD,CMPSN:620 OHM,5%,0.25W	01121	CB6215
R593	316-0100-00	B010100	B085104	RES.,FXD,CMPSN:10 OHM,10%,0.25W	01121	CB1001
R593	315-0100-00	B085105		RES.,FXD,CMPSN:10 OHM,5%,0.25W	01121	CB1005
R595	316-0682-00	B010100	B085104	RES.,FXD,CMPSN:6.8K OHM,10%,0.25W	01121	CB6821
R595	315-0682-00	B085105		RES.,FXD,CMPSN:6.8K OHM,5%,0.25W	01121	CB6825
R600	316-0562-00	B010100	B053592	RES.,FXD,CMPSN:5.6K OHM,10%,0.25W	01121	CB5621
R600	315-0472-00	B053593		RES.,FXD,CMPSN:4.7K OHM,5%,0.25W	01121	CB4725
R604	316-0473-00	B010100	B085104	RES.,FXD,CMPSN:47K OHM,10%,0.25W	01121	CB4731
R604	315-0473-00	B085105		RES.,FXD,CMPSN:47K OHM,5%,0.25W	01121	CB4735
R610	316-0101-00	B010100	B085104	RES.,FXD,CMPSN:100 OHM,10%,0.25W	01121	CB1011
R610	315-0101-00	B085105		RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R615	321-0286-00			RES.,FXD,FILM:9.31K OHM,1%,0.125W	91637	MFF1816G93100F
R616	321-0164-00			RES.,FXD,FILM:499 OHM,1%,0.125W	91637	MFF1816G499R0F
R618	321-0234-00			RES.,FXD,FILM:2.67K OHM,1%,0.125W	91637	MFF1816G26700F
R620	321-0268-03			RES.,FXD,FILM:6.04K OHM,0.25%,0.125W	91637	MFF1816D60400C
R622	321-0827-03			RES.,FXD,FILM:3.61K OHM,0.25%,0.125W	91637	MFF1816D36100C
R623	321-0830-03			RES.,FXD,FILM:2.41K OHM,0.25%,0.125W	91637	MFF1816D24100C
R625	321-0200-00			RES.,FXD,FILM:1.18K OHM,1%,0.125W	91637	MFF1816G11800F
R627	323-0498-03			RES.,FXD,FILM:1.5M OHM,0.25%,0.50W	91637	HFF12915003C
R628	323-0498-03			RES.,FXD,FILM:1.5M OHM,0.25%,0.50W	91637	HFF12915003C
R630	321-0917-03			RES.,FXD,FILM:27.2K OHM,0.25%,0.125W	91637	MFF1816D27201C
R632	321-0856-03			RES.,FXD,FILM:330K OHM,0.25%,0.125W	91637	MFF1816D33002C
R638	321-0830-03			RES.,FXD,FILM:2.41K OHM,0.25%,0.125W	91637	MFF1816D24100C
R640	321-0830-03			RES.,FXD,FILM:2.41K OHM,0.25%,0.125W	91637	MFF1816D24100C
R642	321-0193-00			RES.,FXD,FILM:1K OHM,1%,0.125W	91637	MFF1816G10000F
R648	321-0331-00			RES.,FXD,FILM:27.4K OHM,1%,0.125W	91637	MFF1816G27401F
R650	321-0259-00			RES.,FXD,FILM:4.87K OHM,1%,0.125W	91637	MFF1816G48700F
R651	321-0098-00			RES.,FXD,FILM:102 OHM,1%,0.125W	91637	MFF1816G102R0F
R652	321-0222-00			RES.,FXD,FILM:2K OHM,1%,0.125W	91637	MFF1816G20000F
R653	321-0231-00			RES.,FXD,FILM:2.49K OHM,1%,0.125W	91637	MFF1816G24900F
R655	311-1562-00			RES.,VAR,NONWIR:2K OHM,20%,0.50W	73138	91-84-0
R656	321-0222-00			RES.,FXD,FILM:2K OHM,1%,0.125W	91637	MFF1816G20000F
R658	311-1568-00			RES.,VAR,NONWIR:50 OHM,20%,0.50W	73138	91-90-0
R660	321-0108-00			RES.,FXD,FILM:130 OHM,1%,0.125W	91637	MFF1816G130R0F
R665	316-0101-00	B010100	B085104	RES.,FXD,CMPSN:100 OHM,10%,0.25W	01121	CB1011
R665	315-0101-00	B085105		RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R667	322-0229-00			RES.,FXD,FILM:2.37K OHM,1%,0.25W	75042	CEBT0-2371F
R670	321-0259-00			RES.,FXD,FILM:4.87K OHM,1%,0.125W	91637	MFF1816G48700F
R672	321-0098-00			RES.,FXD,FILM:102 OHM,1%,0.125W	91637	MFF1816G102R0F
R674	321-0286-00			RES.,FXD,FILM:9.31K OHM,1%,0.125W	91637	MFF1816G93100F
R675	321-0210-00			RES.,FXD,FILM:1.5K OHM,1%,0.125W	91637	MFF1816G15000F
R678	321-0172-00			RES.,FXD,FILM:604 OHM,1%,0.125W	91637	MFF1816G604R0F
R679	321-0269-00			RES.,FXD,FILM:6.19K OHM,1%,0.125W	91637	MFF1816G61900F
R680	311-0310-01	B010100	B010250	RES.,VAR,NONWIR:5K OHM,20%,0.50W	01121	W-7350B
R680	311-0310-00	B010251		RES.,VAR,NONWIR:5K OHM,20%,0.50W	01121	W-7350A
R682	316-0332-00	B010100	B085104	RES.,FXD,CMPSN:3.3K OHM,10%,0.25W	01121	CB3321
R682	315-0332-00	B085105		RES.,FXD,CMPSN:3.3K OHM,5%,0.25W	01121	CB3325
R683	316-0332-00	B010100	B085104	RES.,FXD,CMPSN:3.3K OHM,10%,0.25W	01121	CB3321
R683	315-0332-00	B085105		RES.,FXD,CMPSN:3.3K OHM,5%,0.25W	01121	CB3325
R685	315-0272-00			RES.,FXD,CMPSN:2.7K OHM,5%,0.25W	01121	CB2725

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Ckt No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Name & Description	Mfr Code	Mfr Part Number
R691	315-0202-00			RES.,FXD,CMPSN:2K OHM,5%,0.25W	01121	CB2025
R693	315-0471-00			RES.,FXD,CMPSN:470 OHM,5%,0.25W	01121	CB4715
R695	315-0132-00			RES.,FXD,CMPSN:1.3K OHM,5%,0.25W	01121	CB1325
R697	315-0132-00			RES.,FXD,CMPSN:1.3K OHM,5%,0.25W	01121	CB1325
R700	315-0751-00			RES.,FXD,CMPSN:750 OHM,5%,0.25W	01121	CB7515
R702	315-0271-00			RES.,FXD,CMPSN:270 OHM,5%,0.25W	01121	CB2715
R705	315-0202-00			RES.,FXD,CMPSN:2K OHM,5%,0.25W	01121	CB2025
R710	315-0681-00			RES.,FXD,CMPSN:680 OHM,5%,0.25W	01121	CB6815
R720	315-0202-00			RES.,FXD,CMPSN:2K OHM,5%,0.25W	01121	CB2025
R722	315-0751-00			RES.,FXD,CMPSN:750 OHM,5%,0.25W	01121	CB7515
R724	315-0271-00			RES.,FXD,CMPSN:270 OHM,5%,0.25W	01121	CB2715
R732	315-0332-00			RES.,FXD,CMPSN:3.3K OHM,5%,0.25W	01121	CB3325
R735	315-0152-00			RES.,FXD,CMPSN:1.5K OHM,5%,0.25W	01121	CB1525
R750	316-0102-00	B010100	B069999	RES.,FXD,CMPSN:1K OHM,10%,0.25W	01121	CB1021
R750	315-0100-00	B070000	B079999X	RES.,FXD,CMPSN:10 OHM,5%,0.25W	01121	CB1005
R752	315-0913-00	B010100	B069999X	RES.,FXD,CMPSN:91K OHM,5%,0.25W	01121	CB9135
R754	315-0913-00	B010100	B069999X	RES.,FXD,CMPSN:91K OHM,5%,0.25W	01121	CB9135
R756	315-0913-00	B010100	B069999X	RES.,FXD,CMPSN:91K OHM,5%,0.25W	01121	CB9135
R900	315-0133-00			RES.,FXD,CMPSN:13K OHM,5%,0.25W	01121	CB1335
R901	315-0753-00			RES.,FXD,CMPSN:75K OHM,5%,0.25W	01121	CB7535
R903	315-0154-00			RES.,FXD,CMPSN:150K OHM,5%,0.25W	01121	CB1545
R905	315-0154-00			RES.,FXD,CMPSN:150K OHM,5%,0.25W	01121	CB1545
R907	321-0344-00			RES.,FXD,FILM:37.4K OHM,1%,0.125W	91637	MFF1816G37401F
R909	315-0154-00			RES.,FXD,CMPSN:150K OHM,5%,0.25W	01121	CB1545
R911	315-0753-00			RES.,FXD,CMPSN:75K OHM,5%,0.25W	01121	CB7535
R913	315-0513-00			RES.,FXD,CMPSN:51K OHM,5%,0.25W	01121	CB5135
R921	315-0513-00			RES.,FXD,CMPSN:51K OHM,5%,0.25W	01121	CB5135
R923	315-0753-00			RES.,FXD,CMPSN:75K OHM,5%,0.25W	01121	CB7535
R925	315-0154-00			RES.,FXD,CMPSN:150K OHM,5%,0.25W	01121	CB1545
R927	321-0344-00			RES.,FXD,FILM:37.4K OHM,1%,0.125W	91637	MFF1816G37401F
R929	315-0154-00			RES.,FXD,CMPSN:150K OHM,5%,0.25W	01121	CB1545
R931	315-0154-00			RES.,FXD,CMPSN:150K OHM,5%,0.25W	01121	CB1545
R933	315-0753-00			RES.,FXD,CMPSN:75K OHM,5%,0.25W	01121	CB7535
R940	321-0344-00			RES.,FXD,FILM:37.4K OHM,1%,0.125W	91637	MFF1816G37401F
R942	315-0513-00			RES.,FXD,CMPSN:51K OHM,5%,0.25W	01121	CB5135
R944	315-0753-00			RES.,FXD,CMPSN:75K OHM,5%,0.25W	01121	CB7535
R946	315-0154-00			RES.,FXD,CMPSN:150K OHM,5%,0.25W	01121	CB1545
R948	315-0753-00			RES.,FXD,CMPSN:75K OHM,5%,0.25W	01121	CB7535
R950	321-0344-00			RES.,FXD,FILM:37.4K OHM,1%,0.125W	91637	MFF1816G37401F
R952	315-0513-00			RES.,FXD,CMPSN:51K OHM,5%,0.25W	01121	CB5135
R954	315-0753-00			RES.,FXD,CMPSN:75K OHM,5%,0.25W	01121	CB7535
R956	315-0154-00			RES.,FXD,CMPSN:150K OHM,5%,0.25W	01121	CB1545
R958	315-0753-00			RES.,FXD,CMPSN:75K OHM,5%,0.25W	01121	CB7535
R960	315-0154-00			RES.,FXD,CMPSN:150K OHM,5%,0.25W	01121	CB1545
R961	315-0154-00			RES.,FXD,CMPSN:150K OHM,5%,0.25W	01121	CB1545
R965	315-0154-00			RES.,FXD,CMPSN:150K OHM,5%,0.25W	01121	CB1545
R970	316-0332-00	B010100	B085104	RES.,FXD,CMPSN:3.3K OHM,10%,0.25W	01121	CB3321
R970	315-0332-00	B085105		RES.,FXD,CMPSN:3.3K OHM,5%,0.25W	01121	CB3325
R975	316-0332-00	B010100	B085104	RES.,FXD,CMPSN:3.3K OHM,10%,0.25W	01121	CB3321
R975	315-0332-00	B085105		RES.,FXD,CMPSN:3.3K OHM,5%,0.25W	01121	CB3325
S10A, S10B, S10C	260-1448-00			SWITCH,PUSH:3 STA,NON-SHORT	80009	260-1448-00
S60A, S60B, S60C, S60D	260-1556-00			SWITCH,PUSH:4 STA,PB10,2 POLE,INTERLOCK	80009	260-1556-00

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Ckt No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Name & Description	Mfr Code	Mfr Part Number
S95	260-1554-00			SWITCH,PUSH:1 STA,PB1,2 POLE MOMENTARY	80009	260-1554-00
S320A, S320B, S320C	260-1487-00			SWITCH,PUSH:3 BUTTON,PB10,2P,P-P & MOM	80009	260-1487-00
S400	260-1445-00			SWITCH,PUSH:1 STA,NON-SHORT	80009	260-1445-00
S410	260-1208-00			SWITCH,PUSH:DPDT,28VDC,PUSH-PUSH	80009	260-1208-00
S550A	263-1023-00			SW CAM ACTR AS:TIME/DIV	80009	263-1023-00
S550B	263-1022-00	B010100	B095255	SW CAM ACTR AS:TIME/DIV	80009	263-1022-00
S550B	263-1022-02	B095256		SW CAM ACTR AS:TIME/DIV	80009	263-1022-02
S575A, S575B, S575C	260-1555-00			SWITCH,PUSH:2 STA,PB10,4 POLE	80009	260-1555-00
S650	260-1209-00			SWITCH,PUSH:4PDT,1A,25VDC	80009	260-1209-00
S700	260-1211-00			SWITCH,PUSH:1A,28VDC	80009	260-1211-00
S900	----- -----			(FURNISHED AS A UNIT WITH R550)		
U300	155-0109-01	XB060000		MICROCIRCUIT,LI:MONOLITHIC TRIGGER	80009	155-0109-01
U320	156-0295-00	B010100	B059999X	MICROCIRCUIT,DI:TRIPLE EXCL OR EXCL NOR	80009	156-0295-00
U330	156-0205-00	B010100	B059999X	MICROCIRCUIT,DI:QUAD 2-INPUT NOR GATE	04713	MC10102 (P OR L)
U335	156-0182-00	B010100	B059999X	MICROCIRCUIT,DI:TRIPLE 2-3-2 INPUT GATE	80009	156-0182-00
U400	155-0109-01	XB053593		MICROCIRCUIT,LI:MONOLITHIC TRIGGER	80009	155-0109-01
U410	156-0295-00	B010100	B053592X	MICROCIRCUIT,DI:TRIPLE EXCL OR EXCL NOR	80009	156-0295-00
U420	156-0205-00	B010100	B053592X	MICROCIRCUIT,DI:QUAD 2-INPUT NOR GATE	04713	MC10102 (P OR L)
U425	156-0182-00	B010100	B053592X	MICROCIRCUIT,DI:TRIPLE 2-3-2 INPUT GATE	80009	156-0182-00
U450	155-0049-01	B010100	B074280	MICROCIRCUIT,DI:MONOLITHIC,SWEEP CONTROL	80009	155-0049-01
U450	155-0049-02	B074281		MICROCIRCUIT,DI:SWEEP CONTROL,W/LOCKOUT	80009	155-0049-02
U550	155-0042-03	B010100	B074749	MICROCIRCUIT,LI:MILLER INTEGRATOR	80009	155-0042-03
U550	155-0028-00	B074750		MICROCIRCUIT,LI:ML,MILLER INTEGRATOR	80009	155-0028-00
U600	155-0042-03	B010100	B074749	MICROCIRCUIT,LI:MILLER INTEGRATOR	80009	155-0042-03
U600	155-0028-00	B074750		MICROCIRCUIT,LI:ML,MILLER INTEGRATOR	80009	155-0028-00
VR30	152-0278-00			SEMICOND DEVICE:ZENER,0.4W,3V,5%	04713	SZG35009K20
VR42	152-0226-00			SEMICOND DEVICE:ZENER,0.4W,5.1V,5%	14552	TD3810980
VR490	152-0226-00	B010100	B051668	SEMICOND DEVICE:ZENER,0.4W,5.1V,5%	14552	TD3810980
VR490	153-0059-00	B051669		SEMICOND DVC,SE:ZENER,0.4W,4.75V,5%,SEL	80009	153-0059-00
W761	131-0566-00	XB070000	B079999X	BUS CONDUCTOR:DUMMY RES,2.375,22 AWG	55210	L-2007-1

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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.

SPECIAL NOTES AND SYMBOLS

X000	Part first added at this serial number
00X	Part removed after this serial number

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
- - - * - - -
Detail Part of Assembly and/or Component
Attaching parts for Detail Part
- - - * - - -
Parts of Detail Part
Attaching parts for Parts of Detail Part
- - - * - - -

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. The separation symbol - - - * - - - indicates the end of attaching parts.

Attaching parts must be purchased separately, unless otherwise specified.

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.

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

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CROSS INDEX—MFR. CODE NUMBER TO MANUFACTURER

Mfr. Code	Manufacturer	Address	City, State, Zip
000BK	STAUFFER SUPPLY	105 SE TAYLOR	PORTLAND, OR 97214
000CY	NORTHWEST FASTENER SALES, INC.	7923 SW CIRRUS DRIVE	BEAVERTON, OREGON 97005
05129	KILO ENGINEERING COMPANY	2015 D	LA VERNE, CA 91750
05820	WAKEFIELD ENGINEERING, INC.	AUDUBON ROAD	WAKEFIELD, MA 01880
08261	SPECTRA-STRIP CORP.	7100 LAMPSON AVE.	GARDEN GROVE, CA 92642
12327	FREEWAY CORPORATION	9301 ALLEN DRIVE	CLEVELAND, OH 44125
12360	ALBANY PRODUCTS CO., DIV. OF PNEUMO DYNAMICS CORPORATION	145 WOODWARD AVENUE	SOUTH NORWALK, CT 06586
13511	AMPHENOL CARDRE DIV., BUNKER RAMO CORP.		LOS GATOS, CA 95030
15912	ANSLEY ELECTRONICS CORP., A SUB OF THOMAS AND BETTS CORP.	3208 HUMBOLDT ST.	LOS ANGELES, CA 90065
22526	BERG ELECTRONICS, INC.	YOUK EXPRESSWAY	NEW CUMBERLAND, PA 17070
45722	USM CORP., PARKER-KALON FASTENER DIV.		CAMPBELLSVILLE, KY 42718
55210	GETTIG ENG. AND MFG. COMPANY	PO BOX 85, OFF ROUTE 45	SPRING MILLS, PA 16875
71785	TRW, CINCH CONNECTORS	1501 MORSE AVENUE	ELK GROVE VILLAGE, IL 60007
73743	FISCHER SPECIAL MFG. CO.	446 MORGAN ST.	CINCINNATI, OH 45206
74445	HOLO-KROME CO.	31 BROOK ST. WEST	HARTFORD, CT 06110
78189	ILLINOIS TOOL WORKS, INC. SHAKEPROOF DIVISION	ST. CHARLES ROAD	ELGIN, IL 60120
78471	TILLEY MFG. CO.	900 INDUSTRIAL RD.	SAN CARLOS, CA 94070
79136	WALDES, KOHINOOR, INC.	47-16 AUSTEL PLACE	LONG ISLAND CITY, NY 11101
79807	WROUGHT WASHER MFG. CO.	2100 S. O BAY ST.	MILWAUKEE, WI 53207
80009	TEKTRONIX, INC.	P O BOX 500	BEAVERTON, OR 97077
83309	ELECTRICAL SPECIALITY CO., SUBSIDIARY OF BELDEN CORP.	213 E. HARRIS AVE. SOUTH	SAN FRANCISCO, CA 94080
83385	CENTRAL SCREW CO.	2530 CRESCENT DR.	BROADVIEW, IL 60153
87308	N. L. INDUSTRIES, INC., SOUTHERN SCREW DIV.	P. O. BOX 1360	STATESVILLE, NC 28677
93907	TEXTRON INC. CAMCAR DIV	600 18TH AVE	ROCKFORD, IL 61101
97464	INDUSTRIAL RETAINING RING CO.	57 CORDIER ST.	IRVINGTON, NJ 07111

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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
1-1	337-1399-00			2		SHLD,ELECTRICAL:SIDE	80009	337-1399-00
-2	366-0494-00			2		KNOB:GRAY WITH SETSCREW	80009	366-0494-00
	213-0153-00			2		. SETSCREW:5-40 X 0.125,STL BK OXD,HEX SKT	000CY	OBD
-3	366-1125-00			1		KNOB:GY,0.127 ID X0.531 H	80009	366-1125-00
	213-0153-00			1		. SETSCREW:5-40 X 0.125,STL BK OXD,HEX SKT	000CY	OBD
-4	366-1373-01			1		KNOB:CAL	80009	366-1373-01
	213-0153-00			1		. SETSCREW:5-40 X 0.125,STL BK OXD,HEX SKT	000CY	OBD
-5	366-1456-00	B010100	B089999	1		KNOB:GY,0.252 ID X1.15 OD X 0.5	80009	366-1456-00
	366-1456-01	B090000		1		KNOB:GY,0.252 ID X1.15 OD X 0.59	80009	366-1456-01
	366-1710-00	XB010100	B074789	1		KNOB SET:GY,SEC/DIV,0.252 ID X 1.531	80009	366-1710-00
	213-0153-00			4		. SETSCREW:5-40 X 0.125,STL BK OXD,HEX SKT	000CY	OBD
	366-1710-01	B074790	B089999X	1		KNOB SET:GY,SEC/DIV,0.252 ID X 1.531	80009	366-1710-01
	213-0153-00			4		. SETSCREW:5-40 X 0.125,STL BK OXD,HEX SKT	000CY	OBD
	213-0153-00			2		. SETSCREW:5-40 X 0.125,STL BK OXD,HEX SKT	000CY	OBD
	366-1710-00	XB053007	B074789	1		KNOB SET:GY,SEC/DIV,0.252 ID X 1.531	80009	366-1710-00
	366-1710-01	B074790		1		KNOB SET:GY,SEC/DIV,0.252 ID X 1.531	80009	366-1710-01
	213-0153-00			4		. SETSCREW:5-40 X 0.125,STL BK OXD,HEX SKT	000CY	OBD
-6	358-0414-00	B010100	B074789	1		BUSHING,SLEEVE:0.25 OD X 0.21 INCH LONG	80009	358-0414-00
	358-0603-00	B074790		1		BUSHING,SLEEVE:0.125 ID X 0.2 L,AL,0.25 OD	80009	358-0603-00
-7	366-1455-00	B010100	B053006	1		KNOB:GY,0.252 ID X0.705 OD X 0.55	80009	366-1455-00
	366-1455-01	B053007	B074789	1		KNOB:GY,0.252 ID X0.705 OD X 0.55	80009	366-1455-01
	366-1455-02	B074790	B089999	1		KNOB:GY,0.249 ID X0.705 OD X 0.55	80009	366-1455-02
	366-1455-03	B090000		1		KNOB:GY,0.249 ID X0.705 OD X 0.55	80009	366-1455-03
	213-0153-00			2		. SETSCREW:5-40 X 0.125,STL BK OXD,HEX SKT	000CY	OBD
-8	366-1286-02	B010100	B069999	1		KNOB:LATCH	80009	366-1286-02
	366-1690-00	B070000		1		KNOB:SIL GY,0.53 X0.23 X 1.059	80009	366-1690-00
						(ATTACHING PARTS)		
-9	214-1840-00	B010100	B069999	1		PIN,KNOB SECRG:0.094 OD X 0.120 INCH LONG	80009	214-1840-00
	105-0719-00	B070000		1		LATCH,RETAINING:PLUG-IN	80009	105-0719-00
						- - - * - - -		
-10	366-1257-26			1		PUSH BUTTON:GRAY--AUTO TRIG	80009	366-1257-26
-11	366-1402-75			1		PUSH BUTTON:SIL GY,LF REJ	80009	366-1402-75
-12	366-1257-27			1		PUSH BUTTON:--AC COUPL	80009	366-1257-27
-13	366-1257-28			1		PUSH BUTTON:GRAY--+SLOPE	80009	366-1257-28
-14	366-1257-29			1		PUSH BUTTON:SIL GY,SINGL SWP	80009	366-1257-29
-15	366-1257-30			1		PUSH BUTTON:GRAY--RESET	80009	366-1257-30
-16	366-1257-57			1		PUSH BUTTON:GRAY--LEFT	80009	366-1257-57
-17	366-1257-58			1		PUSH BUTTON:GRAY--RIGHT	80009	366-1257-58
-18	366-1257-23			1		PUSH BUTTON:LINE	80009	366-1257-23
-19	366-1257-24			1		PUSH BUTTON:GRAY--EXT	80009	366-1257-24
-20	366-1328-26			1		PUSH BUTTON:CHARCOAL,TRIGAFTER DLY	80009	366-1328-26
-21	366-1402-80			1		PUSH BUTTON:SIL GY,DLY'D SWP	80009	366-1402-80
-22	366-1402-79			1		PUSH BUTTON:SIL GY,INTENSSWP	80009	366-1402-79
-23	366-1402-65			1		PUSH BUTTON:SIL GY,MAIN SWP	80009	366-1402-65
-24	366-1257-31			1		PUSH BUTTON:SIL GRAY,CHOP	80009	366-1257-31
-25	366-1257-25			1		PUSH BUTTON:SWP MAG	80009	366-1257-25
-26	366-1328-22			1		PUSH BUTTON:CHARCOAL,+SLOPE HT	80009	366-1328-22
-27	426-0681-00			17		FR,PUSH BUTTON:GRAY PLASTIC	80009	426-0681-00
-28	----- -----			1		RESISTOR,VAR:(SEE R520 REPL)		
						(ATTACHING PARTS)		
-29	331-0247-00			1		DIAL,CONTROL:10 TURN	05129	771-S-1
						- - - * - - -		
-30	131-0955-00			1		CONN,RCPT,ELEC:BNC,FEMALE	13511	31-279
-31	210-0255-00			1		TERMINAL,LUG:0.391" ID INT TOOTH	80009	210-0255-00
-32	----- -----			1		RESISTOR,VAR:(SEE R680 REPL)		
						(ATTACHING PARTS)		
-33	210-0583-00			1		NUT,PLAIN,HEX.:0.25-32 X 0.312 INCH,BRS	73743	2X20317-402
-34	210-0940-00			1		WASHER,FLAT:0.25 ID X 0.375 INCH OD,STL	79807	OBD
						- - - * - - -		
-35	----- -----			2		RESISTOR,VAR:(SEE R320,R410 REPL)		
						(ATTACHING PARTS)		
-36	210-0583-00			2		NUT,PLAIN,HEX.:0.25-32 X 0.312 INCH,BRS	73743	2X20317-402
-37	210-0940-00			2		WASHER,FLAT:0.25 ID X 0.375 INCH OD,STL	79807	OBD
						- - - * - - -		

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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
1-38	358-0029-00			1		BSHG,MACH.THD:HEX,0.375-32 X 0.438"LONG	80009	358-0029-00
						(ATTACHING PARTS)		
-39	210-0590-00			1		NUT,PLAIN,HEX.:0.375 X 0.438 INCH,STL	73743	2X28269-402
-40	210-0978-00			1		WASHER,FLAT:0.375 ID X 0.50 INCH OD,STL	78471	OBD
-41	344-0195-01			1		CLIP,ELECTRICAL:CAM SHAFT	80009	344-0195-01
						- - - * - - -		
-42	333-1665-00	B010100	B079999	1		PANEL,FRONT:	80009	333-1665-00
	333-1665-01	B080000		1		PANEL,FRONT:	80009	333-1665-01
-43	378-0729-00			4		LENS,LIGHT:CLEAR	80009	378-0729-00
-44	200-1482-00			1		COVER,LAMP:RIGHT	80009	200-1482-00
-45	200-1483-00			1		COVER,LAMP:LEFT	80009	200-1483-00
-46	214-1513-01	B010100	B069999	1		LCH,PLUG-IN RET:	80009	214-1513-01
	105-0718-00	B070000	B074915	1		BAR,LATCH RLSE:	80009	105-0718-00
	105-0718-01	B074916		1		BAR,LATCH RLSE:	80009	105-0718-01
						(ATTACHING PARTS)		
-47	213-0254-00			1		SCREW,TPG,TF:2-32 X 0.250,100 DEG,FLH	45722	OBD
						- - - * - - -		
-48	386-2354-00			1		SUBPANEL,FRONT:	80009	386-2354-00
						(ATTACHING PARTS)		
-49	213-0229-00			4		SCR,TPG,THD FOR:6-20 X0.375"100 DEG,FLH STL	93907	OBD
						- - - * - - -		
-50	337-1701-00			1		SHIELD,ELEC:REAR,SUBPANEL	80009	337-1701-00
-51	384-1101-00			3		EXTENSION SHAFT:4.14 INCH LONG	80009	384-1101-00
-52	384-1136-00			1		EXTENSION SHAFT:0.95 INCH LONG	80009	384-1136-00
-53	384-1099-00			4		EXTENSION SHAFT:PUSH BUTTON,1.54 INCH LONG	80009	384-1099-00
-54	384-1129-00			3		EXTENSION SHAFT:5.607 INCH LONG	80009	384-1129-00
-55	384-1059-00			1		EXTENSION SHAFT:6.58 INCH LONG	80009	384-1059-00
-56	384-1116-00			1		EXTENSION SHAFT:10.456 L X 0.081 OD SST	80009	384-1116-00
-57	378-0541-00			1		LENS,LIGHT:FROSTED	80009	378-0541-00
-58	162-0055-00			IN		INSUL SLVG,ELEC:0.268 ID,VINYL,0.303 OD	83309	OBD
-59	----- -----			1		CKT BOARD ASSY:A(SEE A1 REPL)		
-60	131-0566-00			5		. BUS CONDUCTOR:DUMMY RES,2.375,22 AWG	55210	L-2007-1
-61	214-1292-00			1		. HEAT SINK,ELEC:TRANSISTOR	05820	205-AB
-62	136-0241-00			1		. SOCKET,PLUG-IN:10 CONTACT,ROUND	71785	133-99-12-064
-63	136-0260-02	B010100	B053592	3		. SKT,PL-IN ELEK:MICROCIRCUIT,16 DIP,LOW CLE	71785	133-51-92-008
	136-0260-02	B053593		2		. SKT,PL-IN ELEK:MICROCIRCUIT,16 DIP,LOW CLE	71785	133-51-92-008
-64	136-0252-04			20		. SOCKET,PIN TERM:U/W 0.016-0.018 DIA PINS	22526	75060-007
-65	214-0579-00			5		. TERM,TEST POINT:BRS CD PL	80009	214-0579-00
-66	131-0604-00			26		. CONTACT,ELEC:CKT BD SW,SPR,CU BE	80009	131-0604-00
	----- -----			-		. (FOR REPAIR INFO SEE MAINTENANCE SECTION OF		
	----- -----			-		. THE APPROPRIATE 5400-SERIES MANUAL.)		
	263-1023-00			1		. SW CAM ACTR AS:TIME/DIV	80009	263-1023-00
-67	354-0391-00			1		. . RING,RETAINING:0.395"FREE ID X 0.025" STL	97464	3100-43-CD
-68	214-1139-02			1		. . SPRING,FLAT:GREEN COLORED	80009	214-1139-02
-69	214-1139-03			1		. . SPRING,FLAT:RED COLORED	80009	214-1139-03
-70	214-1127-00			2		. . ROLLER,DETENT:0.125 DIA X 0.125,SST	80009	214-1127-00
-71	401-0081-02			1		. . BEARING,CAM SW:FRONT	80009	401-0081-02
-72	105-0407-00			1		. . ACTUATOR,CAM SW:TIME/DIV,REAR	80009	105-0407-00
-73	401-0146-00			1		. . BEARING,CAM SW:REAR	80009	401-0146-00
-74	210-0406-00			8		. . NUT,PLAIN,HEX.:4-40 X 0.188 INCH,BRS	73743	2X12161-402
						(ATTACHING PARTS FOR ACTR ASSY)		
-75	211-0116-00			4		. SCR,ASSEM WSHR:4-40 X 0.312 INCH,PNH BRS	83385	OBD
						- - - * - - -		
-76	337-1418-01	B010100	B095245	1		. SHIELD,ELEC:CAM SWITCH CASTING	80009	337-1418-01
	337-1418-02	B095246		1		. SHIELD,ELEC:CIRCUIT BOARD	80009	337-1418-02
						(ATTACHING PARTS)		
-77	213-0277-00	B010100	B051668	3		. SCR,TPG,THD FOR:2-56 X 0.312 INCH,PNH STL	83385	OBD
	211-0001-00	B051669		3		. SCREW,MACHINE:2-56 X 0.25 INCH,PNH STL	87308	OBD
-78	210-0001-00			3		. WASHER,LOCK:INTL,0.092 ID X 0.18"OD,STL	78189	1202-00-00-0541C
-79	210-1008-00			3		. WASHER,FLAT:0.09 ID X 0.188" OD,BRS	12360	OBD
-80	342-0167-00			1		. INSULATOR,PLATE:2.45 INCH LONG	80009	342-0167-00
						- - - * - - -		
-81	----- -----			1		. SWITCH,PUSH:(SEE S320 REPL)		
-82	----- -----			1		. SWITCH,PUSH:(SEE S10 REPL)		
-83	----- -----			1		. SWITCH,PUSH:(SEE S95 REPL)		

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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
1-84	384-1136-00			1		. EXTENSION SHAFT:0.95 INCH LONG	80009	384-1136-00
-85	361-0382-00			10		. SPACER,PB SW:BROWN,0.275 INCH LONG	80009	361-0382-00
-86	----- -----			1		. SWITCH,PUSH:(SEE S60 REPL)		
-87	361-0384-00			8		. SPACER,PB SW:0.133 INCH LONG	80009	361-0384-00
-88	376-0039-00	B010100	B010389	1		. ADPT,SHAFT,CPLG:0.128 AND 0.082"DIA SHAFT	80009	376-0039-00
	376-0050-00	B010390		1		. CPLG,SHAFT,FLEX:FOR 0.081/0.125 INCH SHAFTS	80009	376-0050-00
	213-0075-00	B010100	B010389	2		. . SETSCREW:4-40 X 0.094,STL BK OXD,HEX SKT	000BK	OBD
	213-0022-00	B010390		4		. . SETSCREW:4-40 X 0.188 INCH,HEX SOC STL	74445	OBD
-89	----- -----			1		. RESISTOR,VAR:(SEE R550/S900 REPL)		
						(ATTACHING PARTS)		
-90	210-0583-00			1		. NUT,PLAIN,HEX.:0.25-32 X 0.312 INCH,BRS	73743	2X20317-402
-91	210-0940-00			2		. WASHER,FLAT:0.25 ID X 0.375 INCH OD,STL	79807	OBD
-92	407-0803-00			1		. BRACKET,ELEC SW:BRASS	80009	407-0803-00
						- - - * - - -		
						(ATTACHING PARTS FOR CKT BD)		
-93	211-0116-00			4		SCR,ASSEM WSHR:4-40 X 0.312 INCH,PNH BRS	83385	OBD
-94	213-0336-00			1		SCR,TPG,THD FOR:6-32 X 1.25 INCH,PNH STL	000BK	OBD
-95	210-0801-01			1		WASHER,FLAT:0.140 ID X 0.281" OD,STL	12327	OBD
-96	361-0516-00			1		SPACER,SLEEVE:0.189 OD X 0.986"LONG BRS	80009	361-0516-00
						- - - * - - -		
-97	384-0883-00			1		SHAFT,CAM SW:9.850 L X 0.125 OD INNER	80009	384-0883-00
-98	----- -----			1		CKT BOARD ASSY:B(SEE A2 REPL)		
-99	214-1292-00			1		. HEAT SINK,ELEC:TRANSISTOR	05820	205-AB
-100	136-0241-00			1		. SOCKET,PLUG-IN:10 CONTACT,ROUND	71785	133-99-12-064
-101	136-0260-02	B010100	B053592	3		. SKT,PL-IN ELEK:MICROCIRCUIT,16 DIP,LOW CLE	71785	133-51-92-008
	136-0260-02	B053593		1		. SKT,PL-IN ELEK:MICROCIRCUIT,16 DIP,LOW CLE	71785	133-51-92-008
-102	214-0579-00			4		. TERM,TEST POINT:BRS CD PL	80009	214-0579-00
-103	131-0604-00			14		. CONTACT,ELEC:CKT BD SW,SPR,CU BE	80009	131-0604-00
	----- -----			-		. (FOR REPAIR INFO SEE MAINTENANCE SECTION OF		
	----- -----			-		. THE APPROPRIATE 5400-SERIES MANUAL.)		
	131-0566-00	XB070000		1		. BUS CONDUCTOR:DUMMY RES,2.375,22 AWG	55210	L-2007-1
	263-1022-00	B010100	B095255	1		. SW CAM ACTR AS:TIME/DIV	80009	263-1022-00
	263-1022-02	B095256		1		. SW CAM ACTR AS:TIME/DIV	80009	263-1022-02
-104	354-0391-00	B010100	B095255	1		. . RING,RETAINING:0.395"FREE ID X 0.025" STL	97464	3100-43-CD
	354-0390-00	B095256		1		. . RING,RETAINING:0.338 ID X 0.025" THK,STL	79136	5100-37MD
-105	214-1139-02			1		. . SPRING,FLAT:GREEN COLORED	80009	214-1139-02
-106	214-1139-03			1		. . SPRING,FLAT:RED COLORED	80009	214-1139-03
-107	214-1127-00	B010100	B095255	2		. . ROLLER,DETENT:0.125 DIA X 0.125,SST	80009	214-1127-00
	214-1752-00	B095256		2		. . ROLLER,DETENT:	80009	214-1752-00
-108	401-0081-02	B010100	B095255	1		. . BEARING,CAM SW:FRONT	80009	401-0081-02
	401-0180-00	B095256		1		. . BEARING,CAM SW:FRONT & REAR	80009	401-0180-00
-109	105-0408-00	B010100	B095255	1		. . ACTUATOR,CAM SW:TIME/DIV,FRONT	80009	105-0408-00
	105-0408-01	B095256		1		. . ACTUATOR,CAM SW:TIME/DIV,FRONT		OBD
-110	401-0115-00	B010100	B095255	1		. . BEARING,CAM SW:CENTER	80009	401-0115-00
	401-0178-04	B095256		1		. . BEARING,CAM SW:CENTER/REAR	80009	401-0178-04
-111	210-0406-00			8		. . NUT,PLAIN,HEX.:4-40 X 0.188 INCH,BRS	73743	2X12161-402
						(ATTACHING PARTS FOR ACTR ASSY)		
-112	211-0116-00			4		. SCR,ASSEM WSHR:4-40 X 0.312 INCH,PNH BRS	83385	OBD
						- - - * - - -		
-113	----- -----			1		. SWITCH,PUSH:(SEE S700 REPL)		
-114	361-0383-00			2		. SPACER,PB SW:CHARCOAL,0.33 INCH LONG	80009	361-0383-00
-115	----- -----			1		. SWITCH,PUSH:(SEE S400 REPL)		
-116	----- -----			1		. SWITCH,PUSH:(SEE S575 REPL)		
-117	361-0384-00			6		. SPACER,PB SW:0.133 INCH LONG	80009	361-0384-00
-118	----- -----			1		. SWITCH,PUSH:(SEE S650 REPL)		
-119	----- -----			1		. SWITCH,PUSH:(SEE S410 REPL)		
-120	361-0382-00			4		. SPACER,PB SW:BROWN,0.275 INCH LONG	80009	361-0382-00
						(ATTACHING PARTS)		
-121	213-0146-00			3		SCR,TPG,THD FOR:6-20 X 0.313 INCH,PNH STL	83385	OBD
-122	210-0801-01	B010100	B010200X	3		WASHER,FLAT:0.140 ID X 0.281" OD,STL	12327	OBD
-123	211-0116-00			4		SCR,ASSEM WSHR:4-40 X 0.312 INCH,PNH BRS	83385	OBD
						- - - * - - -		
-124	131-1372-00	B010100	B074326	2		CONTACT,ELEC:PLUG-IN GND,CU BE BRT DIP	80009	131-1372-00
	131-1372-01	B074327		2		CONTACT,ELEC:PLUG-IN GND,CU BE BRT DIP	80009	131-1372-01
-125	426-0724-02			1		FR SECT,PLUG-IN:BOTTOM	80009	426-0724-02

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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
1-126	426-0725-03			1		FR SECT,PLUG-IN:TOP	80009	426-0725-03
	198-2137-00			1		WIRE KIT,ELEC:	80009	198-2137-00
-127	175-0826-00	XB080000		FT		. WIRE,ELECTRICAL:3 WIRE RIBBON	80009	175-0826-00
-128	175-0827-00			FT		. CABLE,SP,ELEC:4,26 AWG,STRD,PVC JKT,RBN	08261	SS04267(1061)0C
-129	175-1405-00			3		. CA ASSY,SP,ELEC:FLAT,2.0 LONG	15912	FST 22A-10
	334-3448-00	XB085080		1		. MARKER,IDENT:MARKED NOTICE	80009	334-3448-00

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INTERNAL ADJUSTMENT PROCEDURE

Test Equipment

For calibration, and a complete accuracy check of the 5B42, the following equipment is required:

Tektronix TG 501 Time Mark Generator (requires a TM 500-series power module).

Square Wave Generator capable of producing a 0.5 V, 1-kHz square wave with ≤20 ns risetime. Tektronix PG 506 Calibration Generator (requires a TM 500-series power module).

Tektronix 5400-series oscilloscope (provides power for 5B42).

Vertical Plug-In for the 5400-series oscilloscope, such as the 5A48 Dual Trace Amplifier.

Voltmeter, at least 20,000 Ω/V, or a test oscilloscope with 10X probe capable of accurately determining 0 V.

50 Ω Coaxial Cable with bnc connectors, Tektronix Part No. 012-0057-01.

Plug-In Extender, Tektronix Part No. 067-0645-03.

50Ω feed through termination, Tektronix Part No. 011-0049-01 or equivalent.

Preparation

Remove the covers from the 5B42 and the cabinet panels from the 5400-series oscilloscope. Insert the 5B42 in the right hand plug-in compartment. Connect the plug-in extender to the left hand vertical plug-in interface connector, and connect the vertical plug-in to the extender. Make certain that the vertical plug-in is oriented properly: top of the plug-in to top of the extender, to top of the oscilloscope interface connector. Use of the extender on the vertical plug-in is necessary to gain access to adjustments on the A Board. See the Adjustments foldout page for the test point and adjustment locations. Make adjustments at an ambient temperature between +20°C and +30°C (+68°F and +86°F) for best accuracy.

1. Adjust External Horizontal Balance

Set the MAIN SEC/DIV switch to 1 m, and push the AUTO TRIG, EXT, and MAIN SWP buttons. All other buttons should be out. Obtain a visible free running trace that is vertically centered in the graticule area by adjusting the vertical and horizontal POSITION controls and the display module INTENSITY control. Using the 5B42 POSITION control, position the start of the trace at the extreme left vertical graticule line. Switch the MAIN SEC/DIV switch to the AMP position. Reduce the INTENSITY control, if necessary, to prevent burning the phosphor. Move the spot horizontally to the graticule center by adjusting R25, Ext Hor Cent, located on the A Board.

2. Adjust External Horizontal Gain

Apply a 0.5 V, 1 kHz square wave from the square-wave generator through the coaxial cable to the EXT HORIZ AMPL connector. Adjust R52, Ext Hor Gain, located on the A Board for 10 divisions of horizontal deflection. Use the 5B42 POSITION control to position the dots to the extreme right and left vertical graticule lines while making this adjustment.

3. Adjust Input Attenuator Compensation

Connect a fast rise (≤20 ns) 0.5 V square wave through a terminated coaxial cable to the A INPUT connector.

Adjust C15, Att Comp, located on the A Board for minimum horizontal overshoot or undershoot on the two dots referred to in the previous step.

4. Adjust Main Sweep Offset

Connect the probe of a test oscilloscope (set for 50 mV/Div) or the positive lead of the voltmeter to TP545. Connect the negative lead to the 5B42 chassis. Adjust R545, Main Swp Offset on the A Board for a reading of 0 V.

5. Adjust 1 ms Timing

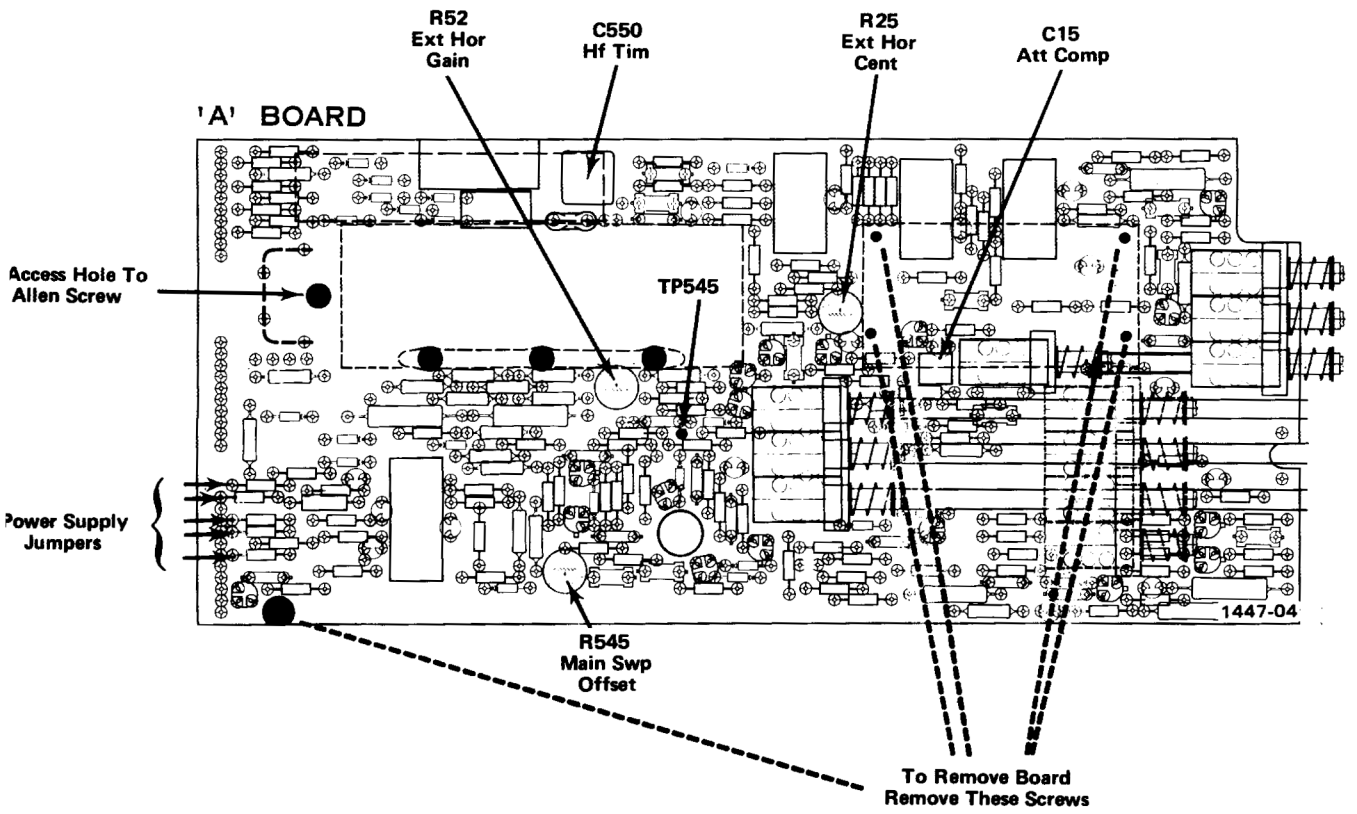
Connect the time mark generator to the vertical plug-in. Set the generator for 1 ms markers. Set the MAIN SEC/DIV switch to position 1 m, and push the LEFT TRIG SOURCE button. Obtain a stable display by adjusting the MAIN TRIG LEVEL knob. Make certain that the CAL knob is in the extreme clockwise detent position. Adjust R655, Lf Tim, on the B Board for a spacing of one time mark per vertical graticule line. Push the DLY'D SWP button. Check for a spacing of one marker per vertical graticule line, within specifications. Push the MAIN SWP button.

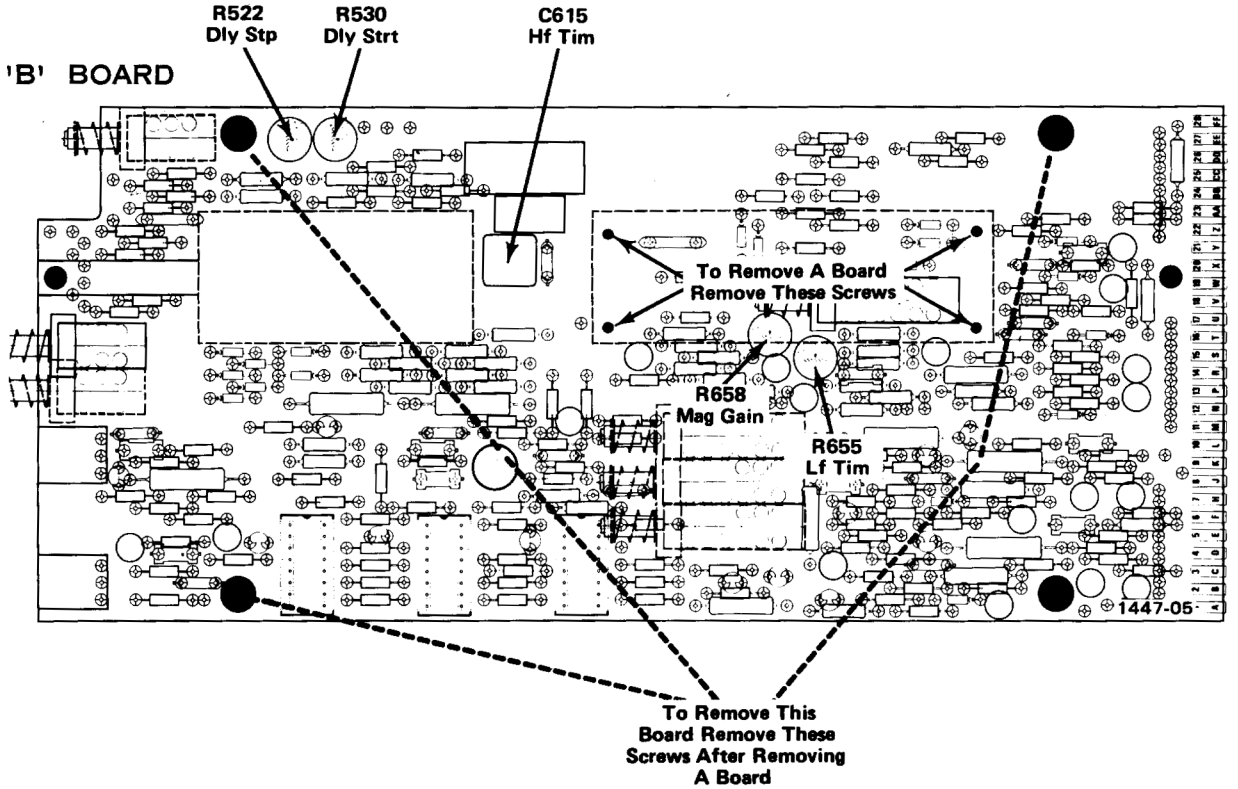
6. Adjust Fast Main Sweep Timing

Set the MAIN SEC/DIV switch to the .5 μ position. Apply 0.5 μs markers to the vertical plug-in. Obtain a stable display. Adjust C550, Hf Tim, on the A Board for one time mark per vertical graticule line. Check the .2 μ and .1 μ positions of the MAIN SEC/DIV switch for one mark per vertical graticule line, within specifications. It may be necessary to go back to the .5 μ position and compromise the adjustment of C550 so that all three ranges are within specifications.

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ADJUSTMENTS





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7. Adjust Magnifier Gain

Change the MAIN SEC/DIV switch to position 1 m. Apply 0.1 ms markers to the vertical plug-in. Obtain a stable display. Center the trace horizontally in the graticule area. Press the SWP MAG button. Adjust R658, Mag Gain, located on the B Board for one time mark per vertical graticule line. Release the SWP MAG button.

8. Adjust Delayed Sweep Fast Timing

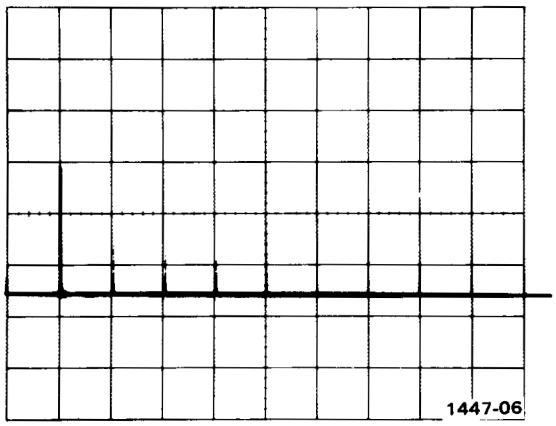
Push the DLY'D SWP button. Set the DLY'D SEC/DIV switch to the .5 μ position and the MAIN SEC/DIV switch to the 1 μ position. Apply 0.5 μs markers to the vertical plug-in. Obtain a stable display by adjusting the MAIN TRIG LEVEL control. Set the DELAY TIME MULT dial fully CCW. Adjust C615, Hf Tim, on the B Board for one time mark per vertical graticule line.

9. Adjust Delay Sweep Start

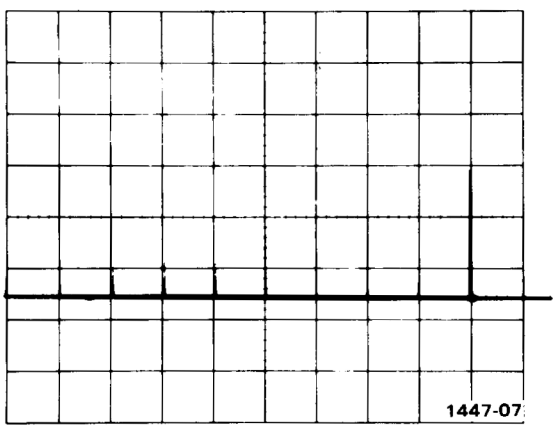
Change the MAIN SEC/DIV dial to the 0.1 m position. Press the INTENS SWP button. Set the DLY'D SEC/DIV switch to the 10 μ position. Apply 0.1 ms markers to the vertical plug-in. Obtain a stable display by adjusting the MAIN TRIG LEVEL control. Check that the DELAY TIME MULT dial reads 0.2 in the fully CCW position. If not, loosen the Allen set screw and reset the dial. Adjust the intensity control so that the intensified portion of the sweep is clearly visible. Position the trace so that the trace starts on the extreme left graticule line. Set the DELAY TIME MULT dial to read 1.00. Adjust R530, Dly Strt, located on the B Board so that the intensified portion of the sweep starts on the second vertical graticule line from the left of the graticule. See Fig. 3-1A.

10. Adjust Delay Sweep Stop

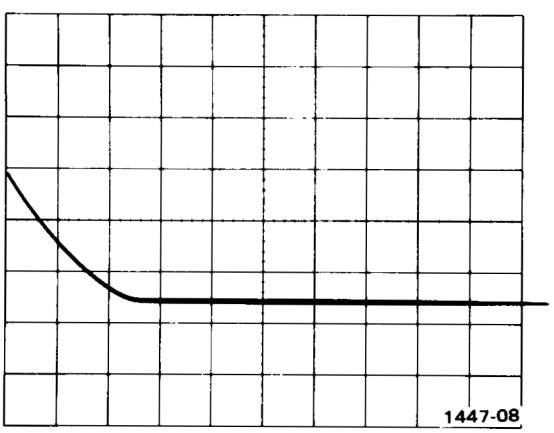
Make certain that the INTENS SWP button is depressed. Turn the DELAY TIME MULT dial to read 9.00. Make certain that the trace starts at the extreme left graticule line. Adjust R522, Dly Stp, located on the B Board so that the intensified portion of the trace starts on the second vertical graticule line from the right of the graticule. See Fig. 3-1B. Go back to step 9 and repeat both steps until no interaction exists. To make the final adjustments, press the DLY'D SWP button. Adjust the delay start and stop potentiometers so that the time marks, visible at the start of the intensified portion in the intensified sweep mode, are just visible at the start of the trace in the delayed sweep mode. Fig. 3-1C shows the correct settings.



(A) Intensified portion set to 2nd time marker.



(B) Intensified portion set to 10th time marker.

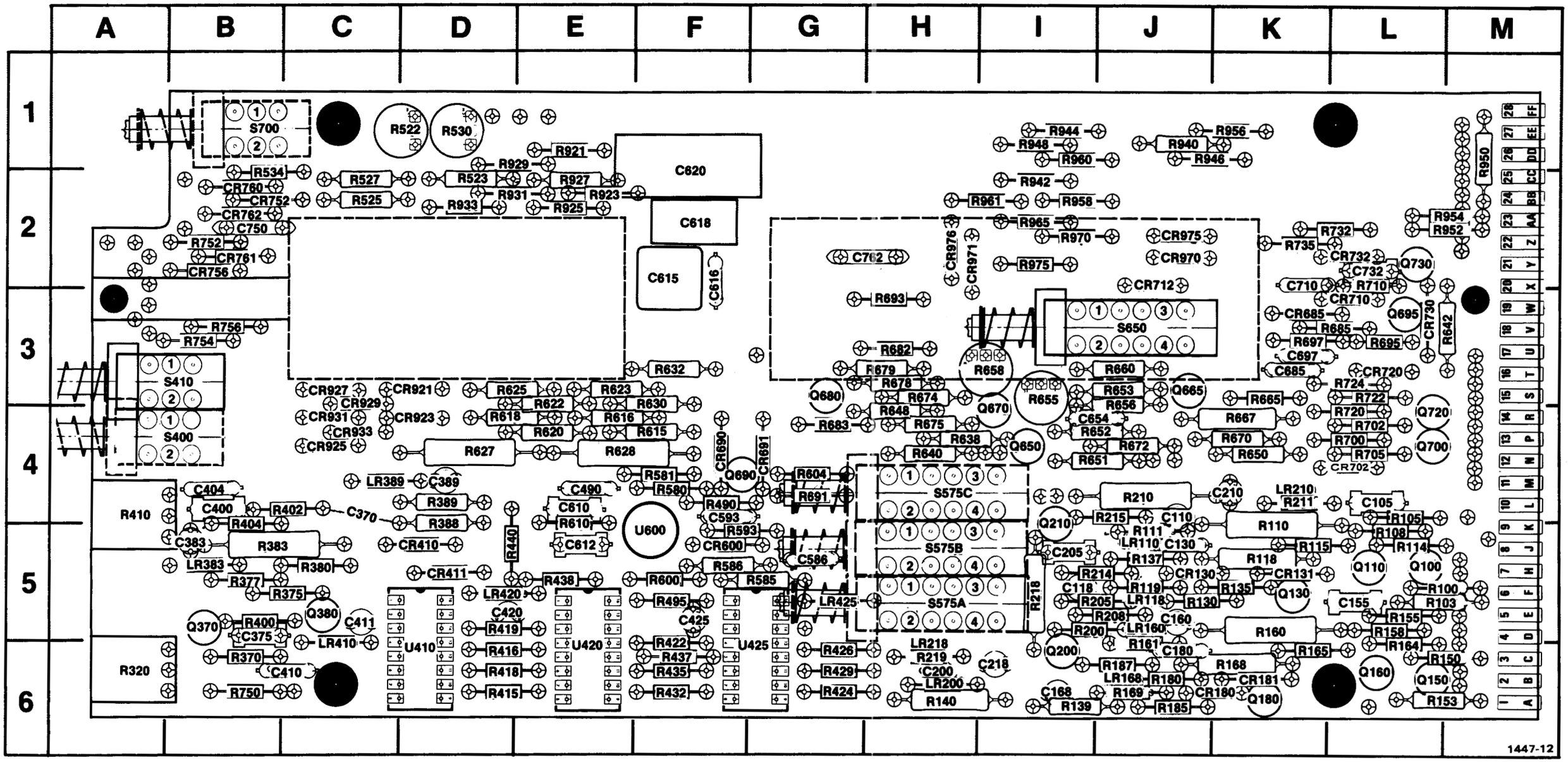


(C) Typical display showing correct adjustment of R522 and R530.

Fig. 3-1. Delay Start and Stop adjustments.

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PARTS LOCATION GRID



Components shown with dashed lines are located on back side of board.

A2–B circuit board (SN B053592 & below).

REV F JAN 1980

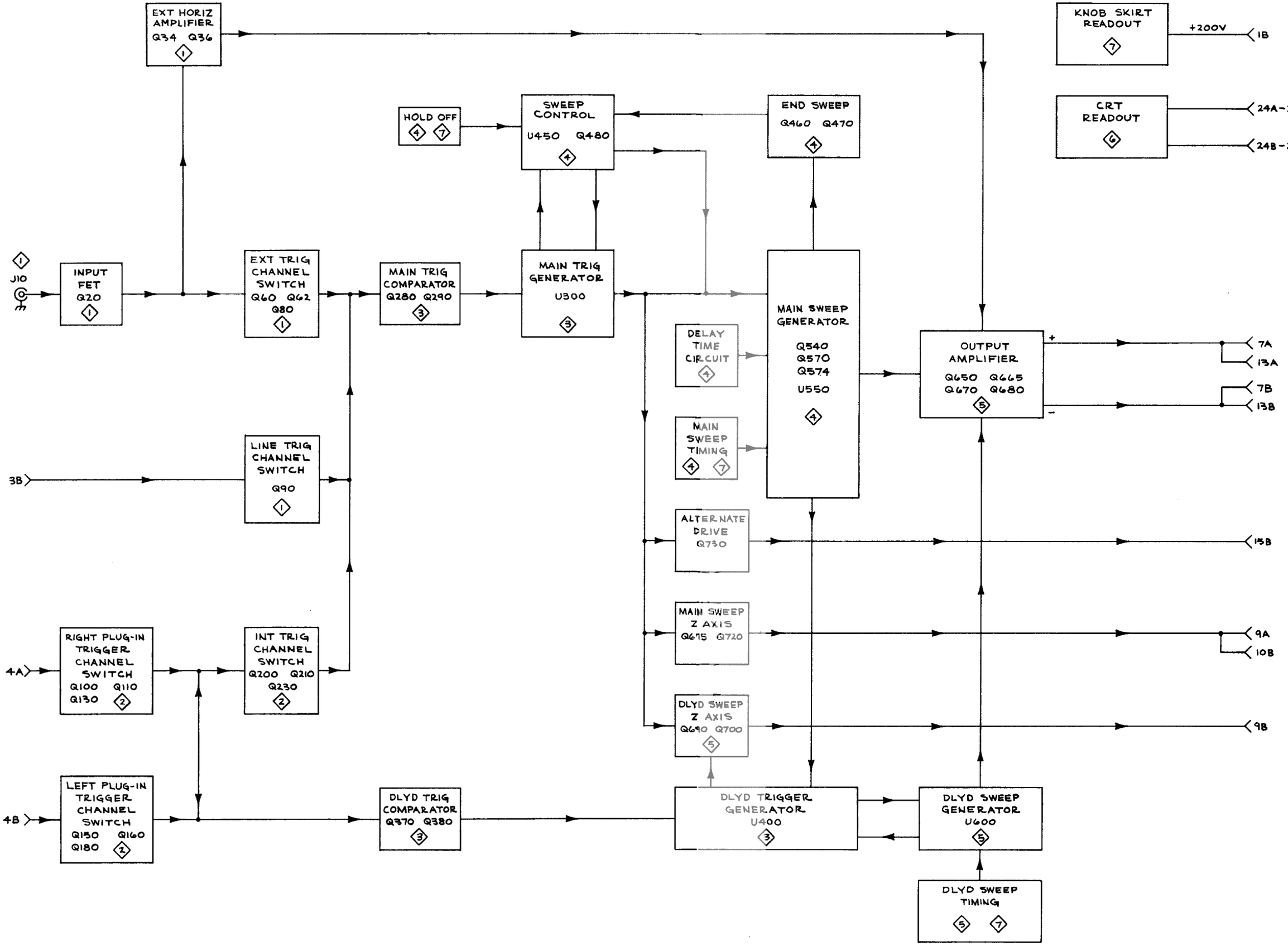
CKT NO	GRID LOC
C105	L4
C110	J4
C118	I5
C130	J5
C155	L5
C160	J5
C168	I6
C180	J6
C200	H6
C205	I5
C210	K4
C218	I6
C370	C4
C375	B5
C383	B5
C389	D4
C400	B4
C404	B4
C410	C6
C411	C5
C420	D5
C425	F5
C490	E4
C586	G5
C593	F4
C610	E4
C612	E5
C615	F2
C616	F2
C618	F2
C620	F1
C654	I4
C685	K3
C697	K3
C710	K3
C732	L2
C750	B2
C762	H2
CR130	J5
CR131	K5
CR180	K6
CR181	K6
CR410	D5
CR411	D5
CR600	F5
CR685	K3
CR690	F4
CR691	L3
CR710	L3
CR712	J2
CR720	L3
CR730	L3
CR732	L2
CR752	B2
CR756	B2
CR760	B2
CR761	B2
CR762	B2
CR921	D3
CR923	D4
CR925	C4
CR927	C4
CR929	C3
CR931	C3
CR933	C4
CR970	C4
CR971	H2
CR975	J2
CR976	H2
LR110*	J5
LR118*	J5
LR160*	J6
LR168*	J6
LR200*	H6
LR210*	K4
LR218*	H6
LR383	B5
LR389	C4
LR410	C6
LR420	D5
LR425	G5

CKT NO	GRID LOC
Q100	L5
Q110	L5
Q130	K5
Q150	L6
Q160	L6
Q180	K6
Q200	I6
Q210	I4
Q370	B5
Q380	C5
Q650	I4
Q665	J3
Q670	I4
Q680	G3
Q690	F4
Q695	L3
Q700	L4
Q720	L4
Q730	L2
R100	L5
R103	L5
R105	L4
R108	L5
R110	J5
R111*	J5
R114	K5
R115	L5
R118	K5
R119*	J5
R130	K5
R135	K5
R137	J5
R139	I6
R140	H6
R150	L6
R153	L6
R155	L5
R158	L5
R160	J6
R161*	J6
R164	L6
R165	K6
R168	K6
R169*	J6
R180	J6
R185	J6
R187	J6
R200	I5
R205	I5
R208	J5
R210	J5
R211*	K4
R214	I5
R215	J4
R218	I5
R219*	H6
R320	A6
R370	B6
R375	C5
R377	B5
R380	C5
R383	B5
R388	D4
R389	D4
R400	B5
R402	C3
R404	B5
R410	A4
R415	D6
R416	D6
R418	D6
R419	D5
R422	G6
R424	G6
R426	G6
R429	G6
R432	F6
R435	F6
R437	F6
R438	E5
R440	D5
R490	F4

CKT NO	GRID LOC
R495	F5
R522	D1
R523	D2
R525	C2
R527	C2
R530	D1
R534	B2
R580	F4
R581	F4
R585	G5
R586	F5
R593	F5
R600	F5
R604	G4
R610	E4
R615	F4
R616	F4
R618	K4
R620	D4
R622	E4
R623	E3
R625	D3
R627	D4
R628	E4
R630	F3
R632	F3
R638	H4
R640	H4
R642	L3
R648	H4
R650	K4
R651	I4
R652	I4
R653	J3
R655	J3
R656	J3
R658	I3
R660	K3
R665	K3
R667	K4
R670	K4
R672	J4
R674	H3
R675	H4
R678	H3
R679	H3
R682	H3
R683	G4
R685	G3
R691	L3
R693	G4
R695	L3
R697	K3
R700	L4
R702	L4
R705	L4
R710	L4
R720	J4
R722	L3
R724*	L3
R732	L2
R735	K2
R750	B6
R752	B2
R754	H3
R756	E1
R921	E1
R923	E2
R925	E2
R927	D1
R929	D2
R931	D2
R933	D2
R940	J1
R942	I2
R944	I1
R946	J1
R948	M1
R950	M1
R952	M2
R954	M2
R956	K1
R958	I2

CKT NO	GRID LOC
R960	I1
R961	I2
R965	I2
R970	I2
R975	I2
S400	B4
S410	B3
S575A	H5
S575B	H5
S575C	H4
S650	J3
S700	B1
U410	D6
U420	E6
U425	G6
U600	F5

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CONTROLS AND CONNECTORS

POSITION

Positions trace horizontally on CRT.

DISPLAY

Selects mode of multiple trace switching.

CAL

Continously varies main sweep rate at least 2.5 times slower than SEC/DIV switch setting.

AUTO TRIG

Button in free runs trace when main sweep is not triggered.

MAIN SEC/DIV[1]

Selects sweep rate for main sweep.

DELAY TIME MULT

Sets time based on main sweep when delayed sweep starts. Calibrated in horizontal divisions of CRT.

LF REJ

Button in attenuates triggering signals below 7.5 kHz.

DLY'D SEC/DIV[1]

Selects sweep rate for delayed sweep.

AC COUPL

Button in AC couples trigger signal and external horizontal input, button out DC.

SWP MAG

Button in increases sweep speed by 10X.

+ SLOPE

Button in, main sweep triggers on positive-going waveform, button out negative-going.

+ SLOPE

Button in, delayed sweep triggers on positive-going waveform, button out negative-going.

LEFT

Button in selects trigger signal from left vertical plug-in compartment.

TRIG AFTER DLY

Button in permits delayed sweep to start on trigger after desired delay.

SINGLE SWEEP

Push to place in single sweep operating mode. READY light indicates sweep armed.

DELAYED TRIG LEVEL

Selects level on triggering waveform where delayed sweep starts.

RIGHT

Button in selects trigger signal from right vertical plug-in compartment.

DLY'D SWP

Button in displays delayed sweep.

RESET

Push to re-arm main sweep in single sweep operation.

INTENS SWP

Button in intensifies main sweep trace during delayed sweep time.

EXT TRIG & EXT HORIZ AMP

Input connector for external horizontal amplifier or external trigger signal.

EXT

Button in connects input of trigger circuits to EXT TRIG BNC connector.

MAIN TRIG LEVEL

Selects level on triggering waveform where main sweep starts.

RELEASE LATCH

Lift up and pull to remove plugin.

LINE

Button in selects power line voltage as triggering signal.

MAIN SWP

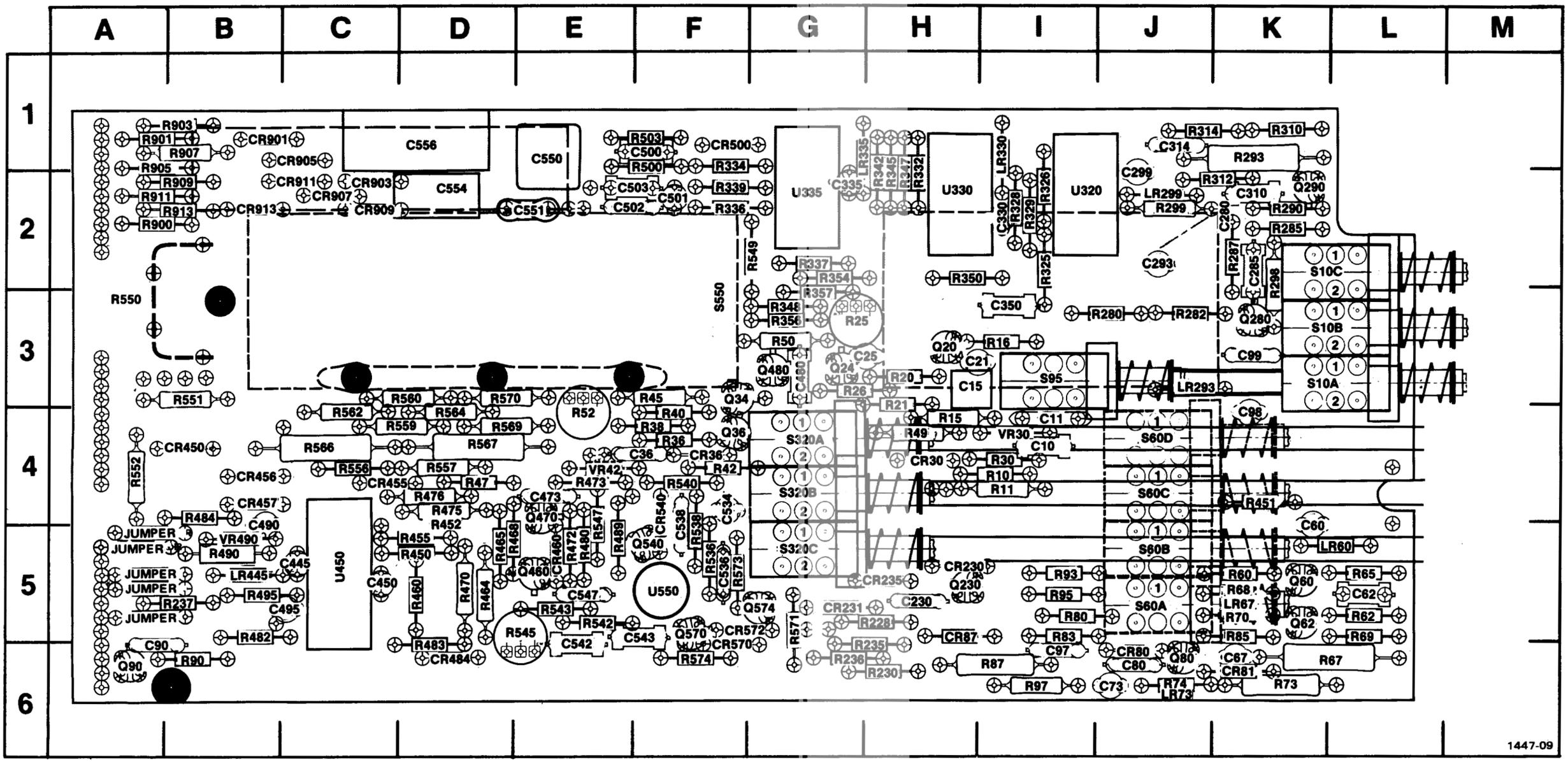
Button in displays main sweep.

1447-11

[1] Effective SN B090000 and up, the MAIN SEC/DIV-DLY'D SEC/DIV knob assembly is manufactured with a locking pin removed from the assembly (all instruments below SN B090000 use a locking pin). This pin removal allows the Delayed Sweep to operate at a slower sweep rate than the Main Sweep rate. Avoid this type of operation to prevent illogical displays, and always set the DLY'D SEC/DIV control for the same or a faster sweep rate than the MAIN SEC/DIV control.

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PARTS LOCATION GRID



Components shown with dashed lines are located on back side of board.

REV. C MAY 1978

A1—A circuit board (SN B059999 & below).

CKT NO	GRID LOC
C10	I4
C11	I4
C15	H3
C21	H3
C25	H3
C36	F4
C60	K5
C62	L5
C67	K6
C73	J6
C80	A6
C90	F2
C97	K4
C98	K3
C99	K2
C230	H5
C280	K2
C285	K2
C289	J2
C293	K2
C310	K2
C314	J1
C330	I2
C335	G2
C350	I3
C445	C5
C450	C5
C473	E4
C480	G3
C490	B5
C495	C5
C500	F1
C501	F2
C502	F2
C503	F2
C534	F4
C536	F5
C538	E6
C542	E6
C543	F6
C547	E5
C550	E1
C551	E2
C554	D2
C556	D1
CR30	H4
CR36	F4
CR60	J6
CR61	K6
CR87	H5
CR230	H5
CR231	G5
CR235	H5
CR450	B4
CR455	C4
CR456	B4
CR457	B4
CR460	E5
CR484	D6
CR500	F1
CR540	F4
CR570	F6
CR572	F5
CR901	B1
CR903	C2
CR905	C1
CR907	C2
CR909	C2
CR911	C2
CR913	B2
LR60	L5
LR67*	K5
LR73*	J6
LR293*	J3
LR299*	J2
LR330	I1
LR335	G1
LR445	B5

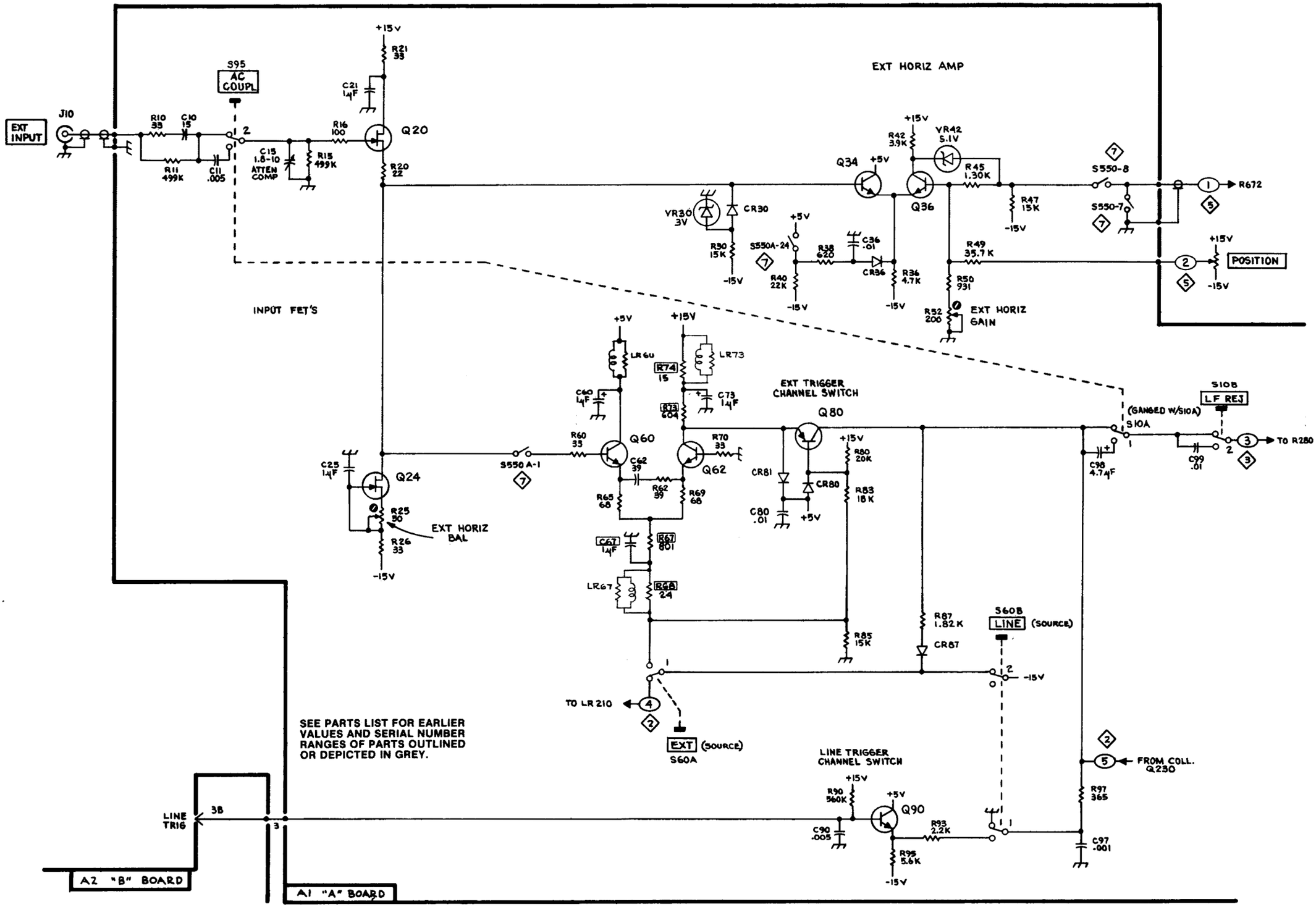
CKT NO	GRID LOC
Q20	H3
Q24	G3
Q34	F3
Q36	G3
Q60	K5
Q62	K5
Q80	J6
Q90	A6
Q230	H5
Q280	K3
Q290	K2
Q460	E5
Q470	E4
Q480	G3
Q540	F5
Q570	F5
Q574	G5
R10	I4
R11	I4
R15	H4
R16	I3
R20	H3
R21	H4
R25	G3
R26	G3
R30	I4
R36	F4
R38	F4
R40	F4
R42	F4
R45	F3
R47	D4
R49	H4
R50	G3
R52	E4
R60	K5
R62	L5
R65	K6
R67	K5
R68*	K5
R69	L5
R70	K5
R73*	J6
R74*	I5
R80	I5
R83	K5
R85	I6
R87	I6
R90	B6
R93	I5
R95	I5
R97	I6
R228	H5
R230	H6
R235	H6
R236	G6
R237	B5
R280	J3
R282	J3
R285	K2
R287	K2
R290	K2
R293	K1
R298	K2
R299	J2
R310	K1
R312	K2
R314	J1
R325	I2
R326	I2
R328	I2
R329	H2
R332	F1
R334	F1
R336	F2
R337	G2
R339	F2
R342	H2
R345	H2

CKT NO	GRID LOC
R347	H2
R348	G3
R350	H2
R354	G2
R356	G3
R357	G3
R450	D5
R451	K4
R452*	D5
R455	D5
R460	D5
R464	D5
R465	D5
R468	D5
R470	D5
R472	E5
R473	E4
R475	D4
R476	D4
R480	E5
R482	B5
R483	D6
R484	B4
R489	E5
R490	B5
R495	B5
R500	F1
R503	F1
R536	F5
R538	F5
R540	F4
R542	E5
R543	E5
R545	E5
R547	G2
R549	E4
R550†	A3
R551	B3
R552	A4
R556	C4
R557	D4
R558	D4
R559	D4
R560	D3
R562	C4
R564	C4
R566	C4
R567	D4
R569	D4
R570	G5
R571	G5
R573	F5
R574	F6
R900	A2
R901	A1
R903	B1
R905	A1
R907	B1
R909	B2
R911	A2
R913	B2
S10A	K3
S10B	K3
S10C	K2
S60A	J5
S60B	J5
S60C	J4
S60D	J4
S95	I3
S320A	G4
S320B	G4
S320C	G5
S550	F3
U320	I2
U330	H2
U335	G2
U450	C5
U550	F5

CKT NO	GRID LOC
VR30	I4
VR42	E4
VR490	B5

†Located on back of board.

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1447-13
REV. C, MAY 1978

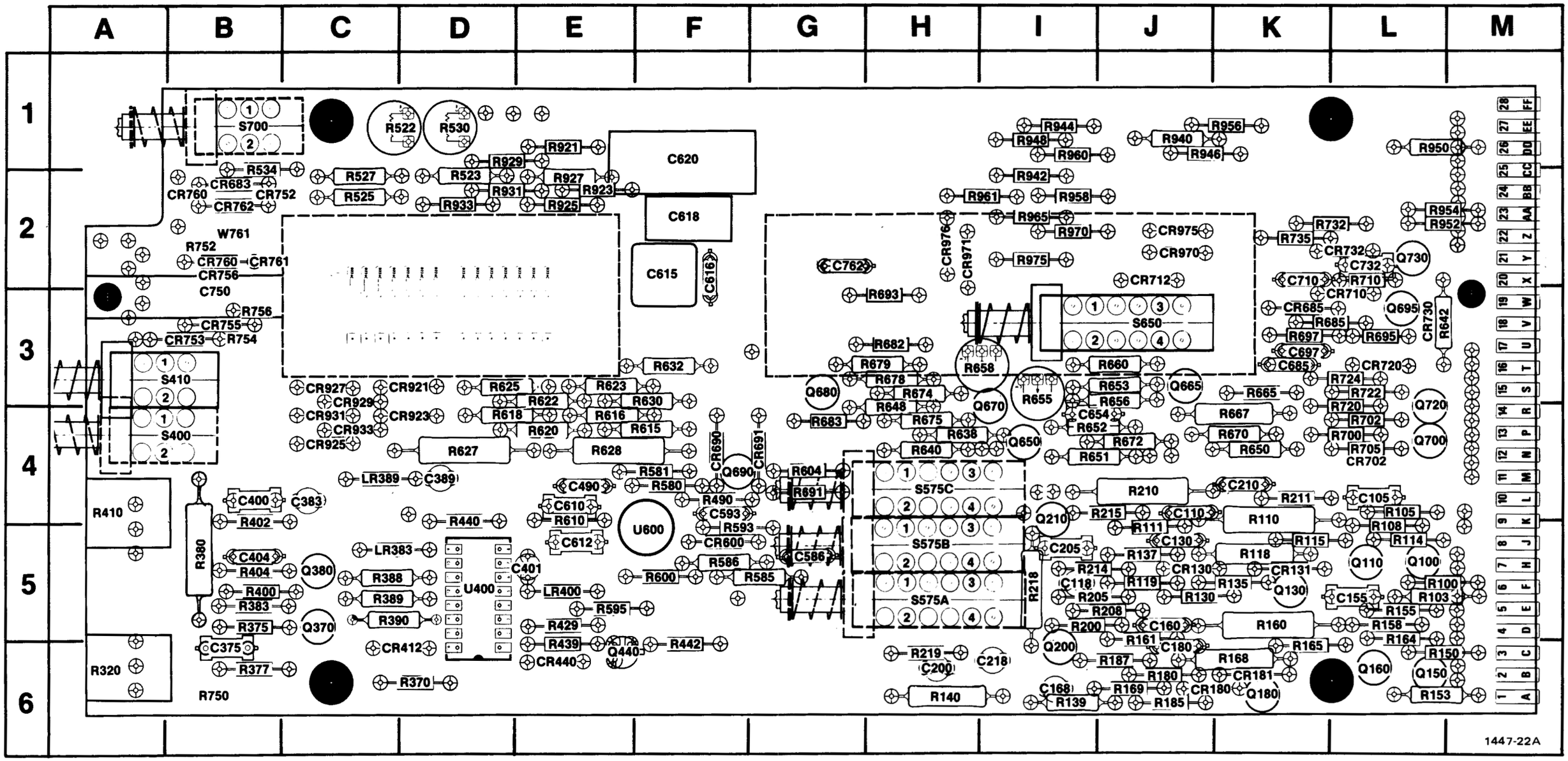
EXTERNAL TRIGGER CHANNEL SWITCHING ◇1

BVZ

5B42

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PARTS LOCATION GRID



Components shown with dashed lines are located on back side of board.

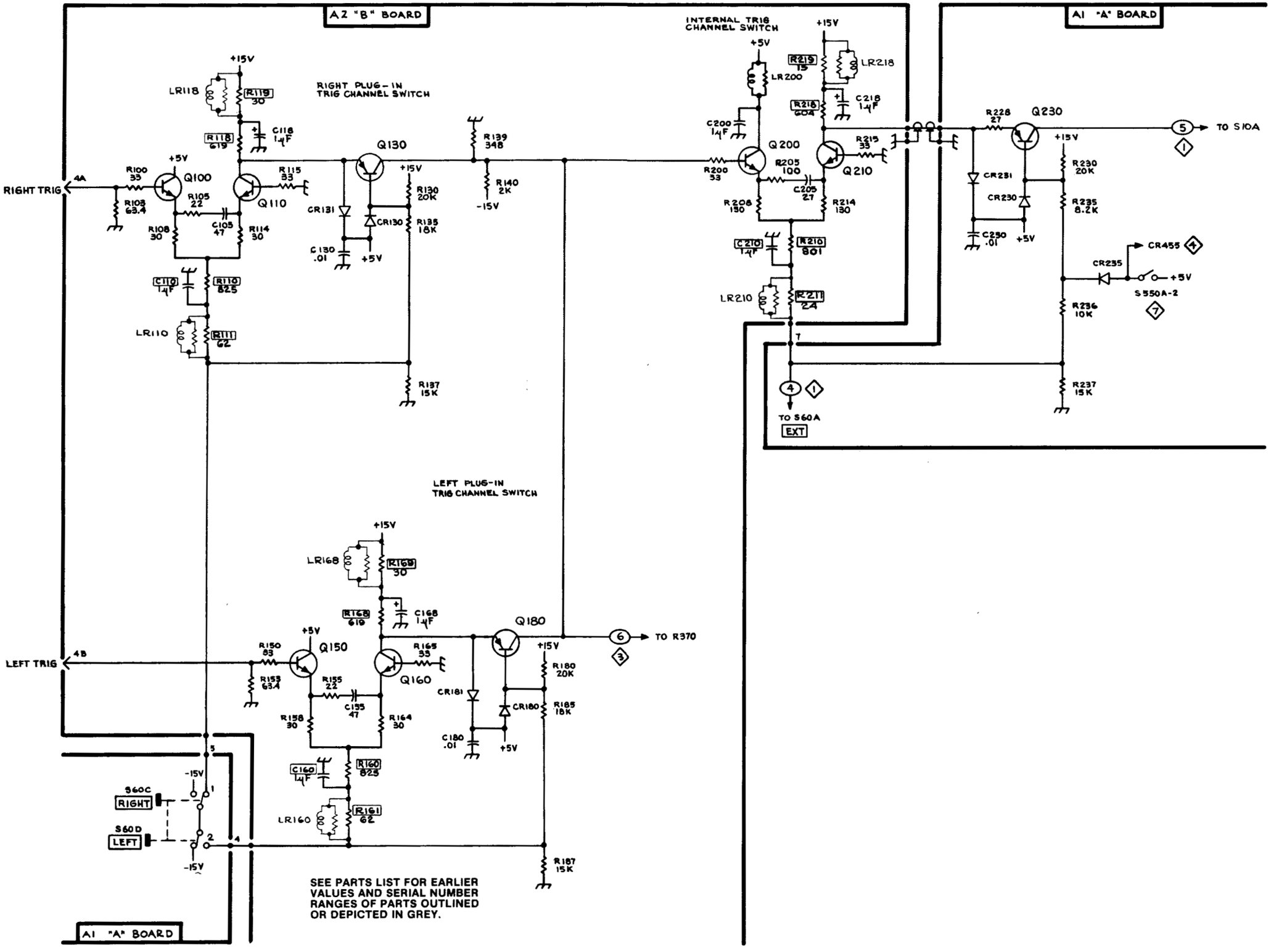
A2—B circuit board (SN B053593 & up).

REV JUN 1981

CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC
C105	L4	CR130	J5	C762*	H2	Q160	L6
C110	J4	CR131	K5	C750*	B2	Q180	K6
C118	I5	C732	L2	CR440*	E6	Q200	I6
C130	J5	CR712	K2	CR412	D6	Q210	I4
C155	L5	C710	K3	CR181	K6	Q370	B5
C160	J5	C697	K3	C180	K6	Q380	C5
C168	I6	C685	K3	C131	K5	Q440*	E6
C180	J6	C654	I4	CR180	K5	Q650	I4
C200	H6	C620	F1	C181	K6	Q665	J3
C205	I5	C618	F2	C616	F2	Q670	I4
C210	K4	C616	F2	C618	F2	Q680	G3
C218	I6	C615	F2	C615	E5	Q690	F4
C375	B5	C612	E4	C612	E4	Q695	L3
C383	B5	C610	E4	C610	E4	Q700	L4
C389	D4	C593	F4	C593	F4	Q720	L4
C400	B4	C586	G5	C586	G5	Q730	L2
C401	E5	C585	F4	C585	F4	R100	L5
C404	B4	C490	E4	C490	E4	R103	L5
C404	E4	C404	B4	C404	B4	R105	L4
C490	E4	C401	E5	C401	E5	R108	L5
C586	G5	C400	B4	C400	B4	R110	K5
C593	F4	C389	D4	C389	D4	R111	E4
C610	E4	C383	B5	C383	B5	R114	L5
C612	E5	C375	B5	C375	B5	R115	J5
C615	F2	C218	I6	C218	I6	R118	K5
C616	F2	C205	I5	C205	I5	R119	K5
C618	F2	C200	H6	C200	H6	R130	J5
C620	F1	C180	J6	C180	J6	R135	K5
C654	I4	C168	I6	C168	I6	R137	J5
C685	K3	C160	J5	C160	J5	R139	I6
C697	K3	C155	L5	C155	L5	R140	I6
C710	K2	C130	J5	C130	J5	R150	L6
C732	L2	C118	I5	C118	I5	R153	L6
C750*	B2	C110	J4	C110	J4	R155	L5
C762*	H2	C105	L4	C105	L4	R158	L5
CR130	J5	CR131	K5	CR130	J5	R160	K5
CR131	K5	CR180	K5	CR131	K5	R161	J6
CR180	K6	CR181	K6	CR180	K6	R164	L6
CR181	K6	CR412	D6	CR181	K6	R165	K6
CR412	D6	CR440*	E6	CR412	D6	R168	K6
CR440*	E6	CR600	F5	CR440*	E6	R169	J6
CR600	F5	CR683*	B2	CR600	F5	R180	J6
CR683*	B2	CR685	K3	CR683*	B2	R185	J6
CR685	K3	CR690	F4	CR685	K3	R187	J6
CR690	F4	CR691	G4	CR690	F4	R200	I5
CR691	G4	CR702	L4	CR691	G4	R205	I5
CR702	L4	CR710	L3	CR702	L4	R208	J5
CR710	L3	CR712	J2	CR710	L3	R210	J4
CR712	J2	CR720	L3	CR712	J2	R211	K4
CR720	L3	CR730	L2	CR720	L3	R214	I5
CR730	L2	CR732	B2	CR730	L2	R215	J4
CR732	B2	CR752*	B2	CR732	B2	R218	I5
CR752*	B2	CR753*	B3	CR752*	B2	R219	H6
CR753*	B3	CR755*	B3	CR753*	B3	R320	A6
CR755*	B3	CR756*	B2	CR755*	B3	R370	B6
CR756*	B2	CR760*	B2	CR756*	B2	R375	C5
CR760*	B2	CR761*	B2	CR760*	B2	R377	B5
CR761*	B2	CR762	B2	CR761*	B2	R380	C5
CR762	B2	CR921	D3	CR762	B2	R383	B5
CR921	D3	CR923	D4	CR921	D3	R388	D4
CR923	D4	CR925	C4	CR923	D4	R389	D4
CR925	C4	CR927	C3	CR925	C4	R390	C5
CR927	C3	CR929	C3	CR927	C3	R400	B5
CR929	C3	CR931	C4	CR929	C3	R402	C3
CR931	C4	CR933	C4	CR931	C4	R404	B5
CR933	C4	CR970	J2	CR933	C4	R410	A4
CR970	J2	CR971	H2	CR970	J2	R429	G6
CR971	H2	CR975	J2	CR971	H2	R439*	E6
CR975	J2	CR976	H2	CR975	J2	R440*	D4
CR976	H2	LR383	B5	CR976	H2	R442*	F6
LR383	B5	LR389	C4	LR383	B5	R490	F4
LR389	C4	LR400	E5	LR389	C4	R522	D1
LR400	E5	Q100	L5	LR400	E5	R523	D2
Q100	L5	Q110	L5	Q100	L5	R525	C2
Q110	L5	Q130	K5	Q110	L5	R527	C2
Q130	K5	Q150	L6	Q130	K5	R530	D1
Q150	L6			Q150	L6	R534	B2
						R580	F4
						R581	F4
						R585	G5
						R586	F5
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						R965	I2
						R970	I2
						R975	I2
						S400	B4
						S410	B3
						S575A	H5
						S575B	H5
						S575C	H4
						S650	J3
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						U400	D5
						U600	F5
						W761*	B2

†Located on back of board.

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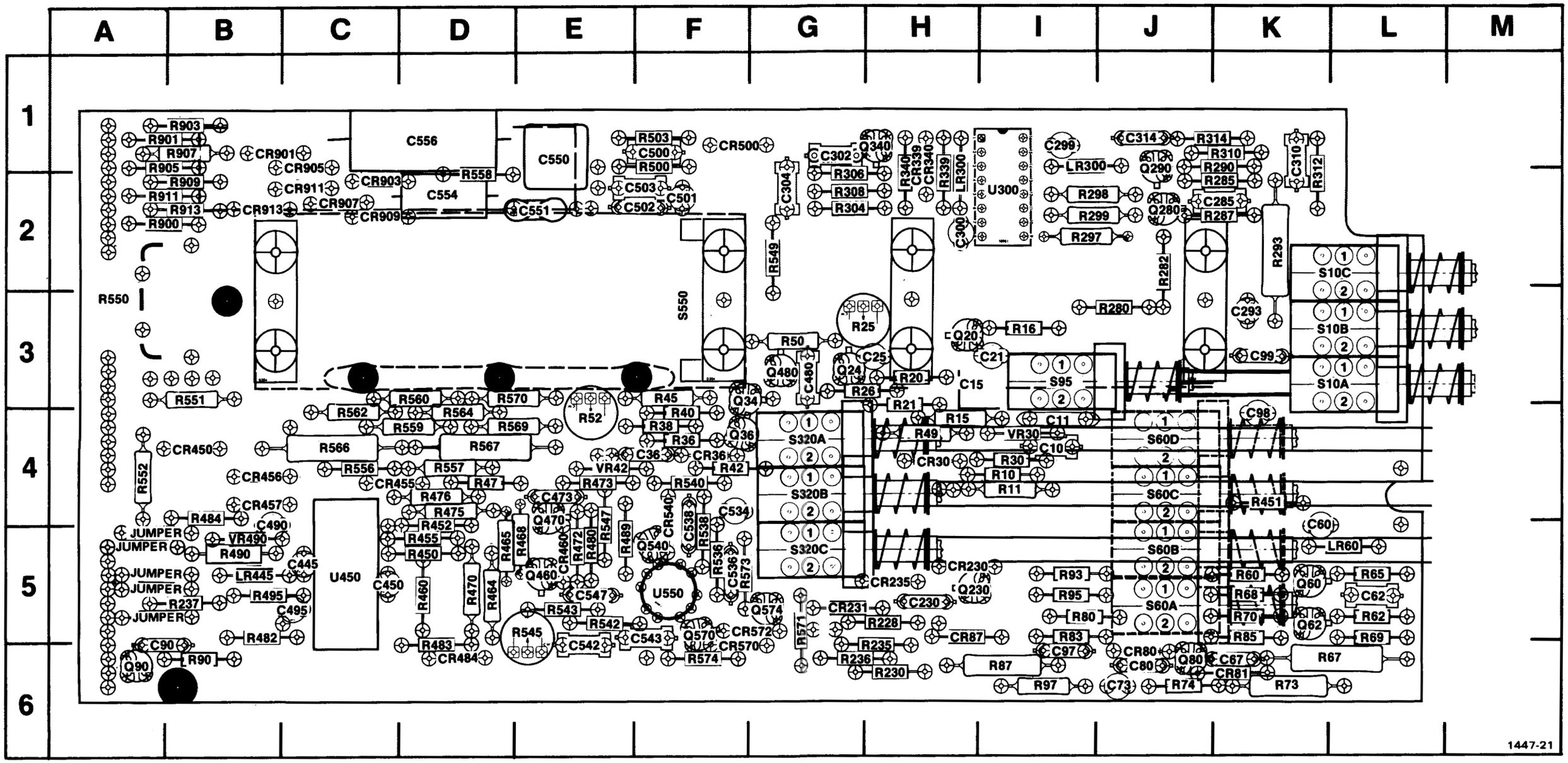
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REV. C, MAY, 1978

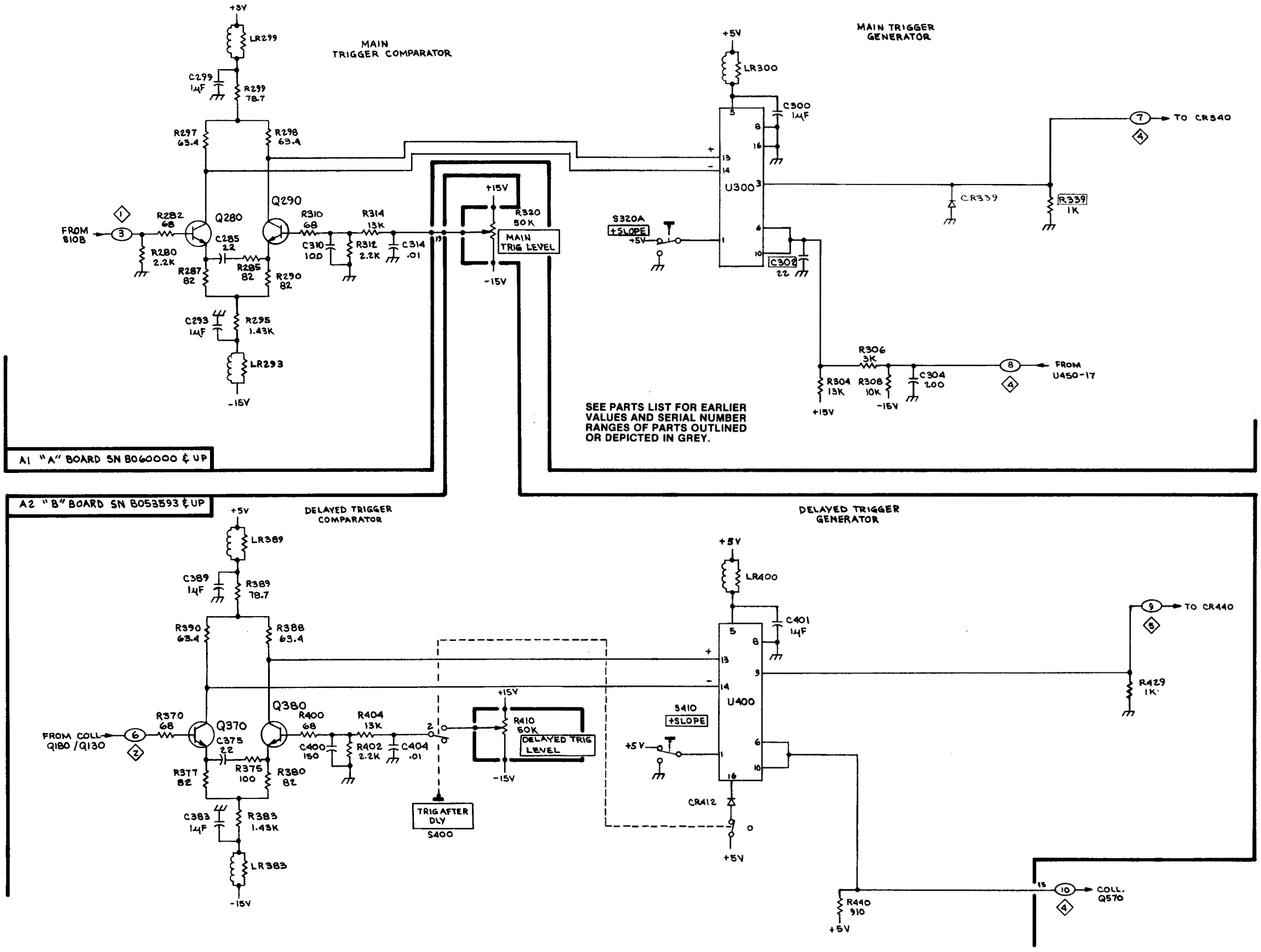
INTERNAL TRIGGER CHANNEL SWITCHING ◇2

BVZ

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PARTS LOCATION GRID


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A1 "A" BOARD SN B059999 & BELOW

MAIN TRIGGER COMPARATOR

MAIN TRIGGER GENERATOR

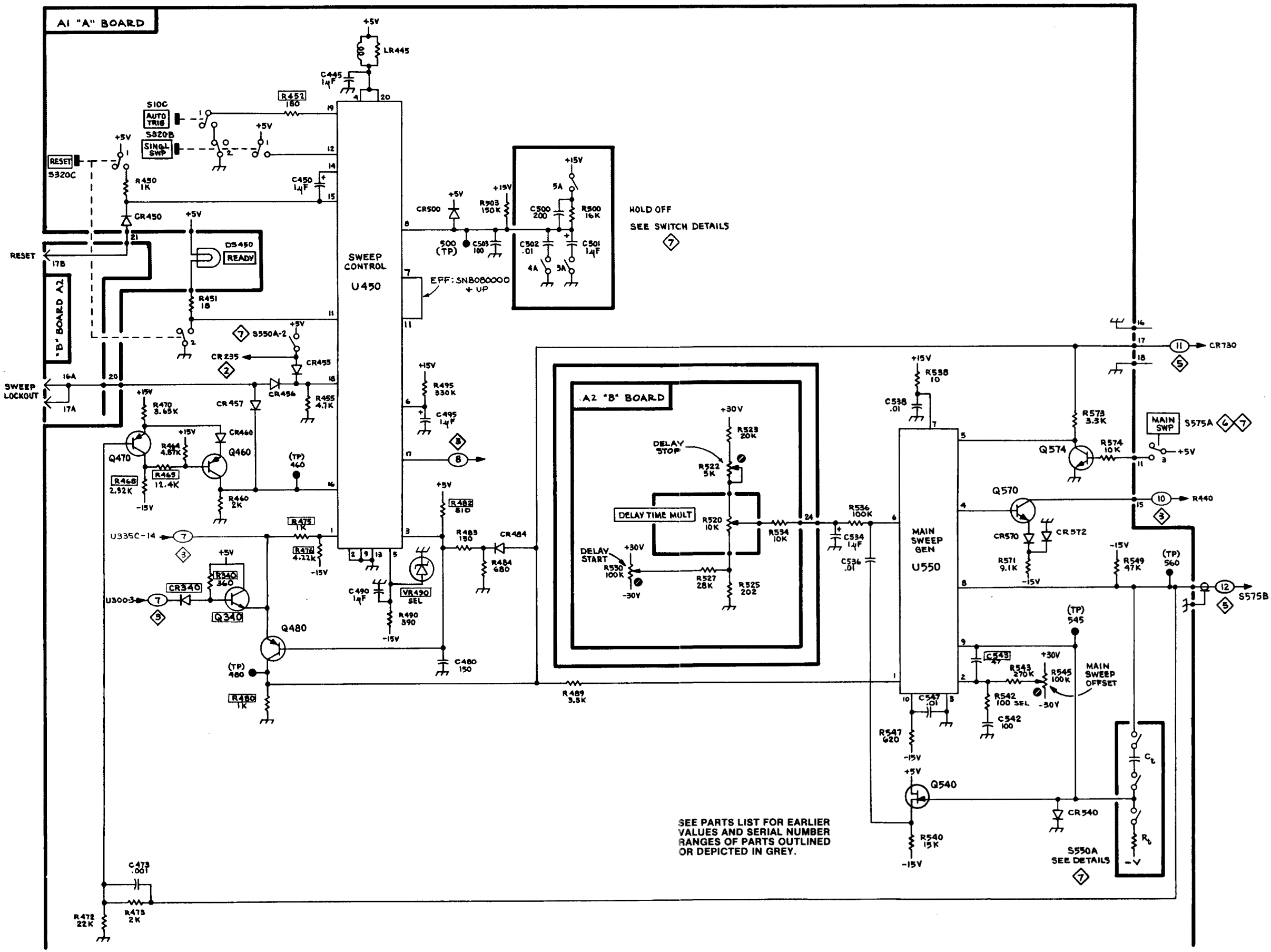
A2 "B" BOARD SN B053592 & BELOW

DELAYED TRIGGER COMPARATOR

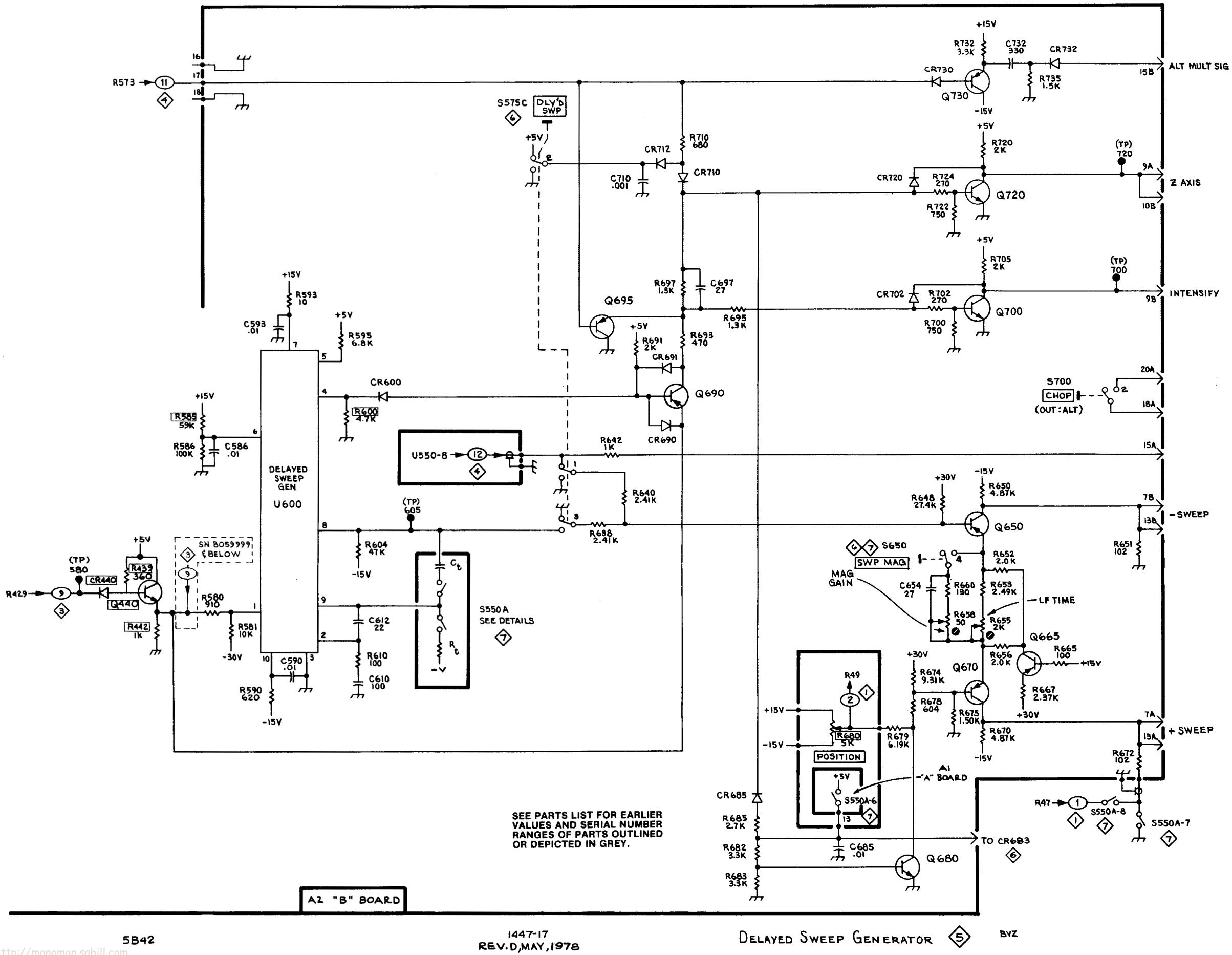
DELAYED TRIGGER GENERATOR

SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES OF PARTS OUTLINED OR DEPICTED IN GREY.

http://manoman.sqhill.com



http://manoman.sqhill.com



SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES OF PARTS OUTLINED OR DEPICTED IN GREY.

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A1 "A" BOARD

A2 "B" BOARD

+5V ⑦ S550A-25 22

+5V ⑦ S550A-24 14

CR970 CR971 CR975 CR976

R970 3.3K R975 3.3K

4 S575C DLY'D SWP ⑤

1 S575A MAIN SWP ④⑦

2 S575B INTENS SWP

TO DS760, DS762 ⑦

TO CR753 + CR755

30

COL 28A ROW 28B CH 1 (MAIN)

(SN B080000 & UP) TO R750 (SN B70000 TO SN B079999)

CR913 CR911 CR909 CR907 CR905 CR903 CR901

R913 51K R911 75K R909 150K R907 37.4K R905 150K R903 150K R901 75K

R900 13K

OPEN IN CAL S900 (AT CW END OF R550 ⑦)

R940 37.4K R942 51K R944 75K R946 150K R948 75K

R965 150K

COL 24A ROW 24B CH 2 (DELAYED)

CR921 CR923 CR925 CR927 CR929 CR931 CR933

R921 51K R923 75K R925 150K R927 37.4K R929 150K R931 150K R933 75K

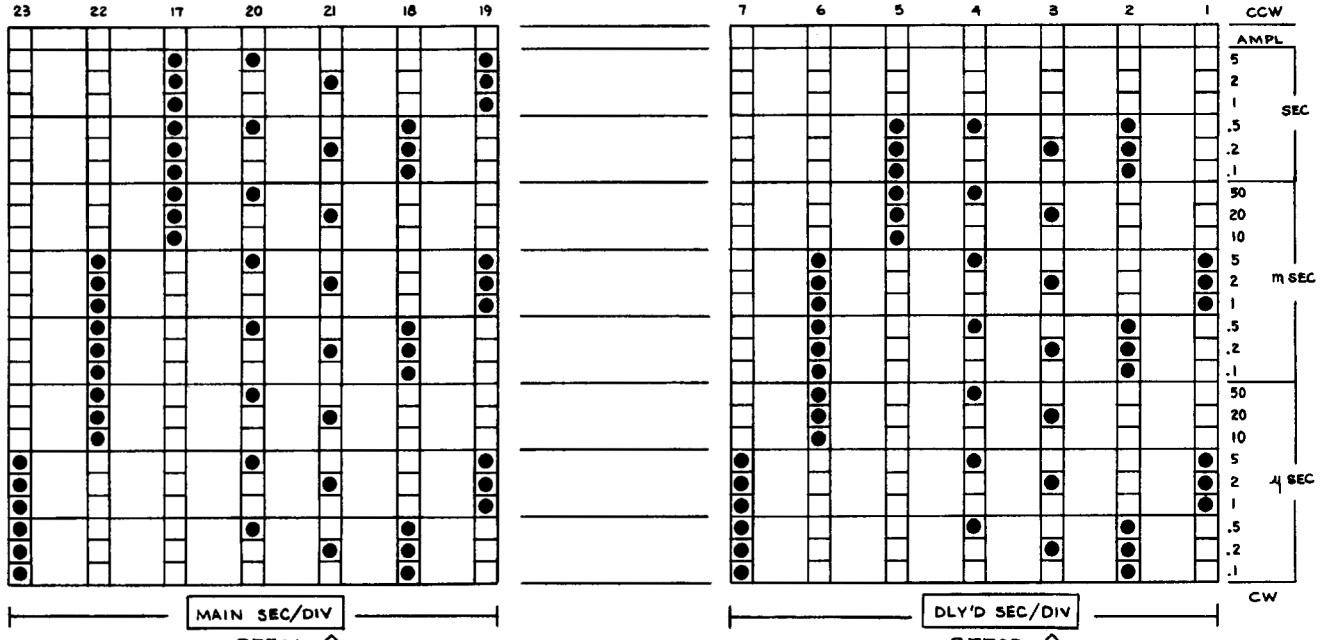
R950 37.4K R952 51K R954 75K R956 150K R958 75K

R960 150K R961 150K

⑤⑦ SWP MAG

29 26 28 27

27A 1 25A 3 27B 4 26A 8 26B 9 TIME SLOT PULSES



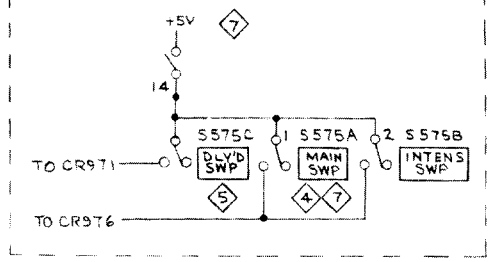
5B42

S550A ⑦

1448-18 S550B ⑦

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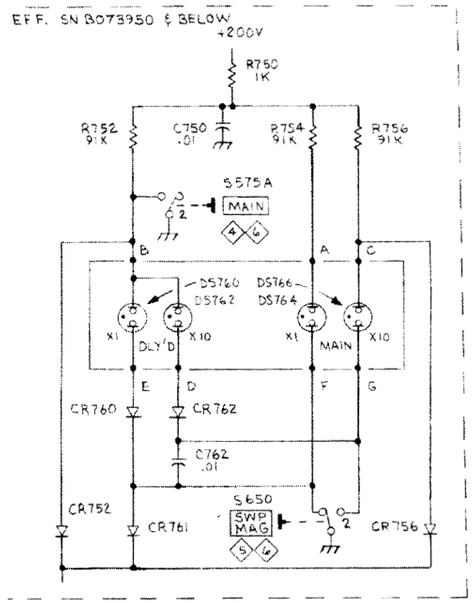
EFF. SN B073950 & BELOW

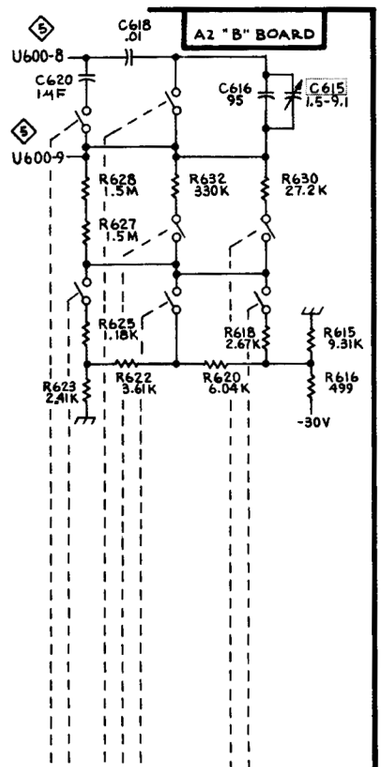


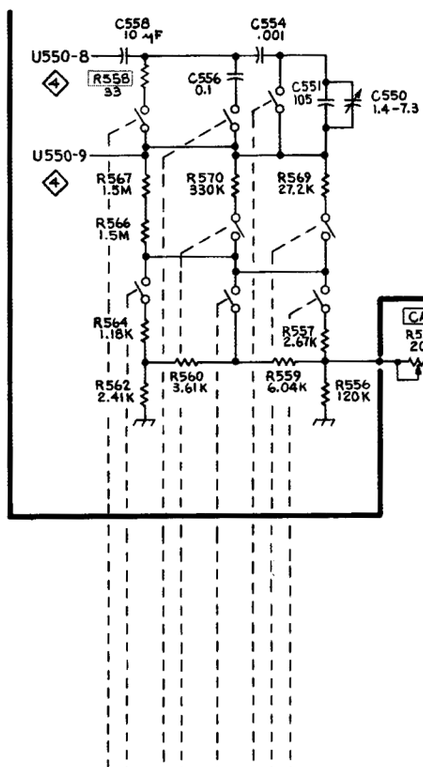
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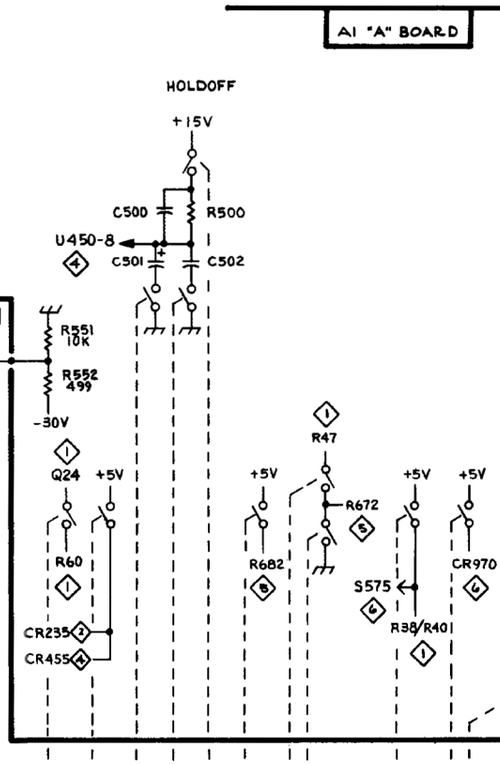
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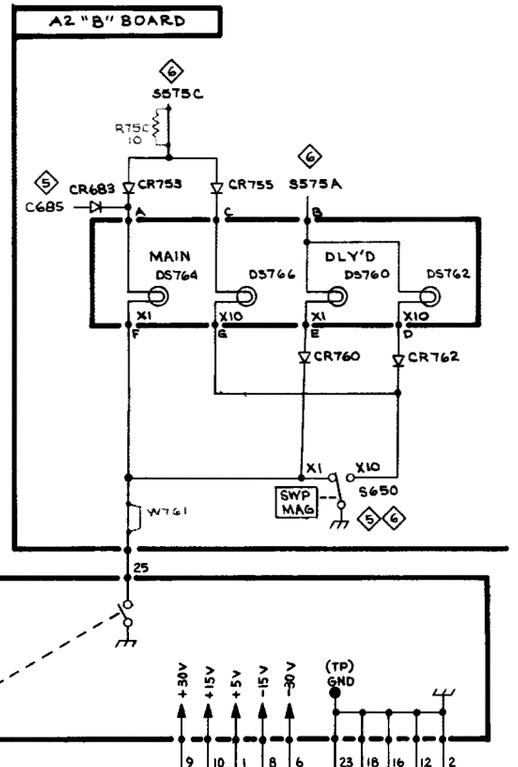
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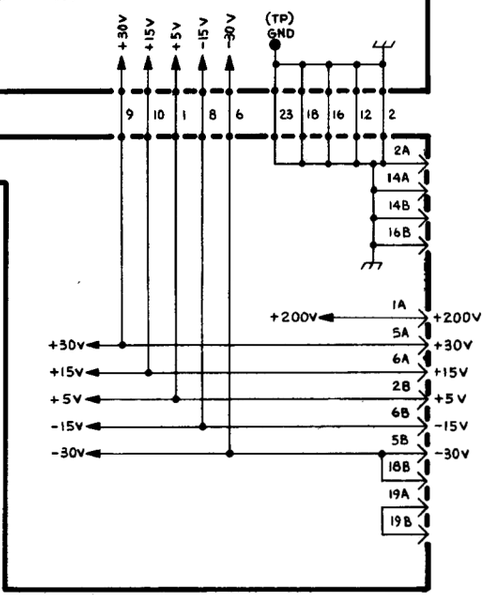


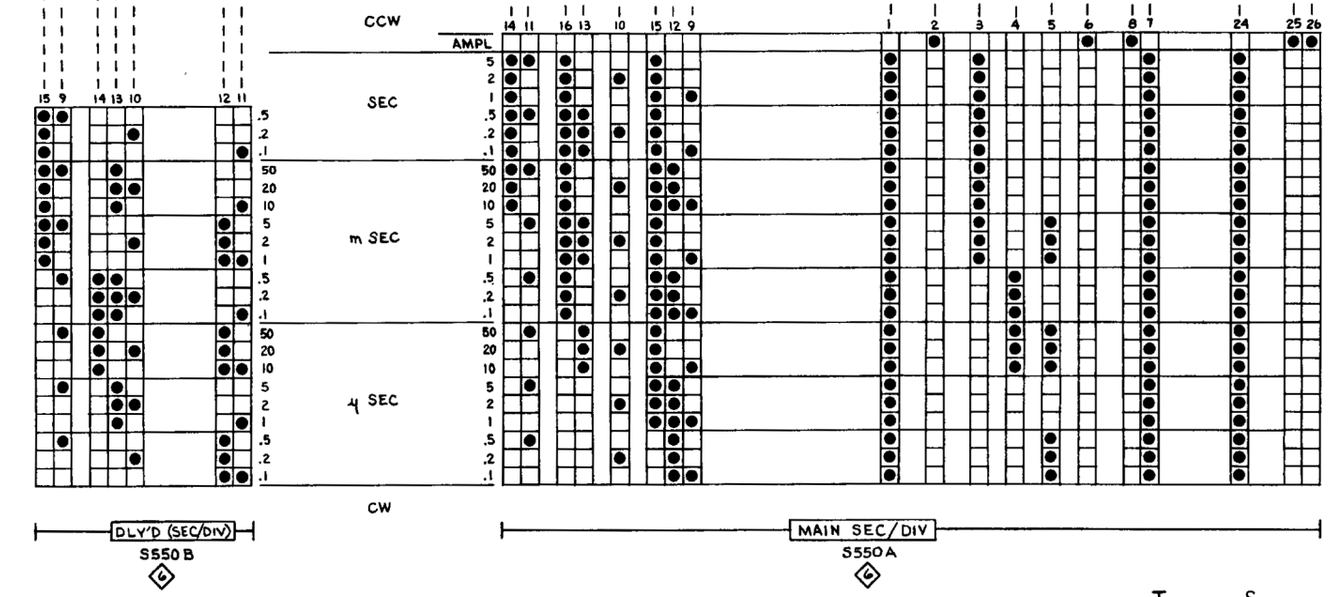












SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES OF PARTS OUTLINED OR DEPICTED IN GREY.

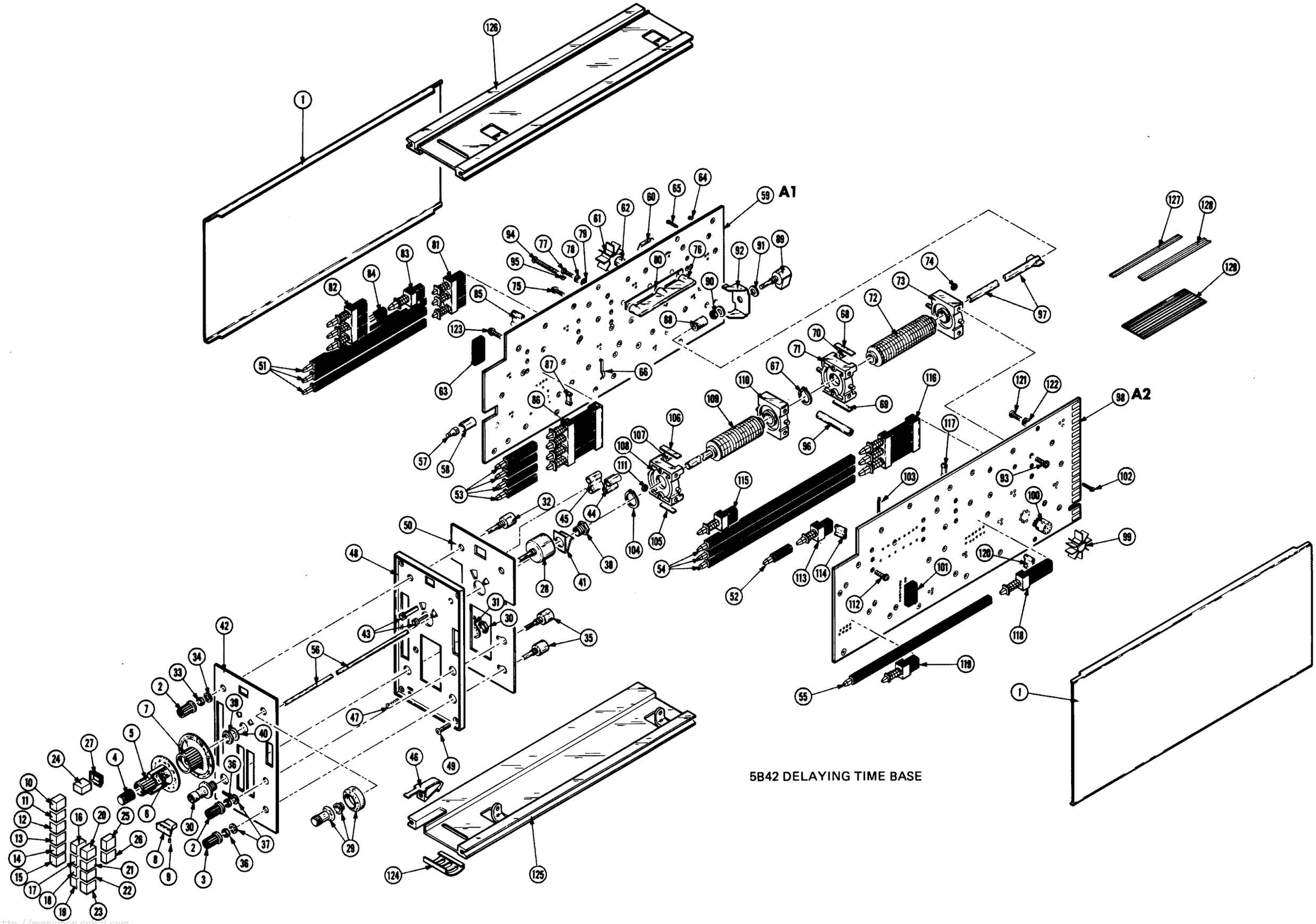
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TIMING SWITCH DETAILS ◇7 BVZ

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Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
	070-1447-00			1		MANUAL,TECH:INSTRUCTION	80009	070-1447-00

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