OPERATOR'S HANDBOOK

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070-227

INTRODUCTION

The following pages provide a rapid means of setting the controls of your Tektronix Type 555 Oscilloscope. This information is designed to give you not only control settings for specific applications but also various functions of these controls during different operational procedures.

An important part of this book covers "triggered" operation of the oscilloscope. Here, some "triggering" signal starts the horizontal trace across the screen, beginning at the left side of the graticule. For present purposes, then, "triggering" can be taken as synonymous with starting the horizontal sweep of the trace.

CONTENTS

CAUTION

Before turning on the power, turn the INTENSITY controls full left. Otherwise, the crt phosphor screen may be damaged. The INTENSITY should never be turned up to the point where a halo forms around the spot, as a permanent phosphor burn may develop.

BEFORE USING PROBE
AWAYS CHECK ITS ADJUSTMENT

CHARACTERISTICS OF TYPE 555 AND PLUG-IN COMBINATIONS

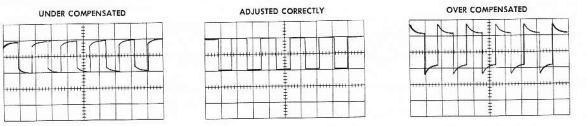
For the complete list of specifications, including input capacitance, see the instruction manual for the instrument involved.

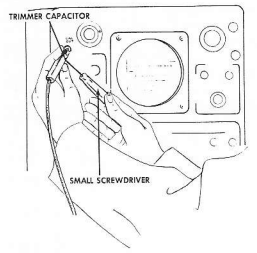
PLUG-IN	DEFLECTION FACTOR (Calibrated)	BANDPASS 555
TYPE A	.05 v/cm to 20 v/cm	dc to 20 mc
TYPE B	.05 v/cm to 20 v/cm	dc to 20 mc
TYPE B	5 mv/cm to .05 v/cm	2 c to 12 mc
TYPE CA*	.05 v/cm to 20 v/cm	dc to 24 mc
TYPE D**	1 mv/cm to 50 v/cm	dc to 2 mc
TYPE E**	50 μv/cm to 10 mv/cm	.06 c to 60 kc
TYPE G**	.05 v/cm to 20 v/cm	dc to 20 mc
TYPE H	5 mv/cm to 20 v/cm	dc to 15 mc
TYPE K	.05 v/cm to 20 v/cm	dc to 30 mc
TYPE L	5 mv/cm to 2 v/cm	3 c to 24 mc
TYPE L	.05 v/cm to 20 v/cm	dc to 30 mc

*Dual-Trace or Single-Trace Differential.

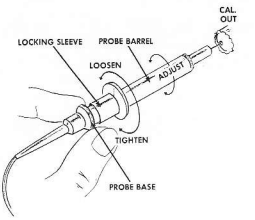
**Differential Input Available.

TYPE R checks transistor risetime. It has a response of 0.5 ma/cm to 100 ma/cm collector current and 0.012 μsec rise-time.





P410 Probe—Adjust the trimmer capacitor for flat-top square waves.

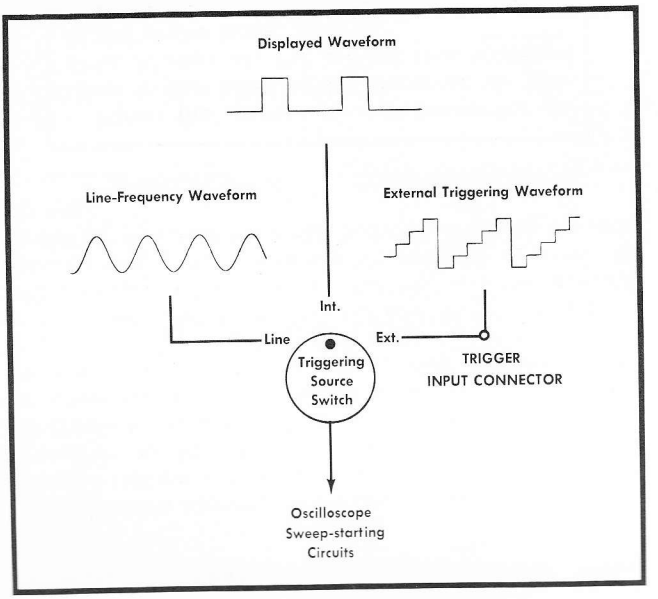


P6000 Probe—Hold probe barrel and loosen locking sleeve several turns. Hold probe base while adjusting probe barrel for flat-top square waves. Hold probe barrel and carefully tighten locking sleeve.

PROBE ADJUSTMENT

An adjustable capacitor in the body of the probe compensates for variations in input capacitance from one plug-in to another, so that your pulse and transient measurements will always be accurate. Attach probe to plug-in unit. Touch the probe tip to the oscilloscope calibrator output connector (CAL. OUT). Turn the locking ring counterclockwise several turns. Turn the AMP. CAL. switch to obtain a display on the screen. Rotate the forward part of the probe body until the square wave displays a flat top. Lock the capacitor again by turning the locking ring in a clockwise direction. Be careful not to rotate the probe body while turning the locking ring.

Make the probe ground connection as close to the point to be measured as possible. Always use the ground lead attached to the probe body.



SELECTING THE TRIGGERING SIGNAL

1. If you mean the start of the display to occur at a time when the triggering signal is rising, use the + position of the trigger SLOPE switch. To start the display at a time when the triggering signal is falling, use the — position of the trigger SLOPE switch.

2. To trigger the time base from the waveform being observed, set the HORIZ. DISPLAY switch for the appropriate time base to the display for that time base. Note that both a X1 and a X.2 position are available for each display. Set the trigger SOURCE switch to the appropriate beam.*

3. To trigger the sweep from an external waveform which has a time relationship to the waveform being displayed, connect the triggering signal to the INPUT connector of the appropriate time base. Set the trigger SOURCE switch to the EXT. position.

4. To trigger the time base from the power-line wave (to observe a waveform having a time relationship to the power-line wave), set the trigger SOURCE switch to LINE.

*Refer to description of the controls.

Triggered Operation

From the displayed waveform

This mode is the most convenient since no external triggering connections are required.

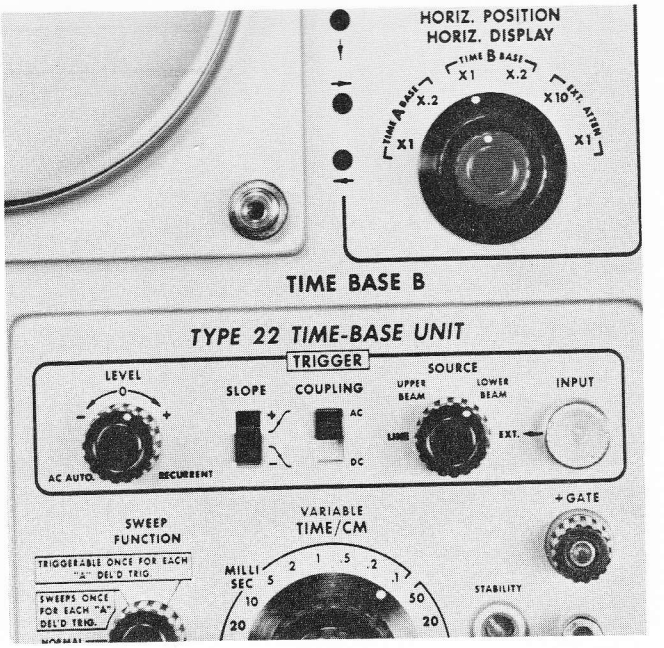
CONTROL	POSITION	PAGE *
Horiz. Display	Time base 'A' or 'B'	36
Trigger Source	Upper or Lower Beam	37
Trigger Coupling	AC or DC	38
Trigger Slope	+ or —	37
Trigger Level	near center	36

*Description of the control functions are listed in the back of this book.

1. Set the TIME/CM switch for the desired time base, and the red VARIABLE knob to CALIBRATED.

2. Turn the LEVEL control slowly toward the center of its range for a stable display.

If the waveform does not appear, refer to page 35.



The UPPER BEAM and LOWER BEAM positions of the TRIGGER SOURCE switch allow you to trigger the sweep from the displayed waveform. This is the most common mode of operation.

Triggered Operation

From the line

This mode is particularly useful for observing a waveform which is related to the line frequency.

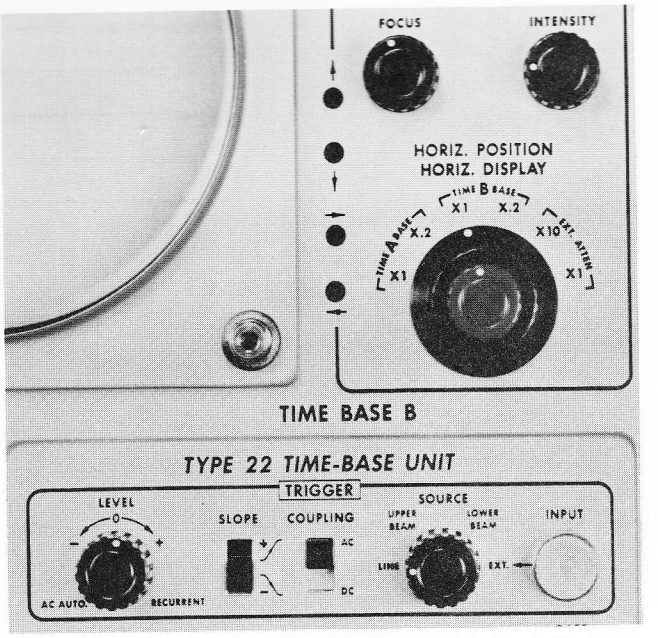
CONTROL	POSITION	PAGE *
Horiz. Display	Time base 'A' or 'B'	36
Trigger Source	LINE	37
Trigger Slope	+ or —	37
Trigger Coupling	AC or DC	38
Trigger Level	Near center*	36

*Description of the control functions are listed in the back of this book.

1. Set the TIME/CM switch for the desired time base, and the red VARIABLE knob at CALIBRATED.

2. Turn the LEVEL control slowly toward the center of its range for a stable display.

If the waveform does not appear, refer to page 35.



The LINE position of the TRIGGER SOURCE switch allows you to trigger the sweep at the line frequency. An advantage of this mode is its stability, since the frequency and amplitude of the triggering signal remains constant.

Triggered Operation
From an external waveform

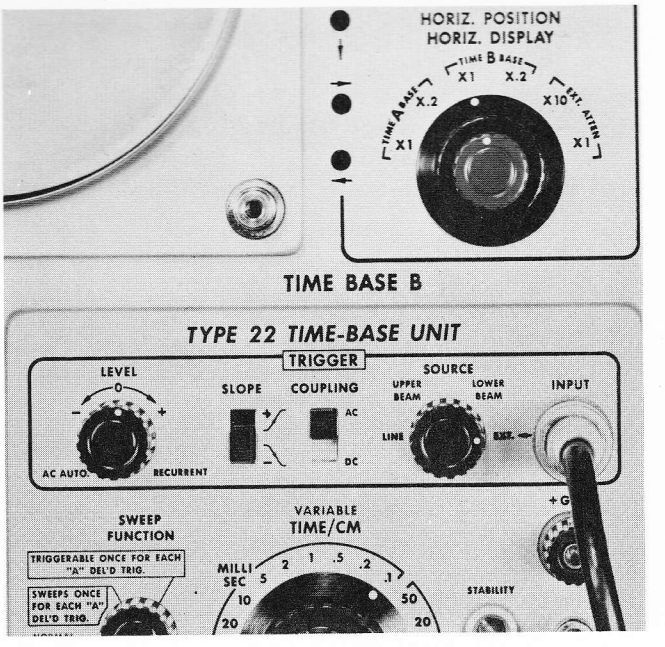
This mode is particularly useful for observing the shaping and amplification of a signal by each stage of a circuit without resetting the triggering controls for each observation. The signal should be 0.2 to 10 volts.

CONTROL	POSITION	PAGE *
Horiz. Display	Time base 'A' or 'B'	36
Trigger Source	EXT.	37
Trigger Coupling	AC or DC	38
Trigger Slope	+ or —	37
Trigger Level	near center	36

*Description of the control functions are listed in the back of this book.

1. Connect the triggering waveform to the appropriate TRIGGER INPUT connector.
2. Place the TRIGGER SOURCE switch to the EXT. position.
3. Set the TRIGGER COUPLING switch to AC, unless the frequency of the triggering waveform is less than 15 cycles. If the frequency is low, or it is impossible to trigger the sweep using ac coupling, use dc coupling.
4. Set the TIME/CM switch for the desired sweep speed, and set the red VARIABLE knob to CALIBRATED.
5. Turn the black TRIGGER LEVEL control toward the center of its range for a stable display.

If the waveform does not appear, refer to page 35.



The EXT. position of the TRIGGER SOURCE switch allows you to trigger the sweep from an externally derived waveform.

Triggered Operation

ac auto

For periodic signals
60 cycles to 2 megacycles

This type of triggering is particularly useful when changing the input connection from one point in the circuit to another. It provides a trace with or without a triggering signal.

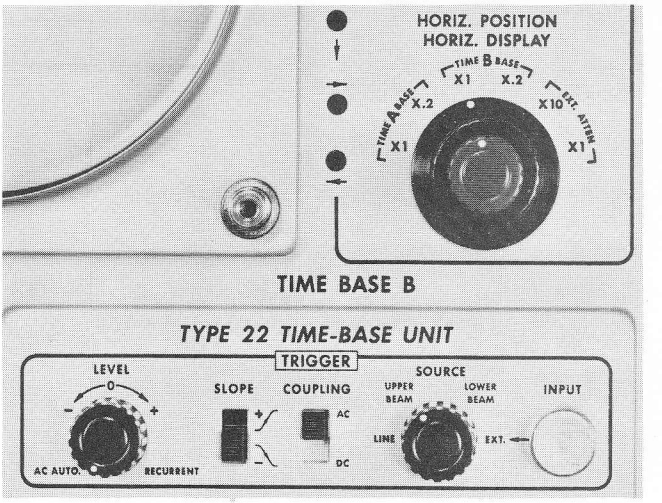
CONTROL	POSITION	PAGE *
Horiz. Display	Time base 'A' or 'B'	36
Trigger Source	as desired**	37
Trigger Coupling	AC or DC	38
Trigger Slope	+ or —	37
Trigger Level	AC AUTO	36

*Refers to description of the control function in this book.

**See page 4.

1. Set the appropriate TIME/CM switch for the desired time base and the red VARIABLE knob to CALIBRATED.

If the waveform does not appear, refer to page 35.



With this type of triggering the LEVEL control needs no adjustment. Each time base is triggered at the average-voltage point on the waveform.

FREE RUNNING SWEEP OPERATION

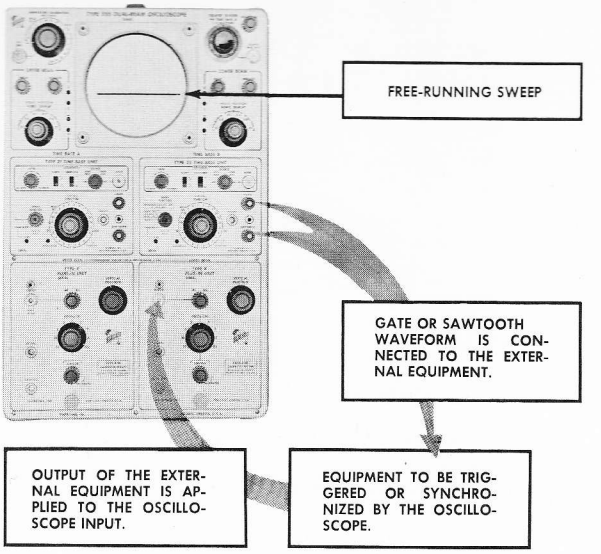
In usual oscilloscope applications, the sweep is triggered or synchronized by the input waveform. However, it is also possible to use the output from either the +GATE connector or the SAWTOOTH connector to trigger or synchronize the input waveform. Not only does this free running sweep provide a means for controlling an applied waveform, but it also supplies a convenient reference trace without requiring an input signal. This trace can be used to position the sweep or to establish a voltage reference level.

1. Use no input to the TRIGGER INPUT connector.

2. To free-run the sweep, set the LEVEL knob full right to the RECURRENT position.

3. In all positions of the LEVEL switch except AC AUTO, the sweep runs at a rate determined by the setting of the appropriate TIME/CM control. In the AC AUTO position, the sweep repetition rate remains at approximately 50 sweeps per second, regardless of the setting of the TIME/CM control

If the waveform does not appear, refer to page 35.



Using the +GATE or SAWTOOTH waveform from TIME BASE 'B' to synchronize or trigger external equipment.

SINGLE SWEEP WITH SINGLE BEAM

Manual Operation

This mode of operation permits photographing waveforms which do not recur at any particular rate. The single sweep eliminates the confusion resulting from multiple traces. The sweep occurs immediately after depression of the PUSH TO RESET button.

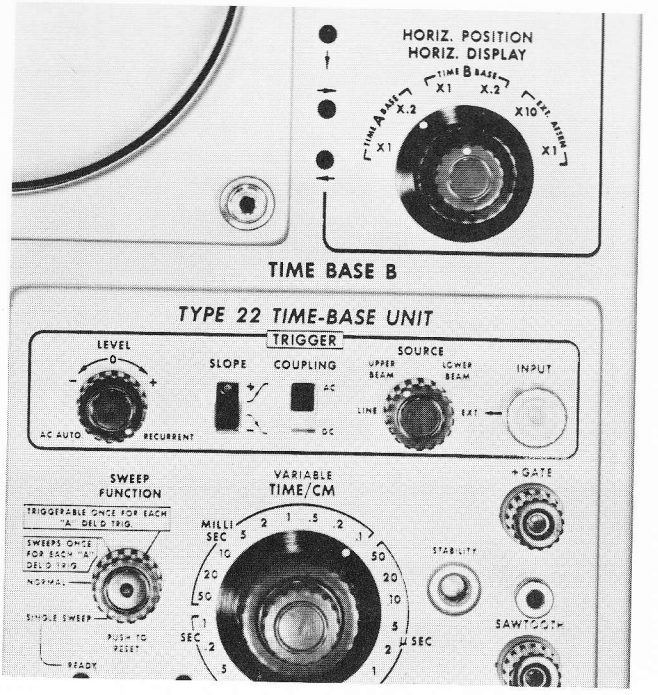
Note: When photographing waveforms, you should use the white graticule markings and the intensity of the trace must approximately match the brightness of the graticule markings.

1. Set the appropriate controls for free running operation.

2. Set the SWEEP FUNCTION switch in the SINGLE SWEEP position.

3. After preparing the camera to receive the picture, open the camera shutter, press the PUSH TO RESET button once, and then close the camera shutter.

Note: Each time the PUSH TO RESET button is pressed, the procedure is repeated.



In this mode of operation, the +GATE waveform can be used to initiate the action to be photographed.

SINGLE SWEEP, DUAL BEAM

MANUAL OPERATION

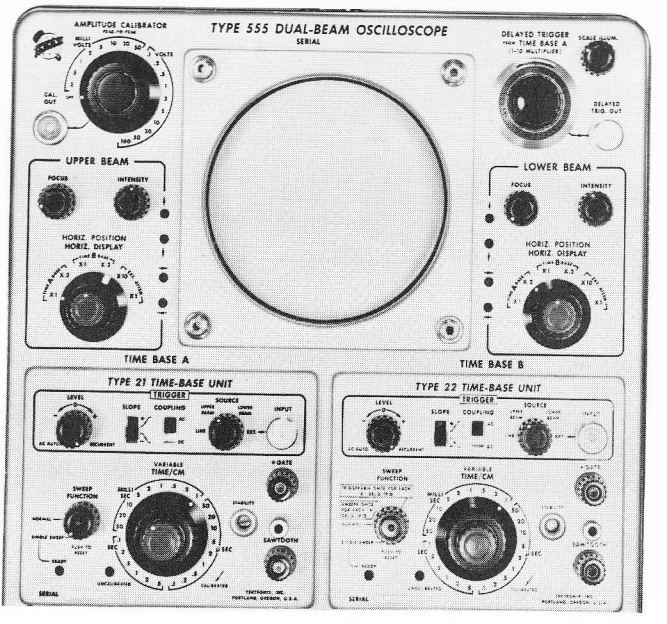
This mode of operation permits photographing waveforms which do not recur at any particularly even rate. The single sweep of two beams eliminates confusion resulting from multiple traces. The sweep occurs immediately after depression of the appropriate PUSH TO RESET button.

The Type 555 can be used to deflect both beams with the same time base unit for single sweep display. One beam sweep display may be a five times magnification of part of the display without the intensified sector feature that occurs with the delayed sweep dual beam display described on page 26.

DUAL BEAM

Note: When photographing waveforms, you should use the precautions noted on page 16.

1. Set the controls of both time base units for free-running operation.
2. Set the HORIZ. DISPLAY switch for Time Base "A x 1" on one beam and the other HORIZ. DISPLAY switch for Time Base "A x .2" on the other beam, if you use Time Base 'A' as the common time base unit.
3. Set the SWEEP FUNCTION switches in the SINGLE SWEEP positions.
4. If Time Base 'A' is used as the common unit, use the PUSH TO RESET button on the Time Base 'A' unit for triggering.



Dual beam, single sweep action of recurrent signals to be observed or photographically recorded.

SINGLE SWEEPS, SINGLE BEAM

TRIGGERED OPERATION

This mode of operation permits photographing a single transient, without interference from any succeeding signals. The circuit is readied for triggering a single sweep when the next signal is applied.

1. Set the HORIZ. DISPLAY switch. Adjust LEVEL knob to get a stable display of the signal from the CAL. OUT connector, whose amplitude is about that expected of the desired signal.

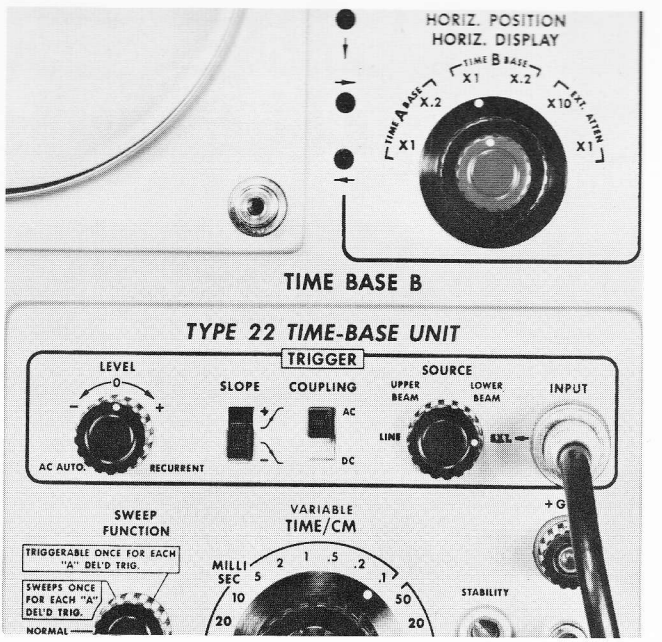
2. Select the desired triggering signal. See page 5.

3. Place the SWEEP FUNCTION switch in the SINGLE SWEEP position.

4. Remove the lead from the CAL. OUT connector. Connect the source of expected signal to the Time Base INPUT connector. Actuate PUSH TO RESET button. The READY light should light.

5. The next trigger signal received will cause a single trace to be displayed. The READY lamp will go out.

Note: The procedure is repeated with each pressing of the button.



In this mode of operation, an action occuring at an undetermined time can be photographed.

SINGLE SWEEP, DUAL BEAM

TRIGGERED OPERATION

This mode of operation permits photographing a single transient, without interference from any succeeding signals. The circuit is readied for triggering a single sweep when the next signal is applied.

The Type 555 can be used to deflect both beams with the same time base unit for single sweep display. One beam sweep display may be a five times magnification of part of the display without the intensified sector that occurs with the delayed sweep dual beam display described on page 26.

1. Set the HORIZ. DISPLAY switch of one beam for the time base used with a multiple of one. (Such as TIME BASE A x 1). Set the HORIZ. DISPLAY switch of the other beam for the time base unit times .2 (such as TIME BASE A x .2). This latter beam will show the same sweep as the first one, but with the sweep magnified five times.

2. Adjust the TRIGGER LEVEL to get a stable display of the signal from the CAL. OUT connector, whose amplitude is about that expected of the desired signal.

3. Select the desired triggering signal. See page 5.

4. Place the SWEEP FUNCTION switch in the SINGLE SWEEP position.

5. Remove the lead from the CAL. OUT connector. Connect the source of expected signal to the plug-in INPUT connector. Actuate PUSH TO RESET button. The READY light should light.

6. The next trigger signal received will cause a single trace to be displayed. The READY lamp will go out.

Note: The procedure is repeated with each pressing of the button.

DELAYED TRIGGER OPERATION

A delayed triggering pulse to Type 22 TIME BASE 'B' and the DELAYED TRIG. OUT binding-post connector of the oscilloscope can be obtained for any time from 0.05 microseconds to 50 seconds after the start of the sweep.

1. Set the controls of the appropriate time base unit for triggered operation or for free-running operation, depending upon the application.

2. Set the 'A' TIME/CM control and the DELAYED TRIGGER control for the delay time.

3. Set the HORIZ. DISPLAY switches for the appropriate beam to be delayed to time base to be used.

4. If using the delayed trigger externally, connect DELAYED TRIG. OUT to external source to be triggered and connect the resultant signal to INPUT on the vertical plug-in for the signal to be fed the other beam.

Used with the delayed sweep, the delayed triggering pulse will start an action after a known time interval and let you observe the resulting action.

DELAYED SWEEP OPERATION

The delayed sweep mode of operation makes possible accurate time and phase measurements as well as high magnification of a selected portion of a low duty-cycle waveform.

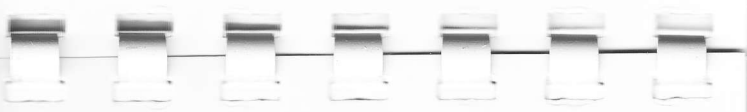
1. Set the controls of both time bases for TRIGGERED OPERATION.

2. Select the delaying sweep by placing the SWEEP FUNCTION switch in the selected position.*

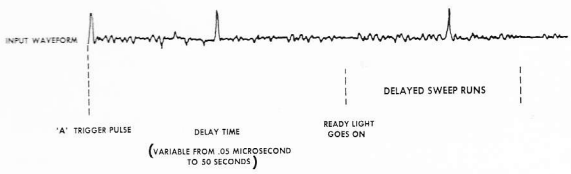
3. Determine the amount of delay occuring until the sweep runs by multiplying the settings of the 'A' TIME/CM switch and the DELAYED TRIGGER control.

4. Further magnification may be effected with the five times magnification by the TIME BASE x .2 setting on the HORIZ. DISPLAY switches.

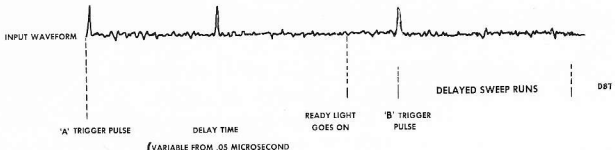
***When the SWEEP FUNCTION switch of the TIME BASE 'B' unit is in the TRIGGERABLE ONCE FOR EACH 'A' DEL'D TRIG. position, the horizontal sweep starts after receiving the next triggering signal. When the switch is in the SWEEPS ONCE FOR EACH 'A' DEL'D TRIG. position, the horizontal sweep starts immediately after the delay period is completed.**



CASE 1: SWEEPS ONCE FOR EACH 'A' DEL'G TRIG.



CASE 2: TRIGGERABLE ONCE FOR EACH 'A' DEL'D TRIG.



The delayed sweep by Time Base B lets you see a part of the 'A' sweep display under high magnification.

MAGNIFICATION

1. Set the controls of both time bases for delayed sweep operation, with the TIME BASE B TIME/CM switch set for a faster sweep rate than TIME BASE A.

2. Place the 'B' HORIZ. DISPLAY switch in the TIME BASE 'B' position. The brightened portion (the delayed sweep) is more noticeable when the INTENSITY control is not turned too high.

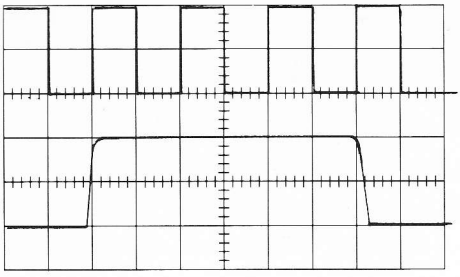
3. Use the DELAYED TRIGGER control to position the start of the brightened portion to left or right.

4. Use the 'B' TIME/CM control to adjust the length of the brightened portion to part of a cycle or to many cycles.

5. To expand the brightened portion set the 'B' TIME/CM switch. The amount of magnification is the ratio of the TIME BASE A TIME/CM control to the TIME BASE B TIME/CM control.

6. Further magnification may be effected by the HORIZ. DISPLAY switch.*

*Refer to description of the control function in this book.



Practical sweep magnifications up to approximately 10,000 times are attainable.

EXTERNAL SWEEP

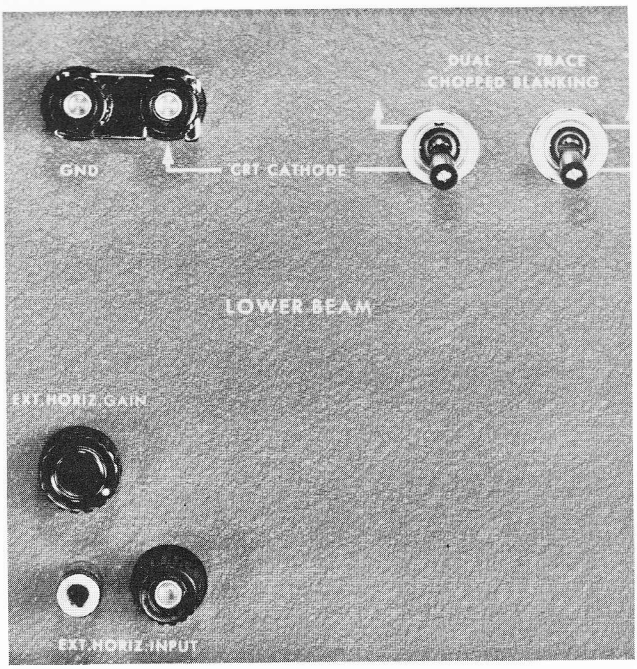
This mode of operation uses externally derived waveforms to deflect the trace both horizontally and vertically. This mode may be used for displaying waveforms up to approximately 240 kc.

1. Connect one externally derived waveform to the INPUT connector on the plug-in unit for vertical deflection and connect the other to the EXT. HORIZ. INPUT binding post connector on the rear panel for horizontal deflection. The sweep voltage should not have a large dc component, or horizontal positioning difficulty may result.

2. Place the HORIZ. DISPLAY switch to either EXT. ATTEN. position.

3. To vary the horizontal deflection factor from approximately .2 volts/cm to 20 volts/cm, use the EXT. HORIZ. GAIN control on back panel.

If the waveform does not appear, refer to page 35.



In this mode of operation, set the TRIGGER LEVEL control to some position other than AC AUTO.

TYPE CA PLUG-IN UNIT
TRIGGERED OPERATION

dc to 24 megacycles

Dual-trace operation with the dual beams gives a maximum possible readout of four traces with two CA vertical amplifier plug-in units used. In the ALTERNATE position, two separate traces may be displayed alternately with one beam. In the CHOPPED position, two traces may be displayed simultaneously with one beam.*

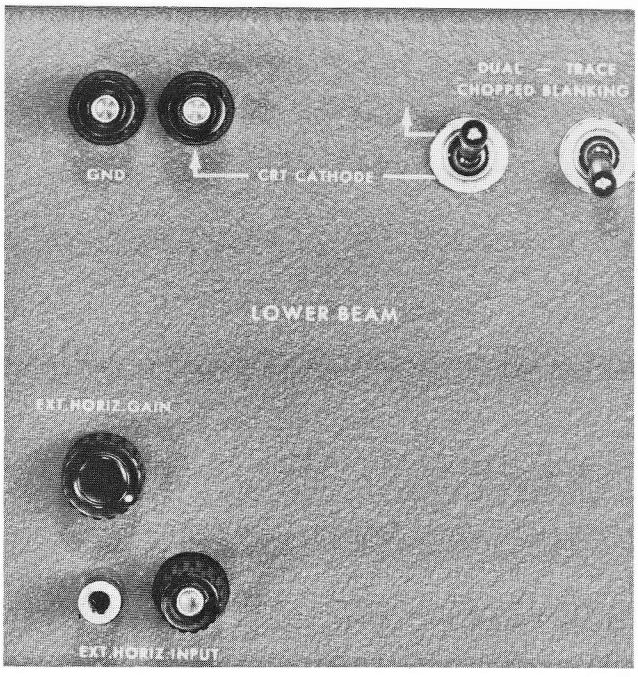
CONTROL	POSITION	PAGE **
Horiz. Display	Time base 'A' or 'B'	36
Trigger Level	near center	36
Trigger Slope	+ or —	37
Trigger Coupling	AC or DC	38

*Detailed instructions for operation of the TYPE CA unit are contained in the CA Instruction Manual.

**Refer to control description in this book.

1. Connect the source of the waveform to the CHANNEL A and CHANNEL B connectors on the plug-in, and place the MODE switch in the desired position.*
2. Couple the units and set the appropriate time base unit for the desired display.
3. Set the TIME/CM switch for the desired time base and the red VARIABLE knob to CALIBRATED.
4. Turn the black LEVEL control slowly toward the center of its range for a stable display.

If the waveform does not appear, refer to page 35.



Chopped Mode settings for Type CA Plug-In Unit.

INTENSITY MODULATION

Either beam can be intensity modulated by an external signal to display additional information. This is done by connecting the external signal to the appropriate EXT. HORIZ. INPUT connector on the rear of the instrument and placing the CRT CATHODE SELECTOR switch in the CRT CATHODE position. This is done after first removing the grounding strap from the CRT connector.

When you wish to make very accurate time measurements from the crt display, you can intensity modulate the beam with time markers and make your measurements directly from the time markers displayed on the screen. A positive signal of approximately 25 volts is required to cut off the beam from normal intensity.

POSSIBLE CAUSES FOR LACK OF TRACE

1. The INTENSITY control is not turned sufficiently to the right. CAUTION: The oscilloscope screen can be damaged in a few seconds if the spot remains overly long in one position, or excessively bright.

2. The TIME/CM switch or the TIME/CM or HORIZ. DISPLAY switch may be set incorrectly.

3. The plug-in vertical-deflection control may be set incorrectly.

4. The waveform may be off the screen. The beam-position-indicator lamps will light. Adjust the HORIZ. POSITION control on the oscilloscope, or the VERTICAL POSITION control on the plug-in accordingly.

5. Check the Maintenance Section of the Instruction Manual for further assistance.

HORIZ. DISPLAY (either UPPER BEAM or LOWER BEAM)

The six position switch determines the Time Base used and the type of display presented. In the two TIME BASE 'A' positions, the sweep is connected to the horizontal amplifier input from the sweep generator in the TIME BASE 'A' position. In the two TIME BASE 'B' positions, the sweep from TIME BASE 'B' generator is connected to the horizontal amplifier input. In the two EXT. ATTEN. positions, an externally derived sweep (coupled through the HORIZ. INPUT connector on the back panel) is connected to the external horizontal amplifier and then to the horizontal amplifier input. It may be switch attenuated by ten or variably attenuated (see EXT. HORIZ. GAIN).

TRIGGER LEVEL

The TRIGGER LEVEL controls determine at which point on the triggering waveform triggering occurs. Setting this control is the final step in triggering the sweep. Rotating the TRIGGER LEVEL controls in the clockwise direction causes the sweep to be triggered at more positive points on the triggering waveform. Rotating the controls counterclockwise

causes the sweep to be triggered at more negative points on the waveform. In usual applications, the control is set near the zero position.

In the fully left AC AUTO position, the sweep is triggered at the average voltage level of the waveform. It is useful for obtaining stable displays of waveforms lying in the range of approximately 60 cycles to 2 megacycles.

In the full right RECURRENT position, the sweep is made to free run and the number of sweeps per second is determined by the setting of the TIME/CM controls. This position provides a convenient reference trace without requiring an input signal.

TRIGGER SOURCE

A four position black TRIGGER SOURCE switch selects the sweep triggering signal from the signal being displayed (UPPER BEAM or LOWER BEAM), the power line wave (LINE), or the signal coupled to the TRIGGER INPUT connector (EXT.).

TRIGGER SLOPE

The two position TRIGGER SLOPE switch determines whether the triggering occurs during the voltage rise of the triggering waveform (in the + position) or during the voltage fall of the triggering waveform (in the — position).

TRIGGER COUPLING

The two position TRIGGER COUPLING switch selects either AC or DC coupling of the triggering waveform to the triggering circuits. In the AC position, only the ac components of the triggering signal are applied to the triggering circuits. DC coupling applies both ac and dc components. AC coupling is usually used, but DC coupling is used when triggering from very low frequency waveforms or when it is impossible to trigger the sweep using AC coupling.

VARIABLE (TIME/CM)

The red VARIABLE (TIME/CM) control provides continuous uncalibrated sweep rates between the ranges of the TIME/CM switch. The associated UNCALIBRATED indicator lamp will light when the VARIABLE control is turned away from the CALIBRATED position.

TIME/CM (TIME BASE 'A')

The twenty-four position TIME/CM switch determines the sweep speed, the horizontal size of the TIME BASE 'A' waveform, and the sweep delay for TYPE 22 TIME BASE 'B'. The sweep rates are determined by this setting and the position of the HORIZ. DISPLAY switch. The CALIBRATED sweep rate is obtained only when the red VARIABLE control is turned

fully clockwise. The mode of sweep delay is determined by the setting of the SWEEP FUNCTION switch in Type 22 in TIME BASE 'B' position, and the TRIGGER LEVEL settings.

SWEEP FUNCTION

The SWEEP FUNCTION four-position switch determines the mode of sweep displayed. Both time base units are equipped to produce a single sweep display. When the switch is placed in the SINGLE SWEEP position, the one sweep is displayed on either beam or possibly both from the same time unit.

The two modes of delayed sweep operation are selected by the Time Base 'B' SWEEP FUNCTION control. When the control is in the SWEEP ONCE FOR EACH 'A' DEL'D TRIG. position, the delayed sweep occurs immediately at the end of the delay period. Through the use of the DELAYED TRIGGER and the 'B' TIME/CM controls, any portion of the undelayed sweep can be included in the brightened section when there is a delayed sweep.

The second delayed sweep mode is obtained with the Time Base 'B' SWEEP FUNCTION switch in the TRIGGERABLE ONCE FOR EACH DEL'D TRIG. position. The 'B' sweep is disabled for the period of the delay and then the sweep waits for the next triggering pulse to be applied to TIME BASE 'B'. The TRIGGER LEVEL control must be in the position required for normal triggered operation.

TIME/CM (TIME BASE 'B')

The twenty-four position TIME/CM switch determines the sweep speed, the horizontal size of the TIME BASE 'B' waveform, and the size of the brightened portion of the sweep from TIME BASE 'A'. The sweep rates are determined by this setting and position of the HORIZ. DISPLAY Switch. The CALIBRATED sweep rate is obtained only when the red VARIABLE control is turned fully clockwise.

DELAYED TRIGGER FROM TIME BASE 'A'

The DELAYED TRIGGER FROM TIME BASE 'A' vernier control is a ten turn control that multiplies the setting of the TIME/CM switch for TIME BASE 'A'.

HORIZONTAL POSITION AND VERNIER

The two controls position the trace horizontally.

AMPLITUDE CALIBRATOR

The AMPLITUDE CALIBRATOR switch selects any one of eighteen square-wave output amplitudes, adjustable from .2 MILLIVOLTS, peak-to-peak, to 100 VOLTS, peak-to-peak.

BEAM-POSITION INDICATORS

The eight indicator lamps, marked with arrows, are located beside the lower portion of the crt screen. If the beam is positioned horizontally or vertically away from the center of the graticule, either on or off the screen, the appropriate BEAM-POSITION INDICATOR lamp will light.

PUSH TO RESET

A red push button which prepares the sweep circuits for the reception of a triggering pulse when the SWEEP FUNCTION switch is in the SINGLE SWEEP or TRIGGERABLE ONCE FOR EACH 'A' DEL'D SWEEP (Type 22) position. Otherwise, the PUSH TO RESET button has no effect.

FOCUS

The FOCUS knob controls the sharpness of the crt spot or trace.

INTENSITY

The INTENSITY knob controls the brightness of the crt display.

SCALE ILLUM.

The SCALE ILLUM. knob controls the graticule light intensity.

EXT. HORIZ. GAIN

The EXT. HORIZ. GAIN knob is a variable attenuator that controls the horizontal deflection factor for external signals. It is used in conjunction with the corresponding beam HORIZ. DISPLAY switch and controls.

DELAYED TRIG. OUT

The DELAYED TRIG. OUT coaxial connector supplies a positive-going delayed trigger output.

TRIGGER INPUT

The coaxial TRIGGER INPUT connector accepts an external triggering signal. The TRIGGER SOURCE switch must be in the EXT. position.

+Gate

The +GATE binding post connector supplies a positive-going waveform with a peak value of approximately +10

volts. The start and duration of the waveform of the positive-going sawtooth waveform available from the SAWTOOTH binding post connector.

SAWTOOTH

The SAWTOOTH binding post connector supplies a positive-going waveform with a peak value of approximately +150 volts. The start of the waveform coincides with the start of the time base sweep. The rate at which the sawtooth rises is determined by the setting of theTIME/CM switch.

CAL. OUT

The CAL. OUT connector supplies a square-wave output from the AMPLITUDE CALIBRATOR at about 1 kc.

POWER ON

A toggle switch on the separate power supply through which power is supplied to the instrument.

CRT CATHODE

Switches located at the rear of the cabinet that are used for selecting the appropriate crt cathode usage. For normal

applications, the switches are placed in the CRT CATHODE selector position and the binding posts are jumpered to ground.

Either beam of the Type 555 Oscilloscope can be intensity modulated by an external signal to display additional information. (See page 34). The grounding strap is removed.

When the Type CA Dual-Trace Plug-In units are used in the chopped mode, undesirable switching transients are blanked by using the DUAL-TRACE CHOPPED BLANKING position of the CRT CATHODE selector switch.

EXT. HORIZ. INPUT

The EXT. HORIZ. INPUT binding post connector at the rear of the cabinet accepts an external signal for deflecting the trace horizontally. The HORIZ. DISPLAY switch must be placed at either EXT. ATTEN x 1 or EXT. ATTEN x 10 position.

READY

The READY light indicates that the sweep can be triggered.