



Heathkit
**SPECIFICATIONS
and SCHEMATICS**

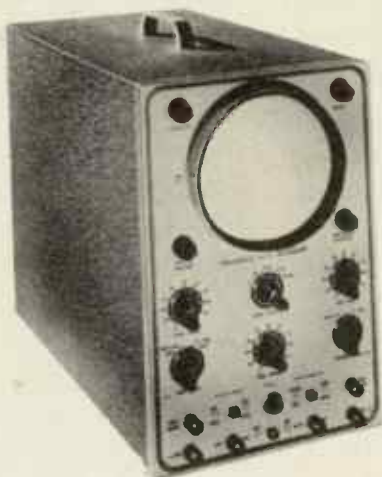
HEATH COMPANY
BENTON HARBOR
MICHIGAN

Heathkits fill a major need in the radio industry, for they form the most complete line of the very best test equipment in kit form. The combination of careful engineering, complete and detailed instruction manuals, the use of highest quality components, and the exacting machine work in the forming and punching of panels and chassis all go together to produce accurate and dependable test equipment which is a pleasure to construct and truly professional in appearance.

The advantages of kit form test equipment are numerous. The builder saves a major portion of the cost of ready-constructed equipment when he does the assembly himself, and while building, becomes better acquainted with the circuitry and operation of the unit thereby gaining that important knowledge which will help him use the instrument far more intelligently and over a wider range of applications. Moreover, should maintenance or repair ever be needed, the knowledge gained in construction will permit the builder to easily put the unit back into good operating condition.

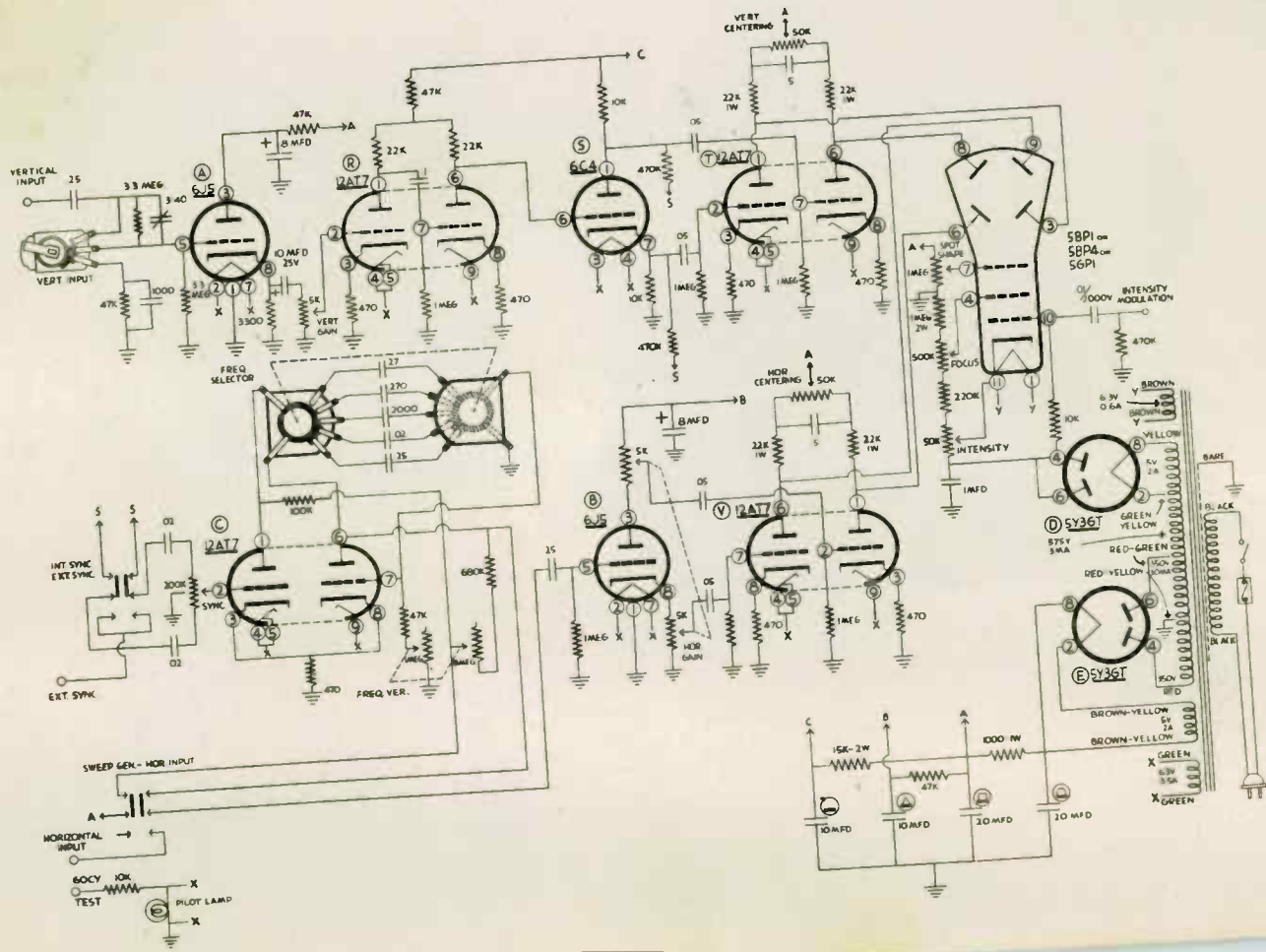
We would like to stress one point—it always has been, and it always shall be, our sincere desire to produce the best kit form test equipment at low cost to customer. And furthermore, we stand ready to help the Heathkit user in any way, and at all times, for we want every Heathkit owner to receive the many years of excellent operation for which his kit was engineered.

HEATHKIT MODEL O-7 OSCILLOSCOPE



SPECIFICATIONS

Vertical:	Frequency response	+2 db at 10 cy.
	(1 inch deflection at 1 kc reference)	-2 db at 200 kc
		-6 db at 500 kc
		-12 db at 1 mc
		-24 db at 2 mc
	Sensitivity (1 inch deflection at 1 kc)	.03 volts per inch
	Input impedance	30 MMF shunting 2 Megohm
Horizontal:	Frequency response	+2 db at 10 cy.
	(1 inch deflection at 1 kc reference)	-3 db at 500 kc
		-6 db at 1 mc
		-12 db at 2 mc
		Sensitivity (1 inch deflection at 1 kc)
	Input impedance	25 MMF shunting 1 Megohm
Sweep Generator:	Multivibrator with frequency range of 15 - 100,000 cycles	
Tube Complement:	1 - 5BP1 or 5BP4 or 5GP1 Cathode-ray tube 2 - 6J5 tubes for horizontal and vertical input 1 - 6C4 tube for vertical phase splitter 4 - 12AT7 tubes for hor. and vert. deflection, cascade amplifier, and multi-ibrator 2 - 5Y3 tubes for high and low voltage rectifiers	
Power Requirements:	105 - 125 volts 50-60 cycle AC 70 watts	
Dimensions:	8½" wide x 13" high x 17½" deep	

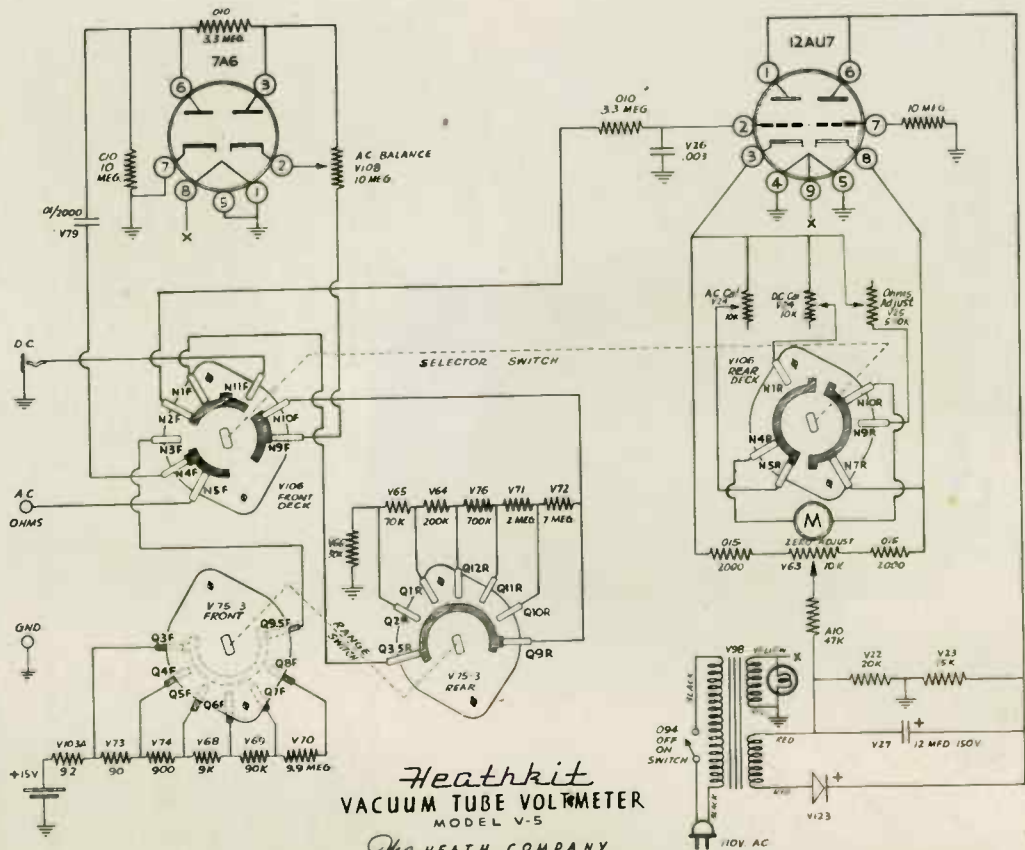


HEATHKIT VTVM MODEL V5



SPECIFICATIONS

Power Requirements:	105-125V 50/60 Cycle AC, 10 Watts.
Cabinet Size:	7 3/8" high x 4 11/16" wide x 4 1/8" deep.
Kit Shipping Weight:	5 pounds
Meter:	4 1/2" Streamlined case with 200 microampere movement.
Multipliers:	Precision type.
Tubes:	1 - 12AU7 Twin triode meter bridge. 1 - 7A6 Twin diode AC rectifier.
Power Supply:	Power transformer and selenium rectifier.
Battery:	1 1/2 Volt flashlight cell.
D. C. Voltmeter: 6 Ranges:	0-3, 10, 30, 100, 300, 1,000 volts full scale. With accessory probe to 30,000 Volts.
Input Resistance:	11 megohms (1 megohm in probe) on all ranges. 1,100 megohms with accessory probe.
Sensitivity:	3,666,666 ohms per volt on 3 Volt range.
Circuit:	Balanced bridge (push-pull) using twin triode.
Electronic AC Voltmeter: 6 Ranges:	0-3, 10, 30, 100, 300, 1,000 Volts full scale on linear scales reading R. M. S. (.707 of negative peak).
Circuit:	Diode with adjustable compensation.
Electronic Ohmmeter: 6 Ranges:	Scale with 10 ohms center x1, x10, x100, x1,000, x10K, x1 Meg. Measures .1 ohm to 1,000 megohms with internal battery.



Heathkit
VACUUM TUBE VOLTMETER
 MODEL V-5

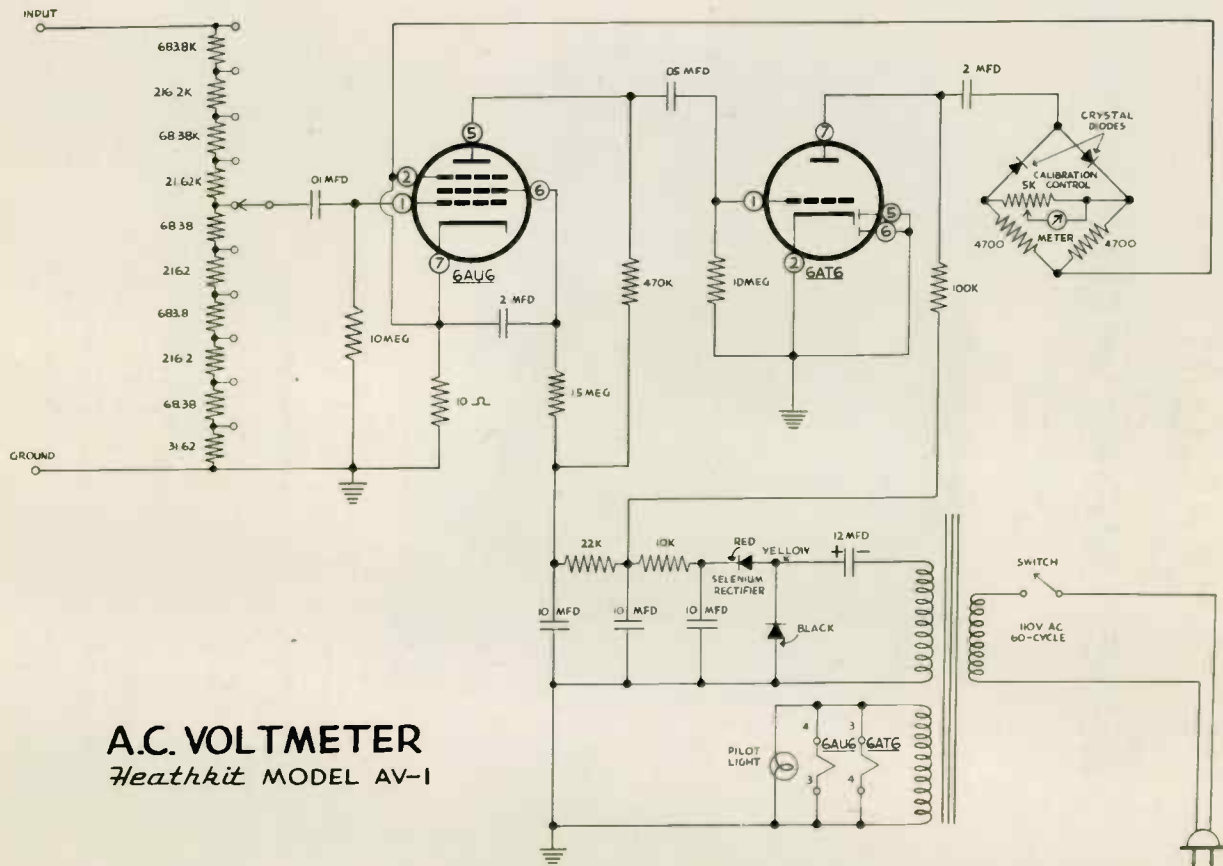
The HEATH COMPANY
 BENTON HARBOR, MICH

HEATHKIT MODEL AV-1 A. C. VOLTMETER



Technical Specifications

Power Requirement:	105-125V AC, 50-60 cycles, 10 Watts
Tube Complement:	1 - 6AU6 1 - 6AT6
Input Impedance:	1 Megohm at 1 KC
Ranges:	.01, .03, .1, .3, 1, 3, 10, 30, 100, 300 V RMS
Decibels:	Total range -52 to +52 db, scale -12 to +2 db. (1 MW - 600 ohm) ten switch selected ranges from -40 to +50 db.
Physical Specifications:	7-3/8" high x 4-11/16" wide x 4-1/8" deep
Net Weight 3½ lbs.	Shipping Weight 5 lbs.



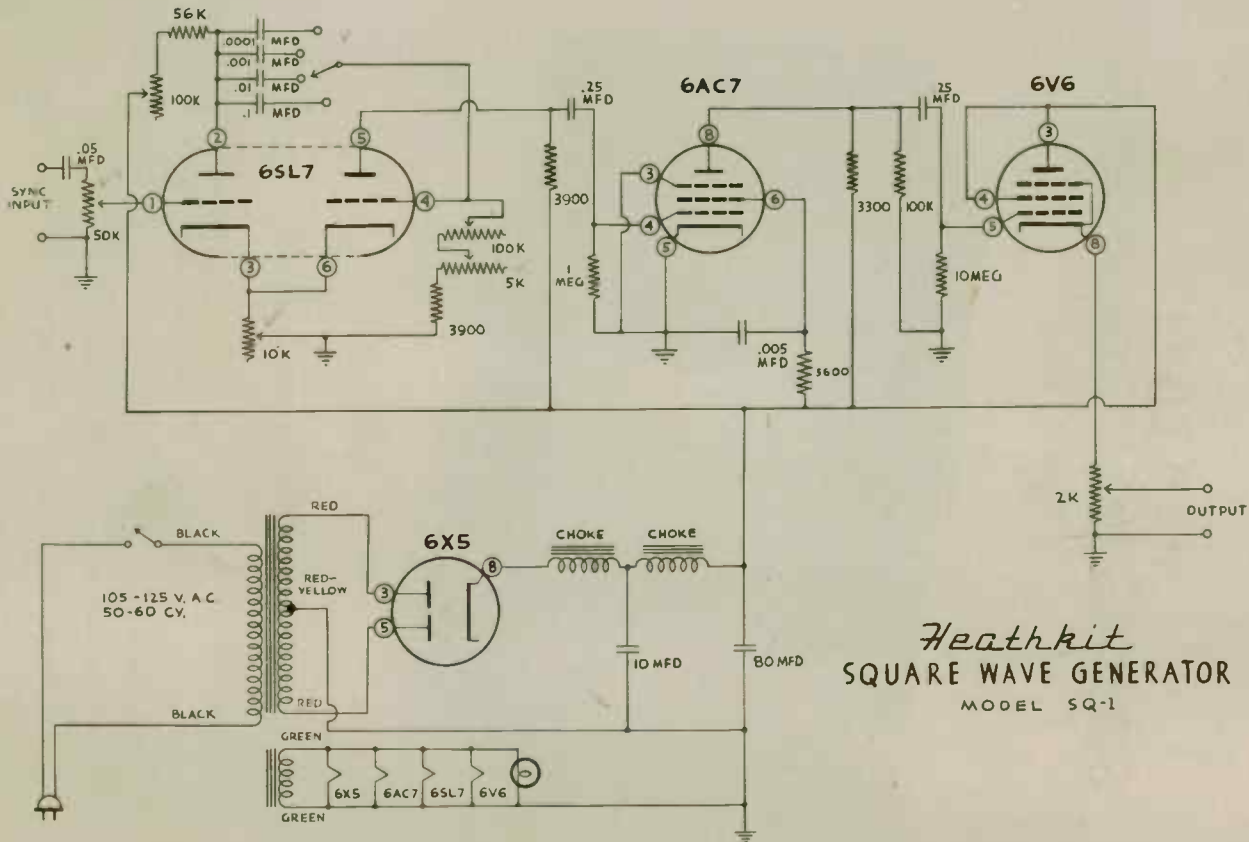
A.C. VOLTMETER
Heathkit MODEL AV-1

HEATHKIT SQUARE WAVE GENERATOR MODEL SQ-1



TECHNICAL SPECIFICATIONS

Power Requirements:	105-125 VAC, 50-60 Cycle, 10 Watts
Ranges:	100 - 1000 - 10 KC - 100 KC
Tube Complement:	1 - 6SL7, 1 - 6AC7, 1 - 6V6, 1 - 6X5
Physical Specifications:	12½" Long, 7" High, 7½" Deep
Shipping Weight 13 lbs.	Net Weight 11 lbs.



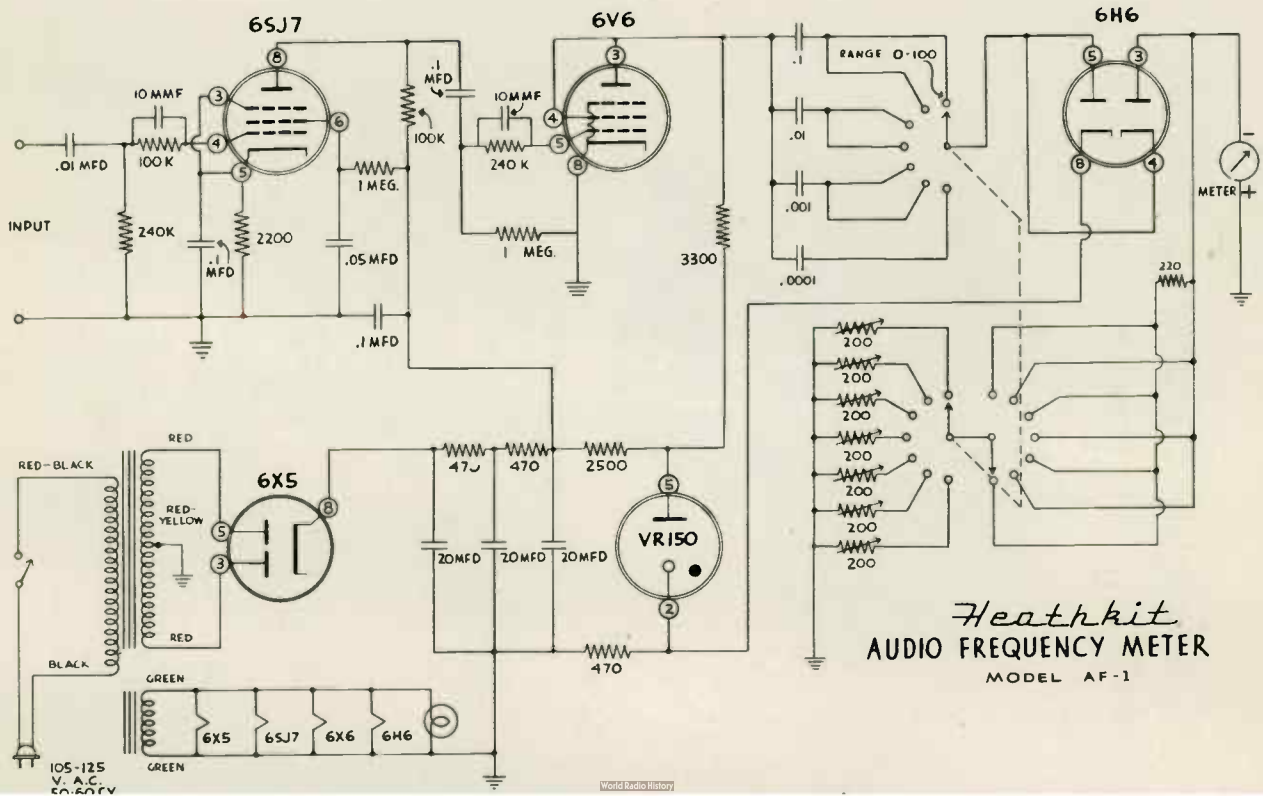
Heathkit
SQUARE WAVE GENERATOR
 MODEL SQ-1

HEATHKIT AUDIO FREQUENCY METER MODEL AF-1



TECHNICAL SPECIFICATIONS

Power Requirements:	105-125 V AC 50-60 cycles, 35 Watts
Tube Complement:	1 - 6V6 1 - 6H6 1 - 6X5 1 - 6SJ7 1 - VR150
Ranges:	0-100, 0-300, 0-1KC, 0-3KC, 0-10KC, 0-30KC, 0-100KC.
Input:	Impedance 250,000 Ohms at 1,000 CPS Voltage 2-300 Volts RMS
Physical Specifications:	12½" long x 7" high x 7½" deep, Shipping Wt. 12 lbs.



Heathkit
AUDIO FREQUENCY METER
 MODEL AF-1

Heathkit Electronic Switch

Model S-2



TECHNICAL SPECIFICATIONS

Input Voltage 110-125V AC 50-60 cycles

Power Consumption 25 Watts

Tube Complement:

- 1 6X5 (GT) Rectifier
- 1 6SN7 (GT) Multivibrator
- 1 6SN7 (GT) Blocking Tube
- 1 6SH7 (GT) or 6SJ7 (GT) A Amplifier
- 1 6SH7 (GT) or 6SJ7 (GT) B Amplifier

Control Line Up:

- Gain A Control Coarse Frequency Control
- Gain B Control Fine Frequency Control
- Position Control

Approximate Switching Rates: (Continuously variable)

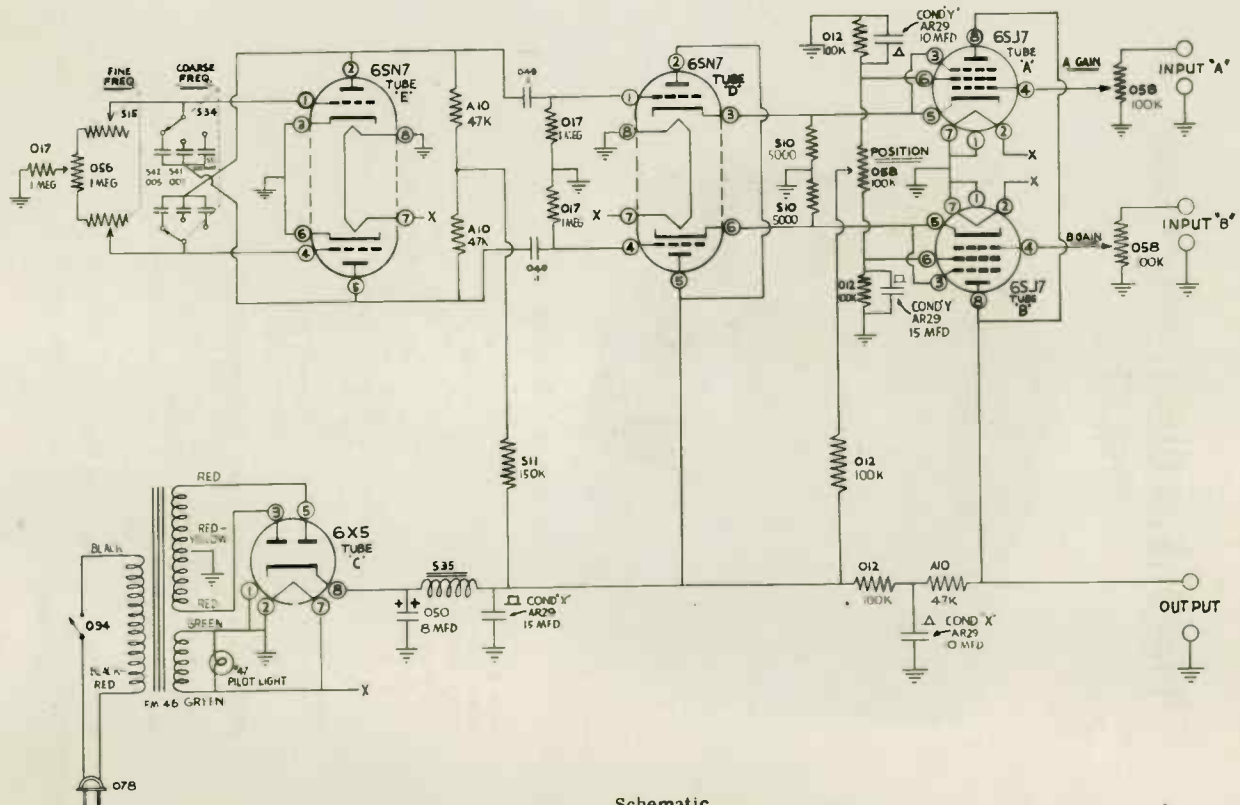
Low range: Less than 10 Cps. to 100 Cps.

Middle range: 50 Cps. to 400 Cps.

High range: 250 Cps. to 2000 Cps.

Physical Specifications:

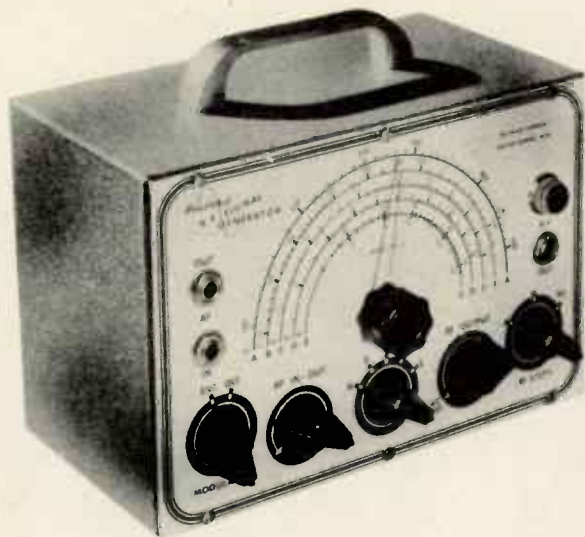
- Length (excluding knobs) 10 1/8"
- Width 5 5/8"
- Height (excluding handle and feet) 6 5/8"
- Net Weight 8 lbs.
- Shipping Weight 10 lbs.



Schematic

Heathkit Signal Generator

Model SG-6



SPECIFICATIONS

FREQUENCY RANGE

Band A	160 Kc to 500 Kc
Band B	500 Kc to 1,650 Kc
Band C	1.65 Mc to 5.5 Mc
Band D	5.5 Mc to 18.5 Mc
Band E	17 Mc to 52 Mc
Calibrated Harmonics	51 Mc to 156 Mc

RADIO FREQUENCY OUTPUT In excess of 100,000 microvolts

MODULATION FREQUENCY Approximately 400 cycles

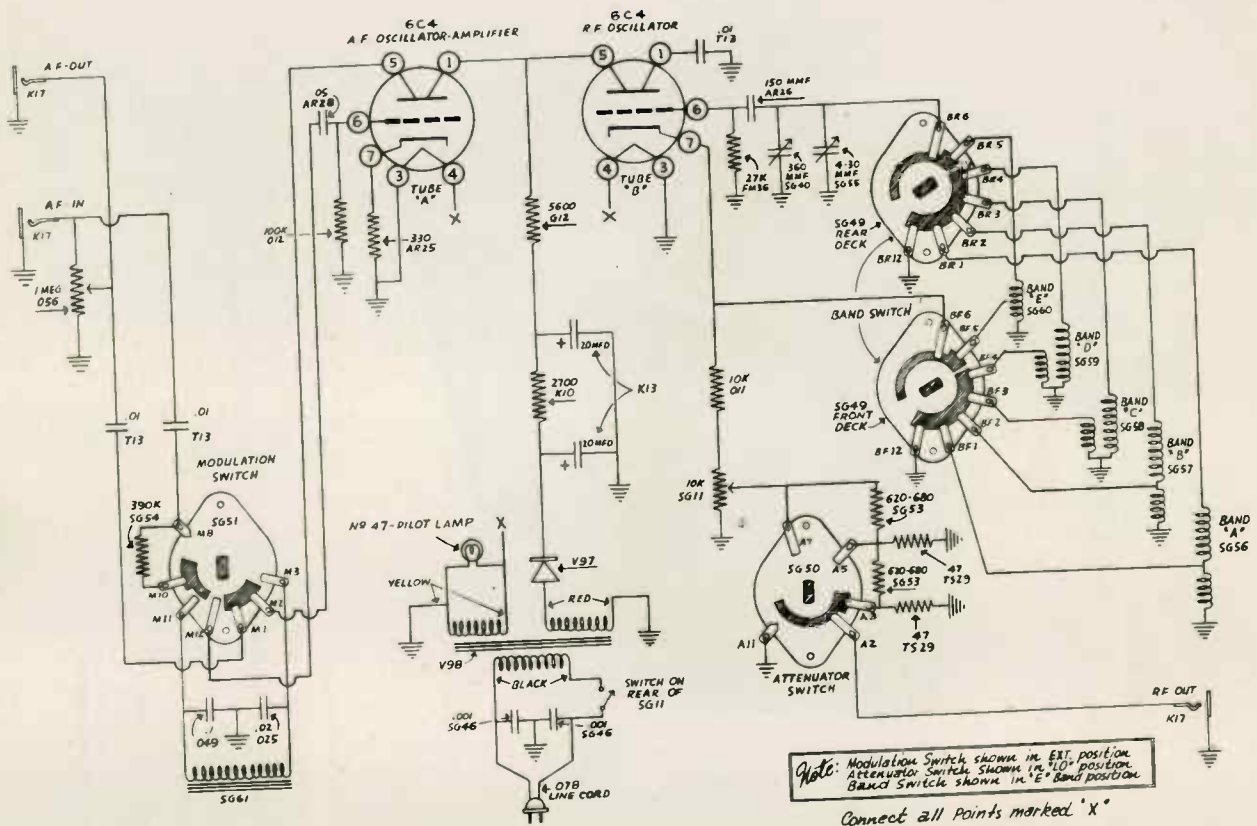
AUDIO OUTPUT 1½ to 2 Volts

AUDIO FREQUENCY INPUT Approximately 5V across 1 Megohm

TUBES

6C4 RF Oscillator 6C4 Audio Oscillator or Audio Amplifier

POWER REQUIREMENTS 105-125V. 50/60 cycles

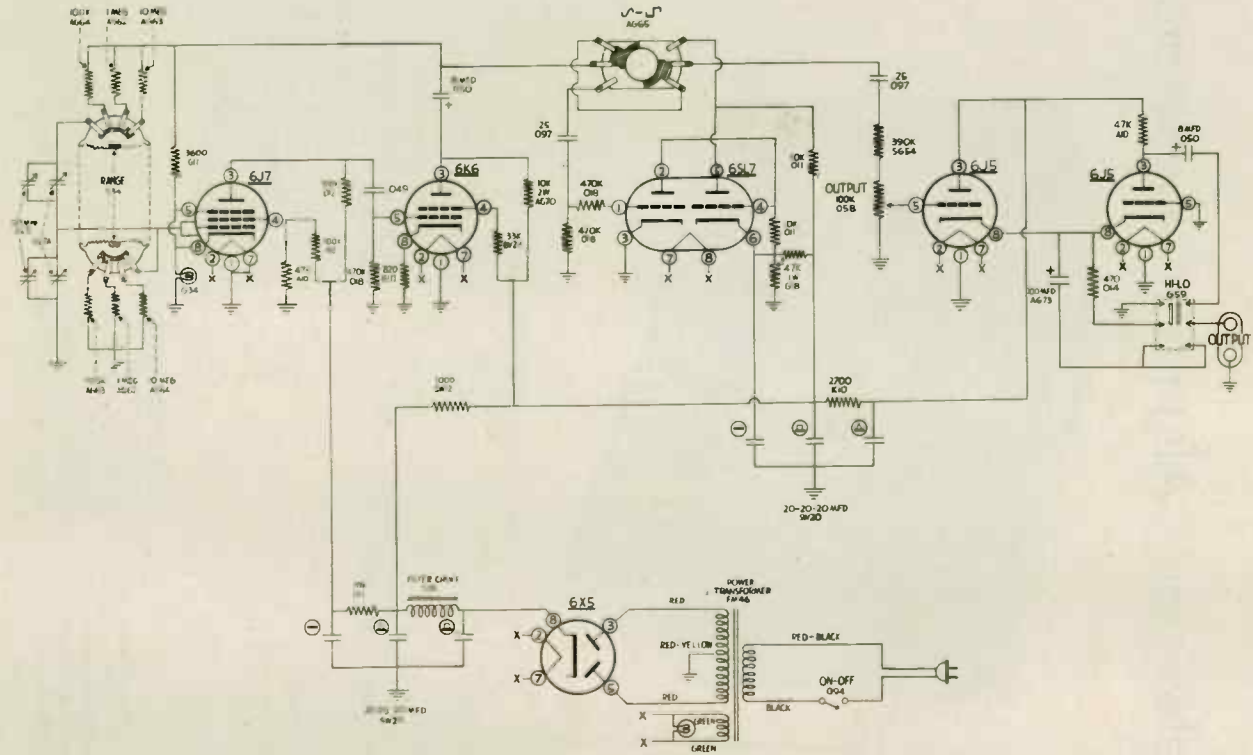


HEATHKIT
MODEL AG-7
AUDIO GENERATOR

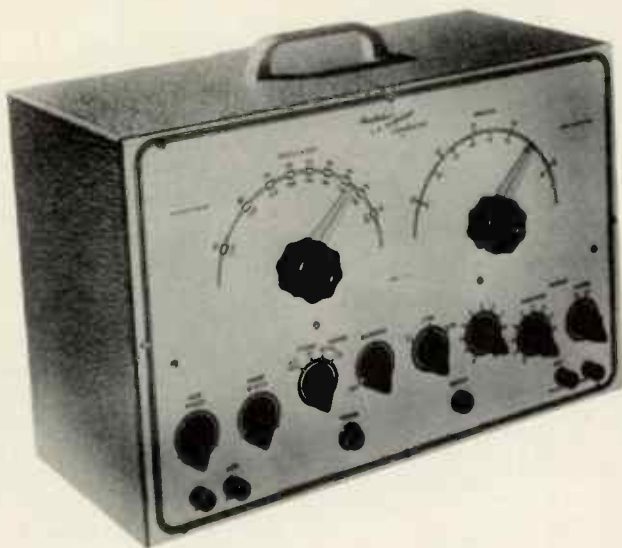


SPECIFICATIONS

Output Frequency	20-20,000 cycles
Output Voltage at 1% Distortion	1 volt across 10,000 ohms 5 volt across 33,000 ohms 10 volt across 100,000 ohms .5 volt across 500 ohms 1.0 volt across 1000 ohms 1.5 volt across 2000 ohms
Square Wave Range	60 cycles (5% tilt) to 6000 cycles (5% round off)
Generator Impedance	HI: 15,000 ohms LO: 700 ohms
Power Requirements	105-125 volts 50/60 cycle 30 watts
Dimensions	7½" high x 13¼" wide x 7½" deep



Television Alignment Generator



TECHNICAL SPECIFICATIONS

Frequency Range:

Low Band—10 to 90 Mc.
High Band—150 to 230 Mc.
0 - 12 Mc. or more.

Sweep Deviation:

Absorption Marker Frequency Range:
Provision for external Marker.

Low Range—20 to 40 Mc.
High Range—40 to 75 Mc.
Return trace may be eliminated
by Blanking Circuit incorporated.

Blanking:

Tube Complement:

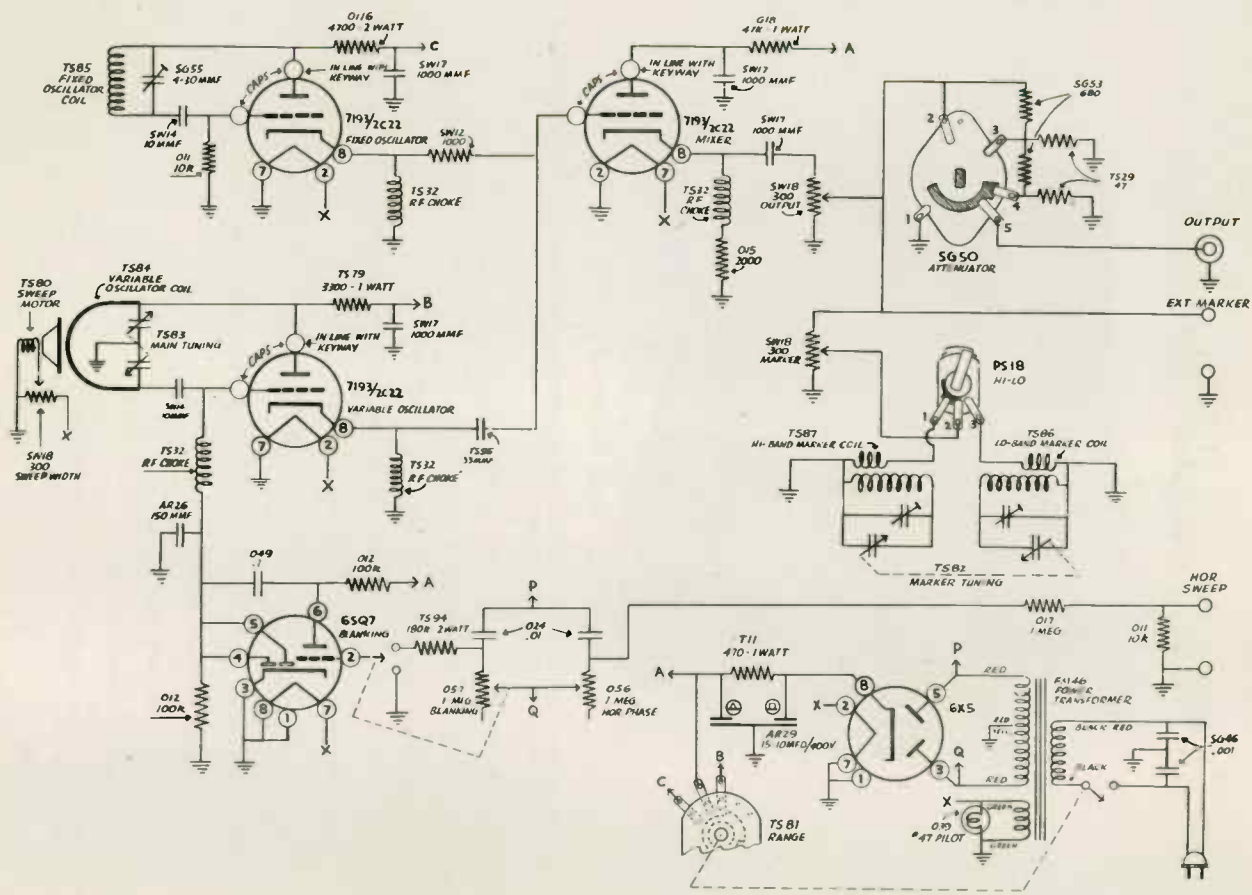
2C22/7193 VHF Triode Variable Osc.
2C22/7193 VHF Triode Fixed Osc.
2C22/7193 VHF Triode Mixer.
6SQ7 Blanking Amplifier.
6X5 Rectifier.

TELEVISION CHANNELS

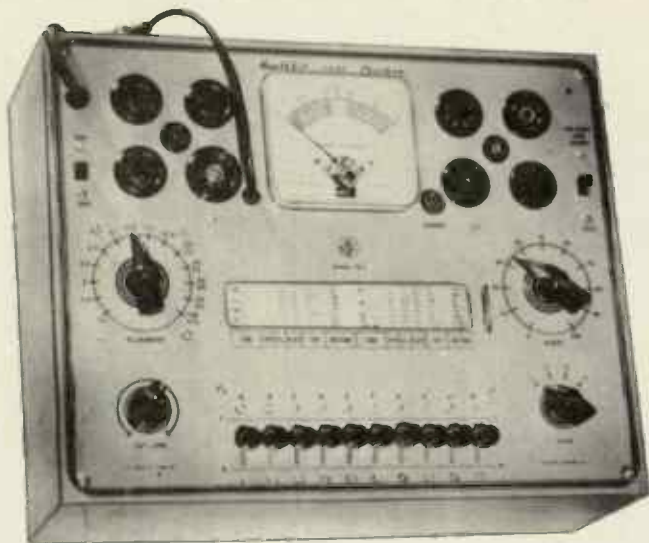
Channel 2 54-60 Mc.
Channel 3 60-66 Mc.
Channel 4 66-72 Mc.
Channel 5 76-82 Mc.

Channel 6 82-88 Mc.
Channel 7 174-180 Mc.
Channel 8 180-186 Mc.
Channel 9 186-192 Mc.

Channel 10 192-198 Mc.
Channel 11 198-204 Mc.
Channel 12 204-210 Mc.
Channel 13 210-216 Mc.



The TC-1 Heathkit Tube Checker



HEATHKIT TUBE CHECKER FEATURES

Simplified, fast, lever switches allow insertion of individual tube elements making the instrument extremely flexible and truly obsolescence free.

Any combination of base connections possible.

Filament voltages from .75V to 117V available.

Has 1 ma 100 mv meter with easily read "good" "bad" scale.

Blank socket hole provided to facilitate modification for checking newly added types.

Correct settings for new tubes easily determined.

Checks 4, 5, 6 and 7 pin large, regular and miniature, octal, loctal, Hytron, 9 pin miniature series tubes and pilot lamps.

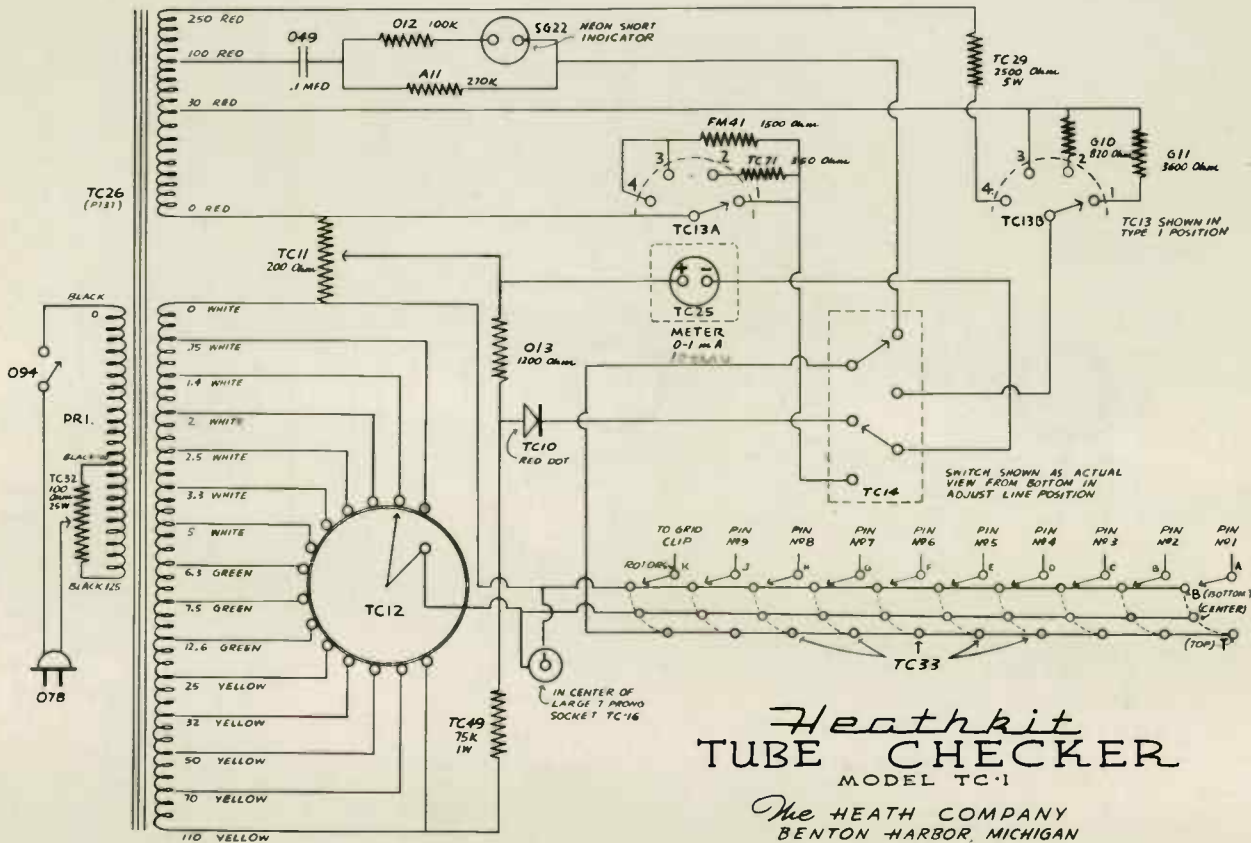
Checks for emission, shorted elements, open elements and filament continuity.

Tests oscillator section of converter tubes separately.

Highest quality switches, meter and sockets.

Fast acting gear driver roll chart.

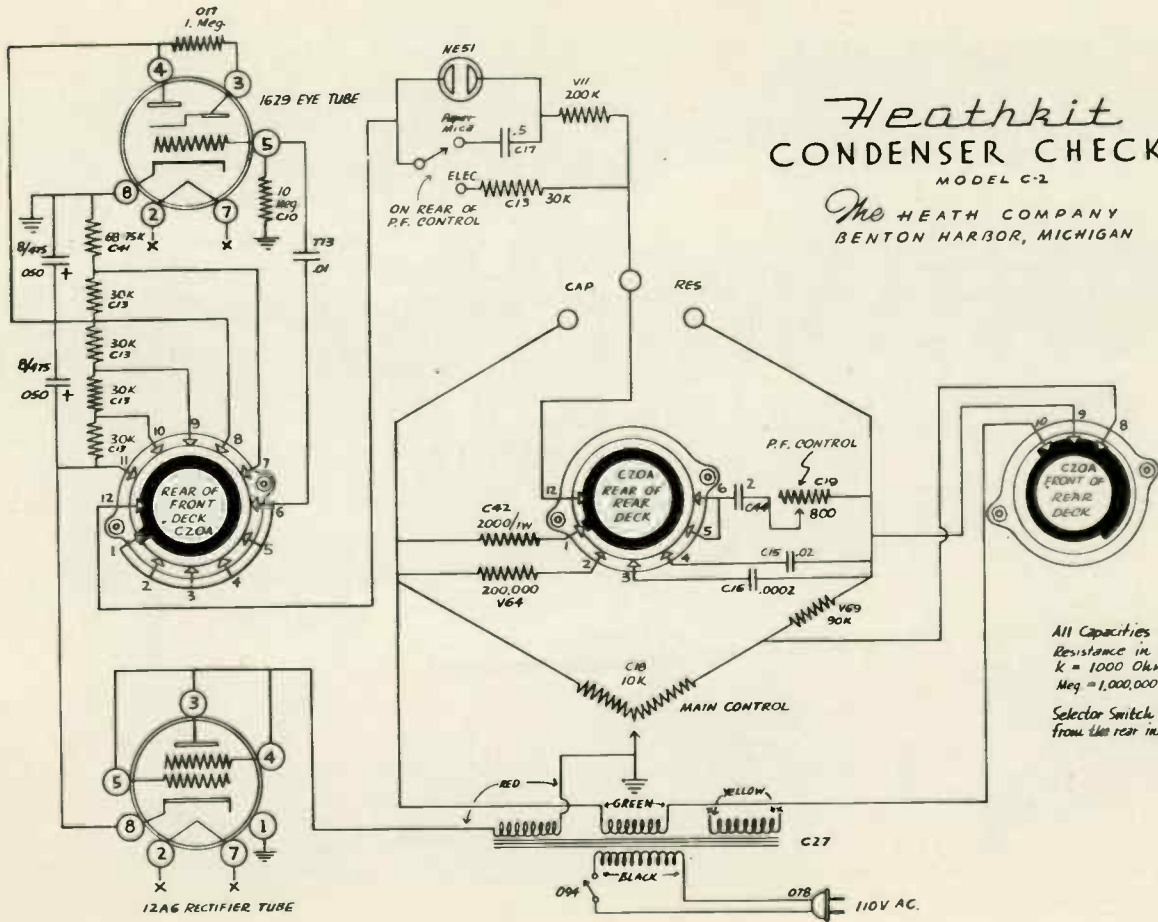
Fine wood cabinet and attractive two color panel.



Heathkit CONDENSER CHECKER

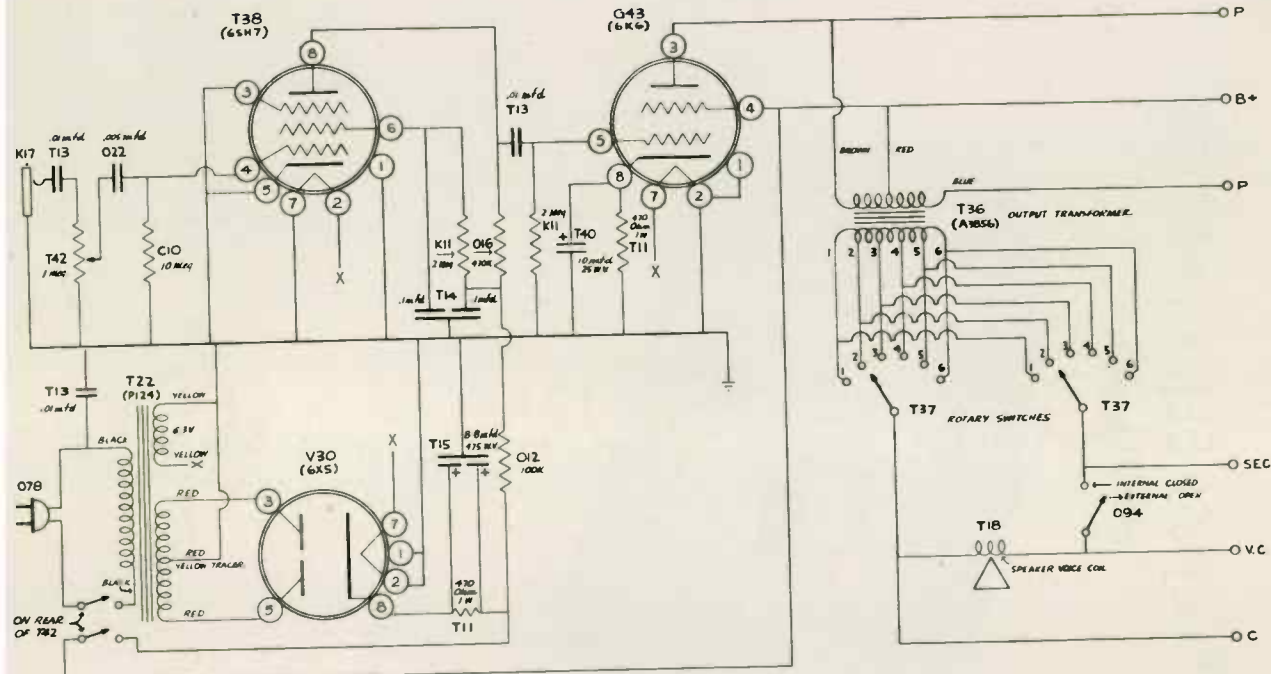
MODEL C-2

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All Capacities in MFDS.
Resistance in Ohms
K = 1000 Ohms
Meg = 1,000,000 Ohms

Selector Switch shown looking from the rear in position "R"



Heathkit MODEL T-2 SIGNAL TRACER

★ ★ ★

The HEATH COMPANY
BENTON HARBOR, MICH

MEG = 1,000,000 Ohms.....
K = 1,000 Ohms.....

CONNECT POINTS MARKED X ON TUBES TO SAME LETTER MARKED ON TRANSFORMER.

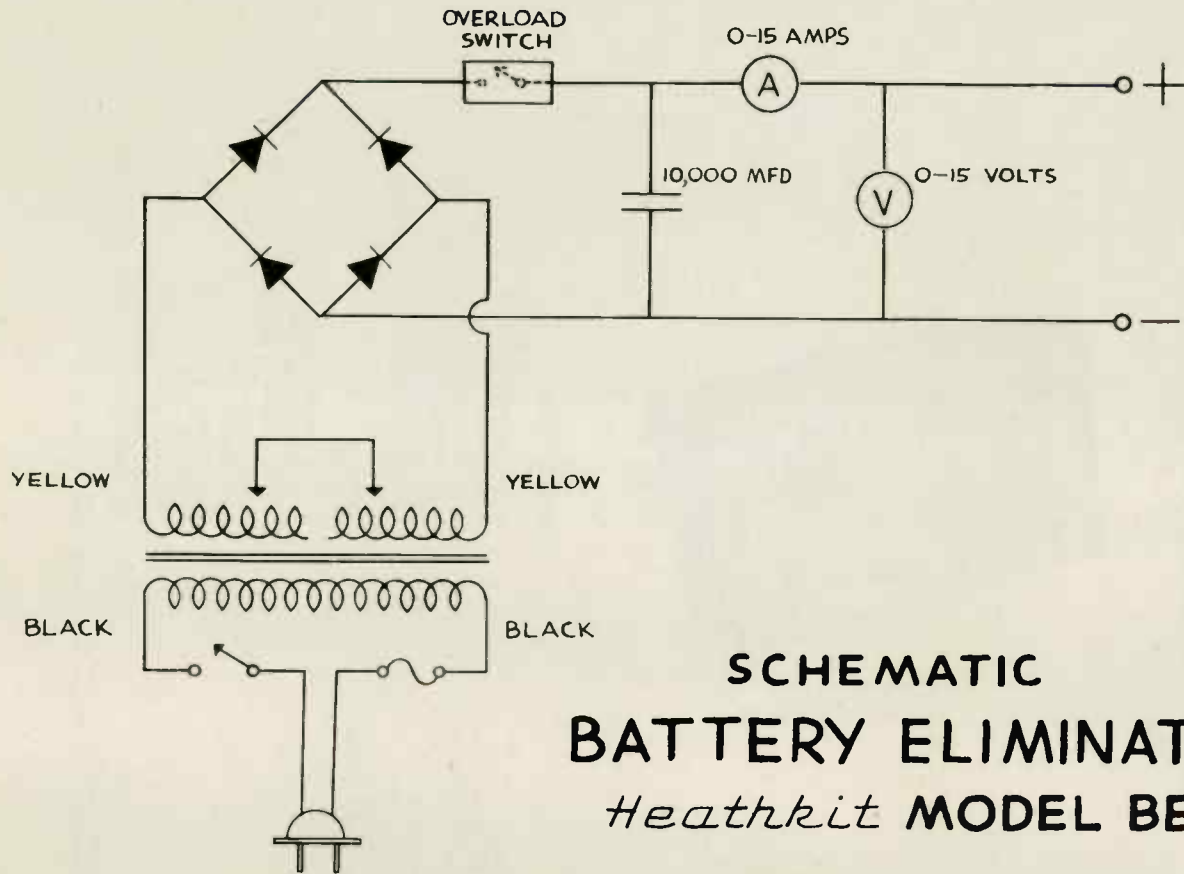
BATTERY ELIMINATOR

MODEL BE-3



SPECIFICATIONS

METERS.....	Voltmeter 0-15V DC Ammeter 0-15A DC
VOLTAGE OUTPUT.....	Variable 0-8V DC
RATED OUTPUT.....	6V 10 Amp. Continuous 15 Amp. Max. Intermittent
POWER REQUIREMENTS.....	105-125V 50-60 Cycle AC, 175 Watts
DIMENSIONS.....	13 $\frac{1}{4}$ " wide x 7 $\frac{1}{4}$ " deep x 7 $\frac{1}{4}$ " high



SCHEMATIC
BATTERY ELIMINATOR
Heathkit MODEL BE-3

IB-1B Heathkit Impedance Bridge



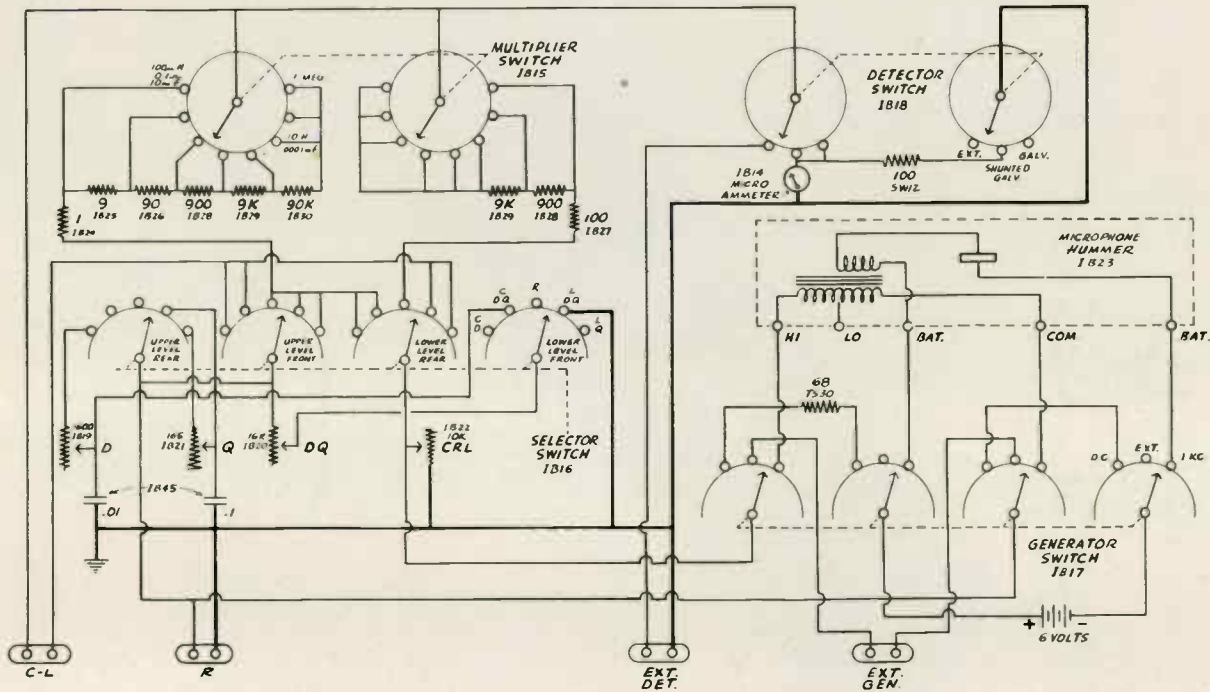
SPECIFICATIONS

Circuit:
D. C. Measurements:
A. C. Measurements:

Resistance:
Capacitance:
Inductance:
Dissipation Factor:
Storage Factor (Q):
Accuracy:

4 Arm Impedance Bridge
6 Volt Burgess Battery No. F4BP
GR 1,000 cycle hummer. Other frequencies can be used by connecting an external generator.
10 milliohm to 10 megohm
10 micromicrofarad to 100 microfarad
10 microhenry to 100 henries
.002 to 1
1 to 1,000
 $\frac{1}{2}$ of 1% decade resistors are used. The accuracy is limited more by the interpretation of the scales and workmanship of assembly. The following is considered normal:
Resistance $\pm 3\%$
Capacitance $\pm 3\%$
Inductance $\pm 10\%$
Dissipation Factor $\pm 20\%$
Storage Factor $\pm 20\%$
The accuracy will fall off at the extreme outer limits.

Weight: 9 $\frac{1}{4}$ lbs.
Dimensions: 7 7/8" high 10" wide 16" long

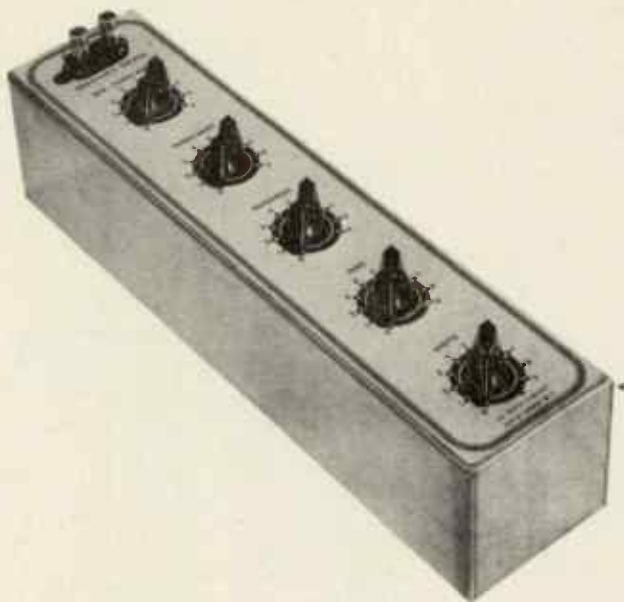


Heathkit IMPEDANCE BRIDGE

MODEL 1B-1B

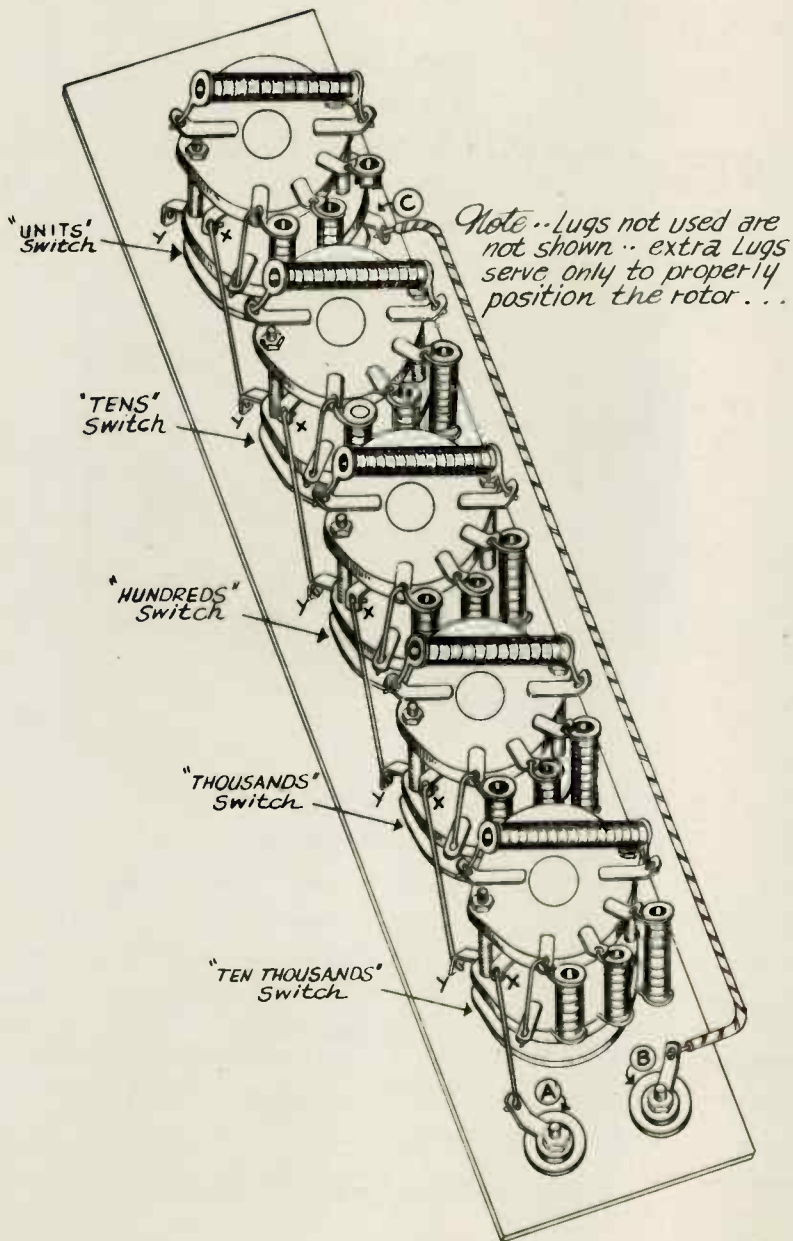
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HEATHKIT MODEL RD-1 RESISTANCE DECADE KIT



SPECIFICATIONS

Range	1 Ohm to 99,999 Ohm in one ohm steps
Components	Resistors: Precision - $\frac{1}{2}$ % accuracy Switches: Ceramic
Maximum Current	Units -----500 MA Tens -----150 MA Hundreds -----50 MA Thousands -----15 MA Ten Thousands ---5 MA
Dimensions	14 $\frac{1}{2}$ " x 3 $\frac{3}{8}$ " x 3 $\frac{3}{8}$ " - Birch Cabinet



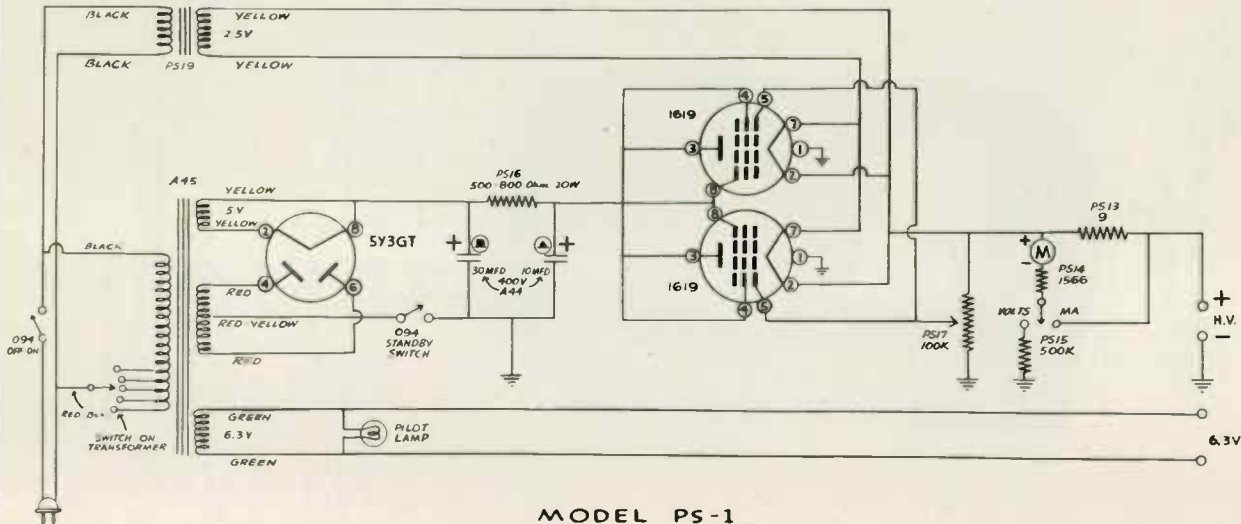
HEATHKIT MODEL PS-1 LABORATORY POWER SUPPLY KIT



SPECIFICATIONS

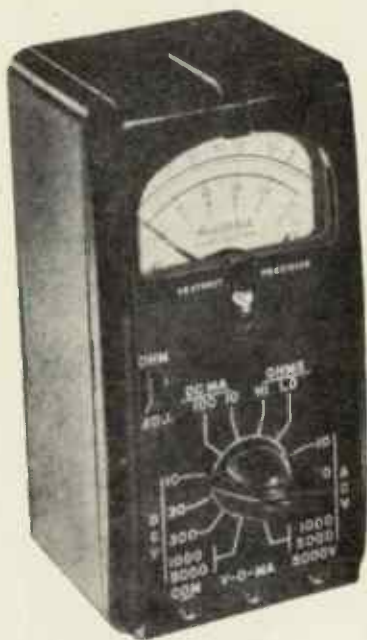
Power Requirements	105-125 V 50/60 Cycle AC	
Overall Size	7½" high x 13¼" wide x 7¼" deep	
Kit Weight	17 pounds	
Meter	3½" Streamlined case Range: 0-500 Volts DC 0-200 Ma. DC	
Tubes	1 5Y3 Rectifier 2 type 1619 Control Tubes	
Output	Continuously variable within limits outlined.	
Limits:	No load	Variable 150 to 400 volts DC
	25 Ma.	Variable 30 to 310 volts DC
	50 Ma.	Variable 25 to 250 volts DC
	Higher loads	Voltage drops proportionally

Heathkit LABORATORY POWER SUPPLY KIT



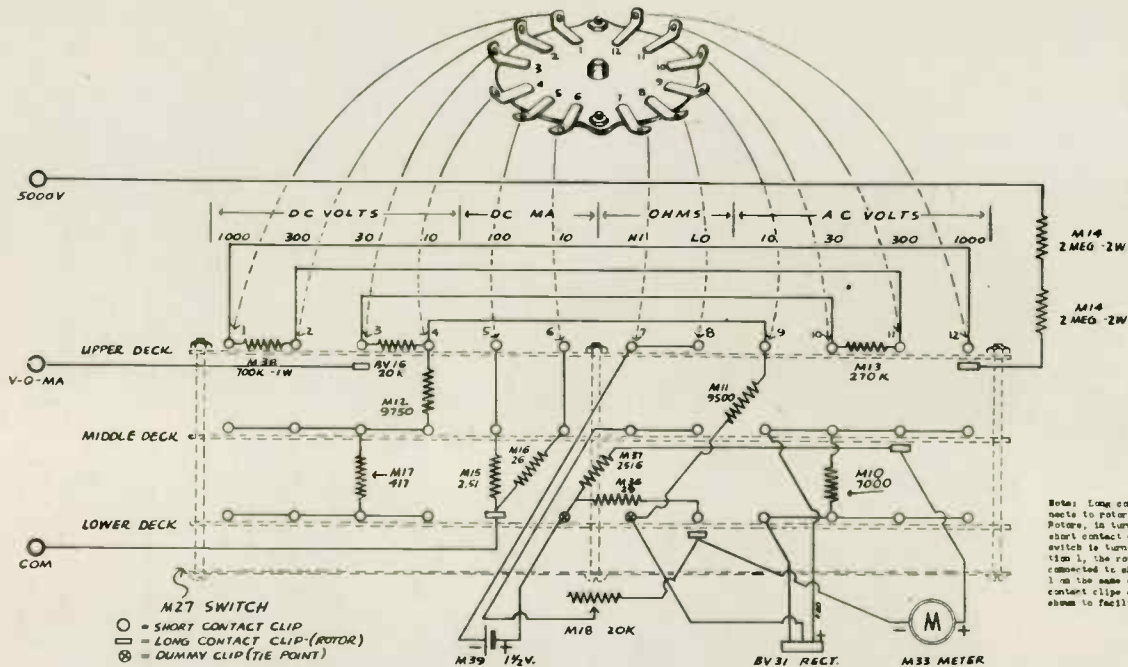
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MICHIGAN

HEATHKIT HANDITESTER MODEL M-1

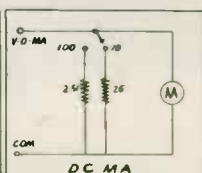
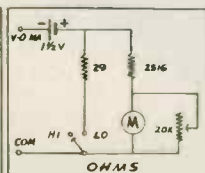
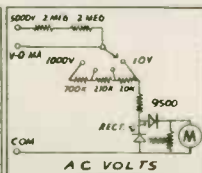
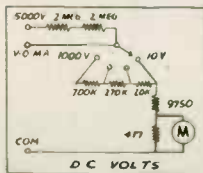


TECHNICAL DESCRIPTION

- Range DC Volts ----- Full scale 10-30-300 - 1,000 and 5,000 Volts
- Range AC Volts ----- Full scale 10-30-300 - 1,000 and 5,000 Volts
- Range Ohmmeter ----- 0-3,000 Ohms 30 Ohms Center
0-300,000 Ohms 3,000 Ohms Center
- Range Milliampere s ---- 0-10 MA 0-100 MA
- Meter Movement ----- 400 Microampere 3°
- AC Rectifier ----- Bradley dual half wave
- Accuracy ----- -1% divider and calibrating resistors provided
Meter movement 2% of full scale
- Case ----- Streamline Bakelite
- Ohmmeter Battery ----- Burgess No. 1 Unicell Flashlight Battery



Note: Long contact clip connects to rotor at all times. Rotor, in turn, connects to short contact clips as the switch is turned. Thus in position 1, the rotor contacts are connected to short contact clip 1 on the same deck. The long contact clips are positioned as shown to facilitate wiring.



Heathkit HANDITESTER KIT

MODEL M-1

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FUNCTIONAL CIRCUIT DIAGRAMS · HEATHKIT HANDITESTER

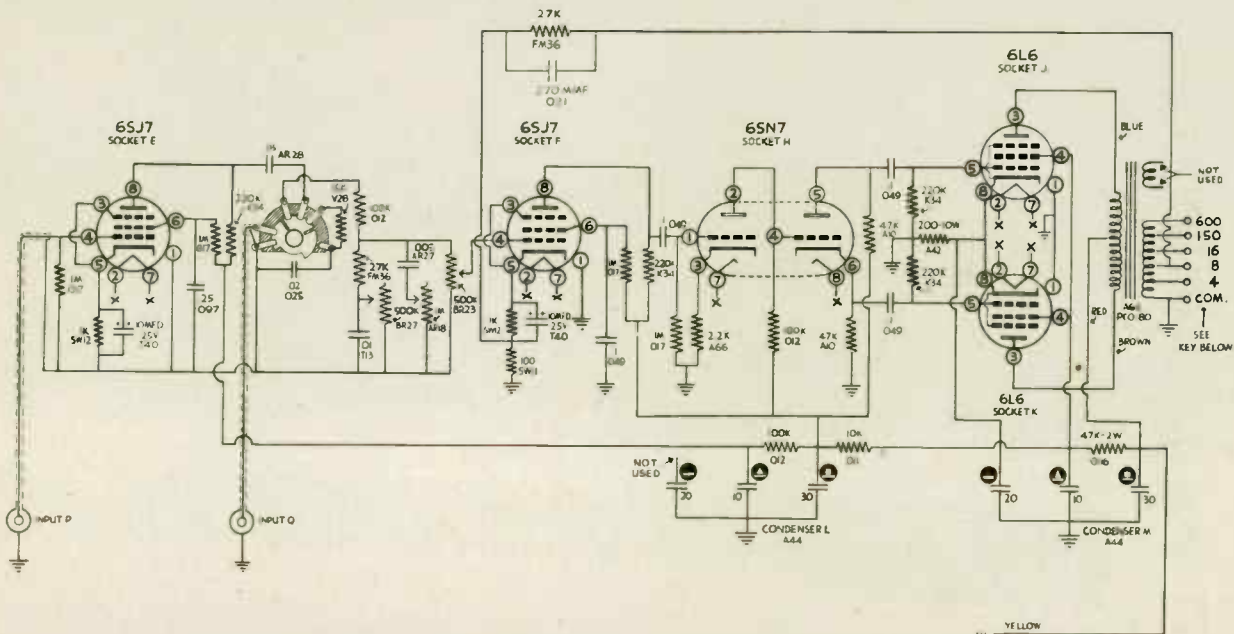
Heathkit 20 Watt Amplifier

Models A-6 & A-6A



TECHNICAL SPECIFICATIONS

Tube Complement:	Rectifier	5U4G
	Output	2--6L6
	Amplifier & Phase Splitter	6SN7
	Voltage Amplifier	6SJ7
	Preamplifier (Model A-6A only)	6SJ7
Maximum Power Output (Odb - 1 mw) at 1000 cycles		43 db (20W)
Distortion at 3db below max. power output at 1000 cycles		0.8%
Frequency Response	Within \pm 1db from 20 to 20,000 cycles	
Treble Control	Attenuates up to 15 db at 10,000 cycles	
Bass Control	Boosts up to 10 db at 50 cycles	
Output Impedance	4, 8, 16, 150, 600 ohms	
Gain at + 30 db (1 Watt) and 1000 cycles	"Xtal phono" (100k) 75 db	
Model A-6A only	"Mike" (1 Megohm) 120 db	
	"Mag Phono" (1 Megohm) 105 db	
Power Requirements	110V 50/60 cycle	
Dimensions	7 $\frac{1}{2}$ " deep x 12" wide x 6 $\frac{1}{2}$ " high	

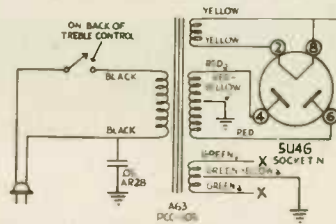


OUTPUT TRANSFORMER KEY

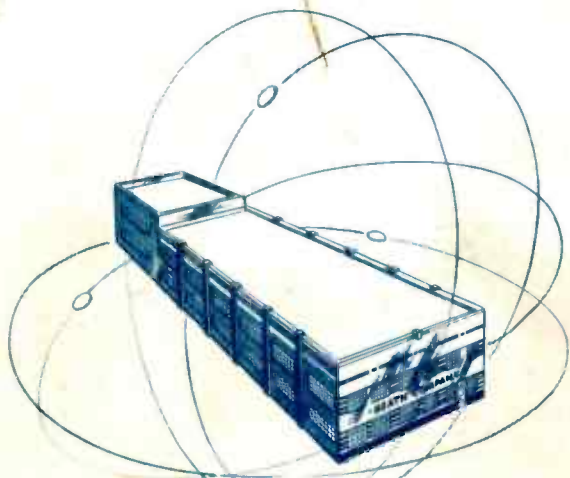
- COM - BLACK
- 4 - YELLOW
- 8 - BLACK-RED
- 16 - BROWN-YELLOW
- 150 - BLUE-YELLOW
- 600 - RED-YELLOW
- NOT USED - GREEN YELLOW
- GREEN

NOTE: 1000
M = MEG. 1000000

SCHMATIC OF A-6A



Notes



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