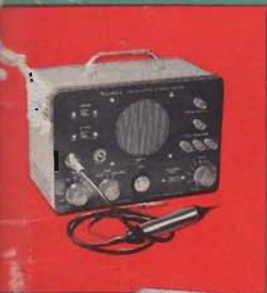
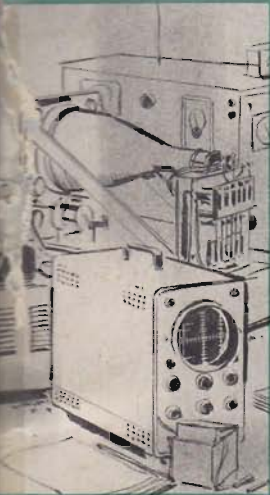


world's

finest

electronic equipment

in kit form...



**TEST  
EQUIPMENT**  
pages 4-36



**AMATEUR  
EQUIPMENT**  
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**HI-FI  
EQUIPMENT**  
pages 44-51

# Heathkits® for 1956

**HEATH COMPANY • BENTON HARBOR, MICHIGAN**

*a subsidiary of Daystrom, Incorporated*



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# HEATHKIT



**FIRST  
in  
quality**

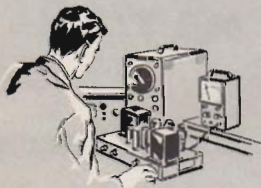
There would be no particular achievement in merely cheapening a kit to bring the price down. But Heathkits may be had for less money *without* sacrificing quality. Heathkits cost less because you assemble the kit yourself, instead of paying for someone else's labor. Further, there is no third party to deal with and the margin of profit is small because you deal directly with the manufacturer. Still more savings result because the kits are designed by personnel thoroughly experienced in kit work. Heathkits offer you economy, without a corresponding sacrifice in kit quality.



*Only with Heathkits  
can you possibly buy so much  
for so little!*



## **EASY-TO-BUILD ELECTRONIC KITS...**



**FIRST  
in  
design**

Heath Company conducts a continuous program of investigation, research, and development so that you may benefit from the latest electronic designs. Etched metal circuit boards, a scope for color TV work, and all-electronic sweep in a TV generator are only a few of a long succession of Heathkit "firsts." This means that you get advanced-design equipment that is far ahead of the field, with all of the *extra* features that make it more valuable to you in your work or hobby. It also means that you have a greater variety of equipment from which to choose. There are now more than 70 different Heathkit models available!

Kits are not a sideline with us—they are our prime activity. Therefore, we depend on your satisfaction with our product to "sell" other Heathkits. Experience has shown that genuine, lasting quality of product is essential to this end. Heathkits perform better and last longer because of the consideration given to quality in all stages of design and service. This may be seen both in the individual components and in the performance of the finished kit.



**FIRST  
in  
performance**

Heathkits are proven instruments. They are proven both through production of thousands of units here at the Heath Company, and proven through the experiences of thousands of Heathkit customers. The fool-proof instructions supplied not only make Heathkits easy to build, but offer you assurance that your kit will perform up to specifications when completed. The Heath Company offers you free technical consultation service in any case where assistance is needed, and the facilities of our service shop are available for a moderate service fee. It is our business to see that your kit performs properly—and that you are completely satisfied.

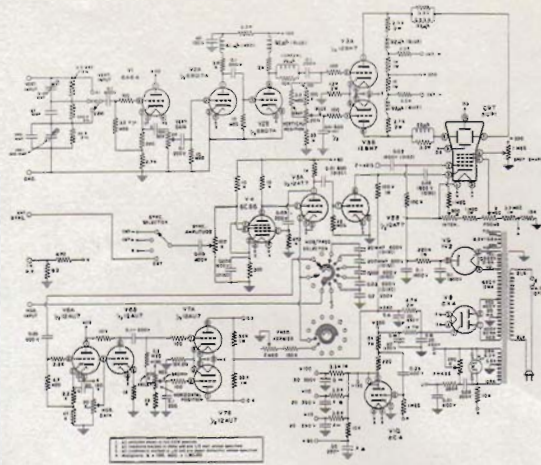
**FIRST  
in  
economy**





**SPECIFICATIONS:**

<b>Vertical Channel:</b>	
Sensitivity	0.025 V (RMS) per inch at 1 kc
Frequency Response	Flat within $\pm 1$ db from 6 cps to 2.5 mc Flat within $+2$ db $-5$ db, 2 cps to 5 mc Response at 3.58 mc $-1.5$ db 0.08 microseconds or less
Rise Time	0.08 microseconds or less
Overshoot	10% or less
Input Impedance	X1—21 mmf across 2.9 megohms, (1 kc impedance, 3.3 megohms)
<b>Horizontal Channel:</b>	
Sensitivity	0.6 V. (RMS) per inch at 1 kc
Frequency Response	Flat within $\pm 1$ db 1 cps to 200 kc Flat within $\pm 3$ db 1 cps to 400 kc
Input Impedance	31 mmf across 30 megohms (1 kc impedance, 4.9 megohms)
<b>Sweep Generator:</b>	
Range	20 cps to 500 kc in 5 steps: 20—100 cps, 100 cps—1 kc, 1 kc—10 kc, 10 kc—100 kc, 100 kc—500 kc
Synchronizing	External, positive or negative signal internally, or from line
<b>Tube Complement</b>	
	1—5U1, 1—6AB4, 1—6BQ7A 1—12BH7, 1—6CB6, 1—12AT7, 2—12AU7, 1—6X4, 1—1V2, 1—6C4
Power Requirements	105 - 125 volts 50-60 cps at 80 watts
Dimensions	8 $\frac{1}{2}$ " wide x 14 $\frac{1}{2}$ " high x 16" deep
Shipping Weight	21 pounds
Net Weight	20 $\frac{1}{2}$ pounds



**HEATHKIT  
5" COLOR TV  
(ETCHED CIRCUIT)**

# oscilloscope KIT



**MODEL O-10**

**\$695.00**

SHPG. WT. 21 LBS.

## features

- ▶ Down only 1 $\frac{1}{2}$  db at 3.58 mc color burst sync frequency.
- ▶ Two printed circuit boards for faster, easier assembly and stable performance.

- ▶ Full 5 mc bandwidth for color TV servicing.
- ▶ New-type sweep generator, 20-500,000 cps in decade ranges. 5 times the sweep range usually provided!
- ▶ New DC positioning controls for instantaneous trace positioning without bounce or overshoot. Push-pull output.
- ▶ Built-in peak-to-peak calibration reference.

The exciting Heathkit Model O-10 Oscilloscope is a *proven* instrument. It easily meets and exceeds the requirements for color TV servicing, and reports from our customers are enthusiastic in praising its performance in actual work situations. In addition to its use in AM, FM, black-and-white, and color TV servicing, the Model O-10 has found extensive application in electronic laboratories, where reliable and accurate wave shape and magnitude observations must be made. Just compare the technical specifications of the Model O-10 with those of other "servicemen's" scopes costing many dollars more. Its capabilities speak for themselves, especially when backed by the experience of thousands of satisfied Heathkit customers.

The Model O-10 combines broad amplifier response and extended sweep circuit operation for outstanding performance. Vertical amplifier circuits are essentially flat from 5 cps to 5 mc, and down only 1 $\frac{1}{2}$  db at 3.58 megacycles (TV color sync burst frequency). The exclusive-design sweep circuit is linear and stable to well over 500,000 cps. More and more color TV sets are appearing on the market daily, and an oscilloscope that will handle color TV servicing is essential to the up-to-date service shop.

The use of etched metal circuit boards in the Model O-10 circuit has made its outstanding design features possible. Etched metal circuit boards function to "freeze" any stray capacities or intercoupling capacities present in the circuit so that layout can be determined for optimum performance initially, and then the etched metal circuit board will hold these variables constant. In addition, use of etched circuits reduces assembly time tremendously, and provides a firm mounting for various circuit components. Heathkit "pre-engineered" circuit boards have all the "bugs" taken out, and you have the assurance that the scope you build will be an exact replica of our laboratory development model. The Model O-10 employs two circuit boards as can be seen in the photograph on the opposite page. Standard, conventional parts are used on these boards. Component leads are inserted through holes in the board and then soldered on the reverse side so that contact is made to the foil. In this way, components may be replaced should this become necessary. Naturally, wiring errors are virtually eliminated in kit construction through the use of etched metal circuit boards. These circuit boards, coupled with the detailed Heathkit construction manual make assembly a cinch — even for the relatively inexperienced beginner. Construction manual features schematic and pictorial diagrams and complete step-by-step instructions. Large-size pictorials pin up over your workbench for easy reference. Manual even contains hints on soldering, data on resistor and capacitor color codes, suggestions concerning use of tools, etc.

In addition to being an outstanding performer, the Model O-10 is the kind of professional-looking instrument you will be proud to display on your workbench. The panel is charcoal gray in color, with "high contrast" white lettering. The panel is readable even under subdued lighting conditions often required for oscilloscope operation. The knobs and the cabinet are a lighter feather gray. The calibrated grid screen is green. Binding posts are red and black.



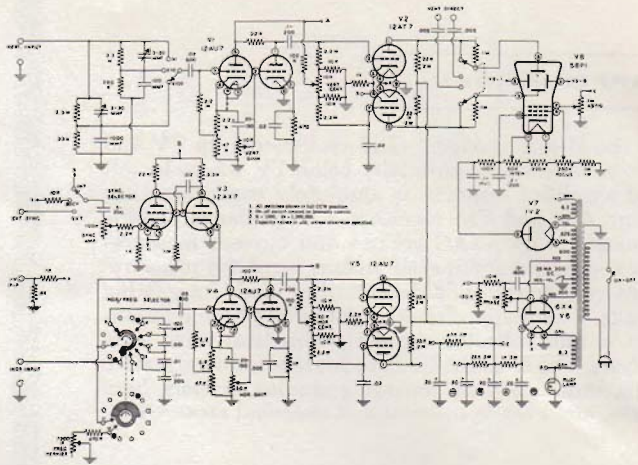




**SPECIFICATIONS:**

Vertical: Frequency response ...  $\pm 3$  db 2 cps—200 kc  
 ...  $\pm 6$  db 1 cps—400 kc  
 Sensitivity ..... 0.09 volts RMS per inch peak-to-peak at 1 kc  
 Input impedance ..... 50 mmf shunting 1.5 megohm at X1, 40 mmf  
 shunting 1.5 megohm at X10 and X100  
 Horizontal: Frequency response ...  $\pm 6$  db 10 cps—400 kc  
 Sensitivity ..... 0.2 volts RMS per inch peak-to-peak at 1 kc  
 Input impedance ..... 25 mmf shunting 10 megohms  
 Sweep Generator ..... Multivibrator—20 cps to 100,000 cps  
 Tube Complement ..... 1—5BP1 CRT  
 ..... 3—12AU7—Vert. and Hor. Cath.  
 ..... Fol. and Amp.  
 ..... Hor. Deflect. Amp.  
 ..... 1—12AT7 Vert. Deflect. Amp.  
 ..... 1—12AX7 Multivibrator  
 ..... 1—6X4 Low Volt. Rect.  
 ..... 1—1V2 High. Volt. Rect.  
 Power Requirements ..... 105-125 VAC, 50-60 cps, 45 W.  
 Dimensions .....  $8\frac{1}{2}$ " wide x  $14\frac{1}{4}$ " high x 18" deep  
 Net Weight ..... 19 lbs.  
 Shipping Weight ..... 21 lbs.

PAGE  
6



MODEL OM-1

**\$495.00**

SHPG. WT. 21 LBS.

**HEATHKIT ETCHED CIRCUIT PUSH-PULL**

**5" oscilloscope KIT**

*features*

- ▶ Full size 5" scope at pre-war price level.
- ▶ Step attenuated, frequency compensated vertical input circuit.
- ▶ Deflection plate connections; spot shape control.
- ▶ Built-in peak-to-peak calibration source voltage.
- ▶ Modern etched circuit design, easy, trouble-free assembly.
- ▶ Push-pull horizontal and vertical amplifiers.

The OM-1 is designed for general application wherever a reliable oscilloscope with good response characteristics may be required. Ideal for schools or as a training model. It is more than adequate for ordinary service applications or for use by radio amateurs or technicians. This scope features modern etched circuit design, push-pull deflection amplifiers, 5BP1 cathode ray tube, twin-triode sweep generator and a host of other fine features. A real dollar value.

Combines outstanding features such as: adjustable spot shape control — RF connections to deflection plates — external and internal sweep and sync — 1 v. peak-to-peak reference voltage — easy positive synchronization. New sweep generator circuit provides frequency range of 20 to 100,000 cps. Etched circuit wiring insures duplication of laboratory pilot model performance, and reduces assembly time. Calibrated grid fits over CRT face.

Vertical amplifier employs 3-position step attenuated, frequency-compensated input circuit with low impedance cathode follower, voltage amplifier, and push-pull deflection amplifier. Vertical frequency response is flat within 3 db from 2 cycles to 200 kc. Vertical sensitivity is .09 volts per inch at 1 kc.

At this price you cannot afford to be without a full 5" scope.



MODEL VC-2

**\$11.50**

SHPG. WT.  
4 LBS.

**HEATHKIT voltage calibrator KIT**

Another useful oscilloscope accessory, particularly in circuit development work or in TV and radio service work. The voltage calibrator provides a convenient method for making peak-to-peak voltage measurements with an oscilloscope by establishing a relationship between the amplitude of an unknown wave shape and the known output of the voltage calibrator. Peak-to-peak voltage values are read directly on the calibrated panel scale without recourse to involved calculations.

Convenient "signal" position on the panel switch by-passes the calibrator completely and

the signal is applied to the oscilloscope input. This eliminates transferring test leads.

Operates within a voltage range of .01 to 100 volts peak-to-peak.

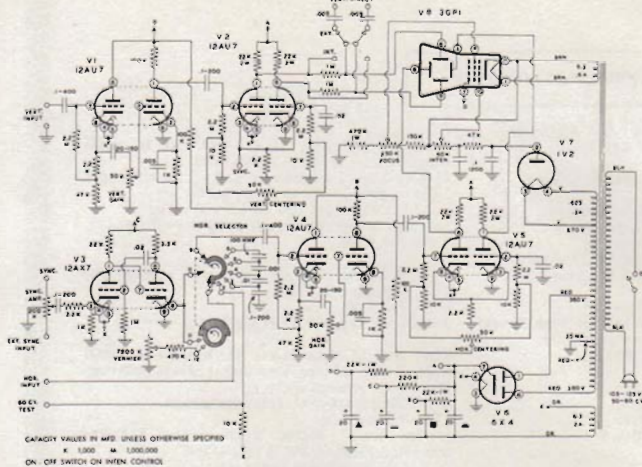
**SPECIFICATIONS:**

Ranges ..... (Using peak-to-peak volt control and output multiplier switch) 0—.1 volt, 0—10 volts, 0—100 volts (Variable control divides steps into 1 to 10)  
 Tube Complement ..... 1—6AL5, 1—0B2  
 Input Impedance ..... Approximately 25 mmf with signal fed through calibrator  
 Physical Specifications .....  $8\frac{1}{2}$ " wide x  $4\frac{3}{8}$ " high x  $4\frac{1}{8}$ " deep  
 Power Requirements ..... 110-125 volts AC 50-60 cycles at 5 watts.



**SPECIFICATIONS:**

Vertical:	Frequency response	..... ± 3 db 2 cps to 200 kc ± 6db 1 cps to 400 kc
	Sensitivity	..... 0.25 volts RMS per inch peak-to-peak at 1 kc
	Input impedance	..... 20 mmf shunting 10 megohm
Horizontal:	Frequency response	..... ± 6 db 10 cps to 400 kc
	Sensitivity	..... 0.3 volts RMS per inch peak-to-peak at 1 kc
	Input impedance	..... 20 mmf shunting 10 megohm
Sweep Generator		..... Multivibrator 20-100,000 cps
Tube complement		..... 1—3GP1 cathode ray tube
		..... 2—12AU7 vertical input and deflection amplifiers
		..... 1—12AX7 multivibrator
		..... 1—6X4 low voltage rectifier
		..... 1—1V2 high voltage rectifier
Power requirements		..... 105-125 volts 50-60 cps, 45 watts
Dimensions		..... 9 1/2" high, 6 1/2" wide, 11 3/4" deep
Net Weight		..... 11 lbs.
Shipping Weight		..... 15 lbs.



**HEATHKIT ETCHED CIRCUIT PUSH-PULL**

**3" oscilloscope KIT**

*features*

- ▶ Heath twin-triode sweep generator circuit 20-100,000 cycles.
- ▶ Convenient deflection plate terminals—ideal for transmitter modulation monitoring.

- ▶ Modern-design etched circuit board for easier, trouble-free assembly.
- ▶ Push-pull horizontal and vertical amplifiers.
- ▶ Compact design; light weight and portable for service work.
- ▶ Heathkit colors and knob design for attractive appearance.



**MODEL OL-1**

**\$295.00**

SHPG. WT. 14 LBS.

The brand new Model OL-1 3" utility scope is designed primarily for portable application so that the outside serviceman or person performing field tests can have the advantages of an oscilloscope. Then too, it is ideal for home workshop, ham shack, or as an "extra" scope in the service shop. It is compact, light in weight, and surprisingly versatile in operation.

Assembly time is reduced by the use of etched circuits. Pre-engineering of the board offers assurance that the scope you build will operate the same as our laboratory development model. No worry about the physical

position of leads and components in the scope circuitry.

The Heath twin-triode sweep generator provides frequency coverage from 20 to 100,000 cycles in four switch-selected ranges. Provision for external or internal sync and external or internal sweep.

Vertical amplifier features frequency response within 3 db from 2 cps to 200 kc. Sensitivity is 0.25 volts per inch at 1 kc.

Terminals for direct connection to vertical deflection plates are ideal for modulation monitoring. Features miniature tubes and identical push-pull vertical and horizontal amplifiers.

**HEATHKIT electronic switch KIT**

The Heathkit Electronic Switch, as the name implies, will electronically switch between two signals to produce both signals alternately at the output. Used in conjunction with an oscilloscope, it will permit the observation of two signals simultaneously, either adjacent to each other or super-imposed on each other. Ideal for such applications as observing the input and output of an amplifier circuit or pulse shaping circuit simultaneously. Features low, medium, and high frequency ranges which provide switching rates from 10 cps

to 2,000 cps. Uses two 6SJ7, two 6SN7, and one 6X5. It can be used to check amplifier distortion — audio crossover networks — phase inverter circuits — to measure phase shift — special waveform study, etc. A valuable instrument for the research and development laboratory or for experimental work in the service shop. Also adaptable for use as a square wave generator in portions of the audio frequency range. Measures 10 1/2" deep by 5 3/8" wide by 6 3/8" high. Operates from 110-125 volts AC, 50-60 cycle power at 25 watts.



**MODEL S-2**

**\$23.50**

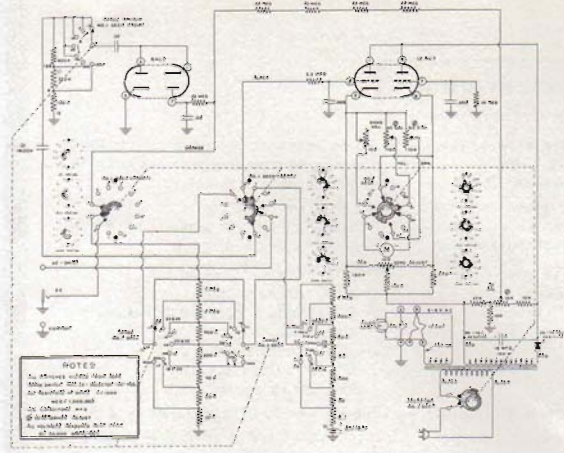
SHPG. WT. 11 LBS.



**SPECIFICATIONS:**

Electronic D.C. Voltmeter:	
7 Ranges	0-1.5, 5, 15, 50, 150, 500 and 1500 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	7,333,333 ohms per volt on 1.5 volt range.
Circuit	Balanced bridge (push-pull) using twin triode.
Accuracy	± 3% full scale.
Electronic A.C. Voltmeter:	
7 RMS Ranges	0-1.5, 5, 15, 50, 150, 500, 1500 scales reading RMS (.707 of positive peak).
Accuracy	± 5% full scale.
7 Peak-to-Peak Ranges	0-4, 14, 40, 140, 400, 1400, 4000.
Electronic Ohmmeter:	
7 Ranges	Scale with 10 ohms center X1, X10, X100, X1000, X10K, X100K, X1 meg. Measures .1 ohm to 1000 meg-ohms with internal battery.
Meter	4½" 200ua movement, Polystyrene case.
Multipliers	1% precision type.
Circuit Board	Printed circuit, etched metal process 3/32" XXXP laminated phenolic .00135 copper foil.
Tubes	1—12AU7, twin triode meter bridge. 1—6AL5, twin diode full wave AC rectifier.
Battery	1½ volt flashlight cell.
Cabinet Size	7½" high x 4½" wide x 4½" deep.
Kit Shipping Weight	Charcoal gray panel, feather gray cabinet. 7 lbs.
Power Requirements	105-125 volt 50-60 cycle AC 10 watts.

PAGE  
8



**HEATHKIT ETCHED CIRCUIT  
VACUUM TUBE**

# voltmeter

## KIT



MODEL V-7A

**\$245.00**

SHPG. WT. 7 LBS.

## features

- ▶ Logical and functional placement of controls for smooth, rapid operation. 1% precision resistors used for high accuracy.
- ▶ Measures ACV (peak-to-peak) - ACV (RMS) - DCV - resistance. High impedance 11 megohm input.

- ▶ Modern etched circuit design for faster, easier construction and stable circuit performance.
- ▶ Comprehensive construction manual for simplified assembly.
- ▶ Heathkit charcoal gray panel and sharp, clear, panel lettering.
- ▶ Peak-to-peak voltage scales - large 4½" meter.

The Model V-7A will rapidly and conveniently measure AC volts (RMS), AC volts (peak-to-peak), DC volts, resistance, and db. One switch controls function selection, while the other determines the range to be used. Convenient front panel zero adjust and ohms adjust controls. Zero center operation within the range of front panel controls. The low voltage scale on the Model V-7A provides well over 2¼" of scale length per volt measured!

High input impedance in a vacuum tube voltmeter is valuable in that the loading effect of the instrument is negligible, and the circuit under test is not disturbed or "loaded" by the test instrument. This, along with the other advantages of a vacuum tube voltmeter, and especially of the Heathkit V-7A, were formerly reserved for laboratories because of price. Functional in design and convenient to use, the time-proven Heathkit Vacuum Tube Voltmeter is the world's largest selling instrument of this type, and has rapidly become the accepted standard in the industry.

Adapted for etched circuit board operation, our new Model V-7A is now better than ever. Gradual modification of our time-proven VTVM circuit over the years has resulted in a trouble-free, "polished" circuit which can be depended on for maximum accuracy and stability. A 6AL5 tube operated as a full-wave AC input rectifier permits 7 peak-to-peak voltage ranges with upper limits to 4,000 volts. Just the ticket for you TV servicemen. Voltage divider in the 6AL5 input circuit limits applied AC input to a safe level. This circuitry, and isolation of the meter in the cathode of the 12AU7 bridge circuit, affords a high degree of protection for the sensitive 200 microampere meter.

Extensive operational coverage is afforded by 7 AC (RMS) and DC voltage ranges of 1.5, 5, 15, 50, 150, 500, 1500, 7 peak-to-peak AC voltage ranges of 4, 14, 40, 140, 400, 1400, 4000, 7 ohmmeter ranges of X1, X10, X100, X1000, X10K, X100K, X1 megohm, and a zero-center db scale. Separate AC and DC test leads and probes are provided for circuit efficiency, and a polarity reversing switch is employed for DC operation.

The greater portion of the V-7A circuit is etched in copper foil and bonded to high-grade, rigid 3/32" XXXP phenolic sheet. This board provides the circuit, and the components are mounted and soldered to it.

Assembly time is virtually cut in half, while assurance is provided that the V-7A you build will be an exact replica of our laboratory model.

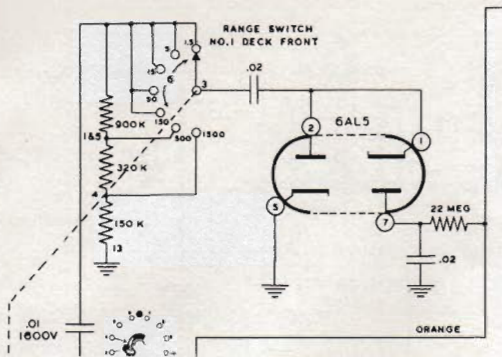
In addition, this rugged unit provides firm mounting of components, good, low-resistance conductor paths, and allows individual standard components to be removed and replaced with new ones should this become necessary.

**DESIGN:** In addition to its outstanding performance characteristics, the Heathkit Model V-7A is a most attractive instrument. It is the kind of vacuum tube voltmeter you will be proud to display on your workbench.



**APPLICATIONS:**

High (11 megohm) input impedance prevents circuit loading and makes a VTVM especially valuable in all electronic applications. Use it to measure all operating voltages and potentials without disturbing the circuit under test. Measures B+ voltage in all types of power supplies. Also checks filament voltage — bias voltage — AVC voltage — line voltage, etc. Ideal for measurements in all types of AM, FM and TV circuits. Tests discriminator or detector operation—AVC or AGC performance—resistance tests—circuit continuity, etc.



A special voltage divider network used with the full-wave rectifier for AC input functions allows upper voltage limits of 4,000 peak-to-peak and 1500 volts RMS. Precision resistors are employed for maximum accuracy.

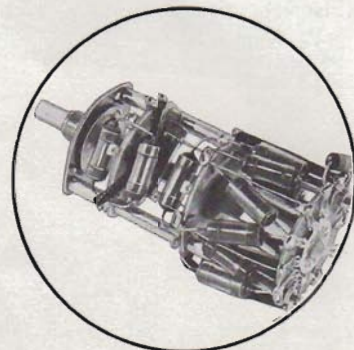
Transformer-type power supply is used for the Model V-7A, with good filtering for improved circuit performance. The meter is sealed against dust, and is a 4½", highly-readable, 200 microampere unit. Bracket construction behind the panel protects the circuit parts from damage while construction is in progress. A self-enclosed battery for the ohmmeter portion of the circuit fits neatly into the space behind the panel.

All components used in the V-7A VTVM are of standard, first-line quality. The multiplier circuits use deposited-carbon type 1% precision resistors, instead of following the usual practice of supplying matched pairs of ordinary carbon resistors. Switches have been especially designed for this particular instrument, and represent every possible consideration from the standpoint of simplified wiring and ease of assembly. Standard brand, commercially available tubes, tube sockets, condensers, controls, etc. are employed to minimize service problems in the event component replacement should be required.

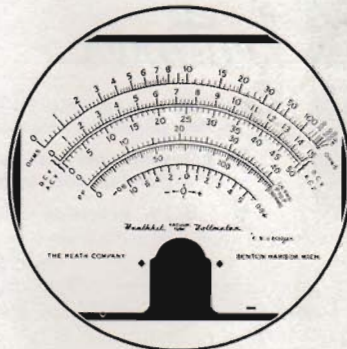
The construction manual supplied with the Model V-7A VTVM sets a new standard in instruction material. It provides detailed step-by-step check-off assembly procedure for constructing the VTVM. In addition, numerous schematics, pictorial diagrams and illustrations are used to insure trouble-free assembly. Besides outlining instrument assembly, the manual describes the theory of instrument operation and actual applications in measurement work. For further convenience, large-scale pictorials are provided which can be fastened to the area above the workbench for quick reference.

The Heath Company is justifiably proud of the fact that the VTVM manual is in demand for instruction work in various educational programs. This kit is complete in every respect—even to the inclusion of test leads and battery.

The range switch of this instrument is especially designed for this specific application. Resistors fit conveniently between decks, and no unused or blank terminals exist to confuse the kit builder. Note that precision resistors are used in multiplier circuits.



A high quality precision meter is employed in the VTVM. It is imprinted with two-color black and red calibrations on a white background. This makes for quick identification of ranges and maximum legibility.



Time-proven etched metal circuit boards are employed in the V-7A. These not only simplify assembly and cut construction time in half, but they permit levels of circuit stability not possible with ordinary conventional wiring methods. The VTVM you build will be an exact replica of our laboratory development model. Get the best—get the first VTVM to use printed circuits.



**HEATHKIT 30,000 VOLT D.C. HIGH VOLTAGE**

**probe KIT**



No. 336  
**\$450**

SHPG. WT.  
2 LBS.

For TV service work or any similar application where measurement of high DC voltage is required, the Heathkit high voltage probe will prove invaluable. A precision multiplier resistor mounted inside the two-color sleek plastic probe body provides a multiplication factor of 100 on the DC ranges of the Heathkit 11 megohm VTVM. Plenty of insulation for safety of operation, even at highest TV potentials.

**HEATHKIT ETCHED CIRCUIT PEAK-TO-PEAK**

**probe KIT**



No. 338-C  
**\$550**

SHPG. WT.  
2 LBS.

Now read peak-to-peak voltages on the DC scale of any 11 megohm VTVM with this new probe employing printed circuits for circuit stability and low loss. Readings can be directly made from the VTVM scales without involved calculations. Measurements over the frequency range of 5 kc to 5 megacycles. Use this probe to extend the usefulness of your VTVM in radio and TV service work. Note: Not required for the new Heathkit V-7A VTVM.

**HEATHKIT ETCHED CIRCUIT RF**

**probe KIT**



No. 309-C  
**\$350**

SHPG. WT.  
1 LB.

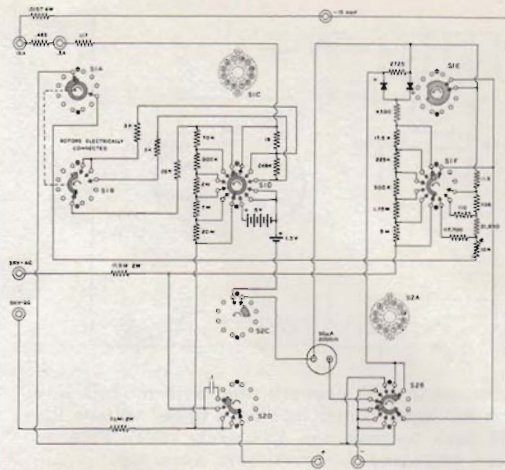
The Heathkit RF Probe used in conjunction with any 11 megohm VTVM will permit RF measurements up to 250 megacycles ±10%. A useful, convenient accessory for those occasions when RF measurements are desired. Uses printed circuits for increased stability and ease of assembly. Ideal for further extending service applications of your Heathkit VTVM.



**SPECIFICATIONS:**

Sensitivity ..... 20,000 ohm/volt DC, 5000 ohm/volt AC  
 Range, DC volts ..... 1.5, 5, 50, 150, 500, 1500, 5000  
 Range, AC volts ..... 1.5, 5, 50, 150, 500, 1500, 5000  
 Range, Direct Current ..... 150 microamperes, 15—150—500 milliamperes, 15 amperes.  
 Range, Ohmmeter ..... 0.2 ohms to 20 megohms  
 Range, Decibels ..... -10 to +65 db  
 Resistors ..... 1% precision type  
 Controls ..... Range switch, Output-AC-DC-Reverse DC switch, Ohms adjust control  
 Batteries ..... 1 type C cell, 4 Penlite cells  
 Cabinet ..... Black Bakelite  
 Dimensions ..... 7½" x 5½" x 4"  
 Net Weight ..... 4 lbs.  
 Shipping Weight ..... 6 lbs.

PAGE  
10



**HEATHKIT 20,000 OHMS-PER-VOLT**  
**multimeter** **KIT**

*features*

- ▶ 20,000 ohms per volt sensitivity DC, 5000 ohms per volt AC.
- ▶ Polarity reversal switch — eliminates transferring test leads.
- ▶ All 1% precision multiplier resistors.

- ▶ Sensitive 50 microampere 4½" meter.
- ▶ Meter ranges selected for maximum convenience.
- ▶ Total of 35 meter ranges on 2-color scale.
- ▶ New, modern cabinet styling—attractive appearance.



MODEL MM-1

**\$29.50**

SHIPPING WT.  
6 LBS.

**MODERN DESIGN:** Attractive as well as functional, Model MM-1 features a black bakelite case and panel with a soft plastic handle. "Thoroughly professional" can best describe the arrangement of test jacks and operational knobs on the recessed panel. A matched fitting between panel and case provides for dust-free performance as well as a rich, expensive appearance. Another fine example of economy combined with real quality.

**PERFORMANCE:** The Heathkit Multimeter employs a 4½ inch 50 microampere meter movement. Wide voltage, current, resistance and db ranges cover hundreds of possible applications. Function and range switches provide full scale settings of 0-1.5, 5, 50, 150, 500, 1500 and 5000 volts for AC and DC; and 0-150 microamperes, 15 milliamperes, 150 milliamperes, 500 milliamperes and 15 amperes for direct current. Resistance can be measured in three ranges from .2 ohms to 20 megohms. DB coverage is -10 db to +65 db. Maximum accuracy is assured by the use of 1% divider and multiplier resistors.

Model MM-1 has been "bench tested" by qualified service technicians to evaluate its usefulness and convenience of operation. The overall sensitivity is 20,000 ohms-per-volt DC and 5000 ohms-per-volt AC. This instrument is insensitive to RF fields and may be used in transmitter work as well as all other types of electronic service, both at home and on the road.

**OUR "HEATHKIT-TO-YOU"**



Sheet-metal work is done in our own factory. Here, a chassis is being punched.

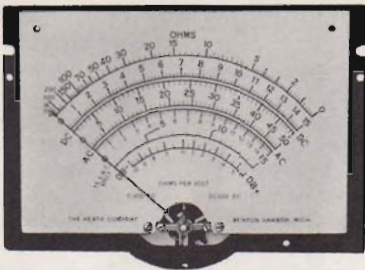


A machine is set up for chassis folding before a run is made.



Panels are cleaned, painted, screened, and then sprayed with clear enamel for added protection.

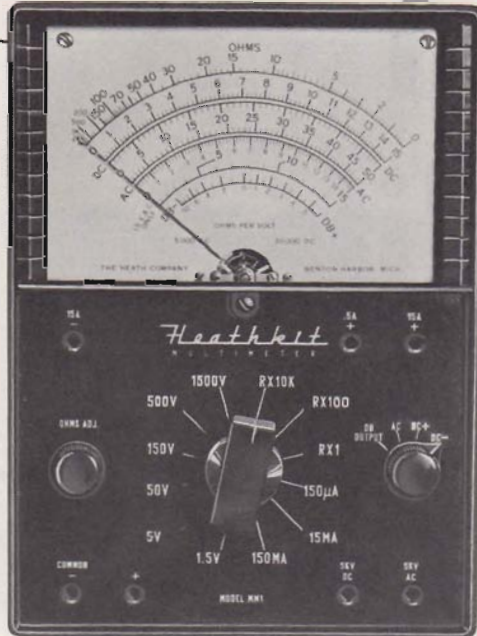




## METER SCALE

**METER:** Scales are clearly legible and printed in two colors for quick identification. A sharp, crisp black for DC voltage, current and resistance measurements—and bright red for AC and db ranges. One glance will give you the correct reading.

**PANEL:** Best lay-out as suggested by "bench test" reports. Easy to grasp and clearly marked operational knobs. The panel is slightly tilted and input jacks are the recessed "safety" type. Overall results provide maximum readability and safety for the operator. It has been very thoughtfully designed for the convenience of the serviceman.



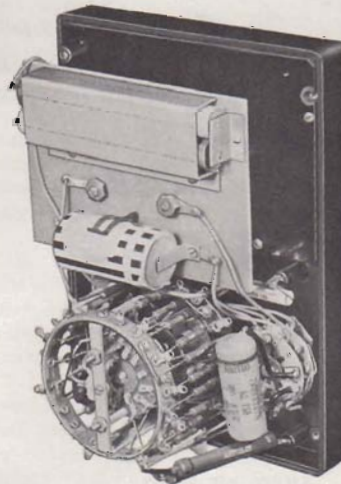
**QUALITY COMPONENTS:** Each part used in the Heathkit Multimeter was chosen for quality performance, ease of construction and long life. Both switches feature smooth action and yet they have very positive detent characteristics. The range switch assembly is unique in itself with resistors mounted to resistor "rings" rather than to the switch lugs. The large 4½ inch, 50 microampere meter is calibrated sharply in no less than 35 useable ranges and has more than enough sensitivity for even the lowest voltages on the 1.5 volt scale. Actually, a single volt on this range will cause a meter deflection of 2¼", thus making it possible to accurately read a very small fraction.

## APPLICATIONS:

All electrical systems including the home, automotive, aircraft, marine, movie equipment, two-way communications, air conditioning, all appliances and any application requiring voltage and resistance tests or the checking of cables for continuity. Model MM-1 requires no external power connections and, therefore, its use is not limited to locations where AC line power is available. Radio and TV service is its most common use but the Heathkit Multimeter can also be applied in transmitter maintenance because it is not affected by RF radiation. Carry the MM-1 on service calls of all types. Its rugged components and durable case can take quite a beating.

**SPECIAL FEATURES:** Many features of the Heathkit Multimeter are unique in an instrument of this type. The polarity reversal switch makes it unnecessary to exchange test leads when alternately measuring + and - voltages. A serious shock hazard when measuring high voltages is eliminated by the use of recessed test jacks. Light is reflected upward from the meter cover by the tilt panel feature, thus reducing glare to a minimum. The standard commercial batteries are easily replaced when necessary. They consist of one Type "C" flashlight cell and four Penlite cells.

The meter is pre-assembled to the panel with perfect fittings and the assembly is completed with a closely fitted case. This feature increases meter life due to the complete absence of dust in the movement. Its beautiful black bakelite finish and two-color scales will complement the best of equipment.



**CONVENIENCE** of construction is perfected. All MM-1 components are to be assembled directly to the panel with the meter itself fully protected. The inside photograph shows that all parts are easily accessible in the event that replacements become necessary. Batteries in particular can be snapped in and out in a matter of seconds. Resistor "rings" prevent excessive handling of switch contacts during construction and maintenance.

## SYSTEM AT WORK ...



Individual small parts are selected from bins and packaged in bags for each kit.



Various types of wire are taken from spools and cut to the proper length before packing.

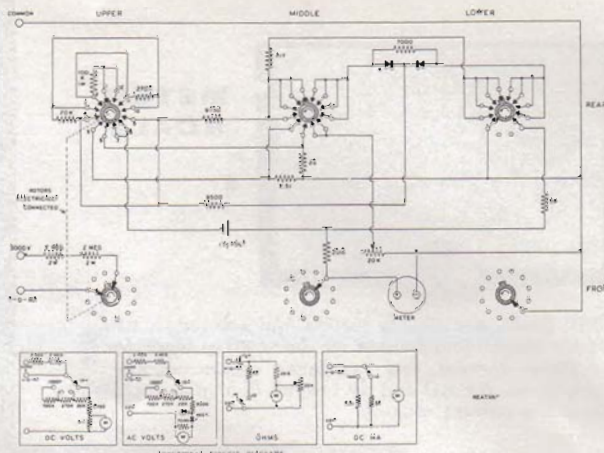


Manager of Manufacturing consults with worker in shipping department.



**SPECIFICATIONS:**

DC Voltmeter	5 Ranges	Full Scale 0-10, 30, 300, 1000, 5000
AC Voltmeter	5 Ranges	Full Scale 0-10, 30, 300, 1000, 5000
Ohmmeter	2 Ranges	0-3000 (30 ohms center scale) 0-300,000 (3000 ohms center scale)
Direct Current	2 Ranges	0-10 MA, 0-100 MA
Sensitivity		1000 Ohms Per Volt—400 Microampere Meter
Dimensions		6" High, 3" Wide, 2 1/2" Deep



**HEATHKIT**

# handitester **KIT**



**MODEL M-1**

**\$14.50**

SHPG. WT. 3 LBS.

## features

- ▶ Completely portable, pocket size.
- ▶ Durable black Bakelite case, designed for rugged usage.
- ▶ 1% precision resistors for maximum accuracy.
- ▶ No calibration required—build it, then use it.
- ▶ All parts furnished, including test leads.

“Handy” is the word for the Heathkit Handitester. Experienced servicemen and hobbyists will recognize the advantage to be gained by owning one or several of these instruments. Keep them in your tool box, glove compartment, desk drawer and as standbys in the lab. It's like insurance; you'll never miss it until you need it. Model M-1 is portable in all respects. Replacement batteries are readily available because it uses only one 1.5 volt No. 1 flashlight cell. A single, 3-deck rotary switch combines the function and range setting in one quick adjustment. Build them in your spare time, plug in the test leads and you're in business. The famous Heathkit “step-by-step” manual makes the Handitester a wonderful “first kit” project for the beginner also. Nowhere else can you buy so many years of service for such a small amount of money.

## QUALITY AND ECONOMY COMBINED

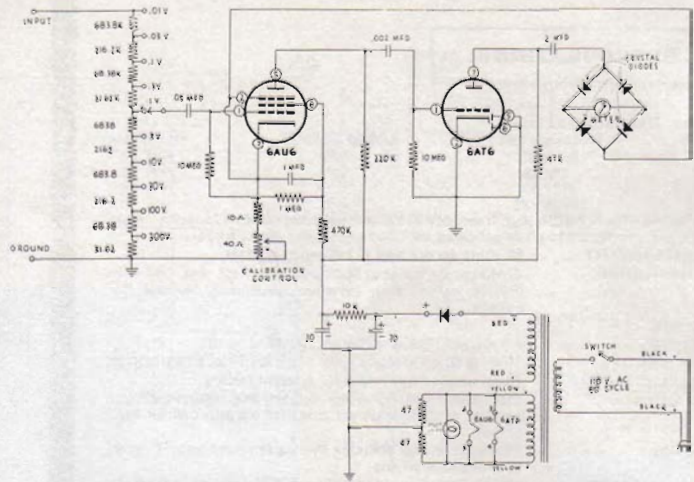
Quality comes first. Maximum accuracy is assured by the use of 1% precision resistors as voltage dividers, ohms multipliers, and meter shunt. 5 full scale ranges are provided for AC and DC voltages with a 5000 volt high limit. Up to 100 MA DC can be measured on two switch selected ranges. The ohmmeter feature covers 0 to 300,000 ohms on two ranges with center scale readings of 30 ohms and 3000 ohms. The “hearing aid” type ohms adjust control and dependable rotary switch have been tested thoroughly as moving parts. A high quality 400 microampere meter, factory fit into the attractive bakelite cover, protects the sensitive movement from dust and moisture. Further protection is provided by a perfect fit between the cover and gleaming case. This kit comes complete with test leads and construction manual. By following the simple step-by-step sequence, Model M-1 Handitester can be completed in a very short time. The manual also includes full details on the use of the instrument in each of its applications.

Although the Heathkit Handitester, Model M-1, is ideal for service calls, it also has the versatility and accuracy required in the service shop. A few quick voltage or DC current checks will usually isolate the faulty part in any electronic circuit. The Handitester is more than adequate for this bench-type service. You Hi-Fi fans will be interested particularly in the DC current measuring feature of Model M-1. Not only can you trouble-shoot your system by voltage checks, but also balance the push-pull power output stages by measuring and adjusting cathode current. The range extends up to 100 MA which more than covers the amount specified for any conventional amplifier. The 3" meter scale is easy to read and the combination function-range switch makes the operation of the Handitester as simple as falling off the proverbial log. High quality parts, low price, and simplified construction and use very painlessly opens the door to electronics for anyone interested. Why pay more!



**SPECIFICATIONS:**

Range, RMS Full Scale...0-.01, .03, .1, .3, 1, 3, 10, 30, 100, 300  
 Decibels, Total.....-52 DB to +52 DB (0 DB 1 MW-600 Ohms)  
 Input Impedance.....1 Megohm at 1 KC  
 Tube Complement.....1-6AU6, 1-6AT6  
 Accuracy.....± 5% or Better  
 Power Requirements.....105-125 VAC, 50-60 CPS, 10 Watts  
 Dimensions.....7<sup>3</sup>/<sub>8</sub>" High, 4-11<sup>1</sup>/<sub>16</sub>" Wide, 4<sup>3</sup>/<sub>8</sub>" Deep



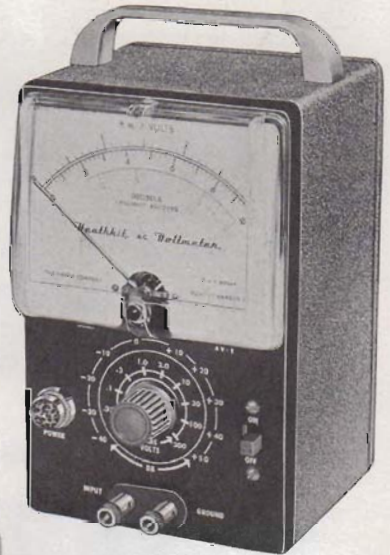
**HEATHKIT  
AC VACUUM TUBE**

**voltmeter  
KIT**

*features*

- ▶ Precision voltage divider resistors.
- ▶ Measures as low as 1 millivolt at high impedance.
- ▶ Feedback type circuit for maximum stability and frequency response.
- ▶ Transformer operated, minimum residual hum.
- ▶ AC volts and DB ranges set by one switch adjustment.
- ▶ Full wave meter bridge (4 Germanium Diodes).

Here is the instrument to take up the slack where your general purpose VTVM becomes a little inadequate. Designed specifically for extreme sensitivity, Model AV-2 will accurately measure those very low AC voltages encountered in audio devices. The wide DB range and flat frequency response simplify those important input-output comparison measurements. Excellent as an output meter for determining the frequency response of your audio amplifier and the gain of each individual stage. Use it to measure the output of microphones and phono pickups, the ripple voltage in filter circuits and as a sensitive null detector. The AV-2 AC VTVM is ideal as a companion to the popular Heathkit V-7A VTVM not only in the service field but also in experimental laboratories, hobby shops and in any application where high AC sensitivity is required.



**MODEL AV-2**

**\$29.50**

SHPG. WT. 5 LBS.

**SOUND ENGINEERING-TOP PERFORMANCE**

Physically, the Heathkit AV-2 leaves nothing to be desired; light weight, attractive and functional in all respects. Electrically it is ideal for each of its many applications. The frequency response will be flat within ± 1 DB from 10 CPS to 50 KC. AC voltage measurements are made on 10 full scale ranges from .01 to 300 volts RMS. Total decibel range covers -52 to +52 DB on 10 switch positions (0 DB = 1 MW - 600 ohms). The input impedance is 1 megohm at 1 KC. Considering all possible tolerances in the meter movement, precision resistors and errors caused by stray circuit capacity, the overall accuracy will fall well within 5% at the calibration frequency. There are no special probe or test lead requirements and the AV-2 is transformer operated for maximum isolation from the AC power line. All parts are furnished including tubes and complete manual of instructions.

The Heathkit AC VTVM features a very practical parts layout for convenience of construction. A single rotary switch handles all

range selections. 10 precision resistors make up the input voltage divider making it possible for one calibration to hold true for all 10 ranges. No additional equipment required because the line voltage itself can be used as an accurate calibration reference. Model AV-2 consists of a high gain 6AU6 voltage amplifier feeding a 6AT6 current amplifier which in turn is coupled to the meter bridge circuit consisting of 4 germanium diodes. Calibration as well as frequency response and stability is attained by the use of feedback from the 6AT6 plate to the 6AU6 cathode. This feedback voltage is made variable and thus the overall gain of the circuit is controlled. The power supply is conventional with a half wave rectifier and resistance-capacitance filter circuit. For minimum hum, the filament circuit is center tapped to ground.

Look over the excellent features and characteristics of the Heathkit AC VTVM. Compare them with others. Now look at the price. You decide whether or not this is a "best buy."



**SPECIFICATIONS:**

Output Frequency and Level:	Output V (RMS)	Flat Within
Band	Frequency (MC)	
"A"	3.6 to 10	± 1/2 db
"B"	10 to 26	± 1/4 db
"C"	30 to 80	± 1/2 db
"D"	80 to 220	± 3/4 db

(Measured with H-P 410B High frequency VTVM without compensation for pulse nature of output, and for worst db deviation on each band at a fixed center frequency.)

Output Impedance . . . . . 50 ohms, terminated at both ends of cable.  
Sweep Deviation . . . . . Continuously variable from 0-3 mc lowest max. deviation 0-42mc highest max. deviation (depending on base frequency).

Markers:  
Crystal . . . . . 4.5 mc and multiples thereof (included in kit)  
Variable . . . . . 19 mc to 60 mc fundamentals, 57 mc to 180 mc on harmonics.  
External . . . . . Panel terminals provided for external marker.

Attenuators . . . . . Step-switch controls sweep oscillator and marker oscillator together, plus separate variable controls provided for each output.

Blanking . . . . . Effective two-way blanking eliminates return trace. Phasing control also available.

Tube Complement . . . . . 6BQ7A Sweep osc. and buffer, 12AT7 variable and crystal marker osc., 12AX7 blanking and AGC amplifier, 6CL6 shunt regulator, 6X4 rectifier.

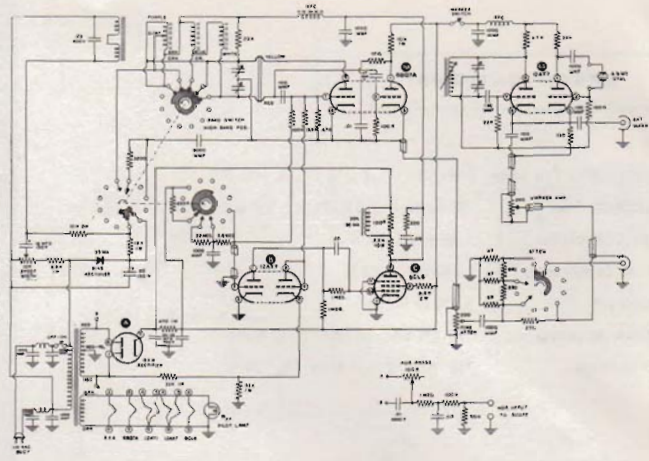
Cables . . . . . 3 supplied: output, scope horizontal and scope vertical.

Power Requirements . . . . . 110V AC, 50-60 cps, 50 watts.

Dimensions . . . . . 13" wide x 8 1/2" high x 7" deep.

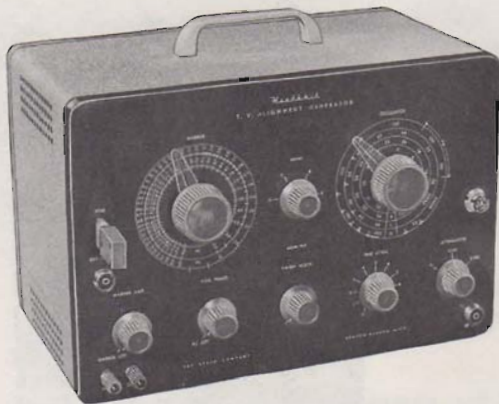
Shipping Weight . . . . . 16 pounds.

Net Weight . . . . . 11 pounds.



**HEATHKIT TELEVISION  
(MONOCHROME AND COLOR)**

# sweep generator **KIT**



**MODEL TS-4**

**\$495.00**

SHPG. WT. 16 LBS.

## features

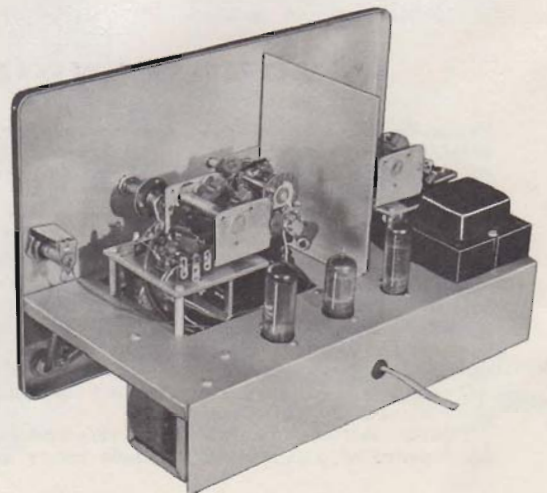
- ▶ Oscillator covers 4 mc to 220 mc entirely on fundamentals—complete FM and TV coverage.
- ▶ Center-sweep circuit swings up to 20 mc each side of center, depending on frequency.

- ▶ Maximum RF output well over .1 volt.
- ▶ New, improved model for outstanding performance.
- ▶ All-Electronic sweep — no moving parts or mechanical vibration.
- ▶ Built-in crystal marker oscillator and variable marker oscillator. Crystal supplied with kit.
- ▶ Automatic amplitude control circuit — constant output.

**EXCEPTIONAL VALUE:** Combining all desirable features required by the TV service industry and adding the tremendous capabilities of the new controllable inductor, the Heath Company has developed the ideal TV sweep generator, Model TS-4. Nothing is omitted. The use of an all-electronic sweep method immediately eliminates the headaches which sometimes result from electro-mechanical systems. Full coverage from 3.6 mc to 220 mc, with more than adequate sweep width, includes all VHF TV channels in addition to FM frequencies. No harmonics involved — they are all fundamental. A triple marker system simplifies the identification and checking of bandwidth. Variable marker range is 19 mc to 60 mc on fundamentals and 57 mc to 180 mc on harmonics — all crystal calibrated to a 4.5 mc crystal furnished with the kit. This feature will also provide 4.5 mc check points on the bandwidth as well as a signal for sound trap adjustments and sound IF alignment in intercarrier sets. Other crystals can be used to beat with the variable marker and obtain any desirable marker frequency.

Many refinements in the TS-4 will benefit the service technician. A regulated AGC voltage to the sweep oscillator grid and a properly terminated RF cable contribute to the very flat output. The accurately biased inductor furnishes excellent linearity on both sides of the reference frequency set up on the oscillator dial. Tuning accuracy is assured by the use of close fitting panel bushings and flexible shaft extensions for both oscillator and marker tuning mechanisms.

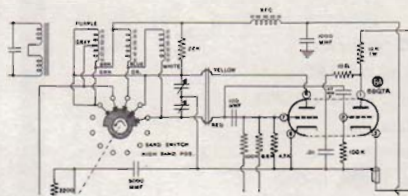
The TS-4 as all Heathkits comes complete with all tubes, cables and all components required for its operation. All material furnished is of excellent quality — first line tubes, plastic molded condensers, adequately rated chokes and resistors, dependable controls and switches, and a good husky power transformer. They will equal or surpass the quality of parts to be found in factory assembled equipment priced many times higher. Heath Company buying power and quantity sales makes this possible. The actual construction is no problem if you can read and make a good soldered connection. Utilize a few hours of spare time plus the famous Heathkit step-by-step method and you have a sweep generator comparable with anything on the market. Then too, there are advantages in knowing what's inside by actual construction, and in the fact that your instrument is not built by assembly line operators with very little personal interest in its performance. Eliminate both middle man and labor and pocket the savings yourself.



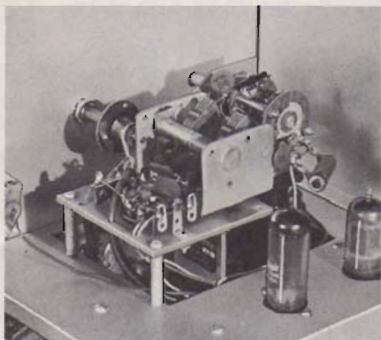


## APPLICATIONS:

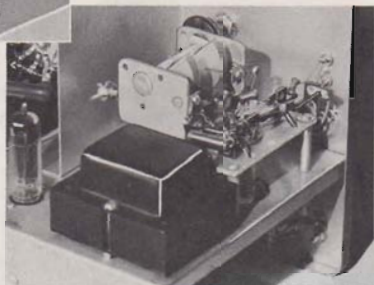
Using conventional methods described in the TS-4 manual, practically all alignment problems encountered in FM and TV, including color sets, can be solved; RF, oscillator, IF (including intercarrier types) either overcoupled or stagger tuned, sound and adjacent channel traps, and FM which is similar to sound IF alignment. High output level permits alignment of boosters, tuners, and other RF circuits separately, and without further amplification. Flat output within  $\pm 3/4$  db or better and all electronic center sweep assures good accuracy and long life.



No moving parts in the all-electronic sweep system. Using a variable inductor in a Colpitts oscillator circuit the TS-4 produces a linear sweep and high output at low impedance. Sweep deviation is controlled smoothly from zero up to 40 mc depending on frequency.



Sweep oscillator and marker sub-assemblies are isolated through use of shielding and laminated phenolic sub-chassis for minimum leakage and hum. Separate unit technique increases ease of construction and uniform performance through use of short leads. Featured also are the "single point" ground return system and heavy filtering in all AC circuits. A special high C filter in the variable inductor bias network keep residual FM at a minimum.



4.5 mc crystal calibration source for variable marker — panel mounted for quick change to other crystals when desirable. Can be modulated by external generator for additional markers. All markers feed through a separate attenuator for smooth, stable control. All desirable ranges covered by a 3-way system.

**FEATURES:** An important point to consider is the high RF output level on all four bands; .23 volts at the lower frequencies and .08 volts at 220 mc. This permits the "cold" adjustment of tuned circuits, filters and traps and simplifies the alignment of tuners, IF strips and boosters. The 4th harmonic of the fundamental will be useful in the UHF range in some cases. The return trace is eliminated by an automatic blanking system, thus providing a base reference.

This new and revolutionary instrument is equipped with a transformer operated power supply using a 6X4 rectifier and RC filter. Included are the 6BQ7A sweep oscillator and buffer, 12AT7 variable and crystal marker oscillator, 12AX7 blanking and AGC amplifier and a 6CL6 shunt regulator. All sheet metal is factory formed, punched and plated. The cable complement consists of the compensated "scope" input lead, horizontal drive cable and the terminated RF output lead.

The construction manual is an education in itself. It includes the now famous step-by-step feature as well as a detailed explanation of the circuit and full instructions for all applications. A tremendous value for the TV serviceman, Model TS-4 is fast becoming a "must" for the beginner and a standard alignment tool in the well established service shop.

## DESIGNED FOR EFFICIENT, CONVENIENT OPERATION

All phases of operation are very simply controlled from the front panel and the manual instructions are complete with diagrams. The center sweep system further simplifies the procedures. Just set the oscillator dial and band switch to the frequency required and advance the sweep width control until the response curve is located. The phase control is then set for proper relationship between the horizontal output and RF

sweep voltages. Marker amplitude is controlled separately with respect to the amplitude of the overall response curve which is set by both step type and fine attenuators. This system is conventional and will fit in with TV manufacturer's test data and independent service bulletins. It can be used with any general purpose oscilloscope and all connecting cables are furnished. Truly a wonderful bargain in alignment equipment.

## PRODUCING YOUR HEATH CATALOG ...

Your Heath catalog was designed to make it as simple to use as possible. A new simplified thumb index has been added to the front cover. Specifications, schematic drawings and other pertinent information are consistently positioned on each page throughout the catalog for easy reference.

Over 300,000 catalogs, involving more than 62 tons of paper and nearly half a ton of ink were produced for us by Mossberg & Company of South Bend, Indiana. The pictures show two phases of the 1955 Catalog in production.



Stitching the catalogs two-up with six stations on an automatic stitcher.



Cutting and trimming the catalogs is done on this cutter with an electronic spacer.

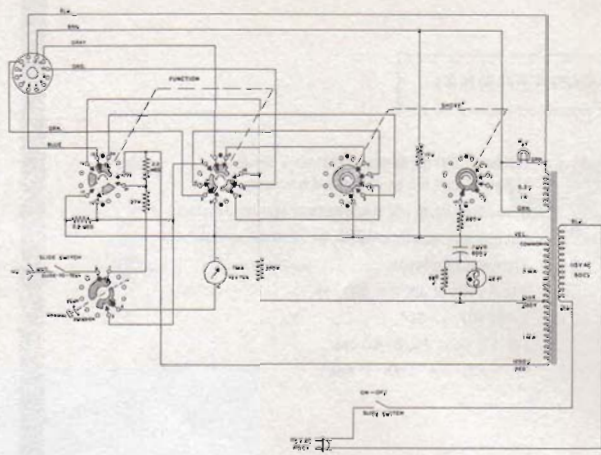






## SPECIFICATIONS:

- Checks** ..... Cathode emission, beam current, shorted elements, leakage between elements.
- Provides** ..... Magnified visual inspection of gun aperture. Indication of quality of fluorescent coating.
- Tests** ..... Electromagnetic deflection types with duo-decal base, straight or bent guns, electrostatic or electromagnetic focus, clear or filterglass faceplates, plain or aluminized screens.
- Power** ..... 105-125 volts AC, 50-60 cps, 15 watts.
- Dimensions** ..... 7½" high, 6¾" deep, 12½" wide.



## HEATHKIT CATHODE RAY

# tube checker KIT

## features

- ▶ Self-contained power supply, transformer operated, to furnish normal test voltages for CRT.
- ▶ Large 4½", 3 color meter scale for quality readings and a neon leakage indicator.
- ▶ Luggage type portable cabinet with removable cover and plastic handle.
- ▶ Permanent test cable with CRT socket and anode connector.
- ▶ Special safety with spring loaded switches.
- ▶ Charcoal gray panel and feather gray knobs.

Brand new! The Heathkit Model CC-1 Cathode Ray Tube Checker eliminates all doubt for the TV serviceman and even more important, for the customer. Carry it on service calls and clearly demonstrate the quality of his picture tube. Model CC-1 will check all electromagnetic deflection types using the duo-decal (12 pin) base. Don't worry about the type of focusing, electron gun, faceplate, or screen. Test tubes without removing them from the receivers or cartons if desirable. You can be sure of its accuracy because the new Cathode Ray Tube Checker sets up all proper test conditions for each tube element.

Special provisions are made in Model CC-1 for the actual observation of the gun aperture on the face of the CRT. Irregularities such as rough or burned edges show up clearly through the use of a unique "shadow-graph" method of projection. No special equipment required. It's all contained in the new CC-1 kit. By comparison between new and old tubes, this same projected shadow will show the customer the relative quality of the tube's fluorescent coating. All this in addition to separate tests for emission, shorts, leakage and a special check for beam current. No warm-up time is required. Plug it in and turn it on. Allow just enough time for the CRT filaments to heat.

Maximum safety in operation is assured by the use of spring loaded switches in test circuits involving high voltages. Both hands will be occupied so that the operator will not come in contact with high voltages. Emission and beam current are evaluated by a large 4½" meter scale (red = bad; yellow = ?; green = good). Shorted elements or a leakage path of as much as 10 megohms resistance will cause a strong glow in the neon indicator. Model CC-1 is a self-contained instrument requiring no external equipment. With no tubes to burn out, it is designed to last a lifetime.

Don't overlook the physical conveniences found in the new Heathkit CRT checker. The entire instrument is attractively housed in a luggage type portable cabinet with removable cover and plastic handle. An extra compartment is provided for the line cord and the

permanently attached cable with CRT socket and anode connector. Attached to the inside of the cover is the operator's chart containing all necessary test data. Soft rubber feet prevent the marring of furniture in the customer's home.

Compare the functional and electrical design of this instrument with any other similar device. Note the added features that provide more accurate and useful results. Compare prices also and you will agree that no service shop should be without one. The wiring is extremely simple and straightforward. Full instructions are provided. The time saved in using Model CC-1 on a few jobs will more than cover its cost. Your time is valuable. Don't waste it on uncertain methods of testing the most vital part in your customer's TV receiver. Use the new Heathkit CC-1.



MODEL CC-1

**\$225.00**

SHIPPING WT.  
10 LBS.

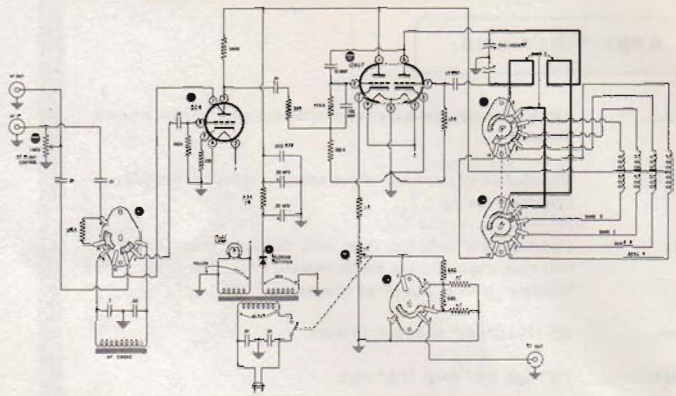
## SAVE VALUABLE TIME



**SPECIFICATIONS:**

Frequency.....160 kc to 110 mc fundamental on 5 bands,  
110 mc to 220 mc on calibrated harmonics.  
RF output.....In excess of 100,000 microvolts at low impedance.  
Modulation.....400 cps internal; provisions for external modulation.  
Attenuation.....Step and fine types.  
AF output.....2 to 3 volts at approx. 400 cps.  
Tubes.....1-12AU7, 1-6C4.  
Power.....105-125 volts AC, 50-60 cps.  
Dimensions.....9½" wide, 6½" high, 5" deep.

PAGE  
18



**HEATHKIT**

# signal generator **KIT**



**MODEL SG-8**

**\$19.50**

SHIPPING WT. 8 LBS.

## features

- ▶ *Dial calibrated in harmonics from 110 mc to 220 mc.*
- ▶ *No oscillator calibration required.*
- ▶ *3 outputs available: Unmodulated RF • Modulated RF • Audio at 400 cps.*
- ▶ *Separate oscillator sub-chassis for uniform circuit characteristics.*
- ▶ *Cathode follower-buffer stage to isolate oscillator from load.*

"So much for so little." That's about the best way to describe the Heathkit RF Signal Generator, Model SG-8. For only \$19.50 and a little construction time you can own a good service type instrument that will compare in every way with generators in much higher price brackets. What's more, no calibration is required. Model SG-8 is ready for business the minute that you solder the last connection. Pre-wound and calibrated coils, as well as close tolerances in critical parts of the circuit make this possible.

With a 5-position band switch and a 6:1 vernier dial the frequency may be varied from 160 kc to 110 mc on fundamentals. Calibrated harmonics extend the range from 110 mc to 220 mc. RF output will be in excess of 100,000 microvolts. The signal available at the RF output connector may be unmodulated RF or it may be modulated either internally at 400 cps or from an external source at other frequencies. The 400 cps signal can be also used separately for audio testing if desired.

Model SG-8 uses a 12AU7 RF oscillator-cathode follower, a 6C4 AF oscillator and a transformer operated power supply. Both step and fine attenuation provides excellent control over the RF output.

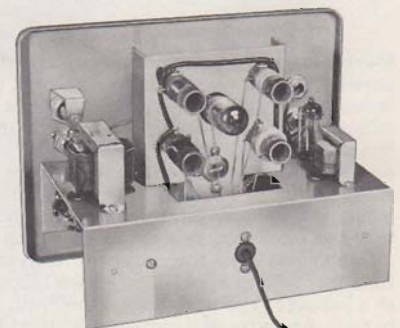
## A "MUST" IN THE SERVICE SHOP

Any radio and TV service shop without a good reliable signal generator is seriously handicapped. Wasted time means less profit. Model SG-8 provides a quick means of alignment in RF, IF and tuned circuits of all kinds. Use it as a signal source for signal tracing in a faulty RF, IF or audio circuit. In a very short time it will pay for itself in time saved. It just isn't practical to attempt alignment or trouble shooting without a good and accurate signal source.

The Heathkit Signal Generator excels in stability due to the use of a cathode follower-buffer stage between the RF oscillator and output circuits. Its low impedance output is

another desirable characteristic. Overall efficiency is assured by the use of top quality components throughout. The kit is absolutely complete even to the output cable, alligator clips and comprehensive construction manual.

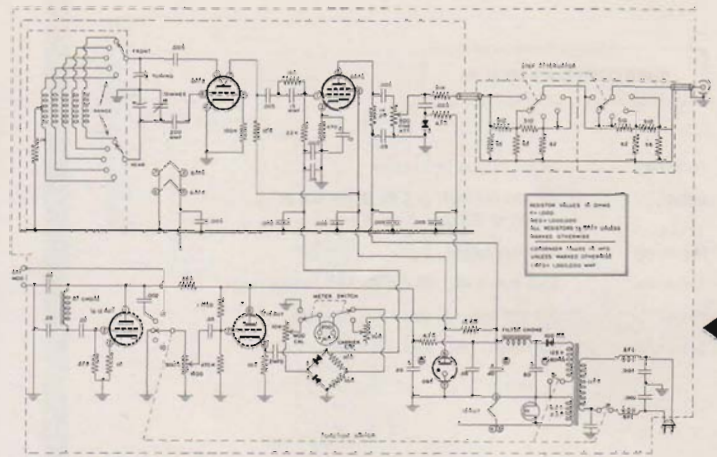
Accuracy of calibration is perhaps most important. Model SG-8 will be well within the limits required for service work. A special sub-chassis is provided for the installation of the entire oscillator circuit, thus keeping control over all variables that would affect frequency. All in all, how could you do better even at three or four times the price of \$19.50.





## SPECIFICATIONS:

Frequency ..... 100 kc - 30 mc in 5 calibrated bands.  
 Output ..... up to 100,000 microvolts.  
 Attenuation ..... 10:1 ratio in 5 steps, 10:1 ratio continuous, metered.  
 Modulation ..... 0-50% metered, 400 cps internal,  
 or 60-10,000 cps external.  
 Termination ..... 50 ohms.  
 Tubes ..... 1-6AF4, 1-6AV5, 1-12AU7, 1-0B2.  
 Power ..... 105-125 volts AC, 50-60 cps.  
 Dimensions ..... 13" wide, 8½" high, 7" deep.



**HEATHKIT**

# laboratory generator **KIT**

## features

- ▶ Voltage regulated B+ supply, transformer operated.
- ▶ Double shielding of oscillator circuits.

- ▶ Line filter for minimum radiation thru line cord.
- ▶ Added convenience by use of output termination "pod".
- ▶ Accurately calibrated meter for output level and modulation percentage.
- ▶ Output frequencies all fundamental.

The "professional" serviceman, experimenter and lab technician will be particularly interested in the Heathkit Laboratory Generator, Model LG-1. Although ideally suited for the usual service alignment applications, this instrument is "precision" in all respects. RF output is variable from 100 kc to 30 mc (all fundamental) on 5 switch selected ranges. Both step and fine attenuation. Up to 100,000 microvolts output. May be modulated to a depth of 0 to 50% either by 400 cps internally or by an external source from 60 cps to 10,000 cps. A 200 microampere panel meter reads microvolts output or percentage of modulation with the choice provided by a meter switch. The low (50 ohms) output impedance is carried directly to the circuit under test by means of a coaxial cable terminated by two binding posts mounted on a small molded plastic "pod" containing the terminating resistance. RF leakage is minimized by the use of extensive shielding.



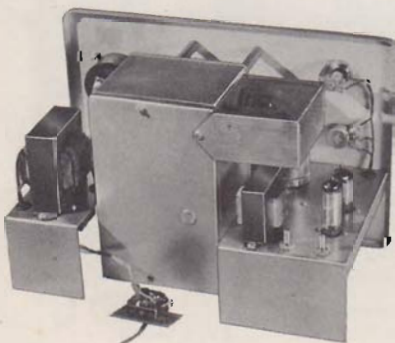
MODEL LG-1

**\$395.00**

SHIPPING WT.  
16 LBS.

## HIGH PRICED FEATURES AT LOW COST

Complete shielding of  
all critical circuits.



Use Model LG-1 for the alignment of radio receivers and all trap circuits falling within its frequency range. Determine the gain of complete RF and IF amplifier circuits as well as individual stages. Check receiver selectivity and image rejection quality. Test for an adequate signal-to-noise ratio. Within the capabilities of this excellent instrument fall many other applications such as the operation of RF bridges and as a frequency source for calibration purposes.

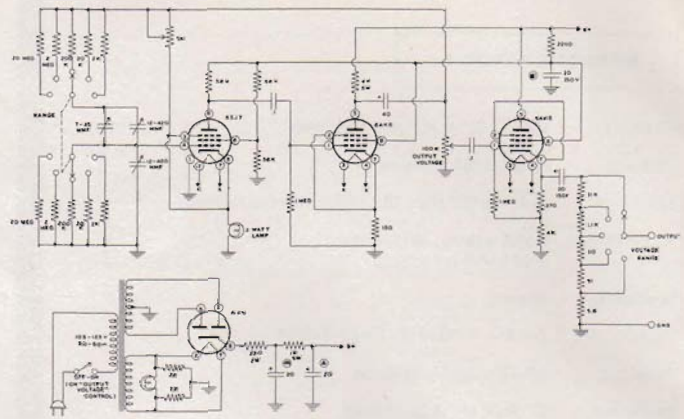
Briefly, the well controlled output voltage is generated by a 6AF4 RF oscillator (Colpitts), amplified by a 6AV5 buffer-amplifier and fed through both step and fine attenuators to the output connector. The 6AV5 is grid modulated by a 400 cps signal from a 12AU7 tube operating as an AF oscillator (Colpitts) and cathode follower. DC is fed to the meter switch from the fine attenuator control for RF level and from the AF cathode follower for modulation percentage. The power supply consists of the power transformer, line filter, selenium rectifier, L-C filter and an 0B2 voltage regulator.

The Heathkit Laboratory Generator is complete with all parts furnished including output cable. The several sheet metal shields and chassis are factory formed and punched for perfect fits. An attractively finished and professional looking panel makes the LG-1 an instrument that you can be proud to own. Construction and use are simplified by the now famous Heathkit manual of instruction. Invest a little time and money now and be rewarded with many years of dependable service from your Heathkit Laboratory Generator.



**SPECIFICATIONS:**

Frequency.....20 cps to 1 mc in 5 ranges.  
 Output.....10 volts (no load)  $\pm$  1 db 20 cps-400 kc  
 -3 db at 600 kc; -8 db at 1 mc.  
 Impedance.....600 ohm output.  
 Distortion.....Less than 0.4%, 100 cps through audible range.  
 Power.....105-125 volts AC, 50-60 cps, 30 watts.  
 Dimensions.....7½" high, 13¼" wide, 7½" deep.



**HEATHKIT**

# audio generator

**KIT**



**MODEL AG-8**

**\$295.00**

SHIPPING WT. 11 LBS.

## features

- ▶ Precision resistors in frequency determining network.
- ▶ Frequency ranges clearly marked in white on the charcoal gray panel.
- ▶ Cathode follower output for stability and low impedance.
- ▶ Well regulated output with very low distortion.
- ▶ Continuous coverage, any frequency between 20 cps and 1 mc.
- ▶ Output voltage controlled continuously and in 5 steps.

High fidelity fans will welcome this low cost, highly efficient Audio Generator kit. Using it as an audio frequency source, you can easily evaluate the performance of your complete audio system. Its constant output voltage and wide frequency range are mighty important when plotting audio response curves. Use the AG-8 also to check the response of your speaker system and for locating unwanted resonance. Check audio filters and other networks such as tone and compensated volume controls. The Heathkit Audio Generator would be excellent as an external generator for the operation of an AC bridge. Not only will it perform well in service but also in the designing of audio equipment.

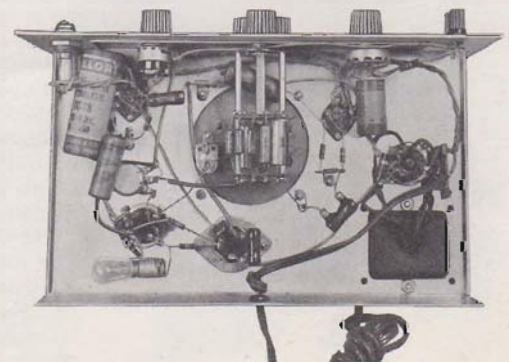
Realizing that hi-fi fans are not necessarily electronic technicians, the operation of the Heathkit Audio Generator is greatly simplified. Merely select the desired frequency by means of a 5-position range switch and a fine adjustment to the panel scale markings. The output voltage is set with a step type attenuator and finally by a continuously variable control. Attach the output terminals to the circuit being tested and away you go.

## CLEAN LAYOUT—TRIED AND TRUE CIRCUIT

Output frequency may be varied from less than 20 cps to 1 mc, thus covering even the extremely wide response characteristics found in high fidelity power amplifiers. The output voltage will be 10 volts (no load)  $\pm$  1 db from 20 cps to 400 kc. It will drop off to -3 db at 600 kc and to -8 db at 1 mc. Generator impedance will remain 600 ohms at all frequencies and output voltages. Overall distortion will be less than .4 of 1% from 100 cps throughout the audible range.

The oscillator section consists of a two stage (6SJ7-6AK6) resistance coupled amplifier using both positive and negative feedback. Frequency is determined by the R-C time constant in the positive feedback loop. A cathode follower output stage (6AK6) is used for stability and low impedance. Operating power is obtained from a conventional power supply consisting of the transformer, rectifier (6X5) and an R-C filter system.

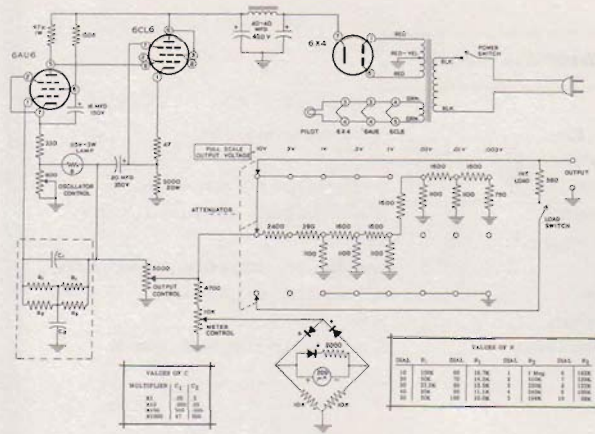
Model AG-8 can be built in a very few hours by following the clearly defined step-by-step procedure in the manual. After construction, it is easily calibrated using only a VTVM or any reasonably high impedance AC voltmeter. Full instructions are provided for the use of the 60 cycle AC line as an accurate frequency source. From then on your accurate frequency source will be the Heathkit Audio Generator.





**SPECIFICATIONS:**

Frequency...10 cps to 100 kc, switch selected, 2 significant figures and multiplier.  
 Output.....6 ranges 0-.003, .01, .03, .1, .3, 1 volts RMS into external 600 ohm load or with internal load into Hi-Z  
 2 ranges 0-3, 10 volts RMS into a minimum of 10,000 ohms —60 db to +22 db in 8 steps  
 —60 dbm to +2 dbm (0 dbm = 1 MW—600 ohms).  
 Distortion... Less than .1% 20-20,000 cps.  
 Tubes.....1—6AU6, 1—6CL6, 1—6X4.  
 Power..... 105-125 volts AC, 50-60 cps, 40 watts.  
 Dimensions..9½" wide, 6½" high, 5" deep.

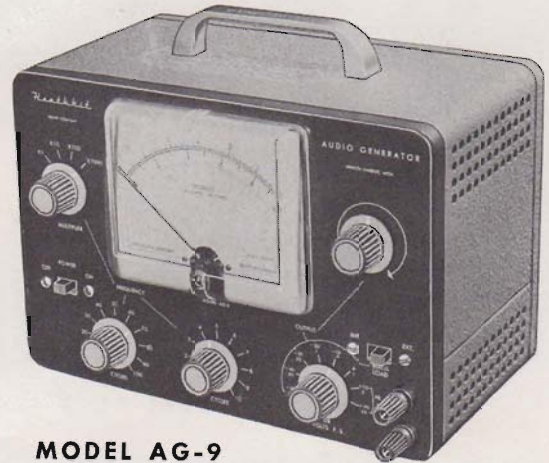


# New HEATHKIT audio generator KIT

## features

- ▶ All frequencies tuned by switch method—no human tuning error to consider.
- ▶ Output and frequency indicators accurate within ± 5%.
- ▶ Built-in 600 ohm load switch selected.
- ▶ 200 microampere meter calibrated in volts RMS and db.
- ▶ Attenuation both continuous and in calibrated steps.

Attention, Hi-Fi perfectionists! This is what you've been waiting for; a small, compact audio generator which produces a near perfect sine wave with close frequency control and metered output voltage. The new Heathkit Audio Generator Model AG-9 fills the bill and then some. A large 4½" output meter reads in volts and decibels within an accuracy of ± 5%. All frequencies within its range may be tuned well within a ± 5% accuracy. Distortion will actually be less than .1 of 1% between 20 cps and 20,000 cps. With the AG-9 as a signal source you can forget about unknown input variations and distortion when working with audio circuits. Use it with the HD-1 kit to check harmonic distortion; as a signal source for bridge measurements and for the external modulation of RF signal generators. Perhaps its most common uses will be in the testing of audio amplifiers and checking audio filter circuits.



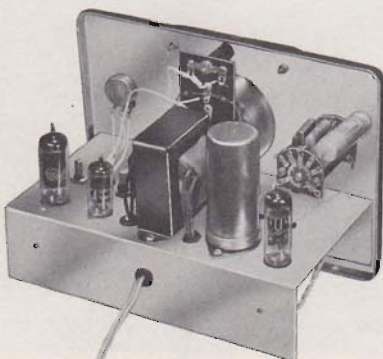
MODEL AG-9

**\$34.50!**

SHIPPING WT. 8 LBS.

## SMALL — COMPACT — PACKED WITH QUALITY

Practical parts lay-out for highest efficiency.



New engineering details combine to provide the user with an unusually high degree of operating efficiency. Oscillator frequency is selected entirely by the switch method, and can be varied in increments of 1 cps from 10 to 100 cps. A 4-position multiplier switch increases this range in multiples of 10, thus providing the overall range of 10 to 100,000 cps. The attenuator system operates in steps of 10 db and is also calibrated in 8 full scale meter ranges of 0-.003, .01, .03, .1, .3, 1, 3, 10 volts RMS. A "LOAD" switch provides for the use of a built-in 600 ohm load or an external load of higher impedance when required. Metering voltage is taken from the output control and rectified in a half-bridge circuit consisting of two resistors and two germanium diodes. Non-linearity at low signal levels is compensated by a third diode across the meter. With the instrument properly terminated the meter and attenuator will indicate the output level at the binding posts.

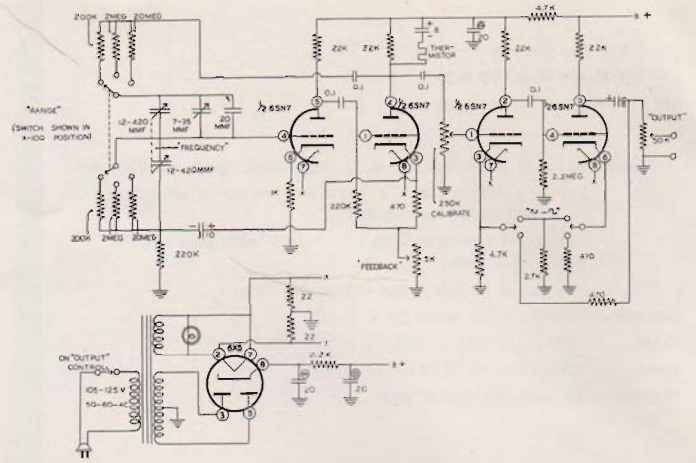
The Heathkit AG-9 Audio Generator features a transformer operated power supply using a 6X4 rectifier tube and an L-C filter system. Both regenerative and degenerative feedback is used in the oscillator circuit consisting of a 6AU6 voltage amplifier and a 6CL6 triode connected cathode follower. The frequency of oscillation is determined by the switch selected R-C constants in a bridge T type "notch" network located in the degenerative feedback circuit.

This wonderfully engineered kit is representative of the high quality that may be expected in all Heathkit instruments. We know you'll like it.



**SPECIFICATIONS:**

Frequency Range.....20 to 20,000 cps in 3 range.  
 Output Voltage  
 (Sine Wave).....10 volts, no load, plus or minus 1 db.  
 (Square Wave).....10 volts, rise time 2 micro-seconds (10-90%).  
 Generator Impedance.....600 ohms.  
 Distortion.....Less than 0.6%, 100 cps through audible range.  
 Dimensions.....7½" high, 13¼" wide, 7½" deep.  
 Shipping Weight.....10 lbs.  
 Power Requirements.....30 watts, 105-125 volts, 50-60 cycles AC.



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**HEATHKIT (SINE WAVE - SQUARE WAVE)**

# audio oscillator **KIT**



**MODEL AO-1**

**\$24.50**

SHPG. WT. 10 LBS.

## features

- ▶ Sine or square wave output.
- ▶ Low output impedance (600 ohm).
- ▶ Variable 10-volt output level with thermistor controlled linearity.
- ▶ Low distortion (less than .6%).
- ▶ 20 to 20,000 cycles per second range.

The Heathkit Model AO-1 Audio Oscillator is like having two generators in one cabinet. It will produce either sine wave or square wave output over the audio range from 20 cps to 20,000 cps. It does this in three ranges. In addition, the Model AO-1 is offered at such a low price level that it is well within the means of the hobbyist and experimenter. The kit is complete in every respect, containing all the parts and material necessary to build the kit, along with a detailed construction manual containing step-by-step assembly procedures, schematic diagrams and pictorial diagrams. Really an exceptional dollar value.

Designed to fulfill the needs of the audio engineer and high fidelity enthusiast. The Model AO-1 has many outstanding features. Among these are the fact that it produces high level output across its entire frequency range, with low distortion and with low impedance output. Very valuable for audio experimentation and development work.

**INCORPORATES FEATURES NOT EXPECTED AT THIS PRICE LEVEL**

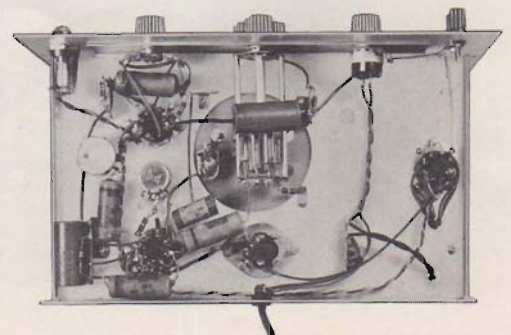
Too, the AO-1 contains a special design feature in the form of a thermistor in the second amplifier stage. This helps maintain essentially flat output through the entire frequency range. Just the ticket for running amplifier frequency response curves, etc.

In addition to sine wave output, the Model AO-1, by means of a cathode coupled clipper, produces good clean square waves with a rise time of only 2 microseconds. As you know, square wave analysis is an excellent way to check amplifier response. The oscillator in the AO-1 uses 1% precision resistors for greatest accuracy in the range multiplier circuit.

This fine audio oscillator is useful in the investigation and development of audio frequency circuits, in the design and development of filter or compensating circuits, as a calibrated source of variable audio frequency in medical and chemical laboratories, and as a comparison-type frequency measuring device when used in conjunction with an oscilloscope. An audio oscillator is also handy for use in radio and TV servicing.

Compare the specifications and capabilities of the Model AO-1 with those of other audio oscillators on the market today. It is truly an outstanding buy. Consider, too, that the Model AO-1 will also supply square wave signals from 20 cycles per second to 20,000 cycles per second. Valuable in many applications. Handsome instrument case features the now-famous Heathkit color styling in the form of a charcoal gray panel with white lettering, feather gray knobs and feather gray case. Shop and compare—and you'll decide on a Heathkit every time!

*CHASSIS LAYOUT: Physical design, both above and below the chassis, is for high circuit efficiency and ease of construction.*



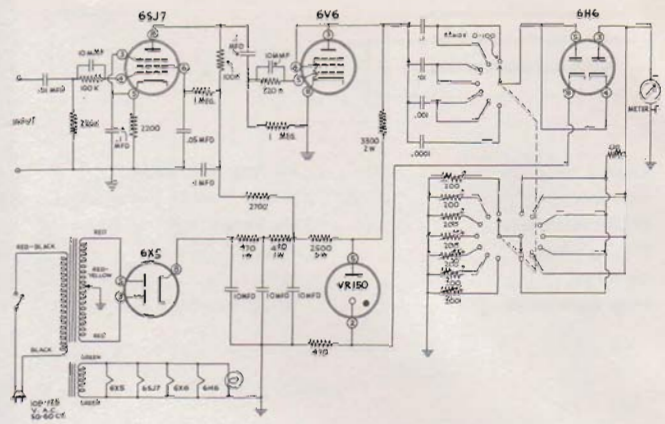






**SPECIFICATIONS:**

Tube Complement.....1-6V6, 1-6H6, 1-6X5, 1-6SJ7, 1-VR150  
 Ranges.....0-100, 0-300, 0-1 kc, 0-3 kc, 0-10 kc, 0-30 kc, 0-100 kc.  
 Input.....Impedance 250,000 ohms at 1,000 cps.  
 Input voltage limits 3-300 volts rms.  
 Physical Specifications.....12½" long x 7" high x 7½" deep.  
 Power Requirements.....105-125 V. AC 50-60 cycles 35 watts.



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**HEATHKIT**

# audio frequency meter **KIT**



**MODEL AF-1**

**\$34.50**

SHPG. WT. 11 LBS.

**EASY OPERATION**  
 Operation of the Model AF-1 is entirely electronic. There are no vibrating reeds, rotating discs, etc. It is merely necessary to set the range switch for the most convenient reading, feed an unknown frequency into the instrument, and read the frequency directly on the meter.

## features

- ▶ Direct reading calibrations.
- ▶ 10 cycles to 100 kc in seven convenient ranges.
- ▶ Simplified operation.
- ▶ Input wave shape not critical, any voltage between 3-300 volts rms.
- ▶ Transformer operated.

The Heathkit Audio Frequency Meter provides the simple and convenient means of checking unknown audio frequencies from 10 cycles to 100 kc at any input voltage level between 3 volts and 300 volts rms. The instrument features seven switch-selected ranges for convenience of operation. Accurate readings are easily obtained on the clearly marked scales of the 4½" 200 microampere meter movement.

Use this fine instrument for production line testing, reading frequency output of various laboratory generators, directly indicating square wave frequencies, determining frequency characteristics of various audio filters, or any other application involving frequency checking. The input wave shapes supplied to the instrument are not critical and this fact further extends the usefulness of the frequency meter. An outstanding instrument, and one that finds many applications in electronic work.

# HEATHKIT audio wattmeter **KIT**

The Model AW-1 Audio Wattmeter is an ideal Heathkit for the audio engineer, hi-fi enthusiast, or for use in recording studios or broadcast stations. Measures audio power output without external load resistors. All readings on calibrated scale of 4½" 200 microampere meter.

Frequency response is ± 1 db from 10 cycles to 250 kc, while the power range covers from 0-5 mw, 50 mw, 500 mw, 5 w, and 50 w, full scale. Also five switch-selected db ranges covering from -10 db to +30 db.

Built-in load resistors of the non-inductive

type for 4, 8, 16, or 600 ohms. Precision type multiplier resistors used for high accuracy, and crystal diode bridge for wide-range frequency response. Uses 12AU7 voltage and current amplifier for meter, and is operated from a transformer-type power supply. Measures 7¾" high x 4-11/16" wide x 4¼" deep and operates from 105-125 v. AC, 50-60 cycle power. A fine instrument to help supply the answers to your audio operating or power output problems. Also features modern physical styling and convenient, functional front panel design.



**MODEL AW-1**

**\$29.50**

SHPG. WT. .6 LBS.



**SPECIFICATIONS:**

**FREQUENCY RESPONSE:**

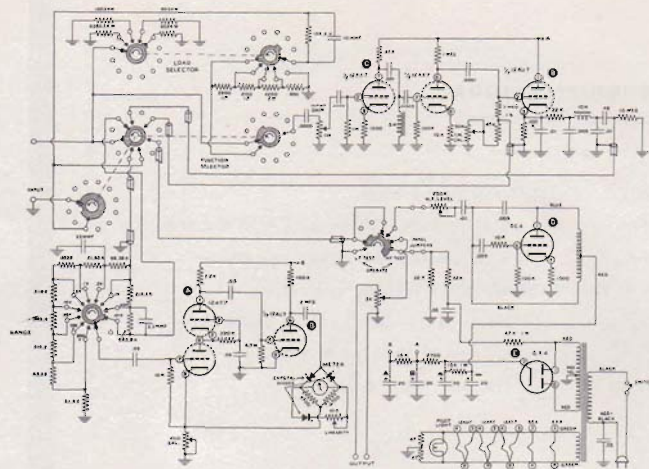
AC VTVM ..... 10 cycles to 100 kc  $\pm$  1 db.  
 Wattmeter ..... 10 cycles to 50 kc  $\pm$  1 db.  
 IM Analyzer High Pass Filter ..... 2000 cps to 12000 cps.  
 IM Analyzer Low Pass Filter ..... 10 cps to 600 cps

**SENSITIVITY:**

AC VTVM ..... 10 millivolts full scale max.  
 Wattmeter ..... 15 milliwatts full scale max.  
 IM Analyzer ..... 0.04 V. minimum high frequency signal required,  
 or 0.17 V. of LF and HF energy mixed 4:1.

**RANGE:**

AC VTVM ..... 0.01, 0.03, 0.1, 0.3, 1, 3, 10, 30, 100, 300 V. RMS  
 full scale.  
 DBM ..... -40, -30, -20, -10, 0, +10, +20, +30, +40,  
 +50. Reads from -65 to +52 DBM.  
 Wattmeter ..... 15 mw, 1.5 mw, 15 mw, 150 mw, 1.5 w, 15 w, 150 w  
 full scale. Maximum continuous power 25 watts,  
 intermittent power to 50 watts.  
 IM Analyzer ..... 1%, 3%, 10%, 30%, 100% full scale.



**HEATHKIT**

# audio analyzer **KIT**

## features

- ▶ Combines functions of AC VTVM, Wattmeter and IM Analyzer.
- ▶ High and low frequency oscillators built in for IM tests.
- ▶ Load resistors of 4, 8, 16 and 600 ohms are built in.
- ▶ Ideal for complete audio circuit analysis.
- ▶ Tremendous saving over purchase of 3 separate instruments.

The Model AA-1 Audio Analyzer was designed originally for the audio engineer or serious audiophile. However, this instrument has become popular with radio and TV servicemen as well, since they are more and more frequently called upon to handle high fidelity service problems. The Model AA-1 combines most of the test functions required for audio work into one compact package. It performs the functions of an AC VTVM, a wattmeter, and an IM analyzer.

Unique circuitry is used in the AC VTVM portion of this instrument to secure improved performance. Employs a cascode type input stage for high gain at low noise levels, thus improving meter accuracy on all voltage readings. Uses a 12AT7 in the cascode circuit, and  $\frac{1}{2}$  of a 12AU7 as a current amplifier for the meter circuit. Crystal diodes perform as meter rectifiers for linear, wide range response.

The VTVM circuit is also employed in the wattmeter portion of the AA-1 circuit. The 4, 8, 16, or 600 ohm, 25 watt load resistors are built in.



**MODEL AA-1**

**\$59.50**

SHPG. WT.  
13 LBS.

## NUMEROUS APPLICATIONS FOR AUDIO ENGINEERS - AUDIOPHILES - SERVICEMEN

### CIRCUIT CHARACTERISTICS

**INPUT IMPEDANCE:**

AC VTVM ..... 1 megohm or 4, 8, 16 or 600 ohms,  
 switch selected.  
 IM Analyzer ..... 1 megohm or 4, 8, 16, or 600 ohms,  
 switch selected.  
 Wattmeter ..... 4, 8, 16 or 600 ohms internal load,  
 10,000 ohms across ext. load.

**OUTPUT IMPEDANCE:**

Low and High Frequency Output ..... 3000 ohms. (600 ohms when shunted  
 with a 750 ohm resistor).

**INTERNAL GENERATOR FREQUENCIES:**

Low Frequency ..... 60 cycles.  
 High Frequency ..... Approximately 6 kc.

**ACCURACY:**

AC VTVM and Wattmeter ..... Within 5% of full scale.  
 IM Analyzer ..... Within 10% of full scale.

**POWER SUPPLY:** Transformer—full wave.

**POWER REQUIREMENTS:** 105-125 VAC, 50-60 cps, 20 watts.

**DIMENSIONS:** 13" wide x 8½" high x 7" deep.

**NET WEIGHT:** 9 lbs.

**SHIPPING WEIGHT:** 13 lbs.

Normally three separate instruments would be required to perform the functions of the Model AA-1. This combination results in economy, but the convenience of the AA-1 deserves consideration too. Combining and consolidating functions reduces the number of test leads and controls required for the same test.

Use the VTVM circuit for measuring noise, frequency response, output, gain, power supply, ripple, etc. The built-in wattmeter allows simple measurement of power output with either internal or external loads. All meter readings are direct, with no calculation or conversion necessary. DBM scales are also provided so that DB gain or loss may be noted quickly. Circuit and meter ballistics are such that the instrument makes an excellent level monitor for recording and program feed purposes. High and low frequency generators for IM measurements are built in, so that no additional equipment is necessary for intermodulation distortion testing. IM tests may be made at the amplifier output, or at individual high impedance stages.

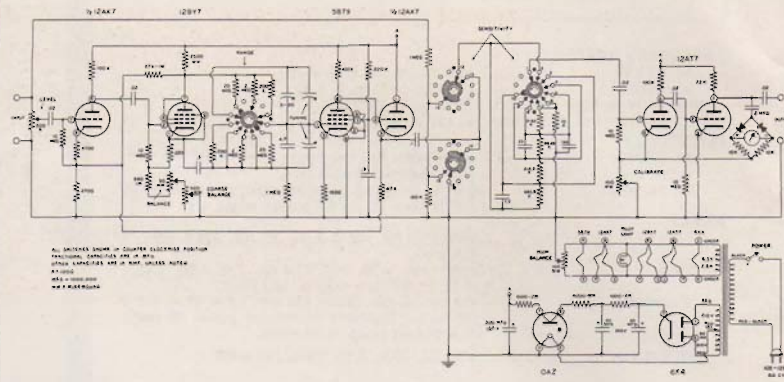
Only 4 meter scales are employed, and one of these is in color. All basic operations of the instrument can be accomplished by connecting the output leads to an amplifier input, and the input leads to the amplifier output, and rotating the function selector switch through all of the available positions.



**SPECIFICATIONS:**

Frequency.....20-20,000 cps in 3 ranges.  
 Distortion.....0-1, 3, 10, 30, 100% full scale,  $\pm 5\% + 0.1\%$  accurate  
 Voltmeter.....0-1, 3, 10, 30 volts RMS full scale,  $\pm 5\%$  accurate.  
 Output for Monitor...2.5 volts RMS at full scale meter reading.  
 Tubes.....1—0A2, 1—6X4, 1—5879, 1—12AX7, 1—12BY7.  
 Power.....105-125 volts AC, 50-60 cps, 30 watts.  
 Dimensions.....13" wide, 8½" high, 7" deep.

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**HEATHKIT**

# harmonic distortion meter **KIT**



**MODEL HD-1**

**\$49.50**

SHIPPING WT. 13 LBS.

## features

- ▶ Measures distortion at all audio frequencies.
- ▶ Meter scales calibrated in volts RMS, % distortion, and db.

- ▶ Signal available for monitoring if desired.
- ▶ 1% precision resistors used in VTVM circuit.
- ▶ Voltage regulation in a transformer operated power supply.
- ▶ Attractive charcoal gray panel with white lettering.

Another "First" for the Audio hobbyist and professional. The new Heathkit Harmonic Distortion Meter, Model HD-1 will prove invaluable in the designing and servicing of audio circuits. Harmonic distortion is read on a large 4½" meter scale in terms of percentage of the test voltage. Three frequency ranges cover 20-20,000 cps and the meter is calibrated for distortion percentage ranges of 0-1, 3, 10, 30, 100% full scale. Full scale voltage ranges of 0-1, 3, 10, 30 volts are provided for the initial reference settings. Special output binding posts bring the metered waveform out to the front panel for monitoring purposes.

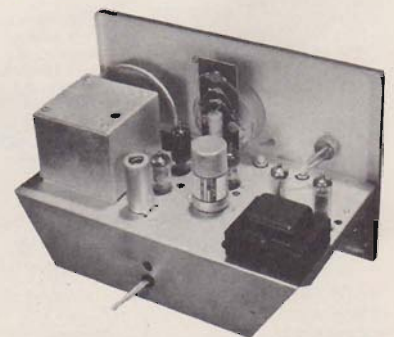
The new HD-1 kit features top quality components throughout. High input impedance (300,000 ohms) and 1% precision resistors in the VTVM voltage divider circuit assure excellent sensitivity and accuracy. Note this feature in particular: Used with an audio signal generator, the Heathkit Harmonic Distortion Meter measures distortion at *any* or *all* frequencies between 20-20,000 cps. Thus a complete family of distortion curves can be compiled. Signal-to-noise ratio measurements are also permitted through the use of a separate meter scale calibrated in db. In many other ways, Model HD-1 will prove its versatility.

## EASY TO CONSTRUCT - EASY TO USE

Residual meter deflection is eliminated by the use of a transformer operated power supply, full wave rectification (6X4), a 3-section R-C filter, voltage regulation (0A2) and a hum balancing control in the filament supply. Fundamental frequencies are suppressed by a tuned Wien Bridge null network and the remains (predominantly harmonics) are applied to the VTVM circuit which is previously set to the total test voltage as a reference. The result is a reading that will be a calibrated percentage of distortion in respect to total voltage. Other tubes used are 1-12BY7, 1-12AX7, 1-12AT7 and 1-5879.

Testing complete amplifiers is the most common use for Model HD-1 but many other applications are possible. During the development of amplifier circuits, the effects of changing voltages and constants can easily be detected and thus optimum values can be determined. Use it to measure distortion in receivers and transmission lines. With a high quality microphone and amplifier, it can even be used to check distortion being introduced by a speaker. Minimum input voltage for test purposes is .3 volts RMS.

In spite of the lab type circuit involved, the Heathkit Harmonic Distortion Meter is quite simple to construct and use. Full instructions are provided. The kit is complete in all respects. Once completed, Model HD-1 will prove its worth by long years of outstanding service.



All metal parts are factory formed and punched.



# supplement

This supplement includes new Heathkits added to our line since the last printing of our catalog.



## features

- ▶ 6146 final amplifier for full 65-watt plate power input.
- ▶ Phone and CW operation on 80, 40, 20, 15, 11, and 10 meters. Pi network output coupling.
- ▶ Switch selection of three crystals – provision for external VFO excitation.
- ▶ Attractive and functional physical design.

### HEATHKIT DX-35 PHONE AND CW

MODEL DX-35

**\$56.95**

SHPG. WT. 24 LBS.

# transmitter **KIT**

#### SPECIFICATIONS:

Power Input:	65 watt CW, 50 watt peak controlled carrier phone
Output Impedance:	50-1000 $\Omega$
Output Coupling:	Pi network (coaxial)
Operation:	Crystal-VFO, CW, Phone
Band Coverage:	80, 40, 20, 15, 11, 10 meters
Tube Complement:	5U4GB Rectifier 12AX7 Speech Amplifier 12AU7 Carrier Control, Modulator 12BY7 Crystal Oscillator 12BY7 Buffer 6146 Final Amplifier
Power Requirements:	115 volts AC, 60 cycles, 175 watts
Cabinet Size:	13" wide x 8½" high x 9" deep
Net Weight:	21 lbs.
Shipping Weight:	26 lbs.

This brand new transmitter provides phone and CW operation on 80, 40, 20, 15, 11, and 10 meters. Plate power input is 65 watts on CW, and controlled-carrier modulation peaks to 50 watts on phone. Completely bandswitching.

Husky power transformer and choke are potted and the circuit is well-shielded. Two-stage 12AX7 speech amplifier, 12AU7 modulator, 12BY7 oscillator, 12BY7 buffer and a 6146 final. The buffer stage assures plenty of drive to the final on all bands. Pi network output coupling employed for easy antenna loading.

Provision for switch-selection of three different crystals. Can be changed without removing transmitter cabinet.

Front panel controls include a function switch with positions marked OFF-CW-STANDBY-PHONE, final tuning, antenna coupling, drive level control, and band change switch. Meter indicates final grid or plate current. Truly a remarkable transmitter package for the price. Ideal both for the novice and for the more experienced operator.





MODEL BC-1

**\$24.50**

SHPG. WT. 8 LBS.  
(WITH CABINET)

**HEATHKIT**

# am tuner **KIT**

## features

- ▶ Broad bandwidth for full AM sideband coverage.
- ▶ Excellent sensitivity and selectivity.
- ▶ Illuminated tuning dial covers 550 to 1600 kc.
- ▶ Power supply built in—low-noise loop antenna supplied in kit.
- ▶ Cabinet comes with kit—beautiful satin-gold finish—measures only 12-9/16" L x 3 5/8" H x 5 7/8" D.

This exciting new tuner incorporates features not usually expected in an AM circuit. Designed especially for use with high fidelity systems, it provides broad bandwidth, while still maintaining good sensitivity and selectivity. In addition, a special voltage doubler detector employing crystal diodes is used for low distortion, even at high modulation levels.

Audio response capabilities of the BC-1 are  $\pm 1$  db from 20 cps to 2 kc with 5 db of pre-emphasis at 10 kc to compensate for station rolloff above 5 kc. Frequency coverage is from 550 to 1600 kc. IF bandwidth is 20 kc. Additional outstanding features are a 10 kc. whistle filter—6 db signal-to-

noise ratio at 2.5 uv.—pre-aligned RF and IF coils, for simplified alignment. Only three minor trimmer adjustments.

Built-in power supply—well filtered B+—extra decoupling to audio amplifier and cathode-follower stages—AVC—two outputs, one fixed and one variable—two antenna inputs, one for low impedance low-noise external loop (furnished with kit), one for high impedance long wire.

Efficient, modern circuit uses 6BA6 RF amplifier, 6BE6 oscillator-mixer, 6BA6 IF amplifier, 12AU7 amplifier—whistle filter—cathode follower output, and 6X4 rectifier. Physical dimensions and color styling match Heathkit models WA-P2 and FM-3.

## HEATHKIT ELECTRONIC **Cross-over** KIT



MODEL XO-1

**\$18.95**

SHPG. WT. 6 LBS.

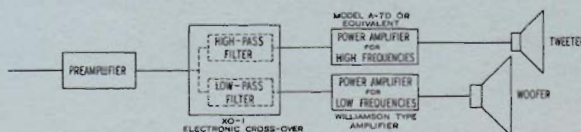
- ▶ New all-electronic cross-over circuit for reduced IM distortion—better high and low frequency balance—more flexible operation.
- ▶ Separate high-pass and low-pass filters provide crossover frequencies of 100, 200, 400, 700, 1200, 2000 and 3500 cps.
- ▶ Separate amplification and reproduction of high and low frequencies results in unbelievable clarity and presence.

This exciting new electronic cross-over system is designed to operate ahead of the main power amplifiers instead of between the amplifier and the speakers. (See block diagram below.) It consists of two independent electronic filters, one high-pass and one low-pass, and each with a rotary switch for selecting the cut-off frequency. A single input is divided so that high frequency and low frequency portions of the spectrum are available at the outputs to feed separate amplifiers. The XO-1 represents a new approach to high fidelity music reproduction and offers many advantages over conventional cross-over systems.

Because high and low frequencies are amplified separately, intermodulation distortion problems are virtually eliminated. Handles unlimited power because frequency division is performed ahead of the power stage. No audio power consumed by the cross-over itself. Eliminates unstable loading conditions

and matching problems. Does not affect amplifier damping factor. Each channel has its own separate level control for more flexible frequency balance. There is negligible level change as the cross-over frequency is adjusted.

Cross-over frequencies are 100, 200, 400, 700, 1200, 2000, 3500 cps. Attenuation is 12 db per octave with sharp "knee" at the cut-off frequency, instead of a rounded slope as obtained with the usual RC filter. A unique answer to frequency division problems.

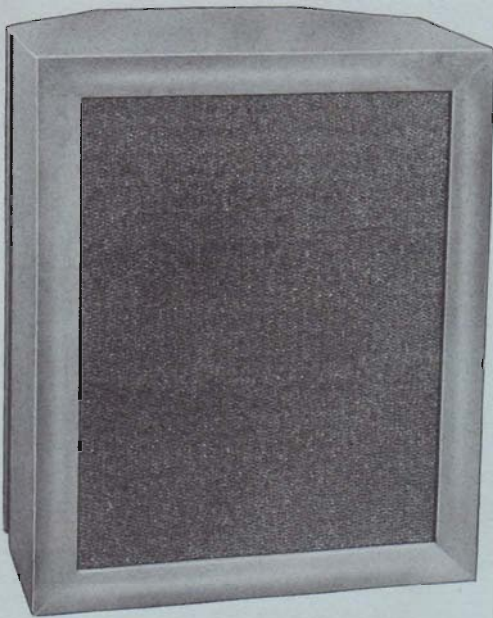




## HEATHKIT HIGH FIDELITY SS-1B

# range extending

## SPEAKER SYSTEM KIT



MODEL SS-1B

**\$99.95**

SHPG. WT. 80 LBS.

### features

- ▶ *Designed especially to complete the audio range when used with the Model SS-1.*
- ▶ *High-quality speakers of special design—15" woofer and compression-type super tweeter.*
- ▶ *Easy-to-assemble cabinet of furniture-grade plywood. Kit includes all necessary parts.*
- ▶ *Attractively styled to fit any living room. Matches Model SS-1.*

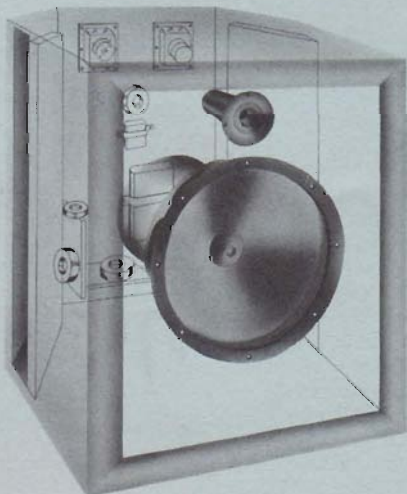
#### SPECIFICATIONS:

##### SS-1 and SS-1B in Combination:

Frequency Response.....  $\pm 5$  db, 35 to 16000 cps.  
Cross-over Frequencies... 600, 1600 and 4000 cps.  
Power Rating..... 35 watts speech and music.  
Nominal Impedance..... 16 ohms.

##### SS-1B Alone:

Cabinet Type..... Ducted-Port Bass Reflex.  
Cabinet Dimensions..... 29" high x 23" wide x 17½" deep.  
Speakers..... Jensen Special Design 15" Edge-Damped Woofer; Compression type, Horn-Loaded Super Tweeter.

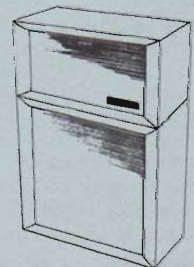


This Range Extending Speaker System has been designed especially to form a complete 4-way speaker system when used in conjunction with the Model SS-1. Employing a super-tweeter and a 15" woofer, it functions between 35 and 600 cps and between 4000 and 16,000 cps. Combined frequency response of the two units is  $\pm 5$  db from 35 to 16,000 cps. Using four separate speakers minimizes intermodulation distortion problems and provides unbelievably rich sound over the audio range.

The Model SS-1B is most attractively styled to match the Model SS-1. Exposed cabinet panels are furniture-grade plywood suitable for light or dark finish of your choice.

All parts are pre-cut and ready for assembly, and the instruction manual is complete in every respect. The speakers are ready for installation, and a cross-over circuit with balance control is included. The complete 4-way speaker system can bring full high fidelity performance into your living room, at a price far below comparable units on the market.

The Model SS-1 and the Model SS-1B are designed as matching units, both physically and audio-wise. The Model SS-1B completes the audio spectrum when used with the Model SS-1, and the smaller unit fits neatly on top of the larger enclosure to form an integrated 4-speaker system.







**SPECIFICATIONS:**

**MODEL  
RC-1**

**\$79.95**

SHPG. WT.  
8 LBS.

Time Constant:	0.5, 1, 5 and 10 seconds
Ranges:	0-100, 600, 6000 and 60,000 counts per minute. 0-.02, .1, 1, and 10 milliroentgens
Probe:	Satin aluminum and chrome plated steel probe contains extra sensitive type 6306 Bismuth geiger counter tube.
Batteries:	1-67 1/2 volt B battery (approximately 200 hours to 40 volt end point), intermittent operation. 2-1 1/2 V A batteries (approx. 20 hours to 1V end point), intermittent operation.
Tube Complement:	1-1U4 } Amplification, pulse 1-3V4 } shaping and counting 2-1U5 } tubes. 1-5841 corona regulator tube 1-6306 Bismuth counter tube 1-2N109 transistor (oscillator)

**HEATHKIT PROFESSIONAL**

*features*

- ▶ *Completely modern design for maximum sensitivity and reliability.*
- ▶ *Both visual (4 1/2" meter) and aural (panel-mounted speaker) indicators for radiation level.*
- ▶ *Meter calibrated in CPM and mR/hr. Four measuring ranges.*
- ▶ *Employs 900 volt Bismuth tube in beta/gamma sensitive probe.*

The Heathkit Model RC-1 incorporates features essential to the serious prospector, and provides design advantages found only in units costing at least three times the low kit price. Extremely valuable, too, for use in measuring radioactive fallout, or in determining other unknown radiation levels.

High sensitivity is provided, with ranges of 0-100,600, 6,000, and 60,000 counts per minute, and 0-.02, .1, 1, and 10 milliroentgens per hour. The compact probe is separate, and is attached to a coiled cable that will expand up to 8 ft. A type 6306 Bismuth tube is employed in the probe, and the probe is included in the kit price.

The modern, efficient, radiation counter circuit employs 5 tubes, (plus a transistor) to assure stable and reliable operation. Circuit parameters permit operation down to 40 volt "B" and 1 volt "A" potentials. High quality 4 1/2", 200 microampere meter eliminates "guess work" and indicates radiation level directly in CPM or mR/hr. In addition, transistor oscillator provides aural "beep" or "click" from panel-mounted speaker. Pre-built, "packaged" high voltage power supply has reserve capacity above the 900-volt level at which it is regulated. Circuitry of Model RC-1 is such that merely changing regulator tube type would allow use of scintillation probe if desired. Employs one 67 1/2 volt B battery and two 1 1/2 volt A batteries for power. Safe, radioactive sample provided for calibration.

No other counter offers all of these outstanding design features in a professional instrument at this price level. Fulfills the requirements of the seriously interested individual who wants a prospecting tool he can rely upon.

The RC-1 has selectable time constant, to allow for different rates of travel over area being investigated. Designed for easy portability, and maximum convenience in use. Measures only 9 1/2" high by 6 1/2" wide by 5" deep. Weighs only 6 1/2 pounds. "B" battery lasts approximately 200 hours, "A" batteries last approximately 20 hours. A top-quality instrument, not to be confused with novelty radiation detecting devices on the market. Simple to build from the complete instructions supplied, even for a beginner.

**radiation counter KIT**

**HEATHKIT crystal receiver KIT**

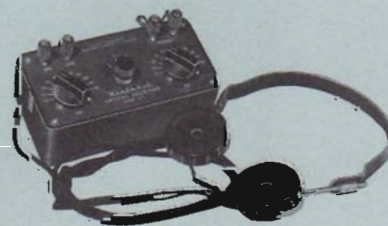
This crystal radio is just the ticket for construction by young people interested in radio or electronics—yet it is definitely not a "toy." Employs high-quality standard components throughout. It is even usable as an AM tuner in high fidelity applications.

Covering from 540 to 1600 kc, the CR-1 has two high-Q tank circuits that employ ferrite-core coils and conventional air tuning capacitors. Capacitors are tuned individually to the desired station.

The receiver is most attractively styled in a black bakelite case. Uses a sealed germanium

diode for detection—no critical "cat's whisker" adjustment. Includes a pair of high-impedance headsets, instead of the usual single headphone. Requires no external power. Could prove extremely valuable for emergency reception of Civil Defense signals, should there be a power failure.

In addition to step-by-step assembly instructions and pictorial diagrams, the construction manual provides the kit builder with the basic fundamentals of signal reception so that he understands how the crystal receiver functions. An interesting and valuable "do-it-yourself" project for all ages.



**MODEL CR-1**

**\$7.95**

SHPG. WT. 3 LBS.



# HEATH'S Easy Time Payment Plan\*

Time Payment Plan available only on orders having cash price of \$90.00 or more

In order to assure prompt shipment of your new Heathkits under the Time Payment Plan, please observe the following instructions:

- 1 First fill out Section "A" (Cash Payment Price) of the Order Blank on the reverse side of this sheet, designating the Heathkits you wish to buy. If your order totals \$90.00 or more, you may use the Time Payment Plan.
- 2 Fill in each item of the Credit Statement set forth below.
- 3 Next complete Section "B" of the Order Blank to determine the Total Down Payment to be sent with your order and the Total Monthly Payment to be made. If you are ordering

more than one of any item, be sure to multiply the down payment and monthly payment by the number of items.

- 4 Insert the amount of your total Down Payment and total Monthly Payment in the designated places in your Time Payment Agreement.
- 5 Sign your Time Payment Agreement in ink with your usual signature and enter today's date.
- 6 Send this application and your down payment to Heath Company, Benton Harbor, Michigan.

\*Available in the Continental United States and the Hawaiian Islands only.

## FILL IN THIS FORM WHEN ORDERING ON TIME PAYMENT

Please answer all questions fully to help establish your credit promptly. Write your order on the reverse side.

NOTE: Time payment agreement cannot be accepted from persons under 21 years of age. If you are under 21, have this form filled out by a person of legal age, regularly employed or engaged in business. He can make the purchase for you, and will be responsible for payment.

### TIME PAYMENT AGREEMENT

TO: HEATH COMPANY  
BENTON HARBOR, MICHIGAN

I hereby order and, upon your acceptance hereof, purchase the equipment designated in the Order Blank on the reverse side hereof and promise to pay to your order at the address set forth above, or such other place as any assignee hereof may designate, the time payment price for said equipment as follows: a down payment of \$ \_\_\_\_\_, and 12 consecutive monthly payments of \_\_\_\_\_ each, the first payment being due one month from the date of shipment.

(Enter total down payment from Order Blank)

(Enter total monthly payment from Order Blank)

Title to and right of possession of said equipment shall remain with you until all payments have been made. Upon default on any payment due on this contract, the full amount unpaid hereon, at your option, shall become immediately due and payable and you may either hold me liable for said amount or may repossess the said equipment. If you shall repossess said equipment, all payments made may be retained as rent for the use and depreciation of said equipment. The loss, injury or destruction of said equipment after I have received it shall not operate as payment or in any manner release me from any obligation hereunder.

I hereby submit this agreement to you for acceptance. If it is not accepted, you shall refund the down payment with notice of non-acceptance. Acceptance shall be effected when the equipment designated on the reverse side hereof is shipped to me. I certify that all statements in the Credit Statement set forth below are true and complete and are made for the purpose of obtaining credit. Any assignee hereof shall have the same rights given to you hereunder. This contract is to be governed by the laws of the State of Michigan.

ENTER DATE \_\_\_\_\_

SIGN HERE \_\_\_\_\_

### CREDIT STATEMENT

(IMPORTANT: Please fill in completely. Omissions and errors cause delays.)

FULL NAME _____ <i>Print</i>	Age _____	Color _____
WIFE'S NAME _____ <i>Print</i>	No. of Children _____	Home Phone No. _____
Residence _____	City _____	How Long? _____
Landlords Name { If Owned } and Address { Mtg. Held By } _____		Paid Monthly \$ _____
Previous Address _____ <i>(If less than 3 years at present address)</i>	How Long? _____	Previous Address _____ How Long? _____
Previous Landlord _____	Address _____	
Employed by _____	Address _____	Business Phone No. _____
Position _____	How Long? _____	Dept. or Badge No. _____ Salary \$ _____
Previous Employer _____ <i>(If less than 3 years at present employment)</i>	Address _____	How Long? _____
Wife's Employer _____	Address _____	Phone _____
Position _____	How Long? _____	Dept. or Badge No. _____ Salary \$ _____
Other Income— Give Details _____		Total Family Income \$ _____

### CREDIT REFERENCE

(Give 3 Merchants, Firms or Finance Companies with whom you do or have done business.)

First Credit Reference _____	Address _____	Present Balance \$ _____	Monthly Payment \$ _____
Second Credit Reference _____	Address _____	Present Balance \$ _____	Monthly Payment \$ _____
Third Credit Reference _____	Address _____	Present Balance \$ _____	Monthly Payment \$ _____
Nearest Relative _____	Address _____		Relationship _____

*(Do not list those with whom you are living)*



C

Time Payment Plan available in Continental United States and the Hawaiian Islands only on orders having cash value of \$90 or more.

**SECTION "A"**  
USE THIS SECTION FOR  
CASH ORDER

CASH PAYMENT PRICE

**SECTION "B"**  
USE THIS SECTION FOR  
TIME PAYMENT ORDER ONLY

TIME PAYMENT PRICE

QUANTITY	ITEM	MODEL NO.	WT. (LBS.)	CASH PAYMENT PRICE		TIME PAYMENT PRICE			
				CASH PRICE PER ITEM	CASH PRICE (One or more Items)	DOWN PAYMENT PER ITEM	DOWN PAYMENT (One or more Items)	12 MONTHLY PAYMENTS PER ITEM	12 MONTHLY PAYMENTS (One or more Items)
	AC Vacuum Tube Voltmeter Kit	AV-2	5	\$29.50		\$2.95		\$2.48	
	Amateur Transmitter Kit	DX-100	107	189.50		18.95		15.92	
	Amateur Transmitter Kit	DX-35	24	56.95		5.70		4.78	
	Amateur Transmitter Kit	AT-1	15	29.50		2.95		2.48	
	Amplifier Kit, 7 watt	A-7D	10	16.95		1.70		1.42	
	Amplifier Kit with Preamp, 7 watt	A-7E	10	18.50		1.85		1.55	
	Amplifier Kit, 20 watt	A-9B	23	35.50		3.55		2.98	
	Amplifier Kit, Williamson, without WA-P2 Preamp	W-5M	31	59.75		5.98		5.02	
	Amplifier Kit, Williamson, with WA-P2 Preamp	W-5	38	79.50		7.95		6.68	
	Amplifier Kit, Williamson, without WA-P2 Preamp	W-4AM	28	39.75		3.98		3.34	
	Amplifier Kit, Williamson, with WA-P2 Preamp	W-4A	35	59.50		5.95		5.00	
	Amplifier Kit, Williamson, without WA-P2 Preamp	W-3M	29	49.75		4.98		4.18	
	Amplifier Kit, Williamson, with WA-P2 Preamp	W-3	37	69.50		6.95		5.84	
	AM Tuner Kit	BC-1	8	24.50		2.45		2.06	
	Antenna Coupler Kit	AC-1	4	14.50		1.45		1.22	
	Antenna Impedance Meter Kit	AM-1	2	14.50		1.45		1.22	
	Audio Analyzer Kit	AA-1	13	59.50		5.95		5.00	
	Audio Frequency Meter Kit	AF-1	12	34.50		3.45		2.90	
	Audio Generator Kit	AG-8	11	29.50		2.95		2.48	
	Audio Generator Kit	AG-9	8	34.50		3.45		2.90	
	Audio Oscillator Kit	AO-1	10	24.50		2.45		2.06	
	Audio Wattmeter Kit	AW-1	6	29.50		2.95		2.48	
	Bar Generator Kit	BG-1	4	14.50		1.45		1.22	
	Battery Eliminator Kit	BE-4	17	31.50		3.15		2.65	
	Battery Tester Kit	BT-1	2	8.50		.85		.72	
	Binding Post Kit	362-A	1	4.00		.40		.34	
	Broadcast Band Receiver Kit	BR-2	10	17.50		1.75		1.47	
	Broadcast Band Receiver Cabinet	91-9	5	4.50		.45		.38	
	Cathode Ray Tube Checker Kit	CC-1	10	22.50		2.25		1.89	
	Communications Receiver Kit	AR-3	12	27.95		2.80		2.35	
	Communications Receiver Cabinet	91-15	5	4.50		.45		.38	
	Condenser Checker Kit	C-3	7	19.50		1.95		1.64	
	Condenser Substitution Box Kit	CS-1	2	5.50		.55		.46	
	Crystal Receiver Kit	CR-1	3	7.95		.80		.67	
	Decade Condenser Kit	DC-1	3	16.50		1.65		1.39	
	Decade Resistance Kit	DR-1	4	19.50		1.95		1.64	
	Direct Reading Capacity Meter Kit	CM-1	7	29.50		2.95		2.48	
	Enlarger Timer Kit	ET-1	3	11.50		1.15		.97	
	Electronic Cross-over Kit	XO-1	6	18.95		1.90		1.59	
	Electronic Switch Kit	S-3	8	21.95		2.20		1.84	
	FM Tuner Kit	FM-3	7	24.50		2.45		2.06	
	Grid Dip Meter Kit	GD-1B	4	19.50		1.95		1.64	
	Grid Dip Meter Coil Kit	341-A	1	3.00		.30		.25	

PHONE BENTON HARBOR, MICHIGAN 5-1175

**HEATH COMPANY**  
A Subsidiary of Daystrom, Inc.  
BENTON HARBOR  
MICHIGAN

From

(PLEASE PRINT)





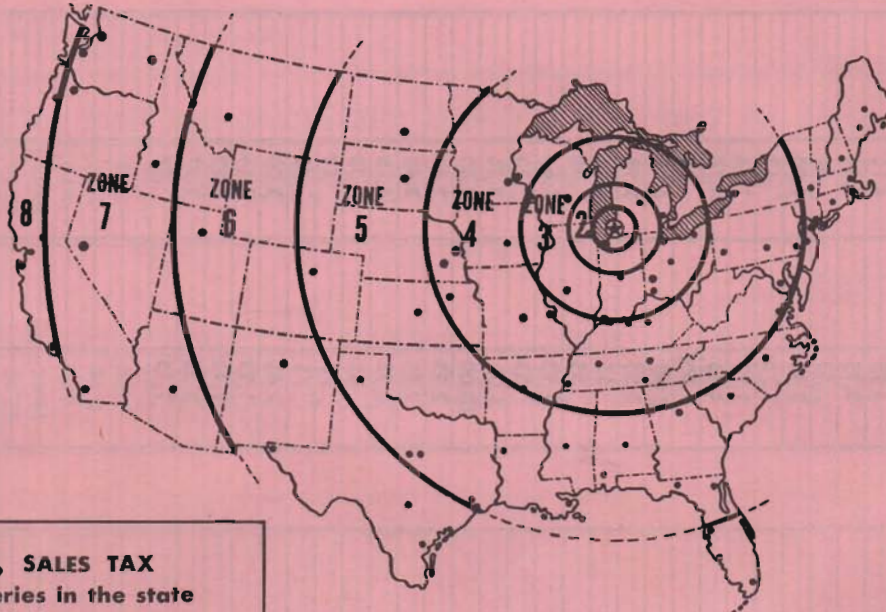


# POSTAGE CHART

(DOES NOT APPLY TO TIME PAYMENT ORDERS)

## DISTANCE FROM BENTON HARBOR

Local Zone . . . In Benton Harbor	Zone 5 . . . . . 601 to 1000 mi.
Zones 1 & 2 . . . not over 150 mi.	Zone 6 . . . . . 1001 to 1400 mi.
Zone 3 . . . . . 151 to 300 mi.	Zone 7 . . . . . 1401 to 1800 mi.
Zone 4 . . . . . 301 to 600 mi.	Zone 8 . . . . . Over 1800 mi.



**ADD 3% SALES TAX**  
on all deliveries in the state  
of Michigan

**NOTE** — To provide additional savings and faster service in filling your order, Insurance fees on Parcel Post shipments have been discontinued. In event you have a damage claim, write directly to the HEATH CO. and not to the post office.

**INCLUDE MONEY FOR POSTAGE**  
with your orders as we must pay postage on parcel post packages before we can send your merchandise. Don't worry about sending more than the correct amount — if you send us too much, every cent extra will be promptly returned to you. You pay only the exact postage needed for your order.

**REFER TO PARCEL POST RATE TABLE**  
at right for the correct amount to include in your remittance for postage. For example, if your order adds up to 16 lbs. and you live in Zone 2, the postage on your merchandise would be .83¢. If you do not know your postal zone, ask your postmaster.

**Postal Regulations** . . . limit parcel post shipments to 20 pounds to zones 3 to 8, and 40 pounds to zones 1 and 2. EXCEPTION: Shipments up to 70 pounds will still be accepted to RFD addresses, and to APO numbers.

SHIPPING WEIGHT	LOCAL	ZONE 1 & 2	ZONE 3	ZONE 4	ZONE 5	ZONE 6	ZONE 7	ZONE 8
to 1 lb.	\$.18	\$.23	\$.23	\$.24	\$.26	\$.28	\$.30	\$.32
2 lbs.	.20	.27	.29	.31	.36	.40	.46	.51
3 lbs.	.21	.31	.34	.38	.45	.52	.61	.69
4 lbs.	.23	.35	.39	.45	.54	.64	.76	.87
5 lbs.	.24	.39	.44	.52	.63	.76	.91	1.05
6 lbs.	.26	.43	.49	.59	.73	.88	1.06	1.23
7 lbs.	.27	.47	.54	.66	.82	1.00	1.22	1.41
8 lbs.	.29	.51	.60	.73	.91	1.12	1.37	1.59
9 lbs.	.30	.55	.65	.80	1.00	1.24	1.52	1.77
10 lbs.	.32	.59	.70	.87	1.10	1.36	1.67	1.95
11 lbs.	.33	.63	.75	.93	1.19	1.48	1.82	2.13
12 lbs.	.34	.67	.80	1.00	1.28	1.60	1.98	2.31
13 lbs.	.36	.71	.85	1.07	1.37	1.72	2.13	2.49
14 lbs.	.37	.75	.90	1.14	1.47	1.84	2.28	2.67
15 lbs.	.39	.79	.96	1.21	1.56	1.96	2.43	2.85
16 lbs.	.40	.83	1.01	1.28	1.65	2.08	2.58	3.03
17 lbs.	.42	.87	1.06	1.35	1.74	2.20	2.74	3.21
18 lbs.	.43	.91	1.11	1.42	1.84	2.32	2.89	3.39
19 lbs.	.45	.95	1.16	1.49	1.93	2.44	3.04	3.57
20 lbs.	.46	.99	1.21	1.56	2.02	2.56	3.19	3.75

**CANADIAN POSTAGE RATES**  
First Pound . . . . . \$.45  
Each Additional Pound . . . . . \$.22







# computer KIT

## AMPLIFIER POWER SUPPLY

**PURPOSE:** To supply power to the amplifiers and function generators.

**OUTSTANDING FEATURES:** The plus and minus voltages are referenced from one standard and are so interconnected as to null or cancel power supply drift to the amplifiers.

**POWER OUTPUT:** Plus 250 V. at 250 mills, minus 250 V. at 250 mills, minus 450 V. at 50 mills, 6.3 V.A.C. at 12 amps, and 6.3 V.A.C. at 2.5 amps.

**TUBE COMPLEMENT:** 1-5651, 3-12AX7, 3-6U8, 2-6080, 1-6BX7, 2-5R4GY, 1-5U4GB.

**MOUNTING:** This unit may be mounted in the computer cabinet or on a rack for special purpose computers.

## MODEL ES-2



This power supply is a highly stable unit which features voltage regulation by a single 5651 tube. It is well rated for its use.

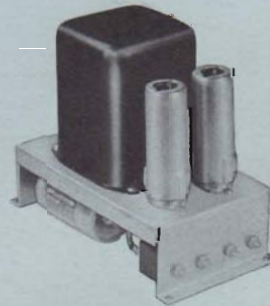
## INITIAL CONDITIONS MODEL ES-100

**PURPOSE:** To supply initial condition voltage to integrators.

**OUTSTANDING FEATURES:** Low drift rate, ungrounded, floating supply, highly shielded.

**TUBE COMPLEMENT:** 2-OB2.

**MOUNTING:** Three of these dual initial conditions power supplies mount inside the computer cabinet. This makes a total of six floating power supplies available.



This unit contains two separate supplies both of which can be varied from zero to 100 volts. Since they are floating supplies, they may be used for offsetting amplifiers and biasing diodes.

## AMPLIFIER MODEL ES-201

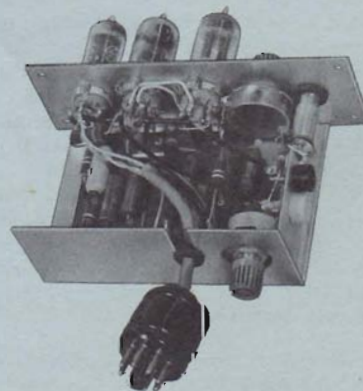
**PURPOSE:** To provide an amplifier for integration, sign changing, addition, and multiplication by a constant.

**OUTSTANDING FEATURES:** This unit is a highly stable unit with low drift. It is linear from plus 100 to minus 100 volts, will deliver 10 mills, and has an open loop gain of 50,000. Its phase shift when connected as a unity inverter is less than one degree at 1200 cycles.

**TUBE COMPLEMENT:** 1-12AX7, 1-6BQ7A, 1-6BH6.

**POWER REQUIREMENTS:** Plus 250 V., minus 250 V., minus 450 V. Quiescent power is less than 5 watts.

**MOUNTING:** This unit may be mounted at the rear of the computer or on a standard rack mounting for special purpose computer.

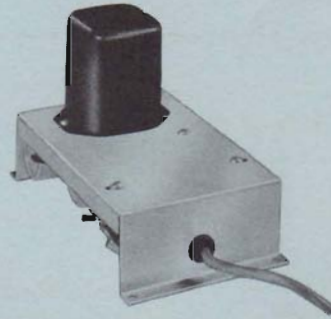


This unit has a shielded chassis and makes use of printed circuits for ease of construction and uniformity. It is mounted at the top rear of the computer where it is shielded thermally and electrically from the rest of the computer.



**RELAY POWER SUPPLY**

MODEL ES-151



**PURPOSE:** To supply power to operate the functional relays.

**OUTSTANDING FEATURES:** Has built in voltage surge network to insure simultaneous operation of the relays.

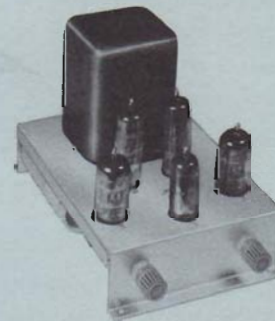
**POWER OUTPUT:** Designed to supply 50 volts across four 10,000 ohm relays.

**MOUNTING:** This unit may be mounted in the computer cabinet or in a special purpose computer.

This unit supplies a high surge voltage for rapid simultaneous operation of the relays, then the voltage drops to that necessary to hold the relays.

**REFERENCE POWER SUPPLY**

MODEL ES-50



**PURPOSE:** To supply highly stable and accurate reference voltages.

**OUTPUT:** Plus 100 volts and minus 100 volts.

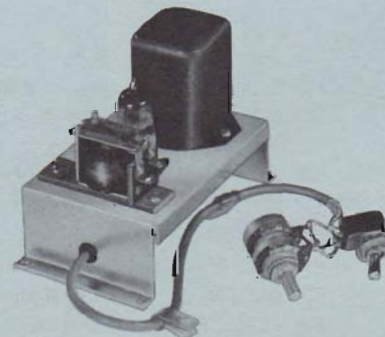
**TUBE COMPLEMENT:** 2-6X4, 2-6U8, 1-5651.

**MOUNTING:** This unit may be mounted in the computer cabinet or in a special purpose computer.

In this supply the positive and negative voltages are slaved together and referenced from a single 5651. When operated with the constant voltage transformer, the output ripple, jitter, and noise is negligible.

**REPETITIVE OSCILLATOR**

MODEL ES-505



**PURPOSE:** To provide repetitive operation of the functional relays.

**OUTSTANDING FEATURES:** Has an adjustable repetition rate of 0.6 to 6.0 times per second.

**TUBE COMPLEMENT:** 1-6J6.

**MOUNTING:** This unit may be mounted in the front of the computer cabinet or in a special purpose computer.

The repetitive oscillator allows problem solutions to be displayed on an oscilloscope.



# computer KIT

## price list

### SMALL COMPUTER—GROUP A \$495

GROUP CONTAINS:

- One ES 2 Amplifier power supply kit
- One ES 100 Initial condition power supply kit.
- One ES 151 Relay power supply kit
- Five ES 201 Operational amplifier kits
- One ES 400 Cabinet kit
- One ES 405 Patch cord kit

### MEDIUM COMPUTER—GROUP B \$775

GROUP CONTAINS:

- One ES 2 Amplifier power supply kit
- One ES 50 Reference power supply kit
- Two ES 100 Initial condition power supply kits
- One ES 151 Relay power supply kit
- Ten ES 201 Operational amplifier kits
- One ES 400 Cabinet kit
- One ES 401 Voltage regulator transformer kit
- Two ES 405 Patch cord kits
- One ES 447 Coefficient potentiometer kit
- One ES 505 Repetitive oscillator kit

### FULL COMPUTER—GROUP C \$945

GROUP CONTAINS:

- One ES 2 Amplifier power supply kit
- One ES 50 Reference power supply kit
- Three ES 100 Initial condition power supply kits
- One ES 151 Relay power supply kit
- Fifteen ES 201 Operational amplifier kits
- One ES 400 Cabinet kit
- One ES 401 Voltage regulator transformer kit
- Three ES 405 Patch cord kits
- Two ES 447 Coefficient potentiometer kits
- One ES 450 Auxiliary coefficient potentiometer kit
- One ES 505 Repetitive oscillator kit

### EDUCATIONAL COMPUTER KIT \$1,550

GROUP CONTAINS:

- One ES 2 Amplifier power supply kit
- Three ES 50 Reference power supply kits
- Three ES 100 Initial condition power supply kits
- Three ES 151 Relay power supply kits
- Fifteen ES 201 Operational amplifier kits
- Three ES 400 Cabinet kits
- One ES 401 Voltage regulator transformer kit
- Three ES 405 Patch cord kits
- Three ES 450 Coefficient potentiometer kits
- Three ES 505 Repetitive oscillator kits

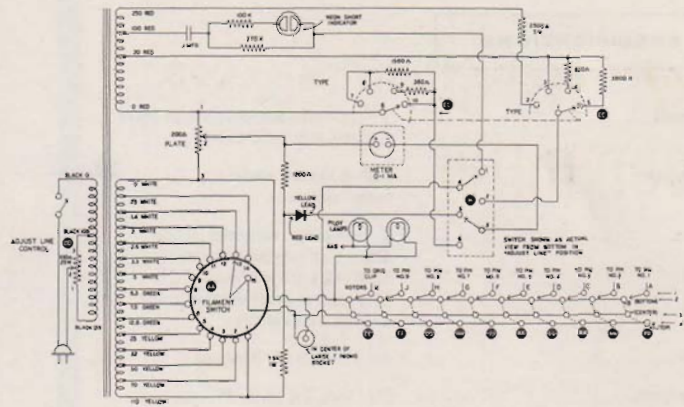
### INDIVIDUAL COMPONENT PARTS LIST

Model No.	Description	Price
ES 2	Amplifier power supply kit.....	\$132.95
ES 50	Reference power supply kit.....	22.95
ES 100	Initial condition power supply kit.....	19.95
ES 151	Relay power supply kit.....	11.95
ES 201	Operational amplifier kit.....	14.95
ES 400	Cabinet kit .....	247.95
ES 401	Voltage regulator transformer kit.....	96.95
ES 405	Patch cord kit (contains 12 patch cords).....	16.95
ES 447	Coefficient potentiometer kit.....	26.95
ES 450	Auxiliary coefficient potentiometer kit.....	36.95
ES 505	Repetitive oscillator kit.....	16.95



**SPECIFICATIONS:**

Test.....	Checks for quality, emission, shorted elements, open elements, filament continuity.
Tube Types.....	4, 5, 6, and 7 pin large, regular and miniature, octal, loctal, Hytron, 9-pin miniature and pilot lamps.
Meter.....	Large 4½" meter with "GOOD-BAD" scale.
Roll Chart.....	Built in, illuminated, smooth action.
Filament Voltage.....	Switch selected, 14 different voltages from 0.75 to 117 volts.
Element Test Voltages.....	0-250 volts.
Dimensions.....	14" wide x 11" deep x 4¼" high.
Power Requirements.....	105-125 volts, 50/60 cps, line adjust control.



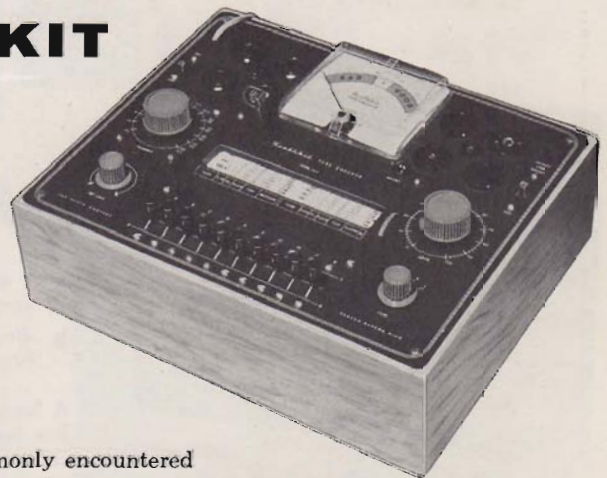
**HEATHKIT**

# tube checker

**KIT**

## features

- ▶ Simplified harness wiring.
- ▶ Adequate roll chart illumination—new colors and knobs.
- ▶ Individual tube element switches.
- ▶ Attractive counter-style cabinet.
- ▶ Large 4½" meter with 3 color "good-bad" scale.



MODEL TC-2

**\$295.00**

SHPG. WT. 12 LBS.

A professional instrument both in appearance and performance, the Model TC-2 uses a 4½" meter with three color face for simple "good" and "bad" indications. Close tolerance resistors are used in critical test circuits. An illuminated roll chart is built in. This instrument will check all tubes commonly encountered in radio and television service work.

Employs a color-coded cable harness for neat, professional underchassis appearance. Ten 3-position lever switches check each tube element for "open" or "short" individually. The line adjustment control off-sets any variation in line voltage. A top cap lead is provided for testing vacuum tubes with grid caps or plate caps. A neon bulb indicates filament circuit continuity and shows shorts between tube elements, while provision is made for checking pilot lamps with a contact-type test socket.

Tube test sockets are provided for four, five, six, and seven pin, octal and loctal tubes, 7 and 9 pin miniature tubes, and the 5 pin Hytron tubes. Also a blank space is provided for future socket addition. Tubes are tested for quality on the basis of total emission, and for open or shorted conditions. Fourteen different filament voltage values are provided.



## HEATHKIT PORTABLE tube checker kit

The TC-2P is identical to the TC-2 except that it is housed in a rugged carrying case. This is a strikingly attractive and practical two-tone case finished in proxylin impregnated material. The cover is detachable and the hardware is brass plated. Topped off with a sturdy plastic handle, this case imparts a professional appearance to the instrument. Ideal for home service calls or any portable application.

Carrying case also serves to protect the tube tester when it's not in use. Seals out dust, and protects the meter and switches from injury. Only \$34.50 complete.

MODEL TC-2P **\$34.50**  
SHPG. WT. 1.5 LBS.

## HEATHKIT portable tube checker cabinet

Portable Tube Checker case may be purchased separately for the TC-2, and will also fit the earlier Model TC-1 Tube Checkers. See description in portable tube checker advertisement on this page. Shipping weight 7 lbs. Cabinet No. 91-8. Worth every penny of the price. Only \$7.50.

NO. 91-8

**\$7.50**

Shpg. Wt. 7 lbs.

## HEATHKIT TV PICTURE TUBE test adapter...

The Heathkit TV Picture Tube Test Adapter is designed to be used with the Model TC-2 Tube Checker. Check for emission, shorts, etc. in TV picture tubes and thereby determine tube quality. Consists of 12-pin TV tube socket, 4 ft. cable, octal connector, and necessary technical data. Not a kit, but a ready-assembled device.



MODEL 355

**\$4.50**

Shpg. Wt. 1 lb.



**SPECIFICATIONS:**

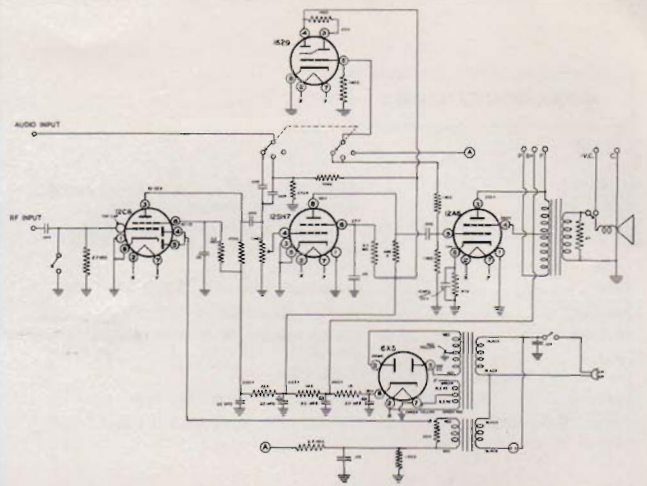
Channels ..... 1 hi-gain with demodulator type probe;  
1 lo-gain with audio probe.

Indications ..... built-in speaker electron  
beam "eye" tube.

Tubes ..... 12C8 amplifier, wattmeter rectifier;  
12SH7 high gain pentode amplifier;  
12A6 beam power output;  
1629 electron beam visual indicator;  
6X5 full wave rectifier.

Power ..... 105-125 volts AC, 50-60 cps.

Dimensions ..... 9½" wide, 6½" high, 5" deep.



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**HEATHKIT VISUAL-AURAL**

**signal tracer** **KIT**



**MODEL T-3**

SHIPPING WT.  
9 LBS.

**\$235.00**

*features*

- ▶ 2 channel input for visual and aural signal tracing.
- ▶ Built-in wattmeter, 30-500 watts calibrated.

- ▶ Noise locator circuit.
- ▶ RF and audio probes furnished.
- ▶ High sensitivity—permits signal tracing in all parts of radio receiver.
- ▶ Useful in AM, FM and TV sets.
- ▶ Substitution speaker and output transformer.

A basic service instrument packed with added features, Model T-3 Signal Tracer has been a Heathkit standby for many months. The kit includes both audio and RF probes. With this instrument you can trace a signal through a complete radio receiver, thus locating a defective stage immediately. Signal strength is indicated by a built-in speaker as well as an electron beam "eye" tube. Two input channels are provided (Audio-RF) to take care of all sections of a receiver under test. Although the Signal Tracer is designed primarily for AM radio service, it is very useful in many sections of FM and TV circuits.

By a unique switching method, the speaker and the output transformer can be used separately for test purposes when either or both of these items are missing from a receiver being serviced. This is just one of the many "extras" in this kit. Also included is a built-in wattmeter (approx. 30 to 500 watts) which provides a means of quickly checking a suspected circuit for unusual wattage consumption. And that's not all. The "noise locator" feature permits you to easily pick out resistors, condensers, controls, etc. that may be causing noisy reception. It's just good horse sense to equip your shop with this instrument. It does all the work.

**A REAL INVESTMENT WITH GUARANTEED DIVIDENDS**

The Heathkit Signal Tracer, Model T-3 features a high gain RF channel with a demodulator type probe attachment which can pick up signals even at the receiver antenna. This channel permits tracing throughout all RF and IF stages. With the audio probe connected to the low gain channel all audio stages can be investigated. Since the signal level is constantly monitored by the electron beam "eye" tube, a relative indication of stage gain can easily be compiled.

Panel binding posts are provided along with a speaker switch so that external connections can be made to the speaker voice coil or the output transformer primary or both. Thus, both items can be substituted in external circuits. Using the audio probe, a high DC potential can be applied across a suspected component in the "noise locator" test. If the component is noisy, the disturbance will be heard in the speaker and it will cause the "eye" tube to flutter. Wattage consumption checks are easily made by plugging the device under test into the panel mounted socket and adjusting the "watts" control for a null indication in the "eye" tube. Watts are then read on a calibrated panel scale.

We could go on and on describing other uses such as an oscilloscope preamplifier, output meter, microphone checker, etc. You can use it for years and still discover new applications from time to time. Needless to say, you'll certainly get your money's worth.

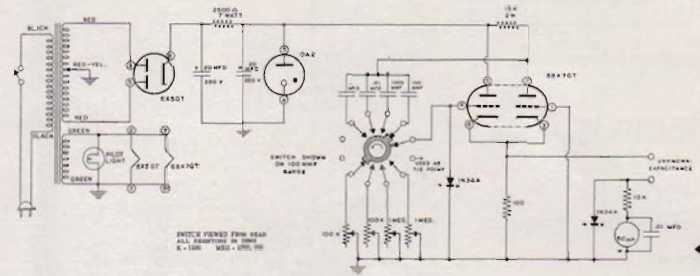
*All functions combined in one chassis-panel layout.*





**SPECIFICATIONS:**

- Ranges.....0 to 100 mmf., 1000 mmf., 0.01 mfd. and 0.1 mfd. full scale  
 Tubes.....6BX7GT Oscillator  
               6X5GT Rectifier  
               OA2 Voltage Regulator  
 Meter.....Easy to read 4½" meter with linear scale and streamlined case; 50 microampere movement  
 Calibrating Condensers. ± 1% for 100 and 1000 mmf. ranges  
                                   ± 2% for 0.01 and 0.1 mfd. ranges  
 Power Requirements...105-125 volts AC, 50/60 cycles, 25 watts  
 Dimensions.....7¾" high x 4-11/16" wide x 4½" deep  
 Net Weight.....5 lbs.  
 Shipping Weight.....7 lbs.



**HEATHKIT DIRECT READING**

# capacity meter

**KIT**

## features

- ▶ Reads capacity directly on 4½" 50 microampere meter.
- ▶ Four ranges—0-100 mmf, 0-1000 mmf, 0-0.01 mfd and 0-0.1 mfd.
- ▶ Residual capacity less than 1 mmf—not affected by hand capacity.
- ▶ One calibration holds for all ranges.
- ▶ Power line operated—voltage regulation for stability.



**MODEL CM-1**

**\$295.00**

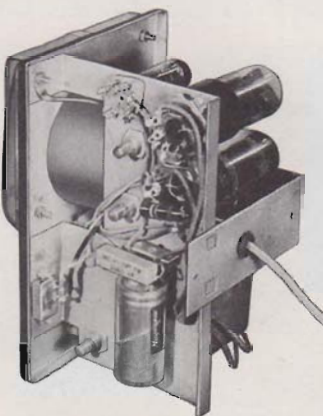
SHPG. WT. 7 LBS.

The Model CM-1 Direct Reading Capacity Meter features a large 4½" 50 microampere meter, directly calibrated in micro-microfarads and microfarads. Calibration is linear, and four ranges, 0-100 mmf, 0-1000 mmf, 0-.01 mfd and 0-.1 mfd are instantly available. Operation is completely automatic, it being necessary only to select the proper range and connect the unknown capacitor to the insulated binding posts on the panel.

Model CM-1 is not susceptible to hand capacity effects. Residual capacity less than 1 mmf enables accurate measurement of tiny trimmers, tube interelectrode capacity, stray wiring capacity, etc.

A transformer operated power supply, employing a 6X4 rectifier and OA2 regulator, supplies voltage to a 6BX7 multivibrator. Individual calibration potentiometers in conjunction with four precision capacity standards enable rapid full scale calibration of each range. Once accomplished, calibration will hold constant over extended periods of time.

**A VALUABLE AND VERSATILE INSTRUMENT**



Open-Type Layout Makes Assembly Easier.

The field of application for the Model CM-1 is extremely broad. Ideal for the radio and television service shop, it is equally valuable in manufacturing plants and in the small industrial laboratory. Research and development laboratories use the CM-1 in experimental work and television receiver manufacturers are finding increasing uses for it on their production lines and for quality control. Since operation is simple and automatic, much time is saved and it is unnecessary to employ highly paid, technically trained personnel to make repetitive capacity measurements or adjustments. Radio amateurs, audio engineers, experimenters, and hobbyists are all finding new uses for this remarkable instrument. Since it will follow the capacity change of a variable capacitor, smoothly and accurately, from the tiniest trimmer to the largest broadcast capacitor, it allows preadjustment of tuning in television circuits utilizing printed inductances.

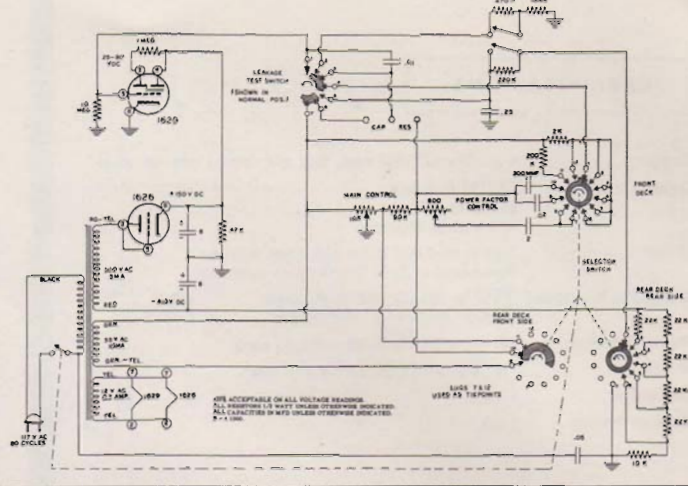
The Model CM-1 indicates the value of capacity directly, and follows immediately even the smallest capacity change. It has become invaluable wherever work with tuned circuits must be done. Too, it enables anyone to have his own accurately calibrated capacitor, whether in the laboratory or the radio "ham shack." Matched pairs, or special capacity values for single-sideband filters are easily and inexpensively made up from wide tolerance values of capacitors from stock, thus saving a considerable amount of money, especially when non-standard values are required to have high accuracy. An Engineer's tool, yet the simplicity of operation makes bridge accuracy of capacity measurement available to the Novice. It may be used for example, to determine the length of a roll of coaxial cable or shielded wire, or to measure the capacity-to-ground of the mobile radio station.



**SPECIFICATIONS:**

Capacity: 4 ranges.....	.00001 mfd—0.005 mfd .001 mfd—5 mfd .1 mfd—50 mfd 20 mfd—1000 mfd
DC Leakage Test	
Polarizing Voltages: 5 ranges.....	25 volts DC 150 volts DC 250 volts DC 350 volts DC 450 volts DC
Resistance Ranges: 2 ranges.....	100 ohms to 50,000 ohms. 10,000 ohms to 5 megohms.
Circuit.....	AC powered bridge for both capacitive and resistive measurements. Maximum opening of electron beam indicator denotes bridge balance.
Cabinet Size.....	9½" wide x 6½" high x 5" deep.
Shipping Weight.....	7 pounds.
Power Supply.....	Transformer operated—half wave rectifier.
Power Requirements.....	110-125 volts, 50-60 cycles AC.

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**HEATHKIT**

# condenser checker **KIT**



**MODEL C-3**

**\$195.00**

SHPG. WT. 7 LBS.

## features

▶ Direct reading scales — measures capacity and resistance.

▶ Leakage indicated directly on eye tube.

▶ Checks paper, mica, ceramic, electrolytic condensers.

Use the Heathkit Model C-3 Condenser Checker to measure those unknown condenser and resistor values quickly and accurately. All readings are taken direct from the calibrated panel scales without the requirement of any involved calculation. Capacity measurements in four ranges of 0.00001 mfd—0.005 mfd; 0.001 mfd—0.5 mfd, 0.1 mfd—50 mfd, 20 mfd—1000 mfd. Checks paper, mica, ceramic and electrolytic condensers. A power factor control is available for accurate indication of electrolytic condenser efficiency. Leakage test switch—selection of five polarizing voltages, 25 volts to 450 volts DC to indicate condenser operating quality under actual load conditions. Spring-return test switch automatically discharges condenser under test and eliminates shock hazard to the operator.

Resistance measurements can be made in the range from 100 ohms to 5 megohms. Here again, all values are read directly on the calibrated scales. Increased sensitivity coupled with an electron-beam null indicator increases overall instrument usefulness.

For safety of operation, the circuit is entirely transformer operated and the instrument housed in the new, attractively styled Heathkit cabinet featuring rounded corners and drawn aluminum panel. The outstanding low kit price for this surprisingly accurate instrument includes necessary test leads. Good service shop operation requires the use of this specialized instrument designed for the express purpose of determining unknown condenser and resistor values as well as their operating characteristics.



Addressograph machines are used to address flyers and catalogs automatically.



A Teletype machine links Heath Company with the local Western Union office.

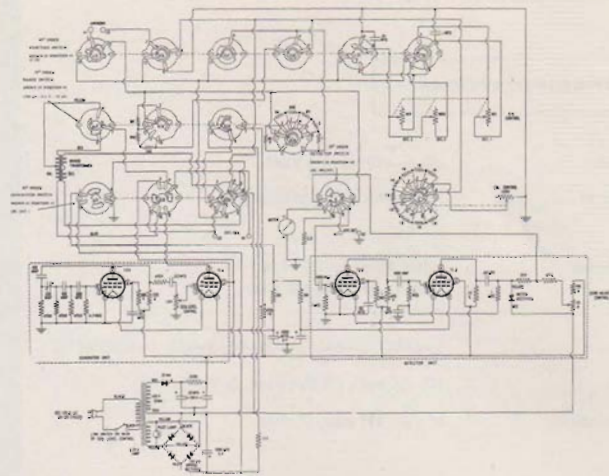


One of our Engineering Consultants handles a technical question phoned in by a customer.



**SPECIFICATIONS:**

- Circuit ..... 4-arm impedance bridge.
- DC Measurements ..... Built-in power supply operates from 110V. AC. Binding posts provided for use of external supply.
- Meter ..... 100—0—100 microampere meter.
- AC Measurements ..... Built-in 1000 cycle generator. Terminals on panel for connection of external generator for measurement at other frequencies.
- Detector ..... Vacuum tube detector and rectifier make use of built-in meter. Panel binding posts provide for connection to external detector.
- Resistance ..... 0.1 ohm to 10 megohm.
- Capacitance ..... 10 mmf to 100 mfd.
- Inductance ..... 10 mh to 100 h.
- Dissipation Factor (D) ..... 0.002 to 1.
- Storage Factor (Q) ..... 0.1 to 1000.
- Accuracy ..... ½ of 1% decade resistors used.  
The following is typical:  
Resistance ± 3%  
Capacitance ± 3%  
Inductance ± 10%  
Dissipation Factor (D = wCR) ± 20%  
Storage Factor (Q = wL/R) ± 20%  
Accuracy will fall off at extreme outer limit.
- Tube Complement ..... 2—1U4 and 2—1L4.
- Power Supply ..... Power transformer and Selenium Rectifier.
- Cabinet Size ..... 8" high x 17" wide x 6" deep.
- Power Requirements ..... 105-125 volts, 50/60 cycles, 10 watts.



**MODEL IB-2**  
SHPG. WT. 12 LBS.

**\$59.50**

**HEATHKIT**

# impedance bridge **KIT**

## features

- ▶ Battery type tubes, no warm-up required.
- ▶ ½% precision resistors and silver-mica condensers.
- ▶ Built-in phase shift generator and amplifier.

Because of its low price the Heathkit Model IB-2 is now available to the service shop, the radio amateur, and even the home experimenter.

It is a direct reading, precision laboratory instrument, designed for the measurement of resistance, capacitance, inductance, dissipation factors of condensers, and storage factors of inductors. Operating from the power line, the IB-2 incorporates its own power supply, its own vacuum-tube phase-shift generator, and its own vacuum-tube detector unit. A 100-0-100 ua. meter is used for determining balance. The usual headset is not necessary, although provision is made for using an external detector when desired.

Employs a Wheatstone Bridge, a Capacity Comparison Bridge, a Maxwell Bridge, and a Hay Bridge. The two-section CRL dial provides 10 separate "units" with an accuracy of 0.5%. Fractions of units are read on a continuously variable control. D, Q, and DQ functions are all combined in a single knob. ½% precision resistors and ½% silver-mica condensers are used in critical circuits.

Use the Model IB-2 for determining values of unmarked components, checking production or design samples, etc. Performance can be further extended by use of an external generator.



**OUR  
OFFICE IS  
DESIGNED  
TO  
SERVE YOU  
EFFICIENTLY**

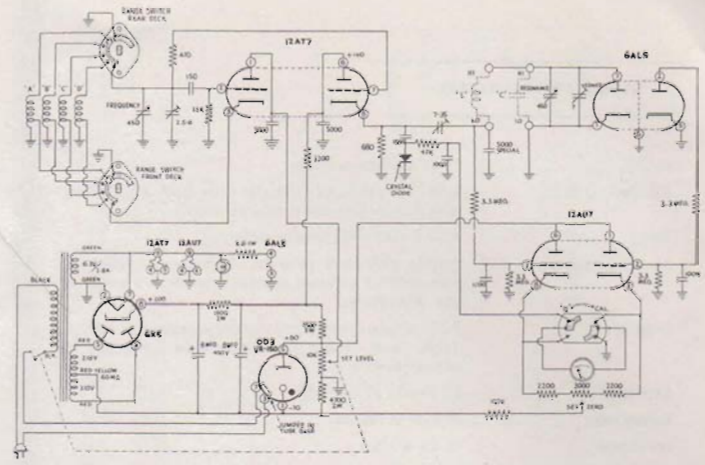
Complete records of Heathkit purchases are kept in our file department.



**SPECIFICATIONS:**

Frequency.....150 Kc—18 Mc on 4 bands.  
 Inductance.....1 microhenry to 10 millihenrys.  
 Q.....250 Full scale x 1 or x 2.  
 Capacitance.....Actual 40 mmf—450 mmf  
 Effective 40 mmf—400 mmf  
 Vernier ± 3 mmf.  
 Tubes.....1—12AT7, 1—6AL5, 1—12AU7, 1—6X5, 1—OD3/VR150.  
 Power.....105-125 Volts AC, 50-60 cps, 30 watts.  
 Dimensions.....8" high, 17" wide, 6" deep.

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**HEATHKIT**

**"Q" meter KIT**



*features*

- ▶ Variable oscillator permits testing at normal frequencies (150 kc-18 mc).
- ▶ Large 4½" meter mounted in slanted panel for easy reading.
- ▶ Pre-wound RF coils—all sheet metal formed and punched.
- ▶ No special equipment required for calibration—test coil furnished.

The Q Meter is not just a "prestige" instrument to be dusted off each morning when opening the shop or lab. It is fully capable of performing many tasks in a matter of minutes that ordinarily require considerable mechanical and mathematical dexterity. Originally a Q meter was out of the financial reach of the average service shop but now Heathkit ingenuity has brought it into line.

Suspected components and parts being developed or manufactured can be tested at frequencies at which they normally are used (150 kc-18 mc). Wide ranges of inductance, capacitance and Q will cover practically all values encountered. All indications are read directly on a large 4½", 50 microampere, panel mounted meter. Surprisingly easy to use, Model QM-1 will take the guess work out of your electronic efforts.

The Heathkit Q Meter uses a 12AT7 oscillator with pre-wound coils to obtain the full frequency range on 4 bands. Oscillator output is metered to provide constant injection. A complete VTVM circuit is used as a resonance indicator, using a 6AL5 twin diode and a 12AU7 VTVM amplifier. Voltage regulated and transformer operated power supply utilize a 6X5 full wave rectifier and an OD3 regulator tube. All other components are of the highest quality in keeping with highest Heathkit standards.

Behind the attractive charcoal gray panel with white lettering is a well laid out and factory-formed chassis. No "extras" are required to build or operate this instrument. A special test coil is provided for calibration purposes. Buy it, build it, use it, and if the Q Meter says so, it's so.

**\$445.00**

**MODEL QM-1**

SHPG. WT.  
14 LBS.

**APPLICATIONS** — Use Model QM-1 in many service, laboratory and development applications. Check peaking coils, chokes, etc., in radio and TV receivers. Determine the values of unknown condensers both variable and fixed. Compile data for coil winding purposes. Measure RF resistance, distributed capacity and Q of coils.

**HEATHKIT decade resistance kit**

Imagine having any resistance value between 1 ohm and 99,999 ohms at your fingertips and all at 1% accuracy. That's just what you have in the Heathkit Decade Resistance Model DR-1. Twenty 1% precision resistors are neatly arranged around 5 rugged switches labeled "UNITS," "TENS," "HUNDREDS," "THOUSANDS," AND "TEN THOUSANDS." Various combinations of switch positions will provide the total range in 1 ohm steps. Use it for ohmmeter calibration, in bridge circuits, as test values in multiplier circuits and for a multitude of experimental applications. An unusually low price for a real precision device.

**MODEL DR-1**

**\$19.50**

SHPG. WT. 4 LBS.

**HEATHKIT decade condenser kit**

This kit provides capacity values from 100 mmf to 0.11 mfd in 100 mmf steps so that exact capacitor values are available for determination of capacitor values in compensating networks, filters, bridge impedances, tuned circuits, etc. It is ideally suited for use in technical school laboratories, industrial laboratories and in all types of design and development work.

Precision 1% silver-mica capacitors are employed for high accuracy. Switches are ceramic wafer types for minimum loss, and feature smooth action and positive detent. It must be used to appreciate its convenience, and the interesting design possibilities it presents.

**MODEL DC-1**

**\$16.50**

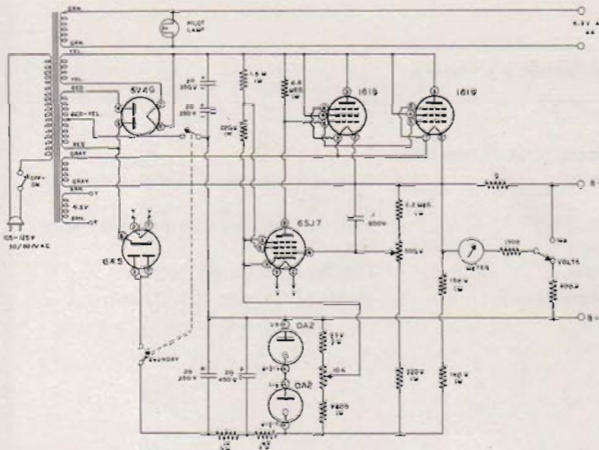
SHPG. WT. 3 LBS.





**SPECIFICATIONS:**

Output .....	Continuously variable from 0 to 500 volts no load
Regulation .....	(With 117V AC Line) Linear from 0 to 10 ma at 450 volts output Linear from 0 to 20 ma at 400 volts output Linear from 0 to 40 ma at 350 volts output Linear from 0 to 70 ma at 300 volts output Linear from 0 to 100 ma at 250 volts output Linear from 0 to 130 ma at 200 volts output
Meter .....	4½" streamlined case, 1 ma full scale, 0—500V DC, 0—200 ma DC
Tubes .....	1—5V4G rectifier, 1—6X5GT rectifier, 2—0A2 regulator tubes, 2—1619 control tubes, 1—6SJ7 control amplifier
Power Requirements .....	105—125V AC, 50—60 cps, 90 watts
Dimensions .....	8½" high, 13" wide, 7" deep
Shipping Weight .....	17 pounds



**HEATHKIT**

**VARIABLE VOLTAGE  
REGULATED**

**power supply KIT**

*features*

- ▶ DC output variable from 0 to 500 volts.
- ▶ Large 4½" meter monitors output voltage or current.
- ▶ Features regulated output — low ripple — convenient operation.
- ▶ Provides filament voltage of 6.3 VAC at 4 amperes.
- ▶ Professional performance and appearance.

The Heathkit Model PS-3 is extremely valuable in the laboratory, the service shop, in the ham shack, or for the home experimenter. DC output of the power supply is variable from 0 to 500 volts at no load, so that any "B+" value within this range can be obtained by merely rotating the voltage control knob on the front panel. Voltage is indicated on the large 4½" panel meter. This power supply also furnishes filament voltage (6.3 volts AC at 4 amperes). Ideal for powering all types of experimental circuits, and for determining power supply design requirements. Panel meter also indicates current being drawn by the load.

The AC filament voltage and DC voltage of the PS-3 are isolated from ground. It may be used for AC-DC work, or may be used in conjunction with another power supply to furnish a negative voltage with respect to a test chassis.

Voltage regulation is excellent, and a convenient standby switch is provided in addition to the ON-OFF power switch. Output current rating increases as output voltage decreases. For example, the power supply will furnish up to 10 milliamperes at 450 volts, but will supply up to 130 milliamperes at 200 volts. Features rugged, well-rated components throughout. Just read over the specifications and then note the low Heathkit price. Another "best buy" for you.



**MODEL PS-3**

**\$35.50**

SHPG. WT.  
17 LBS.

**APPLICATIONS:** The PS-3 is very valuable for experimental work in the ham shack or home workshop, in addition to its use in laboratories.

**HEATHKIT CONDENSER  
substitution box kit**



**\$5.50**

**MODEL  
CS-1**  
SHPG. WT.  
2 LBS.

The Heathkit Condenser Substitution Box with an 18-position panel switch provides individual selection of any one of 18 RTMA standard condenser values ranging from 0.0001 mfd to 0.22 mfd. All capacity values are rated at 600 volts with the exception of the three largest which are 400 volts. Condensers are either silver-mica or plastic-molded tubular types.

The CS-1 provides convenient selection of individual substitution values. Aluminum panel, bakelite cabinet, and 18" flexible leads with alligator clips.

**HEATHKIT RESISTANCE  
substitution box kit**



**\$5.50**

**MODEL  
RS-1**  
SHPG. WT.  
2 LBS.

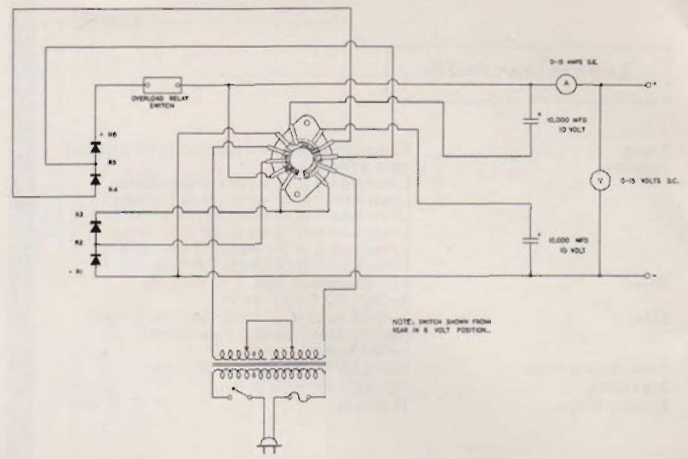
The Heathkit Resistance Substitution Box provides quick, convenient switch selection of any one of 36 RTMA 1-watt standard 10% resistors ranging from 15 ohms to 10 megohms. Ideal for experimentally determining desirable resistance values and for altering circuit operating characteristics quickly. Many applications in radio and TV work for determining values of charred resistors, unmarked values, etc.

This unit is housed in an attractive bakelite cabinet. Kit is priced lower than retail value of resistors alone.



**SPECIFICATIONS:**

Continuously variable voltage output  
 0-8 volts DC ..... 10 amperes continuously, 15 amperes maximum intermittent  
 0-16 volts DC ..... 5 amperes continuously, 7.5 amperes maximum intermittent  
 Dimensions ..... 13¼" wide x 7½" deep x 7¼" high  
 Power Requirements ..... 105-125 V 50-60 cycles AC at 175 watts



**HEATHKIT 6-12 VOLT**

# battery eliminator **KIT**



**MODEL BE-4**  
 SHPG. WT. 17 LBS.

**\$31.50!**

## features

- ▶ Either 6 or 12 volt operation—useful also as battery charger.
- ▶ Continuously variable voltage output.
- ▶ Constant ammeter and voltmeter monitoring.
- ▶ Automatic overload relay—self resetting.
- ▶ New 18 plate split-type heavy duty rectifier unit.

This modern battery eliminator is essential for auto radio service work. It supplies 6 or 12 volt output at a flick of the panel switch so that conventional radios or those from the new automobiles with 12 volt systems can be serviced on your workbench.

Voltage is continuously variable in the two output ranges; from 0 to 8 volts DC at 10 amperes continuously, or from 0 to 16 volts DC at 5 amperes continuously. Will deliver up to 15 amperes at 6 volts, or up to 7 amperes at 12 volts.

Smooth DC output is assured through the use of two 10,000 microfarad filter capacitors. Two panel meters indicate voltage and current output simultaneously.

Continuously variable output is especially valuable for determining receiver operation under other than ideal conditions. Voltage can be lowered to determine the starting point of vibrators, or the operation of the local oscillator in the receiver under adverse conditions. The power transformer is protected by a fuse, and an additional circuit breaker is incorporated in the DC output circuit. Model BE-4 will also double as a battery charger.

## HEATHKIT vibrator tester **KIT**

Now you can test an auto radio vibrator without removing the receiver from the car. Simply remove the vibrator and test it on the Heathkit Model VT-1 Vibrator Tester. It functions similar to a tube tester in that socket provisions are made for all vibrator types and the condition of the vibrator is read on the simple "bad-good" scale. Tests vibrators for proper starting and for quality of operation. Checks both interrupter and self-rectifier types of vibrators with five different vibrator sockets taking care of hundreds of vibrator types.

The VT-1 operates from any battery eliminator capable of delivering continuously variable voltage from 4 to 6 volts DC at 4 amperes or more. It is an ideal companion for the Heathkit Model BE-4 Battery Eliminator. Using this vibrator tester will help you to spot faulty vibrators quickly and definitely, thereby releasing valuable service time for other work. The VT-1 can be assembled quickly and will provide many years of time saving service in your shop. Construction book contains vibrator test chart, providing data for testing popular vibrator types. Operating instructions printed on front panel of tester for convenient reference.



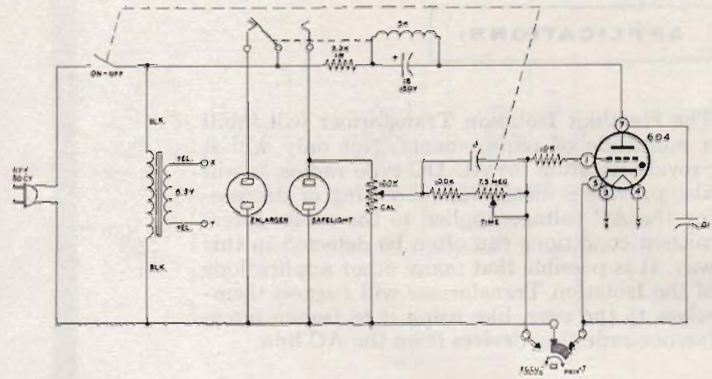
**\$14.50!**

**MODEL VT-1** SHPG. WT. 6 LBS.



**SPECIFICATIONS:**

- Timing Range..... 0-1 minute, continuously variable
- Controls..... Off-On/Timing  
Focus/Print  
Calibration
- Receptacles..... Enlarger and Safelight 350 watts maximum each
- Tube..... 1—6D4
- Power Requirements..... 105-125 V 50-60 Cycle AC, 3 watts
- Cabinet Size..... 6¼" long x 3¼" wide x 2" deep Non-corrosive plastic
- Kit Net Weight..... 1½ lbs.
- Kit Shipping Weight..... 3 lbs.
- Construction Time..... 1 Evening



New

HEATHKIT

# enlarger timer KIT

features

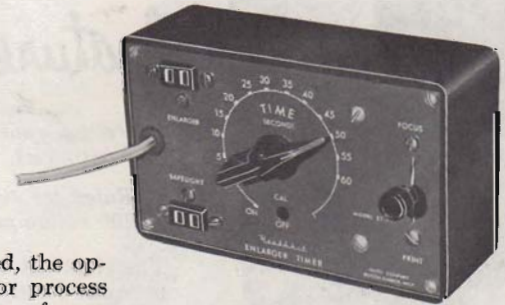
- ▶ Easy-to-read, linear dial scale—front-panel calibrate control.
- ▶ Compact plastic case resists photographic chemicals.
- ▶ Requires only 3 watts of power—does not add extra heat to dark room.
- ▶ Handles up to 350 watts at enlarger or safelight receptacles.
- ▶ Easy to build from complete instructions supplied.

The Model ET-1 is an all-electronic timer for your photographic enlarger. It automatically controls exposure time during the enlarging process.

The Timer dial is calibrated from 5 to 60 seconds, and the timing cycle is initiated by merely moving the spring-return lever switch to "print". In addition to turning the enlarger "on" during the timing cycle, it also turns a safelight "off". The Enlarger and Safelight are plugged into the front panel of the Timer. Internal relay handles up to 350 watts.

Once the timing cycle is started, the operator is free to do "dodging" or process already-exposed prints without fear of over-exposure. When the lever switch is moved in the opposite direction the enlarger will remain "on" for focusing and masking.

A valuable addition to any dark room, the Timer is especially desirable where quantity work is involved, such as in producing photographic Christmas or greeting cards. Just set the timer dial, depress switch to "print," and timing cycle is automatically controlled for each enlargement.



MODEL ET-1

**\$11.50**

SHPG. WT. 3 LBS.

# HEATHKIT battery tester KIT

The Model BT-1 is not just a voltmeter, but is a special battery testing device that actually "loads" the battery (draws current from it) while its being tested. Weak batteries often test "good" with an ordinary voltmeter, but the built-in load resistance of the BT-1 automatically draws current from the battery it is testing, and thereby reveals its true condition. Simple to operate, and no complicated meter readings to interpret.

To use the Model BT-1, just set the voltage selector, connect the leads to the battery, and read the condition of the battery on the three color "good-weak-replace" scale. Test batteries in a way your customers can understand and stimulate battery sales. Ideal, also, for you non-technical hobbyists and experimenters. Test model airplane batteries, lantern batteries, conventional dry cell batteries used in photography and in hearing aids, etc. Just the ticket for testing portable radio batteries in the service shop.

Provides test ranges of 0-15 volts and 0-180 volts. Slide switch provides for either 10 ma or 100 ma load, depending on whether you're testing an A battery or a B battery. Not only determines when battery is completely exhausted, but makes it possible to anticipate failure by noting weak condition. Simple to construct, even for the beginner.



MODEL BT-1

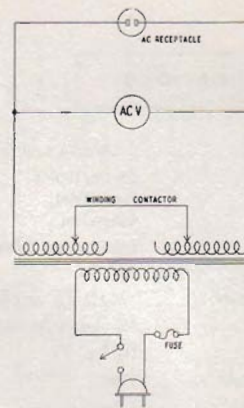
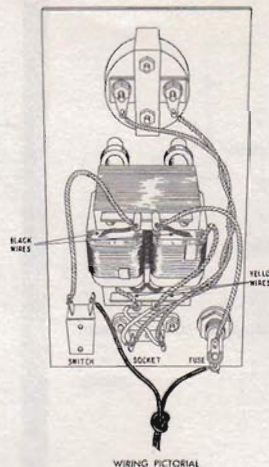
**\$8.50**

SHPG. WT. 2 LBS.



**APPLICATIONS:**

The Heathkit Isolation Transformer will fulfill a multitude of requirements. Not only will it provide isolation for AC-DC type radios, it will also provide a means for increasing or decreasing the AC voltage applied to the radio. Intermittent conditions can often be detected in this way. It is possible that many other applications of the Isolation Transformer will suggest themselves to the user, like using it to isolate interference-radiating devices from the AC line.



WIRING PICTORIAL

**HEATHKIT VARIABLE VOLTAGE**

# isolation transformer

**KIT**



MODEL IT-1

**\$1650**

SHPG. WT. 9 LBS.

## features

- ▶ Voltage control and 0 to 150 VAC meter on front panel.
- ▶ Rated for 100 voltamperes continuously or 200 voltamperes intermittently.
- ▶ Output variable from 90 to 130 VAC.
- ▶ Fused for protection, and for isolation of untested equipment from the power line.

The Heathkit Model IT-1 is one of the handiest units for the service shop, home workshop or laboratory. The advantages of an isolation transformer such as this are three-fold.

Complete isolation from the power line is provided since there is no direct connection between the primary of the transformer and the secondary. AC-DC sets may be plugged directly into the IT-1 without the chassis becoming "hot". Since the IT-1 is fused, it is ideal for use as a buffer between the power line and a questionable receiver or a new piece of equipment that has never been operated before.

Protects house fuses or main fuses in shop.

Thirdly, the voltage control of the Isolation Transformer allows control of the output voltage from 90 volts to 130 volts so that the customer's line voltage may be duplicated to see how the set operates under adverse conditions.

Not to be confused with the usual hazardous "auto-transformer" type of line voltage "booster". The output voltage is monitored by an easy-to-read panel meter. Transformer is fused at 2 amperes (slow blow) in the primary circuit and is rated at 100 voltamperes continuously, or up to 200 voltamperes intermittently.

**HEATH CONSULTATION SERVICE . . .**

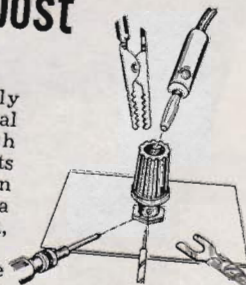


The photograph above shows a Heath Engineering Consultant answering a customer's letter. This extra service is your assurance of successful kit construction, and is one of the reasons why there is such a great difference between just any kit — and a Heathkit!

One of the "extras" you get when purchasing a Heathkit is the availability of our consultation service. Should you experience some sort of difficulty in constructing or operating your kit you can write to Heath Company for help. Although only a very small percentage of our customers ever have occasion to use this service (usually only beginners in electronics) it is still reassuring to know that technical help is available when needed. Our trained Engineering Consultants are specialists in their field and are thoroughly familiar with all Heathkit models and the applications to which they are suited.

**HEATHKIT  
binding post  
KIT . . .**

This sketch clearly shows the universal manner in which Heath binding posts will accommodate an alligator clip, banana plug, test lead pin, spade lug or wire.



To accommodate customer requests, a binding post kit is now available. The kit is sold only in units of twenty complete binding post assemblies; ten red and ten black insulator caps. Consists of binding post base, fluted cap, flat fiber washer, shoulder fiber washer solder lug and 6-32 nut; 120 pieces in all. Shipping wt. 1 pound.

Binding post kit #362-A at . . . . . **\$4.00**



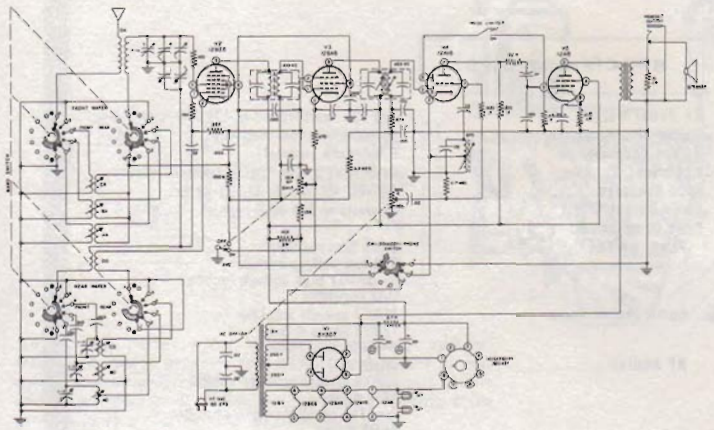
**SPECIFICATIONS:**

Frequency Range.....550 kc to 30 mc on four bands  
 Tube Complement.....1—12BE6 Oscillator and Mixer  
                                   1—12BA6 IF Amplifier  
                                   1—12AV6 Second Detector, AVC, First  
                                   Audio Amplifier and Reflex BFO  
                                   1—12A6 Beam Power Output  
                                   1—5Y3 Full Wave Rectifier  
 Power Requirements.....105—125 volts AC 50/60 cycles 40 watts  
 Dimensions.....11½" wide x 5¼" high x 6¾" deep  
 Shipping Weight.....12 lbs.  
 Amateur bands plainly marked on dial.

**CONTROLS**

General Coverage Tuning	Antenna Trimmer	Phone—Standby—CW Switch
Band Spread Tuning	Band Switch	RF Gain Control/AVC On/Off
Headphone Jack	Noise Limiter On/Off	AC On/Off—Audio Gain
		Accessory Socket

Sockets for connecting Heathkit Model QF-1 Q Multiplier on rear of chassis.



**HEATHKIT COMMUNICATIONS-TYPE**

# all band receiver **KIT**

## features

- ▶ Covers 550 kc to 30 mc in four bands.
- ▶ Slide-rule dial — electrical band-spread — ham bands marked.
- ▶ Separate RF and AF gain controls — antenna trimmer — noise limiter.
- ▶ Slug-tuned coils and efficient IF transformers for good sensitivity and selectivity.
- ▶ Transformer-operated power supply for safety and high efficiency.

The brand new Heathkit Model AR-3 Receiver features improved circuitry, and improved physical layout. The net result is increased sensitivity and selectivity, coupled with more flexible overall operation. Performance of the AR-3 is really outstanding, especially in view of its low kit price.

New High Q slug-tuned coils are used in the front end and an antenna trimmer has been added so that the front end may be peaked to a particular signal on any of the bands. The coil layout permits easy alignment from above the chassis. Re-designed oscillator coils result in increased conversion transductance through the mixer circuit, and new-type IF transformers allow a better bandpass curve, and more gain. The tuning capacitor is shock mounted, and the overall layout eliminates ground loops, shortens important lead lengths, and makes for easier assembly.

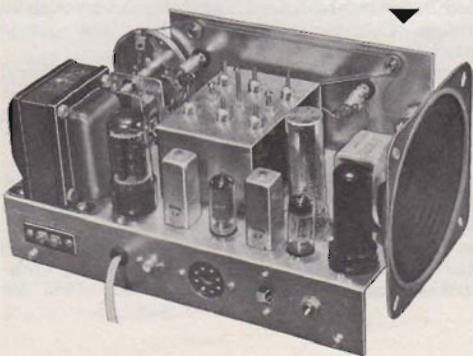


**MODEL AR-3**

**\$279.95** (LESS CABINET)  
 SHPG. WT. 12 LBS.

**AN OUTSTANDING PERFORMER FOR THE PRICE**

*PHYSICAL LAYOUT: The AR-3 is designed for high circuit efficiency, and for convenience in construction. Components are easy to reach for alignment and adjustment.*



Covering from 550 kc to 30 mc in four bands, the Model AR-3 uses a 12BE6 oscillator and mixer, a 12BA6 IF amplifier, a 12AV6 second detector, AVC, first audio amplifier, and reflex BFO, a 12A6 beam power output tube, and a 5Y3 rectifier. Bandswitching eliminates coil changing. Provision is made for main tuning, band-spread tuning, phone-standby-CW switch, headphone jack, antenna trimmer, noise limiter, RF gain control and AF control.

Two dial lights are provided to illuminate the tuning dial softly, while accessory sockets are provided on the rear of the chassis for using the Heathkit Model QF-1 Q Multiplier. Accessory socket is handy, also, for operating other devices that require plate and filament potentials. Will supply +250 VDC at 15 ma and 12.6 VAC at 300 ma.

Slug-tuned coils allow close tracking ad-

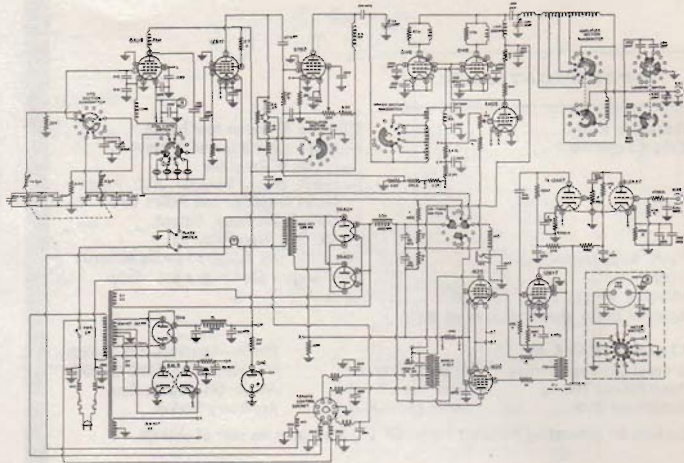
justments. BFO circuit is more stable and delivers greater audio output when receiving CW signals. The standby switch prevents voltage surges and resulting audio blasting during switching. Ceramic bypass capacitors have been freely used to reduce stray coupling in signal circuits. In all, the new Model AR-3 offers tremendous improvements over the previous model and is a fine receiver for the beginning amateur, short wave listener, or for anyone whose listening interest extends beyond the standard broadcast band.

**CABINET:** Proxylin impregnated fabric-covered cabinet available for AR-3. Includes aluminum panel, reinforced speaker grille, and protective rubber feet. Attractive and practical. Measure 12¼" W. x 6¾" H. x 7¾" D. No. 91-15. Shpg. Wt. 5 Lbs..... **\$4.50**



## SPECIFICATIONS:

RF Power Output .....	100-125 watts phone, 120-140 watts CW
Output Impedance .....	50-600 ohm (non-reactive)
Output Coupling .....	Pi network (coaxial)
Operation .....	Crystal-VFO, CW-Phone, Local-Remote
Band Coverage .....	160, 80, 40, 20, 15, 11, 10 meters
Audio Output .....	85 watts at 300-3000 cycles
Tube Complement:	
Power Section .....	6AL5 bias rectifier 5V4 low voltage rectifier 2-5R4GY high voltage rectifier 0A2 regulator
Audio Section .....	12AX7 speech amplifier 12BY7 audio driver 2-1625 modulator
RF Section .....	6AU6 VFO 12BY7 crystal oscillator-buffer 5763 driver 2-6146 parallel power amplifier 6AQ5 clamp
Power Requirements .....	115 volts AC, 50 to 60 cycles
Standby .....	150 watts
CW .....	400 watts (intermittent)
Phone .....	450-600 watts
Cabinet Size .....	20 3/4" wide x 13 3/4" high x 16" deep
Net Weight .....	100 lbs.
Shipping Weight .....	107 lbs.



## HEATHKIT DX-100 PHONE AND CW

# transmitter KIT



MODEL DX-100

# \$189.50

Shipped Motor Freight Unless Otherwise Specified  
\$50.00 Deposit Required on C.O.D. Orders

SHPG. WT. 107 LBS.

## features

- ▶ Phone or CW on 160, 80, 40, 20, 15, 11 and 10 meters.
- ▶ Built in VFO, modulator, and power supplies.
- ▶ Kit includes all parts — tubes — hardware — cabinet, etc.
- ▶ Coils are pre-wound and cable is pre-harnessed.
- ▶ High quality components used throughout for reliable performance.
- ▶ Features 5-point TVI suppression.
- ▶ Easy to build from complete instructions and pictorial diagrams enclosed.

## PROVEN DESIGN:

This transmitter is a completely proven piece of ham gear. Amateur radio operators in the field are enthusiastic in praising its performance under actual operating conditions. It provides the latest and most desirable design features, and combines high quality with real economy.

The Model DX-100 is a completely bandswitching rig for phone or CW operation on 160, 80, 40, 20, 15, 11, and 10 meters. It has a built-in VFO, or may be excited from crystals. The easy-to-build kit contains all parts necessary for construction, including tubes, cabinet, hardware, etc. The detailed step-by-step instruction manual features plenty of pictorial diagrams for ease of assembly. Pi network output coupling allows matching non-inductive loads from 50 to 600 ohms, and is only one of the design features of this outstanding performer.

## EFFICIENT AUDIO AND RF CIRCUITS

This transmitter employs push-pull 1625 tubes modulating parallel 6146 tubes. RF output is in excess of 100 watts on phone, and 120 watts on CW.

The VFO circuit consists of a 6AU6 tube operating as a Clapp oscillator in the frequency ranges of 1750 to 2000 kc, 7000 to 7425 kc and 6740 to 6807.5 kc. An 0A2 regulator tube stabilizes the B supply to the oscillator screen grid.

A 12BY7 tube is used either as a modified Pierce crystal oscillator, or as a buffer, depending on whether the function switch is on crystal or VFO. The plate circuit of this stage is untuned when operating 160 or 80 meters, slug-tuned to 40 meters for operation at 40, 20, or 15 meters, and slug-tuned to 20 meters when operating on the 10-11 meter band.

A 5763 tube drives the parallel 6146 final. Pi network interstage coupling is employed between this stage and the final grid.

The 6AQ5 clamp tube serves to protect the 6146 tubes by reducing screen voltage automatically if grid drive to the final tubes is removed.

A single 12AX7 tube provides two stages of resistance-coupled triode speech amplification in the audio section. A 12BY7 driver provides input voltage to the 1625 modulator tubes. The speech amplifier and the modulator stages have been designed to restrict the audio speech range. This provides a "hard hitting" audio modulation with plenty of punch.

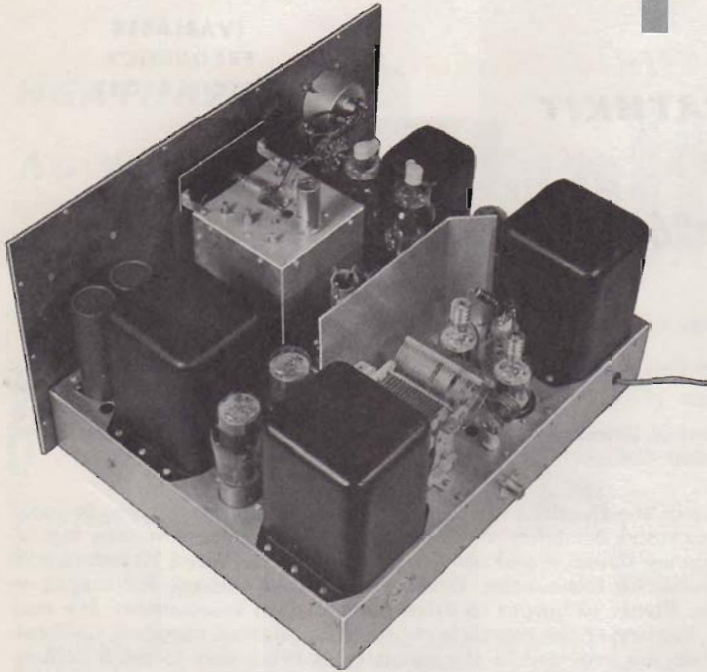
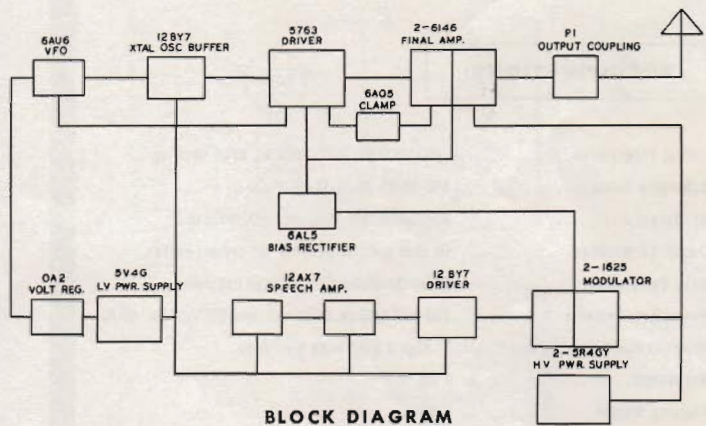
Separate power supplies are used for low-level and high-level functions. The low voltage transformer contains all the filament windings, including the filament for the high voltage rectifiers. It has a tapped secondary to supply voltage for the bias rectifier. A 12-volt center tapped winding supplies audio and RF stage filaments. The low voltage supply delivers 360 volts at 150 ma to the low power audio and RF stages. The bias rectifier voltage is 75 volts. The high voltage supply provides plate and screen potential for the final RF and modulator stages. The entire power section of the transmitter is fused (both sides of the line) at the line plug. All power supply components, including transformers and chokes, are well rated for their service.





## DESIGNED FOR YOU ...

The DX-100 transmitter has been "amateur-designed" to incorporate all of the most desirable features for convenient and effective amateur communications. Its operation is flexible, controls are conveniently located, and its performance is truly outstanding. May be operated CW by novices if xtal excitation and reduced loading is practiced.



## EASY TO BUILD AND ATTRACTIVELY STYLED

This under chassis view of the DX-100 transmitter reveals how the transmitter has been divided off into sections. In addition to providing isolation, this allows the construction to proceed logically from one section of the transmitter to another. Sub-units are assembled and then added to the complete chassis. The chassis is extra-strong 16 gauge copper-plated steel. Construction is further simplified by the use of a pre-formed wiring harness, pre-wound coils, etc.

The VFO dial is illuminated for easy reading under subdued lighting conditions, and the meter is illuminated as well.

A remote control socket is provided on the back chassis apron. This provides AC voltage for operating an antenna change-over switch or a receiver muting relay. Also the circuit can be arranged to bring audio voltage out to this connector socket for driving an external modulator, in case the transmitter were used as a driver for a higher powered rig.

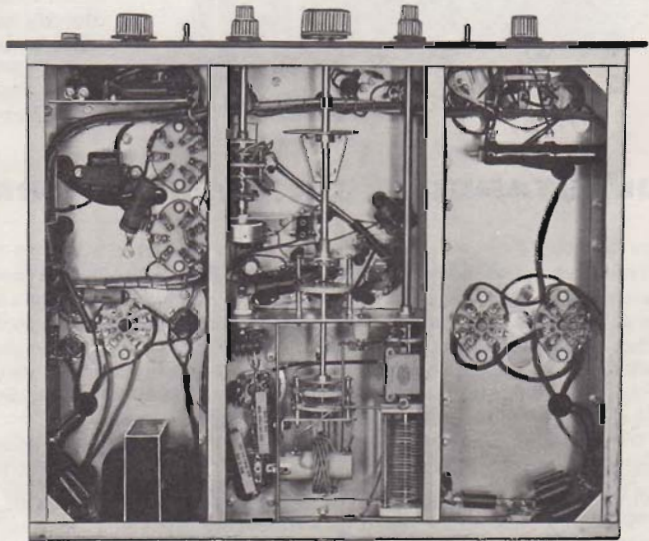
In addition to all the extra features incorporated in this transmitter, features definitely not expected at this price level, the rig is also most attractive. Modern cabinet design in two-tone gray and interesting panel treatment with modern knobs lend a real "professional" look to the transmitter. It's the kind of transmitter you will be proud to display in your ham shack. Needless to say, its performance is very much in keeping with its modern appearance.

Just check over the schematic, the block diagram, and the specifications for this transmitter, and you'll see what a really outstanding dollar value it represents.

## HIGH QUALITY PARTS — TVI SUPPRESSED

Inspection of the "inside" photographs below and at left will give some indication of the high quality parts used in the DX-100. Notice that all the transformers are of the "potted" type and that other components are top-notch items selected for their reliability and service. Capacitors are either disc-ceramic or plastic-molded types, except for the electrolytic units used in the power supplies. The aluminum heat-dissipating plate caps used on the 6146 tubes are typical of the "extras" that can be expected in this transmitter. Porcelain and ceramic insulation is used wherever necessary, and silver-plated, and even solid coin silver switch terminals are used in critical circuits. The entire chassis and sub-chassis units are copper plated for better conduction and more effective shielding.

Another feature of the transmitter is its 5-point TVI suppression. Pi network inter-stage coupling is employed to reduce harmonic transfer from one stage to another. Pi network output coupling reduces harmonic radiation to the antenna. Extensive shielding isolates RF stages and prevents undesirable intercoupling. All incoming and outgoing circuits are filtered to keep RF inside the cabinet. Interlocking cabinet seams prevent RF leakage. Even the meter is shielded with a metal shield to prevent RF radiation through the meter hole in the panel.

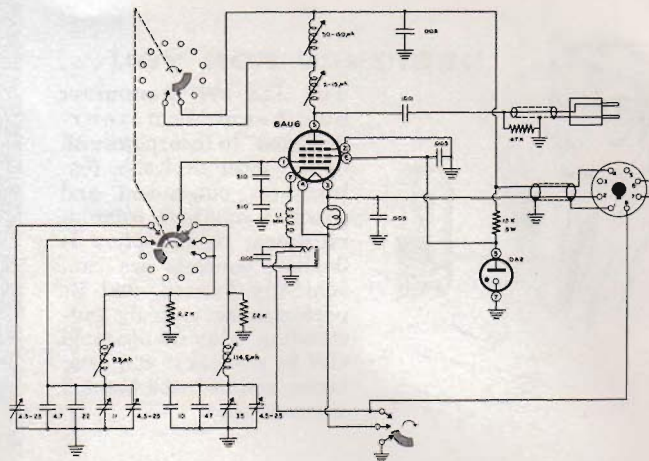


*LAYOUT: The view above shows the under-chassis layout of the DX-100. Notice that the parts are not crowded together and that plenty of "elbow room" is provided. The transmitter is easy-to-build, even for the beginner. "Unitized" constructional procedure allows work on chassis plate or other sub-chassis before they are attached to main chassis frame.*



**SPECIFICATIONS:**

Output Frequencies.....1750-2000 kc, 7000-7425 kc, 6740-6808 kc.  
 Calibrated Bands.....160-80-40-20-15-11-10 meters.  
 RF Output.....Approximately 10 v. on fundamentals.  
 Output Termination.....50 ohm coax. to plug for 1/2" crystal socket.  
 Tube Complement.....6AU6 Oscillator OA2 Voltage Regulator  
 Power Requirements.....250-350 VDC @ 15-20 ma. and 6.3 VAC @ .45 A.  
 Dimensions.....7" high x 6 1/2" wide x 7" deep.  
 Net Weight.....4 lbs.  
 Shipping Weight.....7 lbs.



(VARIABLE  
 FREQUENCY  
 OSCILLATOR)

**HEATHKIT**

**vfo**  
**KIT**

*features*

- ▶ OA2 voltage regulator tube for stability.
- ▶ Covers 160-80-40-20-15-11-10 meters.
- ▶ Smooth-acting, illuminated and precalibrated dial.

- ▶ 6AU6 electron-coupled Clapp oscillator.
- ▶ Copper plated chassis - aluminum case - profuse shielding - ceramic coil forms, switch wafers, and tuning condenser insulation.



**MODEL VF-1**

**\$195.00**

SHPG. WT.  
 7 LBS.

The low price of the Heathkit Model VF-1 makes it possible for you to enjoy the convenience and flexibility of VFO operation. It features voltage regulation for frequency stability, and covers 160-80-40-20-15-11 and 10 meters with three basic oscillator frequencies. Better than 10 volt average RF output on fundamentals. Plenty of output to drive most modern transmitters. It's easy to build, too, because of the complete construction manual supplied. Calibrating instructions are provided in the manual. Features easy-to-reach calibration adjustments.

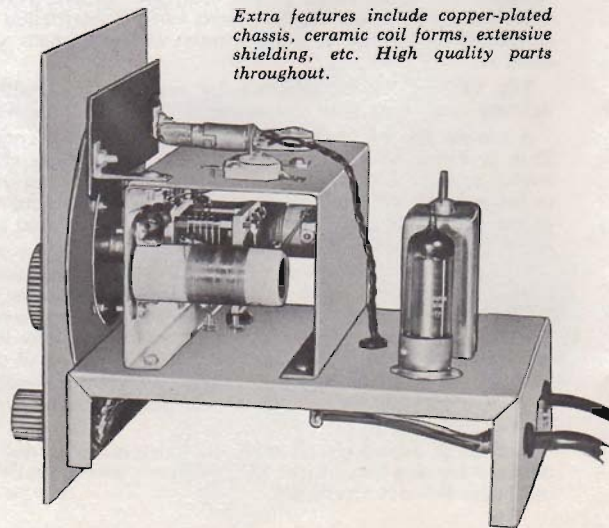
More than two feet of dial calibration available, and the dial is illuminated for maximum readability. Vernier reduction is used between the main tuning knob and the tuning condenser. Requires a power source of only 250 volts DC at 15 to 20 milliamperes and 6.3 volts AC at 0.45 amperes. May be plugged directly into the Heathkit Model AT-1 transmitter for power take-off or supplied with power from most transmitters.

Now you can have commercially designed, "trouble free" equipment at a price below what you would pay for the separate components to build it yourself. High quality components used throughout.

**OUTSTANDING CIRCUIT PERFORMANCE**

The Model VF-1 uses a series tuned Clapp oscillator with two separate tank circuits for maximum stability, and permitting better LC ratio for improved bandsread. One tank circuit is used for 160 meters to 40 meters and the other for 40 meters to 10 meters. Temperature compensating capacitors are employed to offset coil heating and provide additional circuit stability. Since the plate of the 6AU6 electron coupled oscillator is not an integral part of the oscillator circuit, it serves only to couple the oscillator output to the VFO output circuit, isolating the oscillator from loading effects at the output.

Why contend with the restrictions imposed by crystal operation? Enjoy the flexibility of VFO operation. Move out from under QRM, select the portion of the band you want to use without having to be tied down to only two or three frequencies. "Zero in" on the other fellow's signal and return his CQ on his own frequency! Crystals are not cheap, and it takes quite a number of them to give anything even approaching comprehensive coverage of all bands. The cost of the Heathkit VF-1 is far below that of crystals, if you want complete coverage of the amateur bands from 160 meters to 10 meters, so why hesitate? The Model VF-1 with its low Heathkit price and high Heathkit quality is now available. Go VFO for more operating enjoyment.

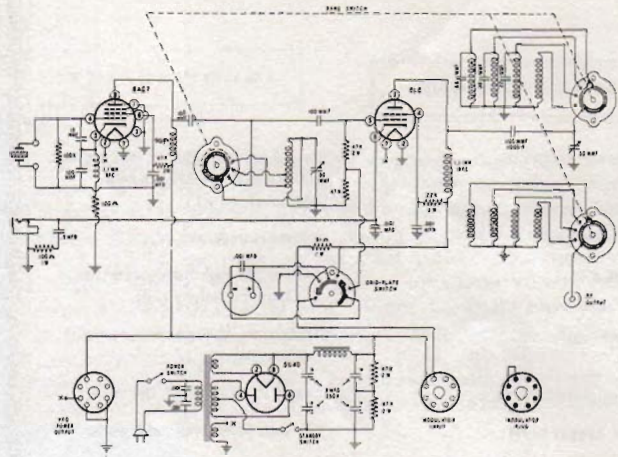


Extra features include copper-plated chassis, ceramic coil forms, extensive shielding, etc. High quality parts throughout.



**SPECIFICATIONS:**

RF Amplifier Power Input.....	25-30 Watts
Output Connection.....	52 Ohm Coaxial Cable
Oscillator Operation.....	Crystal, can be operated by a VFO
Amplifier Operation.....	CW, can be modulated for phone
Band Coverage.....	80, 40, 20, 15, 11, 10 Meters
Tube Complement	
5U4G.....	Rectifier
6AG7.....	Oscillator—Multiplier
6L6.....	Amplifier—Doubler
Power Requirements.....	105-125 50/60 cycle, 100 watts
Cabinet Size.....	8½" high x 13½" wide x 7" deep
Net Weight.....	13 lbs.



**HEATHKIT**

# amateur cw transmitter **KIT**

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41

## features

- ▶ Covers 80 - 40 - 20 - 15 - 11 - 10 meters.
- ▶ One knob band switching - no coils to change.
- ▶ Panel meter monitors final grid or plate.
- ▶ Convenient location of panel controls.
- ▶ Open-type layout and comprehensive construction book insure success—even for beginners.



**MODEL AT-1**

SHPG. WT.  
15 LBS.

**\$29.50**

This kit includes all material necessary to build the transmitter, including tubes, cabinet, coils, and all individual components. The chassis is prepunched and ready for assembly, and a detailed construction manual supplies simple step-by-step instructions with complete schematic and pictorial diagrams. Ideal transmitter for the novice operator and can be used as a standby or all-band exciter rig later on. Offered at the lowest possible dollar-per-watt price.

Designed for crystal operation, the Model AT-1 covers 80, 40, 20, 15, 11 and 10 meters, or is readily adaptable for VFO excitation. Plate power input is up to 30 watts. Power supply is built in, and provides 425 volts at 100 ma. The panel meter indicates either grid current or plate current for the final amplifier stage. Incorporates prewound coils, copper plated chassis, built-in line filter and profuse shielding. Time proven circuits insure reliable, trouble-free operation.

Crystal socket and key jack are on the front panel. (Key and crystals not included in the kit.) Also features built-in key click filter. Employs single-knob band switching. RF output brought out through a 52 ohm coaxial connector. Plug provided for connecting a modulator to transmitter, or for VFO power take-off. Uses 6AG7 oscillator multiplier, 6L6 power amplifier doubler, and 5U4G rectifier.



**MODEL AC-1**

**\$14.50**  
SHPG. WT.  
4 LBS.

## HEATHKIT antenna coupler **KIT**

Outstanding performance may be obtained, even with low power transmitters, if all the power developed in the final amplifier stage is effectively coupled to the antenna and radiated from it. Valuable communications energy is often dissipated and lost through incorrect coupling and matching. Get the most out of your equipment with the AC-1 Antenna Coupler Kit!

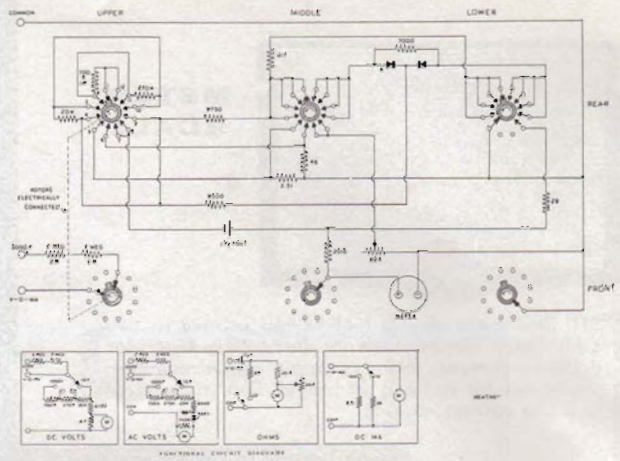
This unit is designed especially for the Heathkit AT-1, or any comparable amateur transmitter. It will handle power up to 75 watts at its 52 ohm coaxial input. Matches a wide

range of antenna impedances with "L" type tuning network and neon indicator. A tapped inductor provides coarse adjustment, while a variable condenser determines the fine setting. Special three-section, low-pass filter cuts off at 36 mc to reduce undesirable harmonic radiation and minimize TVI. Featuring copper plated chassis and high Q coils, the AC-1 has both inductive and capacitive tuning for maximum operating versatility. Designed for simple end-fed Hertz antenna operation from 10 through 80 meters.



**SPECIFICATIONS:**

- DC Voltmeter 5 Ranges..... Full Scale 0-10, 30, 300, 1000, 5000
- AC Voltmeter 5 Ranges..... Full Scale 0-10, 30, 300, 1000, 5000
- Ohmmeter 2 Ranges..... 0-3000 (30 ohms center scale)  
0-300,000 (3000 ohms center scale)
- Direct Current 2 Ranges..... 0-10 MA, 0-100 MA
- Sensitivity..... 1000 Ohms Per Volt—400 Microampere Meter
- Dimensions..... 6" High, 3" Wide, 2 1/2" Deep



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12

**HEATHKIT**

# handitester **KIT**



**MODEL M-1**

**\$14.50**

SHPG. WT. 3 LBS.

## features

- ▶ Completely portable, pocket size.
- ▶ Durable black Bakelite case, designed for rugged usage.
- ▶ 1% precision resistors for maximum accuracy.
- ▶ No calibration required—build it, then use it.
- ▶ All parts furnished, including test leads.

“Handy” is the word for the Heathkit Handitester. Experienced servicemen and hobbyists will recognize the advantage to be gained by owning one or several of these instruments. Keep them in your tool box, glove compartment, desk drawer and as standbys in the lab. It’s like insurance; you’ll never miss it until you need it. Model M-1 is portable in all respects. Replacement batteries are readily available because it uses only one 1.5 volt No. 1 flashlight cell. A single, 3-deck rotary switch combines the function and range setting in one quick adjustment. Build them in your spare time, plug in the test leads and you’re in business. The famous Heathkit “step-by-step” manual makes the Handitester a wonderful “first kit” project for the beginner also. Nowhere else can you buy so many years of service for such a small amount of money.

## QUALITY AND ECONOMY COMBINED

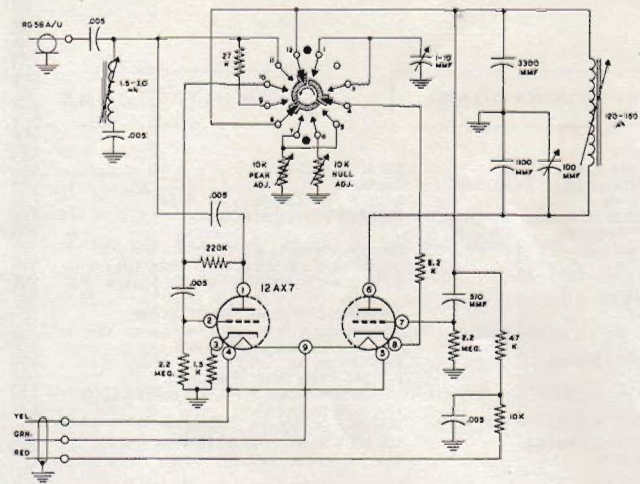
Quality comes first. Maximum accuracy is assured by the use of 1% precision resistors as voltage dividers, ohms multipliers, and meter shunt. 5 full scale ranges are provided for AC and DC voltages with a 5000 volt high limit. Up to 100 MA DC can be measured on two switch selected ranges. The ohmmeter feature covers 0 to 300,000 ohms on two ranges with center scale readings of 30 ohms and 3000 ohms. The “hearing aid” type ohms adjust control and dependable rotary switch have been tested thoroughly as moving parts. A high quality 400 microampere meter, factory fit into the attractive bakelite cover, protects the sensitive movement from dust and moisture. Further protection is provided by a perfect fit between the cover and gleaming case. This kit comes complete with test leads and construction manual. By following the simple step-by-step sequence, Model M-1 Handitester can be completed in a very short time. The manual also includes full details on the use of the instrument in each of its applications.

Although the Heathkit Handitester, Model M-1, is ideal for service calls, it also has the versatility and accuracy required in the service shop. A few quick voltage or DC current checks will usually isolate the faulty part in any electronic circuit. The Handitester is more than adequate for this bench-type service. You Hi-Fi fans will be interested particularly in the DC current measuring feature of Model M-1. Not only can you trouble-shoot your system by voltage checks, but also balance the push-pull power output stages by measuring and adjusting cathode current. The range extends up to 100 MA which more than covers the amount specified for any conventional amplifier. The 3” meter scale is easy to read and the combination function-range switch makes the operation of the Handitester as simple as falling off the proverbial log. High quality parts, low price, and simplified construction and use very painlessly opens the door to electronics for anyone interested. Why pay more!



**SPECIFICATIONS:**

- Operating Frequency.....450-460 kc
- Operation.....OFF-SHARP PEAK-NULL-BROAD PEAK
- Tube Complement.....12AX7 multiplier
- Power Requirements.....6.3 volts AC 300 ma., 150-250 volts DC 2 ma.
- Cabinet Size.....7 3/8" wide x 4 11/16" high x 4 1/8" deep
- Net Weight.....1 1/2 lbs.
- Shipping Weight.....3 lbs.



# "Q" multiplier KIT

## features

- ▶ Will peak or null any signal within the receiver IF bandpass.

- ▶ Provides effective Q of approximately 4,000 for extremely sharp tuning.
- ▶ Inexpensive to own - easy to build - simple to operate.



**MODEL QF-1**  
**\$99.95**  
 SHPG. WT. 3 LBS.

The Heathkit Q Multiplier is the kind of device that must be used to be appreciated. A tremendous help on the phone and CW bands when QRM is heavy. Provides an effective Q of approximately 4,000 for extremely sharp "peak" or "null". Use it to peak the desired signal or to null an undesired signal or heterodyne. It not only functions to sharpen the selectivity of your receiver, but also allows you to select (and either peak or null) a particular frequency within the IF bandpass of your receiver. Tunes to any signal being received by the IF circuits by means of a convenient tuning knob on the front panel. Vernier reduction between the tuning knob

and the tuning capacitor gives added flexibility in operation. The Model QF-1 operates with any receiver having an IF frequency between 450 and 460 kc. Will not function with AC-DC type receivers. It requires only 6.3 volts AC at 300 ma. and 150 to 250 volts DC at 2 ma. for operation. Derives its operating power from your receiver. Simple and easy to connect with the cable and plugs supplied. Uses a 12AX7 tube, and special high Q shielded coils. Don't be deceived by the low price. This Q Multiplier is "top quality" all the way through.



**MODEL AM-1**  
**\$145.00**  
 SHPG. WT. 2 LBS.

## HEATHKIT ANTENNA impedance meter KIT

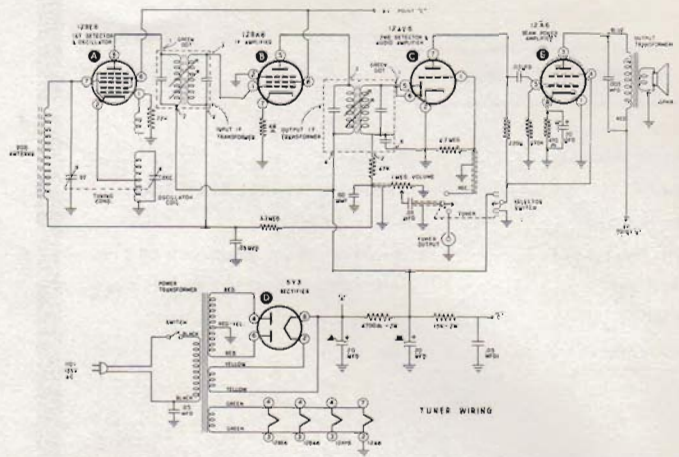
Use the Heathkit Model AM-1 Antenna Impedance Meter for measuring antenna impedance, for line matching purposes, and adjustment of beam and mobile antennas. Match the complete antenna-receiver-transmitter system for optimum overall operation. Used in conjunction with a signal source, the antenna impedance meter will determine antenna resistance and resonance, match transmission lines for minimum SWR (standing wave ratio), determine receiver input impedance and provide a close approximation of SWR. Will also double as a phone monitor, or will function sat-

isfactorily as a relative field strength meter. A valuable instrument around the ham shack. Uses precision resistor, germanium diode and 100 microampere meter. The dial covers the range from 0-600 ohms so as to include the popular 600 ohm transmission line. Operates up to 150 megacycles. Housed in a shielded aluminum cabinet which is 7" long by 2 1/2" wide by 3 1/4" deep, the Model AM-1 has strong antenna terminal connections for convenient connection. Terminals are self-supporting. A real bargain at this price.



**SPECIFICATIONS:**

Radio	
Tuning Range	550 kc to 1620 kc
IF Frequency	455 kc
Antenna	Built-in High Sensitivity Rod Type
Speaker (included)	5½" PM, 4-ohm Voice Coil
Tuner Operation	
Output	High impedance to any amplifier input with resistance of 100,000 ohms or more. 110 V outlet provided for amplifier, phono player, etc.
Phonograph	
Input	1 megohm high impedance for optimum performance with any good quality crystal or ceramic phono pickup.
Tube Complement	1—5Y3 Rectifier 1—12A6 Beam Power Amplifier 1—12AV6 Detector, A.V.C. and Audio Amplifier 1—12BA6 IF Amplifier 1—12BE6 Pentagrid Converter
Power Requirements	105-125 V 50-60 cycles AC 40 watts
Dimensions	11½" wide, 5½" high, 6¾" deep



**HEATHKIT BROADCAST BAND**

**receiver KIT**

*features*

- ▶ Can be used as receiver, tuner, or phono amplifier.
- ▶ Transformer operated power supply eliminates shock hazard of "economy radios."

- ▶ 5½" high quality chassis-mounted speaker included in the low price.
- ▶ New high-gain IF transformer used with miniature tubes for excellent performance.
- ▶ Efficient, rod-type built-in antenna provides high sensitivity.

If you have ever had the urge to build your own radio receiver, the outstanding features of this popular Heathkit deserve your attention. Designed as a completely useful radio construction project, and yet capable of constant daily performance. The Heathkit BR-2 is designed especially for easy construction by the beginner without sacrificing quality or performance in any way.

Your success is assured by the completely detailed information contained in the construction manual. Not only does the manual outline simple, easy-to-follow, step-by-step assembly procedure, but a basic explanation of circuit theory is incorporated as the work progresses and the receiver develops at your fingertips. This specially prepared construction manual represents a basic radio education course in itself and is of particular use to novices and students. Large pictorial and schematic diagrams can be pinned up over workbench during construction. Construction manual even contains information on resistor and capacitor color codes, soldering techniques, use of tools, etc.



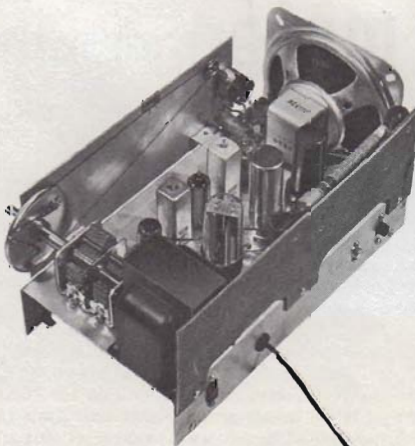
**MODEL BR-2**

**\$175.00**

SHPG. WT.  
10 LBS.

(LESS CABINET)

**A COMPLETELY USEFUL TABLE-MODEL RECEIVER**



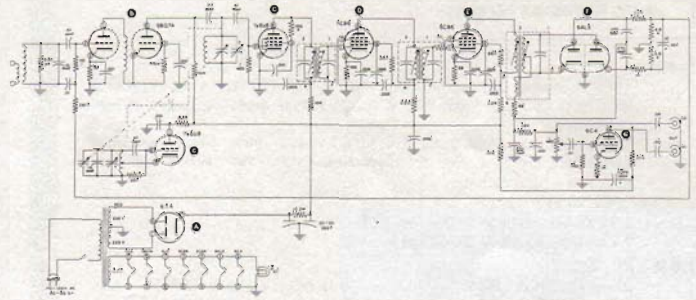
This broadcast band receiver tunes from 550 kc to 1600 kc and features a transformer-operated power supply for safety of operation, as opposed to the usual AC-DC supply so commonly found in "economy radio kits." High-gain miniature tubes, sharply tuned IF transformers and a new rod-type built-in antenna, result in high sensitivity, good selectivity, and unusually fine tone quality. It also features a 5½" PM chassis-mounted speaker. This unit can be wired for use either as a receiver, tuner, or phono amplifier. You receive complete instructions and all parts, including the following tubes. 12BE6 mixer-oscillator, 12BA6 IF amplifier, 12AV6 detector, 12A6 beam power output, and 5Y3 rectifier tube. Don't let the low Heathkit price deceive you. This is the kind of set you will want to show off to your family and friends after you finish building it.

**CABINET:** Proxilyn impregnated fabric covered plywood cabinet available for BR-2 Receiver. Complete with aluminum panel, flocked reinforced speaker grille, and protective rubber feet. Shipping weight 5 lbs. Part No. 91-9. **\$4.50**



## SPECIFICATIONS:

Tuning Range .....	88-108 mc	
IF Frequency .....	10.7 mc	
Antenna Input Impedance .....	300 ohm	
Output Impedance:		
Fixed Output .....	.47 K ohm	
Variable Output .....	15 K ohm	
Output Voltage: (30% modulation at 100 uv input)		
Fixed Output .....	0.12 volts	
Variable Output .....	1.5 volts	
20 db Quieting Sensitivity:	UNALIGNED	ALIGNED
88 mc .....	8 u volts	5 u volts
98 mc .....	10 u volts	8 u volts
108 mc .....	15 u volts	9 u volts
Tube Complement .....	1—6X4 rectifier 1—6BQ7A cascode-type RF amplifier 1—6U8 oscillator-mixer 2—6CB6 IF amplifier 1—6AL5 ratio detector 1—6C4 audio amplifier	
Power Requirements .....	105-125 volts 50-60 cycles AC 35 watts	
Dimensions Overall .....	12 $\frac{3}{4}$ " long x 3 $\frac{3}{4}$ " high x 5 $\frac{1}{2}$ " deep	
Net Weight .....	5 lbs.	
Shipping Weight .....	7 lbs.	



## HEATHKIT HIGH FIDELITY

# f m tuner KIT

## features

- ▶ Physical dimensions and beautiful satin-gold finish match Heathkit Model WA-P2 Preamplifier.
- ▶ Incorporates AGC, cascode front end, temperature-compensated oscillator and other outstanding design features.
- ▶ Offers sensitivity, selectivity, and stability not expected at this price level.
- ▶ Efficient, modern circuit is entirely new — employs miniature tubes.
- ▶ Pre-aligned IF and ratio transformers — partially pre-assembled front end — easy to build.

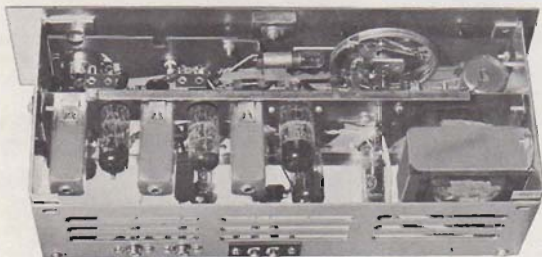
The seven-tube circuit of the new Heathkit Model FM-3 Tuner provides outstanding performance and design features. It has automatic gain control, a stabilized, temperature-compensated oscillator circuit, the IF and ratio transformers are pre-aligned, as is the front-end tuning unit.

A modern line-up of miniature tubes provides better than 10 microvolts sensitivity for 20 db of quieting. The power supply is built-in, and a stage of audio is provided for more than adequate output. Both low-level and high-level outputs are provided, at low impedance.

A high-gain, cascode-type RF amplifier is used ahead of the tuner to increase overall gain and reduce oscillator leakage. It tunes from 88 to 108 megacycles.

The IF frequency is 10.7 mc, and the tuner employs a ratio detector for efficiency without sacrifice in high fidelity performance. The ratio detector has the additional advantage of providing undistorted output, even for weak signals.

*This inside view of the FM-3 chassis shows how the main chassis is "shock mounted" in the cabinet, and reveals how the compact circuit, with miniature tubes, can result in a highly efficient unit.*



## New



MODEL FM-3

# \$24.50

SHPG. WT.  
7 LBS.  
(WITH CABINET)

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## EASY TO BUILD— EVEN FOR THE BEGINNER

This tuner features an illuminated slide-rule dial, and is housed in an attractive ventilated cabinet that is included with the kit. It can be mounted in a "custom" installation, or may be left out in its own cabinet.

One of the most outstanding features about the Model FM-3 is the ease with which it may be constructed, even by a beginner. The fact that the transformers are pre-aligned, and the front end unit partially pre-assembled and pre-aligned, means that stations may be tuned in as soon as the unit is completed. Then it can be "peaked up" to a received station as described in the manual.

The wiring is accomplished by following check-off type step-by-step instructions and large, clear, pictorial diagrams. It is not necessary to read a schematic diagram. The manual even contains information on soldering techniques, tips for beginners on circuit wiring, information concerning required tools, etc. Your success is assured through Heathkit complete construction manuals.

Don't be confused by the low price of the Model FM-3. It is a tuner that will provide excellent performance. Only high-quality components are used in its construction. Now you can afford to have FM with your high fidelity system.

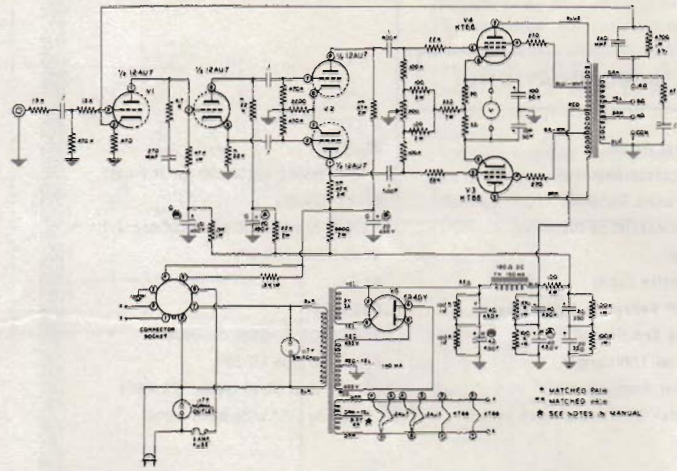






## SPECIFICATIONS:

Power output .....	25 watts
Frequency Response .....	± 1 db from 5 to 160,000 cps at 1 watt
Harmonic Distortion .....	1% at 25 watts
Intermodulation Distortion .....	1% at 20 watts (60 and 3,000 cps, 4:1)
Hum .....	99 db below 25 watts
Damping Factor .....	40:1
Input voltage for 5 watts output .....	1 volt
Tube Complement .....	2—12AU7, 2—KT66, 1—5R4GY
Output Transformer .....	Peerless, Special Design
Power Requirements .....	105-125 volts, 50/60 cycles, 140 watts
Dimensions .....	13½" wide by 8½" deep by 8¼" high



## HEATHKIT ADVANCED-DESIGN WILLIAMSON TYPE

# high fidelity amplifier KIT

## features

- ▶ Improved performance through new-design output transformer.
- ▶ Full 25 watt output with KT-66 tubes.

- ▶ New, simplified balance circuit requires only voltmeter for adjustment.
- ▶ Improved bass response, high frequency response, and phase shift characteristics. Reduced IM and harmonic distortion.
- ▶ Protective cover over amplifier — all connectors and controls (except balance) on front chassis apron.

This Williamson type high fidelity amplifier represents another step toward the "ultimate" in high-quality, undistorted audio. It incorporates all the latest advance-design features for the super-critical listener. You can enjoy virtually distortionless reproduction from one of the most outstanding high fidelity amplifiers available today—at any price!

This amplifier employs a specially designed Peerless output transformer and uses KT66 tubes by Genalex. Involving entirely new techniques in transformer design, this Peerless unit prevents loss in low frequency response, especially at moderate volume levels, in addition to allowing increased power output. The circuit is rated at 25 watts, and will follow instantaneous power peaks of a full orchestra up to 42 watts.

Featured also, is the "tweeter saver" which suppresses high frequency oscillation, and a new type balancing circuit. This is easier to adjust, requiring only a voltmeter, and it results in a closer "dynamic" balance between output tubes. Overall results are improved phase shift characteristics, reduced IM and harmonic distortion, and improved frequency response. This is truly the amplifier for music lovers who can appreciate subtle differences in performance.



### KIT COMBINATIONS:

**W-5M:** Amplifier Kit: Consists of main amplifier and power supply, all on one chassis. Complete with all necessary parts, tubes, and comprehensive manual. Shpg. Wt. 31 lbs. **\$59<sup>75</sup>**  
Express only .....

**W-5:** Combination Amplifier Kit: Consists of W-5M Amplifier Kit listed above plus Heathkit Model WA-P2 Preamplifier Kit. Complete with all necessary parts, tubes, and construction manuals. Shpg. Wt. 38 lbs. **\$79<sup>50</sup>**  
Express only .....

## OUTSTANDING PERFORMANCE AND MODERN PHYSICAL DESIGN



All connectors and terminals are located on one side of the chassis apron for convenience. The circuit is fused, and two AC outlets are provided. Provision is made for matching 4, 8, or 16 ohms speakers at a terminal strip on the chassis.

The chassis is finished in satin-gold enamel, and all terminals and tube sockets are marked as to type or function. An attractive cover fits over all above-chassis components. This not only "child-proofs" the unit, but it results in a most attractive "finished" appearance. It is suitable for use in or out of a cabinet. Rich black and gold color styling harmonizes with the Heathkit Model WA-P2 preamplifier, the Heathkit Model FM-3 Tuner, and blends with any room decoration.

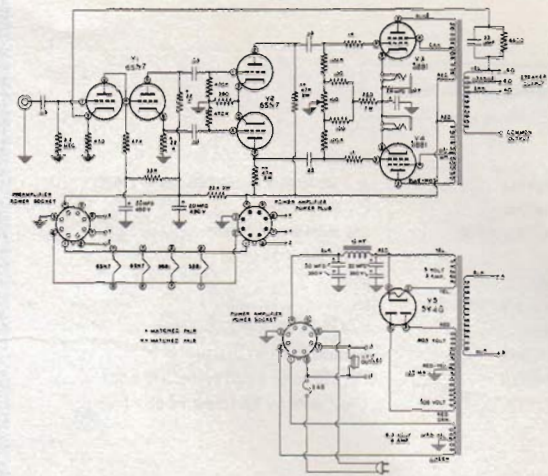
Conservatively rated, high quality components are used throughout to insure years of trouble-free performance. Its specifications, completely outlined above, clearly indicate the superiority of this amplifier for the individual who wants "something special" in top-quality audio.

The construction manual is written so that no technical background or training is required for assembly. Complete step-by-step instructions are provided for every stage of construction, and large pictorial diagrams illustrate exactly where each wire and component is to be placed.



**SPECIFICATIONS:**

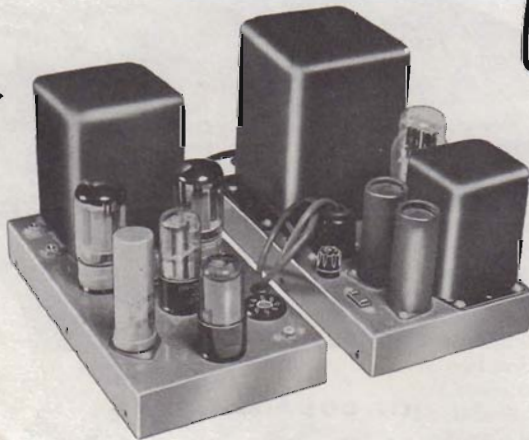
Power Output .....	20 watts
Frequency Response .....	± 1 db from 6 to 150,000 cps at 1 watt
Harmonic Distortion .....	1% at 20 watts
Intermodulation Distortion .....	1.3% at 20 watts (60 and 3,000 cps, 4:1)
Hum .....	88 db below 20 watts
Damping Factor .....	20:1
Input Voltage for 5 watt output .....	0.75 volts
Tube Complement .....	2—6SN7GT, 2—5881, 1—5V4G
Output Transformer .....	Acrosound type TO-300
Power Requirements .....	105-125 volts 50/60 cycles, 120 watts
Overall Dimensions (each unit) .....	7" high by 5½" wide by 11" long.



**HEATHKIT DUAL-CHASSIS WILLIAMSON TYPE**

# high fidelity amplifier **KIT**

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**KIT COMBINATIONS**

**W-3M:** Consists of main amplifier and power supply for separate chassis construction. Includes all tubes and components necessary for assembly. Shpg. Wt. 29 lbs.  
**\$49<sup>75</sup>**  
Express only .....

**W-3:** Consists of W-3M Kit listed above plus Heathkit Model WA-P2 Preamplifier described on page 46.  
**\$69<sup>50</sup>**  
Shpg. Wt. 37 lbs.  
Express only .....

## features

- ▶ Power supply and main amplifier on separate chassis for installation flexibility.
- ▶ Uses Acrosound "ultra-Linear" output transformer.
- ▶ Williamson Type High Fidelity circuit.
- ▶ Matches speaker of your choice; 4, 8 or 16 ohms.
- ▶ Easy to build from comprehensive manual supplied.

The Heathkit Model W-3M is a Williamson type high fidelity amplifier built on two separate chassis. The power supply is on one chassis, the amplifier stages are on the other chassis, and the two chassis are interconnected with a cable. Using two separate chassis provides additional flexibility in installation.

Employing an Acrosound transformer, this amplifier is capable of fine, clean reproduction. Its rated power output is 20 watts. A truly outstanding performer.

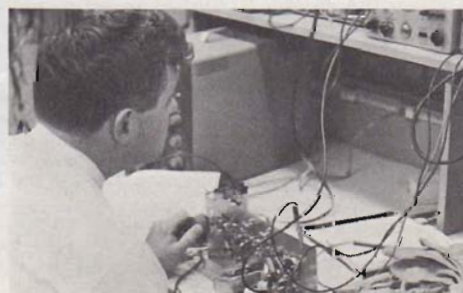
The transformer has provision for output at 4, 8, or 16 ohms, to match the speaker of your choice. The amplifier features broad frequency response, low distortion, low hum level, and exceptionally fine overall audio tone quality. Top quality parts are used throughout for reliable and stable operation. An amplifier that has received high praise from all quarters of the industry.

The instruction book furnished with this amplifier kit is similar to other Heathkit construction manuals in that complete information is supplied for constructing the unit. The actual assembly is done from step-by-step directions combined with large, easy-to-read, pictorial diagrams. No technical training or electronic background is required to build one of these high fidelity units. You can experience the emotional impact of true timbre response, and have the additional satisfaction of having "built it yourself." Assemble your own Williamson type amplifier now for real listening enjoyment.

## CONSTANT ENGINEERING PROGRESS



Director of Engineering discusses design considerations at an engineering meeting.



The new kit is breadboarded in the early stages of design.

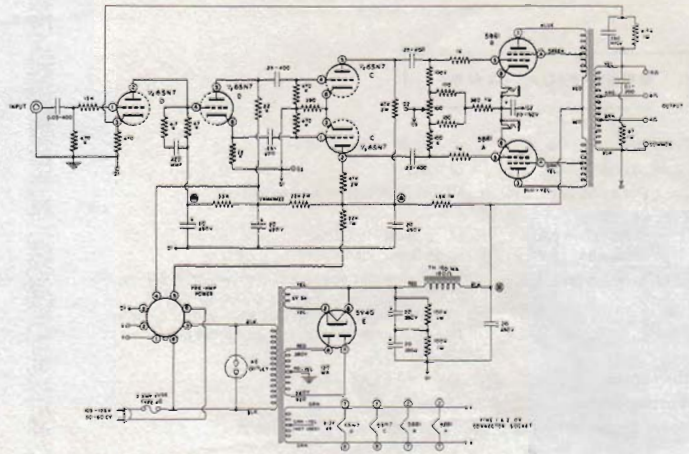


Models are built and thoroughly tested before design is frozen.



**SPECIFICATIONS:**

Power output.....	20 watts
Frequency Response.....	± 1 db from 10 to 100,000 cps at 1 watt
Harmonic Distortion.....	1.5% at 20 watts
Intermodulation Distortion.....	2.7% at 20 watts (60 and 3,000 cps, 4:1)
Hum.....	95 db below 20 watts
Damping Factor.....	28.5:1
Input voltage for 5 watt output.....	1 volt
Tube Complement.....	2—6SN7GT, 2—5881, 1—5V4G
Output Transformer.....	Chicago Standard, Special Design
Power Requirements.....	105-125 volts, 50/60 cycles, 115 watts
Dimensions.....	15¼" by 8¾" shelf space, 7" high (allow 1½" by 15¼" additional shelf space for cables and connections)



**HEATHKIT SINGLE-CHASSIS WILLIAMSON TYPE**

# high fidelity amplifier **KIT**

## features

- ▶ True Williamson-type high fidelity circuit.
- ▶ Simplified construction manual — prepared especially for the complete novice.

- ▶ Special-design Chicago Standard output transformer.
- ▶ Transformer taps provide output impedance of 4, 8, or 16 ohms.
- ▶ Main amplifier and power supply on one compact chassis.

The Heathkit Model W-4AM Williamson type amplifier continues to amaze audio-wise people with its outstanding performance. A true Williamson type circuit, featuring extended frequency response, low distortion and low hum levels, this amplifier can provide you with many hours of listening enjoyment with only a minimum investment compared to other units on the market. It employs a Chicago Standard Transformer, designed especially to Heath Company specifications, and the amplifier is rated at 20 watts output. The use of this transformer makes it possible to sell the amplifier at a bargain price, even though its performance equals that of much more expensive units. Too, some savings were realized by incorporating the power supply and the main amplifier on a single chassis. The result is a real "dollar value" for you.

Just read over the specifications for this fine high fidelity unit and compare them to those for amplifiers costing many dollars more. High quality is emphasized even though the price is unbelievably low.

The construction manual is complete in every respect, making the amplifier suitable for construction by the beginner in electronics. The only pre-requisite is an ability to solder, and this can be taken care of with only a few hours practice. Complete step-by-step instructions combined with pictorial diagrams insure your success. Don't deny yourself high fidelity because you feel you can't afford it. Assemble the Model W-4AM in just a few hours and use it with the Heathkit Model WA-P2 preamplifier for many pleasant listening hours.



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**KIT COMBINATIONS**

**W-4AM:** Consists of main amplifier and power supply for single chassis construction. Includes all tubes and components necessary for assembly. Shpg. Wt. 28 lbs.  
Express only..... **\$39<sup>75</sup>**

**W-4A:** Consists of W-4AM Kit listed above plus Heathkit Model WA-P2 Preamplifier described on page 46. Shpg. Wt. 35 lbs.  
Express only..... **\$59<sup>50</sup>**

**IS A HEATHKIT TRADITION...**



A draftsman prepares drawings for manufacturing the kit on a production basis.



The construction manual manuscript is typed and the kit is "proof-built" before printing.

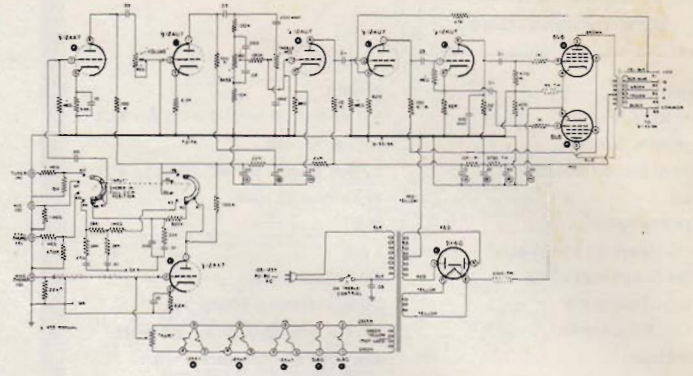


Schematic and pictorial diagrams are prepared by skilled artists to insure easy assembly.



**SPECIFICATIONS:**

Frequency Response .....  $\pm 1$  db 20 to 20,000 cps  
 Power Output ..... 20 watts  
 Total Harmonic Distortion ..... 1% (at 3 db below rated output)  
 Tone Controls:  
     Bass (at 30 cps) ..... 15 db boost, 15 db cut  
     Treble (at 15 kc) ..... 15 db boost, 20 db cut  
 Tube Complement ..... 12AX7 magnetic phono preamplifier and input amplifier  
     12AU7 voltage amplifier and phase splitter  
     12AU7 voltage amplifier and tone control amplifier  
     Two 6L6G push-pull pentode power amplifiers  
     5U4G Rectifier  
 Dimensions .....  $13\frac{1}{4}'' \times 8\frac{1}{2}'' \times 6\frac{3}{8}''$  high  
 Shipping Weight ..... 18 lbs.  
 Power Requirements ..... 110-125 volts AC at 50/60 cycles



**HEATHKIT 20-WATT HIGH FIDELITY**

**amplifier KIT**



**MODEL A-9B**

*features*

- ▶ Full 20 watt output — push-pull 6L6's.
- ▶ Separate bass and treble tone controls.

- ▶ True hi-fi performance  $\pm 1$  db 20 to 20,000 cycles.
- ▶ Four switch-selected compensated inputs.
- ▶ Miniature tubes for low hum and noise level.

**\$35.50**

SHPG. WT.  
23 LBS.

A detachable front plate is employed on the Model A-9B so that the plate can be removed and installed on the outside of a cabinet where the shafts protrude through.

Ease of kit assembly has been assured by supplying a detailed step-by-step construction manual with the kit. A specialized knowledge of electronics or wiring techniques is not required.

The Heathkit Model A-9B amplifier offers you the least expensive route to real high fidelity performance. It employs push-pull 6L6 tubes to provide full 20 watt output. The preamplifier, main amplifier, and power supply are all on one chassis. This one compact unit fills the need for a good high fidelity amplifier with only a minimum cash investment.

Designed primarily for home installations, the Model A-9B is also capable of fulfilling public address requirements. It has excellent gain characteristics and full 20-watt power output.

The preamplifier section features 4 separate inputs, each properly compensated and selected by panel-mounted selector switch. It has separate bass and treble tone controls, each offering 15 db boost and cut. It employs twin-triode miniature tubes in preamplifier, tone control, and phase splitter stages for low hum and noise level. Output transformer is tapped at 4, 8, 16 and 500 ohms. The power transformer is shielded and is of the heavy-duty "potted" type.

**HEATHKIT ECONOMY 7-WATT**

**HIGH FIDELITY amplifier KIT**

**MODEL A-7D**

- ▶ Real hi-fi performance at minimum cost.
- ▶ New circuit design with tapped-screen output transformer.

- ▶ Available with or without built-in preamplifier stage.
- ▶ Easy to build — even for the beginner.

The Model A-7D amplifier honestly qualifies as a high fidelity amplifier even though it is more limited in power than other Heathkit units. It is a top value in the low priced field. This new model provides full 7-watts output. The harmonic distortion has been reduced to only 1.5% at rated output, and it incorporates an isolated ground system for lower noise level. Hum is 60 db below 7 watts. Its performance is truly amazing for the price. The Model A-7D also features sealed-in-steel transformers and the output transformer is a new type incorporating a screen tap for improved performance. Frequency characteristics are  $\pm 1\frac{1}{2}$  db from 20 to 20,000 cps. Output is push-pull and top quality parts are used throughout. The output transformer is tapped at 4, 8, and 16 ohms. Bass and treble tone controls are provided on the front chassis apron, and provision is made for cabinet mounting if desired. Uses a 12SQ7GT voltage amplifier, a 12SN7 tone control amplifier and phase inverter, push-pull 12A6 output power amplifier, and a 5Y3GT rectifier.



**\$16.95**

SHPG. WT.  
10 LBS.

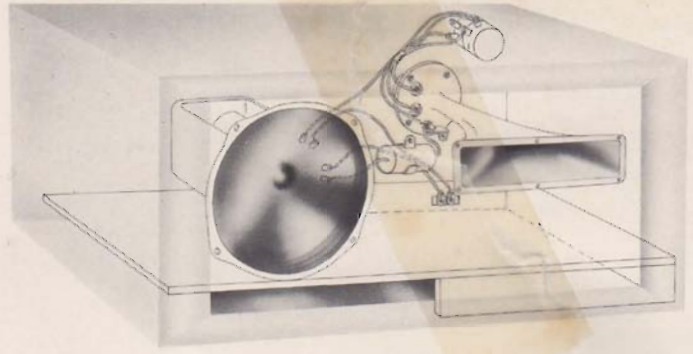
**MODEL A-7E** The Model A-7E is similar to the A-7D except that a 12SL7 tube has been added for preamplification. It features two switch-selected inputs, RIAA compensation, and plenty of gain for variable reluctance or low-level cartridges. Preamplifier is on same chassis as main amplifier.

MODEL A-7E. Shpg. Wt. 10 Lbs. .... **\$18.50**



**SPECIFICATIONS:**

Frequency Response .....	$\pm 5$ db 50 to 12,000 cps
Cross-over Frequency .....	1600 cps
Power Rating:	
Program Material .....	.25 watts
Single Frequency (near mid-range) .....	.15 watts
Nominal Impedance .....	16 ohms
Cabinet:	
Type .....	Ducted-Port Bass Reflex
Dimensions .....	11½" H. x 23" W. x 11¾" D.
Material .....	Furniture-grade plywood, suitable for light or dark finish.
Speakers:	
Low frequency .....	8-inch Jensen (special design)
High Frequency (with level balance control) .....	Jensen compression driver with exponential horn (special design)



*New* **HEATHKIT**  
**HIGH FIDELITY**

**speaker system**  
**KIT**

*features*

- ▶ *Special new enclosure design for smooth, clean, response characteristics.*
- ▶ *Separate speakers for high and low frequencies.*
- ▶ *Built-in crossover circuit (1600 cps).*
- ▶ *Usable as part of a four-speaker system later on.*
- ▶ *Attractively styled to blend with period or modern furnishings.*



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The Heathkit Model SS-1 Speaker System has been designed for clean audio reproduction without coloration of any kind, and without the usual response "hump" at certain frequencies. Performance is within  $\pm 5$  db from 50 to 12,000 cps.

Measuring only 11½" H. x 23" W. x 11¾" D., the Model SS-1 is a beautiful piece of furniture in addition to its being an outstanding performer. The cabinet comes in knocked-down form so you can assemble it yourself, and it is made of furniture-grade plywood, suitable for light or dark finish of your choice. The broad "picture frame" molding makes it most attractive, suitable for use with any decorating scheme.

The cabinet is a ducted-port, bass-reflex type, and the system features two separate speakers for high and low frequencies. A variable balance control allows level adjustment of the high-frequency speaker. The Jensen speakers come ready for installation, and all you do is assemble the cabinet and apply the finish of your choice.

The Model SS-1 is the first step toward an outstanding new speaker system. Later an enclosure will be made available that contains an additional woofer and a super tweeter, with crossover, for a complete 4-way high fidelity speaker system.

Do not be deceived by the low price. The Model SS-1 is an outstanding dollar value.

**MODEL SS-1**

**\$39.95**

SHPG. WT. 30 LBS.

**UTILITY SPEAKERS...**

**401-5:** This is a 12" speaker rated at approximately 9 watts. Its impedance is 4 ohms, and it is intended primarily as an auxiliary unit and in applications where somewhat limited frequency and power ratings may be tolerated. A fine performer for the price but not a true "high-fidelity" speaker. Shipping wt. **\$6.95**  
7 pounds, Model 401-5.....

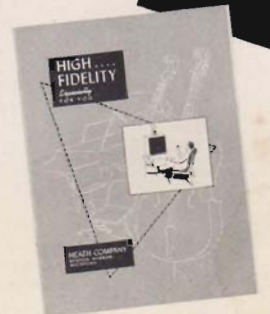
**401-6:** This is a 12" speaker that will handle up to approximately 12 watts. Its impedance is 8 ohms. Suitable for use in inexpensive speaker enclosures where extreme high fidelity is not the objective. Surprisingly good tone quality for the price, but not a true "high-fidelity" unit. Shipping weight 7 pounds, **\$7.50**  
Model 401-6.....

**HIGH FIDELITY BOOKLET...**

*free*

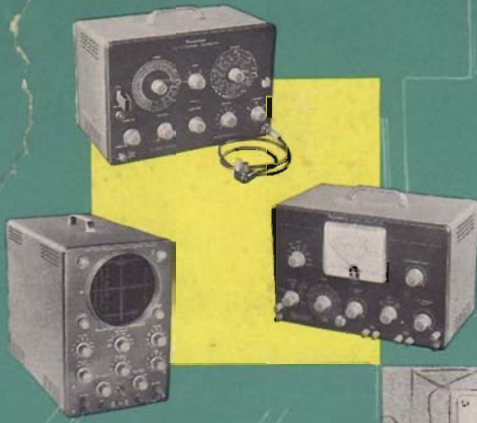
This booklet is available only from the Heath Company and is yours for the asking. Not a "tie-in" or advertising "gimmick." You don't have to buy anything, just mail us a card. Another Heathkit customer service and another one of the extras available from the Heath Company.

**HIGH FIDELITY ESPECIALLY FOR YOU,** by Gerard M. Krepp. An interesting discussion of a controversial subject. Written particularly for those who are curious, but awed by the terminology, confused by conflicting requirements, and uncertain as to "what the fuss is all about." The perfect guide for the non-technical potential audiophile.





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**HEATH COMPANY**

