

SUPREME

Testing Instruments

MODEL

546-A

OSCILLOSCOPE

INSTRUCTION MANUAL

SUPREME INSTRUMENTS CORPORATION

GREENWOOD, MISSISSIPPI

U. S. A.

SUPREME MODEL 546-A

OSCILLOSCOPE

ELECTRICAL SPECIFICATIONS

POWER SUPPLY REQUIREMENTS: (Unless otherwise specified on plate attached to instrument).

Voltage.....110/125 volts A-C
Frequency.....50/60 cycles
Power Consumption.....50 watts maximum

MECHANICAL SPECIFICATIONS

OVER-ALL DIMENSIONS:

Height.....11-1/2 inches
Width.....7-1/4 inches
Depth.....13-1/4 inches

WEIGHT:

Net.....22 pounds
Shipping.....25 pounds

STANDARD EQUIPMENT SUPPLIED WITH THE SUPREME MODEL 546-A

QUANTITY INCLUDED	STOCK NUMBER	DESCRIPTION	PACKER'S CHECK
1	9121	Booklet, Operating Data	
1	6725	Card, Return Registration	

.....
The above list has been checked by the undersigned who is responsible for the completion of this package.

MODEL 546-A (Signed).....
P. M. W.
Shipping Department

SERIAL #.....*3962*.....

MENTION ABOVE NUMBERS IN ALL CORRESPONDENCE!

IMPORTANT

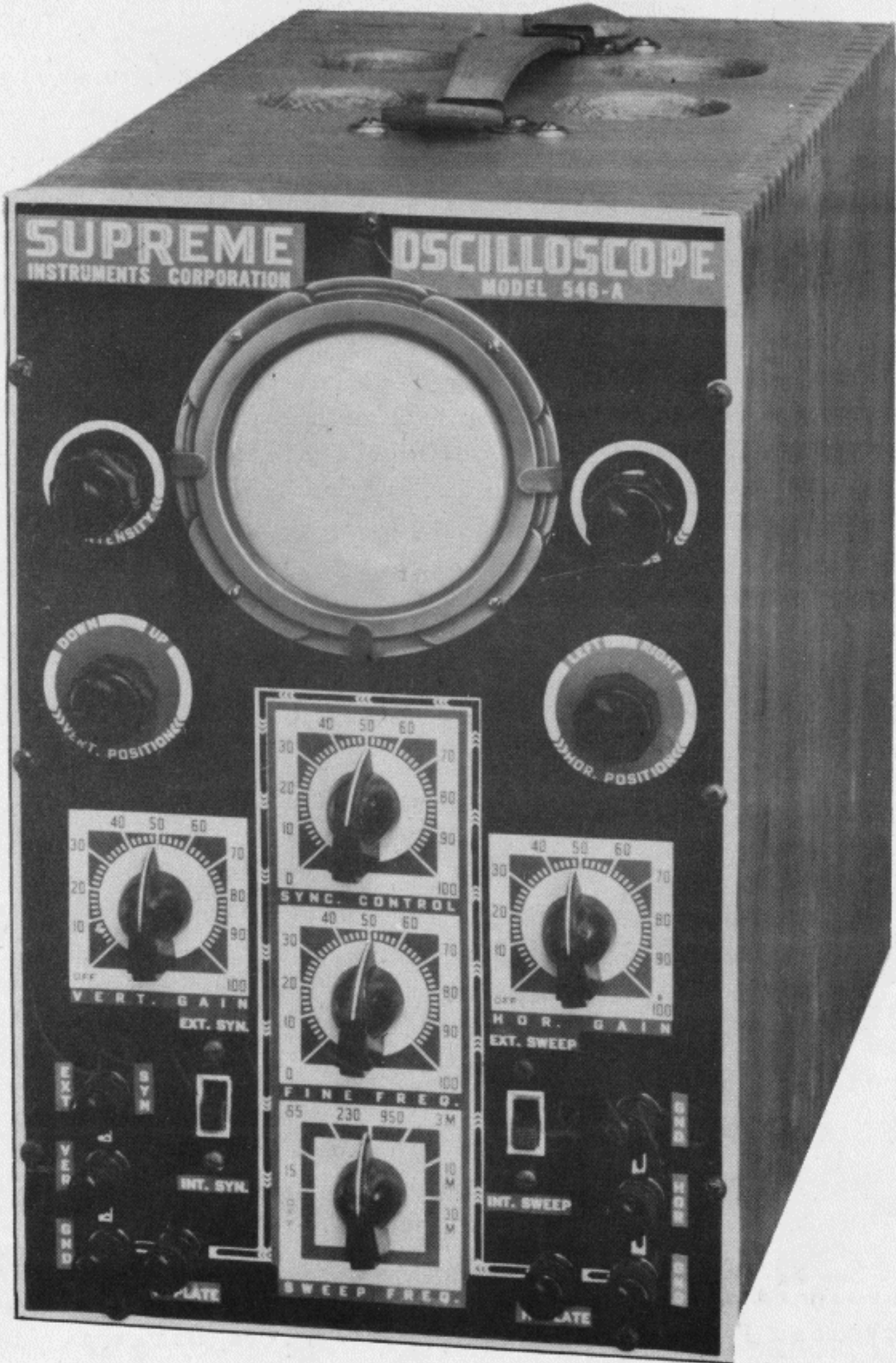
See enclosed colored sheet for information concerning Registration, Transportation Damages, Warranty, Replacement Parts, etc.

The instructions listed on this colored sheet must be complied with before the warranty policy is applicable. The Model and Serial numbers should be mentioned in all correspondence regarding this instrument.

SUPREME
INSTRUMENTS CORPORATION

OSCILLOSCOPE

MODEL 546-A



#9121
INSTRUCTION MANUAL
FOR

SUPREME MODEL 546-A OSCILLOSCOPE

GENERAL DESCRIPTION

The SUPREME Model 546-A is designed around a three-inch cathode-ray tube of the high-vacuum type with medium persistence screen. The deflecting plate terminals and image positioning controls are brought out to the front panel for easy accessibility. A power supply of good regulation provides the necessary anode and control voltages of the proper magnitude and quality.

The vertical amplifier is of special design providing maximum gain with good frequency response from 15 cycles to 100 kilocycles. The horizontal amplifier is so regulated as to amplify the internal or external sweep voltage with a minimum amount of distortion.

The internal sweep generator is of the thyratron gaseous-discharge type producing voltage impulses from approximately 15 to 30M cycles per second. Provisions are also incorporated for automatically switching from internal to external sweep without removing any connecting cables from the instrument. A special synchronization circuit is provided for stabilizing the sweep generator and holding the pattern stationary upon the screen of the cathode-ray tube.

POWER SUPPLY REQUIREMENTS

Unless otherwise specified, the instrument is designed to operate from 110 to 125 volts at 50/60 cycles. Power consumption is 50 watts maximum. The

tubes used are two 6SJ7 as vertical and horizontal amplifiers, 885 as sweep generator, two 5Y3G as low and high voltage rectifiers and 3AP1 Cathode-ray tube.

This instrument is protected from damage in case an overload is applied to it by a fuse having a rating of 1 Ampere. If your instrument fails to operate remove the fuse from its fuse-holder and check it with an ohmmeter to see if it is burned out. (The fuse-holder in this instrument may be located by removing the metal grille from the rear of the wooden carrying case.) If it is, replace it with a fuse of the same length having a rating of 1 Ampere. If the second fuse burns out the instructions listed under SERVICE AND MAINTENANCE should be followed.

CAUTION! The 90-day Warranty on the instrument is valid only if it is protected by a fuse having the specified rating! Do not substitute one of higher rating!

PANEL MARKINGS AND COMPONENTS

PANEL:

Gray wrinkle finish - Size 11-1/2 x 7-1/4 inches.

CATHODE RAY TUBE:

Upper center of panel - Three inch diameter high vacuum, medium persistence type screen. Type 3AP1.

ROTARY CONTROLS:

Upper left and right side of panel - Equipped with hexagon knobs and labeled 'INTENSITY', 'OFF-ON' power switch and 'FOCUS'. For adjusting the brilliance and definition of the image as shown on the screen of the cathode-ray tube.

ROTARY CONTROLS:

Upper left and right of panel - Equipped with hexagon knobs and labeled 'VERT. POSITION' and 'HOR. POSITION'. For centering spot or image of the cathode-ray tube.

ROTARY CONTROL:

Left edge of panel - Equipped with bar pointer knob and labeled 'VERT. GAIN'. '0-100' scale: Gain control for vertical amplifier. 'OFF': Amplifier off and 'V-PLATE' terminal connected to vertical plate.

ROTARY CONTROL:

Right edge of panel - Equipped with bar pointer knob and labeled 'HOR. GAIN'. '0-100' scale: Gain control for horizontal amplifier. 'OFF': Amplifier off and 'H-PLATE' terminal connected to horizontal plate.

ROTARY CONTROL:

Center of panel - Labeled 'SYNC. CONTROL'. Equipped with bar pointer knob. For adjusting amplitude of synchronizing voltage, stabilizing the image on the screen of the Cathode-ray tube.

ROTARY CONTROL:

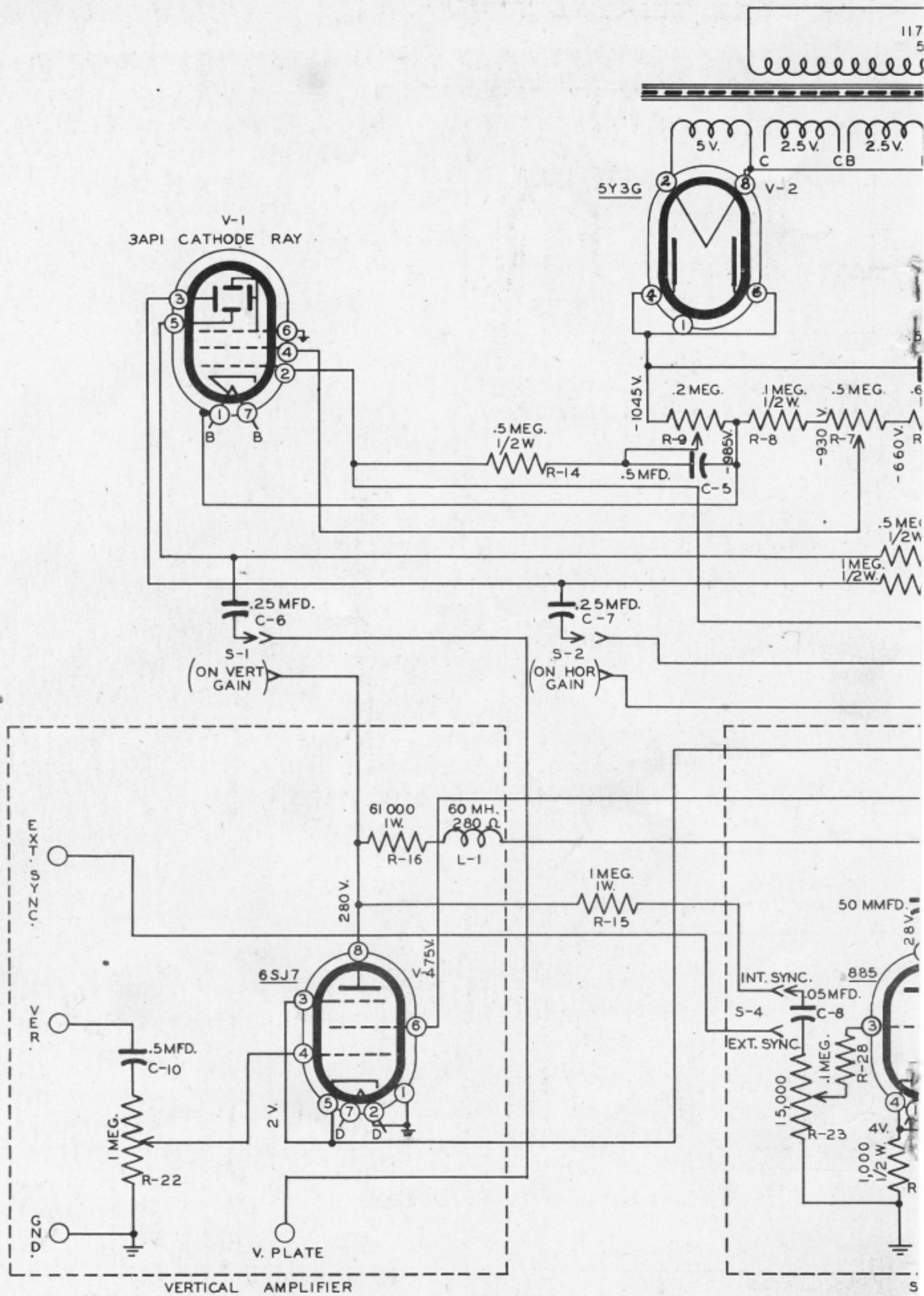
Center of panel - Labeled 'FINE FREQ.'. Equipped with bar pointer knob. For vernier adjustment of saw-tooth generator.

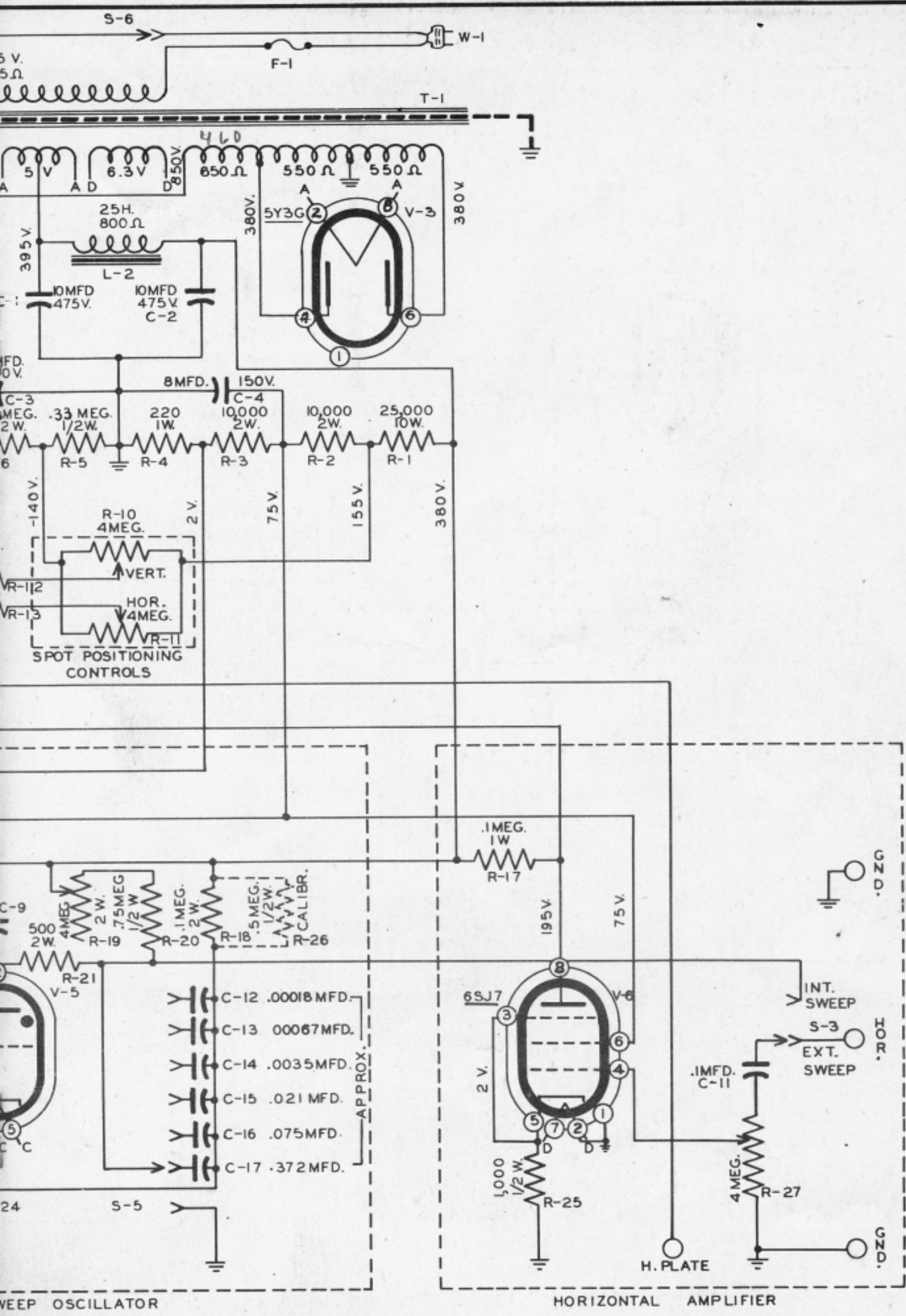
ROTARY CONTROL:

Center of panel - Labeled 'SWEEP FREQ.'. Equipped with bar pointer knob. Range selector for saw-tooth generator. Rough frequency selection - 15/65/230/950/3M/10M/30M/ cycles.

BINDING POSTS:

Four terminals at lower left of panel -





ALL VOLTAGES MEASURED WITH AN ELECTRONIC VOLTMETER

MATERIAL _____	FINISH _____	DATE 1-23-48
UNLESS OTHERWISE SPECIFIED DECIMAL DIMENSIONS TO BE ± _____ OTHER DIMENSIONS TO BE ± _____ SCALE _____		NO. 2806-C
SUPREME INSTRUMENTS CORPORATION GREENWOOD, MISS., U.S.A.	SCHEMATIC DIAGRAM MODEL 546-A	DRAWN BY C. J. BOUTWELL CHECKED BY Raymond Howard TRACED APPROVED DATE 1-23-48 NO. 2806-C

Labeled 'EXT. SYN.' input for external synchronizing voltage; 'VER' input for voltage under observation; 'GND' return for 'VER' and 'EXT. SYN.'; 'V-PLATE' for connection to vertical deflecting plates.

BINDING POSTS:

Four terminals at lower right of panel - Labeled 'GND' 'HOR' and 'GND' input for standard or external sweep; 'H-PLATE' for connection to horizontal deflecting plates.

SLIDE SWITCH:

Lower left side of panel - Labeled 'EXT. SYN' - 'INT. SYN'. Automatic connector for external or internal synchronizing voltage.

SLIDE SWITCH:

Lower right side of panel - Labeled 'EXT. SWEEP' - 'INT. SWEEP'. Automatic connector for horizontal sweep voltage.

MODEL NUMBER:

Model 546-A printed in upper right hand corner of panel.

SERIAL NUMBER:

Number printed in extreme upper center of panel.

OPERATION

1. Connect the power supply cable to convenient A-C supply socket after you have made certain that it is the proper voltage and frequency. (See POWER SUPPLY REQUIREMENTS). Turn 'POWER' switch 'ON' and allow oscilloscope to reach proper operating temperature (5 to 15 minutes).
2. Turn all rotary controls to the extreme counter-clockwise position and move the slide switches to

the down position.

3. Advance all rotary controls including the bar pointer knobs to approximately one-half normal rotation in a clockwise direction. Regulate the 'INTENSITY' control until a green fluorescence appears on the screen of the cathode-ray tube. Adjust the 'VERT. POSITION' and 'HOR. POSITION' controls until the fluorescent image is centered. Re-adjust the 'FOCUS' and 'INTENSITY' controls for a well-defined horizontal line. Care must be taken not to burn the screen of the tube; therefore, the 'INTENSITY' control must be kept as low as possible and yet maintain a clearly visible image.

WAVEFORM OBSERVATION USING VERTICAL AMPLIFIER:

With all controls set at approximately 50% rotation apply an A-C voltage to the 'VER' and 'GND' terminals located in the extreme lower left hand corner. (If the resulting deflection from this test voltage does not provide the proper vertical amplitude for clear observation, advance the control if it is below normal and decrease the rotation if it exceeds the limits of the screen). To adjust for more than one wave, turn the 'SWEEP FREQ.' control in the counter-clockwise direction until the desired number of cycles appear. For more accurate adjustment the 'FINE FREQ.' control acts as a vernier to the 'SWEEP FREQ.' control. Should the pattern fail to stand still, advance the 'SYNC. CONTROL' in the clockwise direction just enough to stabilize the pattern. Over-synchronization may result in a distorted figure.

WAVEFORM OBSERVATION WITHOUT VERTICAL AMPLIFIER:

Frequencies which are out of the amplifier range require provisions for connecting more directly to the deflecting plates. The vertical plate is accessible from the panel by attaching

a lead to the 'V-PLATE' and 'GND' terminals with the 'VERT. GAIN' in the extreme counter-clockwise or 'OFF' position. The applied voltage should not exceed 500 volts (peak to peak).

HORIZONTAL DEFLECTING SYSTEM:

The 'HOR. GAIN' operates in the same manner as the 'VERT. GAIN' and controls the horizontal deflection caused by the output of the internal amplifier.

With the 'EXT. INT. SWEEP' in 'INT. SWEEP' position a saw-tooth voltage is automatically applied to the horizontal amplifier input. With this slide switch in 'EXT. SWEEP' position, the operation is exactly the same as the vertical section using the amplifier except that the deflection will be on a horizontal plane. When the 'HOR. GAIN' is in the 'OFF' position the horizontal deflecting plate is accessible from the panel by connecting to the 'H-PLATE' and 'GND' terminals. The applied voltage should not exceed 500 volts (peak to peak).

TIMING AXIS:

The 'SWEEP FREQ.' is the main control for the internal saw-tooth oscillator with the 'FINE FREQ.' acting as a vernier. The lower limit of the saw-tooth oscillator is approximately 15 cycles with the 'SWEEP FREQ.' set at 15 and the 'FINE. FREQ.' at 0. The next position will be approximately 65 cycles, 230, etc., if the 'FINE FREQ.' control remains at 0. Values between the division marks of the 'SWEEP FREQ.' may be obtained by rotating the 'FINE FREQ.' between 0 and 100. If more than one cycle appears upon the screen of the tube it means that the horizontal timing axis has a frequency below that of the test voltage. When the timing axis exceeds the frequency of the test voltage, a series of crossed

waves or part cycles will be noted.

INTERNAL SYNCHRONIZATION:

The 'SYNC. CONTROL' is located directly above the 'FINE FREQ.' control and is used to stabilize or lock the pattern upon the screen. This control works in conjunction with the 'VERT. GAIN' and should be advanced just a sufficient amount to stop the image.

EXTERNAL SYNCHRONIZATION.

When the 'EXT. INT. SYN' slide switch is in the down position, a part of the vertical amplifier output voltage is connected to the control grid of the thyratron saw-tooth generator. When in the 'EXT. SYN' position, the 'EXT. SYN' terminal is connected to the control grid and external synchronization voltage may be applied to stabilize the pattern.

APPLICATION:

For a more complete discussion of the operation of a cathode-ray oscilloscope and uses therefor it is suggested that the booklets entitled 'THE CATHODE-RAY OSCILLOSCOPE' and 'RECEIVER ALIGNMENT PROCEDURES' be purchased. These booklets are the first two in a series written especially for the radio serviceman in a language he can understand. They are available from the factory for twenty-five cents (25¢) each.

SERVICE AND MAINTENANCE

All functions and ranges of the SUPREME Model 546-A were carefully tested and calibrated before shipment from the factory. Under normal operating conditions this instrument should give a long and trouble-free service. However, if for any reason this instrument should fail to operate properly, write the Service Engineer at the factory. Submit complete information regarding the difficulty

and full instructions will be forwarded in detail. The Model and Serial numbers, position of controls, inoperative section, and any other information should be given in your *first* letter.

REPLACEMENT PARTS

The parts used in the SUPREME Model 546-A were carefully inspected for mechanical and electrical defects at the factory. Under normal conditions and average use the life of the tubes will be equal to those in radio receivers (approximately 1500 hours). Any special parts which are not available from regular dealer stocks may be ordered from your nearest SUPREME distributor by describing the item and giving the Model and Serial numbers of your unit.

SUPREME INSTRUMENTS CORPORATION

GREENWOOD, MISSISSIPPI

U. S. A.

19 YEARS EXPERIENCE

MANUFACTURING

- TUBE TESTERS
- MULTIMETERS
- CAPACITOR ANALYZERS
- A. F. SIGNAL GENERATORS
- VACUUM TUBE VOLTMETERS
- A. M. SIGNAL GENERATORS
- F. M. SIGNAL GENERATORS
- SIGNAL TRACERS
- OSCILLOSCOPES



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