

*TEKTRONIX, INC.*  
*1963 ABRIDGED CATALOG*





This reference section is designed to give you a quick indication of major features and characteristics of Tektronix Oscilloscopes and companion instruments.

Pictures and other features follow this reference section on pages indicated. For additional information, contact your nearest Tektronix Field Engineering Office.

TEKTRONIX OSCILLOSCOPES (According to Passband Capabilities)										
Instrument	Vertical <sup>†</sup> Passband	Risetime	Calibrated Deflection Factor	Signal Delay	Sweep Delay	Calibrated Sweep Range	Magnifier Max. Calib. Sweep Rate	Accel. Potential	Price	Page
Type 661 <sup>(A)</sup>	Equivalent to DC to 3500 MC	0.1 nsec	2 mv/cm to 200 mv/cm	No	through 100 nsec	1 nsec/cm to 100 μsec/cm	2, 5, 10, 20, 50, 100X 10 psec/cm	3 kv	\$1150 <sup>†</sup>	13
Type 661 <sup>(B)</sup>	Equivalent to DC to 1000 MC	0.35 nsec	2 mv/cm to 200 mv/cm	Yes	through 100 nsec	1 nsec/cm to 100 μsec/cm	2, 5, 10, 20, 50, 100X 10 psec/cm	3 kv	\$1150 <sup>†</sup>	13
Type 519	DC to 1000 MC	0.35 nsec	less than 10 v/cm	Yes	0 to 35 nsec	2 nsec/cm to 1 μsec/cm	None	24 kv	\$3900	10
*Type 561A <sup>(C)</sup>	Equivalent	0.4 nsec	2 mv/cm to 200 mv/cm	Yes	through 100 nsec	0.2 nsec/cm to 10 μsec/cm	10X 20 psec/cm	3.5 kv	\$ 470 <sup>†</sup>	12
Type 564 <sup>(C)</sup> Storage	to	0.4 nsec	Same features as Type 561A (above) plus SPLIT-SCREEN STORAGE of signal information.						\$ 950 <sup>†</sup>	12
*Type 567 <sup>(C)</sup> Readout	DC to 875 MC	0.4 nsec	Same features as Type 561A (above) plus DIGITAL READOUT of pulse risetime, pulse width, time differences (with Type 6R1 Digital Unit).						\$ 700 <sup>†</sup>	12
Type 581 Oscilloscope				Yes	None	50 nsec/cm to 2 sec/cm	5X 10 nsec/cm	10 kv	\$1425 <sup>†</sup>	13
Type 585 Oscilloscope				Yes	2 μsec to 10 sec	50 nsec/cm to 2 sec/cm	5X 10 nsec/cm	10 kv	\$1725 <sup>†</sup>	13
Type 80/P80 Fast-Rise Preamp	DC to 95 MC	3.9 nsec	0.1 v/cm to 5 v/cm	Type 80 Plug-In Unit less probe				\$ 100	13	
				Type P80 Probe				\$ 150		
Type 82 Dual-Trace Preamp	DC to 85 MC	4 nsec	100 mv/cm to 20 v/cm	Type 82 Plug-In Unit and probes				\$ 650	13	
Type 517A High-Speed		7 nsec	50 mv/cm	Yes	None	10 nsec/cm to 20 μsec/cm	None	24 kv	\$3500	10
*Type 541A <sup>(D)</sup> Fast-Rise	DC to 30 MC	12 nsec	50 mv/cm to 20 v/cm	Yes	None	0.1 μsec/cm to 5 sec/cm	5X 20 nsec/cm	10 kv	\$1225 <sup>†</sup>	11
*Type 543A <sup>(D)</sup> Fast-Rise		12 nsec	50 mv/cm to 20 v/cm	Yes	None	0.1 μsec/cm to 5 sec/cm	2, 5, 10, 20, 50, 100X 20 nsec/cm	10 kv	\$1300 <sup>†</sup>	11
*Type 545A <sup>(D)</sup> Fast-Rise		12 nsec	50 mv/cm to 20 v/cm	Yes	2 μsec to 10 sec	0.1 μsec/cm to 5 sec/cm	5X 20 nsec/cm	10 kv	\$1550 <sup>†</sup>	11
Type 555 <sup>(E)</sup> Dual-Beam		12 nsec	50 mv/cm to 20 v/cm	Yes	0.1 μsec to 50 sec	0.1 μsec/cm to 5 sec/cm	5X 20 nsec/cm	10 kv	\$2650 <sup>†</sup>	11
Type 551 <sup>(E)</sup> Dual-Beam	DC to 25 MC	14 nsec	50 mv/cm to 20 v/cm	Yes	None	0.1 μsec/cm to 5 sec/cm	5X 20 nsec/cm	10 kv	\$1850 <sup>†</sup>	11
Type 945 Militarized Oscilloscope				Yes	2 μsec to 100 msec	0.1 μsec/cm to 5 sec/cm	5X 20 nsec/cm	10 kv	\$2850 <sup>†</sup>	14
Type MC Dual-Trace Preamp	DC to 24 MC	15 nsec or less	50 mv/cm to 20 v/cm					\$ 475	14	
Type ML Fast-Rise Preamp	DC to 30 MC	12 nsec or less	50 mv/cm to 20 v/cm					\$ 425	14	

<sup>†</sup> Price does not include Plug-In Units.

\* Rack-Mount models are available.

<sup>(A)</sup> When used with Types 4S2 and 5T1A Sampling Plug-In Units.

<sup>(B)</sup> When used with Types 4S1 and 5T1A Sampling Plug-In Units.

<sup>(C)</sup> When used with Types 3S76 and 3T77 Sampling Plug-In Units.

<sup>(D)</sup> When used with Type L Plug-In Preamplifier.

<sup>(E)</sup> When used with Type L Plug-In Preamplifier. Type 551 and 555 Oscilloscopes are designed for 2 Plug-In Preamplifiers.

**TEKTRONIX OSCILLOSCOPES**  
(According to Passband Capabilities)

Instrument	Vertical ‡ Passband	Risetime	Calibrated Deflection Factor	Signal Delay	Sweep Delay	Calibrated Sweep Range	Magnifier Max. Calib. Sweep Rate	Accel. Potential	Price	Page
<b>*Type 515A</b>	DC to 15 MC	23 nsec	50 mv/cm to 20 v/cm	Yes	None	0.2 $\mu$ sec/cm to 2 sec/cm	5X 40 nsec/cm	4 kv	\$ 875	10
<b>Type 516 Dual-Trace</b>		23 nsec	50 mv/cm to 20 v/cm	Yes	None	0.2 $\mu$ sec/cm to 2 sec/cm	5X 40 nsec/cm	4 kv	\$1070	10
<b>*Type 531A ①</b>		23 nsec	50 mv/cm to 20 v/cm	Yes	None	0.1 $\mu$ sec/cm to 5 sec/cm	5X 20 nsec/cm	10 kv	\$ 995†	11
<b>*Type 533A ①</b>		23 nsec	50 mv/cm to 20 v/cm	Yes	None	0.1 $\mu$ sec/cm to 5 sec/cm	2, 5, 10, 20, 50, 100 X 20 nsec/cm	10 kv	\$1125†	11
<b>*Type 535A ①</b>		23 nsec	50 mv/cm to 20 v/cm	Yes	2 $\mu$ sec to 10 sec	0.1 $\mu$ sec/cm to 5 sec/cm	5X 20 nsec/cm	10 kv	\$1400†	11
<b>Type 536 ② X-Y Curve Tracer</b>	DC to 11 MC	31 nsec	50 mv/div to 20 v/div	No	None	0.2 $\mu$ sec/div to 2 sec/div	5X 40 nsec/div	4 kv	\$1085†	11
<b>*Type 317 Daylight 3" Portable</b>	DC to 10 MC	35 nsec	10 mv/div to 50 v/div	Yes	None	0.2 $\mu$ sec/div to 2 sec/div	5X 40 nsec/div	9 kv	\$ 875	9
<b>*Type 561A ③ Oscilloscope</b>		35 nsec	10 mv/cm to 10 v/cm	No	0.5 $\mu$ sec to 10 sec	0.5 $\mu$ sec/cm to 1 sec/cm	5X 0.1 $\mu$ sec/cm	3.5 kv	\$ 470†	12
<b>Type 564 ③ Storage</b>		Same features as Type 561A (above) plus SPLIT-SCREEN STORAGE of signal information.							\$ 950†	12
<b>*Type 565 ④ Dual-Beam Oscilloscope</b>		35 nsec	10 mv/cm to 10 v/cm	No	1 $\mu$ sec to 50 sec	1 $\mu$ sec/cm to 5 sec/cm	10X 0.1 $\mu$ sec/cm	4 kv	\$1400†	12
<b>Type 321 Transistorized 3" Portable</b>	DC to 5 MC	70 nsec	10 mv/div to 20 v/div	No	None	0.5 $\mu$ sec/div to 0.5 sec/div	5X 0.1 $\mu$ sec/div	4 kv	\$ 820	9
<b>Type 310A 3" Portable</b>	DC to 4 MC	0.1 $\mu$ sec 90 nsec	10 mv/div to 0.1 v/div 0.1 v/div to 50 v/div	No	None	0.5 $\mu$ sec/div to 0.2 sec/div	5X 0.1 $\mu$ sec/div	1.8 kv	\$ 675	9
<b>*Type 503 Differential X-Y Curve Tracer</b>	DC to 450 KC	0.75 $\mu$ sec	1 mv/cm to 20 v/cm	No	None	1 $\mu$ sec/cm to 5 sec/cm	2, 5, 10, 20, and 50X 0.1 $\mu$ sec/cm	3 kv	\$ 640	9
<b>*Type 504</b>		0.75 $\mu$ sec	5 mv/cm to 20 v/cm	No	None	1 $\mu$ sec/cm to 0.5 sec/cm	None	3 kv	\$ 540	9
<b>Type 502 Dual-Beam and X-Y Curve Tracer</b>	DC to 100 KC increasing to DC to 1 MC	3.5 $\mu$ sec diminishing to 0.35 $\mu$ sec	200 $\mu$ v/cm to 20 v/cm	No	None	1 $\mu$ sec/cm to 5 sec/cm	2, 5, 10, and 20X 1 $\mu$ sec/cm	3 kv	\$ 890	9

**HIGH-VOLTAGE SURGE-TEST OSCILLOSCOPE**

<b>Type 507</b>		10 nsec	Approximately 50 v/cm to 500 v/cm	No	None	20 nsec/cm to 50 $\mu$ sec/cm	None	24 kv	\$3000	9
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‡ Frequency Specifications are at 3-db down.

† Price does not include Plug-In Units.

\* Rack-Mount models are available.

① When used with Type L Plug-In Preamplifier.

② When used with Type L Plug-In Preamplifier and Type T Plug-In Time Base.

③ When used with Type 3A1 Plug-In Amplifier and Type 3B3 Plug-In Time Base.

④ When used with Type 3A1 Plug-In Amplifier. Type 565 is designed for 2 Plug-In Amplifiers.

Information in this catalog supersedes all previously published material. Specification and price change privileges reserved.

**U.S. Sales Prices f.o.b. Beaverton, Oregon**

### TELEVISION OSCILLOSCOPES

Instrument	Risetime	Calibrated Deflection Factor	Signal Delay	Vertical Response	Calibrated Sweep Range	Sweep Magnifier	Accel. Potential	Price	Page
<b>Type 524AD Oscilloscope</b>	35 nsec	15 mv/cm to 50 v/cm	Yes	Normal, Flat, IRE	0.1 $\mu$ sec/cm to 0.01 sec/cm	3 and 10X	4 kv	\$1300	10
<b>Type 525 Waveform Monitor</b>		15 mv/cm with 1X, 2X, 5X step attenuator	No	Flat, Low-Pass, High-Pass, IRE	Field and Line Rates	5 and 25X	4 kv	\$1140	10
<b>Type 526 Vectorscope</b>	Dual Channel displays, with either vector or linear-sweep presentation of demodulated chroma signal.						4 kv	\$1665	10
<b>*Type 527 Waveform Monitor</b>		0.25 v to 1.6 v for 7 cm	No	Flat, IRE	Field and Line Rates	5 and 25X	4 kv	\$ 925	10

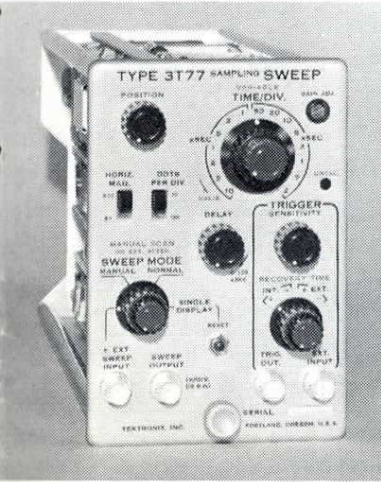
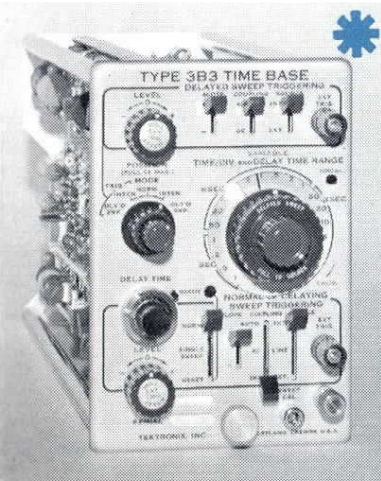
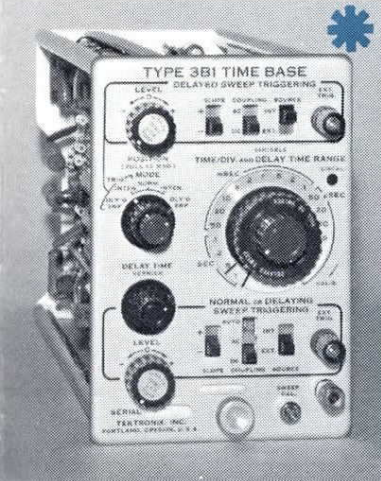
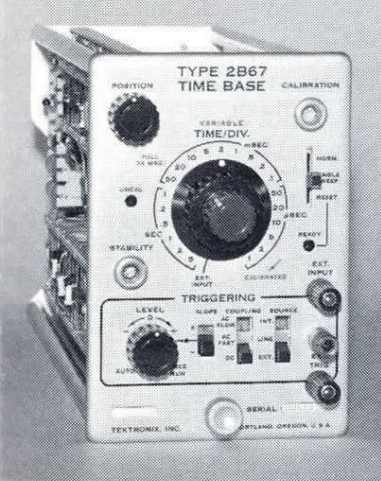
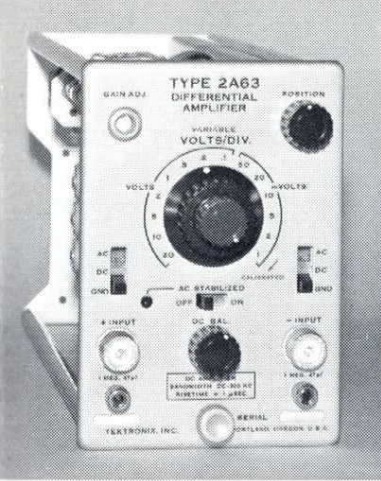
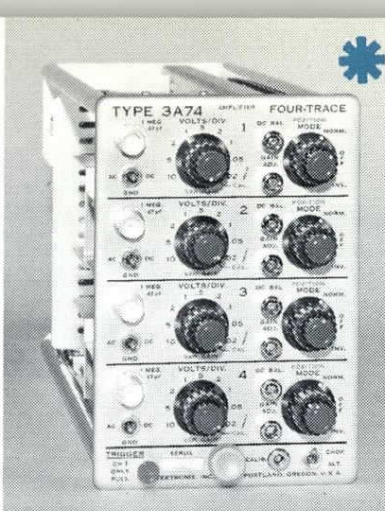
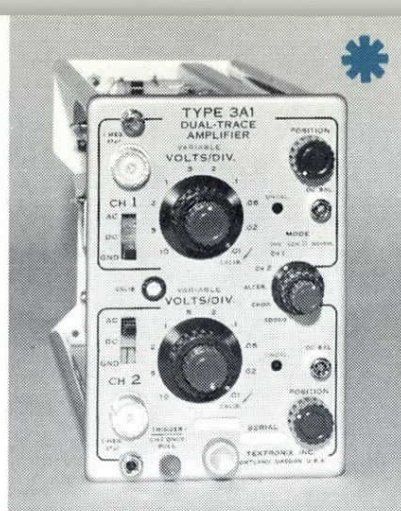
### 50-OHM SAMPLING SYSTEMS

Instrument	Risetime	Calibrated Sensitivity	Signal Delay	Sweep Delay	Equivalent Sweep Time	Samples Per Centimeter	Trigger	Accel. Potential	System Price	Page
<b>Type 661</b> with Types 5T1A and 4S2 Units	0.1 nsec	2-200 mv/cm 1-2-5 sequence	No	Through 100 nsec	1 nsec/cm to 100 $\mu$ sec/cm plus magnifier	5, 10, 20, 50, 100 or 1000	External	3.0 kv	\$3500	13
<b>Type 661</b> with Types 5T1A and 4S1 Units	0.35 nsec		Yes		Internal or External		\$3330		13	
<b>*Type 561A</b> with Types 3S76 and 3T77 Units	0.4 nsec		Yes		Internal or External		\$2220		12	
<b>Type 564</b> with Types 3S76 and 3T77 Units	0.4 nsec	Same features as Types 561A, 3S76, 3T77 (above) plus SPLIT-SCREEN STORAGE of signal information.							\$2700	12
<b>*Type 567</b> with Types 3S76, 3T77, and 6R1 Units	0.4 nsec	Same features as Types 561A, 3S76, 3T77 (above) plus DIGITAL READOUT of pulse risetime, pulse amplitude, pulse width, time differences.							\$4950	12

### CHARACTERISTIC-CURVE TRACERS

Instrument	Vertical Axis	Horizontal Axis	Variable Drive Parameters	Accel. Potential	A-B Comparison Tests	Price	Page
<b>Type 570</b> presents an accurate graphic analysis of electron-tube characteristics under almost any conceivable operating condition.	20 $\mu$ a/div to 50 ma/div 1-2-5 sequence	1 v/div to 50 v/div 1-2-5 sequence	Plate, screen, or grid current vs. plate or grid voltage.	4 kv	Yes	\$1100	13
<b>Type 575</b> traces characteristic curves for both PNP and NPN transistors and diodes on the face of a crt.	1 $\mu$ a/div to 2 a/div 10 mv/div to 0.5 v/div	10 mv/div to 20 v/div 10 mv/div to 0.5 v/div	Collector current & voltage, Base current & voltage.	4 kv	Yes	\$1075	13
Instrument	Collector Supply	Base Supply	Calibrated Display	A-B Comparison Tests	Price	Page	
<b>Type 175</b> adapts the Type 575 to measurement of high power (NPN and PNP) transistors and diodes. Specifications apply ONLY when used with Type 575 Curve Tracer.	0 to 20 v or 0 to 100 v, or 0 to 100 v with 300- $\Omega$ series load resistor.	$\pm$ stepping, 4 to 12 steps per family, either repetitive or single family. 10 current positions—1 ma to 1 amp/step 5 voltage positions—0.02 to 0.5 v/step	Vertical Axis—Collector Current Horizontal Axis—Collector Voltage Base Voltage	Yes	\$1475	13	

\* Rack Mount models are available



## Plug-in Units for Type 560 Series Oscilloscopes

Type 561A, RM561A, and 564 Oscilloscopes use any of these Plug-In Units.

Type 565 and RM565 Oscilloscopes use Plug-In Units for vertical deflection only.

Type 567 and RM567 Readout Oscilloscopes use Digital and Sampling Units for digital readout. Other Amplifier and Time Base Units can be used without digital readout.

NEW

AMPLIFIER UNITS					
Type	Passband (3-db down)	Calibrated Deflection Factor ††	Input (ac or dc coupled)	Price	
*2A60	dc — 1 Mc.	50 vm/cm—50 v/cm in 4 steps.	1 megohm shunted by 47 pf, 600 volts max.	\$105	
*2A63 Differential 50:1 rejection ratio	dc — 300 kc.	1 mv/cm—20 v/cm, 1-2-5 sequence.		\$130	
**3A1 Dual-Trace (Identical Channels)	dc — 10 Mc. (each channel).	10 mv/cm—10 v/cm, 1-2-5 sequence.		\$410	
*3A72 Dual-Trace (Identical Channels)	dc — 650 kc (each channel).	10 mv/cm—20 v/cm, 1-2-5 sequence.		\$250	
3A74 Four-Trace (Identical Channels)	dc — 2 Mc. (each channel).	20 mv/cm—10 v/cm, 1-2-5 sequence.		\$550	
*3A75 Wide-Band	dc — 4 Mc.	50 mv/cm—20 v/cm, 1-2-5 sequence.		\$175	
3S76 Dual-Trace Sampling (use with 3T77)	dc to equivalent 875 Mc. (each channel).	2 mv/cm—200 mv/cm, 1-2-5 sequence.		50 Ω 2 volts pk-to-pk. max. dc coupled	\$1100
TIME-BASE UNITS					
Type	Sweep Rate ††	Magnifier	Triggering	Price	
†2B67 Single Sweep	1 μsec/cm to 5 sec/cm, 1-2-5 sequence.	5X	Internal, External, Line; amplitude-level selection; ac or dc-coupled; automatic or free run; ± slope.	\$175	
3B1 Sweep Delay	0.5 μsec/cm to 1 sec/cm, 1-2-5 sequence (for both normal and delayed sweeps).		Internal, External; amplitude-level selection; ac or dc-coupled; automatic (normal sweep only) or free-run; ± slope.	\$475	
3B3 Calibrated Sweep Delay Single Sweep	0.5 μsec/cm to 1 sec/cm, 1-2-5 sequence (for both normal and delayed sweeps). Continuously variable calibrated delay from 0.5 μsec to 10 sec.		Internal, External; amplitude-level selection, ac or dc coupled, ± slope. Normal sweep has in addition: automatic and line plus single sweep.	\$525	
3T77 Sampling Sweep (use with 3S76)	Equivalent sweep rates 0.2 nsec/cm to 10 μsec/cm, 1-2-5 sequence.	10X	Internal or External, ± slope.	\$650	

\* Formerly designated by last two digits.

\*\* Provides 6-cm linear scan.

† Same as former Type 67 with addition of single-sweep feature.

†† Deflection factor and Sweep Rate are variable between steps, uncalibrated.

530 Series  
540 Series  
550 Series  
580 Series

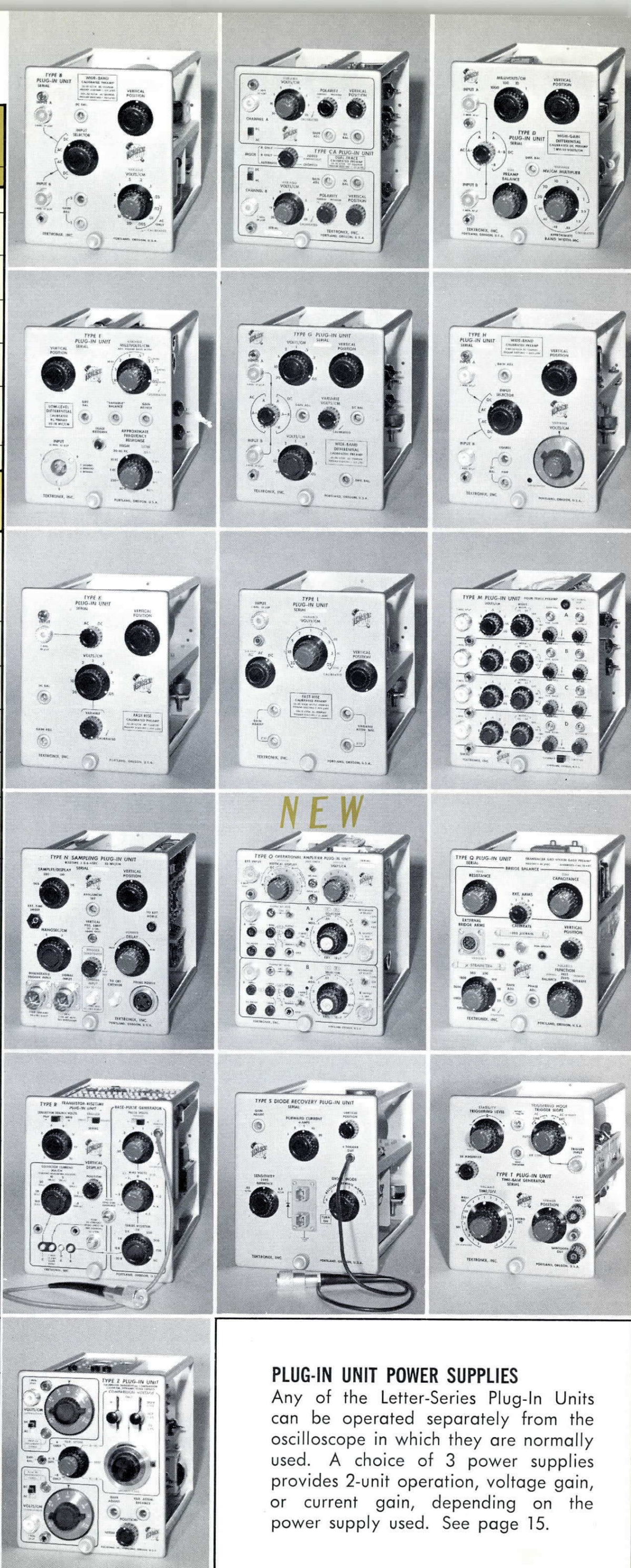
## Oscilloscope Characteristics with Letter Series Plug-in Units

OSCILLOSCOPE FEATURES	* Type 531A General Purpose	* Type 533A General Purpose	* Type 535A Sweep Delay	Type 536 X-Y Curve Tracer	* Type 541A Fast-Rise	* Type 543A Fast-Rise
SIGNAL DELAY	Yes			No		
CALIBRATED SWEEP RANGE	0.1 $\mu$ sec/cm to 5 sec/cm			See Type T Time-Base Generator		
SWEEP MAGNIFIER	5X	2, 5, 10, 20, 50, 100X	5X		5X	2, 5, 10, 20 50, 100X
SWEEP DELAY	None		2 $\mu$ sec to 10 sec	None	None	
ACCELERATING POTENTIAL	10 kv			4 kv		
PRICE (WITHOUT PLUG-IN UNITS)	\$995	\$1125	\$1400	\$1085	\$1225	\$1300
PAGE NUMBER	11	11	11	11	11	11

PLUG-IN UNIT TYPE	PRICE	CALIBRATED DEFLECTION FACTOR	RISETIME AND PASSBAND OF OSCILLOSCOPE AND PLUG-IN UNIT			
<b>B</b> Wide-Band High-Gain Unit	\$145	5 mv/cm to 20 mv/cm 50 mv/cm to 20 v/cm	35 nsec 2 cps to 10 Mc	40 nsec 2 cps to 9 Mc	30 nsec 2 cps to 12 Mc	
<b>C-A</b> Dual-Trace DC Unit	\$260	50 mv/cm to 20 v/cm	25 nsec dc to 14 Mc	35 nsec dc to 10 Mc	18 nsec dc to 20 Mc	
<b>D</b> High-Gain DC Differential	\$170	1 mv/cm to 50 v/cm	23 nsec dc to 15 Mc			
<b>E</b> Low-Level AC Differential	\$190	50 $\mu$ v/cm to 10 mv/cm	0.18 $\mu$ sec dc to 300 kc, increasing to 2 Mc			
<b>G</b> Wide-Band DC Differential	\$190	50 mv/cm to 20 v/cm	6 $\mu$ sec 0.06 cps to 20 kc, increasing to 60 kc			
<b>H</b> Wide-Band High-Gain DC Unit	\$185	5 mv/cm to 20 v/cm	25 nsec dc to 14 Mc	35 nsec dc to 10 Mc	18 nsec dc to 20 Mc	
<b>K</b> Fast-Rise DC Unit	\$145	50 mv/cm to 20 v/cm	31 nsec dc to 11 Mc	37 nsec dc to 9.5 Mc	23 nsec dc to 15 Mc	
<b>L</b> Fast-Rise High-Gain Unit	\$210	50 mv/cm to 20 v/cm	23 nsec dc to 15 Mc	31 nsec dc to 11 Mc	12 nsec dc to 30 Mc	
<b>M</b> Four-Trace Unit	\$525	20 mv/cm to 10 v/cm	23 nsec 3 cps to 15 Mc	35 nsec 3 cps to 10 Mc	15 nsec 3 cps to 24 Mc	
<b>N</b> Sampling Unit	\$625	10 mv/cm	23 nsec dc to 15 Mc	31 nsec dc to 11 Mc	12 nsec dc to 30 Mc	
<b>O</b> Operational Amplifier Unit	\$525	50 mv/cm to 20 v/cm	25 nsec dc to 14 Mc	35 nsec dc to 10 Mc	17 nsec dc to 20 Mc	
<b>Q</b> Strain Gage Unit	\$325	10 $\mu$ strain/div to 10,000 $\mu$ strain/div	0.6 nsec risetime (corresponding to 600 Mc), apparent sweep time to 1 nsec/cm (100 psec/cm with 10X magnifier), samples per display of 50, 100, 200, or 500. No signal delay, requires external trigger in advance of signal.			
<b>R</b> Transistor Risetime Unit	\$325	0.5 ma/cm to 100 ma/cm	Performs precise operations of integration, differentiation, function generation, and linear or nonlinear amplification.			
<b>S</b> Semiconductor Diode-Recovery Unit	\$260	50 mv/cm and 0.5 v/cm	60 $\mu$ sec risetime, dc to 6 kc. Measures force, displacement, acceleration, strain... any mechanical quantity that can be converted to a change in resistance, capacitance, or inductance.			
<b>T</b> Time-Base Generator Unit	\$240		Supplies 5-nsec risetime pulse, 400-ma collector supply, 100-ma bias supply, risetime and passband same as with K Unit.			
<b>Z</b> Differential-Comparator Unit	\$525	50 mv/cm to 25 v/cm	1 to 20 ma forward current, 0 to 2 ma reverse current, risetime and passband same as with K Unit.			
			Generates 22 calibrated sweep rates from 0.2 $\mu$ sec/div to 2 sec/div plus 5X magnifier. Triggering facilities include Manual, Automatic, H. F. Sync and Line, either ac or dc coupled.			
			35 nsec dc to 10 Mc	40 nsec dc to 9 Mc		
			Vertical "magnification" up to 500 times. Calibrated continuously variable (0 to $\pm$ 100 v) dc comparison voltages. $\pm$ 2000 cm effective scale length. 0.005% maximum resolution. 40,000 to 1 common-mode rejection ratio.			

\* Rack-Mount Models are available.

* Type 545A Sweep Delay	Type 551 Dual-Beam	Type 555 Dual-Beam	Type 581 Fast-Rise	Type 585 Sweep Delay
Use Type 81 Adapter				
Yes				
0.1 $\mu$ sec/cm to 5 sec/cm			50 nsec/cm to 2 sec/cm	
5X				
2 $\mu$ sec to 10 sec	None	0.1 $\mu$ sec to 50 sec	None	2 $\mu$ sec to 10 sec
10 kv				
\$1550	\$1850	\$2650	\$1425	\$1725
11	11	11	13	13
RISETIME AND PASSBAND OF OSCILLOSCOPE AND PLUG-IN UNIT				
30 nsec 2 cps to 12 Mc		30 nsec 2 cps to 12 Mc		
20 nsec dc to 18 Mc		18 nsec dc to 20 Mc		
16 nsec dc to 22 Mc		15 nsec dc to 24 Mc		
0.18 $\mu$ sec dc to 300 kc, increasing to 2 Mc				
6 $\mu$ sec 0.06 cps to 20 kc, increasing to 60 kc				
20 nsec dc to 18 Mc		18 nsec dc to 20 Mc		
25 nsec dc to 14 Mc		23 nsec dc to 15 Mc		
14 nsec dc to 25 Mc		12 nsec dc to 30 Mc		
16 nsec 3 cps to 22 Mc		15 nsec 3 cps to 24 Mc		
14 nsec dc to 25 Mc		12 nsec dc to 30 Mc		
18 nsec dc to 19 Mc		17 nsec dc to 20 Mc		
0.6 nsec risetime (corresponding to 600 Mc), apparent sweep time to 1 nsec/cm (100 psec/cm with 10X magnifier), samples per display of 50, 100, 200, or 500. No signal delay, requires external trigger in advance of signal.				
16 nsec dc to 22 Mc		14 nsec dc to 25 Mc		
Performs precise operations of integration, differentiation, function generation, and linear or nonlinear amplification.				
60 $\mu$ sec risetime, dc to 6 kc. Measures force, displacement, acceleration, strain... any mechanical quantity that can be converted to a change in resistance, capacitance, or inductance.				
Supplies 5-nsec risetime pulse, 400-ma collector supply, 100-ma bias supply, risetime and passband same as with K Unit.				
1 to 20 ma forward current, 0 to 2 ma reverse current, risetime and passband same as with K Unit.				
Generates 22 calibrated sweep rates from 0.2 $\mu$ sec/div to 2 sec/div plus 5X magnifier. Triggering facilities include Manual, Automatic, H. F. Sync and Line, either ac or dc coupled.				
27 nsec dc to 13 Mc				
Vertical "magnification" up to 500 times. Calibrated continuously variable (0 to $\pm$ 100 v) dc comparison voltages. $\pm$ 2000 cm effective scale length. 0.005% maximum resolution. 40,000 to 1 common-mode rejection ratio.				
* Rack-Mount Models are available.				



**NEW**

**PLUG-IN UNIT POWER SUPPLIES**

Any of the Letter-Series Plug-In Units can be operated separately from the oscilloscope in which they are normally used. A choice of 3 power supplies provides 2-unit operation, voltage gain, or current gain, depending on the power supply used. See page 15.

AMPLIFIERS								
Instrument	Gain	Frequency Response†	Noise Level	Differential Input	Input Impedance	Output Impedance	Price	Page
*Type 122	100X or 1000X	0.2 cps to 40 kc	1-5 $\mu$ v, rms, grounded	Yes	10 megohms paralleled by 50 pf.	1000 ohms	\$ 135	14
Type 123	100X	3 cps to 25 kc	7.5 $\mu$ v, rms, or less grounded	No	10 megohms	31 kilohms	\$ 75	14
Type 1121	100X	5 cps to 17 Mc 21-nsec risetime	50 $\mu$ v or less pk-to-pk, grounded	No	1 megohm paralleled by 22 pf.	93 ohms	\$ 465	14

† Frequency Specifications are at 3-db down.  
\* Rack-Mount models are available.

INDUCTANCE AND CAPACITANCE METER					
Instrument	Ranges	Accuracy	Guard Voltage	Price	Page
Type 130	0 to 3, 10, 30, 100, 300 $\mu$ h 0 to 3, 10, 30, 100, 300 $\mu$ mf	within 3% of full scale	Permits measuring an unknown capacitance while eliminating effects of other capacitances.	\$ 225	15

SQUARE-WAVE GENERATORS					
Instrument	Risetime	Frequency Range	Output Voltage	Price	Page
Type 105	13 nsec	25 cps to 1 Mc	10 v to 100 v across the internal 600- $\Omega$ load	\$ 435	14
Type 107	3 nsec	400 kc to 1 Mc	0.1 v to 0.5 v with 52- $\Omega$ termination	\$ 190	14

PULSE GENERATORS									
Instrument	Frequency	Main Pulse Width	Risetime	Delay	Output		Trigger Req.	Price	Page
					Amplitude	Impedance			
Type 109	275 to 700 cps	0.5 nsec to 300 nsec	<0.25 nsec	None	0 to 50 v	50 $\Omega$	None	\$360	14
Type 110	360 to 720 cps	0.5 nsec to 300 nsec	<0.25 nsec	1 nsec	0 to 50 v	50 $\Omega$	Line	\$650	14
Type 111	0 to 100 kc	2 nsec to 0.1 $\mu$ sec	0.5 nsec	30 to 250 nsec	$\pm$ 5 v	50 $\Omega$	+5 v	\$365	14
† Type 161	0 to 50 kc	10 $\mu$ sec to 0.1 sec	0.5 $\mu$ sec	Variable	0 to $\pm$ 50 v	1—5 k $\Omega$	+3 v	\$130	9
† Type 162	0 to 10 kc	100 $\mu$ sec to 10 sec	1 $\mu$ sec	None	50 v	1 k $\Omega$	+15 v	\$130	9
† Type 163	0 to 500 kc	1 $\mu$ sec to 10 msec	0.2 $\mu$ sec	Variable	0 to +25 v	100 $\Omega$ —3.5 k $\Omega$	+2 v	\$130	9

† Type 160A Power Supply provides power for up to 7 Type 161 or 162 Generators, 5 Type 163 Generators, or 5 Type 360 Indicators.

TIME-MARK GENERATORS						
Instrument	Time-Mark Interval	Sine-Wave Frequency	Accuracy	Stability††	Price	Page
Type 180A	2 per decade from 1 $\mu$ sec to 5 sec, separately or in timing combination.	5 Mc, 10 Mc or 50 Mc	within 0.001%	3 parts per million for 24 hr. period	\$ 625	15
*Type 181	1 per decade from 1 $\mu$ sec to 10 msec.	10 Mc	about 0.03%	0.005% per hour	\$ 265	15

\* Rack-Mount models are available.  
†† All outputs are derived from a 1 Mc crystal-controlled oscillator. Type 180A uses temperature-stabilized oven which is also available as accessory for the Type 181, or as MOD110 installed in the instrument. This provides stability of 3 parts per million.

CONSTANT AMPLITUDE SINE-WAVE GENERATOR						
Instrument	Output Frequency	Output Amplitude	Harmonic Content	Output Impedance	Price	Page
Type 190B	Continuously variable from 350 kc to 50 Mc.	Continuously variable from 40 mv to 10 volts, pk-to-pk.	Typically less than 5%.	Nominally 52 $\Omega$	\$ 330	15



310A  
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160A  
161  
162  
163  
502  
503  
504  
507



#### TYPE 310A DC-to-4 MC PORTABLE

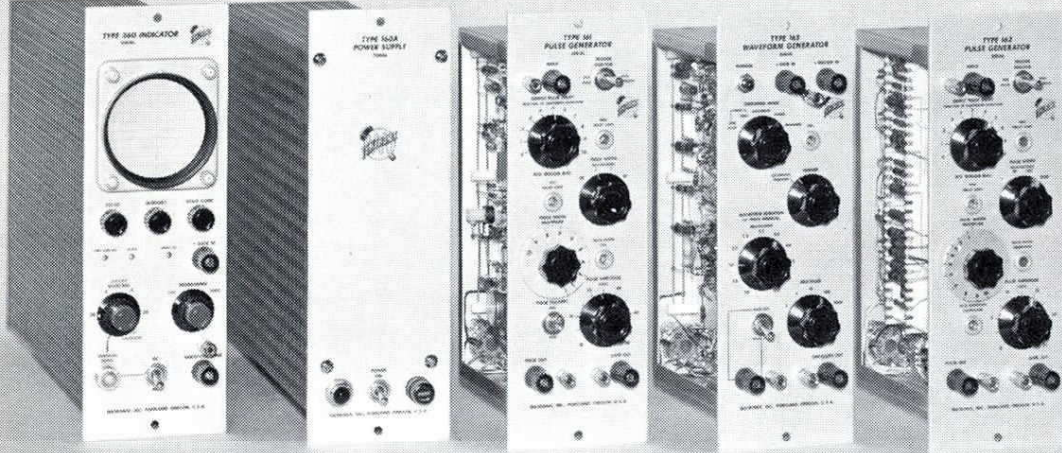
- COMPACT — only 23 pounds
- ACCURATE — 3% time and amplitude
- VERSATILE — 50 to 800 cps operation
- TRIGGER — internal, external, line . . . ac or dc-coupled and automatic
- VIEWING AREA — 8 by 10 (1/4") divisions
- AMPLITUDE CALIBRATOR
- POWER SUPPLY — electronically regulated
- TYPE 310A — \$675

#### TYPE 317 DC-to-10 MC DAYLIGHT PORTABLE

- BRILLIANT TRACE — 9-kv accelerating potential
- ACCURATE — 3% time and amplitude
- TRIGGER — internal, external, line . . . ac or dc-coupled . . . automatic or high-frequency sync
- VIEWING AREA — 8 by 10 (1/4") divisions
- AMPLITUDE CALIBRATOR
- POWER SUPPLY — electronically regulated
- TYPE 317 — \$875
- TYPE RM17 — mounts on slide-out tracks to rack . . . \$950

#### TYPE 321 DC-to-5 MC TRANSISTORIZED PORTABLE

- VERSATILE — ac, dc or battery powered (with internal charger)
- ACCURATE — 3% time and amplitude
- TRIGGER — internal or external . . . ac or dc-coupled and automatic
- VIEWING AREA — 6 by 10 (1/4") divisions
- POWER SUPPLY — electronically regulated from 11.5 to 35 v dc, 105 to 125 or 210 to 250 v rms, 50 to 800 cps
- TYPE 321 — less batteries . . . \$820
- BATTERIES — 10 rechargeable 2.5 A.H. cells . . . \$36.50, 10 rechargeable 3.5 A.H. cells . . . \$55



#### TYPE 360 INDICATOR

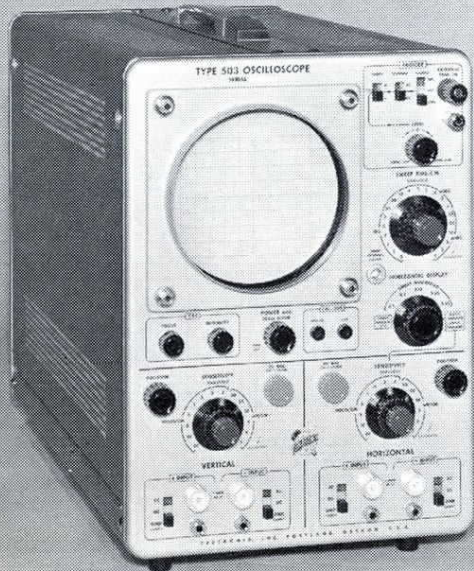
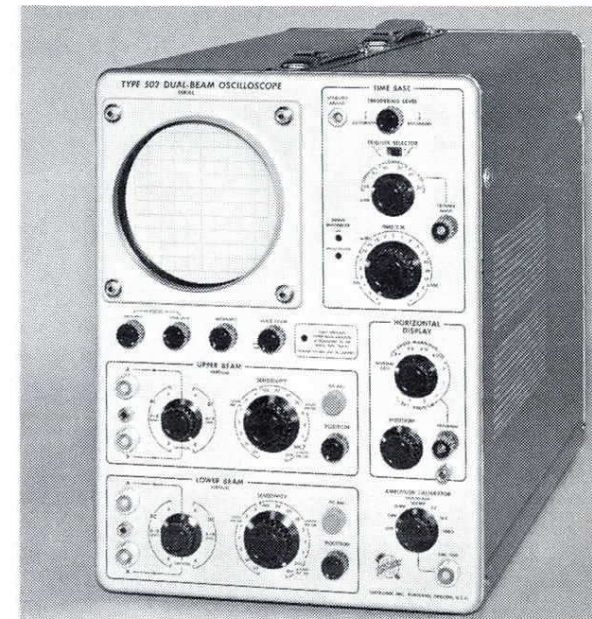
- COMPACT — contains horizontal and vertical amplifiers, calibrated vertical attenuator (50 mv/div to 50 v/div), and accelerating-voltage supply
- VIEWING AREA — 8 by 10 (1/4") divisions
- VERTICAL RESPONSE — dc to 500 kc
- HORIZONTAL RESPONSE — dc to 100 kc
- REQUIREMENTS — sweep, unblanking, and Type 160A Power Supply
- TYPE 360 — \$270

#### SEQUENCE CONTROL SYSTEM — 160A, 161, 162, 163

- GENERATES COMPLEX WAVEFORMS — accurate timed pulses of adjustable amplitude, duration, and repetition rate
- APPLICATIONS — nerve stimulation, circuit testing, flaw detection, among others
- TYPE 160A Power Supply — \$190
- TYPE 161 Pulse Generator — \$130
- TYPE 162 Waveform Generator — \$130
- TYPE 163 Fast-Rise Pulse Generator — \$130

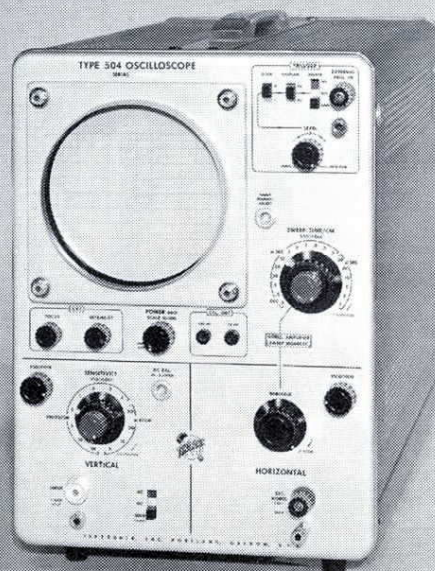
#### TYPE 502 DUAL-BEAM OSCILLOSCOPE

- DIFFERENTIAL INPUT — at all sensitivities to 200  $\mu$ v/cm
- COMMON-MODE REJECTION — up to 1000:1
- X-Y CURVE TRACING — 2 identical amplifiers
- TRIGGER — internal from either amplifier, external, or line . . . ac or dc-coupled and automatic
- VIEWING AREA — 8 by 10 centimeters per beam, 6 cm overlap
- AMPLITUDE CALIBRATOR
- POWER SUPPLY — electronically regulated
- TYPE 502 — \$890



#### TYPE 503 DC-to-450 KC OSCILLOSCOPE

- DIFFERENTIAL OR SINGLE-ENDED INPUT — at all sensitivities to 1 mv/cm
- X-Y CURVE TRACING — 2 identical amplifiers
- TRIGGER — internal, external, line . . . ac or dc-coupled and automatic
- VIEWING AREA — 8 by 10 centimeters
- AMPLITUDE CALIBRATOR
- POWER SUPPLY — electronically regulated
- TYPE 503 — \$640
- TYPE RM503 — bolts to 19" rack . . . \$655



#### TYPE 504 DC-to-450 KC OSCILLOSCOPE

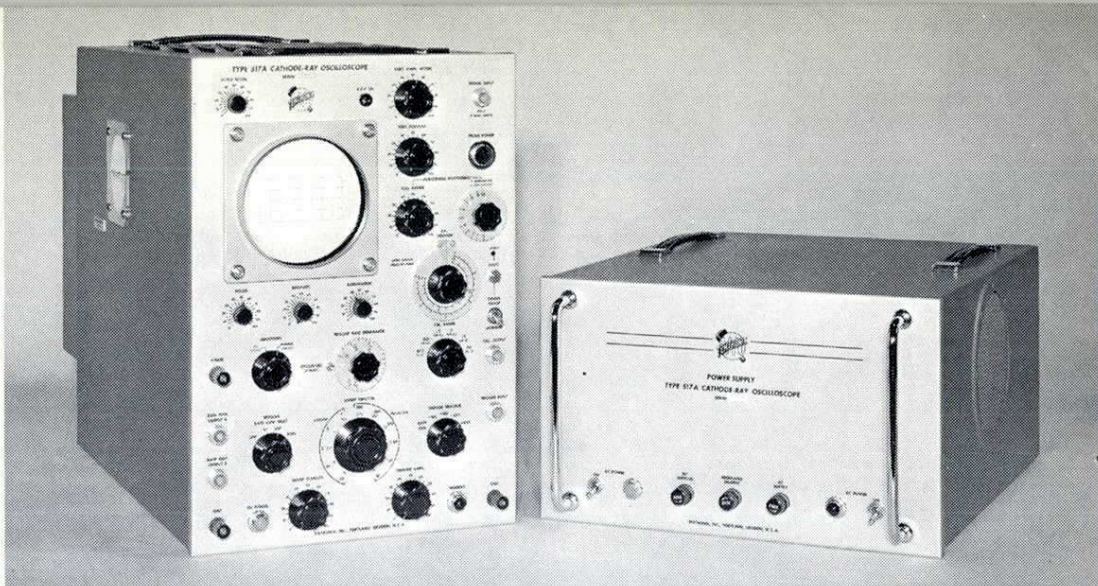
- SINGLE-ENDED INPUT — sensitivity to 5 mv/cm
- TRIGGER — internal, external, line . . . ac or dc-coupled and automatic
- VIEWING AREA — 8 by 10 centimeters
- AMPLITUDE CALIBRATOR
- POWER SUPPLY — electronically regulated
- TYPE 504 — \$540
- TYPE RM504 — bolts to 19" rack . . . \$550



#### TYPE 507 SURGE-TEST OSCILLOSCOPE

- DESIGN AND TEST — power transformers, high-voltage insulators, lightning arresters . . .
- SINGLE-SWEEP APPLICATIONS — 24-kv accelerating potential
- RISE TIME — 10 nsec
- CALIBRATED VERTICAL POSITIONING — 50 v steps from -150 v to +150 v
- TRIGGER — internal, external, or manual
- VIEWING AREA — 6 by 10 centimeters
- POWER SUPPLY — separate, electronically regulated
- MOBILE — Type 500A Scope-Mobile® Cart
- TYPE 507 — \$3000

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517A  
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524AD  
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527



**TYPE 515A DC-to-15 MC OSCILLOSCOPE**

• 50 MV/CM to 20 V/CM VERTICAL DEFLECTION FACTOR — variable between steps • 40 NSEC/CM CALIBRATED SWEEP SPEED — (with 5X magnifier) • TRIGGER VERSATILITY — internal, external, line . . . ac, dc, high-frequency sync, and automatic • OTHER FEATURES — 6 by 10-cm display, amplitude calibrator, electronically-regulated power supply • TYPE 515A — \$875 • TYPE RM15 — mounts on slide-out tracks to 19" rack . . . \$950 •

**TYPE 516 DUAL-TRACE DC-to-15 MC OSCILLOSCOPE**

TWO IDENTICAL VERTICAL INPUT CHANNELS — chopped or alternate switching plus A or B only • OTHER FEATURES — same as Type 515A plus AC low-frequency reject triggering • TYPE 516 — \$1070 •

**TYPE 517A HIGH-SPEED OSCILLOSCOPE**

• OBSERVE and PHOTOGRAPH LOW DUTY CYCLE FAST-RISE WAVEFORMS — 7 nsec risetime, 24 kv accelerating potential • 50 MV/CM to 400 V/CM DEFLECTION FACTOR — with supplied cathode follower probe • 10 NSEC/CM CALIBRATED SWEEP RATE — extends to 20  $\mu$ sec/cm • SINGLE-SWEEP OPERATION — lockout-reset circuitry for one-shot recording • TRIGGER-RATE GENERATOR — 15 cps to 15 kc, continuously variable, 0.15  $\mu$ sec risetime • TRIGGER SELECTION — displayed waveform, external, or internal Trigger Generator • VIEWING AREA — 4 by 8 centimeters • POWER SUPPLY — separate, electronically regulated • TYPE 517A—with Type 500A Scope-Mobile® Cart . . . \$3500 •

**TELEVISION OSCILLOSCOPES**

**TYPE 524AD** for maintenance of transmitter and studio equipment • 3 RESPONSE CHARACTERISTICS — Normal: dc to 10 Mc from 150 mv/cm to 50 v/cm, 2 cps to 10 Mc from 15 mv/cm to 50 v/cm, Flat: within 1% from 60 cps to 5 Mc, IRE: new standard #23S-1 • RISE-TIME — 35 nsec • CONTINUOUSLY VARIABLE SWEEP RATE — 0.1  $\mu$ sec/cm to 10 msec/cm • INTERNAL TIME MARKERS — 50 nsec, 0.1  $\mu$ sec, 1.0  $\mu$ sec, 40 or 200 pips per line • SWEEP DELAY — continuous from 0 to 25 msec • AMPLITUDE CALIBRATOR — variable duty cycle, 0 to 50 v • TYPE 524AD — \$1300 •



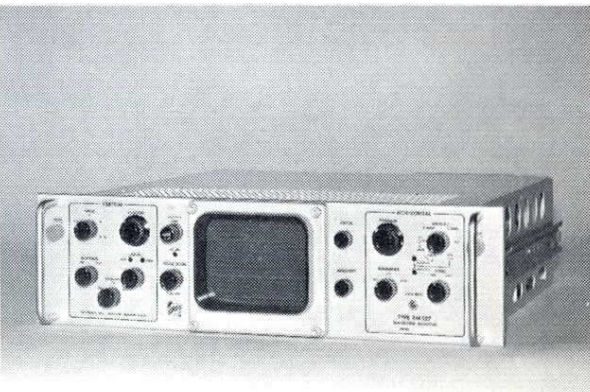
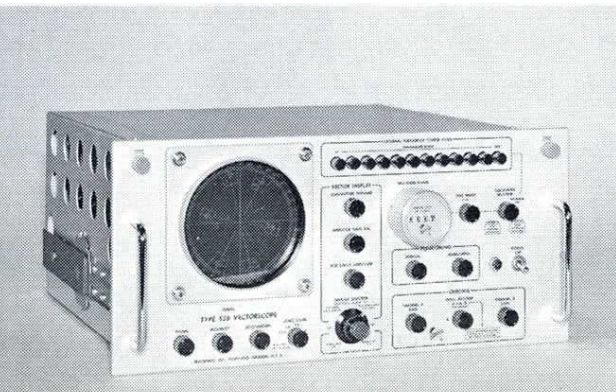
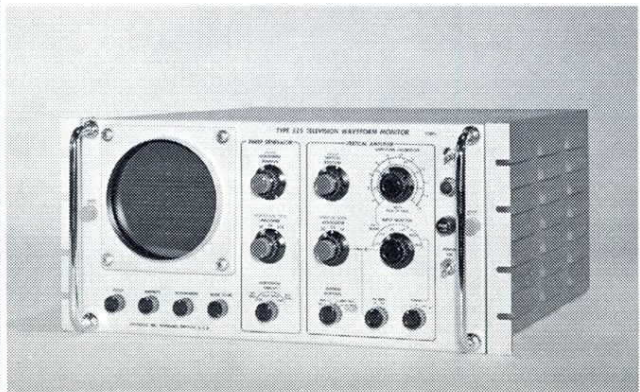
**TYPE 519 DC-to-1 GIGACYCLE OSCILLOSCOPE**

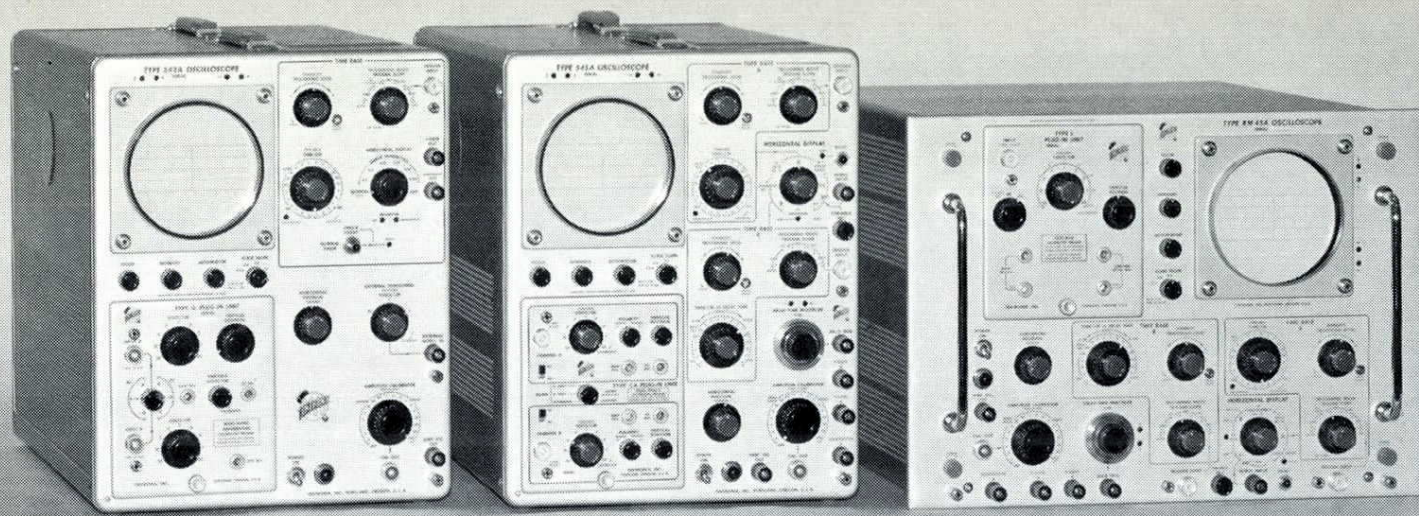
• MEASURE AND RECORD SUB-NANOSECOND RISE-TIMES — less than 0.35-nsec risetime, 24-kv accelerating potential • VERTICAL SENSITIVITY — less than 10 v/cm • 2 NSEC/CM CALIBRATED SWEEP RATE — extends to 1  $\mu$ sec/cm • SINGLE-SWEEP OPERATION — lockout-reset circuitry for one-shot recording • RATE GENERATOR — 3 cps to 30 kc, continuously variable, less than 0.8 nsec risetime • CALIBRATION-STEP GENERATOR — drives device under test or checks sensitivity of Type 519 • TRIGGER SELECTION — displayed waveform, external waveform, Calibration-Step Generator, Rate Generator . . . high-frequency sync to over 1 gigacycle • OTHER CHARACTERISTICS — 2 by 6-cm display, electronically-regulated power supply • TYPE 519 — \$3900 •

**TYPE 525** for display of composite video waveforms • 4 RESPONSE CHARACTERISTICS — Flat: within 1% from 60 cps to 5 Mc, Low Pass: passes stair steps, High Pass: eliminates stair steps, IRE: new standard #23S-1 • SENSITIVITY — 15 mv/cm, 2 or 5X attenuation • GAIN STABILITY — within 1% • FIELD and LINE SPEEDS — automatic sync at sweep frequencies of 7875 and 30 cycles • TYPE 525 — withdraws on slide-out tracks from cabinet that mounts in 19" rack . . . \$1140 •

**TYPE 526** for measurement of phase and amplitude of NTSC color signal • PHASE ACCURACY —  $\pm 1.5^\circ$  by vector presentation,  $\pm 1^\circ$  by null technique • PHASE RESOLUTION — better than 0.1° at 3.58 Mc • DUAL DISPLAYS — electronic switching between channels • INTER-FIELD SIGNAL KEY — displays test signals during vertical blanking time • BURST BRIGHTENING — for positive identification of burst packet • TYPE 526 — mounts on slide-out tracks to 19" rack . . . \$1665 •

**TYPE 527** for measurement of linearity, signal level, and bandwidth of black-and-white and color TV waveforms • 2 RESPONSE CHARACTERISTICS — Flat: within 1% from 60 cps to 5 Mc, IRE: new standard #23S-1 • SENSITIVITY — variable, 0.25 v to 1.6 v for 140 IRE units (7 cm) • LINEARITY — within  $\pm 1\%$  • CALIBRATED SWEEP — 0.125 H/cm, 0.025 H/cm, or 0.005 H/cm; no need for time-markers • HORIZONTAL DISPLAY — 2 line, 2 field, VIT, 0.125 H/cm, RGB line and RGB field • DC RESTORATION — eliminates dc drift, base-line shift due to color burst • VOLTAGE CALIBRATOR — 0.714 v or 1.00 v, pk-to-pk • COMPACT — 2 Type 527's or RM527's mount in 10 1/2" rack height • TYPE 527 — \$925 • TYPE RM527 — mounts on slide-out tracks to 19" rack . . . \$1000 • TYPE RM527 MOD132 — features same as above plus line selector and video-distribution amplifier . . . \$1230 •





### 530-SERIES DC-to-15 MC OSCILLOSCOPES

**TYPE 535A FEATURES** — calibrated sweep delay, 2  $\mu$ sec to 10 sec • **USES 17 MULTI-PURPOSE PLUG-IN UNITS** — for differential input, multi-trace, wide-band, operational amplifier, other applications • **SINGLE-SWEEP OPERATION** — lockout-reset circuitry for one-shot recording • **20 NSEC/CM CALIBRATED SWEEP SPEED** — (with 5X magnifier) • **TRIGGER VERSATILITY** — internal, external, line . . . ac, dc, low-frequency reject, high-frequency sync, and automatic • **OTHER CHARACTERISTICS** — 6 by 10-cm display, amplitude calibrator, electronically-regulated power supply • **TYPE 535A** — less plug-in units . . . \$1400 •

• **TYPE 533A FEATURES** — sweep magnification to 100X • **OTHER CHARACTERISTICS** — same as Type 535A, except no sweep delay • **TYPE 533A** — less plug-in units . . . \$1125 •

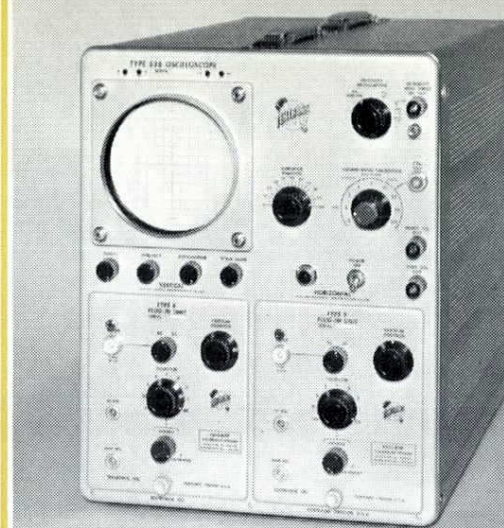
• **TYPE 531A FEATURES** — same characteristics as Type 535A, except no sweep delay or single-sweep • **TYPE 531A** — less plug-in units . . . \$995 •

### 540-SERIES DC-to-30 MC OSCILLOSCOPES

**TYPE 545A FEATURES** — calibrated sweep delay, 2  $\mu$ sec to 10 sec • **USES 17 MULTI-PURPOSE PLUG-IN UNITS** — for differential input, multi-trace, wide-band, operational amplifier, other applications • **SINGLE-SWEEP OPERATION** — lockout-reset circuitry for one-shot recording • **20 NSEC/CM CALIBRATED SWEEP SPEED** — (with 5X magnifier) • **TRIGGER VERSATILITY** — internal, external, line . . . ac, dc, low-frequency reject, high-frequency sync, and automatic • **OTHER CHARACTERISTICS** — 4 by 10-cm display, amplitude calibrator, electronically-regulated power supply • **TYPE 545A** — less plug-in units . . . \$1550 •

• **TYPE 543A FEATURES** — sweep magnification to 100X • **OTHER CHARACTERISTICS** — same as Type 545A, except no sweep delay • **TYPE 543A** — less plug-in units . . . \$1300 •

• **TYPE 541A FEATURES** — same characteristics as Type 545A, except no sweep delay or single-sweep • **TYPE 541A** — less plug-in units . . . \$1225 •



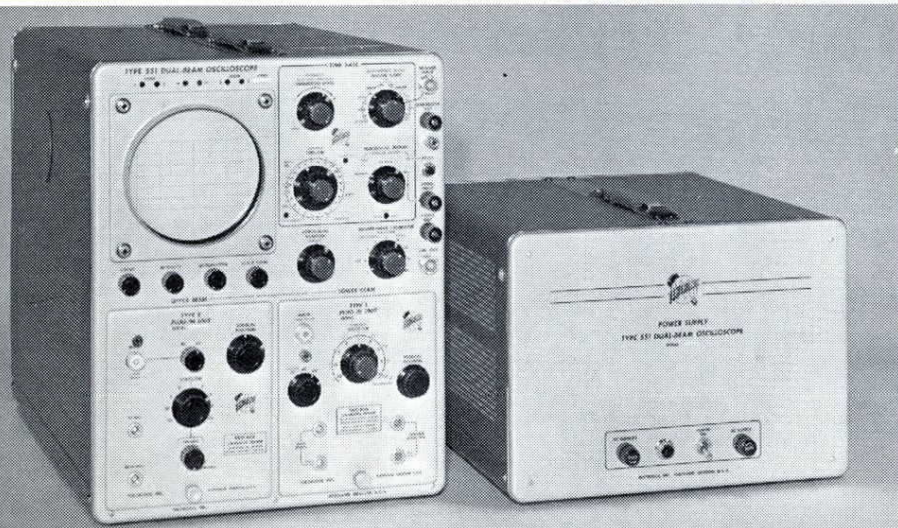
### TYPE 536 "X-Y" OSCILLOSCOPE

• **IDENTICAL HORIZONTAL AND VERTICAL DEFLECTION SYSTEMS** — with 2 identical plug-in units • **AMPLIFIER PHASE BALANCE TO OVER 25 MC** — with 2 identical wide-band units • **USES ANY OF 17 PLUG-IN UNITS** — for vertical and horizontal-deflection • **CONVENTIONAL OPERATION** — with Type T Time Base • **OTHER CHARACTERISTICS** — 10 by 10-div display, regulated power supply • **TYPE 536** — less plug-in units . . . \$1085 •

### RACK-MOUNTING OSCILLOSCOPES

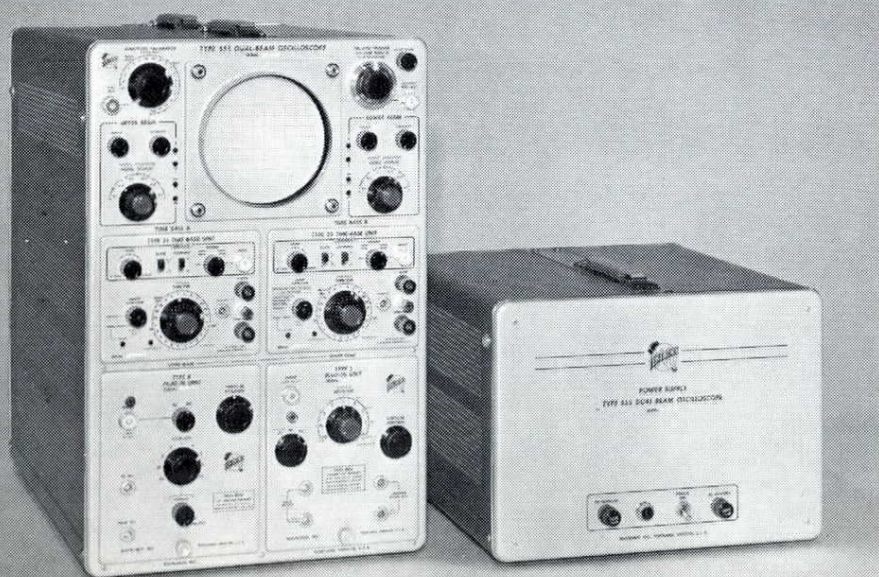
• **CONVENIENT MOUNTING**—chassis with-draws from cabinet on slideout tracks, can be tilted and locked in any of 7 positions • **PROVEN CIRCUITRY** — electrically identical to corresponding cabinet model.

- **TYPE RM31A** — less plug-in units . . . \$1095
- **TYPE RM33A** — less plug-in units . . . \$1225
- **TYPE RM35A** — less plug-in units . . . \$1500
- **TYPE RM41A** — less plug-in units . . . \$1325
- **TYPE RM43A** — less plug-in units . . . \$1400
- **TYPE RM45A** — less plug-in units . . . \$1650



### TYPE 551 DUAL-BEAM OSCILLOSCOPE

• **COMMON X, INDEPENDENT Y DEFLECTION** — upper and lower beam use any of 17 plug-in units for differential input, multi-trace, wide-band, operational amplifier, other applications • **DC-to-25 MC** — with Type L Plug-In Unit • **SINGLE-SWEEP OPERATION** — lockout-reset circuitry for one-shot recording • **20 NSEC/CM CALIBRATED SWEEP SPEED** — (with 5X magnifier) • **TRIGGER VERSATILITY** — internal from lower or upper beam, external, line . . . ac, dc, low-frequency reject, high-frequency sync, and automatic • **OTHER CHARACTERISTICS** — 4 by 10-cm display with 2-cm vertical overlap (each beam), 6-cm total vertical scan, amplitude calibrator, separate electronically-regulated power supply • **TYPE 551** — less plug-in units . . . \$1850 •

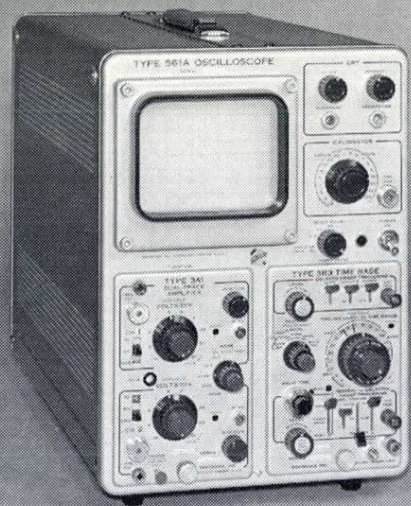


### TYPE 555 DUAL-BEAM SWEEP DELAY OSCILLOSCOPE

• **2 INDEPENDENT VERTICAL DEFLECTION SYSTEMS** — upper and lower beams use any of 17 plug-in units for differential input, multi-trace, wide-band, operational amplifier, other applications • **DC-to-30 MC** — with Type L Plug-In Unit • **2 INDEPENDENT PLUG-IN TIME BASES** — deflect either or both beams with either time base • **CALIBRATED SWEEP DELAY** — 0.1  $\mu$ sec to 50 sec • **SINGLE-SWEEP OPERATION** — lockout-reset circuitry for one-shot recording • **20 NSEC/CM CALIBRATED SWEEP SPEED** — (with 5X magnifier) • **TRIGGER VERSATILITY** — internal from lower or upper beam, external, line . . . ac or dc coupled and automatic • **OTHER CHARACTERISTICS** — 4 by 10-cm display with 2-cm overlap (each beam), 6-cm total vertical scan, amplitude calibrator, separate electronically-regulated power supply • **TYPE 555** — with plug-in time bases, without plug-in preamplifiers . . . \$2650 •

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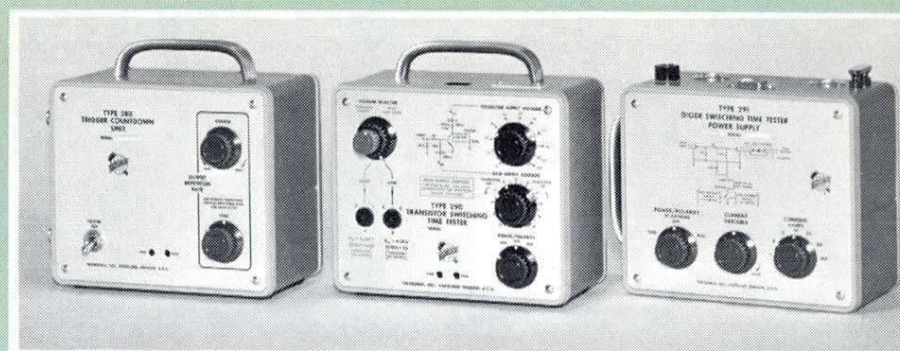
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### SAMPLING ACCESSORIES

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**TYPE 280 TRIGGER COUNTDOWN UNIT** — synchronizes on 30 Mc to 5 gigacycles, output continuously variable from 15 to 45 megacycles • 2 **OUTPUTS** — 150 mv at less than 0.4 nsec risetime (for Type 3T77 and 5T1A Sampling Units) and 1.5 v at less than 4 nsec risetime (for Type N Sampling Unit) • **INPUT SENSITIVITY** — 50 mv to 4 v, pk-to-pk • **INPUT IMPEDANCE** — approximately 50 ohms • **TYPE 280** — \$265 •



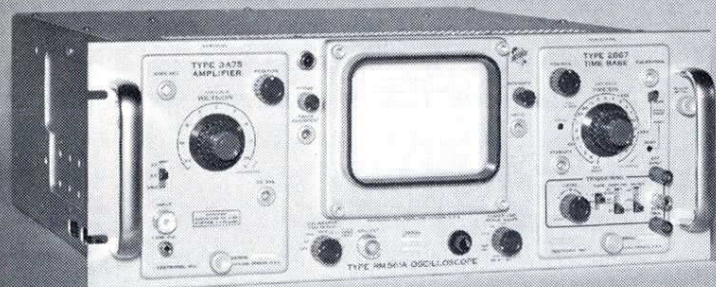
### TYPE 561A OSCILLOSCOPE

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• **ACCURATE** — parallax-free internal 8 by 10 centimeter graticule with variable edge lighting • **ADAPTABLE** — accepts any of 11 amplifier and time-base units for differential input, multi-trace, wide-band, delaying sweep, or sampling applications • **VERSATILE** — multiple X-Y displays, Z-axis input, 50 to 400 cps operation • **STABLE** — electronically-regulated power supply • **OTHER FEATURES** — new rectangular ceramic crt . . . 0.2 mv to 100 v amplitude calibrator • **TYPE 561A** — less plug-in units . . . \$470 •

### TYPE RM561A OSCILLOSCOPE

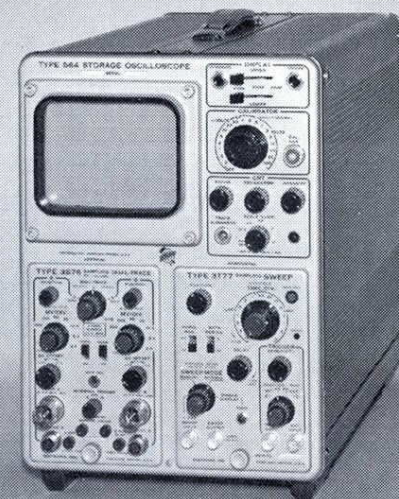
• **COMPACT** — only 7" high • **FEATURES** — same as Type 561A except 1 mv to 100 v calibrator, 50 to 60 cps operation • **TYPE RM561A** — bolts to 19" rack; less plug-in units . . . \$525.



### TYPE 564 STORAGE OSCILLOSCOPE

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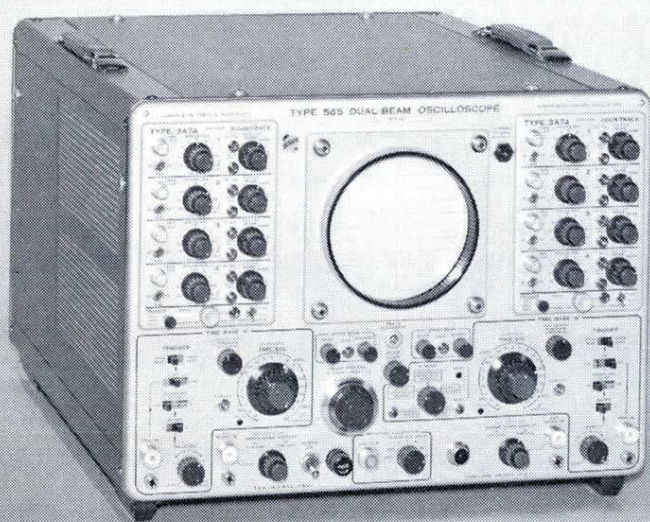
- **SPLIT-SCREEN DISPLAYS** — storage or non-storage on either or both halves of crt face, selective erase • **SIMPLE OPERATION** — separate storage controls, trace can be located visually prior to storage • **APPLICATIONS** — storage of single-shot displays at slow or medium speeds and repetitive displays at slow or fast speeds, using integration technique
- **STORAGE FEATURES** — 250-msec erase, up to 1-hour storage, faster than 25 cm/msec writing speed (single-shot) • **ADAPTABLE** — accepts any of 11 amplifier and time-base units for differential input, multi-trace, wide-band, delaying sweep, or sampling applications • **VERSATILE** — multiple X-Y displays, 50 to 400 cps operation • **STABLE** — electronically-regulated power supply • **OTHER FEATURES** — new rectangular ceramic crt, bi-stable . . . amplitude calibrator • **TYPE 564** — less plug-in units . . . \$950 •



### TYPE 565 DUAL-BEAM OSCILLOSCOPE

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- 2 **INDEPENDENT BEAMS** • 2 **IDENTICAL INDEPENDENT SWEEP SYSTEMS**
- **USES 2 PLUG-IN VERTICAL AMPLIFIERS**—choose from 6 units for differential input, multi-trace, and wide-band applications • **CALIBRATED SWEEP DELAY**—1  $\mu$ sec to 50 sec • **SINGLE SWEEP OPERATION** — for one-shot recording.
- **TRIGGERING** — internal, external, line; ac fast, or dc-coupled; automatic triggering • **3% ACCURACY** — time and amplitude • **VIEWING AREA** — 10 by 10 cm, 6-cm vertical overlap • **OUTPUTS** — vertical, horizontal, + gate, delayed trigger • **AMPLITUDE CALIBRATOR** • **POWER SUPPLY** — electronically regulated • **TYPE 565** — less plug-in units . . . \$1400 • **TYPE RM565** — less plug-in units; mounts on slide-out tracks to rack . . . \$1500 •



### TYPE 567 READOUT OSCILLOSCOPE

- **SAMPLING OSCILLOSCOPE** — dual-trace . . . 0.4-nsec risetime . . . internal triggering • **DIGITAL PLUS ANALOG DISPLAYS** — direct readout of pulse risetimes, amplitudes as small as 2 mv, pk-to-pk, time differences from 20 psec to 100  $\mu$ sec • **DIGITAL COMPARATORS** — indicators show when reading is below, above, or within selected limits • **ACCURACY** — 3%,  $\pm 1$  count, direct reading minimizes operator error • **EXTERNALLY PROGRAMMABLE** — for automatic sequential operation • **RECORDER OUTPUTS** — for printers, summary punches, etc. • **TYPE 567** — less plug-in units . . . \$700 • **TYPE RM567** — less plug-in units; mounts on slide-out tracks to rack . . . \$800 • **TYPE 3S76 DUAL-TRACE SAMPLING UNIT** — \$1100 • **TYPE 3T77 SAMPLING SWEEP UNIT** — \$650 • **TYPE 6R1 DIGITAL UNIT** — \$2500 •

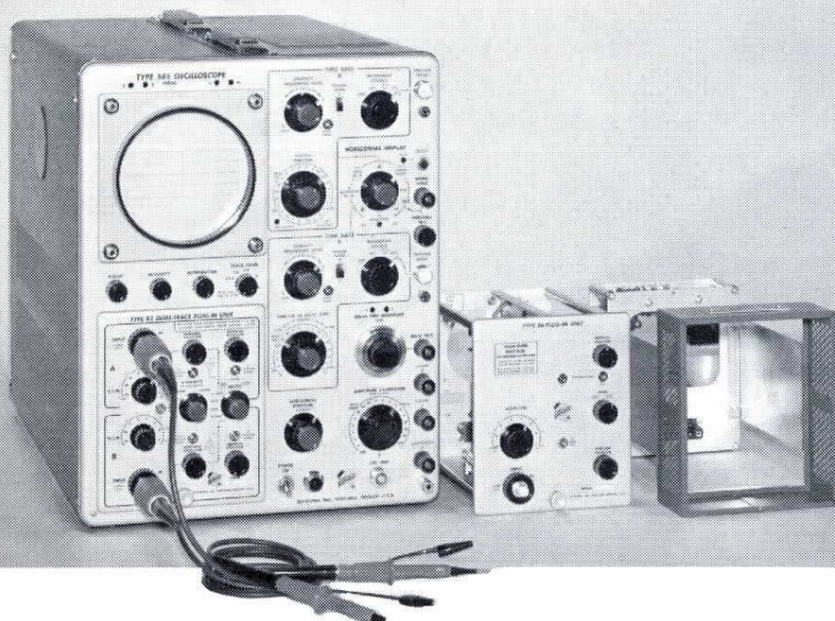
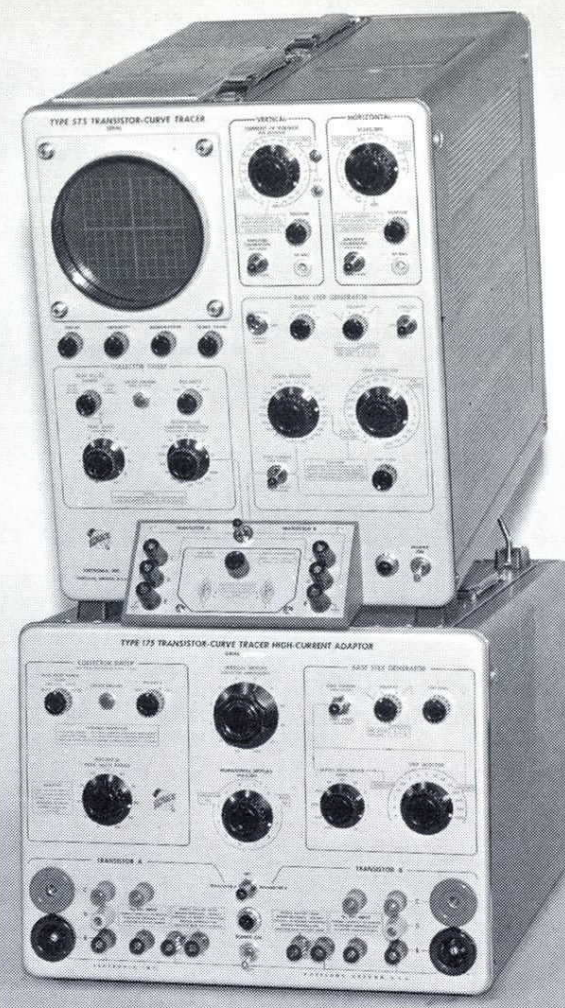
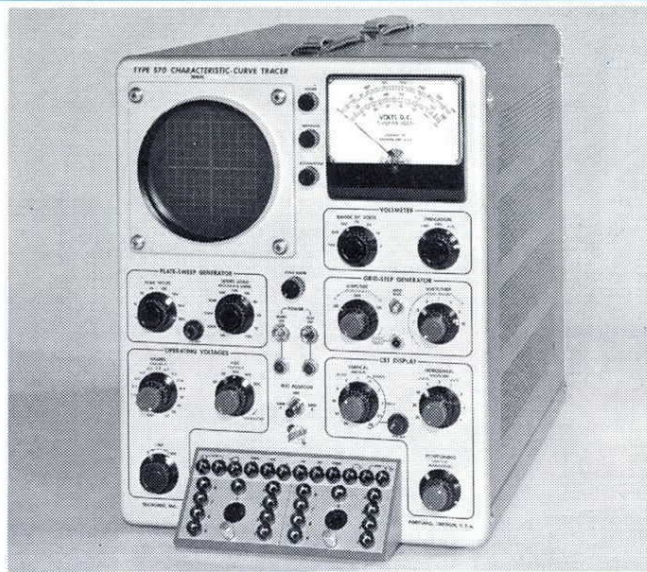


**TYPE 290 TRANSISTOR SWITCHING-TIME TESTER** — measures fast transistors, short duty cycle measurements of delay time, risetime, storage time, and fall time (with Fast-Rise Pulser and Sampling Oscilloscope) • **MONITOR** — input or collector output separately or (with dual-trace system) simultaneously • **HIGH-LOW COLLECTOR VOLTAGES** — continuously variable from 0 to 30 v and 0 to 100 v (2 transistor sockets) • **CONTINUOUSLY VARIABLE BASE SUPPLY** — 0 to  $\pm 10$  v through 10 kilohms • **50- $\Omega$  OUTPUTS** — allow remote location • **TYPE 290** — \$290 •

**TYPE 291 DIODE SWITCHING-TIME TESTER and TEST FIXTURE** — measures fast-switching diodes, forward and reverse recovery (with Fast-Rise Pulser and Sampling Oscilloscope) • **STRIP-LINE ENVIRONMENT** — clean response at better than 0.35 nsec • **CONSTANT CURRENT SUPPLY** — 1 to 100 ma, in 7 steps, variable between steps • **REMOTE OPERATION** — test fixture separate from power supply, 50- $\Omega$  connectors • **FAST MEASUREMENTS** — diodes are magnetically held in test fixture, ejected by push button • **TYPE 291** — \$185 • **TYPE TF-1 DIODE TEST FIXTURE** — \$65 •

### TYPE 570 ELECTRON-TUBE CURVE-TRACER

• **PLOTS TUBE CHARACTERISTICS** — simulates operating conditions • **CALIBRATED VERTICAL DISPLAYS** — plate, screen, or grid current; 20  $\mu$ a/div to 50 ma/div in 11 steps • **CALIBRATED HORIZONTAL DISPLAYS** — plate or grid voltage; 0.1 v/div to 50 v/div in 9 steps • **OTHER VARIABLES** — 11 series load resistors from 300  $\Omega$  to 1 megohm, 7 grid-step values from 0.1 v/step to 10 v/step • **VOLTMETER** — monitors all dc voltages and ac heater supply • **DISPLAYS FAMILY OF CURVES**—4 to 12 characteristic curves per family • **TYPE 570** — \$1100 •



### TYPE 581 and 585 OSCILLOSCOPES

• **OVER 100-MC TRIGGERING** — internal, external, or line • **10 NSEC/CM SWEEP RATE** — for recording fast transients • **SINGLE SWEEP** — for one-shot recording • **HIGH RESOLUTION** — small spot size, P31 phosphor • **USES 17 MULTI-PURPOSE PLUG-IN UNITS** — differential input, multi-trace, operational amplifier, other applications (with Type 81 Adapter) • **CALIBRATED SWEEP DELAY** — (Type 585 only) continuously variable from 2  $\mu$ sec to 10 sec • **TYPE 581** — less plug-in units . . . \$1425 • **TYPE 585** — less plug-in units . . . \$1725 •

**TYPE 82 DUAL-TRACE PLUG-IN UNIT** — 4-nsec risetime at 100 mv/cm; 4.3 nsec at 10 mv/cm • **CALIBRATED STEP ATTENUATION** — 10 mv/cm to 20 v/cm, variable between steps • **CHOPPED OR ALTERNATE SWITCHING** — plus A or B only • **PASSIVE PROBES** — small convenient size • **TYPE 82** — \$650 •

**TYPE 86 PLUG-IN UNIT** — same as Type 82, except single channel . . . \$350 •

**TYPE 81 ADAPTER** — use with Letter-Series plug-in units . . . \$135 •

**TYPE 80 PLUG-IN UNIT** — 0.1 v/cm basic sensitivity . . . \$100 • **TYPE P80 PROBE** — 5 attenuator heads (use with Type 80) . . . \$150 •

### TYPE 575 TRANSISTOR-CURVE TRACER

• **PLOTS PNP, NPN, AND DIODE CURVES** — simulates operating conditions • **CALIBRATED VERTICAL DISPLAYS** — collector or base current, base or base source voltage • **CALIBRATED HORIZONTAL DISPLAYS** — base current, collector, base, or base source voltage • **20-AMPERE COLLECTOR DISPLAYS** —  $\pm$  collector sweep, 0 to 20 v, 10 amp; 0 to 200 v, 1 amp •  $\pm$  **BASE STEPPING** — 4 to 12 steps/family, repetitive or single family display, 2.4-ampere base supply • **TYPE 575** — \$1075 • **MOD122C** — much higher test and collector voltages . . . \$1325 •

### TYPE 175 HIGH-CURRENT ADAPTER

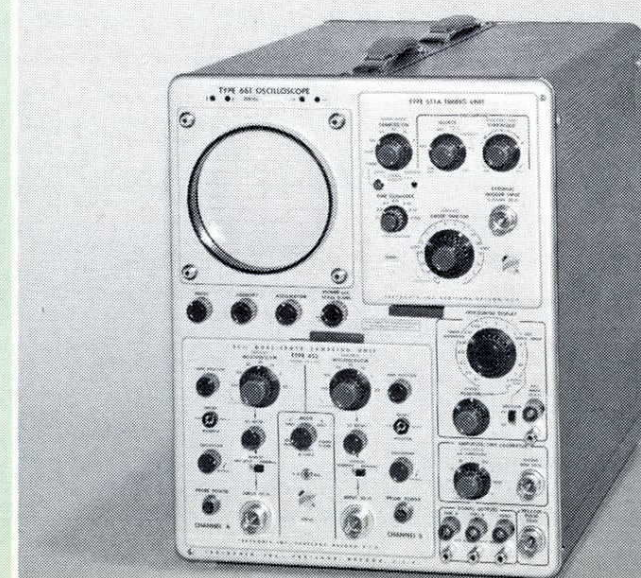
• **200-AMPERE COLLECTOR DISPLAYS** — 12-ampere base supply •  $\pm$  **COLLECTOR SWEEP** — 0 to 20 v, 0 to 100 v, or 0 to 100 v with 300- $\Omega$  series load resistor •  $\pm$  **BASE STEPPING** — 4 to 12 steps/family, repetitive or single family display • **CALIBRATED DISPLAYS** — collector current (vertical), collector or base voltage (horizontal) • **TYPE 175** — for use with Type 575 only . . . \$1475 •

### TYPE 661 SAMPLING OSCILLOSCOPE

• **PLUG-IN CONVENIENCE** — uses 4-Series and 5-Series Sampling Units • **FAST or SLOW MANUAL SCAN** — drives external recorders • **AMPLITUDE/TIME CALIBRATOR** — checks vertical and sweep calibration • **OUTPUTS** — delayed pulse, A and B vertical, and horizontal • **HIGH RESOLUTION** — 8 by 10-cm viewing area • **TYPE 661** — less sampling plug-in units . . . \$1150 •

**DUAL-TRACE 50-OHM SAMPLING UNITS** • **4 DISPLAY MODES** — A only, B only, Dual-Trace, Added Algeb. and (for X-Y displays) A vertical, B horizontal • **2 MV/CM to 200 MV/CM SENSITIVITY** — variable between steps • **ACCURATE DISPLAYS** — time coincidence between channels within 30 psec • **DC OFFSET VOLTAGE** — for displaying portions of signals having off-screen amplitudes • **TYPE 4S1 FEATURES** — 0.35 nsec risetime • **SEPARATE INTERNAL DELAY LINES** — trigger on either A or B input signals or externally • **2 VOLT DYNAMIC RANGE** — without overload • **TYPE 4S1** — \$1430 • **TYPE 4S2 FEATURES** — 0.1 nsec risetime • **EXTERNAL TRIGGER** — with Type 5T1A •  $\pm 1$  **VOLT DYNAMIC RANGE** without overload • **TYPE 4S2** — \$1600 •

**TYPE 5T1A TIMING UNIT** • **HIGH RESOLUTION** — up to 1000 dots/cm • **TIME EXPANSION** — 2X to 100X with constant dots/cm • **VARIABLE TIME DELAY** — 0 to 100 nsec • **SWEEP MODE** — repetitive or single displays, plus timed scan (5 sec/cm) for driving external recorders • **TYPE 5T1A** — \$750 •



570  
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175  
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585  
80  
P80  
81  
82  
86  
661  
4S1  
4S2  
5T1A

945  
MC  
ML

105  
107

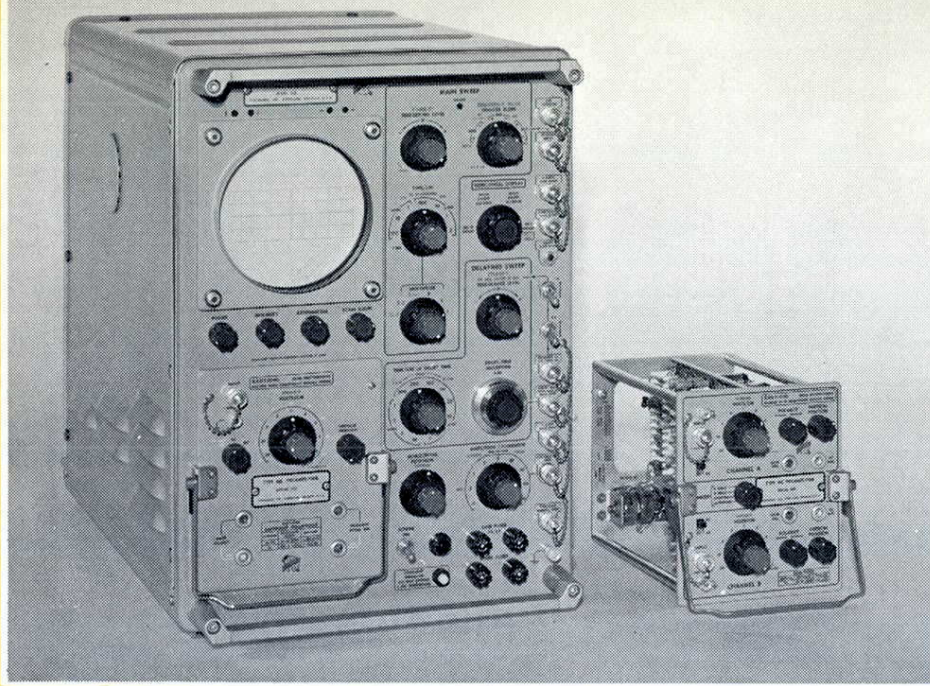
109  
110  
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113

122

123

1121



**TYPE 945 MILITARIZED OSCILLOSCOPE**

TYPE MC DUAL-TRACE and TYPE ML FAST-RISE PREAMPLIFIERS for extra reliability and accuracy in severe environment

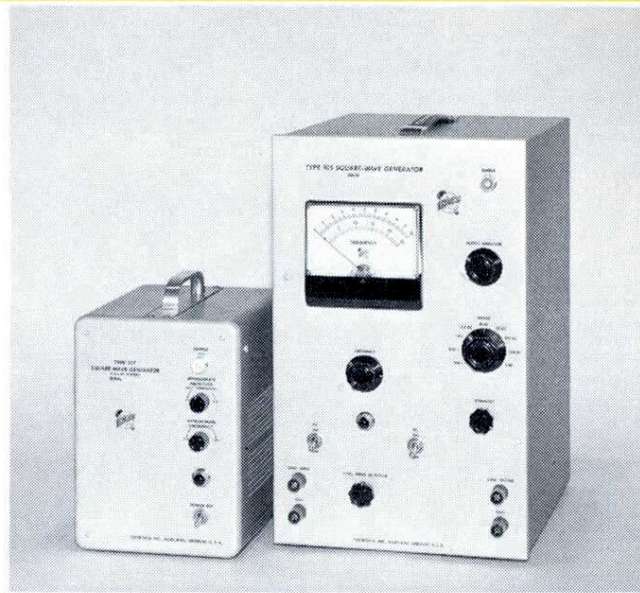
- **RUGGED** — designed to meet MIL-T-945A environmental specifications
- **PROVED DESIGN** — militarized versions of Type 545 Oscilloscope, Type 53/54C Dual-Trace, and Type L Plug-In Units
- **VERTICAL PASSBAND** — dc to 30 Mc with Type ML Unit, dc to 24 Mc with Type MC Unit
- **SENSITIVITY** — 50 mv/cm with either unit (5 mv/cm ac-coupled with Type ML)
- **ENVIRONMENTAL CAPABILITIES** — complete specifications in TEK MP SPEC 1A

Temperature	—40° C to +55° C/71° C	(Operating)
	—65° C to 85° C	(Storage)
Humidity	10 days, 95% RH +18° C to +65° C	(Storage)
Radio Interference	14 kc to 1000 Mc	(Operating)
Salt Atmosphere	100 hrs.	(Finishes)

**SQUARE WAVE GENERATORS**

**TYPE 105 FEATURES** — 25 cps to 1 Mc range, continuously variable • **RISETIME** — 13 nsec with 52-ohm termination; less than 20 nsec with 93-ohm termination • **OUTPUT AMPLITUDE** — 10 v to 100 v across internal 600-ohm load • **FREQUENCY METER** — accurate within 3% of full scale • **TYPE 105** — \$435 •

**TYPE 107 FEATURES** — risetime less than 3 nsec into terminated 52-ohm cable • **FREQUENCY RANGE** — 400 kc to 1 Mc, uncalibrated • **OUTPUT AMPLITUDE** — 0.1 v to 0.5 v, with 52-ohm termination • **TYPE 107** — \$190 •



Fungus	28 days	(Storage)
Vibration	5G's, 55 cps, 0.030" pk-to-pk	(Operating)
Shock	400 lb. drop hammer	(Operating)
Altitude	20,000 ft. 50,000 ft.	(Operating) (Storage)
Rain	5 min. drip test	(Storage)

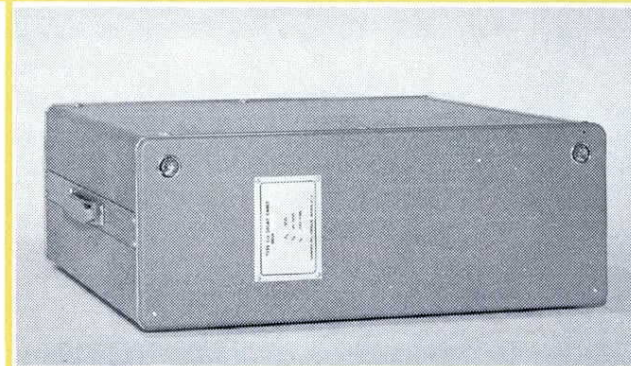
TYPE 945 — less plug-in units . . . \$2850  
TYPE MC UNIT . . . . . \$475  
TYPE ML UNIT . . . . . \$425

**50-OHM PULSE GENERATORS**

**TYPE 109 FEATURES** — less than 0.25-nsec risetime • **PULSE WIDTH** — 0.5 nsec to 40 nsec at full rep rate, 300 nsec at 1/2 rep rate • **VARIABLE CALIBRATED AMPLITUDE** — 0 to ±50 v • **2 CHARGE LINES** — for equal or unequal alternate pulse durations • **TYPE 109** — \$360 •

**TYPE 110 FEATURES** — similar to Type 109 plus Trigger Takeoff and Regenerator • **TRIGGER TAKEOFF** — signal patched into a 50-ohm "loop through" arrangement; about 98% of input voltage appearing at output • **REGENERATED TRIGGER** — ±6 to ±10 v, 220 to 280-nsec duration • **TYPE 110** — \$650 •

**TYPE 111 FEATURES** — 2 outputs: fast rising Output Pulse and Pretrigger Pulse • **OUTPUT PULSE RISETIME** — 0.5 nsec for positive, slightly longer for negative pulse • **REPETITION RATE** — continuously adjustable from 10 pps to 100 kc • **DURATION** — 2 nsec minimum, 100 nsec maximum • **AMPLITUDE** — over ±5 v • **PRETRIGGER PULSE** — 10 v, 250-nsec duration, 4-nsec risetime (1/2 amplitude) • **TIME DIFFERENCE** — 30 to 250 nsec between Pretrigger and Output pulses • **TYPE 111** — \$365 •



**TYPE 113 DELAY CABLE**

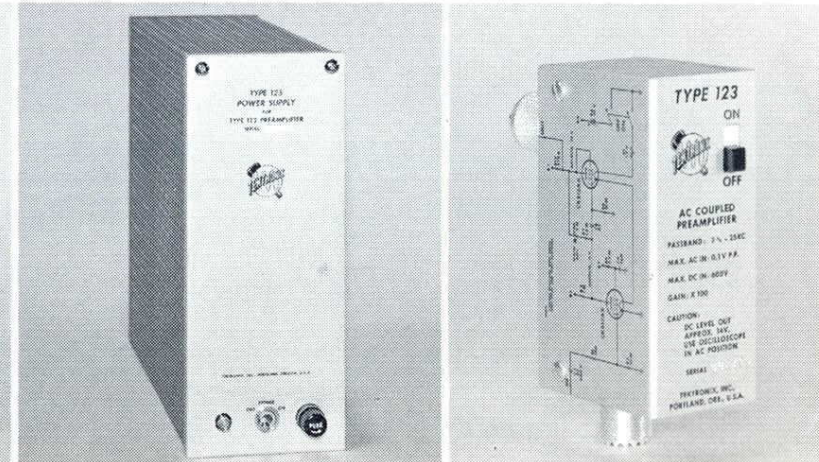
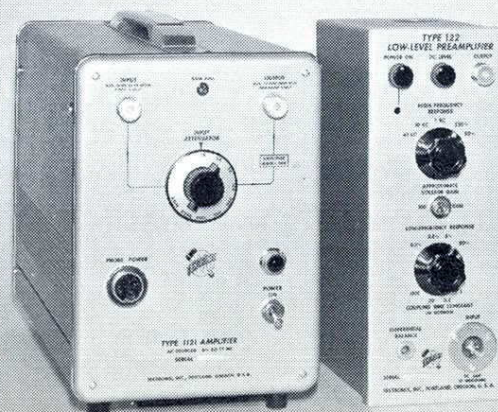
• **TIME DELAY** — 60 nsec • **RISETIME** — 0.1 nsec • **LOSS** — 1.5 db per 100 feet at 1000 Mc • **TYPE 113** — for sampling applications using Type 4S2 or Type N Plug-In Units . . . \$200 •

**AMPLIFIERS**

**TYPE 122** • **FREQUENCY RESPONSE** — variable from 0.2 cps to 40 kc • **5 UPPER 3-DB POINTS** — 50 cps to 40 kc • **4 LOWER 3-DB POINTS** — 0.2 to 80 cps • **GAIN** — 100 or 1000X • **REJECTION RATIO** — 80 to 100 db • **SIGNAL OUT** — 20 v, pk-to-pk maximum, 1000-Ω impedance • **POWER SOURCE** — external batteries or TYPE 125 Power Supply (below) • **TYPE 122** — \$135 • **TYPE 125 POWER SUPPLY** — powers up to 4 Type 122 Amplifiers . . . \$285 •

**TYPE 123** • **FREQUENCY RESPONSE** — within 3 db from 3 cps to 25 kc, within 2% from 15 cps to 6 kc • **GAIN** — 100X • **MAXIMUM INPUT SIGNAL** — 0.1 v, 10 megohm impedance • **HUM FREE** — powered by miniature batteries (included) • **COMPACT** — 4 1/4" by 1 1/2" by 3 7/8" • **TYPE 123** — \$75 •

**TYPE 1121** • **FREQUENCY RESPONSE** — 5 cps to 17 Mc (3-db down) • **GAIN** — 100X • **CALIBRATED ATTENUATION** — 1 to 500X in 9 steps • **GAIN STABILITY** — within ± 1% over 24-hour period • **SIGNAL OUT** — ± 1 v terminated in 93-ohm cable • **TYPE 1121** — \$465 •

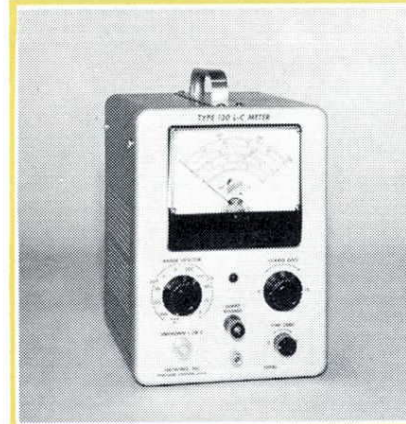
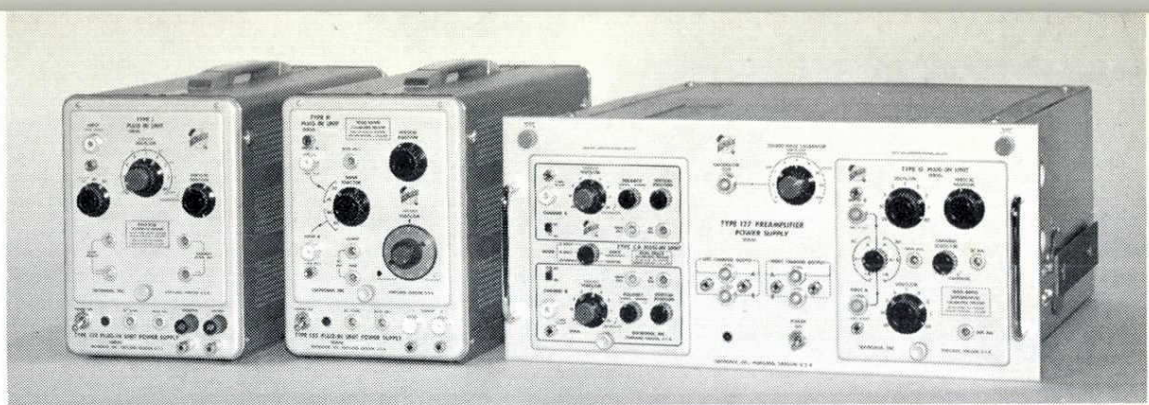


## POWER SUPPLIES FOR LETTER-SERIES PLUG-IN UNITS

**TYPE 127** • **POWER** — adequate for any combination of 2 plug-in units • **FREQUENCY RESPONSE** — dc to 19 Mc with Type L Unit • **GAIN** — unity (push-pull) or 1/2 (single-ended) • **OUTPUT** —  $\pm 0.3$  v into 170-ohm termination • **AMPLITUDE CALIBRATOR** — 0.2 mv to 100 v • **TYPE 127** — fits 19" rack . . . \$650 •

**TYPE 132** • **GAIN** — 10X with 93-ohm load or about 5X into 52-ohm load • **FREQUENCY RESPONSE** — dc to 16 Mc with Type L Unit • **OUTPUT** —  $\pm 100$  v (push-pull) or  $\pm 50$  v (single-ended) with high impedance load;  $\pm 1$  v with 93-ohm load • **TYPE 132** — \$460 •

**TYPE 133** • **SOURCE IMPEDANCE** — 2 ohms • **FREQUENCY RESPONSE** — dc to 100 kc • **GAIN** — 10X (single-ended) • **OUTPUT** —  $\pm 5$  v (high-impedance load), 1.5 amp (short circuit) • **DC ADJUST** — output adjusts to ground potential • **TYPE 133** — \$440 •



### TYPE 130 L-C METER

• **MICROHENRY SCALE** — 0 to 3, 10, 30, 100, and 300 • **PICOFARAD SCALE** — 0 to 3, 10, 30, 100, and 300 • **ACCURACY** — within 3% • **GUARD VOLTAGE** — for measuring an unknown capacitance, eliminates effects of other capacitances • **TYPE 130** — \$225 •

130  
127  
132  
133  
180A  
181  
190B

Scope-  
mobiles  
Cameras



### TIME-MARK GENERATORS

**TYPE 180A** • **ACCURACY** — within 0.001%, stability of 3 parts per million over a 24-hour period • **14 TIME-MARK INTERVALS** — 2 per decade from 1  $\mu$ sec to 5 sec, separately or in combination • **3 SINE-WAVE FREQUENCIES** — 5, 10, and 50 Mc • **6 TRIGGER-RATE FREQUENCIES** — 1, 10 or 100 cps, 1, 10 or 100 kc • **TYPE 180A** — \$625 •

**TYPE 181** • **5 TIME-MARK INTERVALS** — 1, 10, 100, and 1000  $\mu$ sec plus 10-Mc sine wave • **TYPE 181** — \$265 • **TYPE RM181** — mounts to 19" rack . . . \$290 •



### TYPE 190B CONSTANT AMPLITUDE SINE-WAVE GENERATOR

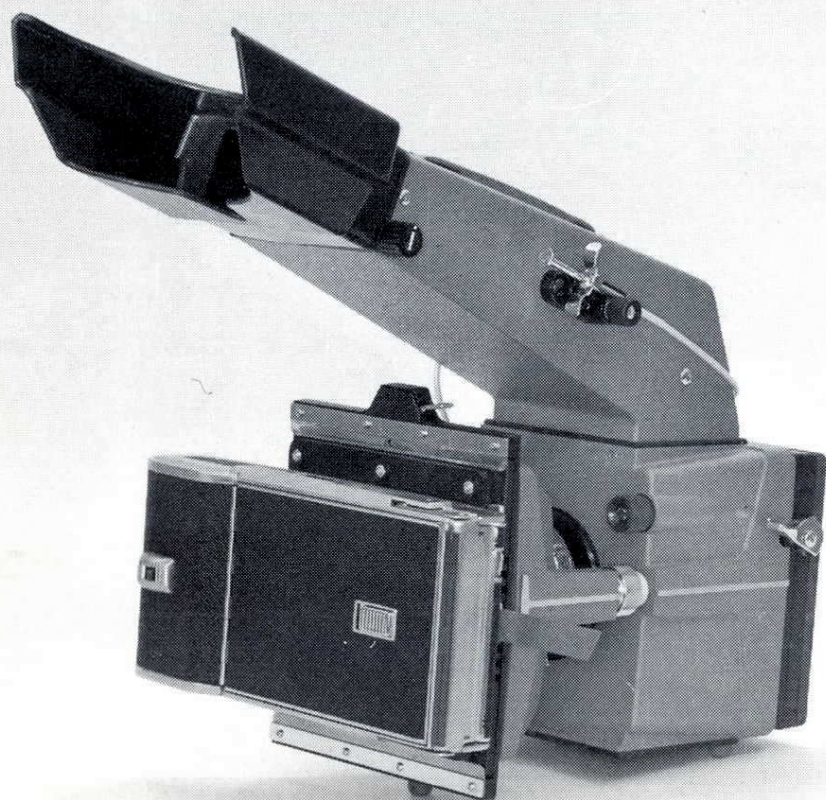
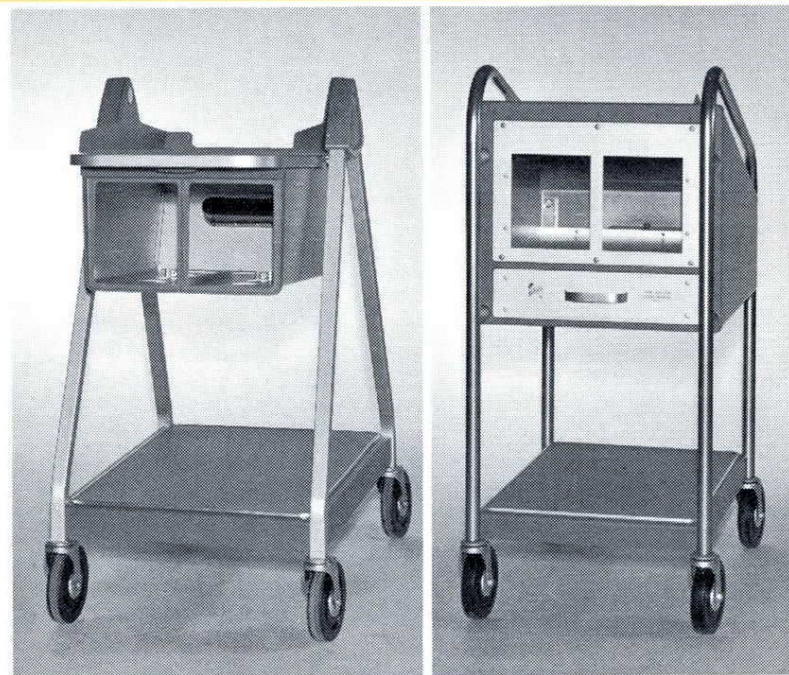
• **OUTPUT FREQUENCY** — 350 kc to 50 Mc, continuously variable, plus 50 kc variable over a narrow band • **AMPLITUDE VARIATION** — less than  $\pm 2\%$  from 50 kc to 30 Mc; less than  $\pm 5\%$  from 30 Mc to 50 Mc • **OUTPUT AMPLITUDE** — 40 mv to 10 v pk-to-pk, continuously variable • **OUTPUT IMPEDANCE** — nominally 52 ohms • **TYPE 190B** — \$330 •

**SCOPE-MOBILE® CARTS** — convenient mobile support for oscilloscopes or other instruments.

**200-SERIES FEATURES** — tilt-lock tray (nine 4.5° steps), 5" rubber wheels • **TYPE 201** — 10 1/2" wide, for Types 503, 504, 515A, 516, 561A, 564 Oscilloscopes . . . \$85 • **TYPE 203** — as above with plug-in carrier installed . . . \$99.50 • **TYPE 202** — 14" wide, for Types 530, 540, 550, 580-Series Oscilloscopes; 502, 507, 517A, 524AD, 661 Oscilloscopes; 570, 575 Curve Tracers . . . \$85 • **TYPE 204** — with plug-in carrier installed . . . \$99.50 •

**500-SERIES FEATURES** — storage drawer, fixed (20°) tray, 5" rubber wheels • **TYPE 500A** — 13 3/4" wide . . . \$99.50 • **TYPE 500/53A** — with plug-in carrier installed . . . \$110 •

® Registered Trademark



### TRACE-RECORDING CAMERAS

• **FUNCTIONAL DESIGN** — one-hand portability, lift-on mounting, swing-away hinging, comfortable viewing with or without glasses, 9 positive-lock detents for multiple exposures, locking focus control •

• **STANDARD CAMERA ASSEMBLIES** — C-12 and C-13 for general-purpose trace recording; C-19 for high-speed pulse recording •

• **SPECIAL COMBINATIONS** — Camera Frames, optional Lenses, and Film Backs as individual components, or assembled as a complete unit . . . consult your Tektronix Field Office (or Distributor) •

• **C-12 CAMERA** includes — f/1.9 Lens with 1:0.9 object-to-image ratio, Polaroid\* Land 3 1/4" by 4 1/4" Camera Back with focus plate, and complete Camera Frame Assembly with dichroic mirror and viewing tunnel • **C-12 CAMERA** — \$465 •

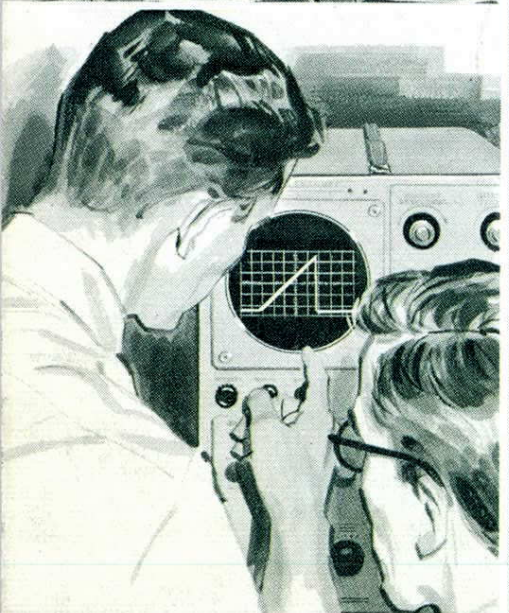
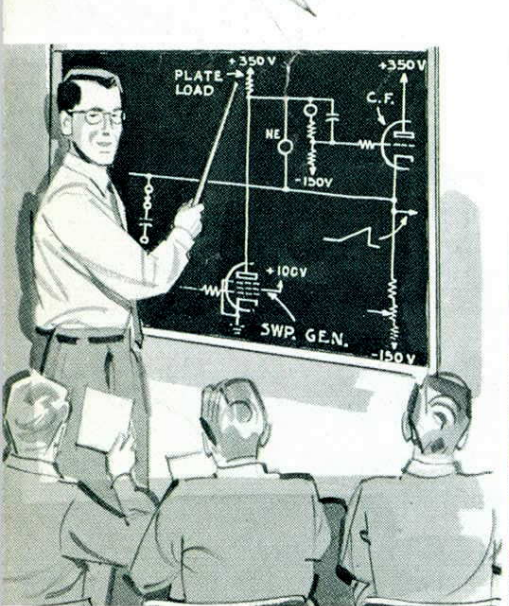
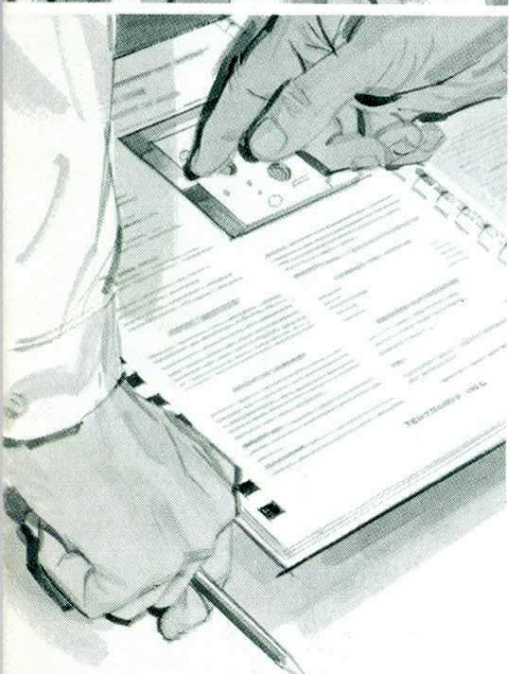
• **C-13 CAMERA** includes — f/4.5 Lens with 1:0.7 object-to-image ratio, Polaroid Land 3 1/4" by 4 1/4" Camera Back with focus plate and complete Camera Frame Assembly • **C-13 CAMERA** — \$375 •

• **C-19 CAMERA** includes — f/1.9 Lens with 1:0.5 object-to-image ratio, Polaroid Land 3 1/4" by 4 1/4" Camera Back with focus plate, and complete Camera Frame Assembly with viewing tunnel • **C-19 CAMERA** — \$515 •

\* Registered by Polaroid Corporation



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