

# INSTRUCTION MANUAL

INSERT

TYPE 506  
MOD 129B

This insert has been written to supplement the Instruction Manual furnished with this modified instrument. The information given in this insert will supersede that given in the manual.

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**TYPE 506**  
MOD 129B  
**OSCILLOSCOPE**

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04055

TYPE 506  
MOD 129B

The instrument for which this manual was prepared has been modified to provide a 1 kc precision amplitude calibrator. The specifications of this calibrator are:

- Waveform -- Square wave.
- Frequency -- 1 kc  $\pm 1\%$
- Symmetry -- within 2%
- Amplitude -- within 3% of the front-panel markings.
- Rise Time -- typically 2  $\mu$ sec.

CIRCUIT DESCRIPTION

This precision, 1 kc calibrator consists of an electron coupled Colpitts oscillator which triggers a bistable multivibrator. The Colpitts oscillator (V950A) generates a 2 kc signal which is amplified and shaped into negative pulses by V950B. These negative pulses are applied to the grid circuits of V960 and cause the multivibrator to switch with each pulse. Since the multivibrator requires two input pulses for one output cycle, the output waveform is a 1 kc square wave.

The output of the multivibrator is coupled directly to the grid of a cathode-follower, V970. The negative excursion of the cathode of V970 is held very close to ground potential. The positive excursion is adjustable by means of the CAL. ADJ. control R968 in the grid circuit.

CALIBRATION

Substitute the following for Step 8 as given in the Instruction Manual:

8. Adjust Precision Calibrator Amplitude
  - a. Connect the CAL OUT to one vertical INPUT; connect the output of the Time-Mark Generator to the other vertical INPUT.
  - b. With the MODE switch set to ALT and the TIME/DIV switch set to 1 mSEC, adjust the triggering for a stable display.
  - c. Adjust L950 so that the leading edge of each square wave coincides with a time mark.
  - d. Turn the CALIBRATOR to OFF.

- e. Connect a dc voltmeter between Pin 8 of V970 and ground.
- f. Adjust CAL ADJ (R968) for +100 volts. Calibration of each position of the CALIBRATOR switch is not necessary.

PARTS LIST CHANGES

The following part changes have been made in this modified instrument. When ordering replacement parts, give the description of the item as shown below and specify instrument type, serial number, and MOD number.

CAPACITORS

C876	Delete				
C878	Delete				
C884	Delete				
C950	Add	283-555	.002 $\mu$ f	Mica	500v
C951	Add	283-555	.002 $\mu$ f	Mica	500v
C952	Add	special	.015 $\mu$ f	Mica	500v
C953	Add	283-002	.01 $\mu$ f	Ceramic	500v
C954	Add	283-001	.005 $\mu$ f	Ceramic	500v
C960	Add	281-550	120 pf	Ceramic	500v
C961	Add	281-549	68 pf	Ceramic	500v
C962	Add	281-549	68 pf	Ceramic	500v
C963	Add	281-524	150 pf	Ceramic	500v
C964	Add	281-524	150 pf	Ceramic	500v
C971	Add	281-513	27 pf	Ceramic	500v
C972	Add	290-149	5 $\mu$ f	Elec.	150v

DIODES

D960	Add	152-008	T12G	Germanium	
D961	Add	152-147	Z7v	Zener	.4w

INDUCTORS

L950	Add	31-62B	2800 turns #42 wire	<i>Cap Core</i>
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RESISTORS

R870	Delete
R871	Delete

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R872	Delete						
R876	Delete						
R877	Delete						
R878	Delete						
R879	Delete						
R883	Delete						
R950	Add	301-224	220k	1/2w	Comp	5%	
R951	Add	301-473	47k	1/2w	Comp	5%	
R952	Add	301-563	56k	1/2w	Comp	5%	
R953	Add	315-223	22k	1/2w	Comp	5%	
R954	Add	301-331	330Ω	1/2w	Comp	5%	
R955	Add	301-103	10k	1/2w	Comp	5%	
R960	Add	315-473	47k	1/4w	Comp	5%	
R961	Add	315-683	68k	1/4w	Comp	5%	
R962	Add	301-124	120k	1/2w	Comp	5%	
R963	Add	301-224	220k	1/2w	Comp	5%	
R964	Add	301-224	220k	1/2w	Comp	5%	
R965	Add	301-474	470k	1/2w	Comp	5%	
R966	Add	315-473	47k	1/4w	Comp	5%	
R967	Add	302-333	33k	1/2w	Comp	10%	
R968	Add	311-159	20k	var.	Cal Adj		
R969	Add	316-393	39k	1/4w	Comp	10%	
R972	Add	302-101	100Ω	1/2w	Comp	10%	

ELECTRON TUBES

V884	Delete		
V950	Add	154-278	6BL8
V960	Add	154-278	6BL8
V970	Add	154-323	6CW4

MECHANICAL

CHASSIS, Calibrator	Change to	Modified 441-336
SOCKET, 9-Pin Tube	Add	2 136-015
SOCKET, 5-Pin Nuvistor	Add	1 136-101

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